

Description of Device Parameters

Proline Cubemass 300

FOUNDATION Fieldbus

Coriolis flowmeter

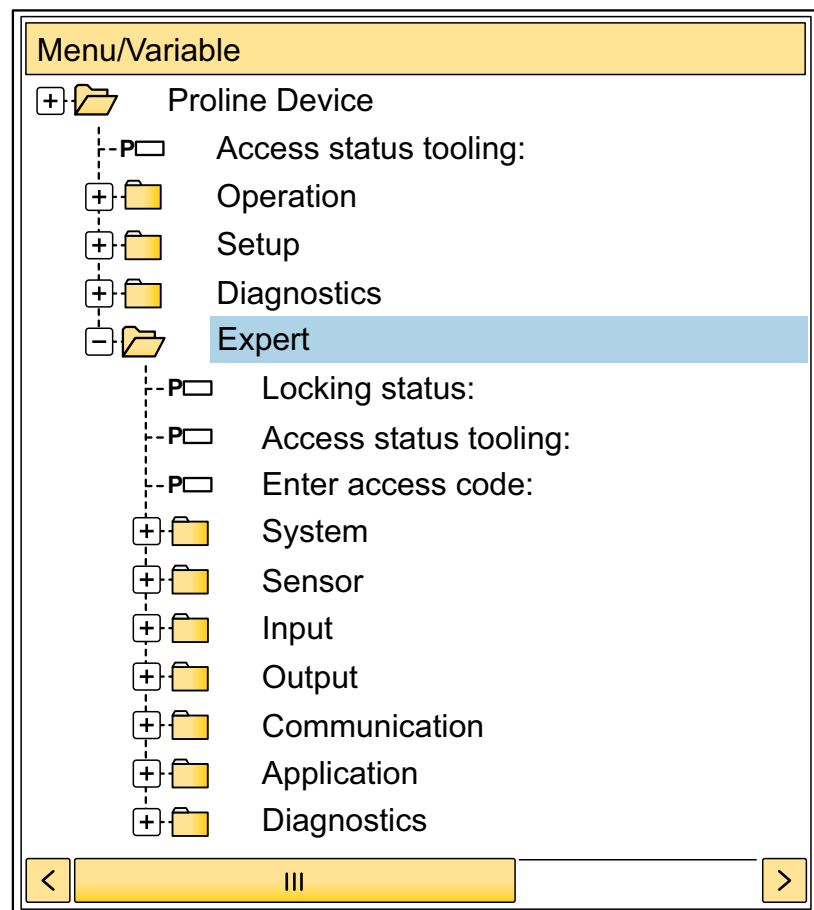


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1 Document information

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

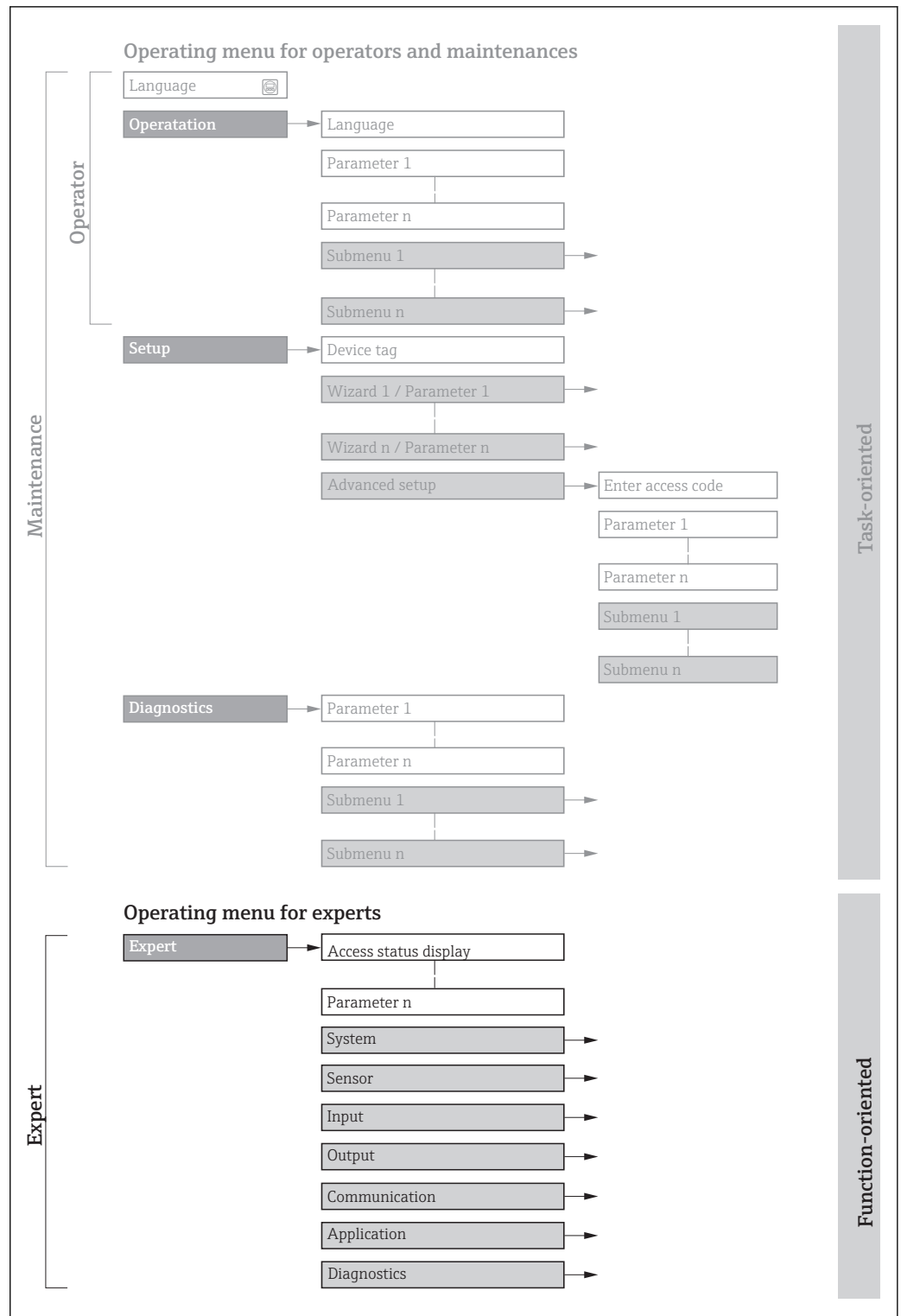
1.2 Target group

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



Detailed information concerning:

- Arrangement of the parameters according to the menu structure of the **Operation** menu, **Setup** menu, **Diagnostics** menu along with a brief description, see the Operating Instructions for the device → 7
- Operating philosophy of the operating menu: "Operating philosophy" chapter of the Operating Instructions for the device → 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
Cubemass C 300	BA01516D

1.5.2 Supplementary device-dependent documentation

Special documentation

Contents	Documentation code
Information on the Pressure Equipment Directive	SD01614D
Remote display and operating module DKX001	SD01763D
Web server	SD01673D
Heartbeat Technology	SD01694D
Concentration measurement	SD01712D

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	→ 	45
▶ Sensor	→ 	50
▶ Measured val.	→ 	50
▶ System units	→ 	61
▶ Process param.	→ 	69
▶ Measurement mode	→ 	78
▶ External comp.	→ 	80
▶ Calculated value	→ 	82
▶ Sensor adjustm.	→ 	86
▶ Calibration	→ 	92
▶ I/O config.	→ 	94
I/O 1 to n terminals (3902-1 to n)	→ 	94
I/O 1 to n info (3906-1 to n)	→ 	94

I/O 1 to n type (3901–1 to n)	→ 95
Apply I/O config (3907)	→ 95
Conversion code (2762)	→ 96
► Input	→ 96
► Current input 1 to n	→ 96
► Status input 1 to n	→ 99
► Output	→ 101
► Curr.output 1 to n	→ 101
► PFS output 1 to n	→ 116
► Relay output 1 to n	→ 139
► Communication	→ 145
Device address (11061)	→ 145
► Resource block	→ 145
► WLAN settings	→ 166
► Web server	→ 170
► Analog inputs	→ 173
► Analog input 1 to n	→ 173
► Discrete inputs	→ 221
► Discrete input 1 to n	→ 222
► Analog outputs	→ 250
► Multiple AO	→ 250
► Discrete outputs	→ 259
► Multiple DO	→ 259
► Application	→ 268
Reset all tot. (2806)	→ 268

► Totalizer 1 to n	→ 268
► Viscosity	
► Concentration	→ 273
► Diagnostics	→ 273
Actual diagnos. (0691)	→ 274
Prev.diagnostics (0690)	→ 275
Time fr. restart (0653)	→ 276
Operating time (0652)	→ 276
► Diagnostic list	→ 276
► Event logbook	→ 280
► Device info	→ 283
► Mainboard module	→ 287
► Sens. electronic	→ 288
► I/O module 1	→ 288
► I/O module 2	→ 289
► I/O module 3	→ 288
► I/O module 4	→ 288
► Display module	→ 290
► Min/max val.	→ 290
► Data logging	→ 296
► Heartbeat	→ 305
► Simulation	→ 305

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	→	50
► I/O config.	→	94
► Input	→	96
► Output	→	101
► Communication	→	145
► Analog inputs	→	173
► Discrete inputs	→	221
► Analog outputs	→	250
► Discrete outputs	→	259
► Application	→	268
► Diagnostics	→	273

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 4-digit number and the channel number, which identifies the channel of a process variable: e.g. 0914-1. In the navigation view, this appears on the right-hand side in the header of the selected parameter.

0914-2

1

A0029414

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: Input of "914" instead of "0914"
- If no channel number is entered, channel 1 is jumped to automatically.
Example: Enter 0914 → Assign variable parameter
- If a different channel is jumped to: Enter the direct access code with the corresponding channel number.
Example: Enter 0914-2 → 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	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	→  45

3.1.1 "Display" submenu

Navigation  Expert → System → Display

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

Display language

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

Format display

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

* Visibility depends on order options or device settings

Additional information*Description*

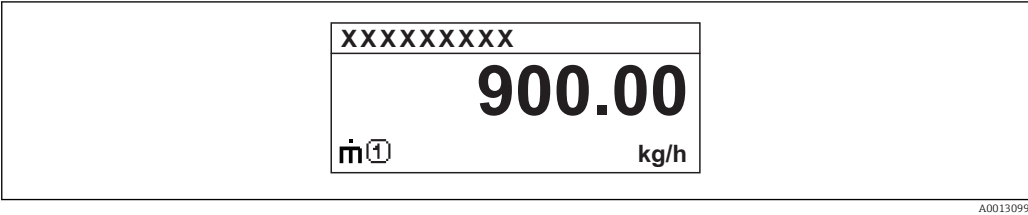
The display format (size, bar graph etc.) and number of measured values displayed simultaneously (1 to 4) can be configured. This setting only applies to normal operation.



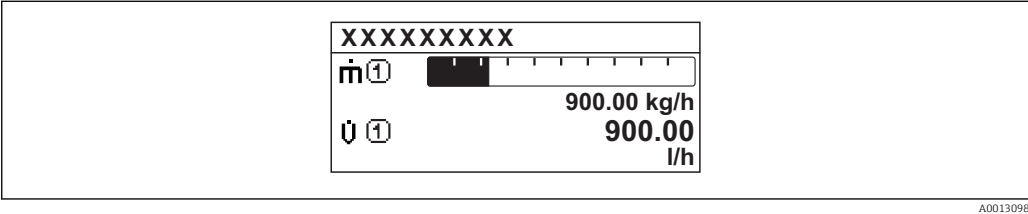
- The **Value 1 display** parameter (→ 18) to **Value 4 display** parameter (→ 23) are used to specify which measured values are shown on the local display and in what order.
- If more measured values are specified than the display mode selected permits, then the values alternate on the device display.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

Possible measured values shown on the local display:

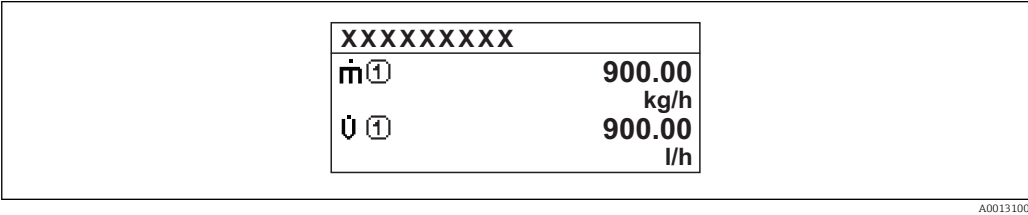
"1 value, max." option



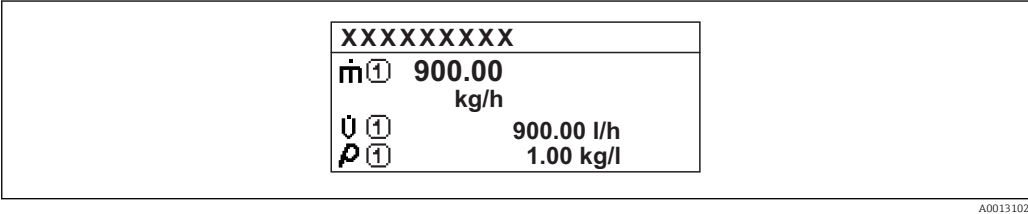
"Bagr. + 1 value" option



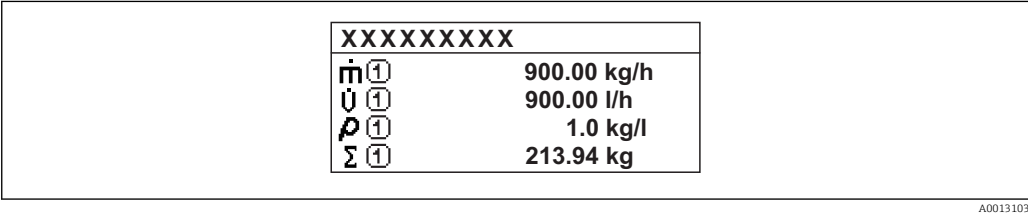
"2 values" option



"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	■ Mass flow ■ Volume flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. * ■ Density ■ Ref.density ■ Concentration * ■ Temperature ■ Carr. pipe temp. * ■ Electronic temp. ■ Osc. freq. 0 ■ Osc. ampl. 0 * ■ Freq. fluct. 0 ■ Osc. damping 0 ■ Osc.damp.fluct 0 ■ Signal asymmetry ■ Exc. current 0 ■ Totalizer 1 ■ Totalizer 2 ■ Totalizer 3 ■ Curr.output 1
Factory setting	Mass flow

* Visibility depends on order options or device settings

Additional information*Description*

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

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

Dependency

 The unit of the displayed measured value is taken from the **System units** submenu (→  61).

Selection

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

0% bargraph 1**Navigation**

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

Prerequisite

A local display is provided.

Description

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

User entry

Signed floating-point number

Factory setting

Country-specific:

- 0 kg/h
- 0 lb/min

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 (→  61).

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 → 315
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 (→ 61).

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	<i>Description</i> 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. <i>Dependency</i>  The unit of the displayed measured value is taken from the System units submenu (→  61).

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	<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 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

Description

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.

Selection

 The unit of the displayed measured value is taken from the **System units** submenu (→  61).

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 kg/h
- 0 lb/min

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 (→  61).

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*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 (→  61).

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*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 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

Description

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.

Selection

 The unit of the displayed measured value is taken from the **System units** submenu (→  61).

Decimal places 4



Navigation

  Expert → System → Display → Decimal places 4 (0119)

Prerequisite

A measured value is specified in the **Value 4 display** parameter (→  23).

Description

Use this function to select the number of decimal places for measured value 4.

Selection

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

Factory setting

x.xx

Additional information

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.

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

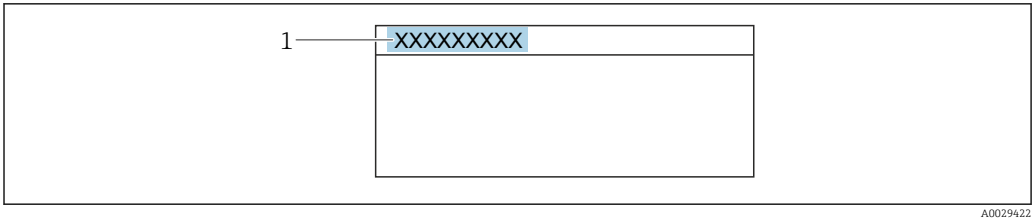
5 s

Additional information	<i>Description</i> This type of alternating display only occurs automatically if the number of measured values defined exceeds the number of values the selected display format can display simultaneously. ■ The Value 1 display parameter (→  18) to Value 4 display parameter (→  23) are used to specify which measured values are shown on the local display. ■ The display format of the displayed measured values is specified using the Format display parameter (→  15).
-------------------------------	--

Display damping 	
Navigation	  Expert → System → Display → Display damping (0094)
Prerequisite	A local display is provided.
Description	Use this function to enter a time constant for the reaction time of the local display to fluctuations in the measured value caused by process conditions.
User entry	0.0 to 999.9 s
Factory setting	0.0 s
Additional information	<i>User entry</i> 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
Additional information	<i>Description</i> The header text only appears during normal operation.

1) proportional transmission behavior with first order delay



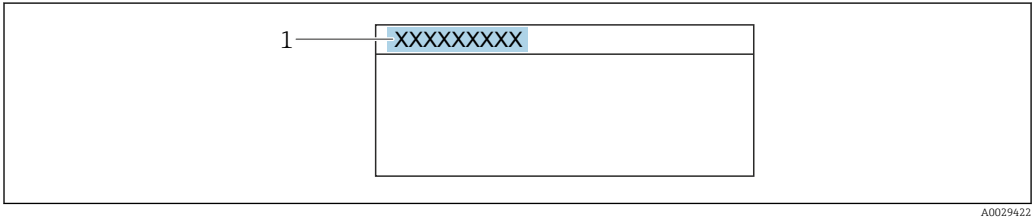
1 Position of the header text on the display

Selection

- Device tag
Is defined in the **Device tag** parameter (→ 283).
- Free text
Is defined in the **Header text** parameter (→ 26).

Header text

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



1 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** "remote 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

→  28

Last backup	→ 28
Config. managem.	→ 28
Backup state	→ 29
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 integrated HistoROM 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 integrated HistoROM. 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 integrated HistoROM. 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

Compar. result**Navigation**

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

Description

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

User interface

- Set. identical
- Set. not ident.
- No backup

- Backup corrupt
- Check not done
- Dataset incomp.

Factory setting

Check not done

Additional information

Description

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

Selection

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

HistoROM

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

3.1.3 "Diagnostic handling" submenu

Navigation

 Expert → System → Diagn. handling

► Diagn. handling

Alarm delay (0651) →  31

► Diagn. behavior →  31

**Alarm delay****Navigation** Expert → System → Diagn. handling → Alarm delay (0651)**Description**

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



The diagnostic message is reset without a time delay.

User entry

0 to 60 s

Factory setting

0 s

Additional information*Result*

This setting affects the following diagnostic messages:

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

"Diagnostic behavior" submenu

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

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

Options	Description
Alarm	The device stops measurement. The signal outputs and totalizers assume the defined alarm condition. A diagnostic message is generated. The background lighting changes to red.
Warning	The device continues to measure. The signal outputs and totalizers are not affected. A diagnostic message is generated.

Options	Description
Logbook only	The device continues to measure. The diagnostic message is displayed only in the Event logbook submenu (→  280) (Event list submenu (→  282)) and is not displayed in alternation with the operational display.
Off	The diagnostic event is ignored, and no diagnostic message is generated or entered.

 Assignment of the status of a diagnostic event.

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

- Bad
The status of the input value (PV) is Bad.
- Uncertain
The status of the input value (PV) is Uncertain.
- Good
The status of the input value (PV) is Good.

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

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

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

Diagnostic no. 862 (0679)	→  39
Diagnostic no. 912 (0703)	→  39
Diagnostic no. 913 (0712)	→  39
Diagnostic no. 944 (0732)	→  40
Diagnostic no. 948 (0744)	→  40
Status diag. 046 (11042)	→  40
Status diag. 140 (11041)	→  41
Status diag. 144 (11016)	→  41
Status diag. 374 (11000)	→  41
Status diag. 830 (11006)	→  42
Status diag. 831 (11007)	→  42
Status diag. 832 (11002)	→  42
Status diag. 833 (11003)	→  43
Status diag. 834 (11004)	→  43
Status diag. 835 (11005)	→  43
Status diag. 862 (11008)	→  44
Status diag. 912 (11009)	→  44
Status diag. 913 (11010)	→  44
Status diag. 944 (11014)	→  45
Status diag. 948 (11011)	→  45

Diagnostic no. 046 (Sensor limit)**Navigation**  Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 046 (0709)**Description**Option for changing the diagnostic behavior of the diagnostic message **046 Sensor limit**.

Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Alarm
Additional information	 For a detailed description of the options available, see →  31

Diagnostic no. 140 (Sensor sig.asym.)

Navigation	  Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 140 (0708)
Description	Use this function to change the diagnostic behavior of the diagnostic message 140 Sensor sig.asym..
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Alarm
Additional information	 For a detailed description of the options available, see →  31

Diagnostic no. 144 (MeasErrorTooHigh)

Navigation	  Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 144 (0731)
Description	Option for changing the diagnostic behavior of the diagnostic message 144 MeasErrorTooHigh.
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Alarm
Additional information	 For a detailed description of the options available, see →  31

Diagnostic no. 374 (Sensor electron.) 	
Navigation	  Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 374 (0710)
Description	Option for changing the diagnostic behavior of the diagnostic message 374 Sensor electron..
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Warning
Additional information	 For a detailed description of the options available, see →  31
Diagnostic no. 441 (Curr.output 1 to n) 	
Navigation	  Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 441 (0657)
Description	Use this function to change the diagnostic behavior of the diagnostic message 441 Curr.output 1 to n.
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Warning
Additional information	 For a detailed description of the options available, see →  31
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	Use this function to change the diagnostic behavior of the diagnostic message 442 Freq. output 1 to n.
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Warning

Additional information  For a detailed description of the options available, see →  31

Diagnostic no. 443 (Pulse output 1 to n)



Navigation  Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 443 (0659)

Prerequisite The measuring device has a pulse/frequency/switch output.

Description Use this function to change the diagnostic behavior of the diagnostic message **443 Pulse output 1 to n**.

Selection

- Off
- Alarm
- Warning
- Logbook only

Factory setting Warning

Additional information  For a detailed description of the options available, see →  31

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.

Description Use this function to change the diagnostic behavior of the diagnostic message **444 Current input 1 to n**.

Selection

- Off
- Alarm
- Warning
- Logbook only

Factory setting Warning

Additional information  For a detailed description of the options available, see →  31

Diagnostic no. 830 (Sensor temp.)



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

Description Use this function to change the diagnostic behavior of the diagnostic message **830 Sensor temp..**

Selection

- Off
- Alarm
- Warning
- Logbook only

Factory setting Warning

Additional information  For a detailed description of the options available, see →  31

Diagnostic no. 831 (Sensor temp.)

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

Description Use this function to change the diagnostic behavior of the diagnostic message **831 Sensor temp..**

Selection

- Off
- Alarm
- Warning
- Logbook only

Factory setting Warning

Additional information  For a detailed description of the options available, see →  31

Diagnostic no. 832 (Electronic temp.)

Navigation   Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 832 (0681)

Description Use this function to change the diagnostic behavior of the diagnostic message **832 Electronic temp..**

Selection

- Off
- Alarm
- Warning
- Logbook only

Factory setting Logbook only

Additional information  For a detailed description of the options available, see →  31

Diagnostic no. 833 (Electronic temp.)



Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 833 (0682)
Description	Use this function to change the diagnostic behavior of the diagnostic message 833 Electronic temp..
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Logbook only
Additional information	For a detailed description of the options available, see → 31

Diagnostic no. 834 (Process temp.)



Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 834 (0700)
Description	Use this function to change the diagnostic behavior of the diagnostic message 834 Process temp..
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Warning
Additional information	For a detailed description of the options available, see → 31

Diagnostic no. 835 (Process temp.)



Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 835 (0702)
Description	Use this function to change the diagnostic behavior of the diagnostic message 835 Process temp..
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Warning
Additional information	For a detailed description of the options available, see → 31

Diagnostic no. 862 (Empty pipe)



Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 862 (0679)
Description	Use this function to change the diagnostic behavior of the diagnostic message 862 Empty pipe .
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Warning
Additional information	For a detailed description of the options available, see → 31

Diagnostic no. 912 (Medium inhomog.)



Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 912 (0703)
Description	Option for changing the diagnostic behavior of the diagnostic message 912 Medium inhomog..
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Warning
Additional information	For a detailed description of the options available, see → 31

Diagnostic no. 913 (Medium unsuitab.)



Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 913 (0712)
Description	Option for changing the diagnostic behavior of the diagnostic message 913 Medium unsuitab..
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Warning
Additional information	For a detailed description of the options available, see → 31

Diagnostic no. 944 (MonitoringFailed)



Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 944 (0732)
Description	Option for changing the diagnostic behavior of the diagnostic message 944 MonitoringFailed .
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Warning
Additional information	For a detailed description of the options available, see → 31

Diagnostic no. 948 (Oscill. damping)



Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 948 (0744)
Description	Option for changing the diagnostic behavior of the diagnostic message 948 Oscill. damping .
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Warning
Additional information	For a detailed description of the options available, see → 31

Status diag. 046 (Sensor limit)

Navigation	Expert → System → Diagn. handling → Diagn. behavior → Status diag. 046 (11042)
Description	Use this function to change the status of diagnostic message 046 Sensor limit .
Selection	■ Bad ■ Uncertain ■ Good
Factory setting	Uncertain
Additional information	Detailed description of the options available for selection: → 32

Status diag. 140 (Sensor sig.asym.)

Navigation	 Expert → System → Diagn. handling → Diagn. behavior → Status diag. 140 (11041)
Description	Use this function to change the status of diagnostic message 140 Sensor sig.asym..
Selection	■ Bad ■ Uncertain ■ Good
Factory setting	Bad
Additional information	 Detailed description of the options available for selection: →  32

Status diag. 144 (MeasErrorTooHigh)

Navigation	 Expert → System → Diagn. handling → Diagn. behavior → Status diag. 144 (11016)
Description	Use this function to change the status of diagnostic message 144 MeasErrorTooHigh.
Selection	■ Bad ■ Uncertain ■ Good
Factory setting	Uncertain
Additional information	 Detailed description of the options available for selection: →  32

Status diag. 374 (Sensor electron.)

Navigation	 Expert → System → Diagn. handling → Diagn. behavior → Status diag. 374 (11000)
Description	Use this function to change the status of diagnostic message △S374 Sensor electron..
Selection	■ Bad ■ Uncertain ■ Good
Factory setting	Uncertain
Additional information	 Detailed description of the options available for selection: →  32

Status diag. 830 (Sensor temp.)

Navigation	 Expert → System → Diagn. handling → Diagn. behavior → Status diag. 830 (11006)
Description	Use this function to change the status of diagnostic message 830 Sensor temp..
Selection	■ Bad ■ Uncertain ■ Good
Factory setting	Uncertain
Additional information	 Detailed description of the options available for selection: →  32

Status diag. 831 (Sensor temp.)

Navigation	 Expert → System → Diagn. handling → Diagn. behavior → Status diag. 831 (11007)
Description	Use this function to change the status of diagnostic message 831 Sensor temp..
Selection	■ Bad ■ Uncertain ■ Good
Factory setting	Uncertain
Additional information	 Detailed description of the options available for selection: →  32

Status diag. 832 (Electronic temp.)

Navigation	 Expert → System → Diagn. handling → Diagn. behavior → Status diag. 832 (11002)
Description	Option for changing the status of the diagnostic message 832 Electronic temp..
Selection	■ Bad ■ Uncertain ■ Good
Factory setting	Uncertain
Additional information	 Detailed description of the options available for selection: →  32

Status diag. 833 (Electronic temp.)

Navigation	 Expert → System → Diagn. handling → Diagn. behavior → Status diag. 833 (11003)
Description	Option for changing the status of the diagnostic message 833 Electronic temp..
Selection	■ Bad ■ Uncertain ■ Good
Factory setting	Uncertain
Additional information	 Detailed description of the options available for selection: →  32

Status diag. 834 (Process temp.)

Navigation	 Expert → System → Diagn. handling → Diagn. behavior → Status diag. 834 (11004)
Description	Use this function to change the status of diagnostic message 834 Process temp..
Selection	■ Bad ■ Uncertain ■ Good
Factory setting	Uncertain
Additional information	 Detailed description of the options available for selection: →  32

Status diag. 835 (Process temp.)

Navigation	 Expert → System → Diagn. handling → Diagn. behavior → Status diag. 835 (11005)
Description	Use this function to change the status of diagnostic message 835 Process temp..
Selection	■ Bad ■ Uncertain ■ Good
Factory setting	Uncertain
Additional information	 Detailed description of the options available for selection: →  32

Status diag. 862 (Empty pipe)

Navigation	 Expert → System → Diagn. handling → Diagn. behavior → Status diag. 862 (11008)
Description	Use this function to change the status of diagnostic message 862 Empty pipe .
Selection	■ Bad ■ Uncertain ■ Good
Factory setting	Uncertain
Additional information	 Detailed description of the options available for selection: →  32

Status diag. 912 (Medium inhomog.)

Navigation	 Expert → System → Diagn. handling → Diagn. behavior → Status diag. 912 (11009)
Description	Use this function to change the status of diagnostic message 912 Medium inhomog..
Selection	■ Bad ■ Uncertain ■ Good
Factory setting	Uncertain
Additional information	 Detailed description of the options available for selection: →  32

Status diag. 913 (Medium unsuitab.)

Navigation	 Expert → System → Diagn. handling → Diagn. behavior → Status diag. 913 (11010)
Description	Use this function to change the status of diagnostic message 913 Medium unsuitab..
Selection	■ Bad ■ Uncertain ■ Good
Factory setting	Uncertain
Additional information	 Detailed description of the options available for selection: →  32

Status diag. 944 (MonitoringFailed)

Navigation	 Expert → System → Diagn. handling → Diagn. behavior → Status diag. 944 (11014)
Description	Use this function to change the status of diagnostic message 944 MonitoringFailed .
Selection	■ Bad ■ Uncertain ■ Good
Factory setting	Uncertain
Additional information	 Detailed description of the options available for selection: →  32

Status diag. 948 (Oscill. damping)

Navigation	 Expert → System → Diagn. handling → Diagn. behavior → Status diag. 948 (11011)
Description	Use this function to change the status of diagnostic message 948 Oscill. damping .
Selection	■ Bad ■ Uncertain ■ Good
Factory setting	Uncertain
Additional information	 Detailed description of the options available for selection: →  32

3.1.4 "Administration" submenu

Navigation  Expert → System → Administration

► Administration	
► Def. access code	→  46
► Reset acc. code	→  47
Device reset (0000)	→  48
Activate SW opt. (0029)	→  48
SW option overv. (0015)	→  49

"Def. access code" wizard

 The **Def. access code** wizard (→  46) 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

Confirm code

→  46

→  47

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 *Description*

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.

User entry

A message is displayed if the access code is not in the input range.

Factory setting

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)

→  47

Reset acc. code (0024)

→  47

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

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

Additional information*Description*

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

User entry

The reset code can only be entered via:

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

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

Expert → System → Administration → Device reset (0000)

Description

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

Selection

- Cancel
- To delivery set.
- Restart device
- ENP restart

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.
ENP restart	The parameters of the electronic name plate are reset. The device is restarted.

Activate SW opt.**Navigation**

Expert → System → Administration → Activate SW opt. (0029)

Description

Use this function to enter an activation code to enable an additional, ordered software option.

User entry	Max. 10-digit string consisting of numbers.
Factory setting	Depends on the software option ordered
Additional information	<i>Description</i> If a measuring device was ordered with an additional software option, the activation code is programmed in the device at the factory. <i>User entry</i>  To activate a software option subsequently, please contact your Endress+Hauser sales organization. NOTE! The activation code is linked to the serial number of the measuring device and varies according to the device and software option. If an incorrect or invalid code is entered, this results in the loss of software options that have already been activated. ▶ Before you enter a new activation code, make a note of the current activation code . ▶ Enter the new activation code provided by Endress+Hauser when the new software option was ordered. ▶ Once the activation code has been entered, check if the new software option is displayed in the SW option overv. parameter (→  49). ↳ The new software option is active if it is displayed. ↳ If the new software option is not displayed or all software options have been deleted, the code entered was either incorrect or invalid. ▶ If the code entered is incorrect or invalid, enter the old activation code . ▶ Have your Endress+Hauser sales organization check the new activation code remembering to specify the serial number or ask for the code again. <i>Example for a software option</i> Order code for "Application package", option EA "Extended HistoROM"  The software options currently enabled are displayed in the SW option overv. parameter (→  49). <i>Web browser</i>  Once a software option has been activated, the page must be loaded again in the Web browser.

SW option overv.

Navigation	 Expert → System → Administration → SW option overv. (0015)
Description	Displays all the software options that are enabled in the device.
User interface	■ Extend. HistoROM ■ HBT Verification ■ HBT Monitoring ■ Concentration

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"

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

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

3.2 "Sensor" submenu

Navigation  Expert → Sensor

► Sensor		
► Measured val.	→ 	50
► System units	→ 	61
► Process param.	→ 	69
► Measurement mode	→ 	78
► External comp.	→ 	80
► Calculated value	→ 	82
► Sensor adjustm.	→ 	86
► Calibration	→ 	92

3.2.1 "Measured val." submenu

Navigation  Expert → Sensor → Measured val.

► Measured val.		
► Process variab.	→ 	51
► Totalizer	→ 	54

► Input values	→ 56
► Output values	→ 57

"Process variab." submenu

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

► Process variab.	
Mass flow (1838)	→ 51
Volume flow (1847)	→ 52
Correct.vol.flow (1851)	→ 52
Density (1850)	→ 52
Ref.density (1852)	→ 52
Temperature (1853)	→ 53
Pressure value (6129)	→ 53
Concentration (1887)	→ 53
Target mass flow (1864)	→ 54
Carrier mass fl. (1865)	→ 54

Mass flow

Navigation	 Expert → Sensor → Measured val. → Process variab. → Mass flow (1838)
Description	Displays the mass flow that is currently measured.
User interface	Signed floating-point number
Additional information	Dependency  The unit is taken from the Mass flow unit parameter (→ 62)

Volume flow

Navigation	  Expert → Sensor → Measured val. → Process variab. → Volume flow (1847)
Description	Displays the volume flow currently calculated.
User interface	Signed floating-point number
Additional information	<i>Description</i> The volume flow is calculated from the mass flow currently measured and the density currently measured. <i>Dependency</i>  The unit is taken from the Volume flow unit parameter (→  63)

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 (→  65)

Density

Navigation	  Expert → Sensor → Measured val. → Process variab. → Density (1850)
Description	Displays the density currently measured.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the Density unit parameter (→  66)

Ref.density

Navigation	  Expert → Sensor → Measured val. → Process variab. → Ref.density (1852)
Description	Displays the reference density currently calculated.

User interface Signed floating-point number

Additional information *Dependency*



The unit is taken from the **Ref. dens. unit** parameter (→ 67)

Temperature

Navigation Expert → Sensor → Measured val. → Process variab. → Temperature (1853)

Description Displays the medium temperature currently measured.

User interface Signed floating-point number

Additional information *Dependency*



The unit is taken from the **Temperature unit** parameter (→ 67)

Pressure value

Navigation Expert → Sensor → Measured val. → Process variab. → Pressure value (6129)

Description Displays the fixed or external pressure value.

User interface Signed floating-point number

Additional information *Dependency*



The unit is taken from the **Pressure unit** parameter (→ 68)

Concentration

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

Prerequisite For the following order code:
"Application package", option **ED** "Concentration"



The software options currently enabled are displayed in the **SW option overv.** parameter (→ 49).

Description Displays the concentration currently calculated.

User interface Signed floating-point number

Additional information *Dependency*



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

Target mass flow

Navigation	 Expert → Sensor → Measured val. → Process variab. → Target mass flow (1864)
Prerequisite	With the following conditions: ▪ Order code for "Application package", option ED "Concentration" ▪ The WT-% option or the User conc. option is selected in the Concentr. unit parameter.  The software options currently enabled are displayed in the SW option overv. parameter (→  49).
Description	Displays the mass flow currently measured for the target medium.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the Mass flow unit parameter (→  62)

Carrier mass fl.

Navigation	 Expert → Sensor → Measured val. → Process variab. → Carrier mass fl. (1865)
Prerequisite	With the following conditions: ▪ Order code for "Application package", option ED "Concentration" ▪ The WT-% option or the User conc. option is selected in the Concentr. unit parameter.  The software options currently enabled are displayed in the SW option overv. parameter (→  49).
Description	Displays the mass flow currently measured for the carrier medium.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the Mass flow unit parameter (→  62)

"Totalizer" submenu

Navigation  Expert → Sensor → Measured val. → Totalizer

 Totalizer	
Totalizer val. 1 to n (0911-1 to n)	→  55
Tot. overflow 1 to n (0910-1 to n)	→  55

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 (→  269) 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 (→  272). <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 (→  270).  The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→  269). <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 (→  269) 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 (→  269).

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

→  56

► Val.stat.inp. 1 to n

→  57

"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)

→  56

Measur. curr. 1 to n (1604–1 to n)

→  57

Measured val.

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.

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) →  57

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 →  58

► PFS output 1 to n →  58

► Relay output 1 to n →  60

"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)

→  58

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

→  58

Output curr.

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.

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)

→  59

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

→  59

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

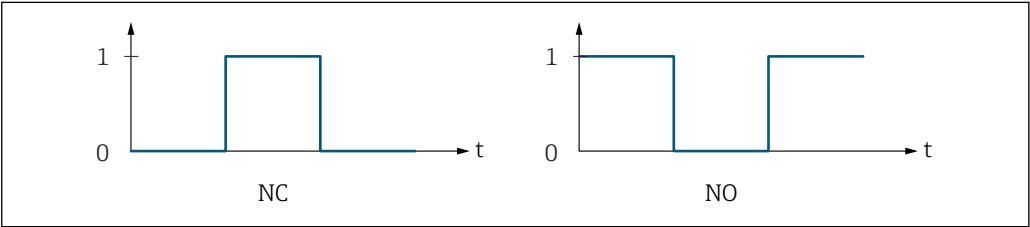
→  60

Output freq.

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 (→  118), 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

Navigation	 Expert → Sensor → Measured val. → Output values → PFS output 1 to n → Pulse output 1 to n (0456-1 to n)
Prerequisite	In the Operating mode parameter (→  118), the Pulse option is selected.
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 (→  138) 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 (→  122)) can be configured.

Switch status

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 (→  118).
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)

→  60

Switch cycles (0815–1 to n)

→  61

Max. cycles no. (0817–1 to n)

→  61

Switch status

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

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

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

3.2.2 "System units" submenu

Navigation   Expert → Sensor → System units

► System units	
Mass flow unit (0554)	→  62
Mass unit (0574)	→  62
Volume flow unit (0553)	→  63
Volume unit (0563)	→  65
Cor.volflow unit (0558)	→  65
Corr. vol. unit (0575)	→  66
Density unit (0555)	→  66
Ref. dens. unit (0556)	→  67
Temperature unit (0557)	→  67

Pressure unit (0564)	→ 68
Date/time format (2812)	→ 69

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
- | SI units | US units |
|----------|------------|
| ■ 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:

- **Target mass flow** parameter (→ 54)
- **Carrier mass fl.** parameter (→ 54)
- **Mass flow** parameter (→ 51)

Selection

For an explanation of the abbreviated units: → 318

Mass unit

Navigation

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

Description

Use this function to select the unit for the mass.

Selection	<i>SI units</i>	<i>US units</i>
	■ g ■ kg ■ t	■ oz ■ lb ■ STon
Factory setting	Country-specific: ■ kg ■ lb	
Additional information	<i>Selection</i>  For an explanation of the abbreviated units: →  318	

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 (→  52)*Selection*For an explanation of the abbreviated units: →  318

Volume unit



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

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

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

Factory setting Country-specific:

- l
- gal (us)

Additional information *Selection*
 For an explanation of the abbreviated units: → 318

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 ■ Nm³/s ■ Nm³/min ■ Nm³/h ■ Nm³/d ■ Sm³/s ■ Sm³/min ■ Sm³/h ■ Sm³/d	■ Sft³/s ■ Sft³/min ■ Sft³/h ■ Sft³/d ■ Sgal/s (us) ■ Sgal/min (us) ■ Sgal/h (us) ■ Sgal/d (us) ■ Sbbl/s (us;liq.) ■ 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
- Sft³/min

Additional information*Result*

The selected unit applies for:

Correct.vol.flow parameter (→  52)

Selection

For an explanation of the abbreviated units: →  318

Corr. vol. unit**Navigation**

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

Description

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

Selection*SI units*

- NI
- Nm³
- Sm³

US units

- Sft³
- Sgal (us)
- Sbbl (us;liq.)

Imperial units

Sgal (imp)

Factory setting

Country-specific:

- NI
- Sft³

Additional information*Selection*

For an explanation of the abbreviated units: →  318

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/dm³
- kg/l
- 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	<i>Result</i> The selected unit applies for: ▪ Density setpt 1 parameter ▪ Density setpt 2 parameter ▪ Density parameter (→ ⓘ 52)	
	<i>Selection</i> ▪ SD = specific density The specific density is the ratio of the fluid 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 fluid 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: → ⓘ 318	
Ref. dens. unit 		
Navigation	 Expert → Sensor → System units → Ref. dens. unit (0556)	
Description	Use this function to select the unit for the reference density.	
Selection	<i>SI units</i> ▪ kg/Nm³ ▪ kg/Nl ▪ g/Scm³ ▪ kg/Sm³	<i>US units</i> ▪ lb/Sft³
Factory setting	Country-dependent ▪ kg/Nl ▪ lb/Sft³	
Additional information	<i>Result</i> The selected unit applies for: ▪ Ext. ref.density parameter (→ ⓘ 84) ▪ Fix ref.density parameter (→ ⓘ 84) ▪ Ref.density parameter (→ ⓘ 52)	
	<i>Selection</i>  For an explanation of the abbreviated units: → ⓘ 318	

Temperature unit		
--	--	--

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

Selection	<i>SI units</i> ■ °C ■ K <i>US units</i> ■ °F ■ °R
Factory setting	Country-specific: ■ °C ■ °F
Additional information	<i>Result</i> The selected unit applies for: ■ Maximum value parameter (→ ⓘ 291) ■ Minimum value parameter (→ ⓘ 292) ■ Maximum value parameter (→ ⓘ 292) ■ Minimum value parameter (→ ⓘ 292) ■ Maximum value parameter (→ ⓘ 293) ■ Minimum value parameter (→ ⓘ 293) ■ External temp. parameter (→ ⓘ 82) ■ Temperature parameter (→ ⓘ 53) ■ Ref. temperature parameter (→ ⓘ 84) <i>Selection</i>  For an explanation of the abbreviated units: → ⓘ 318

Pressure unit

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

Additional information	<i>Result</i> The unit is taken from: ■ Pressure value parameter (→ ⓘ 81) ■ External press. parameter (→ ⓘ 81) ■ Pressure value parameter (→ ⓘ 53) <i>Selection</i> ⓘ For an explanation of the abbreviated units: → ⓘ 318
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Date/time format ⓘ	
Navigation	ⓘ ⓘ Expert → Sensor → System units → Date/time format (2812)
Description	Use this function to select the desired time format for calibration history.
Selection	■ dd.mm.yy hh:mm ■ dd.mm.yy am/pm ■ mm/dd/yy hh:mm ■ mm/dd/yy am/pm
Factory setting	dd.mm.yy hh:mm
Additional information	<i>Selection</i> ⓘ For an explanation of the abbreviated units: → ⓘ 318

3.2.3 "Process param." submenu

Navigation ⓘ ⓘ Expert → Sensor → Process param.

▶ Process param.	
Flow damping (1802)	→ ⓘ 70
Density damping (1803)	→ ⓘ 70
Temp. damping (1822)	→ ⓘ 71
Flow override (1839)	→ ⓘ 71
▶ Low flow cut off	→ ⓘ 72
▶ Partial pipe det	→ ⓘ 75

Flow damping		
Navigation	  Expert → Sensor → Process param. → Flow damping (1802)	
Description	Use this function to enter a time constant for flow damping (PT1 element). Reduction of the variability of the flow measured value (in relation to interference). For this purpose, the depth of the flow filter is adjusted: when the filter setting increases, the reaction time of the device also increases.	
User entry	0 to 100.0 s	
Factory setting	0 s	
Additional information	<i>Description</i>	
	 The damping is performed by a PT1 element ²⁾ .	
	<i>User entry</i>	
	■ Value = 0: no damping ■ Value > 0: damping is increased	
	 Damping is switched off if 0 is entered (factory setting).	
	<i>Result</i>	
	 The damping affects the following variables of the device: ■ Outputs ■ Low flow cut off →  72 ■ Totalizers →  268	
Density damping		

Navigation   Expert → Sensor → Process param. → Density damping (1803)

Description Use this function to enter a time constant for the damping (PT1 element) of the density measured value.

User entry 0 to 999.9 s

Factory setting 0 s

2) Proportional behavior with first-order lag

Additional information*Description*

The damping is performed by a PT1 element ³⁾.

User entry

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



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

Temp. damping**Navigation**

Expert → Sensor → Process param. → Temp. damping (1822)

Description

Use this function to enter a time constant for the damping (PT1 element) of the temperature measured value.

User entry

0 to 999.9 s

Factory setting

0 s

Additional information*Description*

The damping is performed by a PT1 element ⁴⁾.

User entry

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



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

Flow override**Navigation**

Expert → Sensor → Process param. → Flow override (1839)

Description

Use this function to select whether to interrupt the evaluation of measured values. This is useful for the cleaning processes of a pipeline, for example.

Selection

- Off
- On

Factory setting

Off

3) Proportional behavior with first-order lag

4) Proportional behavior with first-order lag

Additional information

Description

Flow override is active

- The diagnostic message diagnostic message **△C453 Flow override** is displayed.
- Output values
 - Temperature: proceeding output
 - Totalizers 1-3: Stop being totalized

 Positive zero return can also be enabled via the Status input: **Assign stat.inp.** parameter (→  100).

"Low flow cut off" submenu

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

► Low flow cut off

Assign variable (1837)

→  72

On value (1805)

→  72

Off value (1804)

→  73

Pres. shock sup. (1806)

→  74

Assign variable

Navigation   Expert → Sensor → Process param. → Low flow cut off → Assign variable (1837)

Description Use this function to select the process variable for low flow cutoff detection.

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

Factory setting Mass flow

On value

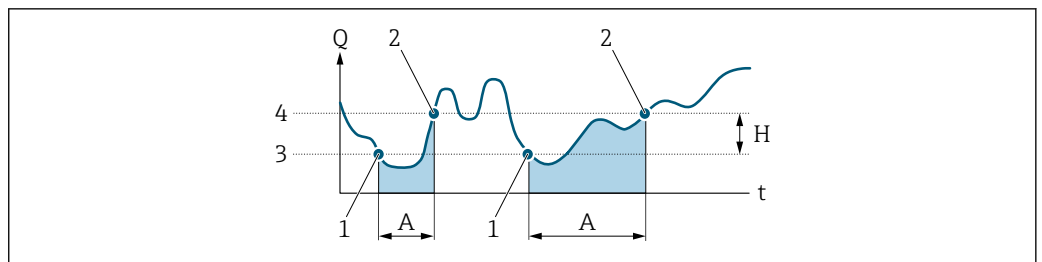
Navigation   Expert → Sensor → Process param. → Low flow cut off → On value (1805)

- Prerequisite One of the following options is selected in the **Assign variable** parameter (→  72):
- Mass flow
 - Volume flow
 - Correct.vol.flow

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 →  73.
User entry	Positive floating-point number
Factory setting	Depends on country and nominal diameter →  316
Additional information	<i>Dependency</i>  The unit depends on the process variable selected in the Assign variable parameter (→  72).

Off value

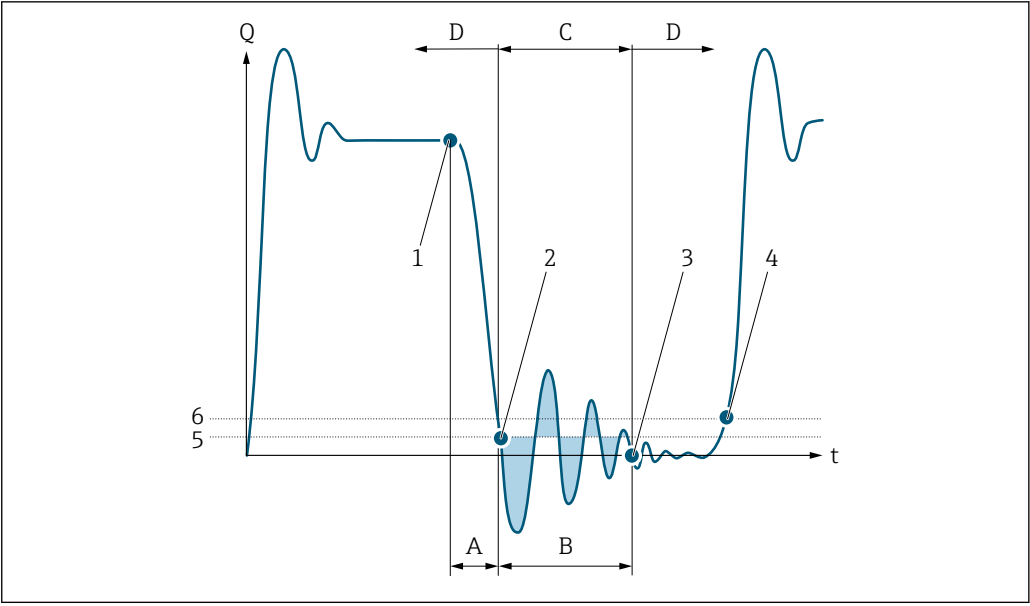
Navigation	  Expert → Sensor → Process param. → Low flow cut off → Off value (1804)
Prerequisite	One of the following options is selected in the Assign variable parameter (→  72): ■ Mass flow ■ Volume flow ■ Correct.vol.flow
Description	Use this function to enter a switch-off value for low flow cut off. The off value is entered as a positive hysteresis from the on value →  72.
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	One of the following options is selected in the Assign variable parameter (→  72): ■ Mass flow ■ Volume flow ■ Correct.vol.flow
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 - or – Changing the flow direction ■ Output values – Flow displayed: 0 – Totalizer: the totalizers are pegged at the last correct value Pressure shock suppression is disabled ■ Prerequisite: the time interval set in this function has elapsed. ■ If the flow also exceeds the switch-off value for low flow cut off, the device starts processing the current flow value again and displays it. <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.



A0012888

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

"Partial pipe det" submenu

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

► Partial pipe det

Assign variable (1860)

→  76

Low value (1861)

→  76

High value (1858)

→  76

Response time (1859)

→  77

Max. damping (6040)

→  77

Assign variable 	
Navigation	  Expert → Sensor → Process param. → Partial pipe det → Assign variable (1860)
Description	Use this function to select a process variable to detect empty or partially filled measuring tubes. For gas measurement: Deactivate monitoring due to low gas density.
Selection	■ Off ■ Density ■ Ref.density
Factory setting	Off
Low value 	
Navigation	  Expert → Sensor → Process param. → Partial pipe det → Low value (1861)
Prerequisite	One of the following options is selected in the Assign variable parameter (→  76): ■ Density ■ Ref.density
Description	Use this function to enter a lower limit value to enable detection of empty or partially filled measuring tubes. If the measured density falls below this value, monitoring is enabled.
User entry	Signed floating-point number
Factory setting	200
Additional information	<i>User entry</i> The lower limit value must be less than the upper limit value defined in the High value parameter (→  76).  The unit depends on the process variable selected in the Assign variable parameter (→  76). <i>Limit value</i>  If the displayed value is outside the limit value, the measuring device displays the diagnostic message  S862 Partly filled.
High value 	
Navigation	  Expert → Sensor → Process param. → Partial pipe det → High value (1858)
Prerequisite	One of the following options is selected in the Assign variable parameter (→  76): ■ Density ■ Ref.density

Description	Use this function to enter an upper limit value to enable detection of empty or partially filled measuring tubes. If the measured density exceeds this value, detection is enabled.
User entry	Signed floating-point number
Factory setting	6 000
Additional information	<i>User entry</i> The upper limit value must be greater than the lower limit value defined in the Low value parameter (→  76).  The unit depends on the process variable selected in the Assign variable parameter (→  76). <i>Limit value</i>  If the displayed value is outside the limit value, the measuring device displays the diagnostic message △S862 Partly filled.

Response time

Navigation	 Expert → Sensor → Process param. → Partial pipe det → Response time (1859)
Prerequisite	One of the following options is selected in the Assign variable parameter (→  76): ■ Density ■ Ref.density
Description	Use this function to enter the minimum length of time (debouncing time) the signal must be present for the diagnostic message △S862 Partly filled to be triggered if the measuring pipe is empty or partially full.
User entry	0 to 100 s
Factory setting	1 s

Max. damping

Navigation	 Expert → Sensor → Process param. → Partial pipe det → Max. damping (6040)
Description	Use this function to enter a damping value to enable detection of empty or partially filled measuring tubes.
User entry	Positive floating-point number
Factory setting	0
Additional information	<i>Description</i> If oscillation damping exceeds the specified value, the measuring device presumes that the pipe is partially filled and the flow signal is set to 0. The measuring device displays the

diagnostic message **△S862 Partly filled**. In the case of non-homogeneous media or air pockets, the damping of the measuring tubes increases.

User entry

- Damping is disabled if **0** is entered (factory setting).
- Damping is enabled if the value entered is greater than **0**.
- The value entered depends on application-specific influence variables, such as the medium, nominal diameter, sensor etc.

Example

- If the pipe is filled normally the value of the oscillation damping is 500.
- If the pipe is partially filled the value of the oscillation damping is > 5000.
- A practical damping value would then be 2000: enter 2000 as the value.

3.2.4 "Measurement mode" submenu

Navigation   Expert → Sensor → Measurement mode

► Measurement mode

Select medium (6062)

Select gas type (6074)

Sound velocity (6147)

Temp. coeff. SV (6181)

→  78

→  78

→  79

→  79

Select medium

Navigation	  Expert → Sensor → Measurement mode → Select medium (6062)
Description	Use this function to select the type of medium.
Selection	■ Liquid ■ Gas
Factory setting	Liquid

Select gas type

Navigation	  Expert → Sensor → Measurement mode → Select gas type (6074)
Prerequisite	The Gas option is selected in the Select medium parameter (→  78).

Description Use this function to select the type of gas for the measuring application.

Selection

- Air
- Ammonia NH₃
- Argon Ar
- Sulf. hex.fl.SF₆
- Oxygen O₂
- Ozone O₃
- Nitrog. ox. NO_x
- Nitrogen N₂
- Nitrous ox. N₂O
- Methane CH₄
- Hydrogen H₂
- Helium He
- Hydrog.chlor.HCl
- Hydrog.sulf. H₂S
- Ethylene C₂H₄
- Carbon diox. CO₂
- Carbon monox. CO
- Chlorine Cl₂
- Butane C₄H₁₀
- Propane C₃H₈
- Propylene C₃H₆
- Ethane C₂H₆
- Others

Factory setting Methane CH₄

Additional information *Description*
The gas type needs to be selected so that it is possible to comply with accuracy specifications in gas applications.

Sound velocity

Navigation   Expert → Sensor → Measurement mode → Sound velocity (6147)

Prerequisite In the **Select gas type** parameter (→  78), the **Others** option is selected.

Description Use this function to enter the sound velocity of the gas at 0 °C (+32 °F).

User entry 1 to 99 999.9999 m/s

Factory setting 415.0 m/s

Temp. coeff. SV

Navigation   Expert → Sensor → Measurement mode → Temp. coeff. SV (6181)

Prerequisite The **Others** option is selected in the **Select gas type** parameter (→  78).

Description	Use this function to enter a temperature coefficient for the sound velocity of the gas.
User entry	Positive floating-point number
Factory setting	0 (m/s)/K

3.2.5 "External comp." submenu

Navigation  Expert → Sensor → External comp.

► External comp.

Pressure compen. (6130)

→  80

Pressure value (6059)

→  81

External press. (6209)

→  81

Temperature mode (6184)

→  81

External temp. (6080)

→  82

Pressure compen.

Navigation	 Expert → Sensor → External comp. → Pressure compen. (6130)
Description	Use this function to select the type of pressure compensation.
Selection	■ Off ■ Fixed value ■ External value ■ Current input 1 [*]
Factory setting	Off
Additional information	Selection ■ Fixed value A fixed pressure value is used for compensation: Pressure value parameter (→  81) ■ External value The pressure value read in via FOUNDATION Fieldbus is used for compensation. ■ Current input 1 The pressure value read in via the current input is used for compensation.  For more information, see the "Cyclic data transmission" section of the Operating Instructions

* Visibility depends on order options or device settings

Pressure value 	
Navigation	 Expert → Sensor → External comp. → Pressure value (6059)
Prerequisite	The Fixed value option is selected in the Pressure compen. parameter (→  80).
Description	Use this function to enter a value for the process pressure that is used for pressure correction.
User entry	Positive floating-point number
Factory setting	0 bar
Additional information	<i>User entry</i>  The unit is taken from the Pressure unit parameter (→  68)
External press. 	
Navigation	 Expert → Sensor → External comp. → External press. (6209)
Prerequisite	The External value option is selected in the Pressure compen. parameter (→  80).
Description	Use this function to enter an external pressure value.
User interface	Positive floating-point number
Factory setting	0 bar
Additional information	<i>User entry</i>  The unit is taken from the Pressure unit parameter (→  68)
Temperature mode 	
Navigation	 Expert → Sensor → External comp. → Temperature mode (6184)
Description	Use this function to select the temperature mode.
Selection	■ Internal value ■ External value ■ Current input 1 *
Factory setting	Internal value

* Visibility depends on order options or device settings

Additional information	<i>Description</i> Use this function to select the type of temperature compensation. <i>Selection</i> All the options available for selection are used for measured value compensation. ■ Internal value The temperature value measured internally (temperature sensor of the measuring sensor) is used for compensation. ■ External value The temperature value read in via FOUNDATION Filedbus is used for compensation. ■ Current input 1 The temperature value read in via the current input is used for compensation.  For more information, see the "Cyclic data transmission" section of the Operating Instructions
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External temp.

Navigation	  Expert → Sensor → External comp. → External temp. (6080)
Prerequisite	In the Temperature mode parameter (→  81), the External value option is selected.
Description	Use this function to enter the external temperature.
User interface	–273.15 to 99 999 °C
Factory setting	Country-specific: ■ 0 °C ■ +32 °F
Additional information	<i>Description</i>  The unit is taken from the Temperature unit parameter (→  67)

3.2.6 "Calculated value" submenu

Navigation

 Expert → Sensor → Calculated value

► Calculated value

► Corr. vol.flow.

→  83

"Corr. vol.flow." submenu

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

► Corr. vol.flow.

Corr. vol.flow. (1812)

Ext. ref.density (6198)

Fix ref.density (1814)

Ref. temperature (1816)

Linear exp coeff (1817)

Square exp coeff (1818)

→  83

→  84

→  84

→  84

→  85

→  85

Corr. vol.flow.

Navigation	 Expert → Sensor → Calculated value → Corr. vol.flow. → Corr. vol.flow. (1812)
Description	Use this function to select the reference density for calculating the corrected volume flow.
Selection	■ Fix ref.density ■ Calc ref density ■ Ref. dens API 53 ■ Ext. ref.density ■ Current input 1 *
Factory setting	Calc ref density
Additional information	Selection The Ref. dens API 53 option is suitable only for applications involving LPG ⁵⁾, where the flow rate is measured on the basis of the corrected volume flow. Selecting this option means that the reference density is used, taking into account the values in table 53 E of API MPMS section 11.2. Temperature measurement (measured internally or read into the device from an external source→  80→  80) and density measurement take place during operation while the medium is flowing. The mass flow is divided by the reference density to give the corrected volume flow and is issued as an output signal.

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

Ext. ref.density	
Navigation	 Expert → Sensor → Calculated value → Corr. vol.flow. → Ext. ref.density (6198)
Description	Displays the reference density which is read in externally, e.g. via the current input.
User interface	Floating point number with sign
Additional information	<i>Dependency</i>  The unit is taken from the Ref. dens. unit parameter (→  67)
Fix ref.density 	
Navigation	 Expert → Sensor → Calculated value → Corr. vol.flow. → Fix ref.density (1814)
Prerequisite	The Fix ref.density option is selected in the Corr. vol.flow. parameter (→  83)
Description	Use this function to enter a fixed value for the reference density.
User entry	Positive floating-point number
Factory setting	1 kg/Nl
Additional information	<i>Dependency</i>  The unit is taken from the Ref. dens. unit parameter (→  67)
Ref. temperature 	
Navigation	 Expert → Sensor → Calculated value → Corr. vol.flow. → Ref. temperature (1816)
Prerequisite	The Calc ref density option is selected in the Corr. vol.flow. parameter (→  83)
Description	Use this function to enter a reference temperature for calculating the reference density.
User entry	-273.15 to 99 999 °C
Factory setting	Country-specific: ■ +20 °C ■ +68 °F

Additional information*Dependency*

The unit is taken from the **Temperature unit** parameter (→ 67)

Reference density calculation

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

A0023403

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

Linear exp coeff**Navigation**

Expert → Sensor → Calculated value → Corr. vol.flow. → Linear exp coeff (1817)

Prerequisite

The **Calc ref density** option is selected in the **Corr. vol.flow.** parameter (→ 83) parameter.

Description

Use this function to enter a linear, fluid-specific expansion coefficient for calculating the reference density.

User entry

Signed floating-point number

Factory setting

0.0

Square exp coeff**Navigation**

Expert → Sensor → Calculated value → Corr. vol.flow. → Square exp coeff (1818)

Prerequisite

The **Calc ref density** option is selected in the **Corr. vol.flow.** parameter (→ 83) 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 entry

Signed floating-point number

Factory setting

0.0

3.2.7 "Sensor adjustment" submenu

Navigation  Expert → Sensor → Sensor adjustm.

► Sensor adjustm.		
Install. direct. (1809)	→ 	86
► Zero point adj.	→ 	86
► Variable adjust	→ 	88

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.

"Zero point adj." submenu

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

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

► Zero point adj.

Zero point adj. (6196)

→  87

Progress (2808)

→  87

Zero point adj.

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

Progress

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

"Variable adjust" submenu

Navigation  Expert → Sensor → Sensor adjustm. → Variable adjust

► Variable adjust		
Mass flow offset (1831)	→ 	88
Mass flow factor (1832)	→ 	89
Vol. flow offset (1841)	→ 	89
Vol. flow factor (1846)	→ 	89
Density offset (1848)	→ 	90
Density factor (1849)	→ 	90
Corr. vol offset (1866)	→ 	90
Corr. vol factor (1867)	→ 	91
Ref.dens. offset (1868)	→ 	91
Ref.dens. factor (1869)	→ 	91
Temp. offset (1870)	→ 	92
Temp. factor (1871)	→ 	92

Mass flow offset

Navigation  Expert → Sensor → Sensor adjustm. → Variable adjust → Mass flow offset (1831)

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

User entry Signed floating-point number

Factory setting 0 kg/s

Additional information *Description*
 Corrected value = (factor × value) + offset

Mass flow factor

Navigation	 Expert → Sensor → Sensor adjustm. → Variable adjust → Mass flow factor (1832)
Description	Use this function to enter a quantity factor (without time) for the mass flow. This multiplication factor is applied over the mass flow range.
User entry	Positive floating-point number
Factory setting	1
Additional information	<i>Description</i>  Corrected value = (factor × value) + offset

Vol. flow offset

Navigation	 Expert → Sensor → Sensor adjustm. → Variable adjust → Vol. flow offset (1841)
Description	Use this function to enter the zero point shift for the volume flow trim. The volume flow unit on which the shift is based is 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 (1846)
Description	Use this function to enter a quantity factor (without time) for the volume flow. This multiplication factor is applied over the volume flow range.
User entry	Positive floating-point number
Factory setting	1
Additional information	<i>Description</i>  Corrected value = (factor × value) + offset

Density offset 	
Navigation	 Expert → Sensor → Sensor adjustm. → Variable adjust → Density offset (1848)
Description	Use this function to enter the zero point shift for the density trim. The density unit on which the shift is based is kg/m ³ .
User entry	Signed floating-point number
Factory setting	0 kg/m ³
Additional information	<i>Description</i>  Corrected value = (factor × value) + offset
Density factor 	
Navigation	 Expert → Sensor → Sensor adjustm. → Variable adjust → Density factor (1849)
Description	Use this function to enter a quantity factor for the density. This multiplication factor is applied over the density range.
User entry	Positive floating-point number
Factory setting	1
Additional information	<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 Nm ³ /s.
User entry	Signed floating-point number
Factory setting	0 Nm ³ /s
Additional information	<i>Description</i>  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	<i>Description</i>  Corrected value = (factor × value) + offset
Ref.dens. offset 	
Navigation	  Expert → Sensor → Sensor adjustm. → Variable adjust → Ref.dens. offset (1868)
Description	Use this parameter to enter the zero point shift for the reference density trim. The reference density unit on which the shift is based is 1 kg/Nm ³ .
User entry	Signed floating-point number
Factory setting	0 kg/Nm ³
Additional information	<i>Description</i>  Corrected value = (factor × value) + offset
Ref.dens. factor 	
Navigation	  Expert → Sensor → Sensor adjustm. → Variable adjust → Ref.dens. factor (1869)
Description	Use this function to enter a quantity factor (without time) for the reference density. This multiplication factor is applied over the reference density range.
User entry	Positive floating-point number
Factory setting	1
Additional information	<i>Description</i>  Corrected value = (factor × value) + offset

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

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

3.2.8 "Calibration" submenu

Navigation Expert → Sensor → Calibration

Calibration		
Cal. factor (6025)	→	93
Zero point (6195)	→	93
Nominal diameter (2807)	→	93
C0 to 5 (6022)	→	93

Cal. factor

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

Zero point



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

Nominal diameter

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

C0 to 5

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

3.3 "I/O configuration" submenu

Navigation  Expert → I/O config.

► I/O config.

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

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

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

Apply I/O config (3907)

Conversion code (2762)

→  94

→  94

→  95

→  95

→  96

I/O 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 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 ■ Fieldbus

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>"Fieldbus" option</i>
	The I/O module is configured for the fieldbus.

I/O type



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

Apply I/O config



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

* Visibility depends on order options or device settings

Conversion code	
Navigation	 Expert → I/O config. → Conversion code (2762)
Description	Use this function to enter the ordered activation code to activate the I/O configuration change.
User entry	Positive integer
Factory setting	0
Additional information	<i>Description</i> The I/O configuration is changed in the I/O type parameter (→  95).

3.4 "Input" submenu

Navigation   Expert → Input

► Input

► Current input 1 to n

→  96

► Status input 1 to n

→  99

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)

→  97

Signal mode (1610-1 to n)

→  97

Current span (1605-1 to n)

→  97

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

→  98

20 mA value (1607-1 to n)

→  98

Failure mode (1601-1 to n)

→  98

Failure value (1602-1 to n)

→  99

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	Passive
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 (→  103)

0/4 mA value 	
Navigation	 Expert → Input → Current input 1 to n → 0/4 mA value (1606–1 to n)
Description	Use this function to enter a value for the 4 mA current.
User entry	Signed floating-point number
Factory setting	0
Additional information	<i>Current input behavior</i> The current input behaves differently depending on the settings configured in the following parameters: ▪ Current span (→  97) ▪ Failure mode (→  98) <i>Configuration examples</i>  Pay attention to the configuration examples for 4 mA value parameter (→  105).
20 mA value 	
Navigation	 Expert → Input → Current input 1 to n → 20 mA value (1607–1 to n)
Description	Use this function to enter a value for the 20 mA current.
User entry	Signed floating-point number
Factory setting	Depends on country and nominal diameter
Additional information	<i>Configuration examples</i>  Pay attention to the configuration examples for 4 mA value parameter (→  105).
Failure mode 	
Navigation	 Expert → Input → Current input 1 to n → Failure mode (1601–1 to n)
Description	Use this function to select the input behavior when measuring a current outside the configured Current span parameter (→  97).
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 (→ 99)).
Failure value 	
Navigation	 Expert → Input → Current input 1 to n → Failure value (1602–1 to n)
Prerequisite	In the Failure mode parameter (→ 98), the Defined value option is selected.
Description	Use this function to enter the value that the device uses if it does not receive an input signal from the external device, or if the input signal is invalid.
User entry	Signed floating-point number
Factory setting	0

3.4.2 "Status input 1 to n" submenu

Navigation   Expert → Input → Status input 1 to n

► Status input 1 to n

Terminal no. (1358–1 to n)

→ 99

Assign stat.inp. (1352–1 to n)

→ 100

Val.stat.inp. (1353–1 to n)

→ 100

Active level (1351–1 to n)

→ 101

Response time (1354–1 to n)

→ 101

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 *Selection*

- 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 (→ 71) is activated.
- Note on the Flow override (→ 71):
- The Flow override (→ 71) is enabled as long as the level is at the status input (continuous signal).
 - All other assignments react to a change in level (pulse) at the status input.

Val.stat.inp.

Navigation Expert → Input → Status input 1 to n → Val.stat.inp. (1353-1 to n)

Description Displays the current input signal level.

User interface

- High
- Low

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

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

3.5 "Output" submenu

Navigation Expert → Output

► Output

► Curr.output 1 to n

→ 101

► PFS output 1 to n

→ 116

► Relay output 1 to n

→ 139

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)

→ 102

Signal mode (0377–1 to n)

→ 102

Assign curr. 1 to n (0359-1 to n)	→  103
Current span (0353-1 to n)	→  103
Fixed current (0365-1 to n)	→  104
0/4 mA value (0367-1 to n)	→  105
20 mA value (0372-1 to n)	→  106
Measuring mode (0351-1 to n)	→  107
Damping out. 1 to n (0363-1 to n)	→  112
Response time (0378-1 to n)	→  113
Failure mode (0364-1 to n)	→  114
Failure current (0352-1 to n)	→  115
Output curr. 1 to n (0361-1 to n)	→  115
Measur. curr. 1 to n (0366-1 to n)	→  116

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 Passive

Assign curr.



Navigation Expert → Output → Curr.output 1 to n → Assign curr. 1 to n (0359–1 to n)

Description Use this function to select a process variable for the current output.



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

Selection

- Off
- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *
- Density
- Ref.density
- Concentration *
- Temperature
- Carr. pipe temp. *
- Electronic temp.
- Osc. freq. 0
- Osc. ampl. 0 *
- Freq. fluct. 0
- Osc. damping 0
- Osc.damp.fluct 0
- Signal asymmetry
- Exc. current 0

Factory setting Mass flow

Current span



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

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

Selection

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

Factory setting Country-specific:

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

* Visibility depends on order options or device settings

Additional information

Description

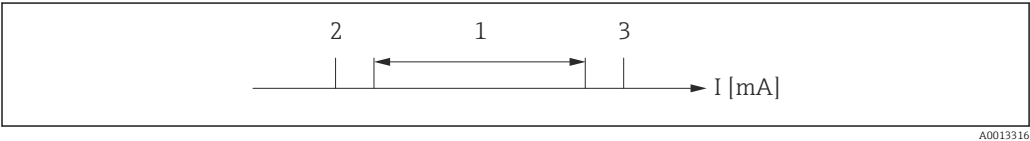
-  In the event of a device alarm, the current output adopts the value specified in the **Failure mode** parameter (→  114).
- If the measured value is outside the measuring range, the diagnostic message **△S441 Curr.output 1 to n** is displayed.
- The measuring range is specified via the **0/4 mA value** parameter (→  105) and **20 mA value** parameter (→  106).

"Fixed current" option

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

Example

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



A0013316

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

Selection

Selection	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 In the **Current span** parameter (→  103), the **Fixed current** option is selected.

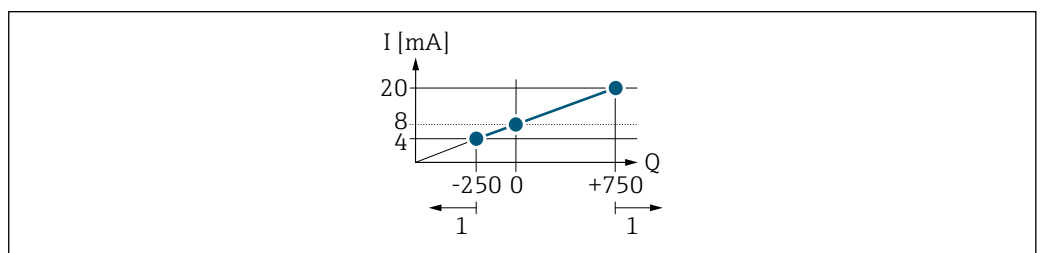
Description Use this function to enter a constant current value for the current output.

User entry 0 to 22.5 mA

Factory setting 22.5 mA

0/4 mA value 🔒

Navigation	🔍 Expert → Output → Curr.output 1 to n → 0/4 mA value (0367-1 to n)
Prerequisite	One of the following options is selected in the Current span parameter (→ 📄 103): ■ 4...20 mA NAMUR ■ 4...20 mA US ■ 4...20 mA ■ 0...20 mA
Description	Use this function to enter a value for the 0/4 mA current.
User entry	Signed floating-point number
Factory setting	Country-specific: ■ 0 kg/h ■ 0 lb/min
Additional information	<i>Description</i> Positive and negative values are permitted depending on the process variable assigned in the Assign curr. parameter (→ 📄 103). In addition, the value can be greater than or smaller than the value assigned for the 20 mA current in the 20 mA value parameter (→ 📄 106). <i>Dependency</i> 📘 The unit depends on the process variable selected in the Assign curr. parameter (→ 📄 103). <i>Current output behavior</i> The current output behaves differently depending on the settings configured in the following parameters: ■ Current span (→ 📄 103) ■ Failure mode (→ 📄 114) <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 (→ 📄 105) = not equal to zero flow (e.g. -250 m³/h) ■ 20 mA value parameter (→ 📄 106) = not equal to zero flow (e.g. +750 m³/h) ■ Calculated current value = 8 mA at zero flow

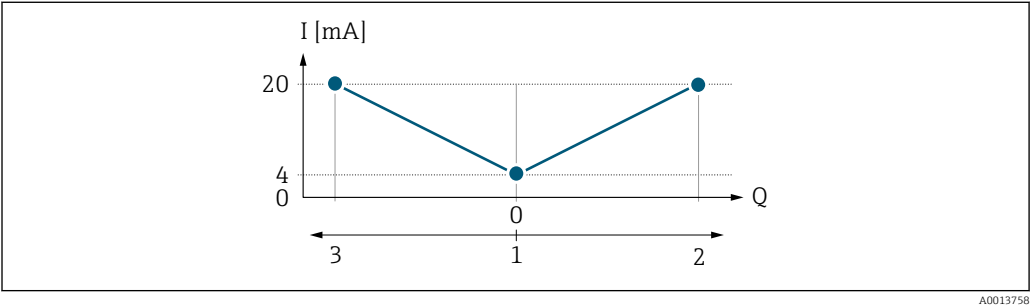


A0013757

Q Flow
 I Current
 1 Measuring range is exceeded or undershot

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

Configuration example B
Measuring mode with **Forward/Reverse** option



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

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

Configuration example C
Measuring mode with **Rev. flow comp.** option
If flow is characterized by severe fluctuations (e.g. when using reciprocating pumps), flow components outside the measuring range are buffered, balanced and output after a maximum delay of 60 s → 107.

20 mA value

Navigation	 Expert → Output → Curr.output 1 to n → 20 mA value (0372-1 to n)
Prerequisite	One of the following options is selected in the Current span parameter (→  103): ■ 4...20 mA NAMUR ■ 4...20 mA US ■ 4...20 mA ■ 0...20 mA
Description	Use this function to enter a value for the 20 mA current.
User entry	Signed floating-point number
Factory setting	Depends on country and nominal diameter →  315
Additional information	<i>Description</i> Positive and negative values are permitted depending on the process variable assigned in the Assign curr. parameter (→  103). In addition, the value can be greater than or

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

Dependency

 The unit depends on the process variable selected in the **Assign curr.** parameter (→  103).

Example

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

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

Configuration examples

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

Measuring mode



Navigation

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

Prerequisite

One of the following options is selected in the **Assign curr.** parameter (→  103):

- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *
- Density
- Ref.density
- Concentration *
- Temperature
- Carr. pipe temp. *
- Electronic temp.
- Osc. freq. 0
- Osc. ampl. 0 *
- Freq. fluct. 0
- Osc. damping 0
- Osc.damp.fluct 0
- Signal asymmetry
- Exc. current 0

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

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

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

* Visibility depends on order options or device settings

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 (→  103) is displayed below the parameter.

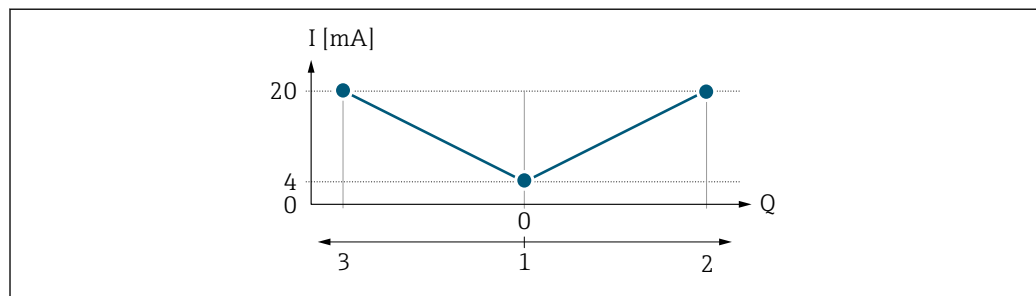
"Forward flow" option

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

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

"Rev. flow comp." option

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

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

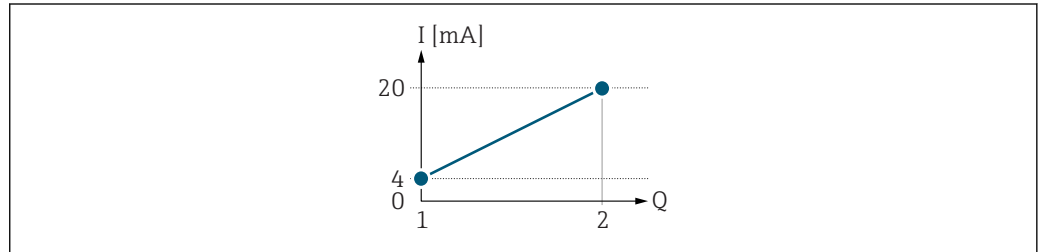
Flow values can aggregate in the buffer in the event of prolonged and unwanted fluid reverse flow. However, these flows are not taken into consideration by the current output configuration, i.e. the reverse flow is not compensated.

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

Examples of how the current output behaves

Example 1

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



A0028084

2 Measuring range

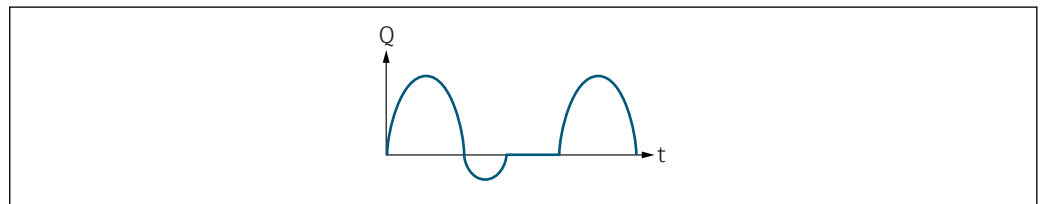
I Current

Q Flow

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

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

With the following flow response:



A0028091

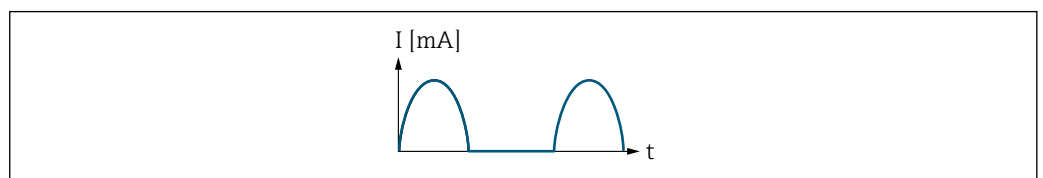
3 Flow response

Q Flow

t Time

With the **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..



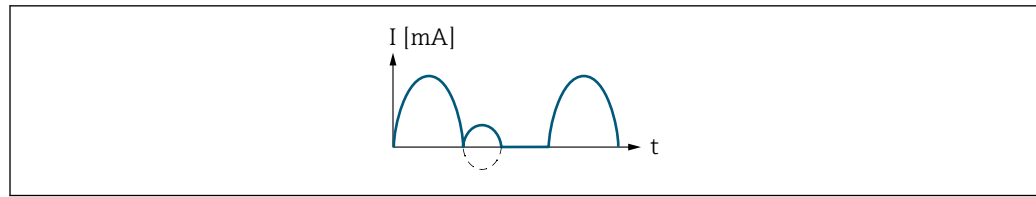
A0028092

I Current

t Time

With the **Forward/Reverse** option

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

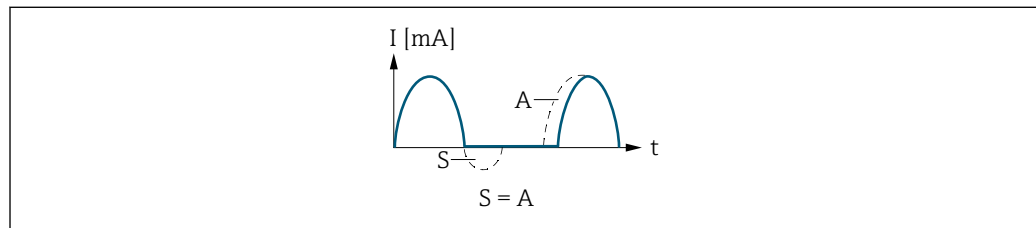


A0028093

I Current
 t Time

With the **Rev. flow comp.** option

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

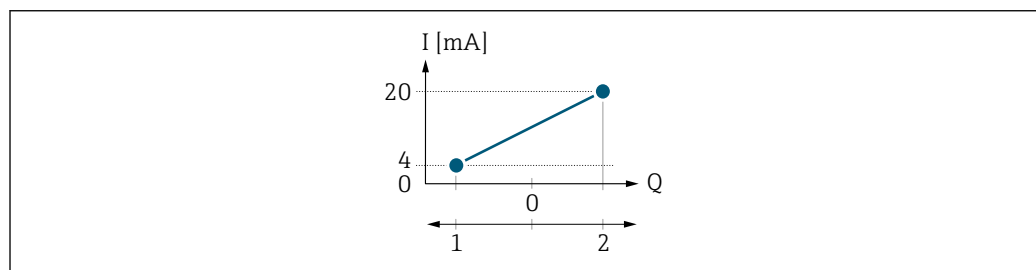


A0028094

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

Example 2

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

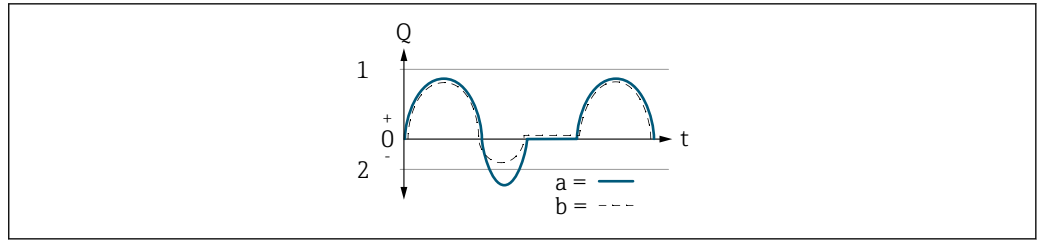


A0028095

4 Measuring range

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

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

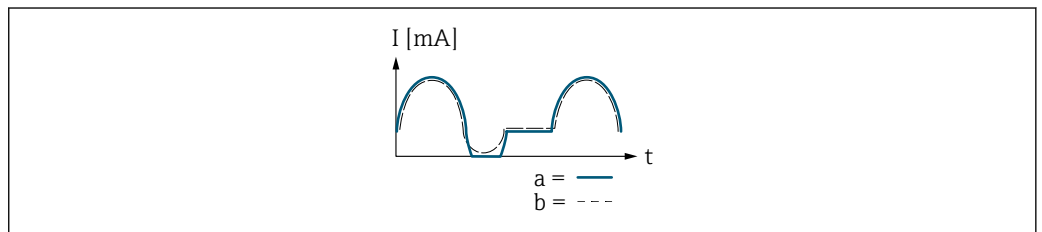


A0028098

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

With the **Forward flow** option

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



A0028100

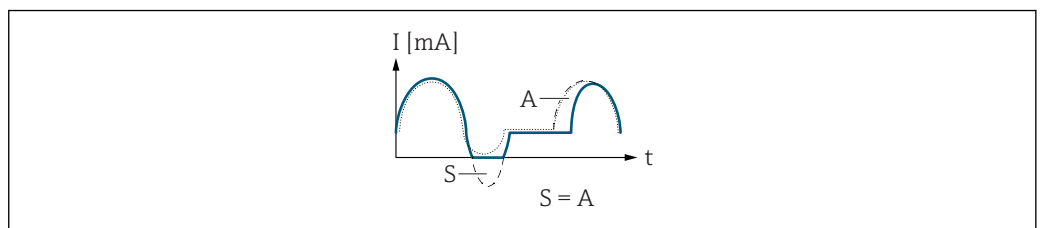
- I Current
 t Time

With the **Forward/Reverse** option

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

With the **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.	
Navigation	Expert → Output → Curr.output 1 to n → Damping out. 1 to n (0363-1 to n)
Prerequisite	One of the following options is selected in the Assign curr. parameter (→ 103): ■ Mass flow ■ Volume flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. * ■ Density ■ Ref.density ■ Concentration * ■ Temperature ■ Carr. pipe temp. * ■ Electronic temp. ■ Osc. freq. 0 ■ Osc. ampl. 0 * ■ Freq. fluct. 0 ■ Osc. damping 0 ■ Osc.damp.fluct 0 ■ Signal asymmetry ■ Exc. current 0 Detailed description of the options Oscil. frequency, Oscil. amplitude, Oscil. damping and Signal asymmetry: Value 1 display parameter (→ 18) One of the following options is selected in the Current span parameter (→ 103): ■ 4...20 mA NAMUR ■ 4...20 mA US ■ 4...20 mA ■ 0...20 mA
Description	Use this function to enter a time constant for the reaction time of the current output signal to fluctuations in the measured value caused by process conditions.
User entry	0.0 to 999.9 s
Factory setting	1.0 s
Additional information	<i>User entry</i> Use this function to enter a time constant (PT1 element ⁶⁾) for current output damping: ■ If a low time constant is entered, the current output reacts particularly quickly to fluctuating measured variables. ■ On the other hand, the current output reacts more slowly if a high time constant is entered. Damping is switched off if 0 is entered (factory setting).

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

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 (→  103):

- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *
- Density
- Ref.density
- Concentration *
- Temperature
- Carr. pipe temp. *
- Electronic temp.
- Osc. freq. 0
- Osc. ampl. 0 *
- Freq. fluct. 0
- Osc. damping 0
- Osc.damp.fluct 0
- Signal asymmetry
- Exc. current 0

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

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

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

Description

Displays the response time. This specifies how quickly the current output reaches the measured value change of 63 % of 100 % of the measured value change.

User interface

Positive floating-point number

Additional information

Description

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

* Visibility depends on order options or device settings

Failure mode	
Navigation	 Expert → Output → Curr.output 1 to n → Failure mode (0364-1 to n)
Prerequisite	One of the following options is selected in the Assign curr. parameter (→  103): ■ Mass flow ■ Volume flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. * ■ Density ■ Ref.density ■ Concentration * ■ Temperature ■ Carr. pipe temp. * ■ Electronic temp. ■ Osc. freq. 0 ■ Osc. ampl. 0 * ■ Freq. fluct. 0 ■ Osc. damping 0 ■ Osc.damp.fluct 0 ■ Signal asymmetry ■ Exc. current 0  Detailed description of the options Oscil. frequency, Oscil. amplitude, Oscil. damping and Signal asymmetry: Value 1 display parameter (→  18) One of the following options is selected in the Current span parameter (→  103): ■ 4...20 mA NAMUR ■ 4...20 mA US ■ 4...20 mA ■ 0...20 mA
Description	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.

* Visibility depends on order options or device settings

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 (→ 103).

"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 (→ 103).

"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 (→ 115).

Failure current**Navigation**

Expert → Output → Curr.output 1 to n → Failure current (0352–1 to n)

Prerequisite

In the **Failure mode** parameter (→ 114), the **Defined value** option is selected.

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.**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.

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)	→	 117
Signal mode (0490-1 to n)	→	 118
Operating mode (0469-1 to n)	→	 118
Assign pulse 1 to n (0460-1 to n)	→	 120
Value per pulse (0455-1 to n)	→	 120
Pulse width (0452-1 to n)	→	 121
Measuring mode (0457-1 to n)	→	 122
Failure mode (0480-1 to n)	→	 122
Pulse output 1 to n (0456-1 to n)	→	 123
Assign freq. (0478-1 to n)	→	 124
Min. freq. value (0453-1 to n)	→	 124
Max. freq. value (0454-1 to n)	→	 125
Val. at min.freq (0476-1 to n)	→	 126
Val. at max.freq (0475-1 to n)	→	 126
Measuring mode (0479-1 to n)	→	 127
Damping out. 1 to n (0477-1 to n)	→	 128

Response time (0491-1 to n)	→  129
Failure mode (0451-1 to n)	→  130
Failure freq. (0474-1 to n)	→  131
Output freq. 1 to n (0471-1 to n)	→  132
Switch out funct (0481-1 to n)	→  132
Assign diag. beh (0482-1 to n)	→  133
Assign limit (0483-1 to n)	→  133
Switch-on value (0466-1 to n)	→  135
Switch-off value (0464-1 to n)	→  135
Assign dir.check (0484-1 to n)	→  136
Assign status (0485-1 to n)	→  136
Switch-on delay (0467-1 to n)	→  137
Switch-off delay (0465-1 to n)	→  137
Failure mode (0486-1 to n)	→  137
Switch status 1 to n (0461-1 to n)	→  138
Invert outp.sig. (0470-1 to n)	→  138

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

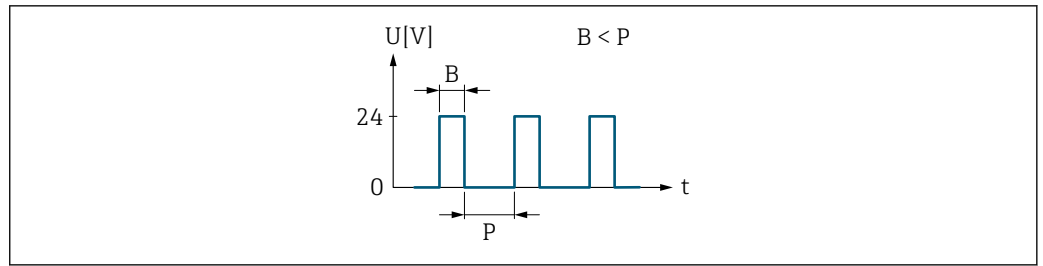
The pulse/frequency/switch output module does not use any terminal numbers.

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, corrected volume, target mass or carrier mass is reached (pulse value), a pulse is output, the duration of which was set previously (pulse width). ■ The pulses are never shorter than the set duration. Example ■ Flow rate approx. 100 g/s ■ Pulse value 0.1 g ■ Pulse width 0.05 ms ■ Pulse rate 1 000 Impuls/s



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

B Pulse width entered

P Pauses between the individual pulses

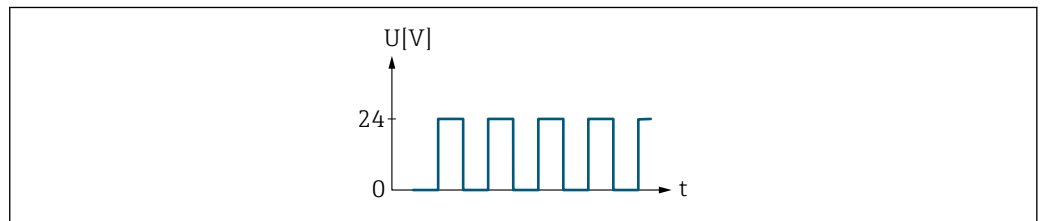
"Frequency" option

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

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

Example

- Flow rate approx. 100 g/s
- Max. frequency 10 kHz
- Flow rate at max. frequency 1 000 g/s
- Output frequency approx. 1 000 Hz



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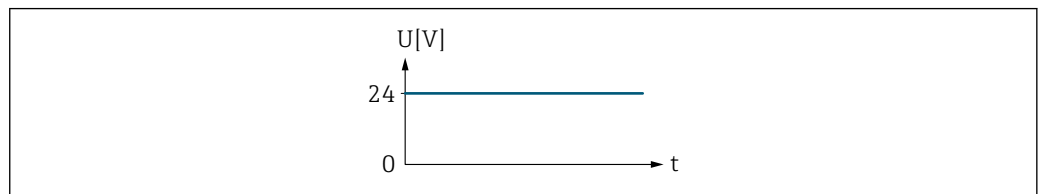
6 Flow-proportional frequency output

"Switch" option

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

Example

Alarm response without alarm

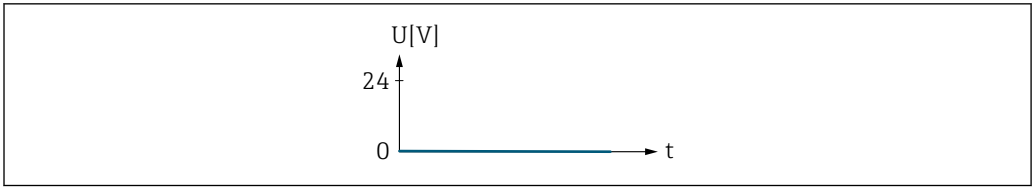


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7 No alarm, high level

Example

Alarm response in case of alarm



A0026885

8 Alarm, low level

Assign pulse



Navigation	Expert → Output → PFS output 1 to n → Assign pulse 1 to n (0460–1 to n)
Prerequisite	In the Operating mode parameter (→ 118), the Pulse option is selected.
Description	Use this function to select the process variable for the pulse output.
Selection	■ Off ■ Mass flow ■ Volume flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. *
Factory setting	Off

Value per pulse



Navigation	Expert → Output → PFS output 1 to n → Value per pulse (0455–1 to n)
Prerequisite	In the Operating mode parameter (→ 118), the Pulse option is selected and one of the following options is selected in the Assign pulse parameter (→ 120): ■ Mass flow ■ Volume flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. *
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 → 315
Additional information	User entry Weighting of the pulse output with a quantity.

* Visibility depends on order options or device settings

- 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

In the **Operating mode** parameter (→ 118), the **Pulse** option is selected and one of the following options is selected in the **Assign pulse** parameter (→ 120):

- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow^{*}
- Carrier mass fl.^{*}

Description

Use this function to enter the duration of the output pulse.

User entry

0.05 to 2 000 ms

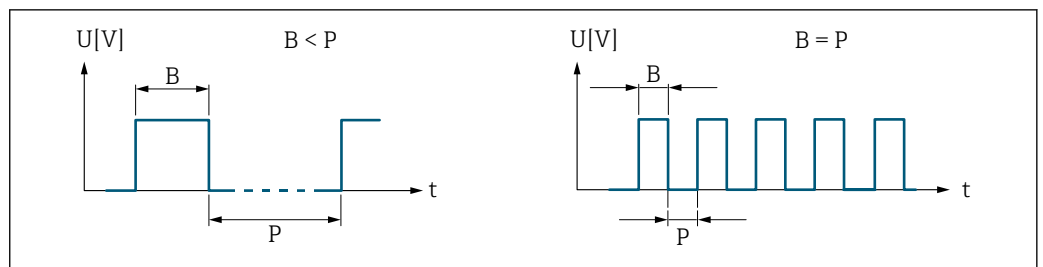
Factory setting

100 ms

Additional information

Description

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

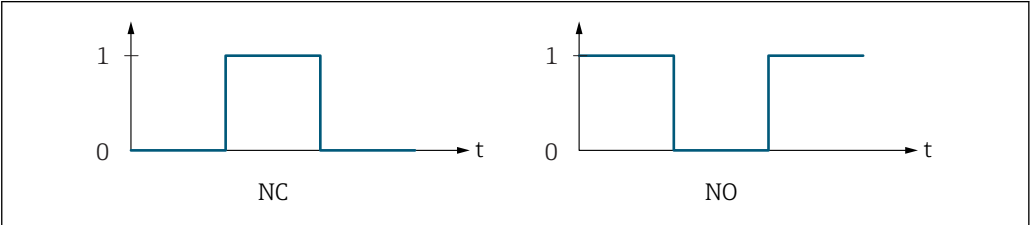
* Visibility depends on order options or device settings

Measuring mode 	
Navigation	 Expert → Output → PFS output 1 to n → Measuring mode (0457–1 to n)
Prerequisite	In the Operating mode parameter (→  118), the Pulse option is selected and one of the following options is selected in the Assign pulse parameter (→  120): ■ Mass flow ■ Volume flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. *
Description	Use this function to select the measuring mode for the pulse output.
Selection	■ Forward flow ■ Forward/Reverse ■ Reverse flow ■ Rev. flow comp.
Factory setting	Forward flow
Additional information	<i>Selection</i> ■ Forward flow Positive flow is output, negative flow is not output. ■ Forward/Reverse Positive and negative flow are output (absolute value), but a distinction is not made between positive and negative flow. ■ Reverse flow Negative flow is output, positive flow is not output. ■ Rev. flow comp. The flow components outside the span are buffered, balanced and output after a maximum delay of 60 s.  For a detailed description of the options available, see the Measuring mode parameter (→  107) <i>Examples</i>  For a detailed description of the configuration examples, see the Measuring mode parameter (→  107)
Failure mode 	

Navigation	 Expert → Output → PFS output 1 to n → Failure mode (0480–1 to n)
Prerequisite	In the Operating mode parameter (→  118), the Pulse option is selected and one of the following options is selected in the Assign pulse parameter (→  120): ■ Mass flow ■ Volume flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. *

* Visibility depends on order options or device settings

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	
Navigation	 Expert → Output → PFS output 1 to n → Pulse output 1 to n (0456-1 to n)
Prerequisite	In the Operating mode parameter (→  118), the Pulse option is selected.
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.  <i>0 Non-conductive</i> <i>1 Conductive</i> <i>NC NC contact (normally closed)</i> <i>NO NO contact (normally open)</i>

The output behavior can be reversed via the **Invert outp.sig.** parameter (→  138) 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 (→  122)) can be configured.

Assign freq. 	
Navigation	 Expert → Output → PFS output 1 to n → Assign freq. (0478–1 to n)
Prerequisite	In the Operating mode parameter (→  118), the Frequency option is selected.
Description	Use this function to select the process variable for the frequency output.  Detailed description of the options Oscil. frequency , Oscil. amplitude , Oscil. damping and Signal asymmetry: Value 1 display parameter (→  18)
Selection	■ Off ■ Mass flow ■ Volume flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. * ■ Density ■ Ref.density ■ Concentration * ■ Temperature ■ Carr. pipe temp. * ■ Electronic temp. ■ Osc. freq. 0 ■ Osc. ampl. 0 * ■ Freq. fluct. 0 ■ Osc. damping 0 ■ Osc.damp.fluct 0 ■ Signal asymmetry ■ Exc. current 0 ■ HBSI
Factory setting	Off

Min. freq. value 	
Navigation	 Expert → Output → PFS output 1 to n → Min. freq. value (0453–1 to n)
Prerequisite	In the Operating mode parameter (→  118) the Frequency option is selected and in the Assign freq. parameter (→  124) one of the following options is selected: ■ Mass flow ■ Volume flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. * ■ Density

* Visibility depends on order options or device settings

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



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

Description Use this function to enter 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 In the **Operating mode** parameter (→ 118) the **Frequency** option is selected and in the **Assign freq.** parameter (→ 124) one of the following options is selected:

- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *
- Density
- Ref.density
- Concentration *
- Temperature
- Carr. pipe temp. *
- Electronic temp.
- Osc. freq. 0
- Freq. fluct. 0
- Osc. ampl. 0 *
- Osc. damping 0
- Osc.damp.fluct 0
- Signal asymmetry
- Exc. current 0



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

Description Use this function to enter the end value frequency.

User entry 0.0 to 10 000.0 Hz

* Visibility depends on order options or device settings

Factory setting10 000.0 Hz

Val. at min.freq

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

Prerequisite

In the **Operating mode** parameter (→  118) the **Frequency** option is selected and in the **Assign freq.** parameter (→  124) one of the following options is selected:

- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *
- Density
- Ref.density
- Concentration *
- Temperature
- Carr. pipe temp. *
- Electronic temp.
- Osc. freq. 0
- Freq. fluct. 0
- Osc. ampl. 0 *
- Osc. damping 0
- Osc.damp.fluct 0
- Signal asymmetry
- Exc. current 0

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

DescriptionUse this function to enter the measured value for the start value frequency.

User entrySigned floating-point number

Factory settingDepends on country and nominal diameter

Additional information

Dependency

 The entry depends on the process variable selected in the **Assign freq.** parameter (→  124).

Val. at max.freq

NavigationExpert → Output → PFS output 1 to n → Val. at max.freq (0475–1 to n)

Prerequisite

In the **Operating mode** parameter (→  118) the **Frequency** option is selected and in the **Assign freq.** parameter (→  124) one of the following options is selected:

- Mass flow
- Volume flow
- Correct.vol.flow

* Visibility depends on order options or device settings

- Target mass flow *
- Carrier mass fl. *
- Density
- Ref.density
- Concentration *
- Temperature
- Carr. pipe temp. *
- Electronic temp.
- Osc. freq. 0
- Freq. fluct. 0
- Osc. ampl. 0 *
- Osc. damping 0
- Osc.damp.fluct 0
- Signal asymmetry
- Exc. current 0



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

Description	Use this function to enter the measured value for the end value frequency.
User entry	Signed floating-point number
Factory setting	Depends on country and nominal diameter
Additional information	<i>Description</i> Use this function to enter the maximum measured value at the maximum frequency. The selected process variable is output as a proportional frequency. <i>Dependency</i> The entry depends on the process variable selected in the Assign freq. parameter (→ 124).

Measuring mode



Navigation	Expert → Output → PFS output 1 to n → Measuring mode (0479-1 to n)
Prerequisite	In the Operating mode parameter (→ 118) the Frequency option is selected and in the Assign freq. parameter (→ 124) one of the following options is selected: ■ Mass flow ■ Volume flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. * ■ Density ■ Ref.density ■ Concentration * ■ Temperature ■ Carr. pipe temp. * ■ Electronic temp. ■ Osc. freq. 0 ■ Freq. fluct. 0

* Visibility depends on order options or device settings

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

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

Description

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

Selection

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

Factory setting

Forward flow

Additional information

Selection

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

Examples

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

Damping out.



Navigation

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

Prerequisite

In the **Operating mode** parameter (→  118), the **Frequency** option is selected and one of the following options is selected in the **Assign freq.** parameter (→  124):

- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *
- Density
- Ref.density
- Concentration *
- Temperature
- Carr. pipe temp. *
- Electronic temp.
- Osc. freq. 0
- Freq. fluct. 0
- Osc. ampl. 0 *
- Osc. damping 0
- Osc.damp.fluct 0
- Signal asymmetry
- Exc. current 0

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

* Visibility depends on order options or device settings

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

Response time

Navigation	 Expert → Output → PFS output 1 to n → Response time (0491-1 to n)
Prerequisite	In the Operating mode parameter (→  118), the Frequency option is selected and one of the following options is selected in the Assign freq. parameter (→  124): ■ Mass flow ■ Volume flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. * ■ Density ■ Ref.density ■ Concentration * ■ Temperature ■ Carr. pipe temp. * ■ Electronic temp. ■ Osc. freq. 0 ■ Freq. fluct. 0 ■ Osc. ampl. 0 * ■ Osc. damping 0 ■ Osc.damp.fluct 0 ■ Signal asymmetry ■ Exc. current 0  Detailed description of the options Oscil. frequency, Oscil. amplitude, Oscil. damping and Signal asymmetry: Value 1 display parameter (→  18)
Description	Displays the response time. This specifies how quickly the pulse/frequency/switch output reaches the measured value change of 63 % of 100 % of the measured value change.
User interface	Positive floating-point number

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

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 →  112 and ■ Depending on the measured variable assigned to the output. – Flow damping or – Density damping or – Temperature damping
Failure mode	
Navigation	 Expert → Output → PFS output 1 to n → Failure mode (0451–1 to n)
Prerequisite	In the Operating mode parameter (→  118) the Frequency option is selected and in the Assign freq. parameter (→  124) one of the following options is selected: ■ Mass flow ■ Volume flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. * ■ Density ■ Ref.density ■ Concentration * ■ Temperature ■ Carr. pipe temp. * ■ Electronic temp. ■ Osc. freq. 0 ■ Freq. fluct. 0 ■ Osc. ampl. 0 * ■ Osc. damping 0 ■ Osc.damp.fluct 0 ■ Signal asymmetry ■ Exc. current 0  Detailed description of the options Oscil. frequency, Oscil. amplitude, Oscil. damping and Signal asymmetry: Value 1 display parameter (→  18)
Description	Use this function to select the 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*Selection*

- 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. (→  131) 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

In the **Operating mode** parameter (→  118) the **Frequency** option is selected and in the **Assign freq.** parameter (→  124) one of the following options is selected:

- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *
- Density
- Ref.density
- Concentration *
- Temperature
- Carr. pipe temp. *
- Electronic temp.
- Osc. freq. 0
- Freq. fluct. 0
- Osc. ampl. 0 *
- Osc. damping 0
- Osc.damp.fluct 0
- Signal asymmetry
- Exc. current 0



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

Description

Use this function to enter 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

* Visibility depends on order options or device settings

Output freq.	
Navigation	 Expert → Output → PFS output 1 to n → Output freq. 1 to n (0471–1 to n)
Prerequisite	In the Operating mode parameter (→  118), 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	In the Operating mode parameter (→  118) the Switch option is selected.
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 (→  118), the Switch option is selected. ■ In the Switch out funct parameter (→  132), 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	<i>Description</i>  If no diagnostic event is pending, the switch output is closed and conductive. <i>Selection</i> ■ 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	■ In the Operating mode parameter (→  118), the Switch option is selected. ■ In the Switch out funct parameter (→  132), the Limit option is selected.	
Description	Use this function to select a process variable for the limit function.	
Selection	■ Mass flow ■ Volume flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. * ■ Density ■ Ref.density ■ Concentration * ■ Temperature ■ Totalizer 1 ■ Totalizer 2 ■ Totalizer 3 ■ Oscil. damping	

* Visibility depends on order options or device settings

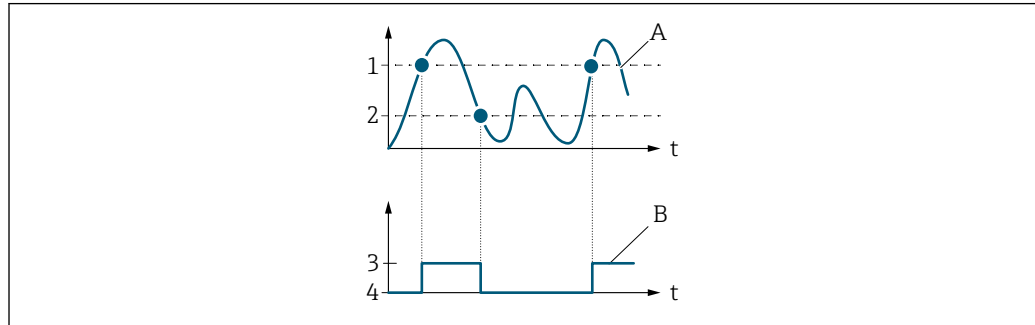
Factory setting

Mass flow

Additional information*Description*

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

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

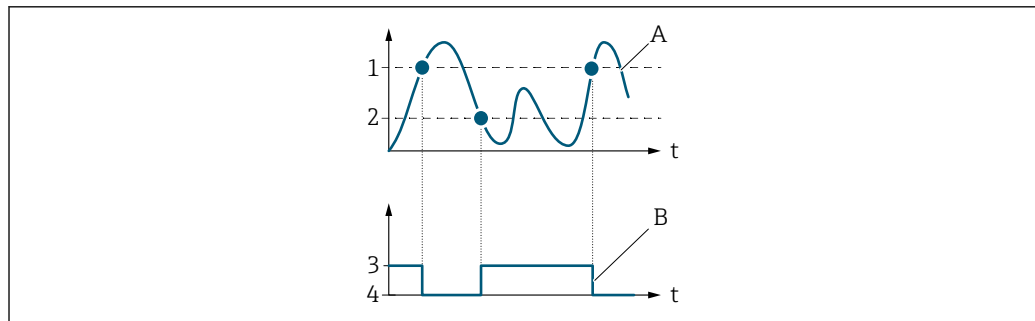


A0026891

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

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

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

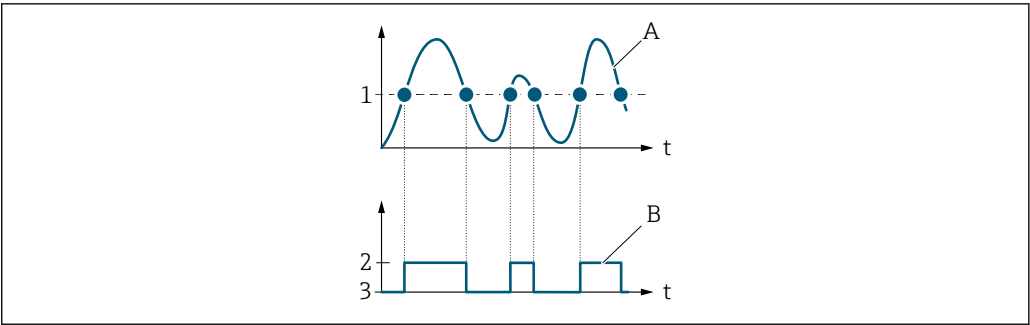


A0026892

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

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

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



A0026893

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

Switch-on value

Navigation	Expert → Output → PFS output 1 to n → Switch-on value (0466-1 to n)
Prerequisite	■ In the Operating mode parameter (→ 118), the Switch option is selected. ■ In the Switch out funct parameter (→ 132), the Limit option is selected.
Description	Use this function to enter the measured value for the switch-on point.
User entry	Signed floating-point number
Factory setting	Country-specific: ■ 0 kg/h ■ 0 lb/min
Additional information	<i>Description</i> Use this function to enter the limit value for the switch-on value (process variable > switch-on value = closed, conductive). When using a hysteresis: Switch-on value > Switch-off value. <i>Dependency</i> The unit depends on the process variable selected in the Assign limit parameter (→ 133).

Switch-off value

Navigation	Expert → Output → PFS output 1 to n → Switch-off value (0464-1 to n)
Prerequisite	■ In the Operating mode parameter (→ 118), the Switch option is selected. ■ In the Switch out funct parameter (→ 132), the Limit option is selected.
Description	Use this function to enter the measured value for the switch-off point.

User entry Signed floating-point number

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

Additional information *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 depends on the process variable selected in the **Assign limit** parameter (→ 133).

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 (→ 118).
- The **Fl. direct.check** option is selected in the **Switch out funct** parameter (→ 132).

Description Use this function to select a process variable for monitoring the flow direction.

Selection

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

Factory setting Mass flow

Assign status



Navigation Expert → Output → PFS output 1 to n → Assign status (0485–1 to n)

Prerequisite

- The **Switch** option is selected in the **Operating mode** parameter (→ 118).
- The **Status** option is selected in the **Switch out funct** parameter (→ 132).

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

Selection

- Partial pipe det
- Low flow cut off
- Digital outp. 6

Factory setting Partial pipe det

Additional information*Options*

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

Switch-on delay**Navigation**

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

Prerequisite

- The **Switch** option is selected in the **Operating mode** parameter (→ 118).
- The **Limit** option is selected in the **Switch out funct** parameter (→ 132).

Description

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

User entry

0.0 to 100.0 s

Factory setting

0.0 s

Switch-off delay**Navigation**

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

Prerequisite

- The **Switch** option is selected in the **Operating mode** parameter (→ 118).
- The **Limit** option is selected in the **Switch out funct** parameter (→ 132).

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

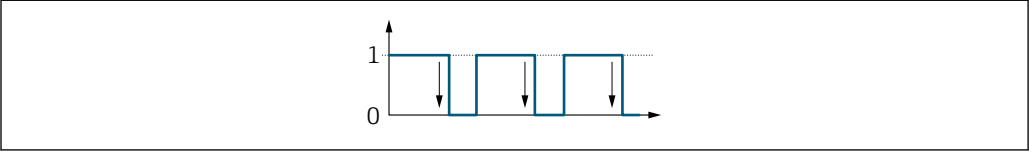
Open

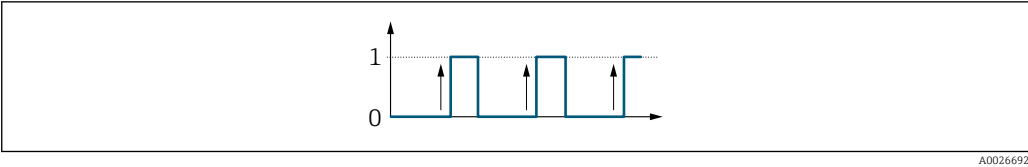
Additional information	Options
	■ Actual status In the event of a device alarm, faults are ignored and the current behavior of the input value is output by the switch output. The Actual status option behaves in the same way as the current input value.
	■ Open In the event of a device alarm, the switch 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

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 (→  118).
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.

→  139

Relay outp.func.

→  140

Assign dir.check

→  140

Assign limit

→  141

Assign diag. beh

→  141

Assign status

→  142

Switch-off value

→  142

Switch-off delay

→  143

Switch-on value

→  143

Switch-on delay

→  143

Failure mode

→  144

Switch status

→  144

Powerless relay

→  144

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 *"Not used" option*
 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 *Selection*

- 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 (→  140), the **Fl. direct.check** option is selected.

Description Use this function to select a process variable for monitoring the flow direction.

Selection	■ Off
	■ Volume flow
	■ Mass flow
	■ Correct.vol.flow

Factory setting	Mass flow
------------------------	-----------

Assign limit



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

Prerequisite	In the Relay outp.func. parameter (→ 140), the Limit option is selected.
---------------------	---

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

Selection	■ Mass flow
	■ Volume flow
	■ Correct.vol.flow
	■ Target mass flow *
	■ Carrier mass fl. *
	■ Density
	■ Ref.density
	■ Concentration *
	■ Temperature
	■ Totalizer 1
	■ Totalizer 2
	■ Totalizer 3
	■ Oscil. damping

Factory setting	Mass flow
------------------------	-----------

Assign diag. beh



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

Prerequisite	In the Relay outp.func. parameter (→ 140), 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
------------------------	-------

* Visibility depends on order options or device settings

Additional information	<i>Description</i>  If no diagnostic event is pending, the relay output is closed and conductive. <i>Selection</i> ■ 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 (→  140), the Digital Output option is selected.
Description	Use this function to select the device status for the relay output.
Selection	■ Partial pipe det ■ Low flow cut off ■ Digital outp. 6
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 (→  140), the Limit option is selected.
Description	Use this function to enter the measured value for the switch-off point.
User entry	Signed floating-point number
Factory setting	Country-specific: ■ 0 kg/h ■ 0 lb/min
Additional information	<i>Description</i> Use this function to enter the limit value for the switch-off value (process variable < switch-off value = open, non-conductive).  When using a hysteresis: Switch-on value > Switch-off value. <i>Dependency</i>  The unit is dependent on the process variable selected in the Assign limit parameter (→  141).

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 (→ 140), the Limit option is selected.
Description	Use this function to enter a delay time for switching off the switch output.
User entry	0.0 to 100.0 s
Factory setting	0.0 s

Switch-on value



Navigation	Expert → Output → Relay output 1 to n → Switch-on value (0810–1 to n)
Prerequisite	In the Relay outp.func. parameter (→ 140), the Limit option is selected.
Description	Use this function to enter the measured value for the switch-on point.
User entry	Signed floating-point number
Factory setting	Country-specific: ■ 0 kg/h ■ 0 lb/min
Additional information	<i>Description</i> Use this function to enter the limit value for the switch-on value (process variable > switch-on value = closed, conductive). When using a hysteresis: Switch-on value > Switch-off value. <i>Dependency</i> The unit is dependent on the process variable selected in the Assign limit parameter (→ 141).

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 (→ 140), 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	<i>User interface</i> ■ Open The relay output is not conductive. ■ Closed The relay output is conductive.
Powerless relay 	
Navigation	 Expert → Output → Relay output 1 to n → Powerless relay (0816–1 to n)
Description	Use this function to select the quiescent state for the relay output.
Selection	■ Open ■ Closed
Factory setting	Open

Additional information	Selection
	■ Open
	The relay output is not conductive.
	■ Closed
	The relay output is conductive.

3.6 "Communication" submenu

Navigation  Expert → Communication

► Communication		
Device address (11061)	→ 	145
► Resource block	→ 	145
► WLAN settings	→ 	166
► Web server	→ 	170

Device address

Navigation	 Expert → Communication → Device address (11061)
Description	Displays the device address.
User interface	1 to 255

3.6.1 "Resource block" submenu

Navigation   Expert → Communication → Resource block

► Resource block		
Block tag (10702)	→ 	146
Target mode (10728)	→ 	147
Actual mode (10725)	→ 	149
Manufacturer Id (10721)	→ 	152

Device type (10711)	→ ⓘ 152
Device revision (10710)	→ ⓘ 152
DD Revision (10709)	→ ⓘ 152
Restart (10800)	→ ⓘ 153
Write Lock (10747)	→ ⓘ 160
ITK Version (10794)	→ ⓘ 166

Block tag

Navigation	🔍📄 Expert → Communication → Resource block → Block tag (10702)
Description	Use this function to enter the Block tag: Used for specifying a "label" for identifying the function block.
User entry	Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).

Static Revision

Navigation	📄 Expert → Communication → Resource block → Static Revision (10735)
Description	Displays the Static Revision: Each instance of a static block parameter being accessed with write access is counted (event counter).
User interface	0 to FFFF
Additional information	<i>Description</i> 📘 Static parameters are parameters that are not changed by the process.

Tag Description

Navigation	📄 Expert → Communication → Resource block → Tag Description (10736)
Description	Use this function to enter the Tag Description: Used for defining a user-specific text for detailed description of the function block.
User entry	Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).

Strategy

Navigation	 Expert → Communication → Resource block → Strategy (10734)
Description	Use this function to enter the Strategy: Enables blocks to be grouped by entering identical numbers.
User entry	0 to FFFF
Factory setting	0

Alert Key

Navigation	 Expert → Communication → Resource block → Alert Key (10696)
Description	Use this function to enter the Alert Key: Identifies the plant unit where the transmitter is located. This helps in pinpointing events.
User entry	0 to 0xFF
Factory setting	1

Target mode

Navigation	  Expert → Communication → Resource block → Target mode (10728)
Description	Use this function to select the Target mode: The selection indicates which operating mode is used for this function block. This mode is generally set by a control application.
Selection	■ ROut ■ RCas ■ Cas ■ Auto ■ Man ■ LO ■ IMan ■ OOS
Factory setting	OOS

Additional information*Options*■ **ROut**

In the **ROut** operating mode, the set point (SP) for the function block is controlled by the field bus host system, which runs over an interface, via the RIn parameter. The set point (SP) is used as an output signal after internal calculations. The output value and the status of the function block is communicated to the field bus host system as feedback via the ROut parameter. The set point can be initiated or retained for the value of the process variables.

■ **RCas**

In the **RCas** operating mode (external cascade mode), the set point (SP) for the function block is controlled by the field bus host system, which runs over an interface, via the RCas-In parameter. The set point (SP) is used as an output signal after internal calculations. The output value and status of the function block is communicated to the field bus host system as feedback via the RCas-Out parameter.

■ **Cas**

In the **Cas** (cascade mode) operating mode, the function block receives a discrete signal via the function block input, which is provided by the Cas-In parameter of an upstream function block. This signal controls the set point (SP) of the function block and is used as an output signal after internal calculations. The output is used to communicate the output value and status to the upstream function block.

■ **Auto**

The **Auto** operating mode is the normal operating mode of the function block. The set point (SP) is specified locally in the function block and is used as an output signal after internal calculations. This set point can be specified by the user via an interface.

■ **Man**

In the **Man** operating mode, the output value can be specified directly in the function block. This is specified by the user via an interface. There is no internal calculation. The algorithm is initiated in such a way that there is no interruption when the operating mode is changed. The set point can be retained or initiated for the value of the process variables or for the set point of the previous operating mode if the system is switched back to it.

■ **LO**

The **LO** operating mode is used in control and output blocks that support a track input parameter. The manufacturer can also provide a local lock switch on the device to enable the **LO** operating mode. Tracking must be supported in the group of control parameters and is initiated by a discrete track-in parameter.

In local bridge mode, the output value of the function block is set in order to track the value of the track-input parameter. The algorithm is initiated in such a way that there is no interruption when the operating mode switches from **LO** back to the previous operating mode. The set point can be initiated or retained for the value of the process variables.

■ **IMan**

In the **IMan** operating mode, the output value of the function block is performed as a reaction to the status of the back-calculation-input parameter. When this status indicates that there is no signal for the final output element, the control blocks ensure that there is a smooth transition. The back-calculation-input parameter is supported by all control and output blocks. The set point can be initiated or retained for the value of the process variables.

■ **OOS**

In the **OOS** operating mode, implementation of the function block is blocked. Either the last valid value or, in the case of an output block, the last valid set point is retained as the output value. This operating mode is used during configuration of the device.

Actual mode

Navigation	 Expert → Communication → Resource block → Actual mode (10725)
Description	Displays the Actual mode: Under certain conditions, a function block may not work in the operating mode to be used. In this case, the Actual mode shows the actual operating mode that the function block is currently operating in. By comparing the Actual mode with the Target mode, users can see whether it was possible to reach the Target mode (→  147).
User interface	■ ROut ■ RCas ■ Cas ■ Auto ■ Man ■ LO ■ IMan ■ OOS
Additional information	<i>User interface</i>  Detailed description of the options displayed: Target mode parameter (→  147)

Permitted mode

Navigation	 Expert → Communication → Resource block → Permitted mode (10727)
Description	Use this function to select the Permitted mode: The selection defines which operating modes are available in Target mode (→  147) for the function block. The operating modes that are supported vary depending on the type and function of the block.
Selection	■ ROut ■ RCas ■ Cas ■ Auto ■ Man ■ LO ■ IMan ■ OOS
Factory setting	■ Auto ■ OOS
Additional information	<i>Options</i>  Detailed description of the options available for selection: Target mode parameter (→  147)

Normal mode

Navigation	 Expert → Communication → Resource block → Normal mode (10726)
Description	Use this function to select the Normal mode: This is available to enable the user to select the Normal mode from the available operating modes. This can be set using an operating tool in order to help the user configure the operating mode of a function block.
Selection	■ ROut ■ RCas ■ Cas ■ Auto ■ Man ■ LO ■ IMan ■ OOS
Additional information	<i>Options</i>  Detailed description of the options available for selection: Target mode parameter (→  147)

Block Error

Navigation	 Expert → Communication → Resource block → Block Error (10703)
Description	Displays the short text for the Block Error that has occurred in the function block.
User interface	■ Other ■ BlockConfigurat ■ LinkConfigurat ■ SimulationActive ■ LocalOverride ■ DeviceFaultState ■ DeviceMainten ■ SensorFailure ■ OutputFailure ■ MemoryFailure ■ LostStaticData ■ LostNVData ■ ReadbackCheck ■ MaintenanceNeed ■ PowerUp ■ OutOfService

Resource State

Navigation	 Expert → Communication → Resource block → Resource State (10730)
Description	Displays the Resource State: Displays the current operating mode of the resource block.

User interface	■ Uninitialized ■ StartRestart ■ Initialization ■ Online Linking ■ Online ■ Standby ■ Failure
Additional information	<i>User interface</i> ■ Uninitialized The resource block is in an invalid operating mode. ■ StartRestart The resource block is in the start-up or restore phase. The necessary memory and hardware tests are carried out for the current operation. If these tests are successful, the resource block switches to the Initialization operating mode. If these tests are not successful, the resource block switches to the Failure operating mode. ■ Initialization The resource block is in this operating mode if the block successfully passes the hardware tests from the StartRestart or Failure status. In this operating mode, all alarms of the function block that are not displayed are automatically confirmed and acknowledged. When system management is operational, the implementation of the block can be planned and the resource block switches to the Online Linking operating mode. ■ Online Linking The resource block is in this operating mode when the block switches from the Initialization or Online operating mode. The configured connections between the function blocks are not yet established. When all configured connections have been established, the resource block switches to the Online operating mode. ■ Online Normal operating mode, the resource block is in the Auto operating mode. The configured connections between the function blocks have been established. If one of the connections could not be established, the resource block switches back to the Online Linking operating mode. ■ Standby The Resource Block is in the OOS option operating mode. It is not possible to implement the remaining blocks. The operating mode of the transducer block is not necessarily affected by this. Switching the resource block to the Auto mode causes the resource block to switch back to the StartRestart operating mode. ■ Failure The resource block is in the fault state. It switches to this operating mode if a memory or hardware fault that would hinder current operation has been detected in the block. The fault can affect the block or the entire device. When this operating mode is active, blocks with an output function are also in the fault state. The hardware test is carried out again. If the error does not reoccur, the resource block switches back to the Initialization operating mode.

DD Resource

Navigation	 Expert → Communication → Resource block → DD Resource (10708)
Description	Displays the DD Resource: Indicates the reference source for the device description (DD).
User interface	Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).

Additional information *User interface*

Zero: No device description is stored on the device.

Manufacturer Id

Navigation Expert → Communication → Resource block → Manufacturer Id (10721)**Description** Manufacturer Id display: is used by the interface to assign the right DD file for the resource.**User interface** Endress+Hauser

Device type

Navigation Expert → Communication → Resource block → Device type (10711)**Description** Use this function to view the device type with which the measuring device is registered with FOUNDATION Fieldbus.**User interface** Promass 300/500

Device revision

Navigation Expert → Communication → Resource block → Device revision (10710)**Description** Use this function to view the device revision with which the measuring device is registered with FOUNDATION Fieldbus.**User interface** 1

DD Revision

Navigation Expert → Communication → Resource block → DD Revision (10709)**Description** Displays the revision number of the device description (DD).**User interface** 1**Additional information** *Description*This display can be used to ensure that the right system files (DD = device description) are used for integration into the host system. The system files can be downloaded free of charge online at: www.endress.com.

Grant

Navigation	 Expert → Communication → Resource block → Grant (10718)
Description	Option for releasing certain access authorizations of the field bus host system on the device.
Selection	■ Program ■ Tune ■ Alarm ■ Local ■ Operate ■ Service ■ Diagnostic

Deny

Navigation	 Expert → Communication → Resource block → Deny (10717)
Description	Option for restricting certain access authorizations of the field bus host system on the device.
Selection	■ Program Denied ■ Tune Denied ■ Alarm Denied ■ Local ■ Operate Denied

Hard Types

Navigation	 Expert → Communication → Resource block → Hard Types (10719)
Description	Displays the input signal type for the Analog input block.
User interface	■ Scalar Input ■ Scalar Output ■ Discrete Input ■ Discrete Output

Restart

Navigation	  Expert → Communication → Resource block → Restart (10800)
Description	Use this function to select a manual restart or a manual device reset.

Selection	■ Uninitialized ■ Run ■ Resource ■ Defaults ■ Processor ■ To delivery set.
------------------	--

Factory setting	Uninitialized
------------------------	---------------

Features

Navigation	 Expert → Communication → Resource block → Features (10713)
-------------------	--

Description	Displays the additional options that are supported by the measuring device.
--------------------	---

User interface	■ Reports ■ Faultstate ■ Soft W Lock ■ Hard W Lock ■ Chng Bypass Auto ■ MVCReporDistrsup ■ Multibit AlmSupp ■ InterParamWrChk
-----------------------	---

Feature Select

Navigation	 Expert → Communication → Resource block → Feature Select (10714)
-------------------	--

Description	Use this function to select additional options that are supported by the measuring device.
--------------------	--

Selection	■ Reports ■ Faultstate ■ Soft W Lock ■ Hard W Lock ■ Chng Bypass Auto ■ MVCReporDistrsup ■ Multibit AlmSupp ■ InterParamWrChk
------------------	---

Cycle Type

Navigation	 Expert → Communication → Resource block → Cycle Type (10707)
-------------------	--

Description	Displays the implementation methods for the block that are supported by the measuring device.
--------------------	---

User interface	■ Scheduled ■ Block Execution
-----------------------	--

Cycle Selection

Navigation	 Expert → Communication → Resource block → Cycle Selection (10706)
Description	Use this function to select the implementation method for the block that is used by the field bus host system. This implementation method is selected by the field bus host system.
Selection	■ Scheduled ■ Block Execution

Minumum Cyc.Time

Navigation	 Expert → Communication → Resource block → Minumum Cyc.Time (10724)
Description	Displays the implementation time of all function blocks that are available in the measuring device.
User interface	Positive integer

Memory Size

Navigation	 Expert → Communication → Resource block → Memory Size (10723)
Description	Displays the available configuration memory in kilobytes.
User interface	0 to 65 535 Kbytes

Nonvolat CycTime

Navigation	 Expert → Communication → Resource block → Nonvolat CycTime (10729)
Description	Displays the time interval during which the dynamic device parameters are stored in the non-volatile memory.
User interface	Positive integer

Free Space

Navigation	 Expert → Communication → Resource block → Free Space (10715)
Description	Displays the free system memory volume available for implementing further function blocks as a percentage.
User interface	0.000000 to 100.000 %

Free Time

Navigation	 Expert → Communication → Resource block → Free Time (10716)
Description	Displays the free system time available for implementing further function blocks as a percentage.
User interface	0.000000 to 100.000 %

Clear Fault Stat

Navigation	 Expert → Communication → Resource block → Clear Fault Stat (10704)
Description	Use this function to select the fault state for the Discrete outputs (→  259) block.
Selection	■ Uninitialized ■ Off ■ Clear
Factory setting	Uninitialized
Additional information	<i>Options</i>  The fault state can be disabled with Clear option.

Confirm Time

Navigation	 Expert → Communication → Resource block → Confirm Time (10705)
Description	Use this function to enter a time interval for confirming the event report. If the measuring device does not receive a confirmation within this interval, the event report is sent to the field bus host system again.
User entry	Positive integer
Factory setting	0 1/32 ms

Fault State

Navigation	 Expert → Communication → Resource block → Fault State (10712)
Description	Displays the current status of the fault state for the Discrete outputs (→  259) block.
User interface	■ Uninitialized ■ Clear ■ Active
Additional information	<i>User interface</i> ■ Uninitialized ■ Clear The fault state is disabled. ■ Active The fault state is enabled.

Limit Notify

Navigation	 Expert → Communication → Resource block → Limit Notify (10720)
Description	Use this function to enter the maximum number of event reports that may be pending at the same time without confirmation.
User entry	0 to 255
Factory setting	0

Max Notify

Navigation	 Expert → Communication → Resource block → Max Notify (10722)
Description	Displays the maximum number of event reports that are supported by the measuring device and may be pending at the same time without confirmation.
User interface	0 to 255

Set Fault State

Navigation	 Expert → Communication → Resource block → Set Fault State (10731)
Description	Option for manually enabling or disabling the fault state for the Discrete outputs (→  259) function block.

Selection	■ OFF ■ SET
Factory setting	OFF
Additional information	<i>Options</i> ■ OFF The fault state is disabled. ■ SET The fault state is enabled.

Shed Remote Casc

Navigation	 Expert → Communication → Resource block → Shed Remote Casc (10732)
Description	Use this function to enter the time interval after which the computer stops writing to function blocks with RCas points.
User entry	Positive integer
Factory setting	0 1/32 ms

Shed Remote Out

Navigation	 Expert → Communication → Resource block → Shed Remote Out (10733)
Description	Use this function to enter the time interval after which the computer stops writing to function blocks with ROut points.
User entry	Positive integer
Factory setting	0 1/32 ms

Unacknowledged

Navigation	 Expert → Communication → Resource block → Unacknowledged (10740)
Description	Option for manually acknowledging an update of the static block parameter.
Selection	■ Uninitialized ■ Acknowledged ■ Unacknowledged
Factory setting	Uninitialized

Additional information*Description*

- If a new diagnostic event occurs, the measuring device sets **Unacknowledged** option.
- If the diagnostic event has been acknowledged, the user can set **Acknowledged** option.

Update State

Navigation

Expert → Communication → Resource block → Update State (10741)

Description

Displays the status of an update of the static block parameter. The status indicates whether the update was communicated or not.

User interface

- Uninitialized
- Reported
- Not Reported

Time Stamp

Navigation

Expert → Communication → Resource block → Time Stamp (10739)

Description

Displays the time stamp indicating when the analysis of the block was started and when a status change of an update to the static block parameter that has not yet been communicated was identified. The time stamp is retained until the update confirmation is received.

User interface

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

Static revision

Navigation

Expert → Communication → Resource block → Static revision (10738)

Description

Displays the Static revision: Each instance of a static block parameter being accessed with write and report access due to an update is counted (event counter).

User interface

0 to 65 535

Relative Index

Navigation

Expert → Communication → Resource block → Relative Index (10737)

Description

Displays the relative index of the static block parameter that triggered the alarm (OD index minus field bus start index).

User interface 0 to 65 535

Write Lock

Navigation  Expert → Communication → Resource block → Write Lock (10747)

Description Option for enabling and disabling the hardware write protection.

Selection

- Not Locked
- Locked

Factory setting Not Locked

Additional information *Description*

Option for enabling and disabling write access to the measuring device via the FOUNDATION Fieldbus (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.

Options

- Not Locked
Device data can be changed via the FOUNDATION Fieldbus interface.
- Locked
Device data cannot be changed via the FOUNDATION Fieldbus interface.

Unacknowledged

Navigation  Expert → Communication → Resource block → Unacknowledged (10700)

Description Option for manually acknowledging a block alarm.

Selection

- Uninitialized
- Acknowledged
- Unacknowledged

Factory setting Uninitialized

Additional information *Description*



- If a new alarm occurs, the measuring device sets **Unacknowledged** option.
- If the alarm has been acknowledged, the user can set **Acknowledged** option.

Alarm State

Navigation	 Expert → Communication → Resource block → Alarm State (10697)
Description	Displays the status of the block alarm. The status indicates whether the block alarm is active and whether it has already been communicated to the field bus host system.
User interface	■ Uninitialized ■ Clear-Reported ■ ClearNotReported ■ Active-Reported ■ ActiveNotRep

Time Stamp

Navigation	 Expert → Communication → Resource block → Time Stamp (10699)
Description	Displays the time stamp indicating when the analysis of the block was started and when a status change of the block alarm that has not yet been communicated to the field bus host system was detected. The time stamp is retained until the alarm confirmation is received.
User interface	Days (d), hours (h), minutes (m), seconds (s)

Subcode

Navigation	 Expert → Communication → Resource block → Subcode (10698)
Description	Displays the specific cause of the block alarm.
User interface	■ Other ■ BlockConfigurat ■ LinkConfigurat ■ SimulationActive ■ LocalOverride ■ DeviceFaultState ■ DeviceMainten ■ SensorFailure ■ OutputFailure ■ MemoryFailure ■ LostStaticData ■ LostNVData ■ ReadbackCheck ■ MaintenanceNeed ■ PowerUp ■ OutOfService

Value

Navigation	 Expert → Communication → Resource block → Value (10701)
Description	Displays the value of the affected parameter at the time at which the block alarm was detected.
User interface	0 to 255

Current

Navigation	 Expert → Communication → Resource block → Current (10692)
Description	Use this function to view the current status of the process alarms.
User interface	■ Discrete Alarm ■ Block Alarm ■ Fail Alarm ■ Off Spec Alarm ■ Maint. Alarm ■ Check Alarm

Unacknowledged

Navigation	 Expert → Communication → Resource block → Unacknowledged (10694)
Description	Displays an unacknowledged process alarm.
User interface	■ Disc Alm Unack ■ Block Alm Unack ■ Fail Alm Unack ■ Off SpecAlmUnack ■ Maint Alm Unack ■ Check Alm Unack

Unreported

Navigation	 Expert → Communication → Resource block → Unreported (10695)
Description	Displays a process alarm that has not been communicated.
User interface	■ Disc Alm Unrep ■ Block Alm Unrep ■ Fail Alm Unrep

- Off SpecAlmUnrep
- Maint Alm Unrep
- Check Alm Unrep

Disabled

Navigation  Expert → Communication → Resource block → Disabled (10693)

Description Option for disabling a process alarm category.

Selection

- Disc Alm Disabl
- Block Alm Disabl
- Fail Alm Disabl
- OffSpecAlmDisabl
- Maint Alm Disabl
- Check Alm Disab.

Ack. Option

Navigation  Expert → Communication → Resource block → Ack. Option (10691)

Description Option for automatic acknowledgment of process alarms in a specific category.

Selection

- Disc Alm Aut Ack
- Blk Alm Auto Ack
- Fail Alm Aut Ack
- OffSpecAlmAutAck
- Maint Alm AutAck
- Check Alm AutAck

Additional information *Description*

Use this function to determine whether an alarm must be acknowledged via the field bus host system.



If the process alarm option has not been enabled in this parameter, this process alarm must only be acknowledged in **Unacknowledged** parameter (→  160).

Current parameter (→  162) indicates the current status of all process alarms.

Write Priority

Navigation  Expert → Communication → Resource block → Write Priority (10748)

Description Use this function to enter the priority for the write protection alarm.

User entry 0 to 15

Factory setting 0

Additional information *Description*

If write protection is disabled on the FOUNDATION Fieldbus I/O board, the alarm priority entered here is checked before the status change is transferred to the field bus host system. The alarm priority determines the behavior in the event of an active write protection alarm.



The alarm is triggered when the write protection is disabled.

Unacknowledged**Navigation**

Expert → Communication → Resource block → Unacknowledged (10745)

Description

Option for manually acknowledging a write protection alarm.

Selection

- Uninitialized
- Acknowledged
- Unacknowledged

Factory setting

Uninitialized

Additional information

Description



- If a new alarm occurs, the measuring device sets **Unacknowledged** option.
- If the alarm has been acknowledged, the user can set **Acknowledged** option.

Alarm State**Navigation**

Expert → Communication → Resource block → Alarm State (10742)

Description

Displays the status of the write protection alarm. The status indicates whether the write protection alarm is active and whether it has already been communicated to the field bus host system.

User interface

- Uninitialized
- Clear-Reported
- ClearNotReported
- Active-Reported
- ActiveNotRep

Time Stamp**Navigation**

Expert → Communication → Resource block → Time Stamp (10744)

Description

Displays the time stamp indicating when the analysis of the block was started and when the status change of a write protection alarm that has not yet been communicated was identified. The time stamp is retained until the alarm confirmation is received.

User interface Days (d), hours (h), minutes (m), seconds (s)

Subcode

Navigation  Expert → Communication → Resource block → Subcode (10743)

Description Displays the specific cause of the write protection alarm, which is to be communicated to the field bus host system.

User interface

- Other
- BlockConfigurat
- LinkConfigurat
- SimulationActive
- LocalOverride
- DeviceFaultState
- DeviceMainten
- SensorFailure
- OutputFailure
- MemoryFailure
- LostStaticData
- LostNVData
- ReadbackCheck
- MaintenanceNeed
- PowerUp
- OutOfService

Discrete Value

Navigation  Expert → Communication → Resource block → Discrete Value (10746)

Description Displays the discrete value of the affected parameter at the time at which the write protection alarm was detected.

User interface

- State 0
- State 1
- State 2
- State 3
- State 4
- State 5
- State 6
- State 7
- State 8
- State 9
- State 10
- State 11
- State 12
- State 13
- State 14
- State 15
- State 16

ITK Version

Navigation	  Expert → Communication → Resource block → ITK Version (10794)
Description	Displays the revision status of the Interoperability Test Kits (ITK).
User interface	6

3.6.2 "WLAN settings" submenu

Navigation

  Expert → Communication → WLAN settings

▶ WLAN settings

WLAN (2702)

→  166

WLAN IP address (2711)

→  167

WLAN subnet mask (2709)

→  167

WLAN MAC address (2703)

→  167

Security type (2705)

→  168

WLAN passphrase (2706)

→  168

Assign SSID name (2708)

→  168

SSID name (2707)

→  169

Select antenna (2713)

→  169

WLAN channel (2704)

→  169

Apply changes (2712)

→  169

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 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 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 MAC address

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

Description Displays the MAC⁸⁾ 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

8) Media Access Control

Security type

Navigation   Expert → Communication → WLAN settings → Security type (2705)

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

Selection

- Unsecured
- WPA2-PSK

Factory setting WPA2-PSK

Additional information *Selection*

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

WLAN passphrase

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

Prerequisite In the **Security type** parameter (→  168), the **WPA2-PSK** option is selected.

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 ⁹⁾.

Selection

- Device tag
- User-defined

Factory setting User-defined

Additional information *Selection*

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

9) Service Set Identifier

SSID name



Navigation	Expert → Communication → WLAN settings → SSID name (2707)
Prerequisite	In the Assign SSID name parameter (→ 168), the User-defined option is selected.
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_Promass_300_A802000)

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

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.

Apply changes



Navigation	Expert → Communication → WLAN settings → Apply changes (2712)
Description	Use this function to adopt modified WLAN settings.

Selection	■ Cancel ■ Ok
Factory setting	Cancel
Additional information	Selection ■ Cancel No action is executed and the user exits the parameter. ■ Ok The measuring device adopts the modified WLAN settings.

3.6.3 "Web server" submenu

Navigation  Expert → Communication → Web server

► Web server

Webserv.language (7221)

→  170

MAC Address (7214)

→  171

IP address (7209)

→  171

Subnet mask (7211)

→  172

Default gateway (7210)

→  172

Webserver funct. (7222)

→  172

Login page (7273)

→  173

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 *

* Visibility depends on order options or device settings

- Polski *
- русский язык(Ru) *
- Svenska *
- Türkçe *
- 中文 (Chinese) *
- 日本語 (Japanese) *
- 한국어 (Korean) *
- العربية(Ara) *
- Bahasa Indonesia *
- ภาษาไทย (Thai) *
- tiếng Việt (Vit) *
- čeština (Czech) *

Factory setting English

MAC Address

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

Description Displays the MAC ¹⁰⁾ 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

IP address



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

Description Displays the IP address of the Web server of the measuring device.

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

Factory setting 192.168.1.212

* Visibility depends on order options or device settings

10) Media Access Control

Subnet mask

Navigation	 Expert → Communication → Web server → Subnet mask (7211)
Description	Displays the subnet mask.
User interface	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	Displays the default gateway.
User interface	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 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.
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

3.7 "Analog inputs" submenu

In the analog input function block (AI function block), the process variables from the transducer block are prepared in terms of control for the subsequent automation functions (e.g. scaling, limit value processing). The automation function is defined by interconnecting the outputs.

Navigation   Expert → Analog inputs

► Analog inputs

► Analog input 1 to n

→  173

3.7.1 "Analog input 1 to n" submenu

Navigation   Expert → Analog inputs → Analog input 1 to n

► Analog input 1 to n

Block tag (6901-1 to n)

→  174

Status (6906-1 to n)

→  180

Value (6907-1 to n)

→  182

Channel (6902-1 to n)

→  201

Lin Type (6905-1 to n)

→  202

PV Filter Time (6909-1 to n)

→  207

Block tag

Navigation	 Expert → Analog inputs → Analog input 1 to n → Block tag (6901–1 to n)
Description	Use this function to enter the Block tag: Used for specifying a "label" for identifying the function 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 (6973–1 to n)
Description	Displays the Static Revision: Each instance of a static block parameter being accessed with write access is counted (event counter).
User interface	0 to FFFF
Additional information	<i>Description</i>  Static parameters are parameters that are not changed by the process.

Tag Description

Navigation	 Expert → Analog inputs → Analog input 1 to n → Tag Description (6974–1 to n)
Description	Use this function to enter the Tag Description: Used for defining a user-specific text for detailed description of the function block.
User entry	Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).

Strategy

Navigation	 Expert → Analog inputs → Analog input 1 to n → Strategy (6972–1 to n)
Description	Use this function to enter the Strategy: Enables blocks to be grouped 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 (6916–1 to n)
Description	Use this function to enter the Alert Key: Identifies the plant unit where the transmitter is located. This helps in pinpointing events.
User entry	0 to 0xFF
Factory setting	1

Target mode

Navigation	 Expert → Analog inputs → Analog input 1 to n → Target mode (6960–1 to n)
Description	Use this function to select the Target mode: The selection indicates which operating mode is used for this function block. This mode is generally set by a control application.
Selection	■ ROut ■ RCas ■ Cas ■ Auto ■ Man ■ LO ■ IMan ■ OOS
Factory setting	OOS
Additional information	<i>Options</i>  Detailed description of the options available for selection: Target mode parameter (→  147)

Actual mode

Navigation	 Expert → Analog inputs → Analog input 1 to n → Actual mode (6957–1 to n)
Description	Displays the Actual mode: Under certain conditions, a function block may not work in the operating mode to be used. In this case, the Actual mode shows the actual operating mode in which the function block is currently operating. By comparing the Actual mode with the Target mode, users can see whether it was possible to reach the Target mode (→  175).
User interface	■ ROut ■ RCas ■ Cas ■ Auto ■ Man

- LO
- IMan
- OOS

Additional information*User interface*Detailed description of the options displayed: **Target mode** parameter (→ 147)

Permitted mode

Navigation

Expert → Analog inputs → Analog input 1 to n → Permitted mode (6959–1 to n)

Description

Use this function to select the Permitted mode: The selection defines which operating modes are available in Target mode (→ 175) for the function block. The operating modes that are supported vary depending on the type and function of the block.

Selection

- ROut
- RCas
- Cas
- Auto
- Man
- LO
- IMan
- OOS

Factory setting

- Auto
- OOS

Additional information*Options*Detailed description of the options available for selection: **Target mode** parameter (→ 147)

Normal mode

Navigation

Expert → Analog inputs → Analog input 1 to n → Normal mode (6958–1 to n)

Description

Use this function to select the Normal mode: This is available to enable the user to select the Normal mode from the available operating modes. This can be set using an operating tool in order to help the user configure the operating mode of a function block.

Selection

- ROut
- RCas
- Cas
- Auto
- Man
- LO
- IMan
- OOS

Factory setting

Auto

Additional information*Options*

Detailed description of the options available for selection: **Target mode** parameter
(→ 147)

Block Error**Navigation**

Expert → Analog inputs → Analog input 1 to n → Block Error (6922–1 to n)

Description

Displays the short text for the Block Error that has occurred in the function block.

User interface

- Other
- BlockConfigurat
- LinkConfigurat
- SimulationActive
- LocalOverride
- DeviceFaultState
- DeviceMainten
- SensorFailure
- OutputFailure
- MemoryFailure
- LostStaticData
- LostNVData
- ReadbackCheck
- MaintenanceNeed
- PowerUp
- OutOfService

Status**Navigation**

Expert → Analog inputs → Analog input 1 to n → Status (6964–1 to n)

Description

Displays the status of the input value (PV).

User interface

- Bad (0x00)
- Bad (0x01)
- Bad (0x02)
- Bad (0x03)
- Bad (0x04)
- Bad (0x05)
- Bad (0x06)
- Bad (0x07)
- Bad (0x08)
- Bad (0x09)
- Bad (0x0A)
- Bad (0x0B)
- Bad (0x0C)
- Bad (0x0D)
- Bad (0x0E)
- Bad (0x0F)
- Bad (0x10)
- Bad (0x11)

- Bad (0x12)
- Bad (0x13)
- Bad (0x14)
- Bad (0x15)
- Bad (0x16)
- Bad (0x17)
- Bad (0x18)
- Bad (0x19)
- Bad (0x1A)
- Bad (0x1B)
- Bad (0x1C)
- Bad (0x1D)
- Bad (0x1E)
- Bad (0x1F)
- Uncertain (0x40)
- Uncertain (0x41)
- Uncertain (0x42)
- Uncertain (0x43)
- Uncertain (0x44)
- Uncertain (0x45)
- Uncertain (0x46)
- Uncertain (0x47)
- Uncertain (0x48)
- Uncertain (0x49)
- Uncertain (0x4A)
- Uncertain (0x4B)
- Uncertain (0x4C)
- Uncertain (0x4D)
- Uncertain (0x4E)
- Uncertain (0x4F)
- Uncertain (0x50)
- Uncertain (0x51)
- Uncertain (0x52)
- Uncertain (0x53)
- Uncertain (0x54)
- Uncertain (0x55)
- Uncertain (0x56)
- Uncertain (0x57)
- Uncertain (0x58)
- Uncertain (0x59)
- Uncertain (0x5A)
- Uncertain (0x5B)
- Good (0x80)
- Good (0x81)
- Good (0x82)
- Good (0x83)
- Good (0x84)
- Good (0x85)
- Good (0x86)
- Good (0x87)
- Good (0x88)
- Good (0x89)
- Good (0x8A)
- Good (0x8B)
- Good (0x8C)
- Good (0x8D)
- Good (0x8E)
- Good (0x8F)
- Good (0x90)

- Good (0x91)
- Good (0x92)
- Good (0x93)
- Good (0x94)
- Good (0x95)
- Good (0x96)
- Good (0x97)
- Good (0x98)
- Good (0x99)
- Good (0x9A)
- Good (0x9B)
- Good (0xC0)
- Good (0xC1)
- Good (0xC2)
- Good (0xC3)
- Good (0xC4)
- Good (0xC5)
- Good (0xC6)
- Good (0xC7)
- Good (0xC8)
- Good (0xC9)
- Good (0xCA)
- Good (0xCB)
- Good (0xCC)
- Good (0xCD)
- Good (0xCE)
- Good (0xCF)
- Good (0xD0)
- Good (0xD1)
- Good (0xD2)
- Good (0xD3)
- Good (0xD4)
- Good (0xD5)
- Good (0xD6)
- Good (0xD7)
- Good (0xD8)
- Good (0xD9)
- Good (0xDA)
- Good (0xDB)
- Good (0xDC)
- Good (0xDD)
- Good (0xDE)
- Good (0xDF)
- Good (0xE0)
- Good (0xE1)
- Good (0xE2)
- Good (0xE3)

Value

Navigation	 Expert → Analog inputs → Analog input 1 to n → Value (6965–1 to n)
Description	Displays the input value (PV).
User interface	Signed floating-point number

Additional information	Dependency  The unit is taken from the: Units index parameter (→  191)
Status	
Navigation	  Expert → Analog inputs → Analog input 1 to n → Status (6906-1 to n)
Description	Displays the status of the output value (OUT).
User interface	■ Bad (0x00) ■ Bad (0x01) ■ Bad (0x02) ■ Bad (0x03) ■ Bad (0x04) ■ Bad (0x05) ■ Bad (0x06) ■ Bad (0x07) ■ Bad (0x08) ■ Bad (0x09) ■ Bad (0x0A) ■ Bad (0x0B) ■ Bad (0x0C) ■ Bad (0x0D) ■ Bad (0x0E) ■ Bad (0x0F) ■ Bad (0x10) ■ Bad (0x11) ■ Bad (0x12) ■ Bad (0x13) ■ Bad (0x14) ■ Bad (0x15) ■ Bad (0x16) ■ Bad (0x17) ■ Bad (0x18) ■ Bad (0x19) ■ Bad (0x1A) ■ Bad (0x1B) ■ Bad (0x1C) ■ Bad (0x1D) ■ Bad (0x1E) ■ Bad (0x1F) ■ Uncertain (0x40) ■ Uncertain (0x41) ■ Uncertain (0x42) ■ Uncertain (0x43) ■ Uncertain (0x44) ■ Uncertain (0x45) ■ Uncertain (0x46) ■ Uncertain (0x47) ■ Uncertain (0x48) ■ Uncertain (0x49) ■ Uncertain (0x4A) ■ Uncertain (0x4B) ■ Uncertain (0x4C)

- Uncertain (0x4D)
- Uncertain (0x4E)
- Uncertain (0x4F)
- Uncertain (0x50)
- Uncertain (0x51)
- Uncertain (0x52)
- Uncertain (0x53)
- Uncertain (0x54)
- Uncertain (0x55)
- Uncertain (0x56)
- Uncertain (0x57)
- Uncertain (0x58)
- Uncertain (0x59)
- Uncertain (0x5A)
- Uncertain (0x5B)
- Good (0x80)
- Good (0x81)
- Good (0x82)
- Good (0x83)
- Good (0x84)
- Good (0x85)
- Good (0x86)
- Good (0x87)
- Good (0x88)
- Good (0x89)
- Good (0x8A)
- Good (0x8B)
- Good (0x8C)
- Good (0x8D)
- Good (0x8E)
- Good (0x8F)
- Good (0x90)
- Good (0x91)
- Good (0x92)
- Good (0x93)
- Good (0x94)
- Good (0x95)
- Good (0x96)
- Good (0x97)
- Good (0x98)
- Good (0x99)
- Good (0x9A)
- Good (0x9B)
- Good (0xC0)
- Good (0xC1)
- Good (0xC2)
- Good (0xC3)
- Good (0xC4)
- Good (0xC5)
- Good (0xC6)
- Good (0xC7)
- Good (0xC8)
- Good (0xC9)
- Good (0xCA)
- Good (0xCB)
- Good (0xCC)
- Good (0xCD)
- Good (0xCE)
- Good (0xCF)

- Good (0xD0)
- Good (0xD1)
- Good (0xD2)
- Good (0xD3)
- Good (0xD4)
- Good (0xD5)
- Good (0xD6)
- Good (0xD7)
- Good (0xD8)
- Good (0xD9)
- Good (0xDA)
- Good (0xDB)
- Good (0xDC)
- Good (0xDD)
- Good (0xDE)
- Good (0xDF)
- Good (0xE0)
- Good (0xE1)
- Good (0xE2)
- Good (0xE3)

Value	
Navigation	 Expert → Analog inputs → Analog input 1 to n → Value (6907–1 to n)
Description	Input for the output value (OUT).
User entry	Signed floating-point number
Factory setting	0
Additional information	<i>Dependency</i>  The unit is taken from the: Units index parameter (→  191)

Simulate Status	
Navigation	 Expert → Analog inputs → Analog input 1 to n → Simulate Status (6967–1 to n)
Description	Use this function to select the status that is used for the transducer block simulation.
Selection	■ Bad (0x00) ■ Bad (0x01) ■ Bad (0x02) ■ Bad (0x03) ■ Bad (0x04) ■ Bad (0x05) ■ Bad (0x06) ■ Bad (0x07) ■ Bad (0x08) ■ Bad (0x09)

- Bad (0x0A)
- Bad (0x0B)
- Bad (0x0C)
- Bad (0x0D)
- Bad (0x0E)
- Bad (0x0F)
- Bad (0x10)
- Bad (0x11)
- Bad (0x12)
- Bad (0x13)
- Bad (0x14)
- Bad (0x15)
- Bad (0x16)
- Bad (0x17)
- Bad (0x18)
- Bad (0x19)
- Bad (0x1A)
- Bad (0x1B)
- Bad (0x1C)
- Bad (0x1D)
- Bad (0x1E)
- Bad (0x1F)
- Uncertain (0x40)
- Uncertain (0x41)
- Uncertain (0x42)
- Uncertain (0x43)
- Uncertain (0x44)
- Uncertain (0x45)
- Uncertain (0x46)
- Uncertain (0x47)
- Uncertain (0x48)
- Uncertain (0x49)
- Uncertain (0x4A)
- Uncertain (0x4B)
- Uncertain (0x4C)
- Uncertain (0x4D)
- Uncertain (0x4E)
- Uncertain (0x4F)
- Uncertain (0x50)
- Uncertain (0x51)
- Uncertain (0x52)
- Uncertain (0x53)
- Uncertain (0x54)
- Uncertain (0x55)
- Uncertain (0x56)
- Uncertain (0x57)
- Uncertain (0x58)
- Uncertain (0x59)
- Uncertain (0x5A)
- Uncertain (0x5B)
- Good (0x80)
- Good (0x81)
- Good (0x82)
- Good (0x83)
- Good (0x84)
- Good (0x85)
- Good (0x86)
- Good (0x87)
- Good (0x88)

- Good (0x89)
- Good (0x8A)
- Good (0x8B)
- Good (0x8C)
- Good (0x8D)
- Good (0x8E)
- Good (0x8F)
- Good (0x90)
- Good (0x91)
- Good (0x92)
- Good (0x93)
- Good (0x94)
- Good (0x95)
- Good (0x96)
- Good (0x97)
- Good (0x98)
- Good (0x99)
- Good (0x9A)
- Good (0x9B)
- Good (0xC0)
- Good (0xC1)
- Good (0xC2)
- Good (0xC3)
- Good (0xC4)
- Good (0xC5)
- Good (0xC6)
- Good (0xC7)
- Good (0xC8)
- Good (0xC9)
- Good (0xCA)
- Good (0xCB)
- Good (0xCC)
- Good (0xCD)
- Good (0xCE)
- Good (0xCF)
- Good (0xD0)
- Good (0xD1)
- Good (0xD2)
- Good (0xD3)
- Good (0xD4)
- Good (0xD5)
- Good (0xD6)
- Good (0xD7)
- Good (0xD8)
- Good (0xD9)
- Good (0xDA)
- Good (0xDB)
- Good (0xDC)
- Good (0xDD)
- Good (0xDE)
- Good (0xDF)
- Good (0xE0)
- Good (0xE1)
- Good (0xE2)
- Good (0xE3)

Factory setting

Bad (0x00)

Simulate Value

Navigation	 Expert → Analog inputs → Analog input 1 to n → Simulate Value (6968–1 to n)
Description	Use this function to enter the value that is used for the transducer block simulation.
User entry	Signed floating-point number
Factory setting	0 %
Additional information	<i>Dependency</i>  The unit is taken from the: Units index parameter (→  188)

Transducer Stat

Navigation	 Expert → Analog inputs → Analog input 1 to n → Transducer Stat (6969–1 to n)
Description	Displays the current status of the transducer block.
User interface	■ Bad (0x00) ■ Bad (0x01) ■ Bad (0x02) ■ Bad (0x03) ■ Bad (0x04) ■ Bad (0x05) ■ Bad (0x06) ■ Bad (0x07) ■ Bad (0x08) ■ Bad (0x09) ■ Bad (0x0A) ■ Bad (0x0B) ■ Bad (0x0C) ■ Bad (0x0D) ■ Bad (0x0E) ■ Bad (0x0F) ■ Bad (0x10) ■ Bad (0x11) ■ Bad (0x12) ■ Bad (0x13) ■ Bad (0x14) ■ Bad (0x15) ■ Bad (0x16) ■ Bad (0x17) ■ Bad (0x18) ■ Bad (0x19) ■ Bad (0x1A) ■ Bad (0x1B) ■ Bad (0x1C) ■ Bad (0x1D) ■ Bad (0x1E) ■ Bad (0x1F) ■ Uncertain (0x40)

- Uncertain (0x41)
- Uncertain (0x42)
- Uncertain (0x43)
- Uncertain (0x44)
- Uncertain (0x45)
- Uncertain (0x46)
- Uncertain (0x47)
- Uncertain (0x48)
- Uncertain (0x49)
- Uncertain (0x4A)
- Uncertain (0x4B)
- Uncertain (0x4C)
- Uncertain (0x4D)
- Uncertain (0x4E)
- Uncertain (0x4F)
- Uncertain (0x50)
- Uncertain (0x51)
- Uncertain (0x52)
- Uncertain (0x53)
- Uncertain (0x54)
- Uncertain (0x55)
- Uncertain (0x56)
- Uncertain (0x57)
- Uncertain (0x58)
- Uncertain (0x59)
- Uncertain (0x5A)
- Uncertain (0x5B)
- Good (0x80)
- Good (0x81)
- Good (0x82)
- Good (0x83)
- Good (0x84)
- Good (0x85)
- Good (0x86)
- Good (0x87)
- Good (0x88)
- Good (0x89)
- Good (0x8A)
- Good (0x8B)
- Good (0x8C)
- Good (0x8D)
- Good (0x8E)
- Good (0x8F)
- Good (0x90)
- Good (0x91)
- Good (0x92)
- Good (0x93)
- Good (0x94)
- Good (0x95)
- Good (0x96)
- Good (0x97)
- Good (0x98)
- Good (0x99)
- Good (0x9A)
- Good (0x9B)
- Good (0xC0)
- Good (0xC1)
- Good (0xC2)
- Good (0xC3)

- Good (0xC4)
- Good (0xC5)
- Good (0xC6)
- Good (0xC7)
- Good (0xC8)
- Good (0xC9)
- Good (0xCA)
- Good (0xCB)
- Good (0xCC)
- Good (0xCD)
- Good (0xCE)
- Good (0xCF)
- Good (0xD0)
- Good (0xD1)
- Good (0xD2)
- Good (0xD3)
- Good (0xD4)
- Good (0xD5)
- Good (0xD6)
- Good (0xD7)
- Good (0xD8)
- Good (0xD9)
- Good (0xDA)
- Good (0xDB)
- Good (0xDC)
- Good (0xDD)
- Good (0xDE)
- Good (0xDF)
- Good (0xE0)
- Good (0xE1)
- Good (0xE2)
- Good (0xE3)

Transducer Value

Navigation	 Expert → Analog inputs → Analog input 1 to n → Transducer Value (6970–1 to n)
Description	Displays the current value of the transducer block.
User interface	Signed floating-point number
Factory setting	0 %
Additional information	<i>Dependency</i>  The unit is taken from the: Units index parameter (→  188)

Sim. En/Disable

Navigation	 Expert → Analog inputs → Analog input 1 to n → Sim. En/Disable (6966-1 to n)
Description	Use this function to enable or disable the function block simulation.
Selection	■ Uninitialized ■ Disabled ■ Active
Factory setting	Uninitialized

EU at 100%

Navigation	 Expert → Analog inputs → Analog input 1 to n → EU at 100% (6982-1 to n)
Description	Use this function to enter the upper limit value of the output value measuring range.
User entry	Signed floating-point number
Factory setting	0 %
Additional information	<i>Dependency</i>  The unit is taken from the: Units index parameter (→  188)

EU at 0%

Navigation	 Expert → Analog inputs → Analog input 1 to n → EU at 0% (6981-1 to n)
Description	Use this function to enter the lower limit value of the output value measuring range.
User entry	Signed floating-point number
Factory setting	0 %
Additional information	<i>Dependency</i>  The unit is taken from the: Units index parameter (→  188)

Units index

Navigation	 Expert → Analog inputs → Analog input 1 to n → Units index (6983-1 to n)
Description	Use this function to select the unit for the output value.

Selection	<i>SI units</i>	<i>US units</i>	<i>Imperial units</i>
	■ g/s	■ oz/s	■ gal/s (imp)
	■ g/min	■ oz/min	■ gal/min (imp)
	■ g/h	■ oz/h	■ gal/h (imp)
	■ g/d	■ oz/d	■ gal/d (imp)
	■ kg/s	■ lb/s	■ Mgal/s (imp)
	■ kg/min	■ lb/min	■ Mgal/min (imp)
	■ kg/h	■ lb/h	■ Mgal/h (imp)
	■ kg/d	■ lb/d	■ Mgal/d (imp)
	■ t/s	■ STon/s	■ bbl/s (imp;oil)
	■ t/min	■ STon/min	■ bbl/min (imp;oil)
	■ t/h	■ STon/h	■ bbl/h (imp;oil)
	■ t/d	■ STon/d	■ bbl/d (imp;oil)
	■ l/s	■ af/s	■ bbl/s (imp;beer)
	■ l/min	■ af/min	■ bbl/min (imp;beer)
	■ l/d	■ af/h	■ bbl/h (imp;beer)
	■ l/h	■ af/d	■ bbl/d (imp;beer)
	■ m ³ /s	■ ft ³ /s	■ Sgal/s (imp)
	■ m ³ /min	■ ft ³ /min	■ Sgal/min (imp)
	■ m ³ /h	■ ft ³ /h	■ Sgal/h (imp)
	■ m ³ /d	■ ft ³ /d	■ Sgal/d (imp)
	■ cm ³ /s	■ fl oz/s (us)	■ lb/gal (imp)
	■ cm ³ /min	■ fl oz/min (us)	■ lb/bbl (imp;oil)
	■ cm ³ /h	■ fl oz/h (us)	■ Mgal (imp)
	■ cm ³ /d	■ fl oz/d (us)	■ bbl (imp;beer)
	■ dm ³ /s	■ gal/s (us)	■ Sgal (imp)
	■ dm ³ /min	■ gal/min (us)	■ bbl (imp;oil)
	■ dm ³ /h	■ gal/h (us)	■ gal (imp)
	■ dm ³ /d	■ gal/d (us)	
	■ ml/s	■ Mgal/s (us)	
	■ ml/min	■ Mgal/min (us)	
	■ ml/h	■ Mgal/h (us)	
	■ ml/d	■ Mgal/d (us)	
	■ NI/s	■ bbl/s (us;oil)	
	■ NI/d	■ bbl/min (us;oil)	
	■ NI/h	■ bbl/h (us;oil)	
	■ NI/min	■ bbl/d (us;oil)	
	■ Nm ³ /s	■ bbl/s (us;liq.)	
	■ Nm ³ /min	■ bbl/min (us;liq.)	
	■ Nm ³ /h	■ bbl/h (us;liq.)	
	■ Nm ³ /d	■ bbl/d (us;liq.)	
	■ Sm ³ /s	■ bbl/s (us;beer)	
	■ Sm ³ /min	■ bbl/min (us;beer)	
	■ Sm ³ /h	■ bbl/h (us;beer)	
	■ Sm ³ /d	■ bbl/d (us;beer)	
	■ MSft ³ /d	■ bbl/s (us;tank)	
	■ kg/l	■ bbl/min (us;tank)	
	■ kg/m ³	■ bbl/h (us;tank)	
	■ kg/dm ³	■ bbl/d (us;tank)	
	■ g/cm ³	■ kgal/s (us)	
	■ g/m ³	■ kgal/min (us)	
	■ SD4°C	■ kgal/h (us)	
	■ SD15°C	■ kgal/d (us)	
	■ SD20°C	■ Sft ³ /s	
	■ SG4°C	■ Sft ³ /min	
	■ SG20°C	■ Sft ³ /h	
	■ SG15°C	■ Sft ³ /d	
	■ kg/NI	■ Sgal/s (us)	
	■ g/Scm ³	■ Sgal/min (us)	

- kg/Sm³
 - kg/Nm³
 - K
 - °C
 - %
 - g
 - Nl
 - Nm³
 - Sl
 - Sm³
 - ml
 - kg
 - l
 - t
 - m³
 - dm³
 - cm³
 - mA
- Sgal/d (us)
 - Sgal/h (us)
 - Sbbl/s (us;liq.)
 - Sbbl/min (us;liq.)
 - Sbbl/h (us;liq.)
 - Sbbl/d (us;liq.)
 - MSft³/D
 - lb/ft³
 - lb/gal (us)
 - lb/bbl (us;tank)
 - lb/bbl (us;liq.)
 - lb/bbl (us;beer)
 - lb/bbl (us;oil)
 - lb/Sft³
 - °F
 - °R
 - oz
 - af
 - fl oz (us)
 - Mgal (us)
 - bbl (us;oil)
 - bbl (us;liq.)
 - bbl (us;tank)
 - Sgal (us)
 - Sbbl (us;liq.)
 - Sft³
 - kgal (us)
 - lb
 - ft³
 - gal (us)
 - bbl (us;beer)
 - STon

Factory setting

%

Additional information

Result
The selected unit applies for:

- **Simulate Value** parameter (→ ⓘ 185)
- **Transducer Value** parameter (→ ⓘ 187)
- **EU at 0%** parameter (→ ⓘ 188)
- **EU at 100%** parameter (→ ⓘ 188)

Decimal

Navigation

 Expert → Analog inputs → Analog input 1 to n → Decimal (6980–1 to n)

Description

Use this function to enter the number of decimal places for the output value.

User entry

–128 to 127

Factory setting

0

EU at 100%

Navigation	 Expert → Analog inputs → Analog input 1 to n → EU at 100% (6963-1 to n)
Description	Use this function to enter the upper limit value of the input value measuring range from the transducer block (input value).
User entry	Signed floating-point number
Factory setting	0
Additional information	<i>Dependency</i>  The unit is taken from the: Units index parameter (→  191)

EU at 0%

Navigation	 Expert → Analog inputs → Analog input 1 to n → EU at 0% (6962-1 to n)
Description	Function for entering the lower limit value of the input value measuring range from the transducer block (input value).
User entry	Signed floating-point number
Factory setting	0
Additional information	<i>Dependency</i>  The unit is taken from the: Units index parameter (→  191)

Units index

Navigation	 Expert → Analog inputs → Analog input 1 to n → Units index (6908-1 to n)
Description	Use this function to select the unit for the input value from the transducer block (input value).

Selection	SI units	US units	Imperial units
	■ K	■ mils	■ lbf/in
	■ m	■ °F	■ gal (imp)
	■ m ³	■ °R	■ Btu
	■ Pa s	■ ft	■ LTon
	■ m ² /s	■ in	■ datherm
	■ P	■ bbl (us;liq.)	■ Btu/h
	■ cP	■ Sft ³	■ Btu/day
	■ St	■ in/min	■ Btu/min
	■ cSt	■ oz	■ Btu/s
	■ Wbm	■ STon	■ LTon/d
	■ Ns/m	■ lb/d	■ LTon/h
	■ 1/Jm ³	■ lb/h	■ LTon/min
	■ e/Vm ³	■ lb/min	■ LTon/s
	■ m ³ /C	■ lb/s	■ gal/d (imp)
	■ (1/32 millisecc)/min	■ STon/d	■ gal/h (imp)
	■ °C	■ STon/h	■ gal/min (imp)
	■ °	■ STon/min	■ gal/s (imp)
	■ °	■ STon/s	■ lb/gal (imp)
	■ rad	■ mile	■ Mgal/min (imp)
	■ °	■ yd	■ Mgal/h (imp)
	■ gon	■ ft ²	■ Mgal/d (imp)
	■ μm	■ in ²	■ kgal/d (imp)
	■ mm	■ mile ²	■ kgal/h (imp)
	■ cm ³	■ yd ²	■ kgal/min (imp)
	■ dm ³	■ ft ³	■ kgal/s (imp)
	■ hl	■ gal (us)	■ μgal/d (imp)
	■ l	■ quart	■ μgal/h (imp)
	■ ml	■ pint	■ μgal/min (imp)
	■ s	■ yd ³	■ μgal/s (imp)
	■ min	■ mile ³	■ mgal/d (imp)
	■ d	■ in ³	■ mgal/h (imp)
	■ h	■ bushel	■ mgal/min (imp)
	■ ks	■ bbl (us;oil)	■ mgal/s (imp)
	■ μs	■ ft/s	■ Mgal/s (imp)
	■ ms	■ ft/h	■ μbbl/d (us;oil)
	■ m/h	■ lb	■ μbbl/h (us;oil)
	■ m/s	■ ft/min	■ μbbl/min (us;oil)
	■ mm/s	■ in/h	■ μbbl/s (us;oil)
	■ Hz	■ in/s	■ kImpGal
	■ g	■ yd/h	■ Btu/lb
	■ kg	■ yd/min	■ oz/ft
	■ GWh	■ yd/s	
	■ J	■ lb/in ³	
	■ kWh	■ lb/gal (us)	
	■ MWh	■ STon/yd ³	
	■ kcal	■ psi	
	■ Mcal	■ psi a	
	■ kW	■ psi g	
	■ MW	■ ftlbf	
	■ W	■ hp	
	■ MJ/h	■ lb/ft ³	
	■ mV	■ MPH	
	■ Ohm	■ ft ³ /d	
	■ pF	■ ft ³ /h	
	■ V	■ ft ³ /min	
	■ MI Mega	■ ft ³ /s	
	■ mbar a	■ Sft ³ /h	
	■ bar	■ Sft ³ /min	

■ dB	■ gal/d (us)
■ kPa a	■ gal/h (us)
■ kPa g	■ gal/min (us)
■ MPa a	■ gal/s (us)
■ MPa g	■ Mgal/d (us)
■ Pa a	■ bbl/d (us;oil)
■ Pa g	■ bbl/h (us;oil)
■ g/d	■ bbl/min (us;oil)
■ g/h	■ bbl/s (us;oil)
■ g/min	■ Mgal/h (us)
■ g/s	■ Mgal/min (us)
■ kg/d	■ Mgal/s (us)
■ kg/h	■ Mgal (us)
■ kg/min	■ af
■ kg/s	■ af/d
■ cm	■ af/h
■ km	■ af/min
■ nm	■ af/s
■ pm	■ bbl/d (us;beer)
■ a	■ bbl/h (us;beer)
■ ha	■ bbl/min (us;beer)
■ cm ²	■ bbl/s (us;beer)
■ dm ²	■ kgal/d (us)
■ km ²	■ kgal/h (us)
■ m ²	■ kgal/min (us)
■ mm ²	■ kgal/s (us)
■ mm ³	■ µgal/d (us)
■ cl	■ µgal/h (us)
■ t	■ µgal/min (us)
■ kg/m ³	■ µgal/s (us)
■ kg/dm ³	■ mgal/d (us)
■ g/cm ³	■ mgal/h (us)
■ g/m ³	■ mgal/min (us)
■ kg/l	■ mgal/s (us)
■ kgf/cm ²	■ Mbbbl/d (us;oil)
■ GJ	■ Mbbbl/h (us;oil)
■ kJ	■ Mbbbl/min (us;oil)
■ MJ	■ Mbbbl/s (us;oil)
■ km/h	■ mbbbl/d (us;oil)
■ kt	■ mbbbl/h (us;oil)
■ m/s ²	■ mbbbl/min (us;oil)
■ GHz	■ mbbbl/s (us;oil)
■ kHz	■ kft ³ /d
■ MHz	■ kft ³ /h
■ 1/min	■ kft ³ /min
■ 1/s	■ kft ³ /s
■ THz	■ mft ³ /d
■ rad/s	■ mft ³ /h
■ 1/s ²	■ mft ³ /min
■ Mg	■ mft ³ /s
■ mg	■ kbbbl(US Beer)/d
■ g/l	■ kbbbl(US Beer)/h
■ g/ml	■ kbbbl(US Beer)/min
■ Mg/m ³	■ ubbl(US Beer)/min
■ t/m ³	■ ubbl(US Beer)/s
■ mg/m	■ mbbbl(US Beer)/d
■ tex	■ mbbbl(US Beer)/h
■ kg/m	■ mbbbl(US Beer)/min
■ kgm/s	■ mbbbl(US Beer)/s

■ kgm ²	■ kgal (us)
■ kgm ² /s	■ ac-in/d
■ kNm	■ ac-in/h
■ MNm	■ ac-in/m
■ mNm	■ ac-in/s
■ Nm	■ Mft ³ /d
■ kN	■ ac-in
■ MN	■ Mft ³
■ μN	■ inH2Oa
■ mN	■ inH2Og
■ N	■ inH2O a(4°C)
■ mN/m	■ inH2Og(4°C)
■ N/m	■ inH2O a(68°F)
■ atm	■ inH2Og(68°F)
■ GPa	■ ftH2Oa
■ hPa	■ ftH2Og
■ kPa	■ ftH2O a(4°C)
■ MPa	■ ftH2Og(4°C)
■ μPa	■ ftH2O a(68°F)
■ mPa	■ ftH2Og(68°F)
■ Pa	■ inHga
■ torr	■ inHgg
■ gf/cm ²	■ inHg a(0°C)
■ cal	■ inHgg(0°C)
■ EJ	■ klb(US)/d
■ mJ	■ klb(US)/h
■ PJ	■ klb(US)/min
■ TJ	■ klb(US)/s
■ TWh	■ MSft ³ /D
■ Wh	■ mils/yr
■ GW	■ ft/s ²
■ μW	■ MLB/H
■ mW	■ lbf-in/deg
■ nW	
■ pW	
■ TW	
■ Mcal/h	
■ kcal/d	
■ kcal/h	
■ kcal/min	
■ kcal/s	
■ Mcal/d	
■ Mcal/min	
■ Mcal/s	
■ kJ/d	
■ kJ/h	
■ kJ/min	
■ kJ/s	
■ A	
■ mA	
■ kA	
■ μA	
■ nA	
■ pA	
■ C	
■ kC	
■ MC	
■ μC	
■ nC	

- pC
- Ah
- W/mK
- m²K/W
- W/m²K
- J/K
- kJ/K
- J/(kgK)
- kJ/(kgK)
- J/kg
- kJ/kg
- MJ/kg
- C/cm³
- C/m³
- C/mm³
- kC/m³
- μC/m³
- mC/m³
- C/cm²
- C/m²
- C/mm²
- kC/m²
- μC/m²
- mC/m²
- kV/m
- MV/m
- μV/m
- mV/m
- V/cm
- V/m
- kV
- MV
- μV
- F
- μF
- mF
- nF
- F/m
- A/cm²
- kA/m²
- MA/m²
- A/cm
- A/m
- kA/m
- μT
- mT
- nT
- T
- mWb
- Wb
- kWb/m
- Wb/m
- H
- μH
- mH
- nH
- pH
- H/m
- μH/m

- nH/m
- Am²
- GOhm
- kOhm
- MOhm
- μOhm
- mOhm
- kS
- μS
- μS/cm
- mS
- S
- t/d
- t/h
- t/min
- t/s
- %
- m³/d
- m³/h
- m³/min
- m³/s
- GOhmm
- kOhmm
- MOhmm
- μOhmm
- mOhmm
- nOhmm
- Ohmcm
- Ohmm
- kS/m
- MS/m
- μS/mm
- mS/cm
- S/m
- sr
- l/d
- l/h
- l/min
- l/s
- Ml/d
- kW/m²
- W/(sr·m²)
- cd
- cd/m²
- lm
- lm/m²
- lm/W
- lmh
- lms
- lx
- lxs
- μW/m²
- mW/m²
- pW/m²
- Pas/m³
- Pas/m
- ppm
- MJ/d
- MJ/min

- MJ/s
- cm³/d
- cm³/h
- cm³/min
- cm³/s
- Nm³
- Nm³/d
- Nm³/h
- Nm³/min
- Nm³/s
- Sm³
- Sm³/d
- Sm³/h
- Sm³/min
- Sm³/s
- NI
- NI/d
- NI/h
- NI/min
- NI/s
- SI
- ml/min
- B
- ppb
- ppth
- °Balling
- km³/d
- km³/h
- km³/min
- km³/s
- Mm³/d
- Mm³/h
- Mm³/min
- Mm³/s
- μm³/d
- μm³/h
- μm³/min
- μm³/s
- mm³/d
- mm³/h
- mm³/min
- mm³/s
- kl/d
- kl/h
- kl/min
- kl
- Sl/d
- Sl/h
- Sl/min
- Sl/s
- kL/s
- Ml/h
- Ml/min
- Mm³/d
- Mm³
- GPa a
- GPa g
- mPa a
- mPa g

- $\mu\text{Pa a}$
- $\mu\text{Pa g}$
- hPa a
- hPa g
- $\text{gf/cm}^2 \text{ a}$
- $\text{gf/cm}^2 \text{ g}$
- $\text{kgf/cm}^2 \text{ a}$
- $\text{kgf/cm}^2 \text{ g}$
- mBarg
- μbar
- Gy
- kcal/kg
- mGy
- mSv
- rad
- rem
- Sv
- Bq
- kBq
- MBq
- cnt/s
- MSft^3/d
- SCCM
- dm
- mm/yr
- g/m
- $\mu\text{g/m}^3$
- $\mu\text{g/l}$
- mg/m^3
- kmol
- μmol
- mmol
- mol
- mol/dm^3
- mol/m^3
- mol/l
- cm^3/mol
- dm^3/mol
- m^3/mol
- g/mol
- kg/mol
- l/mol
- mmol/kg
- mol/kg
- mg/l
- $\mu\text{S/m}$
- mS/m
- nS/cm
- S/cm
- kOhmcm
- MOhmcm
- l/m^3
- L/m
- $\mu\text{L/L}$
- ml/m^3
- ml/l
- $\%\text{Sat}$
- $\%\text{ sol/vol}$
- $\%\text{ sol/mass}$

- %vol
- WT-%
- J/mol
- kJ/mol
- J/(molK)
- Bq/kg
- kBq/kg
- MBq/kg
- mV/K
- V/K
- J/g
- mV/pH
- pH
- pH/°C
- mV/%
- %/s
- %/V
- nA/ppm
- 1/32 ms
- 1/H
- /cm
- 1/K
- 1/m
- 1/mm
- A/hPa
- A/Pa
- Nm²/A
- Pa/A
- pA/hPa
- C/kg
- mC/kg
- dyne-cm/deg
- newton-m/deg
- bar a
- bar g

Custom-specific units

PV/Sec

Factory setting

K

Additional information

Result

The selected unit applies for:

- **Value** parameter (→  179)
- **Value** parameter (→  182)
- **EU at 100%** parameter (→  188)
- **EU at 0%** parameter (→  188)
- **Low Cutoff** parameter (→  204)
- **High High Limit** parameter (→  212)
- **Float Value** parameter (→  216)
- **High Limit** parameter (→  213)
- **Float Value** parameter (→  218)
- **Low Limit** parameter (→  214)
- **Float Value** parameter (→  219)
- **Low Low Limit** parameter (→  214)
- **Float Value** parameter (→  221)

Decimal

Navigation	 Expert → Analog inputs → Analog input 1 to n → Decimal (6961–1 to n)
Description	Use this function to select the number of decimal places for the input value from the transducer block (input value).
User entry	–128 to 127
Factory setting	0

Grant

Navigation	 Expert → Analog inputs → Analog input 1 to n → Grant (6926–1 to n)
Description	Option for releasing certain access authorizations of the field bus host system on the device.
Selection	■ Program ■ Tune ■ Alarm ■ Local ■ Operate ■ Service ■ Diagnostic

Deny

Navigation	 Expert → Analog inputs → Analog input 1 to n → Deny (6925–1 to n)
Description	Option for restricting certain access authorizations of the field bus host system on the device.
Selection	■ Program Denied ■ Tune Denied ■ Alarm Denied ■ Local ■ Operate Denied

I/O Options

Navigation	 Expert → Analog inputs → Analog input 1 to n → I/O Options (6941–1 to n)
Description	Option for activating the low flow cut off.
Selection	Low Cutoff

Additional information*Description*

The limit value for the low flow cut off is defined in **Low Cutoff** parameter (→ 204).

Channel**Navigation**

Expert → Analog inputs → Analog input 1 to n → Channel (6902–1 to n)

Description

Use this function to select the input value that should be processed in the analog input function block.

Selection

- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *
- Density
- Ref.density
- Concentration *
- Temperature
- Carr. pipe temp. *
- Electronic temp.
- Osc. freq. 0
- Osc. ampl. 0
- Freq. fluct. 0
- Osc. damping 0
- Osc.damp.fluct 0
- Signal asymmetry
- Exc. current 0
- Totalizer 1
- Totalizer 2
- Totalizer 3
- Current input 1 *
- Uninitialized

Factory setting

Uninitialized

Status Options**Navigation**

Expert → Analog inputs → Analog input 1 to n → Status Options (6971–1 to n)

Prerequisite

The measuring device must be in the OOS operating mode so that the parameter can be edited.

Description

Use this function to select an option for the status of the output value that is supported by the analog input block.

* Visibility depends on order options or device settings

Selection

- Propag Fault Fwd
- Uncertain if Lim
- Bad if Limited
- Uncertain if Man

Additional information*Options*

- Propag Fault Fwd
If the measuring device has the status **Bad DeviceFailure** or **Bad SensorFailure**, the device continues to measure and no alarm is triggered. The use of this substatus in the output value (OUT) is defined by **Propag Fault Fwd** option. With the aid of this option, the user/operator can specify whether the alarm generation (sending an alarm) is triggered by the block or is forwarded downstream.
- Uncertain if Lim
If the measured or calculated value reaches a limit value, **Uncertain if Lim** option is used for the output status.
- Bad if Limited
If the measured value exceeds or falls below an upper or lower limit value, **Bad if Limited** option is used as the output status.
- Uncertain if Man
If the Actual mode of the function block is in the **Man** option operating mode, **Uncertain if Man** option is used as the output status.

Lin Type

Navigation

 Expert → Analog inputs → Analog input 1 to n → Lin Type (6905-1 to n)

Description

Use this function to select the type of linearization of the input or simulation value.

Selection

- Uninitialized
- Direct
- Indirect
- Indirect Sq Root

Factory setting

Uninitialized

Additional information*"Uninitialized" option*

The function block does not switch to Auto operating mode.

"Direct" option

The measured value from the transducer block (input value) bypasses the linearization function and is routed unchanged through the analog input function block (Xd_Scale = Out_Scale). This is selected if the input value already has the required physical units.

PV = Input value

The units in Units index (→  188) (Xd_Scale) and Units index (→  191) (Out_Scale) must be the same. Otherwise, the function block will remain in the OOS operating mode and the BlockConfigurat block error is displayed in Block Error (→  177).

"Indirect" option

The measured value from the transducer block (input value) is linearly rescaled via the Xd_Scale input scaling to the required Out_Scale output range.

$$PV = \frac{X}{100} \cdot (Y - Z) - Z$$

A0024820

PV Primary value
 X Value (→ 207) (Field_Val)
 Y EU at 100% (→ 191) (Out_Scale)
 Z EU at 0% (→ 191) (Out_Scale)

"Indirect Sq Root" option

The measured value from the transducer block (input value) is rescaled via the Xd_Scale parameter group and recalculated using a root function. It is then rescaled again to the required output range via the Out_Scale parameter group.

$$PV = \sqrt{\frac{X}{100}} \cdot (Y - Z) - Z$$

A0024847

PV Primary value
 X Value (→ 207) (Field_Val)
 Y EU at 100% (→ 191) (Out_Scale)
 Z EU at 0% (→ 191) (Out_Scale)

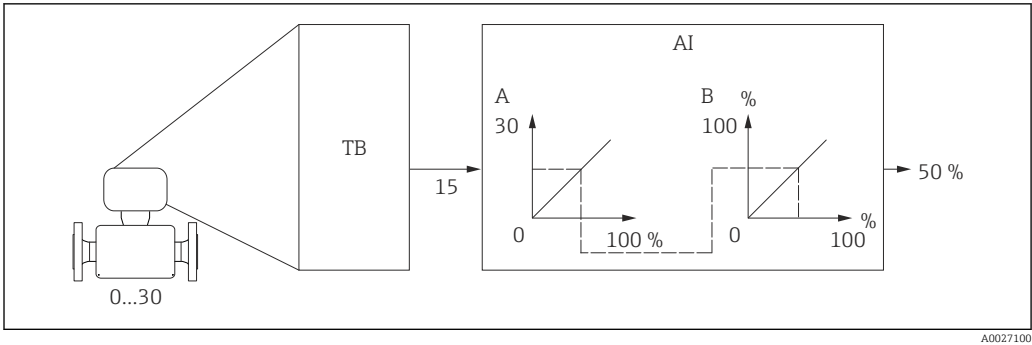
Example

- System unit in transducer block: kg/h
- Sensor measuring range: 0 to 30 kg/h
- Output range for the automation system: 0 to 100 %

The analog input function block must be configured as follows:

1. In **Channel** parameter (→ 201), select **Mass flow** option.
2. In **Lin Type** parameter (→ 202), select **Indirect** option.
 - ↳ The "Volume Flow" process variable of the transducer block "Flow" is linearly rescaled in the AI block to the required Out_Scale output range via the Xd_Scale input scaling.
3. In the Xd_Scale parameter group:
 - ↳ **EU at 0%** parameter (→ 188), enter the value 0.
 - In **EU at 100%** parameter (→ 188), enter the value 30.
 - In **Units index** parameter (→ 188), select **kg/h** option.
4. In the Out_Scale parameter group:
 - ↳ **EU at 0%** parameter (→ 191), enter the value 0.
 - In **EU at 100%** parameter (→ 191), enter the value 100.
 - In **Units index** parameter (→ 191), select **%** option.

The result is that an input value of 15 kg/h, for example, outputs a value of 50 % via the **Value** parameter (→ 182).



9 Engineering unit in kg/h

Low Cutoff

Navigation	Expert → Analog inputs → Analog input 1 to n → Low Cutoff (6956-1 to n)
Description	Use this function to enter a limit value for low flow cut off.
User entry	Positive floating-point number
Factory setting	0
Additional information	<i>Description</i> If the converted input value (PV) falls below this limit value, then it is set to zero. The low flow cut off is enabled via I/O Options parameter (→ 200). <i>Dependency</i> The unit is taken from the: Units index parameter (→ 191)

Status

Navigation	Expert → Analog inputs → Analog input 1 to n → Status (6923-1 to n)
Description	Displays the status of the unprocessed measured value from the device, which reflects the status of the transducer before signal transmission.
User interface	■ Bad (0x00) ■ Bad (0x01) ■ Bad (0x02) ■ Bad (0x03) ■ Bad (0x04) ■ Bad (0x05) ■ Bad (0x06) ■ Bad (0x07) ■ Bad (0x08) ■ Bad (0x09) ■ Bad (0x0A)

- Bad (0x0B)
- Bad (0x0C)
- Bad (0x0D)
- Bad (0x0E)
- Bad (0x0F)
- Bad (0x10)
- Bad (0x11)
- Bad (0x12)
- Bad (0x13)
- Bad (0x14)
- Bad (0x15)
- Bad (0x16)
- Bad (0x17)
- Bad (0x18)
- Bad (0x19)
- Bad (0x1A)
- Bad (0x1B)
- Bad (0x1C)
- Bad (0x1D)
- Bad (0x1E)
- Bad (0x1F)
- Uncertain (0x40)
- Uncertain (0x41)
- Uncertain (0x42)
- Uncertain (0x43)
- Uncertain (0x44)
- Uncertain (0x45)
- Uncertain (0x46)
- Uncertain (0x47)
- Uncertain (0x48)
- Uncertain (0x49)
- Uncertain (0x4A)
- Uncertain (0x4B)
- Uncertain (0x4C)
- Uncertain (0x4D)
- Uncertain (0x4E)
- Uncertain (0x4F)
- Uncertain (0x50)
- Uncertain (0x51)
- Uncertain (0x52)
- Uncertain (0x53)
- Uncertain (0x54)
- Uncertain (0x55)
- Uncertain (0x56)
- Uncertain (0x57)
- Uncertain (0x58)
- Uncertain (0x59)
- Uncertain (0x5A)
- Uncertain (0x5B)
- Good (0x80)
- Good (0x81)
- Good (0x82)
- Good (0x83)
- Good (0x84)
- Good (0x85)
- Good (0x86)
- Good (0x87)
- Good (0x88)
- Good (0x89)

- Good (0x8A)
- Good (0x8B)
- Good (0x8C)
- Good (0x8D)
- Good (0x8E)
- Good (0x8F)
- Good (0x90)
- Good (0x91)
- Good (0x92)
- Good (0x93)
- Good (0x94)
- Good (0x95)
- Good (0x96)
- Good (0x97)
- Good (0x98)
- Good (0x99)
- Good (0x9A)
- Good (0x9B)
- Good (0xC0)
- Good (0xC1)
- Good (0xC2)
- Good (0xC3)
- Good (0xC4)
- Good (0xC5)
- Good (0xC6)
- Good (0xC7)
- Good (0xC8)
- Good (0xC9)
- Good (0xCA)
- Good (0xCB)
- Good (0xCC)
- Good (0xCD)
- Good (0xCE)
- Good (0xCF)
- Good (0xD0)
- Good (0xD1)
- Good (0xD2)
- Good (0xD3)
- Good (0xD4)
- Good (0xD5)
- Good (0xD6)
- Good (0xD7)
- Good (0xD8)
- Good (0xD9)
- Good (0xDA)
- Good (0xDB)
- Good (0xDC)
- Good (0xDD)
- Good (0xDE)
- Good (0xDF)
- Good (0xE0)
- Good (0xE1)
- Good (0xE2)
- Good (0xE3)

Value	
Navigation	 Expert → Analog inputs → Analog input 1 to n → Value (6924–1 to n)
Description	Displays the unprocessed measured value from the device as a % of the primary value (PV).
User interface	Signed floating-point number
PV Filter Time	
Navigation	  Expert → Analog inputs → Analog input 1 to n → PV Filter Time (6909–1 to n)
Description	Use this function to enter the filter time specification for the filtering of the unconverted input value (PV).
User entry	Positive floating-point number
Factory setting	0 s
Additional information	<i>Factory setting</i>  If the value 0 s is entered, filtering will not be performed.
Unacknowledged	
Navigation	 Expert → Analog inputs → Analog input 1 to n → Unacknowledged (6978–1 to n)
Description	Option for manually acknowledging an update of the static block parameter.
Selection	■ Uninitialized ■ Acknowledged ■ Unacknowledged
Factory setting	Uninitialized
Additional information	<i>Description</i>  ■ If a new diagnostic event occurs, the measuring device sets Unacknowledged option. ■ If the diagnostic event has been acknowledged, the user can set Acknowledged option.

Update State

Navigation	 Expert → Analog inputs → Analog input 1 to n → Update State (6979–1 to n)
Description	Displays the status of an update of the static block parameter. The status indicates whether the update was communicated or not.
User interface	■ Uninitialized ■ Reported ■ Not Reported

Time Stamp

Navigation	 Expert → Analog inputs → Analog input 1 to n → Time Stamp (6977–1 to n)
Description	Displays the time stamp indicating when the analysis of the block was started and when a status change of an update to the static block parameter that has not yet been communicated was identified. The time stamp is retained until the update confirmation is received.
User interface	Days (d), hours (h), minutes (m), seconds (s)

Static revision

Navigation	 Expert → Analog inputs → Analog input 1 to n → Static revision (6976–1 to n)
Description	Displays the Static revision: Each instance of a static block parameter being accessed with write and communicate access due to an update is counted (event counter).
User interface	0 to 65 535

Relative Index

Navigation	 Expert → Analog inputs → Analog input 1 to n → Relative Index (6975–1 to n)
Description	Displays the relative index of the static block parameter that triggered the alarm (OD index minus field bus start index).
User interface	0 to 65 535

Unacknowledged

Navigation	 Expert → Analog inputs → Analog input 1 to n → Unacknowledged (6920–1 to n)
Description	Option for manually acknowledging a block alarm.
Selection	■ Uninitialized ■ Acknowledged ■ Unacknowledged
Factory setting	Uninitialized
Additional information	<i>Description</i> If Blk Alm Auto Ack option is not enabled in Ack. Option parameter (→  211), the process alarm must be manually acknowledged in this parameter.  ■ If a new alarm occurs, the measuring device sets Unacknowledged option. ■ If the alarm has been acknowledged, the user can set Acknowledged option.

Alarm State

Navigation	 Expert → Analog inputs → Analog input 1 to n → Alarm State (6917–1 to n)
Description	Displays the status of the block alarm. The status indicates whether the block alarm is active and whether it has already been communicated to the field bus host system.
User interface	■ Uninitialized ■ Clear-Reported ■ ClearNotReported ■ Active-Reported ■ ActiveNotRep

Time Stamp

Navigation	 Expert → Analog inputs → Analog input 1 to n → Time Stamp (6919–1 to n)
Description	Displays the time stamp indicating when the analysis of the block was started and when a status change of the block alarm that has not yet been communicated to the field bus host system was detected. The time stamp is retained until the alarm confirmation is received.
User interface	Days (d), hours (h), minutes (m), seconds (s)

Subcode

Navigation	 Expert → Analog inputs → Analog input 1 to n → Subcode (6918–1 to n)
Description	Displays the specific cause of the block alarm.
User interface	■ Other ■ BlockConfigurat ■ LinkConfigurat ■ SimulationActive ■ LocalOverride ■ DeviceFaultState ■ DeviceMainten ■ SensorFailure ■ OutputFailure ■ MemoryFailure ■ LostStaticData ■ LostNVData ■ ReadbackCheck ■ MaintenanceNeed ■ PowerUp ■ OutOfService

Value

Navigation	 Expert → Analog inputs → Analog input 1 to n → Value (6921–1 to n)
Description	Displays the value of the affected parameter at the time at which the block alarm was detected.
User interface	0 to 255

Current

Navigation	 Expert → Analog inputs → Analog input 1 to n → Current (6912–1 to n)
Description	Use this function to view the current status of the process alarms.
User interface	■ HiHi Alarm ■ Hi Alarm ■ LoLo Alarm ■ Lo Alarm ■ Block Alarm

Unacknowledged

Navigation	 Expert → Analog inputs → Analog input 1 to n → Unacknowledged (6914-1 to n)
Description	Displays an unacknowledged process alarm.
User interface	■ HiHi Alarm Unack ■ Hi Alm Unack ■ LoLo Alm Unack ■ Lo Alm Unack ■ Block Alm Unack

Unreported

Navigation	 Expert → Analog inputs → Analog input 1 to n → Unreported (6915-1 to n)
Description	Displays a process alarm that has not been communicated.
User interface	■ HiHi Alm Unrep ■ Hi Alm Unrep ■ LoLo Alm Unrep ■ Lo Alm Unrep ■ Block Alm Unrep

Disabled

Navigation	 Expert → Analog inputs → Analog input 1 to n → Disabled (6913-1 to n)
Description	Option for disabling a process alarm category.
Selection	■ HiHi Alm Disabl ■ Hi Alm Disabled ■ LoLo Alm Disabl ■ Lo Alm Disabled ■ Block Alm Disabl

Ack. Option

Navigation	 Expert → Analog inputs → Analog input 1 to n → Ack. Option (6910-1 to n)
Description	Option for automatic acknowledgment of process alarms in a specific category.
Selection	■ HiHi Alm Aut Ack ■ Hi Alm Auto Ack ■ LoLo Alm Aut Ack ■ Lo Alm Auto Ack

- Blk Alm Auto Ack
- Fail Alm Aut Ack
- OffSpecAlmAutAck
- Maint Alm AutAck
- Check Alm AutAck

Additional information

Description

Use this function to determine whether an alarm must be acknowledged via the field bus host system.



If the process alarm option has not been enabled in this parameter, this process alarm must only be acknowledged in **Unacknowledged** parameter (→  211).
Current parameter (→  210) indicates the current status of all process alarms.

Alarm Hysteresis

Navigation

 Expert → Analog inputs → Analog input 1 to n → Alarm Hysteresis (6911–1 to n)

Description

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

User entry

0.000000 to 50.0000 %

Factory setting

0 %

Hi Hi Priority

Navigation

 Expert → Analog inputs → Analog input 1 to n → Hi Hi Priority (6938–1 to n)

Description

Use this function to enter the priority for the upper alarm limit, which determines the behavior in the event of an active limit value violation.

User entry

0 to 15

Factory setting

0

High High Limit

Navigation

 Expert → Analog inputs → Analog input 1 to n → High High Limit (6937–1 to n)

Description

Use this function to enter the value for the upper alarm limit.

User entry

Signed floating-point number

Factory setting

0

Additional information*Dependency*The unit is taken from the: **Units index** parameter (→ 191)

High Priority

Navigation

Expert → Analog inputs → Analog input 1 to n → High Priority (6940–1 to n)

Description

Use this function to enter the priority for the upper early warning limit, which determines the behavior in the event of an active limit value violation.

User entry

0 to 15

Factory setting

0

High Limit

Navigation

Expert → Analog inputs → Analog input 1 to n → High Limit (6939–1 to n)

Description

Use this function to enter the value for the upper early warning limit.

User entry

Signed floating-point number

Factory setting

0

Additional information*Dependency*The unit is taken from the: **Units index** parameter (→ 191)

Low Priority

Navigation

Expert → Analog inputs → Analog input 1 to n → Low Priority (6955–1 to n)

Description

Use this function to enter the priority for the lower early warning limit, which determines the behavior in the event of an active limit value violation.

User entry

0 to 15

Factory setting

0

Low Limit

Navigation  Expert → Analog inputs → Analog input 1 to n → Low Limit (6947–1 to n)

Description Use this function to enter the value for the lower early warning limit.

User entry Signed floating-point number

Factory setting 0

Additional information *Dependency*

 The unit is taken from the: **Units index** parameter (→  191)

Low Low Priority

Navigation  Expert → Analog inputs → Analog input 1 to n → Low Low Priority (6954–1 to n)

Description Use this function to enter the priority for the lower alarm limit, which determines the behavior in the event of an active limit value violation.

User entry 0 to 15

Factory setting 0

Low Low Limit

Navigation  Expert → Analog inputs → Analog input 1 to n → Low Low Limit (6953–1 to n)

Description Use this function to enter the value for the lower alarm limit.

User entry Signed floating-point number

Factory setting 0

Additional information *Dependency*

 The unit is taken from the: **Units index** parameter (→  191)

Unacknowledged

Navigation  Expert → Analog inputs → Analog input 1 to n → Unacknowledged (6935–1 to n)

Description Option for manually acknowledging a process alarm that has exceeded the upper alarm limit (High High Limit (→  212)).

- Selection**
- Uninitialized
 - Acknowledged
 - Unacknowledged

Factory setting Uninitialized

Additional information *Description*

If **HiHi Alm Aut Ack** option is not enabled in **Ack. Option** parameter (→  211), the process alarm must be manually acknowledged in this parameter.



- If a new alarm occurs, the measuring device sets **Unacknowledged** option.
- If the alarm has been acknowledged, the user can set **Acknowledged** option.

Alarm State

Navigation  Expert → Analog inputs → Analog input 1 to n → Alarm State (6932-1 to n)

Description Displays the status of the process alarm for the upper alarm limit. The status indicates whether the process alarm is active and whether it has already been communicated to the field bus host system.

- User interface**
- Uninitialized
 - Clear-Reported
 - ClearNotReported
 - Active-Reported
 - ActiveNotRep

Time Stamp

Navigation  Expert → Analog inputs → Analog input 1 to n → Time Stamp (6934-1 to n)

Description Displays the time stamp of the process alarm for the upper alarm limit. This records the time at which analysis of the block was started and at which a status change of the process alarm that has not yet been communicated to the field bus host system was detected. The time stamp is retained until the alarm confirmation is received.

User interface Days (d), hours (h), minutes (m), seconds (s)

Subcode

Navigation  Expert → Analog inputs → Analog input 1 to n → Subcode (6933-1 to n)

Description Displays the specific cause of the process alarm for the upper alarm limit.

- User interface**
- Other
 - BlockConfigurat
 - LinkConfigurat

- SimulationActive
- LocalOverride
- DeviceFaultState
- DeviceMainten
- SensorFailure
- OutputFailure
- MemoryFailure
- LostStaticData
- LostNVData
- ReadbackCheck
- MaintenanceNeed
- PowerUp
- OutOfService

Float Value

Navigation	 Expert → Analog inputs → Analog input 1 to n → Float Value (6936–1 to n)
Description	Displays the value of the affected parameter at the time at which the process alarm for the upper alarm limit was triggered.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the: Units index parameter (→  191)

Unacknowledged

Navigation	 Expert → Analog inputs → Analog input 1 to n → Unacknowledged (6930–1 to n)
Description	Option for manually acknowledging a process alarm that has exceeded the upper early warning limit (High Limit (→  213)).
Selection	■ Uninitialized ■ Acknowledged ■ Unacknowledged
Factory setting	Uninitialized
Additional information	<i>Description</i> If Hi Alm Auto Ack option is not enabled in Ack. Option parameter (→  211), the process alarm must be manually acknowledged in this parameter.  ■ If a new alarm occurs, the measuring device sets Unacknowledged option. ■ If the alarm has been acknowledged, the user can set Acknowledged option.

Alarm State

Navigation	 Expert → Analog inputs → Analog input 1 to n → Alarm State (6927-1 to n)
Description	Displays the status of the process alarm for the upper early warning limit. The status indicates whether the process alarm is active and whether it has already been communicated to the field bus host system.
User interface	■ Uninitialized ■ Clear-Reported ■ ClearNotReported ■ Active-Reported ■ ActiveNotRep

Time Stamp

Navigation	 Expert → Analog inputs → Analog input 1 to n → Time Stamp (6929-1 to n)
Description	Displays the time stamp of the process alarm for the upper early warning limit. This records the time at which analysis of the block was started and at which a status change of the process alarm that has not yet been communicated to the field bus host system was detected. The time stamp is retained until the alarm confirmation is received.
User interface	Days (d), hours (h), minutes (m), seconds (s)

Subcode

Navigation	 Expert → Analog inputs → Analog input 1 to n → Subcode (6928-1 to n)
Description	Displays the specific cause of the process alarm for the upper early warning limit.
User interface	■ Other ■ BlockConfigurat ■ LinkConfigurat ■ SimulationActive ■ LocalOverride ■ DeviceFaultState ■ DeviceMainten ■ SensorFailure ■ OutputFailure ■ MemoryFailure ■ LostStaticData ■ LostNVData ■ ReadbackCheck ■ MaintenanceNeed ■ PowerUp ■ OutOfService

Float Value

Navigation	 Expert → Analog inputs → Analog input 1 to n → Float Value (6931–1 to n)
Description	Displays the value of the affected parameter at the time at which the process alarm for the upper early warning limit was triggered.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the: Units index parameter (→  191)

Unacknowledged

Navigation	 Expert → Analog inputs → Analog input 1 to n → Unacknowledged (6945–1 to n)
Description	Option for manually acknowledging a process alarm that has exceeded the lower early warning limit (Low Limit (→  214)).
Selection	■ Uninitialized ■ Acknowledged ■ Unacknowledged
Factory setting	Uninitialized
Additional information	<i>Description</i> If Lo Alm Auto Ack option is not enabled in Ack. Option parameter (→  211), the process alarm must be manually acknowledged in this parameter.  ■ If a new alarm occurs, the measuring device sets Unacknowledged option. ■ If the alarm has been acknowledged, the user can set Acknowledged option.

Alarm State

Navigation	 Expert → Analog inputs → Analog input 1 to n → Alarm State (6942–1 to n)
Description	Displays the status of the process alarm for the lower early warning limit. The status indicates whether the process alarm is active and whether it has already been communicated to the field bus host system.
User interface	■ Uninitialized ■ Clear-Reported ■ ClearNotReported ■ Active-Reported ■ ActiveNotRep

Time Stamp

Navigation	 Expert → Analog inputs → Analog input 1 to n → Time Stamp (6944-1 to n)
Description	Displays the time stamp of the process alarm for the lower early warning limit. This records the time at which analysis of the block was started and at which a status change of the process alarm that has not yet been communicated to the field bus host system was detected. The time stamp is retained until the alarm confirmation is received.
User interface	Days (d), hours (h), minutes (m), seconds (s)

Subcode

Navigation	 Expert → Analog inputs → Analog input 1 to n → Subcode (6943-1 to n)
Description	Displays the specific cause of the process alarm for the lower early warning limit.
User interface	■ Other ■ BlockConfigurat ■ LinkConfigurat ■ SimulationActive ■ LocalOverride ■ DeviceFaultState ■ DeviceMainten ■ SensorFailure ■ OutputFailure ■ MemoryFailure ■ LostStaticData ■ LostNVData ■ ReadbackCheck ■ MaintenanceNeed ■ PowerUp ■ OutOfService

Float Value

Navigation	 Expert → Analog inputs → Analog input 1 to n → Float Value (6946-1 to n)
Description	Displays the value of the affected parameter at the time at which the process alarm for the lower early warning limit was triggered.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the: Units index parameter (→  191)

Unacknowledged	
Navigation	 Expert → Analog inputs → Analog input 1 to n → Unacknowledged (6951–1 to n)
Description	Option for manually acknowledging a process alarm that has exceeded the lower alarm limit (Low Low Limit (→  214)).
Selection	■ Uninitialized ■ Acknowledged ■ Unacknowledged
Factory setting	Uninitialized
Additional information	<i>Description</i> If LoLo Alm Aut Ack option is not enabled in Ack. Option parameter (→  211), the process alarm must be manually acknowledged in this parameter.  ■ If a new alarm occurs, the measuring device sets Unacknowledged option. ■ If the alarm has been acknowledged, the user can set Acknowledged option.
Alarm State	
Navigation	 Expert → Analog inputs → Analog input 1 to n → Alarm State (6948–1 to n)
Description	Displays the status of the process alarm for the lower alarm limit. The status indicates whether the process alarm is active and whether it has already been communicated to the field bus host system.
User interface	■ Uninitialized ■ Clear-Reported ■ ClearNotReported ■ Active-Reported ■ ActiveNotRep
Time Stamp	
Navigation	 Expert → Analog inputs → Analog input 1 to n → Time Stamp (6950–1 to n)
Description	Displays the time stamp of the process alarm for the lower alarm limit. This records the time at which analysis of the block was started and at which a status change of the process alarm that has not yet been communicated to the field bus host system was detected. The time stamp is retained until the alarm confirmation is received.
User interface	Days (d), hours (h), minutes (m), seconds (s)

Subcode	
Navigation	 Expert → Analog inputs → Analog input 1 to n → Subcode (6949–1 to n)
Description	Displays the specific cause of the process alarm for the lower alarm limit.
User interface	■ Other ■ BlockConfigurat ■ LinkConfigurat ■ SimulationActive ■ LocalOverride ■ DeviceFaultState ■ DeviceMainten ■ SensorFailure ■ OutputFailure ■ MemoryFailure ■ LostStaticData ■ LostNVData ■ ReadbackCheck ■ MaintenanceNeed ■ PowerUp ■ OutOfService

Float Value	
Navigation	 Expert → Analog inputs → Analog input 1 to n → Float Value (6952–1 to n)
Description	Displays the value of the affected parameter at the time at which the process alarm for the lower alarm limit was triggered.
User interface	Signed floating-point number
Additional information	Dependency  The unit is taken from the: Units index parameter (→  191)

3.8 "Discrete inputs" submenu

Navigation   Expert → Discrete inputs

► Discrete inputs

► Discrete input 1 to n

→  222

3.8.1 "Discrete input 1 to n" submenu

Navigation   Expert → Discrete inputs → Discrete input 1 to n

► Discrete input 1 to n

Block tag (6851-1 to n)

→  222

Status (6853-1 to n)

→  228

Value (6854-1 to n)

→  231

Channel (6852-1 to n)

→  239

PV Filter Time (6855-1 to n)

→  240

Block tag

Navigation	  Expert → Discrete inputs → Discrete input 1 to n → Block tag (6851-1 to n)
Description	Use this function to enter the Block tag: Used for specifying a "label" for identifying the function 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 (6884-1 to n)
Description	Displays the Static Revision: Each instance of a static block parameter being accessed with write access is counted (event counter).
User interface	0 to FFFF
Additional information	Description  Static parameters are parameters that are not changed by the process.

Tag Description

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Tag Description (6885-1 to n)
Description	Use this function to enter the Tag Description: Used for defining a user-specific text for detailed description of the function block.

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

Strategy

Navigation  Expert → Discrete inputs → Discrete input 1 to n → Strategy (6883–1 to n)

Description Use this function to enter the Strategy: Enables blocks to be grouped 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 (6846–1 to n)

Description Use this function to enter the Alert Key: Identifies the plant unit where the transmitter is located. This helps in pinpointing events.

User entry 0 to 0xFF

Factory setting 1

Target mode

Navigation  Expert → Discrete inputs → Discrete input 1 to n → Target mode (6873–1 to n)

Description Use this function to select the Target mode: The selection indicates which operating mode is used for this function block. This mode is generally set by a control application.

Selection

- ROut
- RCas
- Cas
- Auto
- Man
- LO
- IMan
- OOS

Factory setting OOS

Additional information *Options*

 Detailed description of the options available for selection: **Target mode** parameter (→  147)

Actual mode

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Actual mode (6870–1 to n)
Description	Displays the Actual mode: Under certain conditions, a function block may not work in the operating mode to be used. In this case, the Actual mode shows the actual operating mode in which the function block is currently operating. By comparing the Actual mode with the Target mode, users can see whether it was possible to reach the Target mode (→  223).
User interface	■ ROut ■ RCas ■ Cas ■ Auto ■ Man ■ LO ■ IMan ■ OOS
Additional information	<i>User interface</i>  Detailed description of the options available for selection: Target mode parameter (→  147)

Permitted mode

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Permitted mode (6872–1 to n)
Description	Use this function to select the Permitted mode: The selection defines which operating modes are available in Target mode (→  223) for the function block. The operating modes that are supported vary depending on the type and function of the block.
Selection	■ ROut ■ RCas ■ Cas ■ Auto ■ Man ■ LO ■ IMan ■ OOS
Factory setting	■ Auto ■ OOS
Additional information	<i>Options</i>  Detailed description of the options available for selection: Target mode parameter (→  147)

Normal mode

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Normal mode (6871–1 to n)
Description	Use this function to select the Normal mode: This is available to enable the user to select the Normal mode from the available operating modes. This can be set using an operating tool in order to help the user configure the operating mode of a function block.
Selection	■ ROut ■ RCas ■ Cas ■ Auto ■ Man ■ LO ■ IMan ■ OOS
Additional information	<i>Options</i>  Detailed description of the options available for selection: Target mode parameter (→  147)

Block Error

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Block Error (6857–1 to n)
Description	Displays the short text for the Block Error that has occurred in the function block.
User interface	■ Other ■ BlockConfigurat ■ LinkConfigurat ■ SimulationActive ■ LocalOverride ■ DeviceFaultState ■ DeviceMainten ■ SensorFailure ■ OutputFailure ■ MemoryFailure ■ LostStaticData ■ LostNVData ■ ReadbackCheck ■ MaintenanceNeed ■ PowerUp ■ OutOfService

Status

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Status (6875–1 to n)
Description	Displays the status of the discrete input value (PV).

User interface

- Bad (0x00)
- Bad (0x01)
- Bad (0x02)
- Bad (0x03)
- Bad (0x04)
- Bad (0x05)
- Bad (0x06)
- Bad (0x07)
- Bad (0x08)
- Bad (0x09)
- Bad (0x0A)
- Bad (0x0B)
- Bad (0x0C)
- Bad (0x0D)
- Bad (0x0E)
- Bad (0x0F)
- Bad (0x10)
- Bad (0x11)
- Bad (0x12)
- Bad (0x13)
- Bad (0x14)
- Bad (0x15)
- Bad (0x16)
- Bad (0x17)
- Bad (0x18)
- Bad (0x19)
- Bad (0x1A)
- Bad (0x1B)
- Bad (0x1C)
- Bad (0x1D)
- Bad (0x1E)
- Bad (0x1F)
- Uncertain (0x40)
- Uncertain (0x41)
- Uncertain (0x42)
- Uncertain (0x43)
- Uncertain (0x44)
- Uncertain (0x45)
- Uncertain (0x46)
- Uncertain (0x47)
- Uncertain (0x48)
- Uncertain (0x49)
- Uncertain (0x4A)
- Uncertain (0x4B)
- Uncertain (0x4C)
- Uncertain (0x4D)
- Uncertain (0x4E)
- Uncertain (0x4F)
- Uncertain (0x50)
- Uncertain (0x51)
- Uncertain (0x52)
- Uncertain (0x53)
- Uncertain (0x54)
- Uncertain (0x55)
- Uncertain (0x56)
- Uncertain (0x57)
- Uncertain (0x58)
- Uncertain (0x59)
- Uncertain (0x5A)

- Uncertain (0x5B)
- Good (0x80)
- Good (0x81)
- Good (0x82)
- Good (0x83)
- Good (0x84)
- Good (0x85)
- Good (0x86)
- Good (0x87)
- Good (0x88)
- Good (0x89)
- Good (0x8A)
- Good (0x8B)
- Good (0x8C)
- Good (0x8D)
- Good (0x8E)
- Good (0x8F)
- Good (0x90)
- Good (0x91)
- Good (0x92)
- Good (0x93)
- Good (0x94)
- Good (0x95)
- Good (0x96)
- Good (0x97)
- Good (0x98)
- Good (0x99)
- Good (0x9A)
- Good (0x9B)
- Good (0xC0)
- Good (0xC1)
- Good (0xC2)
- Good (0xC3)
- Good (0xC4)
- Good (0xC5)
- Good (0xC6)
- Good (0xC7)
- Good (0xC8)
- Good (0xC9)
- Good (0xCA)
- Good (0xCB)
- Good (0xCC)
- Good (0xCD)
- Good (0xCE)
- Good (0xCF)
- Good (0xD0)
- Good (0xD1)
- Good (0xD2)
- Good (0xD3)
- Good (0xD4)
- Good (0xD5)
- Good (0xD6)
- Good (0xD7)
- Good (0xD8)
- Good (0xD9)
- Good (0xDA)
- Good (0xDB)
- Good (0xDC)
- Good (0xDD)

- Good (0xDE)
- Good (0xDF)
- Good (0xE0)
- Good (0xE1)
- Good (0xE2)
- Good (0xE3)

Value

Navigation  Expert → Discrete inputs → Discrete input 1 to n → Value (6876–1 to n)

Description Displays the discrete process variable that is used for the block implementation.

User interface

- Low flow or PFS Stat.=Not active
- Low flow or PFS Stat.=Active or Verif. stat.=Check not done
- Verification status=failed
- Verification status=busy
- Verification status=ready
- Verification overall result=failed
- Status=Check not done/Result=failed
- Status=failed/Result=failed
- Status=busy/Result=failed
- Status=ready/Result=failed
- Verification overall result=passed
- Status=Check not done/Result=passed
- Status=failed/Result=passed
- Status=busy/Result=passed
- Status=ready/Result=passed
- Verification overall result=Check not done
- Status=Check not done/Result=Check not done
- Status=failed/Result=Check not done
- Status=busy/Result=Check not done
- Status=ready/Result=Check not done

Status

Navigation   Expert → Discrete inputs → Discrete input 1 to n → Status (6853–1 to n)

Description Displays the status of the discrete output value.

User interface

- Bad (0x00)
- Bad (0x01)
- Bad (0x02)
- Bad (0x03)
- Bad (0x04)
- Bad (0x05)
- Bad (0x06)
- Bad (0x07)
- Bad (0x08)
- Bad (0x09)
- Bad (0x0A)

- Bad (0x0B)
- Bad (0x0C)
- Bad (0x0D)
- Bad (0x0E)
- Bad (0x0F)
- Bad (0x10)
- Bad (0x11)
- Bad (0x12)
- Bad (0x13)
- Bad (0x14)
- Bad (0x15)
- Bad (0x16)
- Bad (0x17)
- Bad (0x18)
- Bad (0x19)
- Bad (0x1A)
- Bad (0x1B)
- Bad (0x1C)
- Bad (0x1D)
- Bad (0x1E)
- Bad (0x1F)
- Uncertain (0x40)
- Uncertain (0x41)
- Uncertain (0x42)
- Uncertain (0x43)
- Uncertain (0x44)
- Uncertain (0x45)
- Uncertain (0x46)
- Uncertain (0x47)
- Uncertain (0x48)
- Uncertain (0x49)
- Uncertain (0x4A)
- Uncertain (0x4B)
- Uncertain (0x4C)
- Uncertain (0x4D)
- Uncertain (0x4E)
- Uncertain (0x4F)
- Uncertain (0x50)
- Uncertain (0x51)
- Uncertain (0x52)
- Uncertain (0x53)
- Uncertain (0x54)
- Uncertain (0x55)
- Uncertain (0x56)
- Uncertain (0x57)
- Uncertain (0x58)
- Uncertain (0x59)
- Uncertain (0x5A)
- Uncertain (0x5B)
- Good (0x80)
- Good (0x81)
- Good (0x82)
- Good (0x83)
- Good (0x84)
- Good (0x85)
- Good (0x86)
- Good (0x87)
- Good (0x88)
- Good (0x89)

- Good (0x8A)
- Good (0x8B)
- Good (0x8C)
- Good (0x8D)
- Good (0x8E)
- Good (0x8F)
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- Good (0x91)
- Good (0x92)
- Good (0x93)
- Good (0x94)
- Good (0x95)
- Good (0x96)
- Good (0x97)
- Good (0x98)
- Good (0x99)
- Good (0x9A)
- Good (0x9B)
- Good (0xC0)
- Good (0xC1)
- Good (0xC2)
- Good (0xC3)
- Good (0xC4)
- Good (0xC5)
- Good (0xC6)
- Good (0xC7)
- Good (0xC8)
- Good (0xC9)
- Good (0xCA)
- Good (0xCB)
- Good (0xCC)
- Good (0xCD)
- Good (0xCE)
- Good (0xCF)
- Good (0xD0)
- Good (0xD1)
- Good (0xD2)
- Good (0xD3)
- Good (0xD4)
- Good (0xD5)
- Good (0xD6)
- Good (0xD7)
- Good (0xD8)
- Good (0xD9)
- Good (0xDA)
- Good (0xDB)
- Good (0xDC)
- Good (0xDD)
- Good (0xDE)
- Good (0xDF)
- Good (0xE0)
- Good (0xE1)
- Good (0xE2)
- Good (0xE3)

Value	
Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Value (6854-1 to n)
Description	Use this function to select the discrete output value.
Selection	■ Low flow or PFS Stat.=Not active ■ Low flow or PFS Stat.=Active or Verif. stat.=Check not done ■ Verification status=failed ■ Verification status=busy ■ Verification status=ready ■ State 15 ■ Verificaton overall result=failed ■ Status=Check not done/Result=failed ■ Status=failed/Result=failed ■ Status=busy/Result=failed ■ Status=ready/Result=failed ■ Verificaton overall result=passed ■ Status=Check not done/Result=passed ■ Status=failed/Result=passed ■ Status=busy/Result=passed ■ Status=ready/Result=passed ■ Verificaton overall result=Check not done ■ Status=Check not done/Result=Check not done ■ Status=failed/Result=Check not done ■ Status=busy/Result=Check not done ■ Status=ready/Result=Check not done
Factory setting	Low flow or PFS Stat.=Not active

Simulate Status	
Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Simulate Status (6878-1 to n)
Description	Use this function to select the status that is used for the transducer block simulation.
Selection	■ Bad (0x00) ■ Bad (0x01) ■ Bad (0x02) ■ Bad (0x03) ■ Bad (0x04) ■ Bad (0x05) ■ Bad (0x06) ■ Bad (0x07) ■ Bad (0x08) ■ Bad (0x09) ■ Bad (0x0A) ■ Bad (0x0B) ■ Bad (0x0C) ■ Bad (0x0D) ■ Bad (0x0E) ■ Bad (0x0F) ■ Bad (0x10)

- Bad (0x11)
- Bad (0x12)
- Bad (0x13)
- Bad (0x14)
- Bad (0x15)
- Bad (0x16)
- Bad (0x17)
- Bad (0x18)
- Bad (0x19)
- Bad (0x1A)
- Bad (0x1B)
- Bad (0x1C)
- Bad (0x1D)
- Bad (0x1E)
- Bad (0x1F)
- Uncertain (0x40)
- Uncertain (0x41)
- Uncertain (0x42)
- Uncertain (0x43)
- Uncertain (0x44)
- Uncertain (0x45)
- Uncertain (0x46)
- Uncertain (0x47)
- Uncertain (0x48)
- Uncertain (0x49)
- Uncertain (0x4A)
- Uncertain (0x4B)
- Uncertain (0x4C)
- Uncertain (0x4D)
- Uncertain (0x4E)
- Uncertain (0x4F)
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- Uncertain (0x56)
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- Uncertain (0x58)
- Uncertain (0x59)
- Uncertain (0x5A)
- Uncertain (0x5B)
- Good (0x80)
- Good (0x81)
- Good (0x82)
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- Good (0x99)
- Good (0x9A)
- Good (0x9B)
- Good (0xC0)
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- Good (0xC5)
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- Good (0xC7)
- Good (0xC8)
- Good (0xC9)
- Good (0xCA)
- Good (0xCB)
- Good (0xCC)
- Good (0xCD)
- Good (0xCE)
- Good (0xCF)
- Good (0xD0)
- Good (0xD1)
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- Good (0xD7)
- Good (0xD8)
- Good (0xD9)
- Good (0xDA)
- Good (0xDB)
- Good (0xDC)
- Good (0xDD)
- Good (0xDE)
- Good (0xDF)
- Good (0xE0)
- Good (0xE1)
- Good (0xE2)
- Good (0xE3)

Factory setting

Bad (0x00)

Simulate Value

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Simulate Value (6879–1 to n)
Description	Use this function to select the simulation value that is used for the transducer block simulation.
Selection	■ Low flow or PFS Stat.=Not active ■ Low flow or PFS Stat.=Active or Verif. stat.=Check not done ■ Verification status=failed ■ Verification status=busy ■ Verification status=ready ■ Verification overall result=failed ■ Status=Check not done/Result=failed ■ Status=failed/Result=failed ■ Status=busy/Result=failed ■ Status=ready/Result=failed ■ Verification overall result=passed ■ Status=Check not done/Result=passed ■ Status=failed/Result=passed ■ Status=busy/Result=passed ■ Status=ready/Result=passed ■ Verification overall result=Check not done ■ Status=Check not done/Result=Check not done ■ Status=failed/Result=Check not done ■ Status=busy/Result=Check not done ■ Status=ready/Result=Check not done
Factory setting	Low flow or PFS Stat.=Not active

Transducer Stat

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Transducer Stat (6880–1 to n)
Description	Displays the current status of the transducer block.
User interface	■ Bad (0x00) ■ Bad (0x01) ■ Bad (0x02) ■ Bad (0x03) ■ Bad (0x04) ■ Bad (0x05) ■ Bad (0x06) ■ Bad (0x07) ■ Bad (0x08) ■ Bad (0x09) ■ Bad (0x0A) ■ Bad (0x0B) ■ Bad (0x0C) ■ Bad (0x0D) ■ Bad (0x0E) ■ Bad (0x0F) ■ Bad (0x10)

- Bad (0x11)
- Bad (0x12)
- Bad (0x13)
- Bad (0x14)
- Bad (0x15)
- Bad (0x16)
- Bad (0x17)
- Bad (0x18)
- Bad (0x19)
- Bad (0x1A)
- Bad (0x1B)
- Bad (0x1C)
- Bad (0x1D)
- Bad (0x1E)
- Bad (0x1F)
- Uncertain (0x40)
- Uncertain (0x41)
- Uncertain (0x42)
- Uncertain (0x43)
- Uncertain (0x44)
- Uncertain (0x45)
- Uncertain (0x46)
- Uncertain (0x47)
- Uncertain (0x48)
- Uncertain (0x49)
- Uncertain (0x4A)
- Uncertain (0x4B)
- Uncertain (0x4C)
- Uncertain (0x4D)
- Uncertain (0x4E)
- Uncertain (0x4F)
- Uncertain (0x50)
- Uncertain (0x51)
- Uncertain (0x52)
- Uncertain (0x53)
- Uncertain (0x54)
- Uncertain (0x55)
- Uncertain (0x56)
- Uncertain (0x57)
- Uncertain (0x58)
- Uncertain (0x59)
- Uncertain (0x5A)
- Uncertain (0x5B)
- Good (0x80)
- Good (0x81)
- Good (0x82)
- Good (0x83)
- Good (0x84)
- Good (0x85)
- Good (0x86)
- Good (0x87)
- Good (0x88)
- Good (0x89)
- Good (0x8A)
- Good (0x8B)
- Good (0x8C)
- Good (0x8D)
- Good (0x8E)
- Good (0x8F)

- Good (0x90)
- Good (0x91)
- Good (0x92)
- Good (0x93)
- Good (0x94)
- Good (0x95)
- Good (0x96)
- Good (0x97)
- Good (0x98)
- Good (0x99)
- Good (0x9A)
- Good (0x9B)
- Good (0xC0)
- Good (0xC1)
- Good (0xC2)
- Good (0xC3)
- Good (0xC4)
- Good (0xC5)
- Good (0xC6)
- Good (0xC7)
- Good (0xC8)
- Good (0xC9)
- Good (0xCA)
- Good (0xCB)
- Good (0xCC)
- Good (0xCD)
- Good (0xCE)
- Good (0xCF)
- Good (0xD0)
- Good (0xD1)
- Good (0xD2)
- Good (0xD3)
- Good (0xD4)
- Good (0xD5)
- Good (0xD6)
- Good (0xD7)
- Good (0xD8)
- Good (0xD9)
- Good (0xDA)
- Good (0xDB)
- Good (0xDC)
- Good (0xDD)
- Good (0xDE)
- Good (0xDF)
- Good (0xE0)
- Good (0xE1)
- Good (0xE2)
- Good (0xE3)

Transducer Value

Navigation

 Expert → Discrete inputs → Discrete input 1 to n → Transducer Value (6881-1 to n)

Description

Displays the current value of the transducer block.

User interface	■ Low flow or PFS Stat.=Not active ■ Low flow or PFS Stat.=Active or Verif. stat.=Check not done ■ Verification status=failed ■ Verification status=busy ■ Verification status=ready ■ Verification overall result=failed ■ Status=Check not done/Result=failed ■ Status=failed/Result=failed ■ Status=busy/Result=failed ■ Status=ready/Result=failed ■ Verification overall result=passed ■ Status=Check not done/Result=passed ■ Status=failed/Result=passed ■ Status=busy/Result=passed ■ Status=ready/Result=passed ■ Verification overall result=Check not done ■ Status=Check not done/Result=Check not done ■ Status=failed/Result=Check not done ■ Status=busy/Result=Check not done ■ Status=ready/Result=Check not done
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Factory setting	Low flow or PFS Stat.=Not active
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Sim. En/Disable

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Sim. En/Disable (6877-1 to n)
Description	Use this function to enable or disable the function block simulation.
Selection	■ Uninitialized ■ Disabled ■ Active
Factory setting	Uninitialized

Transducer State

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Transducer State (6891-1 to n)
Description	Use this function to enter the transducer state: this is required by FieldValD (Status parameter (→  240), Value parameter (→  242)) to display the actual on/off status of the hardware.
User entry	0 to 65 535
Factory setting	0

Output State

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Output State (6874–1 to n)
Description	Use this function to enter the output state: This is required for scaling the discrete input value (PV).
User entry	0 to 65 535
Factory setting	0

Deny

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Deny (6867–1 to n)
Description	Option for restricting certain access authorizations of the field bus host system on the device.
Selection	■ Program Denied ■ Tune Denied ■ Alarm Denied ■ Local ■ Operate Denied

Grant

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Grant (6868–1 to n)
Description	Option for releasing certain access authorizations of the field bus host system on the device.
Selection	■ Program ■ Tune ■ Alarm ■ Local ■ Operate ■ Service ■ Diagnostic

I/O Options

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → I/O Options (6869–1 to n)
Description	Option for activating the inversion of the signal.
Selection	Invert

Additional information	<i>Description</i> This selection determines whether the discrete input is inverted before it is stored as a process variable. Normally a discrete value of 0 is regarded as a logical value of 0 and a discrete value that is not equal to 0 is regarded as a logical value of 1. If inversion is enabled, this correlation is reversed. A field device input value that is not equal to 0 results in a discrete output value of 0 and an input value of 0 results in a discrete output value of 1.
Status Options	
Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Status Options (6882-1 to n)
Prerequisite	The measuring device must be in the OOS operating mode so that the parameter can be edited.
Description	For selecting an option for the status of the output value that is supported by the Discrete input block.
Selection	■ Propag Fault Fwd ■ Uncertain if Man
Additional information	<i>Options</i> ■ Propag Fault Fwd If the measuring device indicates the status Bad DeviceFailure or Bad SensorFailure, the device continues to measure and no alarm is triggered. The use of this substatus in the output value (OUT) is defined by Propag Fault Fwd option. With the aid of this option, the user/operator can specify whether the alarm generation (sending an alarm) is triggered by the block or is forwarded downstream. ■ Uncertain if Man If the Actual mode of the function block is in the Man option operating mode, Uncertain if Man option is used as the output status.
Channel	
Navigation	  Expert → Discrete inputs → Discrete input 1 to n → Channel (6852-1 to n)
Description	Use this function to select the input value that should be processed in the discrete input function block.
Selection	■ Uninitialized ■ Empty pipe det. ■ Low flow cut off ■ Switch out.stat. ■ Verific. status
Factory setting	Empty pipe det.

PV Filter Time

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → PV Filter Time (6855–1 to n)
Description	Use this function to enter the filter time specification for the filtering of the unconverted input value (PV).
User entry	Positive floating-point number
Factory setting	0 s
Additional information	<i>Factory setting</i>  If the value 0 s is entered, filtering will not be performed.

Status

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Status (6865–1 to n)
Description	Displays the status of the discrete input value from a measuring device in the field.
User interface	■ Bad (0x00) ■ Bad (0x01) ■ Bad (0x02) ■ Bad (0x03) ■ Bad (0x04) ■ Bad (0x05) ■ Bad (0x06) ■ Bad (0x07) ■ Bad (0x08) ■ Bad (0x09) ■ Bad (0x0A) ■ Bad (0x0B) ■ Bad (0x0C) ■ Bad (0x0D) ■ Bad (0x0E) ■ Bad (0x0F) ■ Bad (0x10) ■ Bad (0x11) ■ Bad (0x12) ■ Bad (0x13) ■ Bad (0x14) ■ Bad (0x15) ■ Bad (0x16) ■ Bad (0x17) ■ Bad (0x18) ■ Bad (0x19) ■ Bad (0x1A) ■ Bad (0x1B) ■ Bad (0x1C) ■ Bad (0x1D) ■ Bad (0x1E) ■ Bad (0x1F)

- Uncertain (0x40)
- Uncertain (0x41)
- Uncertain (0x42)
- Uncertain (0x43)
- Uncertain (0x44)
- Uncertain (0x45)
- Uncertain (0x46)
- Uncertain (0x47)
- Uncertain (0x48)
- Uncertain (0x49)
- Uncertain (0x4A)
- Uncertain (0x4B)
- Uncertain (0x4C)
- Uncertain (0x4D)
- Uncertain (0x4E)
- Uncertain (0x4F)
- Uncertain (0x50)
- Uncertain (0x51)
- Uncertain (0x52)
- Uncertain (0x53)
- Uncertain (0x54)
- Uncertain (0x55)
- Uncertain (0x56)
- Uncertain (0x57)
- Uncertain (0x58)
- Uncertain (0x59)
- Uncertain (0x5A)
- Uncertain (0x5B)
- Good (0x80)
- Good (0x81)
- Good (0x82)
- Good (0x83)
- Good (0x84)
- Good (0x85)
- Good (0x86)
- Good (0x87)
- Good (0x88)
- Good (0x89)
- Good (0x8A)
- Good (0x8B)
- Good (0x8C)
- Good (0x8D)
- Good (0x8E)
- Good (0x8F)
- Good (0x90)
- Good (0x91)
- Good (0x92)
- Good (0x93)
- Good (0x94)
- Good (0x95)
- Good (0x96)
- Good (0x97)
- Good (0x98)
- Good (0x99)
- Good (0x9A)
- Good (0x9B)
- Good (0xC0)
- Good (0xC1)
- Good (0xC2)

- Good (0xC3)
- Good (0xC4)
- Good (0xC5)
- Good (0xC6)
- Good (0xC7)
- Good (0xC8)
- Good (0xC9)
- Good (0xCA)
- Good (0xCB)
- Good (0xCC)
- Good (0xCD)
- Good (0xCE)
- Good (0xCF)
- Good (0xD0)
- Good (0xD1)
- Good (0xD2)
- Good (0xD3)
- Good (0xD4)
- Good (0xD5)
- Good (0xD6)
- Good (0xD7)
- Good (0xD8)
- Good (0xD9)
- Good (0xDA)
- Good (0xDB)
- Good (0xDC)
- Good (0xDD)
- Good (0xDE)
- Good (0xDF)
- Good (0xE0)
- Good (0xE1)
- Good (0xE2)
- Good (0xE3)

Factory setting Bad (0x00)

Additional information *Description*
An output parameter can be linked to an input parameter from another function block. Both the input parameter and the output parameter have a field value and status. The status of the input parameter is taken from the linked output parameter.

Value

Navigation  Expert → Discrete inputs → Discrete input 1 to n → Value (6866-1 to n)

Description Displays the discrete input value from a measuring device in the field.

- User interface**
- Low flow or PFS Stat.=Not active
 - Low flow or PFS Stat.=Active or Verif. stat.=Check not done
 - Verification status=failed
 - Verification status=busy
 - Verification status=ready
 - Verificaton overall result=failed
 - Status=Check not done/Result=failed

- Status=failed/Result=failed
- Status=busy/Result=failed
- Status=ready/Result=failed
- Verification overall result=passed
- Status=Check not done/Result=passed
- Status=failed/Result=passed
- Status=busy/Result=passed
- Status=ready/Result=passed
- Verification overall result=Check not done
- Status=Check not done/Result=Check not done
- Status=failed/Result=Check not done
- Status=busy/Result=Check not done
- Status=ready/Result=Check not done

Factory setting Low flow or PFS Stat.=Not active

Unacknowledged

Navigation  Expert → Discrete inputs → Discrete input 1 to n → Unacknowledged (6889–1 to n)

Description Option for manually acknowledging an update of the static block parameter.

Selection

- Uninitialized
- Acknowledged
- Unacknowledged

Factory setting Uninitialized

Additional information *Description*



- If a new diagnostic event occurs, the measuring device sets **Unacknowledged** option.
- If the diagnostic event has been acknowledged, the user can set **Acknowledged** option.

Update State

Navigation  Expert → Discrete inputs → Discrete input 1 to n → Update State (6890–1 to n)

Description Displays the status of an update of the static block parameter. The status indicates whether the update was communicated or not.

User interface

- Uninitialized
- Reported
- Not Reported

Time Stamp

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Time Stamp (6888–1 to n)
Description	Displays the time stamp indicating when the analysis of the block was started and when a status change of an update to the static block parameter that has not yet been communicated was identified. The time stamp is retained until the update confirmation is received.
User interface	Days (d), hours (h), minutes (m), seconds (s)

Static revision

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Static revision (6887–1 to n)
Description	Displays the Static revision: Each instance of a static block parameter being accessed with write and communicate access due to an update is counted (event counter).
User interface	0 to 65 535

Relative Index

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Relative Index (6886–1 to n)
Description	Displays the relative index of the static block parameter that triggered the alarm (OD index minus field bus start index).
User interface	0 to 65 535

Ack. Option

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Ack. Option (6841–1 to n)
Description	Option for automatic acknowledgment of process alarms in a specific category.
Selection	■ Disc Alm Aut Ack ■ Blk Alm Auto Ack ■ Fail Alm Aut Ack ■ OffSpecAlmAutAck ■ Maint Alm AutAck ■ Check Alm AutAck

Additional information	<i>Description</i> Use this function to determine whether an alarm must be acknowledged via the field bus host system.  If the process alarm option has not been enabled in this parameter, this process alarm must only be acknowledged in Unacknowledged parameter (→  211). Current parameter (→  210) indicates the current status of all process alarms.
Current	
Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Current (6842–1 to n)
Description	Use this function to view the current status of the process alarms.
User interface	■ Discrete Alarm ■ Block Alarm ■ Fail Alarm ■ Off Spec Alarm ■ Maint. Alarm ■ Check Alarm
Disabled	
Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Disabled (6843–1 to n)
Description	Option for disabling a process alarm category.
Selection	■ Disc Alm Disabl ■ Block Alm Disabl ■ Fail Alm Disabl ■ OffSpecAlmDisabl ■ Maint Alm Disabl ■ Check Alm Disab.
Unacknowledged	
Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Unacknowledged (6844–1 to n)
Description	Displays an unacknowledged process alarm.
User interface	■ Disc Alm Unack ■ Block Alm Unack ■ Fail Alm Unack ■ Off SpecAlmUnack ■ Maint Alm Unack ■ Check Alm Unack

Unreported

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Unreported (6845–1 to n)
Description	Displays a process alarm that has not been communicated.
User interface	■ Disc Alm Unrep ■ Block Alm Unrep ■ Fail Alm Unrep ■ Off SpecAlmUnrep ■ Maint Alm Unrep ■ Check Alm Unrep

Alarm State

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Alarm State (6847–1 to n)
Description	Displays the status of the block alarm. The status indicates whether the block alarm is active and whether it has already been communicated to the field bus host system.
User interface	■ Uninitialized ■ Clear-Reported ■ ClearNotReported ■ Active-Reported ■ ActiveNotRep

Subcode

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Subcode (6848–1 to n)
Description	Displays the specific cause of the block alarm.
User interface	■ Other ■ BlockConfigurat ■ LinkConfigurat ■ SimulationActive ■ LocalOverride ■ DeviceFaultState ■ DeviceMainten ■ SensorFailure ■ OutputFailure ■ MemoryFailure ■ LostStaticData ■ LostNVData ■ ReadbackCheck ■ MaintenanceNeed ■ PowerUp ■ OutOfService

Time Stamp

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Time Stamp (6849–1 to n)
Description	Displays the time stamp indicating when the analysis of the block was started and when a status change of the block alarm that has not yet been communicated to the field bus host system was detected. The time stamp is retained until the alarm confirmation is received.
User interface	Days (d), hours (h), minutes (m), seconds (s)

Unacknowledged

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Unacknowledged (6850–1 to n)
Description	Option for manually acknowledging a block alarm.
Selection	■ Uninitialized ■ Acknowledged ■ Unacknowledged
Factory setting	Uninitialized
Additional information	<i>Description</i> If Blk Alm Auto Ack option is not enabled in Ack. Option parameter (→  244), the process alarm must be manually acknowledged in this parameter.  ■ If a new alarm occurs, the measuring device sets Unacknowledged option. ■ If the alarm has been acknowledged, the user can set Acknowledged option.

Value

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Value (6856–1 to n)
Description	Displays the value of the affected parameter at the time at which the block alarm was detected.
User interface	0 to 255

Alarm State

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Alarm State (6858–1 to n)
Description	Displays the status of the block alarm. The status indicates whether the block alarm is active and whether it has already been communicated to the field bus host system.

User interface	■ Uninitialized ■ Clear-Reported ■ ClearNotReported ■ Active-Reported ■ ActiveNotRep
-----------------------	--

Subcode

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Subcode (6859–1 to n)
-------------------	--

Description	Displays the specific cause of the discrete alarm.
--------------------	--

User interface	■ Other ■ BlockConfigurat ■ LinkConfigurat ■ SimulationActive ■ LocalOverride ■ DeviceFaultState ■ DeviceMainten ■ SensorFailure ■ OutputFailure ■ MemoryFailure ■ LostStaticData ■ LostNVData ■ ReadbackCheck ■ MaintenanceNeed ■ PowerUp ■ OutOfService
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Time Stamp

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Time Stamp (6860–1 to n)
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Description	Displays the time stamp indicating when the analysis of the function block was started and when a status change of the discrete alarm that has not yet been communicated to the field bus host system was detected. The time stamp is retained until the alarm confirmation is received.
--------------------	--

User interface	Days (d), hours (h), minutes (m), seconds (s)
-----------------------	---

Unacknowledged

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Unacknowledged (6861–1 to n)
-------------------	---

Description	Option for manually acknowledging a discrete alarm.
--------------------	---

Selection	■ Uninitialized ■ Acknowledged ■ Unacknowledged
Factory setting	Uninitialized
Additional information	<i>Description</i> If Disc Alm Aut Ack option is not enabled in Ack. Option parameter (→  244), the process alarm must be manually acknowledged in this parameter.  ■ If a new alarm occurs, the measuring device sets Unacknowledged option. ■ If the alarm has been acknowledged, the user can set Acknowledged option.

Discrete Value

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Discrete Value (6862–1 to n)
Description	Displays the value of the associated parameter at the time at which the alarm was detected.
User interface	■ State 0 ■ State 1 ■ State 2 ■ State 3 ■ State 4 ■ State 5 ■ State 6 ■ State 7 ■ State 8 ■ State 9 ■ State 10 ■ State 11 ■ State 12 ■ State 13 ■ State 14 ■ State 15 ■ State 16

Discrete Limit

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Discrete Limit (6863–1 to n)
Description	Use this to enter the status of the discrete input value that triggers an alarm.
User entry	0 to 255
Factory setting	0

Discrete Prio

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Discrete Prio (6864-1 to n)
Description	Use this to enter the priority of a discrete alarm.
User entry	0 to 15
Factory setting	0

3.9 "Analog outputs" submenu

Navigation  Expert → Analog outputs

► Analog outputs

► Multiple AO

→  250

3.9.1 "Multiple AO" submenu

Navigation  Expert → Analog outputs → Multiple AO

► Multiple AO

Block tag (11351)

Status Options (11363)

Fault State Time (11354)

FaultState Val 1 (11355)

FaultState Val 2 (11356)

FaultState Val 3 (11357)

FaultState Val 4 (11358)

FaultState Val 5 (11359)

FaultState Val 6 (11360)

FaultState Val 7 (11361)

→  251

→  254

→  255

→  256

→  256

→  256

→  257

→  257

→  257

→  258

250

Endress+Hauser

FaultState Val 8 (11362)	→ 258
FaultStateStatus (11353)	→ 258

Block tag

Navigation	 Expert → Analog outputs → Multiple AO → Block tag (11351)
Description	Use this function to enter the Block tag: specify a "label" for identifying the function block.
User entry	Max. 32 characters, such as letters, numbers or special characters (e.g. @, %, /).

Static Revision

Navigation	 Expert → Analog outputs → Multiple AO → Static Revision (11371)
Description	Displays the Static Revision: every write access to a static block parameter is counted (event counter).
User interface	0 to FFFF
Additional information	<i>Description</i>  Static parameters are parameters that are not changed by the process.

Tag Description

Navigation	 Expert → Analog outputs → Multiple AO → Tag Description (11372)
Description	Use this function to enter the Tag Description: define a user-specific text for the detailed description of the function block.
User entry	Max. 32 characters, such as letters, numbers or special characters (e.g. @, %, /).

Strategy

Navigation	 Expert → Analog outputs → Multiple AO → Strategy (11370)
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 → Multiple AO → Alert Key (11365)

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 1

Target mode

Navigation  Expert → Analog outputs → Multiple AO → Target mode (11369)

Description Use this function to select the Target mode: the selection specifies which operating mode is used for this block. This mode is generally set by a control application.

Selection

- ROut
- RCas
- Cas
- Auto
- Man
- LO
- IMan
- OOS

Factory setting OOS

Additional information *Selection*

 Detailed description of the options available for selection: **Target mode** parameter (→  147)

Actual mode

Navigation  Expert → Analog outputs → Multiple AO → Actual mode (11366)

Description Displays the Actual mode: under certain conditions a block may not work in the operating mode to be used. In this case, the Actual mode represents the valid mode in which the block is currently operating. A comparison of the Actual mode with the Target mode indicates whether the Target mode (→  252) could be reached.

User interface

- ROut
- RCas
- Cas

- Auto
- Man
- LO
- IMan
- OOS

Additional information*Selection*

Detailed description of the options available for selection: **Target mode** parameter
(→ 147)

Permitted mode

Navigation

Expert → Analog outputs → Multiple AO → Permitted mode (11368)

Description

Use this function to select the Permitted mode: the selection defines which operating modes are available for the function block in the Target mode (→ 252). The operating modes that are supported vary depending on the type and function of the block.

Selection

- ROut
- RCas
- Cas
- Auto
- Man
- LO
- IMan
- OOS

Factory setting

- Auto
- OOS

Additional information*Selection*

Detailed description of the options available for selection: **Target mode** parameter
(→ 147)

Normal mode

Navigation

Expert → Analog outputs → Multiple AO → Normal mode (11367)

Description

Use this function to select the Normal mode: this mode is provided to enable the user to select the Normal mode among the operating modes available. This can be set using an operating tool in order to help the user configure the operating mode of a block.

Selection

- ROut
- RCas
- Cas
- Auto
- Man
- LO
- IMan
- OOS

Factory setting	Auto
Additional information	<i>Selection</i>  Detailed description of the options available for selection: Target mode parameter (→  147)

Block Error

Navigation	 Expert → Analog outputs → Multiple AO → Block Error (11364)
Description	Displays the short text for the Block Error that occurred in the function block.
User interface	▪ Other ▪ BlockConfigurat ▪ LinkConfigurat ▪ SimulationActive ▪ LocalOverride ▪ DeviceFaultState ▪ DeviceMainten ▪ SensorFailure ▪ OutputFailure ▪ MemoryFailure ▪ LostStaticData ▪ LostNVData ▪ ReadbackCheck ▪ MaintenanceNeed ▪ PowerUp ▪ OutOfService

Channel

Navigation	 Expert → Analog outputs → Multiple AO → Channel (11352)
Description	Use this function to select the assignment or connection between the Analog Output function block and the Transducer Block.
Selection	▪ Uninitialized ▪ Channel_0
Factory setting	Channel_0

Status Options

Navigation	 Expert → Analog outputs → Multiple AO → Status Options (11363)
Description	Option for determining the fault state of the function block.

Selection

- Fstate to val 1
- Fstate to val 2
- Fstate to val 3
- Fstate to val 4
- Fstate to val 5
- Fstate to val 6
- Fstate to val 7
- Fstate to val 8
- Fstate restart 1
- Fstate restart 2
- Fstate restart 3
- Fstate restart 4
- Fstate restart 5
- Fstate restart 6
- Fstate restart 7
- Fstate restart 8

Additional information*Description*

This behavior is activated if an error condition of the set point that applies is present for longer than defined in the **Fault State Time** parameter (→  255) or if the **Set Fault State** parameter (→  157) is activated in the Resource block.

The fault state is defined via the following parameters:

- Fault State Time (→  255)
- FaultState Val 1 to n

Selection

- Fstate to val 1...8
The value predefined in the **FaultState Val 1 to n** parameter is used instead of the analog set point. The fault state is enabled if there is an error condition.
- Fstate restart 1...8
The value predefined in the **FaultState Val 1 to n** parameter is used if the device is restarted. The non-volatile value is used otherwise. The fault state is not enabled and only the predefined value is used.

Fault State Time

Navigation

  Expert → Analog outputs → Multiple AO → Fault State Time (11354)

Description

Use this function to enter a time range during which an error condition (of the currently valid set point) must be met without interruption before an error message is generated.

User entry

Positive floating-point number

Factory setting

0 s

FaultState Val 1

Navigation	 Expert → Analog outputs → Multiple AO → FaultState Val 1 (11355)
Description	Use this function to enter a predefined analog value to be used if an error condition of the analog set point 1 is present.
User entry	Signed floating-point number
Factory setting	0
Additional information	<i>Description</i>  This value is ignored if the Fstate to val 1 option is not selected in the Status Options parameter (→  254).

FaultState Val 2

Navigation	 Expert → Analog outputs → Multiple AO → FaultState Val 2 (11356)
Description	Use this function to enter a predefined analog value to be used if an error condition of the analog set point 2 is present.
User entry	Signed floating-point number
Factory setting	0
Additional information	<i>Description</i>  This value is ignored if the Fstate to val 2 option is not selected in the Status Options parameter (→  254).

FaultState Val 3

Navigation	 Expert → Analog outputs → Multiple AO → FaultState Val 3 (11357)
Description	Use this function to enter a predefined analog value to be used if an error condition of the analog set point 3 is present.
User entry	Signed floating-point number
Factory setting	0
Additional information	<i>Description</i>  This value is ignored if the Fstate to val 3 option is not selected in the Status Options parameter (→  254).

FaultState Val 4

Navigation	 Expert → Analog outputs → Multiple AO → FaultState Val 4 (11358)
Description	Use this function to enter a predefined analog value to be used if an error condition of the analog set point 4 is present.
User entry	Signed floating-point number
Factory setting	0
Additional information	<i>Description</i>  This value is ignored if the Fstate to val 4 option is not selected in the Status Options parameter (→  254).

FaultState Val 5

Navigation	 Expert → Analog outputs → Multiple AO → FaultState Val 5 (11359)
Description	Use this function to enter a predefined analog value to be used if an error condition of the analog set point 5 is present.
User entry	Signed floating-point number
Factory setting	0
Additional information	<i>Description</i>  This value is ignored if the Fstate to val 5 option is not selected in the Status Options parameter (→  254).

FaultState Val 6

Navigation	 Expert → Analog outputs → Multiple AO → FaultState Val 6 (11360)
Description	Use this function to enter a predefined analog value to be used if an error condition of the analog set point 6 is present.
User entry	Signed floating-point number
Factory setting	0
Additional information	<i>Description</i>  This value is ignored if the Fstate to val 6 option is not selected in the Status Options parameter (→  254).

FaultState Val 7

Navigation	 Expert → Analog outputs → Multiple AO → FaultState Val 7 (11361)
Description	Use this function to enter a predefined analog value to be used if an error condition of the analog set point 7 is present.
User entry	Signed floating-point number
Factory setting	0
Additional information	<i>Description</i>  This value is ignored if the Fstate to val 7 option is not selected in the Status Options parameter (→  254).

FaultState Val 8

Navigation	 Expert → Analog outputs → Multiple AO → FaultState Val 8 (11362)
Description	Use this function to enter a predefined analog value to be used if an error condition of the analog set point 8 is present.
User entry	Signed floating-point number
Factory setting	0
Additional information	<i>Description</i>  This value is ignored if the Fstate to val 8 option is not selected in the Status Options parameter (→  254).

FaultStateStatus

Navigation	 Expert → Analog outputs → Multiple AO → FaultStateStatus (11353)
Description	Displays the values for which the fault state is enabled.
User interface	■ Val 1 in FState ■ Val 2 in FState ■ Val 3 in FState ■ Val 4 in FState ■ Val 5 in FState ■ Val 6 in FState ■ Val 7 in FState ■ Val 8 in FState

3.10 "Discrete outputs" submenu

The Discrete outputs function block (DO, discrete output) processes a discrete set point received from an upstream function block or a higher-level process control system that enables various device functions (e.g. zero point adjustment or reset of the totalizer) to be triggered in the downstream transducer block.

Navigation  Expert → Discrete outputs

► Discrete outputs

► Multiple DO

→  259

3.10.1 "Multiple DO" submenu

Navigation  Expert → Discrete outputs → Multiple DO

► Multiple DO

Block tag (11252)

→  260

Status Options (11268)

→  263

Fault State Time (11255)

→  264

FStateValue DO 1 (11256)

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FStateValue DO 2 (11257)

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FStateValue DO 3 (11258)

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FStateValue DO 4 (11259)

→  266

FStateValue DO 5 (11260)

→  266

FStateValue DO 6 (11261)

→  266

FStateValue DO 7 (11262)

→  267

FStateValue DO 8 (11263)

→  267

FaultStateStatus (11254)

→  267

Block tag

Navigation	 Expert → Discrete outputs → Multiple DO → Block tag (11252)
Description	Use this function to enter the Block tag: Used for specifying a "label" for identifying the function block.
User entry	Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).

Static Revision

Navigation	 Expert → Discrete outputs → Multiple DO → Static Revision (11270)
Description	Displays the Static Revision: Each instance of a static block parameter being accessed with write access is counted (event counter).
User interface	0 to FFFF
Additional information	<i>Description</i>  Static parameters are parameters that are not changed by the process.

Tag Description

Navigation	 Expert → Discrete outputs → Multiple DO → Tag Description (11271)
Description	Use this function to enter the Tag Description: Used for defining a user-specific text for detailed description of the function block.
User entry	Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).

Strategy

Navigation	 Expert → Discrete outputs → Multiple DO → Strategy (11269)
Description	Use this function to enter the Strategy: Enables blocks to be grouped by entering identical numbers.
User entry	0 to FFFF
Factory setting	0

Alert Key

Navigation	 Expert → Discrete outputs → Multiple DO → Alert Key (11251)
Description	Use this function to enter the Alert Key: Identifies the plant unit where the transmitter is located. This helps in pinpointing events.
User entry	0 to 0xFF
Factory setting	1

Target mode

Navigation	 Expert → Discrete outputs → Multiple DO → Target mode (11267)
Description	Use this function to select the Target mode: The selection indicates which operating mode is used for this function block. This mode is generally set by a control application.
Selection	■ ROut ■ RCas ■ Cas ■ Auto ■ Man ■ LO ■ IMan ■ OOS
Factory setting	OOS
Additional information	<i>Options</i>  Detailed description of the options available for selection: Target mode parameter (→  147)

Actual mode

Navigation	 Expert → Discrete outputs → Multiple DO → Actual mode (11264)
Description	Displays the Actual mode: Under certain conditions, a function block may not work in the operating mode to be used. In this case, the Actual mode shows the actual operating mode that the function block is currently operating in. By comparing the Actual mode with the Target mode, users can see whether it was possible to reach the Target mode (→  261).
User interface	■ ROut ■ RCas ■ Cas ■ Auto ■ Man

- LO
- IMan
- OOS

Additional information*User interface*

 Detailed description of the options available for selection: **Target mode** parameter
(→  147)

Permitted mode

Navigation

 Expert → Discrete outputs → Multiple DO → Permitted mode (11266)

Description

Use this function to select the Permitted mode: The selection defines which operating modes are available in Target mode (→  261) for the function block. The operating modes that are supported vary depending on the type and function of the block.

Selection

- ROut
- RCas
- Cas
- Auto
- Man
- LO
- IMan
- OOS

Factory setting

- Auto
- OOS

Additional information*Options*

 Detailed description of the options available for selection: **Target mode** parameter
(→  147)

Normal mode

Navigation

 Expert → Discrete outputs → Multiple DO → Normal mode (11265)

Description

Use this function to select the Normal mode: This is available to enable the user to select the Normal mode from the available operating modes. This can be set using an operating tool in order to help the user configure the operating mode of a function block.

Selection

- ROut
- RCas
- Cas
- Auto
- Man
- LO
- IMan
- OOS

Factory setting

Auto

Additional information*Options*

Detailed description of the options available for selection: **Target mode** parameter
(→ 147)

Block Error

Navigation

Expert → Discrete outputs → Multiple DO → Block Error (11272)

Description

Displays the short text for the Block Error that has occurred in the function block.

User interface

- Other
- BlockConfigurat
- LinkConfigurat
- SimulationActive
- LocalOverride
- DeviceFaultState
- DeviceMainten
- SensorFailure
- OutputFailure
- MemoryFailure
- LostStaticData
- LostNVData
- ReadbackCheck
- MaintenanceNeed
- PowerUp
- OutOfService

Channel

Navigation

Expert → Discrete outputs → Multiple DO → Channel (11253)

Description

Option for the assignment or connection between the discrete output function block and the transducer block.

Selection

- Uninitialized
- Channel_D0

Factory setting

Channel_D0

Status Options

Navigation

Expert → Discrete outputs → Multiple DO → Status Options (11268)

Description

Option for determining the fault state of the function block.

Selection

- Fstate to val 1
- Fstate to val 2
- Fstate to val 3
- Fstate to val 4
- Fstate to val 5
- Fstate to val 6
- Fstate to val 7
- Fstate to val 8
- Fstate restart 1
- Fstate restart 2
- Fstate restart 3
- Fstate restart 4
- Fstate restart 5
- Fstate restart 6
- Fstate restart 7
- Fstate restart 8

Additional information

Description

This behavior is enabled if an error condition of the valid set point persists for longer than the time specified in **Fault State Time** parameter (→  264) or if **Set Fault State** parameter (→  157) is enabled in Resource block.

The fault state is defined via the following parameters:

- Fault State Time (→  264)
- FStateValue DO 1 to n

Options

- Fstate to val 1...8
The value predefined in **FStateValue DO 1 to n** parameter is used in place of the discrete set point. The fault state is enabled if there is an error condition.
- Fstate restart 1...8
The value predefined in **FStateValue DO 1 to n** parameter is used if the device is restarted. The non-volatile value is used otherwise. The fault state is not enabled and only the predefined value is used.

Fault State Time

Navigation

  Expert → Discrete outputs → Multiple DO → Fault State Time (11255)

Description

Use this function to enter a time range during which an error condition (of the currently valid set point) must be met without interruption before an error message is generated.

User entry

Positive floating-point number

Factory setting

0 s

FStateValue DO 1

Navigation	 Expert → Discrete outputs → Multiple DO → FStateValue DO 1 (11256)
Description	Use this function to enter a predefined discrete value to be used if an error condition of the discrete set point 1 is present.
User entry	0 to 255
Factory setting	0
Additional information	<i>Description</i>  If Fstate to val 1 option is not selected in Status Options parameter (→  263), this value is ignored.

FStateValue DO 2

Navigation	 Expert → Discrete outputs → Multiple DO → FStateValue DO 2 (11257)
Description	Use this function to enter a predefined discrete value to be used if an error condition of the discrete set point 2 is present.
User entry	0 to 255
Factory setting	0
Additional information	<i>Description</i>  If Fstate to val 2 option is not selected in Status Options parameter (→  263), this value is ignored.

FStateValue DO 3

Navigation	 Expert → Discrete outputs → Multiple DO → FStateValue DO 3 (11258)
Description	Use this function to enter a predefined discrete value to be used if an error condition of the discrete set point 3 is present.
User entry	0 to 255
Factory setting	0
Additional information	<i>Description</i>  If Fstate to val 3 option is not selected in Status Options parameter (→  263), this value is ignored.

FStateValue DO 4

Navigation	 Expert → Discrete outputs → Multiple DO → FStateValue DO 4 (11259)
Description	Use this function to enter a predefined discrete value to be used if an error condition of the discrete set point 4 is present.
User entry	0 to 255
Factory setting	0
Additional information	<i>Description</i>  If Fstate to val 4 option is not selected in Status Options parameter (→  263), this value is ignored.

FStateValue DO 5

Navigation	 Expert → Discrete outputs → Multiple DO → FStateValue DO 5 (11260)
Description	Use this function to enter a predefined discrete value to be used if an error condition of the discrete set point 5 is present.
User entry	0 to 255
Factory setting	0
Additional information	<i>Description</i>  If Fstate to val 5 option is not selected in Status Options parameter (→  263), this value is ignored.

FStateValue DO 6

Navigation	 Expert → Discrete outputs → Multiple DO → FStateValue DO 6 (11261)
Description	Use this function to enter a predefined discrete value to be used if an error condition of the discrete set point 6 is present.
User entry	0 to 255
Factory setting	0
Additional information	<i>Description</i>  If Fstate to val 6 option is not selected in Status Options parameter (→  263), this value is ignored.

FStateValue DO 7

Navigation	 Expert → Discrete outputs → Multiple DO → FStateValue DO 7 (11262)
Description	Use this function to enter a predefined discrete value to be used if an error condition of the discrete set point 7 is present.
User entry	0 to 255
Factory setting	0
Additional information	<i>Description</i>  If Fstate to val 7 option is not selected in Status Options parameter (→  263), this value is ignored.

FStateValue DO 8

Navigation	 Expert → Discrete outputs → Multiple DO → FStateValue DO 8 (11263)
Description	Use this function to enter a predefined discrete value to be used if an error condition of the discrete set point 8 is present.
User entry	0 to 255
Factory setting	0
Additional information	<i>Description</i>  If Fstate to val 8 option is not selected in Status Options parameter (→  263), this value is ignored.

FaultStateStatus

Navigation	 Expert → Discrete outputs → Multiple DO → FaultStateStatus (11254)
Description	Displays the values for which the fault state is enabled.
User interface	■ Val 1 in FState ■ Val 2 in FState ■ Val 3 in FState ■ Val 4 in FState ■ Val 5 in FState ■ Val 6 in FState ■ Val 7 in FState ■ Val 8 in FState

3.11 "Application" submenu

Navigation  Expert → Application

► Application

Reset all tot. (2806)

→  268

► Totalizer 1 to n

→  268

► Concentration

→  273

Reset all tot.

Navigation	 Expert → Application → Reset all tot. (2806)						
Description	Use this function to reset all totalizers to the value 0 and restart the totaling process. This deletes all the flow values previously totaled.						
Selection	■ Cancel ■ Reset + totalize						
Factory setting	Cancel						
Additional information	Selection <table><tr><th>Options</th><th>Description</th></tr><tr><td>Cancel</td><td>No action is executed and the user exits the parameter.</td></tr><tr><td>Reset + totalize</td><td>Resets all totalizers to 0 and restarts the totaling process. This deletes all the flow values previously totaled.</td></tr></table>	Options	Description	Cancel	No action is executed and the user exits the parameter.	Reset + totalize	Resets all totalizers to 0 and restarts the totaling process. This deletes all the flow values previously totaled.
Options	Description						
Cancel	No action is executed and the user exits the parameter.						
Reset + totalize	Resets all totalizers to 0 and restarts the totaling process. This deletes all the flow values previously totaled.						

3.11.1 "Totalizer 1 to n" submenu

Navigation  Expert → Application → Totalizer 1 to n

► Totalizer 1 to n

Assign variable (0914-1 to n)

→  269

Unit totalizer 1 to n (0915-1 to n)

→  269

Operation mode (0908-1 to n)

→  270

Control Tot. 1 to n (0912-1 to n)

→  271

Preset value 1 to n (0913-1 to n)	→ 272
Failure mode (0901-1 to n)	→ 272

Assign variable

Navigation	Expert → Application → Totalizer 1 to n → Assign variable (0914-1 to n)
Description	Use this function to select a process variable for the Totalizer 1 to n.
Selection	■ Off ■ Volume flow ■ Mass flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. *
Factory setting	Mass flow
Additional information	<i>Description</i> If the option selected is changed, the device resets the totalizer to 0. <i>Selection</i> If the Off option is selected, only Assign variable parameter (→ 269) is still displayed in the Totalizer 1 to n submenu. All other parameters in the submenu are hidden.

Unit totalizer 1 to n

Navigation	Expert → Application → Totalizer 1 to n → Unit totalizer 1 to n (0915-1 to n)								
Prerequisite	One of the following options is selected in the Assign variable parameter (→ 269) of the Totalizer 1 to n submenu: ■ Volume flow ■ Mass flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. *								
Description	Use this function to select the process variable unit for the Totalizer 1 to n (→ 268).								
Selection	<table><tr><td><i>SI units</i></td><td><i>US units</i></td></tr><tr><td>■ g</td><td>■ oz</td></tr><tr><td>■ kg</td><td>■ lb</td></tr><tr><td>■ t</td><td>■ STon</td></tr></table>	<i>SI units</i>	<i>US units</i>	■ g	■ oz	■ kg	■ lb	■ t	■ STon
<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> ■ cm³ ■ dm³ ■ m³ ■ ml ■ l ■ hl ■ Ml Mega	<i>US units</i> ■ af ■ ft³ ■ fl oz (us) ■ gal (us) ■ kgal (us) ■ Mgal (us) ■ bbl (us;liq.) ■ bbl (us;beer) ■ bbl (us;oil) ■ bbl (us;tank)	<i>Imperial units</i> ■ gal (imp) ■ Mgal (imp) ■ bbl (imp;beer) ■ bbl (imp;oil)
	or		
	<i>SI units</i> ■ Nl ■ Nm³ ■ Sl ■ Sm³	<i>US units</i> ■ Sft³ ■ Sgal (us) ■ Sbbl (us;liq.)	<i>Imperial units</i> ■ Sgal (imp)
Factory setting	Country-specific: ■ kg ■ lb		
Additional information	<i>Description</i>  The unit is selected separately for each totalizer. It is independent of the selection made in the System units submenu (→  61). <i>Selection</i> The selection is dependent on the process variable selected in the Assign variable parameter (→  269).		

Operation mode

Navigation	  Expert → Application → Totalizer 1 to n → Operation mode (0908–1 to n)
Prerequisite	One of the following options is selected in the Assign variable parameter (→  269) Totalizer 1 to n submenu: ■ Volume flow ■ Mass flow ■ Correct.vol.flow ■ Target mass flow[*] ■ Carrier mass fl.[*]
Description	Use this function to select how the totalizer summates the flow.

* Visibility depends on order options or device settings

Selection	■ Net flow total ■ Forward total ■ Reverse total
Factory setting	Net flow total
Additional information	<i>Selection</i> ■ Net flow total Flow values in the forward and reverse flow direction 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 in the reverse flow direction is totalized (= reverse flow quantity).

Control Tot. 1 to n

Navigation	 Expert → Application → Totalizer 1 to n → Control Tot. 1 to n (0912-1 to n)
Prerequisite	One of the following options is selected in the Assign variable parameter (→  269) Totalizer 1 to n submenu: ■ Volume flow ■ Mass flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. *
Description	Use this function to select the control of totalizer value 1-3.
Selection	■ Totalize ■ Reset + hold ■ Preset + hold ■ Reset + totalize ■ Preset+totalize ■ Hold
Factory setting	Totalize

Additional information	<i>Selection</i>
-------------------------------	------------------

Options	Description
Totalize	The totalizer is started or continues running.
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.
Reset + totalize	The totalizer is reset to 0 and the totaling process is restarted.
Preset+totalize	The totalizer is set to the defined start value from the Preset value parameter and the totaling process is restarted.
Hold	Totalizing is stopped.

* Visibility depends on order options or device settings

Preset value 1 to n

Navigation	 Expert → Application → Totalizer 1 to n → Preset value 1 to n (0913–1 to n)
Prerequisite	One of the following options is selected in the Assign variable parameter (→  269)Totalizer 1 to n submenu: ■ Volume flow ■ Mass flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. *
Description	Use this function to enter a start value for the Totalizer 1 to n.
User entry	Signed floating-point number
Factory setting	Country-specific: ■ 0 kg ■ 0 lb
Additional information	<i>User entry</i>  The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→  269). <i>Example</i> This configuration is suitable for applications such as iterative filling processes with a fixed batch quantity.

Failure mode



Navigation	 Expert → Application → Totalizer 1 to n → Failure mode (0901–1 to n)
Prerequisite	One of the following options is selected in the Assign variable parameter (→  269)Totalizer 1 to n submenu: ■ Volume flow ■ Mass flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. *
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	Stop

* Visibility depends on order options or device settings

Additional information

Description

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

Selection

- Stop
The totalizer is stopped in the event of a device alarm.
- Actual value
The totalizer continues to count based on the actual 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.

3.11.2 "Concentration" submenu

 For detailed information on the parameter descriptions for the **Concentration** application package, refer to the Special Documentation for the device →  7

Navigation

  Expert → Application → Concentration

► Concentration

3.12 "Diagnostics" submenu

Navigation

  Expert → Diagnostics

► Diagnostics

Actual diagnos. (0691)

Prev.diagnostics (0690)

Time fr. restart (0653)

Operating time (0652)

► Diagnostic list

► Event logbook

► Device info

► Mainboard module

► Sens. electronic

→  274

→  275

→  276

→  276

→  276

→  280

→  283

→  287

→  288

► I/O module 1	→ ⓘ 288
► I/O module 2	→ ⓘ 289
► I/O module 3	→ ⓘ 288
► I/O module 4	→ ⓘ 288
► Display module	→ ⓘ 290
► Min/max val.	→ ⓘ 290
► Data logging	→ ⓘ 296
► Heartbeat	→ ⓘ 305
► Simulation	→ ⓘ 305

Actual diagnos.

Navigation	📁📁 Expert → Diagnostics → Actual diagnos. (0691)
Prerequisite	A diagnostic event has occurred.
Description	Displays the current diagnostic message. If two or more messages occur simultaneously, the message with the highest priority is shown on the display.
User interface	Symbol for diagnostic behavior, diagnostic code and short message.
Additional information	<i>Display</i> 📘 Additional pending diagnostic messages can be viewed in the Diagnostic list submenu (→ ⓘ 276). 📘 Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the ⓘ key. <i>Example</i> For the display format: ⊗F271 Main electronics

Timestamp

Navigation	📁 Expert → Diagnostics → Timestamp
Description	Displays the operating time when the current diagnostic message occurred.
User interface	Days (d), hours (h), minutes (m) and seconds (s)

Additional information*Display*

The diagnostic message can be viewed via the **Actual diagnos.** parameter (→ 274).

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*Display*

The diagnostic message can be viewed via the **Prev.diagnostics** parameter (→ 275).

Example

For the display format:
24d12h13m00s

Time fr. restart

Navigation	 Expert → Diagnostics → Time fr. restart (0653)
Description	Use this function to display the time the device has been in operation since the last device restart.
User interface	Days (d), hours (h), minutes (m) and seconds (s)

Operating time

Navigation	 Expert → Diagnostics → Operating time (0652)
Description	Use this function to display the length of time the device has been in operation.
User interface	Days (d), hours (h), minutes (m) and seconds (s)
Additional information	<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)

Diagnostics 2 (0693)

Diagnostics 3 (0694)

Diagnostics 4 (0695)

Diagnostics 5 (0696)

→  276

→  277

→  278

→  279

→  280

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	<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 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 1 parameter (→  276). <i>Example</i> 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	<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 second-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 2 parameter (→  277). <i>Example</i> 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*Display*

The diagnostic message can be viewed via the **Diagnostics 3** parameter (→ 278).

Example

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 (→ 279).

Example

For the display format:
24d12h13m00s

Diagnostics 5

Navigation	 Expert → Diagnostics → Diagnostic list → Diagnostics 5 (0696)
Description	Displays the current diagnostics message with the fifth-highest priority.
User interface	Symbol for diagnostic behavior, diagnostic code and short message.
Additional information	Display  Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the  key. Examples For the display format: ■  F271 Main electronics ■  F276 I/O module

Timestamp

Navigation	 Expert → Diagnostics → Diagnostic list → Timestamp
Description	Displays the operating time when the diagnostic message with the fifth-highest priority occurred.
User interface	Days (d), hours (h), minutes (m) and seconds (s)
Additional information	Display  The diagnostic message can be viewed via the Diagnostics 5 parameter (→  280). Example For the display format: 24d12h13m00s

3.12.2 "Event logbook" submenu

Navigation  Expert → Diagnostics → Event logbook

► Event logbook

Filter options (0705)

► Event list

→  281

→  282

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	<i>Description</i>  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	<i>Description</i>  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

Navigation	 Expert → Diagnostics → Event logbook → Event list
Description	Displays the history of event messages of the category selected in the Filter options parameter (→  281).
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 (10799)	→ 	283
Serial number (10798)	→ 	284
Device name (0020)	→ 	284
Device revision (10710)	→ 	285
Device type (10711)	→ 	284
DD Revision (10709)	→ 	285
Firmware version (10792)	→ 	285
Hardware rev. (10793)	→ 	285
ITK Version (10794)	→ 	286
Order code (10795)	→ 	286
Ext. order cd. 1 (10796)	→ 	286
Ext. order cd. 2 (10797)	→ 	287
ENP version (10791)	→ 	287

Device tag

Navigation   Expert → Diagnostics → Device info → Device tag (10799)

Description Use this function to enter a unique name for the measuring point so it can be identified quickly within the plant. The name is displayed in the header:

1

XXXXXXXXXX

A0029422

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

Factory setting Promass300/500

Additional information *User entry*
The number of characters displayed depends on the characters used.

Serial number

Navigation  Expert → Diagnostics → Device info → Serial number (10798)

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



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

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

Additional information *Factory setting*
 This information varies depending on the device. Only an example is given here.

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 Promass300/500

Device type

Navigation  Expert → Diagnostics → Device info → Device type (10711)

Description Use this function to view the device type with which the measuring device is registered with FOUNDATION Fieldbus.

User interface Promass 300/500

Device revision

Navigation	 Expert → Diagnostics → Device info → Device revision (10710)
Description	Use this function to view the device revision with which the measuring device is registered with FOUNDATION Fieldbus.
User interface	1

DD Revision

Navigation	 Expert → Diagnostics → Device info → DD Revision (10709)
Description	Displays the revision number of the device description (DD).
User interface	1
Additional information	<i>Description</i>  This display can be used to ensure that the right system files (DD = device description) are used for integration into the host system. The system files can be downloaded free of charge online at: www.endress.com .

Firmware version

Navigation	 Expert → Diagnostics → Device info → Firmware version (10792)
Description	Displays the device firmware version installed.
User interface	Character string with the following format: xx.yy.zz

Hardware rev.

Navigation	 Expert → Diagnostics → Device info → Hardware rev. (10793)
Description	Displays the Hardware rev..
User interface	Character string in the format xx.yy.zz

ITK Version	
Navigation	 Expert → Diagnostics → Device info → ITK Version (10794)
Description	Displays the revision status of the Interoperability Test Kits (ITK).
User interface	6
Order code	
Navigation	 Expert → Diagnostics → Device info → Order code (10795)
Description	Use this function to enter the device order code.  The order code can be found on the nameplate of the sensor and transmitter in the "Order code" field.
User entry	Character string composed of letters, numbers and certain punctuation marks
Additional information	<i>Description</i> The order code is generated from the extended order code, which defines all the device features of the product structure. In contrast, the device features cannot be read directly 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 (10796)
Description	Use this function to enter the first part of the extended order code. On account of length restrictions, the extended order code is split into a maximum of 2 parameters.  The extended order code can also be found on the nameplate of the sensor and transmitter in the "Ext. ord. cd." field.
User entry	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

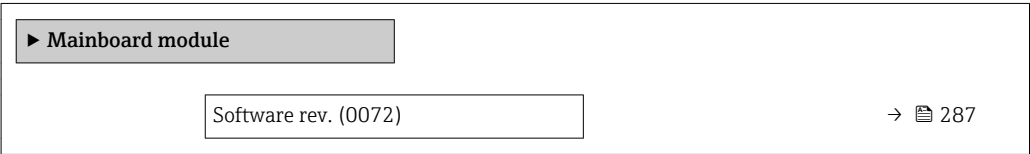
Navigation	 Expert → Diagnostics → Device info → Ext. order cd. 2 (10797)
Description	Use this function to enter the second part of the extended order code.  Deletion of the ordered customer-specific parameter set that was preconfigured before delivery. This parameter set cannot be reset. It can only be restored to the factory setting.
User entry	Character string
Additional information	For additional information, see Ext. order cd. 1 parameter

ENP version

Navigation	 Expert → Diagnostics → Device info → ENP version (10791)
Description	Displays the version of the electronic nameplate. This electronic nameplate stores a data record for device identification that includes more data than the nameplates attached to the outside of the device.
User interface	Character string in the format xx.yy.zz

3.12.4 "Mainboard module" submenu

Navigation  Expert → Diagnostics → Mainboard module



Software rev.

Navigation	 Expert → Diagnostics → Mainboard module → Software rev. (0072)
Description	Use this function to display the software revision of the module.
User interface	Positive integer

3.12.5 "Sens. electronic" submenu

Navigation  Expert → Diagnostics → Sens. electronic

► Sens. electronic

Software rev. (0072)→  288

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

3.12.6 "I/O module 1" submenu

Navigation  Expert → Diagnostics → I/O module 1

► I/O module 1

I/O 1 terminals (3902–1)→  288

Software rev. (0072)→  289

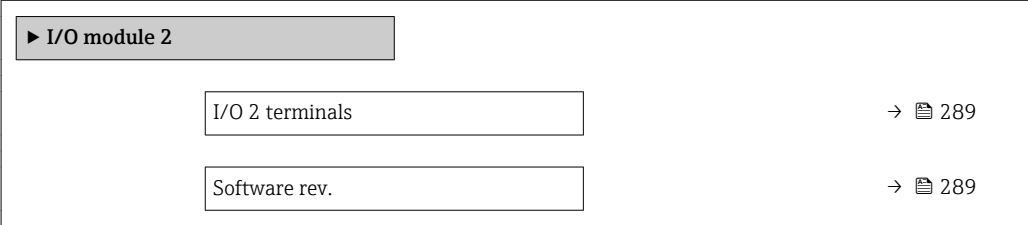
I/O terminals

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 1 → 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 2 terminals	→  289
Software rev.	→  289

I/O terminals	
Navigation	 Expert → Diagnostics → I/O module 2 → I/O 2 terminals (3902–2)
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 2 → Software rev. (0072)
Description	Use this function to display the software revision of the module.
User interface	Positive integer

3.12.8 "Display module" submenu

Navigation  Expert → Diagnostics → Display module

► Display module

Software rev. (0072) →  290

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

3.12.9 "Min/max val." submenu

Navigation  Expert → Diagnostics → Min/max val.

► Min/max val.

Reset min/max (6151) →  291

► Electronic temp. →  291

► Medium temp. →  292

► Carr. pipe temp. →  293

► Oscil. frequency →  294

► Oscil. amplitude →  294

► Oscil. damping →  295

► Signal asymmetry →  296

Reset min/max

Navigation	 Expert → Diagnostics → Min/max val. → Reset min/max (6151)
Description	Use this function to select measured variables whose minimum, maximum and average measured values are to be reset.
Selection	■ Cancel ■ Oscil. amplitude ■ Oscil. damping ■ Oscil. frequency ■ Signal asymmetry
Factory setting	Cancel

"Electronic temp." submenu

Navigation  Expert → Diagnostics → Min/max val. → Electronic temp.

► Electronic temp.

Minimum value

→  292

Maximum value

→  291

Maximum value

Navigation	 Expert → Diagnostics → Min/max val. → Electronic temp. → Maximum value (6051)
Description	Displays the highest 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 (→  67)

Minimum value

Navigation	 Expert → Diagnostics → Min/max val. → Electronic temp. → Minimum value (6052)
Description	Displays the lowest 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 (→  67)

"Medium temp." submenu

Navigation  Expert → Diagnostics → Min/max val. → Medium temp.

► Medium temp.

Minimum value (6109)

→  292

Maximum value (6108)

→  292

Minimum value

Navigation	 Expert → Diagnostics → Min/max val. → Medium temp. → Minimum value (6109)
Description	Displays the lowest previously measured medium temperature value.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the Temperature unit parameter (→  67)

Maximum value

Navigation	 Expert → Diagnostics → Min/max val. → Medium temp. → Maximum value (6108)
Description	Displays the highest previously measured medium temperature value.
User interface	Signed floating-point number

Additional information

Dependency

 The unit is taken from the **Temperature unit** parameter (→  67)

"Carr. pipe temp." submenu

Navigation   Expert → Diagnostics → Min/max val. → Carr. pipe temp.

► Carr. pipe temp.

Minimum value (6030)

→  293

Maximum value (6029)

→  293

Minimum value

Navigation   Expert → Diagnostics → Min/max val. → Carr. pipe temp. → Minimum value (6030)

Prerequisite For the following order code
"Application package", option **EB** "Heartbeat Verification + Monitoring"

Description Displays the lowest previously measured temperature value of the carrier pipe.

User interface Signed floating-point number

Additional information

Dependency

 The unit is taken from the **Temperature unit** parameter (→  67)

Maximum value

Navigation   Expert → Diagnostics → Min/max val. → Carr. pipe temp. → Maximum value (6029)

Prerequisite For the following order code
"Application package", option **EB** "Heartbeat Verification + Monitoring"

Description Displays the highest previously measured temperature value of the carrier pipe.

User interface Signed floating-point number

Additional information

Dependency

 The unit is taken from the **Temperature unit** parameter (→  67)

"Oscil. frequency" submenu

Navigation  Expert → Diagnostics → Min/max val. → Oscil. frequency

► Oscil. frequency

Minimum value (6071)

→  294

Maximum value (6070)

→  294

Minimum value

Navigation	 Expert → Diagnostics → Min/max val. → Oscil. frequency → Minimum value (6071)
Description	Displays the lowest previously measured oscillation frequency.
User interface	Signed floating-point number

Maximum value

Navigation	 Expert → Diagnostics → Min/max val. → Oscil. frequency → Maximum value (6070)
Description	Displays the highest previously measured oscillation frequency.
User interface	Signed floating-point number

"Oscil. amplitude" submenu

Navigation  Expert → Diagnostics → Min/max val. → Oscil. amplitude

► Oscil. amplitude

Minimum value (6010)

→  295

Maximum value (6009)

→  295

Minimum value	
Navigation	  Expert → Diagnostics → Min/max val. → Oscil. amplitude → Minimum value (6010)
Description	Displays the lowest previously measured oscillation amplitude.
User interface	Signed floating-point number

Maximum value	
Navigation	  Expert → Diagnostics → Min/max val. → Oscil. amplitude → Maximum value (6009)
Description	Displays the highest previously measured oscillation amplitude.
User interface	Signed floating-point number

"Oscil. damping" submenu

Navigation   Expert → Diagnostics → Min/max val. → Oscil. damping

► Oscil. damping

Minimum value (6122)

→  295

Maximum value (6121)

→  295

Minimum value	
Navigation	  Expert → Diagnostics → Min/max val. → Oscil. damping → Minimum value (6122)
Description	Displays the lowest previously measured oscillation damping.
User interface	Signed floating-point number

Maximum value	
Navigation	  Expert → Diagnostics → Min/max val. → Oscil. damping → Maximum value (6121)
Description	Displays the highest previously measured oscillation damping.

User interface

Signed floating-point number

"Signal asymmetry" submenu

Navigation  Expert → Diagnostics → Min/max val. → Signal asymmetry

► Signal asymmetry

Minimum value (6015)

→  296

Maximum value (6014)

→  296

Minimum value

Navigation  Expert → Diagnostics → Min/max val. → Signal asymmetry → Minimum value (6015)

Description Displays the lowest previously measured signal asymmetry.

User interface Signed floating-point number

Maximum value

Navigation  Expert → Diagnostics → Min/max val. → Signal asymmetry → Maximum value (6014)

Description Displays the highest previously measured signal asymmetry.

User interface Signed floating-point number

3.12.10 "Data logging" submenu

Navigation  Expert → Diagnostics → Data logging

► Data logging

Assign chan. 1

→  297

Assign chan. 2

→  298

Assign chan. 3	→  299
Assign chan. 4	→  299
Logging interval	→  299
Clear logging	→  300
Data logging	→  300
Logging delay	→  301
Data log.control	→  301
Data log. status	→  302
Logging duration	→  302
► Displ.channel 1	→  302
► Displ.channel 2	→  304
► Displ.channel 3	→  304
► Displ.channel 4	→  304

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 (→  49).

Description

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

Selection

- Off
- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *
- Density
- Ref.density
- Concentration *
- Temperature

* Visibility depends on order options or device settings

- Carr. pipe temp. *
- Electronic temp.
- Osc. freq. 0
- Freq. fluct. 0
- Oscil. amplitude *
- Osc. damping 0
- Osc.damp.fluct 0
- Signal asymmetry
- Exc. current 0
- Curr.output 1
- Curr.output 2 *
- Curr.output 3 *
- HBSI

Factory setting

Off

Additional information*Description*

A total of 1000 measured values can be logged. This means:

- 1000 data points if 1 logging channel is used
- 500 data points if 2 logging channels are used
- 333 data points if 3 logging channels are used
- 250 data points if 4 logging channels are used

Once the maximum number of data points is reached, the oldest data points in the data log are cyclically overwritten in such a way that the last 1000, 500, 333 or 250 measured values are always in the log (ring memory principle).

 The log contents are cleared if the option selected is changed.

Selection

 Detailed description of the options **Oscil. frequency**, **Oscil. amplitude**, **Oscil. damping** and **Signal asymmetry: Assign freq.** parameter (→  124)

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 (→  49).

Description

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

Selection

Picklist, see **Assign channel 1** parameter (→  297)

Factory setting

Off

* Visibility depends on order options or device settings

Assign chan. 3



Navigation	Expert → Diagnostics → Data logging → Assign chan. 3 (0853)
Prerequisite	The Extended HistoROM application package is available. The software options currently enabled are displayed in the SW option overv. parameter (→ 49).
Description	Options for the assignment of a process variable to the data logging channel.
Selection	Picklist, see Assign channel 1 parameter (→ 297)
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 (→ 49).
Description	Options for the assignment of a process variable to the data logging channel.
Selection	Picklist, see Assign channel 1 parameter (→ 297)
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 (→ 49).
Description	Use this function to enter the logging interval $T_{\log}$ for data logging.
User entry	0.1 to 999.0 s
Factory setting	1.0 s

Additional information	<i>Description</i> This defines the interval between the individual data points in the data log, and thus the maximum loggable process time T_{log}: ■ If 1 logging channel is used: $T_{log} = 1000 \times t_{log}$ ■ If 2 logging channels are used: $T_{log} = 500 \times t_{log}$ ■ If 3 logging channels are used: $T_{log} = 333 \times t_{log}$ ■ If 4 logging channels are used: $T_{log} = 250 \times t_{log}$ Once this time elapses, the oldest data points in the data log are cyclically overwritten such that a time of T_{log} always remains in the memory (ring memory principle).  The log contents are cleared if the length of the logging interval is changed. <i>Example</i> If 1 logging channel is used: ■ $T_{log} = 1000 \times 1\text{ s} = 1\,000\text{ s} \approx 15\text{ min}$ ■ $T_{log} = 1000 \times 10\text{ s} = 10\,000\text{ s} \approx 3\text{ h}$ ■ $T_{log} = 1000 \times 80\text{ s} = 80\,000\text{ s} \approx 1\text{ d}$ ■ $T_{log} = 1000 \times 3\,600\text{ s} = 3\,600\,000\text{ s} \approx 41\text{ d}$
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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 (→  49).
Description	Use this function to clear the entire logging data.
Selection	■ Cancel ■ Clear data
Factory setting	Cancel
Additional information	<i>Selection</i> ■ Cancel The data is not cleared. All the data is retained. ■ Clear data The logging data is cleared. The logging process starts from the beginning.

Data logging 	
Navigation	 Expert → Diagnostics → Data logging → Data logging (0860)
Description	Use this function to select the data logging method.
Selection	■ Overwriting ■ Not overwriting

Factory setting	Overwriting
Additional information	<i>Selection</i> ■ 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 (→  300), 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 (→  301), 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 (→  300), 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 (→  300), 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 (→  300), 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 →  303

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 (→  49).

One of the following options is selected in the **Assign chan. 1** parameter (→  297):

- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *
- Density
- Ref.density
- Concentration *
- Carr. pipe temp. *
- Electronic temp.
- Curr.output 1
- Osc. freq. 0
- Freq. fluct. 0
- Oscil. amplitude *
- Osc. damping 0
- Osc.damp.fluct 0
- Signal asymmetry
- Exc. current 0

Description

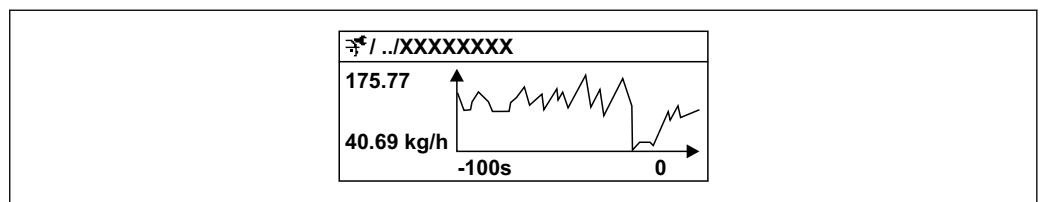
Displays the measured value trend for the logging channel in the form of a chart.

Additional information

Prerequisite

 Detailed description of the options **Oscil. frequency**, **Oscil. amplitude**, **Oscil. damping** and **Signal asymmetry**: **Assign freq.** parameter (→  124)

Description



A0016357

 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.

* Visibility depends on order options or device settings

"Displ.channel 2" submenu

Navigation  Expert → Diagnostics → Data logging → Displ.channel 2

► Displ.channel 2

Display channel 2 →  304

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 →  303

"Displ.channel 3" submenu

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

► Displ.channel 3

Display channel 3 →  304

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 →  303

"Displ.channel 4" submenu

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

► Displ.channel 4

Display channel 4 →  305

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 →  303

3.12.11 "Heartbeat" submenu

 For detailed information on the parameter descriptions for the **Heartbeat Verification+Monitoring** application package, refer to the Special Documentation for the device →  7

Navigation   Expert → Diagnostics → Heartbeat

► Heartbeat

► Base settings

► Perform.verific.

► Verific. results

► HBT Monitoring

► Monitor. results

3.12.12 "Simulation" submenu

Navigation   Expert → Diagnostics → Simulation

► Simulation

Assign proc.var. (1810)

Proc. var. value (1811)

Status inp. sim. (1355)

Signal level (1356)

Curr.inp 1 to n sim. (1608–1 to n)

Value curr.inp 1 to n (1609–1 to n)

→  306

→  307

→  307

→  308

→  308

→  308

Curr.out. 1 to n sim. (0354-1 to n)	→ 309
Value curr.out 1 to n (0355-1 to n)	→ 309
FreqOutputSim 1 to n (0472-1 to n)	→ 309
Freq value 1 to n (0473-1 to n)	→ 310
Puls.outp.sim. 1 to n (0458-1 to n)	→ 310
Pulse value 1 to n (0459-1 to n)	→ 311
Switch sim. 1 to n (0462-1 to n)	→ 311
Switch status 1 to n (0463-1 to n)	→ 312
Relay out. 1 to n sim (0802-1 to n)	→ 312
Switch status 1 to n (0803-1 to n)	→ 313
Dev. alarm sim. (0654)	→ 313
Event category (0738)	→ 314
Diag. event sim. (0737)	→ 314

Assign proc.var.

Navigation	Expert → Diagnostics → Simulation → Assign proc.var. (1810)
Description	Use this function to select a process variable for the simulation process that is activated. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.
Selection	■ Off ■ Mass flow ■ Volume flow ■ Correct.vol.flow ■ Density ■ Ref.density ■ Temperature ■ Concentration * ■ Target mass flow * ■ Carrier mass fl. *
Factory setting	Off

* Visibility depends on order options or device settings

Additional information	<i>Description</i>  The simulation value of the process variable selected is defined in the Proc. var. value parameter (→  307).
Proc. var. value 	
Navigation	  Expert → Diagnostics → Simulation → Proc. var. value (1811)
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	<i>User entry</i>  The unit of the displayed measured value is taken from the System units submenu (→  61).
Status inp. sim. 	
Navigation	 Expert → Diagnostics → Simulation → Status inp. sim. (1355)
Description	Use this function to switch simulation of the status input on and off. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.
Selection	■ Off ■ On
Factory setting	Off
Additional information	<i>Description</i>  The desired simulation value is defined in the Signal level parameter (→  308). <i>Selection</i> ■ 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 (→  307), 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 sim.		
Navigation	 Expert → Diagnostics → Simulation → Curr.inp 1 to n sim. (1608–1 to n)	
Description	Option for switching simulation of the current input on and off. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.  The desired simulation value is defined in the Value curr.inp 1 to n parameter.	
Selection	■ Off ■ On	
Factory setting	Off	
Additional information	<i>Selection</i> ■ Off Current simulation is switched off. The device is in normal measuring mode or another process variable is being simulated. ■ On Current simulation is active.	
Value curr.inp		
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. 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 	
Navigation	 Expert → Diagnostics → Simulation → Value curr.out 1 to n (0355–1 to n)
Prerequisite	In the Curr.out. 1 to n sim. parameter, the On option is selected.
Description	Use this function to enter a current value for the simulation. In this way, users can verify the correct adjustment of the current output and the correct function of downstream switching units.
User entry	3.59 to 22.5 mA
Additional information	<i>Dependency</i> The input range is dependent on the option selected in the Current span parameter (→  103).
FreqOutputSim 	
Navigation	 Expert → Diagnostics → Simulation → FreqOutputSim 1 to n (0472–1 to n)
Prerequisite	In the Operating mode parameter (→  118), the Frequency option is selected.

Description Use this function to switch simulation of the frequency output on and off. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.

Selection

- Off
- On

Factory setting Off

Additional information *Description*

 The desired simulation value is defined in the **Freq value 1 to n** parameter.

Selection

- Off
Frequency simulation is switched off. The device is in normal measuring mode or another process variable is being simulated.
- On
Frequency simulation is active.

Freq value



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.



Navigation  Expert → Diagnostics → Simulation → Puls.outp.sim. 1 to n (0458–1 to n)

Prerequisite In the **Operating mode** parameter (→  118), the **Pulse** option is selected.

Description Use this function to switch simulation of the pulse output on and off. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.

Selection

- Off
- Fixed value
- Down-count. val.

Factory setting Off

Additional information*Description*

The desired simulation value is defined in the **Pulse value 1 to n** parameter.

Selection

- Off
Pulse simulation is switched off. The device is in normal measuring mode or another process variable is being simulated.
- Fixed value
Pulses are continuously output with the pulse width specified in the **Pulse width** parameter (→  121).
- Down-count. val.
The pulses specified in the **Pulse value** parameter (→  311) are output.

Pulse value**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.**Navigation**

Expert → Diagnostics → Simulation → Switch sim. 1 to n (0462–1 to n)

Prerequisite

In the **Operating mode** parameter (→  118), 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	Description  The desired simulation value is defined in the Switch status 1 to n parameter. Selection ■ 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 	
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	Selection ■ 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	<i>Description</i>  The desired simulation value is defined in the Switch status 1 to n parameter. <i>Selection</i> ■ 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	<i>Selection</i> ■ 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	<i>Description</i> 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 (→ 314).
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 (→ 314).

4 Country-specific factory settings

4.1 SI units



Not valid for USA and Canada.

4.1.1 System units

Mass	kg
Mass flow	kg/h
Volume	l
Volume flow	l/h
Corrected volume	Nl
Corrected volume flow	Nl/h
Density	kg/l
Reference density	kg/Nl
Temperature	°C
Pressure	bar a

4.1.2 Full scale values



The factory settings apply to the following parameters:

- 20 mA value (full scale value of the current output)
- 100% bar graph value 1

Nominal diameter [mm]	[kg/h]
1	4
2	20
4	90
6	200

4.1.3 Output current span

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

4.1.4 Pulse value

Nominal diameter [mm]	[kg/p]
1	0.001
2	0.01
4	0.01
6	0.1

4.1.5 On value low flow cut off

 The switch-on point depends on the type of medium and the nominal diameter.

Nominal diameter [mm]	On-value for liquid [kg/h]
1	0.08
2	0.4
4	1.8
6	4

Nominal diameter [mm]	Switch-on value for gas [kg/h]
1	0.02
2	0.1
4	0.45
6	1

4.2 US units

 Only valid for USA and Canada.

4.2.1 System units

Mass	lb
Mass flow	lb/min
Volume	gal (us)
Volume flow	gal/min (us)
Corrected volume	Sft ³
Corrected volume flow	Sft ³ /min
Density	lb/ft ³
Reference density	lb/Sft ³
Temperature	°F
Pressure	psi a

4.2.2 Full scale values

 The factory settings apply to the following parameters:

- 20 mA value (full scale value of the current output)
- 100% bar graph value 1

Nominal diameter [in]	[lb/min]
1/24	0.15
1/12	0.75
1/8	3.3
1/4	7.4

4.2.3 Output current span

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

4.2.4 Pulse value

Nominal diameter [in]	[lb/p]
$1/24$	0.002
$1/12$	0.02
$1/8$	0.02
$1/4$	0.2

4.2.5 On value low flow cut off



The switch-on point depends on the type of medium and the nominal diameter.

Nominal diameter [in]	On-value for liquid [lb/min]
$1/24$	0.003
$1/12$	0.015
$1/8$	0.066
$1/4$	0.15

Nominal diameter [in]	Switch-on value for gas [lb/min]
$1/24$	0.001
$1/12$	0.004
$1/8$	0.016
$1/4$	0.0375

5 Explanation of abbreviated units

5.1 SI units

Process variable	Units	Explanation
Density	g/cm ³ , g/m ³	Gram/volume unit
	kg/dm ³ , kg/l, kg/m ³	Kilogram/volume unit
	SD4°C, SD15°C, SD20°C	Specific density: The specific density is the ratio of the density of the fluid to the density of water at a water temperature of 4 °C (39 °F), 15 °C (59 °F), 20 °C (68 °F).
	SG4°C, SG15°C, SG20°C	Specific gravity: The specific gravity is the ratio of the density of the fluid to the density of water at a water temperature of 4 °C (39 °F), 15 °C (59 °F), 20 °C (68 °F).
Pressure	Pa a, kPa a, MPa a	Pascal, kilopascal, megapascal (absolute)
	bar	Bar
	Pa g, kPa g, MPa g	Pascal, kilopascal, megapascal (relative/gauge)
	bar g	Bar (relative/gauge)
Mass	g, kg, t	Gram, kilogram, metric ton
Mass flow	g/s, g/min, g/h, g/d	Gram/time unit
	kg/s, kg/min, kg/h, kg/d	Kilogram/time unit
	t/s, t/min, t/h, t/d	Metric ton/time unit
Ref.density	kg/Nm ³ , kg/Nl, g/Scm ³ , kg/Sm ³	Kilogram, gram/standard volume unit
Corrected volume	Nl, Nm ³ , Sm ³	Normal liter, normal cubic meter, standard cubic meter
Correct.vol.flow	Nl/s, Nl/min, Nl/h, Nl/d	Normal liter/time unit
	Nm ³ /s, Nm ³ /min, Nm ³ /h, Nm ³ /d	Normal cubic meter/time unit
	Sm ³ /s, Sm ³ /min, Sm ³ /h, Sm ³ /d	Standard cubic meter/time unit
Temperature	°C, K	Celsius, Kelvin
Volume	cm ³ , dm ³ , m ³	Cubic centimeter, cubic decimeter, cubic meter
	ml, l, hl, Ml Mega	Milliliter, liter, hectoliter, megaliter
Volume flow	cm ³ /s, cm ³ /min, cm ³ /h, cm ³ /d	Cubic centimeter/time unit
	dm ³ /s, dm ³ /min, dm ³ /h, dm ³ /d	Cubic decimeter/time unit
	m ³ /s, m ³ /min, m ³ /h, m ³ /d	Cubic meter/time unit
	ml/s, ml/min, ml/h, ml/d	Milliliter/time unit
	l/s, l/min, l/h, l/d	Liter/time unit
	hl/s, hl/min, hl/h, hl/d	Hectoliter/time unit
	Ml/s, Ml/min, Ml/h, Ml/d	Megaliter/time unit
Time	s, m, h, d, y	Second, minute, hour, day, year

5.2 US units

Process variable	Units	Explanation
Density	lb/ft ³ , lb/gal (us)	Pound/cubic foot, pound/gallon
	lb/bbl (us;liq.), lb/bbl (us;beer), lb/bbl (us;oil), lb/bbl (us;tank)	Pound/volume unit

Process variable	Units	Explanation
Pressure	psi a	Pounds per square inch (absolute)
	psi g	Pounds per square inch (gauge)
Mass	oz, lb, STon	Ounce, pound, standard ton
Mass flow	oz/s, oz/min, oz/h, oz/d	Ounce/time unit
	lb/s, lb/min, lb/h, lb/d	Pound/time unit
	STon/s, STon/min, STon/h, STon/d	Standard ton/time unit
Ref.density	lb/Sft ³	Weight unit/standard volume unit
Corrected volume	Sft ³ , Sgal (us), Sbbl (us;liq.)	Standard cubic foot, standard gallon, standard barrel
Correct.vol.flow	Sft ³ /s, Sft ³ /min, Sft ³ /h, Sft ³ /d	Standard cubic foot/time unit
	Sgal/s (us), Sgal/min (us), Sgal/h (us), Sgal/d (us)	Standard gallon/time unit
	Sbbl/s (us;liq.), Sbbl/min (us;liq.), Sbbl/h (us;liq.), Sbbl/d (us;liq.)	Barrel/time unit (normal liquids)
Temperature	°F, °R	Fahrenheit, Rankine
Volume	af	Acre foot
	ft ³	Cubic foot
	fl oz (us), gal (us), kgal (us), Mgal (us)	Fluid ounce, gallon, kilogallon, million gallon
	bbl (us;liq.), bbl (us;beer), bbl (us;oil), bbl (us;tank)	Barrel (normal liquids), barrel (beer), barrel (petrochemicals), barrel (filling tanks)
Volume flow	af/s, af/min, af/h, af/d	Acre foot/time unit
	ft ³ /s, ft ³ /min, ft ³ /h, ft ³ /d	Cubic foot/time unit
	fl oz/s (us), fl oz/min (us), fl oz/h (us), fl oz/d (us)	Fluid ounce/time unit
	gal/s (us), gal/min (us), gal/h (us), gal/d (us)	Gallon/time unit
	kgal/s (us), kgal/min (us), kgal/h (us), kgal/d (us)	Kilogallon/time unit
	Mgal/s (us), Mgal/min (us), Mgal/h (us), Mgal/d (us)	Million gallon/time unit
	bbl/s (us;liq.), bbl/min (us;liq.), bbl/h (us;liq.), bbl/d (us;liq.)	Barrel/time unit (normal liquids) Normal liquids: 31.5 gal/bbl
	bbl/s (us;beer), bbl/min (us;beer), bbl/h (us;beer), bbl/d (us;beer)	Barrel /time unit (beer) Beer: 31.0 gal/bbl
	bbl/s (us;oil), bbl/min (us;oil), bbl/h (us;oil), bbl/d (us;oil)	Barrel/time unit (petrochemicals) Petrochemicals: 42.0 gal/bbl
	bbl/s (us;tank), bbl/min (us;tank), bbl/h (us;tank), bbl/d (us;tank)	Barrel/time unit (filling tank) Filling tanks: 55.0 gal/bbl
Time	s, m, h, d, y	Second, minute, hour, day, year
	am, pm	Ante meridiem (before midday), post meridiem (after midday)

5.3 Imperial units

Process variable	Units	Explanation
Density	lb/gal (imp), lb/bbl (imp;beer), lb/bbl (imp;oil)	Pound/volume unit
Corrected volume	Sgal (imp)	Standard gallon
Correct.vol.flow	Sgal/s (imp), Sgal/min (imp), Sgal/h (imp), Sgal/d (imp)	Standard gallon/time unit
Volume	gal (imp), Mgal (imp)	Gallon, mega gallon
	bbl (imp;beer), bbl (imp;oil)	Barrel (beer), barrel (petrochemicals)
Volume flow	gal/s (imp), gal/min (imp), gal/h (imp), gal/d (imp)	Gallon/time unit
	Mgal/s (imp), Mgal/min (imp), Mgal/h (imp), Mgal/d (imp)	Mega gallon/time unit
	bbl/s (imp;beer), bbl/min (imp;beer), bbl/h (imp;beer), bbl/d (imp;beer)	Barrel /time unit (beer) Beer: 36.0 gal/bbl
	bbl/s (imp;oil), bbl/min (imp;oil), bbl/h (imp;oil), bbl/d (imp;oil)	Barrel/time unit (petrochemicals) Petrochemicals: 34.97 gal/bbl
Time	s, m, h, d, y	Second, minute, hour, day, year
	am, pm	Ante meridiem (before midday), post meridiem (after midday)

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