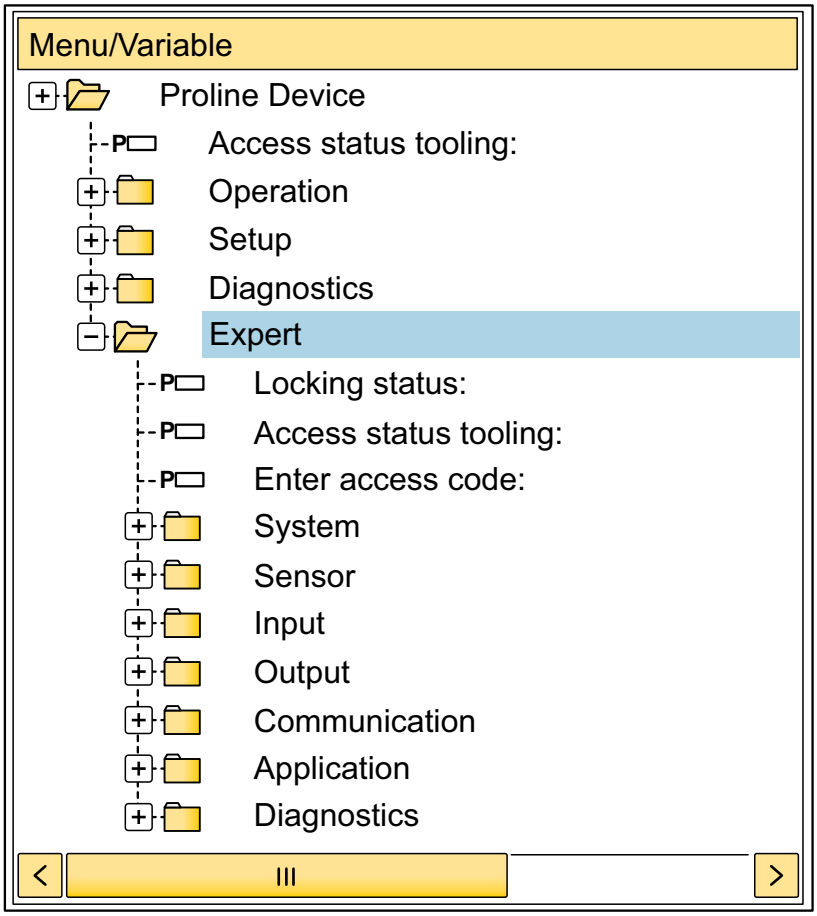
GP01044D/06/EN/02.21
71535815
2022-02-01

Valid as of version
02.00.zz (Device firmware)

Description of Device Parameters
Proline Promag 400
PROFIBUS DP

Electromagnetic 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

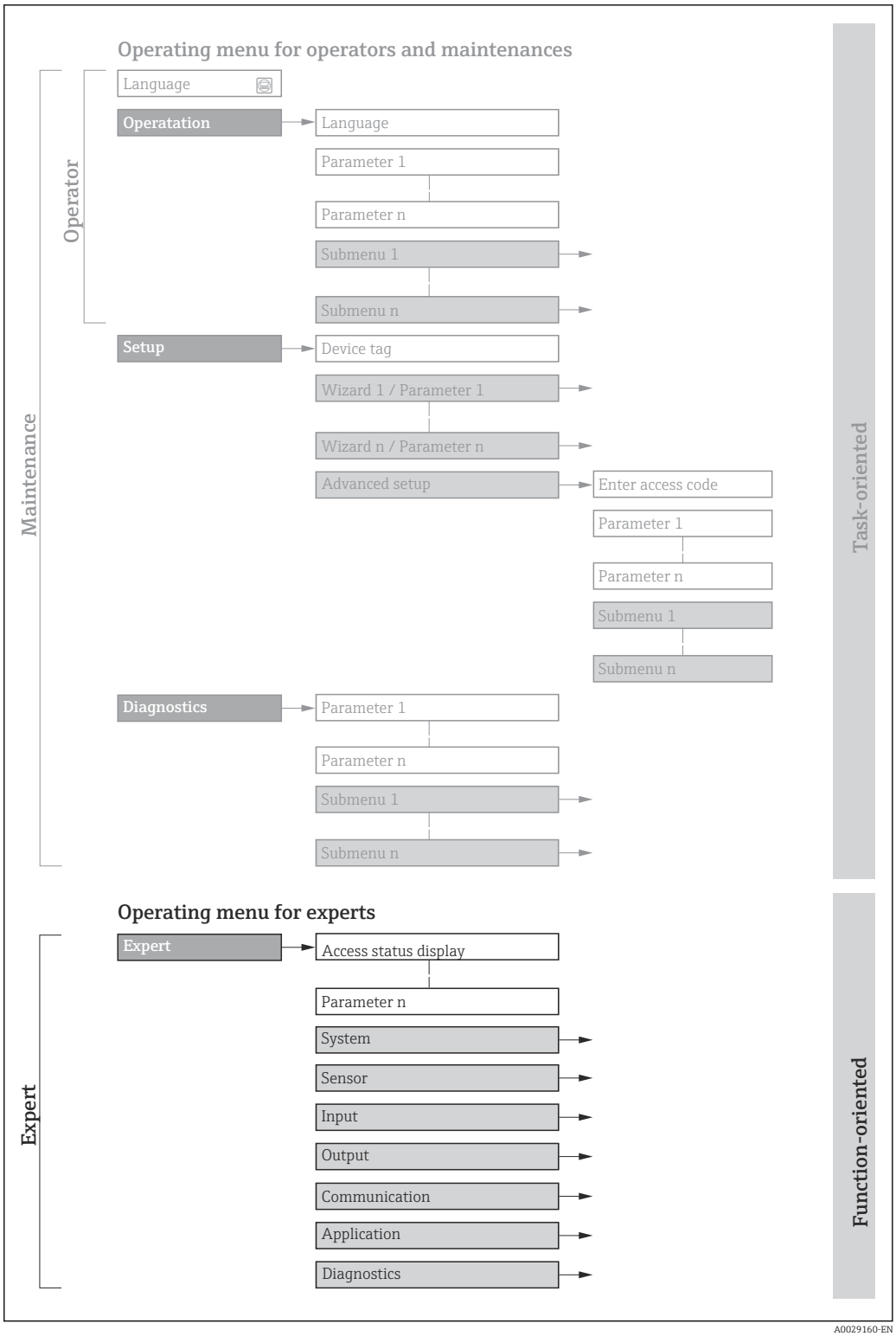
1.2 Target group

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 → 7
- Operating concept of the operating menus: Operating Instructions → 7

1.3.2 Structure of a parameter description

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

Complete parameter name	Write-protected parameter

Navigation
Navigation path to the parameter via the local display (direct access code) 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
Promag D 400	BA01232D
Promag L 400	BA01233D
Promag W 400	BA01234D

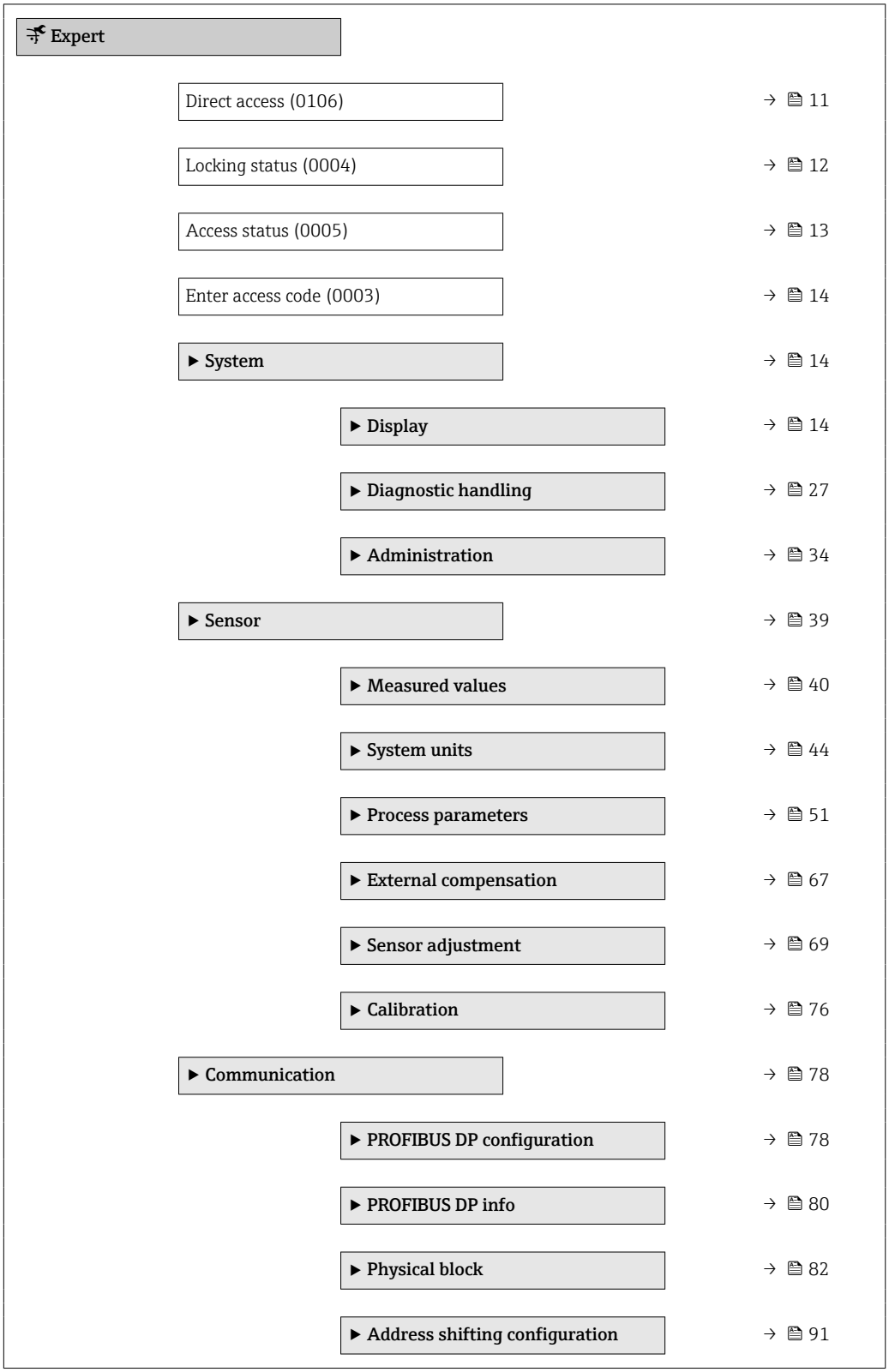
1.5.2 Supplementary device-dependent documentation

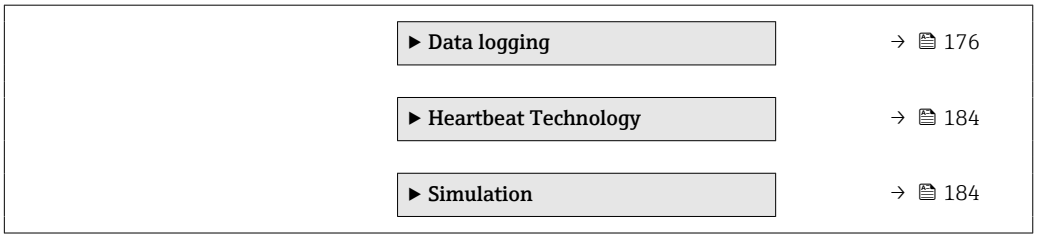
Special Documentation

Content	Documentation code
Heartbeat Verification + Monitoring application package	SD02569D
Display modules A309/A310	SD01793D

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.

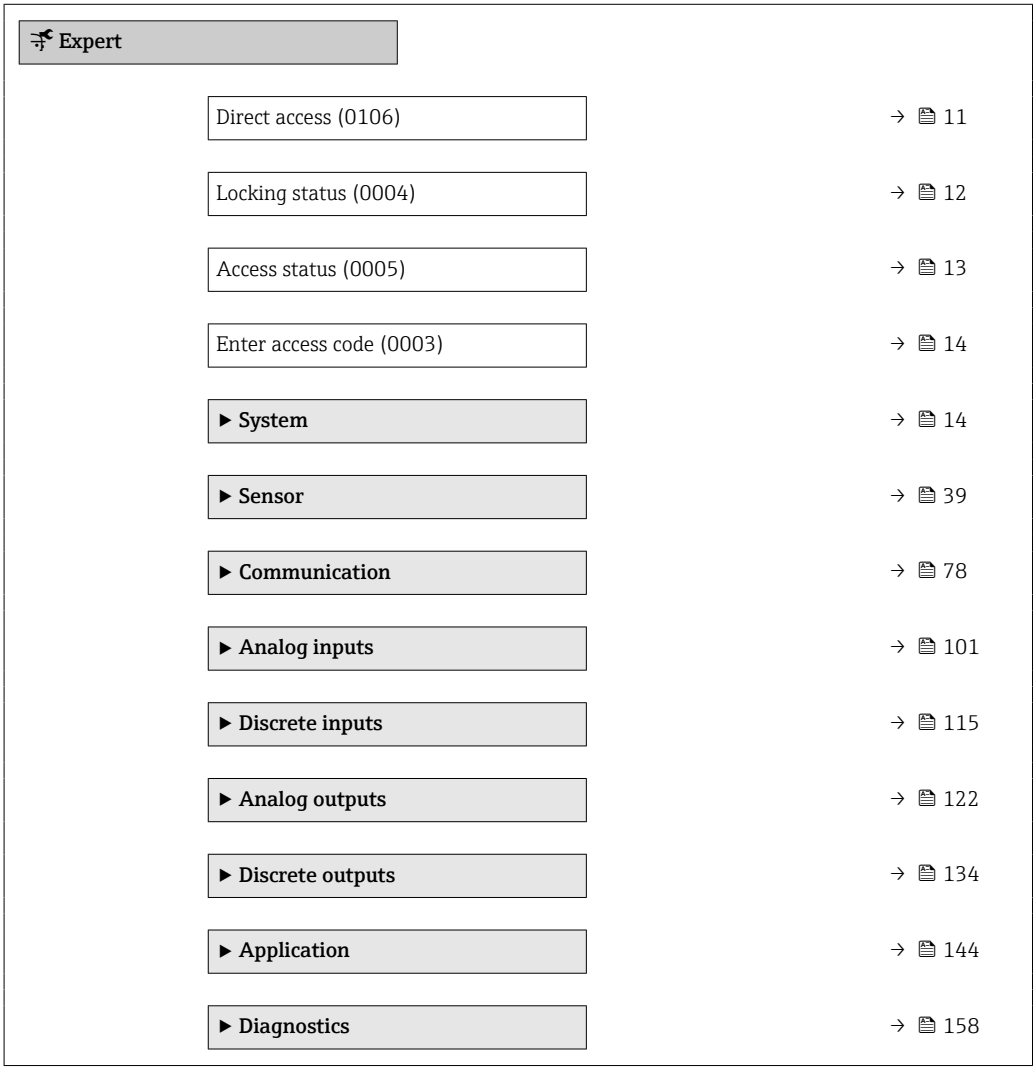



▶ Data logging
→ 176
▶ Heartbeat Technology
→ 184
▶ Simulation
→ 184

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.

Navigation Expert



Direct access

Navigation Expert → Direct access (0106)

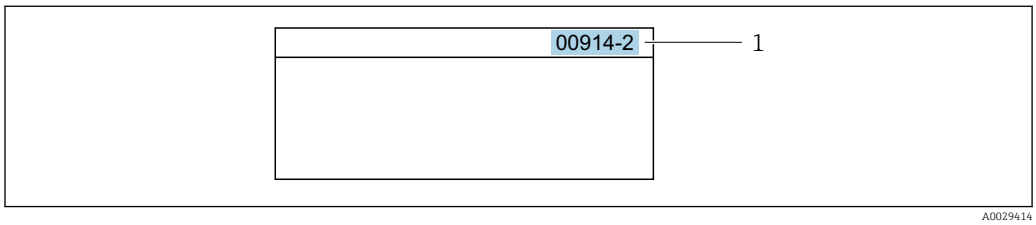
Description Use this function to enter the access code to enable direct access to the desired parameter via the local display. A parameter number is assigned to each parameter for this purpose.

User entry 0 to 65 535

Additional information

User entry

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



1 Direct access code

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 opened automatically.
  Example: Enter **00914** → **Assign process variable** parameter
- If a different channel is opened: Enter the direct access code with the corresponding channel number.
  Example: Enter **00914-2** → **Assign process variable** parameter

Locking status

Navigation

Expert → Locking status (0004)

Description

Displays the active write protection.

User interface

- Hardware locked
- Temporarily 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 → 7

Selection

Options	Description
None	The access status displayed in the **Access status display** parameter (→ 13) applies . Only appears on local display.
Hardware locked (priority 1)	The DIP switch for hardware locking is activated on the main electronics module. This locks write access to the parameters (e.g. via local display or operating tool) .
Temporarily 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 status display

Navigation Expert → Access stat.disp (0091)

Prerequisite A local display is provided.

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

User interface
- Operator
- Maintenance

Factory setting Operator

Additional information

Description

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

Access authorization can be modified via the **Enter access code** parameter (→ 14).

For information about the **Enter access code** parameter: see the "Disabling write protection via the access code" section of the Operating Instructions for the device → 7

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

User interface

Detailed information on access authorization is provided in the "User roles and associated access authorization" and "Operating concept" sections of the Operations Instructions for the device → 7

Access status

Navigation Expert → Access status (0005)

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

User interface
- Operator
- Maintenance

Factory setting Maintenance

Additional information

Description

Access authorization can be modified via the **Enter access code** parameter (→ 14).

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

User interface

Detailed information on access authorization is provided in the "User roles and associated access authorization" and "Operating concept" sections of the Operations Instructions for the device → 7

Enter access code

Navigation Expert → Ent. access code (0003)

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

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

3.1 "System" submenu

Navigation Expert → System

▶ **System**	
▶ **Display**	→ 14
▶ **Diagnostic handling**	→ 27
▶ **Administration**	→ 34

3.1.1 "Display" submenu

Navigation Expert → System → Display

▶ **Display**	
Display language (0104)	→ 15
Format display (0098)	→ 16
Value 1 display (0107)	→ 18

Display language

Navigation Expert → System → Display → Display language (0104)

Prerequisite A local display is provided.

Description Use this function to select the configured language on the local display.

Selection
- English
- Deutsch
- Français

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

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

Format display

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

Prerequisite A local display is provided.

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

Selection
- 1 value, max. size
- 1 bargraph + 1 value
- 2 values
- 1 value large + 2 values
- 4 values

Factory setting 1 value, max. size

Additional information *Description*

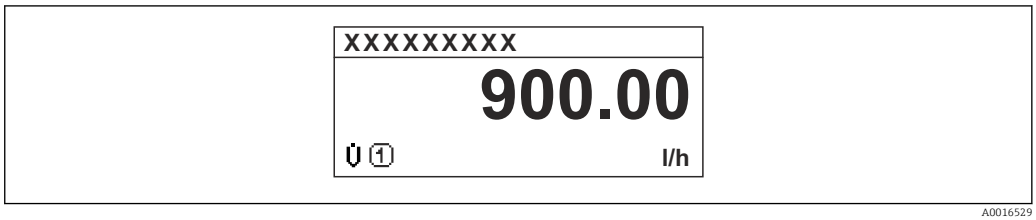
The display format (size, bar graph etc.) and number of measured values displayed simultaneously (1 to 4) can be configured. This setting only applies to normal operation.

- The **Value 1 display** parameter (→ 18) to **Value 4 display** parameter (→ 22) 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 (→ 23).

* Visibility depends on order options or device settings

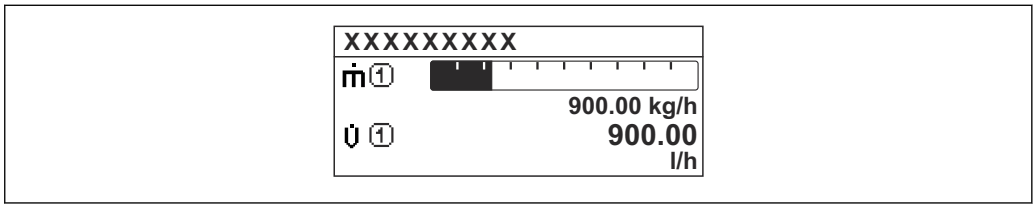
Possible measured values shown on the local display:

"1 value, max. size" option



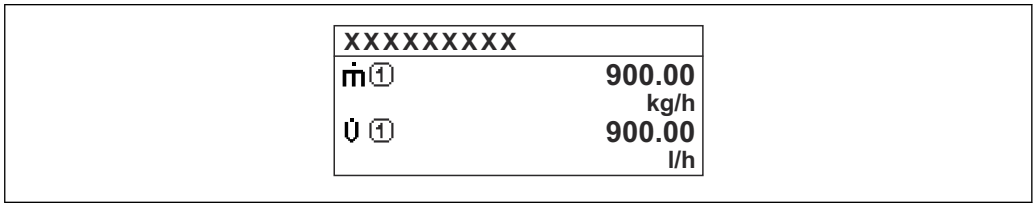
A0016529

"1 bargraph + 1 value" option



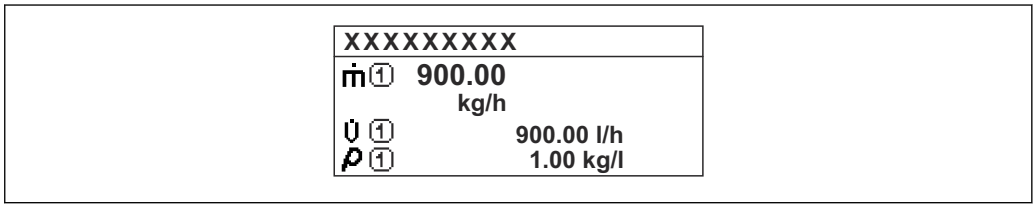
A0013098

"2 values" option



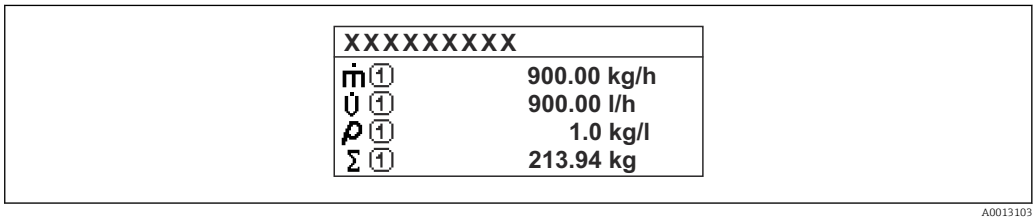
A0013100

"1 value large + 2 values" option



A0013102

"4 values" option



A0013103

Value 1 display

Navigation Expert → System → Display → Value 1 display (0107)

Prerequisite A local display is provided.

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

Selection
- Volume flow
- Mass flow
- Corrected volume flow
- Flow velocity
- Conductivity *
- Corrected conductivity *
- Totalizer 1
- Totalizer 2
- Totalizer 3
- Electronics temperature
- Noise *
- Coil current shot time *
- Reference electrode potential against PE *
- Build-up measured value *
- Test point 1
- Test point 2
- Test point 3

Factory setting Volume flow

Additional information

Description

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

The **Format display** parameter (→ 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 (→ 44).

0% bargraph value 1

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

Prerequisite A local display is provided.

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

User entry Signed floating-point number

* Visibility depends on order options or device settings

Factory setting

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

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 (→ 44).

100% bargraph value 1

Navigation

Expert → System → Display → 100% bargraph 1 (0125)

Prerequisite

A local display is provided.

Description

Use this function to enter the 100% bar graph value to be shown on the display for the measured value 1.

User entry

Signed floating-point number

Factory setting

Depends on country and nominal diameter → 187

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 (→ 44).

Decimal places 1

Navigation

Expert → System → Display → Decimal places 1 (0095)

Prerequisite

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

Description

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

Selection

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

Factory setting

x.xx

Additional information *Description*

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

Value 2 display

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

Prerequisite A local display is provided.

Description Use this function to select one of the measured values 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 (→ 44).

Decimal places 2

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

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

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

Selection

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

Factory setting x.xx

Additional information *Description*

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

Value 3 display

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

Prerequisite A local display is provided.

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

Selection For the picklist, see the **Value 1 display** parameter (→ 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 (→ 44).

0% bargraph value 3

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

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

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

User entry Signed floating-point number

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

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 (→ 44).

100% bargraph value 3

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

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

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

User entry Signed floating-point number

Factory setting 0

Additional information *Description*

The **Format display** parameter (→ 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 (→ 44).

Decimal places 3

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

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

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

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

Factory setting x.xx

Additional information *Description*

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

Value 4 display

Navigation Expert → System → Display → Value 4 display (0109)

Prerequisite A local display is provided.

Description Use this function to select one of the measured values 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 (→ 44).

Decimal places 4

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

Prerequisite A measured value is specified in the **Value 4 display** parameter (→ 22).

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

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

Factory setting x.xx

Additional information *Description*

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

Display interval

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

Prerequisite A local display is provided.

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

User entry 1 to 10 s

Factory setting 5 s

Additional information *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 (→ 22) are used to specify which measured values are shown on the local display.
- The display format of the displayed measured values is specified using the **Format display** parameter (→ 16).

Display damping

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

Prerequisite A local display is provided.

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

User entry 0.0 to 999.9 s

Factory setting 0.0 s

Additional information *User entry*

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

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

Header

Navigation Expert → System → Display → Header (0097)

Prerequisite A local display is provided.

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

Selection
- Device tag
- Free text

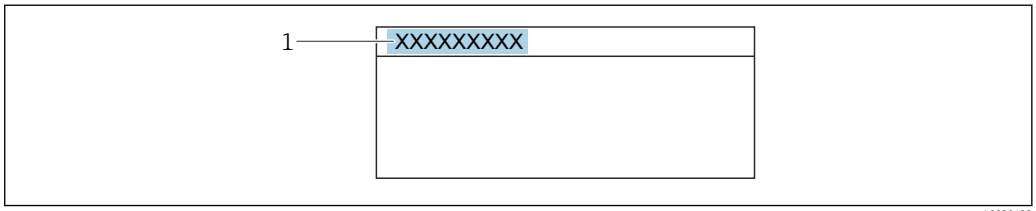
Factory setting Device tag

1) proportional transmission behavior with first order delay

Additional information

Description

The header text only appears during normal operation.



1 Position of the header text on the display

Selection

- Device tag
  Is defined in the **Device tag** parameter (→ 168).
- Free text
  Is defined in the **Header text** parameter (→ 25).

Header text

Navigation Expert → System → Display → Header text (0112)

Prerequisite In the **Header** parameter (→ 24), the **Free text** option is selected.

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

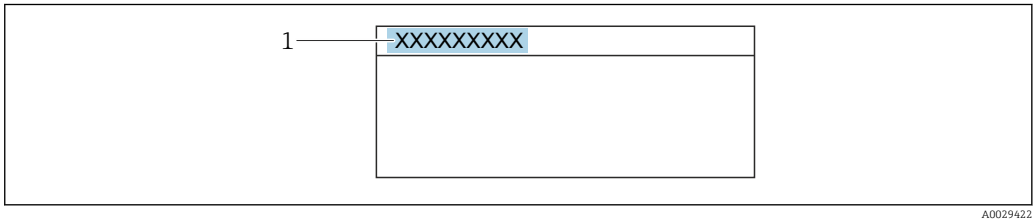
User entry Max. 12 characters such as letters, numbers or special characters (e.g. @, %, /)

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

Additional information

Description

The header text only appears during normal operation.



1 Position of the header text on the display

User entry

The number of characters displayed depends on the characters used.

Separator

Navigation Expert → System → Display → Separator (0101)

Prerequisite A local display is provided.

Description Use this function to select the decimal separator.

Selection
- . (point)
- , (comma)

Factory setting . (point)

Contrast display

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

Prerequisite A local display is provided.

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

User entry 20 to 80 %

Factory setting 50 %

Backlight

Navigation Expert → System → Display → Backlight (0111)

Prerequisite A local display is provided.

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

Selection
- Disable
- Enable

Factory setting Enable

Access status display

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

Prerequisite A local display is provided.

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

User interface
- Operator
- Maintenance

Factory setting Operator

Additional information *Description*

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

Access authorization can be modified via the **Enter access code** parameter (→ 14).

For information about the **Enter access code** parameter: see the "Disabling write protection via the access code" section of the Operating Instructions for the device → 7

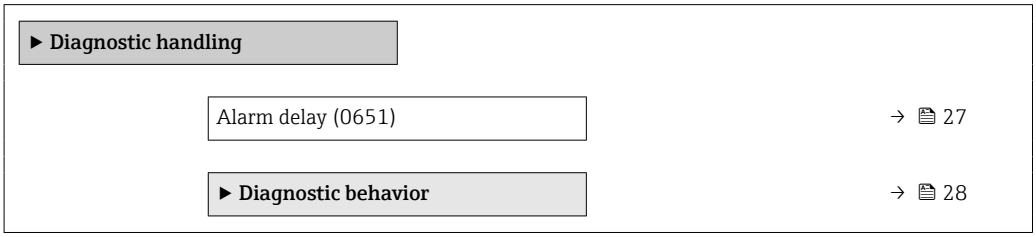
If additional write protection is active, this restricts the current access authorization even further.

User interface

Detailed information on access authorization is provided in the "User roles and associated access authorization" and "Operating concept" sections of the Operations Instructions for the device → 7

3.1.2 "Diagnostic handling" submenu

Navigation Expert → System → Diagn. handling



Alarm delay

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

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

The diagnostic message is reset without a time delay.

User entry 0 to 60 s

Factory setting 0 s

Additional information

Result

This setting affects the following diagnostic messages:
- 190 Special event 1
- 832 Electronics temperature too high
- 833 Electronics temperature too low
- 862 Pipe empty
- 990 Special event 4

"Diagnostic behavior" submenu

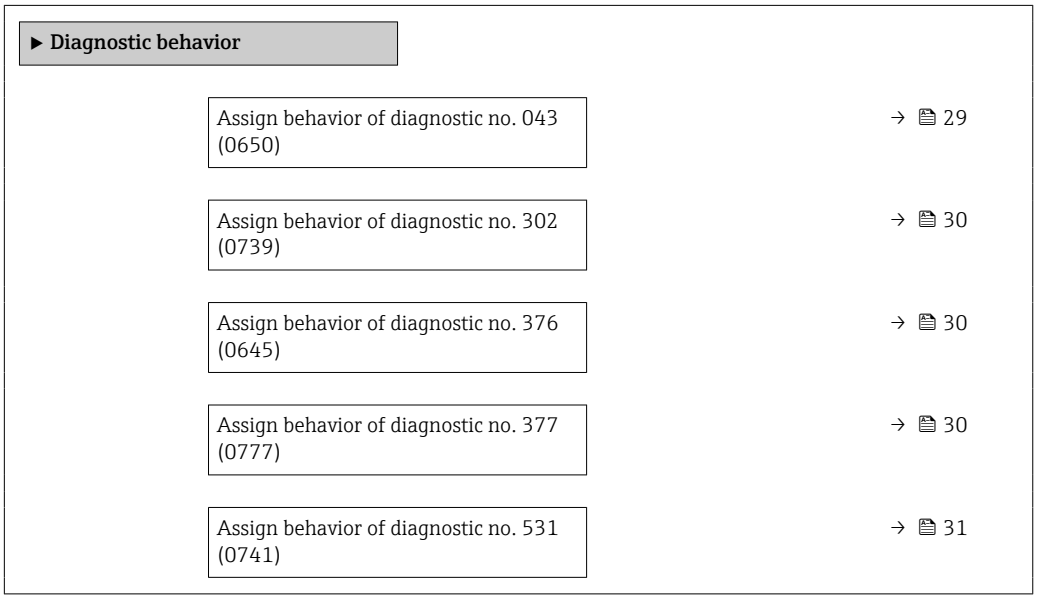
Each item of diagnostic information is assigned a specific diagnostic behavior at the factory. The user can change this assignment for specific diagnostic information in the **Diagnostic behavior** submenu (→ 28).

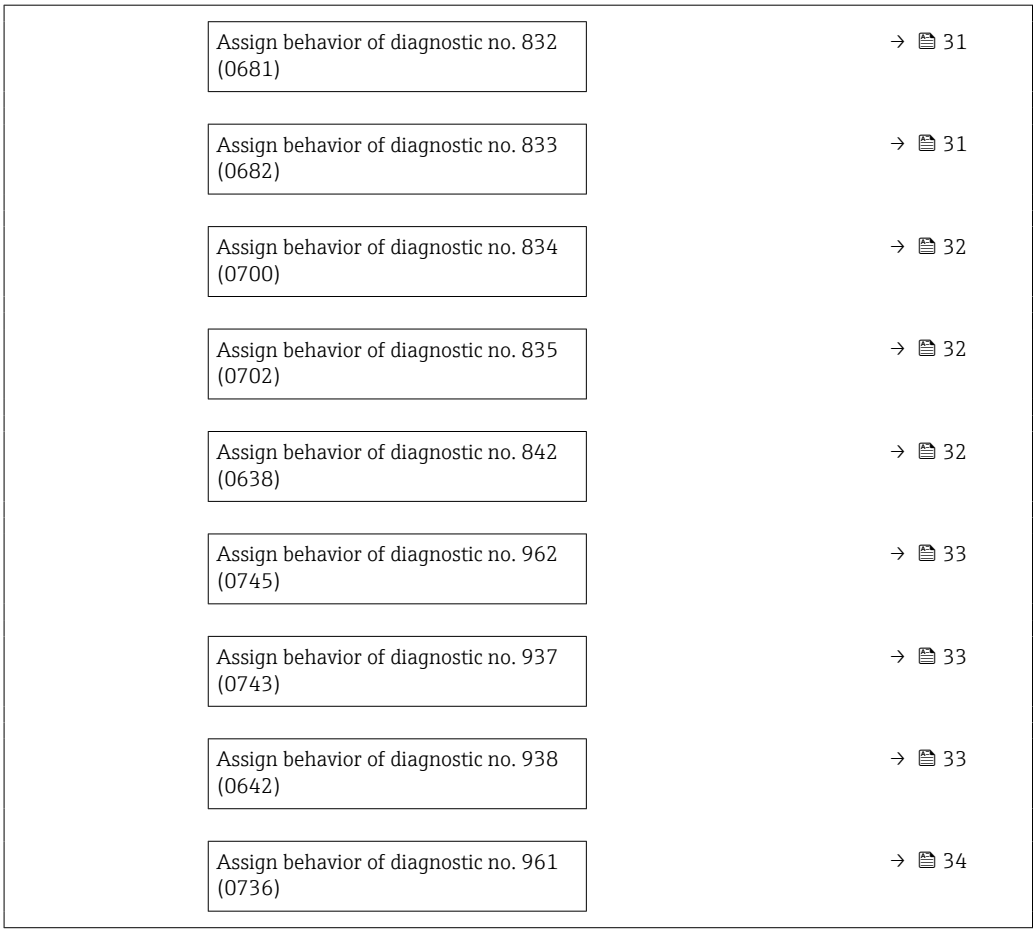
The following options are available in the **Assign behavior of diagnostic no. xxx** parameters:

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 output of measured values via PROFIBUS and totalizers is not affected. A diagnostic message is generated.
Logbook entry only	The device continues to measure. The diagnostic message is only displayed in the **Event logbook** submenu (→ 166) (**Event list** submenu (→ 166)) and is not displayed in alternating sequence 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 → 7

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





Assign behavior of diagnostic no. 043 (Sensor short circuit)

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 043 (0650)

Description Use this function to change the diagnostic behavior of the **043 Sensor short circuit** diagnostic message.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Warning

Additional information Detailed description of the options available for selection:

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

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 302 (0739)

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

Selection
- Alarm
- Warning

Factory setting Warning

Additional information Detailed description of the options available for selection:

Assign behavior of diagnostic no. 376 (Sensor electronics (ISEM) faulty)

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 376 (0645)

Description Use this function to change the diagnostic behavior of the **376 Sensor electronics (ISEM) faulty** diagnostic message.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Warning

Additional information Detailed description of the options available for selection:

Assign behavior of diagnostic no. 377 (Sensor electronics (ISEM) faulty)

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 377 (0777)

Description Use this function to change the diagnostic behavior of the **377 Sensor electronics (ISEM) faulty** diagnostic message.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Warning

Additional information Detailed description of the options available for selection:

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

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 531 (0741)

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

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Warning

Additional information Detailed description of the options available for selection:

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

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

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

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Logbook entry only

Additional information Detailed description of the options available for selection:

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

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 833 (0682)

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

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Logbook entry only

Additional information Detailed description of the options available for selection:

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

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 834 (0700)

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

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Warning

Additional information Detailed description of the options available for selection:

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

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 835 (0702)

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

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Warning

Additional information Detailed description of the options available for selection:

Assign behavior of diagnostic no. 842

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 842 (0638)

Description Change behavior of diagnostic event with diagnostic number 842 'Process limit'.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Off

Assign behavior of diagnostic no. 962 (Pipe empty)

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 962 (0745)

Description Use this function to change the diagnostic behavior of the **862 Pipe empty** diagnostic message.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Warning

Additional information Detailed description of the options available for selection:

Assign behavior of diagnostic no. 937 (EMC interference)

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 937 (0743)

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

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Warning

Additional information Detailed description of the options available for selection:

Assign behavior of diagnostic no. 938 (EMC interference)

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 938 (0642)

Description Use this function to change the diagnostic behavior of the **938 EMC interference** diagnostic message.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Alarm

Additional information Detailed description of the options available for selection:

Assign behavior of diagnostic no. 961

Navigation Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 961 (0736)

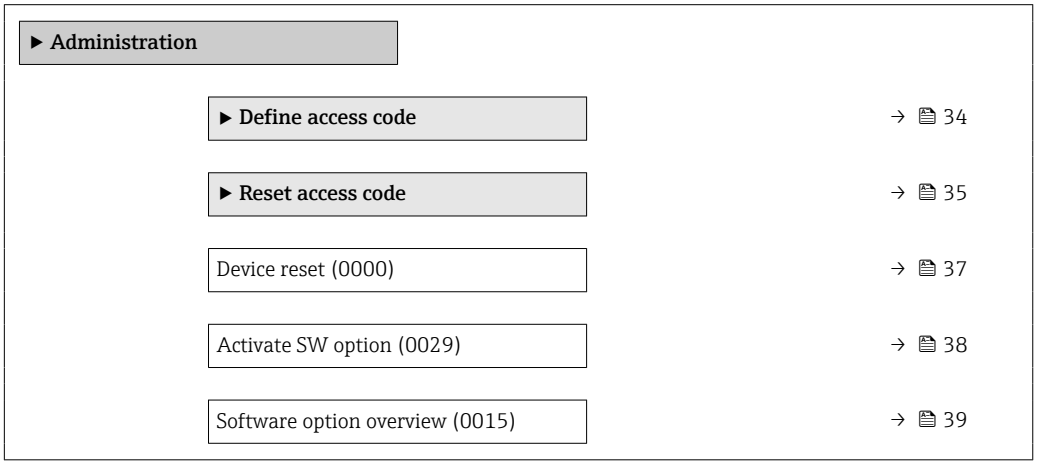
Description Select diagnostic behavior for the selected diagnostic number.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Alarm

3.1.3 "Administration" submenu

Navigation Expert → System → Administration

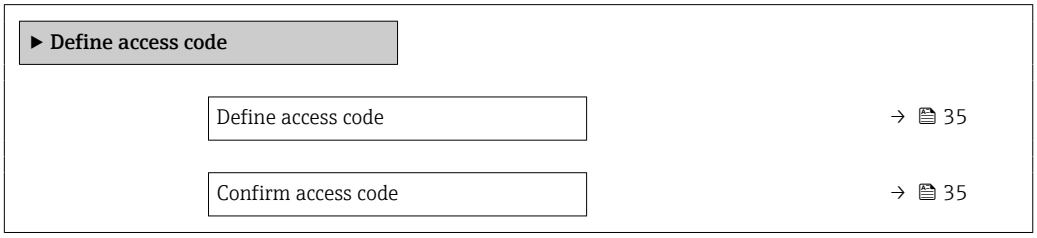


"Define access code" wizard

The **Define access code** wizard (→ 34) is only available when operating via the local display or Web browser.

If operating via the operating tool, the **Define access code** parameter (→ 37) can be found directly in the **Administration** submenu. There is no **Confirm access code** parameter if the device is operated via the operating tool.

Navigation Expert → System → Administration → Def. access code



Define access code

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

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

User entry 0 to 9 999

Factory setting 0

Additional information

Description

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

On the local display, the symbol in front of a parameter indicates that the parameter is write-protected.

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

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

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

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

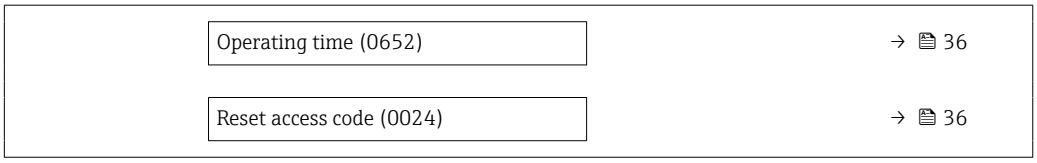
User entry 0 to 9 999

Factory setting 0

"Reset access code" submenu

Navigation Expert → System → Administration → Reset acc. code

▶ Reset access code



Operating time

Navigation Expert → System → Administration → Reset acc. code → Operating time (0652)

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

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

Additional information *User interface*

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

Reset access code

Navigation Expert → System → Administration → Reset acc. code → Reset acc. code (0024)

Description Use this function to enter a reset code to reset the user-specific access codes 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 CDI RJ45 interface)
- Fieldbus

Additional parameters in the "Administration" submenu

Define access code

Navigation Expert → System → Administration → Def. access code

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

User entry 0 to 9 999

Factory setting 0

Additional information

Description

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

Once the access code has been defined, write-protected parameters can only be modified if the access code is entered in the **Enter access code** parameter (→ 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 (0000)

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

Selection
- Cancel
- To delivery settings
- Restart device
- Restore S-DAT backup *

Factory setting Cancel

* Visibility depends on order options or device settings

Activate SW option

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

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

User entry Max. 10-digit string consisting of numbers.

Factory setting Depends on the software option ordered

Additional information

Description

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

User entry

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

NOTE!

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

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

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

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

▸ Once the activation code has been entered, check if the new software option is displayed in the **Software option overview** parameter (→ 39).

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

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

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

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

Example for a software option

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

The software options currently enabled are displayed in the **Software option overview** parameter (→ 39).

Web browser

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

Software option overview

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

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

User interface
- Extended HistoROM
- Electrode cleaning circuit
- Heartbeat Verification
- Build-up index
- Heartbeat Monitoring

Additional information *Description*

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

"Extended HistoROM" option

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

"Electrode cleaning circuit" option

Only available for Promag L and W.

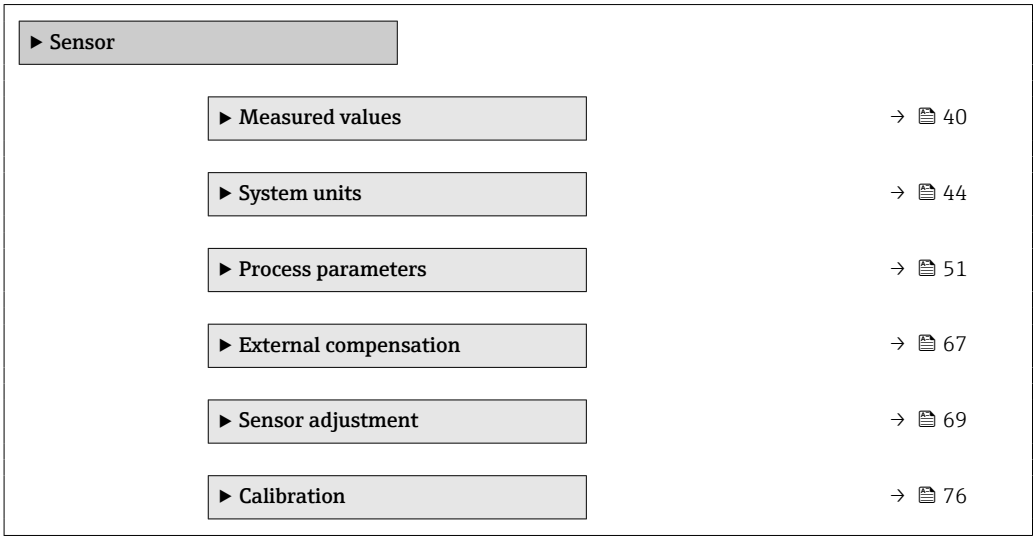
Order code for "Application package", option **EC** "ECC electrode cleaning"

"Heartbeat Verification" option and "Heartbeat Monitoring" option

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

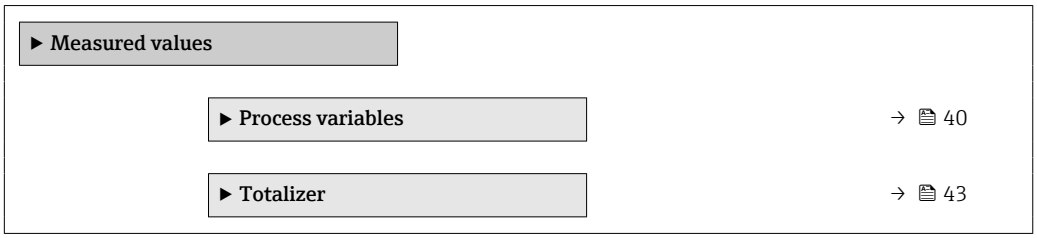
3.2 "Sensor" submenu

Navigation Expert → Sensor



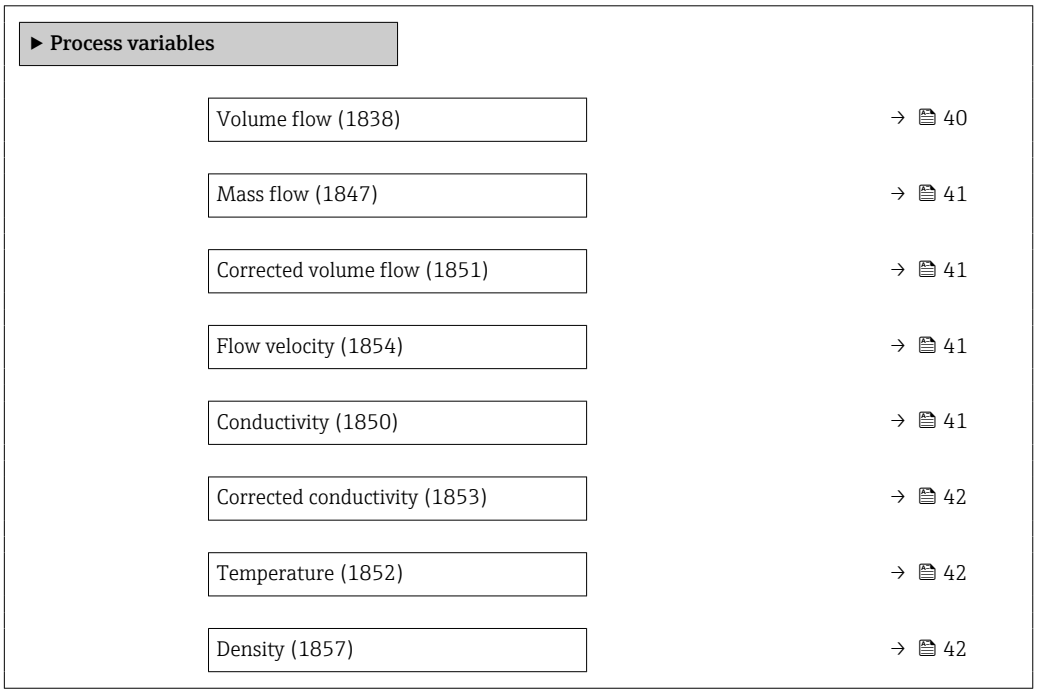
3.2.1 "Measured values" submenu

Navigation Expert → Sensor → Measured val.



"Process variables" submenu

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



Volume flow

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

Description Displays the volume flow that is currently measured.

User interface Signed floating-point number

Additional information *Dependency*

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

Mass flow

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

Description Displays the mass flow that is currently calculated.

User interface Signed floating-point number

Additional information *Dependency*

The unit is taken from the **Mass flow unit** parameter (→ 47)

Corrected volume flow

Navigation Expert → Sensor → Measured val. → Process variab. → Correct.vol.flow (1851)

Description Displays the corrected volume flow that is currently measured.

User interface Signed floating-point number

Additional information *Dependency*

The unit is taken from the **Corrected volume flow unit** parameter (→ 49)

Flow velocity

Navigation Expert → Sensor → Measured val. → Process variab. → Flow velocity (1854)

Description Displays the flow velocity that is currently calculated.

User interface Signed floating-point number

Conductivity

Navigation Expert → Sensor → Measured val. → Process variab. → Conductivity (1850)

Prerequisite The **On** option is selected in the **Conductivity measurement** parameter (→ 55).

Description Displays the conductivity that is currently measured.

User interface Signed floating-point number

Additional information *Dependency*

The unit is taken from the **Conductivity unit** parameter (→ 46)

Corrected conductivity

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

Prerequisite The following conditions are met:
- The **On** option is selected in the **Conductivity measurement** parameter (→ 55).
- The **Internal temperature sensor** option or the **External value** option is selected in the **Temperature source** parameter (→ 68).

Description Displays the conductivity that is currently corrected.

User interface Positive floating-point number

Additional information *Dependency*

The unit is taken from the **Conductivity unit** parameter (→ 46)

Temperature

Navigation Expert → Sensor → Measured val. → Process variab. → Temperature (1852)

Prerequisite The **Internal temperature sensor** option or the **External value** option is selected in the **Temperature source** parameter (→ 68).

Description Displays the temperature that is currently calculated.

User interface Positive floating-point number

Additional information *Dependency*

The unit is taken from the **Temperature unit** parameter (→ 47)

Density

Navigation Expert → Sensor → Measured val. → Process variab. → Density (1857)

Description Displays the current fixed density or density read in from an external device.

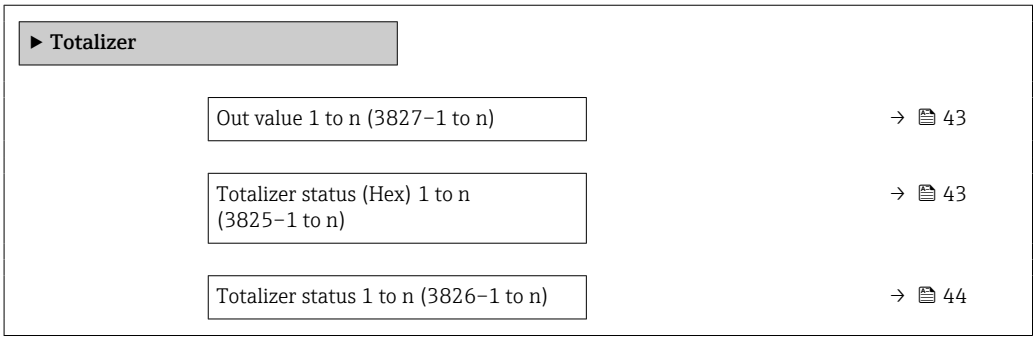
User interface Signed floating-point number

Additional information *Dependency*

The unit is taken from the **Density unit** parameter (→ 48)

"Totalizer" submenu

Navigation Expert → Sensor → Measured val. → Totalizer



Out value 1 to n

Navigation Expert → Sensor → Measured val. → Totalizer → Out value 1 to n (3827–1 to n)

Prerequisite The **Auto** option is selected in the **Target mode** parameter (→ 151).

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 (→ 149).

User interface

The value of the process variable totalized since measuring began can be positive or negative. This depends on the settings in the **Totalizer operation mode** parameter (→ 148).

Dependency

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 146).

Totalizer status (Hex) 1 to n

Navigation Expert → Sensor → Measured val. → Totalizer → Status (Hex) 1 to n (3825–1 to n)

Prerequisite In **Target mode** parameter (→ 151), the **Auto** option is selected.

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

User interface 0 to 0xFF

Totalizer status 1 to n

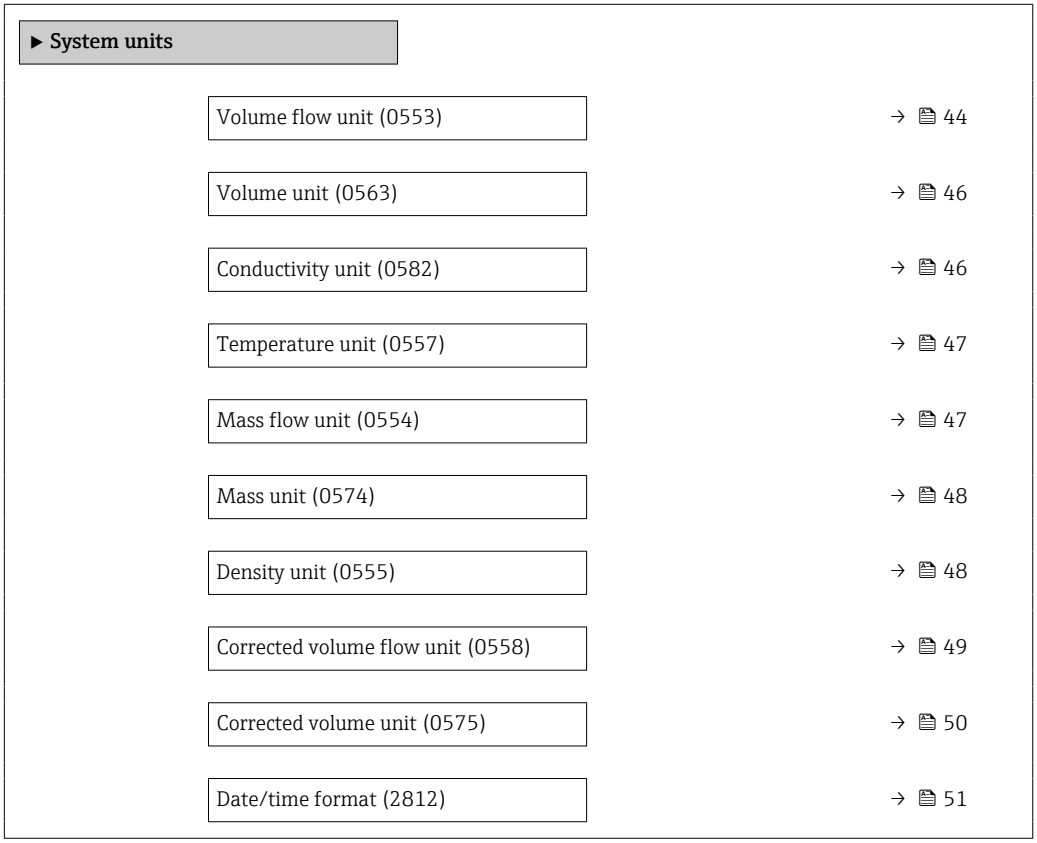
Navigation Expert → Sensor → Measured val. → Totalizer → Tot. status 1 to n (3826–1 to n)

Description Displays the status of the particular totalizer.

User interface
- Good
- Uncertain
- Bad

3.2.2 "System units" submenu

Navigation Expert → Sensor → System units



Volume flow unit

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

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

Selection

SI units
- cm^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
- kft^3/s
- kft^3/min
- kft^3/h
- kft^3/d
- $MMft^3/s$
- $MMft^3/min$
- $MMft^3/h$
- Mft^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)
- 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)
- kgal/s (us)
- kgal/min (us)
- kgal/h (us)
- kgal/d (us)

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

Factory setting

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

Additional information

Effect

The selected unit applies for:
Volume flow parameter (→ 40)

Selection

For an explanation of the abbreviated units: → 192

Volume unit

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

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

Selection

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

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

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

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

Additional information

Selection

For an explanation of the abbreviated units: → 192

Conductivity unit

Navigation Expert → Sensor → System units → Conductiv. unit (0582)

Prerequisite The **On** option is selected in the **Conductivity measurement** parameter (→ 55) parameter.

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

Selection

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

Factory setting

µS/cm

Additional information

Effect

The selected unit applies for:
Conductivity parameter (→ 41)

Selection

For an explanation of the abbreviated units: → 192

Temperature unit

Navigation

Expert → Sensor → System units → Temperature unit (0557)

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

Effect

The selected unit applies for:
- **Maximum value** parameter (→ 175)
- **Minimum value** parameter (→ 175)

Selection

For an explanation of the abbreviated units: → 192

Mass flow unit

Navigation

Expert → Sensor → System units → Mass flow unit (0554)

Description

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

Selection

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

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

Factory setting

Country-specific:
- kg/h
- lb/min

Additional information

Effect

The selected unit applies for:
Mass flow parameter (→ 41)

Selection

For an explanation of the abbreviated units: → 192

Mass unit

Navigation

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

Description

Use this function to select the unit for the mass.

Selection

SI units
- g
- kg
- t

US units
- oz
- lb
- STon

Factory setting

Country-specific:
- kg
- lb

Additional information

Selection

For an explanation of the abbreviated units: → 192

Density unit

Navigation

Expert → Sensor → System units → Density unit (0555)

Description

Use this function to select the unit for the density.

Selection

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

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

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

Factory setting

Country-specific:
- kg/l
- lb/ft³

Additional information

Effect

The selected unit applies for:
- **External density** parameter (→ 67)
- **Fixed density** parameter (→ 68)

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: → 192

Corrected volume flow unit

Navigation

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

Description

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

Selection

SI units
- Nl/s
- Nl/min
- Nl/h
- Nl/d
- Nhl/s
- Nhl/min
- Nhl/h
- Nhl/d
- Nm^3/s
- Nm^3/min
- Nm^3/h
- Nm^3/d
- Sl/s
- Sl/min
- Sl/h
- Sl/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
- $MSft^3/s$
- $MSft^3/min$
- $MSft^3/h$
- $MSft^3/D$
- $MMSft^3/s$
- $MMSft^3/min$
- $MMSft^3/h$
- $MMSft^3/d$
- 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.)
- Sbbl/s (us;oil)
- Sbbl/min (us;oil)
- Sbbl/h (us;oil)
- Sbbl/d (us;oil)

Imperial units
- Sgal/s (imp)
- Sgal/min (imp)
- Sgal/h (imp)
- Sgal/d (imp)

Factory setting

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

Additional information

Selection

For an explanation of the abbreviated units: → 192

Corrected volume unit

Navigation

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

Description

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

Selection

SI units
- Nl
- Nhl
- Nm^3
- Sl
- Sm^3

US units
- Sft^3
- $MSft^3$
- $MMSft^3$
- Sgal (us)
- Sbbl (us;liq.)
- Sbbl (us;oil)

Imperial units
Sgal (imp)

Factory setting

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

Additional information *Selection*

For an explanation of the abbreviated units: → 192

Date/time format

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

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

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

Factory setting dd.mm.yy hh:mm

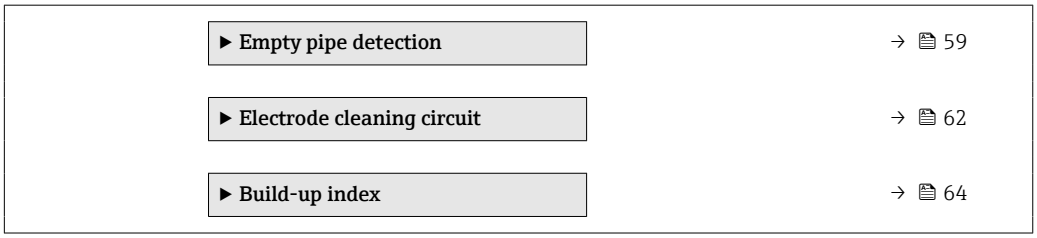
Additional information *Selection*

For an explanation of the abbreviated units: → 192

3.2.3 "Process parameters" submenu

Navigation Expert → Sensor → Process param.

▶ **Process parameters**	
Filter options (6710)	→ 52
Flow damping (6661)	→ 54
Flow override (1839)	→ 54
Conductivity measurement (6514)	→ 55
Conductivity damping (1803)	→ 55
Conductivity temperature coefficient (1891)	→ 56
Temperature damping (1886)	→ 56
Reference density (1885)	→ 56
▶ **Low flow cut off**	→ 57



Filter options

Navigation Expert → Sensor → Process param. → Filter options (6710)

Description Use this function to select a filter option.

Selection
- Adaptive
- Adaptive CIP on
- Dynamic
- Dynamic CIP on
- Binomial
- Binomial CIP on

Factory setting Binomial

Additional information *Description*

The user can choose from a range of filter combinations which can optimize the measurement result depending on the application. Each change in the filter setting affects

the output signal of the measuring device. The response time of the output signal increases as the filter depth increases.

Selection

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

Examples

Possible applications for the filters

Application	Standard	Standard CIP	Dynamic	Dynamic CIP	Binomial
Pulsating flow (flow is negative intermittently)	−−−	−−−	++	−−	++
Flow changes frequently (flow is dynamic)	−	−−	++	−	++
Clear signal, fast control loop (< 1 s)	−−	−−	+ [1)]		++
Poor signal, slow control loop (response time of a few seconds)	++	−	−−	−−−	−−−
Permanently bad signal	++	−−	−	−−−	−
Short and severe signal distortion after a while		++		++	
Replacement of a Promag 50/53: system damping Promag 400 = 0.5 * system damping Promag 50/53					+++
Replacement of a Promag 10: system damping Promag 400 = system damping Promag 10 + 2			+++		
For a stable flow signal (no other requirements)	+++				

1) Value of flow damping < 6

Flow damping

Navigation Expert → Sensor → Process param. → Flow damping (6661)

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

User entry 0 to 15

Factory setting 4

Additional information

Input range 0 to 15

- Value = 0: no damping
- Value = 1: minor damping
- Value = 15: strong damping

- The damping depends on the measuring period and the filter type selected.
- An increase or decrease in the damping depends on the application.

Effect

The damping affects the following variables of the device:
- Outputs
- Low flow cut off → 57
- Totalizers → 145

Flow override

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

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

Selection
- Off
- On

Factory setting Off

Additional information

Result

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

Description

Flow override is active
- The **453 Flow override** diagnostic message is output.
- Output values
  - Output: value at zero flow
  - Temperature: continues to be output
  - Totalizers 1-3: stop being totalized

The **Flow override** option can also be activated in the **Status input** submenu: **Assign status input** parameter.

Conductivity measurement

Navigation Expert → Sensor → Process param. → Conduct. measur. (6514)

Prerequisite The **On** option is selected in the **Conductivity measurement** parameter (→ 55) parameter.

Description Use this function to enable and disable conductivity measurement.

Selection
- Off
- On

Factory setting Off

Additional information *Description*

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

Conductivity damping

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

Prerequisite The **On** option is selected in the **Conductivity measurement** parameter (→ 55).

Description Use this function to enter a time constant for conductivity damping (PT1 element).

User entry 0 to 999.9 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).

2) Proportional behavior with first-order lag

Conductivity temperature coefficient

Navigation Expert → Sensor → Process param. → Cond. temp.coeff (1891)

Prerequisite The **Internal temperature sensor** option or the **External value** option is selected in the **Temperature source** parameter (→ 68).

Description Use this function to enter the temperature coefficient for the conductivity.

User entry Signed floating-point number

Factory setting 2.1 %/K

Temperature damping

Navigation Expert → Sensor → Process param. → Temp. damping (1886)

Prerequisite The **Internal temperature sensor** option or the **External value** option is selected in the **Temperature source** parameter (→ 68).

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

User entry 0 to 999.9 s

Factory setting 0 s

Reference density

Navigation Expert → Sensor → Process param. → Ref.density (1885)

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

User entry Positive floating-point number

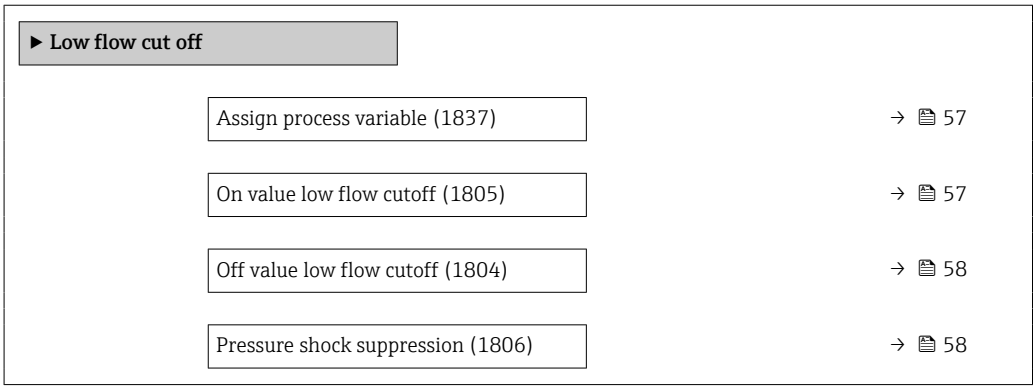
Factory setting Country-specific:
- 1 kg/l
- 1 lb/ft³

Additional information *Dependency*

The unit is taken from the **Density unit** parameter (→ 48)

"Low flow cut off" submenu

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



Assign process variable

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

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

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

Factory setting Volume flow

On value low flow cutoff

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

Prerequisite A process variable is selected in the **Assign process variable** parameter (→ 57).

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 → 58.

User entry Positive floating-point number

Factory setting Depends on country and nominal diameter→ 188

Additional information *Dependency*

The unit depends on the process variable selected in the **Assign process variable** parameter (→ 57).

Off value low flow cutoff

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

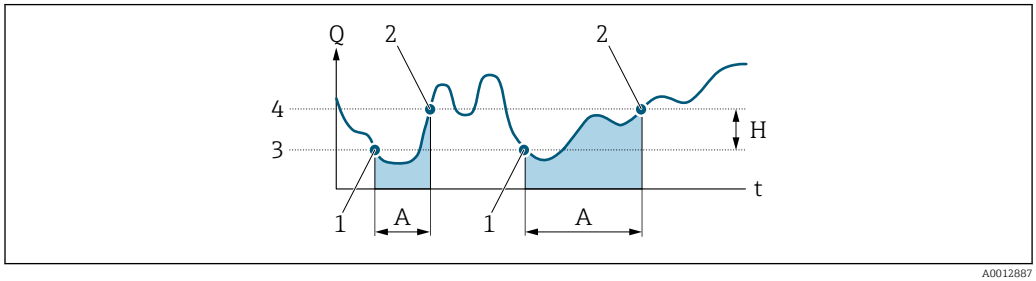
Prerequisite A process variable is selected in the **Assign process variable** parameter (→ 57).

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→ 57.

User entry 0 to 100.0 %

Factory setting 50 %

Additional information *Example*



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

Pressure shock suppression

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

Prerequisite A process variable is selected in the **Assign process variable** parameter (→ 57).

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

User entry 0 to 100 s

Factory setting 0 s

Additional information *Description*

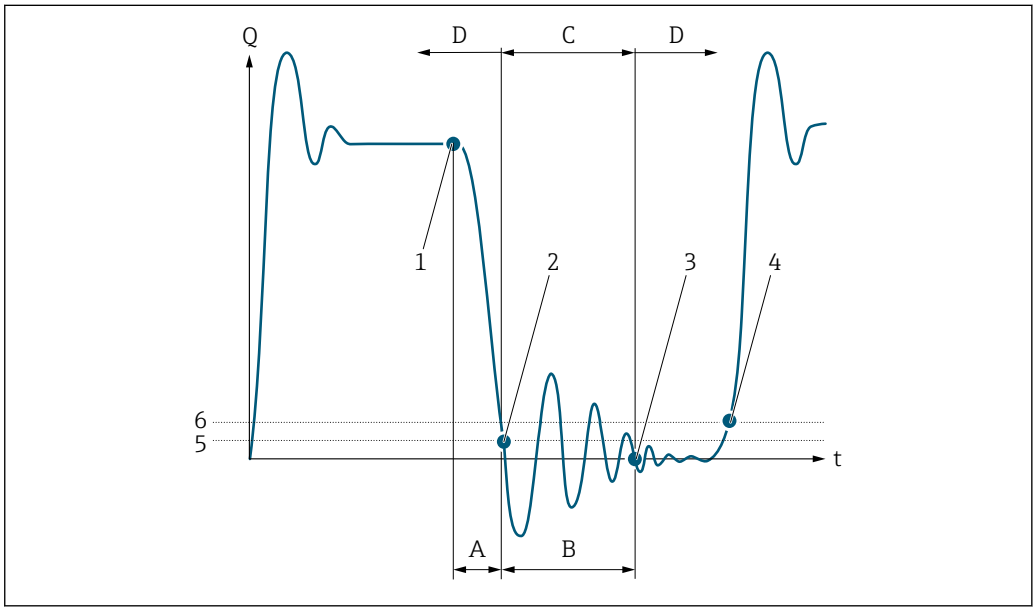
Pressure shock suppression is enabled
- Prerequisite:
  Flow rate < on-value of low flow cut off
- Output values
  - Flow displayed: 0
  - Totalizer: the totalizers are pegged at the last correct value

Pressure shock suppression is disabled

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

Example

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



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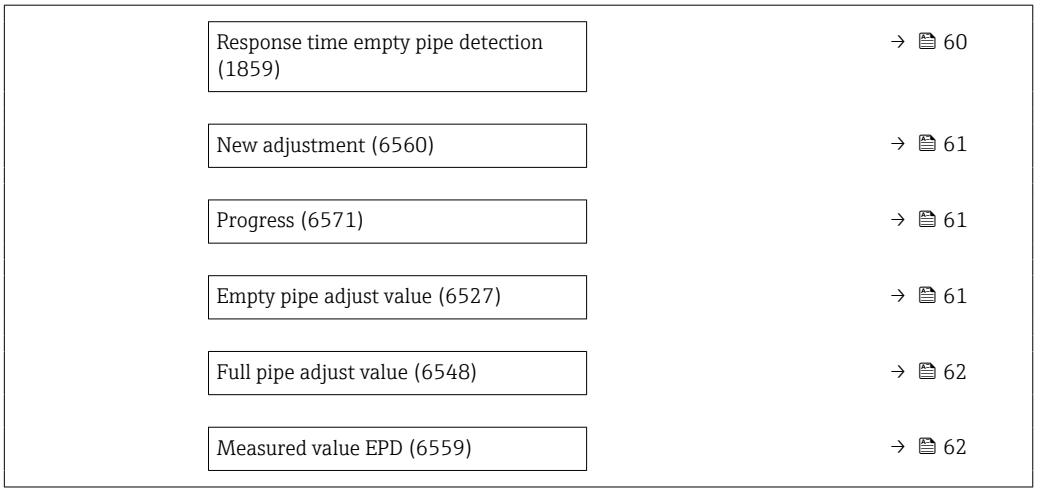
Q Flow
t Time
A Drip
B Pressure shock
C Pressure shock suppression active as per the time entered
D Pressure shock suppression inactive
1 Valve closes
2 Flow falls below the on-value of the low flow cut off: pressure shock suppression is activated
3 The time entered has elapsed: pressure shock suppression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

"Empty pipe detection" submenu

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

▶ Empty pipe detection	
Assign process variable (1860)	→ 60
Switch point empty pipe detection (6562)	→ 60



Assign process variable

Navigation Expert → Sensor → Process param. → Empty pipe det. → Assign variable (1860)

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

Selection
- Off
- On

Factory setting Off

Switch point empty pipe detection

Navigation Expert → Sensor → Process param. → Empty pipe det. → Switch point EPD (6562)

Prerequisite The **On** option is selected in the **Empty pipe detection** parameter (→ 60).

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

User entry 0 to 100 %

Factory setting 50 %

Response time empty pipe detection

Navigation Expert → Sensor → Process param. → Empty pipe det. → Response time (1859)

Prerequisite A process variable is selected in the **Assign process variable** parameter (→ 60).

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

User entry 0 to 100 s

Factory setting 1 s

New adjustment

Navigation Expert → Sensor → Process param. → Empty pipe det. → New adjustment (6560)

Prerequisite The **On** option is selected in the **Empty pipe detection** parameter (→ 60).

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

Selection
- Cancel
- Empty pipe adjust
- Full pipe adjust

Factory setting Cancel

Progress

Navigation Expert → Sensor → Process param. → Empty pipe det. → Progress (6571)

Prerequisite The **On** option is selected in the **Empty pipe detection** parameter (→ 60).

Description Use this function to view the progress.

User interface
- Ok
- Busy
- Not ok

Empty pipe adjust value

Navigation Expert → Sensor → Process param. → Empty pipe det. → Empty pipe value (6527)

Prerequisite
- In the **Empty pipe detection** parameter (→ 60), the **On** option is selected.
- Adjustment value > full pipe value.

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

User interface Positive floating-point number

Full pipe adjust value

Navigation Expert → Sensor → Process param. → Empty pipe det. → Full pipe value (6548)

Prerequisite
- In the **Empty pipe detection** parameter (→ 60), the **On** option is selected.
- Adjustment value < empty pipe value.

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

User interface Positive floating-point number

Measured value EPD

Navigation Expert → Sensor → Process param. → Empty pipe det. → Meas. value EPD (6559)

Prerequisite In the **Empty pipe detection** parameter (→ 60), the **On** option is selected.

Description Displays the current measured value.

User interface Positive floating-point number

"Electrode cleaning circuit" submenu

Navigation Expert → Sensor → Process param. → ECC

▶ **Electrode cleaning circuit**	
Electrode cleaning circuit (6528)	→ 63
ECC duration (6555)	→ 63
ECC recovery time (6556)	→ 63
ECC cleaning cycle (6557)	→ 64
ECC polarity (6631)	→ 64

Electrode cleaning circuit

Navigation Expert → Sensor → Process param. → ECC → ECC (6528)

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

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

Selection
- Off
- On

Factory setting Off

Additional information Conductive deposits on the electrodes and on the walls of the measuring tube (e.g. magnetite) can falsify measurement values. The Electrode Cleaning Circuitry (ECC) was developed to prevent such conductive deposits developing in the vicinity of the electrodes. ECC functions as described above for all available electrode materials except tantalum. If tantalum is used as the electrode material, the ECC protects the electrode surface only against oxidation.

ECC duration

Navigation Expert → Sensor → Process param. → ECC → ECC duration (6555)

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

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

User entry 0.01 to 30 s

Factory setting 2 s

ECC recovery time

Navigation Expert → Sensor → Process param. → ECC → ECC recov. time (6556)

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

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

User entry 1 to 600 s

Factory setting 5 s

ECC cleaning cycle

Navigation Expert → Sensor → Process param. → ECC → ECC clean. cycle (6557)

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

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

User entry 0.5 to 168 h

Factory setting 0.7 h

ECC polarity

Navigation Expert → Sensor → Process param. → ECC → ECC polarity (6631)

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

Description Displays the polarity of the electrode cleaning circuit.

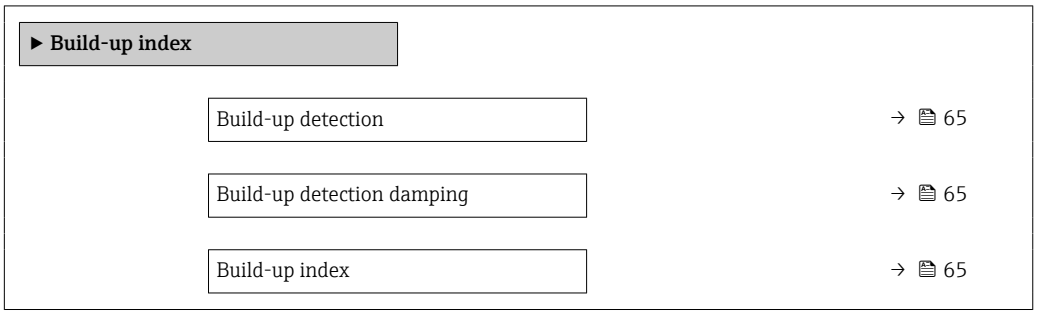
User interface
- Positive
- Negative

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

"Coating detection" submenu

Build-up detection is only available:
- In conjunction with the Promag W sensor
- In the compact device version (transmitter and sensor form a mechanical unit)
- For detailed information on build-up detection: see the Special Documentation for the **Heartbeat Verification + Monitoring** application package→ 7

Navigation Expert → Sensor → Process param. → Build-up detect.



Build-up limit	→ 66
Build-up limit hysteresis	→ 66

Build-up detection

Navigation Expert → Sensor → Process param. → Build-up index → Build-up detect. (6734)

Description Select mode for build-up index.

Selection
- Off
- Slow
- Standard
- Fast

Factory setting Off

Build-up detection damping

Navigation Expert → Sensor → Process param. → Build-up index → Build-up damping (6840)

Description Enter damping value for build-up index.

Damping value:
- 0 = minimum damping
- 15 = maximum damping

The damping value should only be increased if the measured value is unstable.

User entry 0 to 15

Factory setting 0

Build-up index

Navigation Expert → Sensor → Process param. → Build-up index → Build-up index (12111)

Description Shows current build-up measured value.

User interface 0.0 to 100.0 %

Factory setting 0.0 %

Additional information The formation of build-up is output as a percentage in the Build-up index value (→ 65) parameter. The higher the percentage, the thicker the build-up.

Build-up index value (→ 🖹 65) = 0%
- No build-up present
- Measuring tube as-delivered state (initial value)
- Measuring tube was cleaned thoroughly after formation of build-up

Build-up index value (→ 🖹 65) = 100%
- Value for the maximum measurable build-up thickness
- The thickness of the build-up at 100% varies depending on the process
- A value of 100% should not be equated with a blocked measuring tube

The percentage indicated in the Build-up index value (→ 🖹 65) parameter does not provide direct information about the absolute thickness or the composition of the build-up. Therefore, to make optimum use of the build-up detection function, it is necessary to first compare the formation of build-up in the process, as known from experience, with the associated Build-up index value (→ 🖹 65). The aim is to determine the Build-up index value (→ 🖹 65) at the time the cleaning is usually performed.

On the basis of the Build-up index value (→ 🖹 65) during cleaning, it is possible to make a valid assessment of the condition inside the measuring tube and to plan the cleaning using the build-up limit and build-up detection hysteresis parameters.

In addition, conclusions about possible effects on neighboring processes can be drawn from the Build-up index value (→ 🖹 65).

Build-up limit

Navigation Expert → Sensor → Process param. → Build-up index → Build-up limit (6466)

Description Enter limit value for the build-up index.

User entry 0 to 100 %

Factory setting 50 %

Build-up limit hysteresis

Navigation Expert → Sensor → Process param. → Build-up index → Buildup lim.hyst (6467)

Description Enter hysteresis for build-up limit value.

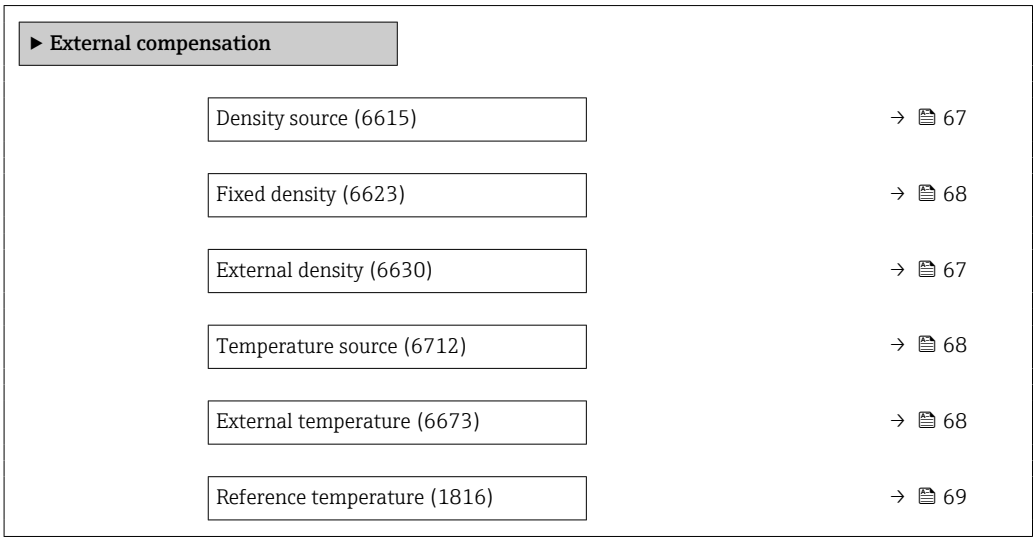
If the value for build-up detection hysteresis is higher than the Build-up limit (→ 🖹 66), the "Build-up detected" diagnostic information is not reset until the measuring tube has been cleaned and a restart has been performed.

User entry 0 to 100 %

Factory setting 20 %

3.2.4 "External compensation" submenu

Navigation Expert → Sensor → External comp.



Density source

Navigation Expert → Sensor → External comp. → Density source (6615)

Description Use this function to select the density source.

Selection
- Fixed density
- External density

Factory setting Fixed density

External density

Navigation Expert → Sensor → External comp. → External density (6630)

Prerequisite The **External density** option is selected in the **Density source** parameter (→ 67).

Description Displays the density read in from the external device.

User entry Positive floating-point number

Additional information *Dependency*

The unit is taken from the **Density unit** parameter (→ 48)

Fixed density

Navigation Expert → Sensor → External comp. → Fixed density (6623)

Prerequisite The **Fixed density** option is selected in the **Density source** parameter (→ 67).

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

User entry Positive floating-point number

Factory setting Depends on country:
- 1 000 kg/m³
- 62 lb/ft³

Additional information *Dependency*

The unit is taken from the **Density unit** parameter (→ 48)

Temperature source

Navigation Expert → Sensor → External comp. → Temp. source (6712)

Description Use this function to select the temperature source.

Selection
- Internal temperature sensor *
- Off
- External value

Factory setting Off

External temperature

Navigation Expert → Sensor → External comp. → External temp. (6673)

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

Description Displays the temperature read in from the external device.

User entry Floating point number with sign

Additional information *Dependency*

The unit is taken from the **Temperature unit** parameter (→ 47)

* Visibility depends on order options or device settings

Reference temperature

Navigation Expert → Sensor → External comp. → Ref. temperature (1816)

Prerequisite The **Fixed density** option or **External density** option are selected in the **Density source** parameter (→ 67).

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

User interface −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 (→ 47)

Reference density calculation

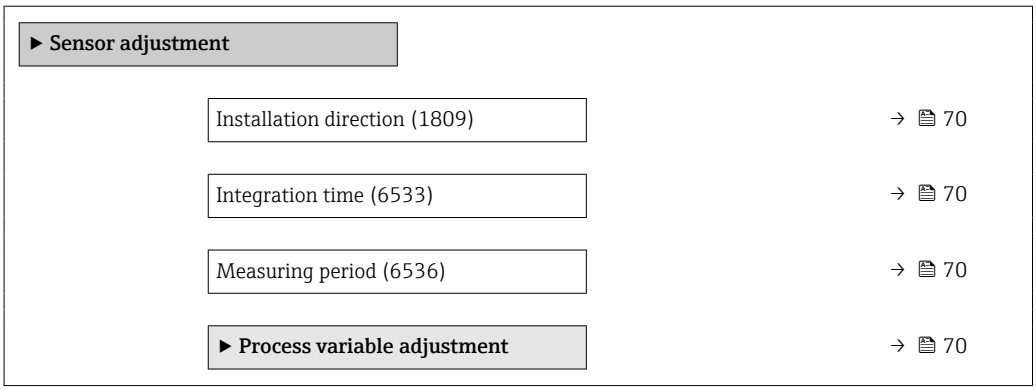
$$\rho_n = \rho \cdot (1 + \alpha \cdot \Delta t + \beta \cdot \Delta t^2)$$

A0023403

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

3.2.5 "Sensor adjustment" submenu

Navigation Expert → Sensor → Sensor adjustm.



Installation direction

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

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

Selection
- Forward flow
- Reverse flow

Factory setting Forward flow

Additional information *Description*

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

Integration time

Navigation Expert → Sensor → Sensor adjustm. → Integration time (6533)

Description Displays the duration of the integration time.

The duration of the measuring period should always be longer than the duration of the integration time.

User interface 1 to 65 ms

Measuring period

Navigation Expert → Sensor → Sensor adjustm. → Measuring period (6536)

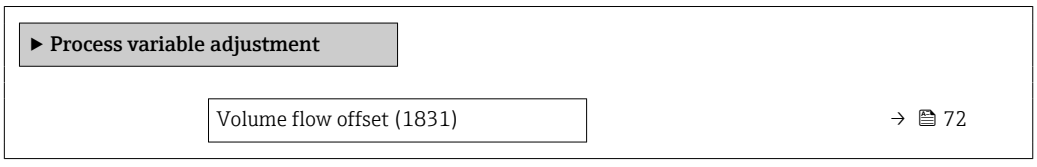
Description Display the time of a full measuring period.

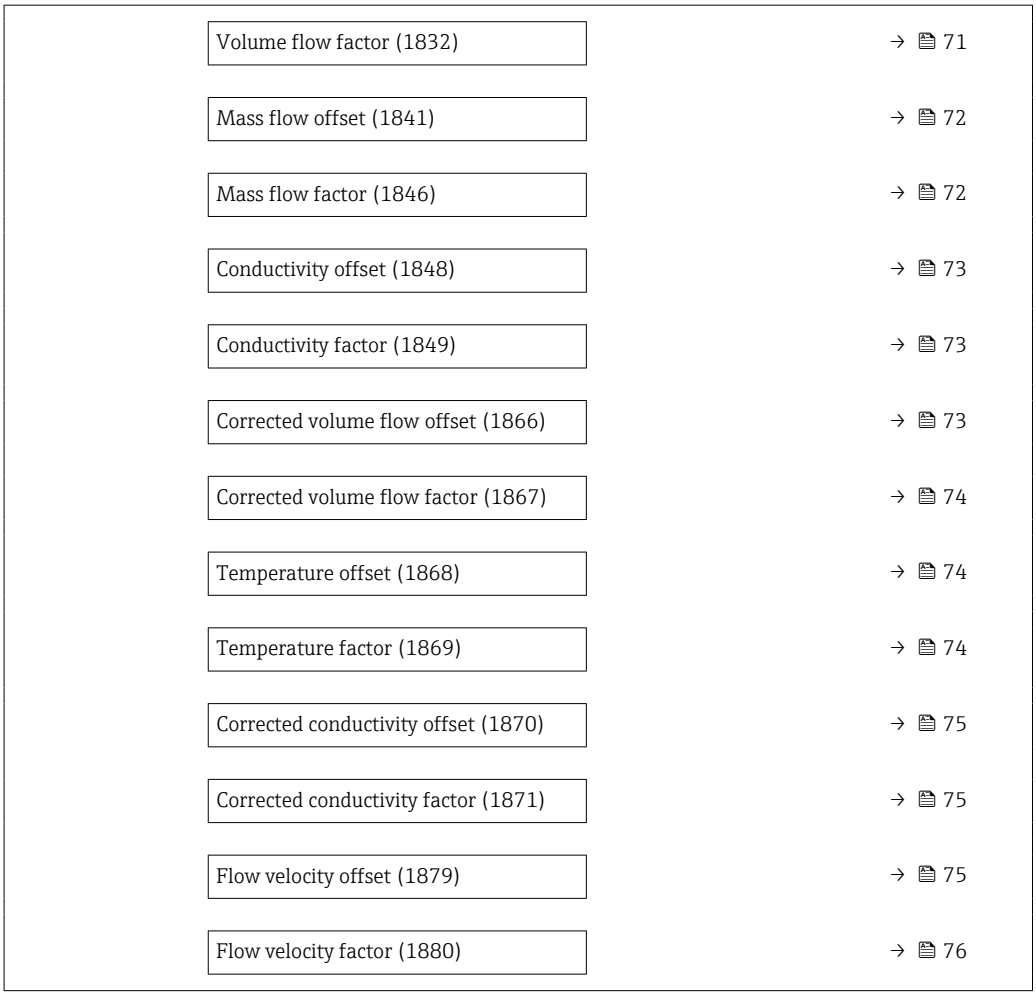
The duration of the measuring period should always be longer than the duration of the integration time.

User interface 2 to 1000 ms

"Process variable adjustment" submenu

Navigation Expert → Sensor → Sensor adjustm. → Variable adjust





Volume flow factor

Navigation Expert → Sensor → Sensor adjustm. → Variable adjust → Vol. flow factor (1832)

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

Volume flow offset

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

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

Mass flow factor

Navigation Expert → Sensor → Sensor adjustm. → Variable adjust → Mass flow factor (1846)

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

Mass flow offset

Navigation Expert → Sensor → Sensor adjustm. → Variable adjust → Mass flow offset (1841)

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

Conductivity offset

Navigation Expert → Sensor → Sensor adjustm. → Variable adjust → Conduct. offset (1848)

Prerequisite The **On** option is selected in the **Conductivity measurement** parameter (→ 55).

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

User entry Signed floating-point number

Factory setting 0 S/m

Additional information *Description*

Corrected value = (factor × value) + offset

Conductivity factor

Navigation Expert → Sensor → Sensor adjustm. → Variable adjust → Conduct. factor (1849)

Prerequisite The **On** option is selected in the **Conductivity measurement** parameter (→ 55).

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

User entry Positive floating-point number

Factory setting 1

Additional information *Description*

Corrected value = (factor × value) + offset

Corrected volume flow offset

Navigation Expert → Sensor → Sensor adjustm. → Variable adjust → Corr. vol offset (1866)

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

User entry Signed floating-point number

Factory setting 0 Nm^3/s

Additional information *Description*

Corrected value = (factor × value) + offset

Corrected volume flow factor

Navigation Expert → Sensor → Sensor adjustm. → Variable adjust → Corr. vol factor (1867)

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

User entry Positive floating-point number

Factory setting 1

Additional information *Description*

Corrected value = (factor × value) + offset

Temperature offset

Navigation Expert → Sensor → Sensor adjustm. → Variable adjust → Temp. offset (1868)

Prerequisite The temperature is read into the flowmeter from an external device.

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

User entry Signed floating-point number

Factory setting 0 K

Additional information *Description*

Corrected value = (factor × value) + offset

Temperature factor

Navigation Expert → Sensor → Sensor adjustm. → Variable adjust → Temp. factor (1869)

Prerequisite The temperature is read into the flowmeter from an external device.

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

User entry Positive floating-point number

Factory setting 1

Additional information *Description*

Corrected value = (factor × value) + offset

Corrected conductivity offset

Navigation Expert → Sensor → Sensor adjustm. → Variable adjust → Corr.cond.offset (1870)

Prerequisite The **On** option is selected in the **Conductivity measurement** parameter (→ 55) parameter.

Description Use this function to enter the zero point shift to trim the corrected conductivity. The conductivity unit on which the shift is based is µS/cm.

User entry Signed floating-point number

Factory setting 0 S/m

Additional information *Description*

Corrected value = (factor × value) + offset

Corrected conductivity factor

Navigation Expert → Sensor → Sensor adjustm. → Variable adjust → Corr.cond.factor (1871)

Prerequisite The **On** option is selected in the **Conductivity measurement** parameter (→ 55) parameter.

Description Use this function to enter a quantity factor for the corrected conductivity. In each case, this factor refers to the conductivity in µS/cm.

User entry Positive floating-point number

Factory setting 1

Additional information *Description*

Corrected value = (factor × value) + offset

Flow velocity offset

Navigation Expert → Sensor → Sensor adjustm. → Variable adjust → Flow vel. offset (1879)

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

User entry Signed floating-point number

Factory setting 0 m/s

Additional information *Description*

Corrected value = (factor × value) + offset

Flow velocity factor

Navigation Expert → Sensor → Sensor adjustm. → Variable adjust → Flow vel. factor (1880)

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

User entry Positive floating-point number

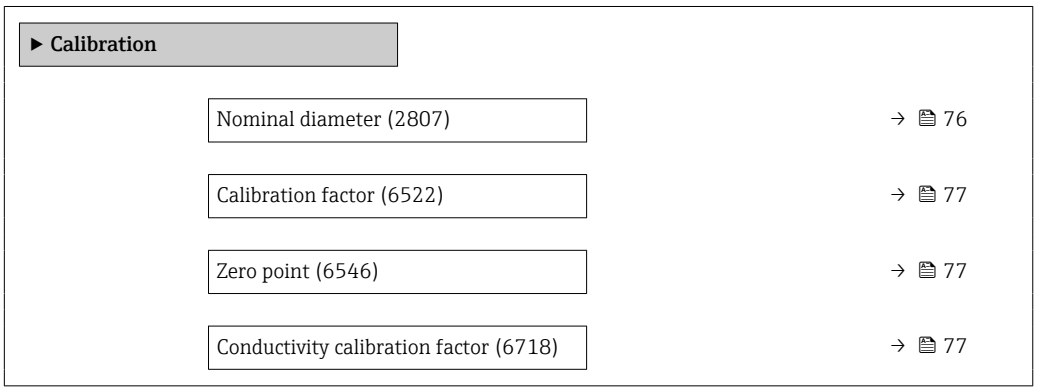
Factory setting 1

Additional information *Description*

Corrected value = (factor × value) + offset

3.2.6 "Calibration" submenu

Navigation Expert → Sensor → Calibration



Nominal diameter

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

Description Displays the nominal diameter of the sensor.

User interface DNxx / x"

Factory setting Depends on the size of the sensor

Additional information *Description*

The value is also specified on the sensor nameplate.

Calibration factor

Navigation Expert → Sensor → Calibration → Cal. factor (6522)

Description Displays the current calibration factor for the sensor.

User interface Positive floating-point number

Factory setting Depends on nominal diameter and calibration.

Zero point

Navigation Expert → Sensor → Calibration → Zero point (6546)

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

User interface Signed floating-point number

Factory setting Depends on nominal diameter and calibration

Conductivity calibration factor

Navigation Expert → Sensor → Calibration → Cond. cal. fact. (6718)

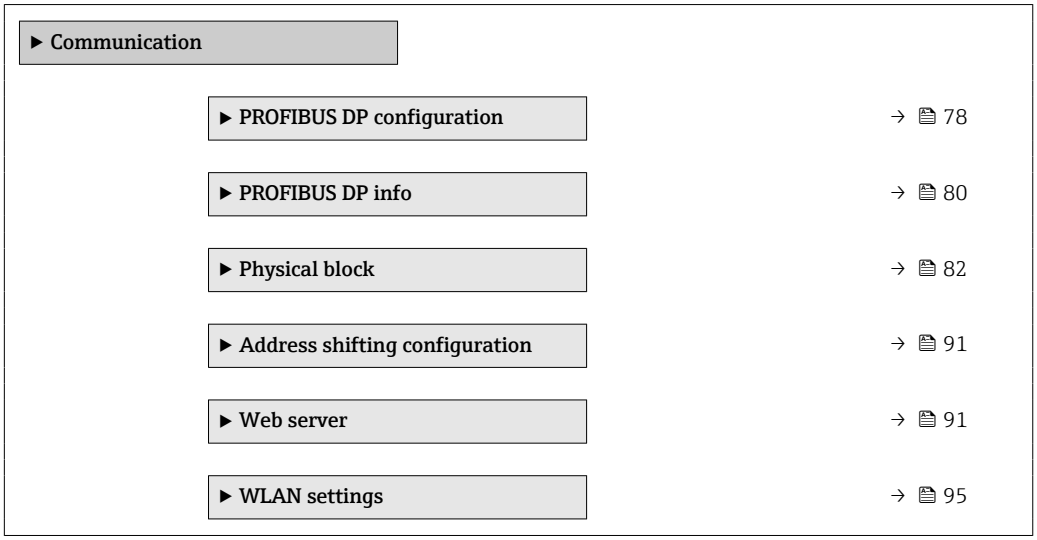
Prerequisite The **On** option is selected in the **Conductivity measurement** parameter (→ 55) parameter.

Description Displays the calibration factor for the conductivity measurement.

User interface 0.01 to 10 000

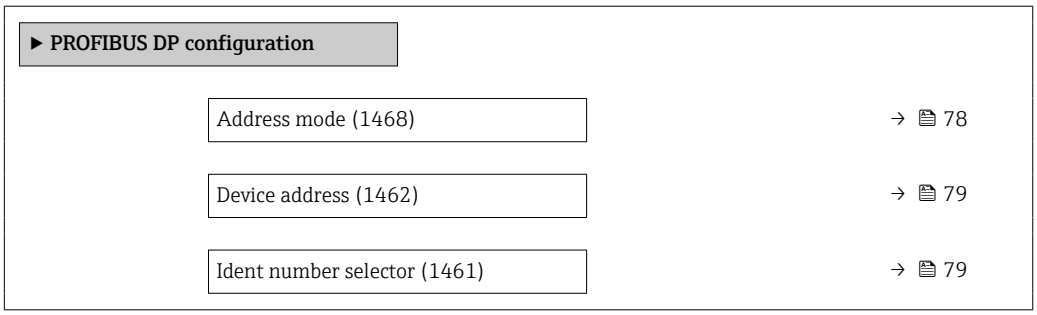
3.3 "Communication" submenu

Navigation Expert → Communication



3.3.1 "PROFIBUS DP configuration" submenu

Navigation Expert → Communication → PROFIBUS DP conf



Address mode

Navigation Expert → Communication → PROFIBUS DP conf → Address mode (1468)

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 (1462)

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 (→ 78)

Ident number selector

Navigation Expert → Communication → PROFIBUS DP conf → Ident num select (1461)

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

Selection
- Automatic mode
- Manufacturer
- Promag 50 (0x1546)
- Promag 53 (0x1526)
- Profile
- 1 AI, 1 Totalizer (0x9740)
- 2 AI, 1 Totalizer (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.

Bus termination

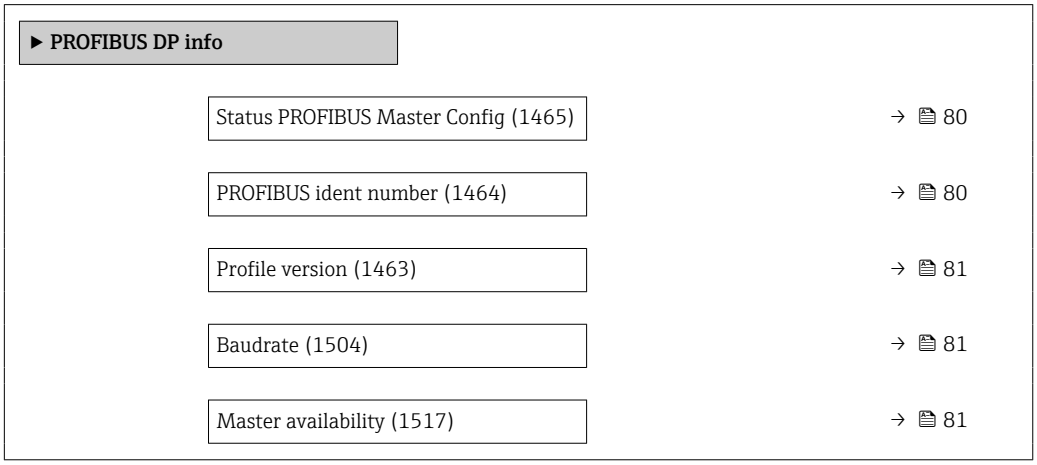
Navigation Expert → Communication → PROFIBUS DP conf → Bus termination (1431)

User interface
- Off
- On

Factory setting Off

3.3.2 "PROFIBUS DP info" submenu

Navigation Expert → Communication → PROFIBUS DP info



Status PROFIBUS Master Config

Navigation Expert → Communication → PROFIBUS DP info → Stat Master Conf (1465)

Description For displaying the status of the PROFIBUS Master configuration.

User interface
- Active
- Not active

Factory setting Not active

PROFIBUS ident number

Navigation Expert → Communication → PROFIBUS DP info → Ident number (1464)

Description For displaying the PROFIBUS identification number.

User interface 0 to FFFF

Factory setting 0x1562

Profile version

Navigation Expert → Communication → PROFIBUS DP info → Profile version (1463)

Description Displays the profile version.

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

Factory setting 3.02

Baudrate

Navigation Expert → Communication → PROFIBUS DP info → Baudrate (1504)

Description Displays the transmission rate.

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

Factory setting 9.6 kBaud

Master availability

Navigation Expert → Communication → PROFIBUS DP info → Master avail. (1517)

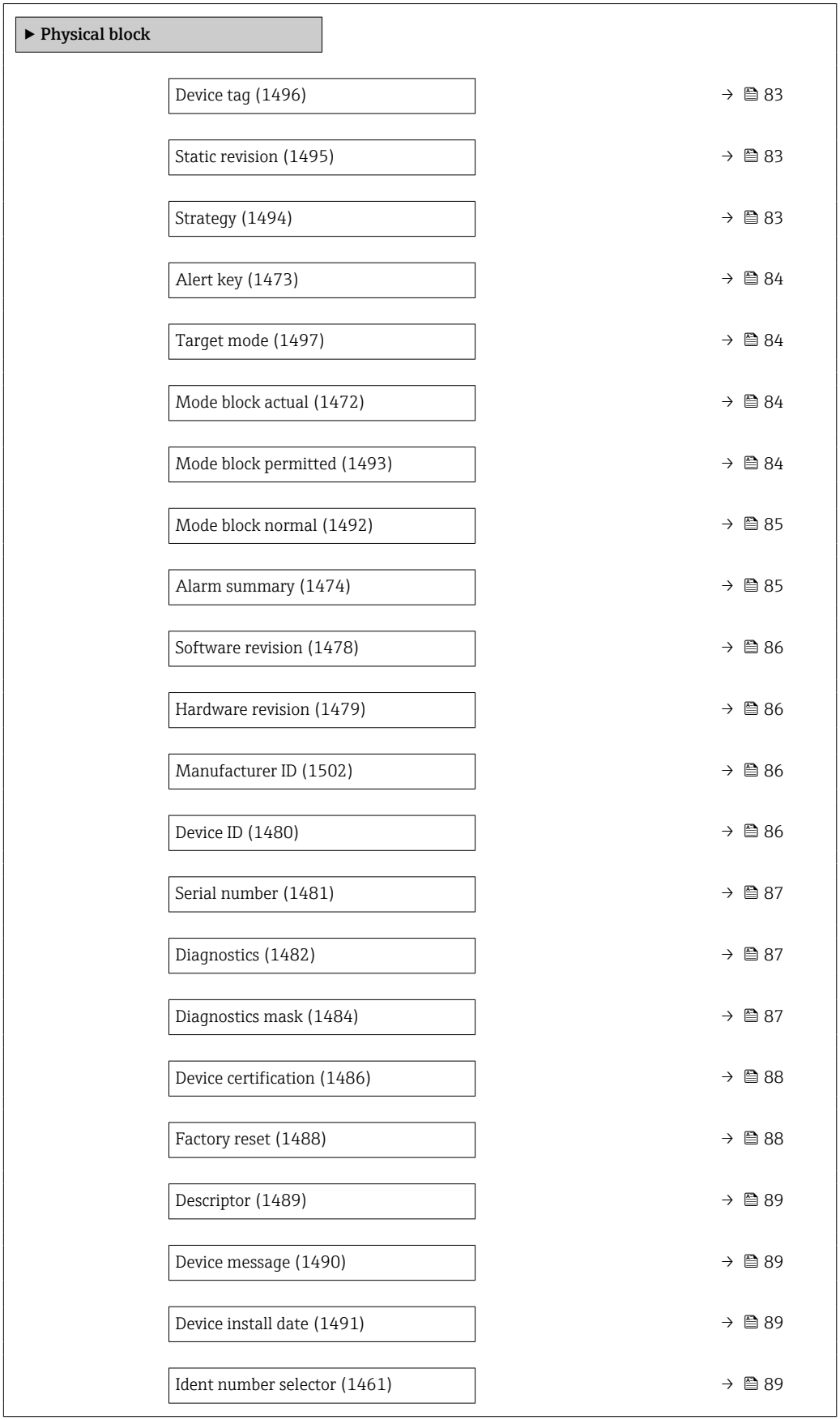
Description Displays whether or not a PROFIBUS master is present in the network.

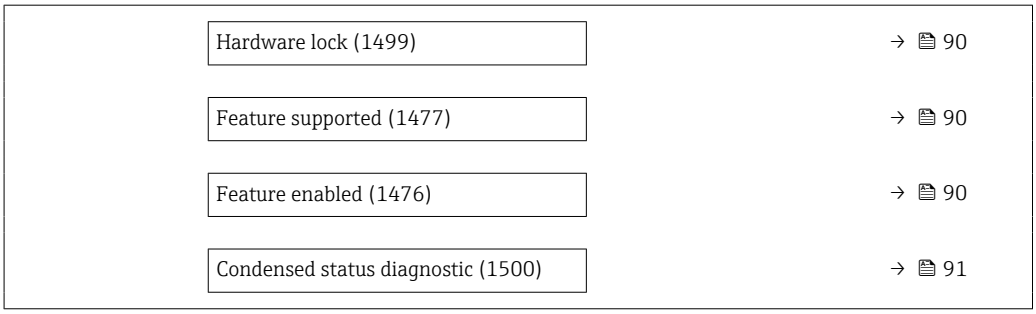
User interface
- No
- Yes

Factory setting No

3.3.3 "Physical block" submenu

Navigation Expert → Communication → Physical block





Device tag

Navigation Expert → Communication → Physical block → Device tag (1496)

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

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

Factory setting Promag 400 DP

Static revision

Navigation Expert → Communication → Physical block → Static revision (1495)

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 (1494)

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 (1473)

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 (1497)

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

User interface
- Auto
- Out of service

Mode block actual

Navigation Expert → Communication → Physical block → Mode block act (1472)

Description Displays the Mode block actual: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block actual shows the actual mode in which the function block is currently operating. A comparison of the Mode block actual with the Target mode indicates whether it was possible to reach the Target mode (→ 84).

User interface
- Auto
- Out of service

Additional information *Description*

A comparison of the current mode with the target mode (**Target mode** parameter (→ 84)) indicates whether it was possible to reach the target mode.

Mode block permitted

Navigation Expert → Communication → Physical block → Mode block perm (1493)

Description Displays the Mode block permitted: This defines which modes of operation in the Target mode (→ 84) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

User interface 0 to 255

Mode block normal

Navigation Expert → Communication → Physical block → Mode blk norm (1492)

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

User interface
- Auto
- Out of service

Alarm summary

Navigation Expert → Communication → Physical block → Alarm summary (1474)

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

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

Additional information

Description

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

User interface

- Discrete alarm
  Alarm or warning message with a discrete value.
- Alarm state HiHi limit
  Upper alarm limit
- Alarm state Hi limit
  Upper warning limit
- Alarm state LoLo limit
  Lower alarm limit
- Alarm state Lo limit
  Lower warning limit
- Update Event
  This option constitutes a special alarm that is triggered if a static parameter is changed. If such a parameter is modified, the associated bit is set in the **Alarm summary** parameter (→ 85), 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 (→ 85) is deleted again).

Software revision

Navigation Expert → Communication → Physical block → Software rev. (1478)

Description Displays the firmware version of the measuring device.

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

Hardware revision

Navigation Expert → Communication → Physical block → Hardware rev. (1479)

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 (1502)

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 (1480)

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

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

Factory setting Promag 400 DP

Serial number

Navigation Expert → Communication → Physical block → Serial number (1481)

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 (1482)

Description Displays the diagnostic messages.

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

Diagnostics mask

Navigation Expert → Communication → Physical block → Diagnostics mask (1484)

Description Displays the diagnostic messages supported by the measuring device.

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

Device certification

Navigation Expert → Communication → Physical block → Device certific. (1486)

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 (1488)

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

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

Factory setting Cancel

* Visibility depends on order options or device settings

Descriptor

Navigation Expert → Communication → Physical block → Descriptor (1489)

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 (1490)

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

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

Device install date

Navigation Expert → Communication → Physical block → Device inst.date (1491)

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

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

Ident number selector

Navigation Expert → Communication → Physical block → Ident num select (1461)

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

Selection
- Automatic mode
- Manufacturer
- Promag 50 (0x1546)
- Promag 53 (0x1526)
- Profile
- 1 AI, 1 Totalizer (0x9740)
- 2 AI, 1 Totalizer (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 (1499)

Description Displays the hardware write protection.

User interface
- Unprotected
- Protected

Additional information

Description

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

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

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

Feature supported

Navigation Expert → Communication → Physical block → Feature support (1477)

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

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

Feature enabled

Navigation Expert → Communication → Physical block → Feature enabled (1476)

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

User interface

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

Condensed status diagnostic

Navigation Expert → Communication → Physical block → Condensed status (1500)

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

Selection

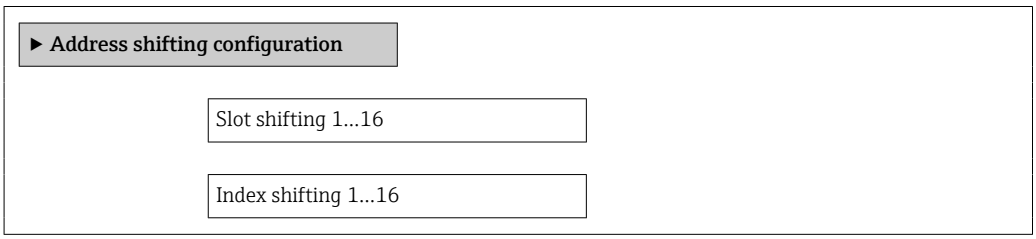
- Off
- On

Factory setting On

3.3.4 "Address shifting configuration" submenu

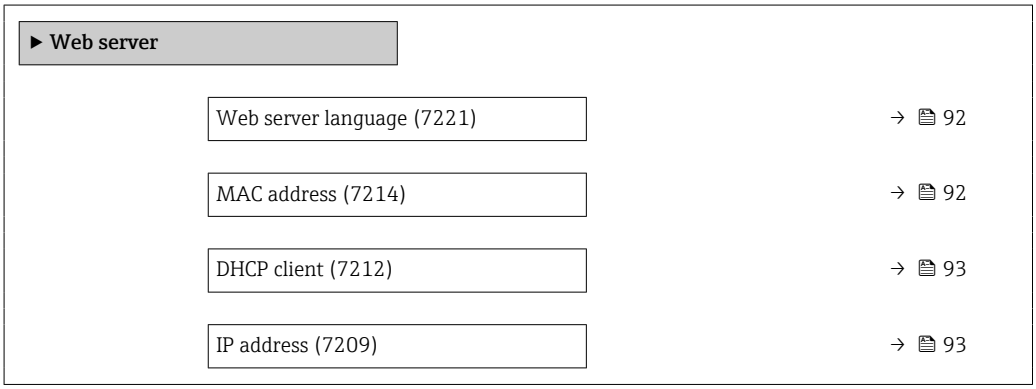
For detailed information on acyclic communication, see the "System integration" – "Address shifting configuration" section of the Operating Instructions for the device → 7

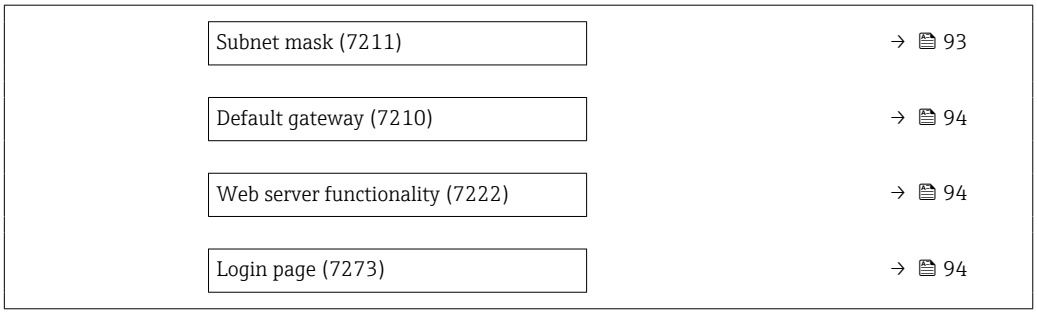
Navigation Expert → Communication → Addr.shift conf.



3.3.5 "Web server" submenu

Navigation Expert → Communication → Web server





Web server language

Navigation Expert → Communication → Web server → Webserv.language (7221)

Description Use this function to select the Web server language setting.

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

Factory setting English

MAC address

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

Description Displays the MAC [3] 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.

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

Additional information *Example*

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

DHCP client

Navigation Expert → Communication → Web server → DHCP client (7212)

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

Selection
- Off
- On

Factory setting On

Additional information *Effect*

If the DHCP client functionality of the web server is selected, the IP address (→ 93), Subnet mask (→ 93) and Default gateway (→ 94) are set automatically.

- Identification is via the MAC address of the measuring device.
- The IP address (→ 93) in the **IP address** parameter (→ 93) is ignored as long as the **DHCP client** parameter (→ 93) is active. This is also the case, in particular, if the DHCP server cannot be reached. The IP address (→ 93) in the parameter of the same name is only used if the **DHCP client** parameter (→ 93) is inactive.

IP address

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

Description Display or enter the IP address of the Web server integrated in the measuring device.

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

Factory setting 192.168.1.212

Subnet mask

Navigation Expert → Communication → Web server → Subnet mask (7211)

Description Display or enter the subnet mask.

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

Factory setting 255.255.255.0

Default gateway

Navigation Expert → Communication → Web server → Default gateway (7210)

Description Display or enter the Default gateway (→ 94).

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

Factory setting 0.0.0.0

Web server functionality

Navigation Expert → Communication → Web server → Webserver funct. (7222)

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

Selection
- Off
- On

Factory setting On

Additional information *Description*

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

Selection

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

Login page

Navigation Expert → Communication → Web server → Login page (7273)

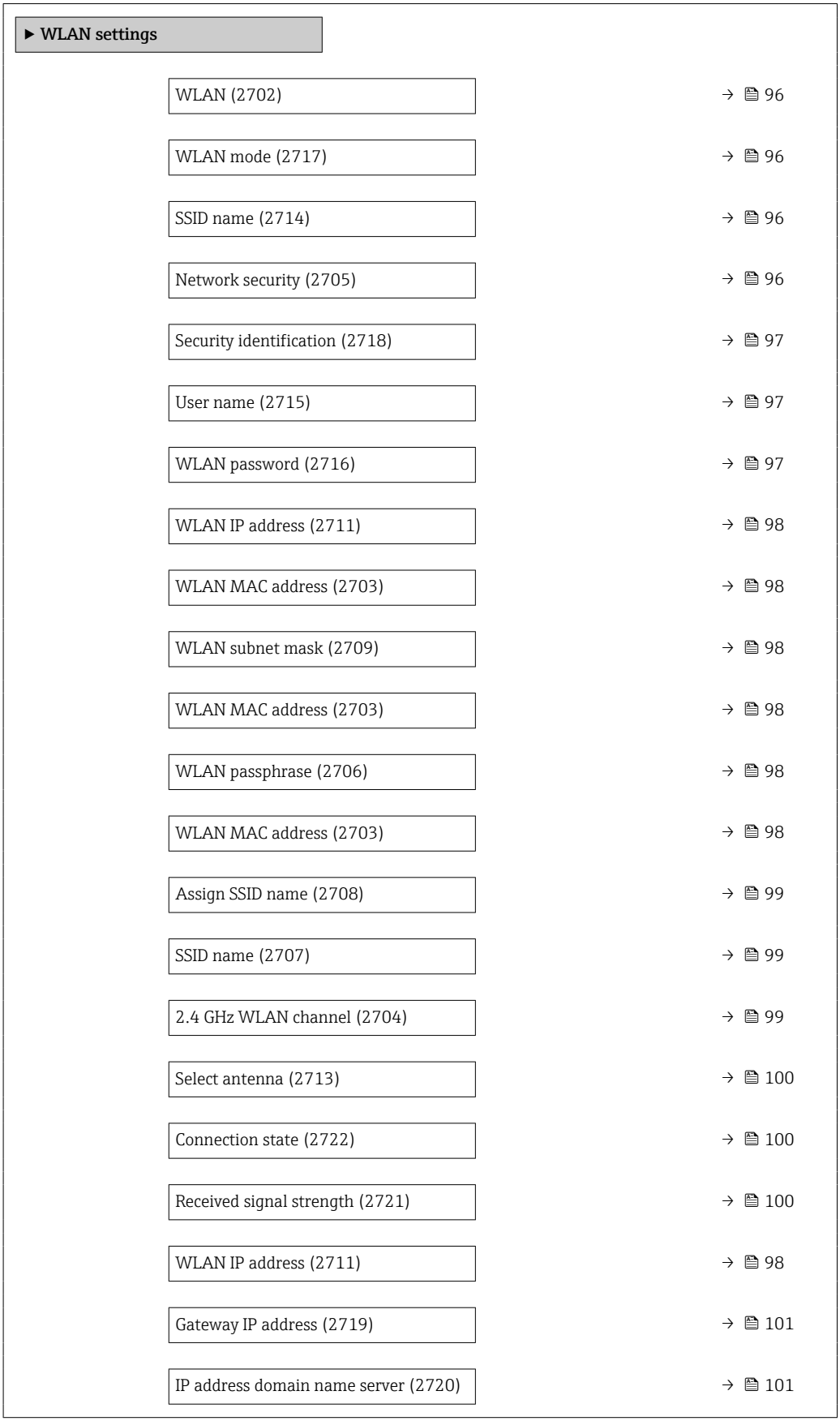
Description Use this function to select the format of the login page.

Selection
- Without header
- With header

Factory setting With header

3.3.6 "WLAN settings" wizard

Navigation Expert → Communication → WLAN settings



WLAN

Navigation Expert → Communication → WLAN settings → WLAN (2702)

Description Use this function to enable and disable the WLAN connection.

Selection
- Disable
- Enable

Factory setting Enable

WLAN mode

Navigation Expert → Communication → WLAN settings → WLAN mode (2717)

Description Use this function to select the WLAN mode.

Selection WLAN access point

Factory setting WLAN access point

SSID name

Navigation Expert → Communication → WLAN settings → SSID name (2714)

Prerequisite The client is activated.

Description Use this function to enter the user-defined SSID name (max. 32 characters) of the WLAN network.

User entry –

Factory setting –

Network security

Navigation Expert → Communication → WLAN settings → Network security (2705)

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

Selection
- Unsecured
- WPA2-PSK
- EAP-PEAP with MSCHAPv2 *
- EAP-PEAP MSCHAPv2 no server authentic. *
- EAP-TLS *

Factory setting WPA2-PSK

Additional information *Selection*
- Unsecured
  Access the WLAN connection without identification.
- WPA2-PSK
  Access the WLAN connection with a network key.

Security identification

Navigation Expert → Communication → WLAN settings → Sec. identific. (2718)

Description Use this function to select the security settings (download via the menu: Data Management > Security > Download WLAN).

User interface
- Trusted issuer certificate
- Device certificate
- Device private key

User name

Navigation Expert → Communication → WLAN settings → User name (2715)

Description Use this function to enter the username of the WLAN network.

User entry –

Factory setting –

WLAN password

Navigation Expert → Communication → WLAN settings → WLAN password (2716)

Description Use this function to enter the WLAN password for the WLAN network.

User entry –

Factory setting –

* Visibility depends on order options or device settings

WLAN IP address

Navigation Expert → Communication → WLAN settings → WLAN IP address (2711)

Description Use this function to enter the IP address of the measuring device's WLAN connection.

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

Factory setting 192.168.1.212

WLAN MAC address

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

Description Displays the MAC [4] 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

WLAN subnet mask

Navigation Expert → Communication → WLAN settings → WLAN subnet mask (2709)

Description Use this function to enter the subnet mask.

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

Factory setting 255.255.255.0

WLAN passphrase

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

Prerequisite The **WPA2-PSK** option is selected in the **Security type** parameter (→ 96).

Description Use this function to enter the network key.

4) Media Access Control

User entry 8 to 32-digit character string comprising numbers, letters and special characters (without spaces)

Factory setting Serial number of the measuring device (e.g. L100A802000)

Assign SSID name

Navigation Expert → Communication → WLAN settings → Assign SSID name (2708)

Description Use this function to select which name is used for the SSID [5].

Selection
- Device tag
- User-defined

Factory setting User-defined

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

SSID name

Navigation Expert → Communication → WLAN settings → SSID name (2707)

Prerequisite
- The **User-defined** option is selected in the **Assign SSID name** parameter (→ 99).
- The **WLAN access point** option is selected in the **WLAN mode** parameter (→ 96).

Description Use this function to enter a user-defined SSID name.

User entry Max. 32-digit character string comprising numbers, letters and special characters

Factory setting

2.4 GHz WLAN channel

Navigation Expert → Communication → WLAN settings → WLAN channel (2704)

Description Use this function to enter the 2.4 GHz WLAN channel.

User entry 1 to 11

Factory setting 6

5) Service Set Identifier

Additional information *Description*

- It is only necessary to enter a 2.4 GHz WLAN channel if multiple WLAN devices are in use.
- If just one measuring device is in use, it is recommended to keep the factory setting.

Select antenna

Navigation Expert → Communication → WLAN settings → Select antenna (2713)

Description Use this function to select whether the external or internal antenna is used for reception.

Selection
- External antenna
- Internal antenna

Factory setting Internal antenna

Connection state

Navigation Expert → Communication → WLAN settings → Connection state (2722)

Description The connection status is displayed.

User interface
- Connected
- Not connected

Factory setting Not connected

Received signal strength

Navigation Expert → Communication → WLAN settings → Rec.sig.strength (2721)

Description Displays the signal strength received.

User interface
- Low
- Medium
- High

Factory setting High

Gateway IP address

Navigation Expert → Communication → WLAN settings → Gateway IP addr. (2719)

Description Use this function to enter the IP address of the gateway.

User interface Character string comprising numbers, letters and special characters

Factory setting 192.168.1.212

IP address domain name server

Navigation Expert → Communication → WLAN settings → IP address DNS (2720)

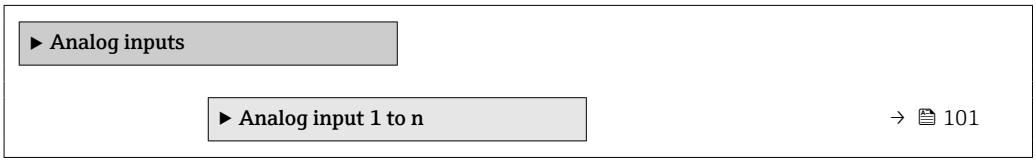
Description Use this function to enter the IP address of the domain name server.

User interface Character string comprising numbers, letters and special characters

Factory setting 192.168.1.212

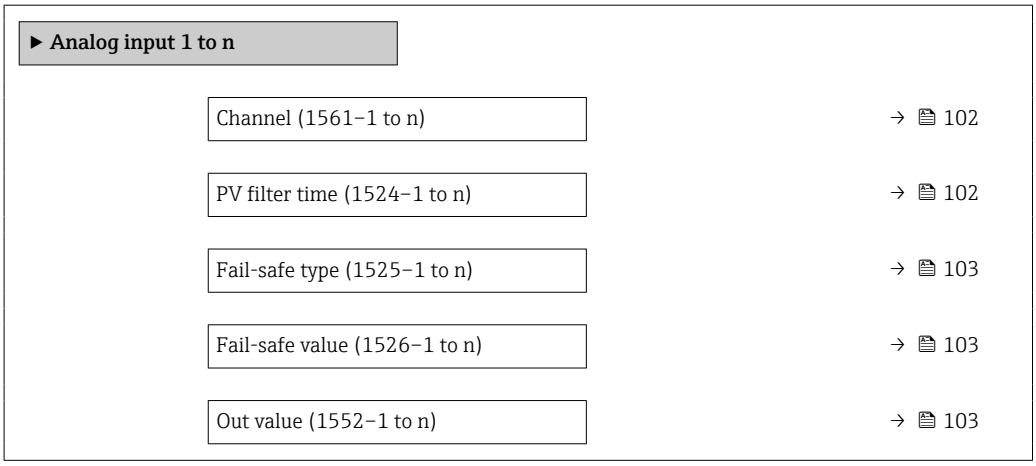
3.4 "Analog inputs" submenu

Navigation Expert → Analog inputs



3.4.1 "Analog input 1 to n" submenu

Navigation Expert → Analog inputs → Analog input 1 to n



Out status (1564–1 to n)	→ 104
Out status (1549–1 to n)	→ 104

Channel

Navigation Expert → Analog inputs → Analog input 1 to n → Channel (1561–1 to n)

Description For selecting the process variable.

Selection
- Volume flow
- Mass flow
- Corrected volume flow
- Flow velocity
- Conductivity *
- Corrected conductivity *
- Temperature *
- Electronics temperature
- Noise *
- Coil current shot time *
- Reference electrode potential against PE *
- Build-up index *
- Test point 1
- Test point 2
- Test point 3

Factory setting Volume flow

PV filter time

Navigation Expert → Analog inputs → Analog input 1 to n → PV filter time (1524–1 to n)

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

* Visibility depends on order options or device settings

Fail-safe type

Navigation Expert → Analog inputs → Analog input 1 to n → Fail-safe type (1525–1 to n)

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 (→ 103).
- 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 (1526–1 to n)

Prerequisite In **Fail-safe type** parameter (→ 103), 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 (→ 103)) 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 (1552–1 to n)

Prerequisite In **Target mode** parameter (→ 105), 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 (1564–1 to n)

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 (1549–1 to n)

Prerequisite In **Target mode** parameter (→ 105), 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 (1562–1 to n)

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 (1560–1 to n)

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 (1559–1 to n)

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 (1522–1 to n)

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 (1563–1 to n)

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

User interface
- Auto
- Man
- Out of service

Mode block actual

Navigation Expert → Analog inputs → Analog input 1 to n → Mode block act (1521–1 to n)

Description Displays the Mode block actual: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block actual shows the actual mode in which the function block is currently operating. A comparison of the Mode block actual with the Target mode indicates whether it was possible to reach the Target mode (→ 105).

User interface
- Auto
- Man
- Out of service

Additional information *Description*

A comparison of the current mode with the target mode (**Target mode** parameter (→ 105)) indicates whether it was possible to reach the target mode.

Mode block permitted

Navigation Expert → Analog inputs → Analog input 1 to n → Mode block perm (1553–1 to n)

Description Displays the Mode block permitted: This defines which modes of operation in the Target mode (→ 105) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

User interface 0 to 255

Mode block normal

Navigation Expert → Analog inputs → Analog input 1 to n → Mode blk norm (1546–1 to n)

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

User interface
- Auto
- Man
- Out of service

Alarm summary

Navigation Expert → Analog inputs → Analog input 1 to n → Alarm summary (1537–1 to n)

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

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

Additional information *Description*

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

Batch ID

Navigation Expert → Analog inputs → Analog input 1 to n → Batch ID (1533–1 to n)

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 (1534–1 to n)

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 (1535–1 to n)

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

User entry 0 to 65 535

Factory setting 0

Batch Recipe Unit Procedure

Navigation Expert → Analog inputs → Analog input 1 to n → Batch Recipe (1536–1 to n)

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

User entry 0 to 65 535

Factory setting 0

Additional information *Description*

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

PV scale lower range

Navigation Expert → Analog inputs → Analog input 1 to n → PVscale lo range (1554–1 to n)

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

User entry Signed floating-point number

Factory setting 0

PV scale upper range

Navigation Expert → Analog inputs → Analog input 1 to n → PVscale up range (1555–1 to n)

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

User entry Signed floating-point number

Factory setting 100.0

Out scale lower range

Navigation Expert → Analog inputs → Analog input 1 to n → Out scale low (1548–1 to n)

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

User entry Signed floating-point number

Factory setting 0

Out scale upper range

Navigation Expert → Analog inputs → Analog input 1 to n → Out scale up (1551–1 to n)

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 (1523–1 to n)

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 (1550–1 to n)

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

User entry 0 to 65 535

Factory setting 1 997

Out decimal point

Navigation Expert → Analog inputs → Analog input 1 to n → Out dec_ point (1547–1 to n)

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 (1527–1 to n)

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 (1528–1 to n)

Description Use this function to enter the value for the upper alarm limit (**Hi Hi alarm value** parameter (→ 111)).

User entry Signed floating-point number

Factory setting Positive floating-point number

Additional information

Description

If the output value Out value (→ 103) exceeds this limit value, the **Hi Hi alarm state** parameter (→ 112) is output.

User entry

The value is entered in the defined units (**Out unit** parameter (→ 109)) and must be in the range defined in the **Out scale lower range** parameter (→ 108) and **Out scale upper range** parameter (→ 108).

Hi Lim

Navigation Expert → Analog inputs → Analog input 1 to n → Hi Lim (1529–1 to n)

Description Use this function to enter the value for the upper warning limit (**Hi alarm value** parameter (→ 112)).

User entry Signed floating-point number

Factory setting Positive floating-point number

Additional information

Description

If the output value Out value (→ 103) exceeds this limit value, the **Hi alarm state** parameter (→ 112) is output.

User entry

The value is entered in the defined units (**Out unit** parameter (→ 109)) and must be in the range defined in the **Out scale lower range** parameter (→ 108) and **Out scale upper range** parameter (→ 108).

Lo Lim

Navigation Expert → Analog inputs → Analog input 1 to n → Lo Lim (1530–1 to n)

Description Use this function to enter the value for the lower warning limit (**Lo alarm value** parameter (→ 112)).

User entry Signed floating-point number

Factory setting Negative floating-point number

Additional information

Description

If the output value Out value (→ 103) exceeds this limit value, the **Lo alarm state** parameter (→ 113) is output.

User entry

The value is entered in the defined units (**Out unit** parameter (→ 109)) and must be in the range defined in the **Out scale lower range** parameter (→ 108) and **Out scale upper range** parameter (→ 108).

Lo Lo Lim

Navigation Expert → Analog inputs → Analog input 1 to n → Lo Lo Lim (1531–1 to n)

Description Use this function to enter the value for the lower alarm limit (**Lo Lo alarm value** parameter (→ 113)).

User entry Signed floating-point number

Factory setting Negative floating-point number

Additional information

Description

If the output value Out value (→ 103) exceeds this limit value, the **Lo Lo alarm state** parameter (→ 113) is output.

User entry

The value is entered in the defined units (**Out unit** parameter (→ 109)) and must be in the range defined in the **Out scale lower range** parameter (→ 108) and **Out scale upper range** parameter (→ 108).

Hi Hi alarm value

Navigation Expert → Analog inputs → Analog input 1 to n → HiHi alarm value (1541–1 to n)

Description Displays the alarm value for the upper alarm limit value (**Hi Hi Lim** parameter (→ 110)).

User interface Signed floating-point number

Hi Hi alarm state

Navigation Expert → Analog inputs → Analog input 1 to n → HiHi alarm state (1540–1 to n)

Description Displays the status for the upper alarm limit value (**Hi Hi Lim** parameter (→ 110)).

User interface
- No alarm
- Alarm state HiHi limit

Additional information *User interface*

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

Hi alarm value

Navigation Expert → Analog inputs → Analog input 1 to n → Hi alarm value (1539–1 to n)

Description Displays the alarm value for the upper warning limit value (**Hi Lim** parameter (→ 110)).

User interface Signed floating-point number

Hi alarm state

Navigation Expert → Analog inputs → Analog input 1 to n → Hi alarm state (1538–1 to n)

Description Displays the status for the upper warning limit value (**Hi Lim** parameter (→ 110)).

User interface
- No warning
- Alarm state Hi limit

Additional information *User interface*

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

Lo alarm value

Navigation Expert → Analog inputs → Analog input 1 to n → Lo alarm value (1543–1 to n)

Description Displays the alarm value for the lower warning limit value (**Lo Lim** parameter (→ 111)).

User interface Signed floating-point number

Lo alarm state

Navigation Expert → Analog inputs → Analog input 1 to n → Lo alarm state (1542–1 to n)

Description Displays the status for the lower warning limit value (**Lo Lim** parameter (→ 111)).

User interface
- No warning
- Alarm state Lo limit

Additional information *User interface*

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

Lo Lo alarm value

Navigation Expert → Analog inputs → Analog input 1 to n → LoLo alarm value (1545–1 to n)

Description Displays the alarm value for the lower alarm limit value (**Lo Lo Lim** parameter (→ 111)).

User interface Signed floating-point number

Lo Lo alarm state

Navigation Expert → Analog inputs → Analog input 1 to n → LoLo alarm state (1544–1 to n)

Description Displays the status for the lower alarm limit value (**Lo Lo Lim** parameter (→ 111)).

User interface
- No alarm
- Alarm state LoLo limit

Additional information *User interface*

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

Simulate enabled

Navigation Expert → Analog inputs → Analog input 1 to n → Simulate enabled (1556–1 to n)

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 (1558–1 to n)

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 (1557–1 to n)

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 (1532–1 to n)

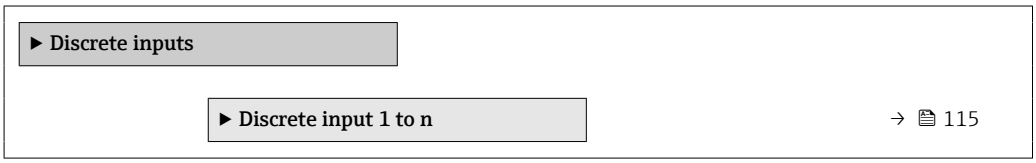
Description Use this function to enter the out unit text: if a specific out unit does not appear in the code list, the user can enter the specific text. The unit code is then equivalent to the definition provided here.

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

Factory setting NoUnit

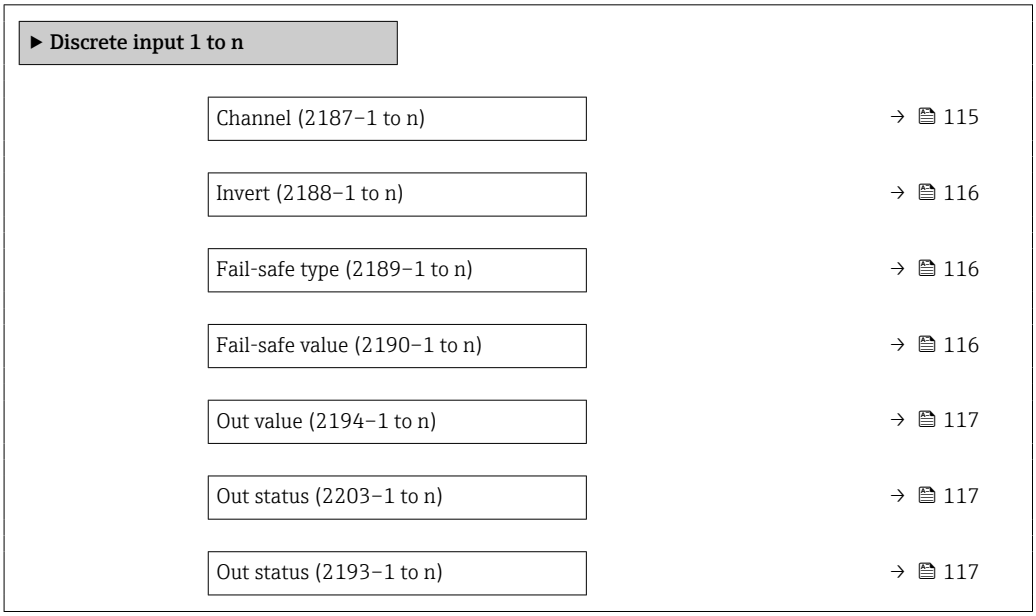
3.5 "Discrete inputs" submenu

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 (2187–1 to n)

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

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

* Visibility depends on order options or device settings

Factory setting Empty pipe detection

Invert

Navigation Expert → Discrete inputs → Discrete input 1 to n → Invert (2188–1 to n)

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 (2189–1 to n)

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 (→ 116).
- 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 (2190–1 to n)

Prerequisite In **Fail-safe type** parameter (→ 116), 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 (→ 117)) 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 (2194–1 to n)

Prerequisite In **Target mode** parameter (→ 118), 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 (2203–1 to n)

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 (2193–1 to n)

Prerequisite In **Target mode** parameter (→ 118), 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 (2201–1 to n)

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 (2200–1 to n)

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 (2199–1 to n)

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 (2182–1 to n)

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 (2202–1 to n)

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

User interface

- Auto
- Man
- Out of service

Mode block actual

Navigation Expert → Discrete inputs → Discrete input 1 to n → Mode block act (2181–1 to n)

Description Displays the Mode block actual: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block actual shows the actual mode in which the function block is currently operating. A comparison of the Mode block actual with the Target mode indicates whether it was possible to reach the Target mode (→ 118).

User interface
- Auto
- Man
- Out of service

Additional information *Description*

A comparison of the current mode with the target mode (**Target mode** parameter (→ 118)) indicates whether it was possible to reach the target mode.

Mode block permitted

Navigation Expert → Discrete inputs → Discrete input 1 to n → Mode block perm (2195–1 to n)

Description Displays the Mode block permitted: This defines which modes of operation in the Target mode (→ 118) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

User interface 0 to 255

Mode block normal

Navigation Expert → Discrete inputs → Discrete input 1 to n → Mode blk norm (2192–1 to n)

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

User interface
- Auto
- Man
- Out of service

Alarm summary

Navigation Expert → Discrete inputs → Discrete input 1 to n → Alarm summary (2191–1 to n)

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

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

Additional information *Description*

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

Batch ID

Navigation Expert → Discrete inputs → Discrete input 1 to n → Batch ID (2183–1 to n)

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 (2184–1 to n)

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 (2185–1 to n)

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

User entry 0 to 65 535

Factory setting 0

Batch Recipe Unit Procedure

Navigation Expert → Discrete inputs → Discrete input 1 to n → Batch Recipe (2186–1 to n)

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 (2196–1 to n)

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 (2198–1 to n)

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 (2197–1 to n)

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

User entry 0 to 255

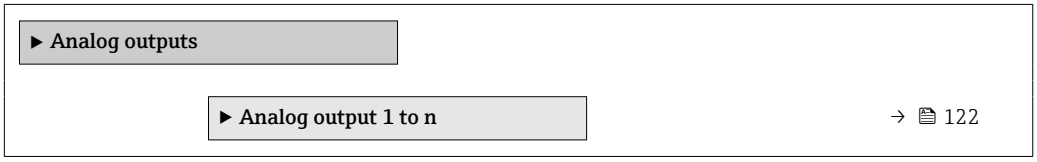
Factory setting 0

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.

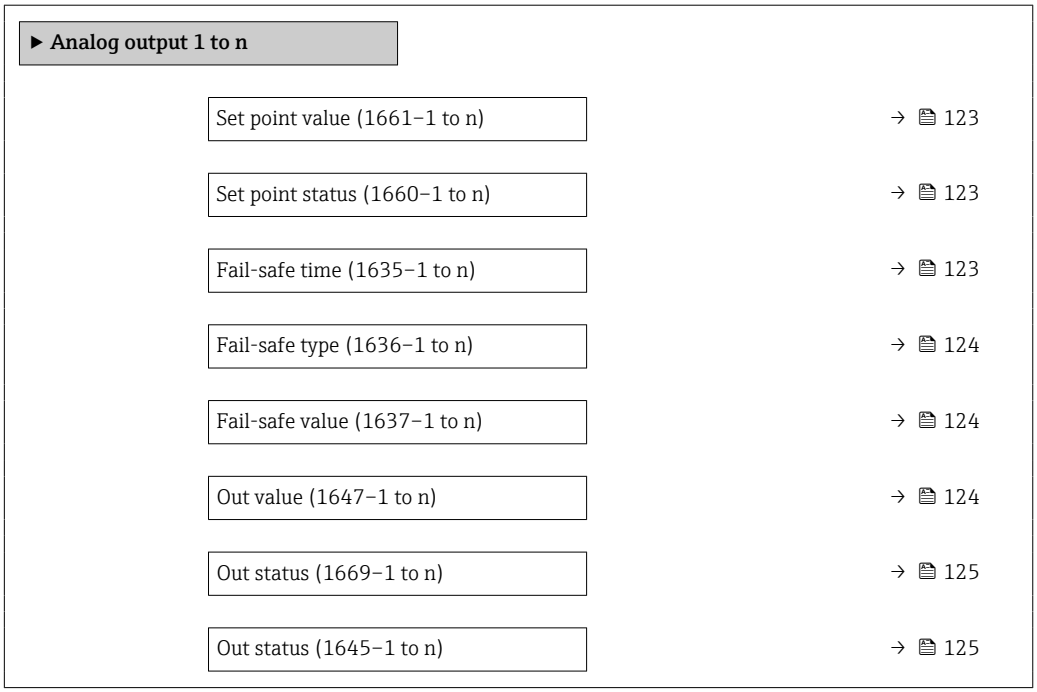
3.6 "Analog outputs" submenu

Navigation Expert → Analog outputs



3.6.1 "Analog output 1 to n" submenu

Navigation Expert → Analog outputs → Analog output 1 to n



Set point value

Navigation Expert → Analog outputs → Analog output 1 to n → Set point val (1661–1 to n)

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 (1660–1 to n)

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 (1635–1 to n)

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 (1636–1 to n)

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 (→ 124).
- 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 (1637–1 to n)

Prerequisite In **Fail-safe type** parameter (→ 124), 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 (→ 124)) 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 (1647–1 to n)

Prerequisite In **Target mode** parameter (→ 126), 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 (1669–1 to n)

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 (1645–1 to n)

Prerequisite In **Target mode** parameter (→ 126), 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 (1667–1 to n)

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 (1666–1 to n)

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 (1665–1 to n)

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 (1632–1 to n)

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 (1668–1 to n)

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

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

Mode block actual

Navigation Expert → Analog outputs → Analog output 1 to n → Mode block act (1631–1 to n)

Description Displays the Mode block actual: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block actual shows the actual mode in which the function block is currently operating. A comparison of the Mode block actual with the Target mode indicates whether it was possible to reach the Target mode (→ 126).

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 (→ 126)) indicates whether it was possible to reach the target mode.

Mode block permitted

Navigation Expert → Analog outputs → Analog output 1 to n → Mode block perm (1648–1 to n)

Description Displays the Mode block permitted: This defines which modes of operation in the Target mode (→ 126) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

User interface 0 to 255

Mode block normal

Navigation Expert → Analog outputs → Analog output 1 to n → Mode blk norm (1643–1 to n)

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

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

Alarm summary

Navigation Expert → Analog outputs → Analog output 1 to n → Alarm summary (1642–1 to n)

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

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

Additional information *Description*

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

Batch ID

Navigation Expert → Analog outputs → Analog output 1 to n → Batch ID (1633–1 to n)

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 (1639–1 to n)

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 (1640–1 to n)

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

User entry 0 to 65 535

Factory setting 0

Batch Recipe Unit Procedure

Navigation Expert → Analog outputs → Analog output 1 to n → Batch Recipe (1641–1 to n)

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

User entry 0 to 65 535

Factory setting 0

Additional information *Description*

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

PV scale lower range

Navigation Expert → Analog outputs → Analog output 1 to n → PVscale lo range (1651–1 to n)

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

User entry Signed floating-point number

Factory setting 0

PV scale upper range

Navigation Expert → Analog outputs → Analog output 1 to n → PVscale up range (1652–1 to n)

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 (1659–1 to n)

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 (1658–1 to n)

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 (1655–1 to n)

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 (→ 130). 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 (1654–1 to n)

Description Use this function to enter the RCAS (Remote Cascade) in status. Defines the status for the RCAS in value (→ 130).

User entry 0 to 255

Factory setting 0

Input channel

Navigation Expert → Analog outputs → Analog output 1 to n → Input channel (1670–1 to n)

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 (1671–1 to n)

Description Use this function to select the output channel. The number of logical hardware channels to the converter that is connected to this I/O block.

Selection
- External temperature
- External density

Factory setting External density

RCAS out value

Navigation Expert → Analog outputs → Analog output 1 to n → RCAS out value (1657–1 to n)

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 (1656–1 to n)

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

User interface 0 to 0xFF

Position value

Navigation Expert → Analog outputs → Analog output 1 to n → Pos value (1650–1 to n)

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 (1649–1 to n)

Description Displays the current status of the positioner.

User interface 0 to 255

Setpoint deviation

Navigation Expert → Analog outputs → Analog output 1 to n → Setp. deviation (1653–1 to n)

Description Displays the deviation between the set point (**Set point value** parameter (→ 123)) and the actual value (**Readback value** parameter (→ 129)).

User interface Signed floating-point number

Simulate enabled

Navigation Expert → Analog outputs → Analog output 1 to n → Simulate enabled (1662–1 to n)

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 (1664–1 to n)

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 (1663–1 to n)

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 (1638–1 to n)

Description Use this function to enter the effective direction of the positioner in automatic mode.

User entry 0 to 255

Factory setting 0

Out scale upper range

Navigation Expert → Analog outputs → Analog output 1 to n → Out scale up (1646–1 to n)

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

User entry Signed floating-point number

Factory setting 100.0

Out scale lower range

Navigation Expert → Analog outputs → Analog output 1 to n → Out scale low (1644–1 to n)

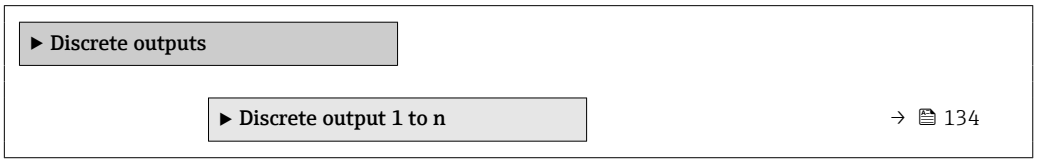
Description Use this function to enter the lower value range for the output value in system units.

User entry Signed floating-point number

Factory setting 0

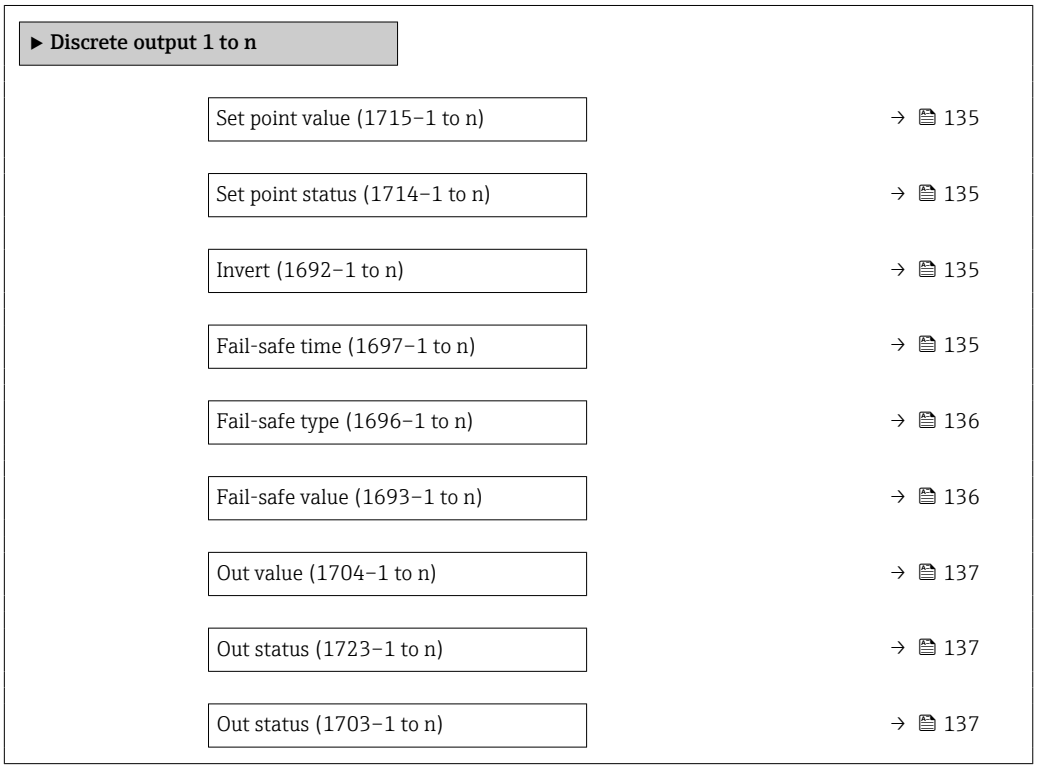
3.7 "Discrete outputs" submenu

Navigation Expert → Discrete outputs



3.7.1 "Discrete output 1 to n" submenu

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



Set point value

Navigation Expert → Discrete outputs → Discr. out. 1 to n → Set point val (1715–1 to n)

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 (1714–1 to n)

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 (1692–1 to n)

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 (1697–1 to n)

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 (1696–1 to n)

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 (→ 136).
- 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 (1693–1 to n)

Prerequisite In **Fail-safe type** parameter (→ 136), 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 (→ 137)) 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 (1704–1 to n)

Prerequisite In **Target mode** parameter (→ 138), 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 (1723–1 to n)

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 (1703–1 to n)

Prerequisite In **Target mode** parameter (→ 138), 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 (1721–1 to n)

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 (1720–1 to n)

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 (1719–1 to n)

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 (1694–1 to n)

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 (1722–1 to n)

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

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

Mode block actual

Navigation Expert → Discrete outputs → Discr. out. 1 to n → Mode block act (1691–1 to n)

Description Displays the Mode block actual: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block actual shows the actual mode in which the function block is currently operating. A comparison of the Mode block actual with the Target mode indicates whether it was possible to reach the Target mode (→ 138).

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 (→ 138)) indicates whether it was possible to reach the target mode.

Mode block permitted

Navigation Expert → Discrete outputs → Discr. out. 1 to n → Mode block perm (1705–1 to n)

Description Displays the Mode block permitted: This defines which modes of operation in the Target mode (→ 138) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

User interface 0 to 255

Mode block normal

Navigation Expert → Discrete outputs → Discr. out. 1 to n → Mode blk norm (1702–1 to n)

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

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

Alarm summary

Navigation Expert → Discrete outputs → Discr. out. 1 to n → Alarm summary (1701–1 to n)

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

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

Additional information *Description*

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

Batch ID

Navigation Expert → Discrete outputs → Discr. out. 1 to n → Batch ID (1695–1 to n)

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 (1698–1 to n)

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 (1699–1 to n)

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

User entry 0 to 65 535

Factory setting 0

Batch Recipe Unit Procedure

Navigation Expert → Discrete outputs → Discr. out. 1 to n → Batch Recipe (1700–1 to n)

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 (1713–1 to n)

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 (1712–1 to n)

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 (1707–1 to n)

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 (→ 142). 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 (1706–1 to n)

Description Use this function to enter the RCAS (Remote Cascade) in status. Defines the status for the RCAS in value (→ 142).

User entry 0 to 255

Factory setting 0

Input channel

Navigation Expert → Discrete outputs → Discr. out. 1 to n → Input channel (1724–1 to n)

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 (1725–1 to n)

Description Use this function to select the output channel. The number of logical hardware channels to the converter that is connected to this I/O block.

Selection
- Flow override
- Start verification *

* Visibility depends on order options or device settings

Factory setting Flow override

RCAS out value

Navigation Expert → Discrete outputs → Discr. out. 1 to n → RCAS out value (1711–1 to n)

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 (1708–1 to n)

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 (1716–1 to n)

Description Use this function to enable or disable block simulation.

Selection
- Disable
- Enable

Factory setting Disable

Additional information *Description*

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

Simulate value

Navigation Expert → Discrete outputs → Discr. out. 1 to n → Simulate value (1718–1 to n)

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 (1717–1 to n)

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

User entry 0 to 255

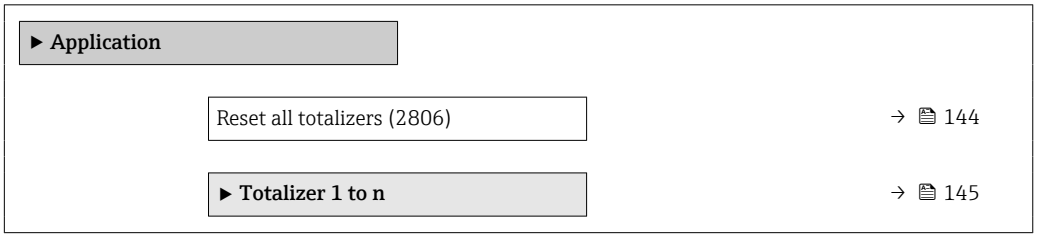
Factory setting 0

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



Reset all totalizers

Navigation Expert → Application → Reset all tot. (2806)

Description Use this function to reset all totalizers to the value **0** and restart the totaling process. This deletes all the flow values previously totalized.

Selection
- Cancel
- Reset + totalize

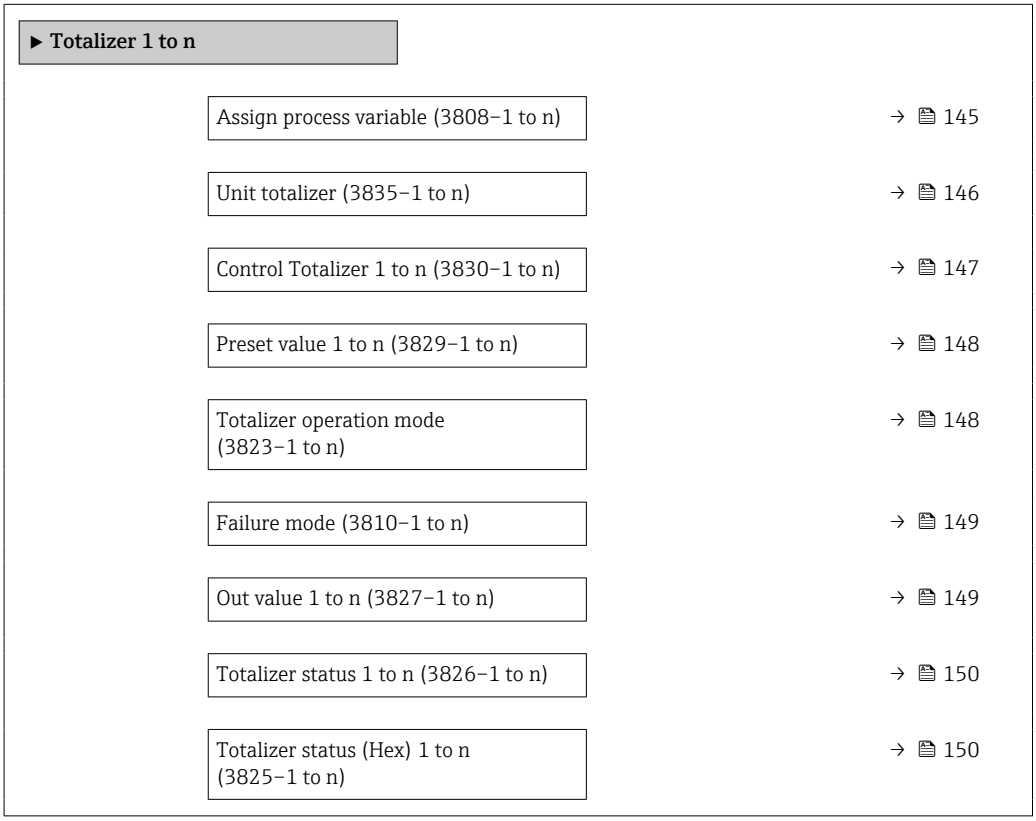
Factory setting Cancel

Additional information *Selection*

Options	Description
Cancel	No action is executed and the user exits the parameter.
Reset + totalize	Resets all totalizers to 0 and restarts the totaling process. This deletes all the flow values previously totalized.

3.8.1 "Totalizer 1 to n" submenu

Navigation Expert → Application → Totalizer 1 to n



Assign process variable

Navigation Expert → Application → Totalizer 1 to n → Assign variable (3808–1 to n)

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

Selection
- Volume flow
- Mass flow
- Corrected volume flow

Factory setting Volume flow

Additional information *Description*

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

Unit totalizer

Navigation Expert → Application → Totalizer 1 to n → Unit totalizer (3835–1 to n)

Prerequisite One of the following options is selected in the **Assign process variable** parameter (→ 145):
- Volume flow
- Mass flow

Description Use this function to select the process variable of a totalizer.

The unit is selected separately for each totalizer. It is independent of the selection made in the **System units** submenu (→ 44).

Selection

SI units
- g *
- kg *
- t *

US units
- oz *
- lb *
- STon *

* Visibility depends on order options or device settings

or

SI units
- cm³ *
- dm³ *
- m³ *
- ml *
- l *
- hl *
- Ml Mega *

US units
- af *
- ft³ *
- Mft³ *
- Mft³ *
- 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) *

* Visibility depends on order options or device settings

or

SI units
- Nl *
- Nhl *
- Nm³ *
- Sl *
- Sm³ *

US units
- Sft³ *
- MSft³ *
- MMSft³ *
- Sgal (us) *
- Sbbl (us;liq.) *
- Sbbl (us;oil) *

Imperial units
Sgal (imp) *

* Visibility depends on order options or device settings

Factory setting

Country-specific:
- m^3
- ft^3

Additional information

Selection

The selection is independent of the process variable selected in the **Assign process variable** parameter (→ 145).

Dependency

The following parameters depend on the option selected:
- **Alarm hysteresis** parameter (→ 154)
- **Hi Hi Lim** parameter (→ 154)
- **Hi Lim** parameter (→ 155)
- **Lo Lim** parameter (→ 155)
- **Lo Lo Lim** parameter (→ 156)
- **Totalizer value** parameter (→ 43)
- **Preset value** parameter (→ 148)

Control Totalizer 1 to n

Navigation

Expert → Application → Totalizer 1 to n → Control Tot. 1 to n (3830–1 to n)

Prerequisite

One of the following options is selected in the **Assign process variable** parameter (→ 145):
- Volume flow
- Mass flow
- Corrected volume flow

Description

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

Selection

- Totalize
- Reset + hold
- Preset + hold

Factory setting

Totalize

Additional information

Options

- Totalize
  The totalizer is started or continues totalizing with the current counter reading.
- Reset + hold
  The totaling process is stopped and the totalizer is reset to 0.
- Preset + hold
  The totaling process is stopped and the totalizer is set to its defined start value from the **Preset value** parameter.

Preset value 1 to n

Navigation Expert → Application → Totalizer 1 to n → Preset value 1 to n (3829–1 to n)

Prerequisite One of the following options is selected in the **Assign process variable** parameter (→ 145):
- Volume flow
- Mass flow

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

User entry Signed floating-point number

Factory setting Country-specific:
- m^3
- ft^3

Additional information *User entry*

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 146).

Example

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

Totalizer operation mode

Navigation Expert → Application → Totalizer 1 to n → Operation mode (3823–1 to n)

Prerequisite In the **Assign process variable** parameter (→ 145), one of the following options is selected:
- Volume flow
- Mass flow

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

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

Factory setting Net flow total

Additional information *Selection*

- Net flow total
  Positive and negative flow values are totalized and balanced against one another. Net flow is registered in the flow direction.
- Forward flow total
  Only the flow in the forward flow direction is totalized.
- Reverse flow total
  Only the flow against the forward flow direction is totalized (= reverse flow total).
- Last valid value
  The value is frozen. Totaling is stopped.

Failure mode

Navigation Expert → Application → Totalizer 1 to n → Failure mode (3810–1 to n)

Prerequisite In the **Assign process variable** parameter (→ 145), one of the following options is selected:
- Volume flow
- Mass flow

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

Selection
- Stop
- Actual value
- Last valid value

Factory setting Actual value

Additional information *Description*

This setting does not affect the failsafe mode of other totalizers and the outputs. This is specified in separate parameters.

Selection

- Stop
  Totalizing is stopped when a device alarm occurs.
- Actual value
  The totalizer continues to count based on the current measured value; the device alarm is ignored.
- Last valid value
  The totalizer continues to count based on the last valid measured value before the device alarm occurred.

Out value 1 to n

Navigation Expert → Application → Totalizer 1 to n → Out value 1 to n (3827–1 to n)

Prerequisite The **Auto** option is selected in the **Target mode** parameter (→ 151).

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 (→ 149).

User interface

The value of the process variable totalized since measuring began can be positive or negative. This depends on the settings in the **Totalizer operation mode** parameter (→ 148).

Dependency

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 146).

Totalizer status 1 to n

Navigation Expert → Application → Totalizer 1 to n → Tot. status 1 to n (3826–1 to n)

Description Displays the status of the particular totalizer.

User interface
- Good
- Uncertain
- Bad

Totalizer status (Hex) 1 to n

Navigation Expert → Application → Totalizer 1 to n → Status (Hex) 1 to n (3825–1 to n)

Prerequisite In **Target mode** parameter (→ 151), 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 (3833–1 to n)

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 (3832–1 to n)

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 (3831–1 to n)

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 (3803–1 to n)

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 (3834–1 to n)

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

User interface

- Auto
- Man
- Out of service

Mode block actual

Navigation Expert → Application → Totalizer 1 to n → Mode block act (3801–1 to n)

Description Displays the Mode block actual: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block actual shows the actual mode in which the function block is currently operating. A comparison of the Mode block actual with the Target mode indicates whether it was possible to reach the Target mode (→ 151).

User interface
- Auto
- Man
- Out of service

Additional information *Description*

A comparison of the current mode with the target mode (**Target mode** parameter (→ 151)) indicates whether it was possible to reach the target mode.

Mode block permitted

Navigation Expert → Application → Totalizer 1 to n → Mode block perm (3828–1 to n)

Description Displays the Mode block permitted: This defines which modes of operation in the Target mode (→ 151) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

User interface 0 to 255

Mode block normal

Navigation Expert → Application → Totalizer 1 to n → Mode blk norm (3824–1 to n)

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

User interface
- Auto
- Man
- Out of service

Alarm summary

Navigation Expert → Application → Totalizer 1 to n → Alarm summary (3809–1 to n)

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

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

Additional information *Description*

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

Batch ID

Navigation Expert → Application → Totalizer 1 to n → Batch ID (3804–1 to n)

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 (3805–1 to n)

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 (3806–1 to n)

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

User entry 0 to 65 535

Factory setting 0

Batch Recipe Unit Procedure

Navigation Expert → Application → Totalizer 1 to n → Batch Recipe (3807–1 to n)

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 (3802–1 to n)

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

User entry Signed floating-point number

Factory setting 0 m^3

Additional information *User entry*

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 146).

Hi Hi Lim

Navigation Expert → Application → Totalizer 1 to n → Hi Hi Lim (3815–1 to n)

Description Use this function to enter the value for the upper alarm limit of the totalizer (**Hi Hi alarm value** parameter (→ 156)).

User entry Signed floating-point number

Factory setting Positive floating-point number

Additional information

Description

If the output value Out value (→ 103) exceeds this limit value, the **Hi Hi alarm state** parameter (→ 157) is output.

User entry

The value is entered in the defined units (**Out unit** parameter (→ 109)) and must be in the range defined in the **Out scale lower range** parameter (→ 108) and **Out scale upper range** parameter (→ 108).

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 146).

Hi Lim

Navigation Expert → Application → Totalizer 1 to n → Hi Lim (3816–1 to n)

Description Use this function to enter the value for the upper warning limit of the totalizer (**Hi alarm value** parameter (→ 157)).

User entry Signed floating-point number

Factory setting Positive floating-point number

Additional information

Description

If the output value Out value (→ 103) exceeds this limit value, the **Hi alarm state** parameter (→ 157) is output.

User entry

The value is entered in the defined units (**Out unit** parameter (→ 109)) and must be in the range defined in the **Out scale lower range** parameter (→ 108) and **Out scale upper range** parameter (→ 108).

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 146).

Lo Lim

Navigation Expert → Application → Totalizer 1 to n → Lo Lim (3819–1 to n)

Description Use this function to enter the value for the lower warning limit of the totalizer (**Lo alarm value** parameter (→ 157)).

User entry Signed floating-point number

Factory setting Negative floating-point number

Additional information

Description

If the output value Out value (→ 103) exceeds this limit value, the **Lo alarm state** parameter (→ 158) is output.

User entry

The value is entered in the defined units (**Out unit** parameter (→ 109)) and must be in the range defined in the **Out scale lower range** parameter (→ 108) and **Out scale upper range** parameter (→ 108).

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 146).

Lo Lo Lim

Navigation Expert → Application → Totalizer 1 to n → Lo Lo Lim (3822–1 to n)

Description Use this function to enter the value for the lower alarm limit of the totalizer (**Lo Lo alarm value** parameter (→ 158)).

User entry Signed floating-point number

Factory setting Negative floating-point number

Additional information

Description

If the output value Out value (→ 103) exceeds this limit value, the **Lo Lo alarm state** parameter (→ 158) is output.

User entry

The value is entered in the defined units (**Out unit** parameter (→ 109)) and must be in the range defined in the **Out scale lower range** parameter (→ 108) and **Out scale upper range** parameter (→ 108).

The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 146).

Hi Hi alarm value

Navigation Expert → Application → Totalizer 1 to n → HiHi alarm value (3814–1 to n)

Description Displays the alarm value for the upper alarm limit value (**Hi Hi Lim** parameter (→ 154)).

User interface Signed floating-point number

Hi Hi alarm state

Navigation Expert → Application → Totalizer 1 to n → HiHi alarm state (3813–1 to n)

Description Displays the status for the upper alarm limit value (**Hi Hi Lim** parameter (→ 154)).

User interface
- No alarm
- Alarm state HiHi limit

Additional information *User interface*

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

Hi alarm value

Navigation Expert → Application → Totalizer 1 to n → Hi alarm value (3812–1 to n)

Description Displays the warning value for the upper warning limit value (**Hi Lim** parameter (→ 155)).

User interface Signed floating-point number

Hi alarm state

Navigation Expert → Application → Totalizer 1 to n → Hi alarm state (3811–1 to n)

Description Displays the status for the upper warning limit value (**Hi Lim** parameter (→ 155)).

User interface
- No warning
- Alarm state Hi limit

Additional information *User interface*

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

Lo alarm value

Navigation Expert → Application → Totalizer 1 to n → Lo alarm value (3818–1 to n)

Description Displays the warning value for the lower warning limit value (**Lo Lim** parameter (→ 155)).

User interface Signed floating-point number

Lo alarm state

Navigation Expert → Application → Totalizer 1 to n → Lo alarm state (3817–1 to n)

Description Displays the status for the lower warning limit value (**Lo Lim** parameter (→ 155)).

User interface
- No warning
- Alarm state Lo limit

Additional information *User interface*

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

Lo Lo alarm value

Navigation Expert → Application → Totalizer 1 to n → LoLo alarm value (3821–1 to n)

Description Displays the alarm value for the lower alarm limit value (**Lo Lo Lim** parameter (→ 156)).

User interface Signed floating-point number

Lo Lo alarm state

Navigation Expert → Application → Totalizer 1 to n → LoLo alarm state (3820–1 to n)

Description Displays the status for the lower alarm limit value (**Lo Lo Lim** parameter (→ 156)).

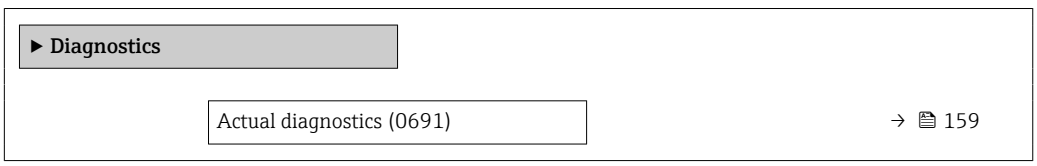
User interface
- No alarm
- Alarm state LoLo limit

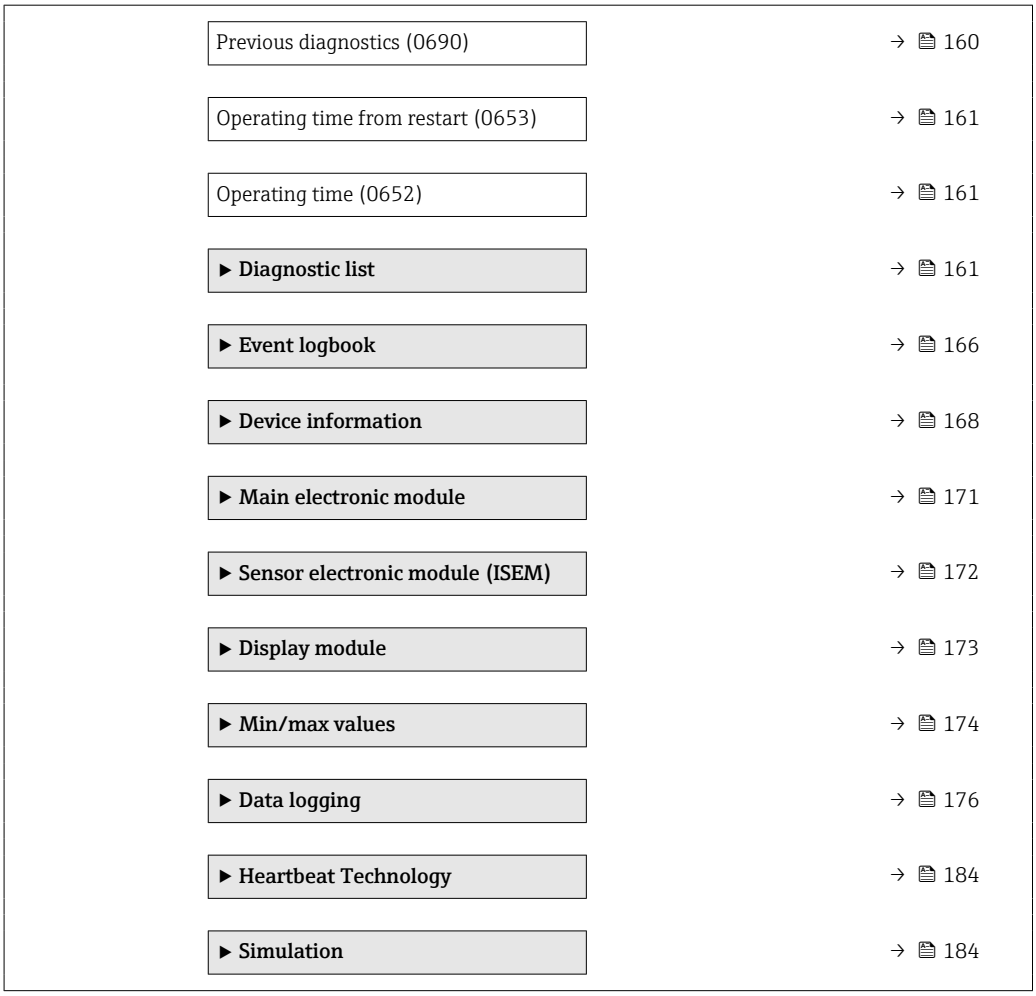
Additional information *User interface*

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

3.9 "Diagnostics" submenu

Navigation Expert → Diagnostics





Actual diagnostics

Navigation Expert → Diagnostics → Actual diagnos. (0691)

Prerequisite A diagnostic event has occurred.

Description Displays the current diagnostic message. If two or more messages occur simultaneously, the message with the highest priority is shown on the display.

User interface Symbol for diagnostic behavior, diagnostic code and short message.

Additional information *Display*

Additional pending diagnostic messages can be viewed in the **Diagnostic list** submenu (→ 161).

Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the E key.

Example

For the display format:
⊗F271 Main electronics failure

Timestamp

Navigation Expert → Diagnostics → Timestamp

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

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

Additional information *Display*

The diagnostic message can be viewed via the **Actual diagnostics** parameter (→ 159).

Example

For the display format:
24d12h13m00s

Previous diagnostics

Navigation Expert → Diagnostics → Prev.diagnostics (0690)

Prerequisite Two diagnostic events have already occurred.

Description Displays the diagnostic message that occurred before the current message.

User interface Symbol for diagnostic behavior, diagnostic code and short message.

Additional information *Display*

Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the E key.

Example

For the display format:
⊗F271 Main electronics failure

Timestamp

Navigation Expert → Diagnostics → Timestamp

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

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

Additional information *Display*

The diagnostic message can be viewed via the **Previous diagnostics** parameter (→ 160).

Example

For the display format:
24d12h13m00s

Operating time from restart

Navigation Expert → Diagnostics → Time fr. restart (0653)

Description Use this function to display the time the device has been in operation since the last device restart.

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

Operating time

Navigation Expert → Diagnostics → Operating time (0652)

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

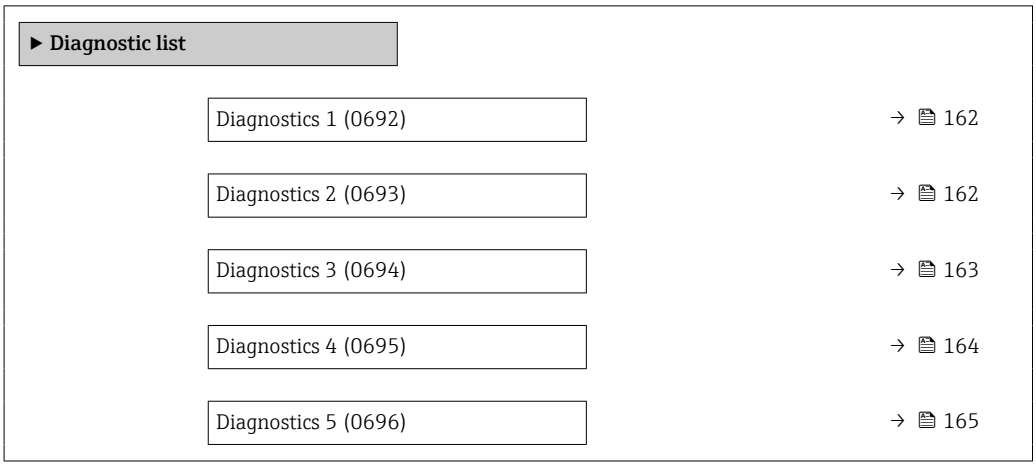
User interface Days (d), hours (h), minutes (m) and seconds (s)

Additional information *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 (0692)

Description Displays the current diagnostics message with the highest priority.

User interface Symbol for diagnostic behavior, diagnostic code and short message.

Additional information *Display*

Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the E key.

Examples

For the display format:
- ⚠S442 Frequency output
- ⊗F276 I/O module failure

Timestamp

Navigation Expert → Diagnostics → Diagnostic list → Timestamp

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

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

Additional information *Display*

The diagnostic message can be viewed via the **Diagnostics 1** parameter (→ 162).

Example

For the display format:
24d12h13m00s

Diagnostics 2

Navigation Expert → Diagnostics → Diagnostic list → Diagnostics 2 (0693)

Description Displays the current diagnostics message with the second-highest priority.

User interface Symbol for diagnostic behavior, diagnostic code and short message.

Additional information *Display*

Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the E key.

Examples

For the display format:
- ⚠S442 Frequency output
- ⊗F276 I/O module failure

Timestamp 2

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 (→ 162).

Example

For the display format:
24d12h13m00s

Diagnostics 3

Navigation Expert → Diagnostics → Diagnostic list → Diagnostics 3 (0694)

Description Displays the current diagnostics message with the third-highest priority.

User interface Symbol for diagnostic behavior, diagnostic code and short message.

Additional information *Display*

Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the E key.

Examples

For the display format:
- ⚠S442 Frequency output
- ⊗F276 I/O module failure

Timestamp 3

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 (→ 163).

Example

For the display format:
24d12h13m00s

Diagnostics 4

Navigation Expert → Diagnostics → Diagnostic list → Diagnostics 4 (0695)

Description Displays the current diagnostics message with the fourth-highest priority.

User interface Symbol for diagnostic behavior, diagnostic code and short message.

Additional information

Display

Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the E key.

Examples

For the display format:
- ⚠S442 Frequency output
- ⊗F276 I/O module failure

Timestamp 4

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 (→ 164).

Example

For the display format:
24d12h13m00s

Diagnostics 5

Navigation Expert → Diagnostics → Diagnostic list → Diagnostics 5 (0696)

Description Displays the current diagnostics message with the fifth-highest priority.

User interface Symbol for diagnostic behavior, diagnostic code and short message.

Additional information *Display*

Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the E key.

Examples

For the display format:
- ⚠S442 Frequency output
- ⊗F276 I/O module failure

Timestamp 5

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 (→ 165).

Example

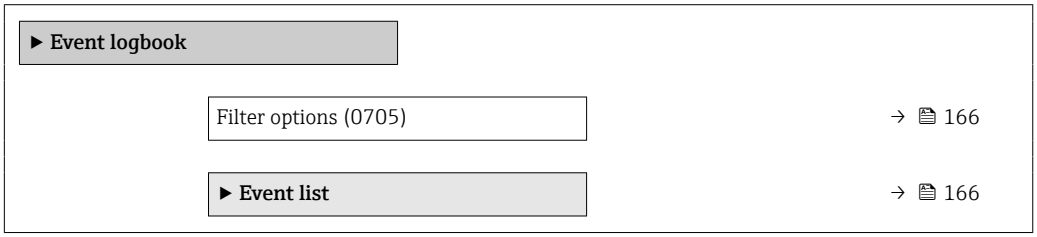
For the display format:
24d12h13m00s

3.9.2 "Event logbook" submenu

Viewing event messages

Event messages are displayed in chronological order. The event history includes both diagnostic events and information events. The symbol in front of the timestamp indicates whether the event has started or ended.

Navigation Expert → Diagnostics → Event logbook



Filter options

Navigation Expert → Diagnostics → Event logbook → Filter options (0705)

Description Use this function to select the category whose event messages are displayed in the event list of the local display.

Selection
- All
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- Information (I)

Factory setting All

Additional information *Description*

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

"Event list" submenu

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

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

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

Navigation Expert → Diagnostics → Event logbook → Event list

Event list

Navigation Expert → Diagnostics → Event logbook → Event list

Description Displays the history of event messages of the category selected in the **Filter options** parameter (→ 166).

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
- ⚠S442 Frequency output
  ⊕ 01d04h12min30s

Additional information, such as remedial measures, can be retrieved via the E key.

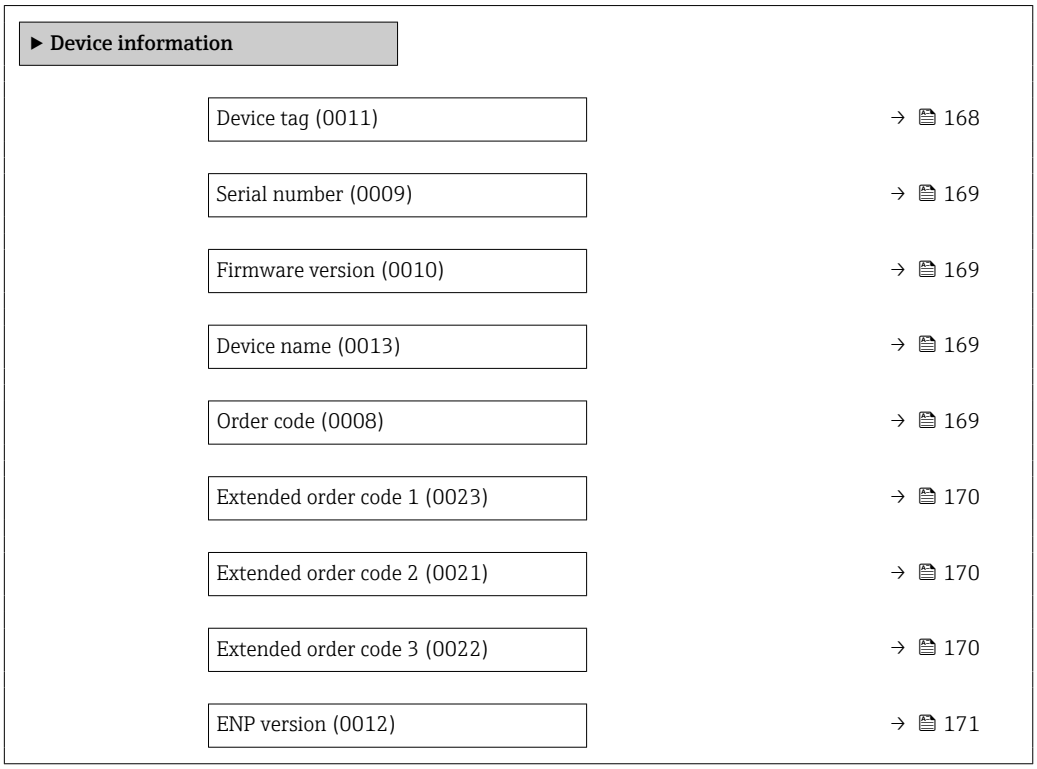
HistoROM

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

To order the **Extended HistoROM** application package, see the "Application packages" section of the "Technical Information" document

3.9.3 "Device information" submenu

Navigation Expert → Diagnostics → Device info



Device tag

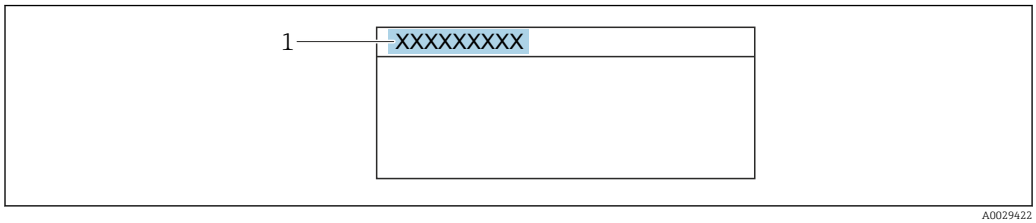
Navigation Expert → Diagnostics → Device info → Device tag (0011)

Description Displays a unique name for the measuring point so it can be identified quickly within the plant. The name is displayed in the header.

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

Factory setting - none -

Additional information *User interface*



1 Position of the header text on the display

The number of characters displayed depends on the characters used.

Serial number

Navigation Expert → Diagnostics → Device info → Serial number (0009)

Description Displays the serial number of the measuring device.

The number can 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

Firmware version

Navigation Expert → Diagnostics → Device info → Firmware version (0010)

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 (0013)

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 Promag 400 DP

Order code

Navigation Expert → Diagnostics → Device info → Order code (0008)

Description Displays the device order code.

User interface Character string composed of letters, numbers and certain punctuation marks (e.g. /).

Additional information *Description*

The order code can be found on the nameplate of the sensor and transmitter in the "Order code" field.

The order code is generated from the extended order code through a process of reversible transformation. The extended order code indicates the attributes for all the device features in the product structure. The device features are not directly readable from the order code.

Uses of the order code
- To order an identical spare device.
- To identify the device quickly and easily, e.g. when contacting Endress+Hauser.

Extended order code 1

Navigation Expert → Diagnostics → Device info → Ext. order cd. 1 (0023)

Description Displays the first part of the extended order code.

On account of length restrictions, the extended order code is split into a maximum of 3 parameters.

User interface Character string

Additional information *Description*

The extended order code indicates the version of all the features of the product structure for the measuring device and thus uniquely identifies the measuring device.

The extended order code can also be found on the nameplate of the sensor and transmitter in the "Ext. ord. cd." field.

Extended order code 2

Navigation Expert → Diagnostics → Device info → Ext. order cd. 2 (0021)

Description Displays the second part of the extended order code.

User interface Character string

Additional information For additional information, see **Extended order code 1** parameter (→ 170)

Extended order code 3

Navigation Expert → Diagnostics → Device info → Ext. order cd. 3 (0022)

Description Displays the third part of the extended order code.

User interface Character string

Additional information For additional information, see **Extended order code 1** parameter (→ 170)

ENP version

Navigation Expert → Diagnostics → Device info → ENP version (0012)

Description Displays the version of the electronic nameplate.

User interface Character string

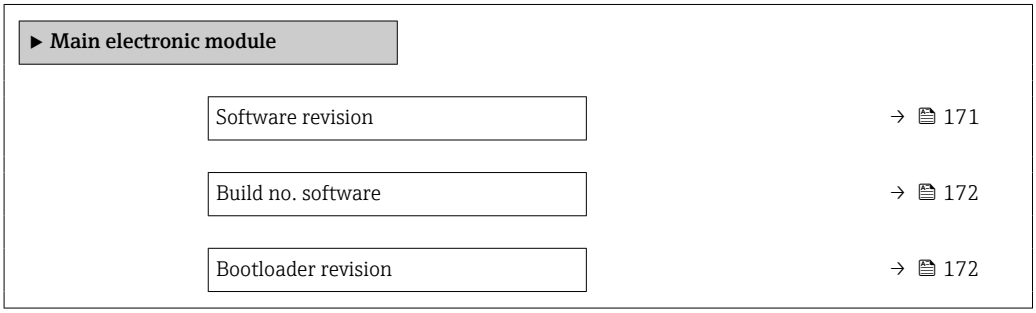
Factory setting 2.02.00

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 "Main electronic module + I/O module 1" submenu

Navigation Expert → Diagnostics → Mainboard module



Software revision

Navigation Expert → Diagnostics → Main elec. mod. → Software rev. (0072)

Description Use this function to display the software revision of the module.

User interface Positive integer

Build no. software

Navigation Expert → Diagnostics → Main elec. mod. → Build no. softw. (0079)

Description Use this function to display the software build number of the module.

User interface Positive integer

Bootloader revision

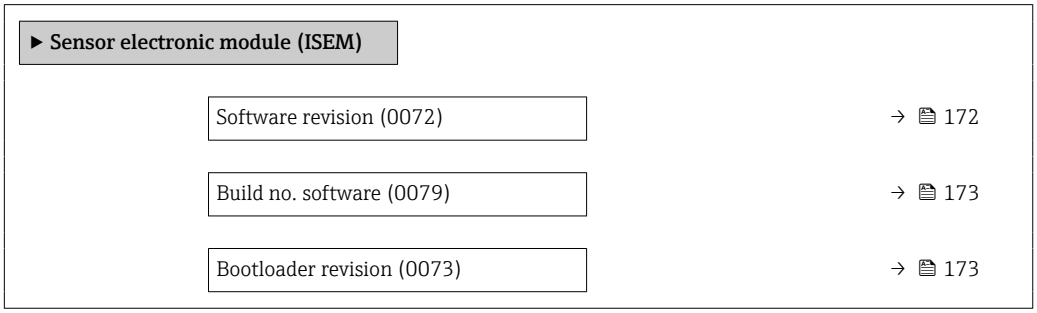
Navigation Expert → Diagnostics → Main elec. mod. → Bootloader rev. (0073)

Description Use this function to display the bootloader revision of the software.

User interface Positive integer

3.9.5 "Sensor electronic module (ISEM)" submenu

Navigation Expert → Diagnostics → Sens. electronic



Software revision

Navigation Expert → Diagnostics → Sens. electronic → Software rev. (0072)

Description Use this function to display the software revision of the module.

User interface Positive integer

Build no. software

Navigation Expert → Diagnostics → Sens. electronic → Build no. softw. (0079)

Description Use this function to display the software build number of the module.

User interface Positive integer

Bootloader revision

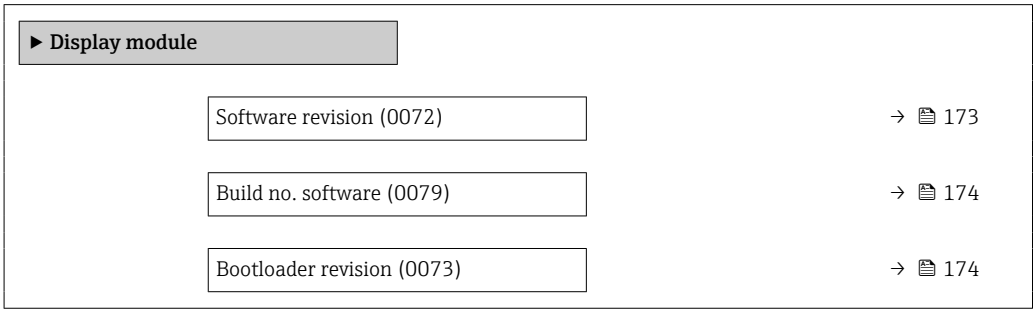
Navigation Expert → Diagnostics → Sens. electronic → Bootloader rev. (0073)

Description Use this function to display the bootloader revision of the software.

User interface Positive integer

3.9.6 "Display module" submenu

Navigation Expert → Diagnostics → Display module



Software revision

Navigation Expert → Diagnostics → Display module → Software rev. (0072)

Description Use this function to display the software revision of the module.

User interface Positive integer

Build no. software

Navigation Expert → Diagnostics → Display module → Build no. softw. (0079)

Description Use this function to display the software build number of the module.

User interface Positive integer

Bootloader revision

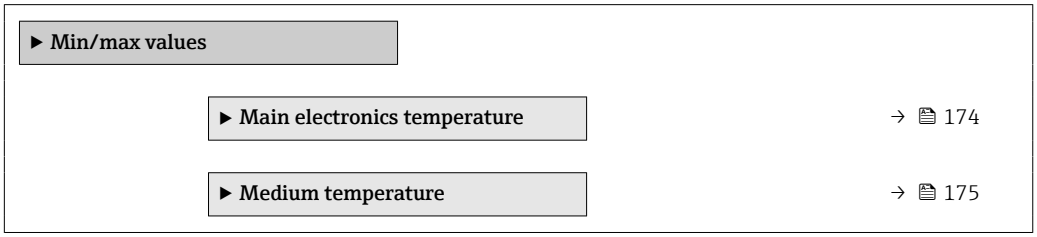
Navigation Expert → Diagnostics → Display module → Bootloader rev. (0073)

Description Use this function to display the bootloader revision of the software.

User interface Positive integer

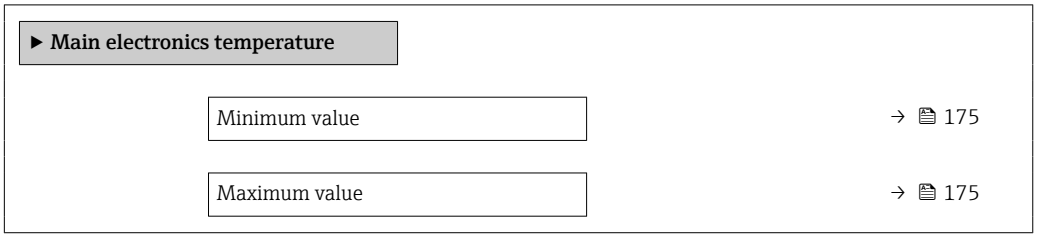
3.9.7 "Min/max values" submenu

Navigation Expert → Diagnostics → Min/max val.



"Main electronics temperature" submenu

Navigation Expert → Diagnostics → Min/max val. → Main elect.temp.



Minimum value

Navigation Expert → Diagnostics → Min/max val. → Main elect.temp. → Minimum value (6547)

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 (→ 47)

Maximum value

Navigation Expert → Diagnostics → Min/max val. → Main elect.temp. → Maximum value (6545)

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

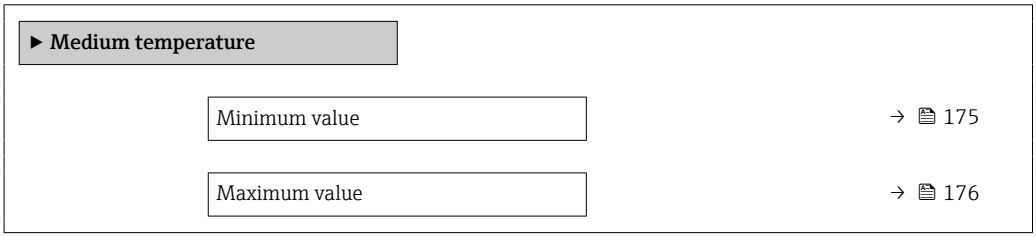
User interface Signed floating-point number

Additional information *Dependency*

The unit is taken from the **Temperature unit** parameter (→ 47)

"Medium temperature" submenu

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



Minimum value

Navigation Expert → Diagnostics → Min/max val. → Medium temp. → Minimum value (6681)

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 (→ 47)

Maximum value

Navigation Expert → Diagnostics → Min/max val. → Medium temp. → Maximum value (6680)

Description Displays the highest previously measured medium temperature value.

User interface Signed floating-point number

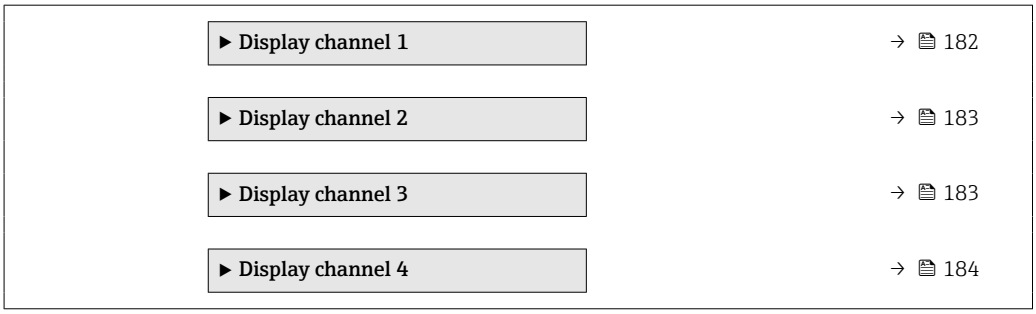
Additional information *Dependency*

The unit is taken from the **Temperature unit** parameter (→ 47)

3.9.8 "Data logging" submenu

Navigation Expert → Diagnostics → Data logging

▶ **Data logging**	
Assign channel 1 (0851)	→ 177
Assign channel 2 (0852)	→ 178
Assign channel 3 (0853)	→ 178
Assign channel 4 (0854)	→ 178
Logging interval (0856)	→ 179
Clear logging data (0855)	→ 179
Data logging (0860)	→ 180
Logging delay (0859)	→ 180
Data logging control (0857)	→ 180
Data logging status (0858)	→ 181
Entire logging duration (0861)	→ 181



Assign channel 1

Navigation Expert → Diagnostics → Data logging → Assign chan. 1 (0851)

Prerequisite The **Extended HistoROM** application package is available.

The software options currently enabled are displayed in the **Software option overview** parameter (→ 39).

Description Use this function to select a process variable for the data logging channel.

Selection
- Off
- Volume flow
- Mass flow
- Corrected volume flow
- Flow velocity
- Conductivity *
- Corrected conductivity *
- Temperature
- Electronics temperature
- Noise *
- Coil current shot time *
- Reference electrode potential against PE *
- Build-up measured value *
- Test point 1
- Test point 2
- Test point 3

Factory setting Off

Additional information *Description*

A total of 1000 measured values can be logged. This means:
- 1000 data points if 1 logging channel is used
- 500 data points if 2 logging channels are used
- 333 data points if 3 logging channels are used
- 250 data points if 4 logging channels are used

Once the maximum number of data points is reached, the oldest data points in the data log are cyclically overwritten in such a way that the last 1000, 500, 333 or 250 measured values are always in the log (ring memory principle).

The log contents are cleared if the option selected is changed.

* Visibility depends on order options or device settings

Assign channel 2

Navigation Expert → Diagnostics → Data logging → Assign chan. 2 (0852)

Prerequisite The **Extended HistoROM** application package is available.

The software options currently enabled are displayed in the **Software option overview** parameter (→ 39).

Description Use this function to select a process variable for the data logging channel.

Selection For the picklist, see the **Assign channel 1** parameter (→ 177)

Factory setting Off

Assign channel 3

Navigation Expert → Diagnostics → Data logging → Assign chan. 3 (0853)

Prerequisite The **Extended HistoROM** application package is available.

The software options currently enabled are displayed in the **Software option overview** parameter (→ 39).

Description Use this function to select a process variable for the data logging channel.

Selection For the picklist, see the **Assign channel 1** parameter (→ 177)

Factory setting Off

Assign channel 4

Navigation Expert → Diagnostics → Data logging → Assign chan. 4 (0854)

Prerequisite The **Extended HistoROM** application package is available.

The software options currently enabled are displayed in the **Software option overview** parameter (→ 39).

Description Use this function to select a process variable for the data logging channel.

Selection For the picklist, see the **Assign channel 1** parameter (→ 177)

Factory setting Off

Logging interval

Navigation Expert → Diagnostics → Data logging → Logging interval (0856)

Prerequisite The **Extended HistoROM** application package is available.

The software options currently enabled are displayed in the **Software option overview** parameter (→ 39).

Description Use this function to enter the logging interval T_{log} for data logging.

User entry 0.1 to 3 600.0 s

Factory setting 1.0 s

Additional information *Description*

This defines the interval between the individual data points in the data log, and thus the maximum loggable process time T_{log}:
- If 1 logging channel is used: $T_{log} = 1000 \times t_{log}$
- If 2 logging channels are used: $T_{log} = 500 \times t_{log}$
- If 3 logging channels are used: $T_{log} = 333 \times t_{log}$
- If 4 logging channels are used: $T_{log} = 250 \times t_{log}$

Once this time elapses, the oldest data points in the data log are cyclically overwritten such that a time of T_{log} always remains in the memory (ring memory principle).

The log contents are cleared if the length of the logging interval is changed.

Example

If 1 logging channel is used:
- $T_{log} = 1000 \times 1$ s = 1 000 s ≈15 min
- $T_{log} = 1000 \times 10$ s = 10 000 s ≈ 3 h
- $T_{log} = 1000 \times 80$ s = 80 000 s ≈ 1 d
- $T_{log} = 1000 \times 3\,600$ s = 3 600 000 s ≈ 41 d

Clear logging data

Navigation Expert → Diagnostics → Data logging → Clear logging (0855)

Prerequisite The **Extended HistoROM** application package is available.

The software options currently enabled are displayed in the **Software option overview** parameter (→ 39).

Description Use this function to clear the entire logging data.

Selection
- Cancel
- Clear data

Factory setting Cancel

Additional information *Selection*

- Cancel
  The data is not cleared. All the data is retained.
- Clear data
  The logging data is cleared. The logging process starts from the beginning.

Data logging

Navigation Expert → Diagnostics → Data logging → Data logging (0860)

Description Use this function to select the data logging method.

Selection
- Overwriting
- Not overwriting

Factory setting Overwriting

Additional information *Selection*

- Overwriting
  The device memory applies the FIFO principle.
- Not overwriting
  Data logging is canceled if the measured value memory is full (single shot).

Logging delay

Navigation Expert → Diagnostics → Data logging → Logging delay (0859)

Prerequisite In the **Data logging** parameter (→ 180), the **Not overwriting** option is selected.

Description Use this function to enter the time delay for measured value logging.

User entry 0 to 999 h

Factory setting 0 h

Additional information *Description*

Once measured value logging has been started with the **Data logging control** parameter (→ 180), the device does not save any data for the duration of the time delay entered.

Data logging control

Navigation Expert → Diagnostics → Data logging → Data log.control (0857)

Prerequisite In the **Data logging** parameter (→ 180), the **Not overwriting** option is selected.

Description Use this function to start and stop measured value logging.

Selection
- None
- Delete + start
- Stop

Factory setting None

Additional information *Selection*
- None
  Initial measured value logging status.
- Delete + start
  All the measured values recorded for all the channels are deleted and measured value logging starts again.
- Stop
  Measured value logging is stopped.

Data logging status

Navigation Expert → Diagnostics → Data logging → Data log. status (0858)

Prerequisite In the **Data logging** parameter (→ 180), the **Not overwriting** option is selected.

Description Displays the measured value logging status.

User interface
- Done
- Delay active
- Active
- Stopped

Factory setting Done

Additional information *Selection*
- Done
  Measured value logging has been performed and completed successfully.
- Delay active
  Measured value logging has been started but the logging interval has not yet elapsed.
- Active
  The logging interval has elapsed and measured value logging is active.
- Stopped
  Measured value logging is stopped.

Entire logging duration

Navigation Expert → Diagnostics → Data logging → Logging duration (0861)

Prerequisite In the **Data logging** parameter (→ 180), the **Not overwriting** option is selected.

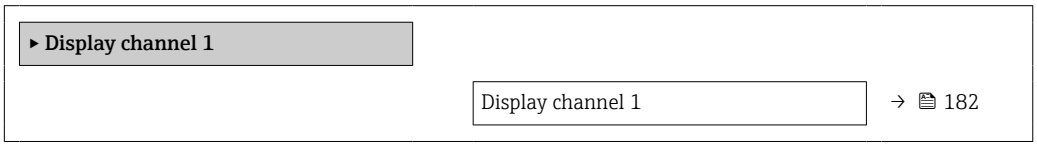
Description Displays the total logging duration.

User interface Positive floating-point number

Factory setting 0 s

"Display channel 1" submenu

Navigation Expert → Diagnostics → Data logging → Displ.channel 1



Display channel 1

Navigation Expert → Diagnostics → Data logging → Displ.channel 1

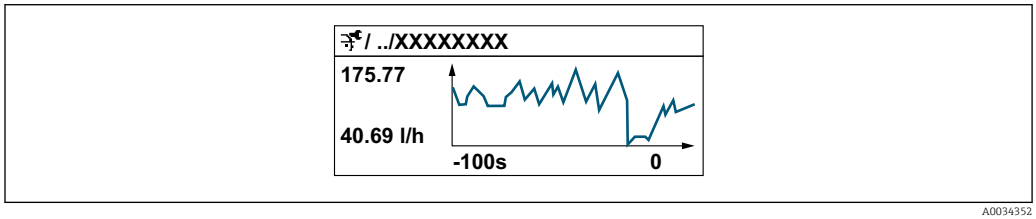
Prerequisite The **Extended HistoROM** application package is available.

The software options currently enabled are displayed in the **Software option overview** parameter (→ 39).

One of the following options is selected in the **Assign channel 1** parameter (→ 177):
- Volume flow
- Corrected volume flow
- Mass flow
- Flow velocity
- Conductivity *
- Corrected conductivity *
- Temperature
- Electronics temperature

Description Displays the measured value trend for the logging channel in the form of a chart.

Additional information *Description*



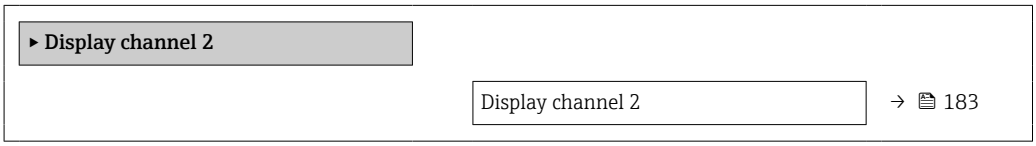
2 *Chart of a measured value trend*

* Visibility depends on order options or device settings

- x-axis: depending on the number of channels selected displays 250 to 1000 measured values of a process variable.
- y-axis: displays the approximate measured value span and constantly adapts this to the ongoing measurement.

"Display channel 2" submenu

Navigation Expert → Diagnostics → Data logging → Displ.channel 2



Display channel 2

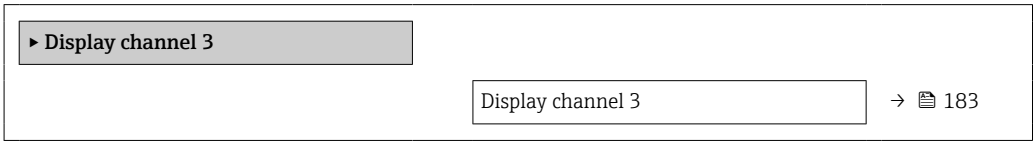
Navigation Expert → Diagnostics → Data logging → Displ.channel 2

Prerequisite A process variable is defined in the **Assign channel 2** parameter.

Description See the **Display channel 1** parameter → 182

"Display channel 3" submenu

Navigation Expert → Diagnostics → Data logging → Displ.channel 3



Display channel 3

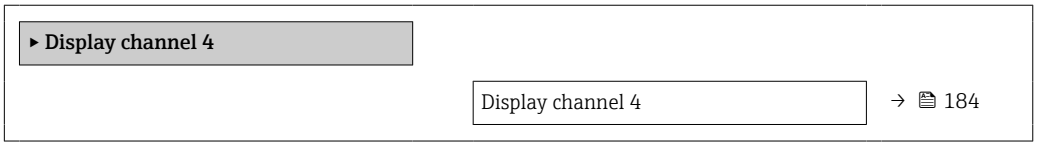
Navigation Expert → Diagnostics → Data logging → Displ.channel 3

Prerequisite A process variable is defined in the **Assign channel 3** parameter.

Description See the **Display channel 1** parameter → 182

"Display channel 4" submenu

Navigation Expert → Diagnostics → Data logging → Displ.channel 4



Display channel 4

Navigation Expert → Diagnostics → Data logging → Displ.channel 4

Prerequisite A process variable is defined in the **Assign channel 4** parameter.

Description See the **Display channel 1** parameter → 182

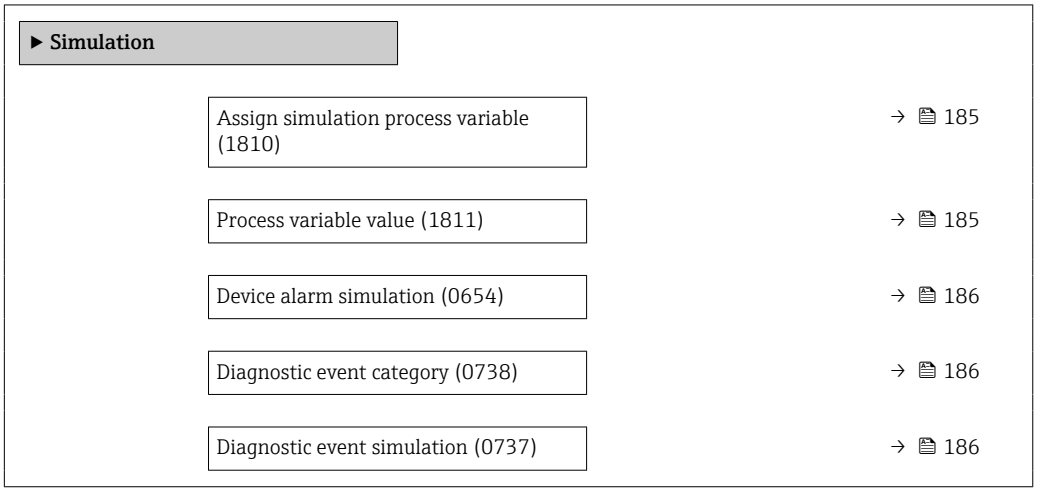
3.9.9 "Heartbeat" submenu

For detailed information on the parameter descriptions for the **Heartbeat Verification+Monitoring**application package, refer to the Special Documentation for the device → 7

Navigation Expert → Diagnostics → HBT

3.9.10 "Simulation" submenu

Navigation Expert → Diagnostics → Simulation



Assign simulation process variable

Navigation Expert → Diagnostics → Simulation → Assign proc.var. (1810)

Description Use this function to select a process variable for the simulation process that is activated. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.

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

Factory setting Off

Additional information *Description*

The simulation value of the process variable selected is defined in the **Process variable value** parameter (→ 185).

Process variable value

Navigation Expert → Diagnostics → Simulation → Proc. var. value (1811)

Prerequisite A process variable is selected in the **Assign simulation process variable** parameter (→ 185).

Description Use this function to enter a simulation value for the selected process variable. Subsequent measured value processing and the signal output use this simulation value. In this way, users can verify whether the measuring device has been configured correctly.

User entry Depends on the process variable selected

Factory setting 0

Additional information *User entry*

The unit of the displayed measured value is taken from the **System units** submenu (→ 44).

* Visibility depends on order options or device settings

Device alarm simulation

Navigation Expert → Diagnostics → Simulation → Dev. alarm sim. (0654)

Description Use this function to switch the device alarm on and off.

Selection
- Off
- On

Factory setting Off

Additional information *Description*

The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.

Diagnostic event category

Navigation Expert → Diagnostics → Simulation → Event category (0738)

Description Use this function to select the category of the diagnostic events that are displayed for the simulation in the **Diagnostic event simulation** parameter (→ 186).

Selection
- Sensor
- Electronics
- Configuration
- Process

Factory setting Process

Diagnostic event simulation

Navigation Expert → Diagnostics → Simulation → Diag. event sim. (0737)

Description Use this function to select a diagnostic event for the simulation process that is activated.

Selection
- Off
- Diagnostic event picklist (depends on the category selected)

Factory setting Off

Additional information *Description*

For the simulation, you can choose from the diagnostic events of the category selected in the **Diagnostic event category** parameter (→ 186).

4 Country-specific factory settings

4.1 SI units

Not valid for USA and Canada.

4.1.1 System units

Volume flow	**l/h** option
Volume	**m³** option
Conductivity	µS/cm
Temperature	**°C** option
Mass flow	**kg/h** option
Mass	**kg** option
Density	**kg/l** option

4.1.2 Full scale values

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

Nominal diameter [mm]	(v ~ 2.5 m/s) [dm³/min]
25	75
32	125
40	200
50	300
65	500
80	750
100	1200
125	1850

Nominal diameter [mm]	(v ~ 2.5 m/s) [m³/h]
150	150
200	300
250	500
300	750
350	1000
375	1200
400	1200
500	2000
600	2500
700	3500
750	4000
800	4500

Nominal diameter [mm]	(v ~ 2.5 m/s) [m³/h]
900	6000
1000	7000
1200	10000
1400	14000
1600	18000
1800	23000
2000	28500
2200	34000
2400	40000
2600	48000
2800	55500
3000	63500

4.1.3 Switch-on point low flow cut off

The switch-on point depends on the type of medium and the nominal diameter.

Nominal diameter [mm]	(v ~ 0.04 m/s) [dm³/min]
25	1
32	2
40	3
50	5
65	8
80	12
100	20
125	30

Nominal diameter [mm]	(v ~ 0.04 m/s) [m³/h]
150	2.5
200	5
250	7.5
300	10
350	15
375	20
400	20
450	25
500	30
600	40
700	50
750	60
800	75

Nominal diameter [mm]	(v ~ 0.04 m/s) [m³/h]
900	100
1000	125
1200	150
1400	225
1600	300
1800	350
2000	450
2200	540
2400	650
2600	775
2800	875
3000	1025

4.2 US units

Only valid for USA and Canada.

4.2.1 System units

Volume flow	**gal/min (us)** option
Volume	**gal (us)** option
Temperature	**°F** option
Mass flow	**lb/min** option
Mass	**lb** option
Density	**lb/ft³** option

4.2.2 Full scale values

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

Nominal diameter [in]	(v ~ 2.5 m/s) [gal/min]
1	18
1½	50
2	75
3	200
4	300
6	600
8	1200
10	1500
12	2400
14	3600
15	4800

Nominal diameter [in]	(v ~ 2.5 m/s) [gal/min]
16	4800
18	6000
20	7500
24	10500
28	13500
30	16500
32	19500
36	24000
40	30000
42	33000
48	42000

Nominal diameter [in]	(v ~ 2.5 m/s) [Mgal/d]
54	75
60	95
66	120
72	140
78	175
84	190
90	220
96	265
102	300
108	340
114	375
120	415

4.2.3 Switch-on point low flow cut off

The switch-on point depends on the type of medium and the nominal diameter.

Nominal diameter [in]	(v ~ 0.04 m/s) [gal/min]
1	0.25
1½	0.75
2	1.25
3	2.5
4	4
6	12
8	15
10	30
12	45
14	60

Nominal diameter [in]	(v ~ 0.04 m/s) [gal/min]
15	60
16	60
18	90
20	120
24	180
28	210
30	270
32	300
36	360
40	480
42	600
48	600

Nominal diameter [in]	(v ~ 0.04 m/s) [Mgal/d]
54	1.3
60	1.3
66	2.2
72	2.6
78	3.0
84	3.2
90	3.6
96	4.0
102	5.0
108	5.0
114	6.0
120	7.0

5 Explanation of abbreviated units

5.1 SI units

Process variable	Units	Explanation
Density	g/cm³, g/m³	Gram/volume unit
	kg/dm³, kg/l, kg/m³	Kilogram/volume unit
	SD4°C, SD15°C, SD20°C	Specific density: The specific density is the ratio of the density of the fluid to the density of water at a water temperature of 4 °C (39 °F), 15 °C (59 °F), 20 °C (68 °F).
	SG4°C, SG15°C, SG20°C	Specific gravity: The specific gravity is the ratio of the density of the fluid to the density of water at a water temperature of 4 °C (39 °F), 15 °C (59 °F), 20 °C (68 °F).
Conductivity	µS/mm	Microsiemens/length unit
	nS/cm, µS/cm, mS/cm, S/cm	Nano-, Micro- , Milli- , Siemens/length unit
	µS/m, mS/m, S/m, kS/m, MS/m	Micro- , Milli- , Siemens, Kilo-, Megasiemens/length unit
Mass	g, kg, t	Gram, kilogram, metric ton
Mass flow	g/s, g/min, g/h, g/d	Gram/time unit
	kg/s, kg/min, kg/h, kg/d	Kilogram/time unit
	t/s, t/min, t/h, t/d	Metric ton/time unit
Temperature	°C , K	Celsius, Kelvin
Volume	cm³, dm³, m³	Cubic centimeter, cubic decimeter, cubic meter
	ml, l, hl, Ml Mega	Milliliter, liter, hectoliter, megaliter
Volume flow	cm³/s, cm³/min, cm³/h, cm³/d	Cubic centimeter/time unit
	dm³/s, dm³/min, dm³/h, dm³/d	Cubic decimeter/time unit
	m³/s, m³/min, m³/h, m³/d	Cubic meter/time unit
	ml/s, ml/min, ml/h, ml/d	Milliliter/time unit
	l/s, l/min, l/h, l/d	Liter/time unit
	hl/s, hl/min, hl/h, hl/d	Hectoliter/time unit
	Ml/s, Ml/min, Ml/h, Ml/d	Megaliter/time unit
Time	s, m, h, d, y	Second, minute, hour, day, year

5.2 US units

Process variable	Units	Explanation
Density	lb/ft³, lb/gal (us)	Pound/cubic foot, pound/gallon
	lb/bbl (us;liq.), lb/bbl (us;beer), lb/bbl (us;oil), lb/bbl (us;tank)	Pound/volume unit
Mass	oz, lb, STon	Ounce, pound, standard ton
Mass flow	oz/s, oz/min, oz/h, oz/d	Ounce/time unit
	lb/s, lb/min, lb/h, lb/d	Pound/time unit
	STon/s, STon/min, STon/h, STon/d	Standard ton/time unit
Temperature	°F, °R	Fahrenheit, Rankine
Volume	af	Acre foot

Process variable	Units	Explanation
	ft^3	Cubic foot
	fl oz (us), gal (us), kgal (us), Mgal (us)	Fluid ounce, gallon, kilogallon, million gallon
	bbl (us;liq.), bbl (us;beer), bbl (us;oil), bbl (us;tank)	Barrel (normal liquids), barrel (beer), barrel (petrochemicals), barrel (filling tanks)
Volume flow	af/s, af/min, af/h, af/d	Acre foot/time unit
	ft^3/s, ft^3/min, ft^3/h, ft^3/d	Cubic foot/time unit
	fl oz/s (us), fl oz/min (us), fl oz/h (us), fl oz/d (us)	Fluid ounce/time unit
	gal/s (us), gal/min (us), gal/h (us), gal/d (us)	Gallon/time unit
	kgal/s (us), kgal/min (us), kgal/h (us), kgal/d (us)	Kilogallon/time unit
	Mgal/s (us), Mgal/min (us), Mgal/h (us), Mgal/d (us)	Million gallon/time unit
	bbl/s (us;liq.), bbl/min (us;liq.), bbl/h (us;liq.), bbl/d (us;liq.)	Barrel/time unit (normal liquids) Normal liquids: 31.5 gal/bbl
	bbl/s (us;beer), bbl/min (us;beer), bbl/h (us;beer), bbl/d (us;beer)	Barrel /time unit (beer) Beer: 31.0 gal/bbl
	bbl/s (us;oil), bbl/min (us;oil), bbl/h (us;oil), bbl/d (us;oil)	Barrel/time unit (petrochemicals) Petrochemicals: 42.0 gal/bbl
	bbl/s (us;tank), bbl/min (us;tank), bbl/h (us;tank), bbl/d (us;tank)	Barrel/time unit (filling tank) Filling tanks: 55.0 gal/bbl
Time	s, m, h, d, y	Second, minute, hour, day, year
	am, pm	Ante meridiem (before midday), post meridiem (after midday)

5.3 Imperial units

Process variable	Units	Explanation
Density	lb/gal (imp), lb/bbl (imp;beer), lb/bbl (imp;oil)	Pound/volume unit
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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