

Description of Device Parameters

Proline Prowirl 200

FOUNDATION Fieldbus

Vortex flowmeter

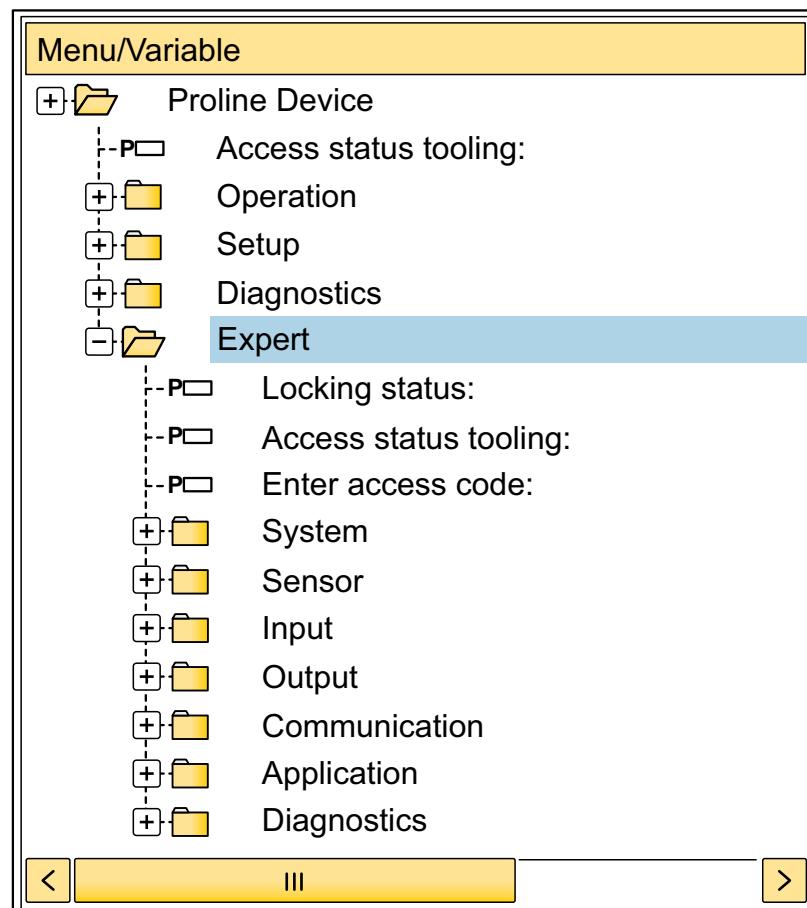


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1 About this document

1.1 Document function

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

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

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

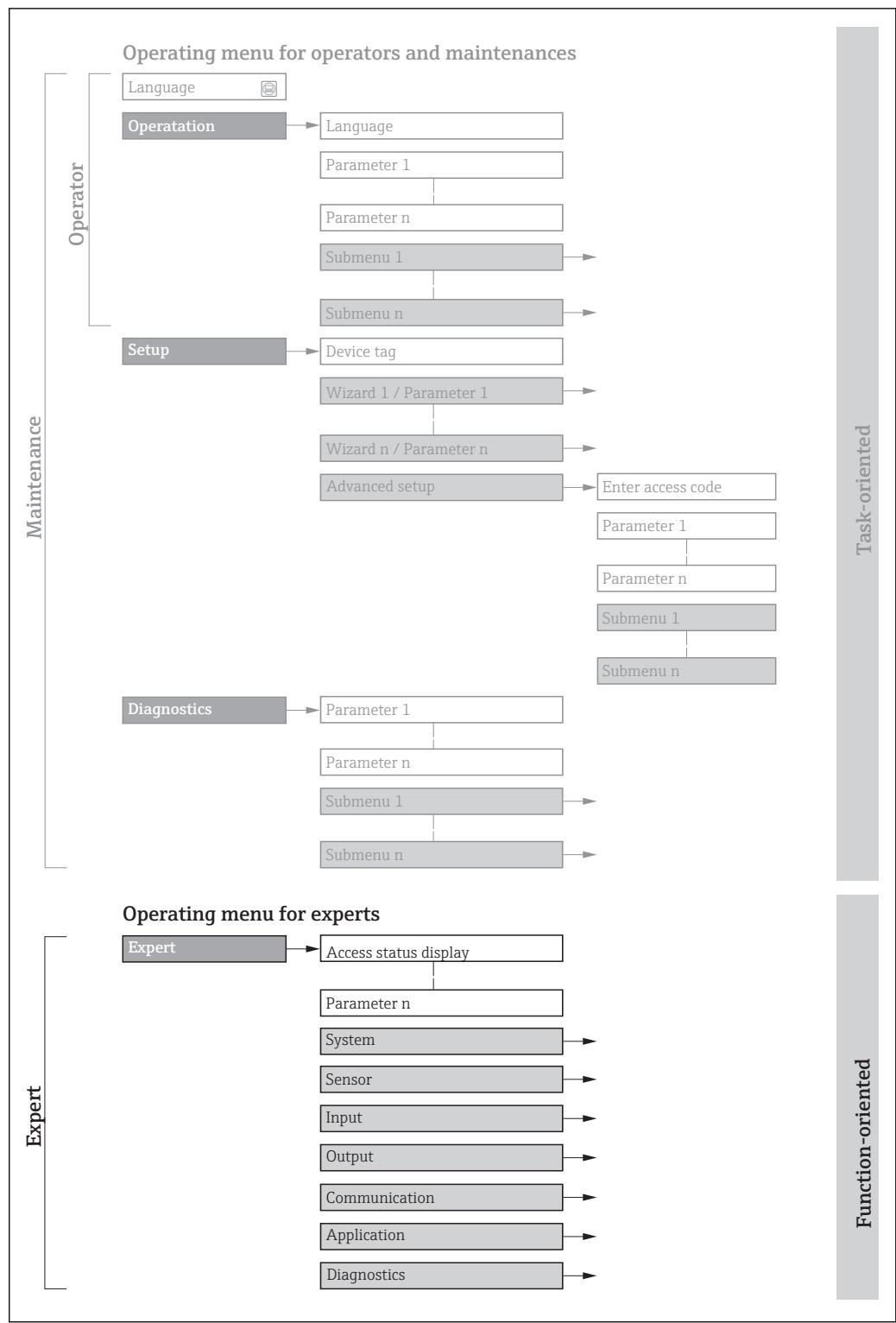
1.2 Target group

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

1.3 Using this document

1.3.1 Information on the document structure

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



1 Sample graphic for the schematic layout of the operating menu



Additional information regarding:

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

1.3.2 Structure of a parameter description

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

Complete parameter name

Write-protected parameter = 

Navigation



- Navigation path to the parameter via the local display (direct access code)
- 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 |
|------------------|--------------------|
| Prowirl D 200 | BA01693D |
| Prowirl F 200 | BA01694D |
| Prowirl O 200 | BA01695D |
| Prowirl R 200 | BA01696D |

1.5.2 Supplementary device-dependent documentation

Special Documentation

| Contents | Documentation code |
|---|--------------------|
| Information on the Pressure Equipment Directive | SD01614D |

| Contents | Documentation code |
|-----------------------|--------------------|
| Heartbeat Technology | SD02030D |
| Wet steam detection | SD02033D |
| Wet steam measurement | SD02036D |

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 stat.disp (0091) | → 13 |
| Ent. access code (0092) | → 14 |
| System | → 14 |
| ▶ Display | → 15 |
| ▶ Conf.backup disp | → 29 |
| ▶ Diagn. handling | → 32 |
| ▶ Administration | → 53 |
| Sensor | → 58 |
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| ▶ System units | → 75 |
| ▶ Process param. | → 88 |
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| ▶ External comp. | → 121 |
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| ▶ Calibration | → 129 |
| Output | → 130 |
| ▶ PFS output | → 130 |

| | |
|-------------------------|-------|
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| Device address (11061) | → 147 |
| ▶ Resource block | → 147 |
| ▶ Analog inputs | → 169 |
| ▶ Analog input 1 to n | → 169 |
| ▶ Discrete inputs | → 220 |
| ▶ Discrete input 1 to n | → 220 |
| ▶ Analog outputs | → 248 |
| ▶ Multiple AO | → 248 |
| ▶ Discrete outputs | → 256 |
| ▶ Multiple DO | → 257 |
| ▶ Application | → 265 |
| Reset all tot. (2806) | → 265 |
| ▶ Totalizer 1 to n | → 266 |
| ▶ Diagnostics | → 270 |
| Actual diagnos. (0691) | → 270 |
| Prev.diagnostics (0690) | → 271 |
| Time fr. restart (0653) | → 272 |
| Operating time (0652) | → 272 |
| ▶ Diagnostic list | → 273 |
| ▶ Event logbook | → 277 |
| ▶ Device info | → 279 |
| ▶ Sensor info | → 283 |
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| | |
|------------------|--------|
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| ► Min/max val. | → 291 |
| ► Heartbeat | → 298 |
| ► Simulation | → 299 |

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 stat.disp (0091) | →  13 |
| Ent. access code (0092) | →  14 |
| ▶ System | →  14 |
| ▶ Sensor | →  58 |
| ▶ Output | →  130 |
| ▶ Communication | →  147 |
| ▶ Analog inputs | →  169 |
| ▶ Discrete inputs | →  220 |
| ▶ Analog outputs | →  248 |
| ▶ Discrete outputs | →  256 |
| ▶ Application | →  265 |
| ▶ Diagnostics | →  270 |

Direct access



Navigation

 Expert → Direct access (0106)

Description

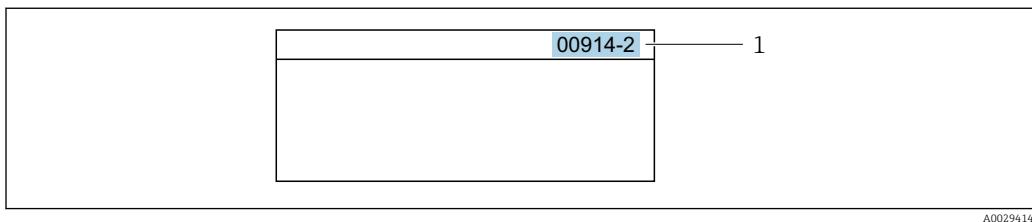
Use this function to enter the access code to enable direct access to the desired parameter via the local display. A parameter number is assigned to each parameter for this purpose.

User entry

0 to 65 535

Additional information*User entry*

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



1 Direct access code

A0029414

Note the following when entering the direct access code:

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

Locking status**Navigation**

Expert → Locking status (0004)

Description

Displays the active write protection.

User interface

- Hardware locked
- Temp. locked

Additional information*Display*

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

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

Selection

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

Access stat.disp

| | |
|-------------------------------|---|
| Navigation |   Expert → Access stat.disp (0091) |
| Prerequisite | A local display is provided. |
| Description | Displays the access authorization to the parameters via the local display. |
| User interface | <ul style="list-style-type: none">▪ Operator▪ Maintenance |
| Factory setting | Operator |
| Additional information | <p><i>Description</i></p> <p>If the -symbol appears in front of a parameter, it cannot be modified via the local display with the current access authorization.</p> <p> The access authorization can be modified via the Ent. access code parameter (→  14).</p> <p> For information about the Ent. access code parameter (→  14): see the "Disabling write protection via the access code" section of the Operating Instructions for the device</p> <p> If additional write protection is active, this restricts the current access authorization even further.</p> |
| | <p><i>Display</i></p> <p> 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</p> |

Access stat.tool

| | |
|------------------------|--|
| Navigation |  Expert → Access stat.tool (0005) |
| Description | Displays the access authorization to the parameters via the operating tool. |
| User interface | <ul style="list-style-type: none">▪ Operator▪ Maintenance |
| Factory setting | Maintenance |

Additional information*Description*

 The access authorization can be modified via the **Ent. access code** parameter
(→ [14](#)).

 If additional write protection is active, this restricts the current access authorization even further.

Display

 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

Ent. access code**Navigation**

 Expert → Ent. access code (0092)

Description

Use this function to enter the user-specific release code to remove parameter write protection on the local display.

User entry

0 to 9 999

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 in the operating tool.

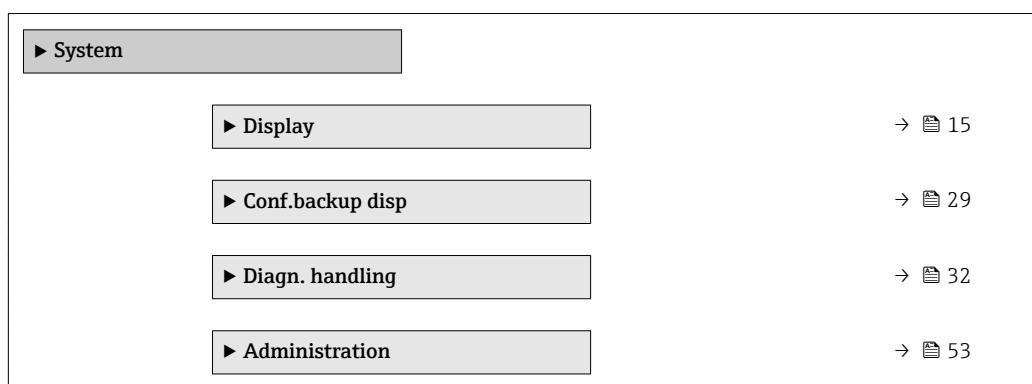
User entry

Max. 16-digit character string comprising numbers, letters and special characters

3.1 "System" submenu

Navigation

  Expert → System



3.1.1 "Display" submenu

Navigation

Expert → System → Display

| | |
|-------------------------|------|
| ► Display | |
| Language (0104) | → 16 |
| Format display (0098) | → 16 |
| Value 1 display (0107) | → 19 |
| 0% bargraph 1 (0123) | → 19 |
| 100% bargraph 1 (0125) | → 20 |
| Decimal places 1 (0095) | → 20 |
| Value 2 display (0108) | → 21 |
| Decimal places 2 (0117) | → 21 |
| Value 3 display (0110) | → 22 |
| 0% bargraph 3 (0124) | → 22 |
| 100% bargraph 3 (0126) | → 23 |
| Decimal places 3 (0118) | → 23 |
| Value 4 display (0109) | → 24 |
| Decimal places 4 (0119) | → 24 |
| Display interval (0096) | → 25 |
| Display damping (0094) | → 25 |
| Header (0097) | → 26 |
| Header text (0112) | → 26 |
| Separator (0101) | → 27 |
| Contrast display (0105) | → 27 |
| Backlight (0111) | → 28 |
| Access stat.disp (0091) | → 28 |

Language

Navigation  Expert → System → 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) *
- العربية (Ara) *
- Bahasa Indonesia *
- ภาษาไทย (Thai) *
- tiếng Việt (Viet) *
- 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.
- Bagr. + 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.



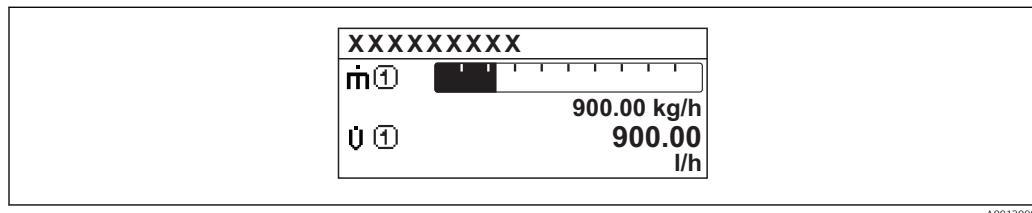
- The **Value 1 display** parameter (→ 19) to **Value 4 display** parameter (→ 24) are used to specify which measured values are shown on the local display and in what order.
- If more measured values are specified than the display mode selected permits, then the values alternate on the device display. The display time until the next change is configured via the **Display interval** parameter (→ 25).

Possible measured values shown on the local display:

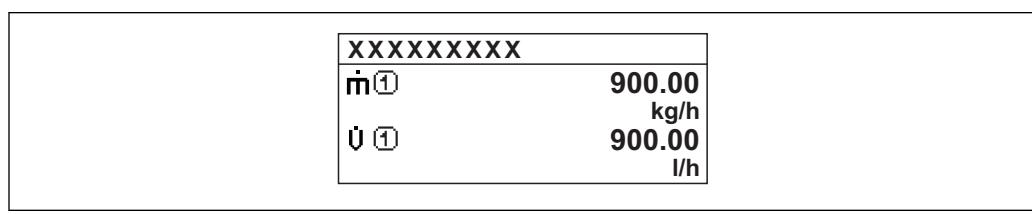
"1 value, max." option



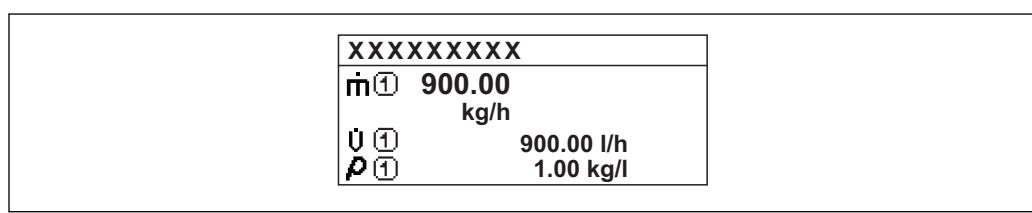
"Bagr. + 1 value" option



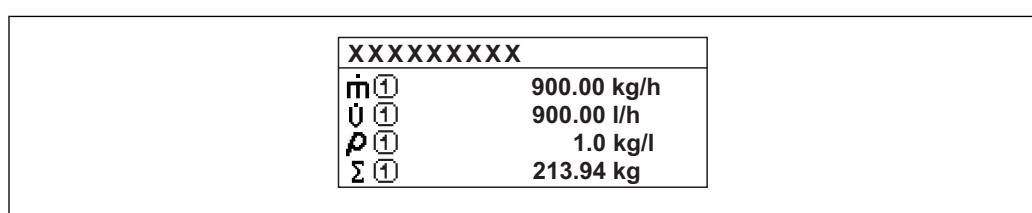
"2 values" option



"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 shown on the local display. |
| Selection | <ul style="list-style-type: none"> ■ Volume flow ■ Correct.vol.flow ■ Mass flow ■ Flow velocity ■ Temperature ■ CalcSatSteamPres * ■ Steam quality * ■ Total mass flow * ■ CondensMassFlow * ■ Energy flow * ■ Heat flow diff. * ■ Reynolds number * ■ Density * ■ Pressure * ■ Specific volume * ■ Degree superheat * ■ Totalizer 1 ■ Totalizer 2 ■ Totalizer 3 |
| Factory setting | Volume flow |
| Additional information | <p><i>Description</i></p> <p>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.</p> <p> The Format display parameter (→ 16) is used to specify how many measured values are displayed simultaneously and how.</p> <p><i>Dependency</i></p> <p> The unit of the displayed measured value is taken from the System units submenu (→ 75).</p> |

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. |

* Visibility depends on order options or device settings

| | |
|------------------------|--|
| User entry | Signed floating-point number |
| Factory setting | Country-specific: <ul style="list-style-type: none">■ 0 m³/h■ 0 ft³/h |
| Additional information | <p><i>Description</i></p> <p> The Format display parameter (→ 16) is used to specify that the measured value is to be displayed as a bar graph.</p> <p><i>User entry</i></p> <p> The unit of the displayed measured value is taken from the System units submenu (→ 75).</p> |

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 → 305 |
| Additional information | <p><i>Description</i></p> <p> The Format display parameter (→ 16) is used to specify that the measured value is to be displayed as a bar graph.</p> <p><i>User entry</i></p> <p> The unit of the displayed measured value is taken from the System units submenu (→ 75).</p> |

Decimal places 1



| | |
|--------------|---|
| Navigation |   Expert → System → Display → Decimal places 1 (0095) |
| Prerequisite | A measured value is specified in the Value 1 display parameter (→ 19). |
| Description | Use this function to select the number of decimal places for measured value 1. |
| Selection | <ul style="list-style-type: none">■ 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 shown on the local display.

Selection For the picklist, see the **Value 1 display** parameter (→  19)

Factory setting None

Additional information *Description*

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

-  The **Format display** parameter (→  16) 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 (→  75).

Decimal places 2



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

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

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

Selection

- X
- X.X
- X.XX
- X.XXX
- X.XXXX

Factory setting X.XX

Additional information*Description*

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

Value 3 display**Navigation**

Expert → System → Display → Value 3 display (0110)

Prerequisite

A local display is provided.

Description

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

Selection

For the picklist, see the **Value 1 display** parameter (→ 19)

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 (→ 16) 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 (→ 75).

0% bargraph 3**Navigation**

Expert → System → Display → 0% bargraph 3 (0124)

Prerequisite

A selection was made in the **Value 3 display** parameter (→ 22).

Description

Use this function to enter the 0% bar graph value to be shown on the display for the measured value 3.

User entry

Signed floating-point number

Factory setting

Country-specific:

- 0 m³/h
- 0 ft³/h

Additional information*Description*

The **Format display** parameter (→ 16) 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 (→ 75).

100% bargraph 3**Navigation**

Expert → System → Display → 100% bargraph 3 (0126)

Prerequisite

A selection was made in the **Value 3 display** parameter (→ 22).

Description

Use this function to enter the 100% bar graph value to be shown on the display for the measured value 3.

User entry

Signed floating-point number

Factory setting

0

Additional information*Description*

The **Format display** parameter (→ 16) 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 (→ 75).

Decimal places 3**Navigation**

Expert → System → Display → Decimal places 3 (0118)

Prerequisite

A measured value is specified in the **Value 3 display** parameter (→ 22).

Description

Use this function to select the number of decimal places for measured value 3.

Selection

- X
- X.X
- X.XX
- X.XXX
- X.XXXX

Factory setting

X.XX

Additional information*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 shown on the local display.

Selection

For the picklist, see the **Value 1 display** parameter (→ 19)

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 (→ 16) 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 (→ 75).

Decimal places 4**Navigation**

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

Prerequisite

A measured value is specified in the **Value 4 display** parameter (→ 24).

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 | <p><i>Description</i></p> <p>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.</p> <p> ■ The Value 1 display parameter (→ 19) to Value 4 display parameter (→ 24) are used to specify which measured values are shown on the local display.</p> <p>■ The display format of the displayed measured values is specified using the Format display parameter (→ 16).</p> |

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 | <p><i>User entry</i></p> <p>Use this function to enter a time constant (PT1 element¹⁾) for display damping:</p> <p>■ If a low time constant is entered, the display reacts particularly quickly to fluctuating measured variables.</p> <p>■ On the other hand, the display reacts more slowly if a high time constant is entered.</p> <p> Damping is switched off if 0 is entered (factory setting).</p> |

1) proportional transmission behavior with first order delay

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

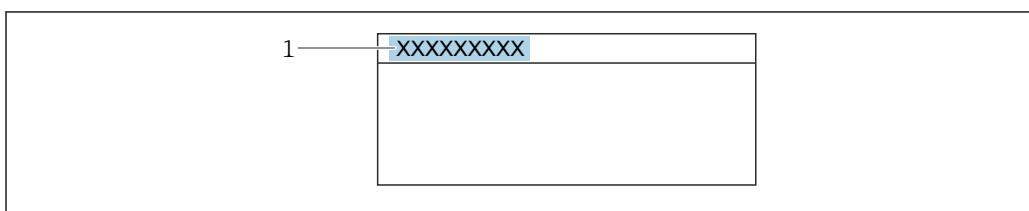
- Device tag
- Free text

Factory setting

Device tag

Additional information*Description*

The header text only appears during normal operation.



A0029422

1 Position of the header text on the display

Selection

- Device tag
 - Is defined in the **Device tag** parameter (→ 280).
- Free text
 - Is defined in the **Header text** parameter (→ 26).

Header text**Navigation**

Expert → System → Display → Header text (0112)

Prerequisite

In the **Header** parameter (→ 26), the **Free text** option is selected.

Description

Use this function to enter a customer-specific text for the header of the local display.

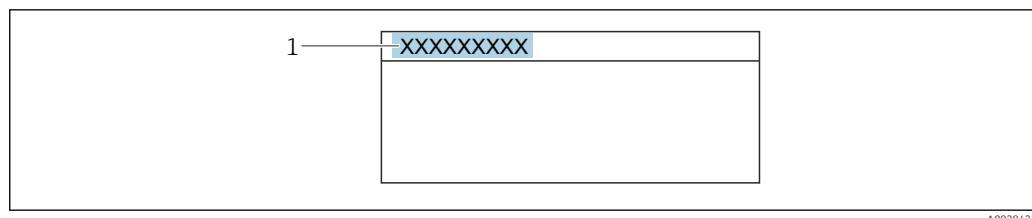
User entry

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

Additional information Set the contrast via the push-buttons:

- Brighter: Press and hold down the keys simultaneously.
- Darker: Press and hold down the keys simultaneously.

Backlight

Navigation   Expert → System → Display → Backlight (0111)

Prerequisite Order code for "Display; operation", option **E** "SD03 4-line, illum.; touch control + data backup function"

Description Use this function to switch the backlight of the local display on and off.

Selection

- Disable
- Enable

Factory setting Disable

Access stat.disp

Navigation   Expert → System → Display → Access stat.disp (0091)

Prerequisite A local display is provided.

Description Displays the access authorization to the parameters via the local display.

User interface

- Operator
- Maintenance

Factory setting Operator

Additional information *Description*

If the -symbol appears in front of a parameter, it cannot be modified via the local display with the current access authorization.

 The access authorization can be modified via the **Ent. access code** parameter (→  14).

 For information about the **Ent. access code** parameter (→  14): see the "Disabling write protection via the access code" section of the Operating Instructions for the device

 If additional write protection is active, this restricts the current access authorization even further.

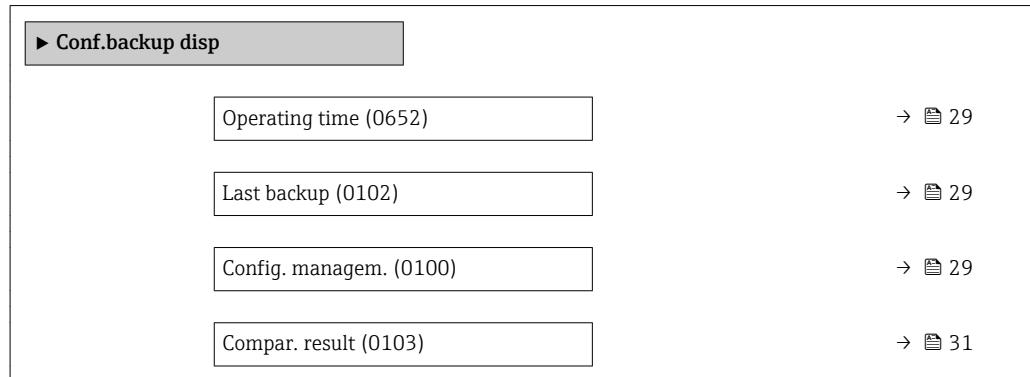
Display

 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

3.1.2 "Conf.backup disp" submenu

Navigation

Expert → System → Conf.backup disp



Operating time

Navigation

Expert → System → Conf.backup disp → Operating time (0652)

Description

Use this function to display the length of time the device has been in operation.

User interface

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

Additional information

User interface

The maximum number of days is 9999, which is equivalent to 27 years.

Last backup

Navigation

Expert → System → Conf.backup disp → Last backup (0102)

Prerequisite

A local display is provided.

Description

Use this function to display the time since a backup copy of the data was last saved to the display module.

User interface

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

Config. managem.



Navigation

Expert → System → Conf.backup disp → Config. managem. (0100)

Prerequisite

A local display is provided.

Description

Use this function to select an action to save the data to the display module.

Selection

- Cancel
- Execute backup
- Restore
- Duplicate
- Compare
- Clear backup
- Display incomp.

Factory setting

Cancel

Additional information*Description*

Configuration via the local display is disabled while the action is performed.

 For information on the status message in the operating tool, see: **Backup state** parameter (→ 31)

Selection

| Options | Description |
|-----------------|--|
| Cancel | No action is executed and the user exits the parameter. |
| Execute backup | A backup copy of the current device configuration is saved from the HistoROM backup to the display module 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 display module to the device's HistoROM backup. The backup copy includes the transmitter data of the device. The following message appears on local display: Restore active! Do not interrupt power supply! |
| Compare | The device configuration saved in the display module is compared with the current device configuration of the HistoROM backup. The following message appears on local display: Comparing files The result can be viewed in Compar. result parameter (→ 31). |
| Duplicate | The transmitter configuration from another device is duplicated to the device using the display module. The following message appears on local display: Copy active! Do not interrupt power supply! |
| Clear backup | The backup copy of the device configuration is deleted from the display module of the device. The following message appears on local display: Deleting file |
| Display incomp. | This option is displayed if the display module is incompatible. All of the other options are not available. Selection is therefore not possible. This option is displayed if it is not possible to save the device and fieldbus data. The display module should be updated to the latest software version so that the data can be saved. |

 For information on updating the display module to the latest software version, please contact your Endress+Hauser service organization.

HistoROM

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

Backup state

| | |
|------------------------|--|
| Navigation |  Expert → System → Conf.backup disp → Backup state (0121) |
| Prerequisite | A local display is provided. |
| Description | Use this function to view the status of the data backup process. |
| User interface | <ul style="list-style-type: none">■ None■ Backup in progr.■ Restore in progr■ Import in progr.■ Delete in progr.■ Comp. in progr. |
| Factory setting | None |

Compar. result

| | |
|------------------------|--|
| Navigation |   Expert → System → Conf.backup disp → Compar. result (0103) |
| Prerequisite | A local display is provided. |
| Description | Use this function to view the last result of comparing the current device configuration to the backup copy in the display module. |
| User interface | <ul style="list-style-type: none">■ Set. identical■ Set. not ident.■ No backup■ Backup corrupt■ Check not done■ Dataset incompl. |
| Factory setting | Check not done |

Additional information*Description*

The comparison is started via the **Compare** option in the **Config. managem.** parameter (→ 29).

Selection

- Set. identical
 - The current device configuration of the HistoROM is identical to the backup copy in the display module.
 - If the transmitter configuration of another device has been copied to the device via the display module and the **Duplicate** option in the **Config. managem.** parameter (→ 29), the current device configuration of the HistoROM only partly matches the backup copy in the display module: 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 display module.
- No backup
There is no backup copy of the device configuration of the HistoROM in the display module.
- Backup corrupt
The current device configuration of the HistoROM is corrupt or not compatible with the backup copy in the display module.
- Check not done
The device configuration of the HistoROM has not yet been compared to the backup copy in the display module.
- Dataset incomp.
The backup copy in the display module is not compatible with the device.

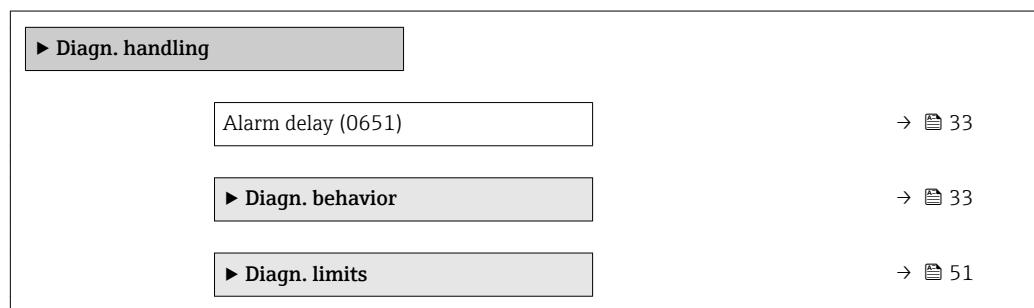
HistoROM

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



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*Description*

This setting affects the following diagnostic messages:

- 046 Sensor limit
- △S172 Ambient temp.
- 828 Ambient temp.
- 829 Ambient temp.
- 832 Electronic temp.
- 833 Electronic temp.
- 834 Process temp.
- 835 Process temp.
- 841 Flow velocity
- 844 Sensor range
- 870 Meas. inaccuracy
- 871 Steam saturation
- 872 Wet steam
- 873 No steam
- 874 Wet steam unsure
- 945 Sensor range
- 946 Vibration
- 947 Vibration exceed

"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 (→ 33).

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. For local display with touch control: 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 (→ 277) (Event list submenu (→ 278)) 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

Navigation

 Expert → System → Diagn. handling → Diagn. behavior

| ► Diagn. behavior | |
|---------------------------|------|
| Diagnostic no. 022 (0751) | → 36 |
| Diagnostic no. 122 (0752) | → 36 |
| Diagnostic no. 350 (0756) | → 37 |
| Diagnostic no. 371 (0757) | → 37 |
| Diagnostic no. 442 (0658) | → 37 |
| Diagnostic no. 443 (0659) | → 38 |
| Diagnostic no. 828 (0755) | → 38 |
| Diagnostic no. 829 (0754) | → 39 |
| Diagnostic no. 832 (0675) | → 39 |
| Diagnostic no. 833 (0676) | → 39 |
| Diagnostic no. 834 (0677) | → 40 |
| Diagnostic no. 835 (0678) | → 40 |
| Diagnostic no. 841 (0729) | → 41 |
| Diagnostic no. 844 (0747) | → 41 |

| | |
|---------------------------|-------|
| Diagnostic no. 870 (0726) | → 42 |
| Diagnostic no. 871 (0748) | → 42 |
| Diagnostic no. 872 (0746) | → 42 |
| Diagnostic no. 873 (0749) | → 43 |
| Diagnostic no. 874 (0772) | → 43 |
| Diagnostic no. 945 (0750) | → 44 |
| Diagnostic no. 947 (0753) | → 44 |
| Diagnostic no. 972 (0758) | → 45 |
| Status diag. 022 (11041) | → 45 |
| Status diag. 122 (11042) | → 45 |
| Status diag. 350 (11000) | → 46 |
| Status diag. 371 (11014) | → 46 |
| Status diag. 828 (11015) | → 46 |
| Status diag. 829 (11001) | → 47 |
| Status diag. 832 (11002) | → 47 |
| Status diag. 833 (11003) | → 47 |
| Status diag. 834 (11004) | → 48 |
| Status diag. 835 (11005) | → 48 |
| Status diag. 841 (11006) | → 48 |
| Status diag. 844 (11007) | → 49 |
| Status diag. 870 (11008) | → 49 |
| Status diag. 871 (11009) | → 49 |
| Status diag. 872 (11010) | → 50 |
| Status diag. 873 (11011) | → 50 |

| | |
|--------------------------|-------|
| Status diag. 945 (11012) | → 50 |
| Status diag. 947 (11013) | → 51 |

Diagnostic no. 022 (Temp. sensor)



| | |
|-------------------------------|--|
| Navigation | Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 022 (0751) |
| Prerequisite | With order code for "Sensor version": Option "Mass (integrated temperature measurement)" |
| Description | Use this function to change the diagnostic behavior of the diagnostic message 022 Temp. sensor . |
| Selection | <ul style="list-style-type: none">■ Off■ Alarm■ Warning■ Logbook only |
| Factory setting | Alarm |
| Additional information | <i>Selection</i> Detailed description of the options available for selection: → 33 |

Diagnostic no. 122 (Temp. sensor)



| | |
|-------------------------------|--|
| Navigation | Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 122 (0752) |
| Prerequisite | With order code for "Sensor version": Option "Mass (integrated temperature measurement)" |
| Description | Use this function to change the diagnostic behavior of the diagnostic message 122 Temp. sensor . |
| Selection | <ul style="list-style-type: none">■ Off■ Alarm■ Warning■ Logbook only |
| Factory setting | Warning |
| Additional information | <i>Selection</i> Detailed description of the options available for selection: → 33 |

Diagnostic no. 350 (Pre-amplifier)

| | |
|-------------------------------|---|
| Navigation | Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 350 (0756) |
| Description | Use this function to change the diagnostic behavior of the diagnostic message 350 Pre-amplifier . |
| Selection | <ul style="list-style-type: none"> ■ Off ■ Alarm ■ Warning ■ Logbook only |
| Factory setting | Alarm |
| Additional information | <i>Selection</i> Detailed description of the options available for selection: → 33 |

Diagnostic no. 371 (Temp. sensor)

| | |
|-------------------------------|---|
| Navigation | Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 371 (0757) |
| Description | Use this function to change the diagnostic behavior of the diagnostic message 371 Temp. sensor . |
| Selection | <ul style="list-style-type: none"> ■ Off ■ Alarm ■ Warning ■ Logbook only |
| Factory setting | Warning |
| Additional information | <i>Selection</i> Detailed description of the options available for selection: → 33 |

Diagnostic no. 442 (Freq. output)

| | |
|---------------------|---|
| Navigation | Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 442 (0658) |
| Prerequisite | The measuring device has a pulse/frequency/switch output. |
| Description | Option for changing the diagnostic behavior of the diagnostic message 442 Freq. output . |
| Selection | <ul style="list-style-type: none"> ■ Off ■ Alarm ■ Warning ■ Logbook only |

Factory setting Warning

Additional information *Selection*



Detailed description of the options available for selection: → [33](#)

Diagnostic no. 443 (Pulse output)



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

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

Description Option for changing the diagnostic behavior of the diagnostic message **443 Pulse output**.

Selection

- Off
- Alarm
- Warning
- Logbook only

Factory setting Warning

Additional information *Selection*



Detailed description of the options available for selection: → [33](#)

Diagnostic no. 828 (Ambient temp.)



Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 828 (0755)

Description Use this function to change the diagnostic behavior of the diagnostic message **828 Ambient temp..**

Selection

- Off
- Alarm
- Warning
- Logbook only

Factory setting Warning

Additional information *Description*

The ambient temperature of the pre-amplifier is too low.

Selection



Detailed description of the options available for selection: → [33](#)

Diagnostic no. 829 (Ambient temp.)



| | |
|-------------------------------|--|
| Navigation | Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 829 (0754) |
| Description | Use this function to change the diagnostic behavior of the diagnostic message 829 Ambient temp.. |
| Selection | <ul style="list-style-type: none"> ■ Off ■ Alarm ■ Warning ■ Logbook only |
| Factory setting | Warning |
| Additional information | <p><i>Description</i></p> <p>The ambient temperature of the pre-amplifier is too high.</p> <p><i>Selection</i></p> <p> Detailed description of the options available for selection: → 33</p> |

Diagnostic no. 832 (Electronic temp.)



| | |
|-------------------------------|--|
| Navigation | Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 832 (0675) |
| Description | Option for changing the diagnostic behavior of the diagnostic message 832 Electronic temp.. |
| Selection | <ul style="list-style-type: none"> ■ Off ■ Alarm ■ Warning ■ Logbook only |
| Factory setting | Warning |
| Additional information | <p><i>Description</i></p> <p>The electronics temperature of the transmitter is too high.</p> <p><i>Selection</i></p> <p> Detailed description of the options available for selection: → 33</p> |

Diagnostic no. 833 (Electronic temp.)



| | |
|--------------------|--|
| Navigation | Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 833 (0676) |
| Description | Option for changing the diagnostic behavior of the diagnostic message 833 Electronic temp.. |

| | |
|-------------------------------|--|
| Selection | <ul style="list-style-type: none">■ Off■ Alarm■ Warning■ Logbook only |
| Factory setting | Warning |
| Additional information | <p><i>Description</i></p> <p>The electronics temperature of the transmitter is too low.</p> <p><i>Selection</i></p> <p> Detailed description of the options available for selection: → 33</p> |
| <hr/> | |

| | |
|---|--|
| Diagnostic no. 834 (Process temp.) | |
| Navigation |   Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 834 (0677) |
| Description | Option for changing the diagnostic behavior of the diagnostic message 834 Process temp.. |
| Selection | <ul style="list-style-type: none">■ Off■ Alarm■ Warning■ Logbook only |
| Factory setting | Warning |
| Additional information | <p><i>Description</i></p> <p>The process temperature is too high.</p> <p><i>Selection</i></p> <p> Detailed description of the options available for selection: → 33</p> |

| | |
|---|---|
| Diagnostic no. 835 (Process temp.) | |
| Navigation |   Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 835 (0678) |
| Description | Option for changing the diagnostic behavior of the diagnostic message 835 Process temp.. |
| Selection | <ul style="list-style-type: none">■ Off■ Alarm■ Warning■ Logbook only |
| Factory setting | Warning |

Additional information*Description*

The process temperature is too low.

Selection

 Detailed description of the options available for selection: → [33](#)

Diagnostic no. 841 (Flow velocity)**Navigation**

 Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 841 (0729)

Description

Use this function to change the diagnostic behavior of the diagnostic message **841 Flow velocity**.

Selection

- Off
- Alarm
- Warning
- Logbook only

Factory setting

Warning

Additional information*Description*

The flow velocity is too high.

Selection

 Detailed description of the options available for selection: → [33](#)

Diagnostic no. 844 (Sensor range)**Navigation**

 Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 844 (0747)

Description

Use this function to change the diagnostic behavior of the diagnostic message **844 Sensor range**.

Selection

- Off
- Alarm
- Warning
- Logbook only

Factory setting

Warning

Additional information*Description*

The sensor range has been exceeded: "overspeeding".

Selection

 Detailed description of the options available for selection: → [33](#)

Diagnostic no. 870 (Meas. inaccuracy)

| | |
|-------------------------------|--|
| Navigation | Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 870 (0726) |
| Description | Option for changing the diagnostic behavior of the diagnostic message 870 Meas. inaccuracy . |
| Selection | <ul style="list-style-type: none">▪ Off▪ Alarm▪ Warning▪ Logbook only |
| Factory setting | Warning |
| Additional information | <p><i>Description</i></p> <p>The Reynolds number is too low.</p> <p><i>Selection</i></p> <p> Detailed description of the options available for selection: → 33</p> |

Diagnostic no. 871 (Steam saturation)

| | |
|-------------------------------|---|
| Navigation | Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 871 (0748) |
| Prerequisite | The Steam option is selected in the Select medium parameter (→ 93) parameter. |
| Description | Use this function to change the diagnostic behavior of the diagnostic message 871 Steam saturation . |
| Selection | <ul style="list-style-type: none">▪ Off▪ Alarm▪ Warning▪ Logbook only |
| Factory setting | Off |
| Additional information | <p><i>Selection</i></p> <p> Detailed description of the options available for selection: → 33</p> |

Diagnostic no. 872 (Wet steam)

| | |
|---------------------|---|
| Navigation | Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 872 (0746) |
| Prerequisite | The Wet Steam Detection application package has been enabled. |
| | <p> The software options currently enabled are displayed in the SW option overv. parameter (→ 57).</p> |

| | |
|-------------------------------|---|
| Description | Use this function to change the diagnostic behavior of the diagnostic message 872 Wet steam . |
| Selection | <ul style="list-style-type: none">▪ Off▪ Alarm▪ Warning▪ Logbook only |
| Factory setting | Warning |
| Additional information | <i>Selection</i>  Detailed description of the options available for selection: → 33 |

Diagnostic no. 873 (Water detected)

| | |
|-------------------------------|---|
| Navigation |   Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 873 (0749) |
| Prerequisite | The Steam option is selected in the Select medium parameter (→ 93) parameter. |
| Description | Use this function to change the diagnostic behavior of the diagnostic message 873 Water detected . |
| Selection | <ul style="list-style-type: none">▪ Off▪ Alarm▪ Warning▪ Logbook only |
| Factory setting | Off |
| Additional information | <i>Selection</i>  Detailed description of the options available for selection: → 33 |

Diagnostic no. 874 (X% spec invalid)

| | |
|------------------------|---|
| Navigation |   Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 874 (0772) |
| Prerequisite | The Steam option is selected in the Select medium parameter (→ 93) parameter. |
| Description | Use this function to change the diagnostic behavior of the diagnostic message 874 X% spec invalid . |
| Selection | <ul style="list-style-type: none">▪ Off▪ Alarm▪ Warning▪ Logbook only |
| Factory setting | Off |

Additional information*Description*

The conditions for calculating the steam quality are not met.

Selection

 Detailed description of the options available for selection: → [33](#)

Diagnostic no. 945 (Sensor range)**Navigation**

 Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 945 (0750)

Prerequisite

With order code for "Sensor version":
Option "Mass (integrated temperature measurement)"

Description

Use this function to change the diagnostic behavior of the diagnostic message **945 Sensor range**.

Selection

- Off
- Alarm
- Warning
- Logbook only

Factory setting

Warning

Additional information*Description*

The sensor range is outside the pressure-temperature curve of the measuring tube.

Selection

 Detailed description of the options available for selection: → [33](#)

Diagnostic no. 947 (Vibration exceed)**Navigation**

 Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 947 (0753)

Description

Use this function to change the diagnostic behavior of the diagnostic message **947 Vibration exceed**.

Selection

- Off
- Alarm
- Warning
- Logbook only

Factory setting

Alarm

Additional information*Selection*

 Detailed description of the options available for selection: → [33](#)

Diagnostic no. 972 (Degr.superh.lim.)



| | |
|-------------------------------|---|
| Navigation | Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 972 (0758) |
| Prerequisite | If the Steam option is selected in the Select medium parameter (→ 93). |
| Description | Use this function to change the diagnostic behavior of the diagnostic message 972 Degr.superh.lim.. |
| Selection | <ul style="list-style-type: none"> ■ Off ■ Alarm ■ Warning ■ Logbook only |
| Factory setting | Off |
| Additional information | <p><i>Description</i></p> <p>The upper limit for superheated steam has been exceeded.</p> <p><i>Selection</i></p> <p> Detailed description of the options available for selection: → 33</p> |

Status diag. 022 (Temp. sensor)

| | |
|-------------------------------|--|
| Navigation | Expert → System → Diagn. handling → Diagn. behavior → Status diag. 022 (11041) |
| Description | Option for changing the status of the diagnostic message 022 Temp. sensor . |
| Selection | <ul style="list-style-type: none"> ■ Bad ■ Uncertain ■ Good |
| Factory setting | Bad |
| Additional information | Detailed description of the options available for selection: → 34 |

Status diag. 122 (Temp. sensor)

| | |
|------------------------|--|
| Navigation | Expert → System → Diagn. handling → Diagn. behavior → Status diag. 122 (11042) |
| Description | Option for changing the status of the diagnostic message 122 Temp. sensor . |
| Selection | <ul style="list-style-type: none"> ■ Bad ■ Uncertain ■ Good |
| Factory setting | Good |

Additional information

Detailed description of the options available for selection: → [34](#)

Status diag. 350 (Pre-amplifier)

Navigation

Expert → System → Diagn. handling → Diagn. behavior → Status diag. 350 (11000)

Description

Option for changing the status of the diagnostic message **350 Pre-amplifier**.

Selection

- Bad
- Uncertain
- Good

Factory setting

Bad

Additional information

Detailed description of the options available for selection: → [34](#)

Status diag. 371 (Temp. sensor)

Navigation

Expert → System → Diagn. handling → Diagn. behavior → Status diag. 371 (11014)

Description

Option for changing the status of the diagnostic message **371 Temp. sensor**.

Selection

- Bad
- Uncertain
- Good

Factory setting

Bad

Additional information

Detailed description of the options available for selection: → [34](#)

Status diag. 828 (Ambient temp.)

Navigation

Expert → System → Diagn. handling → Diagn. behavior → Status diag. 828 (11015)

Description

Option for changing the status of the diagnostic message **828 Ambient temp.**

Selection

- Bad
- Uncertain
- Good

Factory setting

Uncertain

Additional information

Detailed description of the options available for selection: → [34](#)

Status diag. 829 (Ambient temp.)

| | |
|-------------------------------|---|
| Navigation |  Expert → System → Diagn. handling → Diagn. behavior → Status diag. 829 (11001) |
| Description | Option for changing the status of the diagnostic message 829 Ambient temp.. |
| Selection | <ul style="list-style-type: none">■ Bad■ Uncertain■ Good |
| Factory setting | Uncertain |
| Additional information |  Detailed description of the options available for selection: →  34 |

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 | <ul style="list-style-type: none">■ Bad■ Uncertain■ Good |
| Factory setting | Uncertain |
| Additional information |  Detailed description of the options available for selection: →  34 |

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 | <ul style="list-style-type: none">■ Bad■ Uncertain■ Good |
| Factory setting | Uncertain |
| Additional information |  Detailed description of the options available for selection: →  34 |

Status diag. 834 (Process temp.)

| | |
|-------------------------------|--|
| Navigation |   Expert → System → Diagn. handling → Diagn. behavior → Status diag. 834 (11004) |
| Description | Option for changing the status of the diagnostic message 834 Process temp.. |
| Selection | <ul style="list-style-type: none">■ Bad■ Uncertain■ Good |
| Factory setting | Uncertain |
| Additional information |  Detailed description of the options available for selection: →  34 |

Status diag. 835 (Process temp.)

| | |
|-------------------------------|--|
| Navigation |   Expert → System → Diagn. handling → Diagn. behavior → Status diag. 835 (11005) |
| Description | Option for changing the status of the diagnostic message 835 Process temp.. |
| Selection | <ul style="list-style-type: none">■ Bad■ Uncertain■ Good |
| Factory setting | Uncertain |
| Additional information |  Detailed description of the options available for selection: →  34 |

Status diag. 841 (Flow velocity)

| | |
|-------------------------------|--|
| Navigation |   Expert → System → Diagn. handling → Diagn. behavior → Status diag. 841 (11006) |
| Description | Option for changing the status of the diagnostic message 841 Flow velocity. |
| Selection | <ul style="list-style-type: none">■ Bad■ Uncertain■ Good |
| Factory setting | Uncertain |
| Additional information |  Detailed description of the options available for selection: →  34 |

Status diag. 844 (Sensor range)

| | |
|-------------------------------|---|
| Navigation |  Expert → System → Diagn. handling → Diagn. behavior → Status diag. 844 (11007) |
| Description | Option for changing the status of the diagnostic message 844 Sensor range . |
| Selection | <ul style="list-style-type: none">■ Bad■ Uncertain■ Good |
| Factory setting | Uncertain |
| Additional information |  Detailed description of the options available for selection: →  34 |

Status diag. 870 (Meas. inaccuracy)

| | |
|-------------------------------|---|
| Navigation |  Expert → System → Diagn. handling → Diagn. behavior → Status diag. 870 (11008) |
| Description | Option for changing the status of the diagnostic message 870 Meas. inaccuracy . |
| Selection | <ul style="list-style-type: none">■ Bad■ Uncertain■ Good |
| Factory setting | Uncertain |
| Additional information |  Detailed description of the options available for selection: →  34 |

Status diag. 871 (Steam saturation)

| | |
|-------------------------------|---|
| Navigation |  Expert → System → Diagn. handling → Diagn. behavior → Status diag. 871 (11009) |
| Description | Option for changing the status of the diagnostic message 871 Steam saturation . |
| Selection | <ul style="list-style-type: none">■ Bad■ Uncertain■ Good |
| Factory setting | Uncertain |
| Additional information |  Detailed description of the options available for selection: →  34 |

Status diag. 872 (Wet steam)

| | |
|-------------------------------|--|
| Navigation |   Expert → System → Diagn. handling → Diagn. behavior → Status diag. 872 (11010) |
| Description | Option for changing the status of the diagnostic message 872 Wet steam . |
| Selection | <ul style="list-style-type: none">■ Bad■ Uncertain■ Good |
| Factory setting | Uncertain |
| Additional information |  Detailed description of the options available for selection: →  34 |

Status diag. 873 (No steam)

| | |
|-------------------------------|--|
| Navigation |   Expert → System → Diagn. handling → Diagn. behavior → Status diag. 873 (11011) |
| Description | Option for changing the status of the diagnostic message 873 No steam . |
| Selection | <ul style="list-style-type: none">■ Bad■ Uncertain■ Good |
| Factory setting | Uncertain |
| Additional information |  Detailed description of the options available for selection: →  34 |

Status diag. 945 (Sensor range)

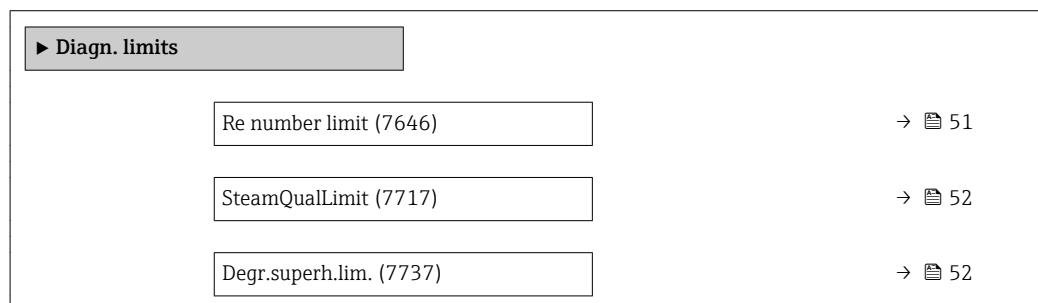
| | |
|-------------------------------|--|
| Navigation |   Expert → System → Diagn. handling → Diagn. behavior → Status diag. 945 (11012) |
| Description | Option for changing the status of the diagnostic message 945 Sensor range . |
| Selection | <ul style="list-style-type: none">■ Bad■ Uncertain■ Good |
| Factory setting | Uncertain |
| Additional information |  Detailed description of the options available for selection: →  34 |

Status diag. 947 (Vibration exceed)

| | |
|-------------------------------|---|
| Navigation |  Expert → System → Diagn. handling → Diagn. behavior → Status diag. 947 (11013) |
| Description | Option for changing the status of the diagnostic message 947 Vibration exceed . |
| Selection | <ul style="list-style-type: none"> ■ Bad ■ Uncertain ■ Good |
| Factory setting | Bad |
| Additional information |  Detailed description of the options available for selection: →  34 |

"Diagnostic limits" submenu

Navigation  Expert → System → Diagn. handling → Diagn. limits

**Re number limit**

| | |
|-------------------------------|---|
| Navigation |  Expert → System → Diagn. handling → Diagn. limits → Re number limit (7646) |
| Prerequisite | With order code for "Sensor version": Option "Mass (integrated temperature measurement)" |
| Description | Use this function to enter the lower limit value for the Reynolds number. If the Reynolds number falls short of this limit value, the diagnostic message 870 Meas. inaccuracy is triggered. |
| User entry | 4 000 to 100 000 |
| Factory setting | 5 000 |
| Additional information | <i>Limit value</i>  If the Reynolds number falls short of the limit value configured here, the diagnostic behavior selected in the Diagnostic no. 870 parameter (→  42) is triggered. |

SteamQualLimit



Navigation

Expert → System → Diagn. handling → Diagn. limits → SteamQualLimit (7717)

Prerequisite

The following conditions are met:

- The **Steam** option is selected in the **Select medium** parameter (→ 93) parameter.
- The **Calculated value** option is selected in the **Steam quality** parameter (→ 94) parameter.

Description

Use this function to enter the threshold value for the steam quality which, if undershot, triggers the diagnostic message **△S872 Wet steam**.

User entry

0 to 100 %

Factory setting

80 %

Additional information

Limit value

This limit value has a hysteresis of 5 %, i.e. the diagnostic message is reset at a threshold value of +5 % or if 100 % is reached (at 85 % for the factory setting of 80 %).

- If the steam quality has dropped below the limit value configured here, the diagnostic behavior selected in the **Diagnostic no. 872** parameter (0746) (→ 42) is triggered.

Degr.superh.lim.



Navigation

Expert → System → Diagn. handling → Diagn. limits → Degr.superh.lim. (7737)

Prerequisite

In the **Select medium** parameter (→ 93), the **Steam** option is selected.

Description

Use this function to enter the threshold value for the degree of superheat which, if exceeded, triggers the diagnostic message **972 Degr.superh.lim..**

User entry

0 to 500 K

Factory setting

5 K

Additional information

Limit value

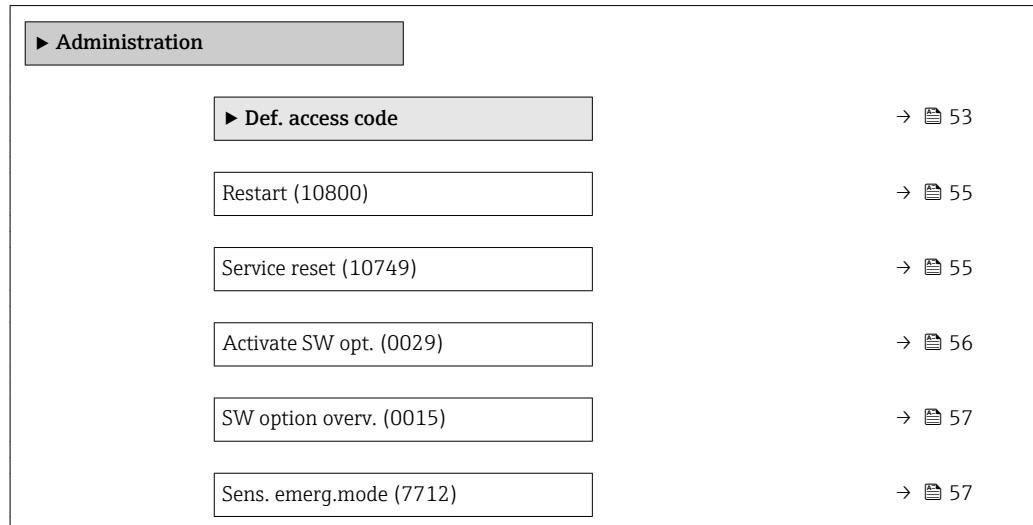
This limit value has a hysteresis of 1 K, i.e. the diagnostic message is triggered if the threshold value +1 K is reached and is reset again when the value drops below the threshold value.

- If the degree of superheat has exceeded the limit value configured here, the diagnostic behavior selected in the **Diagnostic no. 972** parameter (→ 45) is triggered.

3.1.4 "Administration" submenu

Navigation

Expert → System → Administration



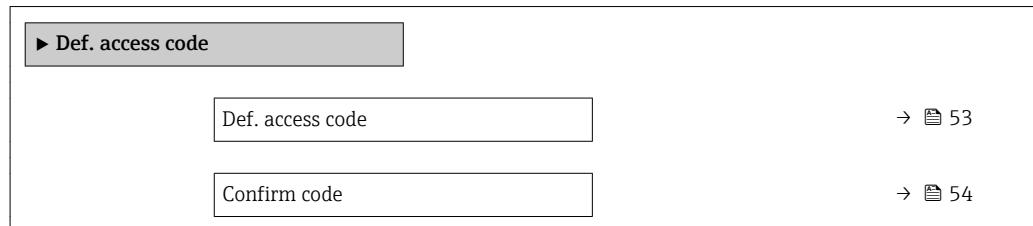
"Def. access code" wizard

i The **Def. access code** wizard (→ 53) is only available when operating via the local display.

If operating via the operating tool, the **Def. access code** parameter (→ 54) 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



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 configuration of the device against any inadvertent changes via the local display.

User entry

0 to 9 999

Factory setting

0

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.

 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 (→ 14).

 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 0 to 9 999

Factory setting 0

Additional parameters in the "Administration" submenu

Def. access code



Navigation  Expert → System → Administration → Def. access code

Description Use this function to enter a user-specific release code to restrict write-access to the parameters. This protects the configuration of the device against any inadvertent changes via the operating tool.

User entry 0 to 9 999

Factory setting 0

Additional information*Description*

The write protection affects all parameters in the document marked with the  symbol.

 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 (→ 14).

 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.

Restart**Navigation**

 Expert → System → Administration → 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

Additional information*Selection*

| Options | Description |
|------------------|---|
| Uninitialized | The selection has no effect on the device. |
| Run | The selection has no effect on the device. |
| Resource | The selection has no effect on the device. |
| Defaults | All FOUNDATION Fieldbus blocks are reset to their factory settings. Example: Analog Input Channel to the Uninitialized option. |
| Processor | The device is restarted. |
| To delivery set. | Advanced FOUNDATION Fieldbus parameters (FOUNDATION Fieldbus blocks, schedule information) and device parameters for which a customer-specific default setting was ordered are reset to this customer-specific value. |

Service reset**Navigation**

 Expert → System → Administration → Service reset (10749)

Description

Extended selection for a manual restart or a manual device reset.

| | |
|-------------------------------|---|
| Selection | <ul style="list-style-type: none"> ▪ Uninitialized ▪ DeliverySett+MIB ▪ ENP restart |
| Factory setting | Uninitialized |
| Additional information | <p><i>Selection</i></p> <ul style="list-style-type: none"> ▪ Uninitialized Factory setting ▪ DeliverySett+MIB Reset the device to the as-delivered state. Important communication settings are reset to the factory default settings here. ▪ ENP restart Reset the parameters for the electronic name plate (ENP). |

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 | <p><i>Description</i></p> <p>If a measuring device was ordered with an additional software option, the activation code is programmed in the device at the factory.</p> <p>The activation code is documented in the parameter protocol supplied.</p> <p><i>User entry</i></p> <p> To activate a software option subsequently, please contact your Endress+Hauser sales organization.</p> <p>NOTE!</p> <p>The activation code is linked to the serial number of the measuring device and varies according to the device and software option.</p> <p>If an incorrect or invalid code is entered, this results in the loss of software options that have already been activated.</p> <ul style="list-style-type: none"> ► Before you enter a new activation code, make a note of the current activation code from the parameter protocol. ► 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 (→ 57). ↳ 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 from the parameter protocol.
- ▶ Have your Endress+Hauser sales organization check the new activation code remembering to specify the serial number or ask for the code again.

Example for a software option

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

 The software options currently enabled are displayed in the **SW option overv.** parameter (→ 57).

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
- Mass flow
- Natural gas
- Air+industr.gas
- Wet steam detec.
- Wet steam meas.
- HBT Verification

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"

"Mass flow" option, "Natural gas" option, "Air+industr.gas" option

Order code for "Sensor version":
Option "Mass (integrated temperature measurement)"

"Wet steam detec." option

 Only available for Prowirl F.

Order code for "Application package", option **ES** "Wet steam detection"

"HBT Verification" option

Order code for "Application package", option **EB** "Heartbeat Verification"

Sens. emerg.mode



Navigation  Expert → System → Administration → Sens. emerg.mode (7712)

Prerequisite The device has identified an error during verification of the characteristics in the sensor data storage or electronics module. A diagnostic message of status type **XF** is output.

| | |
|-------------------------------|--|
| Description | Use this function to switch on the emergency mode of the sensor to use the backup of the sensor characteristics or main electronics characteristics stored in the HistoROM. |
| Selection | <ul style="list-style-type: none"> ▪ Cancel ▪ Ok |
| Factory setting | Cancel |
| Additional information | <p><i>Description</i></p> <p>i This parameter becomes visible if the data in the S-DAT or on-board memory cannot be read on account of a defect or error. There is a copy of the data on the HistoROM (FT10). If the emergency mode is activated, this copy is used and the device measure correctly again at least up until the next device switch-off/switch-on. After switch-on/switch-off, the emergency mode would have to be reactivated again. This ensures that the client can operate the device until a new spare part arrives.</p> <p>The status signal of the output diagnostic message changes from F (failure) to M (maintenance required), the diagnostic behavior changes from Alarm to Warning: ΔM. The diagnostic message is output until the characteristics in the sensor data storage are again correct.</p> <p>i Information on what is causing the diagnostic message, and remedy measures, can be viewed by pressing the \mathbb{E}-button.</p> <p>i Information on status signals and diagnostic behavior: Operating Instructions about the device, "Diagnostic message" chapter</p> |

3.2 "Sensor" submenu

Navigation

Expert → Sensor

| | |
|---------------------------|--------|
| ► Sensor | |
| ► Measured val. | → 59 |
| ► System units | → 75 |
| ► Process param. | → 88 |
| ► Measurement mode | → 92 |
| ► External comp. | → 121 |
| ► Sensor adjustm. | → 125 |
| ► Calibration | → 129 |

3.2.1 "Measured values" submenu

Navigation

Expert → Sensor → Measured val.

| | |
|-------------------|------|
| ► Measured val. | |
| ► Process variab. | → 59 |
| ► Totalizer | → 72 |
| ► Output values | → 73 |

"Process variables" submenu

Navigation

Expert → Sensor → Measured val. → Process variab.

| | |
|-------------------------|------|
| ► Process variab. | |
| Volume flow (1838) | → 60 |
| Correct.vol.flow (1850) | → 60 |
| Mass flow (1847) | → 61 |
| Flow velocity (1865) | → 62 |
| Temperature (1851) | → 62 |
| CalcSatSteamPres (1852) | → 63 |
| Steam quality (1853) | → 63 |
| Total mass flow (1854) | → 63 |
| CondensMassFlow (1857) | → 64 |
| Energy flow (1872) | → 64 |
| Heat flow diff. (1863) | → 64 |
| Reynolds number (1864) | → 65 |
| Density (7607) | → 65 |
| Specific volume (7739) | → 66 |
| Pressure (7696) | → 66 |
| Saturation temp. (7709) | → 67 |

| | |
|-------------------------|----------------------|
| Degree superheat (7738) | → 67 |
| CompressFactor (7729) | → 68 |
| Vortex frequency (7722) | → 68 |

Volume flow

Navigation   Expert → Sensor → Measured val. → Process variab. → Volume flow (1838)

Description Displays the volume flow that is currently measured.

User interface Signed floating-point number

Additional information *Dependency*

 The unit is taken from the **Volume flow unit** parameter (→ [76](#))

Correct.vol.flow

Navigation   Expert → Sensor → Measured val. → Process variab. → Correct.vol.flow (1850)

Description Displays the corrected volume flow that is currently calculated.

User interface Signed floating-point number

Additional information *Description*

To calculate the corrected volume flow, the volume flow measured is multiplied by the ratio of density (**Density** parameter (→ [65](#))) to reference density. The density and reference density here depend on the sensor version and the selected medium (see table). The value output for corrected volume flow cannot be used in condensing gases (e.g. steam).

| Sensor version | Medium | Medium type | Density | Reference density |
|----------------|-------------------|--------------------------|--|-------------------------------------|
| Volume flow | All ¹⁾ | - | ρ | ρ_{Ref} |
| Mass flow | Steam | - | $f(p, T)$ | - |
| | Gas | All except ²⁾ | $f(p, T)$ | $f(p_{\text{Ref}}, T_{\text{Ref}})$ |
| | Liquid | All except | $f(T)$ | $f(T_{\text{Ref}})$ |
| | Gas | | $f(p, T, p_{\text{Ref}}, T_{\text{Ref}}, \rho_{\text{Ref}})$ | ρ_{Ref} |

| Sensor version | Medium | Medium type | Density | Reference density |
|----------------|---------------------------------------|-------------|-----------------------------|-------------------|
| | Liquid | | $f(T, T_{Ref}, \rho_{Ref})$ | ρ_{Ref} |
| ρ | Fixed density (→ 122) | | | |
| ρ_{Ref} | Ref.density (→ 99) | | | |
| p | Pressure (→ 66) | | | |
| p_{Ref} | Ref. pressure (→ 100) | | | |
| T | Temperature (→ 62) | | | |
| T_{Ref} | Ref. temperature (→ 100) | | | |
| $f(\dots)$ | Calculation method as function of ... | | | |

- 1) Outputting the corrected volume flow cannot be used in condensing gases.
 2) User-specific gas or liquid

Dependency

 The unit is taken from the **Cor.volflow unit** parameter (→ 79)

Mass flow

Navigation

Expert → Sensor → Measured val. → Process variab. → Mass flow (1847)

Description

Displays the mass flow currently calculated.

User interface

Signed floating-point number

Additional information

Description

To calculate the mass flow, the measured volume flow is multiplied by the density (**Density** parameter (→ 65)). The density depends on the sensor version and the selected medium (see table).

| Sensor version | Medium | Medium type | Density |
|----------------|---------------------------------------|--------------------------|---|
| Volume flow | All | – | ρ |
| Mass flow | Steam | – | $f(p, T)$ |
| | Gas | All except ¹⁾ | $f(p, T)$ |
| | Liquid | All except ¹⁾ | $f(T)$ |
| | Gas | ¹⁾ | $f(p, T, p_{Ref}, T_{Ref}, \rho_{Ref})$ |
| | Liquid | ¹⁾ | $f(T, T_{Ref}, \rho_{Ref})$ |
| ρ | Fixed density (→ 122) | | |
| ρ_{Ref} | Ref.density (→ 99) | | |
| p | Pressure (→ 66) | | |
| p_{Ref} | Ref. pressure (→ 100) | | |
| T | Temperature (→ 62) | | |
| T_{Ref} | Ref. temperature (→ 100) | | |
| $f(\dots)$ | Calculation method as function of ... | | |

- 1) User-specific gas or liquid

Dependency

 The unit is taken from the **Mass flow unit** parameter (→ 78)

Flow velocity

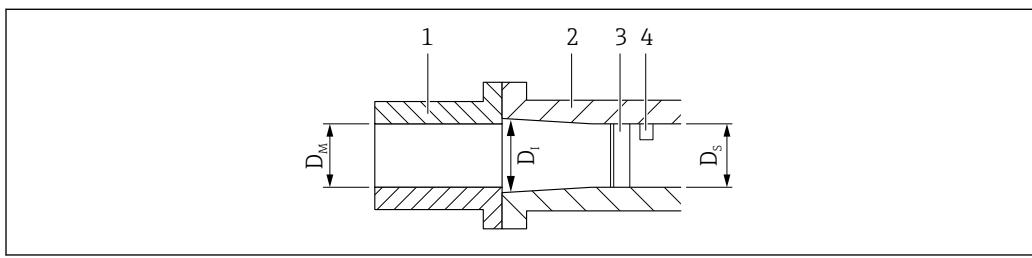
Navigation   Expert → Sensor → Measured val. → Process variab. → Flow velocity (1865)

Description Displays the flow velocity that is currently calculated.

User interface Signed floating-point number

Additional information *Description*

The flow velocity is calculated based on the aspect ratio of the diameter of the measuring tube (D_S) to the diameter of the sensor flange connection (D_I) or to the diameter of the mating pipe (D_M) if entered by the customer in the **D mating pipe** parameter (→  126). The D_S and D_I are production data that are defined by the shape and size of the meter body.



A0034419

- 1 Mating pipe
- 2 Sensor flange connection
- 3 Bluff body
- 4 DSC sensor
- D_M Diameter of the mating pipe - "D mating pipe" parameter (→  126)
- D_I Diameter of the sensor flange connection
- D_S Diameter of the measuring tube

Dependency

 The unit is taken from the **Velocity unit** parameter (→  84)

Temperature

Navigation   Expert → Sensor → Measured val. → Process variab. → Temperature (1851)

Description Displays the temperature that is currently measured.

User interface Signed floating-point number

Additional information *Dependency*

 The unit is taken from the **Temperature unit** parameter (→  81)

CalcSatSteamPres

| | |
|-------------------------------|--|
| Navigation |  Expert → Sensor → Measured val. → Process variab. → CalcSatSteamPres (1852) |
| Prerequisite | The following conditions are met: ■ Order code for "Sensor version", option "Mass (integrated temperature measurement)" ■ The Steam option is selected in the Select medium parameter (→  93). |
| Description | Displays the saturated steam pressure that is currently calculated. |
| User interface | Signed floating-point number |
| Additional information | <i>Dependency</i>  The unit is taken from the Pressure unit parameter (→  80) |

Steam quality

| | |
|-----------------------|--|
| Navigation |  Expert → Sensor → Measured val. → Process variab. → Steam quality (1853) |
| Prerequisite | The following conditions are met: ■ Order code for "Sensor version", option "Mass (integrated temperature measurement)" ■ The Steam option is selected in the Select medium parameter (→  93). |
| Description | Displays the current steam quality. Depends on the compensation mode of the steam quality: Steam quality parameter (→  94). |
| User interface | Signed floating-point number |

Total mass flow

| | |
|-------------------------------|--|
| Navigation |  Expert → Sensor → Measured val. → Process variab. → Total mass flow (1854) |
| Prerequisite | The following conditions are met: ■ Order code for "Application package", option EU "Wet steam measurement" ■ The Steam option is selected in the Select medium parameter (→  93). |
| Description | Displays the total mass flow (steam and condensate) that is currently calculated. |
| User interface | Signed floating-point number |
| Additional information | <i>Dependency</i>  The unit is taken from the Mass flow unit parameter (→  78) |

CondensMassFlow

| | |
|-------------------------------|--|
| Navigation |   Expert → Sensor → Measured val. → Process variab. → CondensMassFlow (1857) |
| Prerequisite | The following conditions are met: <ul style="list-style-type: none">▪ Order code for "Application package", option EU "Wet steam measurement"▪ The Steam option is selected in the Select medium parameter (→  93). |
| Description | Displays the condensate mass flow that is currently calculated. |
| User interface | Signed floating-point number |
| Additional information | <i>Dependency</i>  The unit is taken from the Mass flow unit parameter (→  78) |

Energy flow

| | |
|-------------------------------|--|
| Navigation |   Expert → Sensor → Measured val. → Process variab. → Energy flow (1872) |
| Prerequisite | With order code for "Sensor version": option "Mass (integrated temperature measurement)" |
| Description | Displays the energy flow that is currently calculated. |
| User interface | Signed floating-point number |
| Additional information | <i>Dependency</i>  The unit is taken from the Energy flow unit parameter (→  82) |

Heat flow diff.

| | |
|-----------------------|--|
| Navigation |   Expert → Sensor → Measured val. → Process variab. → Heat flow diff. (1863) |
| Prerequisite | The following conditions are met: <ul style="list-style-type: none">▪ Order code for "Sensor version" option "Mass (integrated temperature measurement)"▪ In the Select gas type parameter (→  95), one of the following options is selected: Single gas Gas mixture Natural gas User-spec. gas |
| Description | Displays the heat flow difference that is currently calculated. |
| User interface | Signed floating-point number |

Additional information*Description*

The measuring device requires the following to calculate the heat flow difference correctly:

1. Select the type of calculation in the **Delta heat calc.** parameter (→ 122).
2. Enter the value in the **2ndTempDeltaHeat** parameter (→ 124).

Dependency

-  The unit is taken from the **Energy flow unit** parameter (→ 82)

Reynolds number

Navigation

 Expert → Sensor → Measured val. → Process variab. → Reynolds number (1864)

Prerequisite

With order code for "Sensor version":
option "Mass (integrated temperature measurement)"

Description

Displays the Reynolds number that is currently calculated.

User interface

Signed floating-point number

Additional information*Description*

$$Re = \frac{\rho \cdot v \cdot d}{\eta}$$

Where:

- ρ is the density of the medium (**Density** parameter (→ 65))
- v is the flow velocity of the fluid in relation to the body (**Flow velocity** parameter (→ 62))
- d is the characteristic length of the body
- η is the viscosity of the medium
 - For gases: **Dynam. viscosity** parameter (→ 105)
 - For liquids: **Dynam. viscosity** parameter (→ 104)
- The mating pipe diameter (**D mating pipe** parameter (→ 126)) is used as the characteristic length

Density

Navigation

 Expert → Sensor → Measured val. → Process variab. → Density (7607)

Prerequisite

With order code for "Sensor version":
Option "Mass (integrated temperature measurement)"

Description

Displays the density currently calculated.

User interface

Positive floating-point number

Additional information*Description*

Depending on the selected medium the density is calculated with pressure and temperature and the corresponding method (e.g. IAPWS, NEL40...).

Dependency

 The unit is taken from the **Density unit** parameter (→ [85](#))

Specific volume

Navigation

  Expert → Sensor → Measured val. → Process variab. → Specific volume (7739)

Prerequisite

With order code for "Sensor version":
Option "Mass (integrated temperature measurement)"

Description

Displays the current value for the specific volume.

User interface

Positive floating-point number

Additional information*Description*

The specific volume is a process variable that is common in steam applications.

 For the calculation: reciprocal value of the density (**Density** parameter (→ [65](#)))

Dependency

 The unit is taken from the **Spec. vol. unit** parameter (→ [86](#)).

Pressure

Navigation

  Expert → Sensor → Measured val. → Process variab. → Pressure (7696)

Prerequisite

One of the following conditions is met:

- Order code for "Sensor version",
 - Option "Mass (integrated temperature measurement)"
 - or
- The **Pressure** option is selected in the **External value** parameter (→ [121](#)) parameter.

Description

Displays the current process pressure.

User interface

0 to 250 bar

Additional information*Description*

The value of the pressure which is read in (e.g. via the current input module) is displayed.

If the **Pressure** option is not selected as the external value in the **External value** parameter (→ 121), the input value for the fixed process pressure (**Fix. proc.press.** parameter (→ 124)) is displayed.

Dependency

 The unit is taken from the **Pressure unit** parameter (→ 80)

Saturation temp.

Navigation  Expert → Sensor → Measured val. → Process variab. → Saturation temp. (7709)

Prerequisite The **Steam** option is selected in the **Select medium** parameter (→ 93) parameter.

Description Displays the saturation temperature currently calculated.

User interface **Country-specific:**

- °C
- °F

Additional information The saturation temperature describes the temperature limit at which steam begins to condense. This value is calculated using the current process pressure (**Pressure** parameter (→ 66)) according to IAPWS-IF97.

Dependency

 The unit is taken from the **Temperature unit** parameter (→ 81)

Degree superheat

Navigation  Expert → Sensor → Measured val. → Process variab. → Degree superheat (7738)

Prerequisite In the **Select medium** parameter (→ 93), the **Steam** option is selected.

Description Displays the degree of superheating currently calculated.

User interface 0 to 500 K

Additional information *Description*

The degree of superheating describes the difference between the temperature (**Temperature** parameter (→ 62)) and the saturation temperature (**Saturation temp.** parameter (→ 67)). If the temperature is below the current saturation temperature, the degree of superheating has the value **0**.

CompressFactor

Navigation

  Expert → Sensor → Measured val. → Process variab. → CompressFactor (7729)

Prerequisite

The following conditions are met:
 Order code for "Sensor version"
 Option "Mass (integrated temperature measurement)"

The **Gas** option or the **Steam** option is selected in the **Select medium** parameter
 (→  93).

Description

Displays the compressibility factor currently calculated.

User interface

0 to 2

Additional information

Description

The compressibility factor describes the deviation of the medium from the ideal behavior under the current process conditions. If the medium is a user-specific gas/liquid, the compressibility factor is entered as the Z-factor (**Z-factor** parameter (→  104)).

Vortex frequency

Navigation

  Expert → Sensor → Measured val. → Process variab. → Vortex frequency (7722)

Description

Displays the measured variable for the flow in the measuring tube which is recorded directly with the DSC sensor.

User interface

Measuring range depending on the nominal diameter:

0.1 to 3 100 Hz

Additional information

Description

The filter settings specify the measuring range of the vortex frequency depending on the nominal diameter.

Filter settings for liquids

Prowirl D

| Nominal diameter | Minimum vortex frequency | Maximum vortex frequency |
|------------------|----------------------------------|--------------------------|
| | f_{vmin} ¹⁾ [Hz] | f_{vmax} [Hz] |
| DN 15 (1/2") | 11.5 | 666.5 |
| DN 25 (1") | 6.7 | 388.8 |
| DN 40 (1½") | 3.9 | 224.3 |
| DN 50 (2") | 3.0 | 172.8 |
| DN 80 (3") | 2.1 | 122.8 |
| DN 100 (4") | 1.7 | 101.4 |
| DN 150 (6") | 1.1 | 66.6 |

1) For factory setting **Turn down** parameter (7755) (→  91)

Prowirl F

| Nominal diameter | Minimum vortex frequency | Maximum vortex frequency |
|------------------|--------------------------|--------------------------|
| | $f_{vmin}^{1)}$ [Hz] | f_{vmax} [Hz] |
| DN 15 (½") | 8.9 | 570 |
| DN 25 (1") | 5.1 | 330 |
| DN 40 (1½") | 3.2 | 210 |
| DN 50 (2") | 2.5 | 160 |
| DN 80 (3") | 1.7 | 110 |
| DN 100 (4") | 1.3 | 82 |
| DN 150 (6") | 0.84 | 54 |
| DN 200 (8") | 0.64 | 41 |
| DN 250 (10") | 0.51 | 33 |
| DN 300 (12") | 0.43 | 27 |

1) For factory setting **Turn down** parameter (7755) (→ 91)*Prowirl O*

| Nominal diameter | Minimum vortex frequency | Maximum vortex frequency |
|------------------|--------------------------|--------------------------|
| | $f_{vmin}^{1)}$ [Hz] | f_{vmax} [Hz] |
| DN 15 (½") | 12.0 | 570 |
| DN 25 (1") | 6.9 | 330 |
| DN 40 (1½") | 4.9 | 230 |
| DN 50 (2") | 3.9 | 180 |
| DN 80 (3") | 2.5 | 119 |
| DN 100 (4") | 1.9 | 91 |
| DN 150 (6") | 1.3 | 60 |
| DN 200 (8") | 0.92 | 43 |
| DN 250 (10") | 0.73 | 34 |
| DN 300 (12") | 0.61 | 29 |

1) For factory setting **Turn down** parameter (7755) (→ 91)*Prowirl R*

| Nominal diameter | Minimum vortex frequency | Maximum vortex frequency |
|---|--------------------------|--------------------------|
| | $f_{vmin}^{1)}$ [Hz] | f_{vmax} [Hz] |
| DN 25 (1") > DN 15 (½") DN 40 (1½") >> DN 15 (½") | 12.0 | 570 |
| DN 40 (1½") > DN 25 (1") DN 50 (2") >> DN 25 (1") | 6.9 | 330 |
| DN 50 (2") > DN 40 (1½") DN 80 (3") >> DN 40 (1½") | 4.4 | 210 |
| DN 80 (3") > DN 50 (2") DN 100 (4") >> DN 50 (2") | 3.4 | 160 |
| DN 100 (4") > DN 80 (3") DN 150 (6") >> DN 80 (3") | 2.3 | 110 |

| Nominal diameter | Minimum vortex frequency | Maximum vortex frequency |
|--|--------------------------|--------------------------|
| | $f_{vmin}^{1)}$ [Hz] | f_{vmax} [Hz] |
| DN 150 (6") > DN 100 (4") DN 200 (8") >> DN 100 (4") | 1.7 | 82 |
| DN 200 (8") > DN 150 (6") DN 250 (10") >> DN 150 (6") | 1.1 | 54 |

1) For factory setting **Turn down** parameter (7755) (→ 91)

Filter settings for gases/steam

Prowirl D

| DN [mm (in)] | Minimum vortex frequency | Maximum vortex frequency |
|-----------------|--------------------------|--------------------------|
| | $f_{vmin}^{1)}$ [Hz] | f_{vmax} [Hz] |
| DN 15 (1½") | 209.9 | 3 100 |
| DN 25 (1") | 67.1 | 3 100 |
| DN 40 (1½") | 13.7 | 1869.1 |
| DN 50 (2") | 10.5 | 2 303.8 |
| DN 80 (3") | 7.5 | 1 636.9 |
| DN 100 (4") | 6.2 | 1 352.3 |
| DN 150 (6") | 4.1 | 888.6 |

1) For factory setting **Turn down** parameter (7755) (→ 91)

Prowirl F

| DN [mm (in)] | Minimum vortex frequency | Maximum vortex frequency |
|-----------------|--------------------------|--------------------------|
| | $f_{vmin}^{1)}$ [Hz] | f_{vmax} [Hz] |
| DN 15 (1½") | 45 | 2 900 |
| DN 25 (1") | 26 | 2 700 |
| DN 40 (1½") | 16 | 1 700 |
| DN 50 (2") | 13 | 2 100 |
| DN 80 (3") | 8.5 | 1 400 |
| DN 100 (4") | 6.4 | 1 100 |
| DN 150 (6") | 4.3 | 720 |
| DN 200 (8") | 3.2 | 540 |
| DN 250 (10") | 2.6 | 430 |
| DN 300 (12") | 2.2 | 370 |

1) For factory setting **Turn down** parameter (7755) (→ 91)

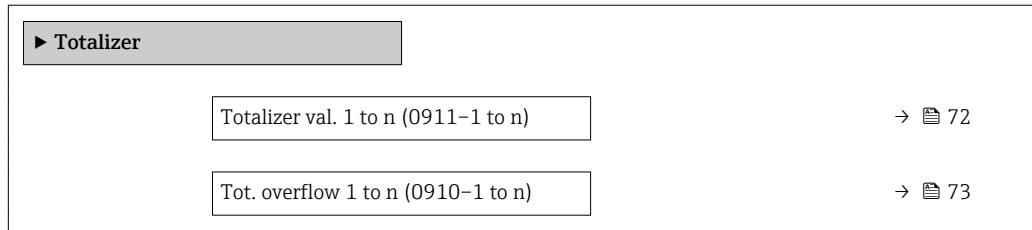
Prowirl O

| DN [mm (in)] | Minimum vortex frequency | Maximum vortex frequency |
|-----------------|--------------------------|--------------------------|
| | $f_{vmin}^{1)}$ [Hz] | f_{vmax} [Hz] |
| DN 15 (½") | 60 | 2 900 |
| DN 25 (1") | 34 | 2 700 |
| DN 40 (1½") | 25 | 1 900 |
| DN 50 (2") | 19 | 2 500 |
| DN 80 (3") | 13 | 1 600 |
| DN 100 (4") | 9.6 | 1 200 |
| DN 150 (6") | 6.3 | 800 |
| DN 200 (8") | 4.6 | 580 |
| DN 250 (10") | 3.6 | 460 |
| DN 300 (12") | 3.1 | 390 |

1) For factory setting **Turn down** parameter (7755) (→ 91)*Prowirl R*

| DN [mm (in)] | Minimum vortex frequency | Maximum vortex frequency |
|--|--------------------------|--------------------------|
| | $f_{vmin}^{1)}$ [Hz] | f_{vmax} [Hz] |
| DN 25 (1") > DN 15 (½") DN 40 (1½") >> DN 15 (½") | 60 | 2 900 |
| DN 40 (1½") > DN 25 (1") DN 50 (2") >> DN 25 (1") | 34 | 2 700 |
| DN 50 (2") > DN 40 (1½") DN 80 (3") >> DN 40 (1½") | 22 | 1 700 |
| DN 80 (3") > DN 50 (2") DN 100 (4") >> DN 50 (2") | 17 | 2 100 |
| DN 100 (4") > DN 80 (3") DN 150 (6") >> DN 80 (3") | 11 | 1 400 |
| DN 150 (6") > DN 100 (4") DN 200 (8") >> DN 100 (4") | 8.6 | 1 100 |
| DN 200 (8") > DN 150 (6") DN 250 (10") >> DN 150 (6") | 5.7 | 720 |

1) For factory setting **Turn down** parameter (7755) (→ 91)

"Totalizer" submenu*Navigation* Expert → Sensor → Measured val. → Totalizer**Totalizer val. 1 to n****Navigation** Expert → Sensor → Measured val. → Totalizer → Totalizer val. 1 to n (0911-1 to n)**Prerequisite**

One of the following options is selected in the **Assign variable** parameter (→ 266) of the **Totalizer 1 to n** submenu:

- Volume flow
- Correct.vol.flow
- Mass flow
- Total mass flow *
- CondensMassFlow *
- Energy flow *
- Heat flow diff. *

Description

Displays the current totalizer reading.

User interface

Signed floating-point number

Additional information*Description*

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 (→ 269).

User interface

 The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 267).

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: 1968457 m³
- Value in the **Tot. overflow 1** parameter: 1 · 10⁷ (1 overflow) = 10 000 000 [m³]
- Current totalizer reading: 11 968 457 m³

* Visibility depends on order options or device settings

Tot. overflow 1 to n**Navigation**

Expert → Sensor → Measured val. → Totalizer → Tot. overflow 1 to n (0910-1 to n)

Prerequisite

One of the following options is selected in the **Assign variable** parameter (→ 266) of the **Totalizer 1 to n** submenu:

- Volume flow
- Correct.vol.flow
- Mass flow
- Total mass flow *
- CondensMassFlow *
- Energy flow *
- Heat flow diff. *

Description

Displays the current totalizer overflow.

User interface

Integer with sign

Additional information*Description*

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 (→ 267).

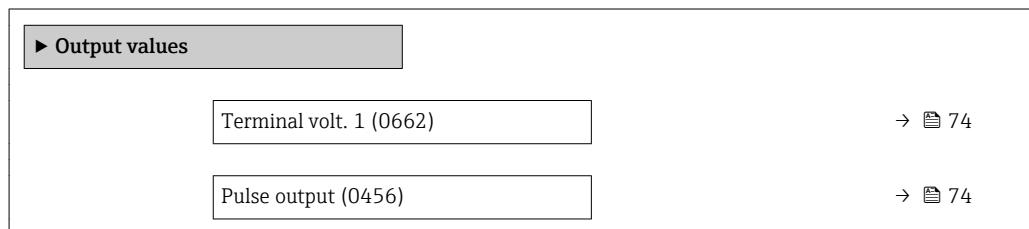
Example

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

"Output values" submenu*Navigation*

Expert → Sensor → Measured val. → Output values



* Visibility depends on order options or device settings

| | |
|----------------------|----------------------|
| Output freq. (0471) | → 75 |
| Switch status (0461) | → 75 |

Terminal volt. 1

Navigation Expert → Sensor → Measured val. → Output values → Terminal volt. 1 (0662)

Description Displays the current terminal voltage that is applied at the output.

User interface 0.0 to 50.0 V

Pulse output

Navigation Expert → Sensor → Measured val. → Output values → Pulse output (0456)

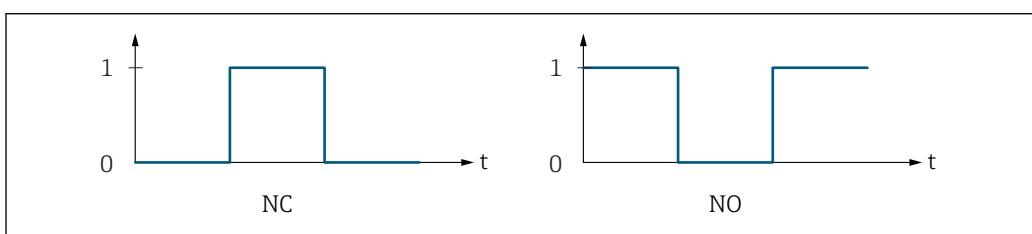
Prerequisite The **Pulse** option is selected in the **Operating mode** parameter (→ [132](#)) parameter.

Description Displays the pulse frequency currently output.

User interface Positive floating-point number

Additional information Description

- The pulse output is an open collector output.
- This is configured at the factory in such a way that the transistor is conductive for the duration of the pulse (NO contact) and is safety-oriented.
- The **Value per pulse** parameter (→ [133](#)) and **Pulse width** parameter (→ [134](#)) can be used to define the value (i.e. the measured value amount that corresponds to a pulse) and the duration of the pulse.



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 (→ [146](#)) 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 (→ [134](#))) can be configured.

Output freq.

| | |
|-----------------------|--|
| Navigation | Expert → Sensor → Measured val. → Output values → Output freq. (0471) |
| Prerequisite | In the Operating mode parameter (→ 132), the Frequency option is selected. |
| Description | Displays the actual value of the output frequency which is currently measured. |
| User interface | 0 to 1250 Hz |

Switch status

| | |
|-------------------------------|---|
| Navigation | Expert → Sensor → Measured val. → Output values → Switch status (0461) |
| Prerequisite | The Switch option is selected in the Operating mode parameter (→ 132). |
| Description | Displays the current switch status of the status output. |
| User interface | <ul style="list-style-type: none"> ■ Open ■ Closed |
| Additional information | <p><i>User interface</i></p> <ul style="list-style-type: none"> ■ Open The switch output is not conductive. ■ Closed The switch output is conductive. |

3.2.2 "System units" submenu

Navigation

Expert → Sensor → System units

| ► System units | |
|-------------------------|------|
| Volume flow unit (0553) | → 76 |
| Volume unit (0563) | → 78 |
| Mass flow unit (0554) | → 78 |
| Mass unit (0574) | → 79 |
| Cor.volflow unit (0558) | → 79 |
| Corr. vol. unit (0575) | → 80 |

| | |
|-------------------------|-------|
| Pressure unit (0564) | → 80 |
| Temperature unit (0557) | → 81 |
| Energy flow unit (0565) | → 82 |
| Energy unit (0559) | → 83 |
| Cal. value unit (0552) | → 83 |
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| Spec. vol. unit (0610) | → 86 |
| Dyn. visc. unit (0577) | → 86 |
| SpecHeatCapaUnit (0604) | → 87 |
| Length unit (0551) | → 87 |
| Date/time format (2812) | → 88 |

Volume flow unit



Navigation

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

Description

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

| Selection | <i>SI units</i> | <i>US units</i> | <i>Imperial units</i> |
|------------------------|--|------------------------|-----------------------|
| | ■ cm ³ /s | ■ af/s | ■ gal/s (imp) |
| | ■ cm ³ /min | ■ af/min | ■ gal/min (imp) |
| | ■ cm ³ /h | ■ af/h | ■ gal/h (imp) |
| | ■ cm ³ /d | ■ af/d | ■ gal/d (imp) |
| | ■ dm ³ /s | ■ ft ³ /s | ■ Mgal/s (imp) |
| | ■ dm ³ /min | ■ ft ³ /min | ■ Mgal/min (imp) |
| | ■ dm ³ /h | ■ ft ³ /h | ■ Mgal/h (imp) |
| | ■ dm ³ /d | ■ ft ³ /d | ■ Mgal/d (imp) |
| | ■ m ³ /s | ■ fl oz/s (us) | ■ bbl/s (imp;beer) |
| | ■ m ³ /min | ■ fl oz/min (us) | ■ bbl/min (imp;beer) |
| | ■ m ³ /h | ■ fl oz/h (us) | ■ bbl/h (imp;beer) |
| | ■ m ³ /d | ■ fl oz/d (us) | ■ bbl/d (imp;beer) |
| | ■ ml/s | ■ gal/s (us) | ■ bbl/s (imp;oil) |
| | ■ ml/min | ■ gal/min (us) | ■ bbl/min (imp;oil) |
| | ■ ml/h | ■ gal/h (us) | ■ bbl/h (imp;oil) |
| | ■ ml/d | ■ gal/d (us) | ■ bbl/d (imp;oil) |
| | ■ l/s | ■ kgal/s (us) | |
| | ■ l/min | ■ kgal/min (us) | |
| | ■ l/h | ■ kgal/h (us) | |
| | ■ l/d | ■ kgal/d (us) | |
| | ■ hl/s | ■ Mgal/s (us) | |
| | ■ hl/min | ■ Mgal/min (us) | |
| | ■ hl/h | ■ Mgal/h (us) | |
| | ■ hl/d | ■ Mgal/d (us) | |
| | ■ Ml/s | ■ bbl/s (us;liq.) | |
| | ■ Ml/min | ■ bbl/min (us;liq.) | |
| | ■ Ml/h | ■ bbl/h (us;liq.) | |
| | ■ Ml/d | ■ 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) | |
| Factory setting | Country-specific: | | |
| | ■ m ³ /h | | |
| | ■ ft ³ /min | | |
| Additional information | <i>Result</i> | | |
| | The selected unit applies for: Volume flow parameter (→  60) | | |
| | <i>Selection</i> | | |
| |  For an explanation of the abbreviated units: →  309 | | |

Volume unit**Navigation**

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

Description

Use this function to select the unit for the volume.

Selection*SI units*

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

US units

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

Imperial units

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

Factory setting

Country-specific:

- m³
- ft³

Additional information*Selection*

For an explanation of the abbreviated units: → 309

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*

- g/s
- g/min
- g/h
- g/d
- kg/s
- kg/min
- kg/h
- kg/d
- t/s
- t/min
- t/h
- t/d

US units

- oz/s
- oz/min
- oz/h
- oz/d
- lb/s
- lb/min
- lb/h
- lb/d
- STon/s
- STon/min
- STon/h
- STon/d

Factory setting

Country-specific:

- kg/h
- lb/min

Additional information*Result*

The selected unit applies for:

- **Mass flow** parameter (→ 61)
- **Total mass flow** parameter (→ 63)
- **CondensMassFlow** parameter (→ 64)

Selection

For an explanation of the abbreviated units: → 309

Mass unit**Navigation**

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

Description

Use this function to select the unit for the mass.

Selection*SI units*

- g
- kg
- t

US units

- oz
- lb
- STon

Factory setting

Country-specific:

- kg
- lb

Additional information*Selection*

For an explanation of the abbreviated units: → 309

Cor.volflow unit**Navigation**

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

Description

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

Selection*SI units*

- Nl/s
- Nl/min
- Nl/h
- Nl/d
- Nm³/s
- Nm³/min
- Nm³/h
- Nm³/d
- Sm³/s
- Sm³/min
- Sm³/h
- Sm³/d

US units

- Sft³/s
- Sft³/min
- Sft³/h
- Sft³/d

Factory setting

Country-specific:

- Nm³/h
- Sft³/h

Additional information*Result*

The selected unit applies for:

Correct.vol.flow parameter (→ 60)*Selection*

 For an explanation of the abbreviated units: → 309

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*

- Nl
- Nm³
- Sm³

*US units*Sft³**Factory setting**

Country-specific:

- Nm³
- Sft³

Additional information*Selection*

 For an explanation of the abbreviated units: → 309

Pressure unit**Navigation**
 Expert → Sensor → System units → Pressure unit (0564)
PrerequisiteWith order code for "Sensor version":
option "Mass (integrated temperature measurement)"**Description**

Use this function to select the unit for the pipe pressure.

Selection*SI units*

- Pa
- kPa
- MPa
- mbar a
- bar
- torr
- atm
- gf/cm²
- kgf/cm²

US units

psi

Other units

- mmH2O (4°C)
- mmH2O (68°F)
- mmHg (0°C)
- inH2O (4°C)
- inH2O (68°F)
- ftH2O (68°F)
- inHg (0°C)

| | |
|------------------------|-------------------------------------|
| Factory setting | Country-specific: ■ bar ■ psi |
|------------------------|-------------------------------------|

| | |
|-------------------------------|---|
| Additional information | <i>Result</i> The unit is taken from: ■ CalcSatSteamPres parameter (→ 63) ■ Atmosph. press. parameter (→ 122) ■ Maximum value parameter (→ 297) ■ Fix. proc.press. parameter (→ 124) ■ Pressure parameter (→ 66) ■ Ref. pressure parameter (→ 100) |
| | <i>Selection</i>  For an explanation of the abbreviated units: → 309 |

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> | <i>US units</i> |
|------------------|-----------------|-----------------|
| | ■ °C | ■ °F |
| | ■ K | ■ °R |

| | |
|------------------------|-----------------------------------|
| Factory setting | Country-specific: ■ °C ■ °F |
|------------------------|-----------------------------------|

| | |
|-------------------------------|---|
| Additional information | <i>Result</i> The selected unit applies for: ■ Temperature parameter (→ 62) ■ Maximum value parameter (→ 294) ■ Minimum value parameter (→ 293) ■ Average value parameter (→ 294) ■ Maximum value parameter (→ 295) ■ Minimum value parameter (→ 294) ■ Maximum value parameter (→ 296) ■ Minimum value parameter (→ 295) ■ 2ndTempDeltaHeat parameter (→ 124) ■ Fixed temp. parameter (→ 123) ■ Ref. comb. temp. parameter (→ 99) ■ Ref. temperature parameter (→ 100) ■ Saturation temp. parameter (→ 67) |
| | <i>Selection</i>  For an explanation of the abbreviated units: → 309 |

Energy flow unit**Navigation**

Expert → Sensor → System units → Energy flow unit (0565)

Prerequisite

With order code for "Sensor version":
option "Mass (integrated temperature measurement)"

Description

Use this function to select the unit for the energy flow.

Selection*SI units*

- kW
- MW
- GW
- kJ/s
- kJ/min
- kJ/h
- kJ/d
- MJ/s
- MJ/h
- MJ/min
- MJ/d
- GJ/s
- GJ/min
- GJ/h
- GJ/d
- kcal/s
- kcal/min
- kcal/h
- kcal/d
- Mcal/s
- Mcal/min
- Mcal/h
- Mcal/d
- Gcal/s
- Gcal/min
- Gcal/h
- Gcal/d

Imperial units

- Btu/s
- Btu/min
- Btu/h
- Btu/day
- MBtu/s
- MBtu/min
- MBtu/h
- MBtu/d
- MMBtu/s
- MMBtu/min
- MMBtu/h
- MMBtu/d

Factory setting

Country-specific:

- kW
- Btu/h

Additional information*Result*

The selected unit applies for:

- **Heat flow diff.** parameter (→ 64)
- **Energy flow** parameter (→ 64)

Selection

For an explanation of the abbreviated units: → 309

Energy unit**Navigation**

Expert → Sensor → System units → Energy unit (0559)

Prerequisite

With order code for "Sensor version":
option "Mass (integrated temperature measurement)"

Description

Use this function to select the unit for energy.

Selection*SI units*

- kWh
- MWh
- GWh
- kJ
- MJ
- GJ
- kcal
- Mcal
- Gcal

Imperial units

- Btu
- MBtu
- MMBtu

Factory setting

Country-specific:

- kWh
- Btu

Additional information*Selection*

For an explanation of the abbreviated units: → [309](#)

Cal. value unit**Navigation**

Expert → Sensor → System units → Cal. value unit (0552)

Prerequisite

The following conditions are met:

- Order code for "Sensor version",
option "Mass (integrated temperature measurement)"
- The **GrossCalorValVol** option or the **NetCalorValVol** option is selected in the **Cal. value type** parameter (→ [98](#)).

Description

Use this function to select the unit for the calorific value.

Selection*SI units*

- kJ/Nm³
- MJ/Nm³
- kWh/Nm³
- MWh/Nm³
- kJ/Sm³
- MJ/Sm³
- kWh/Sm³
- MWh/Nm³

Imperial units

- Btu/Sm³
- MBtu/Sm³
- Btu/Sft³
- MBtu/Sft³

Factory setting

Country-specific:

- kJ/Nm³
- Btu/Sft³

Additional information*Result*

The selected unit applies for:

Ref. **GrossCalVal** parameter (→ 100)

Selection

For an explanation of the abbreviated units: → 309

Cal. value unit (Mass)**Navigation**

Expert → Sensor → System units → Cal. value unit (0606)

Prerequisite

The following conditions are met:

- Order code for "Sensor version",
Option "Mass (integrated temperature measurement)"
- The **GrossCalValMass** option or the **NetCalorValMass** option is selected in the **Cal. value type** parameter (→ 98).

Description

Use this function to select the unit for the calorific value (mass).

Selection*SI units*

- kJ/kg
- MJ/kg
- kWh/kg
- MWh/kg

US units

- kJ/lb
- MJ/lb
- kWh/lb
- MWh/lb

Imperial units

- Btu/lb
- MBtu/lb

Factory setting

Country-specific:

- kJ/kg
- Btu/lb

Additional information*Selection*

For an explanation of the abbreviated units: → 309

Velocity unit**Navigation**

Expert → Sensor → System units → Velocity unit (0566)

Description

Use this function to select the unit for the flow velocity.

Selection*SI units*

m/s

US units

ft/s

Factory setting

Country-specific:

- m/s
- ft/s

Additional information*Result*

The selected unit applies for:

- **Flow velocity** parameter (→ 62)
- **Maximum value** parameter (→ 296)

Selection

For an explanation of the abbreviated units: → 309

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

US units

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

Imperial units

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

Factory setting

Country-specific:

- kg/m³
- lb/ft³

Additional information*Result*

The selected unit applies for:

- **Density** parameter (→ 65)
- **Fixed density** parameter (→ 122)
- **Ref.density** parameter (→ 99)

Selection

- SD = specific density

The specific density is the ratio of the medium density to the water density at a water temperature of +4 °C (+39 °F), +15 °C (+59 °F), +20 °C (+68 °F).

- SG = specific gravity

The specific gravity is the ratio of the medium density to the water density at a water temperature of +4 °C (+39 °F), +15 °C (+59 °F), +20 °C (+68 °F).



For an explanation of the abbreviated units: → 309

Spec. vol. unit**Navigation**

Expert → Sensor → System units → Spec. vol. unit (0610)

Prerequisite

With order code for "Sensor version":
Option "Mass (integrated temperature measurement)"

Description

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

Selection*Other units*

- m³/kg
- ft³/lb

Factory setting

Country-specific:

- m³/kg
- ft³/lb

Additional information*Result*

The selected unit applies for:
Specific volume parameter (→ 66)

Additional information*Selection*

For an explanation of the abbreviated units: → 309

Dyn. visc. unit**Navigation**

Expert → Sensor → System units → Dyn. visc. unit (0577)

Description

Use this function to select the unit for dynamic viscosity.

Selection*SI units*

- cP
- Pa s
- P

Factory setting

Pa s

Additional information*Result*

The selected unit applies for:
▪ **Dynam. viscosity** parameter (→ 105) (gases)
▪ **Dynam. viscosity** parameter (→ 104) (liquids)

Additional information*Selection*

For an explanation of the abbreviated units: → 309

SpecHeatCapaUnit**Navigation**

Expert → Sensor → System units → SpecHeatCapaUnit (0604)

Prerequisite

The following conditions are met:

- Selected medium:
 - The **User-spec. gas** option is selected in the **Select gas type** parameter (→ [95](#)) parameter.
Or
 - The **User-spec liquid** option is selected in the **Liquid type** parameter (→ [96](#)) parameter.
 - The **Heat** option is selected in the **Enthalpy type** parameter (→ [98](#)) parameter.

Description

Use this function to select the unit for the specific heat capacity.

Selection*SI units*

- kJ/(kgK)
- MJ/(kgK)
- kWh/(kgK)
- kcal/(kgK)

Imperial units

- Btu/(lb°R)

Factory setting

kJ/(kgK)

Additional information*Result*

The selected unit applies for:

Spec. heat cap. parameter (→ [103](#))

Selection

For an explanation of the abbreviated units: → [309](#)

Length unit**Navigation**

Expert → Sensor → System units → Length unit (0551)

Description

Use this function to select the unit of length for the nominal diameter.

Selection*SI units*

- mm
- m

US units

- in
- ft

Factory setting

Country-specific:

- mm
- in

Additional information*Result*

The selected unit applies for:

- **Inlet run** parameter (→ 126)
- **D mating pipe** parameter (→ 126)

Selection

 For an explanation of the abbreviated units: → 309

Date/time format**Navigation**

 Expert → Sensor → System units → Date/time format (2812)

Description

Use this function to select the desired time format for calibration history.

Selection

- dd.mm.yy hh:mm
- dd.mm.yy am/pm
- mm/dd/yy hh:mm
- mm/dd/yy am/pm

Factory setting

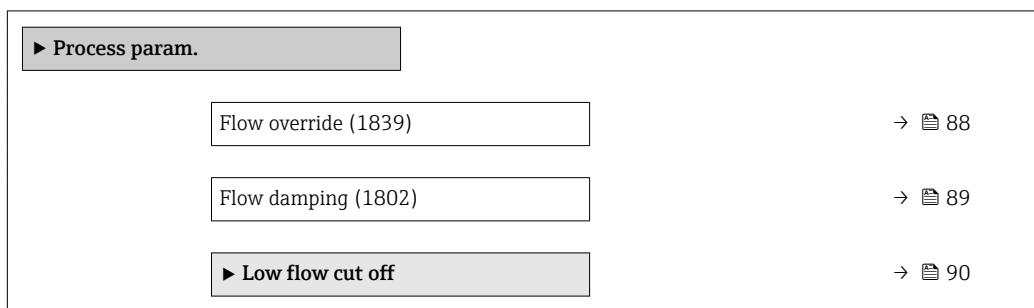
dd.mm.yy hh:mm

Additional information*Selection*

 For an explanation of the abbreviated units: → 309

3.2.3 "Process parameters" submenu**Navigation**

 Expert → Sensor → Process param.

**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.

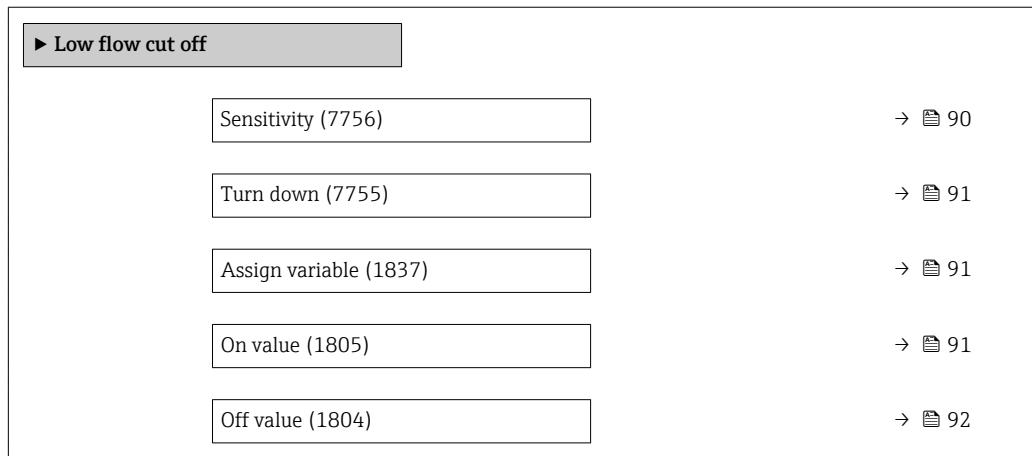
| | |
|-------------------------------|---|
| Selection | <ul style="list-style-type: none"> ▪ Off ▪ On |
| Factory setting | Off |
| Additional information | <p><i>Description</i></p> <p>Flow override is active</p> <ul style="list-style-type: none"> ▪ The diagnostic message △C453 Flow override is output. ▪ Output values <ul style="list-style-type: none"> ▪ Output: value at zero flow ▪ Temperature: continues to be output ▪ Totalizers 1-3: stop being totalized <p>i The Flow override option can also be activated in the Status input submenu: Assign stat.inp. parameter.</p> |

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 999.9 s |
| Factory setting | 5 s |
| Additional information | <p><i>Description</i></p> <p>i The damping is performed by a PT1 element²⁾.</p> <p><i>User entry</i></p> <ul style="list-style-type: none"> ▪ Value = 0: no damping ▪ Value > 0: damping is increased <p>i Damping is switched off if 0 is entered (factory setting).</p> <p><i>Result</i></p> <p>i The damping affects the following variables of the device:</p> <ul style="list-style-type: none"> ▪ Outputs → 130 ▪ Low flow cut off ▪ Totalizers → 266 |

2) Proportional behavior with first-order lag

"Low flow cut off" submenu*Navigation*
 Expert → Sensor → Process param. → Low flow cut off
**Sensitivity****Navigation**
 Expert → Sensor → Process param. → Low flow cut off → Sensitivity (7756)
Description

Use this function to enter a value to control the device sensitivity in the lower flow range.

User entry

1 to 9

Factory setting

5

Additional information*Description*

The measuring signal must have a certain minimum signal amplitude so that the signals can be evaluated without any errors. Using the nominal diameter, the corresponding flow can also be derived from this amplitude. The minimum signal amplitude depends on the setting for the sensitivity of the DSC sensor (s), the steam quality (x) and the force of the vibrations present (a). The value mf corresponds to the lowest measurable flow velocity without vibration (no wet steam) at a density of 1 kg/m³ (0.0624 lbm/ft³). The value mf can be set in the range from 6 to 20 m/s (1.8 to 6 ft/s) (factory setting 12 m/s (3.7 ft/s)) with the **Sensitivity** parameter (value range 1 to 9, factory setting 5).

The lowest flow velocity that can be measured on account of the signal amplitude v_{AmpMin} is derived from the **Sensitivity** parameter and the steam quality (x) or from the force of vibrations present (a).

User entry

Increasing the sensitivity makes it possible to measure smaller flow signals. Reducing the sensitivity improves performance in relation to interference in the lower flow range.

Turn down

| | |
|-------------------------------|--|
| Navigation | Expert → Sensor → Process param. → Low flow cut off → Turn down (7755) |
| Description | Use this function to enter a setting for the turndown. |
| User entry | 50 to 100 % |
| Factory setting | 100 % |
| Additional information | <p><i>Description</i></p> <p>The measuring range can be limited with this parameter, if necessary. The upper end of the measuring range is not affected. The start of the low end of the measuring range can be changed to a higher flow value, making it possible to cut off low flows, for example.</p> <p><i>User entry</i></p> <p>Reducing the turndown limits the lower measuring range in relation to the minimum measurable vortex frequency.</p> |

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 | <ul style="list-style-type: none"> ■ Off ■ Volume flow ■ Correct.vol.flow ■ Mass flow ■ Reynolds number* |
| Factory setting | Off |

On value

| | |
|------------------------|---|
| Navigation | Expert → Sensor → Process param. → Low flow cut off → On value (1805) |
| Prerequisite | A process variable is selected in the Assign variable parameter (→ 91). |
| 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 → 92. |
| User entry | Positive floating-point number |
| Factory setting | 0 |

* Visibility depends on order options or device settings

Additional information*Dependency*

The unit depends on the process variable selected in the **Assign variable** parameter (→ 91).

Off value**Navigation**

Expert → Sensor → Process param. → Low flow cut off → Off value (1804)

Prerequisite

A process variable is selected in the **Assign variable** parameter (→ 91).

Description

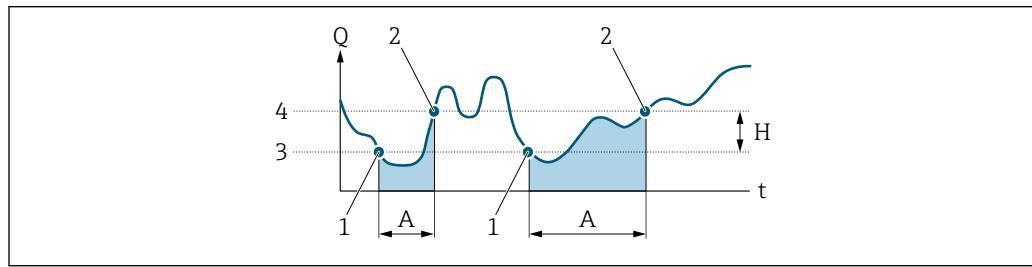
Use this function to enter a switch-off value for low flow cut off. The off value is entered as a positive hysteresis from the on value → 91.

User entry

0 to 100.0 %

Factory setting

50 %

Additional information*Example*

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

3.2.4 "Measurement mode" submenu

Navigation

Expert → Sensor → Measurement mode

| ► Measurement mode | |
|-------------------------|------|
| Select medium (7653) | → 93 |
| Steam calc. mode (7742) | → 93 |
| Steam quality (7605) | → 94 |

| | |
|-------------------------|-------|
| Steam qual. val. (7630) | → 94 |
| Select gas type (7635) | → 95 |
| Liquid type (7636) | → 96 |
| Density calc. (7608) | → 96 |
| Enthalpy calc. (7619) | → 97 |
| ► Medium property | → 97 |

Select medium**Navigation**

Expert → Sensor → Measurement mode → Select medium (7653)

Description

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

Selection

- Gas
- Liquid
- Steam

Factory setting

Steam

Steam calc. mode**Navigation**

Expert → Sensor → Measurement mode → Steam calc. mode (7742)

Prerequisite

The **Steam** option is selected in the **Select medium** parameter (→ 93) parameter.

Description

Use this function to select the steam calculation mode for saturated steam measurement.

Selection

- Sat. st (T-comp)
- Auto (p-/T-comp)

Factory setting

Sat. st (T-comp)

Additional information*Selection*

- Sat. st (T-comp)
Temperature-compensated
- Auto (p-/T-comp)
Pressure/temperature-compensated

Steam quality



Navigation

Expert → Sensor → Measurement mode → Steam quality (7605)

Prerequisite

The following conditions are met:

- Order code for "Application package":
 - Option ES "Wet steam detection"
 - Option EU "Wet steam measurement"
- The **Steam** option is selected in the **Select medium** parameter (→ 93) parameter.

The software options currently enabled are displayed in the **SW option overv.** parameter (→ 57).

Description

Use this function to select the compensation mode for the steam quality.

Selection

- Fixed value
- Calculated value

Factory setting

Fixed value

Additional information

Selection

For detailed information on setting the parameter in steam applications, see the Special Documentation for the **Wet Steam Detection** and **Wet Steam Measurement** application package → 7

Steam qual. val.



Navigation

Expert → Sensor → Measurement mode → Steam qual. val. (7630)

Prerequisite

The following conditions are met:

- The **Steam** option is selected in the **Select medium** parameter (→ 93) parameter.
- The **Fixed value** option is selected in the **Steam quality** parameter (→ 94) parameter.

Description

Use this function to enter a fixed value for the steam quality.

User entry

0 to 100 %

Factory setting

100 %

Additional information

User entry

For detailed information on setting the parameter in steam applications, see the Special Documentation for the **Wet Steam Detection** and **Wet Steam Measurement** application package → 7

Select gas type**Navigation**

Expert → Sensor → Measurement mode → Select gas type (7635)

Prerequisite

The following conditions are met:

- Order code for "Sensor version",
Option "Mass (integrated temperature measurement)"
- The **Gas** option is selected in the **Select medium** parameter (→ 93) parameter.

Description

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

Selection

- Single gas
- Gas mixture
- Air
- Natural gas
- User-spec. gas

Factory setting

User-spec. gas

Additional information*"User-spec. gas" option*

Applications: calculation of the mass flow of a user-specific gas

Calculated variables: the mass flow, the density, the corrected volume flow and the heat quantity are calculated from the measured volume flow and the measured temperature. Either the specific thermal capacity or the calorific value must be entered for calculating the heat quantity.

Formulae for calculation:

- Mass flow: $m = q \cdot \rho (T)$
- Density: $\rho = \rho_1 (T_1) / (1 + \beta_p \cdot [T - T_1])$
- Corrected volume flow: $v_n = q \cdot (\rho (T) / \rho_{ref})$
- Heat quantity in the case of delta heat: $E = q \cdot \rho (T) \cdot c_p \cdot \Delta T$
- Heat quantity in the case of combustion: $E = q \cdot \rho (T) \cdot h$

m = Mass flow

q = Volume flow (measured)

v_n = Corrected volume flow

T = Process temperature (measured)

T_1 = Temperature (→ 62) at which the value for ρ_1 applies.

ρ = Density

ρ_{ref} = Reference density

= Density (→ 65) at which the value for T_1 applies.

β_p = Linear exp coeff (→ 101) of the liquid at T_1

Possible combinations of these values: **Linear exp coeff** parameter (→ 101)

Liquid type**Navigation**

Expert → Sensor → Measurement mode → Liquid type (7636)

Prerequisite

The following conditions are met:

- Order code for "Sensor version",
Option "Mass (integrated temperature measurement)"
- The **Liquid** option is selected in the **Select medium** parameter (→ 93) parameter.

Description

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

Selection

- Water
- LPG (Liquefied Petroleum Gas)
- User-spec liquid

Factory setting

Water

Additional information

"User-spec liquid" option

Applications: calculation of the mass flow of a user-specific liquid, such as thermal oil.

Calculated variables: the mass flow, the density, the corrected volume flow and the heat quantity are calculated from the measured volume flow and the measured temperature. Either the specific thermal capacity or the calorific value must be entered for calculating the heat quantity.

Formulae for calculation:

- Mass flow: $m = q \cdot \rho(T)$
- Density: $\rho = \rho_1(T_1) / (1 + \beta_p \cdot [T - T_1])$
- Corrected volume flow: $v_n = q \cdot (\rho(T) / \rho_{ref})$
- Heat quantity in the case of delta heat: $E = q \cdot \rho(T) \cdot c_p \cdot \Delta T$
- Heat quantity in the case of combustion: $E = q \cdot \rho(T) \cdot h$

m = Mass flow

q = Volume flow (measured)

v_n = Corrected volume flow

T = Process temperature (measured)

T_1 = Temperature (→ 62) at which the value for ρ_1 applies.

ρ = Density

ρ_{ref} = Reference density

= Density (→ 65) at which the value for T_1 applies.

β_p = Linear exp coeff (→ 101) of the liquid at T_1

Possible combinations of these values: **Linear exp coeff** parameter (→ 101)

Density calc.**Navigation**

Expert → Sensor → Measurement mode → Density calc. (7608)

Prerequisite

The following conditions are met:

- In the **Select medium** parameter (→ 93), the **Gas** option is selected.
- In the **Select gas type** parameter (→ 95), the **Natural gas** option is selected.

| | |
|------------------------|--|
| Description | Use this function to select the standard on the basis of which the density is calculated. |
| Selection | <ul style="list-style-type: none"> ■ AGA Nx19 ■ ISO 12213- 2 ■ ISO 12213- 3 |
| Factory setting | AGA Nx19 |

Enthalpy calc.

| | |
|------------------------|--|
| Navigation | Expert → Sensor → Measurement mode → Enthalpy calc. (7619) |
| Prerequisite | The following conditions are met: <ul style="list-style-type: none"> ■ Order code for "Sensor version", Option "Mass (integrated temperature measurement)" ■ In the Select medium parameter (→ 93), the Gas option is selected and in the Select gas type parameter (→ 95), the Natural gas option is selected. |
| Description | Use this function to select the standard on the basis of which the enthalpy is calculated. |
| Selection | <ul style="list-style-type: none"> ■ AGA5 ■ ISO 6976 |
| Factory setting | AGA5 |

"Medium properties" submenu

Navigation Expert → Sensor → Measurement mode → Medium property

| ► Medium property | |
|-------------------------|-------|
| Enthalpy type (7620) | → 98 |
| Cal. value type (7698) | → 98 |
| Ref. comb. temp. (7699) | → 99 |
| Ref. density (7700) | → 99 |
| Ref. GrossCalVal (7701) | → 100 |
| Ref. pressure (7702) | → 100 |
| Ref. temperature (7703) | → 100 |
| Ref. Z-factor (7704) | → 101 |

| | |
|--------------------------|--------|
| Linear exp coeff (7621) | → 101 |
| Relative density (7705) | → 103 |
| Spec. heat cap. (7716) | → 103 |
| Calorific value (7626) | → 104 |
| Z-factor (7631) | → 104 |
| Dynam. viscosity (7733) | → 104 |
| Dynam. viscosity (7732) | → 105 |
| ► Gas composition | → 106 |

Enthalpy type



Navigation

Expert → Sensor → Measurement mode → Medium property → Enthalpy type (7620)

Prerequisite

The following conditions are met:

- In the **Select gas type** parameter (→ 95), the **User-spec. gas** option is selected.
Or
- In the **Liquid type** parameter (→ 96), the **User-spec liquid** option is selected.

Description

Use this function to select the type of enthalpy.

Selection

- Heat
- Calorific value

Factory setting

Heat

Cal. value type



Navigation

Expert → Sensor → Measurement mode → Medium property → Cal. value type (7698)

Prerequisite

The **Cal. value type** parameter (→ 98) is visible.

Description

Use this function to select whether the net calorific value or the gross calorific value is used as the basis for calculation.

Selection

- GrossCalorValVol
- NetCalorValVol
- GrossCalValMass
- NetCalorValMass

| | |
|------------------------|-----------------|
| Factory setting | GrossCalValMass |
|------------------------|-----------------|

Ref. comb. temp.

| | |
|-------------------------------|---|
| Navigation | Expert → Sensor → Measurement mode → Medium property → Ref. comb. temp. (7699) |
| Prerequisite | The Ref. comb. temp. parameter (→ 99) is visible. |
| Description | Use this function to enter the reference combustion temperature for calculating the natural gas energy value. |
| User entry | -200 to 450 °C |
| Factory setting | 20 °C |
| Additional information | <i>Dependency</i> The unit is taken from the Temperature unit parameter (→ 81) |

Ref.density

| | |
|-------------------------------|--|
| Navigation | Expert → Sensor → Measurement mode → Medium property → Ref.density (7700) |
| Prerequisite | The following conditions are met: ■ In the Select gas type parameter (→ 95), the User-spec. gas option is selected. Or ■ In the Liquid type parameter (→ 96), the Water option or User-spec liquid option is selected. |
| Description | Use this function to enter a fixed value for the reference density. |
| User entry | 0.01 to 15 000 kg/m ³ |
| Factory setting | 1 000 kg/m ³ |
| Additional information | <i>Dependency</i> The unit is taken from the Density unit parameter (→ 85) |

Ref. GrossCalVal**Navigation**

Expert → Sensor → Measurement mode → Medium property → Ref. GrossCalVal (7701)

Prerequisite

The following conditions are met:

- In the **Select medium** parameter (→ [93](#)), the **Gas** option is selected.
- In the **Select gas type** parameter (→ [95](#)), the **Natural gas** option is selected.
- In the **Density calc.** parameter (→ [96](#)), the **ISO 12213- 3** option is selected.

Description

Use this function to enter the reference gross calorific value of the natural gas.

User entry

Positive floating-point number

Factory setting

50 000 kJ/Nm³

Additional information

Dependency

The unit is taken from the **Cal. value unit** parameter (→ [83](#))

Ref. pressure**Navigation**

Expert → Sensor → Measurement mode → Medium property → Ref. pressure (7702)

Prerequisite

The following conditions are met:

- Order code for "Sensor version",
Option "Mass (integrated temperature measurement)"
- The **Gas** option is selected in the **Select medium** parameter (→ [93](#)) parameter.

Description

Use this function to enter the reference pressure for calculating the reference density.

User entry

0 to 250 bar

Factory setting

1.01325 bar

Additional information

Dependency

The unit is taken from the **Pressure unit** parameter (→ [80](#))

Ref. temperature**Navigation**

Expert → Sensor → Measurement mode → Medium property → Ref. temperature (7703)

Prerequisite

The following conditions are met:

- The **Gas** option is selected in the **Select medium** parameter (→ [93](#)).
Or
- The **Liquid** option is selected in the **Select medium** parameter (→ [93](#)).

| | |
|-------------------------------|---|
| Description | Use this function to enter the reference temperature for calculating the reference density. |
| User entry | -200 to 450 °C |
| Factory setting | 20 °C |
| Additional information | <i>Dependency</i> |
| |  The unit is taken from the Temperature unit parameter (→ 81) |

Ref. Z-factor

| | |
|------------------------|---|
| Navigation |  Expert → Sensor → Measurement mode → Medium property → Ref. Z-factor (7704) |
| Prerequisite | In the Select gas type parameter (→ 95), the User-spec. gas option is selected. |
| Description | Use this function to enter the real gas constant Z for gas under reference conditions. |
| User entry | 0.1 to 2 |
| Factory setting | 1 |

Linear exp coeff

| | |
|------------------------|---|
| Navigation |  Expert → Sensor → Measurement mode → Medium property → Linear exp coeff (7621) |
| Prerequisite | The following conditions are met: ■ The Liquid option is selected in the Select medium parameter (→ 93). ■ The User-spec liquid option is selected in the Liquid type parameter (→ 96). |
| Description | Use this function to enter the linear, medium-specific expansion coefficient for calculating the reference density for user-specific liquids. |
| User entry | $1.0 \cdot 10^{-6}$ to $2.0 \cdot 10^{-3}$ |
| Factory setting | $2.06 \cdot 10^{-4}$ |

Additional information*User entry*

- If the value in this parameter is changed, it is advisable to reset the totalizer.
- The expansion coefficient can be determined using the Applicator.
- If two density and temperature value pairs are known (density ρ_1 at temperature T_1 and density ρ_2 at temperature T_2), the expansion coefficient can be calculated according to the following formula:

$$\beta_p = ((\rho_1/\rho_2) - 1)/(T_1 - T_2)$$

Sample values

i The closer the process temperature is to the specific temperature value, the better the calculation of the density for application-specific liquids. If the process temperature deviates greatly from the value indicated, the expansion coefficient should be calculated according to the formula (see above).

| Medium (liquid) | Temperature value [K] | Density value [kg/m ³] | Expansion coefficient [10 ⁻⁴ 1/K] |
|--------------------|--------------------------|---------------------------------------|---|
| Air | 123.15 | 594 | 18.76 |
| Ammonia | 298.15 | 602 | 25 |
| Argon | 133.15 | 1028 | 111.3 |
| n-butane | 298.15 | 573 | 20.7 |
| Carbon dioxide | 298.15 | 713 | 106.6 |
| Chlorine | 298.15 | 1398 | 21.9 |
| Cyclohexane | 298.15 | 773 | 11.6 |
| n-decane | 298.15 | 728 | 10.2 |
| Ethane | 298.15 | 315 | 175.3 |
| Ethylene | 298.15 | 386 | 87.7 |
| n-heptane | 298.15 | 351 | 12.4 |
| n-hexane | 298.15 | 656 | 13.8 |
| Hydrogen chloride | 298.15 | 796 | 70.9 |
| i-butane | 298.15 | 552 | 22.5 |
| Methane | 163.15 | 331 | 73.5 |
| Nitrogen | 93.15 | 729 | 75.3 |
| n-octane | 298.15 | 699 | 11.1 |
| Oxygen | 133.15 | 876 | 95.4 |
| n-pentane | 298.15 | 621 | 16.2 |
| Propane | 298.15 | 493 | 32.1 |
| Vinyl chloride | 298.15 | 903 | 19.3 |

Table values according to Carl L. Yaws (2001): Matheson Gas Data Book, 7th edition

Relative density

| | |
|------------------------|---|
| Navigation | Expert → Sensor → Measurement mode → Medium property → Relative density (7705) |
| Prerequisite | The following conditions are met: <ul style="list-style-type: none">■ In the Select medium parameter (→ 93), the Gas option is selected.■ In the Select gas type parameter (→ 95), the Natural gas option is selected.■ In the Density calc. parameter (→ 96), the ISO 12213- 3 option is selected. |
| Description | Use this function to enter the relative density of the natural gas. |
| User entry | 0.55 to 0.9 |
| Factory setting | 0.664 |

Spec. heat cap.

| | |
|-------------------------------|--|
| Navigation | Expert → Sensor → Measurement mode → Medium property → Spec. heat cap. (7716) |
| Prerequisite | The following conditions are met: <ul style="list-style-type: none">■ Selected medium:<ul style="list-style-type: none">■ In the Select gas type parameter (→ 95), the User-spec. gas option is selected. Or■ In the Liquid type parameter (→ 96), the User-spec liquid option is selected.■ In the Enthalpy type parameter (→ 98), the Heat option is selected. |
| Description | Use this function to enter the specific heat capacity of the medium. |
| User entry | 0 to 50 kJ/(kgK) |
| Factory setting | 4.187 kJ/(kgK) |
| Additional information | <i>Dependency</i> |
| | The unit is taken from the SpecHeatCapaUnit parameter (→ 87) |

Calorific value



Navigation Expert → Sensor → Measurement mode → Medium property → Calorific value (7626)

Prerequisite The following conditions are met:

- Selected medium:
 - In the **Select gas type** parameter (→ 95), the **User-spec. gas** option is selected.
Or
 - In the **Liquid type** parameter (→ 96), the **User-spec liquid** option is selected.
- In the **Enthalpy type** parameter (→ 98), the **Calorific value** option is selected.
- In the **Cal. value type** parameter (→ 98), the **GrossCalValVol** option or **GrossCalValMass** option is selected.

Description Use this function to enter the calorific value for calculating the energy flow.

User entry Positive floating-point number

Factory setting 50 000 kJ/kg

Z-factor



Navigation Expert → Sensor → Measurement mode → Medium property → Z-factor (7631)

Prerequisite In the **Select gas type** parameter (→ 95), the **User-spec. gas** option is selected.

Description Use this function to enter the real gas constant Z for gas under operating conditions.

User entry 0.1 to 2.0

Factory setting 1

Dynam. viscosity (Liquids)



Navigation Expert → Sensor → Measurement mode → Medium property → Dynam. viscosity (7733)

Prerequisite The following conditions are met:

- Order code for "Sensor version",
 - Option "Volume"
or
 - Option "Volume high temperature"
- The **Liquid** option is selected in the **Select medium** parameter (→ 93) parameter.
or
- The **User-spec liquid** option is selected in the **Liquid type** parameter (→ 96).

Description Use this function to enter a fixed value for the dynamic viscosity for a liquid.

User entry Positive floating-point number

Factory setting 1 cP

Additional information *Description*

The viscosity entered is used to linearize the measured error in the lower Reynolds number range if the calculated viscosity is not available e.g. "Volume flow" sensor version or the fluid is a user-specific liquid (see table).

Dependencies

| Sensor version | Medium | Dyn. viscosity |
|----------------|--------------------------------------|----------------|
| Volume flow | All | x |
| Mass flow | All except ¹⁾ | - |
| | 1) | x |
| x | Dynamic viscosity as the input value | |

1) User-specific liquid

Dependency

 The unit is taken from the **Dyn. visc. unit** parameter (→ 86).

Dynam. viscosity (Gases)



Navigation  Expert → Sensor → Measurement mode → Medium property → Dynam. viscosity (7732)

Prerequisite

The following conditions are met:

- Order code for "Sensor version",
 - Option "Volume"
 - or
 - Option "Volume high temperature"
- The **Gas** option or the **Steam** option is selected in the **Select medium** parameter (→ 93).
 - or
- The **User-spec. gas** option is selected in the **Select gas type** parameter (→ 95).

Description

Use this function to enter a fixed value for the dynamic viscosity for a gas or steam.

User entry Positive floating-point number

Factory setting 0.015 cP

Additional information *Description*

The viscosity entered is used to linearize the measured error in the lower Reynolds number range if the calculated viscosity is not available e.g. "Volume flow" sensor version or the fluid is a user-specific gas (see table).

Dependencies

| Sensor version | Medium | Dyn. viscosity |
|----------------|--------------------------|----------------|
| Volume flow | All | x |
| Mass flow | All except ¹⁾ | - |

| Sensor version | Medium | Dyn. viscosity |
|----------------|--------------------------------------|----------------|
| | 1) | x |
| x | Dynamic viscosity as the input value | |

1) User-specific gas

Dependency

 The unit is taken from the **Dyn. visc. unit** parameter (→ 86).

"Gas composition" submenu

Navigation

Expert → Sensor → Measurement mode → Medium property
→ Gas composition

|  Gas composition | |
|--|-------|
| Gas type (7714) | → 107 |
| Gas mixture (7640) | → 108 |
| Mol% Ar (7663) | → 109 |
| Mol% C2H3Cl (7664) | → 109 |
| Mol% C2H4 (7665) | → 110 |
| Mol% C2H6 (7666) | → 110 |
| Mol% C3H8 (7667) | → 110 |
| Mol% CH4 (7668) | → 111 |
| Mol% Cl2 (7707) | → 111 |
| Mol% CO (7669) | → 112 |
| Mol% CO2 (7670) | → 112 |
| Mol% H2 (7671) | → 112 |
| Mol% H2O (7672) | → 113 |
| Mol% H2S (7673) | → 113 |
| Mol% HCl (7674) | → 114 |

| | |
|-----------------------|--------|
| Mol% He (7675) | → 114 |
| Mol% i-C4H10 (7676) | → 114 |
| Mol% i-C5H12 (7677) | → 115 |
| Mol% Kr (7678) | → 115 |
| Mol% N2 (7679) | → 115 |
| Mol% n-C10H22 (7680) | → 116 |
| Mol% n-C4H10 (7681) | → 116 |
| Mol% n-C5H12 (7682) | → 117 |
| Mol% n-C6H14 (7683) | → 117 |
| Mol% n-C7H16 (7684) | → 117 |
| Mol% n-C8H18 (7685) | → 118 |
| Mol% n-C9H20 (7686) | → 118 |
| Mol% Ne (7687) | → 118 |
| Mol% NH3 (7688) | → 119 |
| Mol% O2 (7689) | → 119 |
| Mol% SO2 (7691) | → 119 |
| Mol% Xe (7692) | → 120 |
| Mol% other gas (7690) | → 120 |
| Rel. humidity (7731) | → 120 |

Gas type



Navigation

Expert → Sensor → Measurement mode → Medium property → Gas composition
→ Gas type (7714)

Prerequisite

The following conditions are met:

- In the **Select medium** parameter (→ 93), the **Gas** option is selected.
- In the **Select gas type** parameter (→ 95), the **Single gas** option is selected.

Description

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

Selection

- Hydrogen H2
- Helium He
- Neon Ne
- Argon Ar
- Krypton Kr
- Xenon Xe
- Nitrogen N2
- Oxygen O2
- Chlorine Cl2
- Ammonia NH3
- Carbon monox. CO
- Carbon diox. CO2
- Sulfur diox. SO2
- Hydrag.sulf. H2S
- Hydrag.chlor.HCl
- Methane CH4
- Ethane C2H6
- Propane C3H8
- Butane C4H10
- Ethylene C2H4
- Vinyl Chloride

Factory setting

Methane CH4

Gas mixture**Navigation**

Expert → Sensor → Measurement mode → Medium property → Gas composition
→ Gas mixture (7640)

Prerequisite

The following conditions are met:

- In the **Select medium** parameter (→ 93), the **Gas** option is selected.
- In the **Select gas type** parameter (→ 95), the **Gas mixture** option is selected.

Description

Use this function to select the gas mixture for the measuring application.

Selection

- Hydrogen H2
- Helium He
- Neon Ne
- Argon Ar
- Krypton Kr
- Xenon Xe
- Nitrogen N2
- Oxygen O2
- Chlorine Cl2
- Ammonia NH3
- Carbon monox. CO
- Carbon diox. CO2
- Sulfur diox. SO2
- Hydrag.sulf. H2S
- Hydrag.chlor.HCl
- Methane CH4
- Ethane C2H6
- Propane C3H8
- Butane C4H10

- Ethylene C2H4
- Vinyl Chloride
- Others

Factory setting Methane CH4

Mol% Ar

Navigation Expert → Sensor → Measurement mode → Medium property → Gas composition → Mol% Ar (7663)

Prerequisite

The following conditions are met:

- In the **Select medium** parameter (→ 93), the **Gas** option is selected.
- In the **Select gas type** parameter (→ 95), the **Gas mixture** option is selected and in the **Gas mixture** parameter (→ 108), the **Argon Ar** option is selected.
Or
 - In the **Select gas type** parameter (→ 95), the **Natural gas** option is selected and in the **Density calc.** parameter (→ 96), the **ISO 12213- 2** option is selected.

Description Use this function to enter the amount of the gas constituent in the gas mixture.

User entry 0 to 100 %

Factory setting 0 %

Mol% C2H3Cl

Navigation Expert → Sensor → Measurement mode → Medium property → Gas composition → Mol% C2H3Cl (7664)

Prerequisite

The following conditions are met:

- In the **Select medium** parameter (→ 93), the **Gas** option is selected.
- In the **Select gas type** parameter (→ 95), the **Gas mixture** option is selected.
- In the **Gas mixture** parameter (→ 108), the **Vinyl Chloride** option is selected.

Description Use this function to enter the amount of the gas constituent in the gas mixture.

User entry 0 to 100 %

Factory setting 0 %

Mol% C2H4**Navigation**

Expert → Sensor → Measurement mode → Medium property → Gas composition
→ Mol% C2H4 (7665)

Prerequisite

The following conditions are met:

- In the **Select medium** parameter (→ 93), the **Gas** option is selected.
- In the **Select gas type** parameter (→ 95), the **Gas mixture** option is selected.
- In the **Gas mixture** parameter (→ 108), the **Ethylene C2H4** option is selected.

Description

Use this function to enter the amount of the gas constituent in the gas mixture.

User entry

0 to 100 %

Factory setting

0 %

Mol% C2H6**Navigation**

Expert → Sensor → Measurement mode → Medium property → Gas composition
→ Mol% C2H6 (7666)

Prerequisite

The following conditions are met:

- In the **Select medium** parameter (→ 93), the **Gas** option is selected.
- In the **Select gas type** parameter (→ 95), the **Gas mixture** option is selected and in the **Gas mixture** parameter (→ 108), the **Ethane C2H6** option is selected.
Or
 - In the **Select gas type** parameter (→ 95), the **Natural gas** option is selected and in the **Density calc.** parameter (→ 96), the **ISO 12213- 2** option is selected.

Description

Use this function to enter the amount of the gas constituent in the gas mixture.

User entry

0 to 100 %

Factory setting

0 %

Mol% C3H8**Navigation**

Expert → Sensor → Measurement mode → Medium property → Gas composition
→ Mol% C3H8 (7667)

Prerequisite

The following conditions are met:

- In the **Select medium** parameter (→ 93), the **Gas** option is selected.
- In the **Select gas type** parameter (→ 95), the **Gas mixture** option is selected and in the **Gas mixture** parameter (→ 108), the **Propane C3H8** option is selected.
Or
 - In the **Select gas type** parameter (→ 95), the **Natural gas** option is selected and in the **Density calc.** parameter (→ 96), the **ISO 12213- 2** option is selected.

Description

Use this function to enter the amount of the gas constituent in the gas mixture.

User entry 0 to 100 %

Factory setting 0 %

Mol% CH₄



Navigation Expert → Sensor → Measurement mode → Medium property → Gas composition → Mol% CH₄ (7668)

Prerequisite The following conditions are met:
In the **Select medium** parameter (→ 93), the **Gas** option is selected.
■ In the **Select gas type** parameter (→ 95), the **Gas mixture** option is selected and in the **Gas mixture** parameter (→ 108), the **Methane CH₄** option is selected.
Or
■ In the **Select gas type** parameter (→ 95), the **Natural gas** option is selected.

Description Use this function to enter the amount of the gas constituent in the gas mixture.

User entry 0 to 100 %

Factory setting 100 %

Mol% Cl₂



Navigation Expert → Sensor → Measurement mode → Medium property → Gas composition → Mol% Cl₂ (7707)

Prerequisite The following conditions are met:
■ In the **Select medium** parameter (→ 93), the **Gas** option is selected.
■ In the **Select gas type** parameter (→ 95), the **Gas mixture** option is selected.
■ In the **Gas mixture** parameter (→ 108), the **Chlorine Cl₂** option is selected.

Description Use this function to enter the amount of the gas constituent in the gas mixture.

User entry 0 to 100 %

Factory setting 0 %

Mol% CO**Navigation**

Expert → Sensor → Measurement mode → Medium property → Gas composition
→ Mol% CO (7669)

Prerequisite

The following conditions are met:

In the **Select medium** parameter (→ 93), the **Gas** option is selected.

- In the **Select gas type** parameter (→ 95), the **Gas mixture** option is selected and in the **Gas mixture** parameter (→ 108), the **Carbon monox. CO** option is selected.

Or

- In the **Select gas type** parameter (→ 95), the **Natural gas** option is selected and in the **Density calc.** parameter (→ 96), the **ISO 12213- 2** option is selected.

Description

Use this function to enter the amount of the gas constituent in the gas mixture.

User entry

0 to 100 %

Factory setting

0 %

Mol% CO2**Navigation**

Expert → Sensor → Measurement mode → Medium property → Gas composition
→ Mol% CO2 (7670)

Prerequisite

The following conditions are met:

In the **Select medium** parameter (→ 93), the **Gas** option is selected.

- In the **Select gas type** parameter (→ 95), the **Gas mixture** option is selected and in the **Gas mixture** parameter (→ 108), the **Carbon diox. CO2** option is selected.

Or

- In the **Select gas type** parameter (→ 95), the **Natural gas** option is selected.

Description

Use this function to enter the amount of the gas constituent in the gas mixture.

User entry

0 to 100 %

Factory setting

0 %

Mol% H2**Navigation**

Expert → Sensor → Measurement mode → Medium property → Gas composition
→ Mol% H2 (7671)

Prerequisite

The following conditions are met:

In the **Select medium** parameter (→ 93), the **Gas** option is selected.

- In the **Select gas type** parameter (→ 95), the **Gas mixture** option is selected and in the **Gas mixture** parameter (→ 108), the **Hydrogen H2** option is selected.

Or

- In the **Select gas type** parameter (→ 95), the **Natural gas** option is selected and in the **Density calc.** parameter (→ 96), the **AGA Nx19** option is **not** selected.

| | |
|------------------------|--|
| Description | Use this function to enter the amount of the gas constituent in the gas mixture. |
| User entry | 0 to 100 % |
| Factory setting | 0 % |

Mol% H2O

| | |
|------------------------|---|
| Navigation | Expert → Sensor → Measurement mode → Medium property → Gas composition → Mol% H2O (7672) |
| Prerequisite | The following conditions are met: <ul style="list-style-type: none">■ In the Select medium parameter (→ 93), the Gas option is selected.■ In the Select gas type parameter (→ 95), the Natural gas option is selected.■ In the Density calc. parameter (→ 96), the ISO 12213- 2 option is selected. |
| Description | Use this function to enter the amount of the gas constituent in the gas mixture. |
| User entry | 0 to 100 % |
| Factory setting | 0 % |

Mol% H2S

| | |
|------------------------|---|
| Navigation | Expert → Sensor → Measurement mode → Medium property → Gas composition → Mol% H2S (7673) |
| Prerequisite | The following conditions are met: In the Select medium parameter (→ 93), the Gas option is selected. <ul style="list-style-type: none">■ In the Select gas type parameter (→ 95), the Gas mixture option is selected and in the Gas mixture parameter (→ 108), the Hydrog.sulf. H2S option is selected. Or■ In the Select gas type parameter (→ 95), the Natural gas option is selected and in the Density calc. parameter (→ 96), the ISO 12213- 2 option is selected. |
| Description | Use this function to enter the amount of the gas constituent in the gas mixture. |
| User entry | 0 to 100 % |
| Factory setting | 0 % |

Mol% HCl**Navigation**

Expert → Sensor → Measurement mode → Medium property → Gas composition
→ Mol% HCl (7674)

Prerequisite

The following conditions are met:

- In the **Select medium** parameter (→ 93), the **Gas** option is selected.
- In the **Select gas type** parameter (→ 95), the **Gas mixture** option is selected.
- In the **Gas mixture** parameter (→ 108), the **Hydrog.chlor.HCl** option is selected.

Description

Use this function to enter the amount of the gas constituent in the gas mixture.

User entry

0 to 100 %

Factory setting

0 %

Mol% He**Navigation**

Expert → Sensor → Measurement mode → Medium property → Gas composition
→ Mol% He (7675)

Prerequisite

The following conditions are met:

- In the **Select medium** parameter (→ 93), the **Gas** option is selected.
- In the **Select gas type** parameter (→ 95), the **Gas mixture** option is selected and in the **Gas mixture** parameter (→ 108), the **Helium He** option is selected.
Or
 - In the **Select gas type** parameter (→ 95), the **Natural gas** option is selected and in the **Density calc.** parameter (→ 96), the **ISO 12213- 2** option is selected.

Description

Use this function to enter the amount of the gas constituent in the gas mixture.

User entry

0 to 100 %

Factory setting

0 %

Mol% i-C4H10**Navigation**

Expert → Sensor → Measurement mode → Medium property → Gas composition
→ Mol% i-C4H10 (7676)

Prerequisite

The following conditions are met:

- In the **Select medium** parameter (→ 93), the **Gas** option is selected.
- In the **Select gas type** parameter (→ 95), the **Natural gas** option is selected.
- In the **Density calc.** parameter (→ 96), the **ISO 12213- 2** option is selected.

Description

Use this function to enter the amount of the gas constituent in the gas mixture.

User entry

0 to 100 %

| | |
|------------------------|-----|
| Factory setting | 0 % |
|------------------------|-----|

Mol% i-C5H12

| | |
|------------------------|---|
| Navigation | Expert → Sensor → Measurement mode → Medium property → Gas composition → Mol% i-C5H12 (7677) |
| Prerequisite | The following conditions are met: <ul style="list-style-type: none">■ In the Select medium parameter (→ 93), the Gas option is selected.■ In the Select gas type parameter (→ 95), the Natural gas option is selected.■ In the Density calc. parameter (→ 96), the ISO 12213- 2 option is selected. |
| Description | Use this function to enter the amount of the gas constituent in the gas mixture. |
| User entry | 0 to 100 % |
| Factory setting | 0 % |

Mol% Kr

| | |
|------------------------|--|
| Navigation | Expert → Sensor → Measurement mode → Medium property → Gas composition → Mol% Kr (7678) |
| Prerequisite | The following conditions are met: <ul style="list-style-type: none">■ In the Select medium parameter (→ 93), the Gas option is selected.■ In the Select gas type parameter (→ 95), the Gas mixture option is selected.■ In the Gas mixture parameter (→ 108), the Krypton Kr option is selected. |
| Description | Use this function to enter the amount of the gas constituent in the gas mixture. |
| User entry | 0 to 100 % |
| Factory setting | 0 % |

Mol% N2

| | |
|---------------------|--|
| Navigation | Expert → Sensor → Measurement mode → Medium property → Gas composition → Mol% N2 (7679) |
| Prerequisite | The following conditions are met: In the Select medium parameter (→ 93), the Gas option is selected. <ul style="list-style-type: none">■ In the Select gas type parameter (→ 95), the Gas mixture option is selected and in the Gas mixture parameter (→ 108), the Nitrogen N2 option is selected. Or■ In the Select gas type parameter (→ 95), the Natural gas option is selected and in the Density calc. parameter (→ 96), the AGA Nx19 option or the ISO 12213- 2 option is selected. |

Description Use this function to enter the amount of the gas constituent in the gas mixture.

User entry 0 to 100 %

Factory setting 0 %

Mol% n-C10H22



Navigation Expert → Sensor → Measurement mode → Medium property → Gas composition
→ Mol% n-C10H22 (7680)

Prerequisite The following conditions are met:

- In the **Select medium** parameter (→ 93), the **Gas** option is selected.
- In the **Select gas type** parameter (→ 95), the **Natural gas** option is selected.
- In the **Density calc.** parameter (→ 96), the **ISO 12213- 2** option is selected.

Description Use this function to enter the amount of the gas constituent in the gas mixture.

User entry 0 to 100 %

Factory setting 0 %

Mol% n-C4H10



Navigation Expert → Sensor → Measurement mode → Medium property → Gas composition
→ Mol% n-C4H10 (7681)

Prerequisite The following conditions are met:

- In the **Select medium** parameter (→ 93), the **Gas** option is selected.
 - In the **Select gas type** parameter (→ 95), the **Gas mixture** option is selected and in the **Gas mixture** parameter (→ 108), the **Butane C4H10** option is selected.
Or
 - In the **Select gas type** parameter (→ 95), the **Natural gas** option is selected and in the **Density calc.** parameter (→ 96), the **ISO 12213- 2** option is selected.
- Or
In the **Select medium** parameter (→ 93), the **Liquid** option is selected and in the **Liquid type** parameter (→ 96), the **LPG** option is selected.

Description Use this function to enter the amount of the gas constituent in the gas mixture.

User entry 0 to 100 %

Factory setting 0 %

Mol% n-C5H12

**Navigation**

Expert → Sensor → Measurement mode → Medium property → Gas composition
→ Mol% n-C5H12 (7682)

Prerequisite

The following conditions are met:

- In the **Select medium** parameter (→ 93), the **Gas** option is selected.
- In the **Select gas type** parameter (→ 95), the **Natural gas** option is selected.
- In the **Density calc.** parameter (→ 96), the **ISO 12213- 2** option is selected.

Description

Use this function to enter the amount of the gas constituent in the gas mixture.

User entry

0 to 100 %

Factory setting

0 %

Mol% n-C6H14

**Navigation**

Expert → Sensor → Measurement mode → Medium property → Gas composition
→ Mol% n-C6H14 (7683)

Prerequisite

The following conditions are met:

- In the **Select medium** parameter (→ 93), the **Gas** option is selected.
- In the **Select gas type** parameter (→ 95), the **Natural gas** option is selected.
- In the **Density calc.** parameter (→ 96), the **ISO 12213- 2** option is selected.

Description

Use this function to enter the amount of the gas constituent in the gas mixture.

User entry

0 to 100 %

Factory setting

0 %

Mol% n-C7H16

**Navigation**

Expert → Sensor → Measurement mode → Medium property → Gas composition
→ Mol% n-C7H16 (7684)

Prerequisite

The following conditions are met:

- In the **Select medium** parameter (→ 93), the **Gas** option is selected.
- In the **Select gas type** parameter (→ 95), the **Natural gas** option is selected.
- In the **Density calc.** parameter (→ 96), the **ISO 12213- 2** option is selected.

Description

Use this function to enter the amount of the gas constituent in the gas mixture.

User entry

0 to 100 %

Factory setting

0 %

Mol% n-C8H18**Navigation**

Expert → Sensor → Measurement mode → Medium property → Gas composition
→ Mol% n-C8H18 (7685)

Prerequisite

The following conditions are met:

- In the **Select medium** parameter (→ [93](#)), the **Gas** option is selected.
- In the **Select gas type** parameter (→ [95](#)), the **Natural gas** option is selected.
- In the **Density calc.** parameter (→ [96](#)), the **ISO 12213- 2** option is selected.

Description

Use this function to enter the amount of the gas constituent in the gas mixture.

User entry

0 to 100 %

Factory setting

0 %

Mol% n-C9H20**Navigation**

Expert → Sensor → Measurement mode → Medium property → Gas composition
→ Mol% n-C9H20 (7686)

Prerequisite

The following conditions are met:

- In the **Select medium** parameter (→ [93](#)), the **Gas** option is selected.
- In the **Select gas type** parameter (→ [95](#)), the **Natural gas** option is selected.
- In the **Density calc.** parameter (→ [96](#)), the **ISO 12213- 2** option is selected.

Description

Use this function to enter the amount of the gas constituent in the gas mixture.

User entry

0 to 100 %

Factory setting

0 %

Mol% Ne**Navigation**

Expert → Sensor → Measurement mode → Medium property → Gas composition
→ Mol% Ne (7687)

Prerequisite

The following conditions are met:

- In the **Select medium** parameter (→ [93](#)), the **Gas** option is selected.
- In the **Select gas type** parameter (→ [95](#)), the **Gas mixture** option is selected.
- In the **Gas mixture** parameter (→ [108](#)), the **Neon Ne** option is selected.

Description

Use this function to enter the amount of the gas constituent in the gas mixture.

User entry

0 to 100 %

Factory setting

0 %

Mol% NH3

Navigation Expert → Sensor → Measurement mode → Medium property → Gas composition → Mol% NH3 (7688)

Prerequisite The following conditions are met:

- In the **Select medium** parameter (→ 93), the **Gas** option is selected.
- In the **Select gas type** parameter (→ 95), the **Gas mixture** option is selected.
- In the **Gas mixture** parameter (→ 108), the **Ammonia NH3** option is selected.

Description Use this function to enter the amount of the gas constituent in the gas mixture.

User entry 0 to 100 %

Factory setting 0 %

Mol% O2

Navigation Expert → Sensor → Measurement mode → Medium property → Gas composition → Mol% O2 (7689)

Prerequisite The following conditions are met:
In the **Select medium** parameter (→ 93), the **Gas** option is selected.

- In the **Select gas type** parameter (→ 95), the **Gas mixture** option is selected and in the **Gas mixture** parameter (→ 108), the **Oxygen O2** option is selected.
Or
- In the **Select gas type** parameter (→ 95), the **Natural gas** option is selected and in the **Density calc.** parameter (→ 96), the **ISO 12213- 2** option is selected.

Description Use this function to enter the amount of the gas constituent in the gas mixture.

User entry 0 to 100 %

Factory setting 0 %

Mol% SO2

Navigation Expert → Sensor → Measurement mode → Medium property → Gas composition → Mol% SO2 (7691)

Prerequisite The following conditions are met:

- In the **Select medium** parameter (→ 93), the **Gas** option is selected.
- In the **Select gas type** parameter (→ 95), the **Gas mixture** option is selected.
- In the **Gas mixture** parameter (→ 108), the **Sulfur diox. SO2** option is selected.

Description Use this function to enter the amount of the gas constituent in the gas mixture.

User entry 0 to 100 %

| | |
|-----------------|-----|
| Factory setting | 0 % |
|-----------------|-----|

Mol% Xe



| | |
|------------|--|
| Navigation | Expert → Sensor → Measurement mode → Medium property → Gas composition → Mol% Xe (7692) |
|------------|--|

Prerequisite

The following conditions are met:

- In the **Select medium** parameter (→ 93), the **Gas** option is selected.
- In the **Select gas type** parameter (→ 95), the **Gas mixture** option is selected.
- In the **Gas mixture** parameter (→ 108), the **Xenon Xe** option is selected.

| | |
|-------------|--|
| Description | Use this function to enter the amount of the gas constituent in the gas mixture. |
|-------------|--|

| | |
|------------|------------|
| User entry | 0 to 100 % |
|------------|------------|

| | |
|-----------------|-----|
| Factory setting | 0 % |
|-----------------|-----|

Mol% other gas



| | |
|------------|---|
| Navigation | Expert → Sensor → Measurement mode → Medium property → Gas composition → Mol% other gas (7690) |
|------------|---|

Prerequisite

The following conditions are met:

- In the **Select medium** parameter (→ 93), the **Gas** option is selected.
- In the **Select gas type** parameter (→ 95), the **Gas mixture** option is selected.
- In the **Gas mixture** parameter (→ 108), the **Others** option is selected.

| | |
|-------------|--|
| Description | Use this function to enter the amount of the gas constituent in the gas mixture. |
|-------------|--|

| | |
|------------|------------|
| User entry | 0 to 100 % |
|------------|------------|

| | |
|-----------------|-----|
| Factory setting | 0 % |
|-----------------|-----|

Rel. humidity



| | |
|------------|--|
| Navigation | Expert → Sensor → Measurement mode → Medium property → Gas composition → Rel. humidity (7731) |
|------------|--|

Prerequisite

The following conditions are met:

- In the **Select medium** parameter (→ 93), the **Gas** option is selected.
- In the **Select gas type** parameter (→ 95), the **Air** option is selected.

| | |
|-------------|--|
| Description | Use this function to enter the humidity content of the air in %. |
|-------------|--|

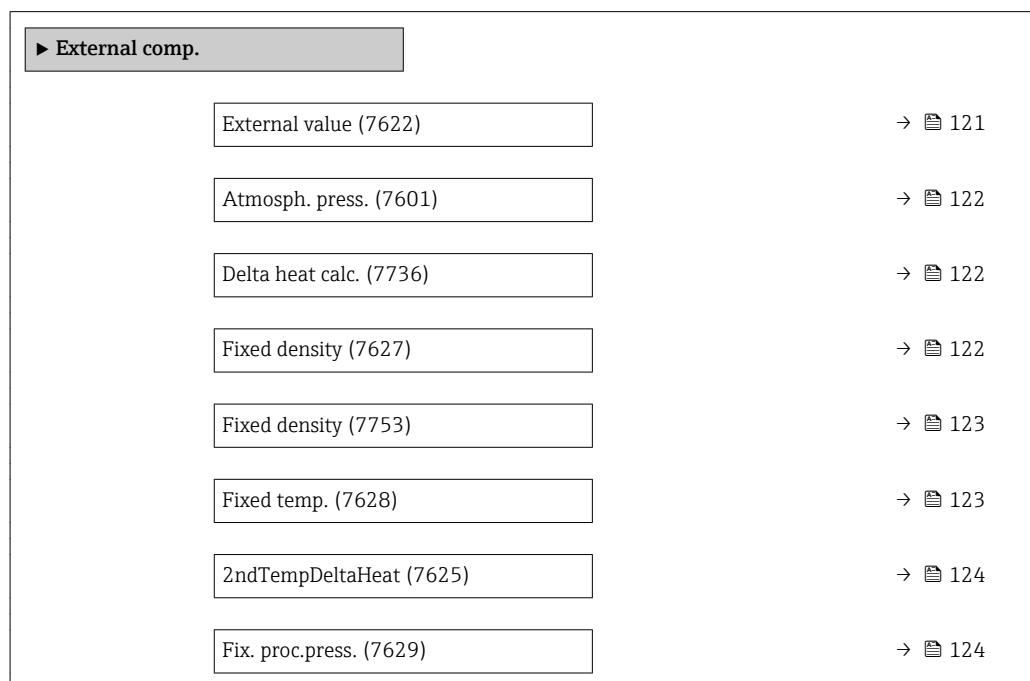
| | |
|------------|------------|
| User entry | 0 to 100 % |
|------------|------------|

Factory setting 0 %

3.2.5 "External compensation" submenu

Navigation

Expert → Sensor → External comp.



External value



Navigation Expert → Sensor → External comp. → External value (7622)

Prerequisite With order code for "Sensor version":
Option "Mass (integrated temperature measurement)"

Description Use this function to select the process variable which is taken from an external device.



For detailed information on setting the parameter in steam applications, see the Special Documentation for the **Wet Steam Detection** and **Wet Steam Measurement** application package → 7

Selection

- Off
- Pressure
- Gauge pressure
- Density
- Temperature
- 2ndTempDeltaHeat

Factory setting Off

Atmosph. press.**Navigation**

Expert → Sensor → External comp. → Atmosph. press. (7601)

Prerequisite

In the **External value** parameter (→ 121), the **Gauge pressure** option is selected.

Description

Use this function to enter the value for the ambient pressure to be used for pressure correction.

User entry

0 to 250 bar

Factory setting

1.01325 bar

Additional information

Dependency

The unit is taken from the **Pressure unit** parameter (→ 80)

Delta heat calc.**Navigation**

Expert → Sensor → External comp. → Delta heat calc. (7736)

Prerequisite

The **Delta heat calc.** parameter (→ 122) is visible.

Description

Use this function to select the option for calculating the heat transferred via a heat exchanger (=delta heat).

Selection

- Off
- Device cold side
- Device warm side

Factory setting

Device warm side

Fixed density**Navigation**

Expert → Sensor → External comp. → Fixed density (7627)

Prerequisite

With order code for "Sensor version":

- Option "Volume"
or
- Option "Volume high temperature"

Description

Use this function to enter a fixed value for the density if the medium is a liquid.

User entry

0.01 to 15 000 kg/m³

Factory setting

1 000 kg/m³

Additional information*Description*

The density entered is used to linearize the measured error in the lower Reynolds number range if the calculated density is not available e.g. "Volume flow" sensor version or the fluid is a user-specific gas (see table).

Dependency

 The unit is taken from the **Density unit** parameter (→ [85](#))

Fixed density**Navigation**

 Expert → Sensor → External comp. → Fixed density (7753)

Prerequisite

With order code for "Sensor version":

- Option "Volume"
or
- Option "Volume high temperature"

Description

Use this function to enter a fixed value for the density if the medium is gas or steam.

User entry

0.01 to 15 000 kg/m³

Factory setting

5 kg/m³

Additional information*Description*

The density entered is used to linearize the measured error in the lower Reynolds number range if the calculated density is not available e.g. "Volume flow" sensor version or the fluid is a user-specific gas (see table).

Dependency

 The unit is taken from the **Density unit** parameter (→ [85](#))

Fixed temp.**Navigation**

 Expert → Sensor → External comp. → Fixed temp. (7628)

Description

Use this function to enter a fixed value for the process temperature.

User entry

-200 to 450 °C

Factory setting

20 °C

Additional information*Dependency*

 The unit is taken from the **Temperature unit** parameter (→ [81](#))

2ndTempDeltaHeat**Navigation**

Expert → Sensor → External comp. → 2ndTempDeltaHeat (7625)

Prerequisite

The **2ndTempDeltaHeat** parameter (→ [124](#)) is visible.

Description

Use this function to enter the second temperature value for calculating the delta heat.

User entry

-200 to 450 °C

Factory setting

20 °C

Additional information

Dependency

The unit is taken from the **Temperature unit** parameter (→ [81](#))

Fix. proc.press.**Navigation**

Expert → Sensor → External comp. → Fix. proc.press. (7629)

Prerequisite

The following conditions are met:

- Order code for "Sensor version",
Option "Mass flow (integrated temperature measurement)"
- In the **External value** parameter (→ [121](#)) the **Pressure** option is not selected.

Description

Use this function to enter a fixed value for the process pressure.

User entry

0 to 250 bar abs.

Factory setting

0 bar abs.

Additional information

User entry

For detailed information on setting the parameter in steam applications, see the Special Documentation for the **Wet Steam Detection** and **Wet Steam Measurement** application package → [7](#)

Dependency

The unit is taken from the **Pressure unit** parameter (→ [80](#))

3.2.6 "Sensor adjustm." submenu

Navigation

Expert → Sensor → Sensor adjustm.

| ► Sensor adjustm. | |
|-------------------------|-------|
| Inlet config. (7641) | → 125 |
| Inlet run (7642) | → 126 |
| D mating pipe (7648) | → 126 |
| Install. factor (7616) | → 127 |
| Disable pr. cell (7747) | → 127 |
| Ref. pressure (7748) | → 128 |
| Press. cell adj. (7754) | → 128 |
| p cell offs.val (7749) | → 129 |

Inlet config.



Navigation

Expert → Sensor → Sensor adjustm. → Inlet config. (7641)

Prerequisite

The **inlet run correction** feature:

- Is a standard feature and can only be used in Prowirl F 200.
- Can be used for the following pressure ratings and nominal diameters:
DN 15 to 150 (1 to 6")
 - EN (DIN)
 - ASME B16.5, Sch. 40/80

Description

Use this function to select the inlet configuration.

Selection

- Off
- Single elbow
- Double elbow
- Double elbow 3D
- Reduction

Factory setting

Off

Inlet run**Navigation**

Expert → Sensor → Sensor adjustm. → Inlet run (7642)

Prerequisite

The **inlet run correction** feature:

- Is a standard feature and can only be used in Prowirl F 200.
- Can be used for the following pressure ratings and nominal diameters:
 - DN 15 to 150 (1 to 6")
 - EN (DIN)
 - ASME B16.5, Sch. 40/80

Description

Use this function to enter the length of the straight inlet run.

User entry

0 to 20 m

Factory setting

0 m

Additional information

Dependency

The unit is taken from the **Length unit** parameter (→ 87)

D mating pipe**Navigation** Expert → Sensor → Sensor adjustm. → D mating pipe (7648)**Description**

Use this function to enter the diameter of the mating pipe to enable diameter mismatch correction.

User entry

0 to 1 m (0 to 3 ft)

Factory setting

Country-specific:

- 0 m
- 0 ft

Additional information

Description

The device has diameter mismatch correction. This can be enabled by entering the actual internal diameter of the mating pipe in the **D mating pipe** parameter.

User entry

If the value entered is **0**, diameter mismatch correction is disabled. If the standard internal diameter of the ordered process connection differs from the internal diameter of the mating pipe, an additional measuring uncertainty of up to 2 % must be expected if diameter mismatch correction is disabled.

Limit values

Diameter mismatch correction should be enabled only within the following limit values:

Flange connection:

- DN 15 (½"): ±20 % of the internal diameter
- DN 25 (1"): ±15 % of the internal diameter
- DN 40 (1½"): ±12 % of the internal diameter
- DN ≥ 50 (2"): ±10 % of the internal diameter

Disc (wafer version):

- DN 15 (½"): ±15 % of the internal diameter
- DN 25 (1"): ±12 % of the internal diameter
- DN 40 (1½"): ±9 % of the internal diameter
- DN ≥ 50 (2"): ±8 % of the internal diameter

Dependency

 The unit is taken from the **Length unit** parameter (→ 87)

Install. factor



Navigation

 Expert → Sensor → Sensor adjustm. → Install. factor (7616)

Description

Use this function to enter the factor to adjust installation conditions.

User entry

Positive floating-point number

Factory setting

1.0

Additional information

Description

The calculated volume flow and all measured variables derived from this are multiplied by the installation factor.

Disable pr. cell



Navigation

 Expert → Sensor → Sensor adjustm. → Disable pr. cell (7747)

Prerequisite

With order code for "Sensor version":

- Option "Mass steam (integrated pressure/temperature measurement)"
- Option "Mass gas/liquid (integrated pressure/temperature measurement)"

 Only available for Prowirl F, R, O.

Description

Use this function to deactivate integrated pressure measurement.

Selection

- No
- Yes

Factory setting

No

Additional information

Description

If pressure measurement is disabled, the measuring device calculates with the value from the **Fix. proc.press.** parameter (→ 124) or with the value from the **External value** parameter (→ 121). This makes it possible to replace the pressure cell with minimum

impact on the output variable. The setting is not stored persistently and is reset to the factory setting following a restart.

Selection

- No
Pressure cell is not disabled.
- Yes
Pressure cell is disabled.

Ref. pressure



| | |
|-------------------------------|--|
| Navigation | Expert → Sensor → Sensor adjustm. → Ref. pressure (7748) |
| Prerequisite | With order code for "Sensor version": <ul style="list-style-type: none">■ Option "Mass steam (integrated pressure/temperature measurement)"■ Option "Mass gas/liquid (integrated pressure/temperature measurement)" |
| | Only available for Prowirl F, R, O. |
| Description | Use this function to enter the reference pressure for determining the offset value for integrated pressure measurement. |
| User entry | Positive floating-point number |
| Factory setting | 1.01325 bar |
| Additional information | <i>Dependency</i> The unit is taken from the Pressure unit parameter (→ 80) |

Press. cell adj.



| | |
|------------------------|--|
| Navigation | Expert → Sensor → Sensor adjustm. → Press. cell adj. (7754) |
| Prerequisite | With order code for "Sensor version": <ul style="list-style-type: none">■ Option "Mass steam (integrated pressure/temperature measurement)"■ Option "Mass gas/liquid (integrated pressure/temperature measurement)" |
| | Only available for Prowirl F, R, O. |
| Description | Description: adjustment process for an offset correction of the integrated pressure measurement. |
| Selection | <ul style="list-style-type: none">■ Cancel■ Yes■ Discard offset |
| Factory setting | Cancel |

Additional information*Selection*

- Cancel
Cancel the offset adjustment and keep the current offset value
- Yes
Accept the current values for reference pressure and measured pressure for calculating the offset value
- Discard offset
Reset the existing offset value to 0

p cell offs.val**Navigation**
 Expert → Sensor → Sensor adjustm. → p cell offs.val (7749)
Prerequisite

With order code for "Sensor version":

- Option "Mass steam (integrated pressure/temperature measurement)"
- Option "Mass gas/liquid (integrated pressure/temperature measurement)"



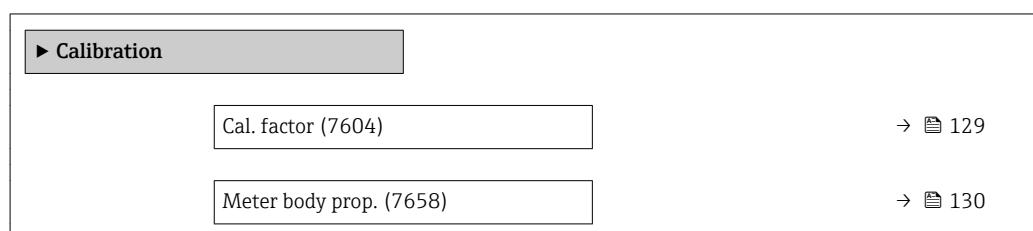
Only available for Prowirl F, R, O.

Description

Displays the current offset value that the measuring device uses to correct the internal pressure measured value.

User interface

Signed floating-point number

Additional information*Dependency*The unit is taken from the **Pressure unit** parameter (→  80)**3.2.7 "Calibration" submenu****Navigation**
 Expert → Sensor → Calibration
**Cal. factor****Navigation**
 Expert → Sensor → Calibration → Cal. factor (7604)
Description

Displays the calibration factor. The calibration factor is determined during device calibration.

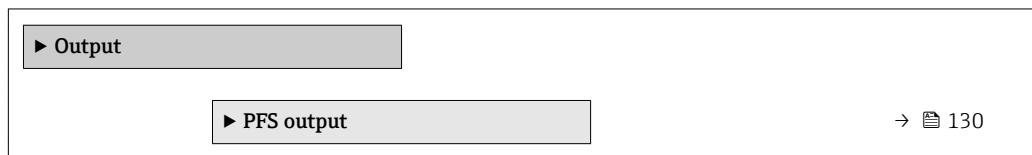
| | |
|-------------------------------|--|
| User interface | Positive floating-point number |
| Factory setting | This value is always > 0 when the device is delivered from the factory. |
| Additional information | <p><i>Description</i></p> <p>Factor by which the measured vortex frequency must be divided in order to calculate the volume flow.</p> <p><i>Unit</i></p> <p>In 1/m³, or vortex pulses per cubic meter</p> |

Meter body prop.

| | |
|-------------------------------|---|
| Navigation | Expert → Sensor → Calibration → Meter body prop. (7658) |
| Description | Displays informative text about the measuring tube. |
| User interface | Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /) |
| Factory setting | ----- |
| Additional information | <p><i>Description</i></p> <p>Summarized information about the meter body.</p> <p><i>Example</i></p> <p>DN25F-PN40: nominal diameter DN25, flange type, pressure rating 40 bar</p> |

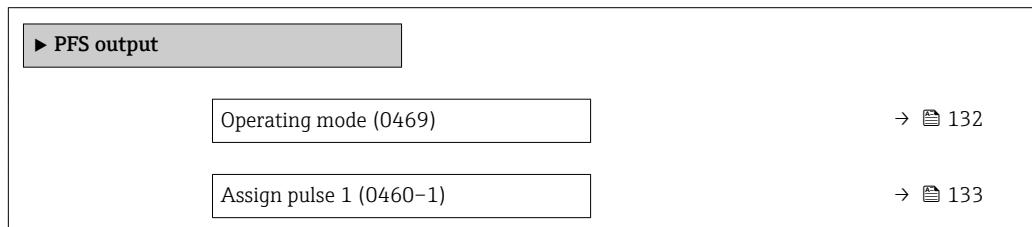
3.3 "Output" submenu

Navigation Expert → Output



3.3.1 "Pulse/frequency/switch output" submenu

Navigation Expert → Output → PFS output



| | |
|-------------------------|-----------------------|
| Value per pulse (0455) | → 133 |
| Pulse width (0452) | → 134 |
| Failure mode (0480) | → 134 |
| Pulse output (0456) | → 135 |
| Assign freq. (0478) | → 136 |
| Min. freq. value (0453) | → 136 |
| Max. freq. value (0454) | → 136 |
| Val. at min.freq (0476) | → 137 |
| Val. at max.freq (0475) | → 137 |
| Damping out. 1 (0477-1) | → 138 |
| Failure mode (0451) | → 139 |
| Failure freq. (0474) | → 140 |
| Output freq. (0471) | → 140 |
| Switch out funct (0481) | → 140 |
| Assign diag. beh (0482) | → 141 |
| Assign limit (0483) | → 141 |
| Switch-on value (0466) | → 143 |
| Switch-off value (0464) | → 144 |
| Assign status (0485) | → 144 |
| Switch-on delay (0467) | → 145 |
| Switch-off delay (0465) | → 145 |
| Failure mode (0486) | → 145 |
| Switch status (0461) | → 146 |
| Invert outp.sig. (0470) | → 146 |

Operating mode**Navigation**

Expert → Output → PFS output → Operating mode (0469)

Description

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

Selection

- Pulse
- Frequency
- Switch

Factory setting

Pulse

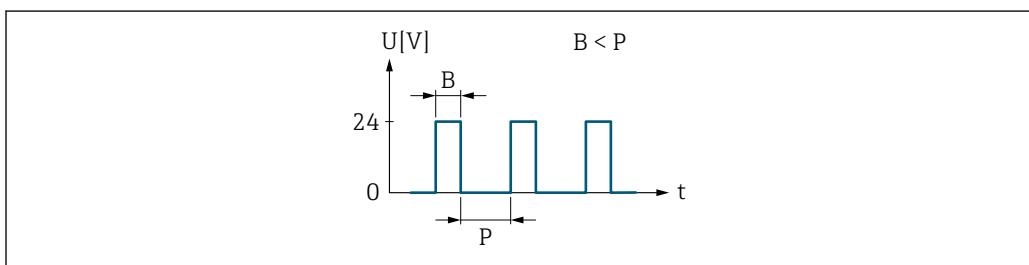
Additional information*"Pulse" option*

Quantity-dependent pulse with configurable pulse width

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

Example

- Flow rate approx. 100 g/s
- Pulse value 0.1 g
- Pulse width 0.05 ms
- Pulse rate 1 000 Impuls/s



A0026883

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

B Pulse width entered

P Pauses between the individual pulses

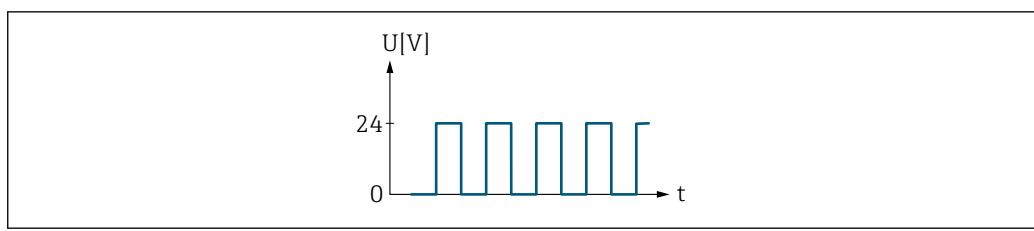
"Frequency" option

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

An output frequency is output that is proportional to the value of a process variable, such as volume flow, corrected volume flow, mass flow, flow velocity, temperature, calculated saturated steam pressure, steam quality, total mass flow, energy flow or heat flow difference.

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



3 Flow-proportional frequency output

Assign pulse 1



Navigation

Expert → Output → PFS output → Assign pulse 1 (0460-1)

Prerequisite

The **Pulse** option is selected in the **Operating mode** parameter (→ 132) parameter.

Description

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

Selection

- Off
- Volume flow
- Correct.vol.flow
- Mass flow
- Total mass flow *
- Energy flow *
- Heat flow diff. *

Factory setting

Volume flow



Value per pulse

Navigation

Expert → Output → PFS output → Value per pulse (0455)

Prerequisite

The **Pulse** option is selected in the **Operating mode** parameter (→ 132) and a process variable is selected in the **Assign pulse** parameter (→ 133).

Description

Use this function to enter the value for the measured value that a pulse is equivalent to.

User entry

Positive floating point number

Factory setting

Depends on country and nominal diameter → 306

Additional information

User entry

Weighting of the pulse output with a quantity.

The lower the pulse value, the

- better the resolution.
- the higher the frequency of the pulse response.

* Visibility depends on order options or device settings

Pulse width**Navigation**

Expert → Output → PFS output → Pulse width (0452)

Prerequisite

The **Pulse** option is selected in the **Operating mode** parameter (→ 132) and a process variable is selected in the **Assign pulse** parameter (→ 133).

Description

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

User entry

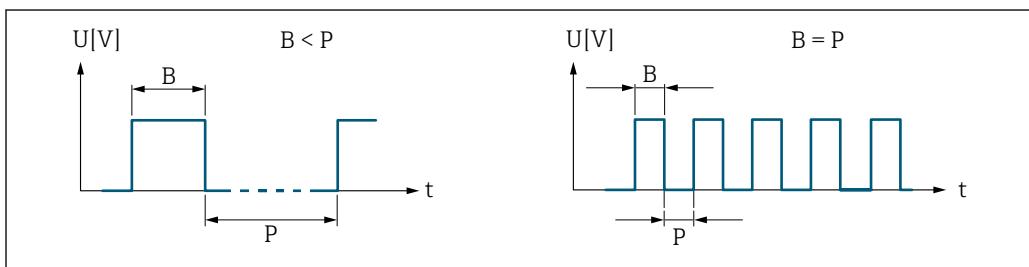
5 to 2 000 ms

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**.



B Pulse width entered
P Pauses between the individual pulses

Example

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

Failure mode**Navigation**

Expert → Output → PFS output → Failure mode (0480)

Prerequisite

The **Pulse** option is selected in the **Operating mode** parameter (→ 132) and a process variable is selected in the **Assign pulse** parameter (→ 133).

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 *Description*

The dictates of safety render it advisable to ensure that the pulse output shows a predefined behavior in the event of a device alarm.

Selection

- Actual value

In the event of a device alarm, the pulse output continues on the basis of the current flow measurement. The fault is ignored.

- No pulses

In the event of a device alarm, the pulse output is "switched off".

NOTICE! A device alarm is a measuring device error that must be taken seriously. It can affect the measurement quality such that the quality can no longer be guaranteed. The **Actual value** option is only recommended if it can be guaranteed that all possible alarm conditions will not affect the measurement quality.

Pulse output

Navigation  Expert → Output → PFS output → Pulse output (0456)

Prerequisite The **Pulse** option is selected in the **Operating mode** parameter (→ 132) parameter.

Description Displays the pulse frequency currently output.

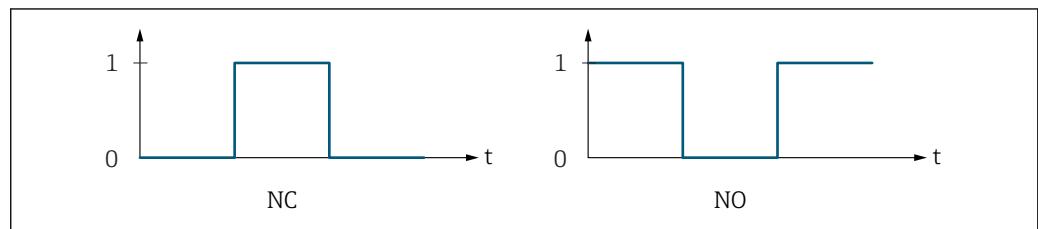
User interface Positive floating-point number

Additional information *Description*

- The pulse output is an open collector output.

■ This is configured at the factory in such a way that the transistor is conductive for the duration of the pulse (NO contact) and is safety-oriented.

■ The **Value per pulse** parameter (→ 133) and **Pulse width** parameter (→ 134) can be used to define the value (i.e. the measured value amount that corresponds to a pulse) and the duration of the pulse.



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 (→ 146) 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 (→ 134)) can be configured.

Assign freq.**Navigation**

Expert → Output → PFS output → Assign freq. (0478)

Prerequisite

The **Frequency** option is selected in the **Operating mode** parameter (→ 132).

Description

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

Selection

- Off
- Volume flow
- Correct.vol.flow
- Mass flow
- Flow velocity
- Temperature
- Pressure
- CalcSatSteamPres *
- Steam quality *
- Total mass flow *
- Energy flow *
- Heat flow diff. *

Factory setting

Off

Min. freq. value**Navigation**

Expert → Output → PFS output → Min. freq. value (0453)

Prerequisite

The **Frequency** option is selected in the **Operating mode** parameter (→ 132) and a process variable is selected in the **Assign freq.** parameter (→ 136).

Description

Use this function to enter the minimum frequency.

User entry

0 to 1 000 Hz

Factory setting

0 Hz

Max. freq. value**Navigation**

Expert → Output → PFS output → Max. freq. value (0454)

Prerequisite

The **Frequency** option is selected in the **Operating mode** parameter (→ 132) and a process variable is selected in the **Assign freq.** parameter (→ 136).

Description

Use this function to enter the end value frequency.

User entry

0 to 1 000 Hz

* Visibility depends on order options or device settings

Factory setting 1 000 Hz

Val. at min.freq



Navigation Expert → Output → PFS output → Val. at min.freq (0476)

Prerequisite The **Frequency** option is selected in the **Operating mode** parameter (→ 132) and a process variable is selected in the **Assign freq.** parameter (→ 136).

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

User entry Signed floating-point number

Factory setting Depends on country and nominal diameter

Additional information *Dependency*

The entry depends on the process variable selected in the **Assign freq.** parameter (→ 136).

Val. at max.freq



Navigation Expert → Output → PFS output → Val. at max.freq (0475)

Prerequisite The **Frequency** option is selected in the **Operating mode** parameter (→ 132) and a process variable is selected in the **Assign freq.** parameter (→ 136).

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

User entry Signed floating-point number

Factory setting Depends on country and nominal diameter

Additional information *Description*

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

Dependency

The entry depends on the process variable selected in the **Assign freq.** parameter (→ 136).

Damping out. 1



Navigation

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

Prerequisite

In the **Operating mode** parameter (→ 132), the **Frequency** option is selected, and one of the following options is selected in the **Assign freq.** parameter (→ 136):

- Volume flow
- Correct.vol.flow
- Mass flow
- Flow velocity
- Temperature
- Pressure
- CalcSatSteamPres *
- Steam quality *
- Total mass flow *
- Energy flow *
- Heat flow diff. *

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

5.0 s

Additional information

User entry

Use this function to enter a time constant (PT1 element³⁾) 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 → Response time (0491)

Prerequisite

In the **Operating mode** parameter (→ 132), the **Frequency** option is selected, and one of the following options is selected in the **Assign freq.** parameter (→ 136):

- Volume flow
- Correct.vol.flow
- Mass flow
- Flow velocity
- Temperature
- Pressure
- CalcSatSteamPres *

* Visibility depends on order options or device settings

3) proportional transmission behavior with first order delay

- Steam quality *
- Total mass flow *
- Energy flow *
- Heat flow diff. *

| | |
|-------------------------------|--|
| Description | Displays the response time. This specifies how quickly the pulse/frequency/switch output reaches the measured value change of 63 % of 100 % of the measured value change. |
| User interface | Positive floating-point number |
| Additional information | <p><i>Description</i></p>  The response time is made up of the time specified for the following dampings: <ul style="list-style-type: none"> ■ Damping of pulse/frequency/switch output and ■ Depending on the measured variable assigned to the output. Flow damping |

Failure mode



| | |
|-------------------------------|--|
| Navigation |   Expert → Output → PFS output → Failure mode (0451) |
| Prerequisite | The Frequency option is selected in the Operating mode parameter (→ 132) and a process variable is selected in the Assign freq. parameter (→ 136). |
| Description | Use this function to select the failure mode of the frequency output in the event of a device alarm. |
| Selection | <ul style="list-style-type: none"> ■ Actual value ■ Defined value ■ 0 Hz |
| Factory setting | 0 Hz |
| Additional information | <p><i>Selection</i></p> <ul style="list-style-type: none"> ■ 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. (→ 140) 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". <p>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.</p> |

* Visibility depends on order options or device settings

Failure freq.**Navigation**

Expert → Output → PFS output → Failure freq. (0474)

Prerequisite

The **Frequency** option is selected in the **Operating mode** parameter (→ 132) and a process variable is selected in the **Assign freq.** parameter (→ 136).

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 1250.0 Hz

Factory setting

0.0 Hz

Output freq.**Navigation**

Expert → Output → PFS output → Output freq. (0471)

Prerequisite

In the **Operating mode** parameter (→ 132), the **Frequency** option is selected.

Description

Displays the actual value of the output frequency which is currently measured.

User interface

0 to 1250 Hz

Switch out funct**Navigation**

Expert → Output → PFS output → Switch out funct (0481)

Prerequisite

The **Switch** option is selected in the **Operating mode** parameter (→ 132).

Description

Use this function to select a function for the switch output.

Selection

- Off
- On
- Diag. behavior
- Limit
- Status

Factory setting

Off

Additional information*Selection*

- 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.
- 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 → Assign diag. beh (0482)

Prerequisite

- In the **Operating mode** parameter (→ 132), the **Switch** option is selected.
- In the **Switch out funct** parameter (→ 140), the **Diag. behavior** option is selected.

Description

Use this function to select the diagnostic event category that is displayed for the switch output.

Selection

- Alarm
- Alarm or warning
- Warning

Factory setting

Alarm

Additional information*Description*

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

Selection

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

Assign limit**Navigation**

Expert → Output → PFS output → Assign limit (0483)

Prerequisite

- The **Switch** option is selected in the **Operating mode** parameter (→ 132).
- The **Limit** option is selected in the **Switch out funct** parameter (→ 140).

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

Selection

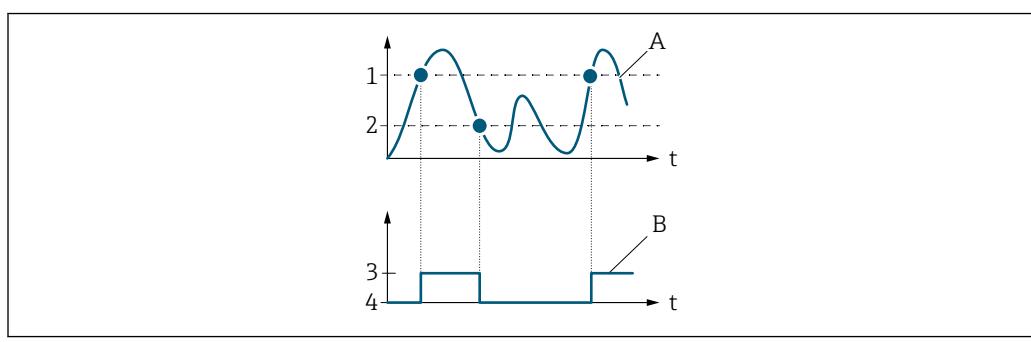
- Volume flow
- Correct.vol.flow
- Mass flow
- Flow velocity
- Temperature
- Pressure
- CalcSatSteamPres *
- Steam quality *
- Total mass flow *
- Energy flow *
- Heat flow diff. *
- Reynolds number *
- Totalizer 1
- Totalizer 2
- Totalizer 3

Factory setting Volume flow

Additional information *Description*

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

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

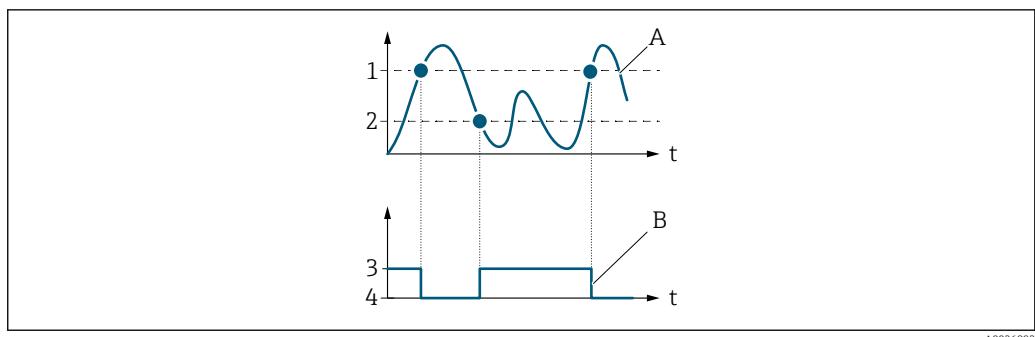


- | | |
|---|------------------|
| 1 | Switch-on value |
| 2 | Switch-off value |
| 3 | Conductive |
| 4 | Non-conductive |
| A | Process variable |
| B | Status output |

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

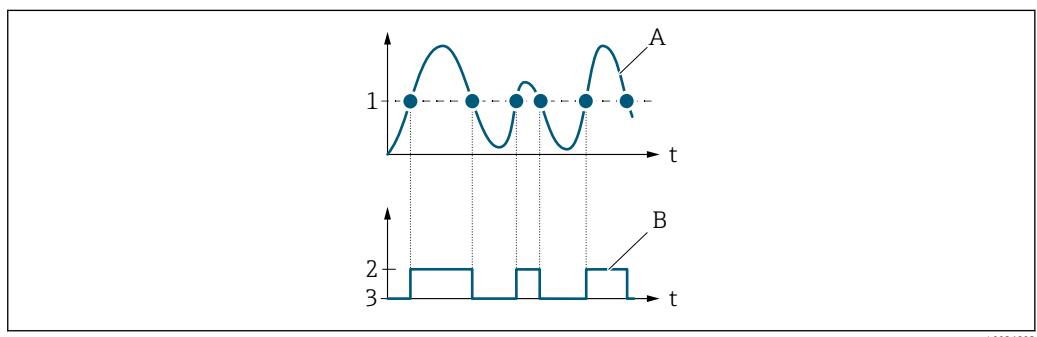
* Visibility depends on order options or device settings



- 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



- 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 → Switch-on value (0466)

Prerequisite

- The **Switch** option is selected in the **Operating mode** parameter (→ 132).
- The **Limit** option is selected in the **Switch out funct** parameter (→ 140).

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 m³/h
- 0 ft³/h

Additional information*Description*

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

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

Dependency

 The unit depends on the process variable selected in the **Assign limit** parameter (→ 141).

Switch-off value**Navigation**

 Expert → Output → PFS output → Switch-off value (0464)

Prerequisite

- The **Switch** option is selected in the **Operating mode** parameter (→ 132).
- The **Limit** option is selected in the **Switch out funct** parameter (→ 140).

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 m³/h
- 0 ft³/h

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 (→ 141).

Assign status**Navigation**

 Expert → Output → PFS output → Assign status (0485)

Prerequisite

- The **Switch** option is selected in the **Operating mode** parameter (→ 132).
- The **Status** option is selected in the **Switch out funct** parameter (→ 140).

Description

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

Selection

- Low flow cut off
- Digital outp. 6

Factory setting

Low flow cut off

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 → Switch-on delay (0467)

Prerequisite

- The **Switch** option is selected in the **Operating mode** parameter (→ 132).
- The **Limit** option is selected in the **Switch out funct** parameter (→ 140).

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 → Switch-off delay (0465)

Prerequisite

- The **Switch** option is selected in the **Operating mode** parameter (→ 132).
- The **Limit** option is selected in the **Switch out funct** parameter (→ 140).

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 → Failure mode (0486)

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 → Switch status (0461)
Prerequisite

The **Switch** option is selected in the **Operating mode** parameter (→  132).

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 → Invert outp.sig. (0470)
Description

Use this function to select whether to invert the output signal.

Selection

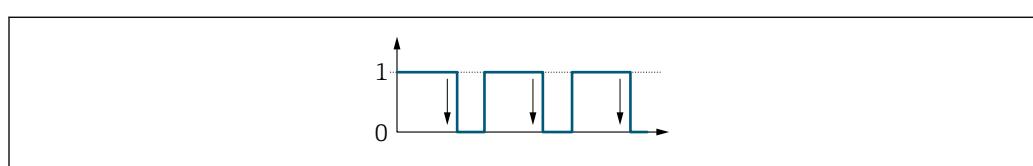
- No
- Yes

Factory setting

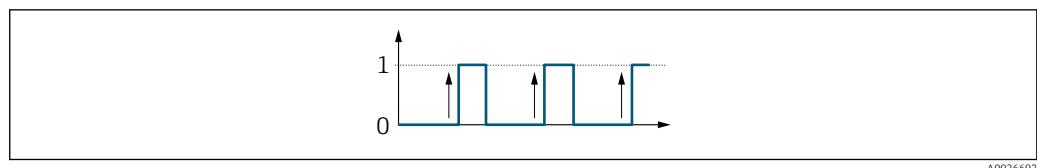
No

Additional information*Selection*

No option (passive - negative)



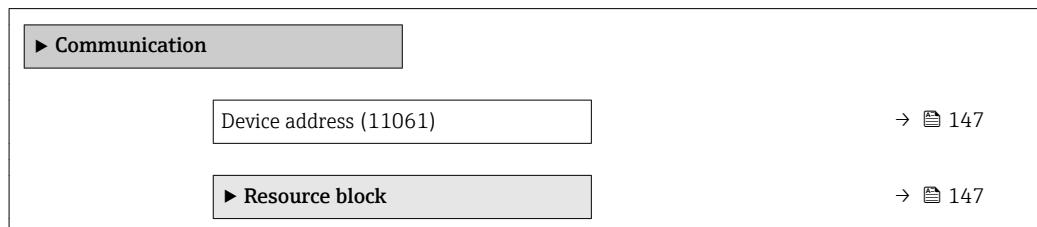
Yes option (passive - positive)



3.4 "Communication" submenu

Navigation

Expert → Communication



Device address

Navigation

Expert → Communication → Device address (11061)

Description

Displays the device address.

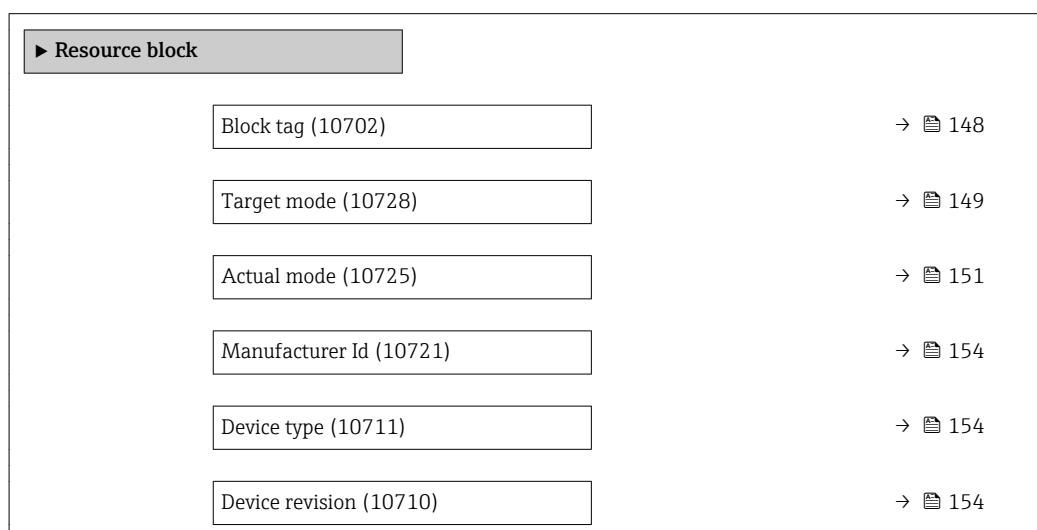
User interface

1 to 255

3.4.1 "Resource block" submenu

Navigation

Expert → Communication → Resource block



| | |
|---------------------|--------|
| DD Revision (10709) | → 154 |
| Restart (10800) | → 155 |
| Write Lock (10747) | → 162 |
| ITK Version (10794) | → 169 |

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 *Description*

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 | <ul style="list-style-type: none">■ 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 (→  149).

User interface

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

Additional information*User interface* Detailed description of the options displayed: **Target mode** parameter (→  149)

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 (→  149) 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 (→  149)

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 | <ul style="list-style-type: none">▪ ROut▪ RCas▪ Cas▪ Auto▪ Man▪ LO▪ IMan▪ OOS |
| Additional information | <i>Options</i>  Detailed description of the options available for selection: Target mode parameter (→  149) |

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 | <ul style="list-style-type: none">▪ Other▪ BlockConfigurat▪ LinkConfigurat▪ SimulationActive▪ DeviceFaultState▪ DeviceMainten▪ MemoryFailure▪ LostStaticData▪ LostNVData▪ MaintenanceNeed▪ 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 | <ul style="list-style-type: none">▪ Uninitialized▪ StartRestart▪ Initialization▪ Online Linking |

- Online
- Standby
- Failure

Additional information*User interface*

- 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 | Displays the device type with which the measuring device is registered with Fieldbus Foundation. |
| User interface | Prowirl 200 |

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 Fieldbus Foundation. |
| User interface | 2 |

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 | <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 . |

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
- Service Denied
- Diagnostic 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 | <ul style="list-style-type: none">■ Uninitialized■ Run■ Resource■ Defaults■ Processor■ To delivery set. |
| Factory setting | Uninitialized |
| <hr/> | |
| Service reset | |
| Navigation |  Expert → Communication → Resource block → Service reset (10749) |
| Description | Extended selection for a manual restart or a manual device reset. |
| Selection | <ul style="list-style-type: none">■ Uninitialized■ DeliverySett+MIB■ ENP restart |
| Factory setting | Uninitialized |
| Additional information | <p><i>Selection</i></p> <ul style="list-style-type: none">■ Uninitialized Factory setting■ DeliverySett+MIB Reset the device to the as-delivered state. Important communication settings are reset to the factory default settings here.■ ENP restart Reset the parameters for the electronic name plate (ENP). |

| | |
|-----------------------|---|
| Features | |
| Navigation |  Expert → Communication → Resource block → Features (10713) |
| Description | Displays the additional options that are supported by the measuring device. |
| User interface | <ul style="list-style-type: none">■ 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

Mimum Cyc.Time

Navigation

Expert → Communication → Resource block → Mimum 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 (→  256) block. |

Selection

- Off
- Clear

Factory setting

Off

Additional information

Options



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 (→ ☒ 256) block.

User interface

- Uninitialized
- Clear
- Active

Additional information

User interface

- 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 (→  256) function block. |
|--------------------|--|

| | |
|------------------|---|
| Selection | <ul style="list-style-type: none">▪ OFF▪ SET |
|------------------|---|

| | |
|------------------------|-----|
| Factory setting | OFF |
|------------------------|-----|

| | |
|-------------------------------|---|
| Additional information | <i>Options</i> <ul style="list-style-type: none">▪ 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 | <ul style="list-style-type: none">■ 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 (→  163).
Current parameter (→  165) 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 | <ul style="list-style-type: none">■ Uninitialized■ Acknowledged■ Unacknowledged |
| Factory setting | Uninitialized |
| Additional information | <i>Description</i>  <ul style="list-style-type: none">■ 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 | <ul style="list-style-type: none">■ 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 | <ul style="list-style-type: none">▪ 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 | <ul style="list-style-type: none">▪ 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

3.5 "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

→  169

3.5.1 "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)

→  169

Status (6906-1 to n)

→  175

Value (6907-1 to n)

→  178

Channel (6902-1 to n)

→  199

Lin Type (6905-1 to n)

→  201

PV Filter Time (6909-1 to n)

→  205

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: 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 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 | <ul style="list-style-type: none"> ■ ROut ■ RCas ■ Cas ■ Auto ■ Man ■ LO ■ IMan ■ OOS |
| Factory setting | OOS |
| Additional information | <p><i>Options</i></p>  Detailed description of the options available for selection: Target mode parameter (→  149) |

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 (→  171). |
| User interface | <ul style="list-style-type: none"> ■ ROut ■ RCas ■ Cas ■ Auto ■ Man ■ LO ■ IMan ■ OOS |
| Additional information | <p><i>User interface</i></p>  Detailed description of the options displayed: Target mode parameter (→  149) |

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 (→ 171) for the function block. The operating modes that are supported vary depending on the type and function of the block. |
| Selection | <ul style="list-style-type: none">▪ ROut▪ RCas▪ Cas▪ Auto▪ Man▪ LO▪ IMan▪ OOS |
| Factory setting | <ul style="list-style-type: none">▪ Auto▪ OOS |
| Additional information | <i>Options</i>  Detailed description of the options available for selection: Target mode parameter (→ 149) |

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 | <ul style="list-style-type: none">▪ ROut▪ RCas▪ Cas▪ Auto▪ Man▪ LO▪ IMan▪ OOS |
| Factory setting | Auto |
| Additional information | <i>Options</i>  Detailed description of the options available for selection: Target mode parameter (→ 149) |

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 | <ul style="list-style-type: none">■ BlockConfigurat■ SimulationActive■ SensorFailure■ 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 | <ul style="list-style-type: none">■ 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 | <i>Dependency</i>  The unit is taken from the: Units index parameter (→  188) |

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 | <ul style="list-style-type: none"> ■ 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 (→  188) |

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 | <ul style="list-style-type: none">■ 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 (→  184) |

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 | <ul style="list-style-type: none">■ 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 (→  184) |

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 | <ul style="list-style-type: none"> ■ 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 *Dependency*

 The unit is taken from the: **Units index** parameter (→ 184)

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 *Dependency*

 The unit is taken from the: **Units index** parameter (→ 184)

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**SI units**

- g/s
- g/min
- g/h
- g/d
- kg/s
- kg/min
- kg/h
- kg/d
- t/s
- t/min
- t/h
- t/d
- l/s
- l/min
- l/d
- l/h
- hl/s
- hl/min
- hl/h
- hl/d
- Ml/s
- Ml/min
- Ml/h
- Ml/d
- m³/s
- m³/min
- m³/h
- m³/d
- cm³/s
- cm³/min
- cm³/h
- cm³/d
- dm³/s
- dm³/min
- dm³/h
- dm³/d
- ml/s
- ml/min
- ml/h
- ml/d
- NL/s
- NL/d
- NL/h
- NL/min
- Nm³/s
- Nm³/min
- Nm³/h
- Nm³/d
- Sm³/s
- Sm³/min
- Sm³/h
- Sm³/d
- MSft³/d
- kg/l
- kg/m³
- kg/dm³
- g/cm³
- g/m³

US units

- oz/s
- oz/min
- oz/h
- oz/d
- lb/s
- lb/min
- lb/h
- lb/d
- STon/s
- STon/min
- STon/h
- STon/d
- 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)
- Mgal/s (us)
- Mgal/min (us)
- Mgal/h (us)
- Mgal/d (us)
- bbl/s (imp;oil)
- bbl/min (imp;oil)
- bbl/h (imp;oil)
- bbl/d (imp;oil)
- bbl/s (imp;beer)
- bbl/min (imp;beer)
- bbl/h (imp;beer)
- bbl/d (imp;beer)
- lb/gal (imp)
- lb/bbl (imp;oil)
- MMBtu/min
- MMBtu/h
- MMBtu/d
- MBtu/s
- MBtu/min
- MBtu/h
- MBtu/d
- MMBtu/s
- Btu/s
- Btu/min
- Btu/h
- Btu/day
- Mgal (imp)
- Sgal (imp)
- bbl (imp;oil)
- gal (imp)
- MBtu
- Btu
- MMBtu

Imperial units

- SD4°C
- SD15°C
- SD20°C
- SG4°C
- SG20°C
- SG15°C
- K
- °C
- m/s
- bar
- mbar a
- Pa
- MPa
- kPa
- torr
- atm
- %
- kW
- MW
- MJ/h
- GJ/d
- Gcal/h
- MJ/s
- MJ/min
- MJ/d
- kJ/s
- kJ/min
- kJ/h
- kJ/d
- GJ/s
- GJ/min
- GJ/h
- kcal/s
- kcal/min
- kcal/h
- kcal/d
- Mcal/s
- Mcal/min
- Mcal/h
- Mcal/d
- Gcal/s
- Gcal/min
- Gcal/d
- W
- TW
- GW
- mW
- μW
- nW
- pW
- g
- NI
- Nm³
- Sl
- Sm³
- ml
- Ml Mega
- kg
- l
- lb/gal (us)
- lb/bbl (us;tank)
- lb/bbl (us;liq.)
- lb/bbl (us;beer)
- lb/bbl (us;oil)
- °F
- °R
- ft/s
- psi
- inH2Og(4°C)
- inH2Og(68°F)
- ftH2Og(68°F)
- hp
- oz
- af
- fl oz (us)
- Mgal (us)
- bbl (us;liq.)
- bbl (us;tank)
- Sgal (us)
- Sbbl (us;liq.)
- Sft³
- kgal (us)
- lb
- ft³
- gal (us)
- bbl (us;beer)
- STon

- t
- m³
- dm³
- cm³
- hl
- kWh
- MWh
- MJ
- GJ
- kgf/cm²
- GWh
- kcal
- gf/cm²
- Mcal
- kJ
- Gcal
- mA

Other units

- mmH2O (4°C)
- mmH2O (68°F)
- inHg (0°C)
- mmHg (0°C)
- mmH2Oa(4°C)
- mmH2Oa(68°F)
- inH2O (4°C)
- inH2O (68°F)
- ftH2O (4°C)
- ftH2O (68°F)

Factory setting %

Additional information *Result*

The selected unit applies for:

- **Simulate Value** parameter (→ 180)
- **Transducer Value** parameter (→ 183)
- **EU at 0%** parameter (→ 184)
- **EU at 100%** parameter (→ 183)

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 *Dependency*

 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% (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 *Dependency*

 The unit is taken from the: **Units index** parameter (→  188)

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 millisecond)/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 | | |
| ■ Ml Mega | ■ ft ³ /s | | |
| ■ mbar a | ■ Sft ³ /h | | |
| ■ bar | ■ Sft ³ /min | | |

- dB
- kPa a
- kPa g
- MPa a
- MPa g
- Pa a
- Pa g
- g/d
- g/h
- g/min
- g/s
- kg/d
- kg/h
- kg/min
- kg/s
- cm
- km
- nm
- pm
- a
- ha
- cm²
- dm²
- km²
- m²
- mm²
- mm³
- cl
- t
- kg/m³
- kg/dm³
- g/cm³
- g/m³
- kg/l
- kgf/cm²
- GJ
- kJ
- MJ
- km/h
- kt
- m/s²
- GHz
- kHz
- MHz
- 1/min
- 1/s
- THz
- rad/s
- 1/s²
- Mg
- mg
- g/l
- g/ml
- Mg/m³
- t/m³
- mg/m
- tex
- kg/m
- kgm/s
- gal/d (us)
- gal/h (us)
- gal/min (us)
- gal/s (us)
- Mgal/d (us)
- bbl/d (us;oil)
- bbl/h (us;oil)
- bbl/min (us;oil)
- bbl/s (us;oil)
- Mgal/h (us)
- Mgal/min (us)
- Mgal/s (us)
- Mgal (us)
- af
- af/d
- af/h
- af/min
- af/s
- bbl/d (us;beer)
- bbl/h (us;beer)
- bbl/min (us;beer)
- bbl/s (us;beer)
- kgal/d (us)
- kgal/h (us)
- kgal/min (us)
- kgal/s (us)
- µgal/d (us)
- µgal/h (us)
- µgal/min (us)
- µgal/s (us)
- mgal/d (us)
- mgal/h (us)
- mgal/min (us)
- mgal/s (us)
- Mbbl/d (us;oil)
- Mbbl/h (us;oil)
- Mbbl/min (us;oil)
- Mbbl/s (us;oil)
- mbbl/d (us;oil)
- mbbl/h (us;oil)
- mbbl/min (us;oil)
- mbbl/s (us;oil)
- kft³/d
- kft³/h
- kft³/min
- kft³/s
- mft³/d
- mft³/h
- mft³/min
- mft³/s
- kbbl(US Beer)/d
- kbbl(US Beer)/h
- kbbl(US Beer)/min
- ubbl(US Beer)/min
- ubbl(US Beer)/s
- mbbl(US Beer)/d
- mbbl(US Beer)/h
- mbbl(US Beer)/min
- mbbl(US Beer)/s

- kgm²
- kgm²/s
- kNm
- MNm
- mNm
- Nm
- kN
- MN
- μ N
- mN
- N
- mN/m
- N/m
- atm
- GPa
- hPa
- kPa
- MPa
- μ Pa
- mPa
- Pa
- torr
- gf/cm²
- cal
- EJ
- mJ
- PJ
- TJ
- TWh
- Wh
- GW
- μ W
- mW
- 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
- μ A
- nA
- pA
- C
- kC
- MC
- μ C
- nC
- kgal (us)
- ac-in/d
- ac-in/h
- ac-in/m
- ac-in/s
- Mft³/d
- ac-in
- Mft³
- inH2Oa
- inH2Og
- inH2O a(4°C)
- inH2Og(4°C)
- inH2O a(68°F)
- inH2Og(68°F)
- ftH2Oa
- ftH2Og
- ftH2O a(4°C)
- ftH2Og(4°C)
- ftH2O a(68°F)
- ftH2Og(68°F)
- inHga
- inHgg
- inHg a(0°C)
- inHgg(0°C)
- klb(US)/d
- klb(US)/h
- klb(US)/min
- klb(US)/s
- MSft³/D
- mils/yr
- ft/s²
- MLB/H
- lbf-in/deg

- 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
- μ C/m³
- mC/m³
- C/cm²
- C/m²
- C/mm²
- kC/m²
- μ C/m²
- mC/m²
- kV/m
- MV/m
- μ V/m
- mV/m
- V/cm
- V/m
- kV
- MV
- μ V
- F
- μ F
- mF
- nF
- F/m
- A/cm²
- kA/m²
- MA/m²
- A/cm
- A/m
- kA/m
- μ T
- mT
- nT
- T
- mWb
- Wb
- kWb/m
- Wb/m
- H
- μ H
- mH
- nH
- pH
- H/m
- μ H/m

- nH/m
- Am²
- GOhm
- kOhm
- MOhm
- μ Ohm
- mOhm
- kS
- μ S
- μ S/cm
- mS
- S
- t/d
- t/h
- t/min
- t/s
- %
- m³/d
- m³/h
- m³/min
- m³/s
- GOhmm
- kOhmm
- MOhmm
- μ Ohmm
- mOhmm
- nOhmm
- Ohmcm
- Ohmm
- kS/m
- MS/m
- μ S/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
- μ W/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
- Sl
- ml/min
- B
- ppb
- ppt
- 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

- μPa a
- μPa g
- hPa a
- hPa g
- gf/cm² a
- gf/cm² g
- kgf/cm² a
- kgf/cm² g
- mBarg
- μbar
- Gy
- kcal/kg
- mGy
- mSv
- rad
- rem
- Sv
- Bq
- kBq
- MBq
- cnt/s
- MSft³/d
- SCCM
- dm
- mm/yr
- g/m
- $\mu\text{g}/\text{m}^3$
- $\mu\text{g}/\text{l}$
- mg/m³
- kmol
- μmol
- mmol
- mol
- mol/dm³
- mol/m³
- mol/l
- cm³/mol
- dm³/mol
- m³/mol
- g/mol
- kg/mol
- l/mol
- mmol/kg
- mol/kg
- mg/l
- $\mu\text{S}/\text{m}$
- mS/m
- nS/cm
- S/cm
- kOhmcm
- MOhmcm
- l/m³
- L/m
- $\mu\text{L}/\text{L}$
- ml/m³
- ml/l
- %Sat
- % sol/vol
- % 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

| <i>Other units</i> | <i>Custom-specific units</i> |
|-----------------------------|------------------------------|
| ■ G's | PV/Sec |
| ■ EBC | |
| ■ %LEL | |
| ■ NoS | |
| ■ Kbytes | |
| ■ rev | |
| ■ nautical mile | |
| ■ Å | |
| ■ RPM | |
| ■ rev/s | |
| ■ °Baum (lt) | |
| ■ °Twad | |
| ■ SGU | |
| ■ °API | |
| ■ °Baum (hv) | |
| ■ ftH ₂ O | |
| ■ ftH ₂ O (4°C) | |
| ■ ftH ₂ O (68°F) | |
| ■ inH ₂ O | |
| ■ inH ₂ O (4°C) | |
| ■ inH ₂ O (68°F) | |
| ■ inHg | |
| ■ inHg (0°C) | |
| ■ mmH ₂ O | |
| ■ mmH ₂ O (4°C) | |
| ■ mmH ₂ O (68°F) | |
| ■ mmHg | |
| ■ mmHg (0°C) | |
| ■ None | |
| ■ °Brix | |
| ■ proof/mass | |
| ■ proof/vol | |
| ■ kbb/d (us;oil) | |
| ■ kbb/h (us;oil) | |
| ■ kbb/min (us;oil) | |
| ■ kbb/s (us;oil) | |
| ■ Mbbl | |
| ■ mmH ₂ Oa | |
| ■ mmH ₂ Og | |
| ■ mmH ₂ Oa(4°C) | |
| ■ mmH ₂ Og(4°C) | |
| ■ mmH ₂ Oa(68°F) | |
| ■ mmH ₂ Og(68°F) | |
| ■ mmHga | |
| ■ mmHgg | |
| ■ mmHga(0°C) | |
| ■ mmHgg(0°C) | |
| ■ R | |
| ■ microns | |
| ■ mTorr | |
| ■ lb/ft | |
| ■ lb/in | |
| ■ MM cells/mL | |
| ■ %/°C | |
| ■ % stm qual | |
| ■ rH | |
| ■ Vol% | |

- Unitless
- V/pH
- %/K
- %/ μ V
- %/mV
- % Transmission
- V/%
- APHA
- Hazen
- FTU
- AU
- OD
- $^{\circ}$ Plato

Factory setting

K

Additional information*Result*

The selected unit applies for:

- **Value** parameter (→ [175](#))
- **Value** parameter (→ [178](#))
- **EU at 100%** parameter (→ [183](#))
- **EU at 0%** parameter (→ [184](#))
- **Low Cutoff** parameter (→ [202](#))
- **High High Limit** parameter (→ [211](#))
- **Float Value** parameter (→ [214](#))
- **High Limit** parameter (→ [211](#))
- **Float Value** parameter (→ [216](#))
- **Low Limit** parameter (→ [212](#))
- **Float Value** parameter (→ [218](#))
- **Low Low Limit** parameter (→ [212](#))
- **Float Value** parameter (→ [219](#))

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
- Service Denied
- DiagnosticDenied

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
(→  202).

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

- Uninitialized
- Mass flow
- Flow velocity
- Volume flow
- Correct.vol.flow

- Temperature
- CalcSatSteamPres *
- Steam quality *
- Total mass flow *
- CondensMassFlow *
- Energy flow *
- Heat flow diff. *
- Reynolds number *
- Totalizer 1
- Totalizer 2
- Totalizer 3
- Density *
- Pressure *
- Specific volume *
- Degree superheat *

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.

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.

* Visibility depends on order options or device settings

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 value or simulation value. |
| Selection | <ul style="list-style-type: none"> ■ Uninitialized ■ Direct ■ Indirect ■ Indirect Sq Root |
| Factory setting | Uninitialized |
| Additional information | <p><i>"Uninitialized" option</i></p> <p>The function block does not switch to Auto operating mode.</p> <p><i>"Direct" option</i></p> <p>The measured value from the transducer block (input value) bypasses the linearization function and is routed unchanged through the analog input function block ($X_{d_Scale} = Out_Scale$). This is selected if the input value already has the required physical units.</p> <p>$PV = \text{Input value}$</p> <p>The units in Units index (→ 184) (X_{d_Scale}) and Units index (→ 188) (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 (→ 173).</p> <p><i>"Indirect" option</i></p> <p>The measured value from the transducer block (input value) is linearly rescaled via the X_{d_Scale} input scaling to the required Out_Scale output range.</p> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> $PV = \frac{X}{100} \cdot (Y - Z) + Z$ </div> <p style="text-align: right;">A0024820</p> <p><i>PV Primary value</i> <i>X Value (→ 205) (Field_Val)</i> <i>Y EU at 100% (→ 188) (Out_Scale)</i> <i>Z EU at 0% (→ 188) (Out_Scale)</i></p> |

"Indirect Sq Root" option

The measured value from the transducer block (input value) is rescaled via the X_{d_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 (→ 205) (Field_Val)
 Y EU at 100% (→ 188) (Out_Scale)
 Z EU at 0% (→ 188) (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 the **Channel** parameter (→ 199), select the **Mass flow** option.
2. In the **Lin Type** parameter (→ 201), select the **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 (→ 184), enter the value 0.
 - In **EU at 100%** parameter (→ 183), enter the value 30.
 - In the **Units index** parameter (→ 184), select the **kg/h** option.
4. In the Out_Scale parameter group:
 - ↳ **EU at 0%** parameter (→ 188), enter the value 0.
 - In **EU at 100%** parameter (→ 188), enter the value 100.
 - In the **Units index** parameter (→ 188), select the **%** option.

The result is that an input value of 15 kg/h, for example, outputs a value of 50 % via the **Value** parameter (→ 178).

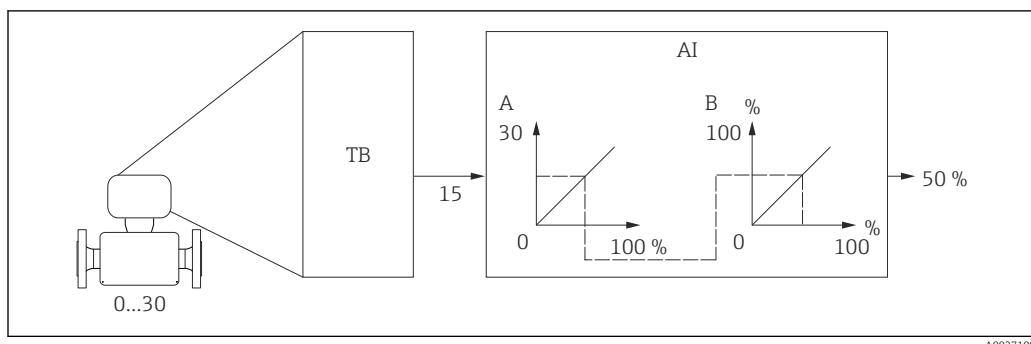


Fig. 4 Engineering unit in kg/h

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*Description*

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 (→ 199).

Dependency

The unit is taken from the: **Units index** parameter (→ 188)

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 (0xDO)
- 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 | Description for manually acknowledging an update of the static block parameter. |
| Selection | <ul style="list-style-type: none">▪ Uninitialized▪ Acknowledged▪ Unacknowledged |
| Factory setting | Uninitialized |
| Additional information | <i>Description</i>  <ul style="list-style-type: none">▪ 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 | <ul style="list-style-type: none">▪ 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 | <ul style="list-style-type: none"> ■ Uninitialized ■ Acknowledged ■ Unacknowledged |
| Factory setting | Uninitialized |
| Additional information | <p><i>Description</i></p> <p>If Blk Alm Auto Ack option is not enabled in Ack. Option parameter (→ 210), the process alarm must be manually acknowledged in this parameter.</p> <p> ■ If a new alarm occurs, the measuring device sets Unacknowledged option. ■ If the alarm has been acknowledged, the user can set Acknowledged option.</p> |

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.

i If the process alarm option has not been enabled in this parameter, this process alarm must only be acknowledged in **Unacknowledged** parameter (→ 209).
Current parameter (→ 209) 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 (→  188)

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 (→  188)

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 (→  188)

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 (→ [2188](#))

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 (→ [211](#))).

Selection

- Uninitialized
- Acknowledged
- Unacknowledged

Factory setting

Uninitialized

Additional information*Description*

If **HiHi Alm Aut Ack** option is not enabled in **Ack. Option** parameter (→ [210](#)), 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 | <ul style="list-style-type: none">■ 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 (→  188) |
|------------------------|---|

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 (→  211)). |
|-------------|---|

| | |
|-------------------------------|---|
| Selection | <ul style="list-style-type: none"> ■ Uninitialized ■ Acknowledged ■ Unacknowledged |
| Factory setting | Uninitialized |
| Additional information | <p><i>Description</i></p> <p>If Hi Alm Auto Ack option is not enabled in Ack. Option parameter (→ 210), the process alarm must be manually acknowledged in this parameter.</p> <p> ■ If a new alarm occurs, the measuring device sets Unacknowledged option. ■ If the alarm has been acknowledged, the user can set Acknowledged option.</p> |

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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 *Dependency*

 The unit is taken from the: **Units index** parameter (→  188)

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 (→  212)).

Selection

- Uninitialized
- Acknowledged
- Unacknowledged

Factory setting Uninitialized

Additional information *Description*

If **Lo Alm Auto Ack** option is not enabled in **Ack. Option** parameter (→  210), 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 | <ul style="list-style-type: none">■ 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 | <ul style="list-style-type: none">■ Other■ BlockConfigurat■ LinkConfigurat■ SimulationActive■ LocalOverride■ DeviceFaultState■ DeviceMainten■ SensorFailure■ OutputFailure■ MemoryFailure■ LostStaticData■ LostNVDData■ 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 *Dependency*

 The unit is taken from the: **Units index** parameter (→  188)

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 (→  212)).

Selection

- Uninitialized
- Acknowledged
- Unacknowledged

Factory setting Uninitialized

Additional information *Description*

If **LoLo Alm Aut Ack** option is not enabled in **Ack. Option** parameter (→  210), 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 | <ul style="list-style-type: none"> ■ Other ■ BlockConfigurat ■ LinkConfigurat ■ SimulationActive ■ LocalOverride ■ DeviceFaultState ■ DeviceMainten ■ SensorFailure ■ OutputFailure ■ MemoryFailure ■ LostStaticData ■ LostNVData ■ ReadbackCheck ■ MaintenanceNeed ■ PowerUp ■ OutOfService |

Float Value

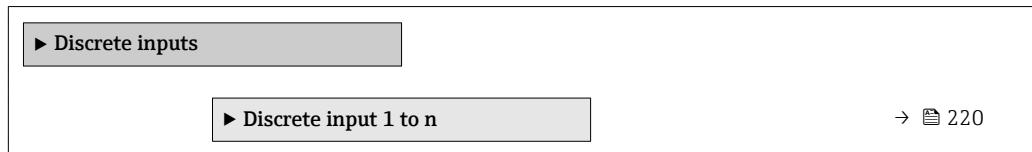
| | |
|-------------------------------|--|
| Navigation |  Expert → Analog inputs → Analog input 1 to n → Float Value (6952–1 to n) |
| Description | Displays the value of the affected parameter at the time at which the process alarm for the lower alarm limit was triggered. |
| User interface | Signed floating-point number |
| Additional information | <i>Dependency</i> |

 The unit is taken from the: **Units index** parameter (→  188)

3.6 "Discrete inputs" submenu

Navigation

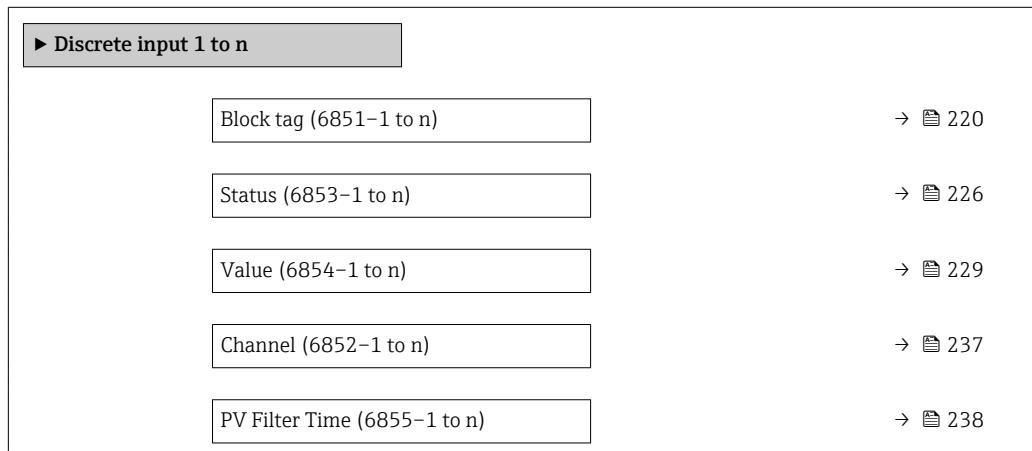
Expert → Discrete inputs



3.6.1 "Discrete input 1 to n" submenu

Navigation

Expert → Discrete inputs → Discrete input 1 to n



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 | <ul style="list-style-type: none"> ■ 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
(→ 149)

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 (→ 221).

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
(→ 149)

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 (→ 221) 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
(→ 149)

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*Options*

Detailed description of the options available for selection: **Target mode** parameter
(→ 149)

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

- BlockConfigurat
- SimulationActive
- SensorFailure
- 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
- 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

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)
- 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 (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
- 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)
- 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)
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- 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 → 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 | <ul style="list-style-type: none">■ 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■ 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 |

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 | <ul style="list-style-type: none">■ 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
- 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

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 | <ul style="list-style-type: none"> ■ 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 FieldValID (Status parameter (→ 238), Value parameter (→ 240)) 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
- Service Denied
- DiagnosticDenied

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 | <p><i>Description</i></p> <p>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.</p> |

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 | <ul style="list-style-type: none"> ■ Propag Fault Fwd ■ Uncertain if Man |
| Additional information | <p><i>Options</i></p> <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ Uninitialized ■ Low flow cut off ■ Switch out.stat. ■ Verific. status |
| Factory setting | Switch out.stat. |

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 *Factory setting*

 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 (0=DB)
- 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
- 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 |
|------------------------|----------------------------------|

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 | <ul style="list-style-type: none"> ■ Uninitialized ■ Acknowledged ■ Unacknowledged |
| Factory setting | Uninitialized |
| Additional information | <p><i>Description</i></p> <p> ■ 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.</p> |

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 | <ul style="list-style-type: none"> ■ 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*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 (→ 209).

Current parameter (→ 209) 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 | <ul style="list-style-type: none">■ 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 | <ul style="list-style-type: none">■ 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 | <ul style="list-style-type: none">■ 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 | <ul style="list-style-type: none"> ■ Uninitialized ■ Acknowledged ■ Unacknowledged |
| Factory setting | Uninitialized |
| Additional information | <p><i>Description</i></p> <p>If Blk Alm Auto Ack option is not enabled in Ack. Option parameter (→ 242), the process alarm must be manually acknowledged in this parameter.</p> <p> ■ If a new alarm occurs, the measuring device sets Unacknowledged option. ■ If the alarm has been acknowledged, the user can set Acknowledged option.</p> |

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

Time Stamp**Navigation**

 Expert → Discrete inputs → Discrete input 1 to n → Time Stamp (6860–1 to n)

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 | <ul style="list-style-type: none"> ■ Uninitialized ■ Acknowledged ■ Unacknowledged |
| Factory setting | Uninitialized |
| Additional information | <p><i>Description</i></p> <p>If Disc Alm Aut Ack option is not enabled in Ack. Option parameter (→ 242), the process alarm must be manually acknowledged in this parameter.</p> <p> ■ If a new alarm occurs, the measuring device sets Unacknowledged option. ■ If the alarm has been acknowledged, the user can set Acknowledged option.</p> |

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 | <ul style="list-style-type: none"> ■ 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

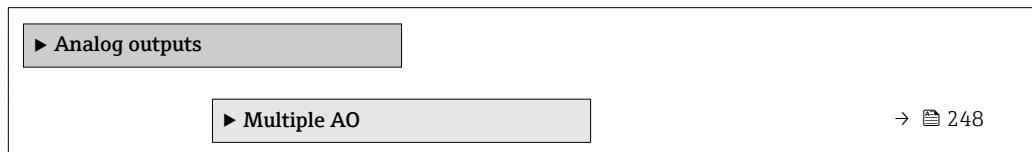
| | |
|------------------------|---|
| Navigation |  Expert → Discrete inputs → Discrete input 1 to n → Discrete Limit (6863–1 to n) |
| Description | Use this to enter the status of the discrete input value that triggers an alarm. |
| User entry | 0 to 255 |
| Factory setting | 0 |

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 |

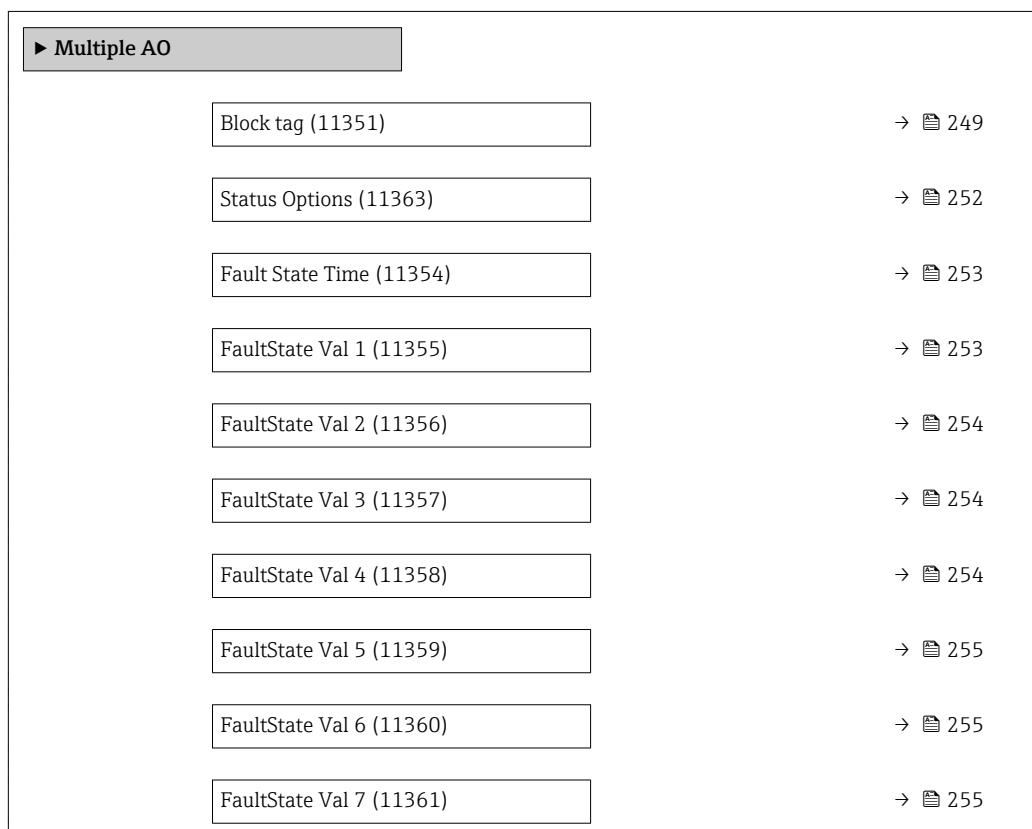
3.7 "Analog outputs" submenu

Navigation █ █ Expert → Analog outputs



3.7.1 "Multiple AO" submenu

Navigation █ █ Expert → Analog outputs → Multiple AO



| | |
|--------------------------|-------|
| FaultState Val 8 (11362) | → 256 |
| FaultStateStatus (11353) | → 256 |

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 | <ul style="list-style-type: none">■ ROut■ RCas■ Cas■ Auto■ Man■ LO■ IMan■ OOS |
|------------------|--|

| | |
|------------------------|-----|
| Factory setting | OOS |
|------------------------|-----|

| | |
|-------------------------------|------------------|
| Additional information | <i>Selection</i> |
|-------------------------------|------------------|

 Detailed description of the options available for selection: **Target mode** parameter
(→  149)

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 (→  250) could be reached. |
|--------------------|---|

| | |
|-----------------------|---|
| User interface | <ul style="list-style-type: none">■ ROut■ RCas■ Cas |
|-----------------------|---|

- Auto
- Man
- LO
- IMan
- OOS

Additional information*Selection*

Detailed description of the options available for selection: **Target mode** parameter
(→ 149)

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 (→ 250). 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
(→ 149)

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 Selection



Detailed description of the options available for selection: **Target mode** parameter
(→ 149)

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

- BlockConfigurat
- SimulationActive
- LocalOverride
- OutputFailure
- ReadbackCheck
- 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 (→ 253) or if the **Set Fault State** parameter (→ 160) is activated in the Resource block.

The fault state is defined via the following parameters:

- Fault State Time (→ 253)
- 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*Description*

 This value is ignored if the **Fstate to val 1** option is not selected in the **Status Options** parameter (→ 252).

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 (→  252). |

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 (→  252). |

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 (→  252). |

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 (→  252). |

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 (→  252). |

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 (→  252). |

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 (→  252). |

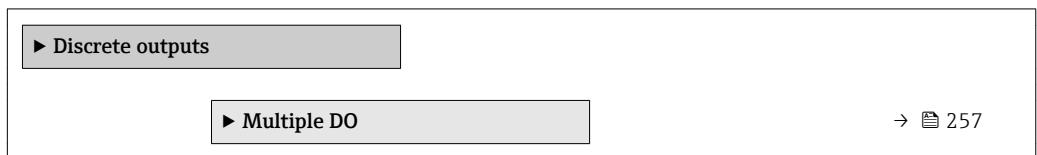
FaultStateStatus

| | |
|-----------------------|---|
| Navigation |   Expert → Analog outputs → Multiple AO → FaultStateStatus (11353) |
| Description | Displays the values for which the fault state is enabled. |
| User interface | <ul style="list-style-type: none">▪ 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 |

3.8 "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



3.8.1 "Multiple DO" submenu

Navigation

Expert → Discrete outputs → Multiple DO

| ► Multiple DO | |
|--------------------------|-------|
| Block tag (11252) | → 257 |
| Status Options (11268) | → 261 |
| Fault State Time (11255) | → 262 |
| FStateValue DO 1 (11256) | → 262 |
| FStateValue DO 2 (11257) | → 262 |
| FStateValue DO 3 (11258) | → 263 |
| FStateValue DO 4 (11259) | → 263 |
| FStateValue DO 5 (11260) | → 263 |
| FStateValue DO 6 (11261) | → 264 |
| FStateValue DO 7 (11262) | → 264 |
| FStateValue DO 8 (11263) | → 264 |
| FaultStateStatus (11254) | → 265 |

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 *Description*



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 | <ul style="list-style-type: none"> ■ ROut ■ RCas ■ Cas ■ Auto ■ Man ■ LO ■ IMan ■ OOS |
| Factory setting | OOS |
| Additional information | <p><i>Options</i></p>  Detailed description of the options available for selection: Target mode parameter (→  149) |

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 (→  258). |
| User interface | <ul style="list-style-type: none"> ■ ROut ■ RCas ■ Cas ■ Auto ■ Man ■ LO ■ IMan ■ OOS |
| Additional information | <p><i>User interface</i></p>  Detailed description of the options available for selection: Target mode parameter (→  149) |

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 (→  258) for the function block. The operating modes that are supported vary depending on the type and function of the block. |
| Selection | <ul style="list-style-type: none"> ■ 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
(→  149)

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
(→  149)

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 ▪ BlockConfigurat
▪ SimulationActive
▪ LocalOverride
▪ OutputFailure
▪ ReadbackCheck
▪ 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 | <ul style="list-style-type: none"> ■ 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 | <ul style="list-style-type: none"> ■ 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 | <p><i>Description</i></p> <p>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 (→ 262) or if Set Fault State parameter (→ 160) is enabled in Resource block.</p> <p>The fault state is defined via the following parameters:</p> <ul style="list-style-type: none"> ■ Fault State Time (→ 262) ■ FStateValue DO 1 to n <p><i>Options</i></p> <ul style="list-style-type: none"> ■ 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 *Description*

 If **Fstate to val 1** option is not selected in **Status Options** parameter (→ 261), 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 *Description*

 If **Fstate to val 2** option is not selected in **Status Options** parameter (→ 261), 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 (→ 261), 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 (→ 261), 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 (→ 261), 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 (→ 261), 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 (→ 261), 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 (→ 261), this value is ignored. |

FaultStateStatus

Navigation Expert → Discrete outputs → Multiple DO → FaultStateStatus (11254)

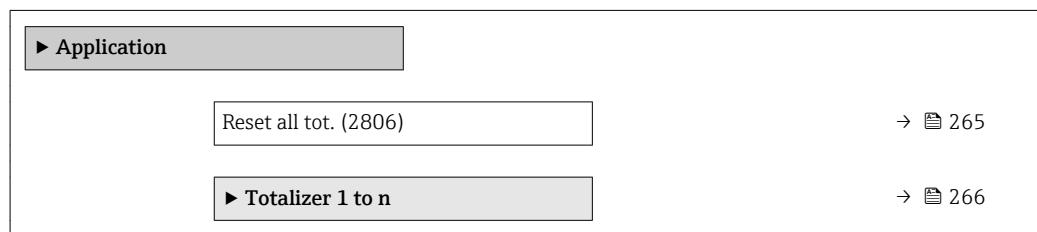
Description Displays the values for which the fault state is enabled.

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

3.9 "Application" submenu

Navigation Expert → Application

**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

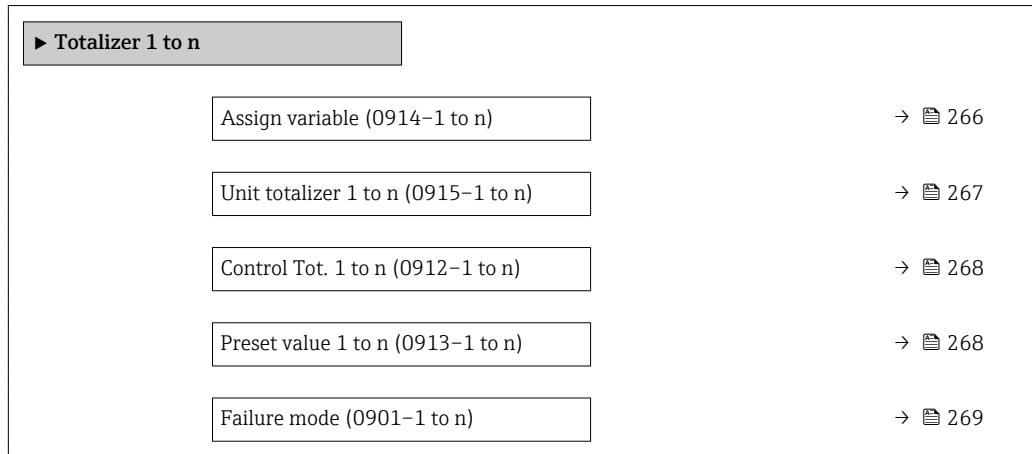
Additional information *Selection*

| 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. |

3.9.1 "Totalizer 1 to n" submenu

Navigation

Expert → Application → Totalizer 1 to n



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
- Correct.vol.flow
- Mass flow
- Total mass flow *
- CondensMassFlow *
- Energy flow *
- Heat flow diff. *

Factory setting

- Totalizer 1: Volume flow
- Totalizer 2: Mass flow
- Totalizer 3: Corrected volume flow

Additional information

Description

If the option selected is changed, the device resets the totalizer to 0.

Selection

If the **Off** option is selected, only **Assign variable** parameter (→ 266) is still displayed in the **Totalizer 1 to n** submenu. All other parameters in the submenu are hidden.

* Visibility depends on order options or device settings

Unit totalizer 1 to n**Navigation**

Expert → Application → Totalizer 1 to n → Unit totalizer 1 to n (0915–1 to n)

Prerequisite

A process variable is selected in the **Assign variable** parameter (→ 266) of the **Totalizer 1 to n** submenu.

Description

Use this function to select the process variable unit for the Totalizer 1 to n (→ 266).

Selection*SI units*

- g
- kg
- t

US units

- oz
- lb
- STon

or

SI units

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

US units

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

Imperial units

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

or

SI units

- Nl
- Nm³
- Sl
- Sm³

US units

- Sft³
- Sgal (us)
- Sbbl (us;liq.)

Imperial units

- Sgal (imp)

or

SI units

- kWh
- MWh
- GWh
- kJ
- MJ
- GJ
- kcal
- Mcal
- Gcal

Imperial units

- Btu
- MBtu
- MMBtu

or

Other units

None

Factory setting

Country-specific:

- m³
- ft³

Additional information*Description*

 The unit is selected separately for each totalizer. It is independent of the selection made in the **System units** submenu (→ 75).

Selection

The selection is dependent on the process variable selected in the **Assign variable** parameter (→ 266).

Control Tot. 1 to n**Navigation**

Expert → Application → Totalizer 1 to n → Control Tot. 1 to n (0912–1 to n)

Prerequisite

A process variable is selected in the **Assign variable** parameter (→ 266) of the **Totalizer 1 to n** submenu.

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*Selection*

| 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. |

Preset value 1 to n**Navigation**

Expert → Application → Totalizer 1 to n → Preset value 1 to n (0913–1 to n)

Prerequisite

A process variable is selected in the **Assign variable** parameter (→ 266) of the **Totalizer 1 to n** submenu.

| | |
|-------------------------------|---|
| 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 m ³ ■ 0 ft ³ |
| Additional information | <i>User entry</i>  The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→ 267). |
| | <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 | A process variable is selected in the Assign variable parameter (→ 266) of the Totalizer 1 to n submenu. |
| Description | Use this function to select how a totalizer behaves in the event of a device alarm. |
| Selection | <ul style="list-style-type: none">■ Stop■ Actual value■ Last valid value |
| Factory setting | Stop |
| Additional information | <i>Description</i>  This setting does not affect the failsafe mode of other totalizers and the outputs. This is specified in separate parameters. <i>Selection</i> <ul style="list-style-type: none">■ 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. |

3.10 "Diagnostics" submenu

Navigation

Expert → Diagnostics

| | |
|-------------------------|-------|
| ▶ Diagnostics | |
| Actual diagnos. (0691) | → 270 |
| Prev.diagnostics (0690) | → 271 |
| Time fr. restart (0653) | → 272 |
| Operating time (0652) | → 272 |
| ▶ Diagnostic list | → 273 |
| ▶ Event logbook | → 277 |
| ▶ Device info | → 279 |
| ▶ Sensor info | → 283 |
| ▶ Mainboard module | |
| ▶ I/O module | → 284 |
| ▶ Display module | → 284 |
| ▶ Data logging | → 285 |
| ▶ Min/max val. | → 291 |
| ▶ Heartbeat | → 298 |
| ▶ Simulation | → 299 |

Actual diagnos.

Navigation

Expert → Diagnostics → Actual diagnos. (0691)

Prerequisite

A diagnostic event has occurred.

Description

Displays the current diagnostic message. If two or more messages occur simultaneously, the message with the highest priority is shown on the display.

User interface

Symbol for diagnostic behavior, diagnostic code and short message.

Additional information*Display*

-  Additional pending diagnostic messages can be viewed in the **Diagnostic list** submenu (→ 273).
-  Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the  key.

Example

For the display format:
F271 Main electronics

Timestamp

Navigation

 Expert → Diagnostics → Timestamp

Description

Displays the operating time when the current diagnostic message occurred.

User interface

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

Additional information*Display*

-  The diagnostic message can be viewed via the **Actual diagnos.** parameter (→ 270).

Example

For the display format:
24d12h13m00s

Prev.diagnostics

Navigation

 Expert → Diagnostics → Prev.diagnostics (0690)

Prerequisite

Two diagnostic events have already occurred.

Description

Displays the diagnostic message that occurred before the current message.

User interface

Symbol for diagnostic behavior, diagnostic code and short message.

Additional information*Display*

-  Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the  key.

Example

For the display format:
F271 Main electronics

Timestamp

| | |
|-------------------------------|--|
| Navigation |  Expert → Diagnostics → Timestamp |
| Description | Displays the operating time when the last diagnostic message before the current message occurred. |
| User interface | Days (d), hours (h), minutes (m) and seconds (s) |
| Additional information | <i>Display</i>  The diagnostic message can be viewed via the Prev.diagnostics parameter (→  271). |
| | <i>Example</i> For the display format: 24d12h13m00s |

Time fr. restart

| | |
|-----------------------|--|
| Navigation |   Expert → Diagnostics → Time fr. restart (0653) |
| Description | Use this function to display the time the device has been in operation since the last device restart. |
| User interface | Days (d), hours (h), minutes (m) and seconds (s) |

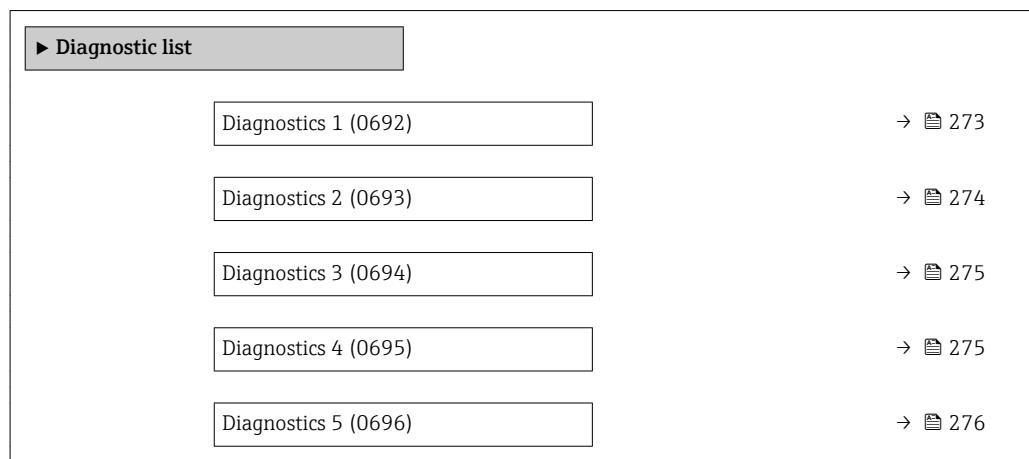
Operating time

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

3.10.1 "Diagnostic list" submenu

Navigation

Expert → Diagnostics → Diagnostic list



Diagnostics 1

Navigation

Expert → Diagnostics → Diagnostic list → Diagnostics 1 (0692)

Description

Displays the current diagnostics message with the highest priority.

User interface

Symbol for diagnostic behavior, diagnostic code and short message.

Additional information

Display

Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the key.

Examples

For the display format:

- S442 Freq. output
- F276 I/O module

Timestamp

Navigation

Expert → Diagnostics → Diagnostic list → Timestamp

Description

Displays the operating time when the diagnostic message with the highest priority occurred.

User interface

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

Additional information*Display*

The diagnostic message can be viewed via the **Diagnostics 1** parameter (→ 273).

Example

For the display format:
24d12h13m00s

Diagnostics 2

Navigation

Expert → Diagnostics → Diagnostic list → Diagnostics 2 (0693)

Description

Displays the current diagnostics message with the second-highest priority.

User interface

Symbol for diagnostic behavior, diagnostic code and short message.

Additional information*Display*

Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the key.

Examples

For the display format:

- ΔS442 Freq. output
- F276 I/O module

Timestamp

Navigation

Expert → Diagnostics → Diagnostic list → Timestamp

Description

Displays the operating time when the diagnostic message with the second-highest priority occurred.

User interface

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

Additional information*Display*

The diagnostic message can be viewed via the **Diagnostics 2** parameter (→ 274).

Example

For the display format:
24d12h13m00s

Diagnostics 3

| | |
|-------------------------------|---|
| Navigation |   Expert → Diagnostics → Diagnostic list → Diagnostics 3 (0694) |
| Description | Displays the current diagnostics message with the third-highest priority. |
| User interface | Symbol for diagnostic behavior, diagnostic code and short message. |
| Additional information | <i>Display</i>  Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the  key. |
| | <i>Examples</i> For the display format: ■ Δ S442 Freq. output ■ \otimes F276 I/O module |

Timestamp

| | |
|-------------------------------|--|
| Navigation |  Expert → Diagnostics → Diagnostic list → Timestamp |
| Description | Displays the operating time when the diagnostic message with the third-highest priority occurred. |
| User interface | Days (d), hours (h), minutes (m) and seconds (s) |
| Additional information | <i>Display</i>  The diagnostic message can be viewed via the Diagnostics 3 parameter (→  275). |
| | <i>Example</i> For the display format: 24d12h13m00s |

Diagnostics 4

| | |
|-----------------------|---|
| Navigation |   Expert → Diagnostics → Diagnostic list → Diagnostics 4 (0695) |
| Description | Displays the current diagnostics message with the fourth-highest priority. |
| User interface | Symbol for diagnostic behavior, diagnostic code and short message. |

Additional information*Display*

 Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the  key.

Examples

For the display format:

-  AS442 Freq. output
-  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 (→  275).

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:

-  AS442 Freq. output
-  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*

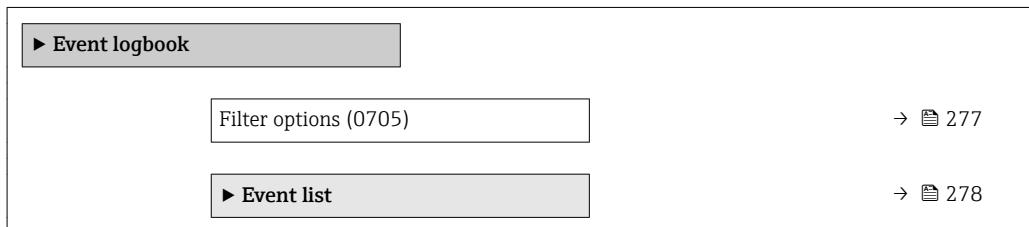
 The diagnostic message can be viewed via the **Diagnostics 5** parameter (→  276).

Example

For the display format:
24d12h13m00s

3.10.2 "Event logbook" submenu**Navigation**

 Expert → Diagnostics → Event logbook

**Filter options****Navigation**

 Expert → Diagnostics → Event logbook → Filter options (0705)

Description

Use this function to select the category whose event messages are displayed in the event list of the local display.

Selection

- All
- Failure (F)
- Funct. check (C)
- Out of spec. (S)
- Mainten. req.(M)
- Information (I)

Factory setting

All

Additional information*Description*

The status signals are categorized in accordance with VDI/VDE 2650 and NAMUR Recommendation NE 107:

- F = Failure
- C = Function Check
- S = Out of Specification
- M = Maintenance Required

Filter options**Navigation**

Expert → Diagnostics → Event logbook → Filter options

Description

Use this function to select the category whose event messages are displayed in the event list of the operating tool.

Selection

- All
- Failure (F)
- Funct. check (C)
- Out of spec. (S)
- Mainten. req.(M)
- Information (I)

Factory setting

All

Additional information*Description*

The status signals are categorized in accordance with VDI/VDE 2650 and NAMUR Recommendation NE 107:

- F = Failure
- C = Function Check
- S = Out of Specification
- M = Maintenance Required

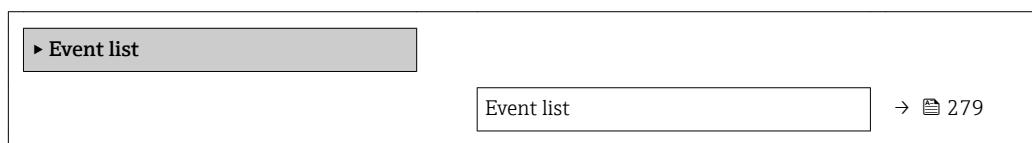
"Event list" submenu

The **Event list** submenu is only displayed if operating via the local display.

If operating via the FieldCare operating tool, the event list can be read out with a separate FieldCare module.

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 (→  277).

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*Description*

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

Examples

For the display format:

- I1091 Configuration modified
 24d12h13m00s
- △S442 Freq. output
 01d04h12min30s

 Additional information, such as remedial measures, can be retrieved via the  key.

HistoROM

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

 To order the **Extended HistoROM** application package, see the "Application packages" section of the "Technical Information" document

3.10.3 "Device information" submenu*Navigation*

  Expert → Diagnostics → Device info

| ▶ Device info | →  280 |
|--------------------------|---|
| Device tag (10799) | →  280 |
| Serial number (10798) | →  281 |
| Firmware version (10792) | →  281 |

| | |
|--------------------------|--------|
| Hardware rev. (10793) | → 281 |
| ITK Version (10794) | → 281 |
| Order code (10795) | → 281 |
| Ext. order cd. 1 (10796) | → 282 |
| Ext. order cd. 2 (10797) | → 282 |
| ENP version (10791) | → 283 |

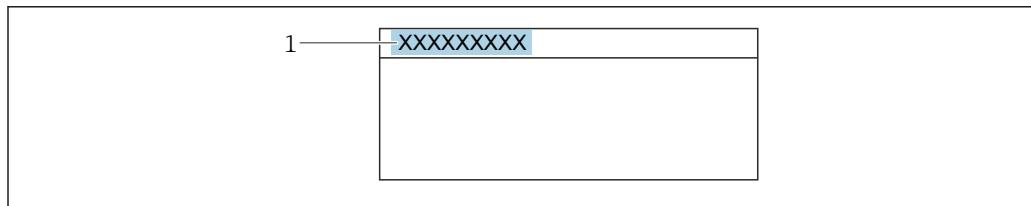
Device tag

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:



A0029422

User interface

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

Factory setting

EH_Prowirl_200_xxxxxxxxxx

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.

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*Description*

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.

i 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.

i 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*Description*

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.

i 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.

i 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

3.10.4 "Sensor info" submenu*Navigation*

  Expert → Diagnostics → Sensor info

 Sensor info

DSC serial no. (7728)

→  283

DSC serial no.**Navigation**

  Expert → Diagnostics → Sensor info → DSC serial no. (7728)

Description

Displays the serial number of the DSC sensor that is used in the measuring tube.

User interface

Character string

Additional information*Description*

The serial number and other individual values of the DSC sensor, such as temperature range and reference values, are stored on the S-DAT.

 If the DSC sensor is replaced, the S-DAT must also always be replaced.

3.10.5 "Main elec.+I/O1" submenu

 Mainboard module

Software rev.

→  284

Build no. softw.

Bootloader rev.

Software rev.**Navigation**

- ④ ⑤ Expert → Diagnostics → Mainboard module → Software rev. (0072)
- ④ ⑤ Expert → Diagnostics → Display module → Software rev. (0072)
- ④ ⑤ Expert → Diagnostics → I/O module → Software rev. (0072)

Description

Use this function to display the software revision of the module.

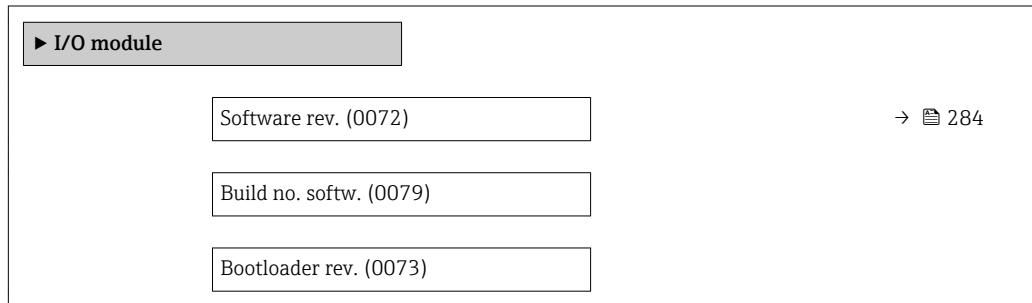
User interface

Positive integer

3.10.6 "I/O module" submenu

Navigation

- ④ ⑤ Expert → Diagnostics → I/O module



→ 284

Software rev.**Navigation**

- ④ ⑤ Expert → Diagnostics → I/O module → Software rev. (0072)

Description

Use this function to display the software revision of the module.

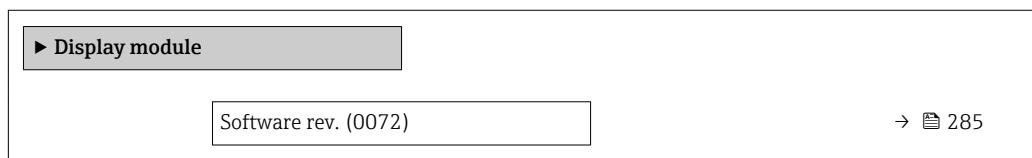
User interface

Positive integer

3.10.7 "Display module" submenu

Navigation

- ④ ⑤ Expert → Diagnostics → Display module



→ 285

| |
|-------------------------|
| Build no. softw. (0079) |
| Bootloader rev. (0073) |

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

3.10.8 "Data logging" submenu

Navigation

  Expert → Diagnostics → Data logging

| | |
|--|---|
|  Data logging | |
| Assign chan. 1 (0851) | →  286 |
| Assign chan. 2 (0852) | →  287 |
| Assign chan. 3 (0853) | →  287 |
| Assign chan. 4 (0854) | →  287 |
| Logging interval (0856) | →  288 |
| Clear logging (0855) | →  288 |
|  Displ.channel 1 | →  289 |
|  Displ.channel 2 | →  290 |
|  Displ.channel 3 | →  290 |
|  Displ.channel 4 | →  291 |

Assign chan. 1**Navigation**

Expert → Diagnostics → Data logging → Assign chan. 1 (0851)

Prerequisite

The **Extended HistoROM** application package is available.

i The software options currently enabled are displayed in the **SW option overv.** parameter (→ 57).

Description

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

Selection

- Off
- Volume flow
- Correct.vol.flow
- Mass flow
- Flow velocity
- Temperature
- CalcSatSteamPres *
- Steam quality *
- Total mass flow *
- CondensMassFlow *
- Energy flow *
- Heat flow diff. *
- Reynolds number *
- Density *
- Pressure *
- Specific volume *
- Vortex frequency
- Electronic temp.
- Ref.density

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).

i The log contents are cleared if the option selected is changed.

* Visibility depends on order options or device settings

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 (→ 57). |
| Description | Options for the assignment of a process variable to the data logging channel. |
| Selection | Picklist, see Assign channel 1 parameter (→ 286) |
| Factory setting | Off |

Assign chan. 3

| | |
|------------------------|--|
| Navigation | Expert → Diagnostics → Data logging → Assign chan. 3 (0853) |
| Prerequisite | The Extended HistoROM application package is available. The software options currently enabled are displayed in the SW option overv. parameter (→ 57). |
| Description | Options for the assignment of a process variable to the data logging channel. |
| Selection | Picklist, see Assign channel 1 parameter (→ 286) |
| 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 (→ 57). |
| Description | Options for the assignment of a process variable to the data logging channel. |
| Selection | Picklist, see Assign channel 1 parameter (→ 286) |
| 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 (→ 57).

Description

Use this function to enter the logging interval T_{log} for data logging.

User entry

1.0 to 3 600.0 s

Factory setting

1.0 s

Additional information

Description

This defines the interval between the individual data points in the data log, and thus the maximum loggable process time T_{log} :

- If 1 logging channel is used: $T_{log} = 1000 \times t_{log}$
- If 2 logging channels are used: $T_{log} = 500 \times t_{log}$
- If 3 logging channels are used: $T_{log} = 333 \times t_{log}$
- If 4 logging channels are used: $T_{log} = 250 \times t_{log}$

Once this time elapses, the oldest data points in the data log are cyclically overwritten such that a time of T_{log} always remains in the memory (ring memory principle).

The log contents are cleared if the length of the logging interval is changed.

Example

If 1 logging channel is used:

- $T_{log} = 1000 \times 1 \text{ s} = 1\,000 \text{ s} \approx 15 \text{ min}$
- $T_{log} = 1000 \times 10 \text{ s} = 10\,000 \text{ s} \approx 3 \text{ h}$
- $T_{log} = 1000 \times 80 \text{ s} = 80\,000 \text{ s} \approx 1 \text{ d}$
- $T_{log} = 1000 \times 3\,600 \text{ s} = 3\,600\,000 \text{ s} \approx 41 \text{ d}$

Clear logging



Navigation

Expert → Diagnostics → Data logging → Clear logging (0855)

Prerequisite

The **Extended HistoROM** application package is available.

The software options currently enabled are displayed in the **SW option overv.** parameter (→ 57).

Description

Use this function to clear the entire logging data.

Selection

- Cancel
- Clear data

Factory setting

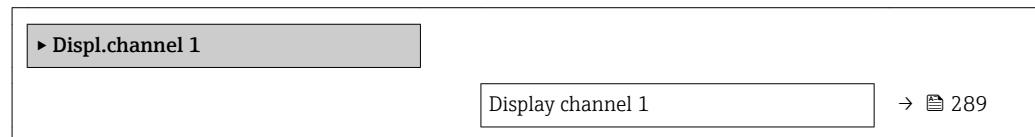
Cancel

Additional information*Selection*

- Cancel
The data is not cleared. All the data is retained.
- Clear data
The logging data is cleared. The logging process starts from the beginning.

"Displ.channel 1" submenu*Navigation*

Expert → Diagnostics → Data logging → Displ.channel 1

**Display channel 1****Navigation**

Expert → Diagnostics → Data logging → Displ.channel 1

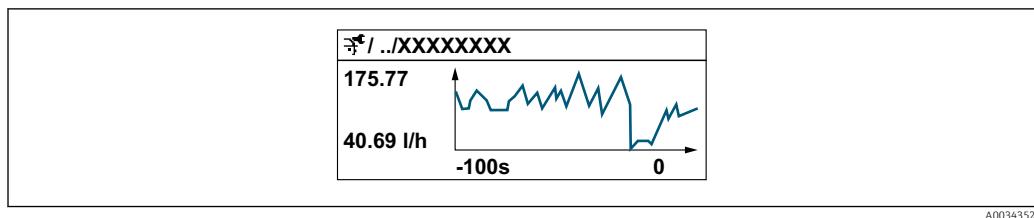
PrerequisiteThe **Extended HistoROM** application package is available.The software options currently enabled are displayed in the **SW option overv.** parameter (→ [57](#)).In the **Assign chan. 1** parameter (→ [286](#)), one of the following options is selected:

- Volume flow
- Correct.vol.flow
- Mass flow
- Flow velocity
- Temperature
- CalcSatSteamPres *
- Steam quality *
- Total mass flow *
- CondensMassFlow *
- Energy flow *
- Heat flow diff. *
- Reynolds number *
- Density *
- Pressure *
- Vortex frequency
- Electronic temp.

Description

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

* Visibility depends on order options or device settings

Additional information**Description**

5 Chart of a measured value trend

- x-axis: depending on the number of channels selected displays 250 to 1000 measured values of a process variable.
- y-axis: displays the approximate measured value span and constantly adapts this to the ongoing measurement.

"Displ.channel 2" submenu

Navigation

Expert → Diagnostics → Data logging → Displ.channel 2

**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 → 289

"Displ.channel 3" submenu

Navigation

Expert → Diagnostics → Data logging → Displ.channel 3



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 →  289

"Displ.channel 4" submenu

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



Display channel 4

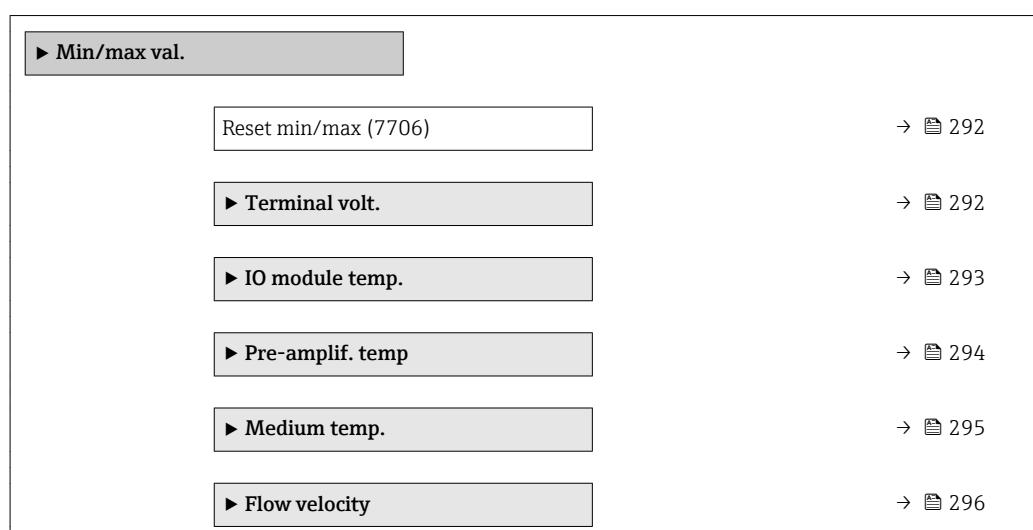
Navigation  Expert → Diagnostics → Data logging → Displ.channel 4

Prerequisite A process variable is defined in the **Assign chan. 4** parameter.

Description See the **Display channel 1** parameter →  289

3.10.9 "Min/max values" submenu

Navigation   Expert → Diagnostics → Min/max val.



| | |
|--------------------|--------|
| ► External press. | → 296 |
| ► Meas.tube press. | → 297 |
| ► Press.cell temp. | → 298 |

Reset min/max**Navigation**

Expert → Diagnostics → Min/max val. → Reset min/max (7706)

Description

Use this function to select measured variables whose minimum, maximum and average measured values are to be reset.

Selection

- Cancel
- Terminal volt. 1
- Temperature
- Flow velocity
- Pressure

Factory setting

Cancel

"Terminal volt." submenu**Navigation**

Expert → Diagnostics → Min/max val. → Terminal volt.

| | |
|----------------------|--------|
| ► Terminal volt. | |
| Minimum value (0689) | → 292 |
| Maximum value (0663) | → 293 |
| Average value (0698) | → 293 |

Minimum value**Navigation**

Expert → Diagnostics → Min/max val. → Terminal volt. → Minimum value (0689)

Description

Use this function to display the smallest previously measured terminal voltage value in Volts.

User interface

0.0 to 50.0 V

Maximum value

| | |
|-----------------------|--|
| Navigation | Expert → Diagnostics → Min/max val. → Terminal volt. → Maximum value (0663) |
| Description | Use this function to view the largest previously measured terminal voltage value in Volts. |
| User interface | 0.0 to 50.0 V |

Average value

| | |
|-----------------------|--|
| Navigation | Expert → Diagnostics → Min/max val. → Terminal volt. → Average value (0698) |
| Description | Use this function to view the average of all previously measured terminal voltage values in Volts. |
| User interface | Signed floating-point number |

"IO module temperature" submenu

Navigation   Expert → Diagnostics → Min/max val. → IO module temp.

| | |
|--------------------------|---|
| ► IO module temp. | |
| Minimum value (0688) | →  293 |
| Maximum value (0665) | →  294 |
| Average value (0697) | →  294 |

Minimum value

| | |
|-------------------------------|--|
| Navigation | Expert → Diagnostics → Min/max val. → IO module temp. → Minimum value (0688) |
| Description | Displays the lowest previously measured temperature value of the I/O electronics module. |
| User interface | Signed floating-point number |
| Additional information | <p><i>Dependency</i></p>  The unit is taken from the Temperature unit parameter (→  81) |

Maximum value

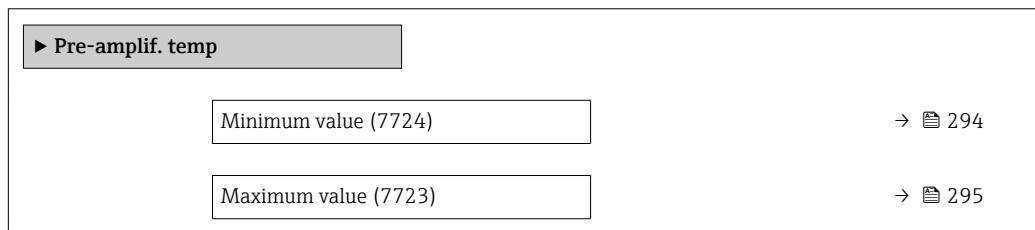
| | |
|-------------------------------|--|
| Navigation |   Expert → Diagnostics → Min/max val. → IO module temp. → Maximum value (0665) |
| Description | Displays the highest previously measured temperature value of the I/O electronics module. |
| User interface | Signed floating-point number |
| Additional information | <i>Dependency</i>  The unit is taken from the Temperature unit parameter (→ 81) |

Average value

| | |
|-------------------------------|--|
| Navigation |   Expert → Diagnostics → Min/max val. → IO module temp. → Average value (0697) |
| Description | Displays the average value of all previously measured temperature values of the I/O electronics module. |
| User interface | -1273.15 to 726.85 °C |
| Additional information | <i>Dependency</i>  The unit is taken from the Temperature unit parameter (→ 81) |

"Pre-amplifier temperature" submenu

Navigation   Expert → Diagnostics → Min/max val. → Pre-amplif. temp



Minimum value

| | |
|-----------------------|---|
| Navigation |   Expert → Diagnostics → Min/max val. → Pre-amplif. temp → Minimum value (7724) |
| Description | Displays the lowest previously measured temperature value of the pre-amplifier module. |
| User interface | 0 to 1 000 °C |

Additional information*Dependency*

The unit is taken from the **Temperature unit** parameter (→ 81)

Maximum value

Navigation

Expert → Diagnostics → Min/max val. → Pre-amplif. temp → Maximum value (7723)

Description

Displays the highest previously measured temperature value of the pre-amplifier module.

User interface

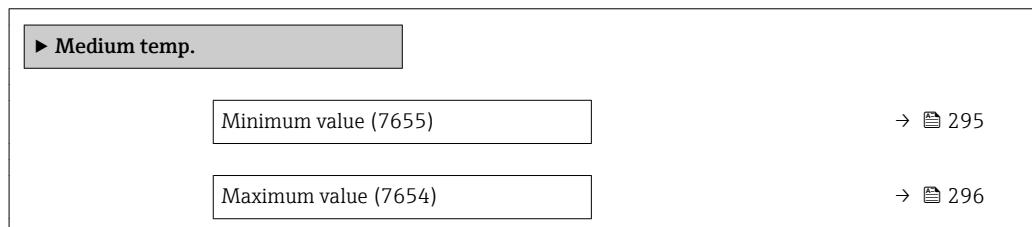
0 to 1 000 °C

Additional information*Dependency*

The unit is taken from the **Temperature unit** parameter (→ 81)

"Medium temperature" submenu*Navigation*

Expert → Diagnostics → Min/max val. → Medium temp.



Minimum value

Navigation

Expert → Diagnostics → Min/max val. → Medium temp. → Minimum value (7655)

Description

Displays the lowest previously measured medium temperature.

User interface

0 to 1 000 °C

Additional information*Dependency*

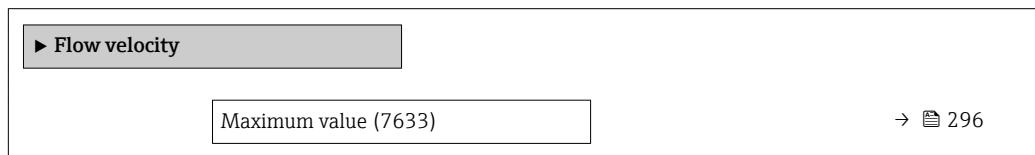
The unit is taken from the **Temperature unit** parameter (→ 81)

Maximum value

| | |
|-------------------------------|---|
| Navigation |   Expert → Diagnostics → Min/max val. → Medium temp. → Maximum value (7654) |
| Description | Displays the highest previously measured medium temperature. |
| User interface | 0 to 1 000 °C |
| Additional information | <i>Dependency</i>  The unit is taken from the Temperature unit parameter (→ 291) |

"Flow velocity" submenu

Navigation   Expert → Diagnostics → Min/max val. → Flow velocity

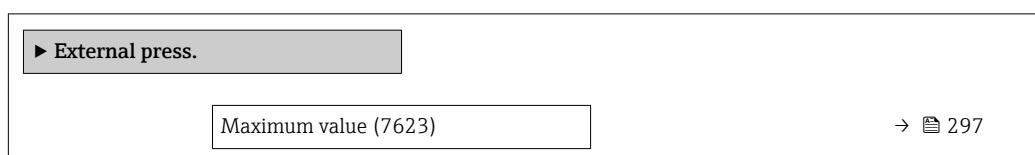


Maximum value

| | |
|-------------------------------|--|
| Navigation |   Expert → Diagnostics → Min/max val. → Flow velocity → Maximum value (7633) |
| Description | Displays the highest previously measured flow velocity. |
| User interface | Positive floating-point number |
| Additional information | <i>Dependency</i>  The unit is taken from the Velocity unit parameter (→ 294) |

"External press." submenu

Navigation   Expert → Diagnostics → Min/max val. → External press.



Maximum value

| | |
|-------------------------------|---|
| Navigation |   Expert → Diagnostics → Min/max val. → External press. → Maximum value (7623) |
| Description | Displays the highest previously measured value for external pressure measurement. |
| User interface | Positive floating-point number |
| Additional information | <i>Dependency</i>  The unit is taken from the Pressure unit parameter (→  80) |

"Measuring tube pressure" submenu

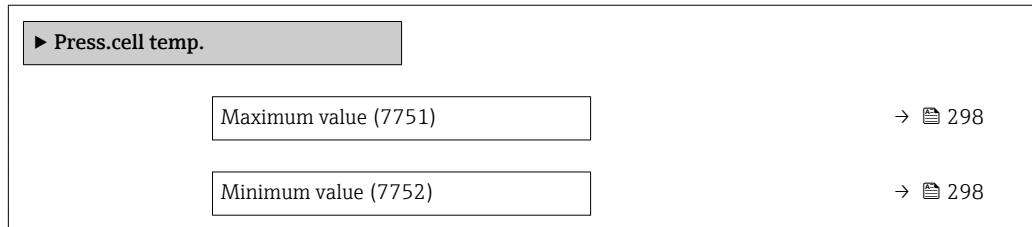
Navigation   Expert → Diagnostics → Min/max val. → Meas.tube press.

 Meas.tube press.

Maximum value (7750) →  297

Maximum value

| | |
|-------------------------------|---|
| Navigation |   Expert → Diagnostics → Min/max val. → Meas.tube press. → Maximum value (7750) |
| Description | Displays the highest previously measured value for internal pressure measurement. |
| User interface | Positive floating-point number |
| Factory setting | 0 bar |
| Additional information | <i>Dependency</i>  The unit is taken from the Pressure unit parameter (→  80) |

"Pressure cell temperature" submenu**Navigation** Expert → Diagnostics → Min/max val. → Press.cell temp.

Maximum value

Navigation Expert → Diagnostics → Min/max val. → Press.cell temp. → Maximum value (7751)**Description**

Displays the highest previously measured temperature of the pressure cell.

User interface

0 to 1 000 °C

Factory setting

0 °C

Additional information*Dependency* The unit is taken from the **Temperature unit** parameter (→ 81)

Minimum value

Navigation Expert → Diagnostics → Min/max val. → Press.cell temp. → Minimum value (7752)**Description**

Displays the lowest previously measured temperature of the pressure cell.

User interface

0 to 1 000 °C

Factory setting

1 000 °C

Additional information*Dependency* The unit is taken from the **Temperature unit** parameter (→ 81)**3.10.10 "Heartbeat" submenu** For detailed information on the parameter descriptions for the **Heartbeat Verification** refer to the Special Documentation for the device

Navigation

[Diagram] Expert → Diagnostics → Heartbeat

▶ Heartbeat

3.10.11 "Simulation" submenu

Navigation

[Diagram] Expert → Diagnostics → Simulation

▶ Simulation

Assign proc.var. (1810)

→ [Diagram] 299

Proc. var. value (1811)

→ [Diagram] 300

FreqOutputSim (0472)

→ [Diagram] 300

Freq value (0473)

→ [Diagram] 301

Puls.outp.sim. (0458)

→ [Diagram] 301

Pulse value (0459)

→ [Diagram] 302

Switch sim. (0462)

→ [Diagram] 302

Switch status (0463)

→ [Diagram] 303

Dev. alarm sim. (0654)

→ [Diagram] 303

Event category (0738)

→ [Diagram] 304

Diag. event sim. (0737)

→ [Diagram] 304

Assign proc.var.

**Navigation**

[Diagram] 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
- Flow velocity
- Volume flow
- Correct.vol.flow
- Temperature

- CalcSatSteamPres *
- Steam quality *
- Total mass flow *
- CondensMassFlow *
- Energy flow
- Heat flow diff. *
- Reynolds number

Factory setting Off

Additional information *Description*

-  The simulation value of the process variable selected is defined in the **Proc. var. value** parameter (→ [300](#)).

Proc. var. value



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

Prerequisite A process variable is selected in the **Assign proc.var.** parameter (→ [299](#)).

Description Use this function to enter a simulation value for the selected process variable. Subsequent measured value processing and the signal output use this simulation value. In this way, users can verify whether the measuring device has been configured correctly.

User entry Depends on the process variable selected

Factory setting 0

Additional information *User entry*

-  The unit of the displayed measured value is taken from the **System units** submenu (→ [75](#)).

FreqOutputSim



Navigation  Expert → Diagnostics → Simulation → FreqOutputSim (0472)

Prerequisite In the **Operating mode** parameter (→ [132](#)), 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

* Visibility depends on order options or device settings

Additional information*Description*

The desired simulation value is defined in the **Freq value** parameter (→ 301).

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 (0473)

Prerequisite

In the **FreqOutputSim** parameter (→ 300), 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 1250.0 Hz

Puls.outp.sim.**Navigation**

Expert → Diagnostics → Simulation → Puls.outp.sim. (0458)

Prerequisite

In the **Operating mode** parameter (→ 132), 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** parameter (→ 302).

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 (→ 134).

▪ Down-count. val.

The pulses specified in the **Pulse value** parameter (→ 302) are output.

Pulse value**Navigation**

Expert → Diagnostics → Simulation → Pulse value (0459)

Prerequisite

In the **Puls.outp.sim.** parameter (→ 301), 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. (0462)

Prerequisite

In the **Operating mode** parameter (→ 132), 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** parameter (→ 303).

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 (0463)

Prerequisite

In the **Switch sim.** parameter (→ 302) **Switch sim. 1 to n** parameter **Switch sim. 1 to n** parameter, the **On** option is selected.

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.

Dev. alarm sim.**Navigation**

Expert → Diagnostics → Simulation → Dev. alarm sim. (0654)

Description

Use this function to switch the device alarm on and off.

Selection

- Off
- On

Factory setting

Off

Additional information*Description*

The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.

Event category

Navigation Expert → Diagnostics → Simulation → Event category (0738)

Description Use this function to select the category of the diagnostic events that are displayed for the simulation in the **Diag. event sim.** parameter (→ 304).

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 *Description*

For the simulation, you can choose from the diagnostic events of the category selected in the **Event category** parameter (→ 304).

4 Country-specific factory settings

4.1 SI units

 Not valid for USA and Canada.

4.1.1 System units

| | |
|--------------------------|--------------------|
| Volume flow | m ³ /h |
| Volume | m ³ |
| Mass flow | kg/h |
| Mass | kg |
| Corrected volume flow | Nm ³ /h |
| Corrected volume | Nm ³ |
| Pressure | bar |
| Temperature | °C |
| Energy flow | kW |
| Energy | kWh |
| Calorific value (volume) | kJ/Nm ³ |
| Calorific value (mass) | kJ/kg |
| Velocity | m/s |
| Density | kg/m ³ |
| Dynamic viscosity | Pa s |
| Specific heat capacity | kJ/(kgK) |
| Length | mm |

4.1.2 Full scale values

 The factory settings apply to the following parameters:
100% bar graph value 1

| Nominal diameter [mm] | [m ³ /h] |
|-----------------------------|---------------------|
| 15 25 > 15 40 >> 15 | 25 |
| 25 40 > 25 50 >> 25 | 125 |
| 40 50 > 40 80 >> 40 | 308 |
| 50 80 > 50 100 >> 50 | 513 |
| 80 100 > 80 150 >> 80 | 1152 |

| Nominal diameter [mm] | [m ³ /h] |
|--------------------------------|---------------------|
| 100 150 > 100 200 >> 100 | 1995 |
| 150 200 > 150 250 >> 150 | 4539 |
| 200 250 > 200 300 >> 200 | 8713 |
| 250 300 > 250 350 >> 250 | 13735 |
| 300 350 > 300 400 >> 300 | 19701 |

4.1.3 Pulse value

| Nominal diameter [mm] | Volume flow (~ 2 pulse/s) [m ³ /pulse] | Mass flow (~ 2 pulse/s) [kg/pulse] |
|--------------------------------|---|--|
| 15 25 > 15 40 >> 15 | 0.00067 | 0.0034 |
| 25 40 > 25 50 >> 25 | 0.0035 | 0.018 |
| 40 50 > 40 80 >> 40 | 0.0085 | 0.044 |
| 50 80 > 50 100 >> 50 | 0.023 | 0.12 |
| 80 100 > 80 150 >> 80 | 0.051 | 0.26 |
| 100 150 > 100 200 >> 100 | 0.089 | 0.46 |
| 150 200 > 150 250 >> 150 | 0.20 | 1.04 |
| 200 250 > 200 300 >> 200 | 0.39 | 1.99 |
| 250 300 > 250 350 >> 250 | 0.61 | 3.14 |
| 300 350 > 300 400 >> 300 | 0.88 | 4.51 |

4.2 US units

 Only valid for USA and Canada.

4.2.1 System units

| | |
|--------------------------|-----------------------|
| Volume flow | ft ³ /min |
| Volume | ft ³ |
| Mass flow | lb/min |
| Mass | lb |
| Corrected volume flow | Sft ³ /min |
| Corrected volume | Sft ³ |
| Pressure | psi |
| Temperature | °F |
| Energy flow | Btu/h |
| Energy | Btu |
| Calorific value (volume) | Btu/Sft ³ |
| Calorific value (mass) | Btu/lb |
| Velocity | ft/s |
| Density | lb/ft ³ |
| Length | in |

4.2.2 Full scale values

 The factory settings apply to the following parameters:
100% bar graph value 1

| Nominal diameter [in] | [ft ³ /h] |
|--------------------------|----------------------|
| ½ 1 > ½ 1½ >> ½ | 882 |
| 1 1½ > 1 2 >> 1 | 4 414 |
| 1½ 2 > 1½ 3 >> 1½ | 10 876 |
| 2 3 > 2 4 >> 2 | 18 116 |
| 3 4 > 3 6 >> 3 | 40 682 |
| 4 6 > 4 8 >> 4 | 70 452 |
| 6 8 > 6 10 >> 6 | 160 293 |

| Nominal diameter [in] | [ft ³ /h] |
|---------------------------|----------------------|
| 8 10 > 8 12 >> 8 | 307 696 |
| 10 12 > 10 14 >> 10 | 485 046 |
| 12 14 > 12 16 >> 12 | 695 734 |

4.2.3 Pulse value

| Nominal diameter [in] | Volume flow ~ 2 pulse/s [gal/pulse] | Volume flow ~ 2 pulse/s [lb/pulse] |
|---------------------------|---|--|
| ½ 1 > ½ 1½ >> ½ | 0.18 | 0.0076 |
| 1 1½ > 1 2 >> 1 | 0.92 | 0.039 |
| 1½ 2 > 1½ 3 >> 1½ | 2.25 | 0.097 |
| 2 3 > 2 4 >> 2 | 6.02 | 0.26 |
| 3 4 > 3 6 >> 3 | 13.50 | 0.58 |
| 4 6 > 4 8 >> 4 | 23.42 | 1.01 |
| 6 8 > 6 10 >> 6 | 53.29 | 2.29 |
| 8 10 > 8 12 >> 8 | 102.29 | 4.40 |
| 10 12 > 10 14 >> 10 | 161.26 | 6.93 |
| 12 14 > 12 16 >> 12 | 231.30 | 9.94 |

5 Explanation of abbreviated units

5.1 SI units

| Process variable | Units | Explanation |
|-----------------------------|---|---|
| Calorific value (volume) | kWh/Nm ³ , MWh/Nm ³ , kJ/Nm ³ , MJ/Nm ³ | Kilowatt hour, megawatt hour, kilojoule, megajoule/standard cubic meter |
| | kWh/Sm ³ , MWh/Sm ³ , kJ/Sm ³ , MJ/Sm ³ | Kilowatt hour, megawatt hour, kilojoule, megajoule/standard cubic meter |
| Calorific value (mass) | kWh/kg, MWh/kg, kJ/kg, MJ/kg | Kilowatt hour, megawatt hour, kilojoule, megajoule/kilogram |
| Density | g/cm 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 fluid density to the water density 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 fluid density to the water density 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 |
| | mbar a | Millibar (absolute) |
| | bar, torr, atm | Bar, torr, physical atmosphere |
| | gf/cm ² , kgf/cm ² | Gram force, kilogram force/square centimeter |
| Dynamic viscosity | Pa s | Pascal second |
| | cP, P | Centipoise, poise |
| Energy | kWh, MWh, GWh | Kilowatt hour, megawatt hour, gigawatt hour |
| | kJ, MJ, GJ | Kilojoule, megajoule, gigajoule |
| | kcal, Mcal, Gcal | Kilocalories, megacalories, gigacalories |
| Energy flow | kW, MW, GW | Kilowatt, megawatt |
| | kJ/s, kJ/min, kJ/h, kJ/d | Kilojoule/time unit |
| | MJ/s, MJ/min, MJ/h, MJ/d | Megajoule/time unit |
| | GJ/s, GJ/min, GJ/h, GJ/d | Gigajoule/time unit |
| | kcal/s, kcal/min, kcal/h, kcal/d | Kilocalories/time unit |
| | Mcal/s, Mcal/min, Mcal/h, Mcal/d | Megacalories/time unit |
| | Gcal/s, Gcal/min, Gcal/h, Gcal/d | Gigacalories/time unit |
| Velocity | m/s | Meter/time unit |
| Length | mm, m | Millimeter, meter |
| 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 |
| 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 |

| Process variable | Units | Explanation |
|------------------------|--|--|
| Specific heat capacity | kJ/(kgK), MJ/(kgK) | Kilojoule, megajoule/kilogram Kelvin |
| | kWh/(kgK) | Kilowatt hour/kilogram Kelvin |
| | kcal/(kgK) | Kilocalories/kilogram Kelvin |
| Temperature | °C , K | Celsius, Kelvin |
| Volume | cm ³ , dm ³ , m ³ | Cubic centimeter, cubic decimeter, cubic meter |
| | ml, l | Milliliter, liter |
| 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 |
| Time | s, m, h, d, y | Second, minute, hour, day, year |

5.2 US units

| Process variable | Units | Explanation |
|------------------------|--|---|
| Calorific value (mass) | kWh/lb, MWh/lb, kJ/lb, MJ/lb | Kilowatt hour, kilojoule, British thermal unit, thousand British thermal units/pound |
| 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 |
| Pressure | psi | Psi |
| Velocity | ft/s | Foot/time unit |
| Length | in, ft | Inch, foot |
| Mass | oz, lb, STon | Ounce, pound, standard ton |
| Mass flow | oz/s, oz/min, oz/h, oz/d | Ounce/time unit |
| | lb/s, lb/min, lb/h, lb/d | Pound/time unit |
| | STon/s, STon/min, STon/h, STon/d | Standard ton/time unit |
| Corrected volume | Sft ³ | Standard cubic foot |
| Correct.vol.flow | Sft ³ /s, Sft ³ /min, Sft ³ /h, Sft ³ /d | Standard cubic foot/time unit |
| 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 |

| Process variable | Units | Explanation |
|------------------|--|---|
| | 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 |
|--------------------------|--|---|
| Calorific value (volume) | Btu/Sm ³ , MBtu/Sm ³ | British thermal unit, thousand British thermal units/standard cubic meter |
| | Btu/Sft ³ , MBtu/Sft ³ | British thermal unit, thousand British thermal units/standard cubic foot |
| Calorific value (mass) | Btu/lb, MBtu/lb | British thermal unit, thousand British thermal units/pound |
| Density | lb/gal (imp), lb/bbl (imp;beer), lb/bbl (imp;oil) | Pound/volume unit |
| Energy | Btu, MBtu, MMBtu | British thermal unit, thousand British thermal units, million British thermal units |
| Energy flow | Btu/s, Btu/min, Btu/h, Btu/day | British thermal unit/time unit |
| | MBtu/s, MBtu/min, MBtu/h, MBtu/d | Thousand British thermal units/time unit |
| | MMBtu/s, MMBtu/min, MMBtu/h, MMBtu/d | Million British thermal units/time unit |
| Specific heat capacity | Btu/(lb°R) | British thermal unit/pound degree Rankine |
| 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) |

5.4 Other units

| Process variable | Units | Explanation |
|------------------|---------------------------|-------------------------------------|
| Pressure | mmH ₂ O (4°C) | Millimeter of water column (4 °C) |
| | mmH ₂ O (68°F) | Millimeter of water column (68 °F) |
| | mmHg (0°C) | Millimeter of mercury column (0 °C) |
| | inH ₂ O (4°C) | Inch of water column (4 °C) |
| | inH ₂ O (68°F) | Inch of water column (68 °F) |
| | ftH ₂ O (68°F) | Foot of water column (68 °F) |
| | inHg (0°C) | Inch of mercury (0 °C) |

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