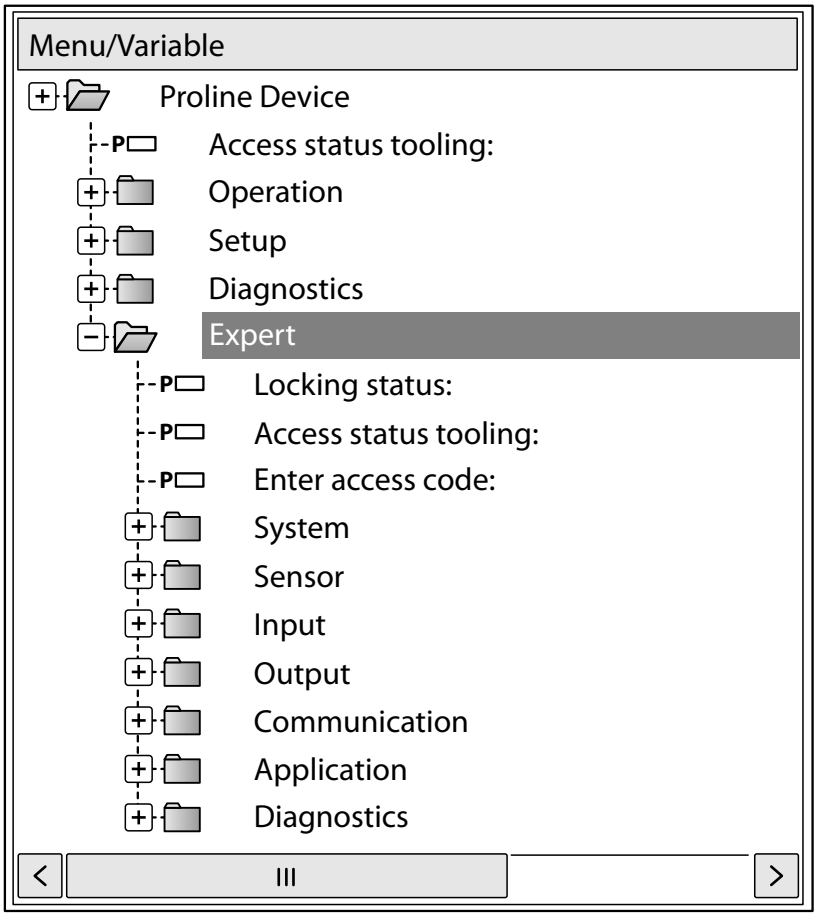
GP01039D/06/EN/01.15
71288059

Valid as of version
01.01.zz (Device firmware)



# Description of Device Parameters
# **Proline Promag 100**
# **PROFIBUS DP**

Electromagnetic flowmeter

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People for Process Automation

# Table of contents

# 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.

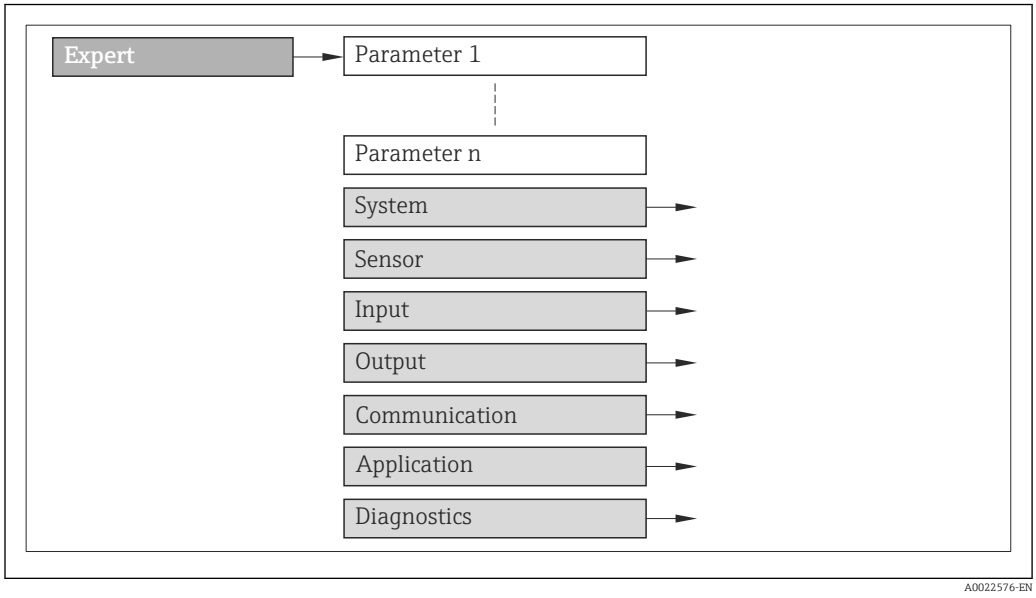
## 1.2 Target group

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

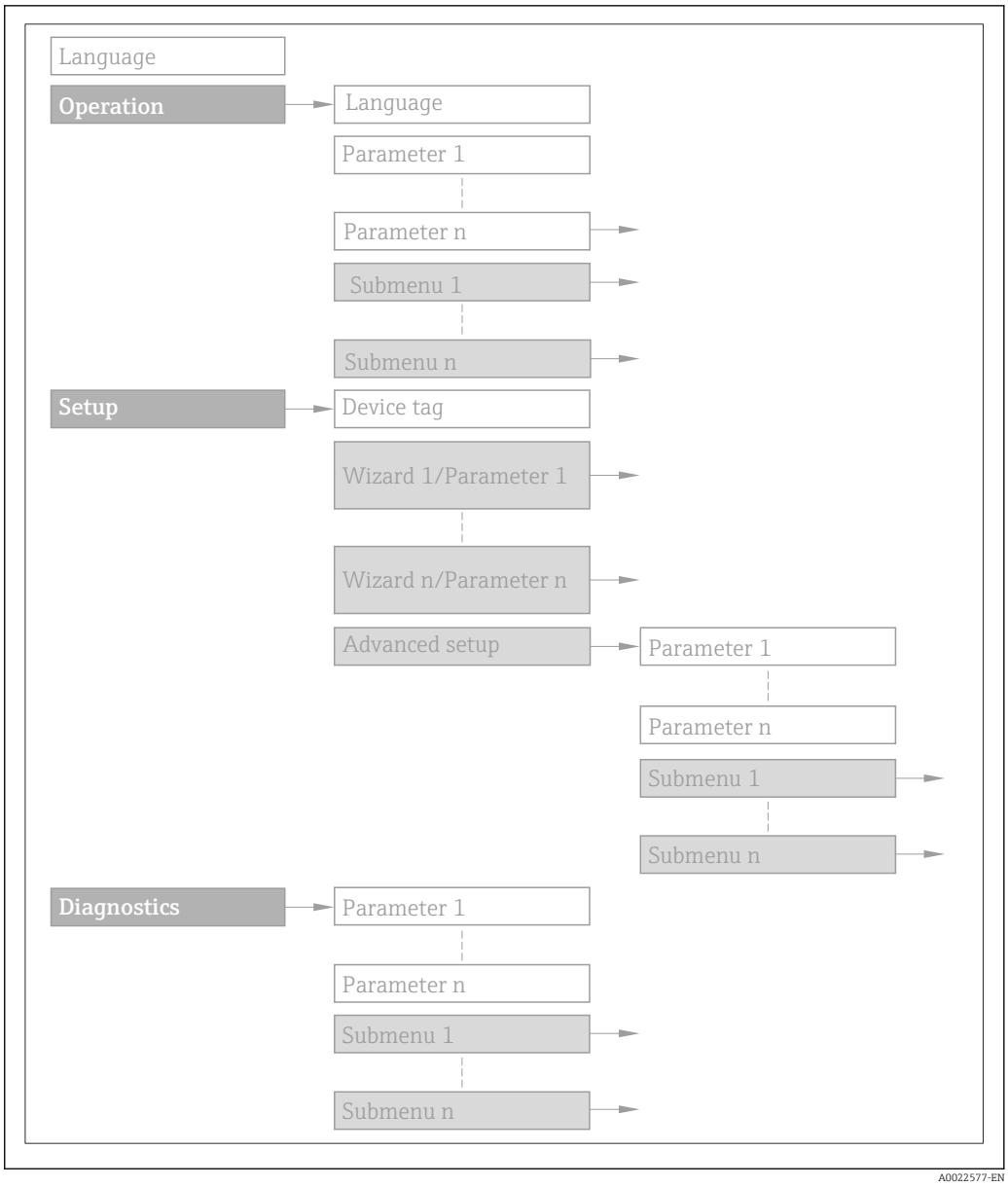
### 1.3.1 Information on the document structure

This document lists the submenus and their parameters according to the structure of the **Expert** menu (→ 8) menu that are available once the **"Operator" user role** or the **"Maintenance" user role** is enabled.




*1 Sample graphic*

For information on the arrangement of the parameters according to the structure of the **Operation** menu, **Setup** menu, **Diagnostics** menu (→ 140), along with a brief description, see the Operating Instructions for the device.




*2 Sample graphic*

For information about the operating philosophy, see the "Operating philosophy" chapter in the device's Operating Instructions

### 1.3.2 Structure of a parameter description

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

| **Complete parameter name** | Write-protected parameter = |
|---|---|

**Navigation**
Navigation path to the parameter via the local display (direct access code) or Web browser
Navigation path to the parameter via the operating tool
The names of the menus, submenus and parameters are abbreviated to the form in which they appear on the display and in the operating tool.

**Prerequisite**
The parameter is only available under these specific conditions

**Description**
Description of the parameter function

**Selection**
List of the individual options for the parameter
- Option 1
- Option 2

**User entry**
Input range for the parameter

**User interface**
Display value/data for the parameter

**Factory setting**
Default setting ex works

**Additional information**
Additional explanations (e.g. in examples):
- On individual options
- On display values/data
- On the input range
- On the factory setting
- On the parameter function

## 1.4 Symbols used

### 1.4.1 Symbols for certain types of information

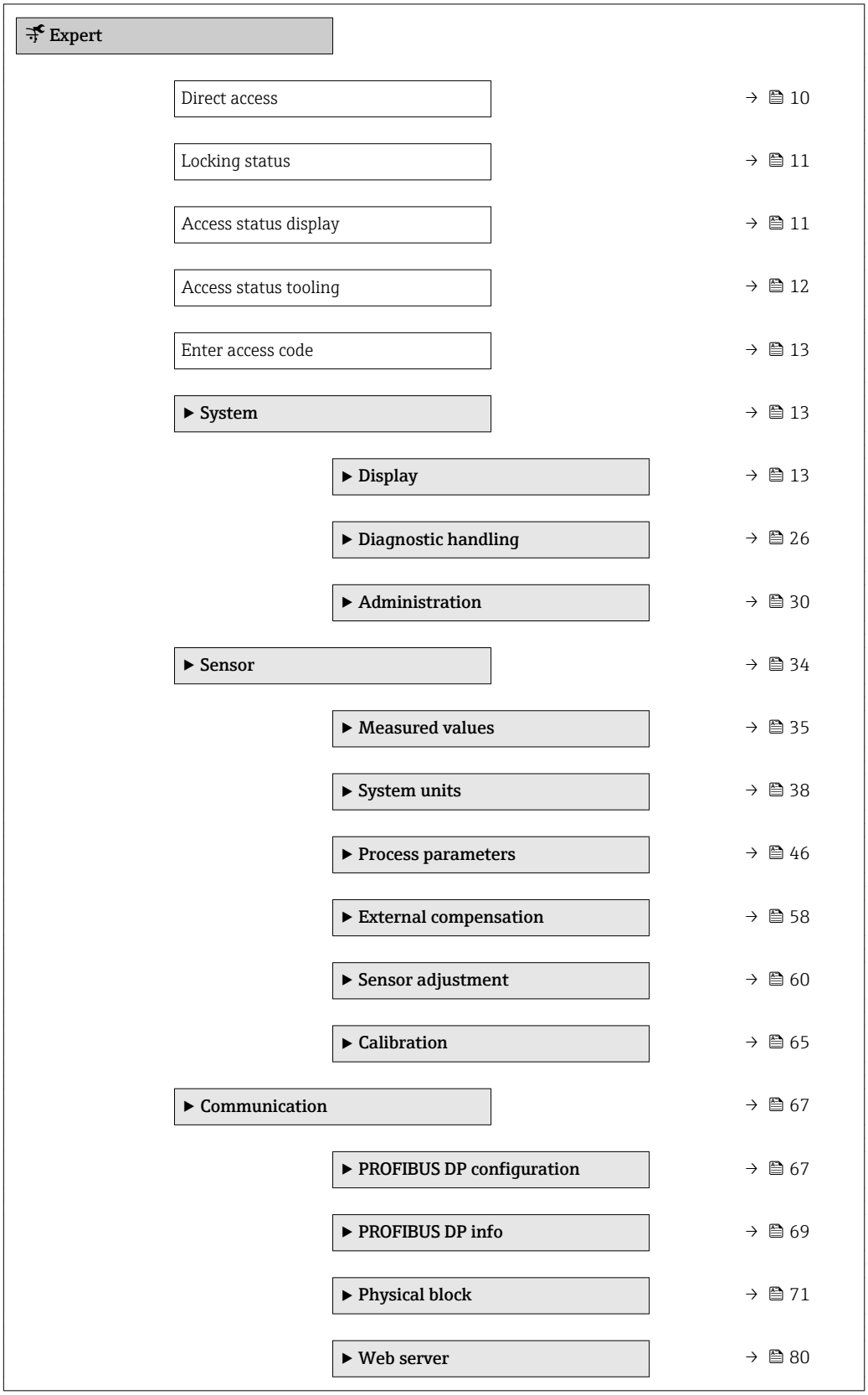
| Symbol | Meaning |
|---|---|
| | **Tip**<br>Indicates additional information. |
| | Reference to documentation |
| | Reference to page |
| | Reference to graphic |
| | Operation via local display |
| | Operation via operating tool |
| | Write-protected parameter |

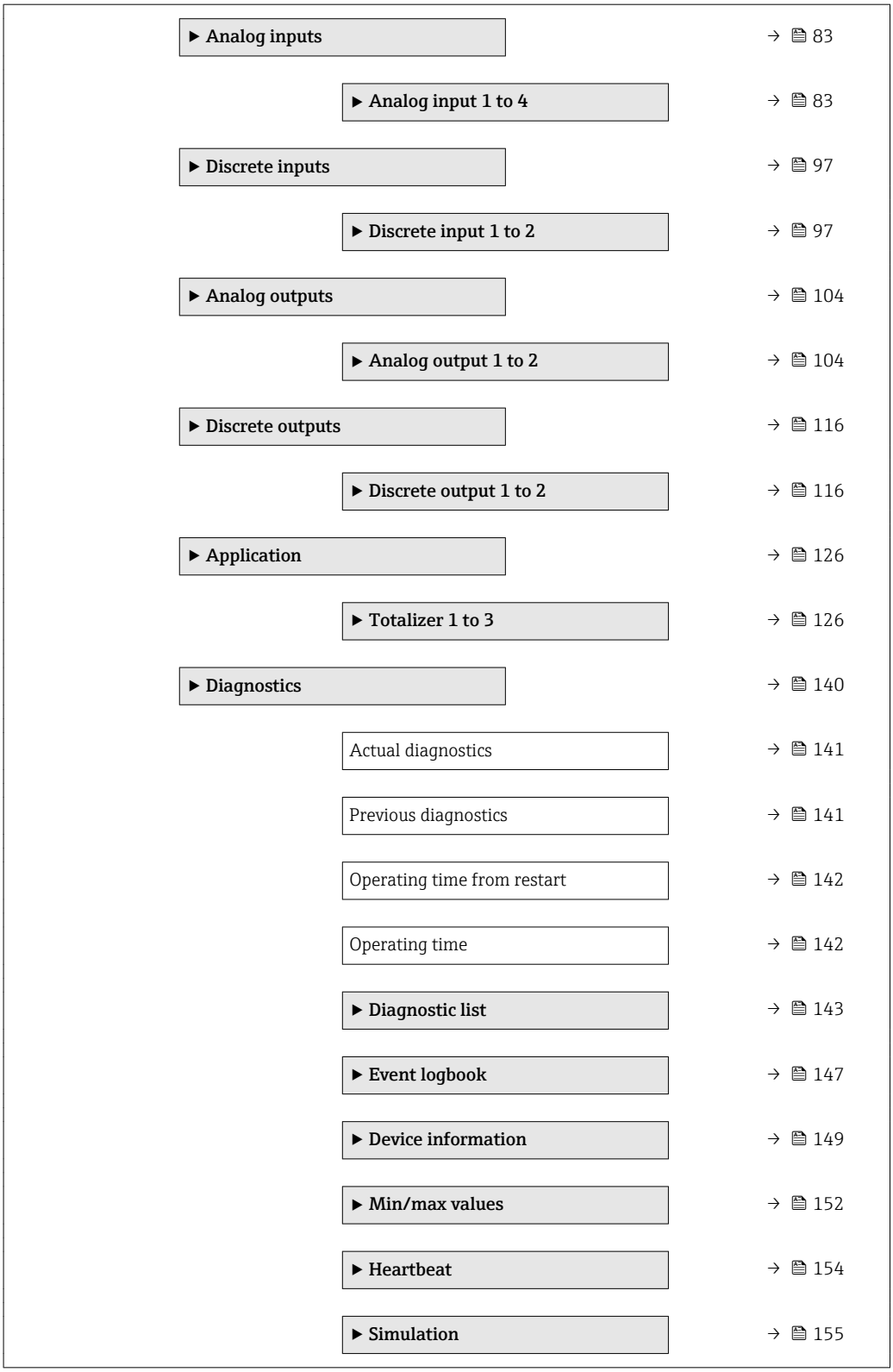
### 1.4.2 Symbols in graphics

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

# 2 Overview of the Expert operating menu

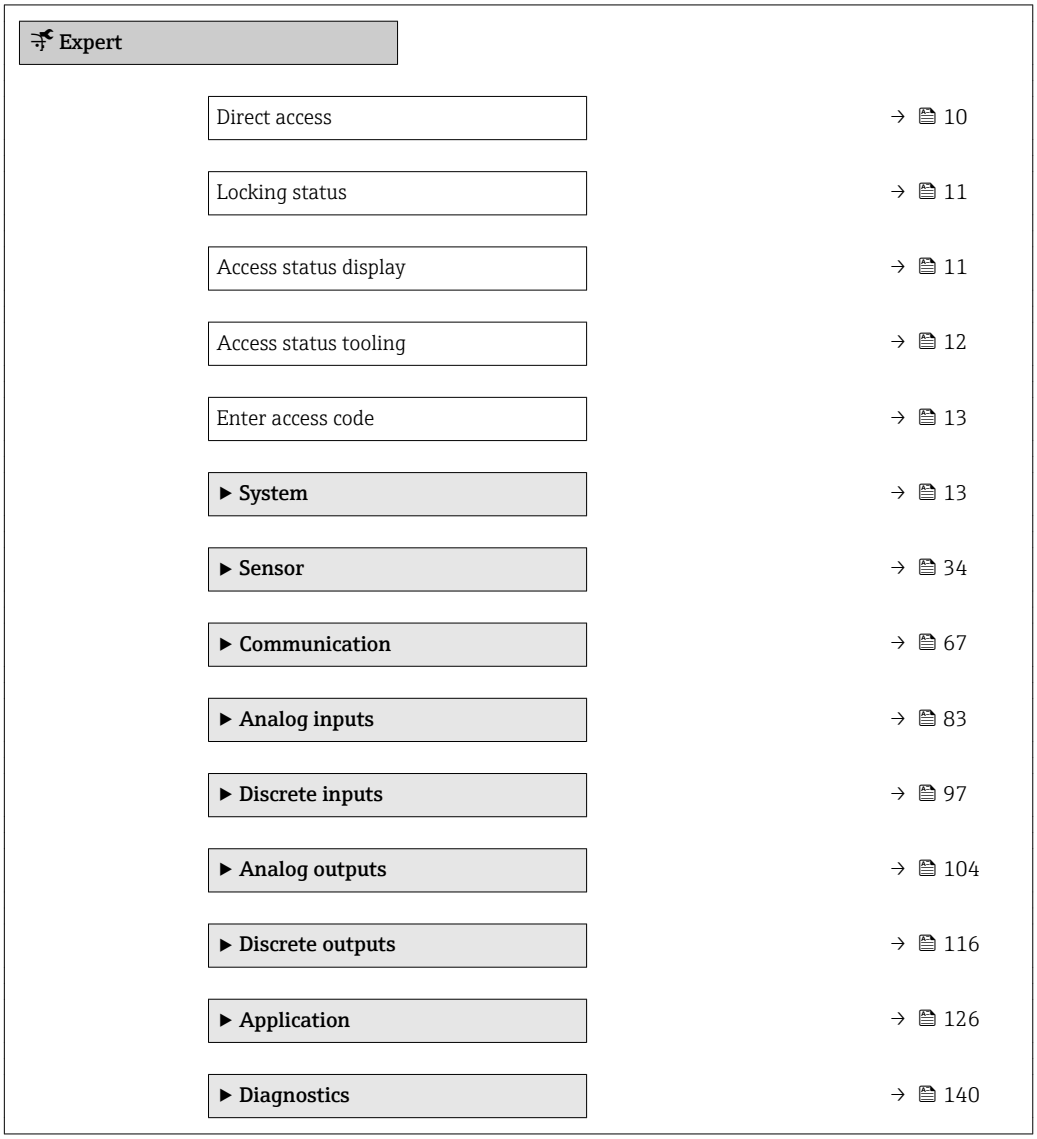
The following table provides an overview of the menu structure of the expert operating menu and its parameters. The page reference indicates where the associated description of the submenu or parameter can be found.




▶ Analog inputs → 83
▶ Analog input 1 to 4 → 83
▶ Discrete inputs → 97
▶ Discrete input 1 to 2 → 97
▶ Analog outputs → 104
▶ Analog output 1 to 2 → 104
▶ Discrete outputs → 116
▶ Discrete output 1 to 2 → 116
▶ Application → 126
▶ Totalizer 1 to 3 → 126
▶ Diagnostics → 140
Actual diagnostics → 141
Previous diagnostics → 141
Operating time from restart → 142
Operating time → 142
▶ Diagnostic list → 143
▶ Event logbook → 147
▶ Device information → 149
▶ Min/max values → 152
▶ Heartbeat → 154
▶ Simulation → 155

# 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.




## Direct access

**Navigation** Expert → Direct access

**Prerequisite** There is a local display with operating elements.

**Description** Input of the access code to enable direct access to the desired parameter via the local display. For this reason, each parameter is assigned a parameter number that appears in the navigation view on the right in the header of the selected parameter.

**User entry** 0 to 65 535

**Additional information** *User entry*

The direct access code consists of a 4-digit number and the channel number, which identifies the channel of a process variable: e.g. 0914-1

- The leading zeros in the direct access code do not have to be entered.
  Example: Input of **"914"** instead of **"0914"**
- If no channel number is entered, channel 1 is jumped to automatically.
  Example: Enter **0914** → **Assign process variable** parameter
- If a different channel is jumped to: Enter the direct access code with the corresponding channel number.
  Example: Enter **0914-3** → **Assign process variable** parameter

## Locking status

**Navigation** Expert → Locking status

**Description** Displays the active write protection.

**User interface**
- Hardware locked
- Temporarily 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.

If additional write protection is active, this restricts the current access authorization even further. The write protection status can be viewed via the **Locking status** parameter (→ 11).

*"Hardware locked" option (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).

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.

*"Temporarily locked" option (priority 2)*

Write access to the parameters is temporarily locked on account of internal processes running in the device (e.g. data upload/download, reset etc.). Once the internal processing has been completed, the parameters can be changed once again.

## Access status display

**Navigation** Expert → Access stat.disp

**Prerequisite** A local display is provided.

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

**User interface**
- Operator
- Maintenance

**Factory setting**
Operator

**Additional information**
*Description*

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

Access authorization can be modified via the **Enter access code** parameter (→ 🖹 13).

For information on the **Enter access code** parameter, see the "Disabling write protection via access code" section of the Operating Instructions for the device

If additional write protection is active, this restricts the current access authorization even further. The write protection status can be viewed via the **Locking status** parameter (→ 🖹 11).

*Display*

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.

## Access status tooling

**Navigation**
Expert → Access stat.tool

**Description**
Displays the access authorization to the parameters via the operating tool or Web browser.

**User interface**
- Operator
- Maintenance

**Factory setting**
Maintenance

**Additional information**
*Description*

Access authorization can be modified via the **Enter access code** parameter (→ 🖹 13).

If additional write protection is active, this restricts the current access authorization even further. The write protection status can be viewed via the **Locking status** parameter (→ 🖹 11).

*Display*

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.

**Enter access code**

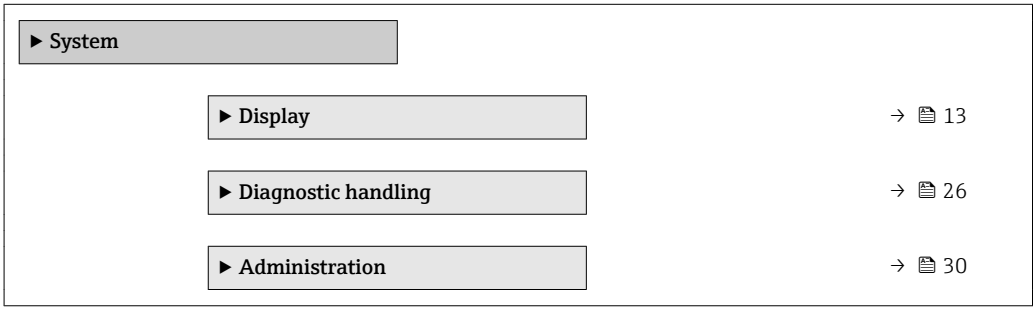
**Navigation** Expert → Ent. access code

**Description** Use this function to enter the user-specific release code to remove parameter write protection.

**User entry** 0 to 9 999

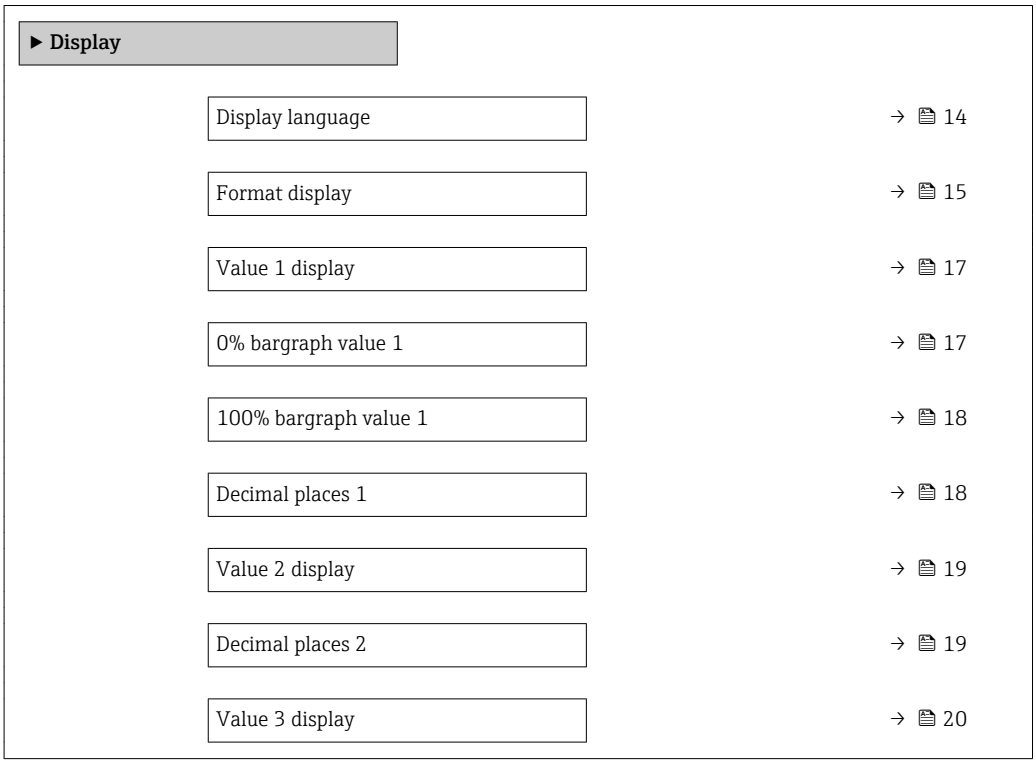
## 3.1 "System" submenu

*Navigation* Expert → System




### 3.1.1 "Display" submenu

*Navigation* Expert → System → Display




## Display language

**Navigation** Expert → System → Display → Display language

**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 (Russian) *
- Svenska *
- Türkçe *
- 中文 (Chinese) *
- 日本語 (Japanese) *

* Visibility depends on order options or device settings

- 한국어 (Korean) *
- العَرَبيّة (Arabic) *
- Bahasa Indonesia *
- ภาษาไทย (Thai) *
- tiếng Việt (Vietnamese) *
- čeština (Czech) *

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

## Format display

**Navigation** Expert → System → Display → Format display

**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. size
- 1 bargraph + 1 value
- 2 values
- 1 value large + 2 values
- 4 values

**Factory setting** 1 value, max. size

**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 (→ 17) to **Value 4 display** parameter (→ 21) 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 (→ 22).

* Visibility depends on order options or device settings

Possible measured values shown on the local display:

*"1 value, max. size" option*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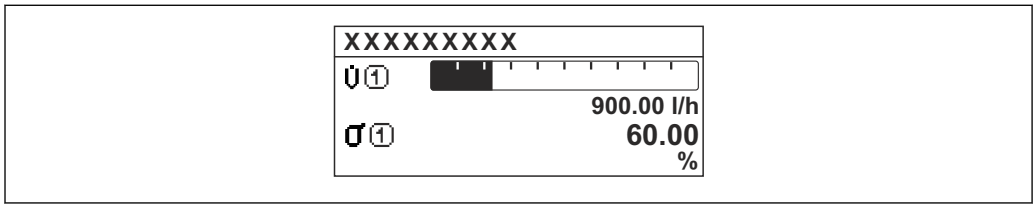
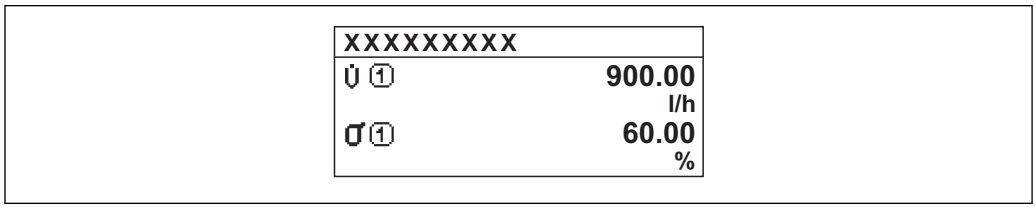
*"1 bargraph + 1 value" option*




A0016530

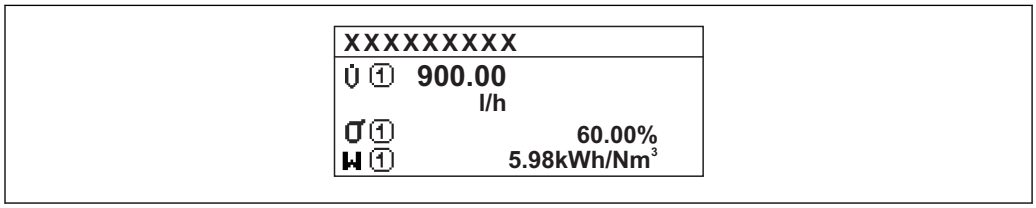
*"2 values" option*




A0016531

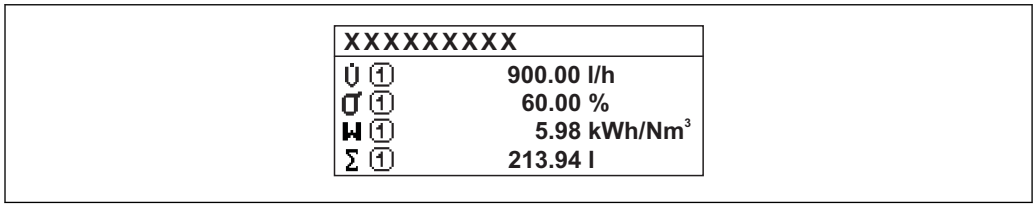
*3*

*"1 value large + 2 values" option*




A0016532

*"4 values" option*




A0016533

## Value 1 display

**Navigation** Expert → System → Display → Value 1 display

**Prerequisite** A local display is provided.

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

**Selection**
- Volume flow
- Mass flow
- Corrected volume flow
- Flow velocity
- Conductivity *
- Corrected conductivity *
- None
- Totalizer 1
- Totalizer 2
- Totalizer 3
- Temperature *
- Electronic temperature

**Factory setting** Volume flow

**Additional information**

*Description*

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

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

*Selection*

The unit of the displayed measured value is taken from the **System units** submenu (→ 38).

## 0% bargraph value 1

**Navigation** Expert → System → Display → 0% bargraph 1

**Prerequisite** A local display is provided.

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

**User entry** Signed floating-point number

**Factory setting** Country-specific:
- 0 l/h
- 0 gal/min (us)

* Visibility depends on order options or device settings

**Additional information**

*Description*

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

*User entry*

The unit of the displayed measured value is taken from the **System units** submenu (→ 38).

## 100% bargraph value 1

**Navigation** Expert → System → Display → 100% bargraph 1

**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 → 158

**Additional information**

*Description*

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

*User entry*

The unit of the displayed measured value is taken from the **System units** submenu (→ 38).

## Decimal places 1

**Navigation** Expert → System → Display → Decimal places 1

**Prerequisite** A measured value is specified in the **Value 1 display** parameter (→ 17).

**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

**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 (→ 17)

**Factory setting** None

**Additional information** *Description*

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

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

*Selection*

The unit of the displayed measured value is taken from the **System units** submenu (→ 38).

## Decimal places 2

**Navigation** Expert → System → Display → Decimal places 2

**Prerequisite** A measured value is specified in the **Value 2 display** parameter (→ 19).

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

**Selection**

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

**Factory setting** x.xx

**Additional information** *Description*

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

## Value 3 display

**Navigation** Expert → System → Display → Value 3 display

**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** Picklist, see **Value 1 display** parameter (→ 17)

**Factory setting** None

**Additional information**

*Description*

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

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

*Selection*

The unit of the displayed measured value is taken from the **System units** submenu (→ 38).

## 0% bargraph value 3

**Navigation** Expert → System → Display → 0% bargraph 3

**Prerequisite** A selection has been made in the **Value 3 display** parameter (→ 20).

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

**User entry** Signed floating-point number

**Factory setting** Country-specific:
- 0 l/h
- 0 gal/min (us)

**Additional information**

*Description*

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

*User entry*

The unit of the displayed measured value is taken from the **System units** submenu (→ 38).

### 100% bargraph value 3

**Navigation** Expert → System → Display → 100% bargraph 3

**Prerequisite** A selection was made in the **Value 3 display** parameter (→ 20).

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

**User entry** Signed floating-point number

**Factory setting** 0

**Additional information** *Description*

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

*User entry*

The unit of the displayed measured value is taken from the **System units** submenu (→ 38).

### Decimal places 3

**Navigation** Expert → System → Display → Decimal places 3

**Prerequisite** A measured value is specified in the **Value 3 display** parameter (→ 20).

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

**Selection**
- x
- x.x
- x.xx
- x.xxx
- x.xxxx

**Factory setting** x.xx

**Additional information** *Description*

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

### Value 4 display

**Navigation** Expert → System → Display → Value 4 display

**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** Picklist, see **Value 1 display** parameter (→ 17)

**Factory setting** None

**Additional information** *Description*

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

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

*Selection*

The unit of the displayed measured value is taken from the **System units** submenu (→ 38).

## Decimal places 4

**Navigation** Expert → System → Display → Decimal places 4

**Prerequisite** A measured value is specified in the **Value 4 display** parameter (→ 21).

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

**Selection**
- x
- x.x
- x.xx
- x.xxx
- x.xxxx

**Factory setting** x.xx

**Additional information** *Description*

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

## Display interval

**Navigation** Expert → System → Display → Display interval

**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 (→ 17) to **Value 4 display** parameter (→ 21) are used to specify which measured values are shown on the local display.
- The display format of the displayed measured values is specified using the **Format display** parameter (→ 15).

## Display damping

**Navigation** Expert → System → Display → Display damping

**Prerequisite** A local display is provided.

**Description** Use this function to enter 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*

A time constant is entered:
- 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.

## Header

**Navigation** Expert → System → Display → Header

**Prerequisite** A local display is provided.

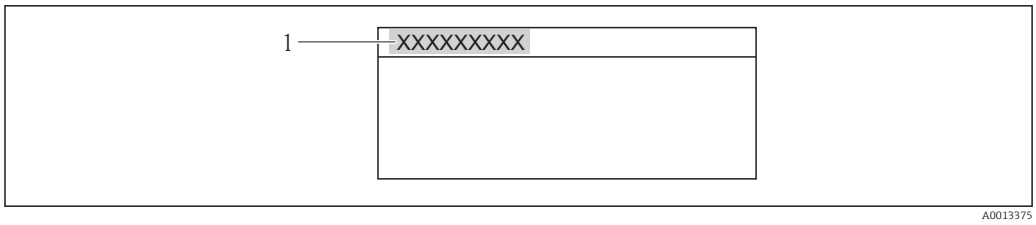
**Description** Use this function to select the contents of the header of the local display.

**Selection**
- Device tag
- Free text

**Factory setting** Device tag

**Additional information** *Description*

The header text only appears during normal operation.




*1 Position of the header text on the display*

*Selection*

Free text
Is defined in the **Header text** parameter (→ 24).

## Header text

**Navigation** Expert → System → Display → Header text

**Prerequisite** The **Free text** option is selected in the **Header** parameter (→ 23).

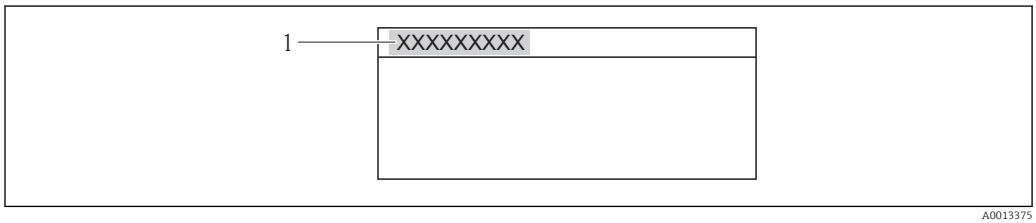
**Description** Use this function to enter a customer-specific text for the header of the local display.

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

**Factory setting** ----------

**Additional information** *Description*

The header text only appears during normal operation.




*1 Position of the header text on the display*

*User entry*

The number of characters displayed depends on the characters used.

## Separator

**Navigation** Expert → System → Display → Separator

**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

**Prerequisite** A local display is provided.

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

**User entry** 20 to 80 %

**Factory setting** Depends on the display

## Backlight

**Navigation** Expert → System → Display → Backlight

**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** Enable

## Access status display

**Navigation** Expert → System → Display → Access stat.disp

**Prerequisite** A local display is provided.

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

**User interface**
- Operator
- Maintenance

**Factory setting** Operator

**Additional information**

*Description*

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

Access authorization can be modified via the **Enter access code** parameter (→ 🖹 13).

For information on the **Enter access code** parameter, see the "Disabling write protection via access code" section of the Operating Instructions for the device

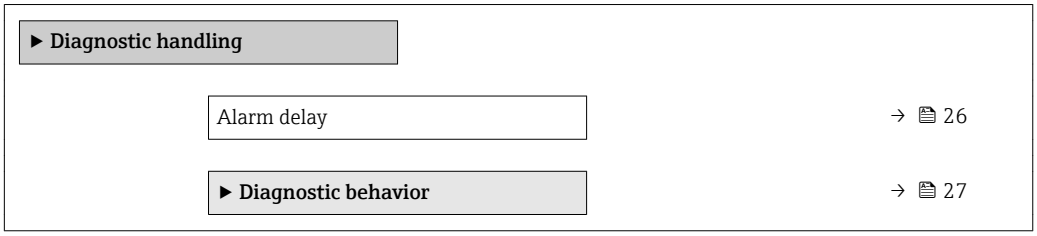
If additional write protection is active, this restricts the current access authorization even further. The write protection status can be viewed via the **Locking status** parameter (→ 🖹 11).

*Display*

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

### 3.1.2 "Diagnostic handling" submenu

*Navigation* Expert → System → Diagn. handling




**Alarm delay** 🔒

**Navigation** Expert → System → Diagn. handling → Alarm delay

**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**

*Effect*

This setting affects the following diagnostic messages:
- 190 Special event 1
- 191 Special event 5
- 832 Electronic temperature too high
- 833 Electronic temperature too low
- 834 Process temperature too high

- 835 Process temperature too low
- 862 Partly filled pipe
- 990 Special event 4
- 991 Special event 8

### "Diagnostic behavior" submenu

Each item of diagnostic information is assigned a specific diagnostic behavior at the factory. The user can change this assignment for specific diagnostic information in the **Diagnostic behavior** submenu (→ 27).

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

| Diagnostic behavior | Description |
|---|---|
| Alarm | The device stops measurement. The totalizers assume the defined alarm condition. A diagnostic message is generated. |
| Warning | The device continues to measure. The measured value output via PROFIBUS and the totalizers are not affected. A diagnostic message is generated. |
| Logbook entry only | The device continues to measure. The diagnostic message is displayed only in the **Event logbook** submenu (→ 147) (**Event list** submenu (→ 148)) and not in alternation with the operational display. |
| Off | The diagnostic event is ignored, and no diagnostic message is generated or entered. |

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

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

▶ **Diagnostic behavior**

| | |
|---|---|
| Assign behavior of diagnostic no. 531 | → 28 |
| Assign behavior of diagnostic no. 832 | → 28 |
| Assign behavior of diagnostic no. 833 | → 28 |
| Assign behavior of diagnostic no. 834 | → 29 |
| Assign behavior of diagnostic no. 835 | → 29 |
| Assign behavior of diagnostic no. 862 | → 29 |
| Assign behavior of diagnostic no. 937 | → 30 |
| Assign behavior of diagnostic no. 302 | → 30 |

### Assign behavior of diagnostic no. 531 (Empty pipe detection)

**Navigation** Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 531

**Description** Use this function to change the diagnostic behavior of the diagnostic message **531 Empty pipe detection**.

**Selection**
- Off
- Alarm
- Warning
- Logbook entry only

**Factory setting** Warning

**Additional information** For a detailed description of the options available, see → 27

### Assign behavior of diagnostic no. 832 (Electronic temperature too high)

**Navigation** Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 832

**Description** Use this function to change the diagnostic behavior of the diagnostic message **832 Electronic temperature too high**.

**Selection**
- Off
- Alarm
- Warning
- Logbook entry only

**Factory setting** Warning

**Additional information** For a detailed description of the options available, see → 27

### Assign behavior of diagnostic no. 833 (Electronic temperature too low)

**Navigation** Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 833

**Description** Use this function to change the diagnostic behavior of the diagnostic message **833 Electronic temperature too low**.

**Selection**
- Off
- Alarm
- Warning
- Logbook entry only

**Factory setting** Warning

**Additional information** For a detailed description of the options available, see → 27

## Assign behavior of diagnostic no. 834 (Process temperature too high)

**Navigation** Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 834

**Description** Use this function to change the diagnostic behavior of the diagnostic message **834 Process temperature too high**.

**Selection**
- Off
- Alarm
- Warning
- Logbook entry only

**Factory setting** Warning

**Additional information** For a detailed description of the options available, see → 27

## Assign behavior of diagnostic no. 835 (Process temperature too low)

**Navigation** Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 835

**Description** Use this function to change the diagnostic behavior of the diagnostic message **835 Process temperature too low**.

**Selection**
- Off
- Alarm
- Warning
- Logbook entry only

**Factory setting** Warning

**Additional information** For a detailed description of the options available, see → 27

## Assign behavior of diagnostic no. 862 (Empty pipe)

**Navigation** Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 862

**Description** Use this function to change the diagnostic behavior of the diagnostic message **862 Empty pipe**.

**Selection**
- Off
- Alarm
- Warning
- Logbook entry only

**Factory setting** Warning

**Additional information** For a detailed description of the options available, see → 27

### Assign behavior of diagnostic no. 937 (EMC interference)

**Navigation** Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 937

**Description** Use this function to change the diagnostic behavior of the diagnostic message **937 EMC interference**.

**Selection**
- Off
- Alarm
- Warning
- Logbook entry only

**Factory setting** Warning

**Additional information** For a detailed description of the options available, see → 27

### Assign behavior of diagnostic no. 302 (Device verification active)

**Navigation** Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 302

**Description** Use this function to change the diagnostic behavior of the diagnostic message **302 Device verification active**.

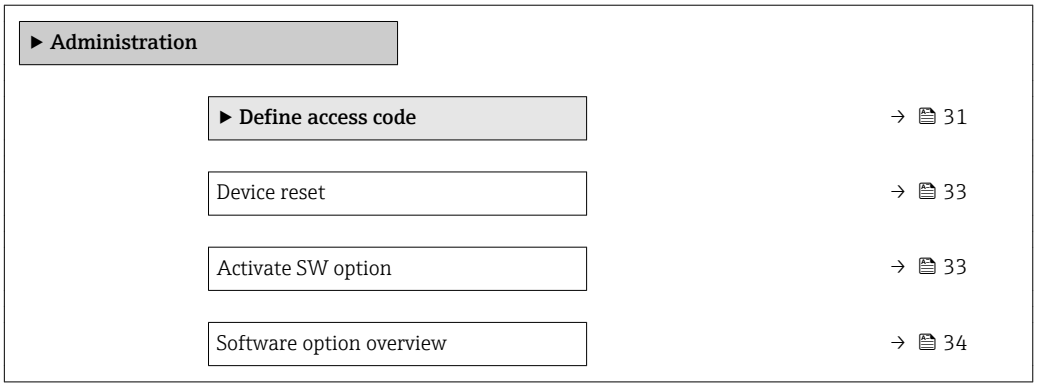
**Selection**
- Alarm
- Warning

**Factory setting** Warning

**Additional information** For a detailed description of the options available, see → 27

## 3.1.3 "Administration" submenu

*Navigation* Expert → System → Administration

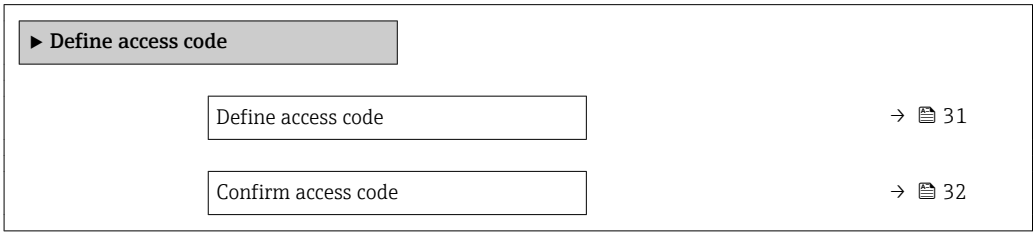


### "Define access code" wizard

The **Define access code** wizard (→ 31) is only available when operating via the local display or Web browser.

If operating via the operating tool, the **Define access code** parameter (→ 32) can be found directly in the **Administration** submenu. There is no **Confirm access code** parameter if the device is operated via the operating tool.

*Navigation* Expert → System → Administration → Def. access code




## Define 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 or Web browser.

**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.

The parameters that cannot be write-accessed are grayed out in the Web browser.

Once the access code has been defined, write-protected parameters can only be modified if the access code is entered in the **Enter access code** parameter (→ 13).

If you lose the access code, please contact your Endress+Hauser Sales Center.

*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 access code

**Navigation** Expert → System → Administration → Def. access code → Confirm code

**Description** Enter the defined release code a second time to confirm the release code.

**User entry** 0 to 9 999

**Factory setting** 0

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

### Define access code

**Navigation** Expert → System → Administration → Def. access code

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

**User entry** 0 to 9 999

**Factory setting** 0

**Additional information**

*Description*

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

Once the access code has been defined, write-protected parameters can only be modified if the access code is entered in the **Enter access code** parameter (→ 13).

If you lose the access code, please contact your Endress+Hauser Sales Center.

*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.

## Device reset

**Navigation** Expert → System → Administration → Device reset

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

**Selection**
- Cancel
- To delivery settings
- Restart device

**Factory setting** Cancel

**Additional information**

*"Cancel" option*

No action is executed and the user exits the parameter.

*"To delivery settings" option*

Every parameter for which a customer-specific default setting was ordered is reset to this customer-specific value. All other parameters are reset to the factory setting.

This option is not visible if no customer-specific settings have been ordered.

*"Restart device" option*

The restart resets every parameter whose data are in the volatile memory (RAM) to the factory setting (e.g. measured value data). The device configuration remains unchanged.

## Activate SW option

**Navigation** Expert → System → Administration → Activate SW opt.

**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** 0

**Additional information**

*User entry*

Endress+Hauser provides the corresponding activation code for the software option with the order.

**NOTICE!** This activation code varies depending on the measuring device and the software option. If an incorrect or invalid code is entered, this can result in the loss of software options that are already been activated. After commissioning the measuring device: in this parameter only enter activation codes which Endress+Hauser has provided (e.g. when a new software option was ordered). If an incorrect or invalid activation code is entered,

enter the activation code from the parameter protocol again and contact your Endress+Hauser sales organization, quoting the serial number of your device.

*Example for a software option*

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

*Web browser*

Once a software option has been activated, the page must be loaded again in the Web browser.

**Software option overview**

**Navigation** Expert → System → Administration → SW option overv.

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

**User interface**
- Electrode cleaning circuit
- Heartbeat Verification
- Heartbeat Monitoring

**Additional information**

*Description*

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

*"Electrode cleaning circuit" option*

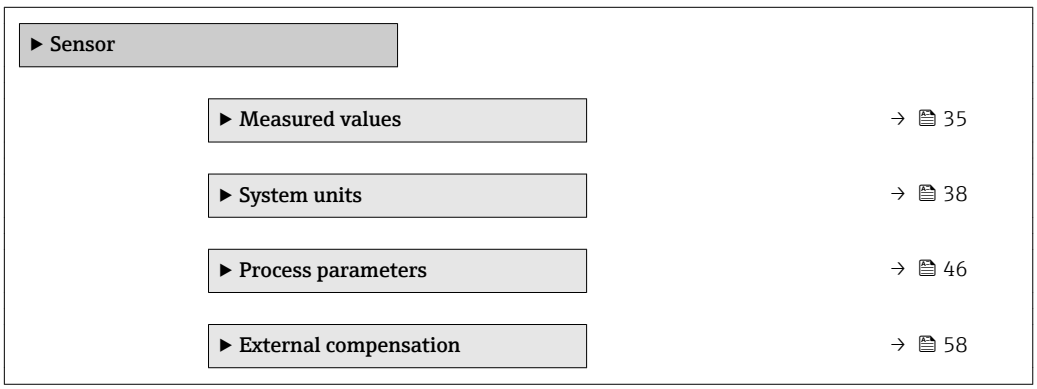
Order code for "Application package", option EC "ECC electrode cleaning"

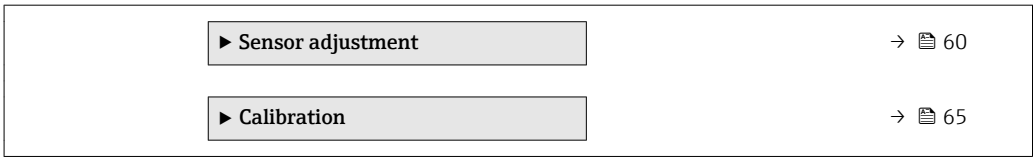
*"Heartbeat Verification" option and "Heartbeat Monitoring" option*

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

## 3.2 "Sensor" submenu

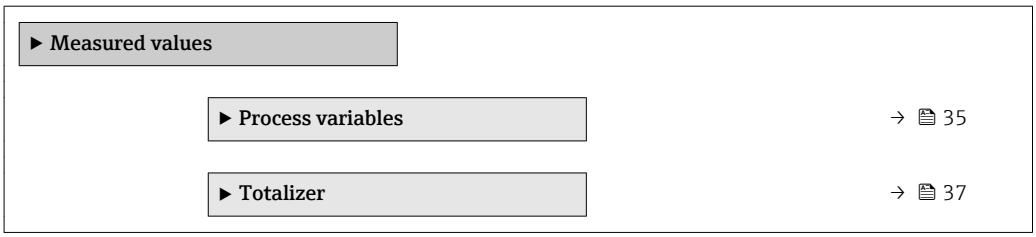
*Navigation* Expert → Sensor





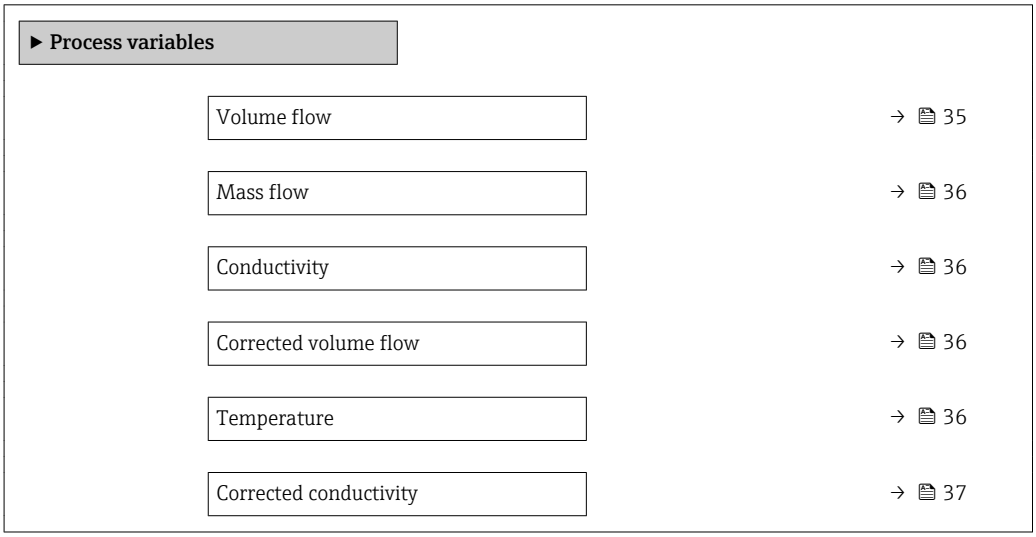

### 3.2.1 "Measured values" submenu

*Navigation* Expert → Sensor → Measured val.




#### "Process variables" submenu

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




**Volume flow**

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

**Description** Displays the volume flow currently measured.

**User interface** Signed floating-point number

**Additional information** *Dependency*

The unit is taken from the **Volume flow unit** parameter (→ 39)

### Mass flow

**Navigation** Expert → Sensor → Measured val. → Process variab. → Mass flow

**Description** Displays the mass flow currently calculated.

**User interface** Signed floating-point number

**Additional information** *Dependency*

The unit is taken from the **Mass flow unit** parameter (→ 42)

### Conductivity

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

**Prerequisite** In the **Conductivity measurement** parameter (→ 49), the **On** option is selected.

**Description** Displays the conductivity currently measured.

**User interface** Signed floating-point number

**Additional information** *Dependency*

The unit is taken from the **Conductivity unit** parameter (→ 41)

### Corrected volume flow

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

**Description** Displays the corrected volume flow currently measured.

**User interface** Signed floating-point number

**Additional information** *Dependency*

The unit is taken from the **Corrected volume flow unit** parameter (→ 44)

### Temperature

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

**Prerequisite** For the following order code:
"Sensor Option", option CI "Fluid temperature probe"

**Description** Displays the temperature currently calculated.

**User interface** Positive floating-point number

**Additional information** *Dependency*

The unit is taken from the **Temperature unit** parameter (→ 42)

## Corrected conductivity

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

**Prerequisite** One of the following conditions is satisfied:
- Order code for "Sensor Option", option CI "Fluid temperature probe"
  or
- The temperature is read into the flowmeter from an external device.

**Description** Displays the conductivity currently corrected.

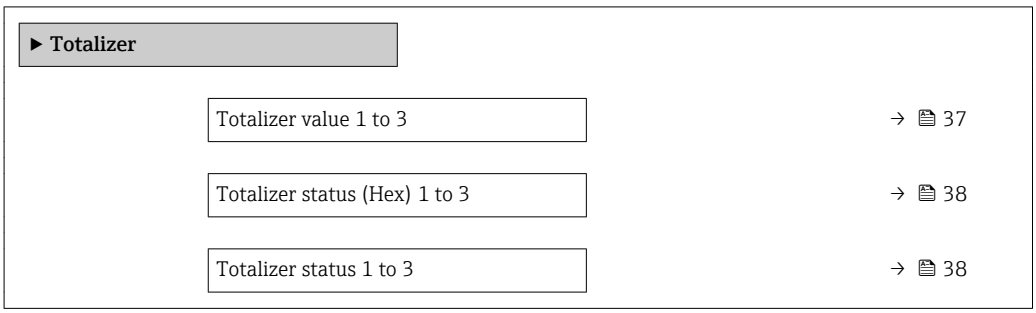
**User interface** Positive floating-point number

**Additional information** *Dependency*

The unit is taken from the **Conductivity unit** parameter (→ 41)

### "Totalizer" submenu

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




## Totalizer value 1 to 3

**Navigation** Expert → Sensor → Measured val. → Totalizer → Totalizer val. 1 to 3

**Prerequisite** In the **Target mode** parameter (→ 133), the **Auto** option is selected.

**Description** Displays the current reading for totalizer 1-3.

**User interface** Signed floating-point number

**Additional information**

*Description*

In the event of an error, the totalizer adopts the mode defined in the **Failure mode** parameter (→ 130).

*User interface*

The value of the process variable totalized since measuring began can be positive or negative. This depends on the settings in the **Totalizer operation mode** parameter (→ 130).

*Dependency*

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 127).

### Totalizer status (Hex) 1 to 3

**Navigation** Expert → Sensor → Measured val. → Totalizer → Status (Hex) 1 to 3

**Prerequisite** In **Target mode** parameter (→ 133), the **Auto** option is selected.

**Description** Displays the status value (hex) of the particular totalizer.

**User interface** 0 to 0xFF

### Totalizer status 1 to 3

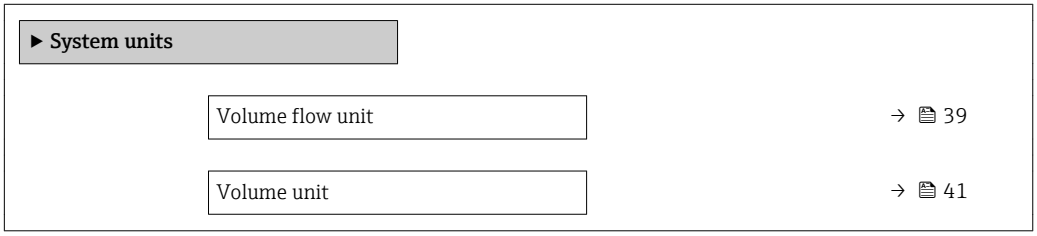
**Navigation** Expert → Sensor → Measured val. → Totalizer → Tot. status 1 to 3

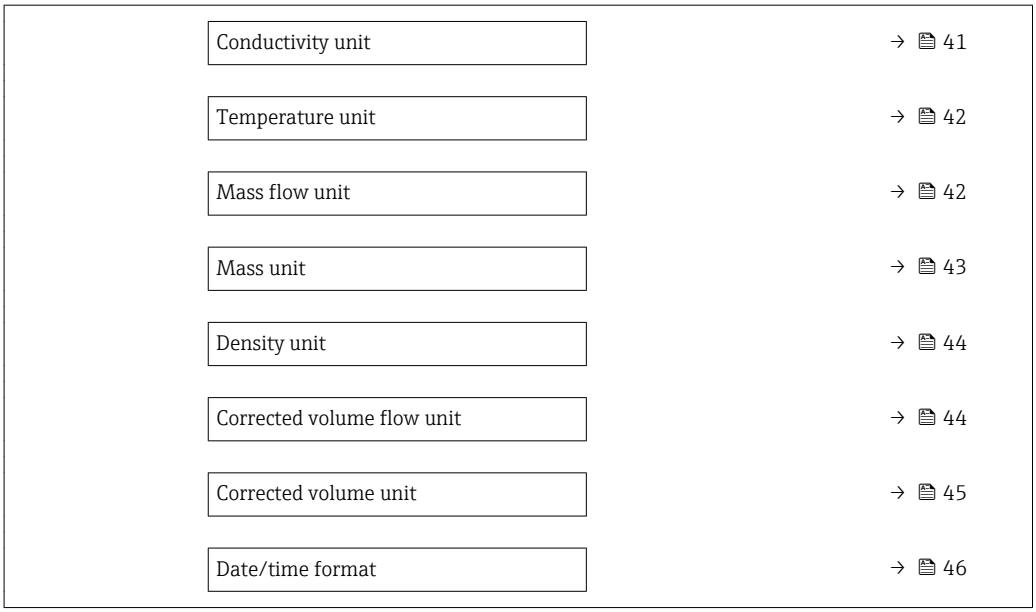
**Description** Displays the status of the particular totalizer.

**User interface**
- Good
- Uncertain
- Bad

## 3.2.2 "System units" submenu

*Navigation* Expert → Sensor → System units






## Volume flow unit

**Navigation** Expert → Sensor → System units → Volume flow unit

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

**Selection**

*SI units*
- $cm^3/s$
- $cm^3/min$
- $cm^3/h$
- $cm^3/d$
- $dm^3/s$
- $dm^3/min$
- $dm^3/h$
- $dm^3/d$
- $m^3/s$
- $m^3/min$
- $m^3/h$
- $m^3/d$
- ml/s
- ml/min
- ml/h
- ml/d
- l/s
- l/min
- l/h
- l/d
- hl/s
- hl/min
- hl/h
- hl/d
- Ml/s
- Ml/min
- Ml/h
- Ml/d

*US units*
- af/s
- af/min
- af/h
- af/d
- $ft^3/s$
- $ft^3/min$
- $ft^3/h$
- $ft^3/d$
- fl oz/s (us)
- fl oz/min (us)
- fl oz/h (us)
- fl oz/d (us)
- gal/s (us)
- gal/min (us)
- gal/h (us)
- gal/d (us)
- kgal/s (us)
- kgal/min (us)
- kgal/h (us)
- kgal/d (us)
- Mgal/s (us)
- Mgal/min (us)
- Mgal/h (us)
- Mgal/d (us)
- bbl/s (us;liq.)
- bbl/min (us;liq.)
- bbl/h (us;liq.)
- bbl/d (us;liq.)
- bbl/s (us;beer)
- bbl/min (us;beer)
- bbl/h (us;beer)
- bbl/d (us;beer)
- bbl/s (us;oil)
- bbl/min (us;oil)
- bbl/h (us;oil)
- bbl/d (us;oil)
- bbl/s (us;tank)
- bbl/min (us;tank)
- bbl/h (us;tank)
- bbl/d (us;tank)

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

**Factory setting**

Country-specific:
- l/h
- gal/min (us)

**Additional information**

*Result*

The selected unit applies for:
**Volume flow** parameter (→ 35)

*Selection*

For an explanation of the abbreviated units: → 162

## Volume unit

**Navigation** Expert → Sensor → System units → Volume unit

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

**Selection**

*SI units*
- $cm^3$
- $dm^3$
- $m^3$
- ml
- l
- hl
- Ml Mega

*US units*
- af
- $ft^3$
- fl oz (us)
- gal (us)
- kgal (us)
- Mgal (us)
- bbl (us;oil)
- bbl (us;liq.)
- bbl (us;beer)
- bbl (us;tank)

*Imperial units*
- gal (imp)
- Mgal (imp)
- bbl (imp;beer)
- bbl (imp;oil)

**Factory setting** Country-specific:
- $m^3$
- gal (us)

**Additional information** *Selection*

For an explanation of the abbreviated units: → 162

## Conductivity unit

**Navigation** Expert → Sensor → System units → Conductiv. unit

**Prerequisite** In the **Conductivity measurement** parameter (→ 49), the **On** option is selected.

**Description** Use this function to select the unit for the conductivity.

**Selection**

*SI units*
- nS/cm
- µS/cm
- µS/m
- µS/mm
- mS/m
- mS/cm
- S/cm
- S/m
- kS/m
- MS/m

**Factory setting** µS/cm

**Additional information**

*Result*

The selected unit applies for:
- **Conductivity** parameter (→ 36)
- **Corrected conductivity** parameter (→ 37)

*Selection*

For an explanation of the abbreviated units: → 162

## Temperature unit

**Navigation** Expert → Sensor → System units → Temperature unit

**Description** Use this function to select the unit for the temperature.

**Selection**

*SI units*
- °C
- K

*US units*
- °F
- °R

**Factory setting**

Country-specific:
- °C
- °F

**Additional information**

*Result*

The selected unit applies for:
- **Temperature** parameter (→ 36)
- **Maximum value** parameter (→ 153)
- **Minimum value** parameter (→ 153)
- **External temperature** parameter (→ 59)
- **Maximum value** parameter (→ 154)
- **Minimum value** parameter (→ 154)

*Selection*

For an explanation of the abbreviated units: → 162

## Mass flow unit

**Navigation** Expert → Sensor → System units → Mass flow unit

**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 (→ 36)

*Selection*

For an explanation of the abbreviated units: → 162

## Mass unit

**Navigation**

Expert → Sensor → System units → Mass unit

**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: → 162

## Density unit

**Navigation** Expert → Sensor → System units → Density unit

**Description** Use this function to select the unit for the density.

**Selection**

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

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

*Imperial units*
- lb/gal (imp)
- lb/bbl (imp;beer)
- lb/bbl (imp;oil)

**Factory setting** Country-specific:
- kg/l
- lb/ft³

**Additional information**

*Result*

The selected unit applies for:
- **External density** parameter (→ 59)
- **Fixed density** parameter (→ 59)

*Selection*

- SD = 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).
- SG = 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).

For an explanation of the abbreviated units: → 162

## Corrected volume flow unit

**Navigation** Expert → Sensor → System units → Cor.volflow unit

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

**Selection**

*SI units*
- Nl/s
- Nl/min
- Nl/h
- Nl/d
- $Nm^3/s$
- $Nm^3/min$
- $Nm^3/h$
- $Nm^3/d$
- $Sm^3/s$
- $Sm^3/min$
- $Sm^3/h$
- $Sm^3/d$

*US units*
- $Sft^3/s$
- $Sft^3/min$
- $Sft^3/h$
- $Sft^3/d$
- Sgal/s (us)
- Sgal/min (us)
- Sgal/h (us)
- Sgal/d (us)
- Sbbl/s (us;liq.)
- Sbbl/min (us;liq.)
- Sbbl/h (us;liq.)
- Sbbl/d (us;liq.)
- Sgal/s (imp)
- Sgal/min (imp)
- Sgal/h (imp)
- Sgal/d (imp)

**Factory setting**

Country-specific:
- Nl/h
- $Sft^3/h$

**Additional information**

*Result*

The selected unit applies for:
**Corrected volume flow** parameter (→ 36)

*Selection*

For an explanation of the abbreviated units: → 162

## Corrected volume unit

**Navigation**

Expert → Sensor → System units → Corr. vol. unit

**Description**

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

**Selection**

*SI units*
- Nl
- $Nm^3$
- $Sm^3$

*US units*
- $Sft^3$
- Sgal (us)
- Sbbl (us;liq.)

*Imperial units*
Sgal (imp)

**Factory setting**

Country-specific:
- $Nm^3$
- $Sft^3$

**Additional information**

*Selection*

For an explanation of the abbreviated units: → 162

**Date/time format**

**Navigation** Expert → Sensor → System units → Date/time format

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

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

**Factory setting** dd.mm.yy hh:mm

**Additional information** *Selection*

For an explanation of the abbreviated units: → 162

### 3.2.3 "Process parameters" submenu

*Navigation* Expert → Sensor → Process param.

| | |
|---|---|
| ▶ **Process parameters** | |
| Filter options | → 47 |
| Flow damping | → 48 |
| Flow override | → 48 |
| Conductivity damping | → 49 |
| Temperature damping | → 49 |
| Conductivity measurement | → 49 |
| ▶ **Low flow cut off** | → 50 |
| ▶ **Empty pipe detection** | → 53 |
| ▶ **Electrode cleaning circuit** | → 56 |

## Filter options

**Navigation** Expert → Sensor → Process param. → Filter options

**Description** Use this function to select a filter option.

**Selection**
- Standard CIP off
- Standard CIP on
- Dynamic CIP off
- Dynamic CIP on
- Binomial filter

**Factory setting** Standard CIP off

**Additional information**

*Description*

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

*Selection*

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

*Examples*

*Possible applications for the filters*

| Application | Standard | Standard CIP | Dynamic | Dynamic CIP | Binomial |
|---|---|---|---|---|---|
| Pulsating flow (flow is negative intermittently) | −−− | −−− | ++ | −− | ++ |
| Flow changes frequently (flow is dynamic) | − | −− | ++ | − | ++ |
| Clear signal, quick control loop (< 1 s) | −− | −− | + [1)] | | ++ |
| Poor signal, slow control loop (response time of a few seconds) | ++ | − | −− | −−− | −−− |
| Permanently bad signal | ++ | −− | − | −−− | − |

| Application | Standard | Standard CIP | Dynamic | Dynamic CIP | Binomial |
|---|---|---|---|---|---|
| Short and severe signal distortion after a while | | ++ | | ++ | |
| Promag 50/53 replacement: Promag 100 system damping = 0.5 * Promag 50/53 | | | | | +++ |
| Promag 10 replacement: Promag 100 system damping = Promag 10 + 2 | | | +++ | | |
| For a stable flow signal (no other requirements) | +++ | | | | |

1) Flow damping value < 6

## Flow damping

**Navigation** Expert → Sensor → Process param. → Flow damping

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

**User entry** 0 to 15

**Factory setting** 7

**Additional information**

*User entry*

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

- 0 is a weak damping and 15 a strong one.
- A damping of 0 is not recommended, as the measuring signal is then so noisy that it is almost impossible to carry out a measurement.
- The damping depends on the measuring period and the filter type selected.
- An increase or decrease in the damping depends on the application.

*Effect*

The damping affects the following variables of the device:
- Outputs
- Low flow cut off → 50
- Totalizers → 126

## Flow override

**Navigation** Expert → Sensor → Process param. → Flow override

**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*

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: proceeding output
  - Totalizers 1-3: Stop being totalized

## Conductivity damping

**Navigation** Expert → Sensor → Process param. → Conduct. damping

**Prerequisite** In the **Conductivity measurement** parameter (→ 49), the **On** option is selected.

**Description** Use this function to enter the time constant for conductivity damping.

**User entry** 0 to 999.9 s

**Factory setting** 0 s

## Temperature damping

**Navigation** Expert → Sensor → Process param. → Temp. damping

**Prerequisite** For the following order code:
"Sensor Option", option CI "Fluid temperature probe"

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

**User entry** 0 to 999.9 s

**Factory setting** 0 s

## Conductivity measurement

**Navigation** Expert → Sensor → Process param. → Conduct. measur.

**Description** Use this function to enable and disable conductivity measurement.

**Selection**
- Off
- On

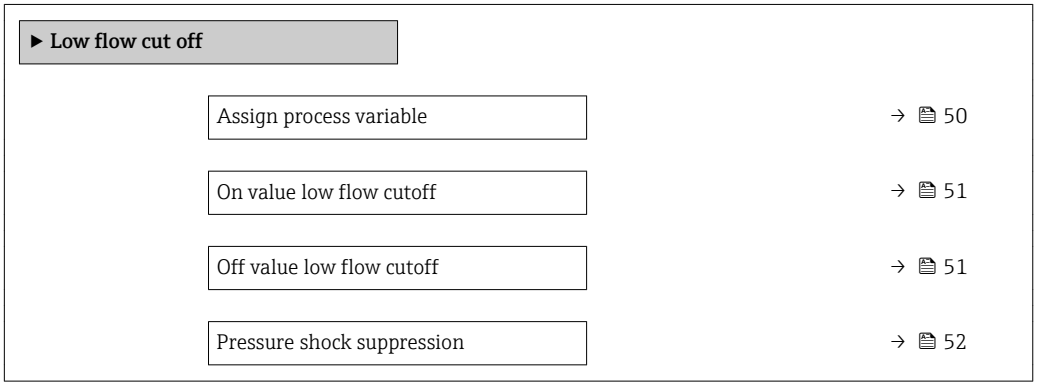
**Factory setting**
Off

**Additional information**
*Description*

For conductivity measurement to work, the medium must have a minimum conductivity of 5 µS/cm.

### "Low flow cut off" submenu

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




## Assign process variable

**Navigation** Expert → Sensor → Process param. → Low flow cut off → Assign variable

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

**Selection**
- Off
- Volume flow
- Mass flow
- Corrected volume flow

**Factory setting**
Volume flow

## On value low flow cutoff

**Navigation** Expert → Sensor → Process param. → Low flow cut off → On value

**Prerequisite** One of the following options is selected in the **Assign process variable** parameter (→ 50):
- Volume flow
- Mass flow
- Corrected volume flow

**Description** Use this function to enter a switch-on value for low flow cut off. Low flow cut off is activated if the value entered is not equal to 0 → 51.

**User entry** Signed floating-point number

**Factory setting** Depends on country and nominal diameter → 159

**Additional information** *Dependency*

The unit depends on the process variable selected in the **Assign process variable** parameter (→ 50).

## Off value low flow cutoff

**Navigation** Expert → Sensor → Process param. → Low flow cut off → Off value

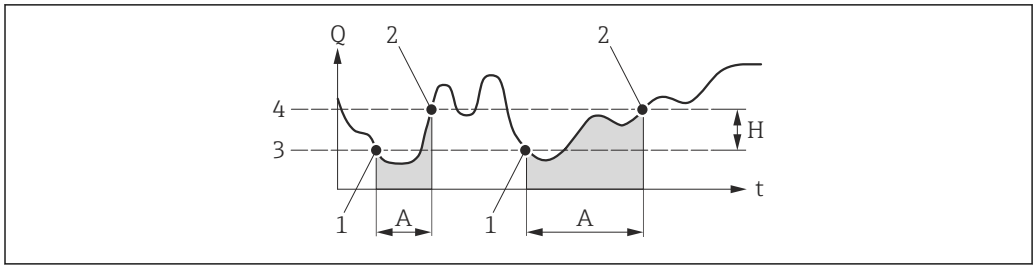
**Prerequisite** One of the following options is selected in the **Assign process variable** parameter (→ 50):
- Volume flow
- Mass flow
- Corrected volume flow

**Description** Use this function to enter a switch-off value for low flow cut off. The off value is entered as a positive hysteresis from the on value→ 51.

**User entry** 0 to 100.0 %

**Factory setting** 50 %

**Additional information** *Example*




A0012887

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

## Pressure shock suppression

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

**Prerequisite** One of the following options is selected in the **Assign process variable** parameter (→ 50):
- Volume flow
- Mass flow
- Corrected volume flow

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

**User entry** 0 to 100 s

**Factory setting** 0 s

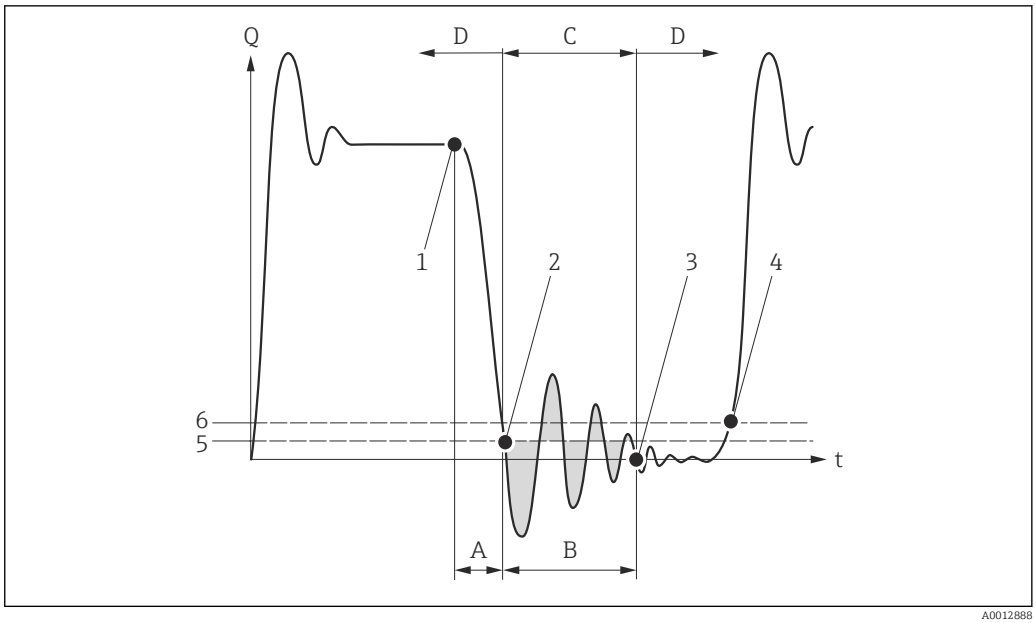
**Additional information** *Description*

**Pressure shock suppression is enabled**
- Prerequisite:
  Flow rate < on-value of low flow cut off
- Output values
  - Flow displayed: 0
  - Totalizer: the totalizers are pegged at the last correct value

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

*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*

### "Empty pipe detection" submenu

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

| | |
|---|---|
| ▶ **Empty pipe detection** | |
| Empty pipe detection | → 54 |
| Switch point empty pipe detection | → 54 |
| Response time empty pipe detection | → 54 |
| Empty pipe adjust value | → 55 |
| Full pipe adjust value | → 55 |
| Measured value EPD | → 56 |
| ▶ **Empty pipe adjust** | |

### Empty pipe detection

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

**Description** Use this function to switch empty pipe detection on and off.

**Selection**
- Off
- On

**Factory setting** Off

### Switch point empty pipe detection

**Navigation** Expert → Sensor → Process param. → Empty pipe det. → Switch point EPD

**Prerequisite** The **On** option is selected in the **Empty pipe detection** parameter (→ 54).

**Description** Use this function to enter the percentage threshold value of the resistance in relation to the adjustment values.

**User entry** 0 to 100 %

**Factory setting** 10 %

### Response time empty pipe detection

**Navigation** Expert → Sensor → Process param. → Empty pipe det. → Response time

**Prerequisite** In the **Empty pipe detection** parameter (→ 54), the **On** option is selected.

**Description** Enter the minimum length of time (debouncing time) the signal must be present for the diagnostic message ⚠**S862 Empty pipe** to be triggered if the measuring pipe is empty or partially full.

**User entry** 0 to 100 s

**Factory setting** 1 s

### New adjustment

**Navigation** Expert → Sensor → Process param. → Empty pipe det. → New adjustment

**Prerequisite** The **On** option is selected in the **Empty pipe detection** parameter (→ 54).

**Description** For selecting whether to perform an empty pipe or full pipe adjustment.

**Selection**
- Cancel
- Empty pipe adjust
- Full pipe adjust

**Factory setting** Cancel

## Progress

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

**Prerequisite** The **On** option is selected in the **Empty pipe detection** parameter (→ 54).

**Description** Use this function to view the progress.

**User interface**
- Ok
- Busy
- Not ok

## Empty pipe adjust value

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

**Prerequisite**
- In the **Empty pipe detection** parameter (→ 54), the **On** option is selected.
- Adjustment value > full pipe value.

**Description** Displays the adjustment value when the measuring pipe is empty.

**User interface** Positive floating-point number

## Full pipe adjust value

**Navigation** Expert → Sensor → Process param. → Empty pipe det. → Full pipe value

**Prerequisite**
- In the **Empty pipe detection** parameter (→ 54), the **On** option is selected.
- Adjustment value < empty pipe value.

**Description** Displays the adjustment value when the measuring pipe is full.

**User interface** Positive floating-point number

### Measured value EPD

**Navigation** Expert → Sensor → Process param. → Empty pipe det. → Meas. value EPD

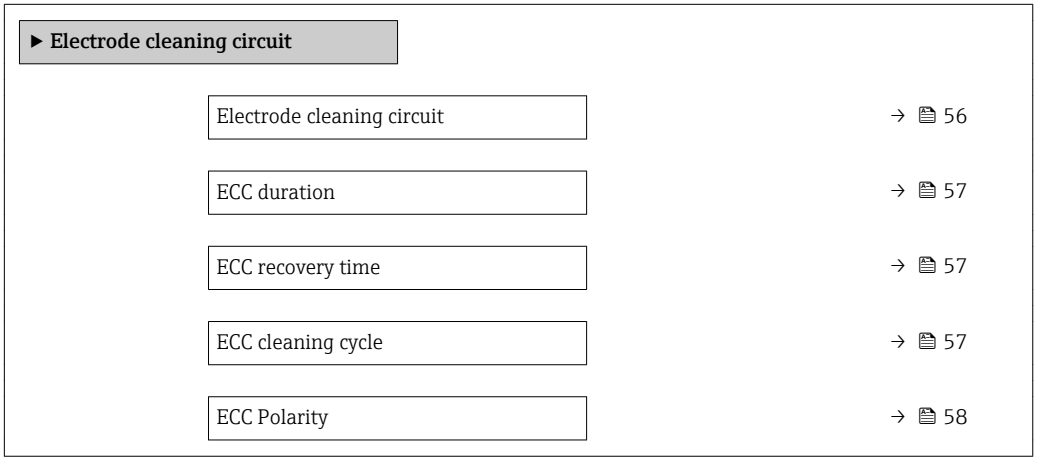
**Prerequisite** In the **Empty pipe detection** parameter (→ 54), the **On** option is selected.

**Description** Displays the current measured value.

**User interface** Positive floating-point number

#### "Electrode cleaning circuit" submenu

*Navigation* Expert → Sensor → Process param. → ECC




### Electrode cleaning circuit

**Navigation** Expert → Sensor → Process param. → ECC → ECC

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

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

**Selection**
- Off
- On

**Factory setting** Off

## ECC duration

**Navigation** Expert → Sensor → Process param. → ECC → ECC duration

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

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

**User entry** 0.01 to 30 s

**Factory setting** 2 s

## ECC recovery time

**Navigation** Expert → Sensor → Process param. → ECC → ECC recov. time

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

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

**User entry** Positive floating-point number

**Factory setting** 60 s

## ECC cleaning cycle

**Navigation** Expert → Sensor → Process param. → ECC → ECC clean. cycle

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

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

**User entry** 0.5 to 168 h

**Factory setting** 0.5 h

**ECC Polarity**

**Navigation** Expert → Sensor → Process param. → ECC → ECC Polarity

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

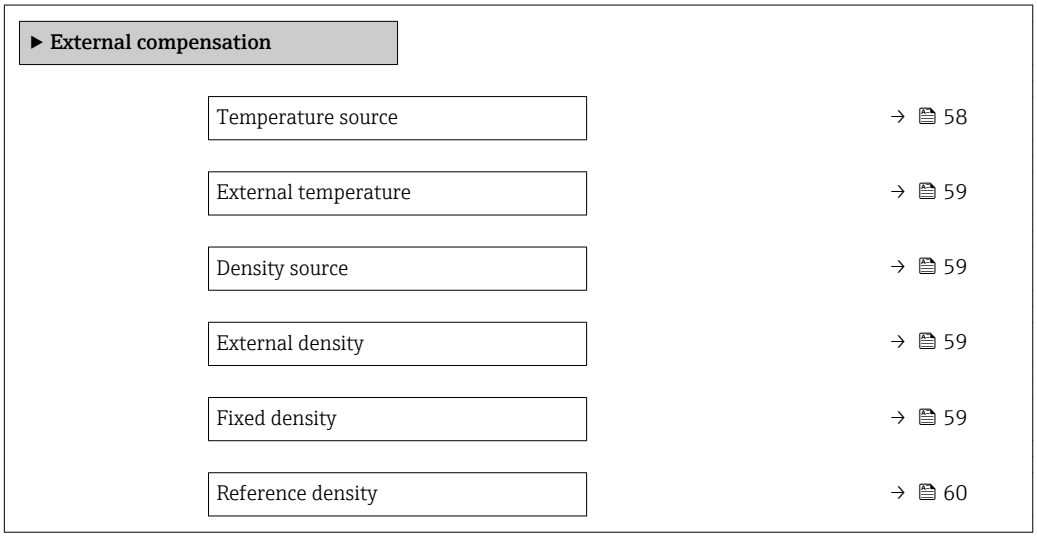
**Description** Displays the polarity of the electrode cleaning circuit.

**User interface**
- Positive
- Negative

**Factory setting** Depends on the electrode material:
- Platinum: **Negative** option
- Tantalum, Alloy C22, stainless steel: **Positive** option

## 3.2.4 "External compensation" submenu

*Navigation* Expert → Sensor → External comp.




**Temperature source**

**Navigation** Expert → Sensor → External comp. → Temp. source

**Description** Use this function to select the temperature source.

**Selection**
- Internal temperature sensor
- External value

**Factory setting** External value

### External temperature

**Navigation** Expert → Sensor → External comp. → External temp.

**Prerequisite** The **External value** option is selected in the **Temperature source** parameter (→ 58).

**Description** Displays the temperature read in by the external device.

**User interface** Floating point number with sign

**Additional information** *Dependency*

The unit is taken from the **Temperature unit** parameter (→ 42)

### Density source

**Navigation** Expert → Sensor → External comp. → Density source

**Description** Use this function to select the density source.

**Selection**
- Fixed density
- External density

**Factory setting** Fixed density

### External density

**Navigation** Expert → Sensor → External comp. → External density

**Prerequisite** In the **Density source** parameter (→ 59), the **External density** option is selected.

**Description** Displays the density read in from the external device.

**User interface** Positive floating-point number

**Additional information** *Dependency*

The unit is taken from the **Density unit** parameter (→ 44)

### Fixed density

**Navigation** Expert → Sensor → External comp. → Fixed density

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

**User entry** Positive floating-point number

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

**Additional information** *Dependency*

The unit is taken from the **Density unit** parameter (→ 44)

**Reference density**

**Navigation** Expert → Sensor → External comp. → Ref.density

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

**User entry** Positive floating-point number

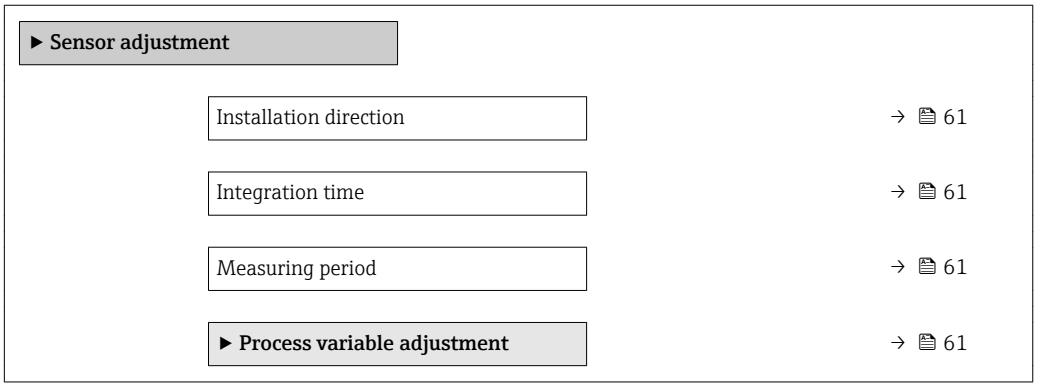
**Factory setting** Country-specific:
- 1 kg/l
- 1 lb/ft³

**Additional information** *Dependency*

The unit is taken from the **Density unit** parameter (→ 44)

### 3.2.5 "Sensor adjustment" submenu

*Navigation* Expert → Sensor → Sensor adjustm.



## Installation direction

**Navigation** Expert → Sensor → Sensor adjustm. → Install. direct.

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

**Selection**
- Flow in arrow direction
- Flow against arrow direction

**Factory setting** Flow in arrow direction

**Additional information** *Description*

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

## Integration time

**Navigation** Expert → Sensor → Sensor adjustm. → Integration time

**Description** Display the duration of an integration cycle.

**User interface** 1 to 65 ms

## Measuring period

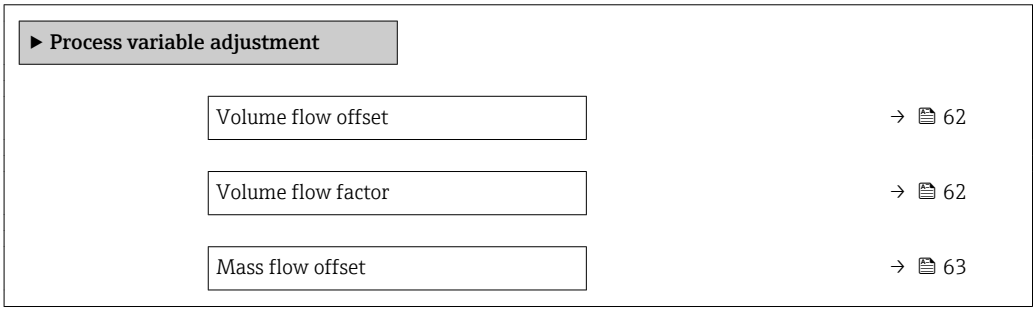
**Navigation** Expert → Sensor → Sensor adjustm. → Measuring period

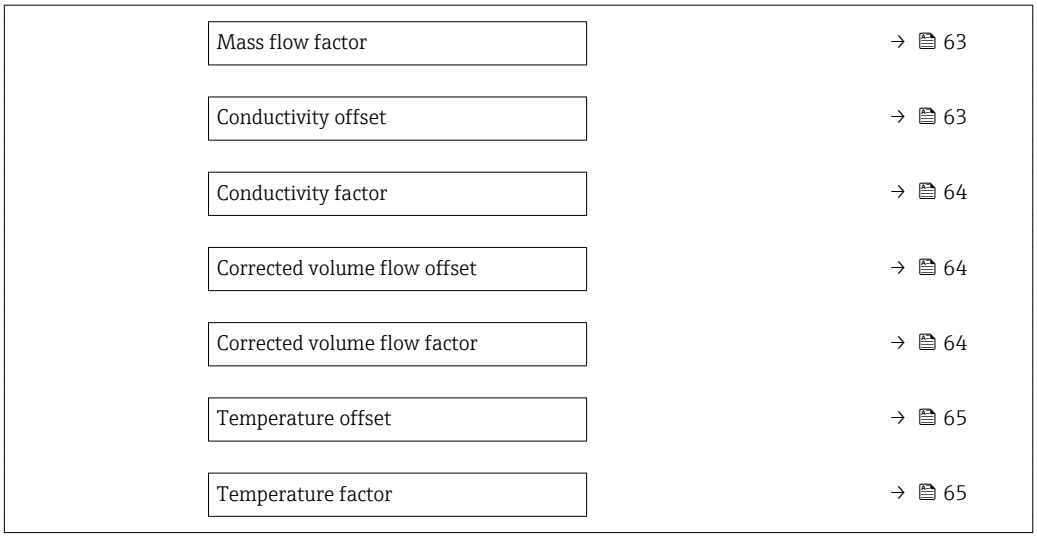
**Description** Display the time of a full measuring period.

**User interface** 50 to 1 000 ms

### "Process variable adjustment" submenu

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






## Volume flow offset

**Navigation** Expert → Sensor → Sensor adjustm. → Variable adjust → Vol. flow offset

**Description** Use this function to enter the zero point shift for the volume flow trim. The volume flow unit on which the shift is based is $m^3/s$.

**User entry** Signed floating-point number

**Factory setting** 0 $m^3/s$

**Additional information** *Description*

Corrected value = (factor × value) + offset

## Volume flow factor

**Navigation** Expert → Sensor → Sensor adjustm. → Variable adjust → Vol. flow factor

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

**User entry** Positive floating-point number

**Factory setting** 1

**Additional information** *Description*

Corrected value = (factor × value) + offset

## Mass flow offset

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

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

**User entry** Signed floating-point number

**Factory setting** 0 kg/s

**Additional information** *Description*

Corrected value = (factor × value) + offset

## Mass flow factor

**Navigation** Expert → Sensor → Sensor adjustm. → Variable adjust → Mass flow factor

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

**User entry** Positive floating-point number

**Factory setting** 1

**Additional information** *Description*

Corrected value = (factor × value) + offset

## Conductivity offset

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

**Prerequisite** In the **Conductivity measurement** parameter (→ 49), the **On** option is selected.

**Description** Use this function to enter the zero point shift for the conductivity trim. The conductivity unit on which the shift is based is S/m

**User entry** Signed floating-point number

**Factory setting** 0 S/m

**Additional information** *Description*

Corrected value = (factor × value) + offset

## Conductivity factor

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

**Prerequisite** In the **Conductivity measurement** parameter (→ 49), the **On** option is selected.

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

**User entry** Positive floating-point number

**Factory setting** 1

**Additional information** *Description*

Corrected value = (factor × value) + offset

## Corrected volume flow offset

**Navigation** Expert → Sensor → Sensor adjustm. → Variable adjust → Corr. vol offset

**Description** Use this function to enter the zero point shift for the corrected volume flow trim. The corrected volume flow unit on which the shift is based is 1 $Nm^3/s$.

**User entry** Signed floating-point number

**Factory setting** 0 $Nm^3/s$

**Additional information** *Description*

Corrected value = (factor × value) + offset

## Corrected volume flow factor

**Navigation** Expert → Sensor → Sensor adjustm. → Variable adjust → Corr. vol factor

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

**User entry** Positive floating-point number

**Factory setting** 1

**Additional information** *Description*

Corrected value = (factor × value) + offset

### Temperature offset

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

**Prerequisite** For the following order code:
"Sensor Option", option CI "Fluid temperature probe"

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

**User entry** Signed floating-point number

**Factory setting** 0 K

**Additional information** *Description*

Corrected value = (factor × value) + offset

### Temperature factor

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

**Prerequisite** For the following order code:
"Sensor Option", option CI "Fluid temperature probe"

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

**User entry** Positive floating-point number

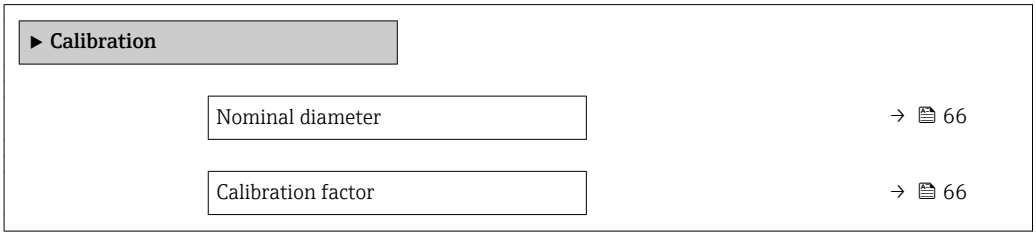
**Factory setting** 1

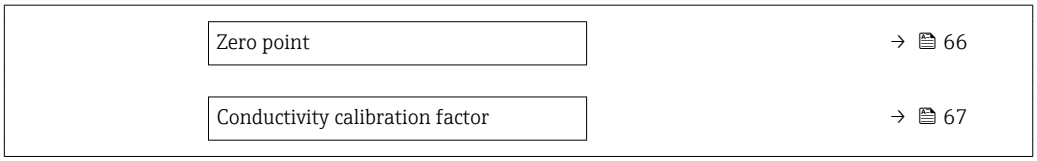
**Additional information** *Description*

Corrected value = (factor × value) + offset

## 3.2.6 "Calibration" submenu

*Navigation* Expert → Sensor → Calibration






## Nominal diameter

**Navigation** Expert → Sensor → Calibration → Nominal diameter

**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.

## Calibration factor

**Navigation** Expert → Sensor → Calibration → Cal. factor

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

**User interface** Positive floating-point number

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

## Zero point

**Navigation** Expert → Sensor → Calibration → Zero point

**Description** This function shows the zero point correction value for the sensor.

**User interface** Signed floating-point number

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

**Conductivity calibration factor**

**Navigation** Expert → Sensor → Calibration → Cond. cal. fact.

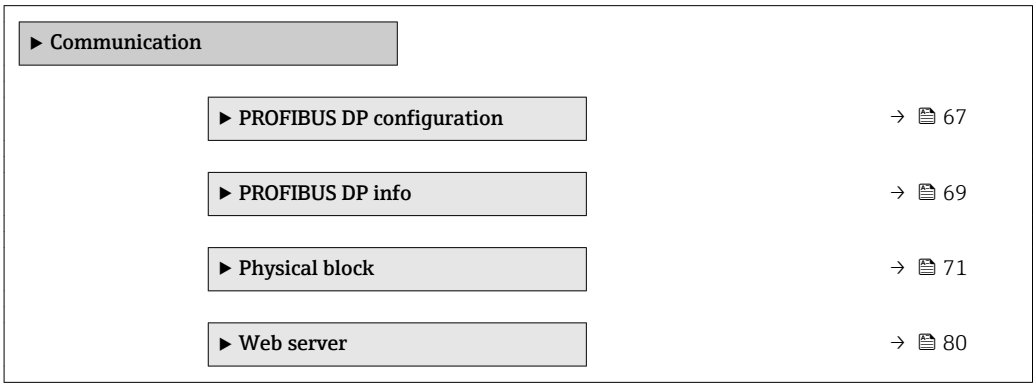
**Prerequisite** In the **Conductivity measurement** parameter (→ 49), the **On** option is selected.

**Description** Displays the calibration factor for the conductivity measurement.

**User interface** 0 to 10 000

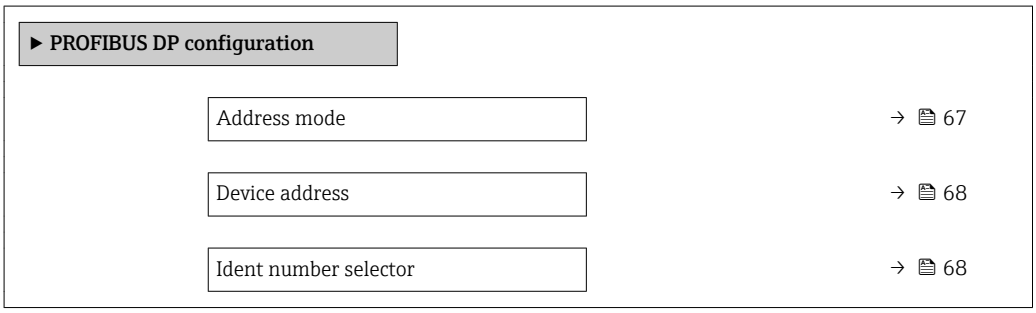
## 3.3 "Communication" submenu

*Navigation* Expert → Communication




### 3.3.1 "PROFIBUS DP configuration" submenu

*Navigation* Expert → Communication → PROFIBUS DP conf




**Address mode**

**Navigation** Expert → Communication → PROFIBUS DP conf → Address mode

**Description** Displays the configured address mode.

**User interface**
- Hardware
- Software

**Factory setting** Software

**Additional information** *Description*

For detailed information, see the "Setting the device address" section of the Operating Instructions.

## Device address

**Navigation** Expert → Communication → PROFIBUS DP conf → Device address

**Description** Use this function to enter the device address.

**User entry** 0 to 126

**Factory setting** 126

**Additional information** *Description*

The address must always be configured for a PROFIBUS device. The valid address range is between 1 and 126. In a PROFIBUS network, each address can only be assigned once. If an address is not configured correctly, the device is not recognized by the master. All measuring devices are delivered from the factory with the device address 126 and with the software addressing method.

Displays the configured address mode: **Address mode** parameter (→ 67)

## Ident number selector

**Navigation** Expert → Communication → PROFIBUS DP conf → Ident num select

**Description** Use this function to select the device master file (GSD).

**Selection**
- Automatic mode
- Manufacturer
- Profile
- 2 AI, 1 Totalizer (0x9741)
- 3 AI, 1 Totalizer (0x9742)

**Factory setting** Automatic mode

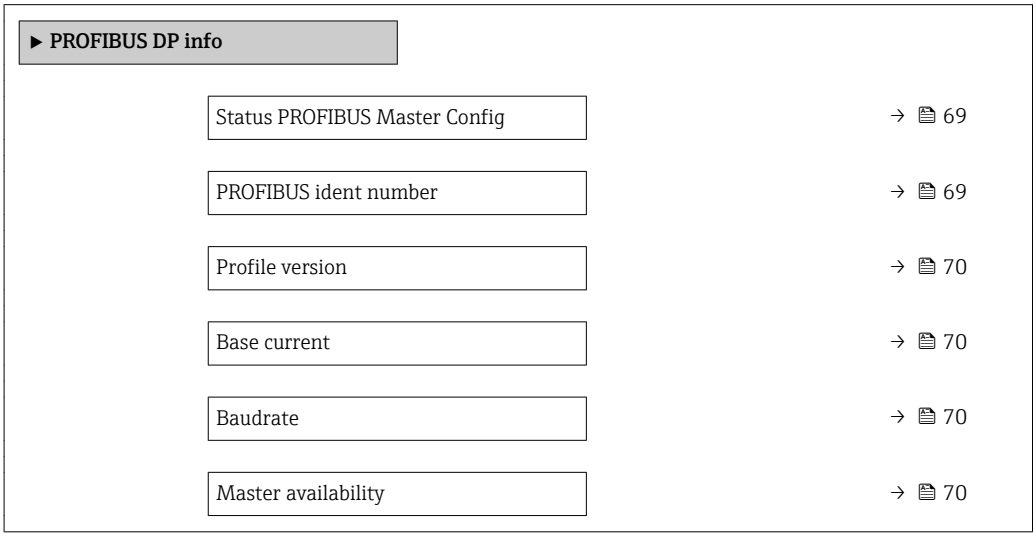
**Additional information** *Description*

In order to integrate the field devices into the bus system, the PROFIBUS system needs a description of the device parameters, such as output data, input data, data format, data volume and supported transmission rate. These data are available in the device master file

(GSD) which is provided to the PROFIBUS Master when the communication system is commissioned.

### 3.3.2 "PROFIBUS DP info" submenu

*Navigation* Expert → Communication → PROFIBUS DP info




#### Status PROFIBUS Master Config

**Navigation** Expert → Communication → PROFIBUS DP info → Stat Master Conf

**Description** For displaying the status of the PROFIBUS Master configuration.

**User interface**
- Active
- Not active

**Factory setting** Not active

#### PROFIBUS ident number

**Navigation** Expert → Communication → PROFIBUS DP info → Ident number

**Description** For displaying the PROFIBUS identification number.

**User interface** 0 to FFFF

**Factory setting** 0x1560

### Profile version

**Navigation** Expert → Communication → PROFIBUS DP info → Profile version

**Description** Displays the profile version.

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

**Factory setting** 3.02

### Base current

**Navigation** Expert → Communication → PROFIBUS DP info → Base current

**Description** Displays the basic current: Every PA measuring device taps a constant basic current from the MBP cable. This base current must be at least 10 mA. The base current enables power to be supplied to the measuring device.

**User interface** 16 mA

### Baudrate

**Navigation** Expert → Communication → PROFIBUS DP info → Baudrate

**Description** Displays the transmission rate.

**User interface**
- Not available
- 9.6 kBaud
- 19.2 kBaud
- 31.25 kBaud
- 45.45 kBaud
- 93.75 kBaud
- 187.5 kBaud
- 500 kBaud
- 1.5 MBaud
- 3 MBaud
- 6 MBaud
- 12 MBaud

**Factory setting** 9.6 kBaud

### Master availability

**Navigation** Expert → Communication → PROFIBUS DP info → Master avail.

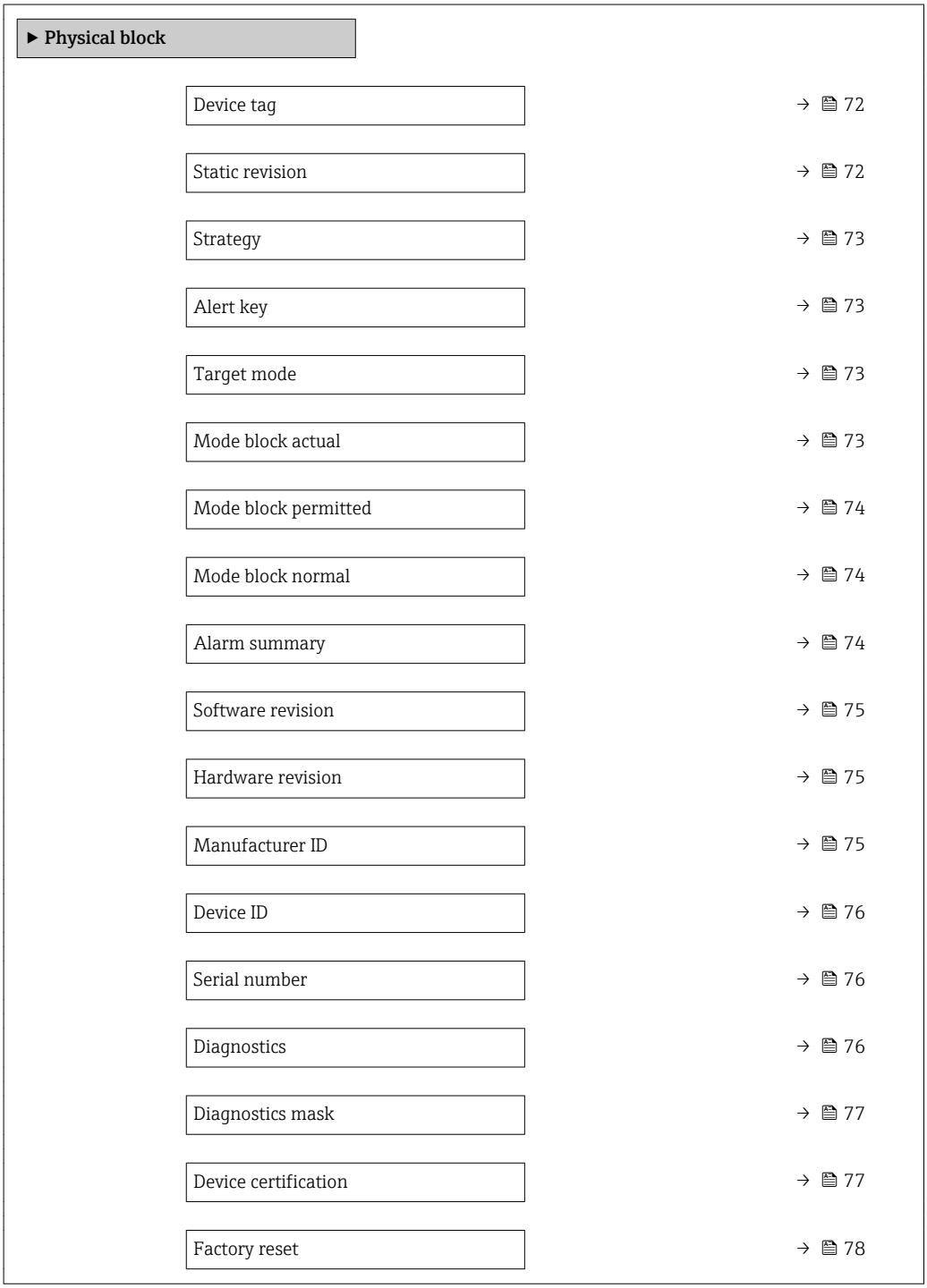
**Description** Displays whether or not a PROFIBUS master is present in the network.

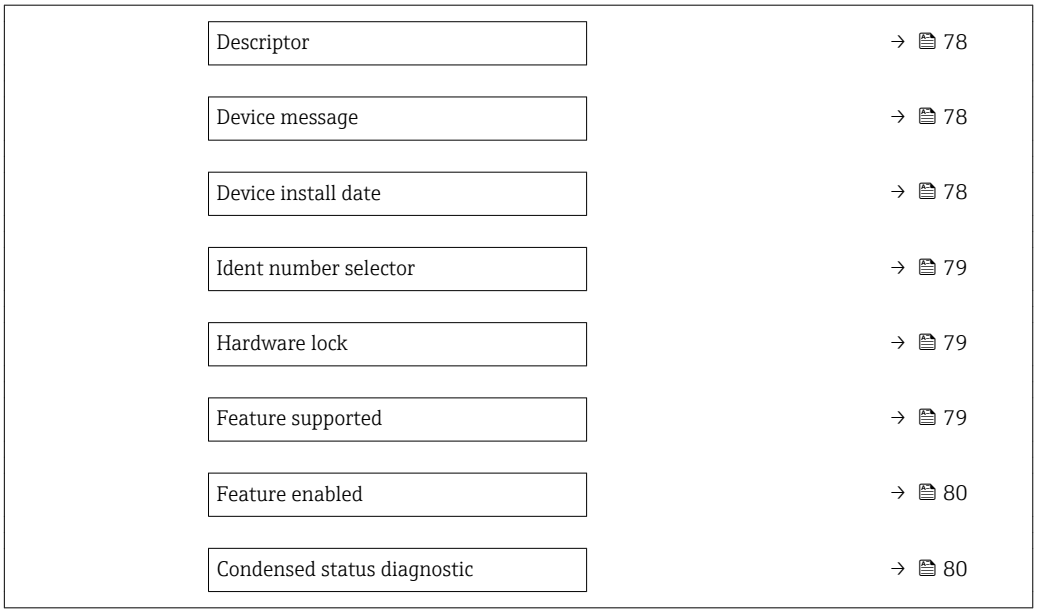
**User interface**
- No
- Yes

**Factory setting** No

### 3.3.3 "Physical block" submenu

*Navigation* Expert → Communication → Physical block






## Device tag

**Navigation** Expert → Communication → Physical block → Device tag

**Description** Use this function to enter the name for the measuring point.

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

**Factory setting** Promag 100 DP

## Static revision

**Navigation** Expert → Communication → Physical block → Static revision

**Description** Displays the event counter: every write access to a static block parameter is counted.

**User interface** 0 to FFFF

**Additional information** *Description*

Static parameters are parameters that are not changed by the process.

### Strategy

**Navigation** Expert → Communication → Physical block → Strategy

**Description** Use this function to enter the strategy: makes it possible to group blocks by entering identical numbers.

**User entry** 0 to FFFF

**Factory setting** 0

### Alert key

**Navigation** Expert → Communication → Physical block → Alert key

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

**User entry** 0 to 0xFF

**Factory setting** 0

### Target mode

**Navigation** Expert → Communication → Physical block → Target mode

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

**User interface**
- Auto
- Out of service

### Mode block actual

**Navigation** Expert → Communication → Physical block → Mode block act

**Description** Displays the Mode block actual: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block actual shows the actual mode in which the function block is currently operating. A comparison of the Mode block actual with the Target mode indicates whether it was possible to reach the Target mode (→ 73).

**User interface**
- Auto
- Out of service

**Additional information** *Description*

A comparison of the current mode with the target mode (**Target mode** parameter (→ 73)) indicates whether it was possible to reach the target mode.

### Mode block permitted

**Navigation** Expert → Communication → Physical block → Mode block perm

**Description** Displays the Mode block permitted: This defines which modes of operation in the Target mode (→ 73) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

**User interface** 0 to 255

### Mode block normal

**Navigation** Expert → Communication → Physical block → Mode blk norm

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

**User interface**
- Auto
- Out of service

### Alarm summary

**Navigation** Expert → Communication → Physical block → Alarm summary

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

**User interface**
- Discrete alarm
- Alarm state HiHi limit
- Alarm state Hi limit
- Alarm state LoLo limit
- Alarm state Lo limit
- Update Event

**Additional information**

*Description*

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

*User interface*

- Discrete alarm
  Alarm or warning message with a discrete value.
- Alarm state HiHi limit
  Upper alarm limit
- Alarm state Hi limit
  Upper warning limit
- Alarm state LoLo limit
  Lower alarm limit
- Alarm state Lo limit
  Lower warning limit
- Update Event
  This option constitutes a special alarm that is triggered if a static parameter is changed. If such a parameter is modified, the associated bit is set in the **Alarm summary** parameter (→ 74), the output of the block switches to "GOOD (NC) Active Update Event" (if the current status has a lower priority than this), and the block remains in this state for a duration of 10 s. The block then reverts to the normal state (the output has the last status and the **Update Event** option bit in the **Alarm summary** parameter (→ 74) is deleted again).

## Software revision

**Navigation** Expert → Communication → Physical block → Software rev.

**Description** Displays the firmware version of the measuring device.

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

## Hardware revision

**Navigation** Expert → Communication → Physical block → Hardware rev.

**Description** Displays the hardware revision of the measuring device.

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

## Manufacturer ID

**Navigation** Expert → Communication → Physical block → Manufacturer ID

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

**User interface** 0 to FFFF

**Factory setting** 0x11

## Device ID

**Navigation** Expert → Communication → Physical block → Device ID

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

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

**Factory setting** Promag 100 DP

## Serial number

**Navigation** Expert → Communication → Physical block → Serial number

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

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

**Additional information** *Description*

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

## Diagnostics

**Navigation** Expert → Communication → Physical block → Diagnostics

**Description** Displays the diagnostic messages.

**User interface**
- Hardware failure electronics
- Hardware failure mechanics
- Temperature motor
- Electronic temperature
- Memory checksum error
- Measurement error
- Device not initialized
- Initialization error
- Zero point error
- Power supply
- Configuration invalid
- On warmstart

- On coldstart
- Maintenance required
- Characterization invalid
- Ident number violation
- More information available
- Maintenance alarm
- Maintenance demanded
- Function check or simulation
- Invalid process condition

### Diagnostics mask

**Navigation** Expert → Communication → Physical block → Diagnostics mask

**Description** Displays the diagnostic messages supported by the measuring device.

**User interface**
- Hardware failure electronics
- Hardware failure mechanics
- Temperature motor
- Electronic temperature
- Memory checksum error
- Measurement error
- Device not initialized
- Initialization error
- Zero point error
- Power supply
- Configuration invalid
- On warmstart
- On coldstart
- Maintenance required
- Characterization invalid
- Ident number violation
- More information available
- Maintenance alarm
- Maintenance demanded
- Function check or simulation
- Invalid process condition

### Device certification

**Navigation** Expert → Communication → Physical block → Dev certificate

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

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

### Factory reset

**Navigation** Expert → Communication → Physical block → Factory reset

**Description** Use this function to reset a certain set of parameters in a block.

**Selection**
- to defaults
- warmstart device
- reset bus address
- Cancel

**Factory setting** Cancel

### Descriptor

**Navigation** Expert → Communication → Physical block → Descriptor

**Description** Use this function to enter a user-specific string to describe the device within the application.

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

### Device message

**Navigation** Expert → Communication → Physical block → Device message

**Description** Use this funtion to enter a user-definable message (a string) to describe the device within the application or in the plant.

**User entry** Max. 32 Zeichen wie Buchstaben, Zahlen oder Sonderzeichen (z.B. @, %, /).

### Device install date

**Navigation** Expert → Communication → Physical block → Device inst.date

**Description** Use this function to enter the date of installation of the device.

**User entry** Max. 16 Zeichen wie Buchstaben, Zahlen oder Sonderzeichen (z.B. @, %, /).

## Ident number selector

**Navigation** Expert → Communication → Physical block → Ident num select

**Description** Use this function to select the device master file (GSD).

**Selection**
- Automatic mode
- Manufacturer
- Profile
- 2 AI, 1 Totalizer (0x9741)
- 3 AI, 1 Totalizer (0x9742)

**Factory setting** Automatic mode

**Additional information** *Description*

In order to integrate the field devices into the bus system, the PROFIBUS system needs a description of the device parameters, such as output data, input data, data format, data volume and supported transmission rate. These data are available in the device master file (GSD) which is provided to the PROFIBUS Master when the communication system is commissioned.

## Hardware lock

**Navigation** Expert → Communication → Physical block → Hardware lock

**Description** Displays the hardware write protection.

**User interface**
- Unprotected
- Protected

**Additional information** *Description*

Indicates whether it is possible to write-access the measuring device via PROFIBUS (acyclic data transmission, e.g. via the “FieldCare” operating program).

For detailed information on hardware write protection, see the "Write protection via write protection switch" section of the Operating Instructions.

*User interface*
- Unprotected
  Write access via PROFIBUS is possible (acyclic data transmission).
- Protected
  Write access via PROFIBUS is locked (acyclic data transmission).

## Feature supported

**Navigation** Expert → Communication → Physical block → Feature support

**Description** Displays the PROFIBUS features that are supported by the measuring device.

**User interface**
- Condensed status
- Classic status diagnosis
- Data exchange broadcast
- MS1 application relationship
- PROFIsafe communication

**Feature enabled**

**Navigation** Expert → Communication → Physical block → Feature enabled

**Description** Displays the PROFIBUS features that are enabled in the measuring device.

**User interface**
- Condensed status
- Classic status diagnosis
- Data exchange broadcast
- MS1 application relationship
- PROFIsafe communication

**Condensed status diagnostic**

**Navigation** Expert → Communication → Physical block → Condensed status

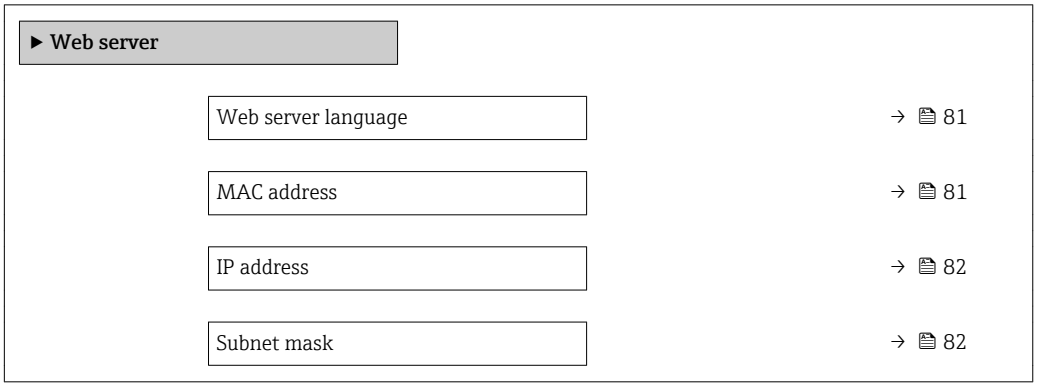
**Description** Use this function to switch the condensed status diagnostic on and off.

**Selection**
- Off
- On

**Factory setting** On

### 3.3.4 "Web server" submenu

*Navigation* Expert → Communication → Web server



| | |
|---|---|
| Default gateway | → 82 |
| Web server functionality | → 82 |

## Web server language

**Navigation** Expert → Communication → Web server → Webserv.language

**Description** Use this function to select the web server language setting.

**Selection**
- English
- Deutsch *
- Français *
- Español *
- Italiano *
- Nederlands *
- Portuguesa *
- Polski *
- русский язык (Russian) *
- Svenska *
- Türkçe *
- 中文 (Chinese) *
- 日本語 (Japanese) *
- 한국어 (Korean) *
- العَرَبيّة (Arabic) *
- Bahasa Indonesia *
- ภาษาไทย (Thai) *
- tiếng Việt (Vietnamese) *
- čeština (Czech) *

**Factory setting** English

## MAC address

**Navigation** Expert → Communication → Web server → MAC Address

**Description** Displays the MAC [1] address of the measuring device.

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

**Factory setting** Each measuring device is given an individual address.

**Additional information** *Example*

For the display format
00:07:05:10:01:5F

* Visibility depends on order options or device settings
1) Media Access Control

### IP address

**Navigation** Expert → Communication → Web server → IP address

**Description** Displays the IP address of the device's web server.

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

**Factory setting** 192.168.1.212

### Subnet mask

**Navigation** Expert → Communication → Web server → Subnet mask

**Description** Displays the subnet mask.

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

**Factory setting** 255.255.255.0

### Default gateway

**Navigation** Expert → Communication → Web server → Default gateway

**Description** Displays the default gateway.

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

**Factory setting** 0.0.0.0

### Web server functionality

**Navigation** Expert → Communication → Web server → Webserver funct.

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

**Selection**
- Off
- On

**Factory setting** On

**Additional information**

*Description*

Once disabled, the Web server functionality can be re-enabled only via the local display or the FieldCare operating tool.

*Selection*

- Off
  - The web server is completely disabled.
  - Port 80 is locked.
- On
  - The complete functionality of the web server is available.
  - JavaScript is used.
  - The password is transferred in an encrypted state.
  - Any change to the password is also transferred in an encrypted state.

## 3.4 "Analog inputs" submenu

*Navigation* Expert → Analog inputs

| | | |
|---|---|---|
| ▶ **Analog inputs** | | |
| | ▶ **Analog input 1 to 4** | → 83 |

### 3.4.1 "Analog input 1 to 4" submenu

*Navigation* Expert → Analog inputs → Analog input 1 to 4

| | | |
|---|---|---|
| ▶ **Analog input 1 to 4** | | |
| | Channel | → 84 |
| | PV filter time | → 84 |
| | Fail safe type | → 84 |
| | Fail safe value | → 85 |
| | Out value | → 85 |
| | Out status | → 85 |
| | Out status | → 86 |

## Channel

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Channel

**Description** For selecting the process variable.

**Selection**
- Volume flow
- Mass flow
- Corrected volume flow
- Flow velocity
- Conductivity *
- Corrected conductivity *
- Temperature *
- Electronic temperature

**Factory setting** Volume flow

## PV filter time

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → PV filter time

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

**User entry** Positive floating-point number

**Factory setting** 0

## Fail safe type

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Fail safe type

**Description** Use this function to select the failure mode.

**Selection**
- Fail safe value
- Fallback value
- Off

**Factory setting** Off

* Visibility depends on order options or device settings

**Additional information** *Selection*

If an input or simulation value has the status BAD, the function block uses this predefined failure value:
- Fail safe value
  A substitute value is used. This is specified in the **Fail safe value** parameter (→ 🖹 85).
- Fallback value
  If the value was good at one point, then this last valid value is used.
- Off
  The system continues to use the bad value.

## Fail safe value

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Fail safe value

**Prerequisite** In **Fail safe type** parameter (→ 🖹 84), the **Fail safe value** option is selected.

**Description** Use this function to enter a failure value. The value entered is displayed as the output value (**Out value** parameter (→ 🖹 85)) in the event of an error.

**User entry** Signed floating-point number

**Factory setting** 0

## Out value

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Out value

**Prerequisite** In **Target mode** parameter (→ 🖹 87), the **Auto** option is selected.

**Description** Displays the analog value which is calculated when the function is executed.

**User interface** Signed floating-point number

## Out status

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Out status

**Description** Displays the current output status (Good, Bad, Uncertain).

**User interface**
- Good
- Uncertain
- Bad

### Out status

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Out status

**Prerequisite** In **Target mode** parameter (→ 87), the **Auto** option is selected.

**Description** Displays the current output status (hex value).

**User interface** 0 to 0xFF

### Tag description

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Tag description

**Description** Use this function to enter a string to identify the block.

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

### Static revision

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Static revision

**Description** Displays the event counter: every write access to a static block parameter is counted.

**User interface** 0 to FFFF

**Additional information** *Description*

Static parameters are parameters that are not changed by the process.

### Strategy

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Strategy

**Description** Use this function to enter the strategy: makes it possible to group blocks by entering identical numbers.

**User entry** 0 to FFFF

**Factory setting** 0

### Alert key

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Alert key

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

**User entry** 0 to 0xFF

**Factory setting** 0

### Target mode

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Target mode

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

**User interface**
- Auto
- Man
- Out of service

### Mode block actual

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Mode block act

**Description** Displays the Mode block actual: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block actual shows the actual mode in which the function block is currently operating. A comparison of the Mode block actual with the Target mode indicates whether it was possible to reach the Target mode (→ 87).

**User interface**
- Auto
- Man
- Out of service

**Additional information** *Description*

A comparison of the current mode with the target mode (**Target mode** parameter (→ 87)) indicates whether it was possible to reach the target mode.

### Mode block permitted

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Mode block perm

**Description** Displays the Mode block permitted: This defines which modes of operation in the Target mode (→ 87) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

**User interface** 0 to 255

### Mode block normal

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Mode blk norm

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

**User interface**
- Auto
- Man
- Out of service

### Alarm summary

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Alarm summary

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

**User interface**
- Discrete alarm
- Alarm state HiHi limit
- Alarm state Hi limit
- Alarm state LoLo limit
- Alarm state Lo limit
- Update Event

**Additional information** *Description*

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

### Batch ID

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Batch ID

**Description** Use this function to enter the batch ID: identification of a specific batch to make it possible to assign device-specific information (e.g. errors, alarm conditions etc.) to the batching process.

**User entry** Positive integer

### Batch operation

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Batch operation

**Description** Use this function to enter the batch operation: control recipe operation number to identify the active control recipe operation.

**User entry** 0 to 65 535

**Factory setting** 0

### Batch phase

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Batch phase

**Description** Use this function to enter the batch phase: control recipe phase number to identify the active control recipe operation.

**User entry** 0 to 65 535

**Factory setting** 0

### Batch Recipe Unit Procedure

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Batch Recipe

**Description** Use this function to enter the batch recipe unit procedure (RUP): identification of the active control recipe unit procedure or the associated unit (e.g. inductor, centrifuge, drying agent).

**User entry** 0 to 65 535

**Factory setting** 0

**Additional information** *Description*

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

## PV scale lower range

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → PVscale lo range

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

**User entry** Signed floating-point number

**Factory setting** 0

## PV scale upper range

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → PVscale up range

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

**User entry** Signed floating-point number

**Factory setting** 100.0

## Out scale lower range

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Out scale low

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

**User entry** Signed floating-point number

**Factory setting** 0

## Out scale upper range

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Out scale up

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

**User entry** Signed floating-point number

**Factory setting** 100.0

## Lin type

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Lin type

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

**Selection** Off

**Factory setting** Off

## Out unit

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Out unit

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

**User entry** 0 to 65 535

**Factory setting** 1 997

## Out decimal point

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Out dec_ point

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

**User entry** 0 to 7

**Factory setting** 0

## Alarm hysteresis

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Alarm hysteresis

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

**User entry** Signed floating-point number

**Factory setting** 0

## Hi Hi Lim

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Hi Hi Lim

**Description** Use this function to enter the value for the upper alarm limit (**Hi Hi alarm value** parameter (→ 93)).

**User entry** Signed floating-point number

**Factory setting** Positive floating-point number

**Additional information**

*Description*

If the output value Out value (→ 85) exceeds this limit value, the **Hi Hi alarm state** parameter (→ 94) is output.

*User entry*

The value is entered in the defined units (**Out unit** parameter (→ 91)) and must be in the range defined in the **Out scale lower range** parameter (→ 90) and **Out scale upper range** parameter (→ 90).

## Hi Lim

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Hi Lim

**Description** Use this function to enter the value for the upper warning limit (**Hi alarm value** parameter (→ 94)).

**User entry** Signed floating-point number

**Factory setting** Positive floating-point number

**Additional information**

*Description*

If the output value Out value (→ 85) exceeds this limit value, the **Hi alarm state** parameter (→ 94) is output.

*User entry*

The value is entered in the defined units (**Out unit** parameter (→ 91)) and must be in the range defined in the **Out scale lower range** parameter (→ 90) and **Out scale upper range** parameter (→ 90).

## Lo Lim

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Lo Lim

**Description** Use this function to enter the value for the lower warning limit (**Lo alarm value** parameter (→ 94)).

**User entry** Signed floating-point number

**Factory setting** Negative floating-point number

**Additional information**

*Description*

If the output value Out value (→ 85) exceeds this limit value, the **Lo alarm state** parameter (→ 95) is output.

*User entry*

The value is entered in the defined units (**Out unit** parameter (→ 91)) and must be in the range defined in the **Out scale lower range** parameter (→ 90) and **Out scale upper range** parameter (→ 90).

## Lo Lo Lim

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Lo Lo Lim

**Description** Use this function to enter the value for the lower alarm limit (**Lo Lo alarm value** parameter (→ 95)).

**User entry** Signed floating-point number

**Factory setting** Negative floating-point number

**Additional information**

*Description*

If the output value Out value (→ 85) exceeds this limit value, the **Lo Lo alarm state** parameter (→ 95) is output.

*User entry*

The value is entered in the defined units (**Out unit** parameter (→ 91)) and must be in the range defined in the **Out scale lower range** parameter (→ 90) and **Out scale upper range** parameter (→ 90).

## Hi Hi alarm value

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → HiHi alarm value

**Description** Displays the alarm value for the upper alarm limit value (**Hi Hi Lim** parameter (→ 92)).

**User interface** Signed floating-point number

### Hi Hi alarm state

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → HiHi alarm state

**Description** Displays the status for the upper alarm limit value (**Hi Hi Lim** parameter (→ 92)).

**User interface**
- No alarm
- Alarm state HiHi limit

**Additional information** *User interface*

The display contains information such as the time of the alarm (date and time) and the value that triggered the alarm.

### Hi alarm value

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Hi alarm value

**Description** Displays the alarm value for the upper warning limit value (**Hi Lim** parameter (→ 92)).

**User interface** Signed floating-point number

### Hi alarm state

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Hi alarm state

**Description** Displays the status for the upper warning limit value (**Hi Lim** parameter (→ 92)).

**User interface**
- No warning
- Alarm state Hi limit

**Additional information** *User interface*

The display contains information such as the time of the warning (date and time) and the value that triggered the alarm.

### Lo alarm value

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Lo alarm value

**Description** Displays the alarm value for the lower warning limit value (**Lo Lim** parameter (→ 93)).

**User interface** Signed floating-point number

### Lo alarm state

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Lo alarm state

**Description** Displays the status for the lower warning limit value (**Lo Lim** parameter (→ 93)).

**User interface**
- No warning
- Alarm state Lo limit

**Additional information** *User interface*

The display contains information such as the time of the warning (date and time) and the value that triggered the alarm.

### Lo Lo alarm value

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → LoLo alarm value

**Description** Displays the alarm value for the lower alarm limit value (**Lo Lo Lim** parameter (→ 93)).

**User interface** Signed floating-point number

### Lo Lo alarm state

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → LoLo alarm state

**Description** Displays the status for the lower alarm limit value (**Lo Lo Lim** parameter (→ 93)).

**User interface**
- No alarm
- Alarm state LoLo limit

**Additional information** *User interface*

The display contains information such as the time of the alarm (date and time) and the value that triggered the alarm.

### Simulate enabled

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Simulate enabled

**Description** Use this function to enable or disable block simulation.

**Selection**
- Disable
- Enable

**Factory setting** Disable

**Additional information** *Description*

The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated discrete I/O channel during operation.

## Simulate value

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Simulate value

**Description** Use this function to enter a simulation value for the block.

**User entry** Signed floating-point number

**Factory setting** 0

**Additional information** *Description*

The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated value during operation.

## Simulate status

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Simulate status

**Description** Use this function to enter a simulation status for the block.

**User entry** 0 to 255

**Factory setting** 0

**Additional information** *Description*

The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated status during operation.

## Out unit text

**Navigation** Expert → Analog inputs → Analog input 1 to 4 → Out unit text

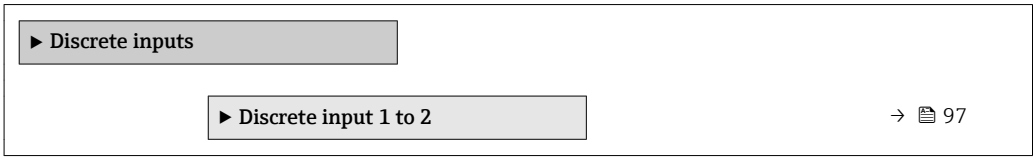
**Description** Use this function to enter the out unit text: if a specific out unit does not appear in the code list, the user can enter the specific text. The unit code is then equivalent to the definition provided here.

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

**Factory setting** NoUnit

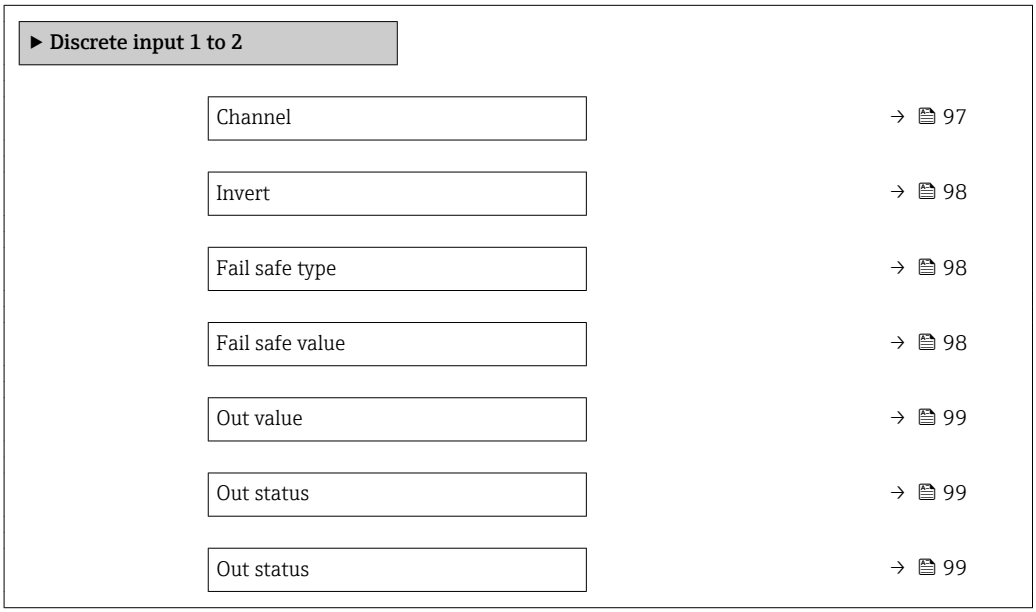
## 3.5 "Discrete inputs" submenu

*Navigation* Expert → Discrete inputs




### 3.5.1 "Discrete input 1 to 2" submenu

*Navigation* Expert → Discrete inputs → Discrete input 1 to 2




**Channel**

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Channel

**Description** Use this function to assign a measured variable to the particular function block.

**Selection**
- Empty pipe detection
- Low flow cut off
- Verification status *

**Factory setting** Empty pipe detection

* Visibility depends on order options or device settings

### Invert

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Invert

**Description** Use this function to invert the input signal.

**Selection**
- Off
- On

**Factory setting** Off

### Fail safe type

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Fail safe type

**Description** Use this function to select the failure mode.

**Selection**
- Fail safe value
- Fallback value
- Off

**Factory setting** Off

**Additional information** *Selection*

If an input or simulation value has the status BAD, the function block uses this predefined failure value:
- Fail safe value
  A substitute value is used. This is specified in the **Fail safe value** parameter (→ 98).
- Fallback value
  If the value was good at one point, then this last valid value is used.
- Off
  The system continues to use the bad value.

### Fail safe value

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Fail safe value

**Prerequisite** In **Fail safe type** parameter (→ 98), the **Fail safe value** option is selected.

**Description** Use this function to enter a failure value. The value entered is displayed as the output value (**Out value** parameter (→ 99)) in the event of an error.

**User entry** 0 to 255

**Factory setting** 0

### Out value

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Out value

**Prerequisite** In **Target mode** parameter (→ 100), the **Auto** option is selected.

**Description** Displays the analog value which is calculated when the function is executed.

**User interface** 0 to 255

### Out status

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Out status

**Description** Displays the current output status (Good, Bad, Uncertain).

**User interface**
- Good
- Uncertain
- Bad

### Out status

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Out status

**Prerequisite** In **Target mode** parameter (→ 100), the **Auto** option is selected.

**Description** Displays the current output status (hex value).

**User interface** 0 to 0xFF

### Tag description

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Tag description

**Description** Use this function to enter a string to identify the block.

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

### Static revision

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Static revision

**Description** Displays the event counter: every write access to a static block parameter is counted.

**User interface** 0 to FFFF

**Additional information** *Description*

Static parameters are parameters that are not changed by the process.

### Strategy

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Strategy

**Description** Use this function to enter the strategy: makes it possible to group blocks by entering identical numbers.

**User entry** 0 to FFFF

**Factory setting** 0

### Alert key

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Alert key

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

**User entry** 0 to 0xFF

**Factory setting** 0

### Target mode

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Target mode

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

**User interface**

- Auto
- Man
- Out of service

### Mode block actual

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Mode block act

**Description** Displays the Mode block actual: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block actual shows the actual mode in which the function block is currently operating. A comparison of the Mode block actual with the Target mode indicates whether it was possible to reach the Target mode (→ 100).

**User interface**
- Auto
- Man
- Out of service

**Additional information** *Description*

A comparison of the current mode with the target mode (**Target mode** parameter (→ 100)) indicates whether it was possible to reach the target mode.

### Mode block permitted

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Mode block perm

**Description** Displays the Mode block permitted: This defines which modes of operation in the Target mode (→ 100) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

**User interface** 0 to 255

### Mode block normal

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Mode blk norm

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

**User interface**
- Auto
- Man
- Out of service

### Alarm summary

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Alarm summary

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

**User interface**
- Discrete alarm
- Alarm state HiHi limit
- Alarm state Hi limit
- Alarm state LoLo limit
- Alarm state Lo limit
- Update Event

**Additional information** *Description*

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

## Batch ID

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Batch ID

**Description** Use this function to enter the batch ID: identification of a specific batch to make it possible to assign device-specific information (e.g. errors, alarm conditions etc.) to the batching process.

**User entry** Positive integer

## Batch operation

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Batch operation

**Description** Use this function to enter the batch operation: control recipe operation number to identify the active control recipe operation.

**User entry** 0 to 65 535

**Factory setting** 0

## Batch phase

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Batch phase

**Description** Use this function to enter the batch phase: control recipe phase number to identify the active control recipe operation.

**User entry** 0 to 65 535

**Factory setting** 0

## Batch Recipe Unit Procedure

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Batch Recipe

**Description** Use this function to enter the batch recipe unit procedure (RUP): identification of the active control recipe unit procedure or the associated unit (e.g. inductor, centrifuge, drying agent).

**User entry** 0 to 65 535

**Factory setting** 0

**Additional information** *Description*

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

## Simulate enabled

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Simulate enabled

**Description** Use this function to enable or disable block simulation.

**Selection**
- Disable
- Enable

**Factory setting** Disable

**Additional information** *Description*

The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated discrete I/O channel during operation.

## Simulate status

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Simulate status

**Description** Use this function to enter a simulation status for the block.

**User entry** 0 to 255

**Factory setting** 0

**Additional information** *Description*

The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated status during operation.

| Simulate value | |
|---|---|

**Navigation** Expert → Discrete inputs → Discrete input 1 to 2 → Simulate value

**Description** Use this function to enter a simulation value for the block.

**User entry** 0 to 255

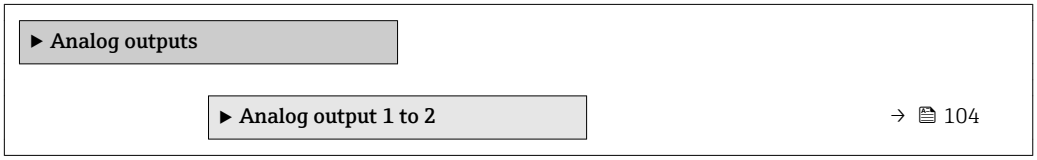
**Factory setting** 0

**Additional information** *Description*

The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated value during operation.

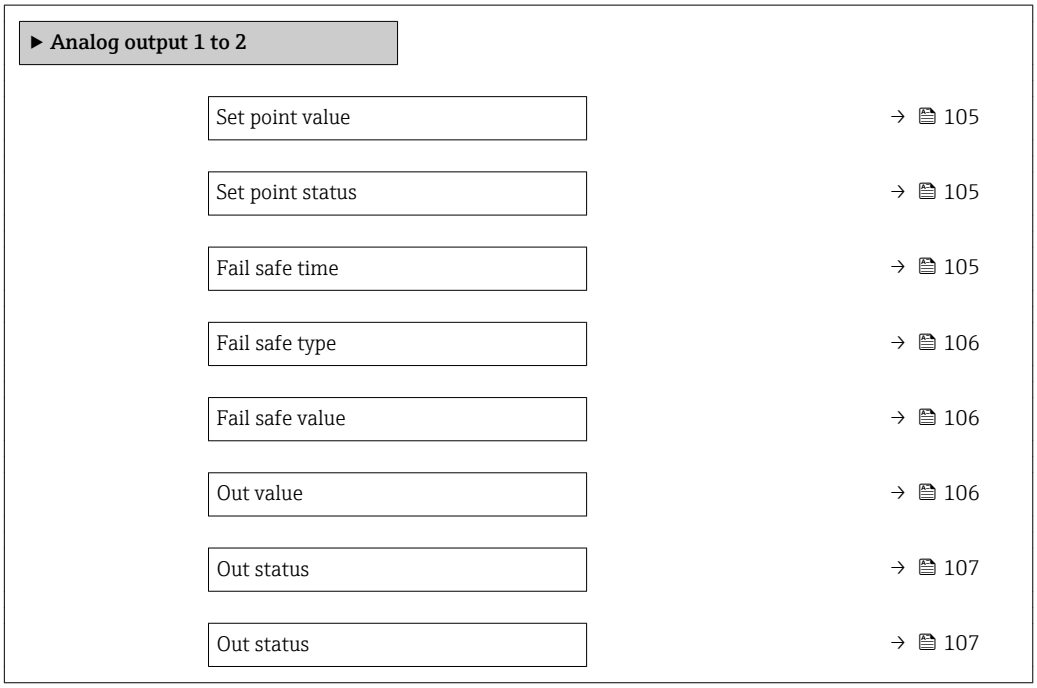
## 3.6 "Analog outputs" submenu

*Navigation* Expert → Analog outputs




### 3.6.1 "Analog output 1 to 2" submenu

*Navigation* Expert → Analog outputs → Analog output 1 to 2



## Set point value

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Set point val

**Description** Use this function to enter an analog set point.

**User entry** Signed floating-point number

**Factory setting** 0

## Set point status

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Set point status

**Description** Use this function to enter a status for the analog set point.

**User entry** 0 to 255

**Factory setting** 0

## Fail safe time

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Fail safe time

**Description** Use this function to enter a time span within which the criteria for an error must be met continuously before an error message or notice message is generated.

**User entry** 0 to 999.0

**Factory setting** 0

**Additional information** *User entry*

**NOTE!**

**If this parameter is used, error messages and notice messages are delayed by the set time before being relayed to the higher-level controller (DCS, etc.).**

▸ Check in advance to ensure that the safety-specific requirements of the process would permit this.

▸ If the error and notice messages may not be suppressed, a value of 0 seconds must be configured here.

### Fail safe type

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Fail safe type

**Description** Use this function to select the failure mode.

**Selection**
- Fail safe value
- Fallback value
- Off

**Factory setting** Fallback value

**Additional information** *Selection*

If an input or simulation value has the status BAD, the function block uses this predefined failure value:
- Fail safe value
  A substitute value is used. This is specified in the **Fail safe value** parameter (→ 106).
- Fallback value
  If the value was good at one point, then this last valid value is used.
- Off
  The system continues to use the bad value.

### Fail safe value

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Fail safe value

**Prerequisite** In **Fail safe type** parameter (→ 106), the **Fallback value** option is selected.

**Description** Use this function to enter a failure value. The value entered is displayed as the output value (**Out value** parameter (→ 106)) in the event of an error.

**User entry** Signed floating-point number

**Factory setting** 0

### Out value

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Out value

**Prerequisite** In **Target mode** parameter (→ 108), the **Auto** option is selected.

**Description** Displays the analog value which is calculated when the function is executed.

**User interface** Signed floating-point number

### Out status

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Out status

**Description** Displays the current output status (Good, Bad, Uncertain).

**User interface**
- Good
- Uncertain
- Bad

### Out status

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Out status

**Prerequisite** In **Target mode** parameter (→ 108), the **Auto** option is selected.

**Description** Displays the current output status (hex value).

**User interface** 0 to 0xFF

### Tag description

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Tag description

**Description** Use this function to enter a string to identify the block.

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

### Static revision

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Static revision

**Description** Displays the event counter: every write access to a static block parameter is counted.

**User interface** 0 to FFFF

**Additional information** *Description*

Static parameters are parameters that are not changed by the process.

### Strategy

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Strategy

**Description** Use this function to enter the strategy: makes it possible to group blocks by entering identical numbers.

**User entry** 0 to FFFF

**Factory setting** 0

### Alert key

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Alert key

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

**User entry** 0 to 0xFF

**Factory setting** 0

### Target mode

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Target mode

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

**User interface**
- Auto
- Local override
- Man
- Out of service
- Remote Cascaded

### Mode block actual

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Mode block act

**Description** Displays the Mode block actual: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block actual shows the actual mode in which the function block is currently operating. A comparison of the Mode block actual with the Target mode indicates whether it was possible to reach the Target mode (→ 108).

**User interface**
- Auto
- Local override
- Man
- Out of service
- Remote Cascaded

**Additional information** *Description*

A comparison of the current mode with the target mode (**Target mode** parameter (→ 108)) indicates whether it was possible to reach the target mode.

### Mode block permitted

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Mode block perm

**Description** Displays the Mode block permitted: This defines which modes of operation in the Target mode (→ 108) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

**User interface** 0 to 255

### Mode block normal

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Mode blk norm

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

**User interface**
- Auto
- Local override
- Man
- Out of service
- Remote Cascaded

### Alarm summary

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Alarm summary

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

**User interface**
- Discrete alarm
- Alarm state HiHi limit
- Alarm state Hi limit
- Alarm state LoLo limit
- Alarm state Lo limit
- Update Event

**Additional information** *Description*

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

## Batch ID

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Batch ID

**Description** Use this function to enter the batch ID: identification of a specific batch to make it possible to assign device-specific information (e.g. errors, alarm conditions etc.) to the batching process.

**User entry** Positive integer

## Batch operation

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Batch operation

**Description** Use this function to enter the batch operation: control recipe operation number to identify the active control recipe operation.

**User entry** 0 to 65 535

**Factory setting** 0

## Batch phase

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Batch phase

**Description** Use this function to enter the batch phase: control recipe phase number to identify the active control recipe operation.

**User entry** 0 to 65 535

**Factory setting** 0

## Batch Recipe Unit Procedure

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Batch Recipe

**Description** Use this function to enter the batch recipe unit procedure (RUP): identification of the active control recipe unit procedure or the associated unit (e.g. inductor, centrifuge, drying agent).

**User entry** 0 to 65 535

**Factory setting** 0

**Additional information** *Description*

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

## PV scale lower range

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → PVscale lo range

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

**User entry** Signed floating-point number

**Factory setting** 0

## PV scale upper range

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → PVscale up range

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

**User entry** Signed floating-point number

**Factory setting** 100.0

## Readback value

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Readback value

**Description** Displays the readback value. The readback value indicates the current position of the control element within the travel range (between the open and close position) in PV scale units.

**User interface** Signed floating-point number

### Readback status

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Readback status

**Description** Displays the readback status. The readback status contains the status information of the slave.

**User interface** 0 to 255

### RCAS in value

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → RCAS in value

**Description** Use this function to enter the RCAS (Remote Cascade) in value. The block set point is set by a control application via the remote cascade **RCAS in value** parameter (→ 112). The normal algorithm calculates the output value of the block on the basis of this set point.

**User entry** Signed floating-point number

**Factory setting** 0

### RCAS in status

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → RCAS in status

**Description** Use this function to enter the RCAS (Remote Cascade) in status. Defines the status for the RCAS in value (→ 112).

**User entry** 0 to 255

**Factory setting** 0

### Input channel

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Input channel

**Description** Use this function to select the input channel. The number of logical hardware channels from the converter that is connected to this I/O block.

**Selection** None

**Factory setting** None

### Output channel

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Output channel

**Description** Use this function to select the output channel. The number of logical hardware channels to the converter that is connected to this I/O block.

**Selection**
- External temperature
- External density

**Factory setting** External temperature

### RCAS out value

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → RCAS out value

**Description** Displays the RCAS out value. Displays the set point of the block which is made available to the higher-level host for monitoring/back calculation and which makes it possible to take action under certain conditions or in a different mode.

**User interface** Signed floating-point number

### RCAS out status

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → RCAS out status

**Description** Displays the RCAS out status. Displays the status of the set point.

**User interface** 0 to 0xFF

### Position value

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Pos value

**Description** Displays the current value of the positioner.

**User interface** 0 to 255

### Position status

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Position status

**Description** Displays the current status of the positioner.

**User interface** 0 to 255

### Setpoint deviation

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Setp. deviation

**Description** Displays the deviation between the set point (**Set point value** parameter (→ 105)) and the actual value (**Readback value** parameter (→ 111)).

**User interface** Signed floating-point number

### Simulate enabled

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Simulate enabled

**Description** Use this function to enable or disable block simulation.

**Selection**
- Disable
- Enable

**Factory setting** Disable

**Additional information** *Description*

The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated discrete I/O channel during operation.

### Simulate value

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Simulate value

**Description** Use this function to enter a simulation value.

**User entry** Signed floating-point number

**Factory setting** 0

**Additional information** *Description*

The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated value during operation.

## Simulate status

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Simulate status

**Description** Use this function to enter a simulation status for the block.

**User entry** 0 to 255

**Factory setting** 0

**Additional information** *Description*

The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated status during operation.

## Increase close

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Increase close

**Description** Use this function to enter the effective direction of the positioner in automatic mode.

**User entry** 0 to 255

**Factory setting** 0

## Out scale upper range

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Out scale up

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

**User entry** Signed floating-point number

**Factory setting** 100.0

**Out scale lower range**

**Navigation** Expert → Analog outputs → Analog output 1 to 2 → Out scale low

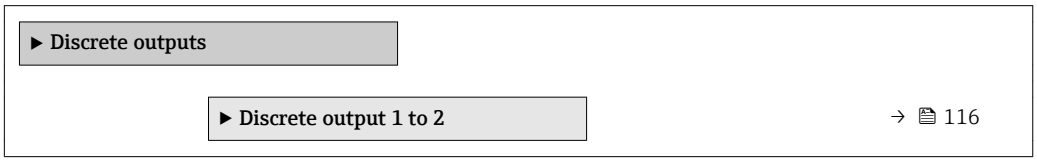
**Description** Use this function to enter the lower value range for the output value in system units.

**User entry** Signed floating-point number

**Factory setting** 0

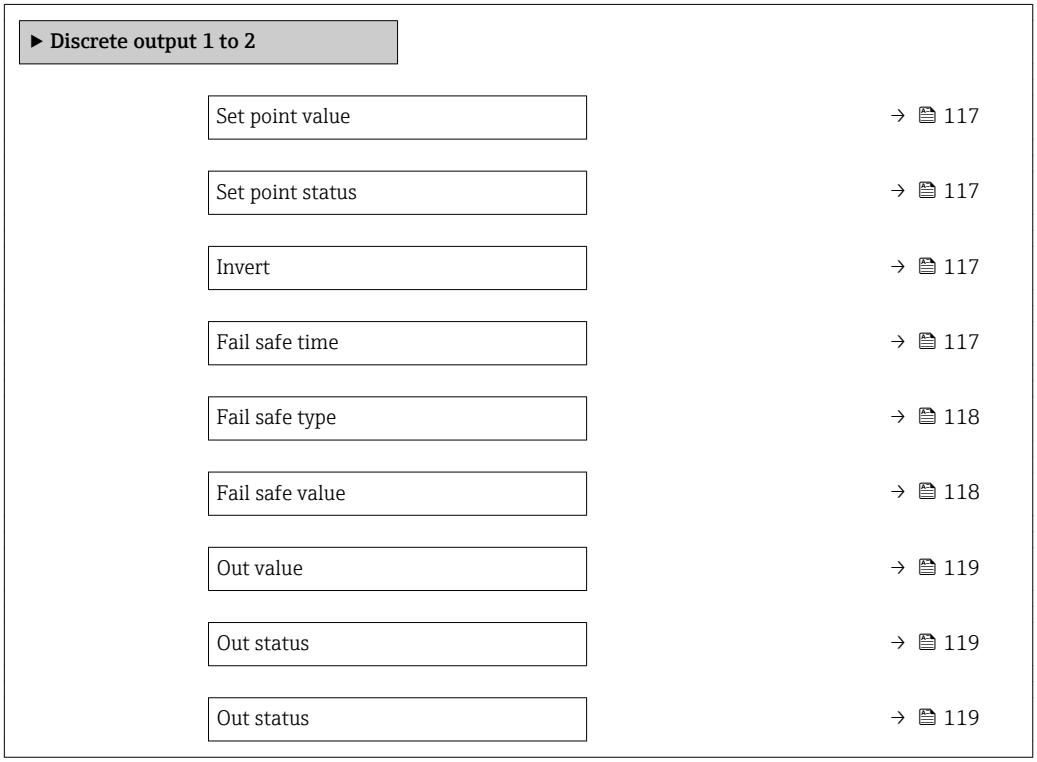
## 3.7 "Discrete outputs" submenu

*Navigation* Expert → Discrete outputs




### 3.7.1 "Discrete output 1 to 2" submenu

*Navigation* Expert → Discrete outputs → Discr. out. 1 to 2



### Set point value

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Set point val

**Description** Use this function to enter an analog set point.

**User entry** 0 to 255

**Factory setting** 0

### Set point status

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Set point status

**Description** Use this function to enter a status for the analog set point.

**User entry** 0 to 255

**Factory setting** 0

### Invert

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Invert

**Description** Use this function to switch inversion on and off. Specifies whether the set point should be inverted before the value is set as the output value or the RCAS value (in the automatic mode).

**Selection**
- Off
- On

**Factory setting** Off

### Fail safe time

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Fail safe time

**Description** Use this function to enter a time span within which the criteria for an error must be met continuously before an error message or notice message is generated.

**User entry** Signed floating-point number

**Factory setting** 0

**Additional information** *User entry*

**NOTE!**

**If this parameter is used, error messages and notice messages are delayed by the set time before being relayed to the higher-level controller (DCS, etc.).**

▸ Check in advance to ensure that the safety-specific requirements of the process would permit this.

▸ If the error and notice messages may not be suppressed, a value of 0 seconds must be configured here.

## Fail safe type

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Fail safe type

**Description** Use this function to select the failure mode.

**Selection**
- Fail safe value
- Fallback value
- Off

**Factory setting** Fallback value

**Additional information** *Selection*

If an input or simulation value has the status BAD, the function block uses this predefined failure value:
- Fail safe value
  A substitute value is used. This is specified in the **Fail safe value** parameter (→ 118).
- Fallback value
  If the value was good at one point, then this last valid value is used.
- Off
  The system continues to use the bad value.

## Fail safe value

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Fail safe value

**Prerequisite** In **Fail safe type** parameter (→ 118), the **Fail safe value** option is selected.

**Description** Use this function to enter a failure value. The value entered is displayed as the output value (**Out value** parameter (→ 119)) in the event of an error.

**User entry** 0 to 255

**Factory setting** 0

### Out value

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Out value

**Prerequisite** In **Target mode** parameter (→ 120), the **Auto** option is selected.

**Description** Displays the analog value which is calculated when the function is executed.

**User interface** 0 to 255

### Out status

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Out status

**Description** Displays the current output status (Good, Bad, Uncertain).

**User interface**
- Good
- Uncertain
- Bad

### Out status

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Out status

**Prerequisite** In **Target mode** parameter (→ 120), the **Auto** option is selected.

**Description** Displays the current output status (hex value).

**User interface** 0 to 0xFF

### Tag description

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Tag description

**Description** Use this function to enter a string to identify the block.

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

## Static revision

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Static revision

**Description** Displays the event counter: every write access to a static block parameter is counted.

**User interface** 0 to FFFF

**Additional information** *Description*

Static parameters are parameters that are not changed by the process.

## Strategy

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Strategy

**Description** Use this function to enter the strategy: makes it possible to group blocks by entering identical numbers.

**User entry** 0 to FFFF

**Factory setting** 0

## Alert key

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Alert key

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

**User entry** 0 to 0xFF

**Factory setting** 0

## Target mode

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Target mode

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

**User interface**
- Local override
- Remote Cascaded
- Man
- Out of service
- Auto

## Mode block actual

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Mode block act

**Description** Displays the Mode block actual: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block actual shows the actual mode in which the function block is currently operating. A comparison of the Mode block actual with the Target mode indicates whether it was possible to reach the Target mode (→ 120).

**User interface**
- Local override
- Remote Cascaded
- Man
- Out of service
- Auto

**Additional information** *Description*

A comparison of the current mode with the target mode (**Target mode** parameter (→ 120)) indicates whether it was possible to reach the target mode.

## Mode block permitted

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Mode block perm

**Description** Displays the Mode block permitted: This defines which modes of operation in the Target mode (→ 120) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

**User interface** 0 to 255

## Mode block normal

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Mode blk norm

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

**User interface**
- Local override
- Remote Cascaded
- Man
- Out of service
- Auto

## Alarm summary

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Alarm summary

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

**User interface**
- Discrete alarm
- Alarm state HiHi limit
- Alarm state Hi limit
- Alarm state LoLo limit
- Alarm state Lo limit
- Update Event

**Additional information** *Description*

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

## Batch ID

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Batch ID

**Description** Use this function to enter the batch ID: identification of a specific batch to make it possible to assign device-specific information (e.g. errors, alarm conditions etc.) to the batching process.

**User entry** Positive integer

## Batch operation

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Batch operation

**Description** Use this function to enter the batch operation: control recipe operation number to identify the active control recipe operation.

**User entry** 0 to 65 535

**Factory setting** 0

### Batch phase

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Batch phase

**Description** Use this function to enter the batch phase: control recipe phase number to identify the active control recipe operation.

**User entry** 0 to 65 535

**Factory setting** 0

### Batch Recipe Unit Procedure

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Batch Recipe

**Description** Use this function to enter the batch recipe unit procedure (RUP): identification of the active control recipe unit procedure or the associated unit (e.g. inductor, centrifuge, drying agent).

**User entry** 0 to 65 535

**Factory setting** 0

**Additional information** *Description*

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

### Readback value

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Readback value

**Description** Displays the readback value. The readback value indicates the current position of the control element and the element's sensors.

**User interface** 0 to 255

### Readback status

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Readback status

**Description** Displays the readback status. Displays the status of the readback value.

**User interface** 0 to 255

### RCAS in value

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → RCAS in value

**Description** Use this function to enter the RCAS (Remote Cascade) in value. The block set point is set by a control application via the remote cascade **RCAS in value** parameter (→ 124). The normal algorithm calculates the output value of the block on the basis of this set point.

**User entry** 0 to 255

**Factory setting** 0

### RCAS in status

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → RCAS in status

**Description** Use this function to enter the RCAS (Remote Cascade) in status. Defines the status for the RCAS in value (→ 124).

**User entry** 0 to 255

**Factory setting** 0

### Input channel

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Input channel

**Description** Use this function to select the input channel. The number of logical hardware channels from the converter that is connected to this I/O block.

**Selection** None

**Factory setting** None

### Output channel

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Output channel

**Description** Use this function to select the output channel. The number of logical hardware channels to the converter that is connected to this I/O block.

**Selection**
- Flow override
- Start verification *

* Visibility depends on order options or device settings

**Factory setting** Flow override

### RCAS out value

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → RCAS out value

**Description** Displays the RCAS out value. Displays the set point of the block which is made available to the higher-level host for monitoring/back calculation and which makes it possible to take action under certain conditions or in a different mode.

**User interface** 0 to 255

### RCAS out status

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → RCAS out status

**Description** Displays the RCAS out status. Displays the status of the set point.

**User interface** 0 to 255

### Simulate enabled

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Simulate enabled

**Description** Use this function to enable or disable block simulation.

**Selection**
- Disable
- Enable

**Factory setting** Disable

**Additional information** *Description*

The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated discrete I/O channel during operation.

### Simulate value

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Simulate value

**Description** Use this function to enter a simulation value.

**User entry** 0 to 255

**Factory setting** 0

**Additional information** *Description*

The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated value during operation.

**Simulate status**

**Navigation** Expert → Discrete outputs → Discr. out. 1 to 2 → Simulate status

**Description** Use this function to enter a simulation status for the block.

**User entry** 0 to 255

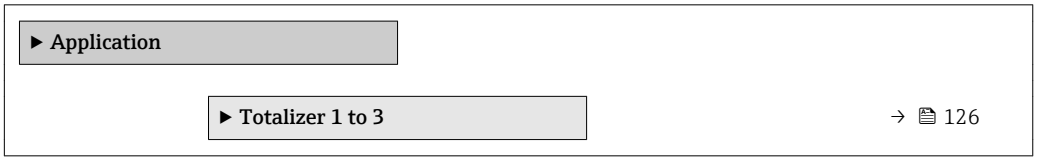
**Factory setting** 0

**Additional information** *Description*

The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated status during operation.

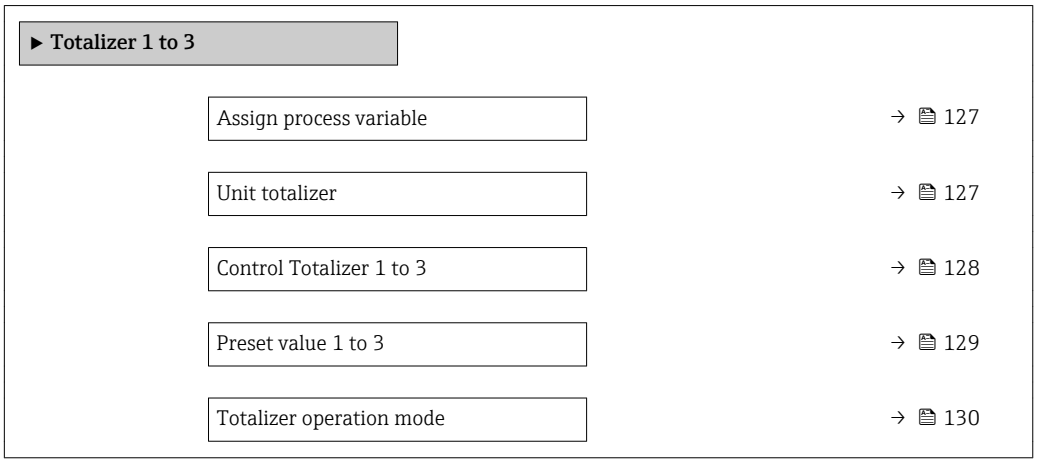
## 3.8 "Application" submenu

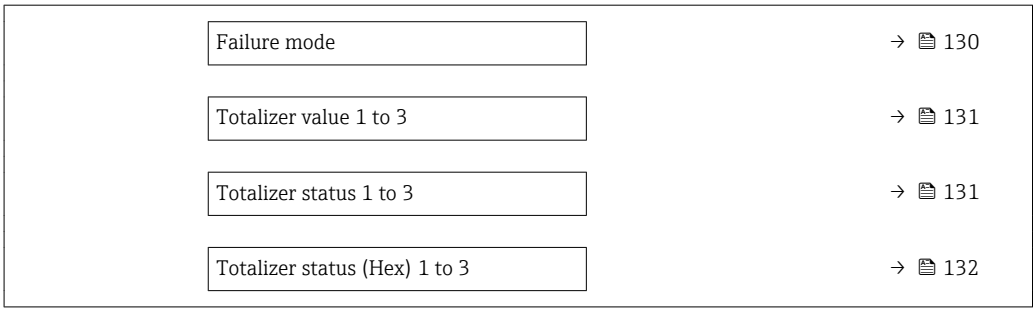
*Navigation* Expert → Application




### 3.8.1 "Totalizer 1 to 3" submenu

*Navigation* Expert → Application → Totalizer 1 to 3






### Assign process variable

**Navigation** Expert → Application → Totalizer 1 to 3 → Assign variable

**Description** Use this function to select a process variable for the Totalizer 1 to 3.

**Selection**
- Volume flow
- Mass flow
- Corrected volume flow

**Factory setting** Volume flow

**Additional information** *Description*

If the option selected is changed, the device resets the totalizer to 0.

### Unit totalizer

**Navigation** Expert → Application → Totalizer 1 to 3 → Unit totalizer

**Prerequisite** One of the following options is selected in the **Assign process variable** parameter (→ 127):
- Volume flow
- Mass flow
- Corrected volume flow

**Description** Use this function to select the process variable of a totalizer.

The unit is selected separately for each totalizer. It is independent of the selection made in the **System units** submenu (→ 38).

**Selection**

*SI units*
- g
- kg
- t

*US units*
- oz
- lb
- STon

or

*SI units*
- $cm^3$
- $dm^3$
- $m^3$
- ml
- l
- hl
- Ml Mega

*US units*
- af
- $ft^3$
- fl oz (us)
- gal (us)
- kgal (us)
- Mgal (us)
- bbl (us;liq.)
- bbl (us;beer)
- bbl (us;oil)
- bbl (us;tank)

*Imperial units*
- gal (imp)
- Mgal (imp)
- bbl (imp;beer)
- bbl (imp;oil)

or

*SI units*
- Nl
- $Nm^3$
- Sl
- $Sm^3$

*US units*
- $Sft^3$
- Sgal (us)
- Sbbl (us;liq.)

*Imperial units*
Sgal (imp)

**Factory setting**

Country-specific:
- $m^3$
- $ft^3$

**Additional information**

*Selection*

The selection is independent of the process variable selected in the **Assign process variable** parameter (→ 127).

*Dependency*

The following parameters depend on the option selected:
- **Alarm hysteresis** parameter (→ 136)
- **Hi Hi Lim** parameter (→ 136)
- **Hi Lim** parameter (→ 137)
- **Lo Lim** parameter (→ 137)
- **Lo Lo Lim** parameter (→ 138)
- **Totalizer value** parameter (→ 37)
- **Preset value** parameter (→ 129)

## Control Totalizer 1 to 3

**Navigation**

Expert → Application → Totalizer 1 to 3 → Control Tot. 1 to 3

**Prerequisite**

In the **Assign process variable** parameter (→ 127), one of the following options is selected:
- Volume flow
- Mass flow
- Corrected volume flow

**Description**

Use this function to select the control of totalizer value 1-3.

**Selection**
- Totalize
- Reset + hold
- Preset + hold

**Factory setting**
Totalize

**Additional information**
*Selection*
- Totalize
  The totalizer is started or continues totalizing with the current counter reading.
- Reset + hold
  The totaling process is stopped and the totalizer is reset to 0.
- Preset + hold
  The totaling process is stopped and the totalizer is set to its defined start value from the **Preset value** parameter.

## Preset value 1 to 3

**Navigation**
Expert → Application → Totalizer 1 to 3 → Preset value 1 to 3

**Prerequisite**
One of the following options is selected in the **Assign process variable** parameter (→ 127):
- Volume flow
- Mass flow
- Corrected volume flow

**Description**
Use this function to enter an initial value for the specific totalizer.

**User entry**
Signed floating-point number

**Factory setting**
Country-specific:
- $m^3$
- $ft^3$

**Additional information**
*User entry*

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 127).

*Example*

This configuration is suitable for applications such as iterative filling processes with a fixed batch quantity.

## Totalizer operation mode

**Navigation** Expert → Application → Totalizer 1 to 3 → Operation mode

**Prerequisite** In the **Assign process variable** parameter (→ 127), one of the following options is selected:
- Volume flow
- Mass flow
- Corrected volume flow

**Description** Use this function to select how the totalizer summates the flow.

**Selection**
- Net flow total
- Forward flow total
- Reverse flow total
- Last valid value

**Factory setting** Net flow total

**Additional information** *Selection*
- Net flow total
  Positive and negative flow values are totalized and balanced against one another. Net flow is registered in the flow direction.
- Forward flow total
  Only the flow in the forward flow direction is totalized.
- Reverse flow total
  Only the flow against the forward flow direction is totalized (= reverse flow total).
- Last valid value
  The value is frozen. Totaling is stopped.

## Failure mode

**Navigation** Expert → Application → Totalizer 1 to 3 → Failure mode

**Prerequisite** One of the following options is selected in the **Assign process variable** parameter (→ 127):
- Volume flow
- Mass flow
- Corrected volume flow

**Description** Use this function to select how a totalizer behaves in the event of a device alarm.

**Selection**
- Stop
- Actual value
- Last valid value

**Factory setting** Actual value

**Additional information**

*Description*

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

*Selection*

- Stop
  Totalizing is stopped when a device alarm occurs.
- Actual value
  The totalizer continues to count based on the current measured value; the device alarm is ignored.
- Last valid value
  The totalizer continues to count based on the last valid measured value before the device alarm occurred.

## Totalizer value 1 to 3

**Navigation** Expert → Application → Totalizer 1 to 3 → Totalizer val. 1 to 3

**Prerequisite** In the **Target mode** parameter (→ 133), the **Auto** option is selected.

**Description** Displays the current reading for totalizer 1-3.

**User interface** Signed floating-point number

**Additional information**

*Description*

In the event of an error, the totalizer adopts the mode defined in the **Failure mode** parameter (→ 130).

*User interface*

The value of the process variable totalized since measuring began can be positive or negative. This depends on the settings in the **Totalizer operation mode** parameter (→ 130).

*Dependency*

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 127).

## Totalizer status 1 to 3

**Navigation** Expert → Application → Totalizer 1 to 3 → Tot. status 1 to 3

**Description** Displays the status of the particular totalizer.

**User interface**

- Good
- Uncertain
- Bad

### Totalizer status (Hex) 1 to 3

**Navigation** Expert → Application → Totalizer 1 to 3 → Status (Hex) 1 to 3

**Prerequisite** In **Target mode** parameter (→ 133), the **Auto** option is selected.

**Description** Displays the status value (hex) of the particular totalizer.

**User interface** 0 to 0xFF

### Tag description

**Navigation** Expert → Application → Totalizer 1 to 3 → Tag description

**Description** Use this function to enter a string to identify the block.

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

### Static revision

**Navigation** Expert → Application → Totalizer 1 to 3 → Static revision

**Description** Displays the event counter: every write access to a static block parameter is counted.

**User interface** 0 to FFFF

**Additional information** *Description*

Static parameters are parameters that are not changed by the process.

### Strategy

**Navigation** Expert → Application → Totalizer 1 to 3 → Strategy

**Description** Use this function to enter the strategy: makes it possible to group blocks by entering identical numbers.

**User entry** 0 to FFFF

**Factory setting** 0

### Alert key

**Navigation** Expert → Application → Totalizer 1 to 3 → Alert key

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

**User entry** 0 to 0xFF

**Factory setting** 0

### Target mode

**Navigation** Expert → Application → Totalizer 1 to 3 → Target mode

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

**User interface**
- Auto
- Man
- Out of service

### Mode block actual

**Navigation** Expert → Application → Totalizer 1 to 3 → Mode block act

**Description** Displays the Mode block actual: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block actual shows the actual mode in which the function block is currently operating. A comparison of the Mode block actual with the Target mode indicates whether it was possible to reach the Target mode (→ 133).

**User interface**
- Auto
- Man
- Out of service

**Additional information** *Description*

A comparison of the current mode with the target mode (**Target mode** parameter (→ 133)) indicates whether it was possible to reach the target mode.

### Mode block permitted

**Navigation** Expert → Application → Totalizer 1 to 3 → Mode block perm

**Description** Displays the Mode block permitted: This defines which modes of operation in the Target mode (→ 133) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

**User interface** 0 to 255

### Mode block normal

**Navigation** Expert → Application → Totalizer 1 to 3 → Mode blk norm

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

**User interface**
- Auto
- Man
- Out of service

### Alarm summary

**Navigation** Expert → Application → Totalizer 1 to 3 → Alarm summary

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

**User interface**
- Discrete alarm
- Alarm state HiHi limit
- Alarm state Hi limit
- Alarm state LoLo limit
- Alarm state Lo limit
- Update Event

**Additional information** *Description*

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

### Batch ID

**Navigation** Expert → Application → Totalizer 1 to 3 → Batch ID

**Description** Use this function to enter the batch ID: identification of a specific batch to make it possible to assign device-specific information (e.g. errors, alarm conditions etc.) to the batching process.

**User entry** Positive integer

**Factory setting** 0

### Batch operation

**Navigation** Expert → Application → Totalizer 1 to 3 → Batch operation

**Description** Use this function to enter the batch operation: control recipe operation number to identify the active control recipe operation.

**User entry** 0 to 65 535

**Factory setting** 0

### Batch phase

**Navigation** Expert → Application → Totalizer 1 to 3 → Batch phase

**Description** Use this function to enter the batch phase: control recipe phase number to identify the active control recipe operation.

**User entry** 0 to 65 535

**Factory setting** 0

### Batch Recipe Unit Procedure

**Navigation** Expert → Application → Totalizer 1 to 3 → Batch Recipe

**Description** Use this function to enter the batch recipe unit procedure (RUP): identification of the active control recipe unit procedure or the associated unit (e.g. inductor, centrifuge, drying agent).

**User entry** 0 to 65 535

**Factory setting** 0

**Additional information** *Description*

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

## Alarm hysteresis

**Navigation** Expert → Application → Totalizer 1 to 3 → Alarm hysteresis

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

**User entry** Signed floating-point number

**Factory setting** 0 $m^3$

**Additional information** *User entry*

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 127).

## Hi Hi Lim

**Navigation** Expert → Application → Totalizer 1 to 3 → Hi Hi Lim

**Description** Use this function to enter the value for the upper alarm limit of the totalizer (**Hi Hi alarm value** parameter (→ 138)).

**User entry** Signed floating-point number

**Factory setting** Positive floating-point number

**Additional information** *Description*

If the output value Out value (→ 85) exceeds this limit value, the **Hi Hi alarm state** parameter (→ 138) is output.

*User entry*

The value is entered in the defined units (**Out unit** parameter (→ 91)) and must be in the range defined in the **Out scale lower range** parameter (→ 90) and **Out scale upper range** parameter (→ 90).

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 127).

## Hi Lim

**Navigation** Expert → Application → Totalizer 1 to 3 → Hi Lim

**Description** Use this function to enter the value for the upper warning limit of the totalizer (**Hi alarm value** parameter (→ 139)).

**User entry** Signed floating-point number

**Factory setting** Positive floating-point number

**Additional information**

*Description*

If the output value Out value (→ 85) exceeds this limit value, the **Hi alarm state** parameter (→ 139) is output.

*User entry*

The value is entered in the defined units (**Out unit** parameter (→ 91)) and must be in the range defined in the **Out scale lower range** parameter (→ 90) and **Out scale upper range** parameter (→ 90).

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 127).

## Lo Lim

**Navigation** Expert → Application → Totalizer 1 to 3 → Lo Lim

**Description** Use this function to enter the value for the lower warning limit of the totalizer (**Lo alarm value** parameter (→ 139)).

**User entry** Signed floating-point number

**Factory setting** Negative floating-point number

**Additional information**

*Description*

If the output value Out value (→ 85) exceeds this limit value, the **Lo alarm state** parameter (→ 139) is output.

*User entry*

The value is entered in the defined units (**Out unit** parameter (→ 91)) and must be in the range defined in the **Out scale lower range** parameter (→ 90) and **Out scale upper range** parameter (→ 90).

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 127).

## Lo Lo Lim

**Navigation** Expert → Application → Totalizer 1 to 3 → Lo Lo Lim

**Description** Use this function to enter the value for the lower alarm limit of the totalizer (**Lo Lo alarm value** parameter (→ 140)).

**User entry** Signed floating-point number

**Factory setting** Negative floating-point number

**Additional information** *Description*

If the output value Out value (→ 85) exceeds this limit value, the **Lo Lo alarm state** parameter (→ 140) is output.

*User entry*

The value is entered in the defined units (**Out unit** parameter (→ 91)) and must be in the range defined in the **Out scale lower range** parameter (→ 90) and **Out scale upper range** parameter (→ 90).

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 127).

## Hi Hi alarm value

**Navigation** Expert → Application → Totalizer 1 to 3 → HiHi alarm value

**Description** Displays the alarm value for the upper alarm limit value (**Hi Hi Lim** parameter (→ 136)).

**User interface** Signed floating-point number

## Hi Hi alarm state

**Navigation** Expert → Application → Totalizer 1 to 3 → HiHi alarm state

**Description** Displays the status for the upper alarm limit value (**Hi Hi Lim** parameter (→ 136)).

**User interface**
- No alarm
- Alarm state HiHi limit

**Additional information** *User interface*

The display contains information such as the time of the alarm (date and time) and the value that triggered the alarm.

### Hi alarm value

**Navigation** Expert → Application → Totalizer 1 to 3 → Hi alarm value

**Description** Displays the warning value for the upper warning limit value (**Hi Lim** parameter (→ 137)).

**User interface** Signed floating-point number

### Hi alarm state

**Navigation** Expert → Application → Totalizer 1 to 3 → Hi alarm state

**Description** Displays the status for the upper warning limit value (**Hi Lim** parameter (→ 137)).

**User interface**
- No warning
- Alarm state Hi limit

**Additional information** *User interface*

The display contains information such as the time of the warning (date and time) and the value that triggered the alarm.

### Lo alarm value

**Navigation** Expert → Application → Totalizer 1 to 3 → Lo alarm value

**Description** Displays the warning value for the lower warning limit value (**Lo Lim** parameter (→ 137)).

**User interface** Signed floating-point number

### Lo alarm state

**Navigation** Expert → Application → Totalizer 1 to 3 → Lo alarm state

**Description** Displays the status for the lower warning limit value (**Lo Lim** parameter (→ 137)).

**User interface**
- No warning
- Alarm state Lo limit

**Additional information** *User interface*

The display contains information such as the time of the warning (date and time) and the value that triggered the alarm.

### Lo Lo alarm value

**Navigation** Expert → Application → Totalizer 1 to 3 → LoLo alarm value

**Description** Displays the alarm value for the lower alarm limit value (**Lo Lo Lim** parameter (→ 138)).

**User interface** Signed floating-point number

### Lo Lo alarm state

**Navigation** Expert → Application → Totalizer 1 to 3 → LoLo alarm state

**Description** Displays the status for the lower alarm limit value (**Lo Lo Lim** parameter (→ 138)).

**User interface**
- No alarm
- Alarm state LoLo limit

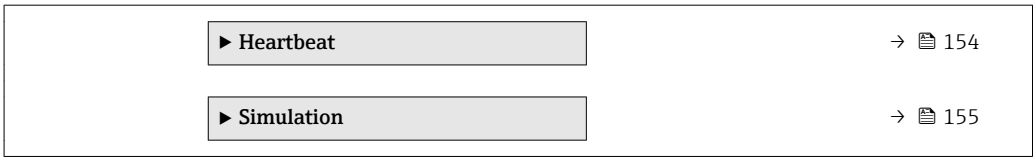
**Additional information** *User interface*

The display contains information such as the time of the alarm (date and time) and the value that triggered the alarm.

## 3.9 "Diagnostics" submenu

*Navigation* Expert → Diagnostics

| | |
|---|---|
| ▶ **Diagnostics** | |
| Actual diagnostics | → 141 |
| Previous diagnostics | → 141 |
| Operating time from restart | → 142 |
| Operating time | → 142 |
| ▶ **Diagnostic list** | → 143 |
| ▶ **Event logbook** | → 147 |
| ▶ **Device information** | → 149 |
| ▶ **Min/max values** | → 152 |




## Actual diagnostics

**Navigation** Expert → Diagnostics → Actual diagnos.

**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 (→ 143).

*Example*

For the display format:
⊗F271 Main electronic failure

## 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 diagnostics** parameter (→ 141).

*Example*

For the display format:
24d12h13m00s

## Previous diagnostics

**Navigation** Expert → Diagnostics → Prev.diagnostics

**Prerequisite** Two diagnostic events have already occurred.

**Description** Displays the diagnostic message that occurred before the current message.

**User interface** Symbol for diagnostic behavior, diagnostic code and short message.

**Additional information** *Example*

For the display format:
⊗F271 Main electronic failure

## Timestamp

**Navigation** Expert → Diagnostics → Timestamp

**Description** Displays the operating time when the last diagnostic message before the current message occurred.

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

**Additional information** *Display*

The diagnostic message can be viewed via the **Previous diagnostics** parameter (→ 141).

*Example*

For the display format:
24d12h13m00s

## Operating time from restart

**Navigation** Expert → Diagnostics → Time fr. restart

**Description** Use this function to display the time the device has been in operation since the last device restart.

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

## Operating time

**Navigation** Expert → Diagnostics → Operating time

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

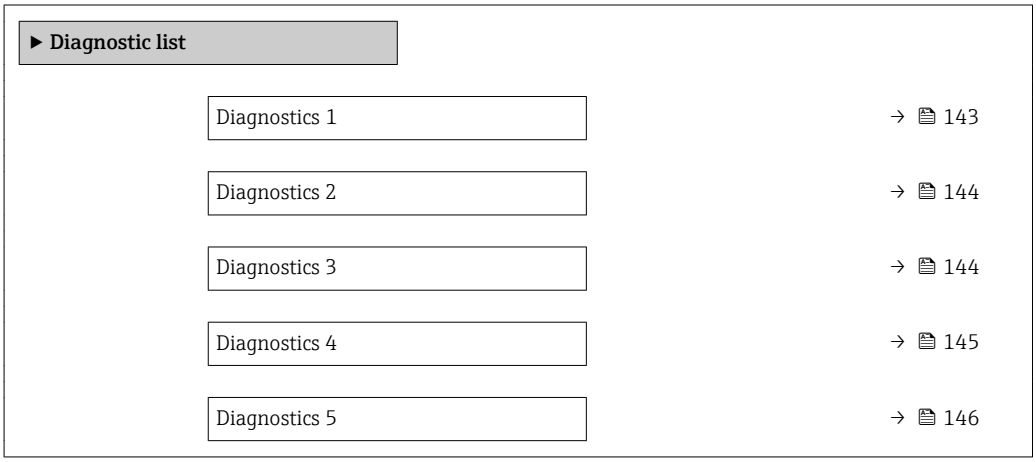
**User interface** Days (d), hours (h), minutes (m) and seconds (s)

**Additional information** *User interface*

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

## 3.9.1 "Diagnostic list" submenu

*Navigation* Expert → Diagnostics → Diagnostic list




### Diagnostics 1

**Navigation** Expert → Diagnostics → Diagnostic list → Diagnostics 1

**Description** Displays the current diagnostics message with the highest priority.

**User interface** Symbol for diagnostic behavior, diagnostic code and short message.

**Additional information** *Examples*

For the display format:
- ⊗F271 Main electronic failure
- ⊗F276 I/O module failure

### 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 (→ 143).

*Example*

For the display format:
24d12h13m00s

## Diagnostics 2

**Navigation** Expert → Diagnostics → Diagnostic list → Diagnostics 2

**Description** Displays the current diagnostics message with the second-highest priority.

**User interface** Symbol for diagnostic behavior, diagnostic code and short message.

**Additional information** *Examples*

For the display format:
- ⊗F271 Main electronic failure
- ⊗F276 I/O module failure

## 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 (→ 144).

*Example*

For the display format:
24d12h13m00s

## Diagnostics 3

**Navigation** Expert → Diagnostics → Diagnostic list → Diagnostics 3

**Description** Displays the current diagnostics message with the third-highest priority.

**User interface** Symbol for diagnostic behavior, diagnostic code and short message.

**Additional information** *Examples*

For the display format:
- ⊗F271 Main electronic failure
- ⊗F276 I/O module failure

### 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 (→ 144).

*Example*

For the display format:
24d12h13m00s

### Diagnostics 4

**Navigation** Expert → Diagnostics → Diagnostic list → Diagnostics 4

**Description** Displays the current diagnostics message with the fourth-highest priority.

**User interface** Symbol for diagnostic behavior, diagnostic code and short message.

**Additional information** *Examples*

For the display format:
- ⊗F271 Main electronic failure
- ⊗F276 I/O module failure

### Timestamp

**Navigation** Expert → Diagnostics → Diagnostic list → Timestamp

**Description** Displays the operating time when the diagnostic message with the fourth-highest priority occurred.

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

**Additional information** *Display*

The diagnostic message can be viewed via the **Diagnostics 4** parameter (→ 145).

*Example*

For the display format:
24d12h13m00s

## Diagnostics 5

**Navigation** Expert → Diagnostics → Diagnostic list → Diagnostics 5

**Description** Displays the current diagnostics message with the fifth-highest priority.

**User interface** Symbol for diagnostic behavior, diagnostic code and short message.

**Additional information** *Examples*

For the display format:
- ⊗F271 Main electronic failure
- ⊗F276 I/O module failure

## 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*

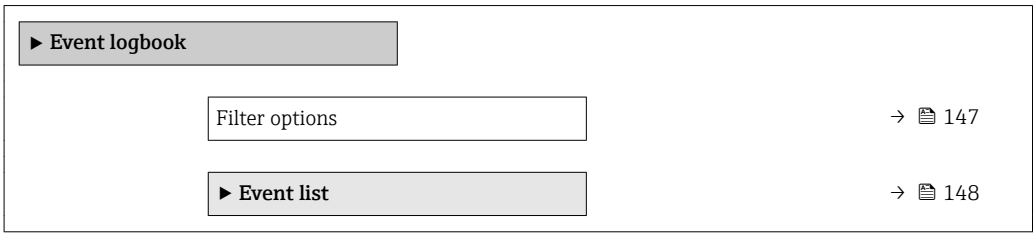
The diagnostic message can be viewed via the **Diagnostics 5** parameter (→ 146).

*Example*

For the display format:
24d12h13m00s

### 3.9.2 "Event logbook" submenu

*Navigation* Expert → Diagnostics → Event logbook




**Filter options**

**Navigation** Expert → Diagnostics → Event logbook → Filter options

**Description** Use this function to select the category whose event messages are displayed in the event list of the local display.

**Selection**
- All
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- Information (I)

**Factory setting** All

**Additional information** *Description*

The status signals are categorized in accordance with VDI/VDE 2650 and NAMUR Recommendation NE 107:
- F = Failure
- C = Function Check
- S = Out of Specification
- M = Maintenance Required

**Filter options**

**Navigation** Expert → Diagnostics → Event logbook → Filter options

**Description** Use this function to select the category whose event messages are displayed in the event list of the operating tool.

**Selection**
- All
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- Information (I)

**Factory setting** All

**Additional information** *Description*

The status signals are categorized in accordance with VDI/VDE 2650 and NAMUR Recommendation NE 107:
- F = Failure
- C = Function Check
- S = Out of Specification
- M = Maintenance Required

### "Event list" submenu

The **Event list** submenu is only displayed if operating via the local display.

If operating via the FieldCare operating tool, the event list can be read out with a separate FieldCare module.

If operating via the Web browser, the event messages can be found directly in the **Event logbook** submenu.

*Navigation* Expert → Diagnostics → Event logbook → Event list


## Event list

**Navigation** Expert → Diagnostics → Event logbook → Event list

**Description** Displays the history of event messages of the category selected in the **Filter options** parameter (→ 147).

**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 advanced HistoROM function 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*

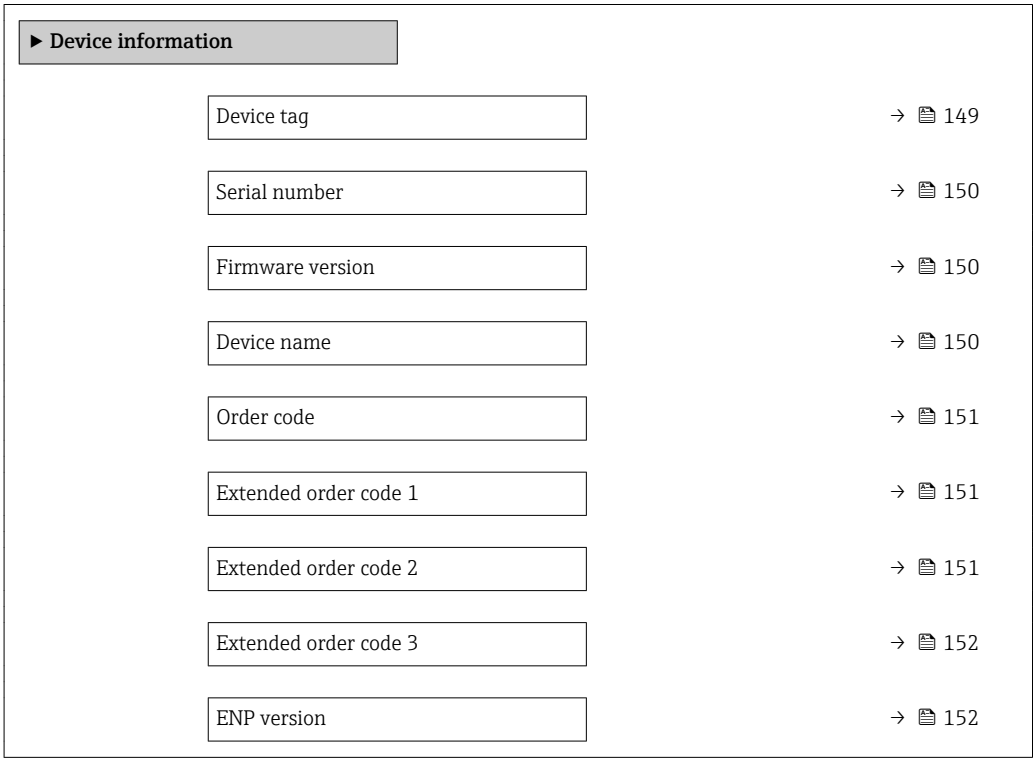
For the display format:
- I1091 Configuration modified
  ⊕ 24d12h13m00s
- ⊗F271 Main electronic failure
  ⊕ 01d04h12min30s

*HistoROM*

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

### 3.9.3 "Device information" submenu

*Navigation* Expert → Diagnostics → Device info




**Device tag**

**Navigation** Expert → Diagnostics → Device info → Device tag

**Description** Displays a unique name for the measuring point so it can be identified quickly within the plant.

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

**Factory setting** Promag 100 DP

## Serial number

**Navigation** Expert → Diagnostics → Device info → Serial number

**Description** Displays the serial number of the measuring device.

The number can be found on the nameplate of the sensor and transmitter.

**User interface** A maximum of 11-digit character string comprising letters and numbers.

**Additional information** *Description*

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

## Firmware version

**Navigation** Expert → Diagnostics → Device info → Firmware version

**Description** Displays the device firmware version installed.

**User interface** Character string in the format xx.yy.zz

**Additional information** *Display*

The Firmware version is also located:
- On the title page of the Operating instructions
- On the transmitter nameplate

## Device name

**Navigation** Expert → Diagnostics → Device info → Device name

**Description** Displays the name of the transmitter. It can also be found on the nameplate of the transmitter.

**User interface** Promag 100

## Order code

**Navigation** Expert → Diagnostics → Device info → Order code

**Description** Displays the device order code.

**User interface** Character string composed of letters, numbers and certain punctuation marks (e.g. /).

**Additional information** *Description*

The order code can be found on the nameplate of the sensor and transmitter in the "Order code" field.

The order code is generated from the extended order code through a process of reversible transformation. The extended order code indicates the attributes for all the device features in the product structure. The device features are not directly readable from the order code.

**Uses of the order code**
- To order an identical spare device.
- To identify the device quickly and easily, e.g. when contacting Endress+Hauser.

## Extended order code 1

**Navigation** Expert → Diagnostics → Device info → Ext. order cd. 1

**Description** Displays the first part of the extended order code.

On account of length restrictions, the extended order code is split into a maximum of 3 parameters.

**User interface** Character string

**Additional information** *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.

## Extended order code 2

**Navigation** Expert → Diagnostics → Device info → Ext. order cd. 2

**Description** For displaying the second part of the extended order code.

**User interface** Character string

**Additional information** For additional information, see **Extended order code 1** parameter (→ 151)

**Extended order code 3**

**Navigation** Expert → Diagnostics → Device info → Ext. order cd. 3

**Description** For displaying the third part of the extended order code.

**User interface** Character string

**Additional information** For additional information, see **Extended order code 1** parameter (→ 151)

**ENP version**

**Navigation** Expert → Diagnostics → Device info → ENP version

**Description** Displays the version of the electronic nameplate.

**User interface** Character string

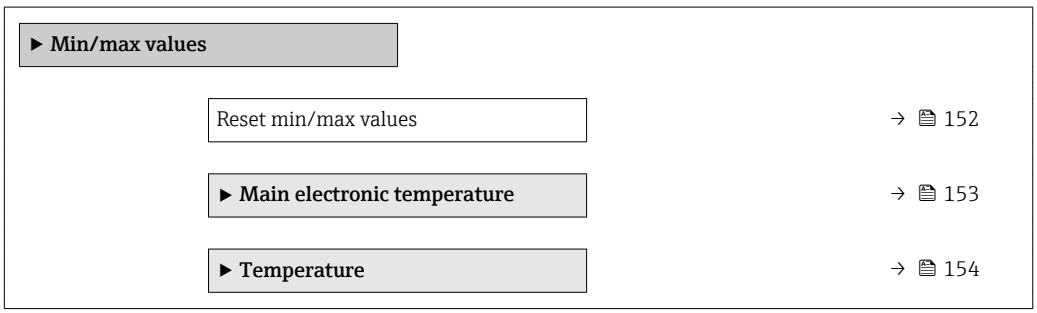
**Factory setting** 2.02.00

**Additional information** *Description*

This electronic nameplate stores a data record for device identification that includes more data than the nameplates attached to the outside of the device.

## 3.9.4 "Min/max values" submenu

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




**Reset min/max values**

**Navigation** Expert → Diagnostics → Min/max val. → Reset min/max

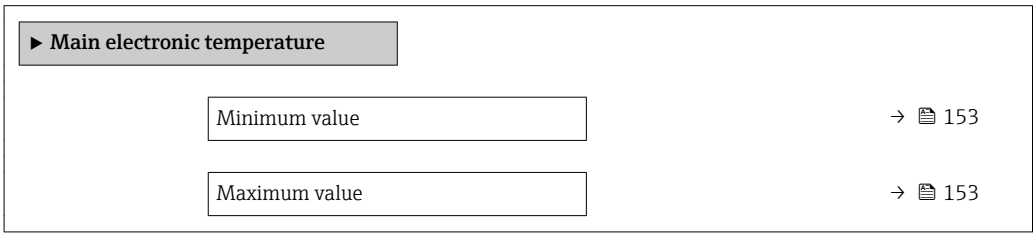
**Description** Use this function to select measured variables whose minimum, maximum and average measured values are to be reset.

**Selection** Cancel

**Factory setting** Cancel

**"Main electronic temperature" submenu**

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




## Minimum value

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

**Description** Displays the lowest previously measured temperature value of the main electronics module.

**User interface** Signed floating-point number

**Additional information** *Dependency*

The unit is taken from the **Temperature unit** parameter (→ 42)

## Maximum value

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

**Description** Displays the highest previously measured temperature value of the main electronics module.

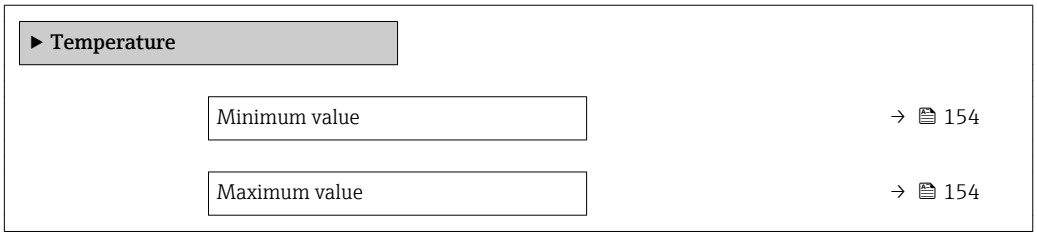
**User interface** Signed floating-point number

**Additional information** *Dependency*

The unit is taken from the **Temperature unit** parameter (→ 42)

**"Temperature" submenu**

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




**Minimum value**

**Navigation** Expert → Diagnostics → Min/max val. → Temperature → Minimum value

**Prerequisite** For the following order code:
"Sensor Option", option CI "Fluid temperature probe"

**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 (→ 42)

**Maximum value**

**Navigation** Expert → Diagnostics → Min/max val. → Temperature → Maximum value

**Prerequisite** For the following order code:
"Sensor Option", option CI "Fluid temperature probe"

**Description** Displays the highest previously measured medium temperature value.

**User interface** Signed floating-point number

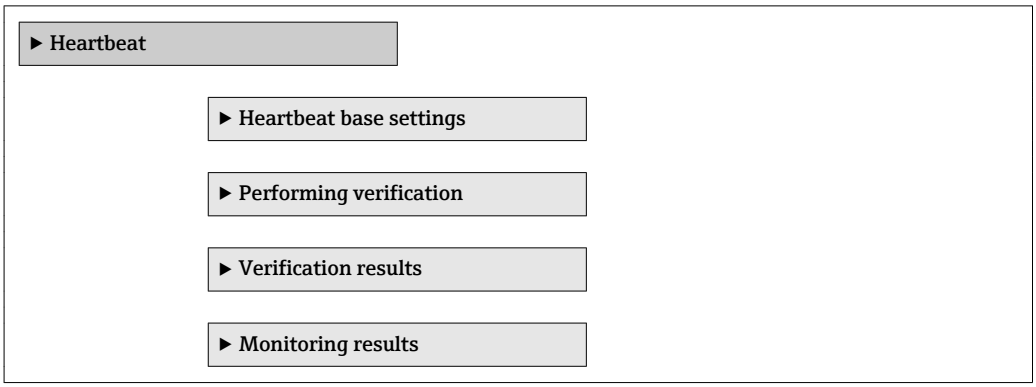
**Additional information** *Dependency*

The unit is taken from the **Temperature unit** parameter (→ 42)

### 3.9.5 "Heartbeat" submenu

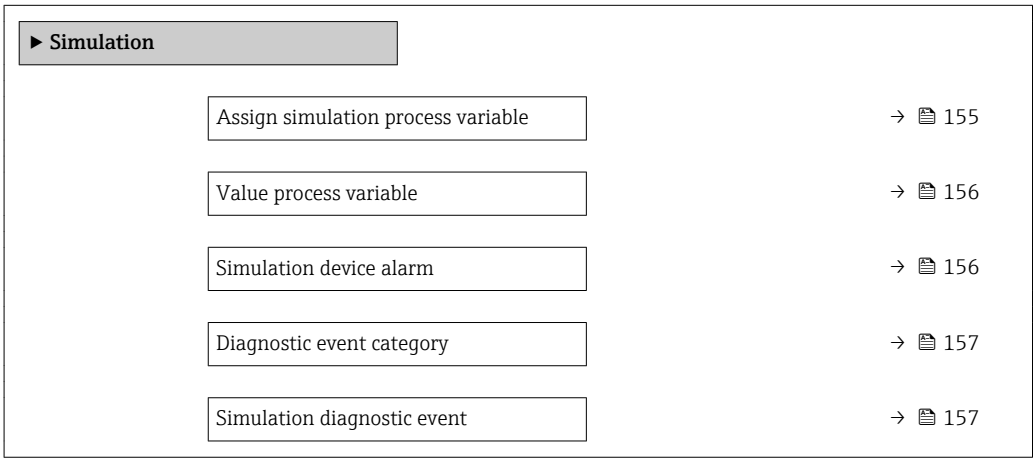
For detailed information on the parameter descriptions of the **Heartbeat Verification** application package, see the Special Documentation for the device

*Navigation* Expert → Diagnostics → Heartbeat




## 3.9.6 "Simulation" submenu

*Navigation* Expert → Diagnostics → Simulation




### Assign simulation process variable

**Navigation** Expert → Diagnostics → Simulation → Assign proc.var.

**Description** Use this function to select a process variable for the simulation process that is activated. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.

**Selection**
- Off
- Volume flow
- Mass flow
- Corrected volume flow
- Conductivity *
- Corrected conductivity *
- Temperature *

**Factory setting** Off

* Visibility depends on order options or device settings

**Additional information** *Description*

The simulation value of the process variable selected is defined in the **Value process variable** parameter (→ 156).

## Value process variable

**Navigation** Expert → Diagnostics → Simulation → Value proc. var.

**Prerequisite** One of the following options is selected in the **Assign simulation process variable** parameter (→ 155):
- Volume flow
- Mass flow
- Corrected volume flow
- Conductivity *
- Corrected conductivity *
- Temperature *

**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 (→ 38).

## Simulation device alarm

**Navigation** Expert → Diagnostics → Simulation → Sim. alarm

**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.

* Visibility depends on order options or device settings

### Diagnostic event category

**Navigation** Expert → Diagnostics → Simulation → Event category

**Description** Use this function to select the category of the diagnostic events that are displayed for the simulation in the **Simulation diagnostic event** parameter (→ 157).

**Selection**
- Sensor
- Electronics
- Configuration
- Process

**Factory setting** Process

### Simulation diagnostic event

**Navigation** Expert → Diagnostics → Simulation → Sim. diag. event

**Description** Use this function to select a diagnostic event for the simulation process that is activated.

**Selection**
- Off
- Diagnostic event picklist (depends on the category selected)

**Factory setting** Off

**Additional information** *Description*

For the simulation, you can choose from the diagnostic events of the category selected in the **Diagnostic event category** parameter (→ 157).

# 4 Country-specific factory settings

## 4.1 SI units

Not valid for USA and Canada.

### 4.1.1 System units

| | |
|---|---|
| **Volume flow** | l/h |
| **Volume** | $m^3$ |
| **Conductivity** | µS/cm |
| **Temperature** | °C |
| **Mass flow** | kg/h |
| **Mass** | kg |
| **Density** | kg/l |
| **Corrected volume flow** | Nl/h |
| **Corrected volume** | $Nm^3$ |

### 4.1.2 Full scale values

The factory settings applie to the following parameters:
100% bar graph value 1

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

| Nominal diameter [mm] | (v ~ 2.5 m/s) [dm³/min] |
|---|---|
| 500 | 2 000 m³/h |
| 600 | 2 500 m³/h |

### 4.1.3 On value low flow cut off

The switch-on point depends on the type of medium and the nominal diameter.

| Nominal diameter [mm] | (v ~ 0.04 m/s) [m³/h] |
|---|---|
| 2 | 0.01 |
| 4 | 0.05 |
| 8 | 0.1 |
| 15 | 0.5 |
| 25 | 1 |
| 32 | 2 |
| 40 | 3 |
| 50 | 5 |
| 65 | 8 |
| 80 | 12 |
| 100 | 20 |
| 125 | 30 |
| 150 | 2.5 |
| 200 | 5 |
| 250 | 7.5 |
| 300 | 10 |
| 350 | 15 |
| 400 | 20 |
| 450 | 25 |
| 500 | 30 |
| 600 | 40 |

## 4.2 US units

Only valid for USA and Canada.

### 4.2.1 System units

| | |
|---|---|
| **Volume flow** | gal/min (us) |
| **Volume** | gal (us) |
| **Temperature** | °F |
| **Mass flow** | lb/min |
| **Mass** | lb |
| **Density** | lb/ft³ |

| | |
|---|---|
| **Corrected volume flow** | $Sft^3/h$ |
| **Corrected volume** | $Sft^3$ |

### 4.2.2 Full scale values

The factory settings applie to the following parameters:
100% bar graph value 1

| Nominal diameter [in] | (v ~ 2.5 m/s) [gal/min] |
|---|---|
| 1/12 | 0.1 |
| 1/8 | 0.5 |
| 3/8 | 2 |
| ½ | 6 |
| 1 | 18 |
| 1½ | 50 |
| 2 | 75 |
| 3 | 200 |
| 4 | 300 |
| 5 | 450 |
| 6 | 600 |
| 8 | 1200 |
| 10 | 1500 |
| 12 | 2400 |
| 14 | 3600 |
| 16 | 4800 |
| 18 | 6000 |
| 20 | 7500 |
| 24 | 10500 |

### 4.2.3 On value low flow cut off

The switch-on point depends on the type of medium and the nominal diameter.

| Nominal diameter [in] | (v ~ 0.04 m/s) [gal/min] |
|---|---|
| 1/12 | 0.002 |
| 1/8 | 0.008 |
| 3/8 | 0.025 |
| ½ | 0.15 |
| 1 | 0.25 |
| 1½ | 0.75 |
| 2 | 1.25 |
| 3 | 2.5 |
| 4 | 4 |
| 5 | 7 |

| Nominal diameter [in] | (v ~ 0.04 m/s) [gal/min] |
|---|---|
| 6 | 12 |
| 8 | 15 |
| 10 | 30 |
| 12 | 45 |
| 14 | 60 |
| 16 | 60 |
| 18 | 90 |
| 20 | 120 |
| 24 | 180 |

# 5 Explanation of abbreviated units

## 5.1 SI units

| Process variable | Units | Explanation |
|---|---|---|
| Density | g/cm³, g/m³ | Gram/volume unit |
| | kg/dm³, kg/l, kg/m³ | Kilogram/volume unit |
| | SD4°C, SD15°C, SD20°C | Specific density: The specific density is the ratio of the density of the fluid to the density of water at a water temperature of 4 °C (39 °F), 15 °C (59 °F), 20 °C (68 °F). |
| | SG4°C, SG15°C, SG20°C | Specific gravity: The specific gravity is the ratio of the density of the fluid to the density of water at a water temperature of 4 °C (39 °F), 15 °C (59 °F), 20 °C (68 °F). |
| Conductivity | µS/mm | Microsiemens/length unit |
| | nS/cm, µS/cm, mS/cm, S/cm | Nano- Micro- , Milli- , Siemens/length unit |
| | µS/m, mS/m, S/m, kS/m, MS/m | Micro- , Milli- , Siemens, Kilo-, Megasiemens/length unit |
| Mass | g, kg, t | Gram, kilogram, metric ton |
| Mass flow | g/s, g/min, g/h, g/d | Gram/time unit |
| | kg/s, kg/min, kg/h, kg/d | Kilogram/time unit |
| | t/s, t/min, t/h, t/d | Metric ton/time unit |
| Corrected volume | Nl, Nm³, Sm³ | Normal liter, normal cubic meter, standard cubic meter |
| Corrected volume flow | Nl/s, Nl/min, Nl/h, Nl/d | Normal liter/time unit |
| | Nm³/s, Nm³/min, Nm³/h, Nm³/d | Normal cubic meter/time unit |
| | Sm³/s, Sm³/min, Sm³/h, Sm³/d | Standard cubic meter/time unit |
| Temperature | °C , K | Celsius, Kelvin |
| Volume | cm³, dm³, m³ | Cubic centimeter, cubic decimeter, cubic meter |
| | ml, l, hl, Ml Mega | Milliliter, liter, hectoliter, megaliter |
| Volume flow | cm³/s, cm³/min, cm³/h, cm³/d | Cubic centimeter/time unit |
| | dm³/s, dm³/min, dm³/h, dm³/d | Cubic decimeter/time unit |
| | m³/s, m³/min, m³/h, m³/d | Cubic meter/time unit |
| | ml/s, ml/min, ml/h, ml/d | Milliliter/time unit |
| | l/s, l/min, l/h, l/d | Liter/time unit |
| | hl/s, hl/min, hl/h, hl/d | Hectoliter/time unit |
| | Ml/s, Ml/min, Ml/h, Ml/d | Megaliter/time unit |
| Time | s, m, h, d, y | Second, minute, hour, day, year |

## 5.2 US units

| Process variable | Units | Explanation |
|---|---|---|
| Density | lb/ft³, lb/gal (us) | Pound/cubic foot, pound/gallon |
| | lb/bbl (us;liq.), lb/bbl (us;beer), lb/bbl (us;oil), lb/bbl (us;tank) | Pound/volume unit |
| Mass | oz, lb, STon | Ounce, pound, standard ton |
| Mass flow | oz/s, oz/min, oz/h, oz/d | Ounce/time unit |

| Process variable | Units | Explanation |
|---|---|---|
| | lb/s, lb/min, lb/h, lb/d | Pound/time unit |
| | STon/s, STon/min, STon/h, STon/d | Standard ton/time unit |
| Corrected volume | $Sft^3$, Sgal (us), Sbbl (us;liq.) | Standard cubic foot, standard gallon, standard barrel |
| Corrected volume flow | $Sft^3/s$, $Sft^3/min$, $Sft^3/h$, $Sft^3/d$ | Standard cubic foot/time unit |
| | Sgal/s (us), Sgal/min (us), Sgal/h (us), Sgal/d (us) | Standard gallon/time unit |
| | Sbbl/s (us;liq.), Sbbl/min (us;liq.), Sbbl/h (us;liq.), Sbbl/d (us;liq.) | Barrel/time unit (normal liquids) |
| Temperature | °F, °R | Fahrenheit, Rankine |
| Volume | af | Acre foot |
| | $ft^3$ | Cubic foot |
| | fl oz (us), gal (us), kgal (us), Mgal (us) | Fluid ounce, gallon, kilogallon, million gallon |
| | bbl (us;liq.), bbl (us;beer), bbl (us;oil), bbl (us;tank) | Barrel (normal liquids), barrel (beer), barrel (petrochemicals), barrel (filling tanks) |
| Volume flow | af/s, af/min, af/h, af/d | Acre foot/time unit |
| | $ft^3/s$, $ft^3/min$, $ft^3/h$, $ft^3/d$ | Cubic foot/time unit |
| | fl oz/s (us), fl oz/min (us), fl oz/h (us), fl oz/d (us) | Fluid ounce/time unit |
| | gal/s (us), gal/min (us), gal/h (us), gal/d (us) | Gallon/time unit |
| | kgal/s (us), kgal/min (us), kgal/h (us), kgal/d (us) | Kilogallon/time unit |
| | Mgal/s (us), Mgal/min (us), Mgal/h (us), Mgal/d (us) | Million gallon/time unit |
| | bbl/s (us;liq.), bbl/min (us;liq.), bbl/h (us;liq.), bbl/d (us;liq.) | Barrel/time unit (normal liquids)<br>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)<br>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)<br>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)<br>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 |
| Corrected volume flow | Sgal/s (imp), Sgal/min (imp), Sgal/h (imp), Sgal/d (imp) | Standard gallon/time unit |
| Volume | gal (imp), Mgal (imp) | Gallon, mega gallon |
| | bbl (imp;beer), bbl (imp;oil) | Barrel (beer), barrel (petrochemicals) |

| Process variable | Units | Explanation |
|---|---|---|
| Volume flow | gal/s (imp), gal/min (imp), gal/h (imp), gal/d (imp) | Gallon/time unit |
| | Mgal/s (imp), Mgal/min (imp), Mgal/h (imp), Mgal/d (imp) | Mega gallon/time unit |
| | bbl/s (imp;beer), bbl/min (imp;beer), bbl/h (imp;beer), bbl/d (imp;beer) | Barrel /time unit (beer)<br>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)<br>Petrochemicals: 34.97 gal/bbl |
| Time | s, m, h, d, y | Second, minute, hour, day, year |
| | am, pm | Ante meridiem ( before midday), post meridiem (after midday) |

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