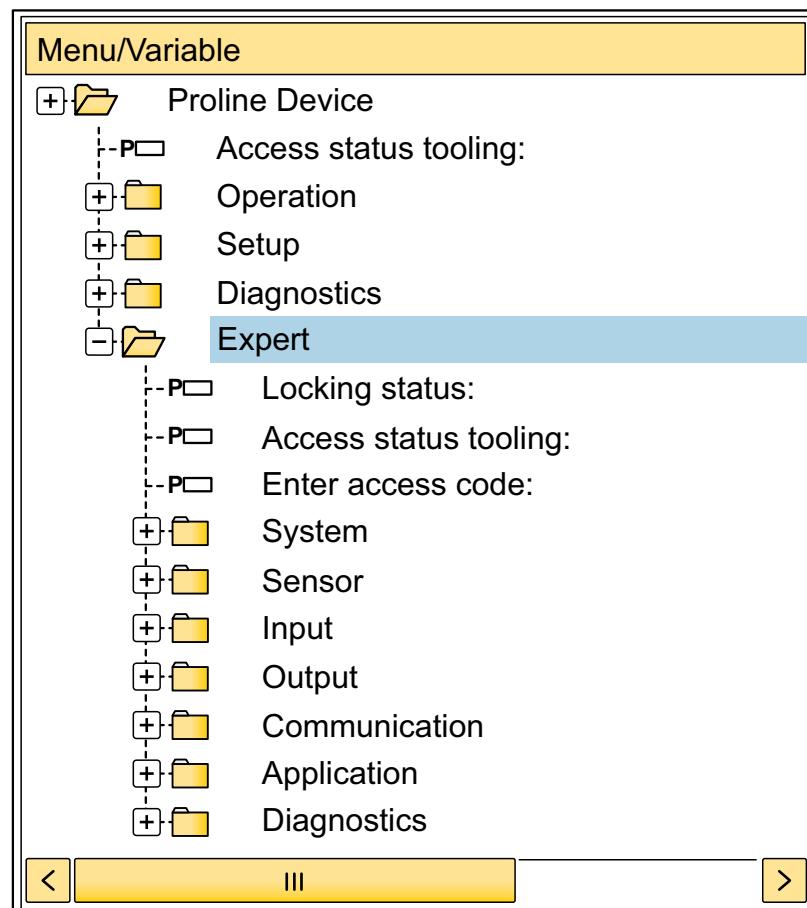


# Description of Device Parameters

## Proline Promass 200

## FOUNDATION Fieldbus

Coriolis flowmeter





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# 1 Document information

## 1.1 Document function

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

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

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

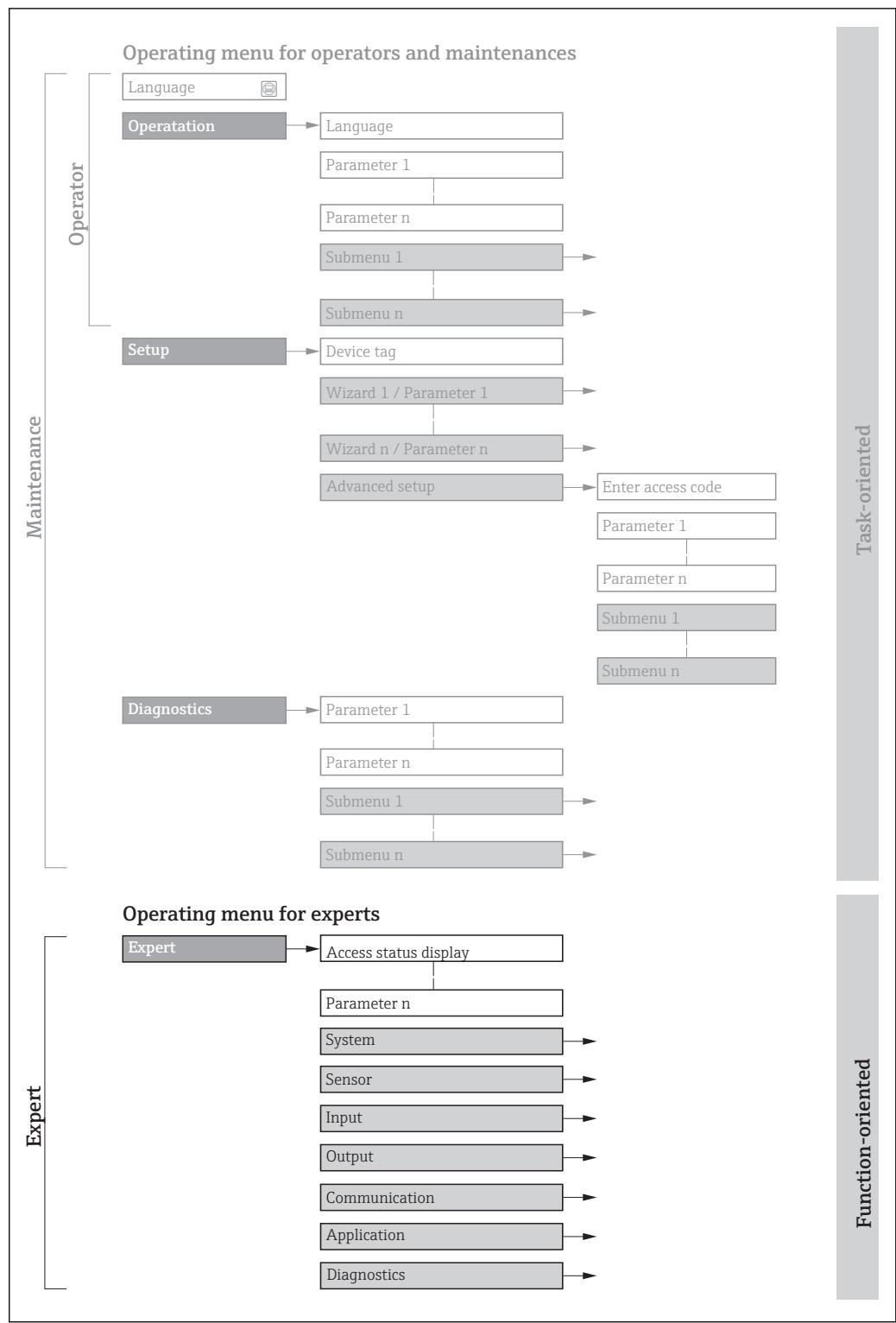
## 1.2 Target group

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

## 1.3 Using this document

### 1.3.1 Information on the document structure

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



1 Sample graphic for the schematic layout of the operating menu



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
	<b>Tip</b> Indicates additional information.
	Reference to documentation
	Reference to page
	Reference to graphic
	Operation via local display
	Operation via operating tool
	Write-protected parameter

### 1.4.2 Symbols in graphics

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

## 1.5 Documentation

### 1.5.1 Standard documentation

#### Operating Instructions

Measuring device	Documentation code
Promass 8A2B**-...	BA01827D
Promass 8E2B**-...	BA01314D
Promass 8E2C**-...	BA01639D
Promass 8F2B**-...	BA01315D

### 1.5.2 Supplementary device-dependent documentation

#### Special Documentation

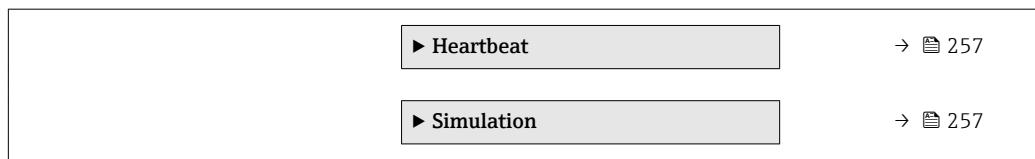
Content	Documentation code
Information on the Pressure Equipment Directive	SD01614D
Display and operating module FHX50	SD01007F
Heartbeat Technology	SD01848D

## 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.

<b>Expert</b>	
Direct access (0106)	→ <a href="#">11</a>
Locking status (0004)	→ <a href="#">12</a>
Access stat.disp (0091)	→ <a href="#">13</a>
Ent. access code (0092)	→ <a href="#">14</a>
<b>System</b>	→ <a href="#">14</a>
► Display	→ <a href="#">15</a>
► Conf.backup disp	→ <a href="#">28</a>
► Diagn. handling	→ <a href="#">32</a>
► Administration	→ <a href="#">45</a>
<b>Sensor</b>	→ <a href="#">50</a>
► Measured val.	→ <a href="#">51</a>
► System units	→ <a href="#">57</a>
► Process param.	→ <a href="#">65</a>
► Measurement mode	→ <a href="#">73</a>
► Calculated value	→ <a href="#">75</a>
► Sensor adjustm.	→ <a href="#">78</a>
► Calibration	→ <a href="#">84</a>
<b>Output</b>	→ <a href="#">87</a>
► PFS output	→ <a href="#">87</a>

▶ Communication	→ 108
Device address (11061)	→ 108
▶ Resource block	→ 109
▶ Analog inputs	→ 130
▶ Analog input 1 to n	→ 130
▶ Discrete inputs	→ 177
▶ Discrete input 1 to n	→ 178
▶ Analog outputs	→ 206
▶ Multiple AO	→ 206
▶ Discrete outputs	→ 214
▶ Multiple DO	→ 215
▶ Application	→ 223
Reset all tot. (2806)	→ 224
▶ Totalizer 1 to n	→ 224
▶ Diagnostics	→ 228
Actual diagnos. (0691)	→ 229
Prev.diagnostics (0690)	→ 230
Time fr. restart (0653)	→ 230
Operating time (0652)	→ 231
▶ Diagnostic list	→ 231
▶ Event logbook	→ 235
▶ Device info	→ 238
▶ Data logging	→ 242
▶ Min/max val.	→ 248



### 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	→  50
 Output	→  87
 Communication	→  108
 Analog inputs	→  130
 Discrete inputs	→  177
 Analog outputs	→  206
 Discrete outputs	→  214
 Application	→  223
 Diagnostics	→  228

#### Direct access



##### Navigation

 Expert → Direct access (0106)

##### Description

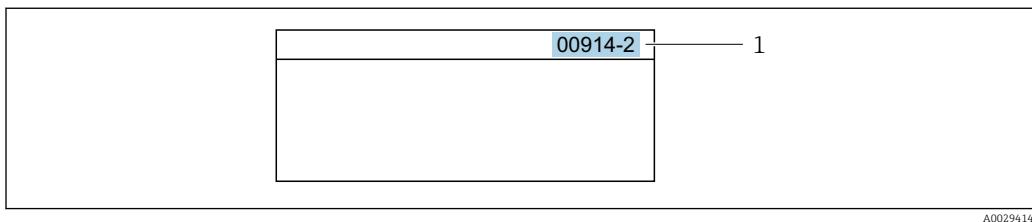
Use this function to enter the access code to enable direct access to the desired parameter via the local display. A parameter number is assigned to each parameter for this purpose.

##### 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 → 7

*Selection*

Options	Description
None	The access status displayed in the <b>Access stat.disp</b> 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) (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

---

<b>Navigation</b>	 Expert → Access stat.disp (0091)
<b>Prerequisite</b>	A local display is provided.
<b>Description</b>	Displays the access authorization to the parameters via the local display.
<b>User interface</b>	<ul style="list-style-type: none"><li>▪ Operator</li><li>▪ Maintenance</li></ul>
<b>Factory setting</b>	Operator
<b>Additional information</b>	<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 <b>Ent. access code</b> parameter (→ <a href="#">14</a>).</p> <p> For information about the <b>Ent. access code</b> parameter (→ <a href="#">14</a>): see the "Disabling write protection via the access code" section of the Operating Instructions for the device → <a href="#">7</a></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 → <a href="#">7</a></p>

---

## Access stat.tool

---

<b>Navigation</b>	 Expert → Access stat.tool (0005)
<b>Description</b>	Displays the access authorization to the parameters via the operating tool.
<b>User interface</b>	<ul style="list-style-type: none"><li>▪ Operator</li><li>▪ Maintenance</li></ul>
<b>Factory setting</b>	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 → [7](#)

---

**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**

0 to 9 999

### 3.1 "System" submenu

**Navigation**

  Expert → System

 <b>System</b>	
 <b>Display</b>	→ <a href="#">15</a>
 <b>Conf.backup disp</b>	→ <a href="#">28</a>
 <b>Diagn. handling</b>	→ <a href="#">32</a>
 <b>Administration</b>	→ <a href="#">45</a>

### 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)	→ 23
Decimal places 4 (0119)	→ 24
Display interval (0096)	→ 24
Display damping (0094)	→ 25
Header (0097)	→ 25
Header text (0112)	→ 26
Separator (0101)	→ 27
Contrast display (0105)	→ 27
Backlight (0111)	→ 27
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) \*
- Bahasa Indonesia \*
- tiêng Việt (Vit) \*
- čeština (Czech) \*

**Factory setting** English (alternatively, the ordered language is preset in the device)

---

## Format display

---

**Navigation**  Expert → System → Display → Format display (0098)

**Prerequisite** A local display is provided.

**Description** Use this function to select how the measured value is shown on the local display.

**Selection**

- 1 value, max.
- 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.



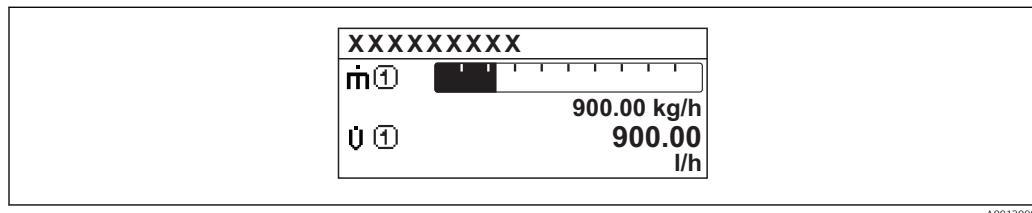
- The **Value 1 display** parameter (→ 19) to **Value 4 display** parameter (→ 23) are used to specify which measured values are shown on the local display and in what order.
- If more measured values are specified than the display mode selected permits, then the values alternate on the device display. The display time until the next change is configured via the **Display interval** parameter (→ 24).

Possible measured values shown on the local display:

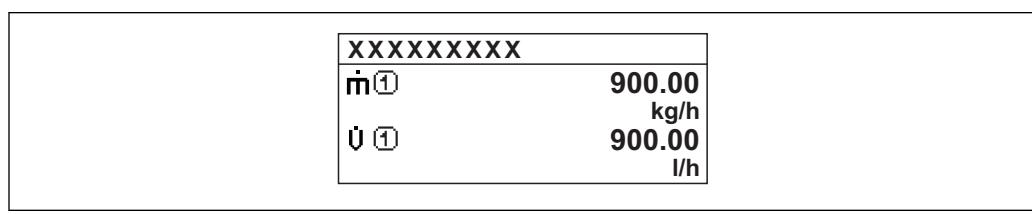
"1 value, max." option



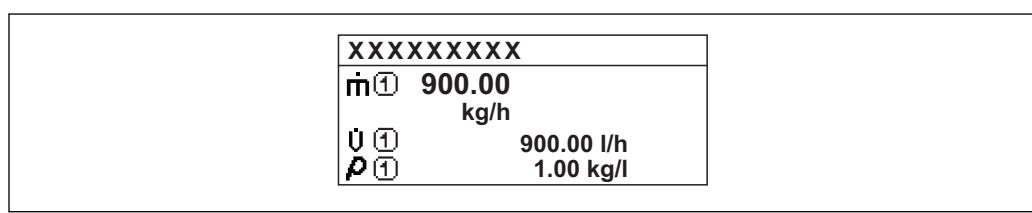
"Bagr. + 1 value" option



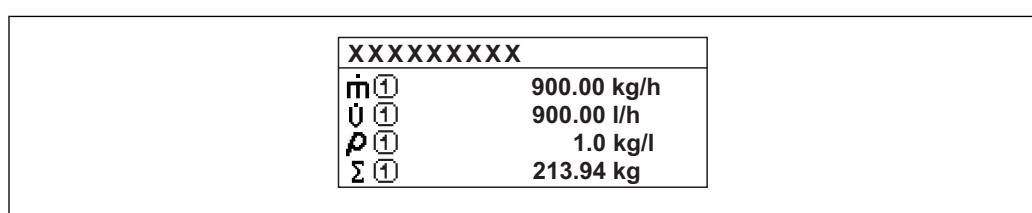
"2 values" option



"Val. large+2val." option



"4 values" option



---

**Value 1 display**

<b>Navigation</b>	Expert → System → Display → Value 1 display (0107)
<b>Prerequisite</b>	A local display is provided.
<b>Description</b>	Use this function to select one of the measured values to be shown on the local display.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Mass flow</li><li>■ Volume flow</li><li>■ Correct.vol.flow</li><li>■ Density</li><li>■ Ref.density</li><li>■ Temperature</li><li>■ Totalizer 1</li><li>■ Totalizer 2</li><li>■ Totalizer 3</li></ul>
<b>Factory setting</b>	Mass flow
<b>Additional information</b>	<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 <b>Format display</b> 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 <b>System units</b> submenu (→  57).</p>

---

**0% bargraph 1**

<b>Navigation</b>	Expert → System → Display → 0% bargraph 1 (0123)
<b>Prerequisite</b>	A local display is provided.
<b>Description</b>	Use this function to enter the 0% bar graph value to be shown on the display for the measured value 1.
<b>User entry</b>	Signed floating-point number
<b>Factory setting</b>	Country-specific: <ul style="list-style-type: none"><li>■ 0 kg/h</li><li>■ 0 lb/min</li></ul>

**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 (→ 57).

---

**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 → 263

**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 (→ 57).

---

**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**

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

**Factory setting**

X.XX

**Additional information***Description*

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

**Value 2 display****Navigation**

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

**Prerequisite**

A local display is provided.

**Description**

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

**Selection**

For the picklist, see the **Value 1 display** parameter (→ 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 (→ 57).

**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**

<b>Navigation</b>	Expert → System → Display → Value 3 display (0110)
<b>Prerequisite</b>	A local display is provided.
<b>Description</b>	Use this function to select one of the measured values to be shown on the local display.
<b>Selection</b>	For the picklist, see the <b>Value 1 display</b> parameter (→  19)
<b>Factory setting</b>	None
<b>Additional information</b>	<i>Description</i> If several measured values are displayed at once, the measured value selected here will be the third value to be displayed. The value is only displayed during normal operation. The <b>Format display</b> parameter (→  16) is used to specify how many measured values are displayed simultaneously and how. <i>Selection</i> The unit of the displayed measured value is taken from the <b>System units</b> submenu (→  57).

**0% bargraph 3**

<b>Navigation</b>	Expert → System → Display → 0% bargraph 3 (0124)
<b>Prerequisite</b>	A selection was made in the <b>Value 3 display</b> parameter (→  22).
<b>Description</b>	Use this function to enter the 0% bar graph value to be shown on the display for the measured value 3.
<b>User entry</b>	Signed floating-point number
<b>Factory setting</b>	Country-specific: <ul style="list-style-type: none"><li>■ 0 kg/h</li><li>■ 0 lb/min</li></ul>
<b>Additional information</b>	<i>Description</i> The <b>Format display</b> parameter (→  16) is used to specify that the measured value is to be displayed as a bar graph. <i>User entry</i> The unit of the displayed measured value is taken from the <b>System units</b> submenu (→  57).

---

**100% bargraph 3**

---



<b>Navigation</b>	Expert → System → Display → 100% bargraph 3 (0126)
<b>Prerequisite</b>	A selection was made in the <b>Value 3 display</b> parameter (→ <a href="#">22</a> ).
<b>Description</b>	Use this function to enter the 100% bar graph value to be shown on the display for the measured value 3.
<b>User entry</b>	Signed floating-point number
<b>Factory setting</b>	0
<b>Additional information</b>	<p><i>Description</i></p> <p> The <b>Format display</b> parameter (→ <a href="#">16</a>) 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 <b>System units</b> submenu (→ <a href="#">57</a>).</p>

---

**Decimal places 3**

---



<b>Navigation</b>	Expert → System → Display → Decimal places 3 (0118)
<b>Prerequisite</b>	A measured value is specified in the <b>Value 3 display</b> parameter (→ <a href="#">22</a> ).
<b>Description</b>	Use this function to select the number of decimal places for measured value 3.
<b>Selection</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> x</li> <li><input type="checkbox"/> x.x</li> <li><input type="checkbox"/> x.xx</li> <li><input type="checkbox"/> x.www</li> <li><input type="checkbox"/> x.wwww</li> </ul>
<b>Factory setting</b>	x.xx
<b>Additional information</b>	<p><i>Description</i></p> <p> 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.</p>

---

**Value 4 display**

---



<b>Navigation</b>	Expert → System → Display → Value 4 display (0109)
<b>Prerequisite</b>	A local display is provided.

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

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

**i** The **Format display** parameter (→ 16) is used to specify how many measured values are displayed simultaneously and how.

*Selection*

**i** The unit of the displayed measured value is taken from the **System units** submenu (→ 57).

## Decimal places 4



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

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

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

**Selection**

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

**Factory setting** X.XX

**Additional information** *Description*

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

## Display interval

**Navigation** Expert → System → Display → Display interval (0096)

**Prerequisite** A local display is provided.

**Description** Use this function to enter the length of time the measured values are displayed if the values alternate on the display.

**User entry** 1 to 10 s

**Factory setting** 5 s

**Additional information** *Description*

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

-  ■ The **Value 1 display** parameter (→ 19) to **Value 4 display** parameter (→ 23) are used to specify which measured values are shown on the local display.
- The display format of the displayed measured values is specified using the **Format display** parameter (→ 16).

## Display damping



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

**Prerequisite** A local display is provided.

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

**User entry** 0.0 to 999.9 s

**Factory setting** 0.0 s

**Additional information** *User entry*

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

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

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

## Header



**Navigation**  Expert → System → Display → Header (0097)

**Prerequisite** A local display is provided.

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

**Selection**

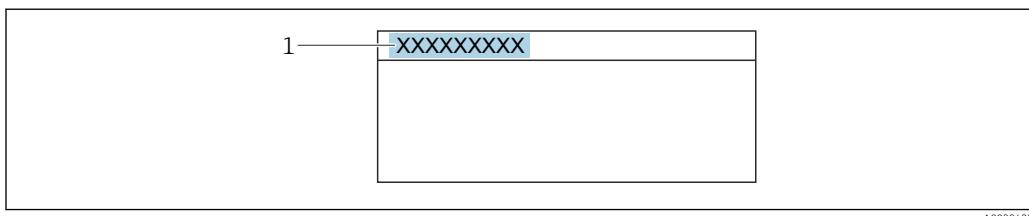
- Device tag
- Free text

**Factory setting** Device tag

1) proportional transmission behavior with first order delay

**Additional information***Description*

The header text only appears during normal operation.



A0029422

1 Position of the header text on the display

*Selection*

- Device tag  
Is defined in the **Device tag** parameter (→ 238).
- Free text  
Is defined in the **Header text** parameter (→ 26).

**Header text****Navigation**

Expert → System → Display → Header text (0112)

**Prerequisite**

In the **Header** parameter (→ 25), the **Free text** option is selected.

**Description**

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

**User entry**

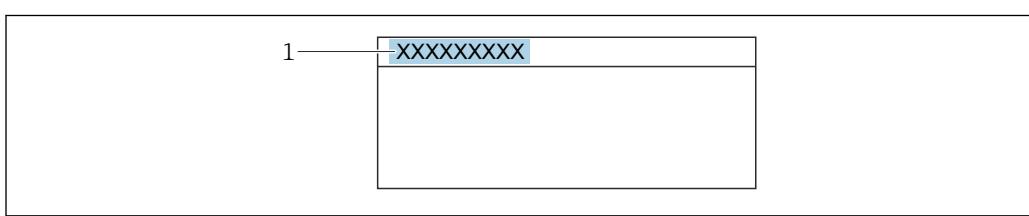
Max. 12 characters such as letters, numbers or special characters (e.g. @, %, /)

**Factory setting**

-----

**Additional information***Description*

The header text only appears during normal operation.



A0029422

1 Position of the header text on the display

*User entry*

The number of characters displayed depends on the characters used.

---

**Separator**

**Navigation** Expert → System → Display → Separator (0101)

**Prerequisite** A local display is provided.

**Description** Use this function to select the decimal separator.

**Selection**

- . (point)
- , (comma)

**Factory setting** . (point)

---

**Contrast display**

**Navigation** Expert → System → Display → Contrast display (0105)

**Prerequisite** A local display is provided.

**Description** Use this function to enter a value to adapt the display contrast to the ambient conditions (e.g. the lighting or viewing angle).

**User entry** 20 to 80 %

**Factory setting** Depends on the display

**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

<b>Navigation</b>	  Expert → System → Display → Access stat.disp (0091)
<b>Prerequisite</b>	A local display is provided.
<b>Description</b>	Displays the access authorization to the parameters via the local display.
<b>User interface</b>	<ul style="list-style-type: none"><li>▪ Operator</li><li>▪ Maintenance</li></ul>
<b>Factory setting</b>	Operator
<b>Additional information</b>	<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 <b>Ent. access code</b> parameter (→  14).</p> <p> For information about the <b>Ent. access code</b> parameter (→  14): see the "Disabling write protection via the access code" section of the Operating Instructions for the device →  7</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 →  7</p>

### 3.1.2 "Conf.backup disp" submenu

*Navigation*        Expert → System → Conf.backup disp

 Conf.backup disp	
Operating time (0652)	→  29
Last backup (0102)	→  29
Config. managem. (0100)	→  29
Compar. result (0103)	→  31

---

## Operating time

---

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

---

## Last backup

---

<b>Navigation</b>	 Expert → System → Conf.backup disp → Last backup (0102)
<b>Prerequisite</b>	A local display is provided.
<b>Description</b>	Use this function to display the time since a backup copy of the data was last saved to the display module.
<b>User interface</b>	Days (d), hours (h), minutes (m) and seconds (s)

---

## Config. managem.

---



<b>Navigation</b>	 Expert → System → Conf.backup disp → Config. managem. (0100)
<b>Prerequisite</b>	A local display is provided.
<b>Description</b>	Use this function to select an action to save the data to the display module.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Cancel</li><li>■ Execute backup</li><li>■ Restore</li><li>■ Duplicate</li><li>■ Compare</li><li>■ Clear backup</li><li>■ Display incompl.</li></ul>
<b>Factory setting</b>	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 (→ 30)

*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 <b>Compar. result</b> 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**

- None
- Store in progr.
- Restore in progr

- Import in progr.
- Delete in progr.
- Comp. in progr.

<b>Factory setting</b>	None
------------------------	------

## Compar. result

<b>Navigation</b>	  Expert → System → Conf.backup disp → Compar. result (0103)
<b>Prerequisite</b>	A local display is provided.
<b>Description</b>	Use this function to view the last result of comparing the current device configuration to the backup copy in the display module.
<b>User interface</b>	<ul style="list-style-type: none"> <li>■ Set. identical</li> <li>■ Set. not ident.</li> <li>■ No backup</li> <li>■ Backup corrupt</li> <li>■ Check not done</li> <li>■ Dataset incompr.</li> </ul>
<b>Factory setting</b>	Check not done
<b>Additional information</b>	<p><i>Description</i></p> <p> The comparison is started via the <b>Compare</b> option in the <b>Config. managem.</b> parameter (→  29).</p> <p><i>Selection</i></p> <ul style="list-style-type: none"> <li>■ Set. identical <ul style="list-style-type: none"> <li>– The current device configuration of the HistoROM is identical to the backup copy in the display module.</li> <li>– If the transmitter configuration of another device has been copied to the device via the display module and the <b>Duplicate</b> option in the <b>Config. managem.</b> 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.</li> </ul> </li> <li>■ Set. not ident. <ul style="list-style-type: none"> <li>The current device configuration of the HistoROM is not identical to the backup copy in the display module.</li> </ul> </li> <li>■ No backup <ul style="list-style-type: none"> <li>There is no backup copy of the device configuration of the HistoROM in the display module.</li> </ul> </li> </ul>

- 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.

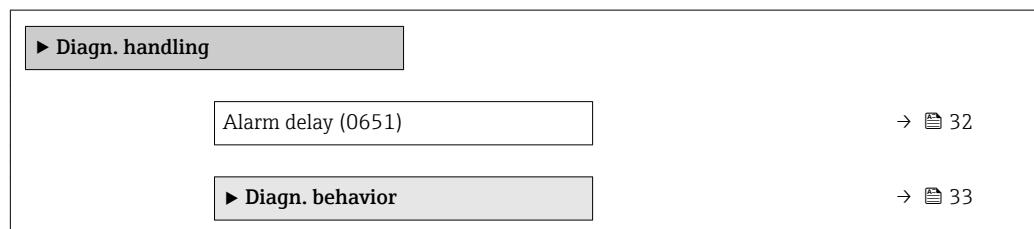
#### *HistoROM*

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

### 3.1.3 "Diagn. 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
- 140 Sensor signal
- 830 Sensor temp.
- 831 Sensor temp.
- 832 Electronic temp.
- 833 Electronic temp.
- 834 Process temp.
- 835 Process temp.

- 910 Tube not oscill.
- 912 Medium inhomog.
- 913 Medium unsuitab.

### "Diagn. behavior" submenu

Each item of diagnostic information is assigned a specific diagnostic behavior at the factory. The user can change this assignment for specific diagnostic information in the **Diagn. behavior** submenu (→ 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.
Logbook only	The device continues to measure. The diagnostic message is displayed only in the <b>Event logbook</b> submenu (→ 235) ( <b>Event list</b> submenu (→ 236)) and is not displayed in alternation with the operational display.
Off	The diagnostic event is ignored, and no diagnostic message is generated or entered.



Assignment of the status of a diagnostic event.

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

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



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

*Navigation*

Expert → System → Diagn. handling → Diagn. behavior

► Diagn. behavior	
Diagnostic no. 046 (0655)	→ 35
Diagnostic no. 140 (0723)	→ 35
Diagnostic no. 274 (0725)	→ 35
Diagnostic no. 442 (0658)	→ 36
Diagnostic no. 443 (0659)	→ 36

Diagnostic no. 801 (0660)	→  36
Diagnostic no. 830 (0715)	→  37
Diagnostic no. 831 (0716)	→  37
Diagnostic no. 832 (0675)	→  38
Diagnostic no. 833 (0676)	→  38
Diagnostic no. 834 (0677)	→  38
Diagnostic no. 835 (0678)	→  39
Diagnostic no. 862 (0679)	→  39
Diagnostic no. 912 (0720)	→  39
Diagnostic no. 913 (0717)	→  40
Status diag. 044 (11041)	→  40
Status diag. 046 (11042)	→  40
Status diag. 274 (11000)	→  41
Status diag. 801 (11001)	→  41
Status diag. 830 (11006)	→  41
Status diag. 831 (11007)	→  42
Status diag. 832 (11002)	→  42
Status diag. 833 (11003)	→  42
Status diag. 834 (11004)	→  43
Status diag. 835 (11005)	→  43
Status diag. 862 (11008)	→  43
Status diag. 912 (11009)	→  44
Status diag. 913 (11010)	→  44

---

**Diagnostic no. 046 (Sensor limit)**

<b>Navigation</b>	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 046 (0655)
<b>Description</b>	Option for changing the diagnostic behavior of the diagnostic message <b>△046 Sensor limit</b> .
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Off</li><li>■ Alarm</li><li>■ Warning</li><li>■ Logbook only</li></ul>
<b>Factory setting</b>	Warning
<b>Additional information</b>	Detailed description of the options available for selection: →  33 →  33

---

**Diagnostic no. 140 (Sensor signal)**

<b>Navigation</b>	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 140 (0723)
<b>Description</b>	Option for changing the diagnostic behavior of the diagnostic message <b>140 Sensor signal</b> .
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Off</li><li>■ Alarm</li><li>■ Warning</li><li>■ Logbook only</li></ul>
<b>Factory setting</b>	Warning
<b>Additional information</b>	Detailed description of the options available for selection: →  33 →  33

---

**Diagnostic no. 274 (Main electronic)**

<b>Navigation</b>	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 274 (0725)
<b>Description</b>	Option for changing the diagnostic behavior of the diagnostic message <b>274 Main electronic</b> .
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Off</li><li>■ Alarm</li><li>■ Warning</li><li>■ Logbook only</li></ul>
<b>Factory setting</b>	Warning
<b>Additional information</b>	Detailed description of the options available for selection: →  33 →  33

**Diagnostic no. 442 (Freq. output)**

<b>Navigation</b>	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 442 (0658)
<b>Prerequisite</b>	The measuring device has a pulse/frequency/switch output.
<b>Description</b>	Option for changing the diagnostic behavior of the diagnostic message <b>442 Freq. output</b> .
<b>Selection</b>	<ul style="list-style-type: none"><li>▪ Off</li><li>▪ Alarm</li><li>▪ Warning</li><li>▪ Logbook only</li></ul>
<b>Factory setting</b>	Warning
<b>Additional information</b>	<i>Selection</i> Detailed description of the options available for selection: →  33 →  33

**Diagnostic no. 443 (Pulse output)**

<b>Navigation</b>	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 443 (0659)
<b>Prerequisite</b>	The measuring device has a pulse/frequency/switch output.
<b>Description</b>	Option for changing the diagnostic behavior of the diagnostic message <b>443 Pulse output</b> .
<b>Selection</b>	<ul style="list-style-type: none"><li>▪ Off</li><li>▪ Alarm</li><li>▪ Warning</li><li>▪ Logbook only</li></ul>
<b>Factory setting</b>	Warning
<b>Additional information</b>	<i>Selection</i> Detailed description of the options available for selection: →  33 →  33

**Diagnostic no. 801 (Supply voltage)**

<b>Navigation</b>	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 801 (0660)
<b>Description</b>	Option for changing the diagnostic behavior of the diagnostic message <b>801 Supply voltage</b> .
<b>Selection</b>	<ul style="list-style-type: none"><li>▪ Off</li><li>▪ Alarm</li><li>▪ Warning</li><li>▪ Logbook only</li></ul>

**Factory setting** Warning

**Additional information** Selection



Detailed description of the options available for selection: → 33 → 33

---

### Diagnostic no. 830 (Sensor temp.)



**Navigation** Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 830 (0715)

**Prerequisite** If the carrier tube temperature is available (applies only to Promass F).

**Description** Option for changing the diagnostic behavior of the diagnostic message **830 Sensor temp..**

**Selection**

- Off
- Alarm
- Warning
- Logbook only

**Factory setting** Warning

**Additional information** Detailed description of the options available for selection: → 33 → 33

---

### Diagnostic no. 831 (Sensor temp.)



**Navigation** Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 831 (0716)

**Prerequisite** If the carrier tube temperature is available (applies only to Promass F).

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

**Selection**

- Off
- Alarm
- Warning
- Logbook only

**Factory setting** Warning

**Additional information** Detailed description of the options available for selection: → 33 → 33

**Diagnostic no. 832 (Electronic temp.)**

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

**Diagnostic no. 833 (Electronic temp.)**

<b>Navigation</b>	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 833 (0676)
<b>Description</b>	Option for changing the diagnostic behavior of the diagnostic message <b>833 Electronic temp..</b>
<b>Selection</b>	<ul style="list-style-type: none"><li>▪ Off</li><li>▪ Alarm</li><li>▪ Warning</li><li>▪ Logbook only</li></ul>
<b>Factory setting</b>	Warning
<b>Additional information</b>	<i>Selection</i> Detailed description of the options available for selection: →  33 →  33

**Diagnostic no. 834 (Process temp.)**

<b>Navigation</b>	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 834 (0677)
<b>Description</b>	Option for changing the diagnostic behavior of the diagnostic message <b>834 Process temp..</b>
<b>Selection</b>	<ul style="list-style-type: none"><li>▪ Off</li><li>▪ Alarm</li><li>▪ Warning</li><li>▪ Logbook only</li></ul>
<b>Factory setting</b>	Warning

**Additional information***Selection*

Detailed description of the options available for selection: → 33 → 33

**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**

- Off
- Alarm
- Warning
- Logbook only

**Factory setting**

Warning

**Additional information***Selection*

Detailed description of the options available for selection: → 33 → 33

**Diagnostic no. 862 (Empty pipe)****Navigation**

Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 862 (0679)

**Description**Option for changing the diagnostic behavior of the diagnostic message **862 Empty pipe.****Selection**

- Off
- Alarm
- Warning
- Logbook only

**Factory setting**

Warning

**Additional information**

Detailed description of the options available for selection: → 33 → 33

**Diagnostic no. 912 (Medium inhomog.)****Navigation**

Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 912 (0720)

**Description**Option for changing the diagnostic behavior of the diagnostic message **912 Medium inhomog..**

**Selection**

- Off
- Alarm
- Warning
- Logbook only

**Factory setting**

Warning

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

---

**Diagnostic no. 913 (Medium unsuitab.)****Navigation** Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 913 (0717)**Description**Option for changing the diagnostic behavior of the diagnostic message **913 Medium unsuitab..****Selection**

- Off
- Alarm
- Warning
- Logbook only

**Factory setting**

Warning

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

---

**Status diag. 140 (Sensor sig.asym.)****Navigation** Expert → System → Diagn. handling → Diagn. behavior → Status diag. 044 (11041)**Description**Use this function to change the status of diagnostic message **140 Sensor sig.asym..****Selection**

- Bad
- Uncertain
- Good

**Factory setting**

Bad

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

---

**Status diag. 046 (Sensor limit)****Navigation** Expert → System → Diagn. handling → Diagn. behavior → Status diag. 046 (11042)**Description**Use this function to change the status of diagnostic message **046 Sensor limit.**

---

<b>Selection</b>	<ul style="list-style-type: none"><li>■ Bad</li><li>■ Uncertain</li><li>■ Good</li></ul>
<b>Factory setting</b>	Uncertain
<b>Additional information</b>	 Detailed description of the options available for selection: → <a href="#">33</a>

---

### Status diag. 274 (Main electronic)

---

<b>Navigation</b>	  Expert → System → Diagn. handling → Diagn. behavior → Status diag. 274 (11000)
<b>Description</b>	Use this function to change the status of diagnostic message <b>274 Main electronic</b> .
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Bad</li><li>■ Uncertain</li><li>■ Good</li></ul>
<b>Factory setting</b>	Uncertain
<b>Additional information</b>	 Detailed description of the options available for selection: → <a href="#">33</a>

---

### Status diag. 801 (Supply voltage)

---

<b>Navigation</b>	  Expert → System → Diagn. handling → Diagn. behavior → Status diag. 801 (11001)
<b>Description</b>	Option for changing the status of the diagnostic message <b>801 Supply voltage</b> .
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Bad</li><li>■ Uncertain</li><li>■ Good</li></ul>
<b>Factory setting</b>	Uncertain
<b>Additional information</b>	 Detailed description of the options available for selection: → <a href="#">33</a>

---

### Status diag. 830 (Sensor temp.)

---

<b>Navigation</b>	  Expert → System → Diagn. handling → Diagn. behavior → Status diag. 830 (11006)
<b>Description</b>	Use this function to change the status of diagnostic message <b>830 Sensor temp.</b> .

<b>Selection</b>	<ul style="list-style-type: none"><li>■ Bad</li><li>■ Uncertain</li><li>■ Good</li></ul>
<b>Factory setting</b>	Uncertain
<b>Additional information</b>	 Detailed description of the options available for selection: → <a href="#">33</a>

---

### Status diag. 831 (Sensor temp.)

---

<b>Navigation</b>	  Expert → System → Diagn. handling → Diagn. behavior → Status diag. 831 (11007)
<b>Description</b>	Use this function to change the status of diagnostic message <b>831 Sensor temp.</b> .
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Bad</li><li>■ Uncertain</li><li>■ Good</li></ul>
<b>Factory setting</b>	Uncertain
<b>Additional information</b>	 Detailed description of the options available for selection: → <a href="#">33</a>

---

### Status diag. 832 (Electronic temp.)

---

<b>Navigation</b>	  Expert → System → Diagn. handling → Diagn. behavior → Status diag. 832 (11002)
<b>Description</b>	Option for changing the status of the diagnostic message <b>832 Electronic temp..</b>
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Bad</li><li>■ Uncertain</li><li>■ Good</li></ul>
<b>Factory setting</b>	Uncertain
<b>Additional information</b>	 Detailed description of the options available for selection: → <a href="#">33</a>

---

### Status diag. 833 (Electronic temp.)

---

<b>Navigation</b>	  Expert → System → Diagn. handling → Diagn. behavior → Status diag. 833 (11003)
<b>Description</b>	Option for changing the status of the diagnostic message <b>833 Electronic temp..</b>

---

<b>Selection</b>	<ul style="list-style-type: none"><li>■ Bad</li><li>■ Uncertain</li><li>■ Good</li></ul>
<b>Factory setting</b>	Uncertain
<b>Additional information</b>	 Detailed description of the options available for selection: → <a href="#">33</a>

---

### Status diag. 834 (Process temp.)

---

<b>Navigation</b>	 Expert → System → Diagn. handling → Diagn. behavior → Status diag. 834 (11004)
<b>Description</b>	Use this function to change the status of diagnostic message <b>834 Process temp..</b>
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Bad</li><li>■ Uncertain</li><li>■ Good</li></ul>
<b>Factory setting</b>	Uncertain
<b>Additional information</b>	 Detailed description of the options available for selection: → <a href="#">33</a>

---

### Status diag. 835 (Process temp.)

---

<b>Navigation</b>	 Expert → System → Diagn. handling → Diagn. behavior → Status diag. 835 (11005)
<b>Description</b>	Use this function to change the status of diagnostic message <b>835 Process temp..</b>
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Bad</li><li>■ Uncertain</li><li>■ Good</li></ul>
<b>Factory setting</b>	Uncertain
<b>Additional information</b>	 Detailed description of the options available for selection: → <a href="#">33</a>

---

### Status diag. 862 (Partly filled)

---

<b>Navigation</b>	 Expert → System → Diagn. handling → Diagn. behavior → Status diag. 862 (11008)
<b>Description</b>	Use this function to change the status of diagnostic message <b>862 Partly filled.</b>

<b>Selection</b>	<ul style="list-style-type: none"><li>■ Bad</li><li>■ Uncertain</li><li>■ Good</li></ul>
<b>Factory setting</b>	Uncertain
<b>Additional information</b>	 Detailed description of the options available for selection: → <a href="#">33</a>

---

### Status diag. 912 (Medium inhomog.)

---

<b>Navigation</b>	  Expert → System → Diagn. handling → Diagn. behavior → Status diag. 912 (11009)
<b>Description</b>	Use this function to change the status of diagnostic message <b>912 Medium inhomog..</b>
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Bad</li><li>■ Uncertain</li><li>■ Good</li></ul>
<b>Factory setting</b>	Uncertain
<b>Additional information</b>	 Detailed description of the options available for selection: → <a href="#">33</a>

---

### Status diag. 913 (Medium unsuitab.)

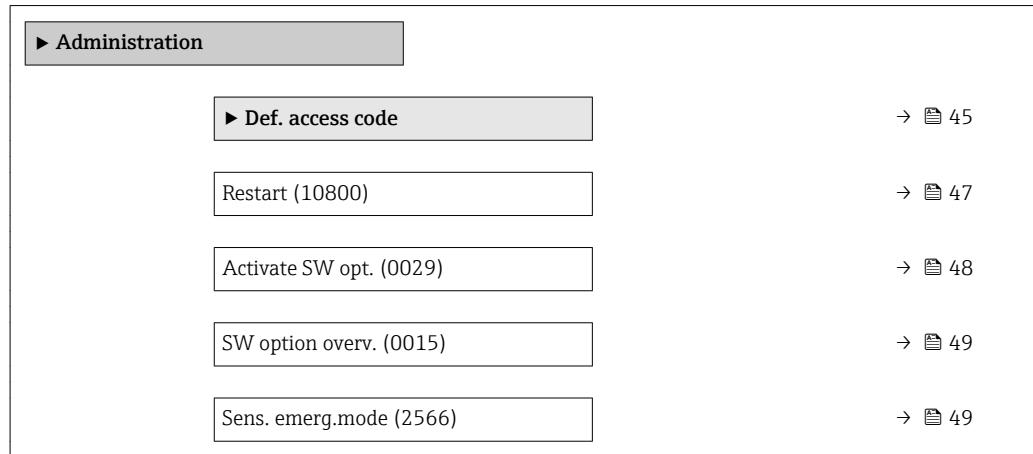
---

<b>Navigation</b>	  Expert → System → Diagn. handling → Diagn. behavior → Status diag. 913 (11010)
<b>Description</b>	Use this function to change the status of diagnostic message <b>913 Medium unsuitab..</b>
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Bad</li><li>■ Uncertain</li><li>■ Good</li></ul>
<b>Factory setting</b>	Uncertain
<b>Additional information</b>	 Detailed description of the options available for selection: → <a href="#">33</a>

### 3.1.4 "Administration" submenu

*Navigation*

Expert → System → Administration



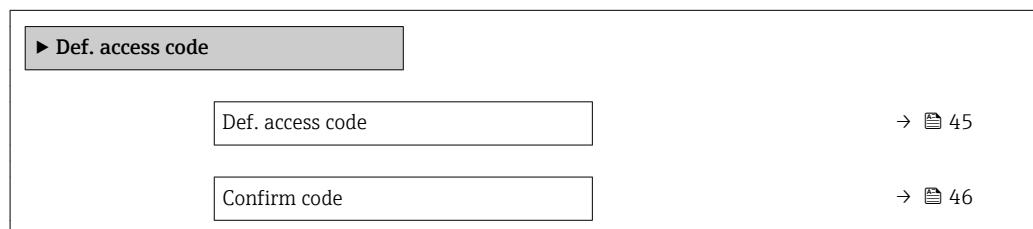
#### "Def. access code" wizard

**i** The **Def. access code** wizard (→ 45) is only available when operating via the local display.

If operating via the operating tool, the **Def. access code** parameter (→ 46) 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



<b>Navigation</b>	 Expert → System → Administration → Def. access code → Confirm code
<b>Description</b>	Enter the defined release code a second time to confirm the release code.
<b>User entry</b>	0 to 9 999
<b>Factory setting</b>	0

#### **Additional parameters in the "Administration" submenu**

---

## Def. access code



<b>Navigation</b>	 Expert → System → Administration → Def. access code
<b>Description</b>	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.
<b>User entry</b>	0 to 9 999
<b>Factory setting</b>	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 fact.defaults
- To delivery set.
- ENP restart
- To transd.def.
- Fact.DefaultBlks

**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 <b>Uninitialized</b> option.
Processor	The device is restarted.
To fact.defaults	The FOUNDATION Fieldbus parameters (FOUNDATION Fieldbus blocks) and the device parameters are reset to their factory setting.
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.
ENP restart	The parameters of the electronic name plate are reset. The device is restarted.

Options	Description
To transd.def.	Certain (measured-value specific) device parameters are reset. The parameters of the FOUNDATION Fieldbus blocks remain unchanged.
Fact.DefaultBlks	The extended FOUNDATION Fieldbus parameters (FOUNDATION Fieldbus blocks, schedule information) are reset to their factory settings.

## Service reset

### Navigation

Expert → System → Administration → Service reset (10749)

### Description

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

### Selection

- Uninitialized
- DeliverySett+MIB
- ENP restart

### Factory setting

Uninitialized

### Additional information

#### *Selection*

- 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

#### *Description*

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

#### *User entry*

To activate a software option subsequently, please contact your Endress+Hauser sales organization.

#### NOTE!

The activation code is linked to the serial number of the measuring device and varies according to the device and software option.

If an incorrect or invalid code is entered, this results in the loss of software options that have already been activated.

- Before you enter a new activation code, make a note of the current activation code .
- Enter the new activation code provided by Endress+Hauser when the new software option was ordered.
- Once the activation code has been entered, check if the new software option is displayed in the **SW option overv.** parameter (→ 49).
- ↳ The new software option is active if it is displayed.
- ↳ If the new software option is not displayed or all software options have been deleted, the code entered was either incorrect or invalid.
- If the code entered is incorrect or invalid, enter the old activation code .
- Have your Endress+Hauser sales organization check the new activation code remembering to specify the serial number or ask for the code again.

*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 (→ 49).

## SW option overv.

### Navigation

Expert → System → Administration → SW option overv. (0015)

### Description

Displays all the software options that are enabled in the device.

### User interface

- Extend. HistoROM
- HBT Monitoring
- HBT Verification

### Additional information

#### Description

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

#### "Extend. HistoROM" option

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

#### "HBT Verification" option and "HBT Monitoring" option

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

## Sens. emerg.mode



### Navigation

Expert → System → Administration → Sens. emerg.mode (2566)

### 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.

<b>Description</b>	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.
<b>Selection</b>	<ul style="list-style-type: none"> <li>▪ Cancel</li> <li>▪ Ok</li> </ul>
<b>Factory setting</b>	Cancel
<b>Additional information</b>	<p><i>Description</i></p> <p><b>i</b> 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 <b>F</b> (failure) to <b>M</b> (maintenance required), the diagnostic behavior changes from Alarm to Warning: <math>\Delta M</math>. The diagnostic message is output until the characteristics in the sensor data storage are again correct.</p> <p><b>i</b> Information on what is causing the diagnostic message, and remedy measures, can be viewed by pressing the <math>\mathbb{E}</math>-button.</p> <p><b>i</b> Information on status signals and diagnostic behavior: Operating Instructions about the device, "Diagnostic message" chapter</p>

## 3.2 "Sensor" submenu

Navigation

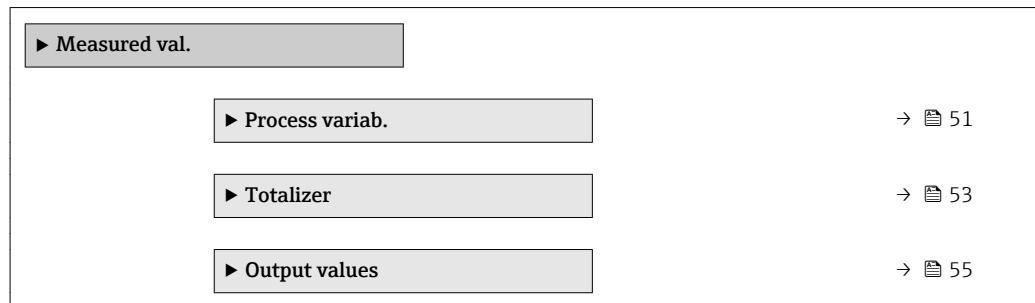
Expert → Sensor

<b>► Sensor</b>	
<b>► Measured val.</b>	→  51
<b>► System units</b>	→  57
<b>► Process param.</b>	→  65
<b>► Measurement mode</b>	→  73
<b>► Calculated value</b>	→  75
<b>► Sensor adjustm.</b>	→  78
<b>► Calibration</b>	→  84

### 3.2.1 "Measured val." submenu

*Navigation*

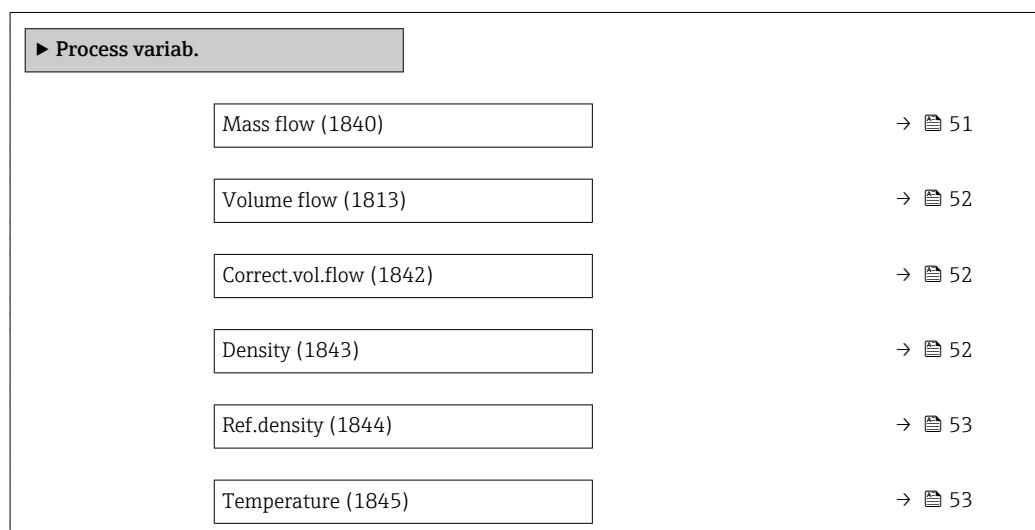
Expert → Sensor → Measured val.



#### "Process variab." submenu

*Navigation*

Expert → Sensor → Measured val. → Process variab.




---

## Mass flow

**Navigation**

Expert → Sensor → Measured val. → Process variab. → Mass flow (1840)

**Description**

Use this function to view the mass flow currently calculated.

**User interface**

Signed floating-point number

**Additional information**

*Dependency*

The unit is taken from the **Mass flow unit** parameter (→ 58)

## Volume flow

---

**Navigation**   Expert → Sensor → Measured val. → Process variab. → Volume flow (1813)

**Description** Use this function to view the volume flow currently measured.

**User interface** Signed floating-point number

**Additional information** *Description*

The volume flow is calculated from the measured mass flow and the measured density.

*Dependency*

 The unit is taken from the **Volume flow unit** parameter (→  59)

---

## Correct.vol.flow

---

**Navigation**   Expert → Sensor → Measured val. → Process variab. → Correct.vol.flow (1842)

**Description** Use this function to view the corrected volume flow currently calculated.

**User interface** Signed floating-point number

**Additional information** *Description*

The corrected volume flow is derived from the measured mass flow and the reference density of the fluid (density at reference temperature, measured or fixed entry).

*Dependency*

 The unit is taken from the **Cor.volflow unit** parameter (→  60)

---

## Density

---

**Navigation**   Expert → Sensor → Measured val. → Process variab. → Density (1843)

**Description** Use this function to view the currently measured density or its specific gravity.

**User interface** Positive floating-point number

**Additional information** *Dependency*

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

**Ref.density**

<b>Navigation</b>	Diagram: Expert → Sensor → Measured val. → Process variab. → Ref.density (1844)
<b>Description</b>	Displays the density at the reference temperature.
<b>User interface</b>	Positive floating-point number
<b>Additional information</b>	<p><i>Description</i> The reference density displayed is calculated using the measured density.</p> <p><i>Dependency</i>  The unit is taken from the <b>Ref. dens. unit</b> parameter (→ <a href="#">62</a>)</p>

**Temperature**

<b>Navigation</b>	Diagram: Expert → Sensor → Measured val. → Process variab. → Temperature (1845)
<b>Description</b>	Use this function to view the temperature currently measured.
<b>User interface</b>	Positive floating-point number
<b>Additional information</b>	<p><i>Dependency</i>  The unit is taken from the <b>Temperature unit</b> parameter (→ <a href="#">63</a>)</p>

**"Totalizer" submenu**

*Navigation*      Diagram: Expert → Sensor → Measured val. → Totalizer

 <b>Totalizer</b>					
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Totalizer val. 1 to n (0911-1 to n)</td> <td style="padding: 2px; text-align: right;">→ <a href="#">54</a></td> </tr> <tr> <td style="padding: 2px;">Tot. overflow 1 to n (0910-1 to n)</td> <td style="padding: 2px; text-align: right;">→ <a href="#">54</a></td> </tr> </table>	Totalizer val. 1 to n (0911-1 to n)	→ <a href="#">54</a>	Tot. overflow 1 to n (0910-1 to n)	→ <a href="#">54</a>	
Totalizer val. 1 to n (0911-1 to n)	→ <a href="#">54</a>				
Tot. overflow 1 to n (0910-1 to n)	→ <a href="#">54</a>				

**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 (→ 224) of the **Totalizer 1 to n** submenu:

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

**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 (→ 227).

*User interface*

The value of the process variable totalized since measuring began can be positive or negative. This depends on the settings in the **Operation mode** parameter (→ 226).

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 225).

*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 m<sup>3</sup>
- Value in the **Tot. overflow 1** parameter: 1 · 10<sup>7</sup> (1 overflow) = 10 000 000 [m<sup>3</sup>]
- Current totalizer reading: 11 968 457 m<sup>3</sup>

**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 (→ 224) of the **Totalizer 1 to n** submenu:

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

**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 (→ [225](#)).

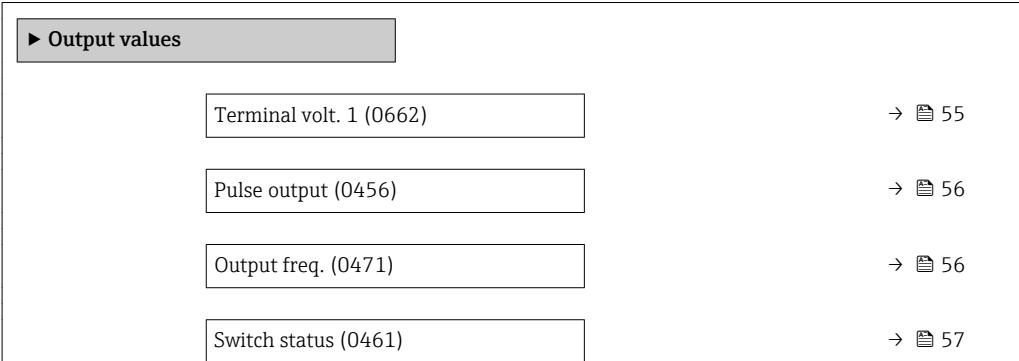
*Example*

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 m<sup>3</sup>
- Value in the **Tot. overflow 1** parameter:  $2 \cdot 10^7$  (2 overflows) = 20 000 000 [m<sup>3</sup>]
- Current totalizer reading: 21 968 457 m<sup>3</sup>

**"Output values" submenu***Navigation*

 Expert → Sensor → Measured val. → Output values



Output values	
Terminal volt. 1 (0662)	→ <a href="#">55</a>
Pulse output (0456)	→ <a href="#">56</a>
Output freq. (0471)	→ <a href="#">56</a>
Switch status (0461)	→ <a href="#">57</a>

**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 (→ [89](#)) parameter.

### Description

Displays the pulse frequency currently output.

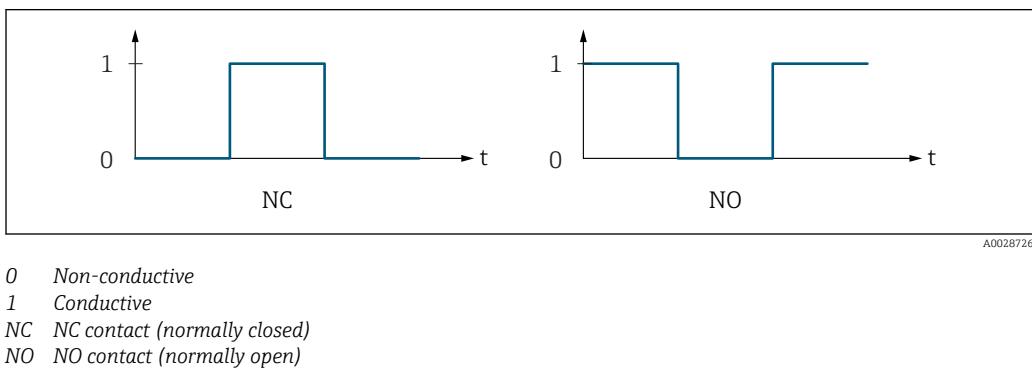
### User interface

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 (→ [91](#)) and **Pulse width** parameter (→ [91](#)) can be used to define the value (i.e. the measured value amount that corresponds to a pulse) and the duration of the pulse.



The output behavior can be reversed via the **Invert outp.sig.** parameter (→ [108](#)) 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 (→ [93](#))) can be configured.

## Output freq.

### Navigation

Expert → Sensor → Measured val. → Output values → Output freq. (0471)

### Prerequisite

In the **Operating mode** parameter (→ [89](#)), the **Frequency** option is selected.

### Description

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

### User interface

0 to 1 250 Hz

**Switch status****Navigation**

 Expert → Sensor → Measured val. → Output values → Switch status (0461)

**Prerequisite**

The **Switch** option is selected in the **Operating mode** parameter (→ 89).

**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.

**3.2.2 "System units" submenu***Navigation*

 Expert → Sensor → System units

► System units	
Mass flow unit (0554)	→ 58
Mass unit (0574)	→ 58
Volume flow unit (0553)	→ 59
Volume unit (0563)	→ 60
Cor.volflow unit (0558)	→ 60
Corr. vol. unit (0575)	→ 61
Density unit (0555)	→ 62
Ref. dens. unit (0556)	→ 62
Temperature unit (0557)	→ 63
Length unit (0551)	→ 63
Pressure unit (0564)	→ 64
Date/time format (2812)	→ 64

**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 (→ 51)

*Selection*

For an explanation of the abbreviated units: → 267

**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: → 267

**Volume flow unit****Navigation**

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

**Description**

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

**Selection***SI units*

- cm<sup>3</sup>/s
- cm<sup>3</sup>/min
- cm<sup>3</sup>/h
- cm<sup>3</sup>/d
- dm<sup>3</sup>/s
- dm<sup>3</sup>/min
- dm<sup>3</sup>/h
- dm<sup>3</sup>/d
- m<sup>3</sup>/s
- m<sup>3</sup>/min
- m<sup>3</sup>/h
- m<sup>3</sup>/d
- ml/s
- ml/min
- ml/h
- ml/d
- l/s
- l/min
- l/h
- l/d

*US units*

- af/s
- af/min
- af/h
- af/d
- ft<sup>3</sup>/s
- ft<sup>3</sup>/min
- ft<sup>3</sup>/h
- ft<sup>3</sup>/d
- fl oz/s (us)
- fl oz/min (us)
- fl oz/h (us)
- fl oz/d (us)
- gal/s (us)
- gal/min (us)
- gal/h (us)
- gal/d (us)
- kgal/s (us)
- kgal/min (us)
- kgal/h (us)
- kgal/d (us)
- Mgal/s (us)
- Mgal/min (us)
- Mgal/h (us)
- Mgal/d (us)
- bbl/s (us;liq.)
- bbl/min (us;liq.)
- bbl/h (us;liq.)
- bbl/d (us;liq.)
- bbl/s (us;beer)
- bbl/min (us;beer)
- bbl/h (us;beer)
- bbl/d (us;beer)
- bbl/s (us;oil)
- bbl/min (us;oil)
- bbl/h (us;oil)
- bbl/d (us;oil)
- bbl/s (us;tank)
- bbl/min (us;tank)
- bbl/h (us;tank)
- bbl/d (us;tank)

*Imperial units*

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

*Other units*

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

**Factory setting**

Country-specific:

- l/h
- gal/min (us)

**Additional information***Result*

The selected unit applies for:

**Volume flow** parameter (→  52)

*Selection*

 For an explanation of the abbreviated units: →  267

---

**Volume unit****Navigation**

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

**Description**

Use this function to select the unit for the volume.

**Selection***SI units*

- cm<sup>3</sup>
- dm<sup>3</sup>
- m<sup>3</sup>
- ml
- l

*US units*

- af
- ft<sup>3</sup>
- 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;oil)

*Other units*

bbl (imp;beer)

**Factory setting**

Country-specific:

- 1 (DN > 150 (6"): m<sup>3</sup>)
- gal (us)

**Additional information***Selection*

 For an explanation of the abbreviated units: →  267

---

**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.

<b>Selection</b>	<i>SI units</i>	<i>US units</i>
	■ Nl/s	■ Sft <sup>3</sup> /s
	■ Nl/min	■ Sft <sup>3</sup> /min
	■ Nl/h	■ Sft <sup>3</sup> /h
	■ Nl/d	■ Sft <sup>3</sup> /d
	■ Nm <sup>3</sup> /s	■ Sgal/s (us)
	■ Nm <sup>3</sup> /min	■ Sgal/min (us)
	■ Nm <sup>3</sup> /h	■ Sgal/h (us)
	■ Nm <sup>3</sup> /d	■ Sgal/d (us)
	■ Sm <sup>3</sup> /s	■ Sbbl/s (us;liq.)
	■ Sm <sup>3</sup> /min	■ Sbbl/min (us;liq.)
	■ Sm <sup>3</sup> /h	■ Sbbl/h (us;liq.)
	■ Sm <sup>3</sup> /d	■ Sbbl/d (us;liq.)
		■ Sgal/s (imp)
		■ Sgal/min (imp)
		■ Sgal/h (imp)
		■ Sgal/d (imp)
<b>Factory setting</b>	Country-specific:	
	■ Nl/h	
	■ Sft <sup>3</sup> /min	
<b>Additional information</b>	<i>Result</i>	
	The selected unit applies for: <b>Correct.vol.flow</b> parameter (→  52)	
	<i>Selection</i>	
	 For an explanation of the abbreviated units: →  267	

---

**Corr. vol. unit****Navigation**   Expert → Sensor → System units → Corr. vol. unit (0575)**Description** Use this function to select the unit for the corrected volume.

<b>Selection</b>	<i>SI units</i>	<i>US units</i>	<i>Imperial units</i>
	■ Nl	■ Sft <sup>3</sup>	Sgal (imp)
	■ Nm <sup>3</sup>	■ Sgal (us)	
	■ Sm <sup>3</sup>	■ Sbbl (us;liq.)	

<b>Factory setting</b>	Country-specific:
	■ Nl

**Additional information** *Selection* For an explanation of the abbreviated units: →  267

**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/cm<sup>3</sup>
- g/m<sup>3</sup>
- kg/dm<sup>3</sup>
- kg/l
- kg/m<sup>3</sup>
- SD4°C
- SD15°C
- SD20°C
- SG4°C
- SG15°C
- SG20°C

*US units*

- lb/ft<sup>3</sup>
- lb/gal (us)
- lb/bbl (us;liq.)
- lb/bbl (us;beer)
- lb/bbl (us;oil)
- lb/bbl (us;tank)

*Imperial units*

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

**Factory setting**

Country-specific:

- kg/l
- lb/ft<sup>3</sup>

**Additional information***Result*

The selected unit applies for:

**Density** parameter (→ 52)

*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: → 267

**Ref. dens. unit****Navigation**

Expert → Sensor → System units → Ref. dens. unit (0556)

**Description**

Use this function to select the unit for the reference density.

**Selection***SI units*

- kg/Nm<sup>3</sup>
- kg/Nl
- g/Scm<sup>3</sup>
- kg/Sm<sup>3</sup>

*US units*

lb/Sft<sup>3</sup>

<b>Factory setting</b>	Country-dependent ■ kg/Nl ■ lb/Sft <sup>3</sup>
------------------------	---

<b>Additional information</b>	<i>Result</i>  The selected unit applies for: ■ <b>Fix ref.density</b> parameter (→ 76) ■ <b>Ref.density</b> parameter (→ 53)
-------------------------------	---

*Selection*

 For an explanation of the abbreviated units: → 267

**Temperature unit**

<b>Navigation</b>	 Expert → Sensor → System units → Temperature unit (0557)
-------------------	--

<b>Description</b>	Use this function to select the unit for the temperature.
--------------------	---

<b>Selection</b>	<i>SI units</i>	<i>US units</i>
	■ °C ■ K	■ °F ■ °R

<b>Factory setting</b>	Country-specific: ■ °C ■ °F
------------------------	-----------------------------------

<b>Additional information</b>	<i>Result</i>  The selected unit applies for: ■ <b>Minimum value</b> parameter (→ 250) ■ <b>Maximum value</b> parameter (→ 251) ■ <b>Maximum value</b> parameter (→ 251) ■ <b>Minimum value</b> parameter (→ 251) ■ <b>Average value</b> parameter (→ 252) ■ <b>Minimum value</b> parameter (→ 252) ■ <b>Maximum value</b> parameter (→ 253) ■ <b>Minimum value</b> parameter (→ 253) ■ <b>Maximum value</b> parameter (→ 253) ■ <b>Ref. temperature</b> parameter (→ 76)
-------------------------------	---

*Selection*

 For an explanation of the abbreviated units: → 267

**Length unit**

<b>Navigation</b>	 Expert → Sensor → System units → Length unit (0551)
-------------------	---

<b>Description</b>	Use this function to select the unit of length for the nominal diameter.
--------------------	--

Selection	<i>SI units</i>	<i>US units</i>
	▪ m	▪ ft
	▪ mm	▪ in
	▪ µm	

Factory setting	Country-specific:
	▪ mm
	▪ in

Additional information	<i>Selection</i>
	 For an explanation of the abbreviated units: → <a href="#">267</a>

---

## Pressure unit



**Navigation**  Expert → Sensor → System units → Pressure unit (0564)

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

Selection	<i>SI units</i>	<i>US units</i>
	▪ Pa a	▪ psi a
	▪ kPa a	▪ psi g
	▪ MPa a	
	▪ bar	
	▪ Pa g	
	▪ kPa g	
	▪ MPa g	
	▪ bar g	

Factory setting	Country-specific:
	▪ bar a
	▪ psi a

Additional information	<i>Selection</i>
	 For an explanation of the abbreviated units: → <a href="#">267</a>

---

## 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: → [267](#)

### 3.2.3 "Process param." submenu

*Navigation*

Expert → Sensor → Process param.

► Process param.	
Flow damping (1801)	→ <a href="#">65</a>
Density damping (1808)	→ <a href="#">66</a>
Flow override (1839)	→ <a href="#">66</a>
Temp. damping (1807)	→ <a href="#">67</a>
► Low flow cut off	→ <a href="#">67</a>
► Partial pipe det	→ <a href="#">70</a>

## Flow damping

**Navigation**

Expert → Sensor → Process param. → Flow damping (1801)

**Description**

Use this function to enter a value for flow damping. Reduction of the variability of the flow measured value (in relation to interference). For this purpose, the depth of the flow filter is adjusted: when the filter setting increases, the reaction time of the device also increases.

**User entry**

0 to 999.9 s

**Factory setting**

0 s

**Additional information***User entry*

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

*Result*

The damping affects the following variables of the device:

- Outputs → [87](#)
- Low flow cut off → [67](#)
- Totalizers → [224](#)

**Density damping****Navigation**

Expert → Sensor → Process param. → Density damping (1808)

**Description**

Use this function to enter a value for density damping. Use this parameter to reduce the sensitivity of the measuring signal to fluctuations in the density of the medium. For this purpose, the depth of the density filter is adjusted. The damping is suitable for non-homogeneous liquids, for example.

**User entry**

0 to 999.9 s

**Factory setting**

0 s

**Additional information**

*Result*

- i** The damping has an effect on the following process variables:
- Density (→ 52)
  - Ref.density (→ 53)
  - Volume flow (→ 52)
  - Correct.vol.flow (→ 52)

**Flow override****Navigation**

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

**Description**

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

**Selection**

- Off
- On

**Factory setting**

Off

**Additional information**

*Result*

- i** This setting affects all the functions and outputs of the measuring device.

*Description*

**Flow override is active**

- The diagnostic message diagnostic message **△C453 Flow override** is displayed.
- Output values
  - Output: value at zero flow
  - Temperature: continues to be output
  - Totalizers 1-3: stop being totalized

- i** The **Flow override** option can also be activated in the **Status input** submenu: **Assign stat.inp.** parameter.

**Temp. damping****Navigation**

Expert → Sensor → Process param. → Temp. damping (1807)

**Description**

Use this function to enter a value for temperature damping. Use this parameter to reduce the sensitivity of the temperature measuring signal to interference peaks. For this purpose, the temperature filter is adjusted.

**User entry** 0 to 999.9 s

**Factory setting** 0 s

**Additional information** *Result*

- In addition to the temperature, the damping has an effect on the following temperature-dependent process variables:
- Ref.density (→ [53](#))
  - Correct.vol.flow (→ [52](#))

**"Low flow cut off" submenu***Navigation*

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

▶ Low flow cut off	
Assign variable (1837)	→ <a href="#">67</a>
On value (1805)	→ <a href="#">68</a>
Off value (1804)	→ <a href="#">68</a>
Pres. shock sup. (1806)	→ <a href="#">69</a>

**Assign variable****Navigation**

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

**Description**

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

**Selection**

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

**Factory setting** Mass flow

**On value****Navigation**

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

**Prerequisite**

A process variable is selected in the **Assign variable** parameter (→ [67](#)).

**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 → [68](#).

**User entry**

Positive floating-point number

**Factory setting**

Depends on country and nominal diameter → [264](#)

**Additional information***Dependency*

The unit depends on the process variable selected in the **Assign variable** parameter (→ [67](#)).

**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 (→ [67](#)).

**Description**

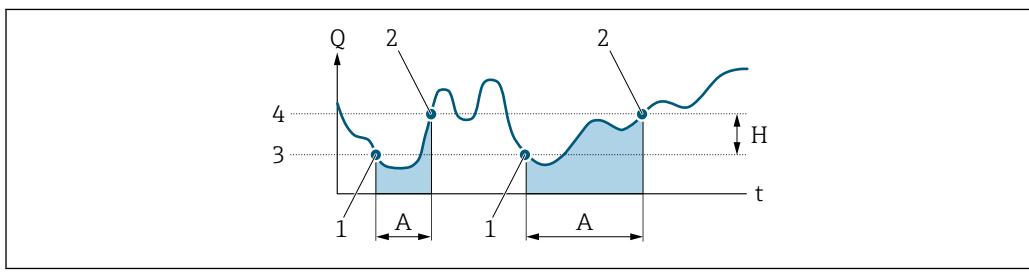
Use this function to enter a switch-off value for low flow cut off. The off value is entered as a positive hysteresis from the on value → [68](#).

**User entry**

0 to 100.0 %

**Factory setting**

50 %

**Additional information***Example*

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

**Pres. shock sup.**

**Navigation** Expert → Sensor → Process param. → Low flow cut off → Pres. shock sup. (1806)

**Prerequisite** A process variable is selected in the **Assign variable** parameter (→ 67).

**Description** Use this function to enter the time interval for signal suppression (= active pressure shock suppression).

**User entry** 0 to 100 s

**Factory setting** 0 s

**Additional information** *Description*

**Pressure shock suppression is enabled**

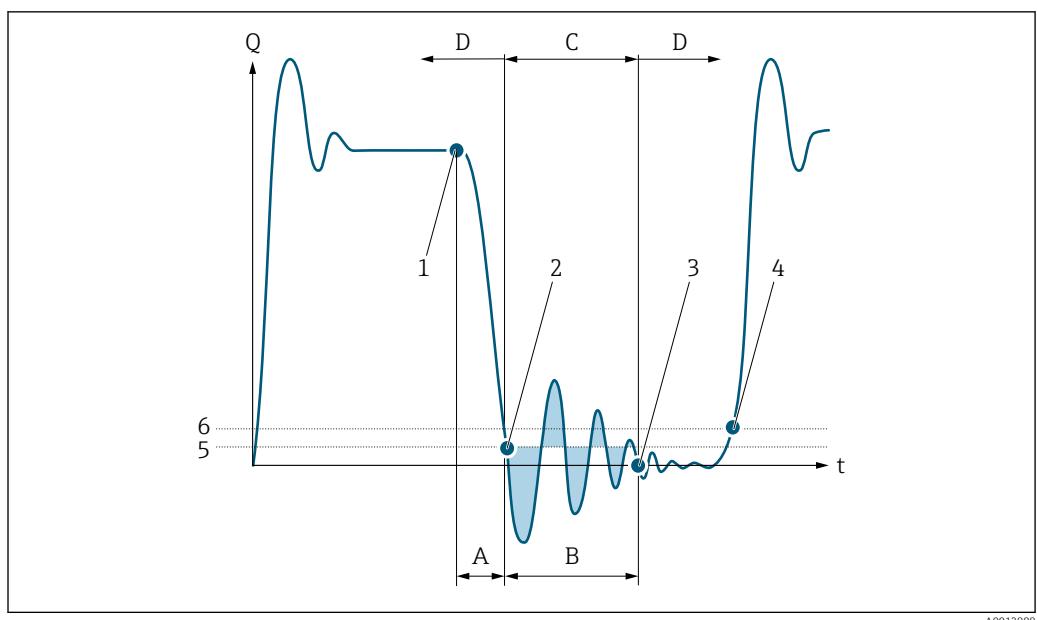
- Prerequisite:
  - Flow rate < on-value of low flow cut off  
or
  - Changing the flow direction
- Output values
  - Flow displayed: 0
  - Totalizer: the totalizers are pegged at the last correct value

**Pressure shock suppression is disabled**

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

**Example**

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



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

### "Partial pipe det" submenu

Navigation

Expert → Sensor → Process param. → Partial pipe det

▶ Partial pipe det	
Assign variable (1833)	→ 71
Low value (1834)	→ 71
High value (1835)	→ 71
Response time (1836)	→ 72
Max. damping (2492)	→ 72

**Assign variable**

<b>Navigation</b>	Expert → Sensor → Process param. → Partial pipe det → Assign variable (1833)
<b>Description</b>	Use this function to select a process variable to detect empty or partially filled measuring tubes. For gas measurement: Deactivate monitoring due to low gas density.
<b>Selection</b>	<ul style="list-style-type: none"> <li>■ Off</li> <li>■ Density</li> <li>■ Ref.density</li> </ul>
<b>Factory setting</b>	Off

**Low value**

<b>Navigation</b>	Expert → Sensor → Process param. → Partial pipe det → Low value (1834)
<b>Prerequisite</b>	One of the following options is selected in the <b>Assign variable</b> parameter (→ <a href="#">71</a> ): <ul style="list-style-type: none"> <li>■ Density</li> <li>■ Ref.density</li> </ul>
<b>Description</b>	Use this function to enter a lower limit value to enable detection of empty or partially filled measuring tubes. If the measured density falls below this value, monitoring is enabled.
<b>User entry</b>	Positive floating-point number
<b>Factory setting</b>	200
<b>Additional information</b>	<p><i>User entry</i></p> <p>The lower limit value must be less than the upper limit value that is specified in the <b>High value</b> parameter (→ <a href="#">71</a>).</p> <p> The unit depends on the process variable selected in the <b>Assign variable</b> parameter (→ <a href="#">71</a>).</p>

**High value**

<b>Navigation</b>	Expert → Sensor → Process param. → Partial pipe det → High value (1835)
<b>Prerequisite</b>	One of the following options is selected in the <b>Assign variable</b> parameter (→ <a href="#">71</a> ): <ul style="list-style-type: none"> <li>■ Density</li> <li>■ Ref.density</li> </ul>
<b>Description</b>	Use this function to enter an upper limit value to enable detection of empty or partially filled measuring tubes. If the measured density exceeds this value, detection is enabled.
<b>User entry</b>	Signed floating-point number
<b>Factory setting</b>	6 000

**Additional information***User entry*

The upper limit value must be greater than the lower limit value, that is specified in the **Low value** parameter (→ [71](#)).

 The unit depends on the process variable selected in the **Assign variable** parameter (→ [71](#)).

**Response time****Navigation**

 Expert → Sensor → Process param. → Partial pipe det → Response time (1836)

**Prerequisite**

One of the following options is selected in the **Assign variable** parameter (→ [71](#)):

- Density
- Ref.density

**Description**

Use this parameter to enter the time period until the diagnostic message **△S862 Partly filled** appears in the case of a partially filled or empty measuring tube.

**User entry**

0 to 100 s

**Factory setting**

1 s

**Max. damping****Navigation**

 Expert → Sensor → Process param. → Partial pipe det → Max. damping (2492)

**Prerequisite**

One of the following options is selected in the **Assign variable** parameter (→ [71](#)):

- Density
- Ref.density

**Description**

Use this function to enter a damping value to enable detection of empty or partially filled measuring tubes.

**User entry**

Positive floating-point number

**Factory setting**

0

**Additional information***Description*

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

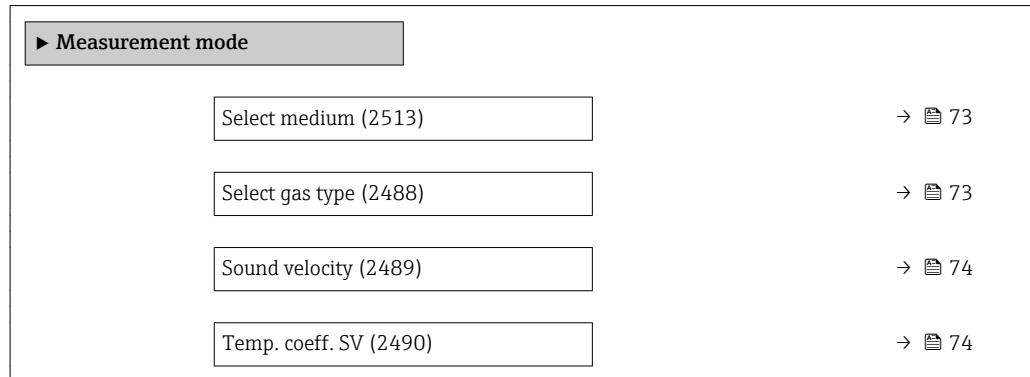
*User entry*

The parameter is enabled only if the input value is greater than **0**.

### 3.2.4 "Measurement mode" submenu

*Navigation*

Expert → Sensor → Measurement mode



#### Select medium



**Navigation**

Expert → Sensor → Measurement mode → Select medium (2513)

**Description**

Use this function to select the type of medium.

**Selection**

- Liquid
- Gas

**Factory setting**

Liquid

#### Select gas type



**Navigation**

Expert → Sensor → Measurement mode → Select gas type (2488)

**Prerequisite**

In the **Select medium** parameter (→ 73) the **Gas** option is selected.

**Description**

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

**Selection**

- Air
- Ammonia NH<sub>3</sub>
- Neon Ne
- Argon Ar
- Sulf. hex.fl.SF<sub>6</sub>
- Oxygen O<sub>2</sub>
- Ozone O<sub>3</sub>
- Nitrog. ox. NO<sub>x</sub>
- Nitrogen N<sub>2</sub>
- Nitrous ox. N<sub>2</sub>O
- Methane CH<sub>4</sub>
- Hydrogen H<sub>2</sub>
- Helium He
- Hydrog.chlor.HCl
- Hydrog.sulf. H<sub>2</sub>S

- Ethylene C2H4
- Carbon diox. CO2
- Carbon monox. CO
- Chlorine Cl2
- Butane C4H10
- Propane C3H8
- Propylene C3H6
- Ethane C2H6
- Others
- Krypton Kr
- Xenon Xe
- Vinyl Chloride
- Sulfur diox. SO2

**Factory setting**

Air

**Sound velocity****Navigation**

Expert → Sensor → Measurement mode → Sound velocity (2489)

**Prerequisite**In the **Select gas type** parameter (→ 73) the **Others** option is selected.**Description**

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

**User entry**

1 to 99 999.9999 m/s

**Factory setting**

331.5 m/s

**Additional information***User entry*

For conversion: 1 m/s = 3.281 ft/s

**Temp. coeff. SV****Navigation**

Expert → Sensor → Measurement mode → Temp. coeff. SV (2490)

**Prerequisite**In the **Select gas type** parameter (→ 73) the **Others** option is selected.**Description**

Use this function to enter the temperature coefficient of the sound velocity of the desired gas.

**User entry**

Positive floating-point number

**Factory setting**

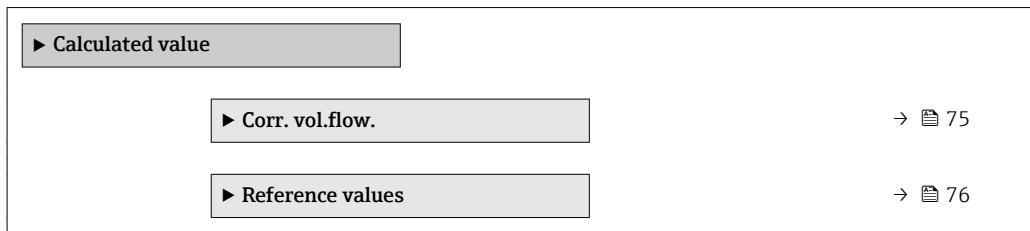
0.61 (m/s)/K

**Additional information***User entry*For conversion:  $T [K] = 0.555 \times T [^{\circ}F]$

### 3.2.5 "Calculated value" submenu

*Navigation*

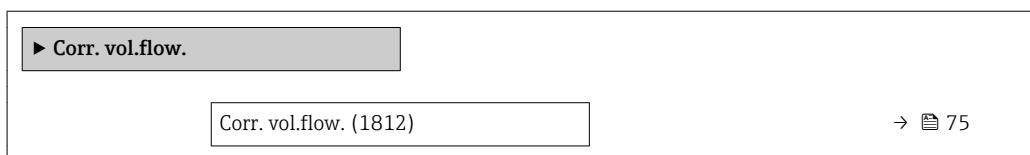
Expert → Sensor → Calculated value



#### "Corr. vol.flow." submenu

*Navigation*

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




---

## Corr. vol.flow.

### Navigation

Expert → Sensor → Calculated value → Corr. vol.flow. → Corr. vol.flow. (1812)

### Description

Use this function to select the reference density for calculating the corrected volume flow.

### Selection

- Fix ref.density
- Calc ref density

### Factory setting

Calc ref density

### Additional information

#### *Selection*

The **Ref. dens API 53** option is suitable only for applications involving LPG<sup>2)</sup>, where the flow rate is measured on the basis of the corrected volume flow.

Selecting this option means that the reference density is used, taking into account the values in table 53 E of API MPMS section 11.2. Temperature measurement (measured internally or read into the device from an external source) and density measurement take place during operation while the medium is flowing. The mass flow is divided by the reference density to give the corrected volume flow and is issued as an output signal.

---

2) liquefied petroleum gas

**"Reference values" submenu***Navigation* Expert → Sensor → Calculated value → Reference values

 ► Reference values	
Fix ref.density (1814)	→  76
Ref. temperature (1816)	→  76
Linear exp coeff (1817)	→  77
Square exp coeff (1818)	→  77

**Fix ref.density****Navigation** Expert → Sensor → Calculated value → Reference values → Fix ref.density (1814)**Prerequisite**

The **Fix ref.density** option is selected in the **Corr. vol.flow.** parameter (→  75) parameter.

**Description**

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

**User entry**

Positive floating-point number

**Factory setting**

1 kg/Nl

**Additional information***Dependency*

 The unit is taken from the **Ref. dens. unit** parameter (→  62)

**Ref. temperature****Navigation** Expert → Sensor → Calculated value → Reference values → Ref. temperature (1816)**Prerequisite**

The **Calc ref density** option is selected in the **Corr. vol.flow.** parameter (→  75) parameter.

**Description**

Use this function to enter a reference temperature for calculating the reference density.

**User entry**

-273.15 to 99 999 °C

**Factory setting**

Country-specific:

- +20 °C
- +68 °F

**Additional information***Dependency*

 The unit is taken from the **Temperature unit** parameter (→ [63](#))

*Reference density calculation*

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

A0023403

- $\rho_N$ : reference density
- $\rho$ : fluid density currently measured
- $t$ : fluid temperature currently measured
- $t_N$ : reference temperature at which the reference density is calculated (e.g. 20 °C)
- $\Delta t$ :  $t - t_N$
- $\alpha$ : linear expansion coefficient of the fluid, unit = [1/K]; K = Kelvin
- $\beta$ : square expansion coefficient of the fluid, unit = [1/K<sup>2</sup>]

**Linear exp coeff****Navigation**

 Expert → Sensor → Calculated value → Reference values → Linear exp coeff (1817)

**Prerequisite**

The **Calc ref density** option is selected in the **Corr. vol.flow.** parameter (→ [75](#)) parameter.

**Description**

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

**User entry**

Signed floating-point number

**Factory setting**

0.0

**Square exp coeff****Navigation**

 Expert → Sensor → Calculated value → Reference values → Square exp coeff (1818)

**Prerequisite**

The **Calc ref density** option is selected in the **Corr. vol.flow.** parameter (→ [75](#)) parameter.

**Description**

For fluid with a non-linear expansion pattern: use this function to enter a quadratic, fluid-specific expansion coefficient for calculating the reference density.

**User entry**

Signed floating-point number

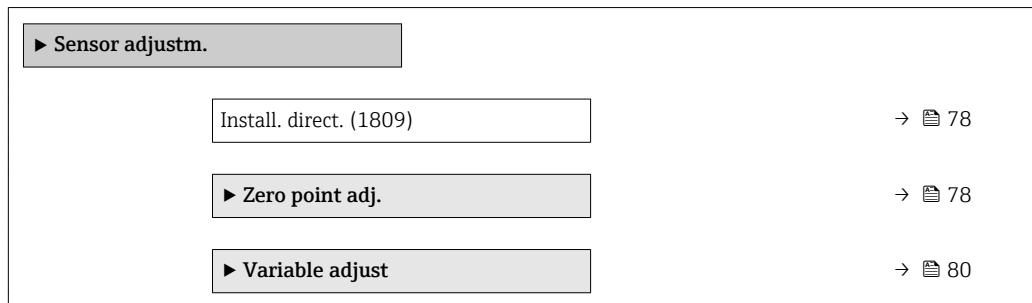
**Factory setting**

0.0

### 3.2.6 "Sensor adjustm." submenu

Navigation

Expert → Sensor → Sensor adjustm.



#### Install. direct.



Navigation

Expert → Sensor → Sensor adjustm. → Install. direct. (1809)

Description

Use this function to change the sign of the medium flow direction.

Selection

- In arrow direct.
- Against arrow

Factory setting

In arrow direct.

Additional information

Description

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

#### "Zero point adj." submenu



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

*Navigation*

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

**► Zero point adj.**

Zero point adj. (2587)

→ 79

Adj. in progress (2588)

→ 79

**Zero point adj.****Navigation**

Expert → Sensor → Sensor adjustm. → Zero point adj. → Zero point adj. (2587)

**Description**

Use this parameter to start automatic zero point adjustment.

**Selection**

- Cancel
- Busy
- Zero adjust fail
- Start

**Factory setting**

Cancel

**Additional information***Description*

During calibration, the **Busy** option and the **Adj. in progress** parameter (→ 79) appear beneath the parameter. If the sensor is defective or flow is present, the **Zero adjust fail** option appears on the display. At the same time, this event is entered in the event logbook (event list) → 237.

The new zero point value determined by the measuring device is displayed in the **Zero point** parameter (→ 85).

Information on the procedure for performing zero point adjustment is provided in the Operating Instructions for the device.

*Description*

- Cancel  
If zero point adjustment has failed, select this option to cancel zero point adjustment.
- Busy  
Is displayed during zero point adjustment.
- Zero adjust fail  
Is displayed if zero point adjustment has failed.
- Start  
Select this option to start zero point adjustment.

**Adj. in progress****Navigation**

Expert → Sensor → Sensor adjustm. → Zero point adj. → Adj. in progress (2588)

**Prerequisite**The **Start** option is selected in the **Zero point adj.** parameter (→ 79).

**Description** Displays the current status of the zero point adjustment via a progress bar.

**User interface** 0 to 100 %

### "Variable adjust" submenu

*Navigation*  Expert → Sensor → Sensor adjustm. → Variable adjust

<b>► Variable adjust</b>	
Mass flow offset (1820)	→  80
Mass flow factor (1819)	→  81
Vol. flow offset (1815)	→  81
Vol. flow factor (1821)	→  81
Corr. vol offset (1824)	→  82
Corr. vol factor (1823)	→  82
Density offset (1826)	→  82
Density factor (1825)	→  83
Ref.dens. offset (1828)	→  83
Ref.dens. factor (1827)	→  83
Temp. offset (1830)	→  83
Temp. factor (1829)	→  84

---

### Mass flow offset



*Navigation*  Expert → Sensor → Sensor adjustm. → Variable adjust → Mass flow offset (1820)

**Description** Use this function to enter the zero point shift for the mass flow trim. The mass flow unit on which the shift is based is 1 kg/s.

**User entry** Signed floating-point number

**Factory setting** 0 kg/s

**Additional information***Description*

Corrected value = (factor × value) + offset

**Mass flow factor****Navigation**

Expert → Sensor → Sensor adjustm. → Variable adjust → Mass flow factor (1819)

**Description**

Use this function to enter a quantity factor (without time) for the mass flow. This factor refers in each case to the mass flow of 1 kg/s.

**User entry**

Positive floating-point number

**Factory setting**

1

**Vol. flow offset****Navigation**

Expert → Sensor → Sensor adjustm. → Variable adjust → Vol. flow offset (1815)

**Description**Use this function to enter the zero point shift for the volume flow trim. The volume flow unit on which the shift is based is 1 m<sup>3</sup>/s.**User entry**

Signed floating-point number

**Factory setting**0 m<sup>3</sup>/s**Additional information***Description*

Corrected value = (factor × value) + offset

**Vol. flow factor****Navigation**

Expert → Sensor → Sensor adjustm. → Variable adjust → Vol. flow factor (1821)

**Description**Use this function to enter a quantity factor (without time) for the volume flow. This factor refers in each case to the volume of 1 m<sup>3</sup>/s.**User entry**

Positive floating-point number

**Factory setting**

1

**Corr. vol offset**

<b>Navigation</b>	Expert → Sensor → Sensor adjustm. → Variable adjust → Corr. vol offset (1824)
<b>Description</b>	Use this function to enter the zero point shift for the corrected volume flow trim. The corrected volume flow unit on which the shift is based is 1 Nm <sup>3</sup> /s.
<b>User entry</b>	Signed floating-point number
<b>Factory setting</b>	0 Nm <sup>3</sup> /s
<b>Additional information</b>	<i>Description</i> Corrected value = (factor × value) + offset

**Corr. vol factor**

<b>Navigation</b>	Expert → Sensor → Sensor adjustm. → Variable adjust → Corr. vol factor (1823)
<b>Description</b>	Use this function to enter a quantity factor (without time) for the corrected volume flow. This factor refers in each case to the standard volume of 1 Nm <sup>3</sup> /s.
<b>User entry</b>	Positive floating-point number
<b>Factory setting</b>	1

**Density offset**

<b>Navigation</b>	Expert → Sensor → Sensor adjustm. → Variable adjust → Density offset (1826)
<b>Description</b>	Use this parameter to enter the zero point shift for the density trim. The density unit on which the shift is based is 1 kg/m <sup>3</sup> .
<b>User entry</b>	Signed floating-point number
<b>Factory setting</b>	0 kg/m <sup>3</sup>
<b>Additional information</b>	<i>Description</i> Corrected value = (factor × value) + offset

---

**Density factor**

<b>Navigation</b>	Expert → Sensor → Sensor adjustm. → Variable adjust → Density factor (1825)
<b>Description</b>	Use this function to enter a quantity factor for the density. This factor refers in each case to the density of 1 kg/m <sup>3</sup> .
<b>User entry</b>	Positive floating-point number
<b>Factory setting</b>	1

---

**Ref.dens. offset**

<b>Navigation</b>	Expert → Sensor → Sensor adjustm. → Variable adjust → Ref.dens. offset (1828)
<b>Description</b>	Use this parameter to enter the zero point shift for the reference density trim. The standard density unit on which the shift is based is 1 kg/Nm <sup>3</sup> .
<b>User entry</b>	Signed floating-point number
<b>Factory setting</b>	0 kg/Nm <sup>3</sup>
<b>Additional information</b>	<i>Description</i> Corrected value = (factor × value) + offset

---

**Ref.dens. factor**

<b>Navigation</b>	Expert → Sensor → Sensor adjustm. → Variable adjust → Ref.dens. factor (1827)
<b>Description</b>	Use this function to enter a quantity factor for the reference density. This factor refers in each case to the reference density of 1 kg/Nm <sup>3</sup> .
<b>User entry</b>	Positive floating-point number
<b>Factory setting</b>	1

---

**Temp. offset**

<b>Navigation</b>	Expert → Sensor → Sensor adjustm. → Variable adjust → Temp. offset (1830)
<b>Description</b>	Use this function to enter the zero point shift for the temperature trim. The temperature on which the shift is based is entered in Kelvin.
<b>User entry</b>	Signed floating-point number

**Factory setting** 0 K

**Additional information** *Description*

 Corrected value = (factor × value) + offset

---

### Temp. factor



**Navigation**  Expert → Sensor → Sensor adjustm. → Variable adjust → Temp. factor (1829)

**Description** Use this parameter to enter a factor by which the temperature in Kelvin is multiplied.

**User entry** Positive floating-point number

**Factory setting** 1

### 3.2.7 "Calibration" submenu

*Navigation*  Expert → Sensor → Calibration

► Calibration	
Cal. factor (2431)	→  85
Zero point (2437)	→  85
Nominal diameter (2807)	→  85
C 0 (2469)	→  86
C 1 (2574)	→  86
C 2 (2575)	→  86
C 3 (2576)	→  86
C 4 (2577)	→  87
C 5 (2578)	→  87

---

**Cal. factor**

---

**Navigation**  Expert → Sensor → Calibration → Cal. factor (2431)

**Description** Displays the current calibration factor for the sensor.

**User interface** Signed floating-point number

**Factory setting** Depends on nominal diameter and calibration

**Additional information** *Description*

 The value is also specified on the sensor nameplate.

---

**Zero point**

---



**Navigation**  Expert → Sensor → Calibration → Zero point (2437)

**Description** Use this function to enter a zero point correction value for the sensor.

**User entry** Signed floating-point number

**Factory setting** 0

**Additional information** *Description*

 The value is also specified on the sensor nameplate.

---

**Nominal diameter**

---

**Navigation**  Expert → Sensor → Calibration → Nominal diameter (2807)

**Description** Displays the nominal diameter of the sensor.

**User interface** DNxx / x"

**Factory setting** Depends on the size of the sensor

**Additional information** *Description*

 The value is also specified on the sensor nameplate.

**C 0**

**Navigation**   Expert → Sensor → Calibration → C 0 (2469)

**Description** Displays the current density coefficient C0 of the sensor.

**Additional information** *Description*



A density trim can alter the calibration value of the density coefficient.

---

**C 1**

**Navigation**   Expert → Sensor → Calibration → C 1 (2574)

**Description** Displays the current density coefficient C1 of the sensor.

**Additional information** *Description*



A density trim can alter the calibration value of the density coefficient.

---

**C 2**

**Navigation**   Expert → Sensor → Calibration → C 2 (2575)

**Description** Displays the current density coefficient C2 of the sensor.

**Additional information** *Description*



A density trim can alter the calibration value of the density coefficient.

---

**C 3**

**Navigation**   Expert → Sensor → Calibration → C 3 (2576)

**Description** Displays the current density coefficient C3 of the sensor.

**Additional information** *Description*



A density trim can alter the calibration value of the density coefficient.

**C 4**

**Navigation**   Expert → Sensor → Calibration → C 4 (2577)

**Description** Displays the current density coefficient C4 of the sensor.

**Additional information** *Description*

 A density trim can alter the calibration value of the density coefficient.

**C 5**

**Navigation**   Expert → Sensor → Calibration → C 5 (2578)

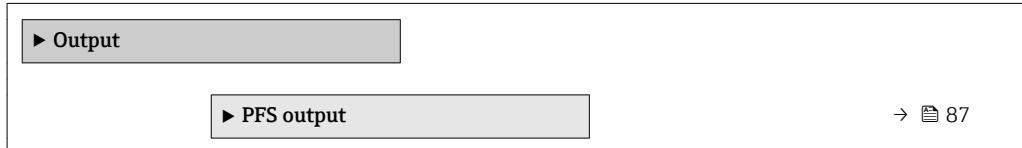
**Description** Displays the current density coefficient C5 of the sensor.

**Additional information** *Description*

 A density trim can alter the calibration value of the density coefficient.

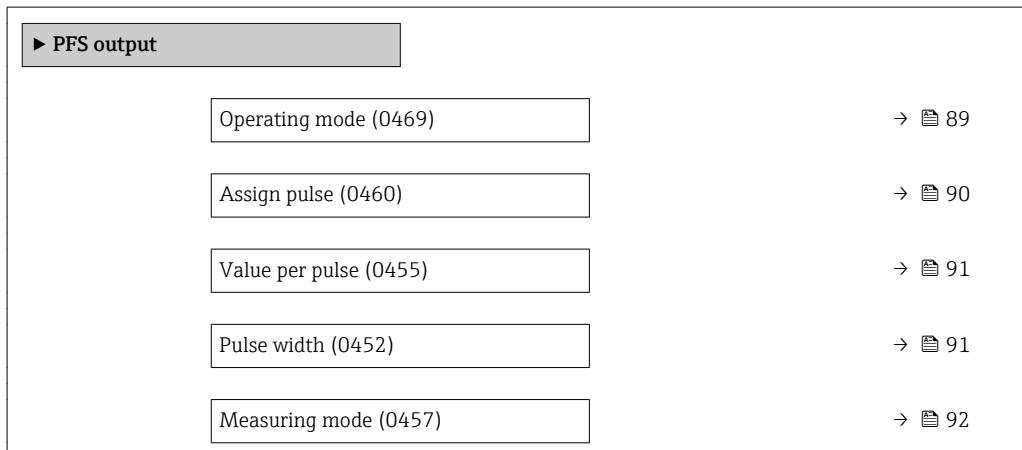
### 3.3 "Output" submenu

*Navigation*   Expert → Output



#### 3.3.1 "Pulse/frequency/switch output" submenu

*Navigation*   Expert → Output → PFS output



Failure mode (0480)	→ ↗ 93
Pulse output (0456)	→ ↗ 93
Assign freq. (0478)	→ ↗ 94
Min. freq. value (0453)	→ ↗ 95
Max. freq. value (0454)	→ ↗ 95
Val. at min.freq (0476)	→ ↗ 96
Val. at max.freq (0475)	→ ↗ 96
Measuring mode (0479)	→ ↗ 96
Damping out. (0477)	→ ↗ 99
Response time (0491)	→ ↗ 99
Failure mode (0451)	→ ↗ 100
Failure freq. (0474)	→ ↗ 101
Output freq. (0471)	→ ↗ 101
Switch out funct (0481)	→ ↗ 101
Assign diag. beh (0482)	→ ↗ 102
Assign limit (0483)	→ ↗ 103
Switch-on value (0466)	→ ↗ 104
Switch-off value (0464)	→ ↗ 105
Assign dir.check (0484)	→ ↗ 105
Assign status (0485)	→ ↗ 106
Switch-on delay (0467)	→ ↗ 106
Switch-off delay (0465)	→ ↗ 106
Failure mode (0486)	→ ↗ 107
Switch status (0461)	→ ↗ 107
Invert outp.sig. (0470)	→ ↗ 108

**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

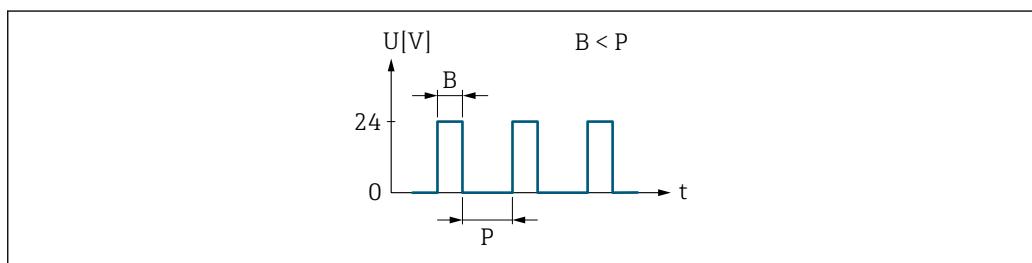
**Additional information***"Pulse" option*

Quantity-dependent pulse with configurable pulse width

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

**Example**

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



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

B Pulse width entered

P Pauses between the individual pulses

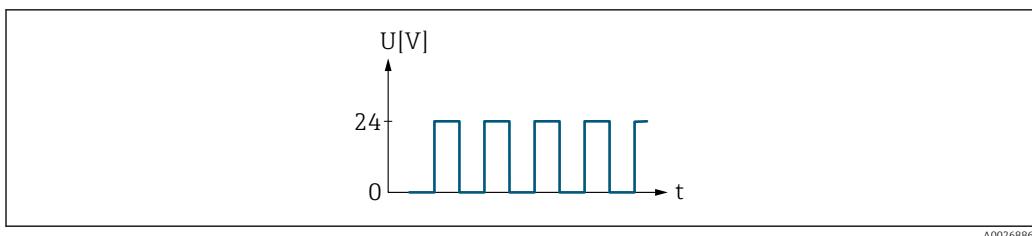
*"Frequency" option*

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 mass flow, volume flow, corrected volume flow, density, reference density, temperature, carrier tube temperature, electronic temperature, vibration frequency, oscillation amplitude, oscillation damping or signal asymmetry.

**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



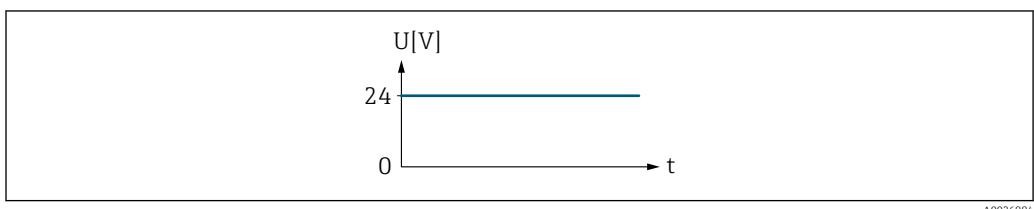
3 Flow-proportional frequency output

#### "Switch" option

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

##### Example

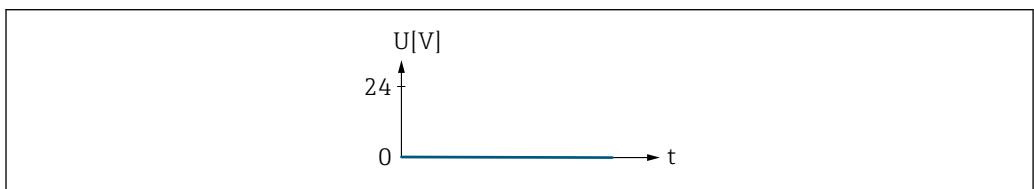
Alarm response without alarm



4 No alarm, high level

##### Example

Alarm response in case of alarm



5 Alarm, low level

---

## Assign pulse



### Navigation

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

### Prerequisite

The **Pulse** option is selected in the **Operating mode** parameter (→ 89) parameter.

### Description

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

### Selection

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

### Factory setting

Off

---

**Value per pulse**

---



<b>Navigation</b>	Expert → Output → PFS output → Value per pulse (0455)
<b>Prerequisite</b>	The <b>Pulse</b> option is selected in the <b>Operating mode</b> parameter (→ 89) and a process variable is selected in the <b>Assign pulse</b> parameter (→ 90).
<b>Description</b>	Use this function to enter the value for the measured value that a pulse is equivalent to.
<b>User entry</b>	Signed floating-point number
<b>Factory setting</b>	Depends on country and nominal diameter → 263
<b>Additional information</b>	<p><i>User entry</i></p> <p>Weighting of the pulse output with a quantity. The lower the pulse value, the</p> <ul style="list-style-type: none"> <li>▪ better the resolution.</li> <li>▪ the higher the frequency of the pulse response.</li> </ul>

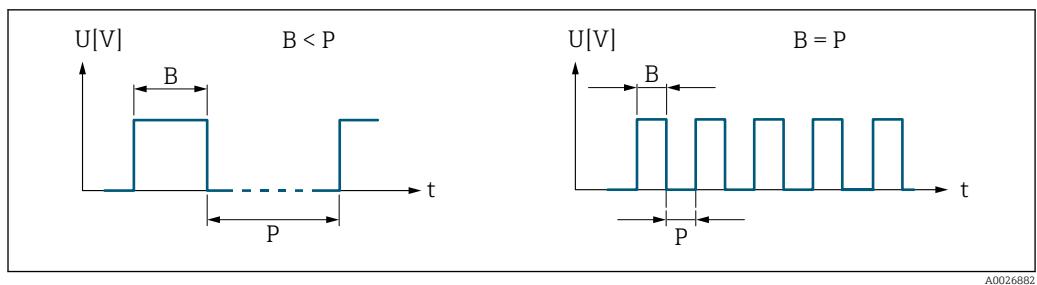
---

**Pulse width**

---



<b>Navigation</b>	Expert → Output → PFS output → Pulse width (0452)
<b>Prerequisite</b>	The <b>Pulse</b> option is selected in the <b>Operating mode</b> parameter (→ 89) and a process variable is selected in the <b>Assign pulse</b> parameter (→ 90).
<b>Description</b>	Use this function to enter the duration of the output pulse.
<b>User entry</b>	5 to 2 000 ms
<b>Factory setting</b>	100 ms
<b>Additional information</b>	<p><i>Description</i></p> <ul style="list-style-type: none"> <li>▪ Define how long a pulse is (duration).</li> <li>▪ The maximum pulse rate is defined by <math>f_{max} = 1 / (2 \times \text{pulse width})</math>.</li> <li>▪ The interval between two pulses lasts at least as long as the set pulse width.</li> <li>▪ The maximum flow is defined by <math>Q_{max} = f_{max} \times \text{pulse value}</math>.</li> <li>▪ If the flow exceeds these limit values, the measuring device displays the diagnostic message <b>△S443 Pulse output 1</b>.</li> </ul>



*B* Pulse width entered  
*P* Pauses between the individual pulses

### Example

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

## Measuring mode



### Navigation

Expert → Output → PFS output → Measuring mode (0457)

### Prerequisite

In the **Operating mode** parameter (→ 89), the **Pulse** option is selected, and one of the following options is selected in the **Assign pulse** parameter (→ 90):

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

### Description

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

### Selection

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

### Factory setting

Forward flow

### Additional information

#### Selection

- Forward flow  
Positive flow is output, negative flow is not output.
- Forward/Reverse  
Positive and negative flow are output (absolute value), but a distinction is not made between positive and negative flow.
- Reverse flow  
Negative flow is output, positive flow is not output.
- Rev. flow comp.  
The flow components outside the span are buffered, balanced and output after a maximum delay of 60 s.

**i** For a detailed description of the options available, see the **Measuring mode** parameter (→ 96)

**Failure mode****Navigation**

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

**Prerequisite**

The **Pulse** option is selected in the **Operating mode** parameter (→ 89) and a process variable is selected in the **Assign pulse** parameter (→ 90).

**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 (→ 89) parameter.

**Description**

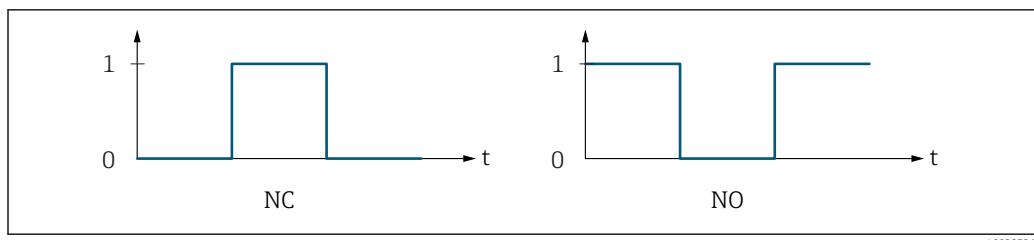
Displays the pulse frequency currently output.

**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 (→ 91) and **Pulse width** parameter (→ 91) 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 (→ 108) 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 (→ 93)) can be configured.

## Assign freq.



### Navigation

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

### Prerequisite

The **Frequency** option is selected in the **Operating mode** parameter (→ 89) parameter.

### Description

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

### Selection

- Off
- Mass flow
- Volume flow
- Correct.vol.flow
- Density
- Ref.density
- Temperature
- Carr. pipe temp. \*
- Electronic temp.
- Oscil. frequency
- Oscil. amplitude
- Oscil. damping
- Signal asymmetry

### Factory setting

Off

\* Visibility depends on order options or device settings

**Additional information***Selection*

- Oscil. frequency  
Displays the current oscillation frequency of the measuring tubes. This frequency depends on the density of the medium.
- Oscil. amplitude  
Displays the relative oscillation amplitude of the measuring tubes in relation to the preset value. This value is 100 % under optimum conditions. The value can decrease in the event of low 4 to 20 mA loop currents and/or difficult media (two-phase, high viscosity or high gas velocity).
- Oscil. damping  
Displays the current oscillation damping. Oscillation damping is an indicator of the sensor's current need for excitation power.
- Signal asymmetry  
Displays the relative difference between the oscillation amplitude at the inlet and outlet of the sensor. The measured value is the result of production tolerances of the sensor coils and should remain constant over the life time of a sensor.

---

**Min. freq. value****Navigation**

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

**Prerequisite**

The **Frequency** option is selected in the **Operating mode** parameter (→ 89) and a process variable is selected in the **Assign freq.** parameter (→ 94).

**Description**

Use this function to enter the start value 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 (→ 89) and a process variable is selected in the **Assign freq.** parameter (→ 94).

**Description**

Use this function to enter the end value frequency.

**User entry**

0 to 1 000 Hz

**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 (→ 89) and a process variable is selected in the **Assign freq.** parameter (→ 94).

### 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 (→ 94).

## 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 (→ 89) and a process variable is selected in the **Assign freq.** parameter (→ 94).

### 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 (→ 94).

## Measuring mode



### Navigation

Expert → Output → PFS output → Measuring mode (0479)

### Prerequisite

In the **Operating mode** parameter (→ 89), the **Frequency** option is selected, and one of the following options is selected in the **Assign freq.** parameter (→ 94):

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

- Ref.density
- Temperature
- Carr. pipe temp. \*
- Electronic temp.
- Oscil. frequency
- Oscil. amplitude
- Oscil. damping
- Signal asymmetry

 Detailed description of the options **Oscil. frequency**, **Oscil. amplitude**, **Oscil. damping** and **Signal asymmetry**: Assign freq. parameter (→ [94](#))

**Description**

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

**Selection**

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

**Factory setting**

Forward flow

**Additional information**

"Forward flow" option

The frequency output signal is proportional to the measured variable assigned. The measuring range is defined by the values that are assigned to the Val. at min.freq (A) and the Val. at max.freq (B).

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

One of the values is defined as equal to zero flow e.g.:

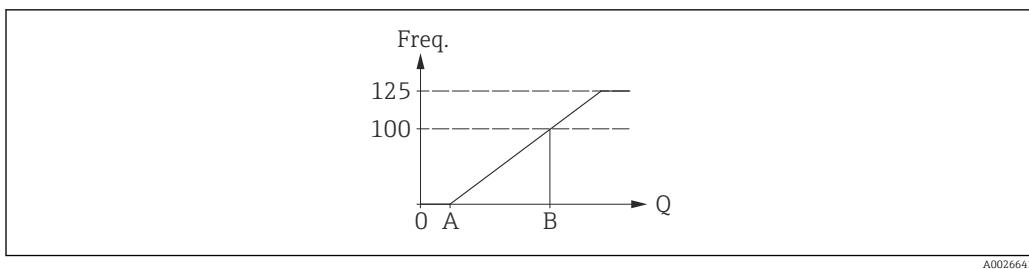
- Val. at min.freq = 0 kg/h
- Val. at max.freq = 10kg/h
  - If the effective flow exceeds or falls below this measured value, no diagnostic message is output and the frequency output retains its value (0 Hz in the example).
  - If the effective flow exceeds or falls below the other measured value, the diagnostic message **△S442 Freq. output** is displayed and the frequency output behaves as configured in the **Failure mode** parameter (→ [100](#)).

Both values are defined such that they are not equal to zero flow e.g.:

- Val. at min.freq = -5 kg/h
- Val. at max.freq = 10kg/h

If the effective flow exceeds or falls below this measuring range, the diagnostic message **△S442 Freq. output 1 to n** is displayed and the frequency output behaves as configured in the **Failure mode** parameter (→ [100](#)).

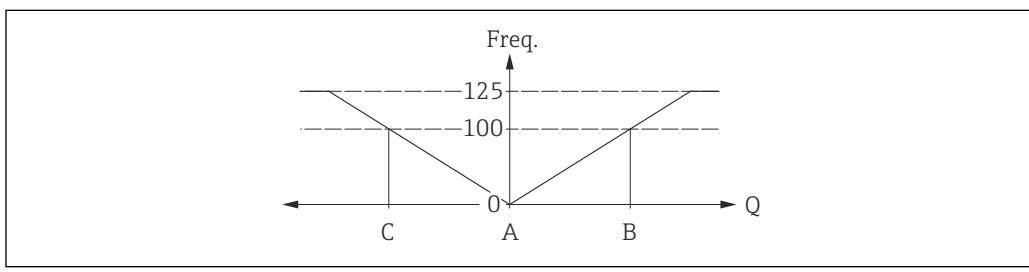
\* Visibility depends on order options or device settings



A Val. at min.freq  
B Val. at max.freq

#### *"Forward/Reverse" option*

The frequency output signal is independent of the direction of flow (absolute amount of the measured variable). The Val. at min.freq (A) and Val. at max.freq (B) must have the same sign (+ or -). The Val. at max.freq (C) (e.g. reverse flow) corresponds to the mirrored Val. at min.freq (e.g. forward flow).



- The flow direction can be output via the configurable relay or status outputs.
- The **Forward/Reverse** option can only be selected if the values in the **Val. at min.freq** parameter (→ 96) and **Val. at max.freq** parameter (→ 96) have the same sign or one of the values is zero.
- The **Forward/Reverse** option cannot be selected if the values have different signs.

#### *"Rev. flow comp." option*

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

If buffering cannot be processed within approx. 60 s, the diagnostic message **△S442 Freq. output 1 to n** is displayed.

If buffering cannot be processed within approx. 60 s, the diagnostic message **△S442 Freq. output** is displayed.

Under certain plant conditions, flow values can aggregate in the buffer, for example in the case of prolonged and unwanted fluid reverse flow. However, this buffer is reset in all relevant programming adjustments which affect the frequency output.

**Damping out.****Navigation**

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

**Prerequisite**

In the **Operating mode** parameter (→ 89), the **Frequency** option is selected, and one of the following options is selected in the **Assign freq.** parameter (→ 94):

- Mass flow
- Volume flow
- Correct.vol.flow
- Density
- Ref.density
- Temperature
- Carr. pipe temp.\*
- Electronic temp.
- Oscil. frequency
- Oscil. amplitude
- Oscil. damping
- Signal asymmetry

Detailed description of the options **Oscil. frequency**, **Oscil. amplitude**, **Oscil. damping** and **Signal asymmetry**: **Assign freq.** parameter (→ 94)

**Description**

Use this function to enter a time constant for the reaction time of the output signal to fluctuations in the measured value.

**User entry**

0 to 999.9 s

**Factory setting**

0.0 s

**Additional information**

*User entry*

Use this function to enter a time constant (PT1 element<sup>3)</sup>) 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 (→ 89), the **Frequency** option is selected, and one of the following options is selected in the **Assign freq.** parameter (→ 94):

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

\* Visibility depends on order options or device settings

3) proportional transmission behavior with first order delay

- Density
- Ref.density
- Temperature
- Carr. pipe temp.\*
- Electronic temp.
- Oscil. frequency
- Oscil. amplitude
- Oscil. damping
- Signal asymmetry

**i** Detailed description of the options **Oscil. frequency**, **Oscil. amplitude**, **Oscil. damping** and **Signal asymmetry**: **Assign freq.** parameter (→ 94)

<b>Description</b>	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.
<b>User interface</b>	Positive floating-point number
<b>Additional information</b>	<p><i>Description</i></p> <p><b>i</b> The response time is made up of the time specified for the following dampings:</p> <ul style="list-style-type: none"> <li>■ Damping of pulse/frequency/switch output and</li> <li>■ Depending on the measured variable assigned to the output.           <ul style="list-style-type: none"> <li>– Flow damping or</li> <li>– Density damping or</li> <li>– Temperature damping</li> </ul> </li> </ul>

<b>Failure mode</b>	
<b>Navigation</b>	Expert → Output → PFS output → Failure mode (0451)
<b>Prerequisite</b>	The <b>Frequency</b> option is selected in the <b>Operating mode</b> parameter (→ 89) and a process variable is selected in the <b>Assign freq.</b> parameter (→ 94).
<b>Description</b>	Use this function to select the failure mode of the frequency output in the event of a device alarm.
<b>Selection</b>	<ul style="list-style-type: none"> <li>■ Actual value</li> <li>■ Defined value</li> <li>■ 0 Hz</li> </ul>
<b>Factory setting</b>	0 Hz

\* Visibility depends on order options or device settings

**Additional information***Selection*

## ■ Actual value

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

## ■ Defined value

In the event of a device alarm, the frequency output continues on the basis of a predefined value. The Failure freq. (→ 101) replaces the current measured value, making it possible to bypass the device alarm. The actual measurement is switched off for the duration of the device alarm.

## ■ 0 Hz

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

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

**Failure freq.****Navigation**

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

**Prerequisite**

The **Frequency** option is selected in the **Operating mode** parameter (→ 89) and a process variable is selected in the **Assign freq.** parameter (→ 94).

**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 (→ 89), 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 (→ 89).

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

**Selection**

- Off
- On
- Diag. behavior
- Limit
- Fl. direct.check
- Status

**Factory setting** Off

**Additional information** *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.
- Fl. direct.check  
Indicates the flow direction (forward or reverse flow).
- Status  
Indicates the device status depending on whether empty pipe detection or low flow cut off is selected.

---

## Assign diag. beh



**Navigation**

Expert → Output → PFS output → Assign diag. beh (0482)

**Prerequisite**

- In the **Operating mode** parameter (→ 89), the **Switch** option is selected.
- In the **Switch out funct** parameter (→ 101), 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 (→ 89) parameter.
- The **Limit** option is selected in the **Switch out funct** parameter (→ 101) parameter.

**Description**

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

**Selection**

- Mass flow
- Volume flow
- Correct.vol.flow
- Density
- Ref.density
- Temperature
- Totalizer 1
- Totalizer 2
- Totalizer 3

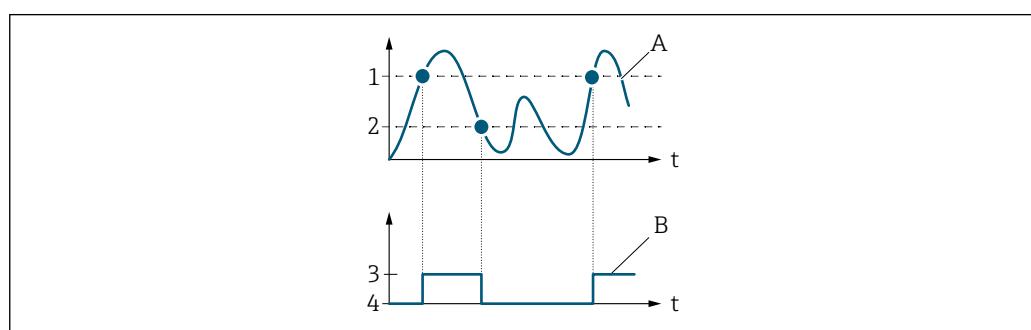
**Factory setting**

Mass flow

**Additional information***Description*

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

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

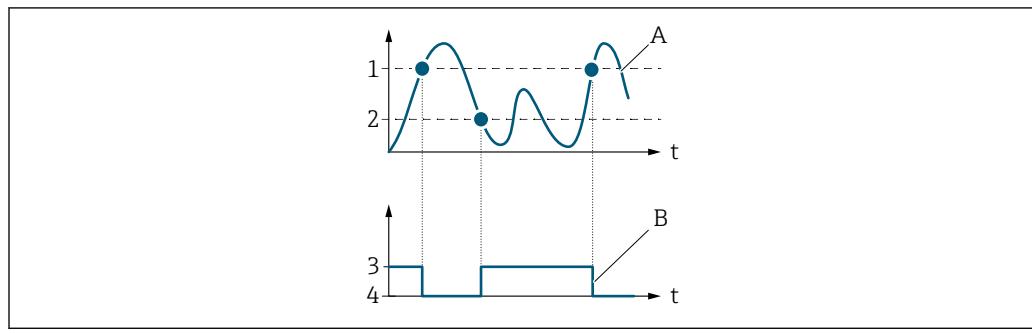


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- |   |                  |
|---|------------------|
| 1 | Switch-on value  |
| 2 | Switch-off value |
| 3 | Conductive       |
| 4 | Non-conductive   |
| A | Process variable |
| B | Status output    |

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

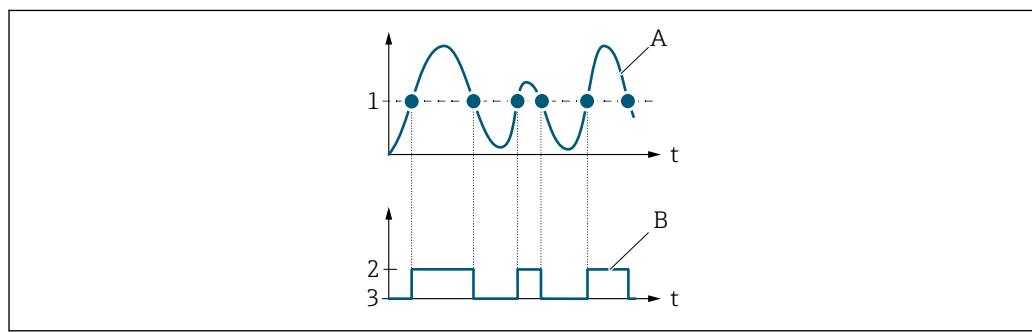
- Process variable < Switch-on value: transistor is conductive
- Process variable > Switch-off value: transistor is non-conductive



- |   |                  |
|---|------------------|
| 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

- In the **Operating mode** parameter (→ 89), the **Switch** option is selected.
- In the **Switch out funct** parameter (→ 101), the **Limit** option is selected.

### Description

Use this function to enter the measured value for the switch-on point.

### User entry

Signed floating-point number

<b>Factory setting</b>	Country-specific: ■ 0 kg/h ■ 0 lb/min
<b>Additional information</b>	<p><i>Description</i></p> <p>Use this function to enter the limit value for the switch-on value (process variable &gt; switch-on value = closed, conductive).</p> <p> When using a hysteresis: Switch-on value &gt; Switch-off value.</p> <p><i>Dependency</i></p> <p> The unit depends on the process variable selected in the <b>Assign limit</b> parameter (→ 103).</p>

---

## Switch-off value



<b>Navigation</b>	  Expert → Output → PFS output → Switch-off value (0464)
<b>Prerequisite</b>	<ul style="list-style-type: none"> <li>■ In the <b>Operating mode</b> parameter (→ 89), the <b>Switch</b> option is selected.</li> <li>■ In the <b>Switch out funct</b> parameter (→ 101), the <b>Limit</b> option is selected.</li> </ul>
<b>Description</b>	Use this function to enter the measured value for the switch-off point.
<b>User entry</b>	Signed floating-point number
<b>Factory setting</b>	Country-specific: ■ 0 kg/h ■ 0 lb/min
<b>Additional information</b>	<p><i>Description</i></p> <p>Use this function to enter the limit value for the switch-off value (process variable &lt; switch-off value = open, non-conductive).</p> <p> When using a hysteresis: Switch-on value &gt; Switch-off value.</p> <p><i>Dependency</i></p> <p> The unit depends on the process variable selected in the <b>Assign limit</b> parameter (→ 103).</p>

---

## Assign dir.check



<b>Navigation</b>	  Expert → Output → PFS output → Assign dir.check (0484)
<b>Prerequisite</b>	<ul style="list-style-type: none"> <li>■ The <b>Switch</b> option is selected in the <b>Operating mode</b> parameter (→ 89).</li> <li>■ The <b>Fl. direct.check</b> option is selected in the <b>Switch out funct</b> parameter (→ 101).</li> </ul>
<b>Description</b>	Use this function to select a process variable for monitoring the flow direction.

<b>Selection</b>	<ul style="list-style-type: none"><li>■ Mass flow</li><li>■ Volume flow</li><li>■ Correct.vol.flow</li></ul>
<b>Factory setting</b>	Mass flow

---

## Assign status



<b>Navigation</b>	  Expert → Output → PFS output → Assign status (0485)
<b>Prerequisite</b>	<ul style="list-style-type: none"><li>■ The <b>Switch</b> option is selected in the <b>Operating mode</b> parameter (→ 89).</li><li>■ The <b>Status</b> option is selected in the <b>Switch out funct</b> parameter (→ 101).</li></ul>
<b>Description</b>	Use this function to select a device status for the switch output.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Partial pipe det</li><li>■ Low flow cut off</li><li>■ Digital outp. 6</li></ul>
<b>Factory setting</b>	Partial pipe det
<b>Additional information</b>	<i>Options</i> If empty pipe detection or low flow cut off are enabled, the output is conductive. Otherwise, the switch output is non-conductive.

---

## Switch-on delay



<b>Navigation</b>	  Expert → Output → PFS output → Switch-on delay (0467)
<b>Prerequisite</b>	<ul style="list-style-type: none"><li>■ The <b>Switch</b> option is selected in the <b>Operating mode</b> parameter (→ 89).</li><li>■ The <b>Limit</b> option is selected in the <b>Switch out funct</b> parameter (→ 101).</li></ul>
<b>Description</b>	Use this function to enter a delay time for switching on the switch output.
<b>User entry</b>	0.0 to 100.0 s
<b>Factory setting</b>	0.0 s

---

## Switch-off delay



<b>Navigation</b>	  Expert → Output → PFS output → Switch-off delay (0465)
<b>Prerequisite</b>	<ul style="list-style-type: none"><li>■ The <b>Switch</b> option is selected in the <b>Operating mode</b> parameter (→ 89).</li><li>■ The <b>Limit</b> option is selected in the <b>Switch out funct</b> parameter (→ 101).</li></ul>
<b>Description</b>	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 (→ 89).

**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

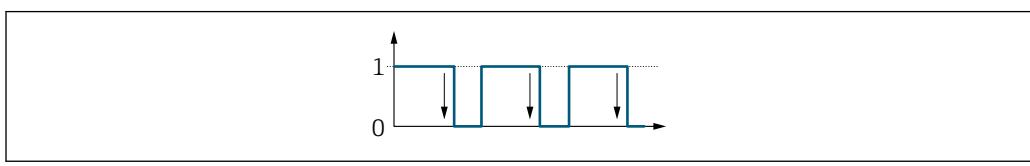
**Factory setting**

No

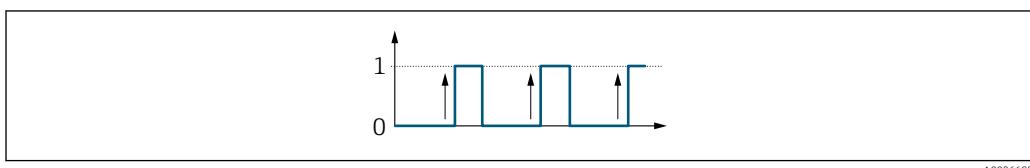
**Additional information**

*Selection*

**No** option (passive - negative)



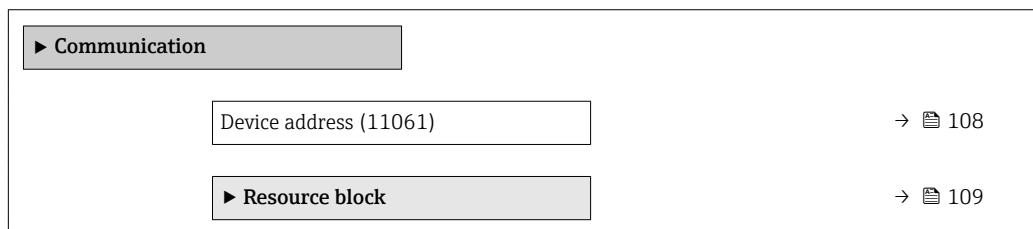
**Yes** option (passive - positive)



## 3.4 "Communication" submenu

**Navigation**

Expert → Communication




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**Device address**


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**Navigation**

Expert → Communication → Device address (11061)

**Description**

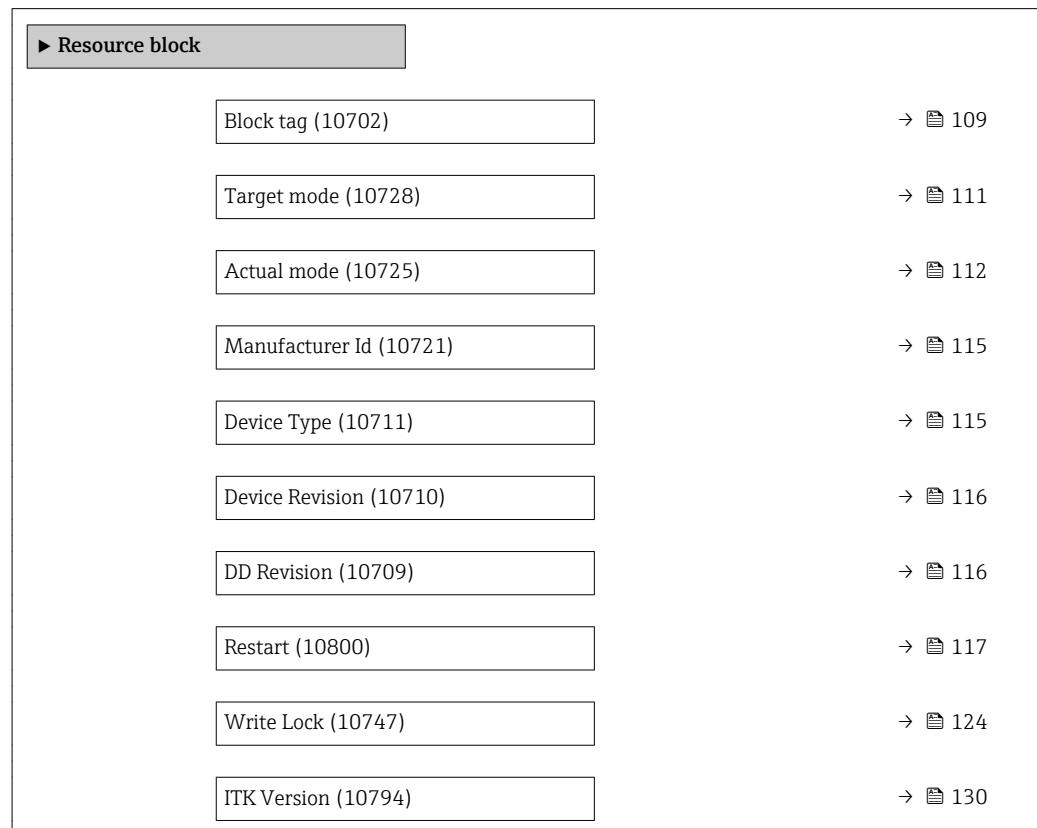
Displays the device address.

User interface 1 to 255

### 3.4.1 "Resource block" submenu

Navigation

Expert → Communication → Resource block



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#### Block tag

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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

---

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

---

## Tag Description

---

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

---

## Strategy

---

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

---

## Alert Key

---

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

**Target mode****Navigation**
 Expert → Communication → Resource block → Target mode (10728)
**Description**

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

**Selection**

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

**Factory setting**

OOS

**Additional information***Options*

- ROut

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

- RCas

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

- Cas

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

- Auto

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

- Man

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

- LO

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

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

- IMan

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

- OOS

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

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## Actual mode

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### 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 (→  111).

### User interface

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

### Additional information

*User interface*

 Detailed description of the options displayed: **Target mode** parameter (→  111)

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## Permitted mode

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### 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 (→  111) for the function block. The operating modes that are supported vary depending on the type and function of the block.

<b>Selection</b>	<ul style="list-style-type: none"> <li>■ ROut</li> <li>■ RCas</li> <li>■ Cas</li> <li>■ Auto</li> <li>■ Man</li> <li>■ LO</li> <li>■ IMan</li> <li>■ OOS</li> </ul>
<b>Factory setting</b>	<ul style="list-style-type: none"> <li>■ Auto</li> <li>■ OOS</li> </ul>
<b>Additional information</b>	<p><i>Options</i></p>  Detailed description of the options available for selection: <b>Target mode</b> parameter (> 111)

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## Normal mode

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<b>Navigation</b>	 Expert → Communication → Resource block → Normal mode (10726)
<b>Description</b>	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.
<b>Selection</b>	<ul style="list-style-type: none"> <li>■ ROut</li> <li>■ RCas</li> <li>■ Cas</li> <li>■ Auto</li> <li>■ Man</li> <li>■ LO</li> <li>■ IMan</li> <li>■ OOS</li> </ul>
<b>Additional information</b>	<p><i>Options</i></p>  Detailed description of the options available for selection: <b>Target mode</b> parameter (> 111)

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## Block Error

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<b>Navigation</b>	 Expert → Communication → Resource block → Block Error (10703)
<b>Description</b>	Displays the short text for the Block Error that has occurred in the function block.
<b>User interface</b>	<ul style="list-style-type: none"> <li>■ Other</li> <li>■ BlockConfigurat</li> <li>■ LinkConfigurat</li> <li>■ SimulationActive</li> <li>■ LocalOverride</li> <li>■ DeviceFaultState</li> <li>■ DeviceMainten</li> </ul>

- SensorFailure
- OutputFailure
- MemoryFailure
- LostStaticData
- LostNVData
- ReadbackCheck
- MaintenanceNeed
- PowerUp
- OutOfService

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## Resource State

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<b>Navigation</b>	 Expert → Communication → Resource block → Resource State (10730)
<b>Description</b>	Displays the Resource State: Displays the current operating mode of the resource block.
<b>User interface</b>	<ul style="list-style-type: none"><li>■ Uninitialized</li><li>■ StartRestart</li><li>■ Initialization</li><li>■ Online Linking</li><li>■ Online</li><li>■ Standby</li><li>■ Failure</li></ul>
<b>Additional information</b>	<p><i>User interface</i></p> <ul style="list-style-type: none"><li>■ Uninitialized The resource block is in an invalid operating mode.</li><li>■ 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.</li><li>■ 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.</li><li>■ 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.</li></ul>

■ 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

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**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

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**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

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**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**

Promass 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** 1

---

## DD Revision

---

**Navigation**   Expert → Communication → Resource block → DD Revision (10709)

**Description** Displays the revision number of the device description (DD).

**User interface** 1

**Additional information** *Description*

 This display can be used to ensure that the right system files (DD = device description) are used for integration into the host system. The system files can be downloaded free of charge online at: [www.endress.com](http://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.

---

<b>Selection</b>	<ul style="list-style-type: none"><li>■ Program Denied</li><li>■ Tune Denied</li><li>■ Alarm Denied</li><li>■ Local</li><li>■ Operate Denied</li></ul>
------------------	--

---

## Hard Types

---

<b>Navigation</b>	  Expert → Communication → Resource block → Hard Types (10719)
<b>Description</b>	Displays the input signal type for the Analog input block.
<b>User interface</b>	<ul style="list-style-type: none"><li>■ Scalar Input</li><li>■ Scalar Output</li><li>■ Discrete Input</li><li>■ Discrete Output</li></ul>

---

## Restart

---

<b>Navigation</b>	  Expert → Communication → Resource block → Restart (10800)
<b>Description</b>	Use this function to select a manual restart or a manual device reset.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Uninitialized</li><li>■ Run</li><li>■ Resource</li><li>■ Defaults</li><li>■ Processor</li><li>■ To fact.defaults</li><li>■ To delivery set.</li><li>■ ENP restart</li><li>■ To transd.def.</li><li>■ Fact.DefaultBlks</li></ul>
<b>Factory setting</b>	Uninitialized

---

## Service reset

---

<b>Navigation</b>	  Expert → Communication → Resource block → Service reset (10749)
<b>Description</b>	Extended selection for a manual restart or a manual device reset.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Uninitialized</li><li>■ DeliverySett+MIB</li><li>■ ENP restart</li></ul>
<b>Factory setting</b>	Uninitialized

**Additional information***Selection*

- 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**

- 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.

<b>User interface</b>	<ul style="list-style-type: none"><li>■ Scheduled</li><li>■ Block Execution</li></ul>
-----------------------	---

---

### Cycle Selection

---

<b>Navigation</b>	 Expert → Communication → Resource block → Cycle Selection (10706)
-------------------	---

<b>Description</b>	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.
--------------------	---

<b>Selection</b>	<ul style="list-style-type: none"><li>■ Scheduled</li><li>■ Block Execution</li></ul>
------------------	---

---

### Mimumum Cyc.Time

---

<b>Navigation</b>	 Expert → Communication → Resource block → Mimumum Cyc.Time (10724)
-------------------	--

<b>Description</b>	Displays the implementation time of all function blocks that are available in the measuring device.
--------------------	---

<b>User interface</b>	Positive integer
-----------------------	------------------

---

### Memory Size

---

<b>Navigation</b>	 Expert → Communication → Resource block → Memory Size (10723)
-------------------	---

<b>Description</b>	Displays the available configuration memory in kilobytes.
--------------------	---

<b>User interface</b>	0 to 65 535 Kbytes
-----------------------	--------------------

---

### Nonvolat CycTime

---

<b>Navigation</b>	 Expert → Communication → Resource block → Nonvolat CycTime (10729)
-------------------	--

<b>Description</b>	Displays the time interval during which the dynamic device parameters are stored in the non-volatile memory.
--------------------	--

<b>User interface</b>	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 (→  214) block.

**Selection**

- Uninitialized
- Off
- Clear

**Factory setting** Uninitialized

**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

---

<b>Navigation</b>	 Expert → Communication → Resource block → Fault State (10712)
<b>Description</b>	Displays the current status of the fault state for the Discrete outputs (→  214) block.
<b>User interface</b>	<ul style="list-style-type: none"><li>■ Uninitialized</li><li>■ Clear</li><li>■ Active</li></ul>
<b>Additional information</b>	<p><i>User interface</i></p> <ul style="list-style-type: none"><li>■ Uninitialized The fault state is disabled.</li><li>■ Active The fault state is enabled.</li></ul>

---

## Limit Notify

---

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

---

## Max Notify

---

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

---

## Set Fault State

---

<b>Navigation</b>	 Expert → Communication → Resource block → Set Fault State (10731)
<b>Description</b>	Option for manually enabling or disabling the fault state for the Discrete outputs (→  214) function block.

<b>Selection</b>	<ul style="list-style-type: none"><li>■ OFF</li><li>■ SET</li></ul>
<b>Factory setting</b>	OFF
<b>Additional information</b>	<i>Options</i> <ul style="list-style-type: none"><li>■ OFF The fault state is disabled.</li><li>■ SET The fault state is enabled.</li></ul>

---

### Shed Remote Casc

---

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

---

### Shed Remote Out

---

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

---

### Unacknowledged

---

<b>Navigation</b>	 Expert → Communication → Resource block → Unacknowledged (10740)
<b>Description</b>	Option for manually acknowledging an update of the static block parameter.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Uninitialized</li><li>■ Acknowledged</li><li>■ Unacknowledged</li></ul>
<b>Factory setting</b>	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
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## 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"><li>▪ Not Locked</li><li>▪ Locked</li></ul>
Factory setting	Not Locked
Additional information	<p><i>Description</i></p> <p>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).</p> <p> For detailed information on hardware write protection, see the "Write protection via write protection switch" section of the Operating Instructions.</p> <p><i>Options</i></p> <ul style="list-style-type: none"><li>▪ Not Locked Device data can be changed via the FOUNDATION Fieldbus interface.</li><li>▪ Locked Device data cannot be changed via the FOUNDATION Fieldbus interface.</li></ul>

---

## Unacknowledged

---

Navigation	 Expert → Communication → Resource block → Unacknowledged (10700)
Description	Option for manually acknowledging a block alarm.
Selection	<ul style="list-style-type: none"><li>▪ Uninitialized</li><li>▪ Acknowledged</li><li>▪ Unacknowledged</li></ul>
Factory setting	Uninitialized
Additional information	<p><i>Description</i></p> <p> ▪ If a new alarm occurs, the measuring device sets <b>Unacknowledged</b> option. ▪ If the alarm has been acknowledged, the user can set <b>Acknowledged</b> option.</p>

---

**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**

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

**Current**

<b>Navigation</b>	 Expert → Communication → Resource block → Current (10692)
<b>Description</b>	Use this function to view the current status of the process alarms.
<b>User interface</b>	<ul style="list-style-type: none"><li>■ Discrete Alarm</li><li>■ Block Alarm</li><li>■ Fail Alarm</li><li>■ Off Spec Alarm</li><li>■ Maint. Alarm</li><li>■ Check Alarm</li></ul>

**Unacknowledged**

<b>Navigation</b>	 Expert → Communication → Resource block → Unacknowledged (10694)
<b>Description</b>	Displays an unacknowledged process alarm.
<b>User interface</b>	<ul style="list-style-type: none"><li>■ Disc Alm Unack</li><li>■ Block Alm Unack</li><li>■ Fail Alm Unack</li><li>■ Off SpecAlmUnack</li><li>■ Maint Alm Unack</li><li>■ Check Alm Unack</li></ul>

**Unreported**

<b>Navigation</b>	 Expert → Communication → Resource block → Unreported (10695)
<b>Description</b>	Displays a process alarm that has not been communicated.
<b>User interface</b>	<ul style="list-style-type: none"><li>■ Disc Alm Unrep</li><li>■ Block Alm Unrep</li><li>■ Fail Alm Unrep</li></ul>

- 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 (→  124).  
**Current** parameter (→  126) indicates the current status of all process alarms.

**Write Priority**

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

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

**User entry** 0 to 15

**Factory setting** 0

**Additional information***Description*

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



The alarm is triggered when the write protection is disabled.

---

**Unacknowledged****Navigation**

Expert → Communication → Resource block → Unacknowledged (10745)

**Description**

Option for manually acknowledging a write protection alarm.

**Selection**

- Uninitialized
- Acknowledged
- Unacknowledged

**Factory setting**

Uninitialized

**Additional information***Description*

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

---

**Alarm State****Navigation**

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

**Description**

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

**User interface**

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

---

**Time Stamp****Navigation**

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

**Description**

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

---

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

---

## Subcode

---

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

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

User interface	<ul style="list-style-type: none"><li>■ Other</li><li>■ BlockConfigurat</li><li>■ LinkConfigurat</li><li>■ SimulationActive</li><li>■ LocalOverride</li><li>■ DeviceFaultState</li><li>■ DeviceMainten</li><li>■ SensorFailure</li><li>■ OutputFailure</li><li>■ MemoryFailure</li><li>■ LostStaticData</li><li>■ LostNVData</li><li>■ ReadbackCheck</li><li>■ MaintenanceNeed</li><li>■ PowerUp</li><li>■ OutOfService</li></ul>
----------------	---

---

## 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"><li>■ State 0</li><li>■ State 1</li><li>■ State 2</li><li>■ State 3</li><li>■ State 4</li><li>■ State 5</li><li>■ State 6</li><li>■ State 7</li><li>■ State 8</li><li>■ State 9</li><li>■ State 10</li><li>■ State 11</li><li>■ State 12</li><li>■ State 13</li><li>■ State 14</li><li>■ State 15</li><li>■ State 16</li></ul>
----------------	--

**ITK Version**

**Navigation**   Expert → Communication → Resource block → ITK Version (10794)

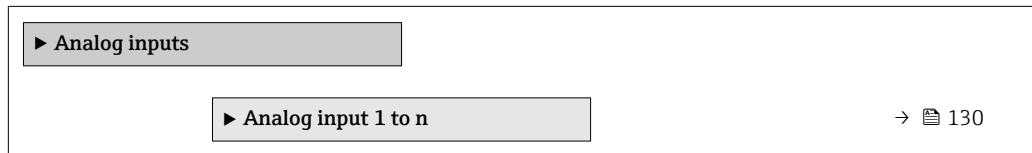
**Description** Displays the revision status of the Interoperability Test Kits (ITK).

**User interface** 6

### 3.5 "Analog inputs" submenu

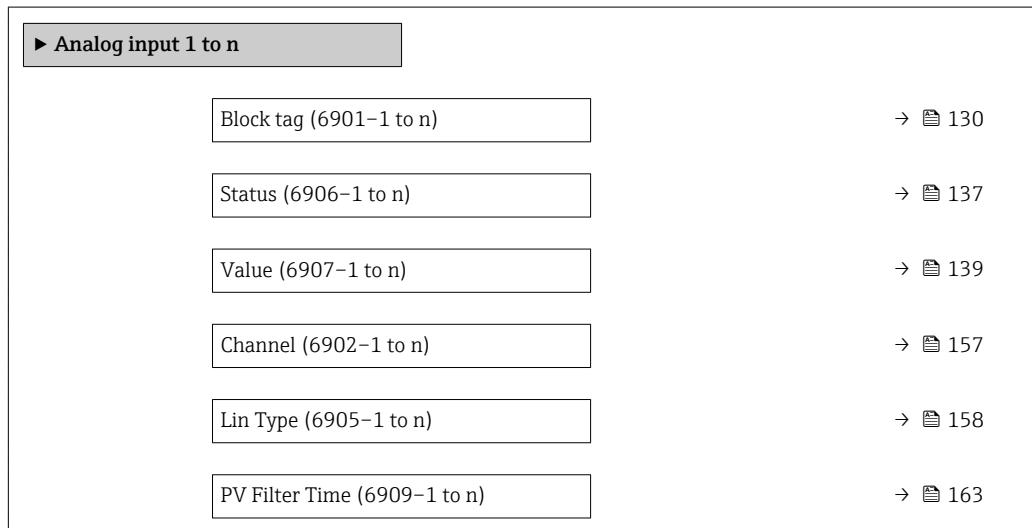
In the analog input function block (AI function block), the process variables from the transducer block are prepared in terms of control for the subsequent automation functions (e.g. scaling, limit value processing). The automation function is defined by interconnecting the outputs.

**Navigation**   Expert → Analog inputs



#### 3.5.1 "Analog input 1 to n" submenu

**Navigation**   Expert → Analog inputs → Analog input 1 to n



---

**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)
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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"><li>■ ROut</li><li>■ RCas</li><li>■ Cas</li><li>■ Auto</li><li>■ Man</li><li>■ LO</li><li>■ IMan</li><li>■ OOS</li></ul>
-----------	--

Factory setting	OOS
-----------------	-----

Additional information	<i>Options</i>
	 Detailed description of the options available for selection: <b>Target mode</b> parameter (→  111)

---

## 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 (→  132).
-------------	--

User interface	<ul style="list-style-type: none"><li>■ ROut</li><li>■ RCas</li><li>■ Cas</li><li>■ Auto</li><li>■ Man</li><li>■ LO</li><li>■ IMan</li><li>■ OOS</li></ul>
----------------	--

Additional information	<i>User interface</i>
	 Detailed description of the options displayed: <b>Target mode</b> parameter (→  111)

---

## Permitted mode

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Permitted mode (6959–1 to n)
<b>Description</b>	Use this function to select the Permitted mode: The selection defines which operating modes are available in Target mode (→  132) for the function block. The operating modes that are supported vary depending on the type and function of the block.
<b>Selection</b>	<ul style="list-style-type: none"><li>▪ ROut</li><li>▪ RCas</li><li>▪ Cas</li><li>▪ Auto</li><li>▪ Man</li><li>▪ LO</li><li>▪ IMan</li><li>▪ OOS</li></ul>
<b>Factory setting</b>	<ul style="list-style-type: none"><li>▪ Auto</li><li>▪ OOS</li></ul>
<b>Additional information</b>	<i>Options</i>  Detailed description of the options available for selection: <b>Target mode</b> parameter (→  111)

---

## Normal mode

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Normal mode (6958–1 to n)
<b>Description</b>	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.
<b>Selection</b>	<ul style="list-style-type: none"><li>▪ ROut</li><li>▪ RCas</li><li>▪ Cas</li><li>▪ Auto</li><li>▪ Man</li><li>▪ LO</li><li>▪ IMan</li><li>▪ OOS</li></ul>
<b>Factory setting</b>	Auto
<b>Additional information</b>	<i>Options</i>  Detailed description of the options available for selection: <b>Target mode</b> parameter (→  111)

---

**Block Error**

---

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

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

**User interface**

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

---

**Status**

---

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

**Description** Displays the status of the input value (PV).

**User interface**

- Bad (0x00)
- Bad (0x01)
- Bad (0x02)
- Bad (0x03)
- Bad (0x04)
- Bad (0x05)
- Bad (0x06)
- Bad (0x07)
- Bad (0x08)
- Bad (0x09)
- Bad (0x0A)
- Bad (0x0B)
- Bad (0x0C)
- Bad (0x0D)
- Bad (0x0E)
- Bad (0x0F)
- Bad (0x10)
- Bad (0x11)
- Bad (0x12)
- Bad (0x13)
- Bad (0x14)
- Bad (0x15)
- Bad (0x16)
- Bad (0x17)
- Bad (0x18)

- Bad (0x19)
- Bad (0x1A)
- Bad (0x1B)
- Bad (0x1C)
- Bad (0x1D)
- Bad (0x1E)
- Bad (0x1F)
- Uncertain (0x40)
- Uncertain (0x41)
- Uncertain (0x42)
- Uncertain (0x43)
- Uncertain (0x44)
- Uncertain (0x45)
- Uncertain (0x46)
- Uncertain (0x47)
- Uncertain (0x48)
- Uncertain (0x49)
- Uncertain (0x4A)
- Uncertain (0x4B)
- Uncertain (0x4C)
- Uncertain (0x4D)
- Uncertain (0x4E)
- Uncertain (0x4F)
- Uncertain (0x50)
- Uncertain (0x51)
- Uncertain (0x52)
- Uncertain (0x53)
- Uncertain (0x54)
- Uncertain (0x55)
- Uncertain (0x56)
- Uncertain (0x57)
- Uncertain (0x58)
- Uncertain (0x59)
- Uncertain (0x5A)
- Uncertain (0x5B)
- Good (0x80)
- Good (0x81)
- Good (0x82)
- Good (0x83)
- Good (0x84)
- Good (0x85)
- Good (0x86)
- Good (0x87)
- Good (0x88)
- Good (0x89)
- Good (0x8A)
- Good (0x8B)
- Good (0x8C)
- Good (0x8D)
- Good (0x8E)
- Good (0x8F)
- Good (0x90)
- Good (0x91)
- Good (0x92)
- Good (0x93)
- Good (0x94)
- Good (0x95)
- Good (0x96)
- Good (0x97)

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

---

## Value

---

**Navigation**

□ Expert → Analog inputs → Analog input 1 to n → Value (6965–1 to n)

**Description**

Displays the input value (PV).

**User interface**

Signed floating-point number

**Additional information**

*Dependency*

 The unit is taken from the: **Units index** parameter (→ □ 148)

---

**Status**

---

**Navigation** Expert → Analog inputs → Analog input 1 to n → Status (6906–1 to n)**Description**

Displays the status of the output value (OUT).

**User interface**

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

- Uncertain (0x54)
- Uncertain (0x55)
- Uncertain (0x56)
- Uncertain (0x57)
- Uncertain (0x58)
- Uncertain (0x59)
- Uncertain (0x5A)
- Uncertain (0x5B)
- Good (0x80)
- Good (0x81)
- Good (0x82)
- Good (0x83)
- Good (0x84)
- Good (0x85)
- Good (0x86)
- Good (0x87)
- Good (0x88)
- Good (0x89)
- Good (0x8A)
- Good (0x8B)
- Good (0x8C)
- Good (0x8D)
- Good (0x8E)
- Good (0x8F)
- Good (0x90)
- Good (0x91)
- Good (0x92)
- Good (0x93)
- Good (0x94)
- Good (0x95)
- Good (0x96)
- Good (0x97)
- Good (0x98)
- Good (0x99)
- Good (0x9A)
- Good (0x9B)
- Good (0xC0)
- Good (0xC1)
- Good (0xC2)
- Good (0xC3)
- Good (0xC4)
- Good (0xC5)
- Good (0xC6)
- Good (0xC7)
- Good (0xC8)
- Good (0xC9)
- Good (0xCA)
- Good (0xCB)
- Good (0xCC)
- Good (0xCD)
- Good (0xCE)
- Good (0xCF)
- Good (0xD0)
- Good (0xD1)
- Good (0xD2)
- Good (0xD3)
- Good (0xD4)
- Good (0xD5)
- Good (0xD6)

- Good (0xD7)
- Good (0xD8)
- Good (0xD9)
- Good (0xDA)
- Good (0xDB)
- Good (0xDC)
- Good (0xDD)
- Good (0xDE)
- Good (0xDF)
- Good (0xE0)
- Good (0xE1)
- Good (0xE2)
- Good (0xE3)

---

## Value

---

<b>Navigation</b>	  Expert → Analog inputs → Analog input 1 to n → Value (6907–1 to n)
<b>Description</b>	Input for the output value (OUT).
<b>User entry</b>	Signed floating-point number
<b>Factory setting</b>	0
<b>Additional information</b>	<i>Dependency</i>  The unit is taken from the: <b>Units index</b> parameter (→  148)

---

## Simulate Status

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Simulate Status (6967–1 to n)
<b>Description</b>	Use this function to select the status that is used for the transducer block simulation.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Bad (0x00)</li><li>■ Bad (0x01)</li><li>■ Bad (0x02)</li><li>■ Bad (0x03)</li><li>■ Bad (0x04)</li><li>■ Bad (0x05)</li><li>■ Bad (0x06)</li><li>■ Bad (0x07)</li><li>■ Bad (0x08)</li><li>■ Bad (0x09)</li><li>■ Bad (0x0A)</li><li>■ Bad (0x0B)</li><li>■ Bad (0x0C)</li><li>■ Bad (0x0D)</li><li>■ Bad (0x0E)</li><li>■ Bad (0x0F)</li><li>■ Bad (0x10)</li></ul>

- 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

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Simulate Value (6968–1 to n)
<b>Description</b>	Use this function to enter the value that is used for the transducer block simulation.
<b>User entry</b>	Signed floating-point number
<b>Factory setting</b>	0 %
<b>Additional information</b>	<i>Dependency</i>  The unit is taken from the: <b>Units index</b> parameter (→  145)

---

## Transducer Stat

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Transducer Stat (6969–1 to n)
<b>Description</b>	Displays the current status of the transducer block.
<b>User interface</b>	<ul style="list-style-type: none"><li>■ Bad (0x00)</li><li>■ Bad (0x01)</li><li>■ Bad (0x02)</li><li>■ Bad (0x03)</li><li>■ Bad (0x04)</li><li>■ Bad (0x05)</li><li>■ Bad (0x06)</li><li>■ Bad (0x07)</li><li>■ Bad (0x08)</li><li>■ Bad (0x09)</li><li>■ Bad (0x0A)</li><li>■ Bad (0x0B)</li><li>■ Bad (0x0C)</li><li>■ Bad (0x0D)</li><li>■ Bad (0x0E)</li><li>■ Bad (0x0F)</li><li>■ Bad (0x10)</li><li>■ Bad (0x11)</li><li>■ Bad (0x12)</li><li>■ Bad (0x13)</li><li>■ Bad (0x14)</li><li>■ Bad (0x15)</li><li>■ Bad (0x16)</li><li>■ Bad (0x17)</li><li>■ Bad (0x18)</li><li>■ Bad (0x19)</li><li>■ Bad (0x1A)</li><li>■ Bad (0x1B)</li><li>■ Bad (0x1C)</li><li>■ Bad (0x1D)</li><li>■ Bad (0x1E)</li><li>■ Bad (0x1F)</li><li>■ Uncertain (0x40)</li></ul>

- 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)

---

## Transducer Value

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Transducer Value (6970–1 to n)
<b>Description</b>	Displays the current value of the transducer block.
<b>User interface</b>	Signed floating-point number
<b>Factory setting</b>	0 %
<b>Additional information</b>	<i>Dependency</i>  The unit is taken from the: <b>Units index</b> parameter (→  145)

---

**Sim. En/Disable**

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Sim. En/Disable (6966-1 to n)
<b>Description</b>	Use this function to enable or disable the function block simulation.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Uninitialized</li><li>■ Disabled</li><li>■ Active</li></ul>
<b>Factory setting</b>	Uninitialized

---

**EU at 100%**

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → EU at 100% (6982-1 to n)
<b>Description</b>	Use this function to enter the upper limit value of the output value measuring range.
<b>User entry</b>	Signed floating-point number
<b>Factory setting</b>	0 %
<b>Additional information</b>	<i>Dependency</i>
	 The unit is taken from the: <b>Units index</b> parameter (→  145)

---

**EU at 0%**

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → EU at 0% (6981-1 to n)
<b>Description</b>	Use this function to enter the lower limit value of the output value measuring range.
<b>User entry</b>	Signed floating-point number
<b>Factory setting</b>	0 %
<b>Additional information</b>	<i>Dependency</i>
	 The unit is taken from the: <b>Units index</b> parameter (→  145)

---

**Units index**

---

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

**Selection**

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

- kg/m<sup>3</sup>
- kg/Nm<sup>3</sup>
- K
- °C
- %
- g
- Nl
- Nm<sup>3</sup>
- Sl
- Sm<sup>3</sup>
- ml
- kg
- l
- t
- m<sup>3</sup>
- dm<sup>3</sup>
- cm<sup>3</sup>
- Sgal/d (us)
- Sgal/h (us)
- Sbbl/s (us;liq.)
- Sbbl/min (us;liq.)
- Sbbl/h (us;liq.)
- Sbbl/d (us;liq.)
- Sgal/s (imp)
- Sgal/min (imp)
- Sgal/h (imp)
- Sgal/d (imp)
- MSft<sup>3</sup>/D
- lb/ft<sup>3</sup>
- lb/gal (us)
- lb/bbl (us;tank)
- lb/bbl (us;liq.)
- lb/bbl (us;beer)
- lb/bbl (us;oil)
- lb/Sft<sup>3</sup>
- °F
- °R
- oz
- af
- fl oz (us)
- Mgal (us)
- bbl (us;oil)
- bbl (us;liq.)
- bbl (us;tank)
- Sgal (us)
- Sbbl (us;liq.)
- Sft<sup>3</sup>
- kgal (us)
- lb
- ft<sup>3</sup>
- gal (us)
- bbl (us;beer)
- STon

*Other units*  
bbl (imp;beer)

**Factory setting** %

**Additional information** *Result*

The selected unit applies for:

- **Simulate Value** parameter (→ [142](#))
- **Transducer Value** parameter (→ [144](#))
- **EU at 0%** parameter (→ [145](#))
- **EU at 100%** parameter (→ [145](#))

## 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 (→ [148](#))

---

### 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 (→ [148](#))

---

### 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	■ gal (imp)
■ m		■ °F	■ Btu
■ m <sup>3</sup>		■ °R	■ LTon
■ Pa s		■ ft	■ datherm
■ m <sup>2</sup> /s		■ in	■ Btu/h
■ P		■ bbl (us;liq.)	■ Btu/day
■ cP		■ Sft <sup>3</sup>	■ Btu/min
■ St		■ in/min	■ Btu/s
■ cSt		■ oz	■ LTon/d
■ Wbm		■ STon	■ LTon/h
■ Ns/m		■ lb/d	■ LTon/min
■ 1/Jm <sup>3</sup>		■ lb/h	■ LTon/s
■ e/Vm <sup>3</sup>		■ lb/min	■ gal/d (imp)
■ m <sup>3</sup> /C		■ lb/s	■ gal/h (imp)
■ (1/32 millisecond)/min		■ STon/d	■ gal/min (imp)
■ °C		■ STon/h	■ gal/s (imp)
■ '		■ STon/min	■ lb/gal (imp)
■ "		■ STon/s	■ Mgal/min (imp)
■ rad		■ mile	■ Mgal/h (imp)
■ °		■ yd	■ Mgal/d (imp)
■ µm		■ ft <sup>2</sup>	■ kgal/d (imp)
■ mm		■ in <sup>2</sup>	■ kgal/h (imp)
■ cm <sup>3</sup>		■ mile <sup>2</sup>	■ kgal/min (imp)
■ dm <sup>3</sup>		■ yd <sup>2</sup>	■ kgal/s (imp)
■ hl		■ ft <sup>3</sup>	■ µgal/d (imp)
■ l		■ gal (us)	■ µgal/h (imp)
■ ml		■ quart	■ µgal/min (imp)
■ s		■ pint	■ µgal/s (imp)
■ min		■ yd <sup>3</sup>	■ mgal/d (imp)
■ ks		■ mile <sup>3</sup>	■ mgal/h (imp)
■ µs		■ in <sup>3</sup>	■ mgal/min (imp)
■ ms		■ bushel	■ mgal/s (imp)
■ m/h		■ bbl (us;oil)	■ Mgal/s (imp)
■ m/s		■ ft/s	■ kImpGal
■ mm/s		■ ft/h	■ Btu/lb
■ Hz		■ lb	
■ g		■ ft/min	
■ kg		■ in/h	
■ GWh		■ in/s	
■ J		■ yd/h	
■ kWh		■ yd/min	
■ MWh		■ yd/s	
■ kcal		■ lb/in <sup>3</sup>	
■ Mcal		■ lb/gal (us)	
■ kW		■ STon/yd <sup>3</sup>	
■ MW		■ psi	
■ W		■ psi a	
■ MJ/h		■ psi g	
■ mV		■ ftlbf	
■ Ohm		■ lb/ft <sup>3</sup>	
■ pF		■ MPH	
■ V		■ ft <sup>3</sup> /d	
■ Ml Mega		■ ft <sup>3</sup> /h	
■ mbar a		■ ft <sup>3</sup> /min	
■ bar		■ ft <sup>3</sup> /s	
■ dB		■ Sft <sup>3</sup> /h	
■ kPa a		■ Sft <sup>3</sup> /min	
■ kPa g		■ gal/d (us)	

- 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
- cm<sup>2</sup>
- dm<sup>2</sup>
- km<sup>2</sup>
- m<sup>2</sup>
- mm<sup>2</sup>
- mm<sup>3</sup>
- cl
- t
- kg/m<sup>3</sup>
- kg/dm<sup>3</sup>
- g/cm<sup>3</sup>
- g/m<sup>3</sup>
- kg/l
- kgf/cm<sup>2</sup>
- GJ
- kJ
- MJ
- km/h
- kt
- m/s<sup>2</sup>
- GHz
- kHz
- MHz
- 1/min
- 1/s
- THz
- rad/s
- 1/s<sup>2</sup>
- Mg
- mg
- g/l
- g/ml
- Mg/m<sup>3</sup>
- t/m<sup>3</sup>
- kgm/s
- kgm<sup>2</sup>
- kgm<sup>2</sup>/s
- kNm
- MNm
- mNm
- Nm
- kN
- MN
- 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)
- kft<sup>3</sup>/d
- kft<sup>3</sup>/h
- kft<sup>3</sup>/min
- kft<sup>3</sup>/s
- mft<sup>3</sup>/d
- mft<sup>3</sup>/h
- mft<sup>3</sup>/min
- mft<sup>3</sup>/s
- ubbl(US Beer)/min
- ubbl(US Beer)/s
- mbbl(US Beer)/d
- mbbl(US Beer)/h
- mbbl(US Beer)/min
- mbbl(US Beer)/s
- kgal (us)
- ac-in/d
- ac-in/h
- ac-in/m
- ac-in/s
- Mft<sup>3</sup>/d
- ac-in
- Mft<sup>3</sup>
- inH2Oa
- inH2Og
- inH2O a(4°C)
- inH2Og(4°C)

- $\mu\text{N}$
- $\text{mN}$
- $\text{N}$
- $\text{mN/m}$
- $\text{N/m}$
- $\text{atm}$
- $\text{GPa}$
- $\text{hPa}$
- $\text{kPa}$
- $\text{MPa}$
- $\mu\text{Pa}$
- $\text{mPa}$
- $\text{Pa}$
- $\text{torr}$
- $\text{gf/cm}^2$
- $\text{cal}$
- $\text{EJ}$
- $\text{mJ}$
- $\text{PJ}$
- $\text{TJ}$
- $\text{TWh}$
- $\text{Wh}$
- $\text{GW}$
- $\mu\text{W}$
- $\text{mW}$
- $\text{nW}$
- $\text{pW}$
- $\text{TW}$
- $\text{Mcal/h}$
- $\text{kcal/d}$
- $\text{kcal/h}$
- $\text{kcal/min}$
- $\text{kcal/s}$
- $\text{Mcal/d}$
- $\text{Mcal/min}$
- $\text{Mcal/s}$
- $\text{kJ/d}$
- $\text{kJ/h}$
- $\text{kJ/min}$
- $\text{kJ/s}$
- $\text{A}$
- $\text{mA}$
- $\text{kA}$
- $\mu\text{A}$
- $\text{nA}$
- $\text{pA}$
- $\text{C}$
- $\text{kC}$
- $\text{MC}$
- $\mu\text{C}$
- $\text{nC}$
- $\text{pC}$
- $\text{Ah}$
- $\text{W/mK}$
- $\text{m2K/W}$
- $\text{W/m}^2\text{K}$
- $\text{J/K}$
- $\text{kJ/K}$
- $\text{J/(kgK)}$
- $\text{inH}_2\text{O a(68°F)}$
- $\text{inH}_2\text{Og(68°F)}$
- $\text{ftH}_2\text{Oa}$
- $\text{ftH}_2\text{Og}$
- $\text{ftH}_2\text{O a(4°C)}$
- $\text{ftH}_2\text{Og(4°C)}$
- $\text{ftH}_2\text{O a(68°F)}$
- $\text{ftH}_2\text{Og(68°F)}$
- $\text{inHga}$
- $\text{inHgg}$
- $\text{inHg a(0°C)}$
- $\text{inHgg(0°C)}$
- $\text{klb(US)/d}$
- $\text{klb(US)/h}$
- $\text{klb(US)/min}$
- $\text{klb(US)/s}$
- $\text{MSft}^3/\text{D}$
- $\text{mils/yr}$
- $\text{ft/s}^2$
- $\text{MLB/H}$
- $\text{lbf-in/deg}$

- kJ/(kgK)
- J/kg
- kJ/kg
- MJ/kg
- C/cm<sup>3</sup>
- C/m<sup>3</sup>
- C/mm<sup>3</sup>
- kC/m<sup>3</sup>
- $\mu$ C/m<sup>3</sup>
- mC/m<sup>3</sup>
- C/cm<sup>2</sup>
- C/m<sup>2</sup>
- C/mm<sup>2</sup>
- kC/m<sup>2</sup>
- $\mu$ C/m<sup>2</sup>
- mC/m<sup>2</sup>
- kV/m
- MV/m
- $\mu$ V/m
- mV/m
- V/cm
- V/m
- kV
- MV
- $\mu$ V
- F
- $\mu$ F
- mF
- nF
- F/m
- A/cm<sup>2</sup>
- kA/m<sup>2</sup>
- MA/m<sup>2</sup>
- A/cm
- A/m
- kA/m
- $\mu$ T
- mT
- nT
- T
- mWb
- Wb
- H
- $\mu$ H
- mH
- nH
- pH
- H/m
- $\mu$ H/m
- nH/m
- Am<sup>2</sup>
- GOhm
- kOhm
- MOhm
- $\mu$ Ohm
- mOhm
- kS
- $\mu$ S
- $\mu$ S/cm

- mS
- S
- t/d
- t/h
- t/min
- t/s
- %
- m<sup>3</sup>/d
- m<sup>3</sup>/h
- m<sup>3</sup>/min
- m<sup>3</sup>/s
- GOhmm
- kOhmm
- MOhmm
- $\mu$ Ohmm
- mOhmm
- nOhmm
- Ohmcm
- Ohmm
- kS/m
- MS/m
- $\mu$ S/mm
- mS/cm
- S/m
- sr
- l/d
- l/h
- l/min
- l/s
- Ml/d
- kW/m<sup>2</sup>
- W/(sr·m<sup>2</sup>)
- cd
- cd/m<sup>2</sup>
- lm
- lm/m<sup>2</sup>
- lm/W
- lx
- $\mu$ W/m<sup>2</sup>
- mW/m<sup>2</sup>
- pW/m<sup>2</sup>
- Pas/m<sup>3</sup>
- Pas/m
- ppm
- MJ/d
- MJ/min
- MJ/s
- cm<sup>3</sup>/d
- cm<sup>3</sup>/h
- cm<sup>3</sup>/min
- cm<sup>3</sup>/s
- Nm<sup>3</sup>
- Nm<sup>3</sup>/d
- Nm<sup>3</sup>/h
- Nm<sup>3</sup>/min
- Nm<sup>3</sup>/s
- Sm<sup>3</sup>
- Sm<sup>3</sup>/d
- Sm<sup>3</sup>/h

- Sm<sup>3</sup>/min
- Sm<sup>3</sup>/s
- NI
- NI/d
- NI/h
- NI/min
- NI/s
- SI
- ml/min
- B
- ppb
- ppth
- °Balling
- km<sup>3</sup>/d
- km<sup>3</sup>/h
- km<sup>3</sup>/min
- km<sup>3</sup>/s
- Mm<sup>3</sup>/d
- Mm<sup>3</sup>/h
- Mm<sup>3</sup>/min
- Mm<sup>3</sup>/s
- μm<sup>3</sup>/d
- μm<sup>3</sup>/h
- μm<sup>3</sup>/min
- μm<sup>3</sup>/s
- mm<sup>3</sup>/d
- mm<sup>3</sup>/h
- mm<sup>3</sup>/min
- mm<sup>3</sup>/s
- kl/d
- kl/h
- kl/min
- kl
- Sl/d
- Sl/h
- Sl/min
- Sl/s
- kL/s
- MI/h
- MI/min
- Mm<sup>3</sup>/d
- Mm<sup>3</sup>
- GPa a
- GPa g
- hPa a
- hPa g
- gf/cm<sup>2</sup> a
- gf/cm<sup>2</sup> g
- kgf/cm<sup>2</sup> a
- kgf/cm<sup>2</sup> g
- mBar g
- μbar
- Gy
- mGy
- mSv
- rem
- Sv
- Bq
- kBq

- MBq
- cnt/s
- MSft<sup>3</sup>/d
- SCCM
- dm
- mm/yr
- g/m
- $\mu\text{g}/\text{m}^3$
- $\mu\text{g}/\text{l}$
- mg/m<sup>3</sup>
- kmol
- $\mu\text{mol}$
- mmol
- mol
- mol/dm<sup>3</sup>
- mol/m<sup>3</sup>
- mol/l
- cm<sup>3</sup>/mol
- m<sup>3</sup>/mol
- g/mol
- kg/mol
- l/mol
- mg/l
- $\mu\text{S}/\text{m}$
- mS/m
- nS/cm
- S/cm
- kOhmcm
- MOhmcm
- l/m<sup>3</sup>
- $\mu\text{L}/\text{L}$
- ml/m<sup>3</sup>
- ml/l
- J/mol
- kJ/mol
- J/(molK)
- Bq/kg
- kBq/kg
- MBq/kg
- J/g
- %/s
- %/V
- nA/ppm
- 1/32 ms
- 1/H
- /cm
- 1/K
- 1/m
- 1/mm
- Nm<sup>2</sup>/A
- Pa/A
- pA/hPa
- C/kg
- mC/kg
- dyne-cm/deg
- newton-m/deg
- bar a
- bar g

*Custom-specific units*  
PV/Sec

**Factory setting** K

**Additional information** *Result*

The selected unit applies for:

- **Value** parameter (→ 136)
- **Value** parameter (→ 139)
- **EU at 100%** parameter (→ 145)
- **EU at 0%** parameter (→ 145)
- **Low Cutoff** parameter (→ 160)
- **High High Limit** parameter (→ 168)
- **Float Value** parameter (→ 172)
- **High Limit** parameter (→ 169)
- **Float Value** parameter (→ 174)
- **Low Limit** parameter (→ 170)
- **Float Value** parameter (→ 175)
- **Low Low Limit** parameter (→ 170)
- **Float Value** parameter (→ 177)

---

## Decimal

---

**Navigation** ☐ Expert → Analog inputs → Analog input 1 to n → Decimal (6961–1 to n)

**Description** Use this function to select the number of decimal places for the input value from the transducer block (input value).

**User entry** -128 to 127

**Factory setting** 0

---

## Grant

---

**Navigation** ☐ Expert → Analog inputs → Analog input 1 to n → Grant (6926–1 to n)

**Description** Option for releasing certain access authorizations of the field bus host system on the device.

**Selection**  

- Program
- Tune
- Alarm
- Local
- Operate
- Service
- Diagnostic

---

**Deny**

**Navigation**  Expert → Analog inputs → Analog input 1 to n → Deny (6925–1 to n)

**Description** Option for restricting certain access authorizations of the field bus host system on the device.

**Selection**

- Program Denied
- Tune Denied
- Alarm Denied
- Local
- Operate Denied

---

**I/O Options**

**Navigation**  Expert → Analog inputs → Analog input 1 to n → I/O Options (6941–1 to n)

**Description** Option for activating the low flow cut off.

**Selection** Low Cutoff

**Additional information** *Description*

 The limit value for the low flow cut off is defined in **Low Cutoff** parameter ( 160).

---

**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
- Volume flow
- Correct.vol.flow
- Density
- Ref.density
- Temperature
- Totalizer 1
- Totalizer 2
- Totalizer 3

**Factory setting** Uninitialized

## Status Options

<b>Navigation</b>	Expert → Analog inputs → Analog input 1 to n → Status Options (6971–1 to n)
<b>Prerequisite</b>	The measuring device must be in the OOS operating mode so that the parameter can be edited.
<b>Description</b>	Use this function to select an option for the status of the output value that is supported by the analog input block.
<b>Selection</b>	<ul style="list-style-type: none"> <li>■ Propag Fault Fwd</li> <li>■ Uncertain if Lim</li> <li>■ Bad if Limited</li> <li>■ Uncertain if Man</li> </ul>
<b>Additional information</b>	<p><i>Options</i></p> <ul style="list-style-type: none"> <li>■ Propag Fault Fwd If the measuring device has the status <b>Bad DeviceFailure</b> or <b>Bad SensorFailure</b>, the device continues to measure and no alarm is triggered. The use of this substatus in the output value (OUT) is defined by <b>Propag Fault Fwd</b> 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.</li> <li>■ Uncertain if Lim If the measured or calculated value reaches a limit value, <b>Uncertain if Lim</b> option is used for the output status.</li> <li>■ Bad if Limited If the measured value exceeds or falls below an upper or lower limit value, <b>Bad if Limited</b> option is used as the output status.</li> <li>■ Uncertain if Man If the Actual mode of the function block is in the <b>Man</b> option operating mode, <b>Uncertain if Man</b> option is used as the output status.</li> </ul>

## Lin Type

<b>Navigation</b>	Expert → Analog inputs → Analog input 1 to n → Lin Type (6905–1 to n)
<b>Description</b>	Use this function to select the type of linearization of the input value or simulation value.
<b>Selection</b>	<ul style="list-style-type: none"> <li>■ Uninitialized</li> <li>■ Direct</li> <li>■ Indirect</li> <li>■ Indirect Sq Root</li> </ul>
<b>Factory setting</b>	Uninitialized
<b>Additional information</b>	<p><i>"Uninitialized" option</i> The function block does not switch to Auto operating mode.</p> <p><i>"Direct" option</i> The measured value from the transducer block (input value) bypasses the linearization function and is routed unchanged through the analog input function block (<math>X_d\_Scale = Out\_Scale</math>). This is selected if the input value already has the required physical units.</p>

PV = Input value

The units in Units index ( $\rightarrow$  145) (Xd\_Scale) and Units index ( $\rightarrow$  148) (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 ( $\rightarrow$  134).

*"Indirect" option*

The measured value from the transducer block (input value) is linearly rescaled via the Xd\_Scale input scaling to the required Out\_Scale output range.

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

A0024620

PV Primary value

X Value ( $\rightarrow$  163) (Field\_Val)

Y EU at 100% ( $\rightarrow$  148) (Out\_Scale)

Z EU at 0% ( $\rightarrow$  148) (Out\_Scale)

*"Indirect Sq Root" option*

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

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

A0024847

PV Primary value

X Value ( $\rightarrow$  163) (Field\_Val)

Y EU at 100% ( $\rightarrow$  148) (Out\_Scale)

Z EU at 0% ( $\rightarrow$  148) (Out\_Scale)

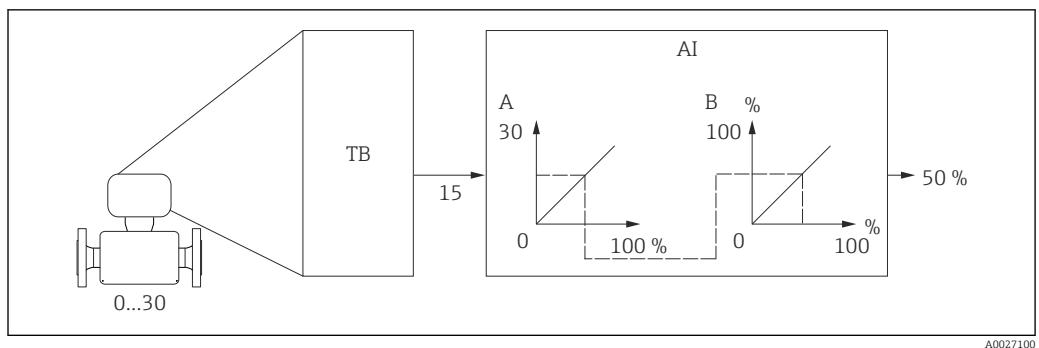
*Example*

- 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 ( $\rightarrow$  157), select the **Mass flow** option.
2. In the **Lin Type** parameter ( $\rightarrow$  158), 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 ( $\rightarrow$  145), enter the value 0.
  - In **EU at 100%** parameter ( $\rightarrow$  145), enter the value 30.
  - In the **Units index** parameter ( $\rightarrow$  145), select the **kg/h** option.
4. In the Out\_Scale parameter group:
  - ↳ **EU at 0%** parameter ( $\rightarrow$  148), enter the value 0.
  - In **EU at 100%** parameter ( $\rightarrow$  148), enter the value 100.
  - In the **Units index** parameter ( $\rightarrow$  148), 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 ( $\rightarrow$  139).



6 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 (→ 157).

#### Dependency

The unit is taken from the: **Units index** parameter (→ 148)

## Status

### Navigation

Expert → Analog inputs → Analog input 1 to n → Status (6923–1 to n)

### Description

Displays the status of the unprocessed measured value from the device, which reflects the status of the transducer before signal transmission.

### User interface

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

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

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

---

**Value**

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Value (6924–1 to n)
<b>Description</b>	Displays the unprocessed measured value from the device as a % of the primary value (PV).
<b>User interface</b>	Signed floating-point number

---

**PV Filter Time**

---

<b>Navigation</b>	  Expert → Analog inputs → Analog input 1 to n → PV Filter Time (6909–1 to n)
<b>Description</b>	Use this function to enter the filter time specification for the filtering of the unconverted input value (PV).
<b>User entry</b>	Positive floating-point number
<b>Factory setting</b>	0 s
<b>Additional information</b>	<i>Factory setting</i>  If the value 0 s is entered, filtering will not be performed.

---

**Unacknowledged**

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Unacknowledged (6978–1 to n)
<b>Description</b>	Option for manually acknowledging an update of the static block parameter.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Uninitialized</li><li>■ Acknowledged</li><li>■ Unacknowledged</li></ul>
<b>Factory setting</b>	Uninitialized
<b>Additional information</b>	<i>Description</i>  <ul style="list-style-type: none"><li>■ If a new diagnostic event occurs, the measuring device sets <b>Unacknowledged</b> option.</li><li>■ If the diagnostic event has been acknowledged, the user can set <b>Acknowledged</b> option.</li></ul>

**Update State**

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Update State (6979–1 to n)
<b>Description</b>	Displays the status of an update of the static block parameter. The status indicates whether the update was communicated or not.
<b>User interface</b>	<ul style="list-style-type: none"><li>■ Uninitialized</li><li>■ Reported</li><li>■ Not Reported</li></ul>

---

**Time Stamp**

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Time Stamp (6977–1 to n)
<b>Description</b>	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.
<b>User interface</b>	Days (d), hours (h), minutes (m), seconds (s)

---

**Static revision**

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Static revision (6976–1 to n)
<b>Description</b>	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).
<b>User interface</b>	0 to 65 535

---

**Relative Index**

---

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

---

## Unacknowledged

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Unacknowledged (6920–1 to n)
<b>Description</b>	Option for manually acknowledging a block alarm.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Uninitialized</li><li>■ Acknowledged</li><li>■ Unacknowledged</li></ul>
<b>Factory setting</b>	Uninitialized
<b>Additional information</b>	<p><i>Description</i></p> <p>If <b>Blk Alm Auto Ack</b> option is not enabled in <b>Ack. Option</b> parameter (→ 167), the process alarm must be manually acknowledged in this parameter.</p> <p> ■ If a new alarm occurs, the measuring device sets <b>Unacknowledged</b> option. ■ If the alarm has been acknowledged, the user can set <b>Acknowledged</b> option.</p>

---

## Alarm State

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Alarm State (6917–1 to n)
<b>Description</b>	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.
<b>User interface</b>	<ul style="list-style-type: none"><li>■ Uninitialized</li><li>■ Clear-Reported</li><li>■ ClearNotReported</li><li>■ Active-Reported</li><li>■ ActiveNotRep</li></ul>

---

## Time Stamp

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Time Stamp (6919–1 to n)
<b>Description</b>	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.
<b>User interface</b>	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**

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Unacknowledged (6914–1 to n)
<b>Description</b>	Displays an unacknowledged process alarm.
<b>User interface</b>	<ul style="list-style-type: none"><li>■ HiHi Alarm Unack</li><li>■ Hi Alm Unack</li><li>■ LoLo Alm Unack</li><li>■ Lo Alm Unack</li><li>■ Block Alm Unack</li></ul>

---

**Unreported**

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Unreported (6915–1 to n)
<b>Description</b>	Displays a process alarm that has not been communicated.
<b>User interface</b>	<ul style="list-style-type: none"><li>■ HiHi Alm Unrep</li><li>■ Hi Alm Unrep</li><li>■ LoLo Alm Unrep</li><li>■ Lo Alm Unrep</li><li>■ Block Alm Unrep</li></ul>

---

**Disabled**

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Disabled (6913–1 to n)
<b>Description</b>	Option for disabling a process alarm category.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ HiHi Alm Disabl</li><li>■ Hi Alm Disabled</li><li>■ LoLo Alm Disabl</li><li>■ Lo Alm Disabled</li><li>■ Block Alm Disabl</li></ul>

---

**Ack. Option**

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Ack. Option (6910–1 to n)
<b>Description</b>	Option for automatic acknowledgment of process alarms in a specific category.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ HiHi Alm Aut Ack</li><li>■ Hi Alm Auto Ack</li><li>■ LoLo Alm Aut Ack</li><li>■ Lo Alm Auto Ack</li></ul>

- 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 (→ 167).  
**Current** parameter (→ 166) 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 (→ 148)

---

**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 (→ 148)

---

**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**

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Low Limit (6947–1 to n)
<b>Description</b>	Use this function to enter the value for the lower early warning limit.
<b>User entry</b>	Signed floating-point number
<b>Factory setting</b>	0
<b>Additional information</b>	<i>Dependency</i>  The unit is taken from the: <b>Units index</b> parameter (→  148)

**Low Low Priority**

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Low Low Priority (6954–1 to n)
<b>Description</b>	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.
<b>User entry</b>	0 to 15
<b>Factory setting</b>	0

**Low Low Limit**

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Low Low Limit (6953–1 to n)
<b>Description</b>	Use this function to enter the value for the lower alarm limit.
<b>User entry</b>	Signed floating-point number
<b>Factory setting</b>	0
<b>Additional information</b>	<i>Dependency</i>  The unit is taken from the: <b>Units index</b> parameter (→  148)

**Unacknowledged**

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Unacknowledged (6935–1 to n)
<b>Description</b>	Option for manually acknowledging a process alarm that has exceeded the upper alarm limit (High High Limit (→  168)).

---

<b>Selection</b>	<ul style="list-style-type: none"> <li>■ Uninitialized</li> <li>■ Acknowledged</li> <li>■ Unacknowledged</li> </ul>
<b>Factory setting</b>	Uninitialized
<b>Additional information</b>	<p><i>Description</i></p> <p>If <b>HiHi Alm Aut Ack</b> option is not enabled in <b>Ack. Option</b> parameter (→ 167), the process alarm must be manually acknowledged in this parameter.</p> <p> ■ If a new alarm occurs, the measuring device sets <b>Unacknowledged</b> option. ■ If the alarm has been acknowledged, the user can set <b>Acknowledged</b> option.</p>

---

## Alarm State

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Alarm State (6932–1 to n)
<b>Description</b>	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.
<b>User interface</b>	<ul style="list-style-type: none"> <li>■ Uninitialized</li> <li>■ Clear-Reported</li> <li>■ ClearNotReported</li> <li>■ Active-Reported</li> <li>■ ActiveNotRep</li> </ul>

---

## Time Stamp

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Time Stamp (6934–1 to n)
<b>Description</b>	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.
<b>User interface</b>	Days (d), hours (h), minutes (m), seconds (s)

---

## Subcode

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Subcode (6933–1 to n)
<b>Description</b>	Displays the specific cause of the process alarm for the upper alarm limit.
<b>User interface</b>	<ul style="list-style-type: none"> <li>■ Other</li> <li>■ BlockConfigurat</li> <li>■ LinkConfigurat</li> </ul>

- 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** *Dependency*

 The unit is taken from the: **Units index** parameter (→  148)

---

## 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 (→  169)).

**Selection**

- Uninitialized
- Acknowledged
- Unacknowledged

**Factory setting** Uninitialized

**Additional information** *Description*

If **Hi Alm Auto Ack** option is not enabled in **Ack. Option** parameter (→  167), 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**

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Alarm State (6927–1 to n)
<b>Description</b>	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.
<b>User interface</b>	<ul style="list-style-type: none"><li>■ Uninitialized</li><li>■ Clear-Reported</li><li>■ ClearNotReported</li><li>■ Active-Reported</li><li>■ ActiveNotRep</li></ul>

---

**Time Stamp**

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Time Stamp (6929–1 to n)
<b>Description</b>	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.
<b>User interface</b>	Days (d), hours (h), minutes (m), seconds (s)

---

**Subcode**

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Subcode (6928–1 to n)
<b>Description</b>	Displays the specific cause of the process alarm for the upper early warning limit.
<b>User interface</b>	<ul style="list-style-type: none"><li>■ Other</li><li>■ BlockConfigurat</li><li>■ LinkConfigurat</li><li>■ SimulationActive</li><li>■ LocalOverride</li><li>■ DeviceFaultState</li><li>■ DeviceMainten</li><li>■ SensorFailure</li><li>■ OutputFailure</li><li>■ MemoryFailure</li><li>■ LostStaticData</li><li>■ LostNVDData</li><li>■ ReadbackCheck</li><li>■ MaintenanceNeed</li><li>■ PowerUp</li><li>■ OutOfService</li></ul>

## 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 (→  148)

---

## 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 (→  170)).

**Selection**

- Uninitialized
- Acknowledged
- Unacknowledged

**Factory setting** Uninitialized

**Additional information** *Description*

If **Lo Alm Auto Ack** option is not enabled in **Ack. Option** parameter (→  167), the process alarm must be manually acknowledged in this parameter.

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

---

## Alarm State

---

**Navigation**  Expert → Analog inputs → Analog input 1 to n → Alarm State (6942–1 to n)

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

**User interface**

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

---

**Time Stamp**

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Time Stamp (6944–1 to n)
<b>Description</b>	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.
<b>User interface</b>	Days (d), hours (h), minutes (m), seconds (s)

---

**Subcode**

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Subcode (6943–1 to n)
<b>Description</b>	Displays the specific cause of the process alarm for the lower early warning limit.
<b>User interface</b>	<ul style="list-style-type: none"> <li>■ Other</li> <li>■ BlockConfigurat</li> <li>■ LinkConfigurat</li> <li>■ SimulationActive</li> <li>■ LocalOverride</li> <li>■ DeviceFaultState</li> <li>■ DeviceMainten</li> <li>■ SensorFailure</li> <li>■ OutputFailure</li> <li>■ MemoryFailure</li> <li>■ LostStaticData</li> <li>■ LostNVData</li> <li>■ ReadbackCheck</li> <li>■ MaintenanceNeed</li> <li>■ PowerUp</li> <li>■ OutOfService</li> </ul>

---

**Float Value**

---

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

 The unit is taken from the: **Units index** parameter (→  148)

## Unacknowledged

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Unacknowledged (6951–1 to n)
<b>Description</b>	Option for manually acknowledging a process alarm that has exceeded the lower alarm limit (Low Low Limit (→ <a href="#">170</a> )).
<b>Selection</b>	<ul style="list-style-type: none"><li>▪ Uninitialized</li><li>▪ Acknowledged</li><li>▪ Unacknowledged</li></ul>
<b>Factory setting</b>	Uninitialized
<b>Additional information</b>	<p><i>Description</i></p> <p>If <b>LoLo Alm Aut Ack</b> option is not enabled in <b>Ack. Option</b> parameter (→ <a href="#">167</a>), the process alarm must be manually acknowledged in this parameter.</p> <p> ▪ If a new alarm occurs, the measuring device sets <b>Unacknowledged</b> option. ▪ If the alarm has been acknowledged, the user can set <b>Acknowledged</b> option.</p>

---

## Alarm State

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Alarm State (6948–1 to n)
<b>Description</b>	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.
<b>User interface</b>	<ul style="list-style-type: none"><li>▪ Uninitialized</li><li>▪ Clear-Reported</li><li>▪ ClearNotReported</li><li>▪ Active-Reported</li><li>▪ ActiveNotRep</li></ul>

---

## Time Stamp

---

<b>Navigation</b>	 Expert → Analog inputs → Analog input 1 to n → Time Stamp (6950–1 to n)
<b>Description</b>	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.
<b>User interface</b>	Days (d), hours (h), minutes (m), seconds (s)

---

**Subcode**

---

<b>Navigation</b>	█ Expert → Analog inputs → Analog input 1 to n → Subcode (6949–1 to n)
<b>Description</b>	Displays the specific cause of the process alarm for the lower alarm limit.
<b>User interface</b>	<ul style="list-style-type: none"> <li>■ Other</li> <li>■ BlockConfigurat</li> <li>■ LinkConfigurat</li> <li>■ SimulationActive</li> <li>■ LocalOverride</li> <li>■ DeviceFaultState</li> <li>■ DeviceMainten</li> <li>■ SensorFailure</li> <li>■ OutputFailure</li> <li>■ MemoryFailure</li> <li>■ LostStaticData</li> <li>■ LostNVData</li> <li>■ ReadbackCheck</li> <li>■ MaintenanceNeed</li> <li>■ PowerUp</li> <li>■ OutOfService</li> </ul>

---

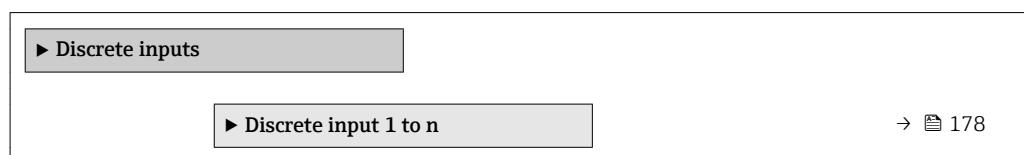
**Float Value**

---

<b>Navigation</b>	█ Expert → Analog inputs → Analog input 1 to n → Float Value (6952–1 to n)
<b>Description</b>	Displays the value of the affected parameter at the time at which the process alarm for the lower alarm limit was triggered.
<b>User interface</b>	Signed floating-point number
<b>Additional information</b>	<p><i>Dependency</i></p> <p> The unit is taken from the: <b>Units index</b> parameter (→ 148)</p>

### 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

► Discrete input 1 to n	
Block tag (6851-1 to n)	→ 178
Status (6853-1 to n)	→ 184
Value (6854-1 to n)	→ 187
Channel (6852-1 to n)	→ 195
PV Filter Time (6855-1 to n)	→ 195

---

#### 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.

---

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

---

## Strategy

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Strategy (6883–1 to n)
<b>Description</b>	Use this function to enter the Strategy: Enables blocks to be grouped by entering identical numbers.
<b>User entry</b>	0 to FFFF
<b>Factory setting</b>	0

---

## Alert Key

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Alert Key (6846–1 to n)
<b>Description</b>	Use this function to enter the Alert Key: Identifies the plant unit where the transmitter is located. This helps in pinpointing events.
<b>User entry</b>	0 to 0xFF
<b>Factory setting</b>	1

---

## Target mode

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Target mode (6873–1 to n)
<b>Description</b>	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.
<b>Selection</b>	<ul style="list-style-type: none"> <li>■ ROut</li> <li>■ RCas</li> <li>■ Cas</li> <li>■ Auto</li> <li>■ Man</li> <li>■ LO</li> <li>■ IMan</li> <li>■ OOS</li> </ul>
<b>Factory setting</b>	OOS
<b>Additional information</b>	<p><i>Options</i></p>  Detailed description of the options available for selection: <b>Target mode</b> parameter (→  111)

## 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 (→  179).

**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  
(→  111)

---

## 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 (→  179) 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  
(→  111)

---

## Normal mode

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Normal mode (6871–1 to n)
<b>Description</b>	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.
<b>Selection</b>	<ul style="list-style-type: none"><li>▪ ROut</li><li>▪ RCas</li><li>▪ Cas</li><li>▪ Auto</li><li>▪ Man</li><li>▪ LO</li><li>▪ IMan</li><li>▪ OOS</li></ul>
<b>Additional information</b>	<i>Options</i>  Detailed description of the options available for selection: <b>Target mode</b> parameter (→  111)

---

## Block Error

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Block Error (6857–1 to n)
<b>Description</b>	Displays the short text for the Block Error that has occurred in the function block.
<b>User interface</b>	<ul style="list-style-type: none"><li>▪ Other</li><li>▪ BlockConfigurat</li><li>▪ LinkConfigurat</li><li>▪ SimulationActive</li><li>▪ LocalOverride</li><li>▪ DeviceFaultState</li><li>▪ DeviceMainten</li><li>▪ SensorFailure</li><li>▪ OutputFailure</li><li>▪ MemoryFailure</li><li>▪ LostStaticData</li><li>▪ LostNVData</li><li>▪ ReadbackCheck</li><li>▪ MaintenanceNeed</li><li>▪ PowerUp</li><li>▪ OutOfService</li></ul>

---

## Status

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Status (6875–1 to n)
<b>Description</b>	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**

- 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

---

**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**

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Value (6854–1 to n)
<b>Description</b>	Use this function to select the discrete output value.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ State 0</li><li>■ State 1</li><li>■ State 2</li><li>■ State 3</li><li>■ State 4</li><li>■ State 5</li><li>■ State 6</li><li>■ State 7</li><li>■ State 8</li><li>■ State 9</li><li>■ State 10</li><li>■ State 11</li><li>■ State 12</li><li>■ State 13</li><li>■ State 14</li><li>■ State 15</li><li>■ State 16</li></ul>
<b>Factory setting</b>	State 0

---

**Simulate Status**

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Simulate Status (6878–1 to n)
<b>Description</b>	Use this function to select the status that is used for the transducer block simulation.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Bad (0x00)</li><li>■ Bad (0x01)</li><li>■ Bad (0x02)</li><li>■ Bad (0x03)</li><li>■ Bad (0x04)</li><li>■ Bad (0x05)</li><li>■ Bad (0x06)</li><li>■ Bad (0x07)</li><li>■ Bad (0x08)</li><li>■ Bad (0x09)</li><li>■ Bad (0x0A)</li><li>■ Bad (0x0B)</li><li>■ Bad (0x0C)</li><li>■ Bad (0x0D)</li><li>■ Bad (0x0E)</li><li>■ Bad (0x0F)</li><li>■ Bad (0x10)</li><li>■ Bad (0x11)</li><li>■ Bad (0x12)</li><li>■ Bad (0x13)</li><li>■ Bad (0x14)</li></ul>

- 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 → 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**

- 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

**Factory setting**

State 0

---

**Transducer Stat**

---

**Navigation** Expert → Discrete inputs → Discrete input 1 to n → Transducer Stat (6880-1 to n)**Description**

Displays the current status of the transducer block.

**User interface**

- Bad (0x00)
- Bad (0x01)
- Bad (0x02)
- Bad (0x03)
- Bad (0x04)
- Bad (0x05)
- Bad (0x06)
- Bad (0x07)
- Bad (0x08)
- Bad (0x09)
- Bad (0x0A)
- Bad (0x0B)
- Bad (0x0C)
- Bad (0x0D)
- Bad (0x0E)
- Bad (0x0F)
- Bad (0x10)
- Bad (0x11)
- Bad (0x12)
- Bad (0x13)
- Bad (0x14)
- Bad (0x15)
- Bad (0x16)
- Bad (0x17)
- Bad (0x18)
- Bad (0x19)
- Bad (0x1A)
- Bad (0x1B)
- Bad (0x1C)

- Bad (0x1D)
- Bad (0x1E)
- Bad (0x1F)
- Uncertain (0x40)
- Uncertain (0x41)
- Uncertain (0x42)
- Uncertain (0x43)
- Uncertain (0x44)
- Uncertain (0x45)
- Uncertain (0x46)
- Uncertain (0x47)
- Uncertain (0x48)
- Uncertain (0x49)
- Uncertain (0x4A)
- Uncertain (0x4B)
- Uncertain (0x4C)
- Uncertain (0x4D)
- Uncertain (0x4E)
- Uncertain (0x4F)
- Uncertain (0x50)
- Uncertain (0x51)
- Uncertain (0x52)
- Uncertain (0x53)
- Uncertain (0x54)
- Uncertain (0x55)
- Uncertain (0x56)
- Uncertain (0x57)
- Uncertain (0x58)
- Uncertain (0x59)
- Uncertain (0x5A)
- Uncertain (0x5B)
- Good (0x80)
- Good (0x81)
- Good (0x82)
- Good (0x83)
- Good (0x84)
- Good (0x85)
- Good (0x86)
- Good (0x87)
- Good (0x88)
- Good (0x89)
- Good (0x8A)
- Good (0x8B)
- Good (0x8C)
- Good (0x8D)
- Good (0x8E)
- Good (0x8F)
- Good (0x90)
- Good (0x91)
- Good (0x92)
- Good (0x93)
- Good (0x94)
- Good (0x95)
- Good (0x96)
- Good (0x97)
- Good (0x98)
- Good (0x99)
- Good (0x9A)
- Good (0x9B)

- Good (0xC0)
- Good (0xC1)
- Good (0xC2)
- Good (0xC3)
- Good (0xC4)
- Good (0xC5)
- Good (0xC6)
- Good (0xC7)
- Good (0xC8)
- Good (0xC9)
- Good (0xCA)
- Good (0xCB)
- Good (0xCC)
- Good (0xCD)
- Good (0xCE)
- Good (0xCF)
- Good (0xD0)
- Good (0xD1)
- Good (0xD2)
- Good (0xD3)
- Good (0xD4)
- Good (0xD5)
- Good (0xD6)
- Good (0xD7)
- Good (0xD8)
- Good (0xD9)
- Good (0xDA)
- Good (0xDB)
- Good (0xDC)
- Good (0xDD)
- Good (0xDE)
- Good (0xDF)
- Good (0xE0)
- Good (0xE1)
- Good (0xE2)
- Good (0xE3)

---

## Transducer Value

---

**Navigation**

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

**Description**

Displays the current value of the transducer block.

**User interface**

- 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

**Factory setting** State 0

---

### Sim. En/Disable

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Sim. En/Disable (6877-1 to n)
<b>Description</b>	Use this function to enable or disable the function block simulation.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Uninitialized</li><li>■ Disabled</li><li>■ Active</li></ul>
<b>Factory setting</b>	Uninitialized

---

### Transducer State

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Transducer State (6891-1 to n)
<b>Description</b>	Use this function to enter the transducer state: this is required by FieldValID ( <b>Status</b> parameter (→ <a href="#">196</a> ), <b>Value</b> parameter (→ <a href="#">198</a> )) to display the actual on/off status of the hardware.
<b>User entry</b>	0 to 65 535
<b>Factory setting</b>	0

---

### Output State

---

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

**Deny**

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Deny (6867–1 to n)
<b>Description</b>	Option for restricting certain access authorizations of the field bus host system on the device.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Program Denied</li><li>■ Tune Denied</li><li>■ Alarm Denied</li><li>■ Local</li><li>■ Operate Denied</li></ul>

**Grant**

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Grant (6868–1 to n)
<b>Description</b>	Option for releasing certain access authorizations of the field bus host system on the device.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Program</li><li>■ Tune</li><li>■ Alarm</li><li>■ Local</li><li>■ Operate</li><li>■ Service</li><li>■ Diagnostic</li></ul>

**I/O Options**

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → I/O Options (6869–1 to n)
<b>Description</b>	Option for activating the inversion of the signal.
<b>Selection</b>	Invert
<b>Additional information</b>	<i>Description</i> This selection determines whether the discrete input is inverted before it is stored as a process variable. Normally a discrete value of 0 is regarded as a logical value of 0 and a discrete value that is not equal to 0 is regarded as a logical value of 1. If inversion is enabled, this correlation is reversed. A field device input value that is not equal to 0 results in a discrete output value of 0 and an input value of 0 results in a discrete output value of 1.

---

## Status Options

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Status Options (6882–1 to n)
<b>Prerequisite</b>	The measuring device must be in the OOS operating mode so that the parameter can be edited.
<b>Description</b>	For selecting an option for the status of the output value that is supported by the Discrete input block.
<b>Selection</b>	<ul style="list-style-type: none"> <li>■ Propag Fault Fwd</li> <li>■ Uncertain if Man</li> </ul>
<b>Additional information</b>	<p><i>Options</i></p> <ul style="list-style-type: none"> <li>■ Propag Fault Fwd If the measuring device indicates the status <b>Bad DeviceFailure</b> or <b>Bad SensorFailure</b>, the device continues to measure and no alarm is triggered. The use of this substatus in the output value (OUT) is defined by <b>Propag Fault Fwd</b> 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.</li> <li>■ Uncertain if Man If the Actual mode of the function block is in the <b>Man</b> option operating mode, <b>Uncertain if Man</b> option is used as the output status.</li> </ul>

---

## Channel

---

<b>Navigation</b>	  Expert → Discrete inputs → Discrete input 1 to n → Channel (6852–1 to n)
<b>Description</b>	Use this function to select the input value that should be processed in the discrete input function block.
<b>Selection</b>	<ul style="list-style-type: none"> <li>■ Uninitialized</li> <li>■ Empty pipe det.</li> <li>■ Low flow cut off</li> <li>■ Switch out.stat.</li> <li>■ Verific. status</li> </ul>
<b>Factory setting</b>	Empty pipe det.

---

## PV Filter Time

---

<b>Navigation</b>	  Expert → Discrete inputs → Discrete input 1 to n → PV Filter Time (6855–1 to n)
<b>Description</b>	Use this function to enter the filter time specification for the filtering of the unconverted input value (PV).
<b>User entry</b>	Positive floating-point number
<b>Factory setting</b>	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 (0xDB)
- Good (0xDC)
- Good (0xDD)
- Good (0xDE)
- Good (0xDF)
- Good (0xE0)
- Good (0xE1)
- Good (0xE2)
- Good (0xE3)

**Factory setting** Bad (0x00)

**Additional information** *Description*

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

---

## Value

---

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

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

**User interface**

- 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

**Factory setting** State 0

---

## Unacknowledged

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Unacknowledged (6889-1 to n)
<b>Description</b>	Option for manually acknowledging an update of the static block parameter.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Uninitialized</li><li>■ Acknowledged</li><li>■ Unacknowledged</li></ul>
<b>Factory setting</b>	Uninitialized
<b>Additional information</b>	<i>Description</i>  <ul style="list-style-type: none"><li>■ If a new diagnostic event occurs, the measuring device sets <b>Unacknowledged</b> option.</li><li>■ If the diagnostic event has been acknowledged, the user can set <b>Acknowledged</b> option.</li></ul>

---

## Update State

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Update State (6890-1 to n)
<b>Description</b>	Displays the status of an update of the static block parameter. The status indicates whether the update was communicated or not.
<b>User interface</b>	<ul style="list-style-type: none"><li>■ Uninitialized</li><li>■ Reported</li><li>■ Not Reported</li></ul>

---

## Time Stamp

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Time Stamp (6888-1 to n)
<b>Description</b>	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.
<b>User interface</b>	Days (d), hours (h), minutes (m), seconds (s)

## Static revision

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Static revision (6887–1 to n)
<b>Description</b>	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).
<b>User interface</b>	0 to 65 535

---

## Relative Index

---

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

---

## Ack. Option

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Ack. Option (6841–1 to n)
<b>Description</b>	Option for automatic acknowledgment of process alarms in a specific category.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Disc Alm Aut Ack</li><li>■ Blk Alm Auto Ack</li><li>■ Fail Alm Aut Ack</li><li>■ OffSpecAlmAutAck</li><li>■ Maint Alm AutAck</li><li>■ Check Alm AutAck</li></ul>
<b>Additional information</b>	<b>Description</b> 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 <b>Unacknowledged</b> parameter (→  167). <b>Current</b> parameter (→  166) indicates the current status of all process alarms.

---

## Current

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Current (6842–1 to n)
<b>Description</b>	Use this function to view the current status of the process alarms.

<b>User interface</b>	<ul style="list-style-type: none"><li>■ Discrete Alarm</li><li>■ Block Alarm</li><li>■ Fail Alarm</li><li>■ Off Spec Alarm</li><li>■ Maint. Alarm</li><li>■ Check Alarm</li></ul>
-----------------------	---

---

## Disabled

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Disabled (6843-1 to n)
<b>Description</b>	Option for disabling a process alarm category.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Disc Alm Disabl</li><li>■ Block Alm Disabl</li><li>■ Fail Alm Disabl</li><li>■ OffSpecAlmDisabl</li><li>■ Maint Alm Disabl</li><li>■ Check Alm Disab.</li></ul>

---

## Unacknowledged

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Unacknowledged (6844-1 to n)
<b>Description</b>	Displays an unacknowledged process alarm.
<b>User interface</b>	<ul style="list-style-type: none"><li>■ Disc Alm Unack</li><li>■ Block Alm Unack</li><li>■ Fail Alm Unack</li><li>■ Off SpecAlmUnack</li><li>■ Maint Alm Unack</li><li>■ Check Alm Unack</li></ul>

---

## Unreported

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Unreported (6845-1 to n)
<b>Description</b>	Displays a process alarm that has not been communicated.
<b>User interface</b>	<ul style="list-style-type: none"><li>■ Disc Alm Unrep</li><li>■ Block Alm Unrep</li><li>■ Fail Alm Unrep</li><li>■ Off SpecAlmUnrep</li><li>■ Maint Alm Unrep</li><li>■ Check Alm Unrep</li></ul>

## Alarm State

---

**Navigation**  Expert → Discrete inputs → Discrete input 1 to n → Alarm State (6847–1 to n)

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

**User interface**

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

---

## Subcode

---

**Navigation**  Expert → Discrete inputs → Discrete input 1 to n → Subcode (6848–1 to n)

**Description** Displays the specific cause of the block alarm.

**User interface**

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

---

## Time Stamp

---

**Navigation**  Expert → Discrete inputs → Discrete input 1 to n → Time Stamp (6849–1 to n)

**Description** Displays the time stamp indicating when the analysis of the block was started and when a status change of the block alarm that has not yet been communicated to the field bus host system was detected. The time stamp is retained until the alarm confirmation is received.

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

---

## Unacknowledged

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Unacknowledged (6850-1 to n)
<b>Description</b>	Option for manually acknowledging a block alarm.
<b>Selection</b>	<ul style="list-style-type: none"> <li>■ Uninitialized</li> <li>■ Acknowledged</li> <li>■ Unacknowledged</li> </ul>
<b>Factory setting</b>	Uninitialized
<b>Additional information</b>	<p><i>Description</i></p> <p>If <b>Blk Alm Auto Ack</b> option is not enabled in <b>Ack. Option</b> parameter (→ 200), the process alarm must be manually acknowledged in this parameter.</p> <p> ■ If a new alarm occurs, the measuring device sets <b>Unacknowledged</b> option. ■ If the alarm has been acknowledged, the user can set <b>Acknowledged</b> option.</p>

---

## Value

---

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

---

## Alarm State

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Alarm State (6858-1 to n)
<b>Description</b>	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.
<b>User interface</b>	<ul style="list-style-type: none"> <li>■ Uninitialized</li> <li>■ Clear-Reported</li> <li>■ ClearNotReported</li> <li>■ Active-Reported</li> <li>■ ActiveNotRep</li> </ul>

---

## Subcode

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Subcode (6859-1 to n)
<b>Description</b>	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**

- Uninitialized
- Acknowledged
- Unacknowledged

**Factory setting**

Uninitialized

**Additional information***Description*

If **Disc Alm Aut Ack** option is not enabled in **Ack. Option** parameter (→  200), the process alarm must be manually acknowledged in this parameter.



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

---

**Discrete Value**

---

<b>Navigation</b>	 Expert → Discrete inputs → Discrete input 1 to n → Discrete Value (6862-1 to n)
<b>Description</b>	Displays the value of the associated parameter at the time at which the alarm was detected.
<b>User interface</b>	<ul style="list-style-type: none"><li>■ State 0</li><li>■ State 1</li><li>■ State 2</li><li>■ State 3</li><li>■ State 4</li><li>■ State 5</li><li>■ State 6</li><li>■ State 7</li><li>■ State 8</li><li>■ State 9</li><li>■ State 10</li><li>■ State 11</li><li>■ State 12</li><li>■ State 13</li><li>■ State 14</li><li>■ State 15</li><li>■ State 16</li></ul>

---

**Discrete Limit**

---

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

---

**Discrete Prio**

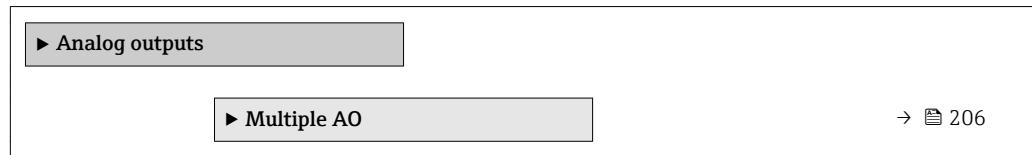
---

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

## 3.7 "Analog outputs" submenu

Navigation

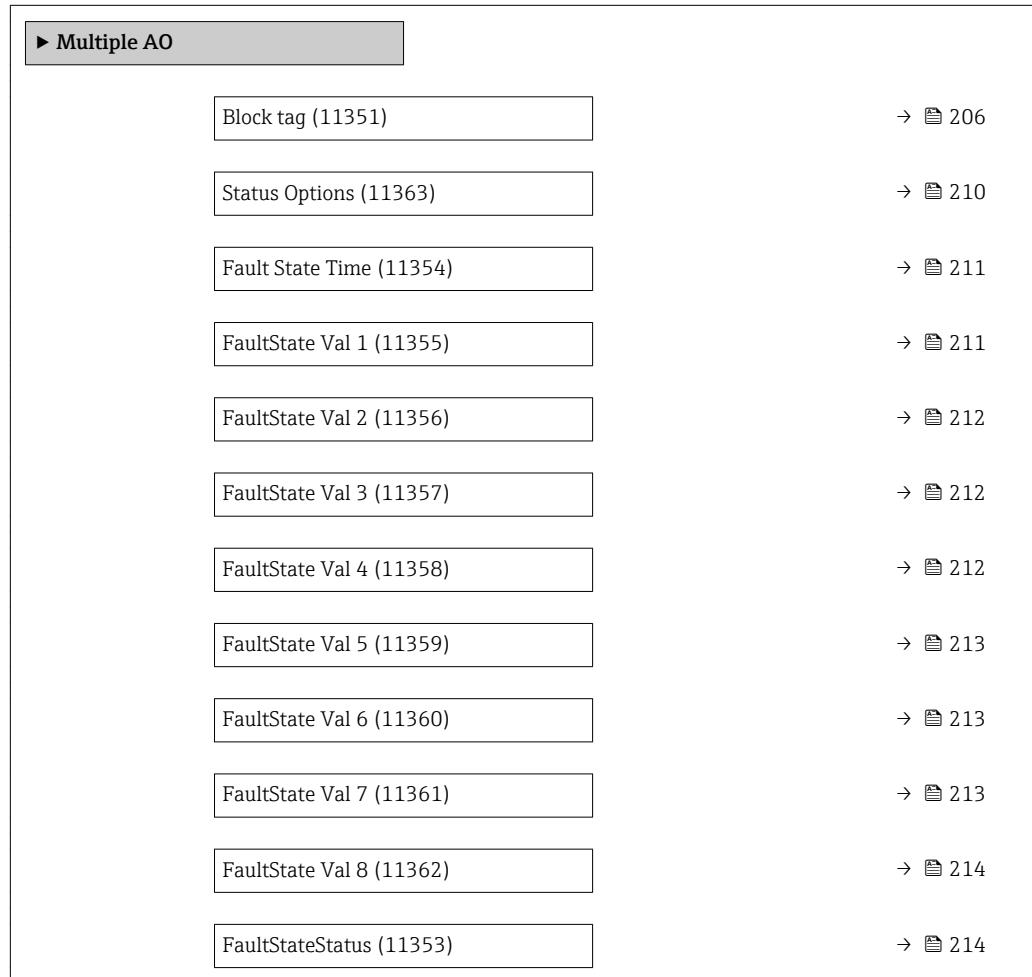
Expert → Analog outputs



### 3.7.1 "Multiple AO" submenu

Navigation

Expert → Analog outputs → Multiple AO



#### 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

---

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

---

## Tag Description

---

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

---

## Strategy

---

<b>Navigation</b>	 Expert → Analog outputs → Multiple AO → Strategy (11370)
<b>Description</b>	Use this function to enter the Strategy: makes it possible to group blocks by entering identical numbers.
<b>User entry</b>	0 to FFFF
<b>Factory setting</b>	0

---

## Alert Key

---

<b>Navigation</b>	 Expert → Analog outputs → Multiple AO → Alert Key (11365)
<b>Description</b>	Use this function to enter the Alert Key: identifies the section of the plant where the transmitter is located. This helps in pinpointing events.
<b>User entry</b>	0 to 0xFF
<b>Factory setting</b>	1

## Target mode

---

<b>Navigation</b>	 Expert → Analog outputs → Multiple AO → Target mode (11369)
<b>Description</b>	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.
<b>Selection</b>	<ul style="list-style-type: none"><li>▪ ROut</li><li>▪ RCas</li><li>▪ Cas</li><li>▪ Auto</li><li>▪ Man</li><li>▪ LO</li><li>▪ IMan</li><li>▪ OOS</li></ul>
<b>Factory setting</b>	OOS
<b>Additional information</b>	<i>Selection</i>  Detailed description of the options available for selection: <b>Target mode</b> parameter (→  111)

---

## Actual mode

---

<b>Navigation</b>	 Expert → Analog outputs → Multiple AO → Actual mode (11366)
<b>Description</b>	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 (→  208) could be reached.
<b>User interface</b>	<ul style="list-style-type: none"><li>▪ ROut</li><li>▪ RCas</li><li>▪ Cas</li><li>▪ Auto</li><li>▪ Man</li><li>▪ LO</li><li>▪ IMan</li><li>▪ OOS</li></ul>
<b>Additional information</b>	<i>Selection</i>  Detailed description of the options available for selection: <b>Target mode</b> parameter (→  111)

---

## 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 (→ [208](#)). 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  
(→ [111](#))

---

## 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  
(→ [111](#))

**Block Error**

---

**Navigation**  Expert → Analog outputs → Multiple AO → Block Error (11364)

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

**User interface**

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

---

**Channel**

---

**Navigation**  Expert → Analog outputs → Multiple AO → Channel (11352)

**Description** Use this function to select the assignment or connection between the Analog Output function block and the Transducer Block.

**Selection**

- Uninitialized
- Channel\_0

**Factory setting** Channel\_0

---

**Status Options**

---

**Navigation**   Expert → Analog outputs → Multiple AO → Status Options (11363)

**Description** Option for determining the fault state of the function block.

**Selection**

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

- Fstate restart 2
- Fstate restart 3
- Fstate restart 4
- Fstate restart 5
- Fstate restart 6
- Fstate restart 7
- Fstate restart 8

**Additional information***Description*

This behavior is activated if an error condition of the set point that applies is present for longer than defined in the **Fault State Time** parameter (→ 211) or if the **Set Fault State** parameter (→ 121) is activated in the Resource block.

The fault state is defined via the following parameters:

- Fault State Time (→ 211)
- 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 (→ 210).

---

**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***Description*

 This value is ignored if the **Fstate to val 2** option is not selected in the **Status Options** parameter (→ 210).

---

**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***Description*

 This value is ignored if the **Fstate to val 3** option is not selected in the **Status Options** parameter (→ 210).

---

**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***Description*

This value is ignored if the **Fstate to val 4** option is not selected in the **Status Options** parameter (→ 210).

---

**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***Description*

This value is ignored if the **Fstate to val 5** option is not selected in the **Status Options** parameter (→ 210).

---

**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***Description*

This value is ignored if the **Fstate to val 6** option is not selected in the **Status Options** parameter (→ 210).

---

**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	Description
	 This value is ignored if the <b>Fstate to val 7</b> option is not selected in the <b>Status Options</b> parameter (→ 210).

---

## FaultState Val 8

---

<b>Navigation</b>	  Expert → Analog outputs → Multiple AO → FaultState Val 8 (11362)
<b>Description</b>	Use this function to enter a predefined analog value to be used if an error condition of the analog set point 8 is present.
<b>User entry</b>	Signed floating-point number
<b>Factory setting</b>	0
Additional information	Description
	 This value is ignored if the <b>Fstate to val 8</b> option is not selected in the <b>Status Options</b> parameter (→ 210).

---

## FaultStateStatus

---

<b>Navigation</b>	  Expert → Analog outputs → Multiple AO → FaultStateStatus (11353)
<b>Description</b>	Displays the values for which the fault state is enabled.
<b>User interface</b>	<ul style="list-style-type: none"><li>▪ Val 1 in FState</li><li>▪ Val 2 in FState</li><li>▪ Val 3 in FState</li><li>▪ Val 4 in FState</li><li>▪ Val 5 in FState</li><li>▪ Val 6 in FState</li><li>▪ Val 7 in FState</li><li>▪ Val 8 in FState</li></ul>

## 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

**► Discrete outputs****► Multiple DO**

→ 215

### 3.8.1 "Multiple DO" submenu

*Navigation*

Expert → Discrete outputs → Multiple DO

**► Multiple DO**

Block tag (11252)

→ 215

Status Options (11268)

→ 219

Fault State Time (11255)

→ 220

FStateValue DO 1 (11256)

→ 220

FStateValue DO 2 (11257)

→ 221

FStateValue DO 3 (11258)

→ 221

FStateValue DO 4 (11259)

→ 221

FStateValue DO 5 (11260)

→ 222

FStateValue DO 6 (11261)

→ 222

FStateValue DO 7 (11262)

→ 222

FStateValue DO 8 (11263)

→ 223

FaultStateStatus (11254)

→ 223

#### **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

---

<b>Navigation</b>	 Expert → Discrete outputs → Multiple DO → Static Revision (11270)
<b>Description</b>	Displays the Static Revision: Each instance of a static block parameter being accessed with write access is counted (event counter).
<b>User interface</b>	0 to FFFF
<b>Additional information</b>	<i>Description</i>  Static parameters are parameters that are not changed by the process.

---

## Tag Description

---

<b>Navigation</b>	 Expert → Discrete outputs → Multiple DO → Tag Description (11271)
<b>Description</b>	Use this function to enter the Tag Description: Used for defining a user-specific text for detailed description of the function block.
<b>User entry</b>	Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).

---

## Strategy

---

<b>Navigation</b>	 Expert → Discrete outputs → Multiple DO → Strategy (11269)
<b>Description</b>	Use this function to enter the Strategy: Enables blocks to be grouped by entering identical numbers.
<b>User entry</b>	0 to FFFF
<b>Factory setting</b>	0

---

## Alert Key

---

<b>Navigation</b>	 Expert → Discrete outputs → Multiple DO → Alert Key (11251)
<b>Description</b>	Use this function to enter the Alert Key: Identifies the plant unit where the transmitter is located. This helps in pinpointing events.
<b>User entry</b>	0 to 0xFF
<b>Factory setting</b>	1

---

**Target mode**

---

<b>Navigation</b>	 Expert → Discrete outputs → Multiple DO → Target mode (11267)
<b>Description</b>	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.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ ROut</li><li>■ RCas</li><li>■ Cas</li><li>■ Auto</li><li>■ Man</li><li>■ LO</li><li>■ IMan</li><li>■ OOS</li></ul>
<b>Factory setting</b>	OOS
<b>Additional information</b>	<i>Options</i>  Detailed description of the options available for selection: <b>Target mode</b> parameter (→  111)

---

**Actual mode**

---

<b>Navigation</b>	 Expert → Discrete outputs → Multiple DO → Actual mode (11264)
<b>Description</b>	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 (→  217).
<b>User interface</b>	<ul style="list-style-type: none"><li>■ ROut</li><li>■ RCas</li><li>■ Cas</li><li>■ Auto</li><li>■ Man</li><li>■ LO</li><li>■ IMan</li><li>■ OOS</li></ul>
<b>Additional information</b>	<i>User interface</i>  Detailed description of the options available for selection: <b>Target mode</b> parameter (→  111)

## Permitted mode

---

<b>Navigation</b>	 Expert → Discrete outputs → Multiple DO → Permitted mode (11266)
<b>Description</b>	Use this function to select the Permitted mode: The selection defines which operating modes are available in Target mode (→ <a href="#">217</a> ) for the function block. The operating modes that are supported vary depending on the type and function of the block.
<b>Selection</b>	<ul style="list-style-type: none"><li>▪ ROut</li><li>▪ RCas</li><li>▪ Cas</li><li>▪ Auto</li><li>▪ Man</li><li>▪ LO</li><li>▪ IMan</li><li>▪ OOS</li></ul>
<b>Factory setting</b>	<ul style="list-style-type: none"><li>▪ Auto</li><li>▪ OOS</li></ul>
<b>Additional information</b>	<i>Options</i>  Detailed description of the options available for selection: <b>Target mode</b> parameter (→ <a href="#">111</a> )

---

## Normal mode

---

<b>Navigation</b>	 Expert → Discrete outputs → Multiple DO → Normal mode (11265)
<b>Description</b>	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.
<b>Selection</b>	<ul style="list-style-type: none"><li>▪ ROut</li><li>▪ RCas</li><li>▪ Cas</li><li>▪ Auto</li><li>▪ Man</li><li>▪ LO</li><li>▪ IMan</li><li>▪ OOS</li></ul>
<b>Factory setting</b>	Auto
<b>Additional information</b>	<i>Options</i>  Detailed description of the options available for selection: <b>Target mode</b> parameter (→ <a href="#">111</a> )

---

**Block Error**

---

<b>Navigation</b>	 Expert → Discrete outputs → Multiple DO → Block Error (11272)
<b>Description</b>	Displays the short text for the Block Error that has occurred in the function block.
<b>User interface</b>	<ul style="list-style-type: none"><li>■ Other</li><li>■ BlockConfigurat</li><li>■ LinkConfigurat</li><li>■ SimulationActive</li><li>■ LocalOverride</li><li>■ DeviceFaultState</li><li>■ DeviceMainten</li><li>■ SensorFailure</li><li>■ OutputFailure</li><li>■ MemoryFailure</li><li>■ LostStaticData</li><li>■ LostNVData</li><li>■ ReadbackCheck</li><li>■ MaintenanceNeed</li><li>■ PowerUp</li><li>■ OutOfService</li></ul>

---

**Channel**

---

<b>Navigation</b>	  Expert → Discrete outputs → Multiple DO → Channel (11253)
<b>Description</b>	Option for the assignment or connection between the discrete output function block and the transducer block.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Uninitialized</li><li>■ Channel_D0</li></ul>
<b>Factory setting</b>	Channel_D0

---

**Status Options**

---

<b>Navigation</b>	  Expert → Discrete outputs → Multiple DO → Status Options (11268)
<b>Description</b>	Option for determining the fault state of the function block.
<b>Selection</b>	<ul style="list-style-type: none"><li>■ Fstate to val 1</li><li>■ Fstate to val 2</li><li>■ Fstate to val 3</li><li>■ Fstate to val 4</li><li>■ Fstate to val 5</li><li>■ Fstate to val 6</li><li>■ Fstate to val 7</li><li>■ Fstate to val 8</li><li>■ Fstate restart 1</li></ul>

- Fstate restart 2
- Fstate restart 3
- Fstate restart 4
- Fstate restart 5
- Fstate restart 6
- Fstate restart 7
- Fstate restart 8

**Additional information***Description*

This behavior is enabled if an error condition of the valid set point persists for longer than the time specified in **Fault State Time** parameter (→ 220) or if **Set Fault State** parameter (→ 121) is enabled in Resource block.

The fault state is defined via the following parameters:

- Fault State Time (→ 220)
- FStateValue DO 1 to n

*Options*

- Fstate to val 1...8

The value predefined in **FStateValue DO 1 to n** parameter is used in place of the discrete set point. The fault state is enabled if there is an error condition.

- Fstate restart 1...8

The value predefined in **FStateValue DO 1 to n** parameter is used if the device is restarted. The non-volatile value is used otherwise. The fault state is not enabled and only the predefined value is used.

---

**Fault State Time**

---

**Navigation**

Expert → Discrete outputs → Multiple DO → Fault State Time (11255)

**Description**

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

**User entry**

Positive floating-point number

**Factory setting**

0 s

---

**FStateValue DO 1**

---

**Navigation**

Expert → Discrete outputs → Multiple DO → FStateValue DO 1 (11256)

**Description**

Use this function to enter a predefined discrete value to be used if an error condition of the discrete set point 1 is present.

**User entry**

0 to 255

**Factory setting**

0

**Additional information***Description*

If **Fstate to val 1** option is not selected in **Status Options** parameter (→ 219), 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 (→ 219), 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***Description*

If **Fstate to val 3** option is not selected in **Status Options** parameter (→ 219), 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***Description*

If **Fstate to val 4** option is not selected in **Status Options** parameter (→ 219), 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***Description*

If **Fstate to val 5** option is not selected in **Status Options** parameter (→ 219), 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***Description*

If **Fstate to val 6** option is not selected in **Status Options** parameter (→ 219), 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***Description*

If **Fstate to val 7** option is not selected in **Status Options** parameter (→ 219), 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***Description*

If **Fstate to val 8** option is not selected in **Status Options** parameter (→ 219), 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

<b>► Application</b>	
Reset all tot. (2806) <span style="float: right;">→ 224</span>	
<b>► Totalizer 1 to n</b> <span style="float: right;">→ 224</span>	

**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 totalized.

**Selection**

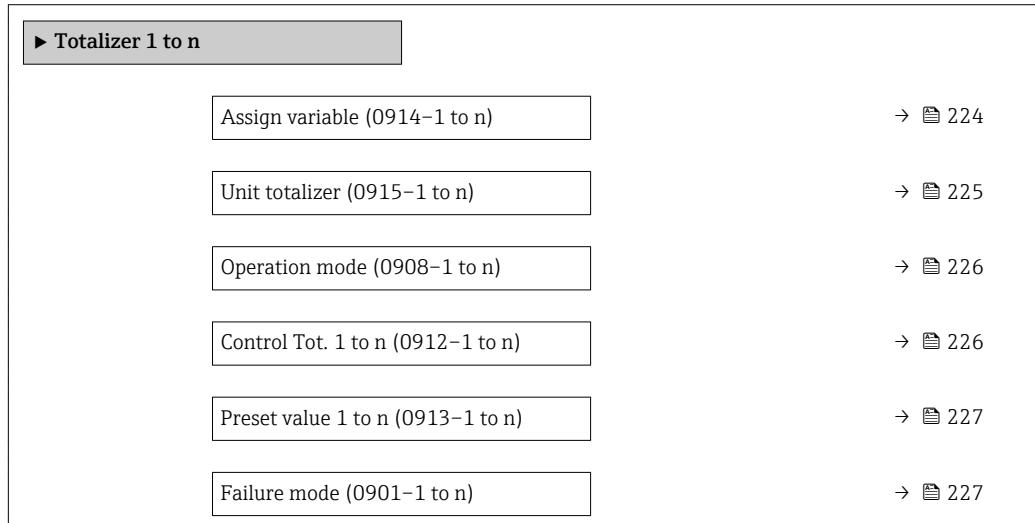
- Cancel
- Reset + totalize

**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 totalized.

**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.

<b>Selection</b>	<ul style="list-style-type: none"> <li>■ Off</li> <li>■ Volume flow</li> <li>■ Mass flow</li> <li>■ Correct.vol.flow</li> </ul>
------------------	---

<b>Factory setting</b>	Mass flow
------------------------	-----------

<b>Additional information</b>	<i>Description</i>
	 If the option selected is changed, the device resets the totalizer to 0.

*Selection*

If the **Off** option is selected, only **Assign variable** parameter (→ 224) is still displayed in the **Totalizer 1 to n** submenu. All other parameters in the submenu are hidden.

**Unit totalizer**

<b>Navigation</b>	 Expert → Application → Totalizer 1 to n → Unit totalizer (0915-1 to n)
-------------------	--

<b>Prerequisite</b>	A process variable is selected in the <b>Assign variable</b> parameter (→ 224) of the <b>Totalizer 1 to n</b> submenu.
---------------------	--

<b>Description</b>	Use this function to select the process variable unit for the Totalizer 1 to n (→ 224).
--------------------	---

<b>Selection</b>	<i>SI units</i>	<i>US units</i>
	<ul style="list-style-type: none"> <li>■ g</li> <li>■ kg</li> <li>■ t</li> </ul>	<ul style="list-style-type: none"> <li>■ oz</li> <li>■ lb</li> <li>■ STon</li> </ul>

or

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

or

<i>SI units</i>	<i>US units</i>	<i>Imperial units</i>
■ Nl	■ Sft <sup>3</sup>	Sgal (imp)
■ Nm <sup>3</sup>	■ Sgal (us)	
■ Sl	■ Sbbl (us;liq.)	
■ Sm <sup>3</sup>		

<b>Factory setting</b>	Country-specific: <ul style="list-style-type: none"><li>▪ l</li><li>▪ gal (us)</li></ul>
<b>Additional information</b>	<p><i>Description</i></p> <p> The unit is selected separately for each totalizer. It is independent of the selection made in the <b>System units</b> submenu (→ 57).</p> <p><i>Selection</i></p> <p>The selection is dependent on the process variable selected in the <b>Assign variable</b> parameter (→ 224).</p>

<b>Operation mode</b>		
<b>Navigation</b>	 Expert → Application → Totalizer 1 to n → Operation mode (0908-1 to n)	
<b>Prerequisite</b>	A process variable is selected in the <b>Assign variable</b> parameter (→ 224) of the <b>Totalizer 1 to n</b> submenu.	
<b>Description</b>	Use this function to select how the totalizer summates the flow.	
<b>Selection</b>	<ul style="list-style-type: none"><li>▪ Net flow total</li><li>▪ Forward total</li><li>▪ Reverse total</li></ul>	
<b>Factory setting</b>	Net flow total	
<b>Additional information</b>	<p><i>Selection</i></p> <ul style="list-style-type: none"><li>▪ Net flow total Flow values in the forward and reverse flow direction are totalized and balanced against one another. Net flow is registered in the flow direction.</li><li>▪ Forward total Only the flow in the forward flow direction is totalized.</li><li>▪ Reverse total Only the flow in the reverse flow direction is totalized (= reverse flow quantity).</li></ul>	

<b>Control Tot. 1 to n</b>	
<b>Navigation</b>	 Expert → Application → Totalizer 1 to n → Control Tot. 1 to n (0912-1 to n)
<b>Prerequisite</b>	A process variable is selected in the <b>Assign variable</b> parameter (→ 224) of the <b>Totalizer 1 to n</b> submenu.
<b>Description</b>	Use this function to select the control of totalizer value 1-3.

<b>Selection</b>	<ul style="list-style-type: none"> <li>■ Totalize</li> <li>■ Reset + hold</li> <li>■ Preset + hold</li> <li>■ Reset + totalize</li> <li>■ Preset+totalize</li> </ul>												
<b>Factory setting</b>	Totalize												
<b>Additional information</b>	<i>Selection</i>												
<hr/>													
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #cccccc;"> <th style="text-align: left; padding: 2px;">Options</th> <th style="text-align: left; padding: 2px;">Description</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">Totalize</td> <td style="padding: 2px;">The totalizer is started or continues running.</td> </tr> <tr> <td style="padding: 2px;">Reset + hold</td> <td style="padding: 2px;">The totaling process is stopped and the totalizer is reset to 0.</td> </tr> <tr> <td style="padding: 2px;">Preset + hold</td> <td style="padding: 2px;">The totaling process is stopped and the totalizer is set to its defined start value from the <b>Preset value</b> parameter.</td> </tr> <tr> <td style="padding: 2px;">Reset + totalize</td> <td style="padding: 2px;">The totalizer is reset to 0 and the totaling process is restarted.</td> </tr> <tr> <td style="padding: 2px;">Preset+totalize</td> <td style="padding: 2px;">The totalizer is set to the defined start value from the <b>Preset value</b> parameter and the totaling process is restarted.</td> </tr> </tbody> </table>	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 <b>Preset value</b> 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 <b>Preset value</b> parameter and the totaling process is restarted.
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 <b>Preset value</b> 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 <b>Preset value</b> parameter and the totaling process is restarted.												

---

## Preset value 1 to n

---

<b>Navigation</b>	  Expert → Application → Totalizer 1 to n → Preset value 1 to n (0913-1 to n)
<b>Prerequisite</b>	A process variable is selected in the <b>Assign variable</b> parameter (→ <a href="#">224</a> ) of the <b>Totalizer 1 to n</b> submenu.
<b>Description</b>	Use this function to enter a start value for the Totalizer 1 to n.
<b>User entry</b>	Signed floating-point number
<b>Factory setting</b>	Country-specific: <ul style="list-style-type: none"> <li>■ 0 l</li> <li>■ 0 gal (us)</li> </ul>
<b>Additional information</b>	<p><i>User entry</i></p> <p> The unit of the selected process variable is specified for the totalizer in the <b>Unit totalizer</b> parameter (→ <a href="#">225</a>).</p> <p><i>Example</i></p> <p>This configuration is suitable for applications such as iterative filling processes with a fixed batch quantity.</p>

---

## Failure mode

---



<b>Navigation</b>	  Expert → Application → Totalizer 1 to n → Failure mode (0901-1 to n)
<b>Prerequisite</b>	A process variable is selected in the <b>Assign variable</b> parameter (→ <a href="#">224</a> ) of the <b>Totalizer 1 to n</b> submenu.

**Description** Use this function to select how a totalizer behaves in the event of a device alarm.

**Selection**

- Stop
- Actual value
- Last valid value

**Factory setting** Stop

**Additional information** *Description*

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

*Selection*

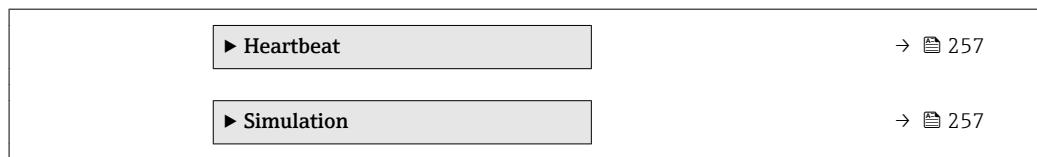
- Stop  
The totalizer is stopped in the event of a device alarm.
- Actual value  
The totalizer continues to count based on the actual measured value; the device alarm is ignored.
- Last valid value  
The totalizer continues to count based on the last valid measured value before the device alarm occurred.

## 3.10 "Diagnostics" submenu

*Navigation*

Expert → Diagnostics

► Diagnostics	
Actual diagnos. (0691)	→ 229
Prev.diagnostics (0690)	→ 230
Time fr. restart (0653)	→ 230
Operating time (0652)	→ 231
► Diagnostic list	→ 231
► Event logbook	→ 235
► Device info	→ 238
► Data logging	→ 242
► Min/max val.	→ 248



---

**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 (→ 231).
- Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the **E** key.

*Example*

For the display format:  
⊗F271 Main electronic

---

**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 (→ 229).

*Example*

For the display format:  
24d12h13m00s

**Prev.diagnostics**

---

<b>Navigation</b>	  Expert → Diagnostics → Prev.diagnostics (0690)
<b>Prerequisite</b>	Two diagnostic events have already occurred.
<b>Description</b>	Displays the diagnostic message that occurred before the current message.
<b>User interface</b>	Symbol for diagnostic behavior, diagnostic code and short message.
<b>Additional information</b>	<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>Example</i> For the display format:  F271 Main electronic

**Timestamp**

---

<b>Navigation</b>	 Expert → Diagnostics → Timestamp
<b>Description</b>	Displays the operating time when the last diagnostic message before the current message occurred.
<b>User interface</b>	Days (d), hours (h), minutes (m) and seconds (s)
<b>Additional information</b>	<i>Display</i>  The diagnostic message can be viewed via the <b>Prev.diagnostics</b> parameter (→  230).  <i>Example</i> For the display format: 24d12h13m00s

**Time fr. restart**

---

<b>Navigation</b>	  Expert → Diagnostics → Time fr. restart (0653)
<b>Description</b>	Use this function to display the time the device has been in operation since the last device restart.
<b>User interface</b>	Days (d), hours (h), minutes (m) and seconds (s)

---

## Operating time

---

**Navigation**

Expert → Diagnostics → Operating time (0652)

**Description**

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

**User interface**

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

**Additional information**

*User interface*

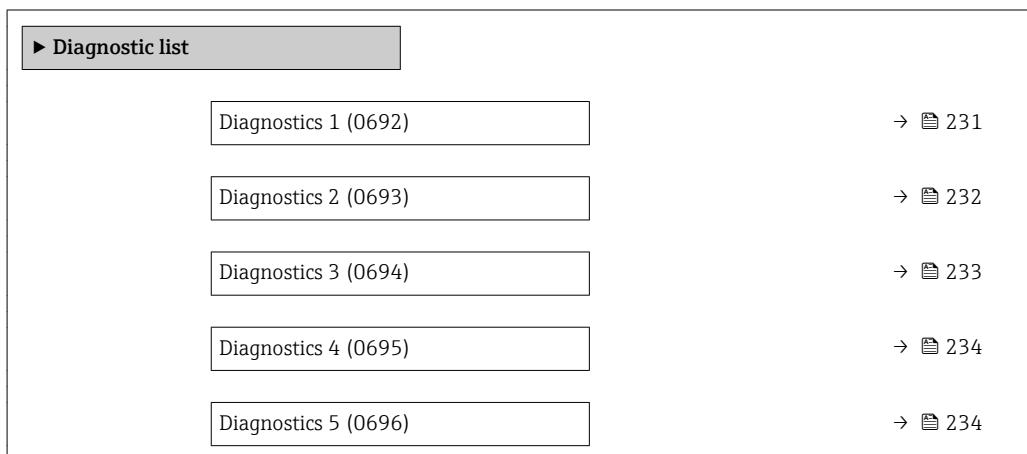
The maximum number of days is 9999, which is equivalent to 27 years.

---

### 3.10.1 "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 (→ 231).

*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:  
▪  $\Delta$ 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 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 (→ 232).

*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***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 third-highest priority occurred.

**User interface**

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

**Additional information***Display*

The diagnostic message can be viewed via the **Diagnostics 3** parameter (→ 233).

*Example*

For the display format:

24d12h13m00s

## Diagnostics 4

---

<b>Navigation</b>	  Expert → Diagnostics → Diagnostic list → Diagnostics 4 (0695)
<b>Description</b>	Displays the current diagnostics message with the fourth-highest priority.
<b>User interface</b>	Symbol for diagnostic behavior, diagnostic code and short message.
<b>Additional information</b>	<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: ■ $\Delta$ S442 Freq. output ■ $\otimes$ F276 I/O module

---

## Timestamp

---

<b>Navigation</b>	  Expert → Diagnostics → Diagnostic list → Timestamp
<b>Description</b>	Displays the operating time when the diagnostic message with the fourth-highest priority occurred.
<b>User interface</b>	Days (d), hours (h), minutes (m) and seconds (s)
<b>Additional information</b>	<i>Display</i>  The diagnostic message can be viewed via the <b>Diagnostics 4</b> parameter (→  234).
	<i>Example</i> For the display format: 24d12h13m00s

---

## Diagnostics 5

---

<b>Navigation</b>	  Expert → Diagnostics → Diagnostic list → Diagnostics 5 (0696)
<b>Description</b>	Displays the current diagnostics message with the fifth-highest priority.
<b>User interface</b>	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 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 (→  234).

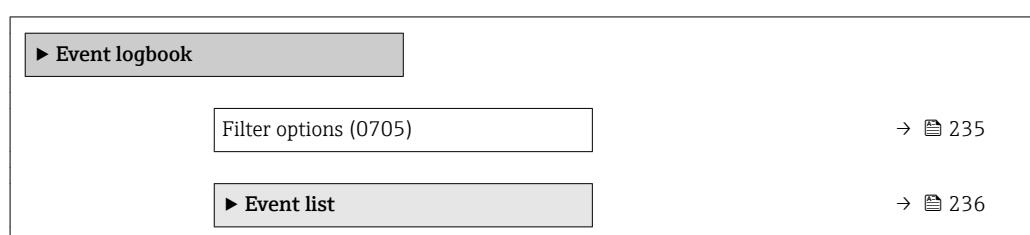
*Example*

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**

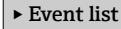
Use this function to select the category whose event messages are displayed in the event list of the local display.

<b>Selection</b>	<ul style="list-style-type: none"> <li>■ All</li> <li>■ Failure (F)</li> <li>■ Funct. check (C)</li> <li>■ Out of spec. (S)</li> <li>■ Mainten. req.(M)</li> <li>■ Information (I)</li> </ul>
<b>Factory setting</b>	All
<b>Additional information</b>	<p><i>Description</i></p> <p><b>i</b> The status signals are categorized in accordance with VDI/VDE 2650 and NAMUR Recommendation NE 107:</p> <ul style="list-style-type: none"> <li>■ F = Failure</li> <li>■ C = Function Check</li> <li>■ S = Out of Specification</li> <li>■ M = Maintenance Required</li> </ul>

<b>Filter options</b>		
<b>Navigation</b>	 Expert → Diagnostics → Event logbook → Filter options	
<b>Description</b>	Use this function to select the category whose event messages are displayed in the event list of the operating tool.	
<b>Selection</b>	<ul style="list-style-type: none"> <li>■ All</li> <li>■ Failure (F)</li> <li>■ Funct. check (C)</li> <li>■ Out of spec. (S)</li> <li>■ Mainten. req.(M)</li> <li>■ Information (I)</li> </ul>	
<b>Factory setting</b>	All	
<b>Additional information</b>	<p><i>Description</i></p> <p><b>i</b> The status signals are categorized in accordance with VDI/VDE 2650 and NAMUR Recommendation NE 107:</p> <ul style="list-style-type: none"> <li>■ F = Failure</li> <li>■ C = Function Check</li> <li>■ S = Out of Specification</li> <li>■ M = Maintenance Required</li> </ul>	

#### "Event list" submenu

**i** 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

Event list

→  237**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 (→  235).

**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
- $\Delta$ 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	
Device tag (10799)	→ 238
Serial number (10798)	→ 239
Device Type (10711)	→ 239
Device Revision (10710)	→ 239
DD Revision (10709)	→ 240
Firmware version (10792)	→ 240
Hardware rev. (10793)	→ 240
ITK Version (10794)	→ 240
Order code (10795)	→ 241
Ext. order cd. 1 (10796)	→ 241
Ext. order cd. 2 (10797)	→ 241
ENP version (10791)	→ 242

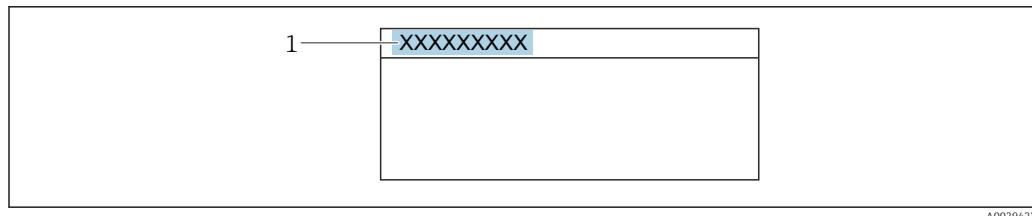
#### Device tag

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 entry

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

Factory setting

Promass 200

**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](http://www.endress.com/deviceviewer)

**User interface**

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

**Additional information***Factory setting*

This information varies depending on the device. Only an example is given here.

---

**Device Type**

---

**Navigation**

  Expert → Diagnostics → Device info → Device Type (10711)

**Description**

Use this function to view the device type with which the measuring device is registered with FOUNDATION Fieldbus.

**User interface**

Promass 200

---

**Device Revision**

---

**Navigation**

  Expert → Diagnostics → Device info → Device Revision (10710)

**Description**

Use this function to view the device revision with which the measuring device is registered with FOUNDATION Fieldbus.

**User interface**

0 to 255

**Factory setting**

1

**DD Revision**

---

**Navigation**  Expert → Diagnostics → Device info → DD Revision (10709)

**Description** Displays the revision number of the device description (DD).

**User interface** 1

**Additional information** *Description*



This display can be used to ensure that the right system files (DD = device description) are used for integration into the host system. The system files can be downloaded free of charge online at: [www.endress.com](http://www.endress.com).

---

**Firmware version**

---

**Navigation**  Expert → Diagnostics → Device info → Firmware version (10792)

**Description** Displays the device firmware version installed.

**User interface** Character string with the following format:  
xx.yy.zz

---

**Hardware rev.**

---

**Navigation**  Expert → Diagnostics → Device info → Hardware rev. (10793)

**Description** Displays the Hardware rev..

**User interface** Character string in the format xx.yy.zz

---

**ITK Version**

---

**Navigation**  Expert → Diagnostics → Device info → ITK Version (10794)

**Description** Displays the revision status of the Interoperability Test Kits (ITK).

**User interface** 6

---

**Order code**

---

**Navigation** Expert → Diagnostics → Device info → Order code (10795)**Description**

Use this function to enter the device order code.

 The order code can be found on the nameplate of the sensor and transmitter in the "Order code" field.

**User entry**

Character string composed of letters, numbers and certain punctuation marks

**Additional information***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.

 **Uses of the order code**

- To order an identical spare device.
- To identify the device quickly and easily, e.g. when contacting Endress+Hauser.

---

**Ext. order cd. 1**

---

**Navigation** Expert → Diagnostics → Device info → Ext. order cd. 1 (10796)**Description**

Use this function to enter the first part of the extended order code.

On account of length restrictions, the extended order code is split into a maximum of 2 parameters.

 The extended order code can also be found on the nameplate of the sensor and transmitter in the "Ext. ord. cd." field.

**User entry**

Character string

**Additional information***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.

 The extended order code can also be found on the nameplate of the sensor and transmitter in the "Ext. ord. cd." field.

---

**Ext. order cd. 2**

---

**Navigation** Expert → Diagnostics → Device info → Ext. order cd. 2 (10797)**Description**

Use this function to enter the second part of the extended order code.

 Deletion of the ordered customer-specific parameter set that was preconfigured before delivery. This parameter set cannot be reset. It can only be restored to the factory setting.

**User entry**

Character string

**Additional information** For additional information, see **Ext. order cd. 1** parameter

---

## ENP version

---

**Navigation**

Expert → Diagnostics → Device info → ENP version (10791)

**Description**

Displays the version of the electronic nameplate. This electronic nameplate stores a data record for device identification that includes more data than the nameplates attached to the outside of the device.

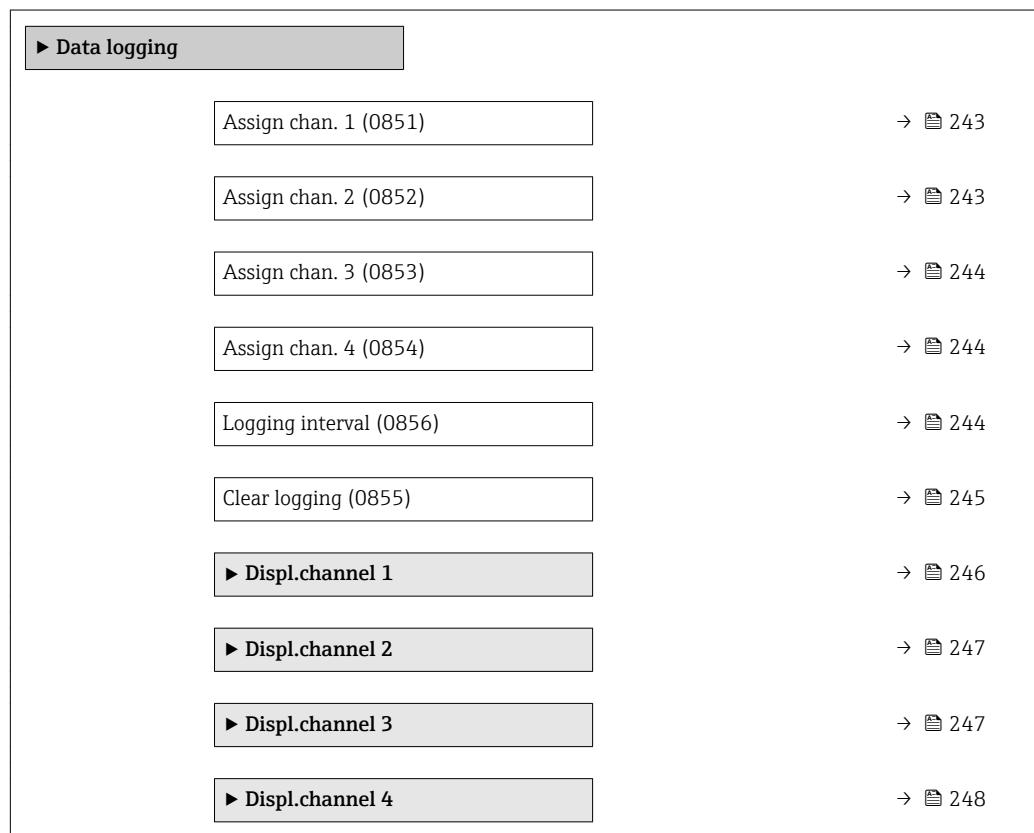
**User interface**

Character string in the format xx.yy.zz

### 3.10.4 "Data logging" submenu

**Navigation**

Expert → Diagnostics → Data logging



**Assign chan. 1****Navigation**

Expert → Diagnostics → Data logging → Assign chan. 1 (0851)

**Prerequisite**

The **Extended HistoROM** application package is available.

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

**Description**

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

**Selection**

- Off
- Mass flow
- Volume flow
- Correct.vol.flow
- Density
- Ref.density
- Temperature
- Carr. pipe temp. \*
- Electronic temp.
- Oscil. frequency
- Oscil. amplitude
- Oscil. damping
- Signal asymmetry

**Factory setting**

Off

**Additional information***Description*

A total of 1000 measured values can be logged. This means:

- 1000 data points if 1 logging channel is used
- 500 data points if 2 logging channels are used
- 333 data points if 3 logging channels are used
- 250 data points if 4 logging channels are used

Once the maximum number of data points is reached, the oldest data points in the data log are cyclically overwritten in such a way that the last 1000, 500, 333 or 250 measured values are always in the log (ring memory principle).

The log contents are cleared if the option selected is changed.

*Selection*

Detailed description of the options **Oscil. frequency**, **Oscil. amplitude**, **Oscil. damping** and **Signal asymmetry**: **Assign freq.** parameter (→ 94)

**Assign chan. 2****Navigation**

Expert → Diagnostics → Data logging → Assign chan. 2 (0852)

**Prerequisite**

The **Extended HistoROM** application package is available.

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

\* Visibility depends on order options or device settings

Description	Options for the assignment of a process variable to the data logging channel.
Selection	Picklist, see <b>Assign channel 1</b> parameter (→ 243)
Factory setting	Off

---

### Assign chan. 3



Navigation	Expert → Diagnostics → Data logging → Assign chan. 3 (0853)
Prerequisite	The <b>Extended HistoROM</b> application package is available. The software options currently enabled are displayed in the <b>SW option overv.</b> parameter (→ 49).
Description	Options for the assignment of a process variable to the data logging channel.
Selection	Picklist, see <b>Assign channel 1</b> parameter (→ 243)
Factory setting	Off

---

### Assign chan. 4



Navigation	Expert → Diagnostics → Data logging → Assign chan. 4 (0854)
Prerequisite	The <b>Extended HistoROM</b> application package is available. The software options currently enabled are displayed in the <b>SW option overv.</b> parameter (→ 49).
Description	Options for the assignment of a process variable to the data logging channel.
Selection	Picklist, see <b>Assign channel 1</b> parameter (→ 243)
Factory setting	Off

---

### Logging interval



Navigation	Expert → Diagnostics → Data logging → Logging interval (0856)
Prerequisite	The <b>Extended HistoROM</b> application package is available. The software options currently enabled are displayed in the <b>SW option overv.</b> parameter (→ 49).
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** 10.0 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:

- $T_{\log} = 1000 \times 1 \text{ s} = 1000 \text{ s} \approx 15 \text{ min}$
- $T_{\log} = 1000 \times 10 \text{ s} = 10000 \text{ s} \approx 3 \text{ h}$
- $T_{\log} = 1000 \times 80 \text{ s} = 80000 \text{ s} \approx 1 \text{ d}$
- $T_{\log} = 1000 \times 3600 \text{ s} = 3600000 \text{ s} \approx 41 \text{ d}$

## 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 (→  49).

**Description**

Use this function to clear the entire logging data.

**Selection**

- Cancel
- Clear data

**Factory setting**

Cancel

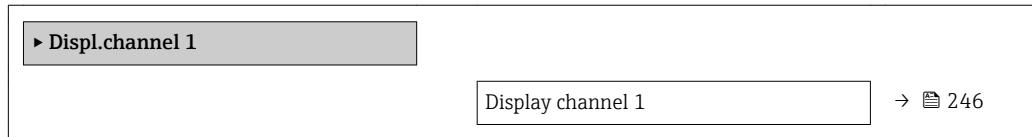
**Additional information**

*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

**Prerequisite**The **Extended HistoROM** application package is available.

The software options currently enabled are displayed in the **SW option overv.** parameter (→ [246](#)).

One of the following options is selected in the **Assign chan. 1** parameter (→ [243](#)):

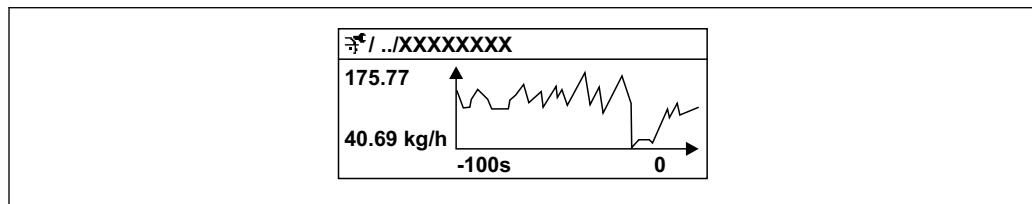
- Mass flow
- Volume flow
- Correct.vol.flow
- Density
- Ref.density
- Temperature
- Carr. pipe temp. \*
- Electronic temp.
- Oscil. frequency
- Oscil. amplitude
- Oscil. damping
- Signal asymmetry

**Description**

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

**Additional information****Prerequisite**

Detailed description of the options **Oscil. frequency**, **Oscil. amplitude**, **Oscil. damping** and **Signal asymmetry**: **Assign freq.** parameter (→ [94](#))

**Description**

A0016357

7 Chart of a measured value trend

\* Visibility depends on order options or device settings

- x-axis: depending on the number of channels selected displays 250 to 1000 measured values of a process variable.
- y-axis: displays the approximate measured value span and constantly adapts this to the ongoing measurement.

#### "Displ.channel 2" submenu

*Navigation*



Expert → Diagnostics → Data logging → Displ.channel 2



---

#### 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 → 246

#### "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.

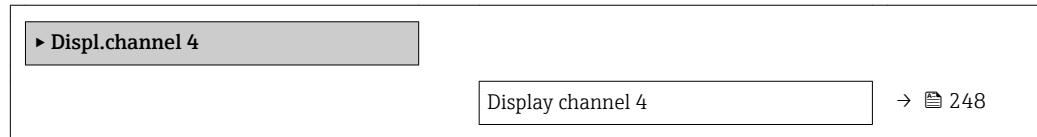
**Description**

See the **Display channel 1** parameter → 246

### "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.

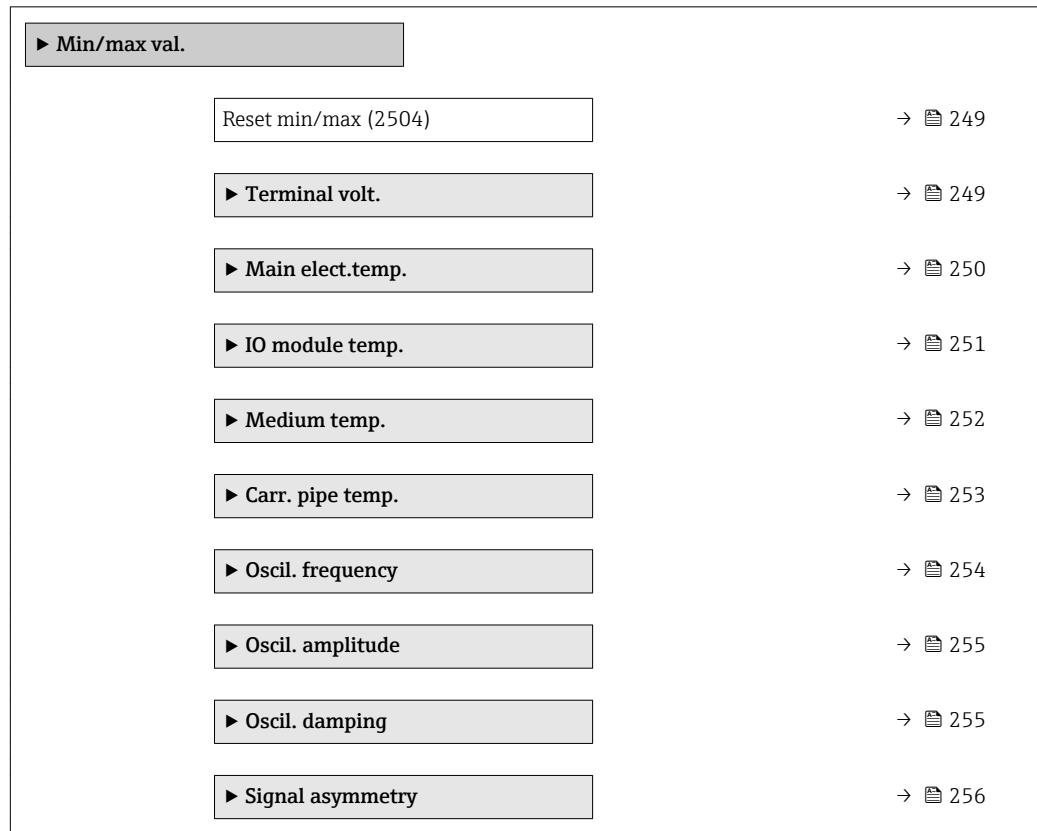
Description

See the **Display channel 1** parameter → [246](#)

### 3.10.5 "Min/max val." submenu

Navigation

Expert → Diagnostics → Min/max val.



**Reset min/max****Navigation**

Expert → Diagnostics → Min/max val. → Reset min/max (2504)

**Description**

Use this function to select measured variables whose minimum, maximum and average measured values are to be reset.

**Selection**

- Cancel
- Terminal volt. 1
- IO module temp.
- Oscil. amplitude
- Oscil. damping
- Oscil. frequency
- Signal asymmetry

**Factory setting**

Cancel

**Additional information***Options*

Detailed description of the options **Oscil. frequency**, **Oscil. amplitude**, **Oscil. damping** and **Signal asymmetry**: **Assign freq.** parameter (→ [94](#))

**"Terminal volt." submenu****Navigation**

Expert → Diagnostics → Min/max val. → Terminal volt.

▶ Terminal volt.							
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Minimum value (0689)</td> <td style="width: 10%; text-align: right; padding: 5px;">→ <a href="#">249</a></td> </tr> <tr> <td style="padding: 5px;">Maximum value (0663)</td> <td style="width: 10%; text-align: right; padding: 5px;">→ <a href="#">250</a></td> </tr> <tr> <td style="padding: 5px;">Average value (0698)</td> <td style="width: 10%; text-align: right; padding: 5px;">→ <a href="#">250</a></td> </tr> </table>		Minimum value (0689)	→ <a href="#">249</a>	Maximum value (0663)	→ <a href="#">250</a>	Average value (0698)	→ <a href="#">250</a>
Minimum value (0689)	→ <a href="#">249</a>						
Maximum value (0663)	→ <a href="#">250</a>						
Average value (0698)	→ <a href="#">250</a>						

**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**

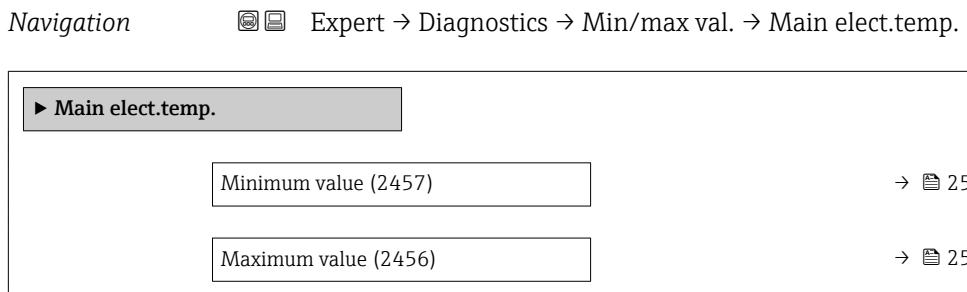
0.0 to 50.0 V

**Maximum value**

<b>Navigation</b>	Expert → Diagnostics → Min/max val. → Terminal volt. → Maximum value (0663)
<b>Description</b>	Use this function to view the largest previously measured terminal voltage value in Volts.
<b>User interface</b>	0.0 to 50.0 V

**Average value**

<b>Navigation</b>	Expert → Diagnostics → Min/max val. → Terminal volt. → Average value (0698)
<b>Description</b>	Use this function to view the average of all previously measured terminal voltage values in Volts.
<b>User interface</b>	Signed floating-point number

**"Main elect.temp." submenu****Minimum value**

<b>Navigation</b>	Expert → Diagnostics → Min/max val. → Main elect.temp. → Minimum value (2457)
<b>Description</b>	Displays the lowest previously measured temperature value of the main electronics module.
<b>User interface</b>	Signed floating-point number
<b>Additional information</b>	<i>Dependency</i> The unit is taken from the <b>Temperature unit</b> parameter (→  63)

---

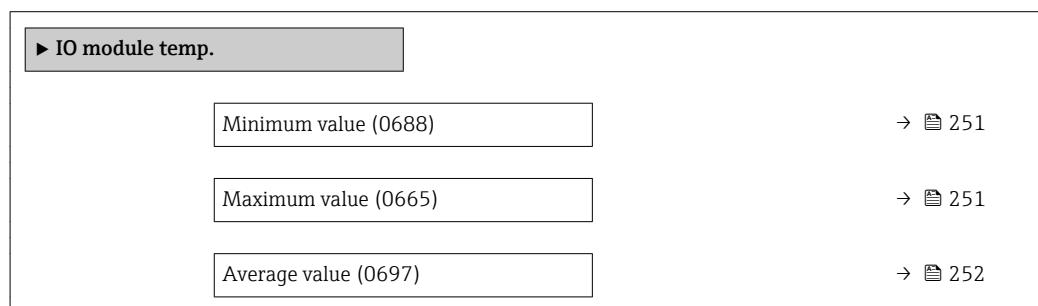
## Maximum value

---

<b>Navigation</b>	  Expert → Diagnostics → Min/max val. → Main elect.temp. → Maximum value (2456)
<b>Description</b>	Displays the highest previously measured temperature value of the main electronics module.
<b>User interface</b>	Signed floating-point number
<b>Additional information</b>	<p><i>Dependency</i></p>  The unit is taken from the <b>Temperature unit</b> parameter (→ <a href="#">63</a> )

### "IO module temperature" submenu

*Navigation*        Expert → Diagnostics → Min/max val. → IO module temp.




---

## Minimum value

---

<b>Navigation</b>	  Expert → Diagnostics → Min/max val. → IO module temp. → Minimum value (0688)
<b>Description</b>	Displays the lowest previously measured temperature value of the I/O electronics module.
<b>User interface</b>	Signed floating-point number
<b>Additional information</b>	<p><i>Dependency</i></p>  The unit is taken from the <b>Temperature unit</b> parameter (→ <a href="#">63</a> )

---

## Maximum value

---

<b>Navigation</b>	  Expert → Diagnostics → Min/max val. → IO module temp. → Maximum value (0665)
<b>Description</b>	Displays the highest previously measured temperature value of the I/O electronics module.

**User interface** Signed floating-point number

**Additional information** *Dependency*

 The unit is taken from the **Temperature unit** parameter (→ [63](#))

---

## 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.

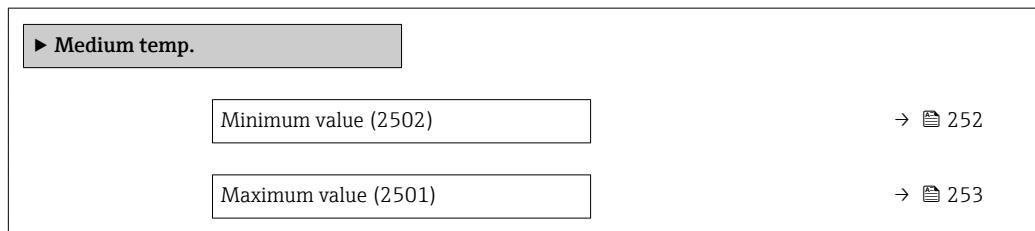
**User interface** -1273.15 to 726.85 °C

**Additional information** *Dependency*

 The unit is taken from the **Temperature unit** parameter (→ [63](#))

## "Medium temp." submenu

**Navigation**  Expert → Diagnostics → Min/max val. → Medium temp.



---

## Minimum value

---

**Navigation**  Expert → Diagnostics → Min/max val. → Medium temp. → Minimum value (2502)

**Description** Displays the lowest previously measured medium temperature value.

**User interface** Signed floating-point number

**Additional information** *Dependency*

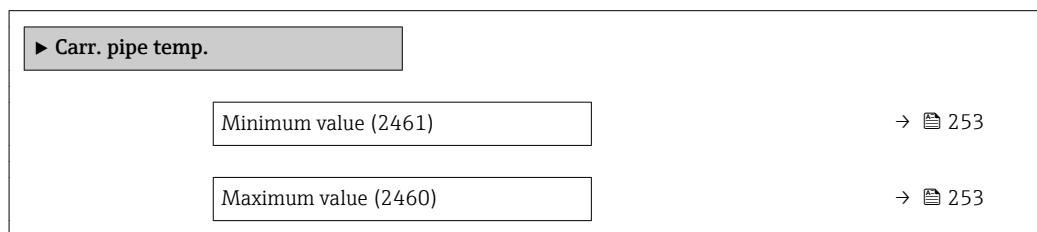
 The unit is taken from the **Temperature unit** parameter (→ [63](#))

## Maximum value

<b>Navigation</b>	Expert → Diagnostics → Min/max val. → Medium temp. → Maximum value (2501)
<b>Description</b>	Displays the highest previously measured medium temperature value.
<b>User interface</b>	Signed floating-point number
<b>Additional information</b>	<p><i>Dependency</i></p>  The unit is taken from the <b>Temperature unit</b> parameter (→ 63)

### "Carr. pipe temp." submenu

*Navigation*       Expert → Diagnostics → Min/max val. → Carr. pipe temp.



## Minimum value

<b>Navigation</b>	Expert → Diagnostics → Min/max val. → Carr. pipe temp. → Minimum value (2461)
<b>Prerequisite</b>	If the carrier tube temperature is available (applies only to Promass F).
<b>Description</b>	Displays the lowest previously measured temperature value of the carrier pipe.
<b>User interface</b>	Signed floating-point number
<b>Additional information</b>	<p><i>Dependency</i></p>  The unit is taken from the <b>Temperature unit</b> parameter (→ 63)

## Maximum value

<b>Navigation</b>	Expert → Diagnostics → Min/max val. → Carr. pipe temp. → Maximum value (2460)
<b>Prerequisite</b>	If the carrier tube temperature is available (applies only to Promass F).
<b>Description</b>	Displays the highest previously measured temperature value of the carrier pipe.

**User interface** Signed floating-point number

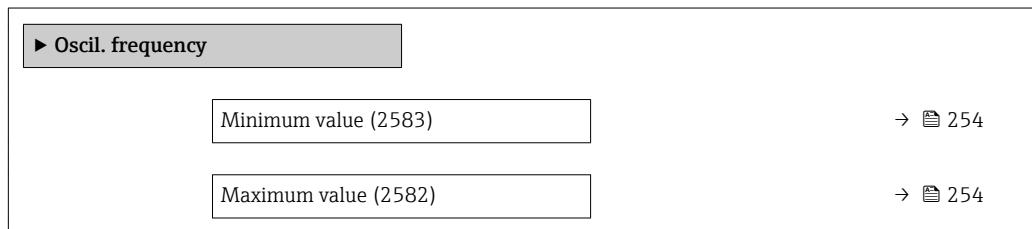
**Additional information** *Dependency*

 The unit is taken from the **Temperature unit** parameter (→ [63](#))

### "Oscil. frequency" submenu

*Navigation*

 Expert → Diagnostics → Min/max val. → Oscil. frequency



---

### Minimum value

---

**Navigation**

 Expert → Diagnostics → Min/max val. → Oscil. frequency → Minimum value (2583)

**Description**

Displays the lowest previously measured oscillation frequency.

**User interface**

Signed floating-point number

---

### Maximum value

---

**Navigation**

 Expert → Diagnostics → Min/max val. → Oscil. frequency → Maximum value (2582)

**Description**

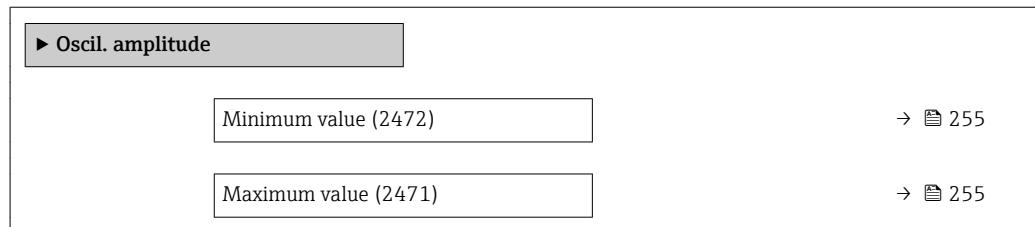
Displays the highest previously measured oscillation frequency.

**User interface**

Signed floating-point number

**"Oscil. amplitude" submenu****Navigation**

Expert → Diagnostics → Min/max val. → Oscil. amplitude



---

**Minimum value**

---

**Navigation**

Expert → Diagnostics → Min/max val. → Oscil. amplitude → Minimum value (2472)

**Description**

Displays the lowest previously measured oscillation amplitude.

**User interface**

Signed floating-point number

---

**Maximum value**

---

**Navigation**

Expert → Diagnostics → Min/max val. → Oscil. amplitude → Maximum value (2471)

**Description**

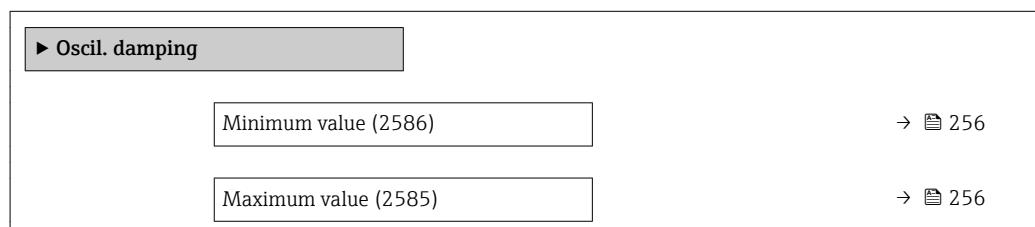
Displays the highest previously measured oscillation amplitude.

**User interface**

Signed floating-point number

**"Oscil. damping" submenu****Navigation**

Expert → Diagnostics → Min/max val. → Oscil. damping



**Minimum value**

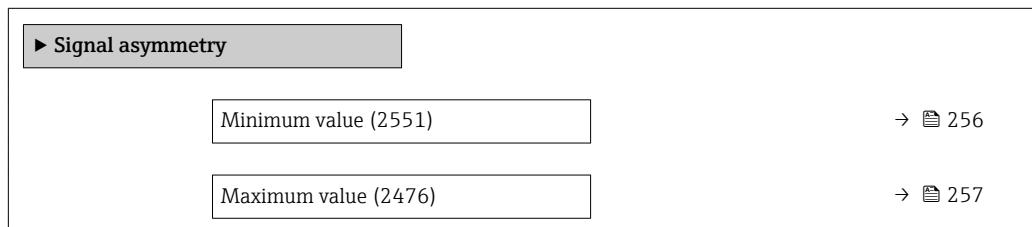
<b>Navigation</b>	  Expert → Diagnostics → Min/max val. → Oscil. damping → Minimum value (2586)
<b>Description</b>	Displays the lowest previously measured oscillation damping.
<b>User interface</b>	Signed floating-point number

**Maximum value**

<b>Navigation</b>	  Expert → Diagnostics → Min/max val. → Oscil. damping → Maximum value (2585)
<b>Description</b>	Displays the highest previously measured oscillation damping.
<b>User interface</b>	Signed floating-point number

**"Signal asymmetry" submenu**

*Navigation*        Expert → Diagnostics → Min/max val. → Signal asymmetry

**Minimum value**

<b>Navigation</b>	  Expert → Diagnostics → Min/max val. → Signal asymmetry → Minimum value (2551)
<b>Description</b>	Displays the lowest previously measured signal asymmetry.
<b>User interface</b>	Signed floating-point number

**Maximum value**

**Navigation**  Expert → Diagnostics → Min/max val. → Signal asymmetry → Maximum value (2476)

**Description** Displays the highest previously measured signal asymmetry.

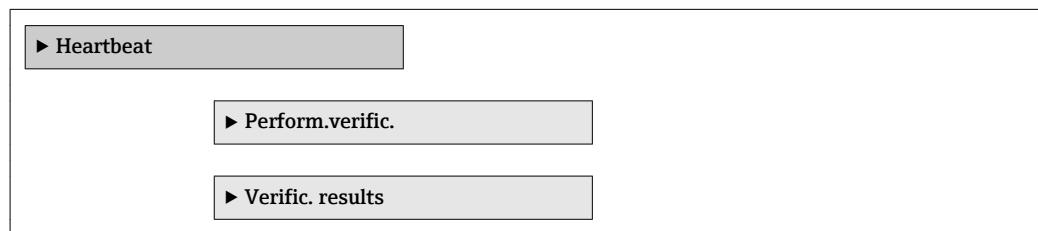
**User interface** Signed floating-point number

**3.10.6 "Heartbeat" submenu**

 For detailed information on the parameter descriptions for the **Heartbeat Verification+Monitoring** application package, refer to the Special Documentation for the device →  7

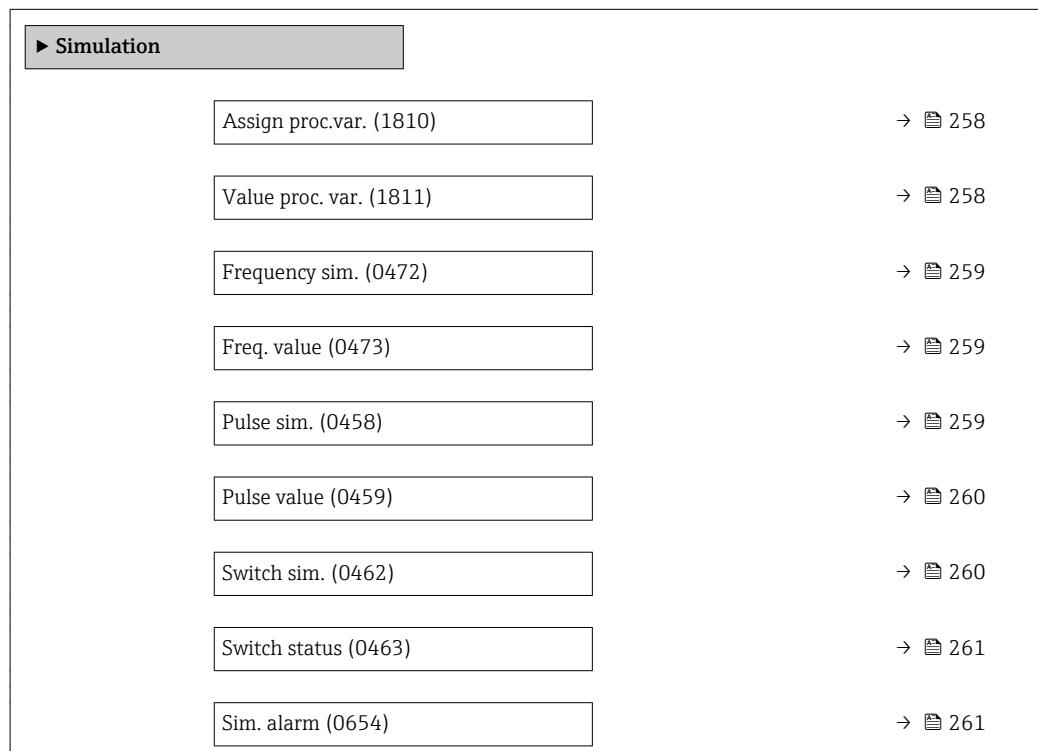
*Navigation*

 Expert → Diagnostics → Heartbeat

**3.10.7 "Simulation" submenu**

*Navigation*

 Expert → Diagnostics → Simulation



Event category (0738)	→  262
Sim. diag. event (0737)	→  262

## Assign proc.var.



### Navigation

Expert → Diagnostics → Simulation → Assign proc.var. (1810)

### Description

Use this function to select a process variable for the simulation process that is activated. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.

### Selection

- Off
- Mass flow
- Volume flow
- Correct.vol.flow
- Density
- Ref.density
- Temperature

### Factory setting

Off

### Additional information

#### Description

The simulation value of the process variable selected is defined in the **Value proc. var.** parameter (→ 258).

## Value proc. var.



### Navigation

Expert → Diagnostics → Simulation → Value proc. var. (1811)

### Prerequisite

A process variable is selected in the **Assign proc.var.** parameter (→ 258).

### 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 (→ 57).

---

**Frequency sim.**

<b>Navigation</b>	Expert → Diagnostics → Simulation → Frequency sim. (0472)
<b>Prerequisite</b>	In the <b>Operating mode</b> parameter (→ 89), the <b>Frequency</b> option is selected.
<b>Description</b>	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.
<b>Selection</b>	<ul style="list-style-type: none"><li>▪ Off</li><li>▪ On</li></ul>
<b>Factory setting</b>	Off
<b>Additional information</b>	<i>Description</i> The desired simulation value is defined in the <b>Freq. value</b> parameter (→ 259).  <i>Selection</i> <ul style="list-style-type: none"><li>▪ Off Frequency simulation is switched off. The device is in normal measuring mode or another process variable is being simulated.</li><li>▪ On Frequency simulation is active.</li></ul>

---

**Freq. value**

<b>Navigation</b>	Expert → Diagnostics → Simulation → Freq. value (0473)
<b>Prerequisite</b>	In the <b>Frequency sim.</b> parameter (→ 259), the <b>On</b> option is selected.
<b>Description</b>	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.
<b>User entry</b>	0.0 to 1250.0 Hz

---

**Pulse sim.**

<b>Navigation</b>	Expert → Diagnostics → Simulation → Pulse sim. (0458)
<b>Prerequisite</b>	In the <b>Operating mode</b> parameter (→ 89), the <b>Pulse</b> option is selected.
<b>Description</b>	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.

<b>Selection</b>	<ul style="list-style-type: none"><li>▪ Off</li><li>▪ Fixed value</li><li>▪ Down-count. val.</li></ul>
<b>Factory setting</b>	Off
<b>Additional information</b>	<p><i>Description</i></p> <p> The desired simulation value is defined in the <b>Pulse value</b> parameter (→ 260).</p> <p><i>Selection</i></p> <ul style="list-style-type: none"><li>▪ Off Pulse simulation is switched off. The device is in normal measuring mode or another process variable is being simulated.</li><li>▪ Fixed value Pulses are continuously output with the pulse width specified in the <b>Pulse width</b> parameter (→ 91).</li><li>▪ Down-count. val. The pulses specified in the <b>Pulse value</b> parameter (→ 260) are output.</li></ul>

<b>Pulse value</b>	
<b>Navigation</b>	  Expert → Diagnostics → Simulation → Pulse value (0459)
<b>Prerequisite</b>	In the <b>Pulse sim.</b> parameter (→ 259), the <b>Down-count. val.</b> option is selected.
<b>Description</b>	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.
<b>User entry</b>	0 to 65 535

<b>Switch sim.</b>	
<b>Navigation</b>	  Expert → Diagnostics → Simulation → Switch sim. (0462)
<b>Prerequisite</b>	In the <b>Operating mode</b> parameter (→ 89), the <b>Switch</b> option is selected.
<b>Description</b>	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.
<b>Selection</b>	<ul style="list-style-type: none"><li>▪ Off</li><li>▪ On</li></ul>
<b>Factory setting</b>	Off

**Additional information***Description*

The desired simulation value is defined in the **Switch status** parameter (→ 261).

*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 (→ 260) **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.

**Sim. alarm****Navigation**

Expert → Diagnostics → Sim. alarm (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**

---

<b>Navigation</b>	 Expert → Diagnostics → Simulation → Event category (0738)
<b>Description</b>	Use this function to select the category of the diagnostic events that are displayed for the simulation in the <b>Sim. diag. event</b> parameter (→  262).
<b>Selection</b>	<ul style="list-style-type: none"><li>▪ Sensor</li><li>▪ Electronics</li><li>▪ Configuration</li><li>▪ Process</li></ul>
<b>Factory setting</b>	Process

---

**Sim. diag. event**

---

<b>Navigation</b>	  Expert → Diagnostics → Simulation → Sim. diag. event (0737)
<b>Description</b>	Use this function to select a diagnostic event for the simulation process that is activated.
<b>Selection</b>	<ul style="list-style-type: none"><li>▪ Off</li><li>▪ Diagnostic event picklist (depends on the category selected)</li></ul>
<b>Factory setting</b>	Off
<b>Additional information</b>	<i>Description</i>  For the simulation, you can choose from the diagnostic events of the category selected in the <b>Event category</b> parameter (→  262).

## 4 Country-specific factory settings

### 4.1 SI units

 Not valid for USA and Canada.

#### 4.1.1 System units

Mass	kg
Mass flow	kg/h
Volume	l
Volume flow	l/h
Corrected volume	Nl
Corrected volume flow	Nl/h
Density	kg/l
Reference density	kg/Nl
Temperature	°C
Length	mm
Pressure	bar a

#### 4.1.2 Full scale values

 The factory settings apply to the following parameters:  
100% bar graph value 1

Nominal diameter [mm]	[kg/h]
1	4
2	20
4	90
8	400
15	1 300
25	3 600
40	9 000
50	14 000
80	36 000

#### 4.1.3 Pulse value

Nominal diameter [mm]	(~ 2 pulses/s at 2 m/s) [kg/p]
1	0.001
2	0.01
4	0.01
8	0.1
15	0.1

Nominal diameter [mm]	(~ 2 pulses/s at 2 m/s) [kg/p]
25	1
40	1
50	10
80	10

#### 4.1.4 On value low flow cut off

 The switch-on point depends on the type of medium and the nominal diameter.

Nominal diameter [mm]	On-value for liquid [kg/h]
1	0.08
2	0.4
4	1.8
8	8
15	26
25	72
40	180
50	300
80	720

Nominal diameter [mm]	On-value for gas [kg/h]
1	0.02
2	0.1
4	0.45
8	2
15	6.5
25	18
40	45
50	75
80	180

## 4.2 US units

 Only valid for USA and Canada.

### 4.2.1 System units

Mass	lb
Mass flow	lb/min
Volume	gal (us)
Volume flow	gal/min (us)

<b>Corrected volume</b>	Sft <sup>3</sup>
<b>Corrected volume flow</b>	Sft <sup>3</sup> /min
<b>Density</b>	lb/ft <sup>3</sup>
<b>Reference density</b>	lb/Sft <sup>3</sup>
<b>Temperature</b>	°F
<b>Length</b>	in
<b>Pressure</b>	psi a

#### 4.2.2 Full scale values

 The factory settings apply to the following parameters:  
100% bar graph value 1

Nominal diameter [in]	[lb/min]
1/24	0.15
1/12	0.75
1/8	3.3
3/8	15
1/2	50
1	130
1½	330
2	515
3	1320

#### 4.2.3 Pulse value

Nominal diameter [in]	(~ 2 pulses/s at 2.0 m/s) [lb/p]
1/24	0.002
1/12	0.02
1/8	0.02
3/8	0.2
1/2	0.2
1	2
1½	2
2	20
3	20

#### 4.2.4 On value low flow cut off

 The switch-on point depends on the type of medium and the nominal diameter.

Nominal diameter [in]	On-value for liquid [lb/min]
1/24	0.003
1/12	0.015

Nominal diameter [in]	On-value for liquid [lb/min]
1/8	0.066
3/8	0.3
1/2	1
1	2.6
1½	6.6
2	11
3	26

Nominal diameter [in]	On-value for gas [lb/min]
1/24	0.001
1/12	0.004
1/8	0.016
3/8	0.075
1/2	0.25
1	0.65
1½	1.65
2	2.75
3	6.5

## 5 Explanation of abbreviated units

### 5.1 SI units

Process variable	Units	Explanation
Density	g/cm <sup>3</sup> , g/m <sup>3</sup>	Gram/volume unit
	kg/dm <sup>3</sup> , kg/l, kg/m <sup>3</sup>	Kilogram/volume unit
	SD4°C, SD15°C, SD20°C	Specific density: The specific density is the ratio of the density of the fluid to the density of water at a water temperature of 4 °C (39 °F), 15 °C (59 °F), 20 °C (68 °F).
	SG4°C, SG15°C, SG20°C	Specific gravity: The specific gravity is the ratio of the density of the fluid to the density of water at a water temperature of 4 °C (39 °F), 15 °C (59 °F), 20 °C (68 °F).
Pressure	Pa a, kPa a, MPa a	Pascal, kilopascal, megapascal (absolute)
	bar	Bar
	Pa g, kPa g, MPa g	Pascal, kilopascal, megapascal (relative/gauge)
	bar g	Bar (relative/gauge)
Length	μm, mm, m	Micrometer, 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
Ref.density	kg/Nm <sup>3</sup> , kg/Nl, g/Scm <sup>3</sup> , kg/Sm <sup>3</sup>	Kilogram, gram/standard volume unit
Corrected volume	Nl, Nm <sup>3</sup> , Sm <sup>3</sup>	Normal liter, normal cubic meter, standard cubic meter
Correct.vol.flow	Nl/s, Nl/min, Nl/h, Nl/d	Normal liter/time unit
	Nm <sup>3</sup> /s, Nm <sup>3</sup> /min, Nm <sup>3</sup> /h, Nm <sup>3</sup> /d	Normal cubic meter/time unit
	Sm <sup>3</sup> /s, Sm <sup>3</sup> /min, Sm <sup>3</sup> /h, Sm <sup>3</sup> /d	Standard cubic meter/time unit
Temperature	°C, K	Celsius, Kelvin
Volume	cm <sup>3</sup> , dm <sup>3</sup> , m <sup>3</sup>	Cubic centimeter, cubic decimeter, cubic meter
	ml, l	Milliliter, liter
Volume flow	cm <sup>3</sup> /s, cm <sup>3</sup> /min, cm <sup>3</sup> /h, cm <sup>3</sup> /d	Cubic centimeter/time unit
	dm <sup>3</sup> /s, dm <sup>3</sup> /min, dm <sup>3</sup> /h, dm <sup>3</sup> /d	Cubic decimeter/time unit
	m <sup>3</sup> /s, m <sup>3</sup> /min, m <sup>3</sup> /h, m <sup>3</sup> /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
Density	lb/ft <sup>3</sup> , 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 a	Pounds per square inch (absolute)

Process variable	Units	Explanation
	psi g	Pounds per square inch (gauge)
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
Ref.density	lb/Sft <sup>3</sup>	Weight unit/standard volume unit
Corrected volume	Sft <sup>3</sup> , Sgal (us), Sbbl (us;liq.)	Standard cubic foot, standard gallon, standard barrel
Correct.vol.flow	Sft <sup>3</sup> /s, Sft <sup>3</sup> /min, Sft <sup>3</sup> /h, Sft <sup>3</sup> /d	Standard cubic foot/time unit
	Sgal/s (us), Sgal/min (us), Sgal/h (us), Sgal/d (us)	Standard gallon/time unit
	Sbbl/s (us;liq.), Sbbl/min (us;liq.), Sbbl/h (us;liq.), Sbbl/d (us;liq.)	Barrel/time unit (normal liquids)
Temperature	°F, °R	Fahrenheit, Rankine
Volume	af	Acre foot
	ft <sup>3</sup>	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 <sup>3</sup> /s, ft <sup>3</sup> /min, ft <sup>3</sup> /h, ft <sup>3</sup> /d	Cubic foot/time unit
	fl oz/s (us), fl oz/min (us), fl oz/h (us), fl oz/d (us)	Fluid ounce/time unit
	gal/s (us), gal/min (us), gal/h (us), gal/d (us)	Gallon/time unit
	kgal/s (us), kgal/min (us), kgal/h (us), kgal/d (us)	Kilogallon/time unit
	Mgal/s (us), Mgal/min (us), Mgal/h (us), Mgal/d (us)	Million gallon/time unit
	bbl/s (us;liq.), bbl/min (us;liq.), bbl/h (us;liq.), bbl/d (us;liq.)	Barrel/time unit (normal liquids) Normal liquids: 31.5 gal/bbl
	bbl/s (us;beer), bbl/min (us;beer), bbl/h (us;beer), bbl/d (us;beer)	Barrel /time unit (beer) Beer: 31.0 gal/bbl
	bbl/s (us;oil), bbl/min (us;oil), bbl/h (us;oil), bbl/d (us;oil)	Barrel/time unit (petrochemicals) Petrochemicals: 42.0 gal/bbl
	bbl/s (us;tank), bbl/min (us;tank), bbl/h (us;tank), bbl/d (us;tank)	Barrel/time unit (filling tank) Filling tanks: 55.0 gal/bbl
Time	s, m, h, d, y	Second, minute, hour, day, year
	am, pm	Ante meridiem ( before midday), post meridiem (after midday)

### 5.3 Imperial units

Process variable	Units	Explanation
Density	lb/gal (imp), lb/bbl (imp;beer), lb/bbl (imp;oil)	Pound/volume unit
Corrected volume	Sgal (imp)	Standard gallon
Correct.vol.flow	Sgal/s (imp), Sgal/min (imp), Sgal/h (imp), Sgal/d (imp)	Standard gallon/time unit
Volume	gal (imp), Mgal (imp) bbl (imp;beer), bbl (imp;oil)	Gallon, mega gallon Barrel (beer), barrel (petrochemicals)
Volume flow	gal/s (imp), gal/min (imp), gal/h (imp), gal/d (imp) Mgal/s (imp), Mgal/min (imp), Mgal/h (imp), Mgal/d (imp) bbl/s (imp;beer), bbl/min (imp;beer), bbl/h (imp;beer), bbl/d (imp;beer)	Gallon/time unit Mega gallon/time unit 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 am, pm	Second, minute, hour, day, year Ante meridiem ( before midday), post meridiem (after midday)

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Process Value Filter Time (Parameter) . . . . .	163, 195	Analog outputs . . . . .	206	Process variable adjustment (Submenu) . . . . .	80	Application . . . . .	223	Process variables (Submenu) . . . . .	51	Calculated values . . . . .	75	Pulse output (Parameter) . . . . .	56, 93	Calibration . . . . .	84	Pulse simulation (Parameter) . . . . .	259	Carrier pipe temperature . . . . .	253	Pulse value (Parameter) . . . . .	260	Communication . . . . .	108	Pulse width (Parameter) . . . . .	91	Configuration backup display . . . . .	28	Pulse/frequency/switch output (Submenu) . . . . .	87	Corrected volume flow calculation . . . . .	75	<b>R</b>					Reference density (Parameter) . . . . .	53	Data logging . . . . .	242	Reference density factor (Parameter) . . . . .	83	Device information . . . . .	238	Reference density offset (Parameter) . . . . .	83	Diagnostic behavior . . . . .	33	Reference density unit (Parameter) . . . . .	62	Diagnostic handling . . . . .	32	Reference sound velocity (Parameter) . . . . .	74	Diagnostic list . . . . .	231	Reference temperature (Parameter) . . . . .	76	Diagnostics . . . . .	228	Reference values (Submenu) . . . . .	76	Discrete input 1 to n . . . . .	178	Relative Index (Parameter) . . . . .	123, 164, 200	Discrete inputs . . . . .	177	Reset all totalizers (Parameter) . . . . .	224	Discrete outputs . . . . .	214	Reset min/max values (Parameter) . . . . .	249	Display . . . . .	15	Resource block (Submenu) . . . . .	109	Display channel 1 . . . . .	246	Resource State (Parameter) . . . . .	114	Display channel 2 . . . . .	247	Response time (Parameter) . . . . .	99	Display channel 3 . . . . .	247	Response time part. filled pipe detect. (Parameter) . . . . .	72	Display channel 4 . . . . .	248	Restart (Parameter) . . . . .	47, 117	Event list . . . . .	236	<b>S</b>					Select gas type (Parameter) . . . . .	73	Event logbook . . . . .	235	Select medium (Parameter) . . . . .	73	Heartbeat . . . . .	257	Sensor (Submenu) . . . . .	50	IO module temperature . . . . .	251	Sensor adjustment (Submenu) . . . . .	78	Low flow cut off . . . . .	67	Separator (Parameter) . . . . .	27	Main electronic temperature . . . . .	250	Serial number (Parameter) . . . . .	239	Measured values . . . . .	51	Service reset (Parameter) . . . . .	48, 117	Measurement mode . . . . .	73	Set Fault State (Parameter) . . . . .	121	Medium temperature . . . . .	252	Shed Remote Cascade (Parameter) . . . . .	122	Min/max values . . . . .	248	Shed Remote Out (Parameter) . . . . .	122	Multiple analog output . . . . .	206	Signal asymmetry (Submenu) . . . . .	256	Multiple discrete output . . . . .	215	Simulate En/Disable (Parameter) . . . . .	145, 193	Oscillation amplitude . . . . .	255	Oscillation damping . . . . .	255	Oscillation frequency . . . . .	254	Output . . . . .	87	Output values . . . . .	55	Partially filled pipe detection . . . . .	70	Process parameters . . . . .	65												
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Process variable adjustment (Submenu) . . . . .	80	Application . . . . .	223	Process variables (Submenu) . . . . .	51	Calculated values . . . . .	75	Pulse output (Parameter) . . . . .	56, 93	Calibration . . . . .	84	Pulse simulation (Parameter) . . . . .	259	Carrier pipe temperature . . . . .	253	Pulse value (Parameter) . . . . .	260	Communication . . . . .	108	Pulse width (Parameter) . . . . .	91	Configuration backup display . . . . .	28	Pulse/frequency/switch output (Submenu) . . . . .	87	Corrected volume flow calculation . . . . .	75	<b>R</b>					Reference density (Parameter) . . . . .	53	Data logging . . . . .	242	Reference density factor (Parameter) . . . . .	83	Device information . . . . .	238	Reference density offset (Parameter) . . . . .	83	Diagnostic behavior . . . . .	33	Reference density unit (Parameter) . . . . .	62	Diagnostic handling . . . . .	32	Reference sound velocity (Parameter) . . . . .	74	Diagnostic list . . . . .	231	Reference temperature (Parameter) . . . . .	76	Diagnostics . . . . .	228	Reference values (Submenu) . . . . .	76	Discrete input 1 to n . . . . .	178	Relative Index (Parameter) . . . . .	123, 164, 200	Discrete inputs . . . . .	177	Reset all totalizers (Parameter) . . . . .	224	Discrete outputs . . . . .	214	Reset min/max values (Parameter) . . . . .	249	Display . . . . .	15	Resource block (Submenu) . . . . .	109	Display channel 1 . . . . .	246	Resource State (Parameter) . . . . .	114	Display channel 2 . . . . .	247	Response time (Parameter) . . . . .	99	Display channel 3 . . . . .	247	Response time part. filled pipe detect. (Parameter) . . . . .	72	Display channel 4 . . . . .	248	Restart (Parameter) . . . . .	47, 117	Event list . . . . .	236	<b>S</b>					Select gas type (Parameter) . . . . .	73	Event logbook . . . . .	235	Select medium (Parameter) . . . . .	73	Heartbeat . . . . .	257	Sensor (Submenu) . . . . .	50	IO module temperature . . . . .	251	Sensor adjustment (Submenu) . . . . .	78	Low flow cut off . . . . .	67	Separator (Parameter) . . . . .	27	Main electronic temperature . . . . .	250	Serial number (Parameter) . . . . .	239	Measured values . . . . .	51	Service reset (Parameter) . . . . .	48, 117	Measurement mode . . . . .	73	Set Fault State (Parameter) . . . . .	121	Medium temperature . . . . .	252	Shed Remote Cascade (Parameter) . . . . .	122	Min/max values . . . . .	248	Shed Remote Out (Parameter) . . . . .	122	Multiple analog output . . . . .	206	Signal asymmetry (Submenu) . . . . .	256	Multiple discrete output . . . . .	215	Simulate En/Disable (Parameter) . . . . .	145, 193	Oscillation amplitude . . . . .	255	Oscillation damping . . . . .	255	Oscillation frequency . . . . .	254	Output . . . . .	87	Output values . . . . .	55	Partially filled pipe detection . . . . .	70	Process parameters . . . . .	65																
Application . . . . .	223																																																																																																																																																																												
Process variables (Submenu) . . . . .	51	Calculated values . . . . .	75	Pulse output (Parameter) . . . . .	56, 93	Calibration . . . . .	84	Pulse simulation (Parameter) . . . . .	259	Carrier pipe temperature . . . . .	253	Pulse value (Parameter) . . . . .	260	Communication . . . . .	108	Pulse width (Parameter) . . . . .	91	Configuration backup display . . . . .	28	Pulse/frequency/switch output (Submenu) . . . . .	87	Corrected volume flow calculation . . . . .	75	<b>R</b>					Reference density (Parameter) . . . . .	53	Data logging . . . . .	242	Reference density factor (Parameter) . . . . .	83	Device information . . . . .	238	Reference density offset (Parameter) . . . . .	83	Diagnostic behavior . . . . .	33	Reference density unit (Parameter) . . . . .	62	Diagnostic handling . . . . .	32	Reference sound velocity (Parameter) . . . . .	74	Diagnostic list . . . . .	231	Reference temperature (Parameter) . . . . .	76	Diagnostics . . . . .	228	Reference values (Submenu) . . . . .	76	Discrete input 1 to n . . . . .	178	Relative Index (Parameter) . . . . .	123, 164, 200	Discrete inputs . . . . .	177	Reset all totalizers (Parameter) . . . . .	224	Discrete outputs . . . . .	214	Reset min/max values (Parameter) . . . . .	249	Display . . . . .	15	Resource block (Submenu) . . . . .	109	Display channel 1 . . . . .	246	Resource State (Parameter) . . . . .	114	Display channel 2 . . . . .	247	Response time (Parameter) . . . . .	99	Display channel 3 . . . . .	247	Response time part. filled pipe detect. (Parameter) . . . . .	72	Display channel 4 . . . . .	248	Restart (Parameter) . . . . .	47, 117	Event list . . . . .	236	<b>S</b>					Select gas type (Parameter) . . . . .	73	Event logbook . . . . .	235	Select medium (Parameter) . . . . .	73	Heartbeat . . . . .	257	Sensor (Submenu) . . . . .	50	IO module temperature . . . . .	251	Sensor adjustment (Submenu) . . . . .	78	Low flow cut off . . . . .	67	Separator (Parameter) . . . . .	27	Main electronic temperature . . . . .	250	Serial number (Parameter) . . . . .	239	Measured values . . . . .	51	Service reset (Parameter) . . . . .	48, 117	Measurement mode . . . . .	73	Set Fault State (Parameter) . . . . .	121	Medium temperature . . . . .	252	Shed Remote Cascade (Parameter) . . . . .	122	Min/max values . . . . .	248	Shed Remote Out (Parameter) . . . . .	122	Multiple analog output . . . . .	206	Signal asymmetry (Submenu) . . . . .	256	Multiple discrete output . . . . .	215	Simulate En/Disable (Parameter) . . . . .	145, 193	Oscillation amplitude . . . . .	255	Oscillation damping . . . . .	255	Oscillation frequency . . . . .	254	Output . . . . .	87	Output values . . . . .	55	Partially filled pipe detection . . . . .	70	Process parameters . . . . .	65																				
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Pulse output (Parameter) . . . . .	56, 93	Calibration . . . . .	84	Pulse simulation (Parameter) . . . . .	259	Carrier pipe temperature . . . . .	253	Pulse value (Parameter) . . . . .	260	Communication . . . . .	108	Pulse width (Parameter) . . . . .	91	Configuration backup display . . . . .	28	Pulse/frequency/switch output (Submenu) . . . . .	87	Corrected volume flow calculation . . . . .	75	<b>R</b>					Reference density (Parameter) . . . . .	53	Data logging . . . . .	242	Reference density factor (Parameter) . . . . .	83	Device information . . . . .	238	Reference density offset (Parameter) . . . . .	83	Diagnostic behavior . . . . .	33	Reference density unit (Parameter) . . . . .	62	Diagnostic handling . . . . .	32	Reference sound velocity (Parameter) . . . . .	74	Diagnostic list . . . . .	231	Reference temperature (Parameter) . . . . .	76	Diagnostics . . . . .	228	Reference values (Submenu) . . . . .	76	Discrete input 1 to n . . . . .	178	Relative Index (Parameter) . . . . .	123, 164, 200	Discrete inputs . . . . .	177	Reset all totalizers (Parameter) . . . . .	224	Discrete outputs . . . . .	214	Reset min/max values (Parameter) . . . . .	249	Display . . . . .	15	Resource block (Submenu) . . . . .	109	Display channel 1 . . . . .	246	Resource State (Parameter) . . . . .	114	Display channel 2 . . . . .	247	Response time (Parameter) . . . . .	99	Display channel 3 . . . . .	247	Response time part. filled pipe detect. (Parameter) . . . . .	72	Display channel 4 . . . . .	248	Restart (Parameter) . . . . .	47, 117	Event list . . . . .	236	<b>S</b>					Select gas type (Parameter) . . . . .	73	Event logbook . . . . .	235	Select medium (Parameter) . . . . .	73	Heartbeat . . . . .	257	Sensor (Submenu) . . . . .	50	IO module temperature . . . . .	251	Sensor adjustment (Submenu) . . . . .	78	Low flow cut off . . . . .	67	Separator (Parameter) . . . . .	27	Main electronic temperature . . . . .	250	Serial number (Parameter) . . . . .	239	Measured values . . . . .	51	Service reset (Parameter) . . . . .	48, 117	Measurement mode . . . . .	73	Set Fault State (Parameter) . . . . .	121	Medium temperature . . . . .	252	Shed Remote Cascade (Parameter) . . . . .	122	Min/max values . . . . .	248	Shed Remote Out (Parameter) . . . . .	122	Multiple analog output . . . . .	206	Signal asymmetry (Submenu) . . . . .	256	Multiple discrete output . . . . .	215	Simulate En/Disable (Parameter) . . . . .	145, 193	Oscillation amplitude . . . . .	255	Oscillation damping . . . . .	255	Oscillation frequency . . . . .	254	Output . . . . .	87	Output values . . . . .	55	Partially filled pipe detection . . . . .	70	Process parameters . . . . .	65																								
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Pulse simulation (Parameter) . . . . .	259	Carrier pipe temperature . . . . .	253	Pulse value (Parameter) . . . . .	260	Communication . . . . .	108	Pulse width (Parameter) . . . . .	91	Configuration backup display . . . . .	28	Pulse/frequency/switch output (Submenu) . . . . .	87	Corrected volume flow calculation . . . . .	75	<b>R</b>					Reference density (Parameter) . . . . .	53	Data logging . . . . .	242	Reference density factor (Parameter) . . . . .	83	Device information . . . . .	238	Reference density offset (Parameter) . . . . .	83	Diagnostic behavior . . . . .	33	Reference density unit (Parameter) . . . . .	62	Diagnostic handling . . . . .	32	Reference sound velocity (Parameter) . . . . .	74	Diagnostic list . . . . .	231	Reference temperature (Parameter) . . . . .	76	Diagnostics . . . . .	228	Reference values (Submenu) . . . . .	76	Discrete input 1 to n . . . . .	178	Relative Index (Parameter) . . . . .	123, 164, 200	Discrete inputs . . . . .	177	Reset all totalizers (Parameter) . . . . .	224	Discrete outputs . . . . .	214	Reset min/max values (Parameter) . . . . .	249	Display . . . . .	15	Resource block (Submenu) . . . . .	109	Display channel 1 . . . . .	246	Resource State (Parameter) . . . . .	114	Display channel 2 . . . . .	247	Response time (Parameter) . . . . .	99	Display channel 3 . . . . .	247	Response time part. filled pipe detect. (Parameter) . . . . .	72	Display channel 4 . . . . .	248	Restart (Parameter) . . . . .	47, 117	Event list . . . . .	236	<b>S</b>					Select gas type (Parameter) . . . . .	73	Event logbook . . . . .	235	Select medium (Parameter) . . . . .	73	Heartbeat . . . . .	257	Sensor (Submenu) . . . . .	50	IO module temperature . . . . .	251	Sensor adjustment (Submenu) . . . . .	78	Low flow cut off . . . . .	67	Separator (Parameter) . . . . .	27	Main electronic temperature . . . . .	250	Serial number (Parameter) . . . . .	239	Measured values . . . . .	51	Service reset (Parameter) . . . . .	48, 117	Measurement mode . . . . .	73	Set Fault State (Parameter) . . . . .	121	Medium temperature . . . . .	252	Shed Remote Cascade (Parameter) . . . . .	122	Min/max values . . . . .	248	Shed Remote Out (Parameter) . . . . .	122	Multiple analog output . . . . .	206	Signal asymmetry (Submenu) . . . . .	256	Multiple discrete output . . . . .	215	Simulate En/Disable (Parameter) . . . . .	145, 193	Oscillation amplitude . . . . .	255	Oscillation damping . . . . .	255	Oscillation frequency . . . . .	254	Output . . . . .	87	Output values . . . . .	55	Partially filled pipe detection . . . . .	70	Process parameters . . . . .	65																												
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Pulse value (Parameter) . . . . .	260	Communication . . . . .	108	Pulse width (Parameter) . . . . .	91	Configuration backup display . . . . .	28	Pulse/frequency/switch output (Submenu) . . . . .	87	Corrected volume flow calculation . . . . .	75	<b>R</b>					Reference density (Parameter) . . . . .	53	Data logging . . . . .	242	Reference density factor (Parameter) . . . . .	83	Device information . . . . .	238	Reference density offset (Parameter) . . . . .	83	Diagnostic behavior . . . . .	33	Reference density unit (Parameter) . . . . .	62	Diagnostic handling . . . . .	32	Reference sound velocity (Parameter) . . . . .	74	Diagnostic list . . . . .	231	Reference temperature (Parameter) . . . . .	76	Diagnostics . . . . .	228	Reference values (Submenu) . . . . .	76	Discrete input 1 to n . . . . .	178	Relative Index (Parameter) . . . . .	123, 164, 200	Discrete inputs . . . . .	177	Reset all totalizers (Parameter) . . . . .	224	Discrete outputs . . . . .	214	Reset min/max values (Parameter) . . . . .	249	Display . . . . .	15	Resource block (Submenu) . . . . .	109	Display channel 1 . . . . .	246	Resource State (Parameter) . . . . .	114	Display channel 2 . . . . .	247	Response time (Parameter) . . . . .	99	Display channel 3 . . . . .	247	Response time part. filled pipe detect. (Parameter) . . . . .	72	Display channel 4 . . . . .	248	Restart (Parameter) . . . . .	47, 117	Event list . . . . .	236	<b>S</b>					Select gas type (Parameter) . . . . .	73	Event logbook . . . . .	235	Select medium (Parameter) . . . . .	73	Heartbeat . . . . .	257	Sensor (Submenu) . . . . .	50	IO module temperature . . . . .	251	Sensor adjustment (Submenu) . . . . .	78	Low flow cut off . . . . .	67	Separator (Parameter) . . . . .	27	Main electronic temperature . . . . .	250	Serial number (Parameter) . . . . .	239	Measured values . . . . .	51	Service reset (Parameter) . . . . .	48, 117	Measurement mode . . . . .	73	Set Fault State (Parameter) . . . . .	121	Medium temperature . . . . .	252	Shed Remote Cascade (Parameter) . . . . .	122	Min/max values . . . . .	248	Shed Remote Out (Parameter) . . . . .	122	Multiple analog output . . . . .	206	Signal asymmetry (Submenu) . . . . .	256	Multiple discrete output . . . . .	215	Simulate En/Disable (Parameter) . . . . .	145, 193	Oscillation amplitude . . . . .	255	Oscillation damping . . . . .	255	Oscillation frequency . . . . .	254	Output . . . . .	87	Output values . . . . .	55	Partially filled pipe detection . . . . .	70	Process parameters . . . . .	65																																
Communication . . . . .	108																																																																																																																																																																												
Pulse width (Parameter) . . . . .	91	Configuration backup display . . . . .	28	Pulse/frequency/switch output (Submenu) . . . . .	87	Corrected volume flow calculation . . . . .	75	<b>R</b>					Reference density (Parameter) . . . . .	53	Data logging . . . . .	242	Reference density factor (Parameter) . . . . .	83	Device information . . . . .	238	Reference density offset (Parameter) . . . . .	83	Diagnostic behavior . . . . .	33	Reference density unit (Parameter) . . . . .	62	Diagnostic handling . . . . .	32	Reference sound velocity (Parameter) . . . . .	74	Diagnostic list . . . . .	231	Reference temperature (Parameter) . . . . .	76	Diagnostics . . . . .	228	Reference values (Submenu) . . . . .	76	Discrete input 1 to n . . . . .	178	Relative Index (Parameter) . . . . .	123, 164, 200	Discrete inputs . . . . .	177	Reset all totalizers (Parameter) . . . . .	224	Discrete outputs . . . . .	214	Reset min/max values (Parameter) . . . . .	249	Display . . . . .	15	Resource block (Submenu) . . . . .	109	Display channel 1 . . . . .	246	Resource State (Parameter) . . . . .	114	Display channel 2 . . . . .	247	Response time (Parameter) . . . . .	99	Display channel 3 . . . . .	247	Response time part. filled pipe detect. (Parameter) . . . . .	72	Display channel 4 . . . . .	248	Restart (Parameter) . . . . .	47, 117	Event list . . . . .	236	<b>S</b>					Select gas type (Parameter) . . . . .	73	Event logbook . . . . .	235	Select medium (Parameter) . . . . .	73	Heartbeat . . . . .	257	Sensor (Submenu) . . . . .	50	IO module temperature . . . . .	251	Sensor adjustment (Submenu) . . . . .	78	Low flow cut off . . . . .	67	Separator (Parameter) . . . . .	27	Main electronic temperature . . . . .	250	Serial number (Parameter) . . . . .	239	Measured values . . . . .	51	Service reset (Parameter) . . . . .	48, 117	Measurement mode . . . . .	73	Set Fault State (Parameter) . . . . .	121	Medium temperature . . . . .	252	Shed Remote Cascade (Parameter) . . . . .	122	Min/max values . . . . .	248	Shed Remote Out (Parameter) . . . . .	122	Multiple analog output . . . . .	206	Signal asymmetry (Submenu) . . . . .	256	Multiple discrete output . . . . .	215	Simulate En/Disable (Parameter) . . . . .	145, 193	Oscillation amplitude . . . . .	255	Oscillation damping . . . . .	255	Oscillation frequency . . . . .	254	Output . . . . .	87	Output values . . . . .	55	Partially filled pipe detection . . . . .	70	Process parameters . . . . .	65																																				
Configuration backup display . . . . .	28																																																																																																																																																																												
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Reference density factor (Parameter) . . . . .	83	Device information . . . . .	238	Reference density offset (Parameter) . . . . .	83	Diagnostic behavior . . . . .	33	Reference density unit (Parameter) . . . . .	62	Diagnostic handling . . . . .	32	Reference sound velocity (Parameter) . . . . .	74	Diagnostic list . . . . .	231	Reference temperature (Parameter) . . . . .	76	Diagnostics . . . . .	228	Reference values (Submenu) . . . . .	76	Discrete input 1 to n . . . . .	178	Relative Index (Parameter) . . . . .	123, 164, 200	Discrete inputs . . . . .	177	Reset all totalizers (Parameter) . . . . .	224	Discrete outputs . . . . .	214	Reset min/max values (Parameter) . . . . .	249	Display . . . . .	15	Resource block (Submenu) . . . . .	109	Display channel 1 . . . . .	246	Resource State (Parameter) . . . . .	114	Display channel 2 . . . . .	247	Response time (Parameter) . . . . .	99	Display channel 3 . . . . .	247	Response time part. filled pipe detect. (Parameter) . . . . .	72	Display channel 4 . . . . .	248	Restart (Parameter) . . . . .	47, 117	Event list . . . . .	236	<b>S</b>					Select gas type (Parameter) . . . . .	73	Event logbook . . . . .	235	Select medium (Parameter) . . . . .	73	Heartbeat . . . . .	257	Sensor (Submenu) . . . . .	50	IO module temperature . . . . .	251	Sensor adjustment (Submenu) . . . . .	78	Low flow cut off . . . . .	67	Separator (Parameter) . . . . .	27	Main electronic temperature . . . . .	250	Serial number (Parameter) . . . . .	239	Measured values . . . . .	51	Service reset (Parameter) . . . . .	48, 117	Measurement mode . . . . .	73	Set Fault State (Parameter) . . . . .	121	Medium temperature . . . . .	252	Shed Remote Cascade (Parameter) . . . . .	122	Min/max values . . . . .	248	Shed Remote Out (Parameter) . . . . .	122	Multiple analog output . . . . .	206	Signal asymmetry (Submenu) . . . . .	256	Multiple discrete output . . . . .	215	Simulate En/Disable (Parameter) . . . . .	145, 193	Oscillation amplitude . . . . .	255	Oscillation damping . . . . .	255	Oscillation frequency . . . . .	254	Output . . . . .	87	Output values . . . . .	55	Partially filled pipe detection . . . . .	70	Process parameters . . . . .	65																																																					
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Reference density offset (Parameter) . . . . .	83	Diagnostic behavior . . . . .	33	Reference density unit (Parameter) . . . . .	62	Diagnostic handling . . . . .	32	Reference sound velocity (Parameter) . . . . .	74	Diagnostic list . . . . .	231	Reference temperature (Parameter) . . . . .	76	Diagnostics . . . . .	228	Reference values (Submenu) . . . . .	76	Discrete input 1 to n . . . . .	178	Relative Index (Parameter) . . . . .	123, 164, 200	Discrete inputs . . . . .	177	Reset all totalizers (Parameter) . . . . .	224	Discrete outputs . . . . .	214	Reset min/max values (Parameter) . . . . .	249	Display . . . . .	15	Resource block (Submenu) . . . . .	109	Display channel 1 . . . . .	246	Resource State (Parameter) . . . . .	114	Display channel 2 . . . . .	247	Response time (Parameter) . . . . .	99	Display channel 3 . . . . .	247	Response time part. filled pipe detect. (Parameter) . . . . .	72	Display channel 4 . . . . .	248	Restart (Parameter) . . . . .	47, 117	Event list . . . . .	236	<b>S</b>					Select gas type (Parameter) . . . . .	73	Event logbook . . . . .	235	Select medium (Parameter) . . . . .	73	Heartbeat . . . . .	257	Sensor (Submenu) . . . . .	50	IO module temperature . . . . .	251	Sensor adjustment (Submenu) . . . . .	78	Low flow cut off . . . . .	67	Separator (Parameter) . . . . .	27	Main electronic temperature . . . . .	250	Serial number (Parameter) . . . . .	239	Measured values . . . . .	51	Service reset (Parameter) . . . . .	48, 117	Measurement mode . . . . .	73	Set Fault State (Parameter) . . . . .	121	Medium temperature . . . . .	252	Shed Remote Cascade (Parameter) . . . . .	122	Min/max values . . . . .	248	Shed Remote Out (Parameter) . . . . .	122	Multiple analog output . . . . .	206	Signal asymmetry (Submenu) . . . . .	256	Multiple discrete output . . . . .	215	Simulate En/Disable (Parameter) . . . . .	145, 193	Oscillation amplitude . . . . .	255	Oscillation damping . . . . .	255	Oscillation frequency . . . . .	254	Output . . . . .	87	Output values . . . . .	55	Partially filled pipe detection . . . . .	70	Process parameters . . . . .	65																																																									
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Reference density unit (Parameter) . . . . .	62	Diagnostic handling . . . . .	32	Reference sound velocity (Parameter) . . . . .	74	Diagnostic list . . . . .	231	Reference temperature (Parameter) . . . . .	76	Diagnostics . . . . .	228	Reference values (Submenu) . . . . .	76	Discrete input 1 to n . . . . .	178	Relative Index (Parameter) . . . . .	123, 164, 200	Discrete inputs . . . . .	177	Reset all totalizers (Parameter) . . . . .	224	Discrete outputs . . . . .	214	Reset min/max values (Parameter) . . . . .	249	Display . . . . .	15	Resource block (Submenu) . . . . .	109	Display channel 1 . . . . .	246	Resource State (Parameter) . . . . .	114	Display channel 2 . . . . .	247	Response time (Parameter) . . . . .	99	Display channel 3 . . . . .	247	Response time part. filled pipe detect. (Parameter) . . . . .	72	Display channel 4 . . . . .	248	Restart (Parameter) . . . . .	47, 117	Event list . . . . .	236	<b>S</b>					Select gas type (Parameter) . . . . .	73	Event logbook . . . . .	235	Select medium (Parameter) . . . . .	73	Heartbeat . . . . .	257	Sensor (Submenu) . . . . .	50	IO module temperature . . . . .	251	Sensor adjustment (Submenu) . . . . .	78	Low flow cut off . . . . .	67	Separator (Parameter) . . . . .	27	Main electronic temperature . . . . .	250	Serial number (Parameter) . . . . .	239	Measured values . . . . .	51	Service reset (Parameter) . . . . .	48, 117	Measurement mode . . . . .	73	Set Fault State (Parameter) . . . . .	121	Medium temperature . . . . .	252	Shed Remote Cascade (Parameter) . . . . .	122	Min/max values . . . . .	248	Shed Remote Out (Parameter) . . . . .	122	Multiple analog output . . . . .	206	Signal asymmetry (Submenu) . . . . .	256	Multiple discrete output . . . . .	215	Simulate En/Disable (Parameter) . . . . .	145, 193	Oscillation amplitude . . . . .	255	Oscillation damping . . . . .	255	Oscillation frequency . . . . .	254	Output . . . . .	87	Output values . . . . .	55	Partially filled pipe detection . . . . .	70	Process parameters . . . . .	65																																																													
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Reference sound velocity (Parameter) . . . . .	74	Diagnostic list . . . . .	231	Reference temperature (Parameter) . . . . .	76	Diagnostics . . . . .	228	Reference values (Submenu) . . . . .	76	Discrete input 1 to n . . . . .	178	Relative Index (Parameter) . . . . .	123, 164, 200	Discrete inputs . . . . .	177	Reset all totalizers (Parameter) . . . . .	224	Discrete outputs . . . . .	214	Reset min/max values (Parameter) . . . . .	249	Display . . . . .	15	Resource block (Submenu) . . . . .	109	Display channel 1 . . . . .	246	Resource State (Parameter) . . . . .	114	Display channel 2 . . . . .	247	Response time (Parameter) . . . . .	99	Display channel 3 . . . . .	247	Response time part. filled pipe detect. (Parameter) . . . . .	72	Display channel 4 . . . . .	248	Restart (Parameter) . . . . .	47, 117	Event list . . . . .	236	<b>S</b>					Select gas type (Parameter) . . . . .	73	Event logbook . . . . .	235	Select medium (Parameter) . . . . .	73	Heartbeat . . . . .	257	Sensor (Submenu) . . . . .	50	IO module temperature . . . . .	251	Sensor adjustment (Submenu) . . . . .	78	Low flow cut off . . . . .	67	Separator (Parameter) . . . . .	27	Main electronic temperature . . . . .	250	Serial number (Parameter) . . . . .	239	Measured values . . . . .	51	Service reset (Parameter) . . . . .	48, 117	Measurement mode . . . . .	73	Set Fault State (Parameter) . . . . .	121	Medium temperature . . . . .	252	Shed Remote Cascade (Parameter) . . . . .	122	Min/max values . . . . .	248	Shed Remote Out (Parameter) . . . . .	122	Multiple analog output . . . . .	206	Signal asymmetry (Submenu) . . . . .	256	Multiple discrete output . . . . .	215	Simulate En/Disable (Parameter) . . . . .	145, 193	Oscillation amplitude . . . . .	255	Oscillation damping . . . . .	255	Oscillation frequency . . . . .	254	Output . . . . .	87	Output values . . . . .	55	Partially filled pipe detection . . . . .	70	Process parameters . . . . .	65																																																																	
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Reference temperature (Parameter) . . . . .	76	Diagnostics . . . . .	228	Reference values (Submenu) . . . . .	76	Discrete input 1 to n . . . . .	178	Relative Index (Parameter) . . . . .	123, 164, 200	Discrete inputs . . . . .	177	Reset all totalizers (Parameter) . . . . .	224	Discrete outputs . . . . .	214	Reset min/max values (Parameter) . . . . .	249	Display . . . . .	15	Resource block (Submenu) . . . . .	109	Display channel 1 . . . . .	246	Resource State (Parameter) . . . . .	114	Display channel 2 . . . . .	247	Response time (Parameter) . . . . .	99	Display channel 3 . . . . .	247	Response time part. filled pipe detect. (Parameter) . . . . .	72	Display channel 4 . . . . .	248	Restart (Parameter) . . . . .	47, 117	Event list . . . . .	236	<b>S</b>					Select gas type (Parameter) . . . . .	73	Event logbook . . . . .	235	Select medium (Parameter) . . . . .	73	Heartbeat . . . . .	257	Sensor (Submenu) . . . . .	50	IO module temperature . . . . .	251	Sensor adjustment (Submenu) . . . . .	78	Low flow cut off . . . . .	67	Separator (Parameter) . . . . .	27	Main electronic temperature . . . . .	250	Serial number (Parameter) . . . . .	239	Measured values . . . . .	51	Service reset (Parameter) . . . . .	48, 117	Measurement mode . . . . .	73	Set Fault State (Parameter) . . . . .	121	Medium temperature . . . . .	252	Shed Remote Cascade (Parameter) . . . . .	122	Min/max values . . . . .	248	Shed Remote Out (Parameter) . . . . .	122	Multiple analog output . . . . .	206	Signal asymmetry (Submenu) . . . . .	256	Multiple discrete output . . . . .	215	Simulate En/Disable (Parameter) . . . . .	145, 193	Oscillation amplitude . . . . .	255	Oscillation damping . . . . .	255	Oscillation frequency . . . . .	254	Output . . . . .	87	Output values . . . . .	55	Partially filled pipe detection . . . . .	70	Process parameters . . . . .	65																																																																					
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Reset all totalizers (Parameter) . . . . .	224	Discrete outputs . . . . .	214	Reset min/max values (Parameter) . . . . .	249	Display . . . . .	15	Resource block (Submenu) . . . . .	109	Display channel 1 . . . . .	246	Resource State (Parameter) . . . . .	114	Display channel 2 . . . . .	247	Response time (Parameter) . . . . .	99	Display channel 3 . . . . .	247	Response time part. filled pipe detect. (Parameter) . . . . .	72	Display channel 4 . . . . .	248	Restart (Parameter) . . . . .	47, 117	Event list . . . . .	236	<b>S</b>					Select gas type (Parameter) . . . . .	73	Event logbook . . . . .	235	Select medium (Parameter) . . . . .	73	Heartbeat . . . . .	257	Sensor (Submenu) . . . . .	50	IO module temperature . . . . .	251	Sensor adjustment (Submenu) . . . . .	78	Low flow cut off . . . . .	67	Separator (Parameter) . . . . .	27	Main electronic temperature . . . . .	250	Serial number (Parameter) . . . . .	239	Measured values . . . . .	51	Service reset (Parameter) . . . . .	48, 117	Measurement mode . . . . .	73	Set Fault State (Parameter) . . . . .	121	Medium temperature . . . . .	252	Shed Remote Cascade (Parameter) . . . . .	122	Min/max values . . . . .	248	Shed Remote Out (Parameter) . . . . .	122	Multiple analog output . . . . .	206	Signal asymmetry (Submenu) . . . . .	256	Multiple discrete output . . . . .	215	Simulate En/Disable (Parameter) . . . . .	145, 193	Oscillation amplitude . . . . .	255	Oscillation damping . . . . .	255	Oscillation frequency . . . . .	254	Output . . . . .	87	Output values . . . . .	55	Partially filled pipe detection . . . . .	70	Process parameters . . . . .	65																																																																																	
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