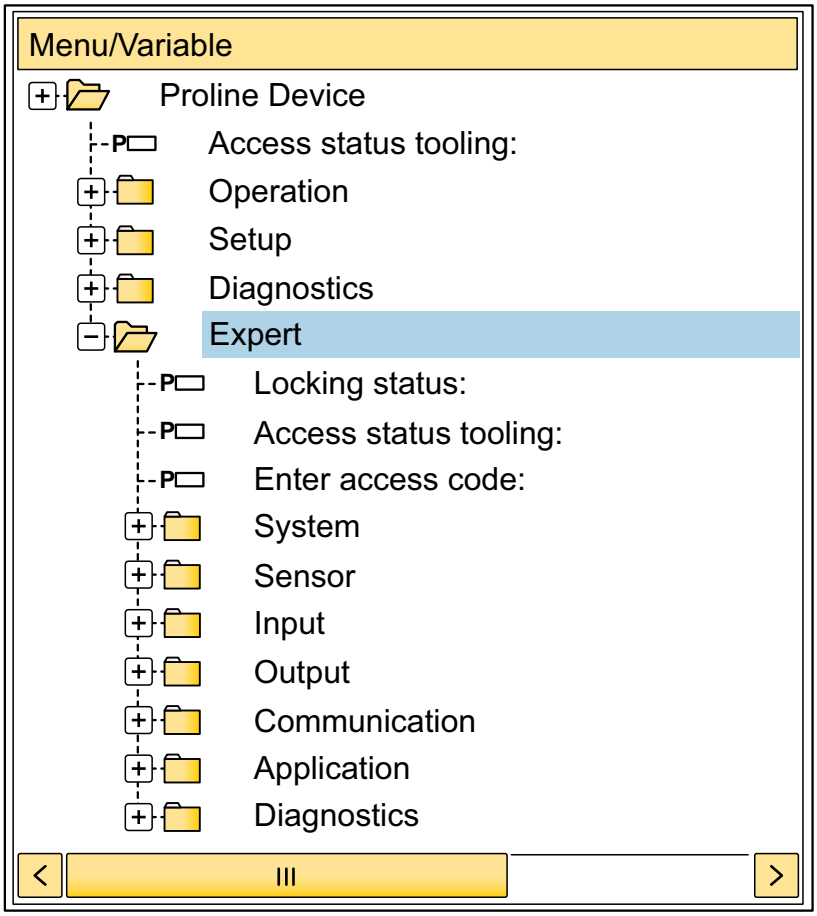
GP01034D/06/EN/02.17
71377884

Valid as of version
01.01.zz (Device firmware)

Description of Device Parameters
Proline Promass 100
PROFIBUS DP

Coriolis flowmeter



Endress+Hauser
People for Process Automation

Table of contents

1 About this document

1.1 Document function

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

It is used to perform tasks that require detailed knowledge of the function of the device:
- Commissioning measurements under difficult conditions
- Optimal adaptation of the measurement to difficult conditions
- Detailed configuration of the communication interface
- Error diagnostics in difficult cases

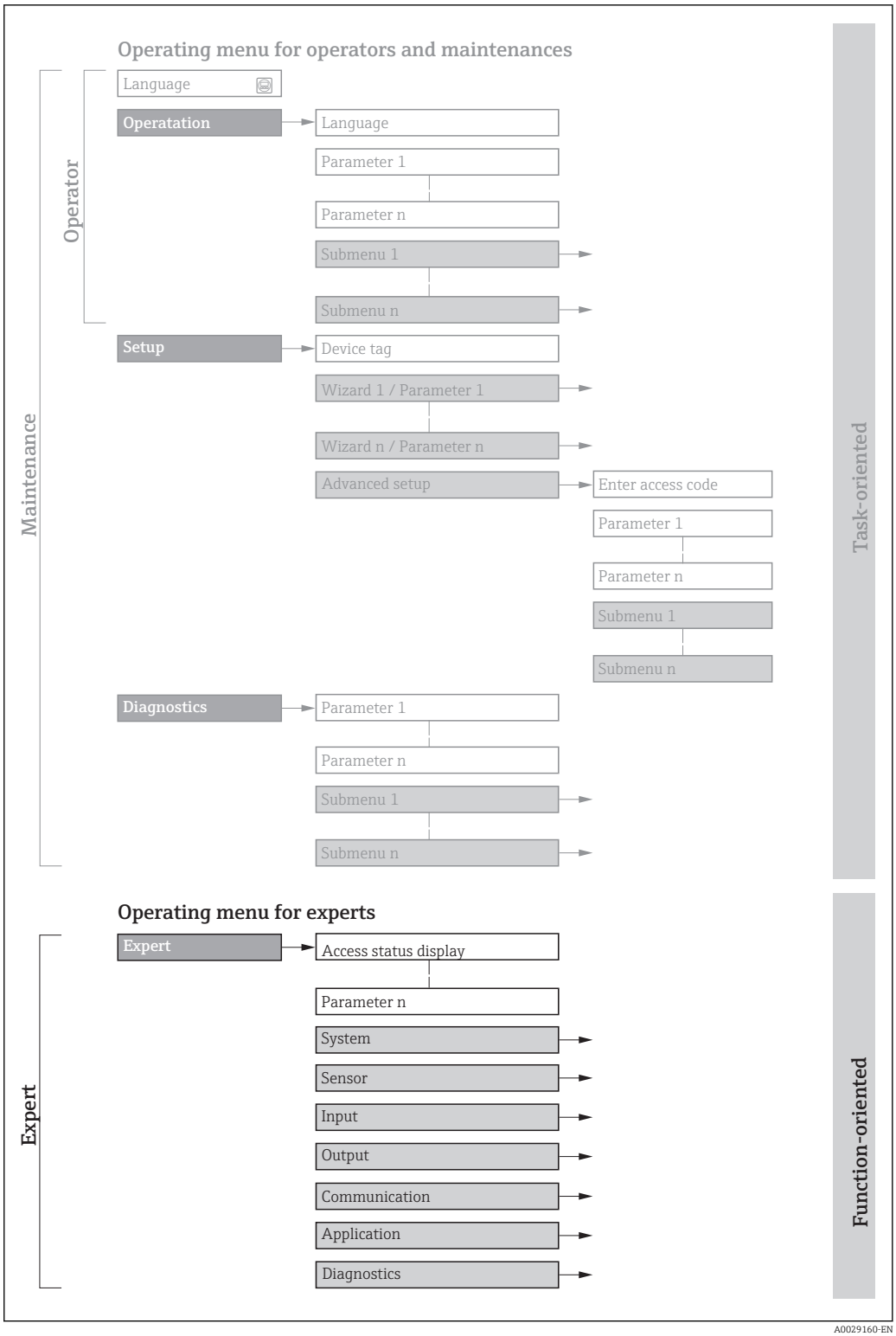
1.2 Target group

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

1.3 Using this document

1.3.1 Information on the document structure

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



1 *Sample graphic for the schematic layout of the operating menu*

Additional information regarding:
- The arrangement of the parameters according to the menu structure of the **Operation** menu, **Setup** menu, **Diagnostics** menu with a brief description: Operating Instructions
- Operating concept of the operating menus: 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 Indicates additional information.
	Reference to documentation
	Reference to page
	Reference to graphic
	Operation via local display
	Operation via operating tool
	Write-protected parameter

1.4.2 Symbols in graphics

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

1.5 Documentation

1.5.1 Standard documentation

Operating Instructions

Measuring device	Documentation code
Promass A 100	BA01246D
Promass E 100 (8E1B**-...)	BA01248D
Promass E 100 (8E1C**-...)	BA01714D
Promass F 100	BA01249D
Promass G 100	BA01348D
Promass H 100	BA01250D
Promass I 100	BA01251D
Promass O 100	BA01252D
Promass P 100	BA01253D
Promass S 100	BA01254D
Promass X 100	BA01255D

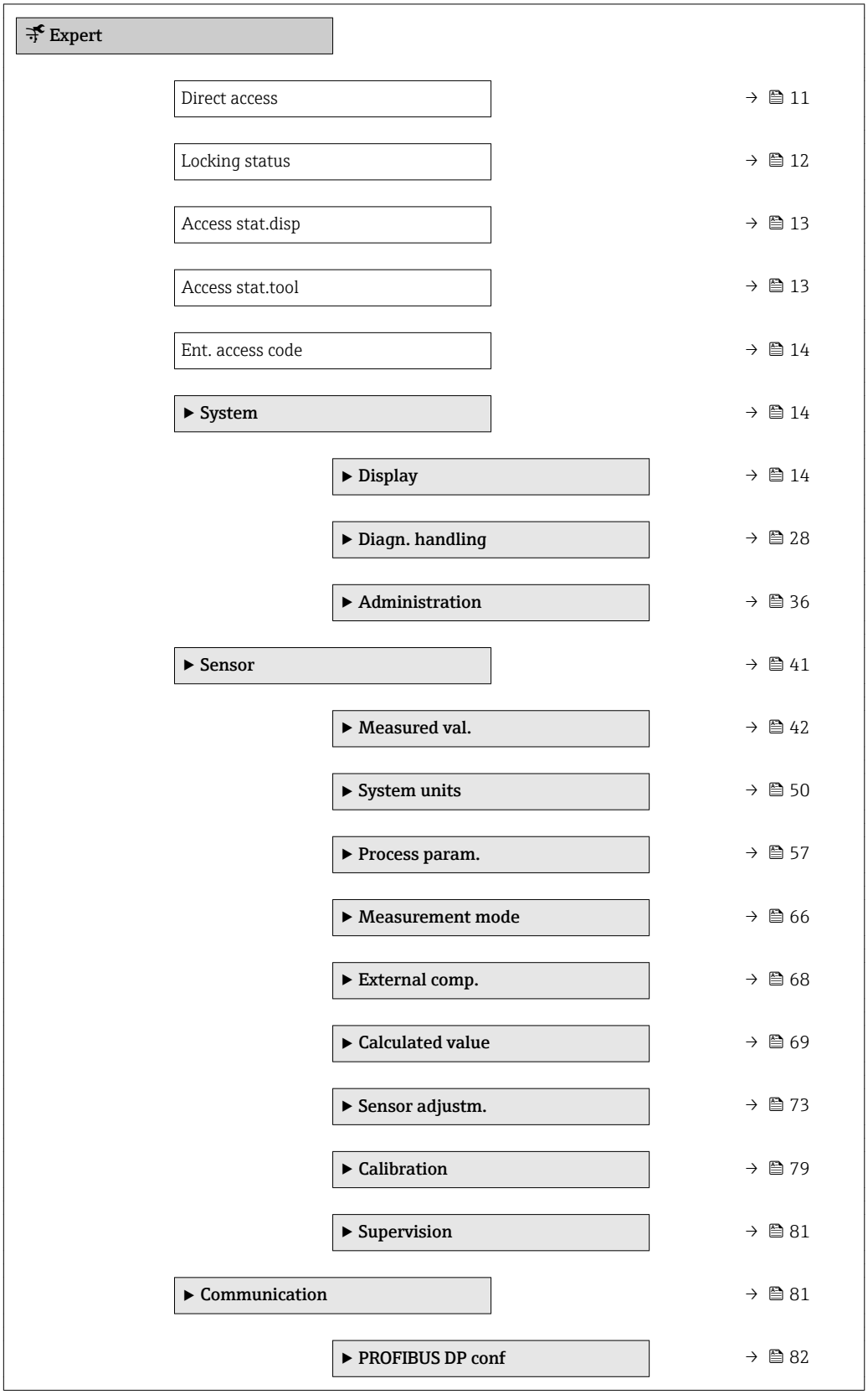
1.5.2 Supplementary device-dependent documentation

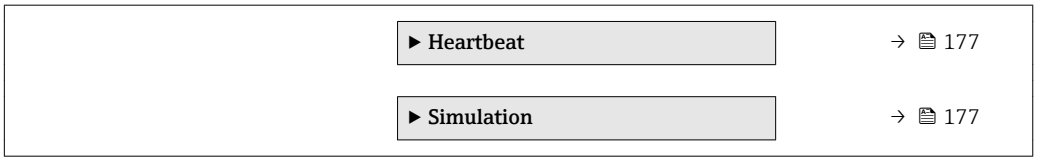
Special Documentation

Content	Documentation code
Information on the Pressure Equipment Directive	SD01614D
Concentration Measurement	SD01152D
Heartbeat Technology	SD01153D
Web server	SD01821D

2 Overview of the Expert operating menu

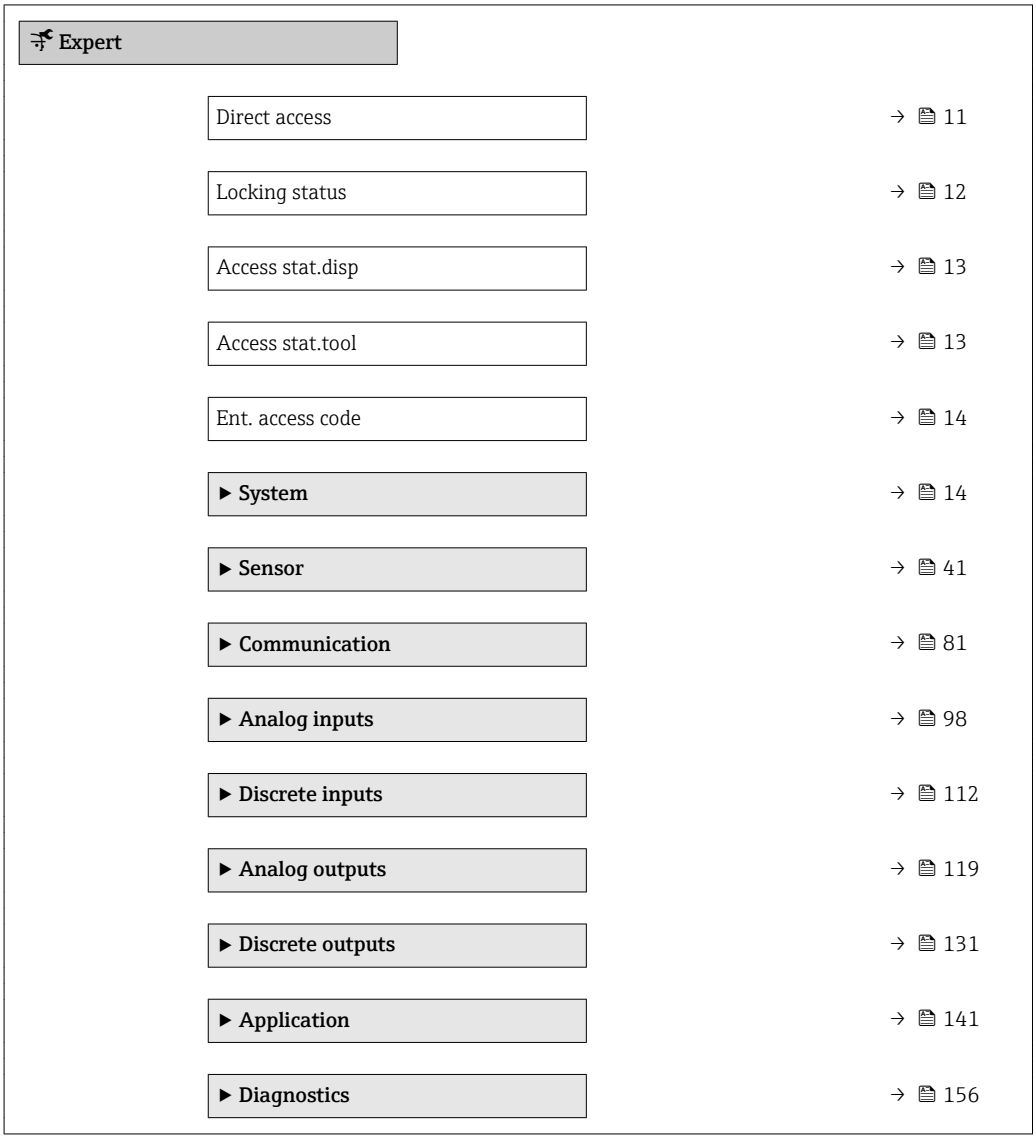
The following table provides an overview of the menu structure of the expert operating menu and its parameters. The page reference indicates where the associated description of the submenu or parameter can be found.




▶ Heartbeat
→ 177
▶ Simulation
→ 177

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.

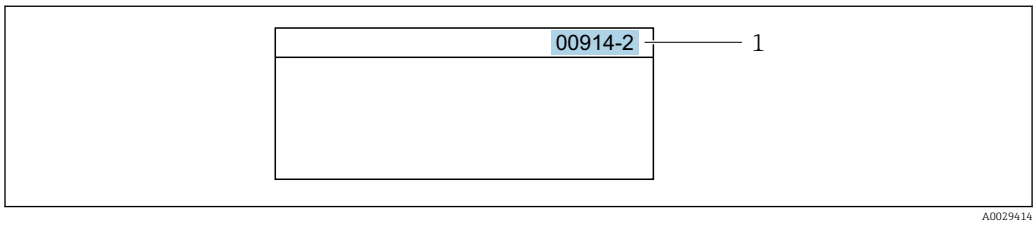
Description Use this function to enter the access code to enable direct access to the desired parameter via the local display. A parameter number is assigned to each parameter for this purpose.

User entry 0 to 65 535

Additional information

User entry

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



1 Direct access code

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

Locking status

Navigation

Expert → Locking status

Description

Displays the active write protection.

User interface

- Hardware locked
- Temp. locked

Additional information

User interface

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

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

Selection

Options	Description
Hardware locked (priority 1)	The write protection switch (DIP switch) for hardware locking is activated on the I/O electronic module. This locks write access to the parameters .
Temp. locked (priority 2)	Write access to the parameters is temporarily locked on account of internal processes running in the device (e.g. data upload/download, reset etc.). Once the internal processing has been completed, the parameters can be changed once again.

Access stat.disp

Navigation Expert → Access stat.disp

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 **Ent. access code** parameter (→ 14).

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

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

Display

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

Access stat.tool

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 **Ent. access code** parameter (→ 14).

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

Display

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

Ent. access code

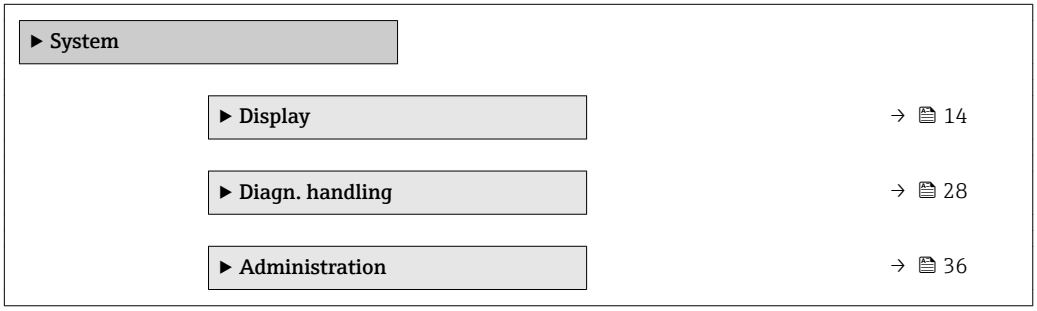
Navigation Expert → Ent. access code

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

User entry 0 to 9 999

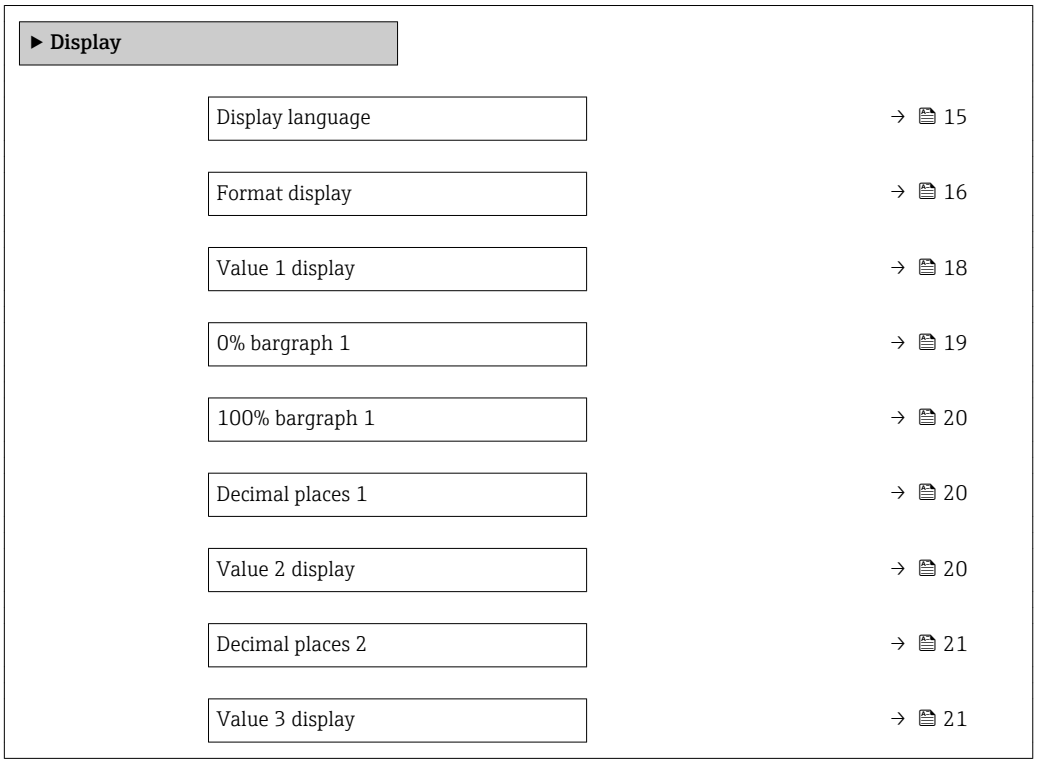
3.1 "System" submenu

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

* Visibility depends on order options or device settings

- 한국어 (Korean) *
- Bahasa Indonesia *
- tiếng Việt (Vit) *
- čeština (Czech) *

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

Format display

Navigation Expert → System → Display → Format display

Prerequisite A local display is provided.

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

Selection
- 1 value, max.
- Bargr. + 1 value
- 2 values
- Val. large+2val.
- 4 values

Factory setting 1 value, max.

Additional information *Description*

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

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

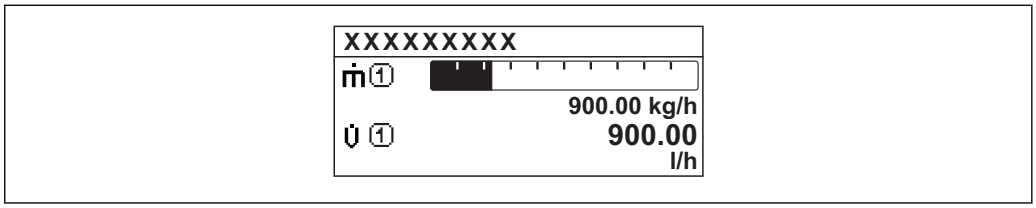
* Visibility depends on order options or device settings

Possible measured values shown on the local display:

"1 value, max." option

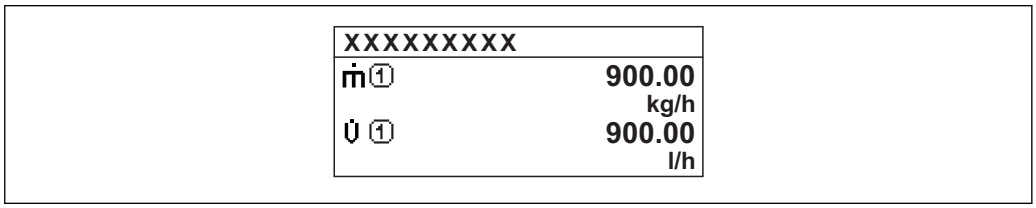
A0013099

"Bargr. + 1 value" option



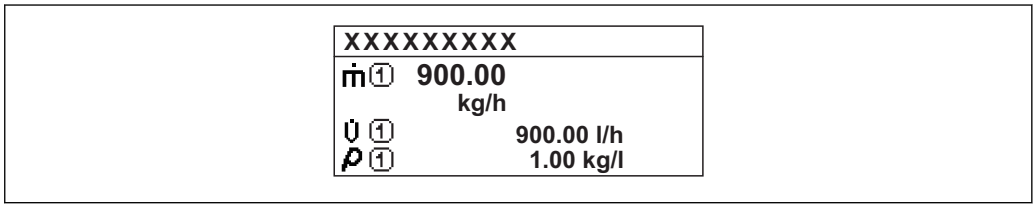
A0013098

"2 values" option



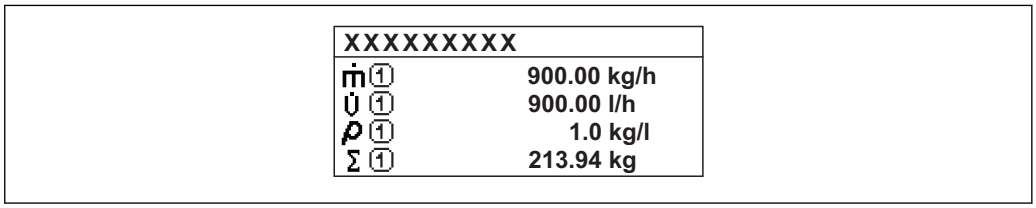
A0013100

"Val. large+2val." option



A0013102

"4 values" option



A0013103

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
- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *
- Density
- Ref.density
- Concentration *
- Dynam. viscosity *
- Kinematic visc. *
- TempCompDynVisc *
- TempCompKinVisc *
- Temperature
- Carr. pipe temp. *
- Electronic temp.
- Osc. freq. 0
- Osc. freq. 1 *
- Freq. fluct. 0
- Freq. fluct. 1 *
- Osc. ampl. 0 *
- Osc. ampl. 1 *
- Freq. fluct. 0
- Osc. damping 0
- Osc. damping 1 *
- Damping fluct 0
- Damping fluct 1
- Signal asymmetry
- Exc. current 0
- Exc. current 1 *
- Sensor integrity *
- None
- Totalizer 1
- Totalizer 2
- Totalizer 3

Factory setting Mass flow

* Visibility depends on order options or device settings

Additional information

Description

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

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

Dependency

The unit of the displayed measured value is taken from the **System units** submenu (→ 50).

Selection

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

0% bargraph 1

Navigation Expert → System → Display → 0% bargraph 1

Prerequisite A local display is provided.

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

User entry Signed floating-point number

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

Additional information

Description

The **Format display** parameter (→ 16) is used to specify that the measured value is to be displayed as a bar graph.

User entry

The unit of the displayed measured value is taken from the **System units** submenu (→ 50).

100% bargraph 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 → 181

Additional information

Description

The **Format display** parameter (→ 16) is used to specify that the measured value is to be displayed as a bar graph.

User entry

The unit of the displayed measured value is taken from the **System units** submenu (→ 50).

Decimal places 1

Navigation Expert → System → Display → Decimal places 1

Prerequisite A measured value is specified in the **Value 1 display** parameter (→ 18).

Description Use this function to select the number of decimal places for measured value 1.

Selection

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

Factory setting x.xx

Additional information

Description

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

Value 2 display

Navigation Expert → System → Display → Value 2 display

Prerequisite A local display is provided.

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

Selection For the picklist, see the **Value 1 display** parameter (→ 18)

Factory setting None

Additional information *Description*

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

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

Dependency

The unit of the displayed measured value is taken from the **System units** submenu (→ 50).

Decimal places 2

Navigation Expert → System → Display → Decimal places 2

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

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

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

Factory setting x.xx

Additional information *Description*

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

Value 3 display

Navigation Expert → System → Display → Value 3 display

Prerequisite A local display is provided.

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

Selection For the picklist, see the **Value 1 display** parameter (→ 18)

Factory setting None

Additional information

Description

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

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

Selection

The unit of the displayed measured value is taken from the **System units** submenu (→ 50).

0% bargraph 3

Navigation Expert → System → Display → 0% bargraph 3

Prerequisite A selection was made in the **Value 3 display** parameter (→ 21).

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

User entry Signed floating-point number

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

Additional information

Description

The **Format display** parameter (→ 16) is used to specify that the measured value is to be displayed as a bar graph.

User entry

The unit of the displayed measured value is taken from the **System units** submenu (→ 50).

100% bargraph 3

Navigation Expert → System → Display → 100% bargraph 3

Prerequisite A selection was made in the **Value 3 display** parameter (→ 21).

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

User entry Signed floating-point number

Factory setting 0

Additional information *Description*

The **Format display** parameter (→ 16) is used to specify that the measured value is to be displayed as a bar graph.

User entry

The unit of the displayed measured value is taken from the **System units** submenu (→ 50).

Decimal places 3

Navigation Expert → System → Display → Decimal places 3

Prerequisite A measured value is specified in the **Value 3 display** parameter (→ 21).

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

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

Factory setting x.xx

Additional information *Description*

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

Value 4 display

Navigation Expert → System → Display → Value 4 display

Prerequisite A local display is provided.

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

Selection For the picklist, see the **Value 1 display** parameter (→ 18)

Factory setting None

Additional information *Description*

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

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

Selection

The unit of the displayed measured value is taken from the **System units** submenu (→ 50).

Decimal places 4

Navigation Expert → System → Display → Decimal places 4

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

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

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

Factory setting x.xx

Additional information *Description*

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

Display interval

Navigation Expert → System → Display → Display interval

Prerequisite A local display is provided.

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

User entry 1 to 10 s

Factory setting 5 s

Additional information *Description*

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

- The **Value 1 display** parameter (→ 18) to **Value 4 display** parameter (→ 23) are used to specify which measured values are shown on the local display.
- The display format of the displayed measured values is specified using the **Format display** parameter (→ 16).

Display damping

Navigation Expert → System → Display → Display damping

Prerequisite A local display is provided.

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

User entry 0.0 to 999.9 s

Factory setting 0.0 s

Additional information *User entry*

Use this function to enter a time constant (PT1 element [1]) for display damping:
- If a low time constant is entered, the display reacts particularly quickly to fluctuating measured variables.
- On the other hand, the display reacts more slowly if a high time constant is entered.

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

Header

Navigation Expert → System → Display → Header

Prerequisite A local display is provided.

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

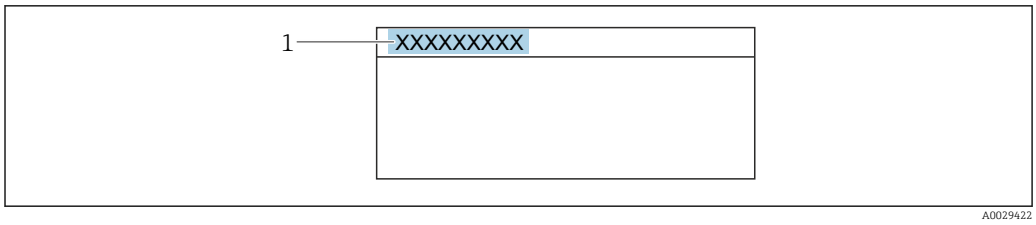
Selection
- Device tag
- Free text

Factory setting Device tag

Additional information *Description*

The header text only appears during normal operation.

1) proportional transmission behavior with first order delay



1 Position of the header text on the display

Selection

- Device tag
  Is defined in the **Device tag** parameter (→ 165).
- Free text
  Is defined in the **Header text** parameter (→ 26).

Header text

Navigation Expert → System → Display → Header text

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

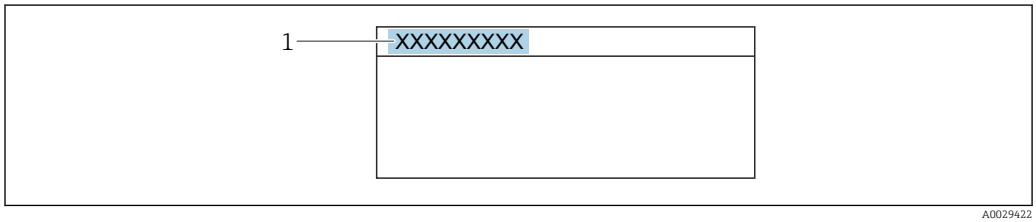
Description Use this function to enter a customer-specific text for the header of the local display.

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

Factory setting ----------

Additional information *Description*

The header text only appears during normal operation.



1 Position of the header text on the display

User entry

The number of characters displayed depends on the characters used.

Separator

Navigation Expert → System → Display → Separator

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

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

Selection
- Disable
- Enable

Factory setting Enable

Access stat.disp

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 **Ent. access code** parameter (→ 🖹 14).

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

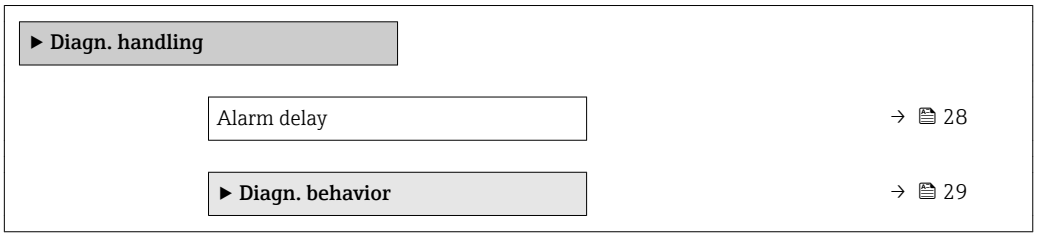
If additional write protection is active, this restricts the current access authorization even further.

Display

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

3.1.2 "Diagn. 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

Result

This setting affects the following diagnostic messages:
- 046 Sensor limit
- 140 Sensor sig.asym.
- 144 MeasErrorTooHigh
- 190 Special event 1
- 191 Special event 5
- 192 Special event 9

- 830 Sensor temp.
- 831 Sensor temp.
- 832 Electronic temp.
- 833 Electronic temp.
- 834 Process temp.
- 835 Process temp.
- 843 Process limit
- 862 Partly filled
- 910 Tube not oscill.
- 912 Medium inhomog.
- 913 Medium unsuitab.
- 944 MonitoringFailed
- 990 Special event 4
- 991 Special event 8
- 992 Special event 12

"Diagn. behavior" submenu

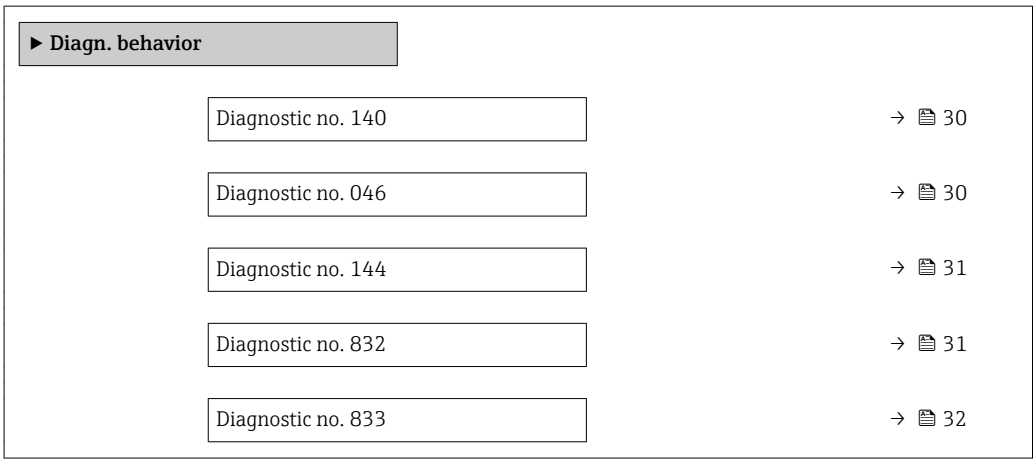
Each item of diagnostic information is assigned a specific diagnostic behavior at the factory. The user can change this assignment for specific diagnostic information in the **Diagn. behavior** submenu (→ 🖹 29).

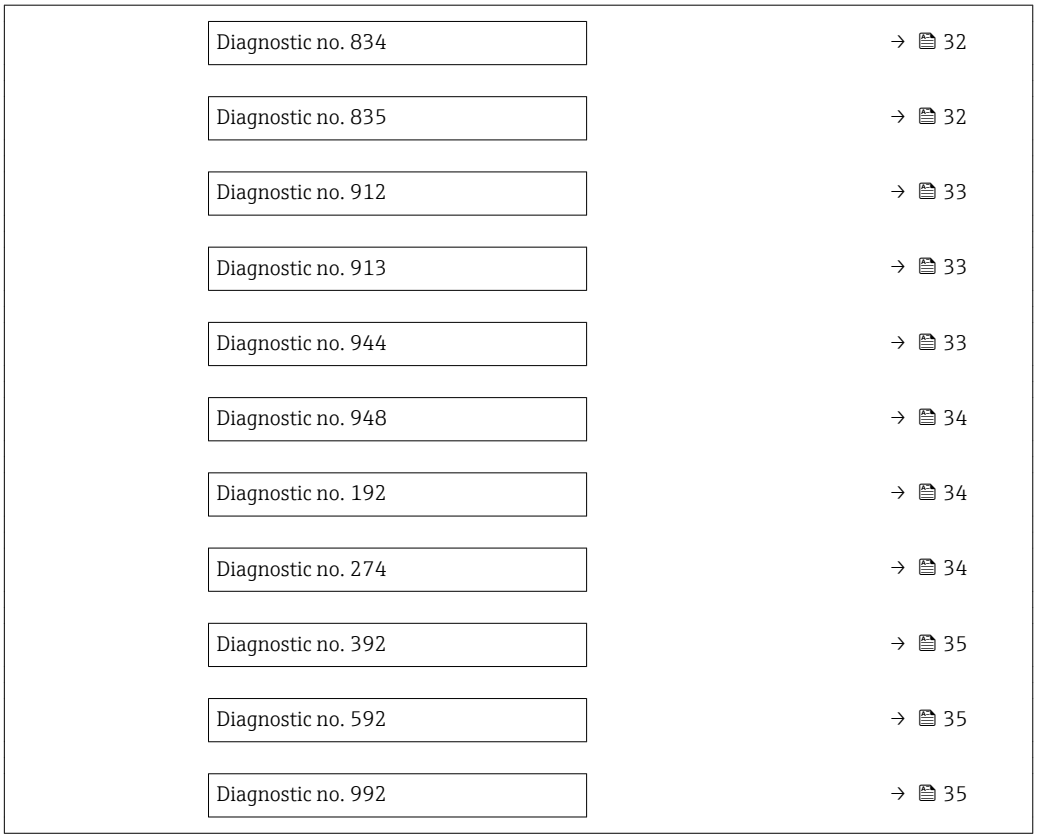
The following options are available in the **Assign behavior of diagnostic no. xxx** parameters:

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 only	The device continues to measure. The diagnostic message is displayed only in the **Event logbook** submenu (→ 🖹 163) (**Event list** submenu (→ 🖹 163)) 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 no. 140 (Sensor sig.asym.)

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 140

Description Use this function to change the diagnostic behavior of the diagnostic message **140 Sensor sig.asym.**.

Selection
- Off
- Alarm
- Warning
- Logbook only

Factory setting Warning

Additional information For a detailed description of the options available, see → 29

Diagnostic no. 046 (Sensor limit)

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 046

Description Option for changing the diagnostic behavior of the diagnostic message **046 Sensor limit**.

Selection
- Off
- Alarm
- Warning
- Logbook only

Factory setting Warning

Additional information For a detailed description of the options available, see → 29

Diagnostic no. 144 (MeasErrorTooHigh)

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 144

Description Option for changing the diagnostic behavior of the diagnostic message **144 MeasErrorTooHigh**.

Selection
- Off
- Alarm
- Warning
- Logbook only

Factory setting Alarm

Additional information For a detailed description of the options available, see → 29

Diagnostic no. 832 (Electronic temp.)

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 temp.**.

Selection
- Off
- Alarm
- Warning
- Logbook only

Factory setting Warning

Additional information For a detailed description of the options available, see → 29

Diagnostic no. 833 (Electronic temp.)

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 temp.**.

Selection
- Off
- Alarm
- Warning
- Logbook only

Factory setting Warning

Additional information For a detailed description of the options available, see → 29

Diagnostic no. 834 (Process temp.)

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 temp.**.

Selection
- Off
- Alarm
- Warning
- Logbook only

Factory setting Warning

Additional information For a detailed description of the options available, see → 29

Diagnostic no. 835 (Process temp.)

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 temp.**.

Selection
- Off
- Alarm
- Warning
- Logbook only

Factory setting Warning

Additional information For a detailed description of the options available, see → 29

Diagnostic no. 912 (Medium inhomog.)

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 912

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

Selection
- Off
- Alarm
- Warning
- Logbook only

Factory setting Warning

Additional information For a detailed description of the options available, see → 29

Diagnostic no. 913 (Medium unsuitab.)

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 913

Description Option for changing the diagnostic behavior of the diagnostic message **913 Medium unsuitab.**.

Selection
- Off
- Alarm
- Warning
- Logbook only

Factory setting Warning

Additional information For a detailed description of the options available, see → 29

Diagnostic no. 944 (MonitoringFailed)

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 944

Description Option for changing the diagnostic behavior of the diagnostic message **944 MonitoringFailed**.

Selection
- Off
- Alarm
- Warning
- Logbook only

Factory setting Warning

Additional information For a detailed description of the options available, see → 29

Diagnostic no. 948 (Oscill. damping)

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 948

Description Option for changing the diagnostic behavior of the diagnostic message **948 Oscill. damping**.

Selection
- Off
- Alarm
- Warning
- Logbook only

Factory setting Warning

Additional information For a detailed description of the options available, see → 29

Diagnostic no. 192 (Special event 9)

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 192

Description Option for changing the diagnostic behavior of the diagnostic message **192 Special event 9**.

Selection
- Off
- Alarm
- Warning
- Logbook only

Factory setting Warning

Additional information For a detailed description of the options available, see → 29

Diagnostic no. 374 (Sensor electron.)

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 274

Description Option for changing the diagnostic behavior of the diagnostic message **374 Sensor electron.**.

Selection
- Off
- Alarm
- Warning
- Logbook only

Factory setting Warning

Additional information For a detailed description of the options available, see → 29

Diagnostic no. 392 (Special event 10)

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 392

Description Option for changing the diagnostic behavior of the diagnostic message **392 Special event 10**.

Selection
- Off
- Alarm
- Warning
- Logbook only

Factory setting Warning

Additional information For a detailed description of the options available, see → 29

Diagnostic no. 592 (Special event 11)

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 592

Description Option for changing the diagnostic behavior of the diagnostic message **592 Special event 11**.

Selection
- Off
- Alarm
- Warning
- Logbook only

Factory setting Warning

Additional information For a detailed description of the options available, see → 29

Diagnostic no. 992 (Special event 12)

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 992

Description Option for changing the diagnostic behavior of the diagnostic message **992 Special event 12**.

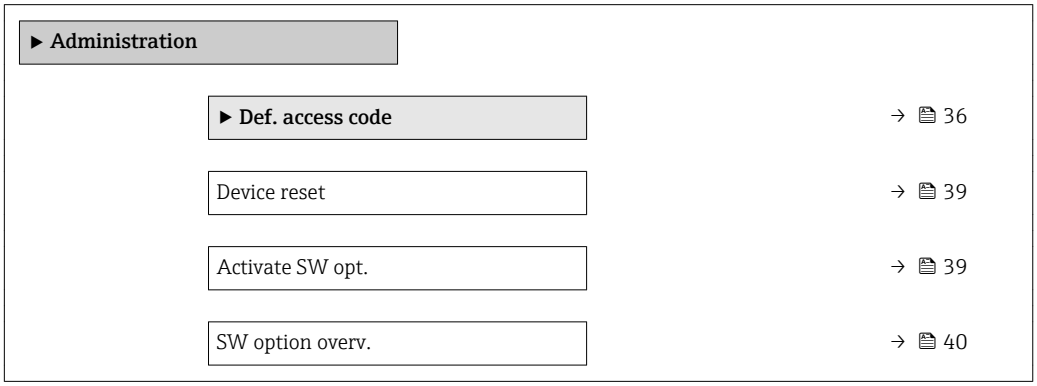
Selection
- Off
- Alarm
- Warning
- Logbook only

Factory setting Warning

Additional information For a detailed description of the options available, see → 29

3.1.3 "Administration" submenu

Navigation Expert → System → Administration

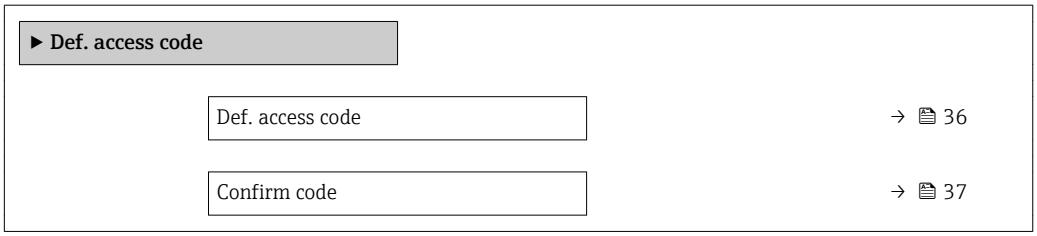


"Def. access code" wizard

The **Def. access code** wizard (→ 36) is only available when operating via the local display or Web browser.

If operating via the operating tool, the **Def. access code** parameter (→ 38) can be found directly in the **Administration** submenu. There is no **Confirm code** parameter if the device is operated via the operating tool.

Navigation Expert → System → Administration → Def. access code



Def. access code

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

Description Use this function to enter a user-specific release code to restrict write-access to the parameters. This protects the configuration of the device against any inadvertent changes via the local display 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 **Ent. access code** parameter (→ 📄 14).

If you lose the access code, please contact your Endress+Hauser sales organization.

User entry

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

Factory setting

If the factory setting is not changed or **0** is defined as the access code, the parameters are not write-protected and the device configuration data can be modified. The user is logged on in the **"Maintenance"** role.

Confirm code 🔒

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

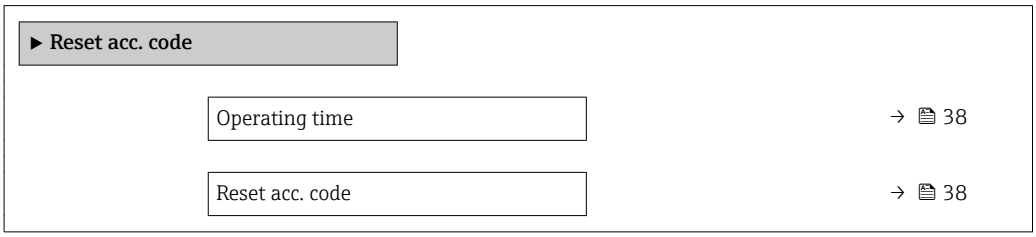
Description Enter the defined release code a second time to confirm the release code.

User entry 0 to 9 999

Factory setting 0

"Reset access code" submenu

Navigation 🔒🖥 Expert → System → Administration → Reset acc. code



Operating time

Navigation
Expert → Diagnostics → Operating time
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.

Reset acc. code

Navigation
Expert → System → Administration → Reset acc. code → Reset acc. code

Description
Use this function to enter a reset code to reset the user-specific release code to the factory setting.

User entry
Character string comprising numbers, letters and special characters

Factory setting
0x00

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

User entry
The reset code can only be entered via:
- Web browser
- DeviceCare, FieldCare (via interface CDI RJ45)
- Fieldbus

Additional parameters in the "Administration" submenu

Def. access code

Navigation
Expert → System → Administration → Def. access code

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

User entry
0 to 9 999

Factory setting 0

Additional information

Description

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

Once the access code has been defined, write-protected parameters can only be modified if the access code is entered in the **Ent. access code** parameter (→ 14).

If you lose the access code, please contact your Endress+Hauser sales organization.

User entry

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

Factory setting

If the factory setting is not changed or **0** is defined as the access code, the parameters are not write-protected and the device configuration data can be modified. The user is logged on in the **"Maintenance"** role.

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 set.
- Restart device

Factory setting Cancel

Additional information

Selection

Options	Description
Cancel	No action is executed and the user exits the parameter.
To delivery set.	Every parameter for which a customer-specific default setting was ordered is reset to this customer-specific value. All other parameters are reset to the factory setting. This option is not visible if no customer-specific settings have been ordered.
Restart device	The restart resets every parameter whose data are in the volatile memory (RAM) to the factory setting (e.g. measured value data). The device configuration remains unchanged.

Activate SW opt. 🔒

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 Depends on the software option ordered

Additional information

Description

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

User entry

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

NOTE!

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

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

▸ Before you enter a new activation code, make a note of the current activation code .

▸ Enter the new activation code provided by Endress+Hauser when the new software option was ordered.

▸ Once the activation code has been entered, check if the new software option is displayed in the **SW option overv.** parameter (→ 40).

↳ The new software option is active if it is displayed.

↳ If the new software option is not displayed or all software options have been deleted, the code entered was either incorrect or invalid.

▸ If the code entered is incorrect or invalid, enter the old activation code .

▸ Have your Endress+Hauser sales organization check the new activation code remembering to specify the serial number or ask for the code again.

Example for a software option

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

The software options currently enabled are displayed in the **SW option overv.** parameter (→ 40).

Web browser

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

SW option overv.

Navigation Expert → System → Administration → SW option overv.

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

User interface

- HBT Verification
- HBT Monitoring
- Concentration
- Viscosity

Additional information

Description

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

"HBT Verification" option and "HBT Monitoring" option

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

"Concentration" option

Order code for "Application package", option **ED** "Concentration" and option **EE** "Special density"

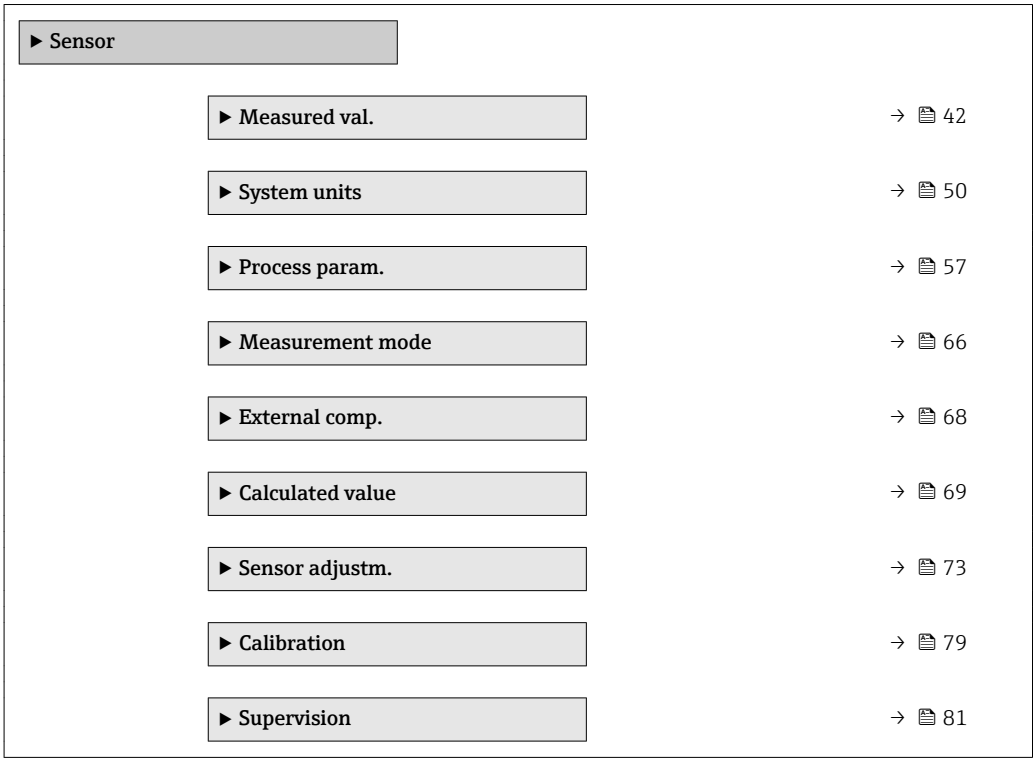
"Viscosity" option

Only available for Promass I.

Order code for "Application package", option **EG** "Viscosity"

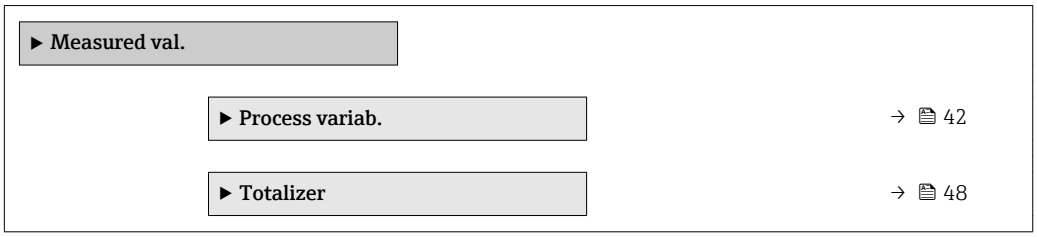
3.2 "Sensor" submenu

Navigation Expert → Sensor



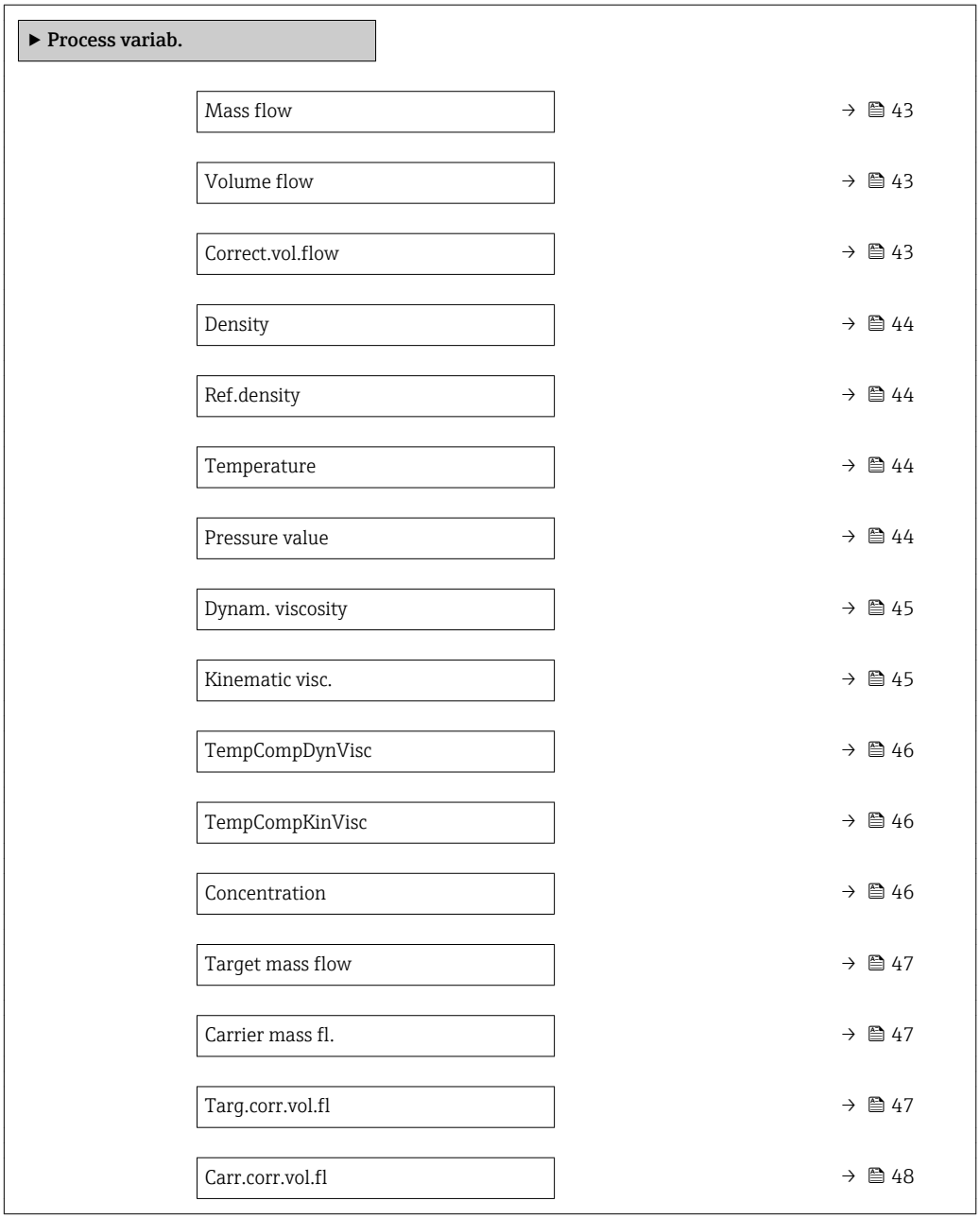
3.2.1 "Measured val." submenu

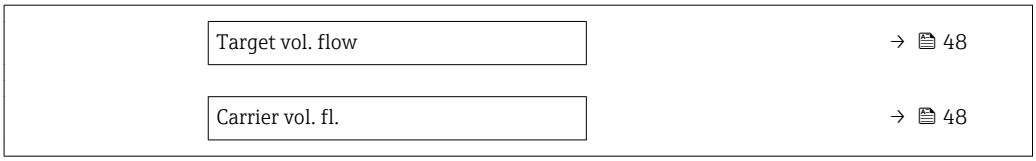
Navigation Expert → Sensor → Measured val.



"Process variab." submenu

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





Mass flow

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

Description Displays the mass flow that is currently measured.

User interface Signed floating-point number

Additional information *Dependency*

The unit is taken from the **Mass flow unit** parameter (→ 50)

Volume flow

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

Description Displays the volume flow currently calculated.

User interface Signed floating-point number

Additional information *Description*

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

Dependency

The unit is taken from the **Volume flow unit** parameter (→ 51)

Correct.vol.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 **Cor.volflow unit** parameter (→ 53)

Density

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

Description Displays the density currently measured.

User interface Signed floating-point number

Additional information *Dependency*

The unit is taken from the **Density unit** parameter (→ 54)

Ref.density

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

Description Displays the reference density currently calculated.

User interface Signed floating-point number

Additional information *Dependency*

The unit is taken from the **Ref. dens. unit** parameter (→ 55)

Temperature

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

Description Displays the medium temperature currently measured.

User interface Signed floating-point number

Additional information *Dependency*

The unit is taken from the **Temperature unit** parameter (→ 55)

Pressure value

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

Description Displays the fixed or external pressure value.

User interface Signed floating-point number

Additional information *Dependency*

The unit is taken from the **Pressure unit** parameter (→ 56)

Dynam. viscosity

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

Prerequisite For the following order code:
"Application package", option **EG** "Viscosity"

The software options currently enabled are displayed in the **SW option overv.** parameter (→ 40).

Description Displays the dynamic viscosity currently calculated.

User interface Signed floating-point number

Additional information *Dependency*

The unit is taken from the **Dyn. visc. unit** parameter.

Kinematic visc.

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

Prerequisite For the following order code:
"Application package", option **EG** "Viscosity"

The software options currently enabled are displayed in the **SW option overv.** parameter (→ 40).

Description Displays the kinematic viscosity currently calculated.

User interface Signed floating-point number

Additional information *Dependency*

The unit is taken from the **Kin. visc. unit** parameter.

TempCompDynVisc

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

Prerequisite
For the following order code:
"Application package", option **EG** "Viscosity"

The software options currently enabled are displayed in the **SW option overv.** parameter (→ 40).

Description Displays the temperature compensation currently calculated for the viscosity.

User interface Signed floating-point number

Additional information
Dependency

The unit is taken from the **Dyn. visc. unit** parameter.

TempCompKinVisc

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

Prerequisite
For the following order code:
"Application package", option **EG** "Viscosity"

The software options currently enabled are displayed in the **SW option overv.** parameter (→ 40).

Description Displays the temperature compensation currently calculated for the kinetic viscosity.

User interface Signed floating-point number

Additional information
Dependency

The unit is taken from the **Kin. visc. unit** parameter.

Concentration

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

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

The software options currently enabled are displayed in the **SW option overv.** parameter (→ 40).

Description Displays the concentration currently calculated.

User interface Signed floating-point number

Additional information *Dependency*

The unit is taken from the **Concentr. unit** parameter.

Target mass flow

Navigation Expert → Sensor → Measured val. → Process variab. → Target mass flow

Prerequisite With the following conditions:
- Order code for "Application package", option **ED** "Concentration"
- The **WT-%** option is selected in the **Concentr. unit** parameter parameter.

The software options currently enabled are displayed in the **SW option overv.** parameter (→ 40).

Description Displays the mass flow currently measured for the target medium.

User interface Signed floating-point number

Additional information *Dependency*

The unit is taken from the **Mass flow unit** parameter (→ 50)

Carrier mass fl.

Navigation Expert → Sensor → Measured val. → Process variab. → Carrier mass fl.

Prerequisite With the following conditions:
- Order code for "Application package", option **ED** "Concentration"
- The **WT-%** option is selected in the **Concentr. unit** parameter parameter.

The software options currently enabled are displayed in the **SW option overv.** parameter (→ 40).

Description Displays the mass flow currently measured for the carrier medium.

User interface Signed floating-point number

Additional information *Dependency*

The unit is taken from the **Mass flow unit** parameter (→ 50)

Targ.corr.vol.fl

Navigation Expert → Sensor → Measured val. → Process variab. → Targ.corr.vol.fl

User interface Signed floating-point number

Factory setting 0 Nl/h

Carr.corr.vol.fl

Navigation Expert → Sensor → Measured val. → Process variab. → Carr.corr.vol.fl

User interface Signed floating-point number

Factory setting 0 Nl/h

Target vol. flow

Navigation Expert → Sensor → Measured val. → Process variab. → Target vol. flow

User interface Signed floating-point number

Factory setting 0 l/h

Carrier vol. fl.

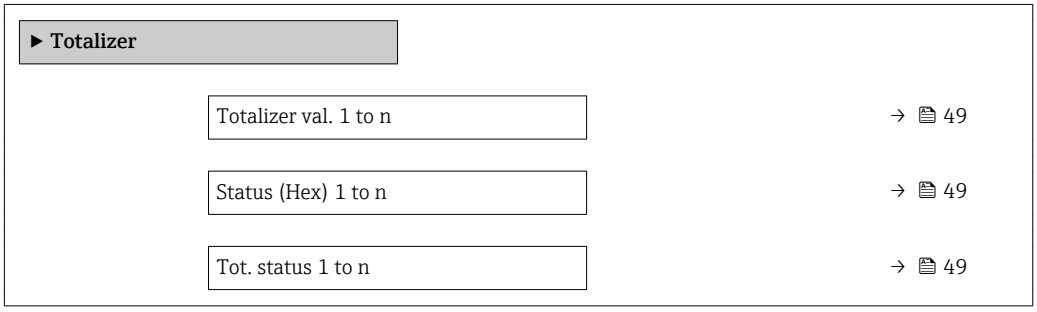
Navigation Expert → Sensor → Measured val. → Process variab. → Carrier vol. fl.

User interface Signed floating-point number

Factory setting 0 l/h

"Totalizer" submenu

Navigation Expert → Sensor → Measured val. → Totalizer



Totalizer val. 1 to n

Navigation Expert → Sensor → Measured val. → Totalizer → Totalizer val. 1 to n

Prerequisite In the **Target mode** parameter (→ 149), 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 (→ 146).

User interface

The value of the process variable totalized since measuring began can be positive or negative. This depends on the settings in the **Operation mode** parameter (→ 145).

Dependency

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 143).

Status (Hex) 1 to n

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

Prerequisite In **Target mode** parameter (→ 149), the **Auto** option is selected.

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

User interface 0 to 0xFF

Tot. status 1 to n

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

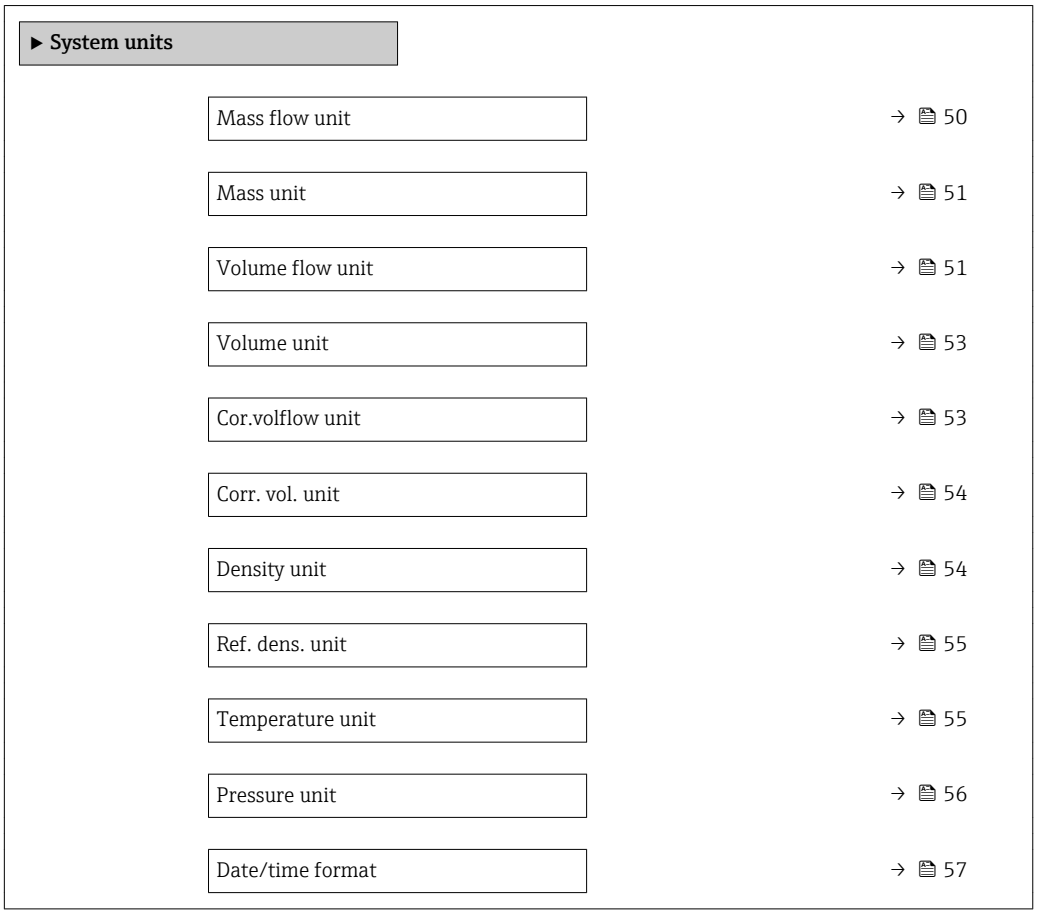
Description Displays the status of the particular totalizer.

User interface

- Good
- Uncertain
- Bad

3.2.2 "System units" submenu

Navigation Expert → Sensor → System units



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 (DN > 150 (6"): t/h)
- lb/min

Additional information

Result

The selected unit applies for:
- **Target mass flow** parameter (→ 47)
- **Carrier mass fl.** parameter (→ 47)
- **Mass flow** parameter (→ 43)

Selection

For an explanation of the abbreviated units: → 185

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 (DN > 150 (6"): t)
- lb

Additional information

Selection

For an explanation of the abbreviated units: → 185

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 (DN > 150 (6"): m^3/h)
- gal/min (us)

Additional information

Result

The selected unit applies for:
Volume flow parameter (→ 📄 43)

Selection

For an explanation of the abbreviated units: → 📄 185

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:
- l (DN > 150 (6"): m^3)
- gal (us)

Additional information *Selection*

For an explanation of the abbreviated units: → 185

Cor.volflow 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 (DN > 150 (6"): Nm^3/h)
- Sft^3/min

Additional information

Result

The selected unit applies for:
Correct.vol.flow parameter (→ 🖹 43)

Selection

For an explanation of the abbreviated units: → 🖹 185

Corr. vol. 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:
- Nl (DN > 150 (6"): Nm^3)
- Sft^3

Additional information

Selection

For an explanation of the abbreviated units: → 🖹 185

Density unit

Navigation

Expert → Sensor → System units → Density unit

Description

Use this function to select the unit for the density.

Selection

SI units
- g/cm^3
- g/m^3
- kg/dm^3
- kg/l
- kg/m^3
- SD4°C
- SD15°C
- SD20°C
- SG4°C
- SG15°C
- SG20°C

US units
- lb/ft^3
- 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:
Density parameter (→ 44)

Selection

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

For an explanation of the abbreviated units: → 185

Ref. dens. unit

Navigation

Expert → Sensor → System units → Ref. dens. unit

Description

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

Selection

SI units
- kg/Nm³
- kg/Nl
- g/Scm³
- kg/Sm³

US units
- lb/Sft³

Factory setting

Country-dependent
- kg/Nl
- lb/Sft³

Additional information

Result

The selected unit applies for:
- **Ext. ref.density** parameter (→ 71)
- **Fix ref.density** parameter (→ 71)
- **Ref.density** parameter (→ 44)

Selection

For an explanation of the abbreviated units: → 185

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:
- **Maximum value** parameter (→ 169)
- **Minimum value** parameter (→ 169)
- **Maximum value** parameter (→ 170)
- **Minimum value** parameter (→ 170)
- **Maximum value** parameter (→ 171)
- **Minimum value** parameter (→ 171)
- **Ref. temperature** parameter
- **Temperature** parameter (→ 44)
- **Ref. temperature** parameter (→ 71)

Selection

For an explanation of the abbreviated units: → 185

Pressure unit

Navigation

Expert → Sensor → System units → Pressure unit

Description

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

Selection

SI units
- Pa a
- kPa a
- MPa a
- bar
- Pa g
- kPa g
- MPa g
- bar g

US units
- psi a
- psi g

Factory setting

Country-specific:
- bar a
- psi a

Additional information *Result*

The unit is taken from:
- **Pressure value** parameter (→ 69)
- **External press.** parameter (→ 69)
- **Pressure value** parameter (→ 44)

Selection

For an explanation of the abbreviated units: → 185

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

Factory setting dd.mm.yy hh:mm

Additional information *Selection*

For an explanation of the abbreviated units: → 185

3.2.3 "Process param." submenu

Navigation Expert → Sensor → Process param.

▶ **Process param.**	
Flow damping	→ 58
Density damping	→ 58
Temp. damping	→ 59
Flow override	→ 59
▶ **Low flow cut off**	→ 60
▶ **Partial pipe det**	→ 63

Flow damping

Navigation Expert → Sensor → Process param. → Flow damping

Description Use this function to enter a time constant for flow damping (PT1 element). Reduction of the variability of the flow measured value (in relation to interference). For this purpose, the depth of the flow filter is adjusted: when the filter setting increases, the reaction time of the device also increases.

User entry 0 to 100.0 s

Factory setting 0 s

Additional information

Description

The damping is performed by a PT1 element [2].

User entry

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

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

Result

The damping affects the following variables of the device:
- Outputs
- Low flow cut off → 60
- Totalizers → 142

Density damping

Navigation Expert → Sensor → Process param. → Density damping

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

User entry 0 to 999.9 s

Factory setting 0 s

2) Proportional behavior with first-order lag

Additional information *Description*

The damping is performed by a PT1 element [3].

User entry

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

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

Temp. damping

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

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

User entry 0 to 999.9 s

Factory setting 0 s

Additional information *Description*

The damping is performed by a PT1 element [4].

User entry

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

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

Flow override

Navigation Expert → Sensor → Process param. → Flow override

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

Selection

- Off
- On

Factory setting Off

3) Proportional behavior with first-order lag
4) Proportional behavior with first-order lag

Additional information

Result

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

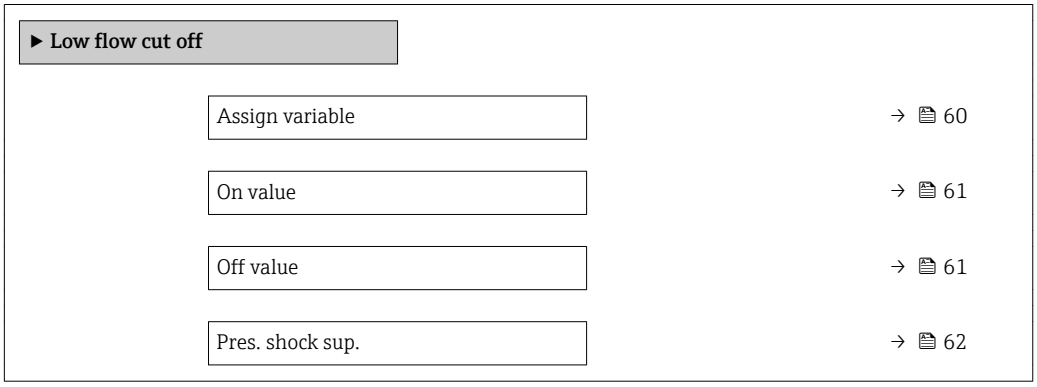
Description

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

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

"Low flow cut off" submenu

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



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

Factory setting Mass flow

On value

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

Prerequisite One of the following options is selected in the **Assign variable** parameter (→ 60):
- Mass flow
- Volume flow
- Correct.vol.flow

Description Use this function to enter a switch-on value for low flow cut off. Low flow cut off is activated if the value entered is not equal to 0 → 61.

User entry Positive floating-point number

Factory setting Depends on country and nominal diameter→ 182

Additional information *Dependency*

The unit depends on the process variable selected in the **Assign variable** parameter (→ 60).

Off value

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

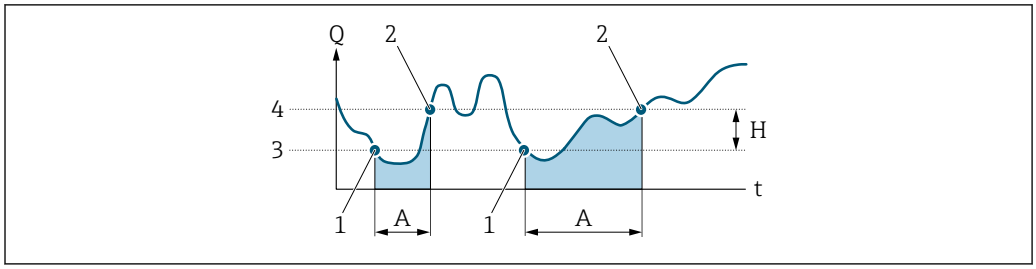
Prerequisite One of the following options is selected in the **Assign variable** parameter (→ 60):
- Mass flow
- Volume flow
- Correct.vol.flow

Description Use this function to enter a switch-off value for low flow cut off. The off value is entered as a positive hysteresis from the on value→ 61.

User entry 0 to 100.0 %

Factory setting 50 %

Additional information *Example*



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

Pres. shock sup.

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

Prerequisite One of the following options is selected in the **Assign variable** parameter (→ 60):
- Mass flow
- Volume flow
- Correct.vol.flow

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

User entry 0 to 100 s

Factory setting 0 s

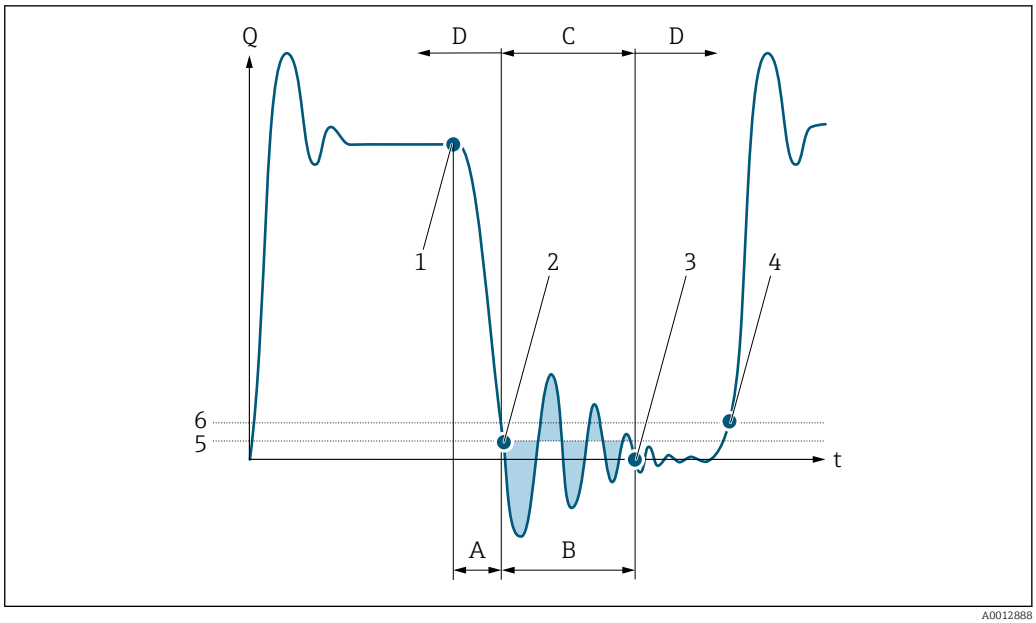
Additional information *Description*

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

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

Example

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



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

"Partial pipe det" submenu

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

▶ Partial pipe det	
Assign variable	→ 64
Low value	→ 64
High value	→ 64
Response time	→ 65
Max. damping	→ 65

Assign variable

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

Description Use this function to select a process variable to detect empty or partially filled measuring tubes.

For gas measurement: Deactivate monitoring due to low gas density.

Selection
- Off
- Density
- Ref.density

Factory setting Off

Low value

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

Prerequisite One of the following options is selected in the **Assign variable** parameter (→ 64):
- Density
- Ref.density

Description Use this function to enter a lower limit value to enable detection of empty or partially filled measuring tubes. If the measured density falls below this value, monitoring is enabled.

User entry Signed floating-point number

Factory setting 200

Additional information *User entry*

The lower limit value must be less than the upper limit value defined in the **High value** parameter (→ 64).

The unit depends on the process variable selected in the **Assign variable** parameter (→ 64).

Limit value

If the displayed value is outside the limit value, the measuring device displays the diagnostic message ⚠**S862 Partly filled**.

High value

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

Prerequisite One of the following options is selected in the **Assign variable** parameter (→ 64):
- Density
- Ref.density

Description Use this function to enter an upper limit value to enable detection of empty or partially filled measuring tubes. If the measured density exceeds this value, detection is enabled.

User entry Signed floating-point number

Factory setting 6 000

Additional information

User entry

The upper limit value must be greater than the lower limit value defined in the **Low value** parameter (→ 64).

The unit depends on the process variable selected in the **Assign variable** parameter (→ 64).

Limit value

If the displayed value is outside the limit value, the measuring device displays the diagnostic message ⚠**S862 Partly filled**.

Response time

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

Prerequisite One of the following options is selected in the **Assign variable** parameter (→ 64):
- Density
- Ref.density

Description Use this function to enter the minimum length of time (debouncing time) the signal must be present for the diagnostic message ⚠**S862 Partly filled** to be triggered if the measuring pipe is empty or partially full.

User entry 0 to 100 s

Factory setting 1 s

Max. damping

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

Prerequisite One of the following options is selected in the **Assign variable** parameter (→ 64):
- Density
- Ref.density

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

User entry Positive floating-point number

Factory setting 0

Additional information

Description

If oscillation damping exceeds the specified value, the measuring device presumes that the pipe is partially filled and the flow signal is set to **0**. The measuring device displays the diagnostic message ⚠**S862 Partly filled**. In the case of non-homogeneous media or air pockets, the damping of the measuring tubes increases.

User entry

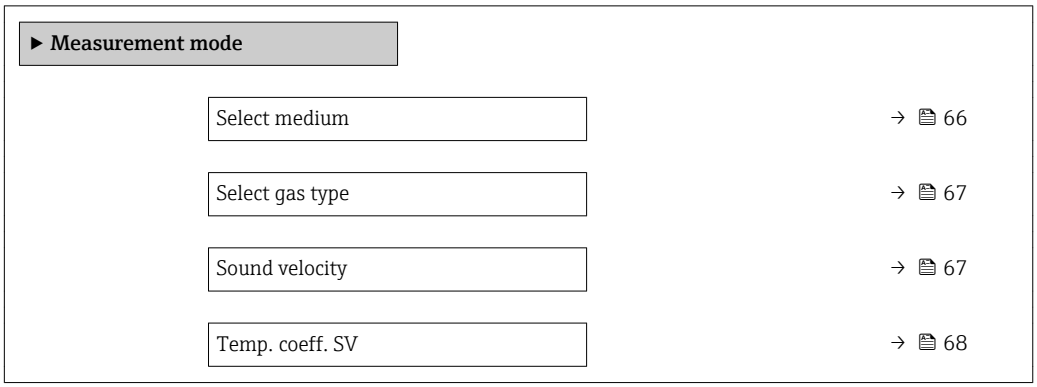
- Damping is disabled if **0** is entered (factory setting).
- Damping is enabled if the value entered is greater than **0**.
- The value entered depends on application-specific influence variables, such as the medium, nominal diameter, sensor etc.

Example

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

3.2.4 "Measurement mode" submenu

Navigation Expert → Sensor → Measurement mode



Select medium

Navigation Expert → Sensor → Measurement mode → Select medium

Description Use this function to select the type of medium.

Selection Liquid

Factory setting Liquid

Select gas type

Navigation Expert → Sensor → Measurement mode → Select gas type

Prerequisite The **Gas** option is selected in the **Select medium** parameter (→ 66).

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

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

Factory setting Methane CH4

Additional information *Description*

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

Sound velocity

Navigation Expert → Sensor → Measurement mode → Sound velocity

Prerequisite In the **Select gas type** parameter (→ 67), the **Others** option is selected.

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

User entry 1 to 99 999.9999 m/s

Factory setting 415.0 m/s

Temp. coeff. SV

Navigation Expert → Sensor → Measurement mode → Temp. coeff. SV

Prerequisite The **Others** option is selected in the **Select gas type** parameter (→ 67).

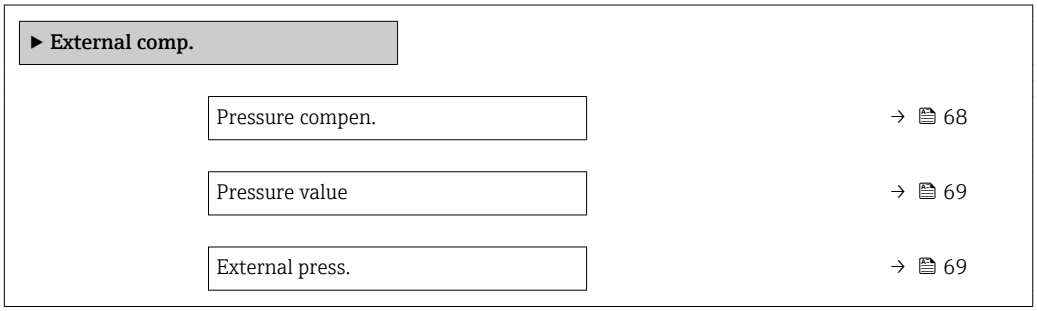
Description Use this function to enter a temperature coefficient for the sound velocity of the gas.

User entry Positive floating-point number

Factory setting 0 (m/s)/K

3.2.5 "External comp." submenu

Navigation Expert → Sensor → External comp.



Pressure compen.

Navigation Expert → Sensor → External comp. → Pressure compen.

Description Use this function to select the type of pressure compensation.

Selection
- Off
- Fixed value
- External value

Factory setting Off

Additional information *Selection*
- Fixed value
  A fixed pressure value is used for compensation: **Pressure value** parameter (→ 69)
- External value
  The pressure value read in via PROFIBUS DP is used for compensation.
- Current input 1
  The pressure value read in via the current input is used for compensation.

For more information, see the "Cyclic data transmission" section of the Operating Instructions

Pressure value	

Navigation Expert → Sensor → External comp. → Pressure value

Prerequisite The **Fixed value** option is selected in the **Pressure compen.** parameter (→ 68).

Description Use this function to enter a value for the process pressure that is used for pressure correction.

User entry Positive floating-point number

Factory setting 0 bar

Additional information *User entry*

The unit is taken from the **Pressure unit** parameter (→ 56)

External press.

Navigation Expert → Sensor → External comp. → External press.

Prerequisite The **External value** option is selected in the **Pressure compen.** parameter (→ 68).

Description Use this function to enter an external pressure value.

User entry Positive floating-point number

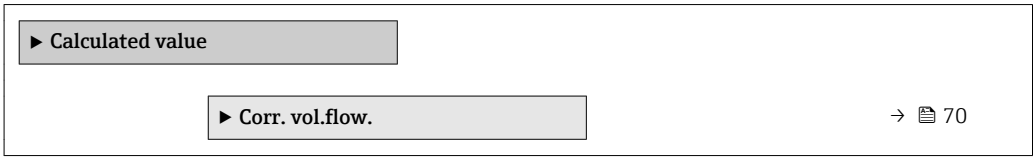
Factory setting 0 bar

Additional information *User entry*

The unit is taken from the **Pressure unit** parameter (→ 56)

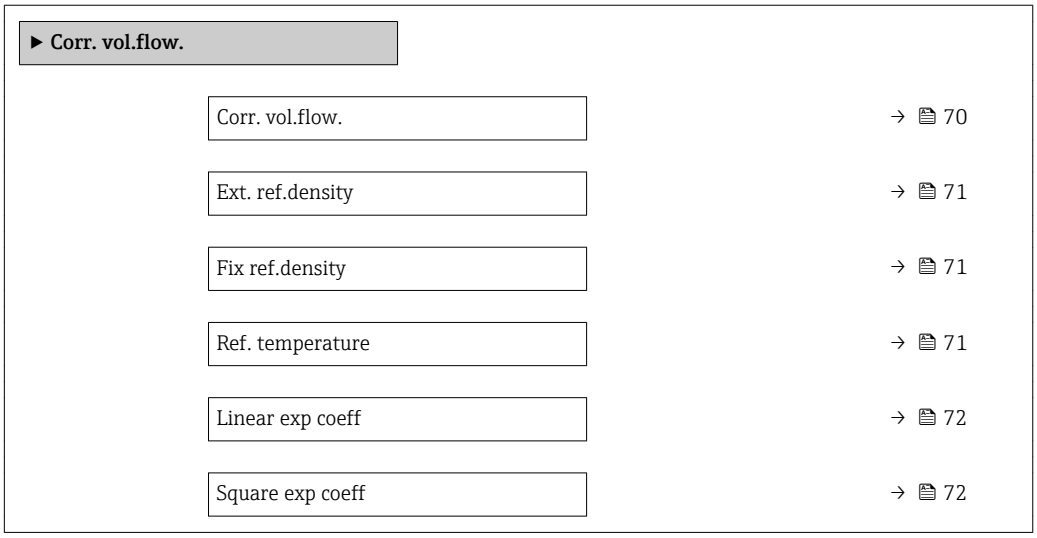
3.2.6 "Calculated value" submenu

Navigation Expert → Sensor → Calculated value



"Corr. vol.flow." submenu

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



Corr. vol.flow.

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

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

Selection
- Fix ref.density
- Calc ref density
- Ref. dens API 53
- Ext. ref.density

Factory setting Calc ref density

Additional information *Selection*

The **Ref. dens API 53** option is suitable only for applications involving LPG [5], where the flow rate is measured on the basis of the corrected volume flow.

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

5) liquefied petroleum gas

Ext. ref.density

Navigation Expert → Sensor → Calculated value → Corr. vol.flow. → Ext. ref.density

Prerequisite In the **Corr. vol.flow.** parameter (→ 70), the **Ext. ref.density** option is selected.

Description Displays the reference density which is read in externally, e.g. via the current input.

User interface Floating point number with sign

Additional information *Dependency*

The unit is taken from the **Ref. dens. unit** parameter (→ 55)

Fix ref.density

Navigation Expert → Sensor → Calculated value → Corr. vol.flow. → Fix ref.density

Prerequisite The **Fix ref.density** option is selected in the **Corr. vol.flow.** parameter (→ 70) parameter.

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

User entry Positive floating-point number

Factory setting 1 kg/Nl

Additional information *Dependency*

The unit is taken from the **Ref. dens. unit** parameter (→ 55)

Ref. temperature

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

Prerequisite The **Calc ref density** option is selected in the **Corr. vol.flow.** parameter (→ 70).

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

User entry −273.15 to 99 999 °C

Factory setting Country-specific:
- +20 °C
- +68 °F

Additional information

Dependency

The unit is taken from the **Temperature unit** parameter (→ 55)

Reference density calculation

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

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

Linear exp coeff

Navigation Expert → Sensor → Calculated value → Corr. vol.flow. → Linear exp coeff

Prerequisite The **Calc ref density** option is selected in the **Corr. vol.flow.** parameter (→ 70) parameter.

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

User entry Signed floating-point number

Factory setting 0.0

Square exp coeff

Navigation Expert → Sensor → Calculated value → Corr. vol.flow. → Square exp coeff

Prerequisite The **Calc ref density** option is selected in the **Corr. vol.flow.** parameter (→ 70) parameter.

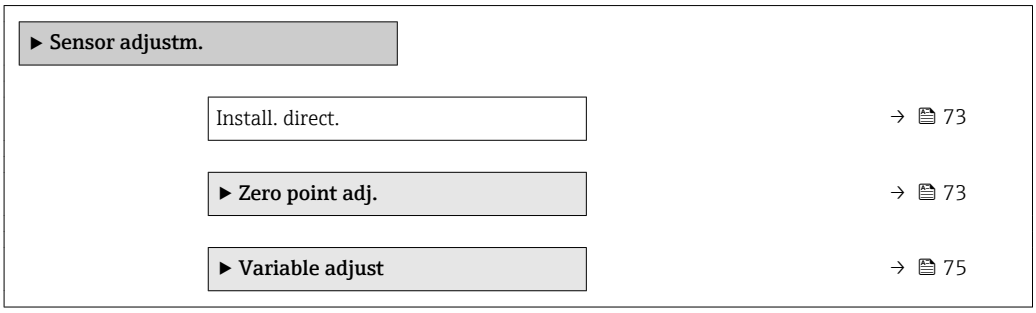
Description For fluid with a non-linear expansion pattern: use this function to enter a quadratic, fluid-specific expansion coefficient for calculating the reference density.

User entry Signed floating-point number

Factory setting 0.0

3.2.7 "Sensor adjustm." submenu

Navigation Expert → Sensor → Sensor adjustm.



Install. direct.

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

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

Selection
- In arrow direct.
- Against arrow

Factory setting In arrow direct.

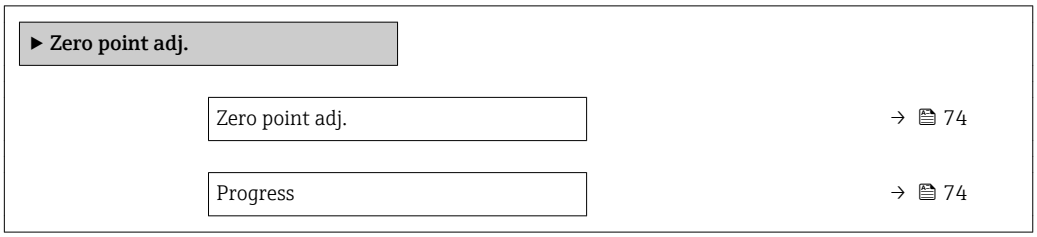
Additional information *Description*

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

"Zero point adj." submenu

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

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



Zero point adj.

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

Description Use this function to select the start of the zero point adjustment.

Observe conditions → 73.

Selection
- Cancel
- Busy
- Zero adjust fail
- Start

Factory setting Cancel

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

Progress

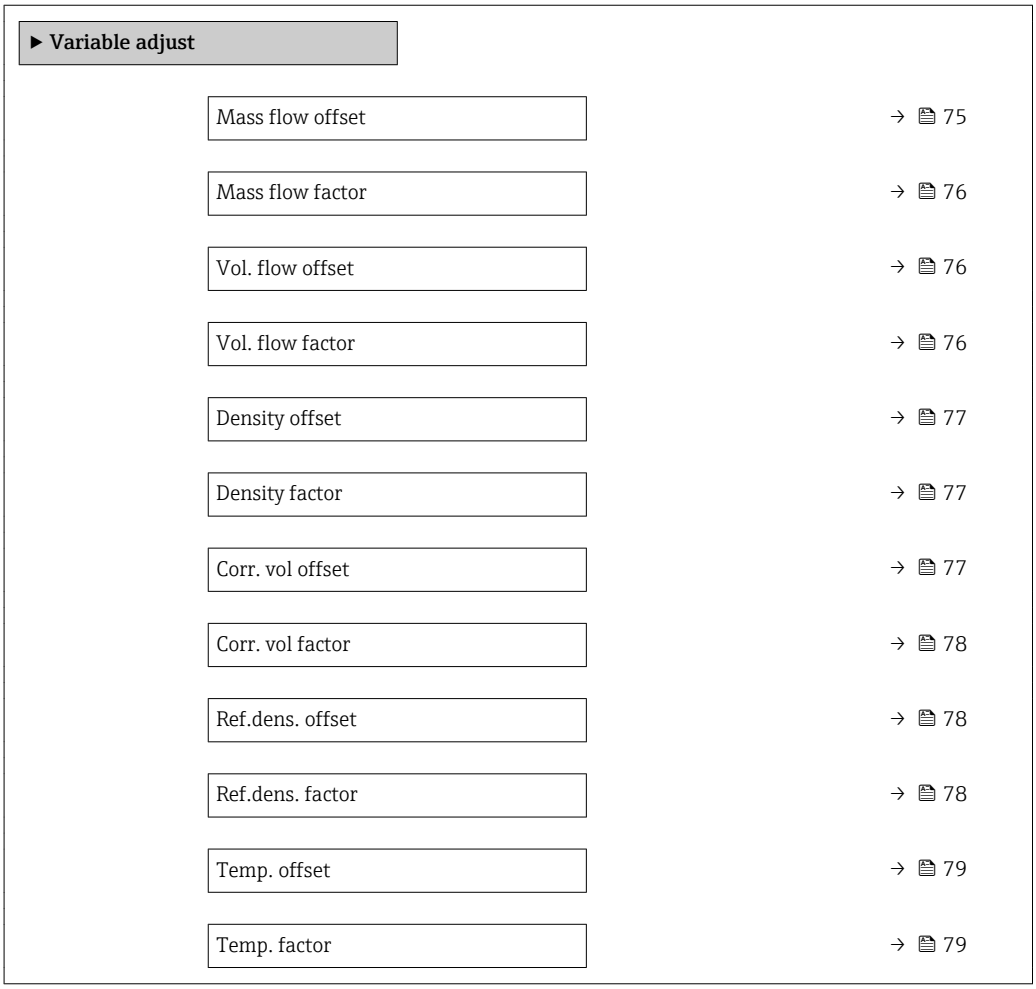
Navigation Expert → Sensor → Sensor adjustm. → Zero point adj. → Progress

Description The progress of the process is indicated.

User interface 0 to 100 %

"Variable adjust" submenu

Navigation Expert → Sensor → Sensor adjustm. → Variable adjust



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

Vol. 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

Vol. 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

Density offset

Navigation Expert → Sensor → Sensor adjustm. → Variable adjust → Density offset

Description Use this function to enter the zero point shift for the density trim. The density unit on which the shift is based is kg/m³.

User entry Signed floating-point number

Factory setting 0 kg/m³

Additional information *Description*

Corrected value = (factor × value) + offset

Density factor

Navigation Expert → Sensor → Sensor adjustm. → Variable adjust → Density factor

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

User entry Positive floating-point number

Factory setting 1

Additional information *Description*

Corrected value = (factor × value) + offset

Corr. vol 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 Nm³/s.

User entry Signed floating-point number

Factory setting 0 Nm³/s

Additional information *Description*

Corrected value = (factor × value) + offset

Corr. vol factor

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

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

Ref.dens. offset

Navigation Expert → Sensor → Sensor adjustm. → Variable adjust → Ref.dens. offset

Description Use this parameter to enter the zero point shift for the reference density trim. The reference density unit on which the shift is based is 1 kg/Nm³.

User entry Signed floating-point number

Factory setting 0 kg/Nm³

Additional information *Description*

Corrected value = (factor × value) + offset

Ref.dens. factor

Navigation Expert → Sensor → Sensor adjustm. → Variable adjust → Ref.dens. factor

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

User entry Positive floating-point number

Factory setting 1

Additional information *Description*

Corrected value = (factor × value) + offset

Temp. offset

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

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

User entry Signed floating-point number

Factory setting 0 K

Additional information *Description*

Corrected value = (factor × value) + offset

Temp. factor

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

Description Use this function to enter a quantity factor for the temperature. In each case, this factor refers to the temperature in K.

User entry Positive floating-point number

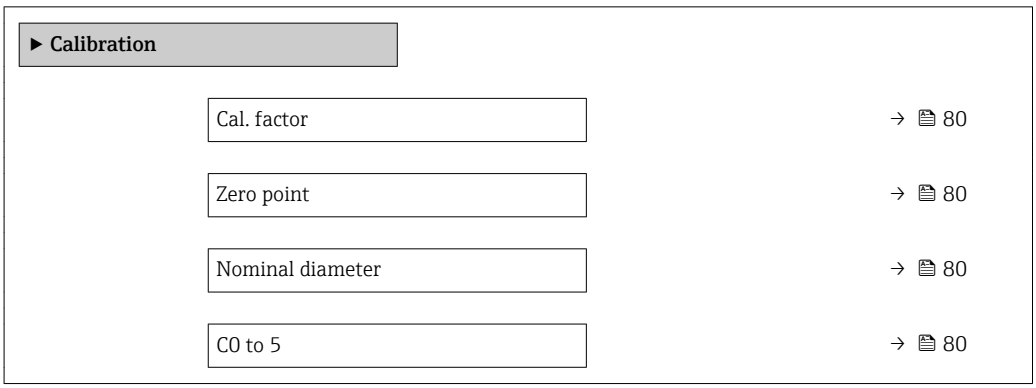
Factory setting 1

Additional information *Description*

Corrected value = (factor × value) + offset

3.2.8 "Calibration" submenu

Navigation Expert → Sensor → Calibration



Cal. factor

Navigation Expert → Sensor → Calibration → Cal. factor

Description Displays the current calibration factor for the sensor.

User interface Signed floating-point number

Factory setting Depends on nominal diameter and calibration.

Zero point

Navigation Expert → Sensor → Calibration → Zero point

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

User entry Signed floating-point number

Factory setting Depends on nominal diameter and calibration.

Nominal diameter

Navigation Expert → Sensor → Calibration → Nominal diameter

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.

C0 to 5

Navigation Expert → Sensor → Calibration → C0 to 5

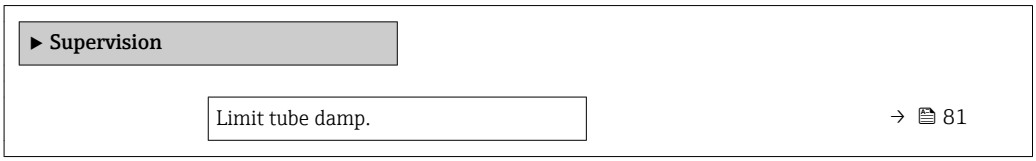
Description Displays the current density coefficients C0 to 5 of the sensor.

User interface Signed floating-point number

Factory setting 0

3.2.9 "Supervision" submenu

Navigation Expert → Sensor → Supervision



Limit tube damp.

Navigation Expert → Sensor → Supervision → Limit tube damp.

Description Use this function to enter a limit value for measuring tube damping.

User entry Positive floating-point number

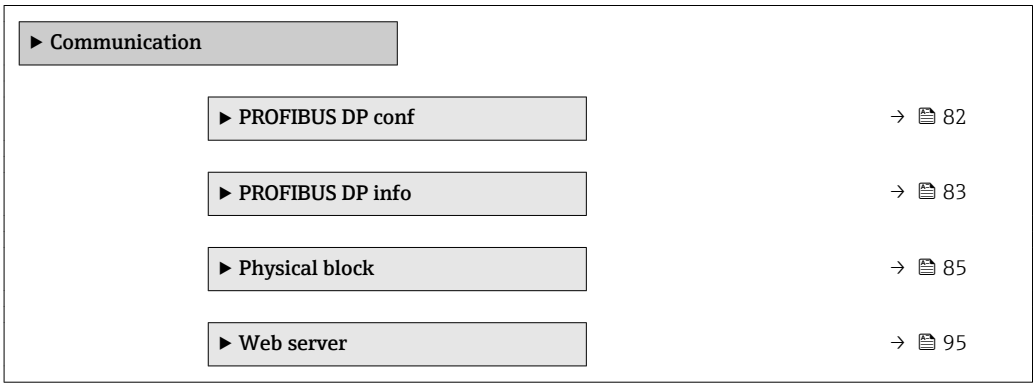
Factory setting Positive floating-point number

Additional information *Limit value*

- If the displayed value is outside the limit value, the measuring device displays the diagnostic message ⚠**S948 Tube damp. high**.
- For detecting inhomogeneous media, for example

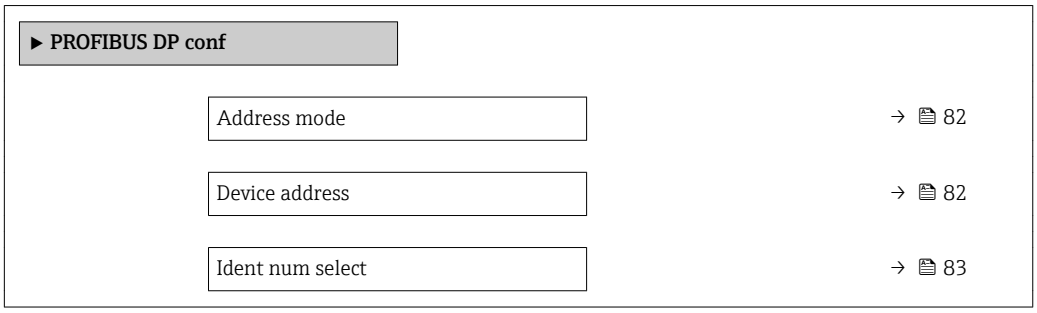
3.3 "Communication" submenu

Navigation Expert → Communication



3.3.1 "PROFIBUS DP conf" 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 (→ 82)

Ident num select

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
- 1AI,1Tot(0x9740)
- 2AI,1Tot(0x9741)

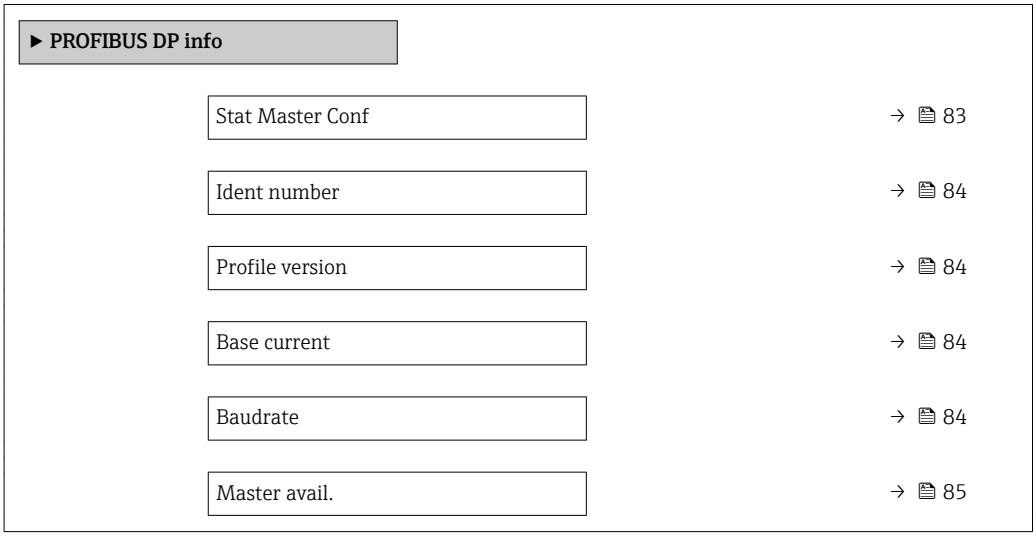
Factory setting Automatic mode

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



Stat Master Conf

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

Ident number

Navigation Expert → Communication → PROFIBUS DP info → Ident number

Description For displaying the PROFIBUS identification number.

User interface 0 to FFFF

Factory setting 0x1561

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 avail.

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

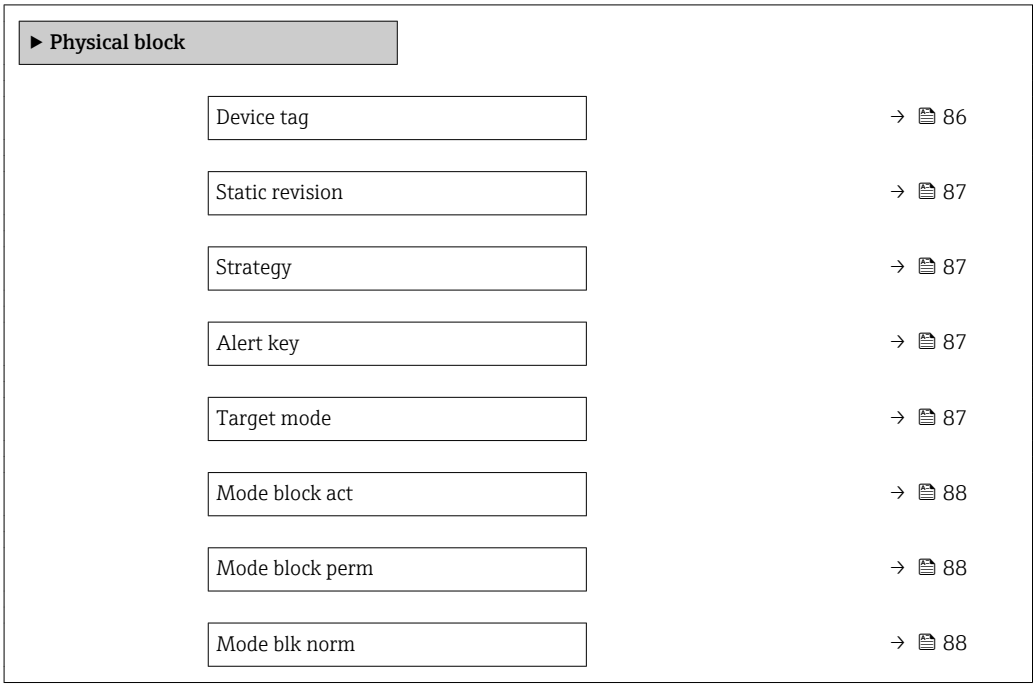
Description Displays whether or not a PROFIBUS master is present in the network.

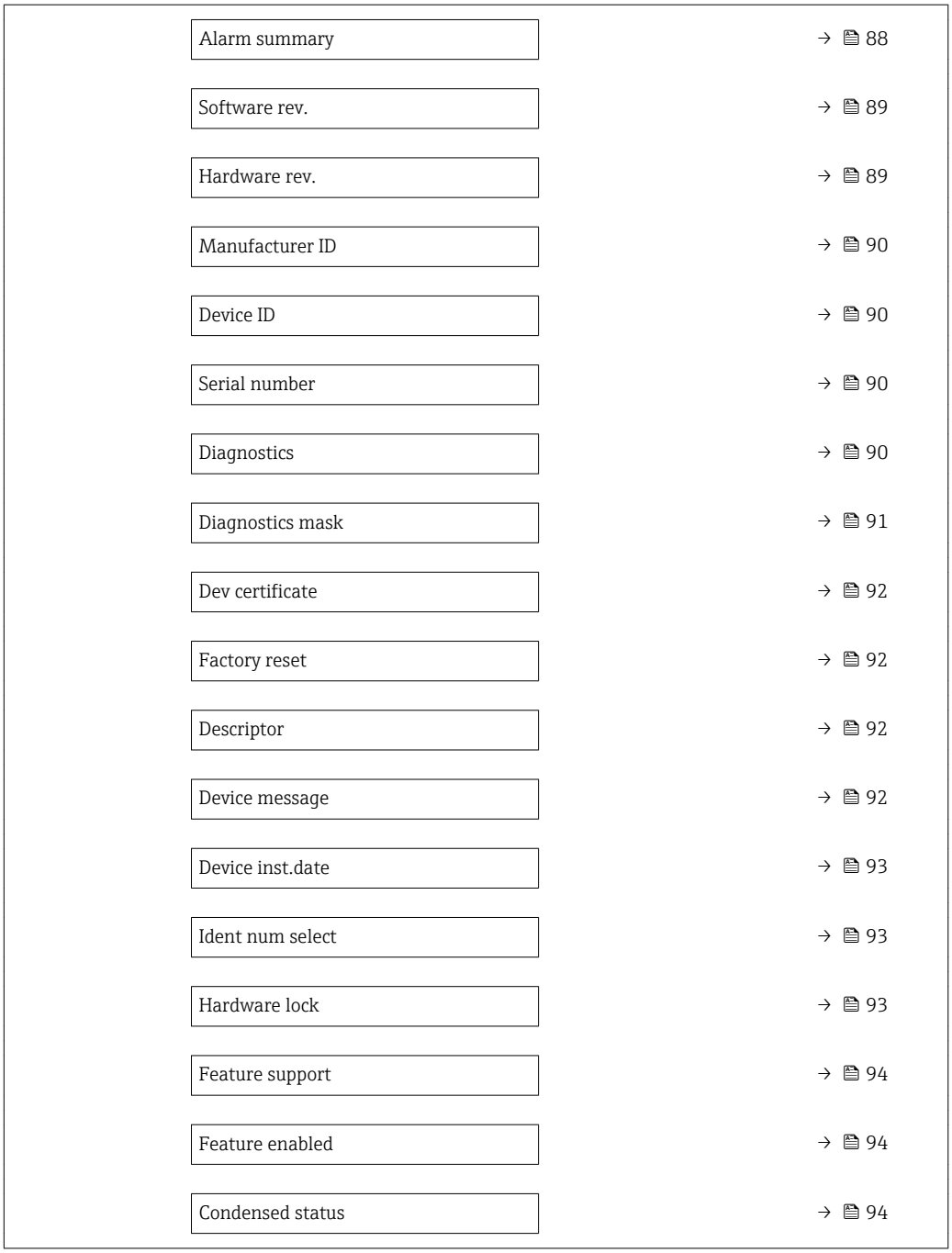
User interface
- No
- Yes

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 Promass 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 act

Navigation Expert → Communication → Physical block → Mode block act

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

User interface
- Auto
- 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 perm

Navigation Expert → Communication → Physical block → Mode block perm

Description Displays the Mode block perm: 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 blk norm

Navigation Expert → Communication → Physical block → Mode blk norm

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

User interface
- Auto
- Out of service

Alarm summary

Navigation Expert → Communication → Physical block → Alarm summary

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

User interface

- Discrete alarm
- Alm statHiHi lim
- Alrm stat Hi lim
- Alm statLoLo lim
- Alrm stat Lo lim
- Update Event

Additional information

Description

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

User interface

- Discrete alarm
  Alarm or warning message with a discrete value.
- Alm statHiHi lim
  Upper alarm limit
- Alrm stat Hi lim
  Upper warning limit
- Alm statLoLo lim
  Lower alarm limit
- Alrm stat Lo lim
  Lower warning limit
- Update Event
  This option constitutes a special alarm that is triggered if a static parameter is changed. If such a parameter is modified, the associated bit is set in the **Alarm summary** parameter (→ 88), 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 (→ 88) is deleted again).

Software rev.

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 rev.

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 Promass 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
- HW Error
- HW Error
- Temp motor

- Electronic temp
- Checksum error
- Measuremnt error
- Not initialized
- Init. error
- Zero point error
- Power supply
- Conf invalid
- On warmstart
- On coldstart
- Maintenance req.
- Char.invalid
- Ident num Error
- More info avlble
- Mainten. alarm
- Mainten.demanded
- Fct.chk or sim.
- Inval.proc.cond.

Diagnostics mask

Navigation Expert → Communication → Physical block → Diagnostics mask

Description Displays the diagnostic messages supported by the measuring device.

User interface

- HW Error
- HW Error
- Temp motor
- Electronic temp
- Checksum error
- Measuremnt error
- Not initialized
- Init. error
- Zero point error
- Power supply
- Conf invalid
- On warmstart
- On coldstart
- Maintenance req.
- Char.invalid
- Ident num Error
- More info avlble
- Mainten. alarm
- Mainten.demanded
- Fct.chk or sim.
- Inval.proc.cond.

Dev certificate

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 addr
- 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 inst.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 num select

Navigation Expert → Communication → Physical block → Ident num select

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

Selection
- Automatic mode
- Manufacturer
- Profile
- 1AI,1Tot(0x9740)
- 2AI,1Tot(0x9741)

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 support

Navigation Expert → Communication → Physical block → Feature support

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

User interface

- Condensed status
- Classic diag
- Data ex.broad.
- MS1 app.relation
- PROFIsafe comm.

Feature enabled

Navigation Expert → Communication → Physical block → Feature enabled

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

User interface

- Condensed status
- Classic diag
- Data ex.broad.
- MS1 app.relation
- PROFIsafe comm.

Condensed status

Navigation Expert → Communication → Physical block → Condensed status

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

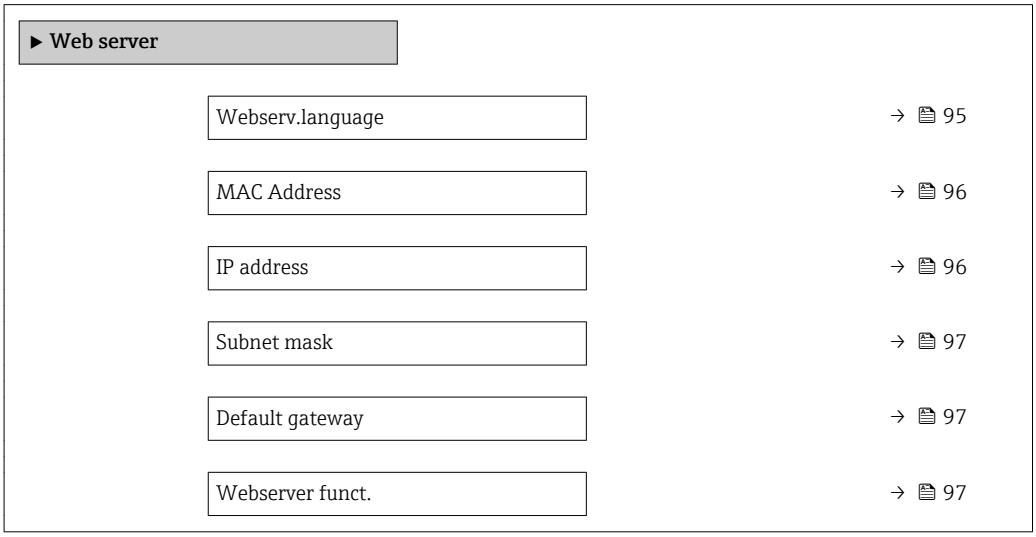
Selection

- Off
- On

Factory setting On

3.3.4 "Web server" submenu

Navigation Expert → Communication → Web server



Webserv.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(Ru) *
- Svenska *
- Türkçe *
- 中文 (Chinese) *
- 日本語 (Japanese) *
- 한국어 (Korean) *
- العَرَبيّة(Ara) *
- Bahasa Indonesia *
- ภาษาไทย (Thai) *
- tiếng Việt (Vit) *
- čeština (Czech) *

* Visibility depends on order options or device settings

Factory setting English

MAC Address

Navigation Expert → Communication → Web server → MAC Address

Description Displays the MAC [6] address of the measuring device.

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

Factory setting Each measuring device is given an individual address.

Additional information *Example*

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

DHCP client

Navigation Expert → Communication → Configuration → DHCP client

Setup → Communication → DHCP client

Description Use this function to activate and deactivate the DHCP client functionality.

Selection
- Off
- On

Factory setting Off

Additional information *Result*

If the DHCP client functionality of the Web server is activated, the IP address (→ 96), Subnet mask (→ 97) and Default gateway (→ 97) are set automatically.

Identification is via the MAC address of the measuring device.

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

6) Media Access Control

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

Webserver funct.

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

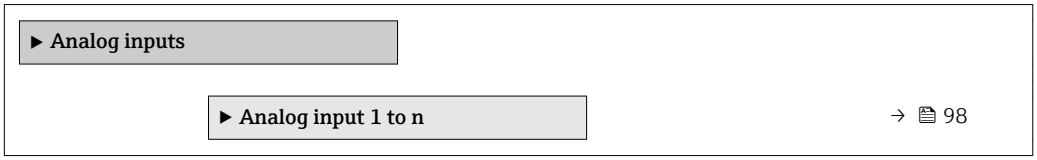
Once disabled, the Webserver funct. can only be re-enabled via the local display or the operating tool FieldCare.

Selection

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

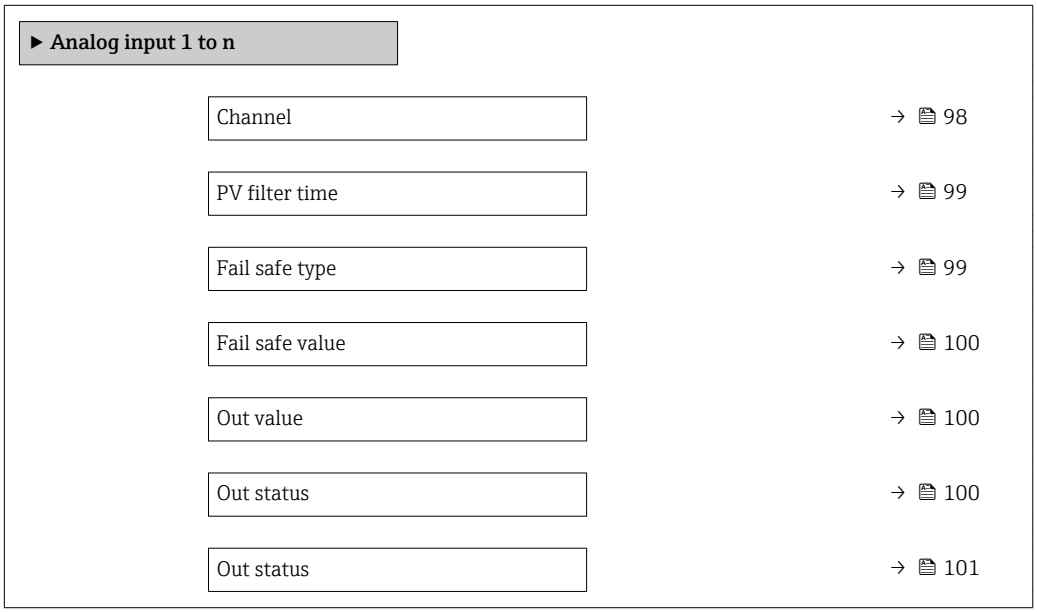
3.4 "Analog inputs" submenu

Navigation Expert → Analog inputs



3.4.1 "Analog input 1 to n" submenu

Navigation Expert → Analog inputs → Analog input 1 to n



Channel

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

Description For selecting the process variable.

Selection
- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *
- Density
- Ref.density
- Concentration *
- Dynam. viscosity *
- Kinematic visc. *
- TempCompDynVisc *
- TempCompKinVisc *

* Visibility depends on order options or device settings

- Temperature
- Carr. pipe temp. *
- Electronic temp.
- Osc. freq. 0
- Osc. freq. 1 *
- Freq. fluct. 0
- Freq. fluct. 1 *
- Osc. ampl. 0 *
- Osc. ampl. 1 *
- Freq. fluct. 0
- Osc. damping 0
- Osc. damping 1 *
- Damping fluct 0
- Damping fluct 1 *
- Signal asymmetry
- Exc. current 0
- Exc. current 1 *
- Sensor integrity

Factory setting Mass flow

Additional information *Selection*

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

PV filter time

Navigation Expert → Analog inputs → Analog input 1 to n → 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 n → 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 (→ 100).
- Fallback value
  If the value was good at one point, then this last valid value is used.
- Off
  The system continues to use the bad value.

Fail safe value

Navigation Expert → Analog inputs → Analog input 1 to n → Fail safe value

Prerequisite In **Fail safe type** parameter (→ 99), 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 (→ 100)) in the event of an error.

User entry Signed floating-point number

Factory setting 0

Out value

Navigation Expert → Analog inputs → Analog input 1 to n → Out value

Prerequisite In **Target mode** parameter (→ 102), the **Auto** option is selected.

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

User interface Signed floating-point number

Out status

Navigation Expert → Analog inputs → Analog input 1 to n → Out status

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

User interface
- Good
- Uncertain
- Bad

Out status

Navigation Expert → Analog inputs → Analog input 1 to n → Out status

Prerequisite In **Target mode** parameter (→ 102), the **Auto** option is selected.

Description Displays the current output status (hex value).

User interface 0 to 0xFF

Tag description

Navigation Expert → Analog inputs → Analog input 1 to n → Tag description

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

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

Static revision

Navigation Expert → Analog inputs → Analog input 1 to n → Static revision

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 n → 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 n → 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 n → 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 act

Navigation Expert → Analog inputs → Analog input 1 to n → Mode block act

Description Displays the Mode block act: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block act shows the actual mode in which the function block is currently operating. A comparison of the Mode block act with the Target mode indicates whether it was possible to reach the Target mode (→ 102).

User interface
- Auto
- Man
- Out of service

Additional information *Description*

A comparison of the current mode with the target mode (**Target mode** parameter (→ 102)) indicates whether it was possible to reach the target mode.

Mode block perm

Navigation Expert → Analog inputs → Analog input 1 to n → Mode block perm

Description Displays the Mode block perm: This defines which modes of operation in the Target mode (→ 102) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

User interface 0 to 255

Mode blk norm

Navigation Expert → Analog inputs → Analog input 1 to n → Mode blk norm

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

User interface
- Auto
- Man
- Out of service

Alarm summary

Navigation Expert → Analog inputs → Analog input 1 to n → Alarm summary

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

User interface
- Discrete alarm
- Alm statHiHi lim
- Alrm stat Hi lim
- Alm statLoLo lim
- Alrm stat Lo lim
- Update Event

Additional information *Description*

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

Batch ID

Navigation Expert → Analog inputs → Analog input 1 to n → Batch ID

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

User entry Positive integer

Batch operation

Navigation Expert → Analog inputs → Analog input 1 to n → Batch operation

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

User entry 0 to 65 535

Factory setting 0

Batch phase

Navigation Expert → Analog inputs → Analog input 1 to n → Batch phase

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

User entry 0 to 65 535

Factory setting 0

Batch Recipe

Navigation Expert → Analog inputs → Analog input 1 to n → Batch Recipe

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.

PVscale lo range

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

PVscale up range

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

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

Navigation Expert → Analog inputs → Analog input 1 to n → 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 n → 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 n → 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 dec_ point

Navigation Expert → Analog inputs → Analog input 1 to n → 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 n → 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 n → Hi Hi Lim

Description Use this function to enter the value for the upper alarm limit (**HiHi alarm value** parameter (→ 108)).

User entry Signed floating-point number

Factory setting Positive floating-point number

Additional information

Description

If the output value Out value (→ 100) exceeds this limit value, the **HiHi alarm state** parameter (→ 109) is output.

User entry

The value is entered in the defined units (**Out unit** parameter (→ 106)) and must be in the range defined in the **Out scale low** parameter (→ 105) and **Out scale up** parameter (→ 105).

Hi Lim

Navigation Expert → Analog inputs → Analog input 1 to n → Hi Lim

Description Use this function to enter the value for the upper warning limit (**Hi alarm value** parameter (→ 109)).

User entry Signed floating-point number

Factory setting Positive floating-point number

Additional information

Description

If the output value Out value (→ 100) exceeds this limit value, the **Hi alarm state** parameter (→ 109) is output.

User entry

The value is entered in the defined units (**Out unit** parameter (→ 106)) and must be in the range defined in the **Out scale low** parameter (→ 105) and **Out scale up** parameter (→ 105).

Lo Lim

Navigation Expert → Analog inputs → Analog input 1 to n → Lo Lim

Description Use this function to enter the value for the lower warning limit (**Lo alarm value** parameter (→ 109)).

User entry Signed floating-point number

Factory setting Negative floating-point number

Additional information

Description

If the output value Out value (→ 100) exceeds this limit value, the **Lo alarm state** parameter (→ 110) is output.

User entry

The value is entered in the defined units (**Out unit** parameter (→ 106)) and must be in the range defined in the **Out scale low** parameter (→ 105) and **Out scale up** parameter (→ 105).

Lo Lo Lim

Navigation Expert → Analog inputs → Analog input 1 to n → Lo Lo Lim

Description Use this function to enter the value for the lower alarm limit (**LoLo alarm value** parameter (→ 110)).

User entry Signed floating-point number

Factory setting Negative floating-point number

Additional information

Description

If the output value Out value (→ 100) exceeds this limit value, the **LoLo alarm state** parameter (→ 110) is output.

User entry

The value is entered in the defined units (**Out unit** parameter (→ 106)) and must be in the range defined in the **Out scale low** parameter (→ 105) and **Out scale up** parameter (→ 105).

HiHi alarm value

Navigation Expert → Analog inputs → Analog input 1 to n → HiHi alarm value

Description Displays the alarm value for the upper alarm limit value (**Hi Hi Lim** parameter (→ 107)).

User interface Signed floating-point number

HiHi alarm state

Navigation Expert → Analog inputs → Analog input 1 to n → HiHi alarm state

Description Displays the status for the upper alarm limit value (**Hi Hi Lim** parameter (→ 107)).

User interface
- No alarm
- Alm statHiHi lim

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 n → Hi alarm value

Description Displays the alarm value for the upper warning limit value (**Hi Lim** parameter (→ 107)).

User interface Signed floating-point number

Hi alarm state

Navigation Expert → Analog inputs → Analog input 1 to n → Hi alarm state

Description Displays the status for the upper warning limit value (**Hi Lim** parameter (→ 107)).

User interface
- No warning
- Alrm stat Hi lim

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 n → Lo alarm value

Description Displays the alarm value for the lower warning limit value (**Lo Lim** parameter (→ 108)).

User interface Signed floating-point number

Lo alarm state

Navigation Expert → Analog inputs → Analog input 1 to n → Lo alarm state

Description Displays the status for the lower warning limit value (**Lo Lim** parameter (→ 108)).

User interface
- No warning
- Alrm stat Lo lim

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.

LoLo alarm value

Navigation Expert → Analog inputs → Analog input 1 to n → LoLo alarm value

Description Displays the alarm value for the lower alarm limit value (**Lo Lo Lim** parameter (→ 108)).

User interface Signed floating-point number

LoLo alarm state

Navigation Expert → Analog inputs → Analog input 1 to n → LoLo alarm state

Description Displays the status for the lower alarm limit value (**Lo Lo Lim** parameter (→ 108)).

User interface
- No alarm
- Alm statLoLo lim

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 n → 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 n → 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 n → 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 n → Out unit text

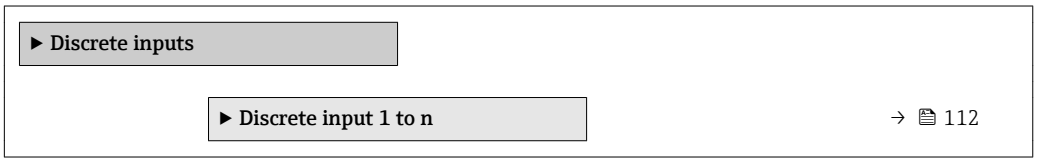
Description Use this function to enter the out unit text: if a specific out unit does not appear in the code list, the user can enter the specific text. The unit code is then equivalent to the definition provided here.

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

Factory setting NoUnit

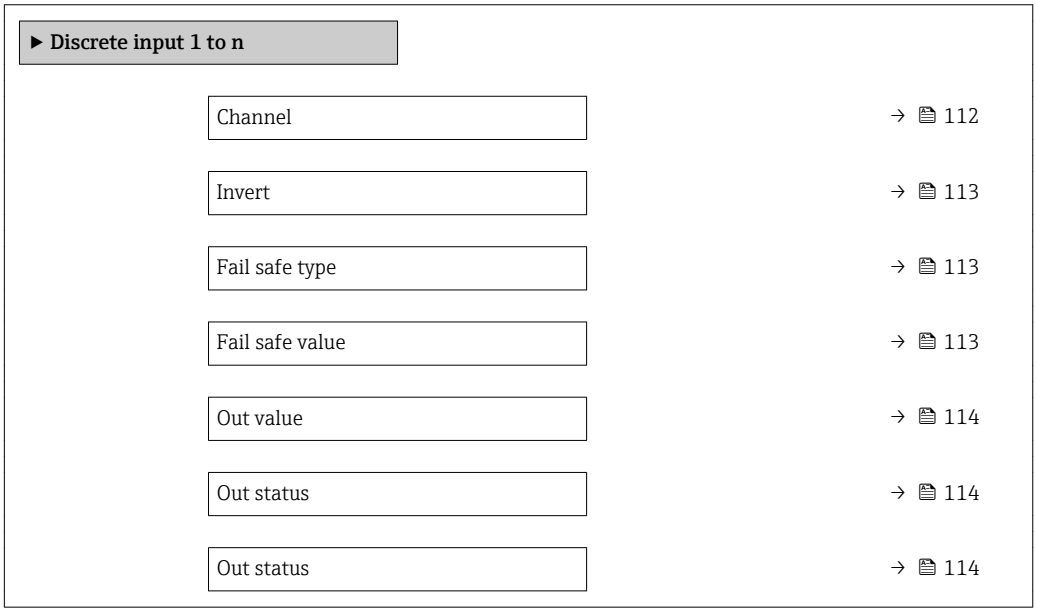
3.5 "Discrete inputs" submenu

Navigation Expert → Discrete inputs



3.5.1 "Discrete input 1 to n" submenu

Navigation Expert → Discrete inputs → Discrete input 1 to n



Channel

Navigation Expert → Discrete inputs → Discrete input 1 to n → Channel

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

Selection
- Empty pipe det.
- Low flow cut off
- Verific. status *

* Visibility depends on order options or device settings

Factory setting Empty pipe det.

Invert

Navigation Expert → Discrete inputs → Discrete input 1 to n → 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 n → 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 (→ 113).
- 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 n → Fail safe value

Prerequisite In **Fail safe type** parameter (→ 113), 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 (→ 114)) in the event of an error.

User entry 0 to 255

Factory setting 0

Out value

Navigation Expert → Discrete inputs → Discrete input 1 to n → Out value

Prerequisite In **Target mode** parameter (→ 115), the **Auto** option is selected.

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

User interface 0 to 255

Out status

Navigation Expert → Discrete inputs → Discrete input 1 to n → Out status

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

User interface
- Good
- Uncertain
- Bad

Out status

Navigation Expert → Discrete inputs → Discrete input 1 to n → Out status

Prerequisite In **Target mode** parameter (→ 115), the **Auto** option is selected.

Description Displays the current output status (hex value).

User interface 0 to 0xFF

Tag description

Navigation Expert → Discrete inputs → Discrete input 1 to n → Tag description

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

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

Static revision

Navigation Expert → Discrete inputs → Discrete input 1 to n → Static revision

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 n → 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 n → 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 n → 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 act

Navigation Expert → Discrete inputs → Discrete input 1 to n → Mode block act

Description Displays the Mode block act: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block act shows the actual mode in which the function block is currently operating. A comparison of the Mode block act with the Target mode indicates whether it was possible to reach the Target mode (→ 115).

User interface
- Auto
- Man
- Out of service

Additional information *Description*

A comparison of the current mode with the target mode (**Target mode** parameter (→ 115)) indicates whether it was possible to reach the target mode.

Mode block perm

Navigation Expert → Discrete inputs → Discrete input 1 to n → Mode block perm

Description Displays the Mode block perm: This defines which modes of operation in the Target mode (→ 115) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

User interface 0 to 255

Mode blk norm

Navigation Expert → Discrete inputs → Discrete input 1 to n → Mode blk norm

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

User interface
- Auto
- Man
- Out of service

Alarm summary

Navigation Expert → Discrete inputs → Discrete input 1 to n → Alarm summary

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

User interface
- Discrete alarm
- Alm statHiHi lim
- Alrm stat Hi lim
- Alm statLoLo lim
- Alrm stat Lo lim
- Update Event

Additional information *Description*

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

Batch ID

Navigation Expert → Discrete inputs → Discrete input 1 to n → 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 n → 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 n → 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

Navigation Expert → Discrete inputs → Discrete input 1 to n → 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 n → 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 inputs → Discrete input 1 to n → 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.

Simulate status	

Navigation Expert → Discrete inputs → Discrete input 1 to n → 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.

3.6 "Analog outputs" submenu

Navigation Expert → Analog outputs

▶ **Analog outputs**		
	▶ **Analog output 1 to n**	→ 119

3.6.1 "Analog output 1 to n" submenu

Navigation Expert → Analog outputs → Analog output 1 to n

▶ **Analog output 1 to n**		
	Set point val	→ 120
	Set point status	→ 120
	Fail safe time	→ 120
	Fail safe type	→ 121
	Fail safe value	→ 121
	Out value	→ 121
	Out status	→ 122
	Out status	→ 122

Set point val

Navigation Expert → Analog outputs → Analog output 1 to n → 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 n → 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 n → 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 n → 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 (→ 121).
- Fallback value
  If the value was good at one point, then this last valid value is used.
- Off
  The system continues to use the bad value.

Fail safe value

Navigation Expert → Analog outputs → Analog output 1 to n → Fail safe value

Prerequisite In **Fail safe type** parameter (→ 121), 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 (→ 121)) in the event of an error.

User entry Signed floating-point number

Factory setting 0

Out value

Navigation Expert → Analog outputs → Analog output 1 to n → Out value

Prerequisite In **Target mode** parameter (→ 123), the **Auto** option is selected.

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

User interface Signed floating-point number

Out status

Navigation Expert → Analog outputs → Analog output 1 to n → Out status

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

User interface
- Good
- Uncertain
- Bad

Out status

Navigation Expert → Analog outputs → Analog output 1 to n → Out status

Prerequisite In **Target mode** parameter (→ 123), the **Auto** option is selected.

Description Displays the current output status (hex value).

User interface 0 to 0xFF

Tag description

Navigation Expert → Analog outputs → Analog output 1 to n → Tag description

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

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

Static revision

Navigation Expert → Analog outputs → Analog output 1 to n → Static revision

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 n → 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 n → 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 n → 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 act

Navigation Expert → Analog outputs → Analog output 1 to n → Mode block act

Description Displays the Mode block act: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block act shows the actual mode in which the function block is currently operating. A comparison of the Mode block act with the Target mode indicates whether it was possible to reach the Target mode (→ 123).

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 (→ 123)) indicates whether it was possible to reach the target mode.

Mode block perm

Navigation Expert → Analog outputs → Analog output 1 to n → Mode block perm

Description Displays the Mode block perm: This defines which modes of operation in the Target mode (→ 123) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

User interface 0 to 255

Mode blk norm

Navigation Expert → Analog outputs → Analog output 1 to n → Mode blk norm

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

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

Alarm summary

Navigation Expert → Analog outputs → Analog output 1 to n → Alarm summary

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

User interface
- Discrete alarm
- Alm statHiHi lim
- Alrm stat Hi lim
- Alm statLoLo lim
- Alrm stat Lo lim
- Update Event

Additional information *Description*

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

Batch ID

Navigation Expert → Analog outputs → Analog output 1 to n → 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 n → 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 n → 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

Navigation Expert → Analog outputs → Analog output 1 to n → 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.

PVscale lo range

Navigation Expert → Analog outputs → Analog output 1 to n → 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

PVscale up range

Navigation Expert → Analog outputs → Analog output 1 to n → 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 n → 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 n → 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 n → 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 (→ 127). The normal algorithm calculates the output value of the block on the basis of this set point.

User entry Signed floating-point number

Factory setting 0

RCAS in status

Navigation Expert → Analog outputs → Analog output 1 to n → RCAS in status

Description Use this function to enter the RCAS (Remote Cascade) in status. Defines the status for the RCAS in value (→ 127).

User entry 0 to 255

Factory setting 0

Input channel

Navigation Expert → Analog outputs → Analog output 1 to n → 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 n → 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 press.
- External temp.
- Ext. ref.density

Factory setting External press.

RCAS out value

Navigation Expert → Analog outputs → Analog output 1 to n → 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 n → RCAS out status

Description Displays the RCAS out status. Displays the status of the set point.

User interface 0 to 0xFF

Pos value

Navigation Expert → Analog outputs → Analog output 1 to n → Pos value

Description Displays the current value of the positioner.

User interface 0 to 255

Position status

Navigation Expert → Analog outputs → Analog output 1 to n → Position status

Description Displays the current status of the positioner.

User interface 0 to 255

Setp. deviation

Navigation Expert → Analog outputs → Analog output 1 to n → Setp. deviation

Description Displays the deviation between the set point (**Set point val** parameter (→ 120)) and the actual value (**Readback value** parameter (→ 126)).

User interface Signed floating-point number

Simulate enabled

Navigation Expert → Analog outputs → Analog output 1 to n → 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 n → 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 n → 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 n → 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 up

Navigation Expert → Analog outputs → Analog output 1 to n → 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 low

Navigation Expert → Analog outputs → Analog output 1 to n → Out scale low

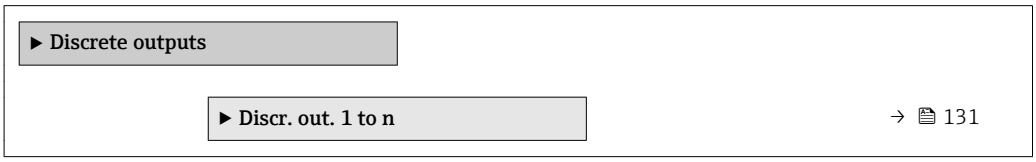
Description Use this function to enter the lower value range for the output value in system units.

User entry Signed floating-point number

Factory setting 0

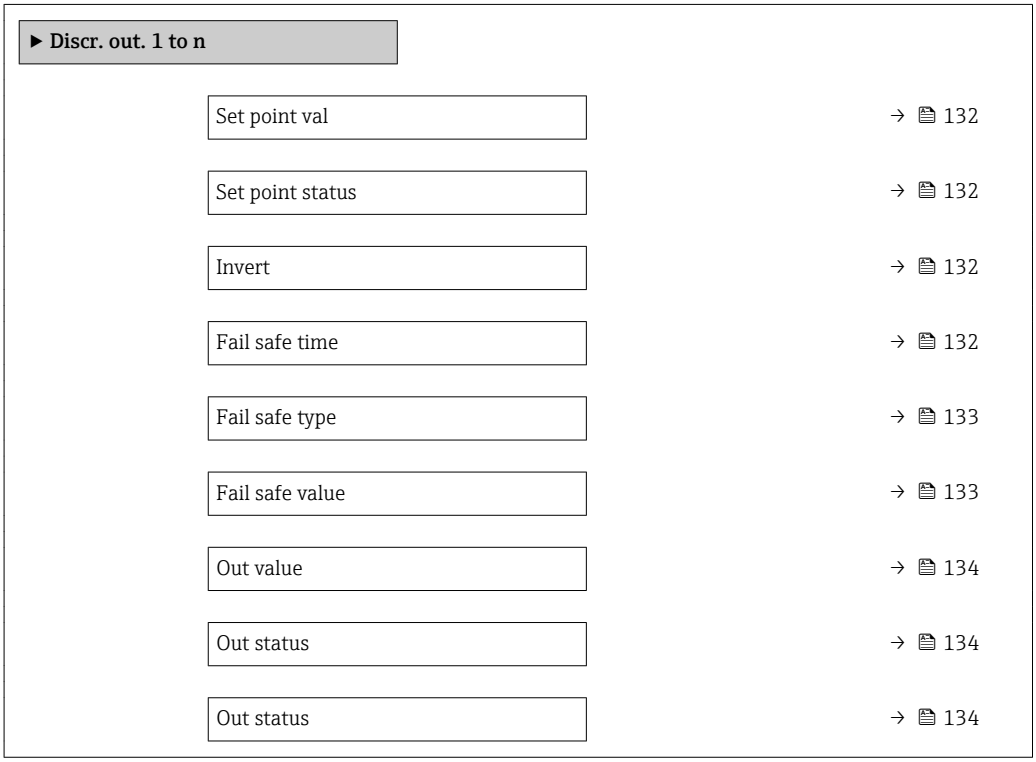
3.7 "Discrete outputs" submenu

Navigation Expert → Discrete outputs



3.7.1 "Discrete output 1 to n" submenu

Navigation Expert → Discrete outputs → Discr. out. 1 to n



Set point val

Navigation Expert → Discrete outputs → Discr. out. 1 to n → 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 n → 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 n → 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 n → 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 n → 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 (→ 133).
- Fallback value
  If the value was good at one point, then this last valid value is used.
- Off
  The system continues to use the bad value.

Fail safe value

Navigation Expert → Discrete outputs → Discr. out. 1 to n → Fail safe value

Prerequisite In **Fail safe type** parameter (→ 133), 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 (→ 134)) in the event of an error.

User entry 0 to 255

Factory setting 0

Out value

Navigation Expert → Discrete outputs → Discr. out. 1 to n → Out value

Prerequisite In **Target mode** parameter (→ 135), the **Auto** option is selected.

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

User interface 0 to 255

Out status

Navigation Expert → Discrete outputs → Discr. out. 1 to n → Out status

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

User interface
- Good
- Uncertain
- Bad

Out status

Navigation Expert → Discrete outputs → Discr. out. 1 to n → Out status

Prerequisite In **Target mode** parameter (→ 135), the **Auto** option is selected.

Description Displays the current output status (hex value).

User interface 0 to 0xFF

Tag description

Navigation Expert → Discrete outputs → Discr. out. 1 to n → Tag description

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

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

Static revision

Navigation Expert → Discrete outputs → Discr. out. 1 to n → Static revision

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 n → 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 n → 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 n → 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 act

Navigation Expert → Discrete outputs → Discr. out. 1 to n → Mode block act

Description Displays the Mode block act: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block act shows the actual mode in which the function block is currently operating. A comparison of the Mode block act with the Target mode indicates whether it was possible to reach the Target mode (→ 135).

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 (→ 135)) indicates whether it was possible to reach the target mode.

Mode block perm

Navigation Expert → Discrete outputs → Discr. out. 1 to n → Mode block perm

Description Displays the Mode block perm: This defines which modes of operation in the Target mode (→ 135) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

User interface 0 to 255

Mode blk norm

Navigation Expert → Discrete outputs → Discr. out. 1 to n → Mode blk norm

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

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

Alarm summary

Navigation Expert → Discrete outputs → Discr. out. 1 to n → Alarm summary

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

User interface
- Discrete alarm
- Alm statHiHi lim
- Alrm stat Hi lim
- Alm statLoLo lim
- Alrm stat Lo lim
- Update Event

Additional information *Description*

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

Batch ID

Navigation Expert → Discrete outputs → Discr. out. 1 to n → 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 n → 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 n → 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

Navigation Expert → Discrete outputs → Discr. out. 1 to n → 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 n → 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 n → 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 n → 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 (→ 139). The normal algorithm calculates the output value of the block on the basis of this set point.

User entry 0 to 255

Factory setting 0

RCAS in status

Navigation Expert → Discrete outputs → Discr. out. 1 to n → RCAS in status

Description Use this function to enter the RCAS (Remote Cascade) in status. Defines the status for the RCAS in value (→ 139).

User entry 0 to 255

Factory setting 0

Input channel

Navigation Expert → Discrete outputs → Discr. out. 1 to n → 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 n → 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
- Zero point adj.
- Start verificat. *

Factory setting Flow override

RCAS out value

Navigation Expert → Discrete outputs → Discr. out. 1 to n → 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 n → 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 n → 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.

* Visibility depends on order options or device settings

Simulate value	

Navigation Expert → Discrete outputs → Discr. out. 1 to n → 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 n → Simulate status

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

User entry 0 to 255

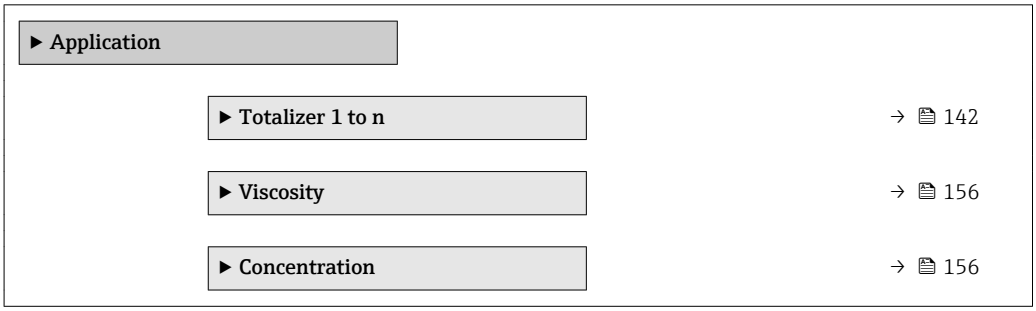
Factory setting 0

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.

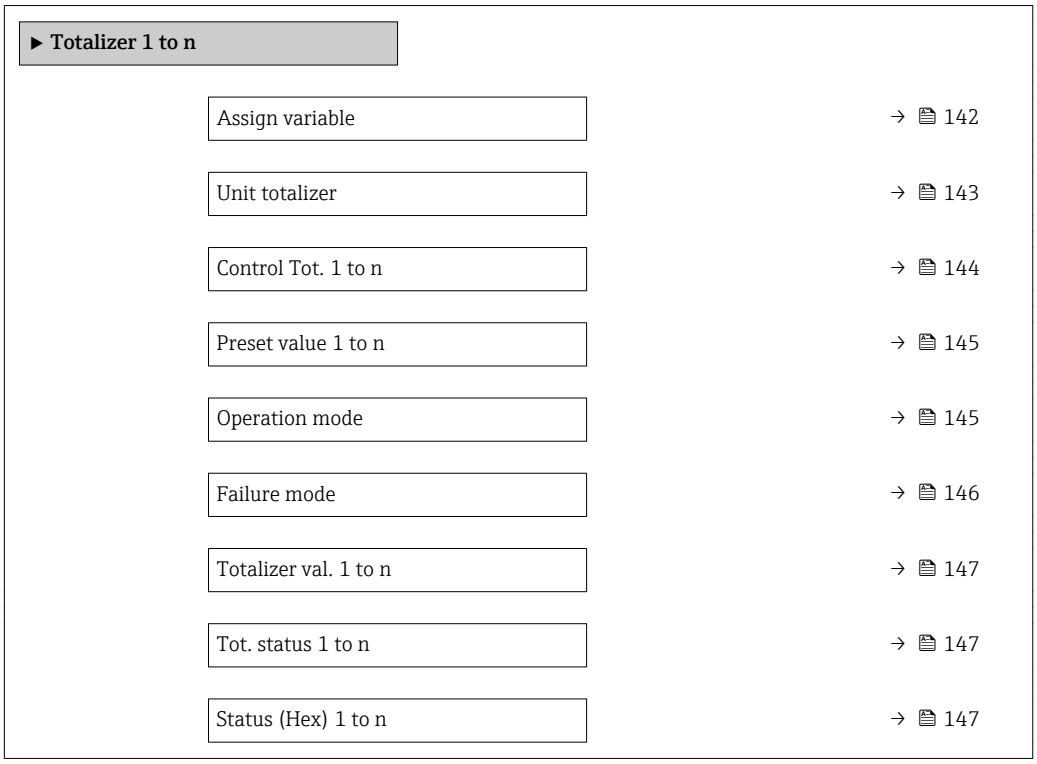
3.8 "Application" submenu

Navigation Expert → Application



3.8.1 "Totalizer 1 to n" submenu

Navigation Expert → Application → Totalizer 1 to n



Assign variable

Navigation Expert → Application → Totalizer 1 to n → Assign variable

Description Use this function to select a process variable for the Totalizer 1 to n.

Selection
- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *

Factory setting Mass flow

Additional information *Description*

If the option selected is changed, the device resets the totalizer to 0.

* Visibility depends on order options or device settings

Unit totalizer

Navigation Expert → Application → Totalizer 1 to n → Unit totalizer

Prerequisite One of the following options is selected in the **Assign variable** parameter (→ 142):
- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *

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 (→ 50).

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:
- kg
- lb

* Visibility depends on order options or device settings

Additional information *Selection*

The selection is independent of the process variable selected in the **Assign variable** parameter (→ 142).

Dependency

The following parameters depend on the option selected:
- **Alarm hysteresis** parameter (→ 151)
- **Hi Hi Lim** parameter (→ 152)
- **Hi Lim** parameter (→ 152)
- **Lo Lim** parameter (→ 153)
- **Lo Lo Lim** parameter (→ 153)
- **Totalizer val.** parameter (→ 49)
- **Preset value** parameter (→ 145)

Control Tot. 1 to n

Navigation Expert → Application → Totalizer 1 to n → Control Tot. 1 to n

Prerequisite In the **Assign variable** parameter (→ 142), one of the following options is selected:
- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *

Description Use this function to select the control of totalizer value 1-3.

Selection
- Totalize
- Reset + hold
- Preset + hold

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.

* Visibility depends on order options or device settings

Preset value 1 to n

Navigation Expert → Application → Totalizer 1 to n → Preset value 1 to n

Prerequisite One of the following options is selected in the **Assign variable** parameter (→ 142):
- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *

Description Use this function to enter an initial value for the specific totalizer.

User entry Signed floating-point number

Factory setting Country-specific:
- kg
- lb

Additional information *User entry*

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 143).

Example

This configuration is suitable for applications such as iterative filling processes with a fixed batch quantity.

Operation mode

Navigation Expert → Application → Totalizer 1 to n → Operation mode

Prerequisite In the **Assign variable** parameter (→ 142), one of the following options is selected:
- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *

Description Use this function to select how the totalizer summates the flow.

Selection
- Net flow total
- Forward total
- Reverse total
- Last valid value

Factory setting Net flow total

* Visibility depends on order options or device settings

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 total
  Only the flow in the forward flow direction is totalized.
- Reverse total
  Only the flow against the forward flow direction is totalized (= reverse flow total).
- Last valid value
  The value is frozen. Totaling is stopped.

Failure mode

Navigation Expert → Application → Totalizer 1 to n → Failure mode

Prerequisite One of the following options is selected in the **Assign variable** parameter (→ 142):
- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *

Description Use this function to select how a totalizer behaves in the event of a device alarm.

Selection
- Stop
- Actual value
- Last valid value

Factory setting 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.

* Visibility depends on order options or device settings

Totalizer val. 1 to n

Navigation Expert → Application → Totalizer 1 to n → Totalizer val. 1 to n

Prerequisite In the **Target mode** parameter (→ 149), 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 (→ 146).

User interface

The value of the process variable totalized since measuring began can be positive or negative. This depends on the settings in the **Operation mode** parameter (→ 145).

Dependency

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 143).

Tot. status 1 to n

Navigation Expert → Application → Totalizer 1 to n → Tot. status 1 to n

Description Displays the status of the particular totalizer.

User interface

- Good
- Uncertain
- Bad

Status (Hex) 1 to n

Navigation Expert → Application → Totalizer 1 to n → Status (Hex) 1 to n

Prerequisite In **Target mode** parameter (→ 149), the **Auto** option is selected.

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

User interface 0 to 0xFF

Tag description

Navigation Expert → Application → Totalizer 1 to n → Tag description

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

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

Static revision

Navigation Expert → Application → Totalizer 1 to n → Static revision

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

User interface 0 to FFFF

Additional information *Description*

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

Strategy

Navigation Expert → Application → Totalizer 1 to n → Strategy

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

User entry 0 to FFFF

Factory setting 0

Alert key

Navigation Expert → Application → Totalizer 1 to n → Alert key

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

User entry 0 to 0xFF

Factory setting 0

Target mode

Navigation Expert → Application → Totalizer 1 to n → Target mode

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

User interface
- Auto
- Man
- Out of service

Mode block act

Navigation Expert → Application → Totalizer 1 to n → Mode block act

Description Displays the Mode block act: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block act shows the actual mode in which the function block is currently operating. A comparison of the Mode block act with the Target mode indicates whether it was possible to reach the Target mode (→ 149).

User interface
- Auto
- Man
- Out of service

Additional information *Description*

A comparison of the current mode with the target mode (**Target mode** parameter (→ 149)) indicates whether it was possible to reach the target mode.

Mode block perm

Navigation Expert → Application → Totalizer 1 to n → Mode block perm

Description Displays the Mode block perm: This defines which modes of operation in the Target mode (→ 149) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

User interface 0 to 255

Mode blk norm

Navigation Expert → Application → Totalizer 1 to n → Mode blk norm

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

User interface
- Auto
- Man
- Out of service

Alarm summary

Navigation Expert → Application → Totalizer 1 to n → Alarm summary

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

User interface
- Discrete alarm
- Alm statHiHi lim
- Alrm stat Hi lim
- Alm statLoLo lim
- Alrm stat Lo lim
- Update Event

Additional information *Description*

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

Batch ID

Navigation Expert → Application → Totalizer 1 to n → 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 n → 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 n → 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

Navigation Expert → Application → Totalizer 1 to n → 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 n → 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 kg

Additional information *User entry*

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 143).

Hi Hi Lim

Navigation Expert → Application → Totalizer 1 to n → Hi Hi Lim

Description Use this function to enter the value for the upper alarm limit of the totalizer (**HiHi alarm value** parameter (→ 154)).

User entry Signed floating-point number

Factory setting Positive floating-point number

Additional information

Description

If the output value Out value (→ 100) exceeds this limit value, the **HiHi alarm state** parameter (→ 154) is output.

User entry

The value is entered in the defined units (**Out unit** parameter (→ 106)) and must be in the range defined in the **Out scale low** parameter (→ 105) and **Out scale up** parameter (→ 105).

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 143).

Hi Lim

Navigation Expert → Application → Totalizer 1 to n → Hi Lim

Description Use this function to enter the value for the upper warning limit of the totalizer (**Hi alarm value** parameter (→ 154)).

User entry Signed floating-point number

Factory setting Positive floating-point number

Additional information

Description

If the output value Out value (→ 100) exceeds this limit value, the **Hi alarm state** parameter (→ 154) is output.

User entry

The value is entered in the defined units (**Out unit** parameter (→ 106)) and must be in the range defined in the **Out scale low** parameter (→ 105) and **Out scale up** parameter (→ 105).

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 143).

Lo Lim

Navigation Expert → Application → Totalizer 1 to n → Lo Lim

Description Use this function to enter the value for the lower warning limit of the totalizer (**Lo alarm value** parameter (→ 155)).

User entry Signed floating-point number

Factory setting Negative floating-point number

Additional information

Description

If the output value Out value (→ 100) exceeds this limit value, the **Lo alarm state** parameter (→ 155) is output.

User entry

The value is entered in the defined units (**Out unit** parameter (→ 106)) and must be in the range defined in the **Out scale low** parameter (→ 105) and **Out scale up** parameter (→ 105).

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 143).

Lo Lo Lim

Navigation Expert → Application → Totalizer 1 to n → Lo Lo Lim

Description Use this function to enter the value for the lower alarm limit of the totalizer (**LoLo alarm value** parameter (→ 155)).

User entry Signed floating-point number

Factory setting Negative floating-point number

Additional information

Description

If the output value Out value (→ 100) exceeds this limit value, the **LoLo alarm state** parameter (→ 155) is output.

User entry

The value is entered in the defined units (**Out unit** parameter (→ 106)) and must be in the range defined in the **Out scale low** parameter (→ 105) and **Out scale up** parameter (→ 105).

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 143).

HiHi alarm value

Navigation Expert → Application → Totalizer 1 to n → HiHi alarm value

Description Displays the alarm value for the upper alarm limit value (**Hi Hi Lim** parameter (→ 152)).

User interface Signed floating-point number

HiHi alarm state

Navigation Expert → Application → Totalizer 1 to n → HiHi alarm state

Description Displays the status for the upper alarm limit value (**Hi Hi Lim** parameter (→ 152)).

User interface
- No alarm
- Alm statHiHi lim

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 n → Hi alarm value

Description Displays the warning value for the upper warning limit value (**Hi Lim** parameter (→ 152)).

User interface Signed floating-point number

Hi alarm state

Navigation Expert → Application → Totalizer 1 to n → Hi alarm state

Description Displays the status for the upper warning limit value (**Hi Lim** parameter (→ 152)).

User interface
- No warning
- Alrm stat Hi lim

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 n → Lo alarm value

Description Displays the warning value for the lower warning limit value (**Lo Lim** parameter (→ 153)).

User interface Signed floating-point number

Lo alarm state

Navigation Expert → Application → Totalizer 1 to n → Lo alarm state

Description Displays the status for the lower warning limit value (**Lo Lim** parameter (→ 153)).

User interface
- No warning
- Alrm stat Lo lim

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.

LoLo alarm value

Navigation Expert → Application → Totalizer 1 to n → LoLo alarm value

Description Displays the alarm value for the lower alarm limit value (**Lo Lo Lim** parameter (→ 153)).

User interface Signed floating-point number

LoLo alarm state

Navigation Expert → Application → Totalizer 1 to n → LoLo alarm state

Description Displays the status for the lower alarm limit value (**Lo Lo Lim** parameter (→ 153)).

User interface
- No alarm
- Alm statLoLo lim

Additional information *User interface*

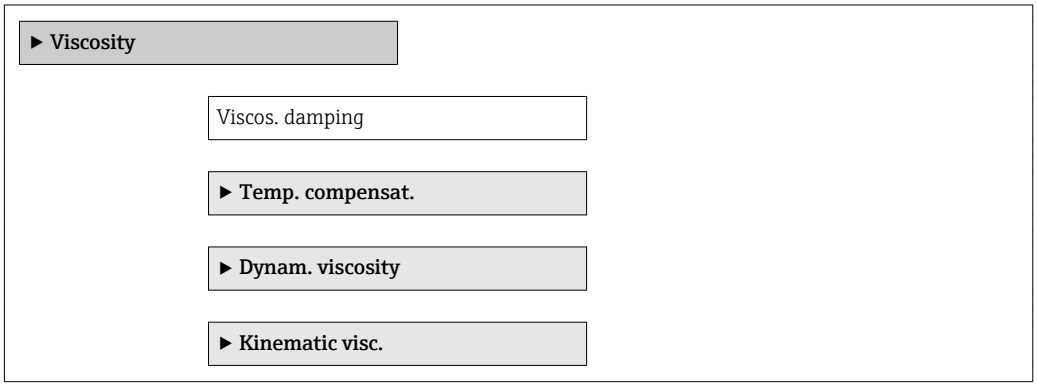
The display contains information such as the time of the alarm (date and time) and the value that triggered the alarm.

3.8.2 "Viscosity" submenu

Only available for Promass I.

For detailed information on the parameter descriptions for the **Viscosity** application package,refer to the Special Documentation for the device

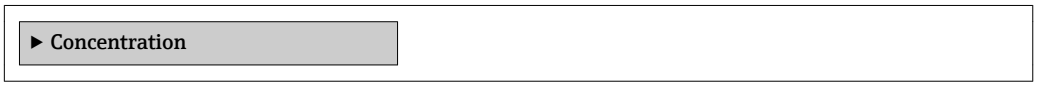
Navigation Expert → Application → Viscosity



3.8.3 "Concentration" submenu

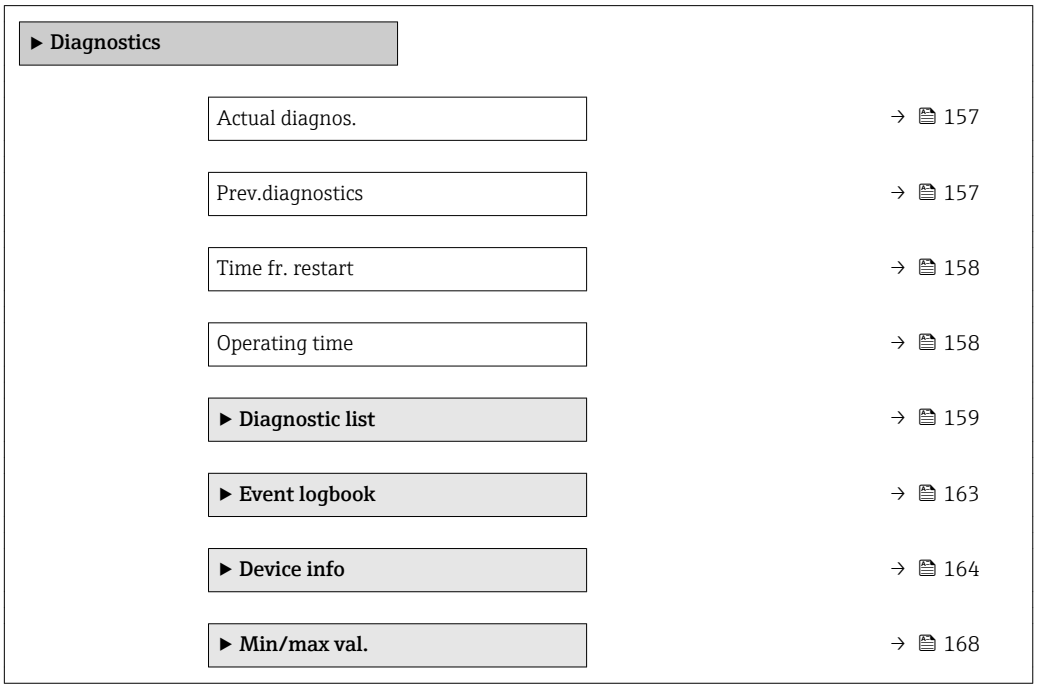
For detailed information on the parameter descriptions for the **Concentration** application package,refer to the Special Documentation for the device

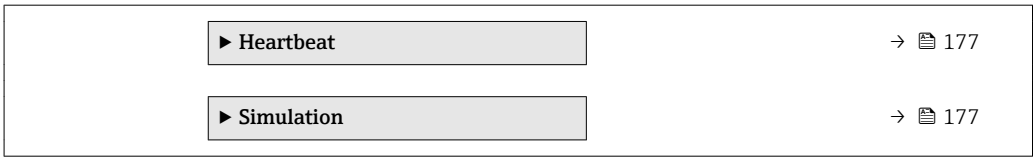
Navigation Expert → Application → Concentration



3.9 "Diagnostics" submenu

Navigation Expert → Diagnostics





Actual diagnos.

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 (→ 159).

Example

For the display format:
⊗F271 Main electronic

Timestamp

Navigation Expert → Diagnostics → Timestamp

Description Displays the operating time when the current diagnostic message occurred.

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

Additional information *Display*

The diagnostic message can be viewed via the **Actual diagnos.** parameter (→ 157).

Example

For the display format:
24d12h13m00s

Prev.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

Timestamp

Navigation Expert → Diagnostics → Timestamp

Description Displays the operating time when the last diagnostic message before the current message occurred.

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

Additional information *Display*

The diagnostic message can be viewed via the **Prev.diagnostics** parameter (→ 157).

Example

For the display format:
24d12h13m00s

Time fr. 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.

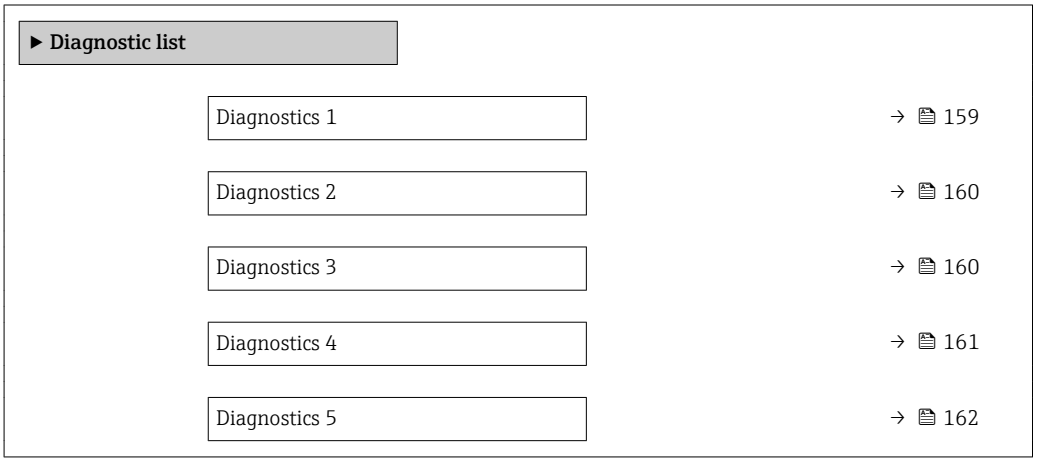
User interface Days (d), hours (h), minutes (m) and seconds (s)

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
- ⊗F276 I/O module

Timestamp

Navigation Expert → Diagnostics → Diagnostic list → Timestamp

Description Displays the operating time when the diagnostic message with the highest priority occurred.

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

Additional information *Display*

The diagnostic message can be viewed via the **Diagnostics 1** parameter (→ 159).

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
- ⊗F276 I/O module

Timestamp

Navigation Expert → Diagnostics → Diagnostic list → Timestamp

Description Displays the operating time when the diagnostic message with the second-highest priority occurred.

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

Additional information *Display*

The diagnostic message can be viewed via the **Diagnostics 2** parameter (→ 160).

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
- ⊗F276 I/O module

Timestamp

Navigation Expert → Diagnostics → Diagnostic list → Timestamp

Description Displays the operating time when the diagnostic message with the third-highest priority occurred.

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

Additional information *Display*

The diagnostic message can be viewed via the **Diagnostics 3** parameter (→ 160).

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
- ⊗F276 I/O module

Timestamp

Navigation Expert → Diagnostics → Diagnostic list → Timestamp

Description Displays the operating time when the diagnostic message with the fourth-highest priority occurred.

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

Additional information *Display*

The diagnostic message can be viewed via the **Diagnostics 4** parameter (→ 161).

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
- ⊗F276 I/O module

Timestamp

Navigation Expert → Diagnostics → Diagnostic list → Timestamp

Description Displays the operating time when the diagnostic message with the fifth-highest priority occurred.

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

Additional information *Display*

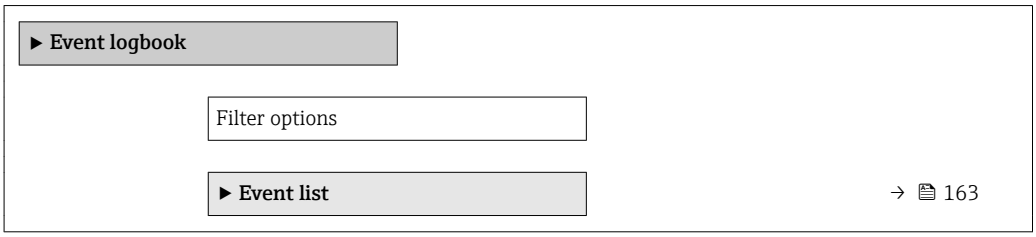
The diagnostic message can be viewed via the **Diagnostics 5** parameter (→ 162).

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 operating tool.

Selection
- All
- Failure (F)
- Funct. check (C)
- Out of spec. (S)
- Mainten. req.(M)
- Information (I)

Factory setting All

Additional information *Description*

The status signals are categorized in accordance with VDI/VDE 2650 and NAMUR Recommendation NE 107:
- F = Failure
- C = Function Check
- S = Out of Specification
- M = Maintenance Required

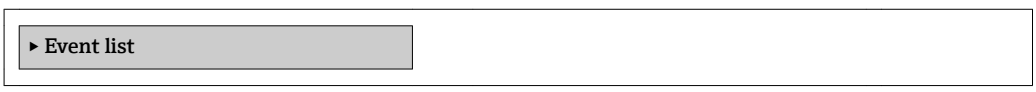
"Event list" submenu

The **Event list** submenu is only displayed if operating via the local display.

If operating via the FieldCare operating tool, the event list can be read out with a separate FieldCare module.

If operating via the Web browser, the event messages can be found directly in the **Event logbook** submenu.

Navigation Expert → Diagnostics → Event logbook → Event list



	Event list	→ 164

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.

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.

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
  ⊕ 01d04h12min30s

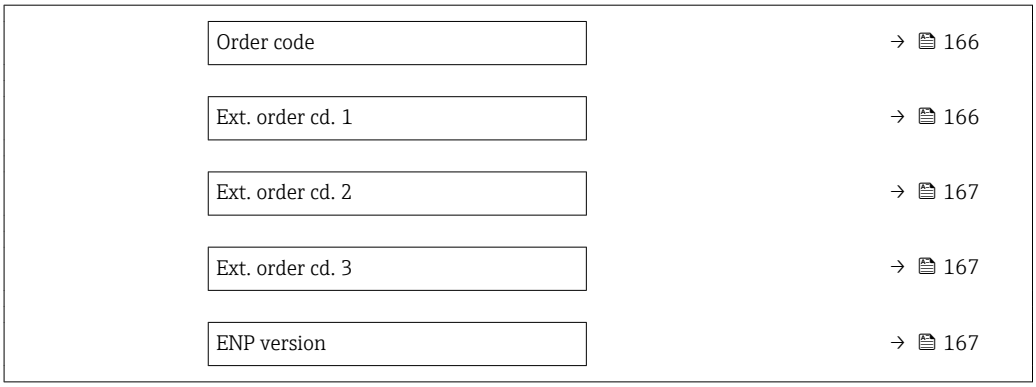
HistoROM

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

3.9.3 "Device info" submenu

Navigation Expert → Diagnostics → Device info

▶ **Device info**		
	Device tag	→ 165
	Serial number	→ 165
	Firmware version	→ 165
	Device name	→ 166



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 Promass 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 Max. 32 characters such as letters or numbers.

Factory setting Promass 100 DP

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.

Ext. order cd. 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.

Ext. order cd. 2

Navigation Expert → Diagnostics → Device info → Ext. order cd. 2

Description Displays the second part of the extended order code.

User interface Character string

Additional information For additional information, see **Ext. order cd. 1** parameter (→ 166)

Ext. order cd. 3

Navigation Expert → Diagnostics → Device info → Ext. order cd. 3

Description Displays the third part of the extended order code.

User interface Character string

Additional information For additional information, see **Ext. order cd. 1** parameter (→ 166)

ENP version

Navigation Expert → Diagnostics → Device info → ENP version

Description Displays the version of the electronic nameplate.

User interface Character string

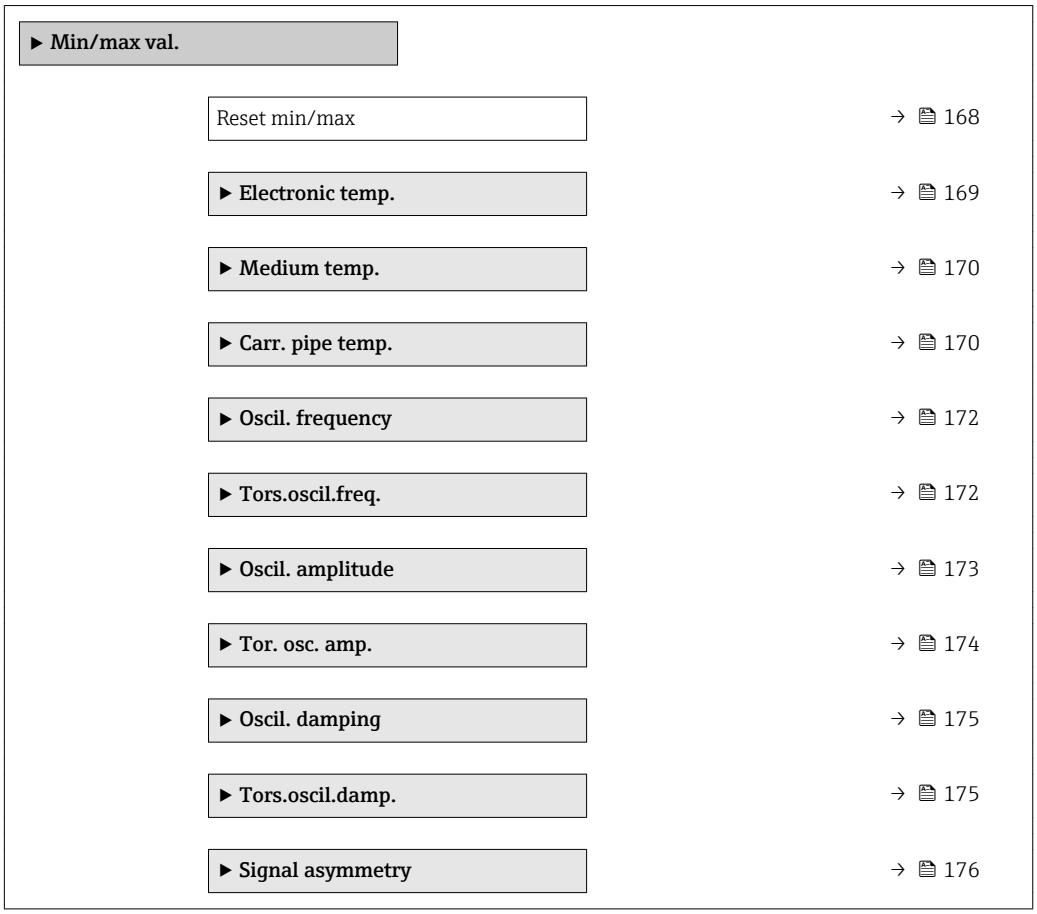
Factory setting 2.02.00

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 val." submenu

Navigation Expert → Diagnostics → Min/max val.



Reset min/max

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
- Oscil. amplitude
- Osc. ampl. 1 *
- Oscil. damping
- Tors.oscil.damp. *
- Oscil. frequency
- Tors.oscil.freq. *
- Signal asymmetry

Factory setting Cancel

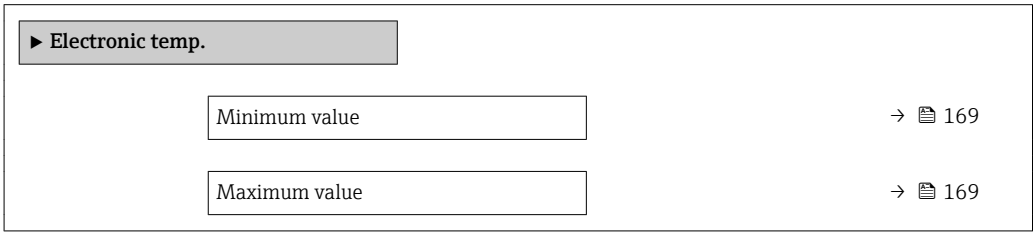
* Visibility depends on order options or device settings

Additional information *Selection*

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

"Electronic temp." submenu

Navigation Expert → Diagnostics → Min/max val. → Electronic temp.



Minimum value

Navigation Expert → Diagnostics → Min/max val. → Electronic 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 (→ 55)

Maximum value

Navigation Expert → Diagnostics → Min/max val. → Electronic temp. → Maximum value

Description Displays the highest previously measured temperature value of the main electronics module.

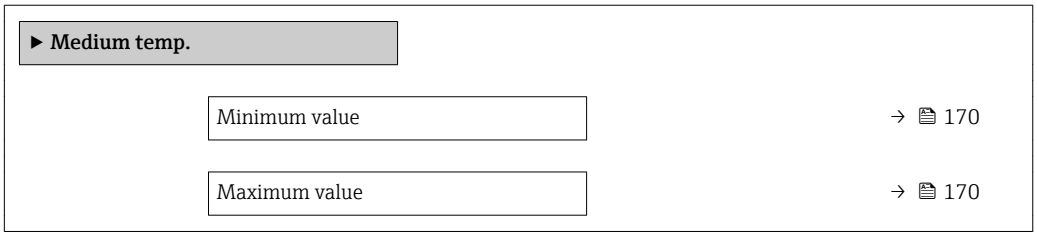
User interface Signed floating-point number

Additional information *Dependency*

The unit is taken from the **Temperature unit** parameter (→ 55)

"Medium temp." submenu

Navigation Expert → Diagnostics → Min/max val. → Medium temp.



Minimum value

Navigation Expert → Diagnostics → Min/max val. → Medium temp. → Minimum value

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 (→ 55)

Maximum value

Navigation Expert → Diagnostics → Min/max val. → Medium temp. → Maximum value

Description Displays the highest previously measured medium temperature value.

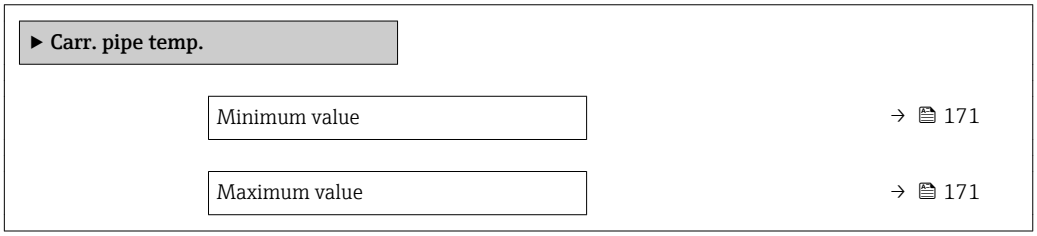
User interface Signed floating-point number

Additional information *Dependency*

The unit is taken from the **Temperature unit** parameter (→ 55)

"Carr. pipe temp." submenu

Navigation Expert → Diagnostics → Min/max val. → Carr. pipe temp.



Minimum value

Navigation Expert → Diagnostics → Min/max val. → Carr. pipe temp. → Minimum value

Prerequisite

Only available for:
- Promass A
- Promass F
- PromassG
- Promass H
- Promass I
- Promass O
- Promass P
- PromassQ
- Promass S
- Promass X

For the following order code
"Application package", option **EB** "Heartbeat Verification + Monitoring"

Description Displays the lowest previously measured temperature value of the carrier pipe.

User interface Signed floating-point number

Additional information *Dependency*

The unit is taken from the **Temperature unit** parameter (→ 55)

Maximum value

Navigation Expert → Diagnostics → Min/max val. → Carr. pipe temp. → Maximum value

Prerequisite

Only available for:
- Promass A
- Promass F
- PromassG
- Promass H
- Promass I
- Promass O
- Promass P
- PromassQ
- Promass S
- Promass X

For the following order code
"Application package", option **EB** "Heartbeat Verification + Monitoring"

Description Displays the highest previously measured temperature value of the carrier pipe.

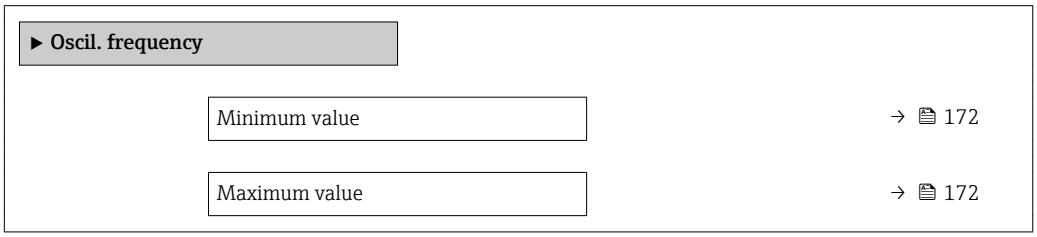
User interface Signed floating-point number

Additional information *Dependency*

The unit is taken from the **Temperature unit** parameter (→ 55)

"Oscil. frequency" submenu

Navigation Expert → Diagnostics → Min/max val. → Oscil. frequency



Minimum value

Navigation Expert → Diagnostics → Min/max val. → Oscil. frequency → Minimum value

Description Displays the lowest previously measured oscillation frequency.

User interface Signed floating-point number

Maximum value

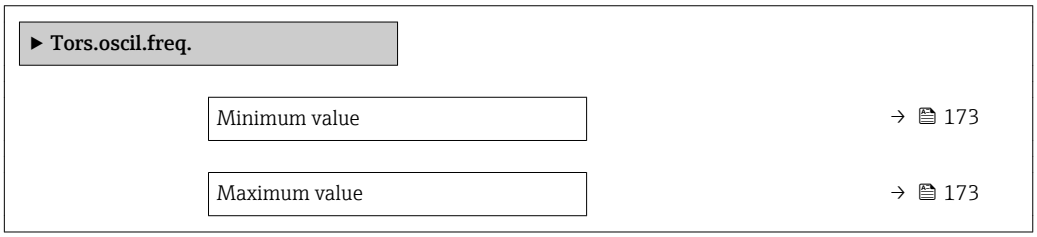
Navigation Expert → Diagnostics → Min/max val. → Oscil. frequency → Maximum value

Description Displays the highest previously measured oscillation frequency.

User interface Signed floating-point number

"Tors.oscil.freq." submenu

Navigation Expert → Diagnostics → Min/max val. → Tors.oscil.freq.



Minimum value

Navigation Expert → Diagnostics → Min/max val. → Tors.oscil.freq. → Minimum value

Prerequisite Only available for Promass I.

For the following order code:
"Application package", option **EB** "Heartbeat Verification + Monitoring"

Description Displays the lowest previously measured torsion oscillation frequency.

User interface Signed floating-point number

Maximum value

Navigation Expert → Diagnostics → Min/max val. → Tors.oscil.freq. → Maximum value

Prerequisite Only available for Promass I.

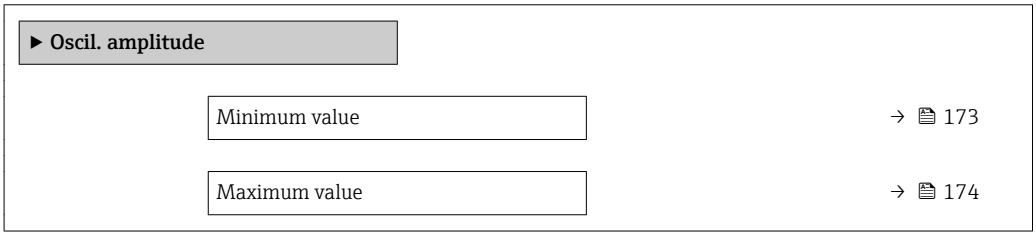
For the following order code:
"Application package", option **EB** "Heartbeat Verification + Monitoring"

Description Displays the highest previously measured torsion oscillation frequency.

User interface Signed floating-point number

"Oscil. amplitude" submenu

Navigation Expert → Diagnostics → Min/max val. → Oscil. amplitude



Minimum value

Navigation Expert → Diagnostics → Min/max val. → Oscil. amplitude → Minimum value

Description Displays the lowest previously measured oscillation amplitude.

User interface Signed floating-point number

Maximum value

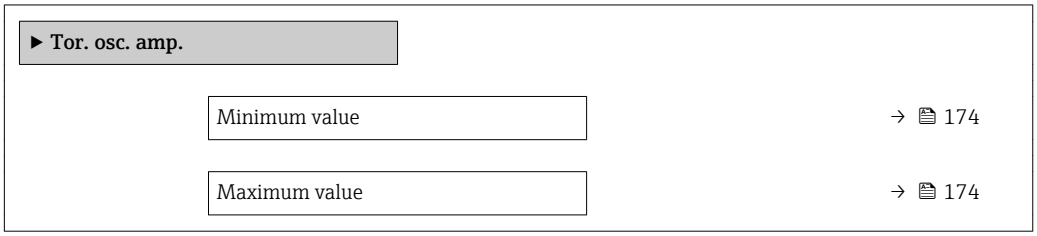
Navigation Expert → Diagnostics → Min/max val. → Oscil. amplitude → Maximum value

Description Displays the highest previously measured oscillation amplitude.

User interface Signed floating-point number

"Tor. osc. amp." submenu

Navigation Expert → Diagnostics → Min/max val. → Tor. osc. amp.



Minimum value

Navigation Expert → Diagnostics → Min/max val. → Tor. osc. amp. → Minimum value

Prerequisite Only available for Promass I.

For the following order code:
"Application package", option **EB** "Heartbeat Verification + Monitoring"

Description Displays the lowest previously measured torsion oscillation amplitude.

User interface Signed floating-point number

Maximum value

Navigation Expert → Diagnostics → Min/max val. → Tor. osc. amp. → Maximum value

Prerequisite Only available for Promass I.

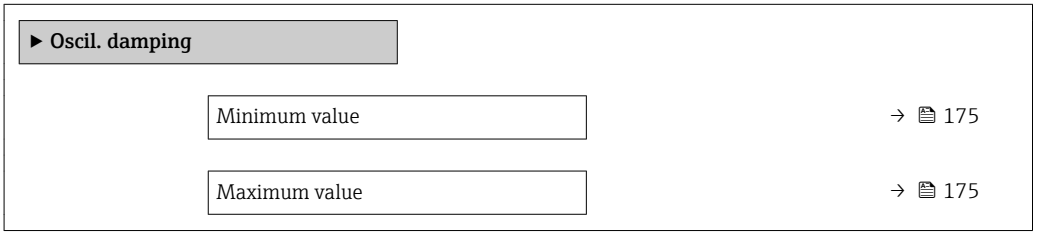
For the following order code:
"Application package", option **EB** "Heartbeat Verification + Monitoring"

Description Displays the highest previously measured torsion oscillation amplitude.

User interface Signed floating-point number

"Oscil. damping" submenu

Navigation Expert → Diagnostics → Min/max val. → Oscil. damping



Minimum value

Navigation Expert → Diagnostics → Min/max val. → Oscil. damping → Minimum value

Description Displays the lowest previously measured oscillation damping.

User interface Signed floating-point number

Maximum value

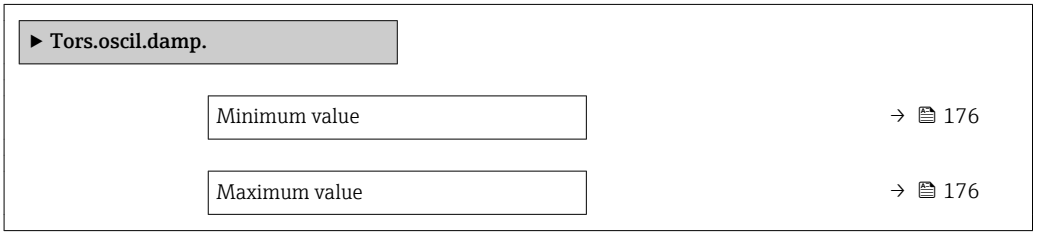
Navigation Expert → Diagnostics → Min/max val. → Oscil. damping → Maximum value

Description Displays the highest previously measured oscillation damping.

User interface Signed floating-point number

"Tors.oscil.damp." submenu

Navigation Expert → Diagnostics → Min/max val. → Tors.oscil.damp.



Minimum value

Navigation Expert → Diagnostics → Min/max val. → Tors.oscil.damp. → Minimum value

Prerequisite Only available for Promass I.

For the following order code:
"Application package", option **EB** "Heartbeat Verification + Monitoring"

Description Displays the lowest previously measured torsion oscillation damping.

User interface Signed floating-point number

Maximum value

Navigation Expert → Diagnostics → Min/max val. → Tors.oscil.damp. → Maximum value

Prerequisite Only available for Promass I.

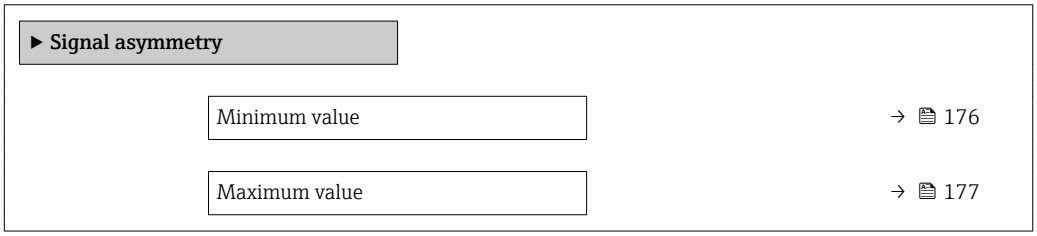
For the following order code:
"Application package", option **EB** "Heartbeat Verification + Monitoring"

Description Displays the highest previously measured torsion oscillation damping.

User interface Signed floating-point number

"Signal asymmetry" submenu

Navigation Expert → Diagnostics → Min/max val. → Signal asymmetry



Minimum value

Navigation Expert → Diagnostics → Min/max val. → Signal asymmetry → Minimum value

Description Displays the lowest previously measured signal asymmetry.

User interface Signed floating-point number

Maximum value

Navigation Expert → Diagnostics → Min/max val. → Signal asymmetry → Maximum value

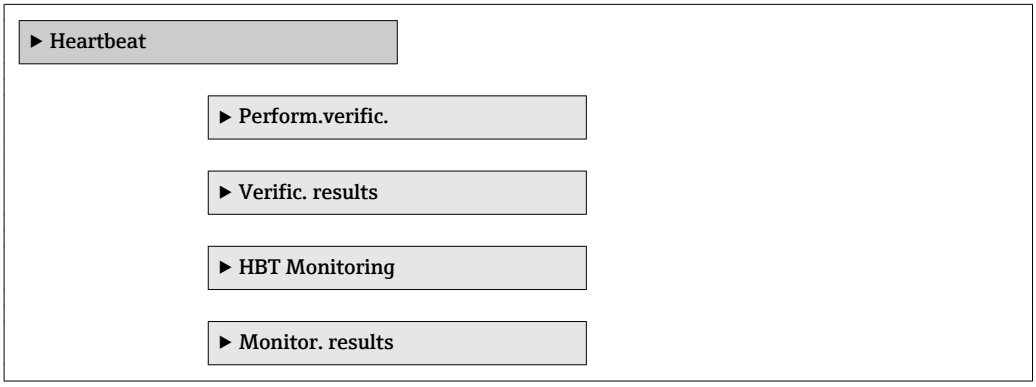
Description Displays the highest previously measured signal asymmetry.

User interface Signed floating-point number

3.9.5 "Heartbeat" submenu

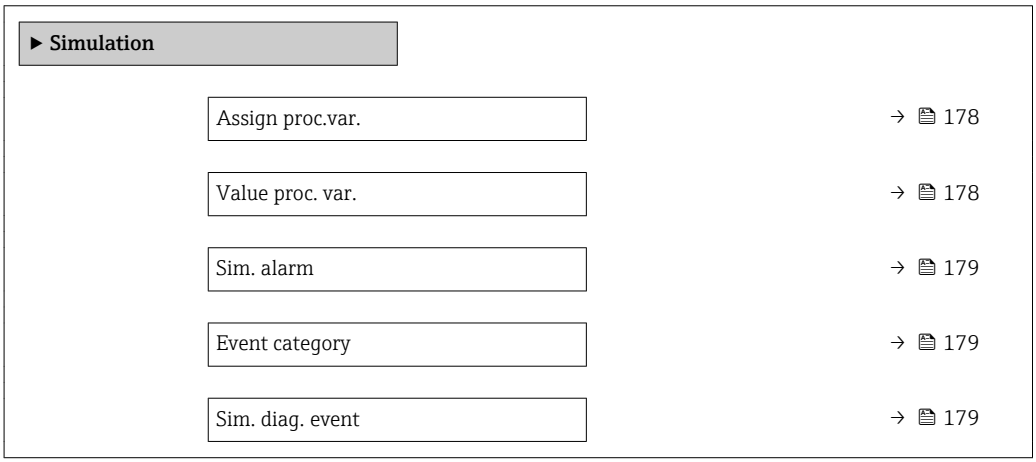
For detailed information on the parameter descriptions for the **Heartbeat Verification+Monitoring**application package, refer to the Special Documentation for the device

Navigation Expert → Diagnostics → Heartbeat



3.9.6 "Simulation" submenu

Navigation Expert → Diagnostics → Simulation



Assign proc.var.

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
- Mass flow
- Volume flow
- Correct.vol.flow
- Density
- Ref.density
- Temperature
- Dynam. viscosity *
- Kinematic visc. *
- TempCompDynVisc *
- TempCompKinVisc *
- Concentration *
- Target mass flow *
- Carrier mass fl. *

Factory setting Off

Additional information *Description*

The simulation value of the process variable selected is defined in the **Value proc. var.** parameter (→ 178).

Value proc. var.

Navigation Expert → Diagnostics → Simulation → Value proc. var.

Prerequisite One of the following options is selected in the **Assign proc.var.** parameter (→ 178):
- Mass flow
- Volume flow
- Correct.vol.flow
- Density
- Ref.density
- Temperature
- Dynam. viscosity *
- Kinematic visc. *
- TempCompDynVisc *
- TempCompKinVisc *
- Concentration *
- Target mass flow *
- Carrier mass fl. *

* Visibility depends on order options or device settings

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 *Entry*

The unit of the displayed measured value is taken from the **System units** submenu (→ 50).

Sim. 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.

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 **Sim. diag. event** parameter (→ 179).

Selection
- Sensor
- Electronics
- Configuration
- Process

Factory setting Process

Sim. diag. 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 **Event category** parameter (→ 179).

4 Country-specific factory settings

4.1 SI units

Not valid for USA and Canada.

4.1.1 System units

Mass	kg
Mass flow	kg/h
Volume	l
Volume flow	l/h
Corrected volume	Nl
Corrected volume flow	Nl/h
Density	kg/l
Reference density	kg/Nl
Temperature	°C
Pressure	bar a

4.1.2 Full scale values

The factory settings applie to the following parameters:
100% bar graph value 1

Nominal diameter [mm]	[kg/h]
1	4
2	20
4	90
8	400
15	1300
15 FB	3600
25	3600
25 FB	9000
40	9000
40 FB	14000
50	14000
50 FB	36000
80	36000
100	60000
150	130 t/h
250	360 t/h
350	650 t/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]	On-value for liquid [kg/h]
1	0.08
2	0.4
4	1.8
8	8
15	26
15 FB	72
25	72
25 FB	180
40	180
40 FB	300
50	300
50 FB	720
80	720
100	1200
150	2.6 t/h
250	7.2 t/h
350	13 t/h

Nominal diameter [mm]	Switch-on value for gas [kg/h]
1	0.02
2	0.1
4	0.45
8	2
15	6.5
15 FB	18
25	18
25 FB	45
40	45
40 FB	75
50	75
50 FB	180
80	180
100	300
150	650
250	1.8 t/h
350	3.25 t/h

4.2 US units

Only valid for USA and Canada.

4.2.1 System units

Mass	lb
Mass flow	lb/min
Volume	gal (us)
Volume flow	gal/min (us)
Corrected volume	Sft³
Corrected volume flow	Sft³/min
Density	lb/ft³
Reference density	lb/Sft³
Temperature	°F
Pressure	psi a

4.2.2 Full scale values

The factory settings applie to the following parameters:
100% bar graph value 1

Nominal diameter [in]	[lb/min]
1/24	0.15
1/12	0.75
1/8	3.3
3/8	15
½	50
½ FB	130
1	130
1 FB	330
1½	330
1½ FB	550
2	550
2 FB	1 300
3	1 300
4	2 200
6	4 800
10	13 000
14	23 500

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]	On-value for liquid [lb/min]
1/24	0.003
1/12	0.015
1/8	0.066
3/8	0.3
½	1
½ FB	2.6
1	2.6
1 FB	6.6
1½	6.6
1½ FB	11
2	11
2 FB	26
3	26
4	44
6	95
10	260
14	470

Nominal diameter [in]	Switch-on value for gas [lb/min]
1/24	0.001
1/12	0.004
1/8	0.016
3/8	0.075
½	0.25
½ FB	0.65
1	0.65
1 FB	1.65
1½	1.65
1½ FB	2.75
2	2.75
2 FB	6.5
3	6.5
4	11
6	23.75
10	65
14	117.5

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).
Pressure	Pa a, kPa a, MPa a	Pascal, kilopascal, megapascal (absolute)
	bar	Bar
	Pa g, kPa g, MPa g	Pascal, kilopascal, megapascal (relative/gauge)
	bar g	Bar (relative/gauge)
Mass	g, kg, t	Gram, kilogram, metric ton
Mass flow	g/s, g/min, g/h, g/d	Gram/time unit
	kg/s, kg/min, kg/h, kg/d	Kilogram/time unit
	t/s, t/min, t/h, t/d	Metric ton/time unit
Ref.density	kg/Nm³, kg/Nl, g/Scm³, kg/Sm³	Kilogram, gram/standard volume unit
Corrected volume	Nl, Nm³, Sm³	Normal liter, normal cubic meter, standard cubic meter
Correct.vol.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

Process variable	Units	Explanation
Pressure	psi a	Pounds per square inch (absolute)
	psi g	Pounds per square inch (gauge)
Mass	oz, lb, STon	Ounce, pound, standard ton
Mass flow	oz/s, oz/min, oz/h, oz/d	Ounce/time unit
	lb/s, lb/min, lb/h, lb/d	Pound/time unit
	STon/s, STon/min, STon/h, STon/d	Standard ton/time unit
Ref.density	lb/Sft³	Weight unit/standard volume unit
Corrected volume	Sft³, Sgal (us), Sbbl (us;liq.)	Standard cubic foot, standard gallon, standard barrel
Correct.vol.flow	Sft³/s, Sft³/min, Sft³/h, Sft³/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
	ft³	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
	ft³/s, ft³/min, ft³/h, ft³/d	Cubic foot/time unit
	fl oz/s (us), fl oz/min (us), fl oz/h (us), fl oz/d (us)	Fluid ounce/time unit
	gal/s (us), gal/min (us), gal/h (us), gal/d (us)	Gallon/time unit
	kgal/s (us), kgal/min (us), kgal/h (us), kgal/d (us)	Kilogallon/time unit
	Mgal/s (us), Mgal/min (us), Mgal/h (us), Mgal/d (us)	Million gallon/time unit
	bbl/s (us;liq.), bbl/min (us;liq.), bbl/h (us;liq.), bbl/d (us;liq.)	Barrel/time unit (normal liquids) Normal liquids: 31.5 gal/bbl
	bbl/s (us;beer), bbl/min (us;beer), bbl/h (us;beer), bbl/d (us;beer)	Barrel /time unit (beer) Beer: 31.0 gal/bbl
	bbl/s (us;oil), bbl/min (us;oil), bbl/h (us;oil), bbl/d (us;oil)	Barrel/time unit (petrochemicals) Petrochemicals: 42.0 gal/bbl
	bbl/s (us;tank), bbl/min (us;tank), bbl/h (us;tank), bbl/d (us;tank)	Barrel/time unit (filling tank) Filling tanks: 55.0 gal/bbl
Time	s, m, h, d, y	Second, minute, hour, day, year
	am, pm	Ante meridiem (before midday), post meridiem (after midday)

5.3 Imperial units

Process variable	Units	Explanation
Density	lb/gal (imp), lb/bbl (imp;beer), lb/bbl (imp;oil)	Pound/volume unit
Corrected volume	Sgal (imp)	Standard gallon
Correct.vol.flow	Sgal/s (imp), Sgal/min (imp), Sgal/h (imp), Sgal/d (imp)	Standard gallon/time unit
Volume	gal (imp), Mgal (imp)	Gallon, mega gallon
	bbl (imp;beer), bbl (imp;oil)	Barrel (beer), barrel (petrochemicals)
Volume flow	gal/s (imp), gal/min (imp), gal/h (imp), gal/d (imp)	Gallon/time unit
	Mgal/s (imp), Mgal/min (imp), Mgal/h (imp), Mgal/d (imp)	Mega gallon/time unit
	bbl/s (imp;beer), bbl/min (imp;beer), bbl/h (imp;beer), bbl/d (imp;beer)	Barrel /time unit (beer) Beer: 36.0 gal/bbl
	bbl/s (imp;oil), bbl/min (imp;oil), bbl/h (imp;oil), bbl/d (imp;oil)	Barrel/time unit (petrochemicals) Petrochemicals: 34.97 gal/bbl
Time	s, m, h, d, y	Second, minute, hour, day, year
	am, pm	Ante meridiem (before midday), post meridiem (after midday)

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