GP01155D/06/EN/01.21
71510281
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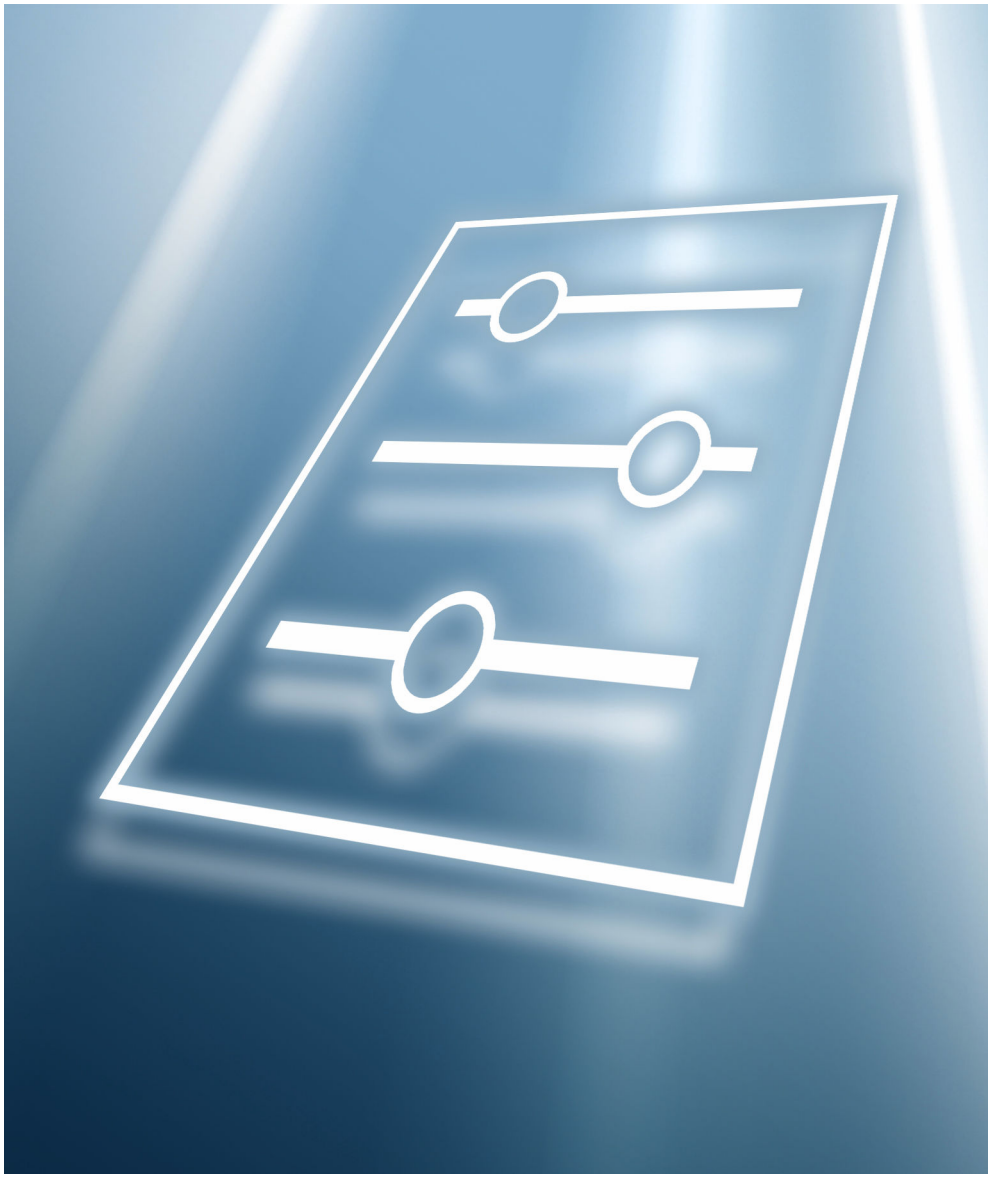
Valid as of version
01.00.zz (Device firmware)

Description of Device Parameters
Proline Promag 800

Electromagnetic flowmeter



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1 About this document

1.1 Document function

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

It is used to perform tasks that require detailed knowledge of the function of the device:
- 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 Symbols for certain types of information

Symbol	Meaning
	**Tip** Indicates additional information.
	Reference to documentation
	Reference to page
	Reference to graphic
 A0028662	Operation via local display
 A0028663	Operation via operating tool
 A0028665	Write-protected parameter

1.3.2 Information on the document structure

The parameters of all the operating menus and the commissioning wizard are described in this document.

- **Guidance** menu with the **Commissioning** wizard (→ 6), which guides the user automatically through all the device parameters that are required for commissioning
- **Application** menu (→ 40)
- **Diagnostics** menu (→ 21)
- **System** menu (→ 74)

1.3.3 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 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 Documentation

The Description of Device Parameters is part of the following documentation:

1.4.1 Operating Instructions

Measuring device	Documentation code
Proline 800	BA02081D

1.4.2 Special Documentation

Contents	Documentation code
Heartbeat Technology	SD01746D
Display with Bluetooth interface	SD02655D
Using Open Source Software Licenses	SD02658D
Information on Custody Transfer Measurement	SD02038D

2 "Guidance" menu

Main functions for use – from fast and safe commissioning to guided support during operation.

Navigation Guidance

Guidance		
	▶ **Commissioning**	→ 6
	▶ **Import / Export**	→ 19

2.1 "Commissioning" wizard

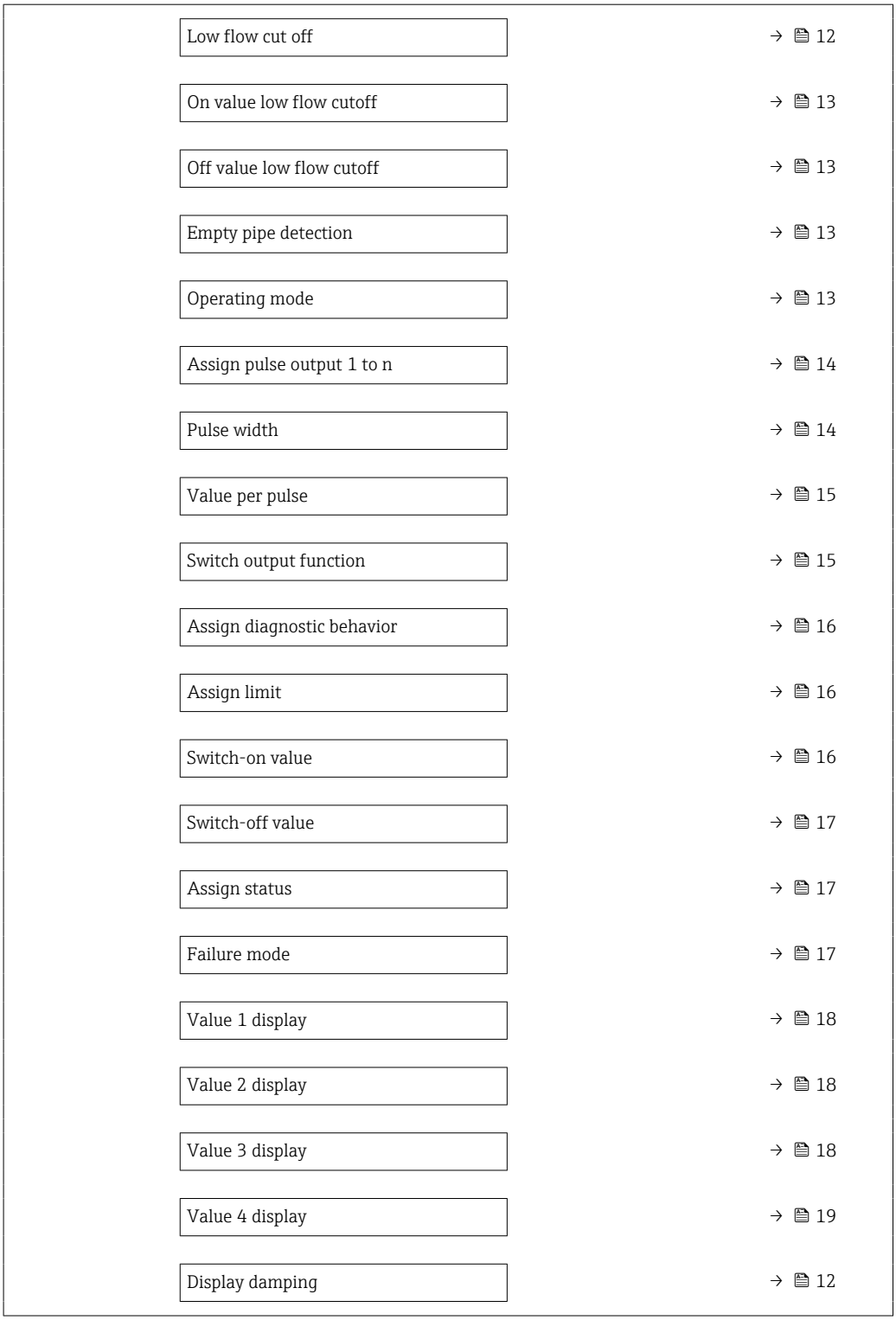
Complete this wizard to commission the device.

For each parameter, enter the appropriate value or select the appropriate option.

NOTE
If you exit the wizard before completing all required parameters, the changes you made will be saved. For this reason, the device may be in an undefined state!
In this case, a reset to the default settings is recommended.

Navigation Guidance → Commissioning

▶ **Commissioning**		
	Device tag	→ 7
	Serial number	→ 8
	Firmware version	→ 8
	Device name	→ 8
	Volume flow unit	→ 8
	Volume unit	→ 9
	Temperature unit	→ 10
	Pressure unit	→ 10
	Assign process variable	→ 10
	Unit totalizer 1 to n	→ 11
	Totalizer operation mode	→ 11
	Failure mode	→ 12



Device tag

Navigation Guidance → Commissioning → Device tag

Description Enter a unique name for the measuring point to identify the device quickly within the plant.

User entry Character string comprising numbers, letters and special characters (#32)

Serial number

Navigation Guidance → Commissioning → Serial number

Description Displays the serial number of the measuring device. The serial number can be used to identify the measuring device and to retrieve further information on the measuring device, such as the related documentation, via the Device Viewer or Operations app.

Additional information:
The serial number can also be found on the nameplate of the sensor and transmitter.

User interface Character string comprising numbers, letters and special characters (#11)

Firmware version

Navigation Guidance → Commissioning → Firmware version

Description Displays the device firmware version installed.

User interface Character string comprising numbers, letters and special characters (#8)

Device name

Navigation Guidance → Commissioning → Device name

Description Displays the name of the transmitter.

Additional information:
The name can also be found on the transmitter's nameplate.

User interface Character string comprising numbers, letters and special characters (#16)

Volume flow unit

Navigation Guidance → Commissioning → Volume flow unit

Description Select volume flow unit.

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
- $MMft^3/s$
- $MMft^3/min$
- $MMft^3/h$
- 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)

Volume unit

Navigation Guidance → Commissioning → Volume unit

Description Select volume unit.

Selection

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

US units
- af
- ft^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)

Temperature unit

Navigation Guidance → Commissioning → Temperature unit

Description Select temperature unit.

Selection

SI units
- °C
- K

US units
- °F
- °R

Pressure unit

Navigation Guidance → Commissioning → Pressure unit

Description Select process pressure unit.

Selection

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

US units
- psi a
- psi g

Assign process variable

Navigation Guidance → Commissioning → Assign variable

Description Select process variable for totalizer.

Additional information:
If the option selected is changed, the device resets the totalizer to "0".

Selection
- Off
- Volume flow

Unit totalizer

Navigation Guidance → Commissioning → Unit totalizer 1 to n

Description Select process variable totalizer unit.

Selection

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

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

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

* Visibility depends on order options or device settings

or

Other units
None *

* Visibility depends on order options or device settings

Totalizer operation mode

Navigation Guidance → Commissioning → Operation mode

Description Select totalizer calculation mode.

Selection
- Net flow total
- Forward flow total
- Reverse flow total

Additional information *Selection*
- **Net flow total** option
  The flow values in the forward and reverse flow directions are totalized and netted against each other. Net flow is recorded in the flow direction.
- **Forward flow total** option
  Only the flow in the forward flow direction is totalized.
- **Reverse flow total** option
  Only the flow in the reverse flow direction is totalized (= reverse flow quantity).

Failure mode

Navigation Guidance → Commissioning → Failure mode

Description Specify how the totalizer should behave in the event of a device alarm.

Additional information:
The failsafe mode that applies to any other totalizers or outputs is specified separately in other parameters and is not impacted by this setting.

Selection
- Stop
- Actual value
- Last valid value

Additional information *Selection*
- **Stop** option
  The totalizer is stopped in the event of a device alarm.
- **Actual value** option
  The totalizer continues to totalize based on the current value measured; the device alarm is ignored.
- **Last valid value** option
  The totalizer continues to totalize based on the last valid value measured before the device alarm occurred.

Display damping

Navigation Guidance → Commissioning → Display damping

Description Enter time constant (PT1 element) to set reaction time of the display to fluctuations in the measured value.

Additional information:
- The smaller the time constant the faster the display reacts to fluctuations in the measured value.
- If the time constant is set to 0, damping is deactivated.

User entry 0.0 to 999.9 s

Low flow cut off

Navigation Guidance → Commissioning → Low flow cut off

Description Select process variable for low flow cut off to activate low flow cut off.

Selection
- Off
- Volume flow

On value low flow cutoff

Navigation Guidance → Commissioning → On value

Description Enter on value to switch on low flow cut off.

Value = 0: No low flow cut off
Value > 0: Low flow cut off is activated

User entry Positive floating-point number

Off value low flow cutoff

Navigation Guidance → Commissioning → Off value

Description Enter off value to switch off low flow cut off. The off value is entered as a positive hysteresis with respect to the on value.

User entry 0 to 100.0 %

Empty pipe detection

Navigation Guidance → Commissioning → Empty pipe det.

Description Switch empty pipe detection on or off. Switch on empty pipe detection to detect a partially filled or empty measuring tube.

Selection
- Off
- On

Operating mode

Navigation Guidance → Commissioning → Operating mode

Description Set the output mode to pulse or switch.

Selection
- Pulse
- Switch

Additional information *Selection*

- **Pulse** option
  Quantitatively proportional pulse with pulse width to be configured. Whenever a specific volume has been reached (pulse value), a pulse is emitted, the duration of which is set within the "Pulse width" parameter.
- **Switch** option
  Indicates when the state of the device changes, e.g. when a specified limit value is reached.
  Additional information:
  - The switch output can be in one of two states: either it is conductive or it is non-conductive.
  - When the function assigned to the switch output is triggered, the switch output will depending on the output configuration either be continuously conductive or continuously non-conductive or, in case of battery-operated devices, it will emit a pulse, i.e. the switch output will be closed and conductive for the duration of the pulse.
  - The switch output is used to display diagnostic information at the system level, e. g. by connecting a lamp that lights up when the function assigned is triggered.

Assign pulse output

Navigation Guidance → Commissioning → Assign pulse 1 to n

Description Select process variable for pulse output.

Selection
- Off
- Volume flow

Pulse width

Navigation Guidance → Commissioning → Pulse width

Description Specify the duration of the output pulse.

Additional information:
The maximum pulse rate is defined by fmax = 1 / (2 × pulse width). The interval between two pulses (P) is at least as long as the specified pulse width (B).
The maximum flow is defined by Qmax = fmax × pulse value. If the flow exceeds these limit values, the measuring device displays the diagnostic message "443 Pulse output faulty".

Example:
- Pulse value: 0.1 g
- Pulse width: 0.1 ms
- fmax: 1 / (2 × 0.1 ms) = 5 kHz
- Qmax: 5 kHz × 0.1 g = 0.5 kg/s

User entry 0.1 to 500 ms

Value per pulse

Navigation Guidance → Commissioning → Value per pulse

Description Enter the measured value to which a pulse corresponds.

Additional information:
Weighting of the pulse output with a quantity.
The lower the pulse value, the
– better the resolution.
– higher the frequency of the pulse response.

User entry Signed floating-point number

Switch output function

Navigation Guidance → Commissioning → Switch out funct

Description Assign a function to the switch output.

Additional information:
- The state of the switch output (on or off) when the assigned function is triggered can be inverted in the "Invert output signal" parameter
- The "Invert output signal" parameter is not available for all devices.

Selection
- Off
- On
- Diagnostic behavior
- Limit
- Flow direction check
- Status

Additional information *Selection*

- **Off** option
  The switch output is permanently switched off (open, non-conductive).
- **On** option
  The switch output is permanently switched on (closed, conductive).
- **Diagnostic behavior** option
  Emits a pulse if there is a pending diagnostic event of the assigned behavioral category.
- **Limit** option
  Emits a pulse if a limit value specified for the process variable has been reached.
- **Flow direction check** option
  Emits a pulse when the flow direction changes.
- **Status** option
  Emits a pulse to indicate the device status for empty pipe detection or low flow cut off, whichever option is assigned to the switch output.

Assign diagnostic behavior

Navigation Guidance → Commissioning → Assign diag. beh

Description Select the diagnostic behavior for which the switch output should emit a pulse.

Selection
- Alarm
- Alarm or warning
- Warning

Additional information *Selection*
- **Alarm** option
  The switch output only emits a pulse for diagnostic events of the "Alarm" category.
- **Alarm or warning** option
  The switch output emits a pulse for diagnostic events of the "Alarm" or "Warning" category.
- **Warning** option
  The switch output only emits a pulse for diagnostic events of the "Warning" category.

Assign limit

Navigation Guidance → Commissioning → Assign limit

Description Select the process variable to monitor in case the specified limit value is exceeded. If a limit value for the selected process variable is exceeded, the output emits a pulse.

Selection
- Off
- Volume flow
- Flow velocity
- Conductivity *
- Totalizer 1
- Totalizer 2
- Totalizer 3
- Pressure *
- Battery state of charge

Switch-on value

Navigation Guidance → Commissioning → Switch-on value

Description Enter limit value for the switch-on point (process variable > switch-on value = closed, conductive).

Additional information:
To use a hysteresis: Switch-on point > Switch-off point.

User entry Signed floating-point number

* Visibility depends on order options or device settings

Switch-off value

Navigation Guidance → Commissioning → Switch-off value

Description Enter limit value for the switch-off point (process variable < switch-off value = open, non-conductive).

Additional information:
To use a hysteresis: Switch-on point > Switch-off point.

User entry Signed floating-point number

Assign status

Navigation Guidance → Commissioning → Assign status

Description Select the device status to display for the switch output.

Additional information:
If the switch on point for empty pipe detection / low flow cut off is reached, the output is conductive. Otherwise, the switch output is non-conductive.

Selection
- Empty pipe detection
- Low flow cut off

Failure mode

Navigation Guidance → Commissioning → Failure mode

Description Specify how the output should behave in the event of a device alarm.

Additional information:
For safety reasons, it is recommended that the behavior of the output in the event of a device alarm be predefined.

Selection
- Actual status
- Open
- Closed

Additional information *Selection*
- **Actual status** option
  In the event of a device alarm, the issue is ignored and the switch output adopts the behavior currently specified for the "Switch output function" parameter.
- **Open** option
  In the event of a device alarm, the switch output's transistor is set to "non-conductive".

Value 1 display

Navigation Guidance → Commissioning → Value 1 display

Description Select the measured value that is displayed first on the local display.

Additional information:
The applicable unit of measure is specified in the "System units" submenu.

Selection
- Volume flow
- Conductivity *
- Pressure *
- Totalizer 1
- Totalizer 2
- Totalizer 3

Value 2 display

Navigation Guidance → Commissioning → Value 2 display

Description Select the measured value that is shown second on the local display.

Additional information:
The applicable unit of measure is specified in the "System units" submenu.

Selection
- None
- Volume flow
- Conductivity *
- Pressure *
- Totalizer 1
- Totalizer 2
- Totalizer 3

Value 3 display

Navigation Guidance → Commissioning → Value 3 display

Description Select the measured value that is shown third on the local display.

Additional information:
The applicable unit of measure is specified in the "System units" submenu.

Selection
- None
- Volume flow
- Conductivity *
- Pressure *
- Totalizer 1
- Totalizer 2
- Totalizer 3

* Visibility depends on order options or device settings

Value 4 display

Navigation Guidance → Commissioning → Value 4 display

Description Select the measured value that is shown fourth on the local display.

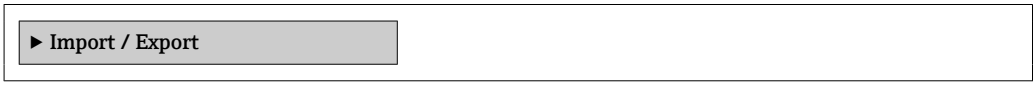
Additional information:
The applicable unit of measure is specified in the "System units" submenu.

Selection
- None
- Volume flow
- Conductivity *
- Pressure *
- Totalizer 1
- Totalizer 2
- Totalizer 3

2.2 "Import / Export" submenu

Use the Import/Export functionality to import or export data, e.g. to generate a report.

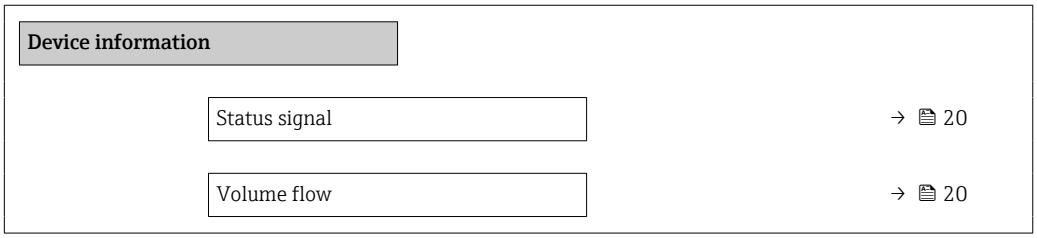
Navigation Guidance → Import / Export



* Visibility depends on order options or device settings

3 "Device information" menu

Navigation Device info



Status signal

Navigation Device info → Status signal

User interface
- OK
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- ---
- Not categorized

Volume flow

Navigation Application → Measured values → Volume flow

Description Displays the volume flow currently measured.

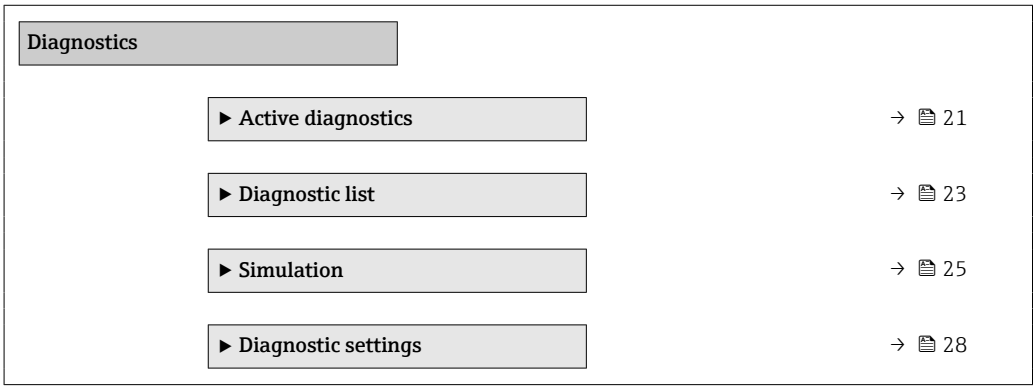
Additional information:
The applicable unit of measure is specified in the "System units" submenu.

User interface Signed floating-point number

4 "Diagnostics" menu

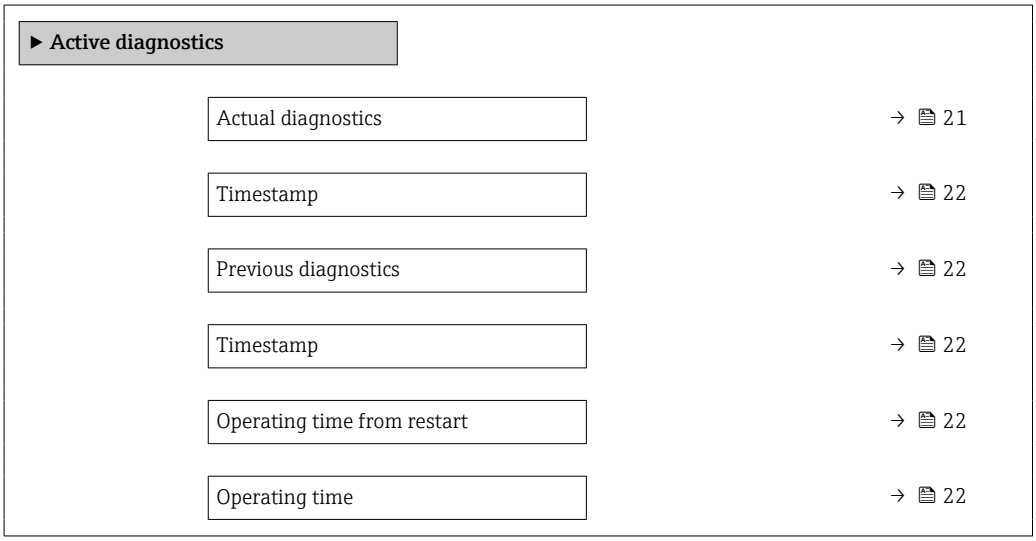
Troubleshooting and preventive maintenance – settings for device behavior during process and device events as well as assistance and measures for diagnostic purposes.

Navigation Diagnostics



4.1 "Active diagnostics" submenu

Navigation Diagnostics → Active diagnos.



Actual diagnostics

Navigation Diagnostics → Active diagnos. → Actual diagnos.

Description Displays the currently active diagnostic message.

If there is more than one pending diagnostic event, the message for the diagnostic event with the highest priority is displayed.

User interface Positive integer

Timestamp

Navigation Diagnostics → Active diagnos. → Timestamp

Description Displays the timestamp for the currently active diagnostic message.

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

Previous diagnostics

Navigation Diagnostics → Active diagnos. → Prev.diagnostics

Description Displays the diagnostic message for the last diagnostic event that has ended.

User interface Positive integer

Timestamp

Navigation Diagnostics → Active diagnos. → Timestamp

Description Displays the timestamp of the diagnostic message generated for the last diagnostic event that has ended.

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

Operating time from restart

Navigation Diagnostics → Active diagnos. → Time fr. restart

Description Indicates how long the device has been in operation since the last time the device was restarted.

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

Operating time

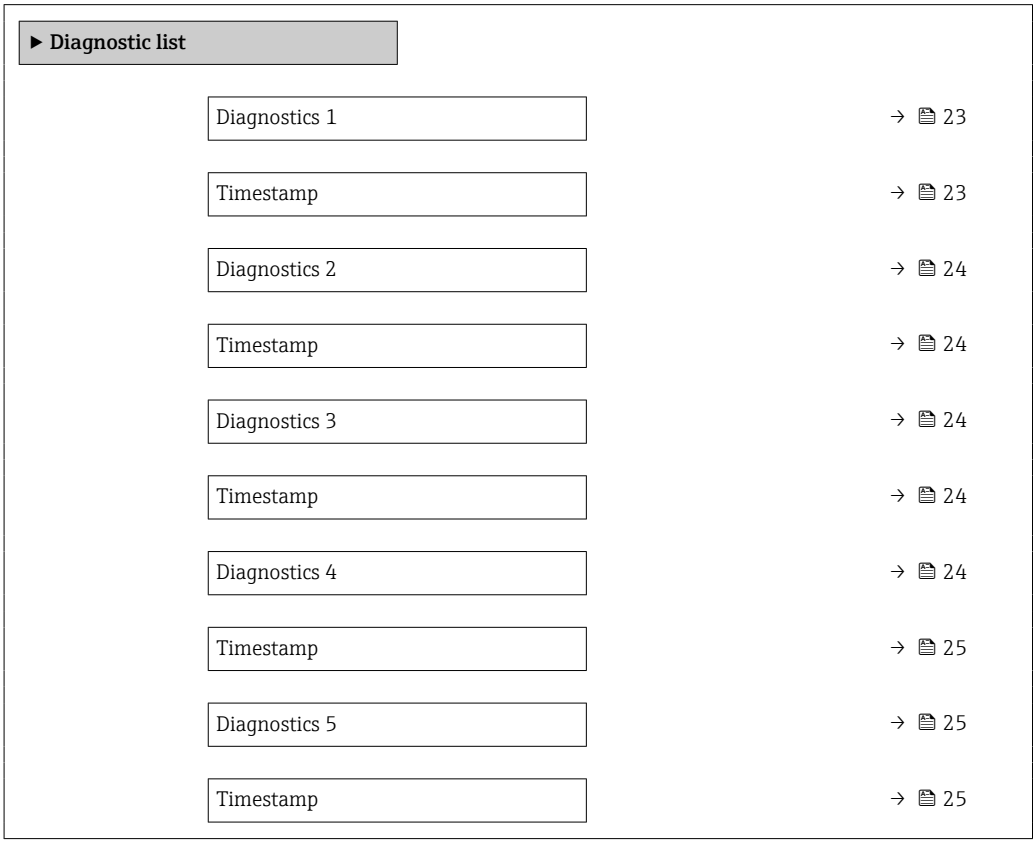
Navigation Diagnostics → Active diagnos. → Operating time

Description Indicates how long the device has been in operation.

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

4.2 "Diagnostic list" submenu

Navigation Diagnostics → Diagnostic list → Diagnostics 1



Diagnostics 1

Navigation Diagnostics → Diagnostic list → Diagnostics 1

Description Displays the currently active diagnostic message with the highest priority.

User interface Positive integer

Timestamp

Navigation Diagnostics → Diagnostic list → Timestamp

Description Displays the timestamp for the diagnostic message with the highest priority.

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

Diagnostics 2

Navigation Diagnostics → Diagnostic list → Diagnostics 2

Description Displays the currently active diagnostic message with the second highest priority.

User interface Positive integer

Timestamp

Navigation Diagnostics → Diagnostic list → Timestamp

Description Displays the timestamp for the diagnostic message with the second highest priority.

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

Diagnostics 3

Navigation Diagnostics → Diagnostic list → Diagnostics 3

Description Displays the currently active diagnostic message with the third highest priority.

User interface Positive integer

Timestamp

Navigation Diagnostics → Diagnostic list → Timestamp

Description Displays the timestamp for the diagnostic message with the third highest priority.

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

Diagnostics 4

Navigation Diagnostics → Diagnostic list → Diagnostics 4

Description Displays the currently active diagnostic message with the fourth highest priority.

User interface Positive integer

Timestamp

Navigation Diagnostics → Diagnostic list → Timestamp

Description Displays the timestamp for the diagnostic message with the fourth highest priority.

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

Diagnostics 5

Navigation Diagnostics → Diagnostic list → Diagnostics 5

Description Displays the currently active diagnostic message with the fifth-highest priority.

User interface Positive integer

Timestamp

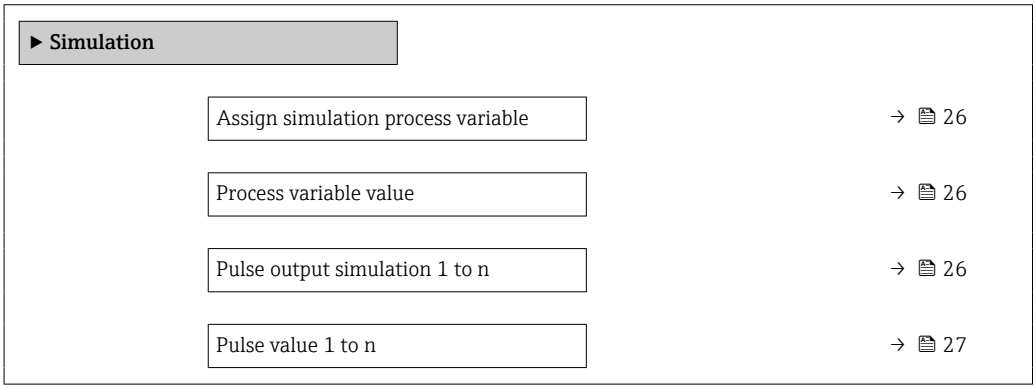
Navigation Diagnostics → Diagnostic list → Timestamp

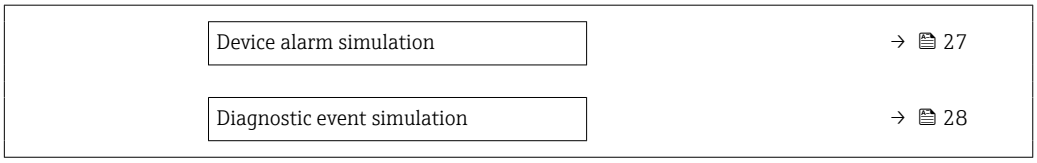
Description Displays the timestamp for the diagnostic message with the fifth highest priority.

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

4.3 "Simulation" submenu

Navigation Diagnostics → Simulation





Assign simulation process variable

Navigation Diagnostics → Simulation → Assign proc.var.

Description Select a process variable for the simulation, thereby activating it.

Selection
- Off
- Volume flow
- Flow velocity
- Conductivity *
- Temperature *
- Pressure

Process variable value

Navigation Diagnostics → Simulation → Proc. var. value

Description Enter the simulation value for the selected process variable. Processing of measured values downstream as well as the signal ouput follow this value. In this way, it is possibe to verify whether the measuring device has been configured correctly.

Additional information:
The applicable unit of measure is specified in the "System units" submenu.

User entry Signed floating-point number

Pulse output simulation 1 to n

Navigation Diagnostics → Simulation → Puls.outp.sim. 1 to n

Description Switch simulation of the pulse output on or off.

Selection
- Off
- Fixed value
- Down-counting value

* Visibility depends on order options or device settings

Additional information *Selection*

- **Off** option
  Simulation of the pulse output is switched off. The device is in standard operation mode or another process variable is being simulated.
- **Fixed value** option
  Pulses are emitted continuously with the pulse width specified in the "Pulse width" parameter.
- **Down-counting value** option
  The number of pulses specified in the "Pulse value " parameter are emitted.

Pulse value 1 to n

Navigation Diagnostics → Simulation → Pulse value 1 to n

Description Enter the number of pulses to simulate the pulse output. In this manner, it is possible to verify the pulse output is configured correctly and downstream processing units are functioning properly.

User entry 0 to 65 535

Diagnostic event category

Navigation Diagnostics → Simulation → Event category

Description Select the category of diagnostic events that should be available for selection in the "Diagnostic event simulation" parameter.

Selection

- Sensor
- Electronics
- Configuration
- Process

Device alarm simulation

Navigation Diagnostics → Simulation → Dev. alarm sim.

Description Switch the device alarm simulation on or off.

While simulation is in progress, the display alternates between the measured value and a diagnostic message of the Function Check (C) category.

Selection

- Off
- On

Diagnostic event simulation

Navigation Diagnostics → Simulation → Diag. event sim.

Description Select the diagnostic event to simulate.

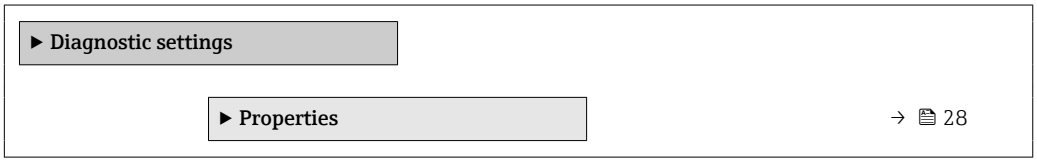
Selection Off

4.4 "Heartbeat" submenu

For detailed information on the parameter descriptions for the **Heartbeat Verification+Monitoring**application package, refer to the Special Documentation for the device → 5

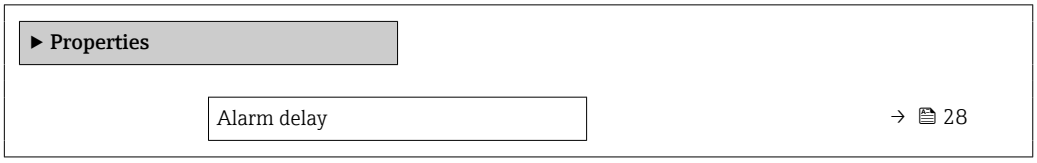
4.5 "Diagnostic settings" submenu

Navigation Diagnostics → Diag. settings



4.5.1 "Properties" submenu

Navigation Diagnostics → Diag. settings → Properties



Alarm delay

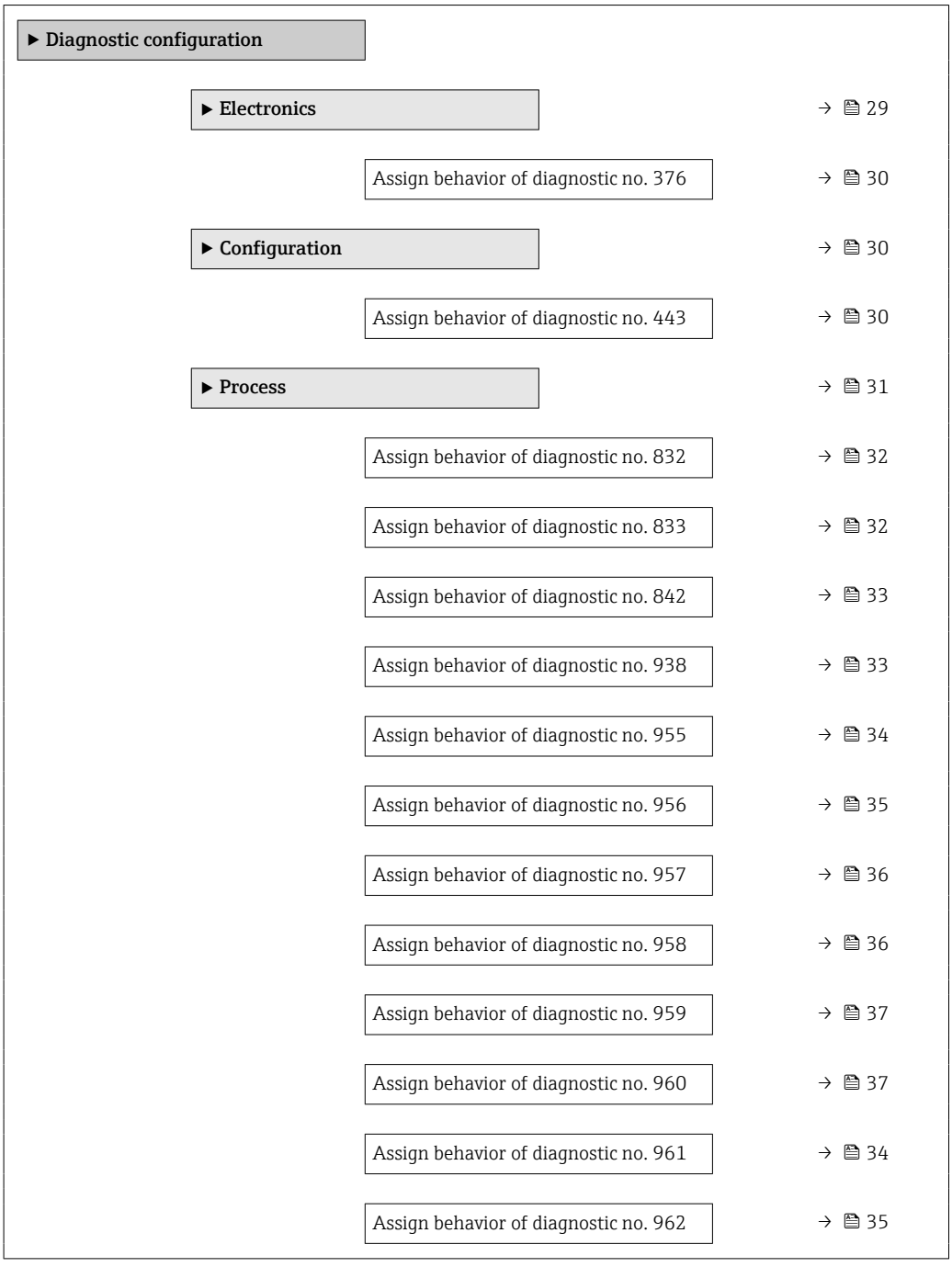
Navigation Diagnostics → Diag. settings → Properties → Alarm delay

Description Enter a duration for the alarm delay. When a diagnostic event of the "Alarm" category occurs, the diagnostic message is not generated until the delay has elapsed.

User entry 0 to 60 s

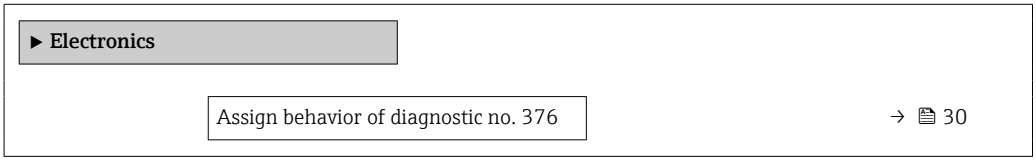
4.5.2 "Diagnostic configuration" submenu

Navigation Diagnostics → Diag. settings → Configuration



"Electronics" submenu

Navigation Diagnostics → Diag. settings → Diag. config. → Electronics



Assign behavior of diagnostic no. 376

Navigation Diagnostics → Diag. settings → Diag. config. → Electronics → Diagnostic no. 376

Description Select behavior for diagnostic event "376 Main electronics faulty".

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Additional information *Selection*
- **Off** option
  The diagnostic event is ignored and no diagnostic message is generated or logged.
- **Alarm** option
  The device stops measuring. The signal outputs and totalizers assume the specified alarm condition. A diagnostic message is generated.
- **Warning** option
  The device continues measuring. The signal outputs and totalizers are not affected. A diagnostic message is generated.
- **Logbook entry only** option
  The device continues measuring. The diagnostic message is only displayed in the "Event logbook" submenu and does not alternate with the standard operational information displayed.

"Configuration" submenu

Navigation Diagnostics → Diag. settings → Diag. config. → Configuration

Assign behavior of diagnostic no. 443

Navigation Diagnostics → Diag. settings → Diag. config. → Configuration → Diagnostic no. 443

Description Select behavior for diagnostic event "443 Pulse output faulty".

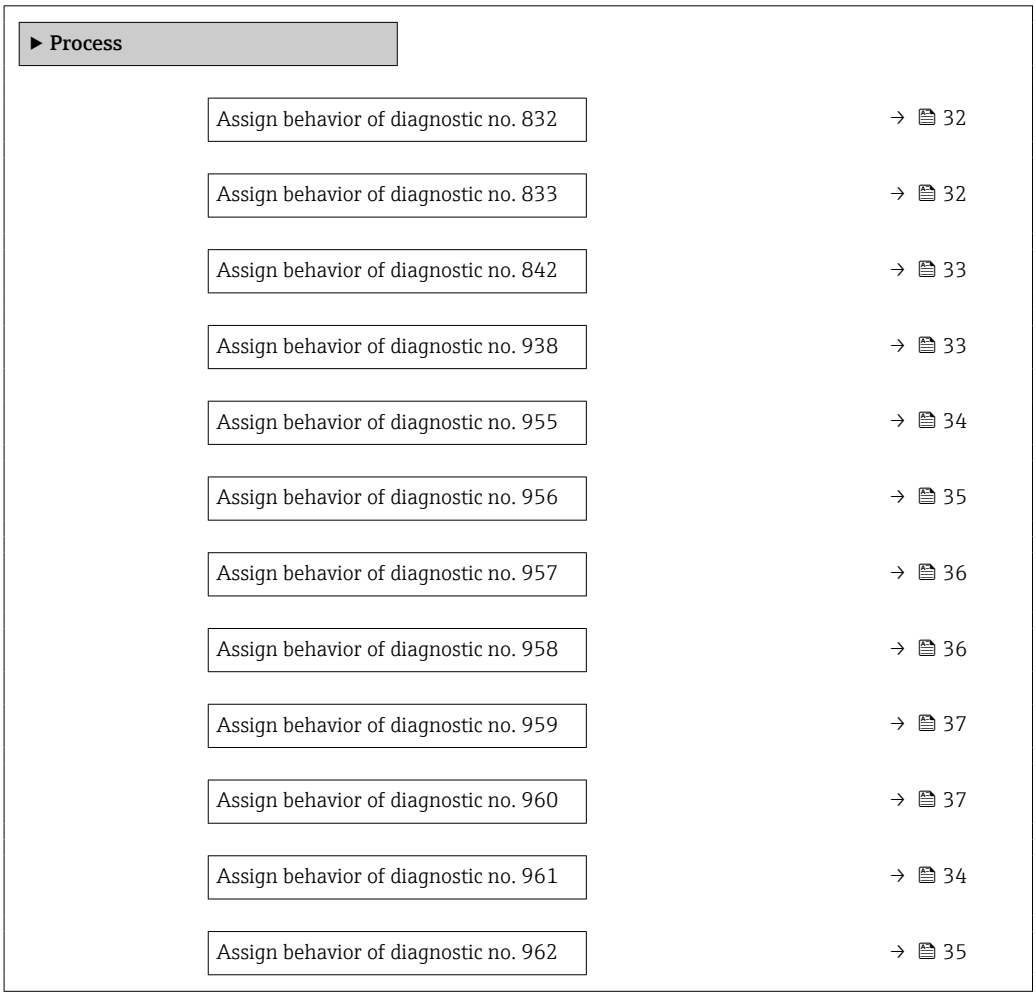
Selection
- Off
- Alarm
- Warning
- Logbook entry only

Additional information *Selection*

- **Off** option
  The diagnostic event is ignored and no diagnostic message is generated or logged.
- **Alarm** option
  The device stops measuring. The signal outputs and totalizers assume the specified alarm condition. A diagnostic message is generated.
- **Warning** option
  The device continues measuring. The signal outputs and totalizers are not affected. A diagnostic message is generated.
- **Logbook entry only** option
  The device continues measuring. The diagnostic message is only displayed in the "Event logbook" submenu and does not alternate with the standard operational information displayed.

"Process" submenu

Navigation Diagnostics → Diag. settings → Diag. config. → Process



Assign behavior of diagnostic no. 832

Navigation Diagnostics → Diag. settings → Diag. config. → Process → Diagnostic no. 832

Description Select behavior for diagnostic event "832 Electronics temperature too high".

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Additional information *Selection*
- **Off** option
  The diagnostic event is ignored and no diagnostic message is generated or logged.
- **Alarm** option
  The device stops measuring. The signal outputs and totalizers assume the specified alarm condition. A diagnostic message is generated.
- **Warning** option
  The device continues measuring. The signal outputs and totalizers are not affected. A diagnostic message is generated.
- **Logbook entry only** option
  The device continues measuring. The diagnostic message is only displayed in the "Event logbook" submenu and does not alternate with the standard operational information displayed.

Assign behavior of diagnostic no. 833

Navigation Diagnostics → Diag. settings → Diag. config. → Process → Diagnostic no. 833

Description Select behavior for diagnostic event "833 Electronics temperature too low".

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Additional information *Selection*
- **Off** option
  The diagnostic event is ignored and no diagnostic message is generated or logged.
- **Alarm** option
  The device stops measuring. The signal outputs and totalizers assume the specified alarm condition. A diagnostic message is generated.
- **Warning** option
  The device continues measuring. The signal outputs and totalizers are not affected. A diagnostic message is generated.
- **Logbook entry only** option
  The device continues measuring. The diagnostic message is only displayed in the "Event logbook" submenu and does not alternate with the standard operational information displayed.

Assign behavior of diagnostic no. 842

Navigation Diagnostics → Diag. settings → Diag. config. → Process → Diagnostic no. 842

Description Select behavior for diagnostic event "842 Process value above limit".

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Additional information *Selection*
- **Off** option
  The diagnostic event is ignored and no diagnostic message is generated or logged.
- **Alarm** option
  The device stops measuring. The signal outputs and totalizers assume the specified alarm condition. A diagnostic message is generated.
- **Warning** option
  The device continues measuring. The signal outputs and totalizers are not affected. A diagnostic message is generated.
- **Logbook entry only** option
  The device continues measuring. The diagnostic message is only displayed in the "Event logbook" submenu and does not alternate with the standard operational information displayed.

Assign behavior of diagnostic no. 938

Navigation Diagnostics → Diag. settings → Diag. config. → Process → Diagnostic no. 938

Description Select behavior for diagnostic event "938 EMC interference".

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Additional information *Selection*
- **Off** option
  The diagnostic event is ignored and no diagnostic message is generated or logged.
- **Alarm** option
  The device stops measuring. The signal outputs and totalizers assume the specified alarm condition. A diagnostic message is generated.
- **Warning** option
  The device continues measuring. The signal outputs and totalizers are not affected. A diagnostic message is generated.
- **Logbook entry only** option
  The device continues measuring. The diagnostic message is only displayed in the "Event logbook" submenu and does not alternate with the standard operational information displayed.

Assign behavior of diagnostic no. 955

Navigation Diagnostics → Diag. settings → Diag. config. → Process → Diagnostic no. 955

Description Select behavior for diagnostic event "955 Flow limit exceeded".

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Additional information *Selection*
- **Off** option
  The diagnostic event is ignored and no diagnostic message is generated or logged.
- **Alarm** option
  The device stops measuring. The signal outputs and totalizers assume the specified alarm condition. A diagnostic message is generated.
- **Warning** option
  The device continues measuring. The signal outputs and totalizers are not affected. A diagnostic message is generated.
- **Logbook entry only** option
  The device continues measuring. The diagnostic message is only displayed in the "Event logbook" submenu and does not alternate with the standard operational information displayed.

Assign behavior of diagnostic no. 961

Navigation Diagnostics → Diag. settings → Diag. config. → Process → Diagnostic no. 961

Description Select behavior for diagnostic event "961 Electrode potential out of specification".

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Additional information *Selection*
- **Off** option
  The diagnostic event is ignored and no diagnostic message is generated or logged.
- **Alarm** option
  The device stops measuring. The signal outputs and totalizers assume the specified alarm condition. A diagnostic message is generated.
- **Warning** option
  The device continues measuring. The signal outputs and totalizers are not affected. A diagnostic message is generated.
- **Logbook entry only** option
  The device continues measuring. The diagnostic message is only displayed in the "Event logbook" submenu and does not alternate with the standard operational information displayed.

Assign behavior of diagnostic no. 962

Navigation Diagnostics → Diag. settings → Diag. config. → Process → Diagnostic no. 962

Description Select behavior for diagnostic event "962 Pipe empty".

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Additional information *Selection*
- **Off** option
  The diagnostic event is ignored and no diagnostic message is generated or logged.
- **Alarm** option
  The device stops measuring. The signal outputs and totalizers assume the specified alarm condition. A diagnostic message is generated.
- **Warning** option
  The device continues measuring. The signal outputs and totalizers are not affected. A diagnostic message is generated.
- **Logbook entry only** option
  The device continues measuring. The diagnostic message is only displayed in the "Event logbook" submenu and does not alternate with the standard operational information displayed.

Assign behavior of diagnostic no. 956

Navigation Diagnostics → Diag. settings → Diag. config. → Process → Diagnostic no. 956

Description Select behavior for diagnostic event "956 Pressure limit exceeded".

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Additional information *Selection*
- **Off** option
  The diagnostic event is ignored and no diagnostic message is generated or logged.
- **Alarm** option
  The device stops measuring. The signal outputs and totalizers assume the specified alarm condition. A diagnostic message is generated.
- **Warning** option
  The device continues measuring. The signal outputs and totalizers are not affected. A diagnostic message is generated.
- **Logbook entry only** option
  The device continues measuring. The diagnostic message is only displayed in the "Event logbook" submenu and does not alternate with the standard operational information displayed.

Assign behavior of diagnostic no. 957

Navigation Diagnostics → Diag. settings → Diag. config. → Process → Diagnostic no. 957

Description Select behavior for diagnostic event "957 Time-dependent flow limit exceeded".

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Additional information *Selection*
- **Off** option
  The diagnostic event is ignored and no diagnostic message is generated or logged.
- **Alarm** option
  The device stops measuring. The signal outputs and totalizers assume the specified alarm condition. A diagnostic message is generated.
- **Warning** option
  The device continues measuring. The signal outputs and totalizers are not affected. A diagnostic message is generated.
- **Logbook entry only** option
  The device continues measuring. The diagnostic message is only displayed in the "Event logbook" submenu and does not alternate with the standard operational information displayed.

Assign behavior of diagnostic no. 958

Navigation Diagnostics → Diag. settings → Diag. config. → Process → Diagnostic no. 958

Description Select behavior for diagnostic event "958 Time-dependent pressure limit exceeded".

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Additional information *Selection*
- **Off** option
  The diagnostic event is ignored and no diagnostic message is generated or logged.
- **Alarm** option
  The device stops measuring. The signal outputs and totalizers assume the specified alarm condition. A diagnostic message is generated.
- **Warning** option
  The device continues measuring. The signal outputs and totalizers are not affected. A diagnostic message is generated.
- **Logbook entry only** option
  The device continues measuring. The diagnostic message is only displayed in the "Event logbook" submenu and does not alternate with the standard operational information displayed.

Assign behavior of diagnostic no. 959

Navigation Diagnostics → Diag. settings → Diag. config. → Process → Diagnostic no. 959

Description Select behavior for diagnostic event "959 Event at status input detected"..

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Additional information *Selection*
- **Off** option
  The diagnostic event is ignored and no diagnostic message is generated or logged.
- **Alarm** option
  The device stops measuring. The signal outputs and totalizers assume the specified alarm condition. A diagnostic message is generated.
- **Warning** option
  The device continues measuring. The signal outputs and totalizers are not affected. A diagnostic message is generated.
- **Logbook entry only** option
  The device continues measuring. The diagnostic message is only displayed in the "Event logbook" submenu and does not alternate with the standard operational information displayed.

Assign behavior of diagnostic no. 960

Navigation Diagnostics → Diag. settings → Diag. config. → Process → Diagnostic no. 960

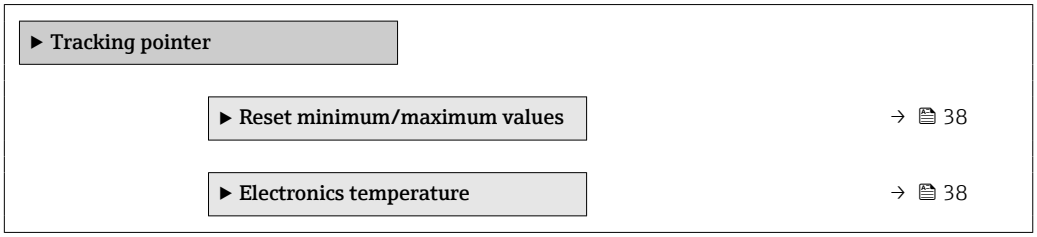
Description Select behavior for diagnostic event "960 Battery lifetime is less than 180 days".

Selection
- Off
- Alarm
- Warning
- Logbook entry only

Additional information *Selection*
- **Off** option
  The diagnostic event is ignored and no diagnostic message is generated or logged.
- **Alarm** option
  The device stops measuring. The signal outputs and totalizers assume the specified alarm condition. A diagnostic message is generated.
- **Warning** option
  The device continues measuring. The signal outputs and totalizers are not affected. A diagnostic message is generated.
- **Logbook entry only** option
  The device continues measuring. The diagnostic message is only displayed in the "Event logbook" submenu and does not alternate with the standard operational information displayed.

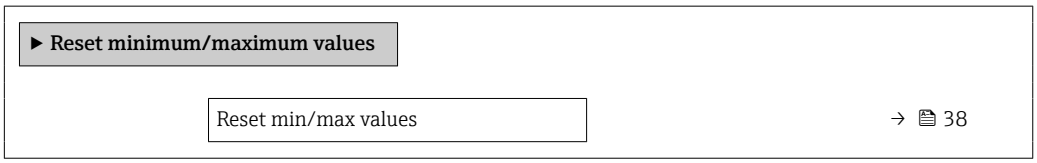
4.6 "Tracking pointer" submenu

Navigation Diagnostics → Tracking pointer



4.6.1 "Reset minimum/maximum values" submenu

Navigation Diagnostics → Tracking pointer → Reset values



Reset min/max values

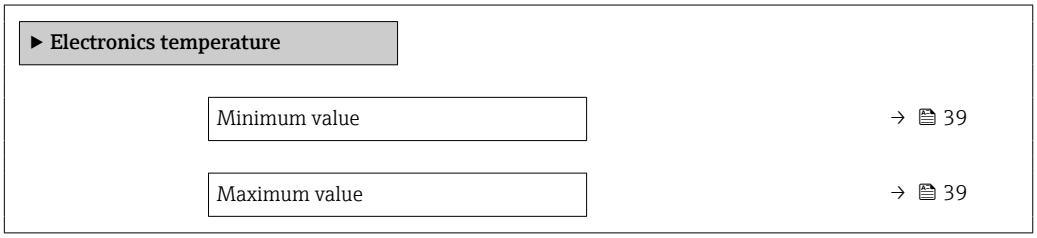
Navigation Diagnostics → Tracking pointer → Reset values → Reset min/max

Description Select the measured variable for which the minimum value and maximum value are to be reset.

Selection Cancel

4.6.2 "Electronics temperature" submenu

Navigation Diagnostics → Tracking pointer → Electronics temp



Minimum value

Navigation Diagnostics → Tracking pointer → Electronics temp → Minimum value

Description Displays the lowest electronics temperature measured so far.

Additional information:
The unit of measure is specified in the "Temperature unit" parameter.

User interface Signed floating-point number

Maximum value

Navigation Diagnostics → Tracking pointer → Electronics temp → Maximum value

Description Displays the highest electronics temperature measured so far.

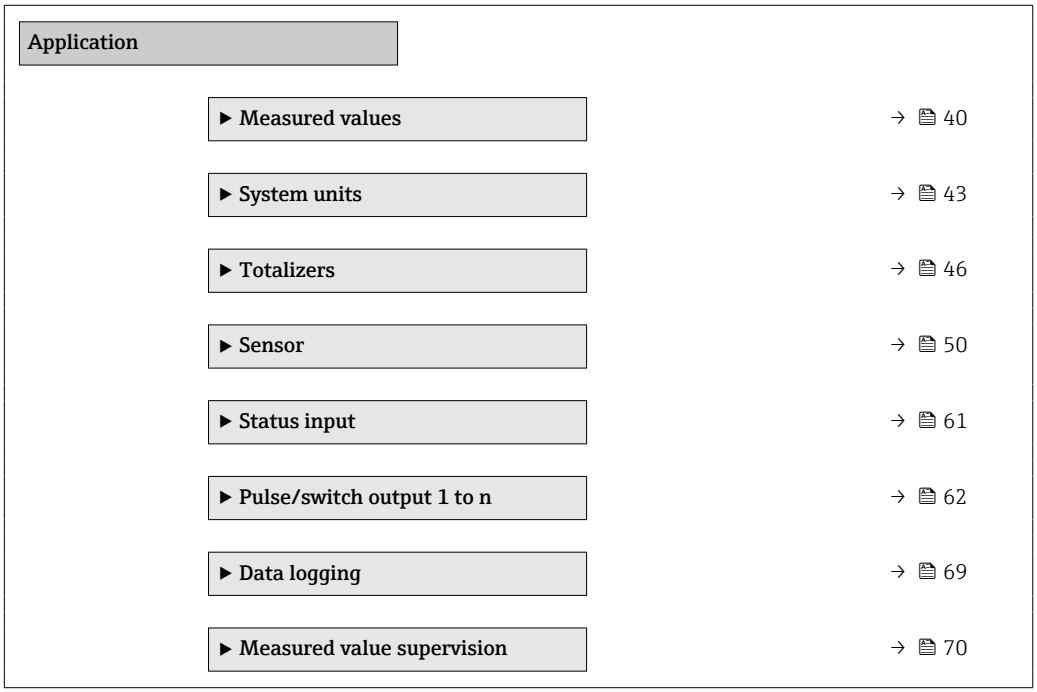
Additional information:
The unit of measure is specified in the "Temperature unit" parameter.

User interface Signed floating-point number

5 "Application" menu

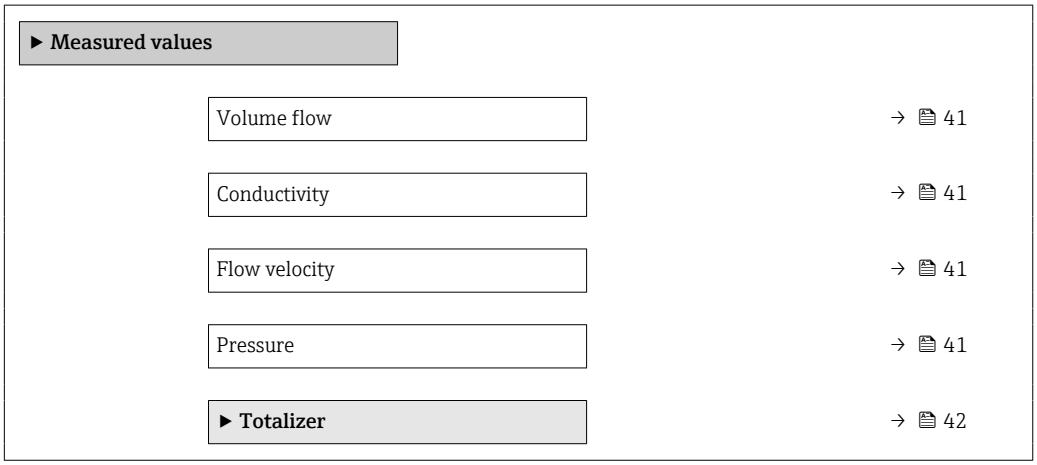
Targeted optimization to the application – comprehensive device settings from sensor technology to system integration for optimum application adaptation.

Navigation Application



5.1 "Measured values" submenu

Navigation Application → Measured values



Volume flow

Navigation Application → Measured values → Volume flow

Description Displays the volume flow currently measured.

Additional information:
The applicable unit of measure is specified in the "System units" submenu.

User interface Signed floating-point number

Conductivity

Navigation Application → Measured values → Conductivity

Description Displays the conductivity currently measured.

Additional information:
The applicable unit of measure is specified in the "System units" submenu.

User interface Positive floating-point number

Flow velocity

Navigation Application → Measured values → Flow velocity

Description Displays the flow velocity currently measured.

Additional information:
The applicable unit of measure is specified in the "System units" submenu.

User interface Signed floating-point number

Pressure

Navigation Application → Measured values → Pressure

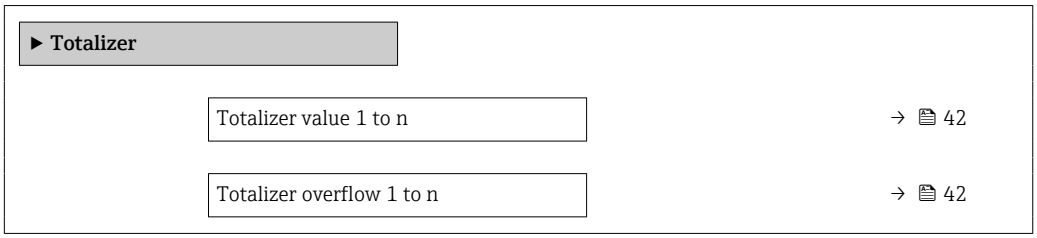
Description Displays the pressure currently measured.

Additional information:
The applicable unit of measure is specified in the "System units" submenu.

User interface Signed floating-point number

5.1.1 "Totalizer" submenu

Navigation Application → Measured values → Totalizer



Totalizer value 1 to n

Navigation Application → Measured values → Totalizer → Totalizer val. 1 to n

Description Displays the current totalizer counter.

Additional information:
Since the operating tool cannot display figures with more than 7 digits, the current counter above this range equals the sum of the totalizer counter plus the overflow displayed for the "Totalizer overflow " parameter.

Example for how to calculate the current totalizer counter when the value exceeds the 7 digit display range limit of the operating tool:
- Value of "Totalizer value " parameter: 1,968,457 m³
- Value of "Totalizer overflow " parameter: 1 × 107 m³ = 10,000,000 m³
- Current totalizer reading: 11,968,457 m³

In the event of an error, the totalizer behaves as specified in the "Failure mode" parameter.

User interface Signed floating-point number

Totalizer overflow 1 to n

Navigation Application → Measured values → Totalizer → Tot. overflow 1 to n

Description Displays the current totalizer overflow.

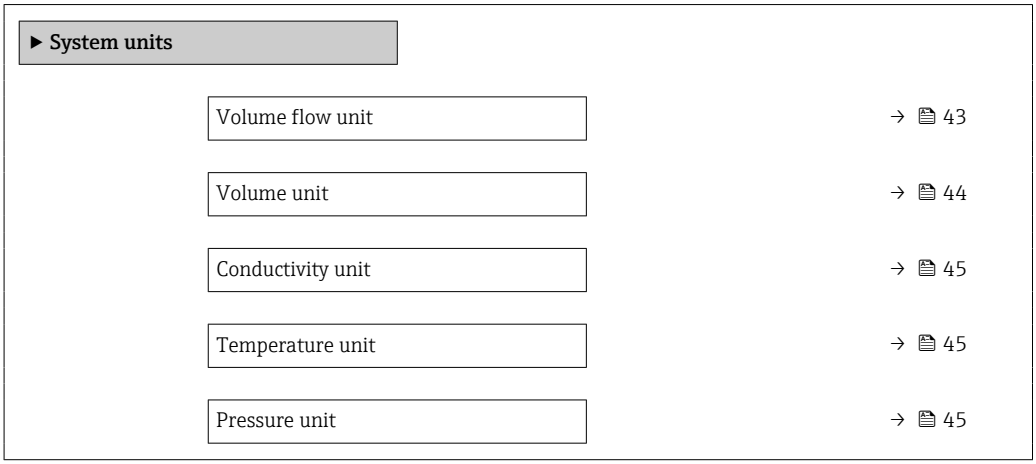
Additional information:
If the current totalizer counter exceeds the operating tool's maximum numerical display range of 7 digits, the amount above this range is expressed as an overflow. The current totalizer counter therefore equals the sum of the overflow and the totalizer value displayed in the "Totalizer value " parameter.

Example of how to calculate the current totalizer counter when the value exceeds the 7 digit display limit of the operating tool:
- Value of "Totalizer value " parameter: 1,968,457 m³
- Value of "Totalizer overflow " parameter: 1 × 10^7 m³ = 10,000,000 m³
- Current totalizer reading: 11,968,457 m³

User interface −32 000.0 to 32 000.0

5.2 " Units" submenu

Navigation Application → Units



Volume flow unit

Navigation Application → System units → Volume flow unit

Description Select volume flow unit.

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
- $MMft^3/s$
- $MMft^3/min$
- $MMft^3/h$
- 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)

Volume unit

Navigation Application → System units → Volume unit

Description Select volume unit.

Selection

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

US units
- af
- ft^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)

Conductivity unit

Navigation Application → System units → Conductiv. unit

Description Select conductivity unit.

Selection

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

Temperature unit

Navigation Application → System units → Temperature unit

Description Select temperature unit.

Selection

SI units
- °C
- K

US units
- °F
- °R

Pressure unit

Navigation Application → System units → Pressure unit

Description Select process pressure unit.

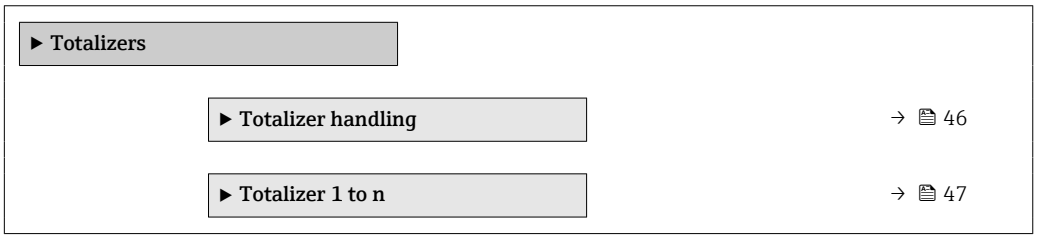
Selection

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

US units
- psi a
- psi g

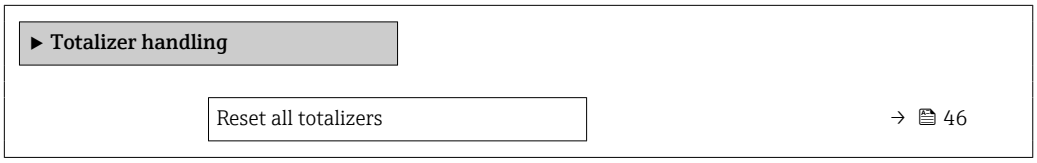
5.3 "Totalizers" submenu

Navigation Application → Totalizers



5.3.1 "Totalizer handling" submenu

Navigation Application → Totalizers → Totalizer



Reset all totalizers

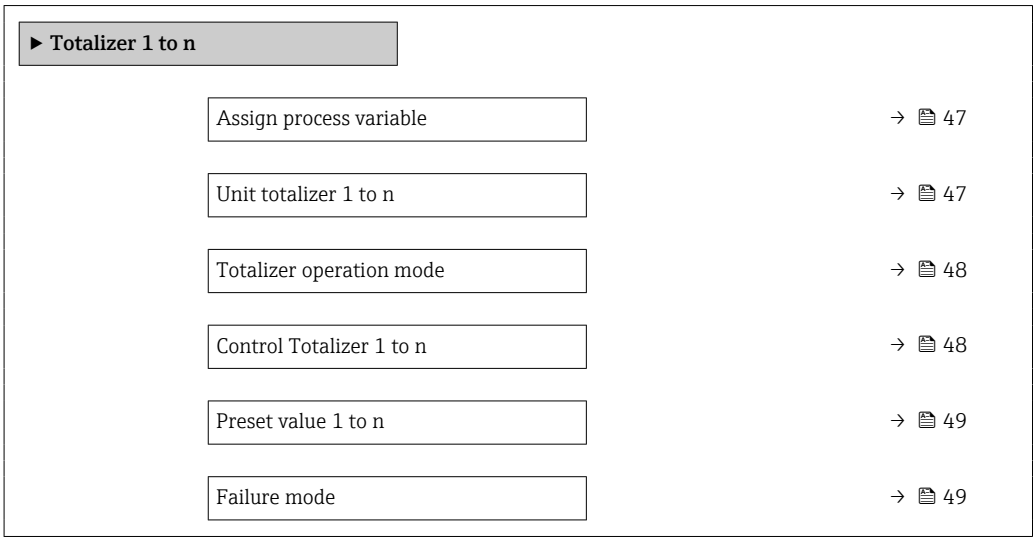
Navigation Application → Totalizers → Totalizer → Reset all tot.

Description Reset all totalizers to "0" and restart the totaling process. All flow quantities thus far totalized are thereby deleted.

Selection
- Cancel
- Reset + totalize

5.3.2 "Totalizer 1 to n" submenu

Navigation Application → Totalizers → Totalizer 1 to n



Assign process variable

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

Description Select process variable for totalizer.

Additional information:
If the option selected is changed, the device resets the totalizer to "0".

Selection
- Off
- Volume flow

Unit totalizer 1 to n

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

Description Select process variable totalizer unit.

Selection

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

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

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

* Visibility depends on order options or device settings

or

Other units
None *

* Visibility depends on order options or device settings

Totalizer operation mode

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

Description Select totalizer calculation mode.

Selection
- Net flow total
- Forward flow total
- Reverse flow total

Additional information *Selection*
- **Net flow total** option
  The flow values in the forward and reverse flow directions are totalized and netted against each other. Net flow is recorded in the flow direction.
- **Forward flow total** option
  Only the flow in the forward flow direction is totalized.
- **Reverse flow total** option
  Only the flow in the reverse flow direction is totalized (= reverse flow quantity).

Control Totalizer 1 to n

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

Description Operate the totalizer.

Selection
- Totalize
- Reset + hold
- Preset + hold
- Reset + totalize
- Hold

Additional information *Selection*
- **Totalize** option
  The totalizer is started or continues running.
- **Reset + hold** option
  The totaling process is stopped and the totalizer is reset to "0".
- **Preset + hold** option
  The totaling process is stopped and the totalizer is set to the start value specified in the "Preset value " parameter.
- **Reset + totalize** option
  The totalizer is reset to "0" and the totaling process is restarted.
- **Hold** option
  Totalizing is stopped.

Preset value 1 to n

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

Description Specify start value for totalizer.

User entry Signed floating-point number

Failure mode

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

Description Specify how the totalizer should behave in the event of a device alarm.

Additional information:
The failsafe mode that applies to any other totalizers or outputs is specified separately in other parameters and is not impacted by this setting.

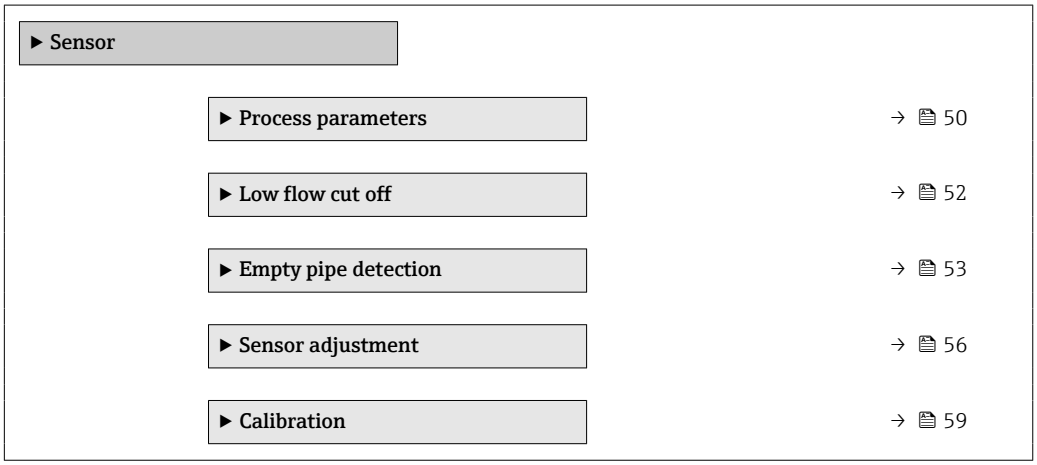
Selection
- Stop
- Actual value
- Last valid value

Additional information *Selection*

- **Stop** option
  The totalizer is stopped in the event of a device alarm.
- **Actual value** option
  The totalizer continues to totalize based on the current value measured; the device alarm is ignored.
- **Last valid value** option
  The totalizer continues to totalize based on the last valid value measured before the device alarm occurred.

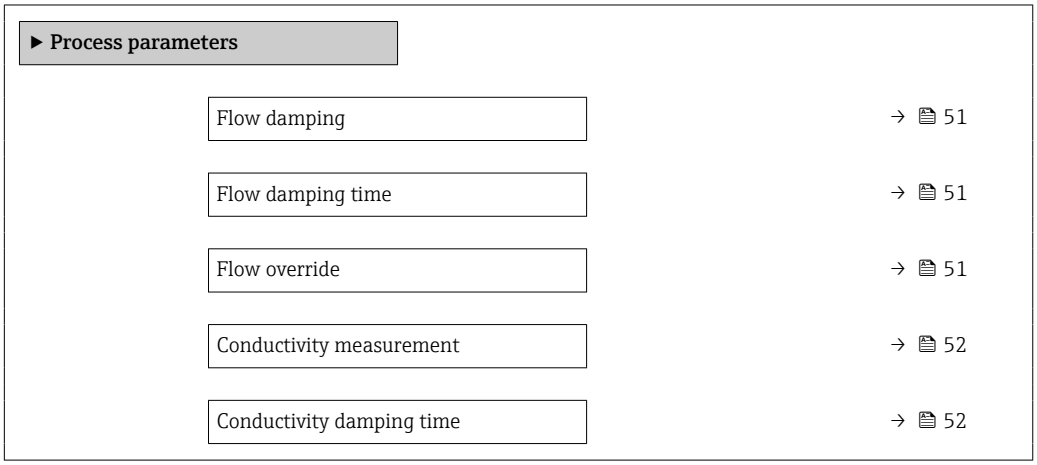
5.4 "Sensor" submenu

Navigation Application → Sensor



5.4.1 "Process parameters" submenu

Navigation Application → Sensor → Process param.



Flow damping

Navigation Application → Sensor → Process param. → Flow damping

Description Enter value for damping of the flow measured value in order to reduce the variability of the flow measured value when exposed to interference.

Additional information:
The depth of the flow filter is determined by this setting. As the filter depth increases, so does the reaction time of the device.
- Value = 0: No damping. Damping of 0 is not recommended, as the measuring signal is then so noisy that it is almost impossible to perform a measurement.
- Value > 0: Damping increases

Optimal damping depends on the measuring period.

Damping impacts the following measuring device variables:
- Outputs
- Low flow cut off
- Totalizers

User entry 0 to 15

Flow damping time

Navigation Application → Sensor → Process param. → FlowDampingTime

Description Enter time constant for flow damping (PT1 element).
- Value = 0: No damping
- Value > 0: Damping increases

Additional information:
Damping is implemented by means of a proportional transmission behavior with first order delay (PT1 element).

User entry 0 to 99.9 s

Flow override

Navigation Application → Sensor → Process param. → Flow override

Description Stops the measuring process. Can be used for example when cleaning the pipeline.

Selection
- Off
- On

Additional information *Selection*

"On" option
Activates flow override. The diagnostic message "453 Flow override active" is generated.

Additional information:
Output values:
- Temperature: Measurement continues
- Totalizers 1 to 3: No longer totalize

Conductivity measurement

Navigation Application → Sensor → Process param. → Conduct. measur.

Description Switch conductivity measurement on or off.

Additional information:
To be able to measure conductivity, the medium must have a minimum conductivity of 5 µS/cm.

Selection
- Off
- On

Conductivity damping time

Navigation Application → Sensor → Process param. → ConductDampTime

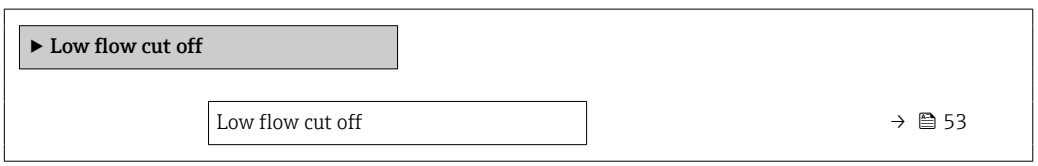
Description Enter time constant for conductivity damping (PT1 element):
- Value = 0: No damping
- Value > 0: Damping increases

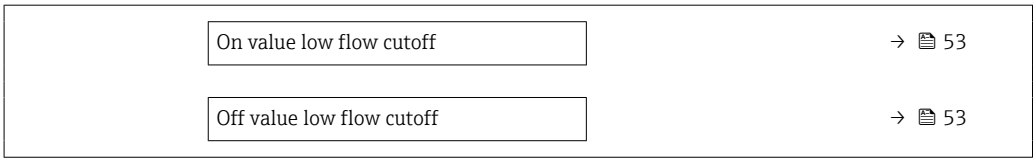
Additional information:
Damping is implemented by means of a proportional transmission behavior with first order delay (PT1 element).

User entry 0 to 999.9 s

5.4.2 "Low flow cut off" submenu

Navigation Application → Sensor → Low flow cut off





Low flow cut off

Navigation Application → Sensor → Low flow cut off → Low flow cut off

Description Select process variable for low flow cut off to activate low flow cut off.

Selection
- Off
- Volume flow

On value low flow cutoff

Navigation Application → Sensor → Low flow cut off → On value

Description Enter on value to switch on low flow cut off.

Value = 0: No low flow cut off
Value > 0: Low flow cut off is activated

User entry Positive floating-point number

Off value low flow cutoff

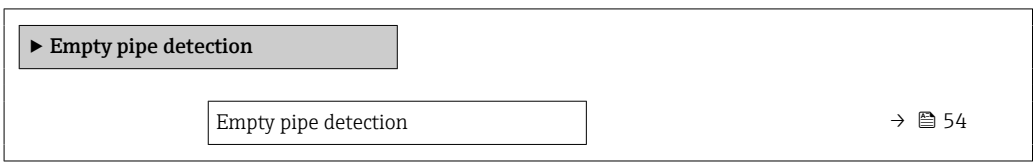
Navigation Application → Sensor → Low flow cut off → Off value

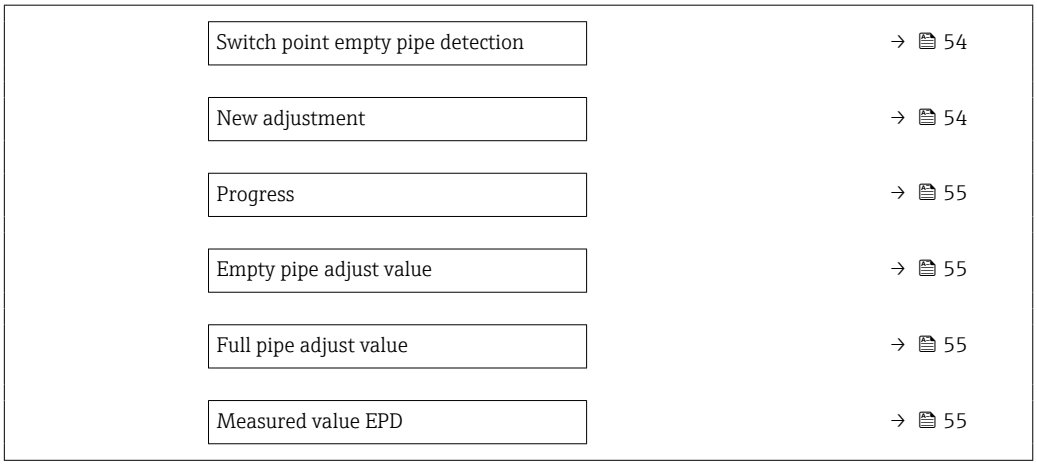
Description Enter off value to switch off low flow cut off. The off value is entered as a positive hysteresis with respect to the on value.

User entry 0 to 100.0 %

5.4.3 "Empty pipe detection" submenu

Navigation Application → Sensor → Empty pipe det.





Empty pipe detection

Navigation Application → Sensor → Empty pipe det. → Empty pipe det.

Description Switch empty pipe detection on or off. Switch on empty pipe detection to detect a partially filled or empty measuring tube.

Selection
- Off
- On

Switch point empty pipe detection

Navigation Application → Sensor → Empty pipe det. → Switch point EPD

Description Enter hysteresis in % below which the measuring tube will be detected as empty.

User entry 0 to 100 %

New adjustment

Navigation Application → Sensor → Empty pipe det. → New adjustment

Description Select empty pipe or full pipe adjustment to perform a new adjustment. To adjust empty pipe detection, perform the empty pipe adjustment first and then the full pipe adjustment.

Additional information:
The measuring device is pre-adjusted at production using water (approx. 300 µS/cm). For liquids that deviate from this conductivity, a new empty pipe and full pipe adjustment must be performed on site.

Selection
- Cancel
- Empty pipe adjust
- Full pipe adjust

Progress

Navigation Application → Sensor → Empty pipe det. → Progress

Description Shows the progress of the process.

User interface
- Ok
- Busy
- Not ok

Empty pipe adjust value

Navigation Application → Sensor → Empty pipe det. → Empty pipe value

Description Displays adjustment value when the measuring tube is empty.

NOTE
Users logged on in the Service role have write access!

User interface Positive floating-point number

Full pipe adjust value

Navigation Application → Sensor → Empty pipe det. → Full pipe value

Description Displays adjustment value when the measuring tube is full.

NOTE
Users logged on in the Service role have write access!

User interface Positive floating-point number

Measured value EPD

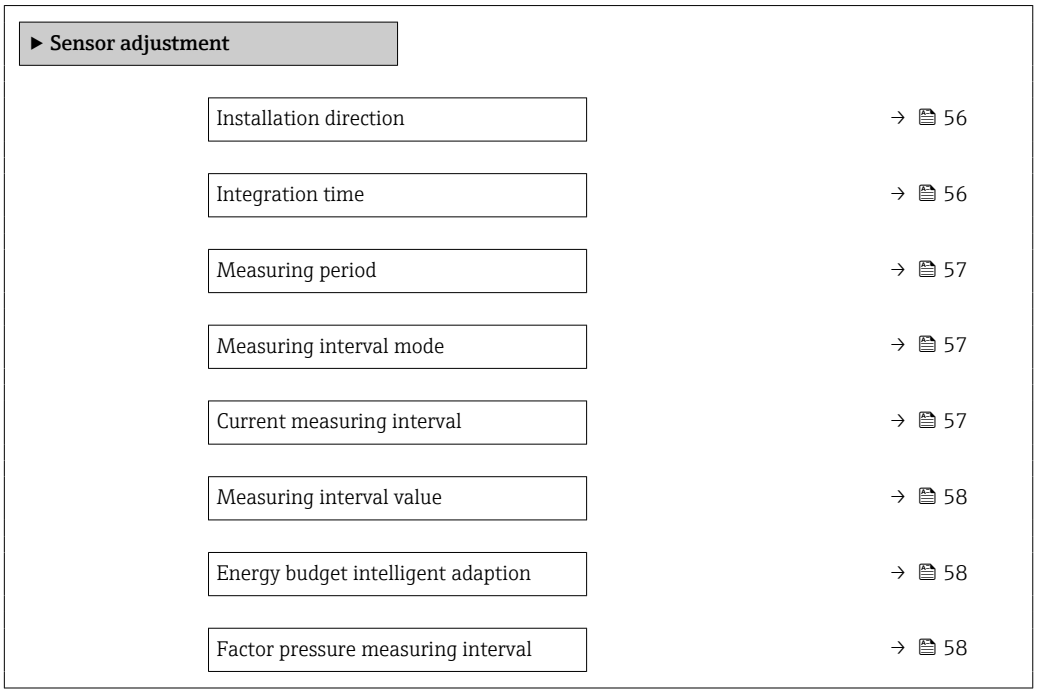
Navigation Application → Sensor → Empty pipe det. → Meas. value EPD

Description Displays the value currently measured for empty pipe detection.

User interface Positive floating-point number

5.4.4 "Sensor adjustment" submenu

Navigation Application → Sensor → Sensor adjustm.



Installation direction

Navigation Application → Sensor → Sensor adjustm. → Install. direct.

Description Select sign of flow direction

Selection
- Forward flow
- Reverse flow

Integration time

Navigation Application → Sensor → Sensor adjustm. → Integration time

Description Displays the duration of an integration cycle.

NOTE
Users logged on in the Service role have write access!

User interface 1 to 65 ms

Measuring period

Navigation Application → Sensor → Sensor adjustm. → Measuring period

Description Displays the duration of a full measuring period.

Additional information:
The measuring period is the time span during which the excitation of the magnetic field takes place and a measuring point is created.

NOTE
Users logged on in the Service role have write access!

User interface 0 to 1 000 ms

Measuring interval mode

Navigation Application → Sensor → Sensor adjustm. → MeasurIntervMod

Description Select measuring interval mode. The measuring interval is the time span between two measuring periods.

Selection
- Fixed value
- Intelligent adaptation

Additional information *Selection*
- **Fixed value** option
  The measuring interval is specified in the "Measuring interval value" parameter. This option is recommended to optimize battery lifetime.
- **Intelligent adaptation** option
  Under normal process conditions, the measuring device measures according to the measuring interval specified in the "Measuring interval value" parameter. If the process conditions change, the measuring device measures in shorter intervals according to the usage rate specified in the "Energy budget intelligent adaption" parameter. This option is recommended to optimize the measuring result.

Current measuring interval

Navigation Application → Sensor → Sensor adjustm. → Cur.meas.interv.

Description Shows the measuring interval currently used.

User interface Positive floating-point number

Measuring interval value

Navigation Application → Sensor → Sensor adjustm. → Meas.interv.val.

Description Enter the value for the measuring interval.

Additional information:
To increase battery life, set as long an interval as possible. To optimize the measuring result, set as short an interval as possible.

User entry 0 to 60 s

Energy budget intelligent adaption

Navigation Application → Sensor → Sensor adjustm. → Energy budget

Description Set the energy budget.

Additional information:
- Value = 100%: Energy budget usage is maximized. The measuring device adapts the measuring interval to flow changes frequently.
- Value = 50%: Mean energy budget usage. The measuring device adapts the measuring interval to flow changes at a frequency that requires half as much energy as when usage of the energy budget is maximized.
- Value = 1%: Low energy budget usage. The measuring device does not frequently adapt the measuring interval to flow changes.

NOTE
The higher the energy budget usage, the shorter the battery life span!

User entry 1 to 100 %

Factor pressure measuring interval

Navigation Application → Sensor → Sensor adjustm. → FactMeasurInterv

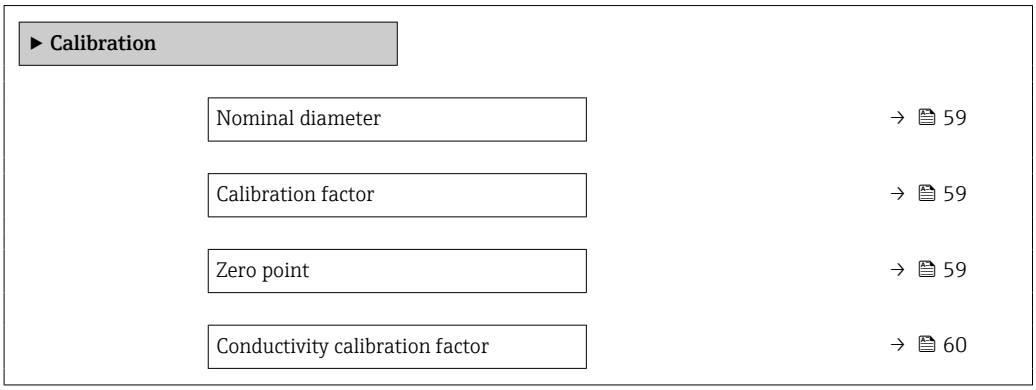
Description Enter factor for pressure measuring interval as a multiple of the measuring interval. To increase battery life, enter as large of a factor as possible.

Example:
"Measuring interval value" parameter value = 15 s
"Factor pressure measuring interval" parameter value = 10
Pressure measuring interval = 150 s

User entry 0 to 65 535

5.4.5 "Calibration" submenu

Navigation Application → Sensor → Calibration



Nominal diameter

Navigation Application → Sensor → Calibration → Nominal diameter

Description Shows the nominal diameter of the sensor.

User interface Character string comprising numbers, letters and special characters (#20)

Calibration factor

Navigation Application → Sensor → Calibration → Cal. factor

Description Displays the current calibration factor for the flow rate measuring sensor.

Additional information:
The factory setting for the calibration factor can be found on the sensor's nameplate.

User interface Positive floating-point number

Zero point

Navigation Application → Sensor → Calibration → Zero point

Description Displays the zero point correction value for the sensor.

NOTE
Users logged on in the Service role have write access!

User interface Signed floating-point number

Conductivity calibration factor

Navigation Application → Sensor → Calibration → Cond. cal. fact.

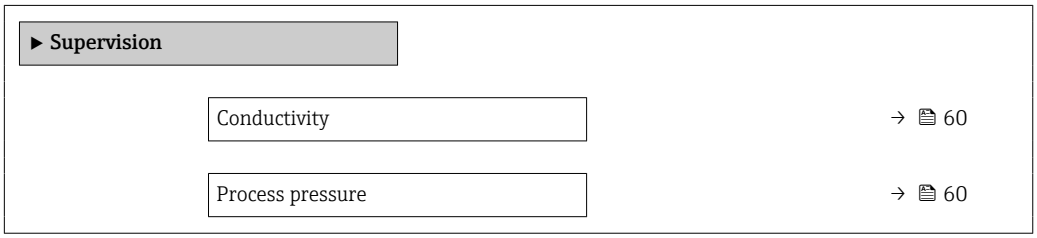
Description Displays calibration factor for conductivity measurement.

NOTE
Users logged on in the Service role have write access!

User interface 0.01 to 10 000

5.4.6 "Supervision" submenu

Navigation Application → Sensor → Supervision



Conductivity

Navigation Application → Sensor → Supervision → Conductivity

Description Displays the conductivity currently measured.

Additional information:
The applicable unit of measure is specified in the "System units" submenu.

User interface Positive floating-point number

Process pressure

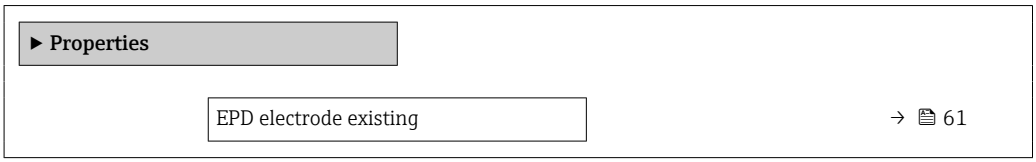
Navigation Application → Sensor → Supervision → Process pressure

Description Displays the currently measured process pressure.

User interface Signed floating-point number

5.4.7 "Properties" submenu

Navigation Application → Sensor → Properties



EPD electrode existing

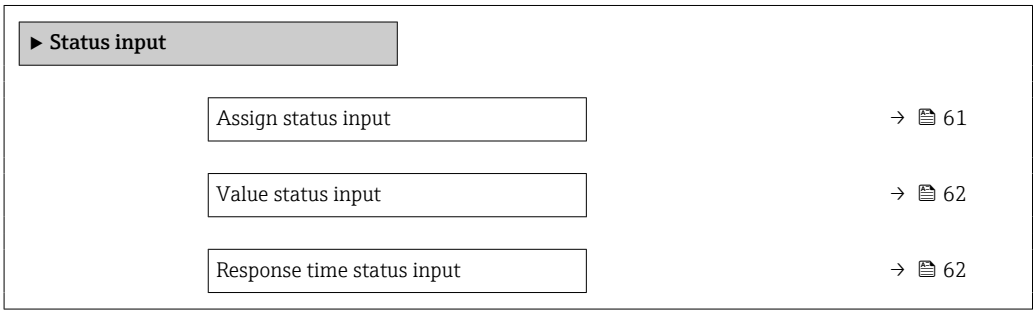
Navigation Application → Sensor → Properties → EPD electrode

Description Shows whether the empty pipe detection electrode exists.

User interface
- No
- Yes

5.5 "Status input" submenu

Navigation Application → Status input



Assign status input

Navigation Application → Status input → Assign stat.inp.

Description Assign a function to the status input.

Additional information:
Ensure the "Off" option is selected, before enabling the measuring device for custody transfer.

Selection
- Off
- Reset totalizer 1
- Reset totalizer 2

- Reset totalizer 3
- Reset all totalizers
- Generate logbook entry

Additional information *Selection*

"Generate logbook entry" option
If the condition of the status input changes, a logbook entry is created.

Value status input

Navigation Application → Status input → Val.stat.inp.

Description Indicates the current input signal level.

Additional information:
When a voltage is applied to the status input, the signal level indicates "High". Otherwise it indicates "Low".

User interface
- High
- Low

Response time status input

Navigation Application → Status input → Response time

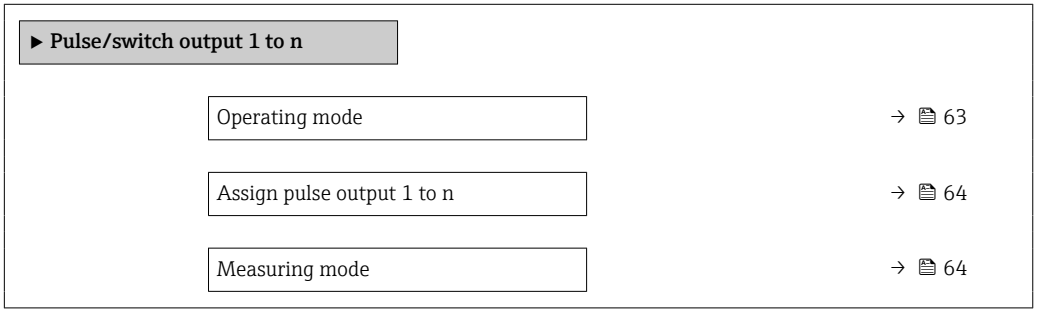
Description Specify the minimum amount of time the input signal level must be present before the selected function is triggered.

User entry 50 to 200 ms

5.6 "Pulse/switch output 1 to n" submenu

Configuring the pulse/frequency/switch output

Navigation Application → Pulse/switch 1 to n



Operating mode

Navigation Application → Pulse/switch 1 to n → Operating mode

Description Set the output mode to pulse or switch.

Selection
- Pulse
- Switch

Additional information *Selection*

- **Pulse** option
  Quantitatively proportional pulse with pulse width to be configured. Whenever a specific volume has been reached (pulse value), a pulse is emitted, the duration of which is set within the "Pulse width" parameter.
- **Switch** option
  Indicates when the state of the device changes, e.g. when a specified limit value is reached.
  Additional information:
  - The switch output can be in one of two states: either it is conductive or it is non-conductive.
  - When the function assigned to the switch output is triggered, the switch output will depending on the output configuration either be continuously conductive or continuously non-conductive or, in case of battery-operated devices, it will emit a pulse, i.e. the switch output will be closed and conductive for the duration of the pulse.
  - The switch output is used to display diagnostic information at the system level, e. g. by connecting a lamp that lights up when the function assigned is triggered.

Assign pulse output 1 to n

Navigation Application → Pulse/switch 1 to n → Assign pulse 1 to n

Description Select process variable for pulse output.

Selection
- Off
- Volume flow

Measuring mode

Navigation Application → Pulse/switch 1 to n → Measuring mode

Description Select measuring mode for pulse output.

Selection
- Forward flow
- Forward/Reverse flow
- Reverse flow

Additional information *Selection*

- **Forward flow** option
  For positive flow a pulse is emitted, for negative flow not.
- **Forward/Reverse flow** option
  For both positive and negative flow a pulse is emitted (absolute value), whereby no distinction is made between positive and negative flow.
- **Reverse flow** option
  For negative flow a pulse is emitted, for positive flow not.

Switch output function

Navigation Application → Pulse/switch 1 to n → Switch out funct

Description Assign a function to the switch output.

Additional information:
- The state of the switch output (on or off) when the assigned function is triggered can be inverted in the "Invert output signal" parameter
- The "Invert output signal" parameter is not available for all devices.

Selection
- Off
- On
- Diagnostic behavior
- Limit
- Flow direction check
- Status

Additional information *Selection*
- **Off** option
  The switch output is permanently switched off (open, non-conductive).
- **On** option
  The switch output is permanently switched on (closed, conductive).
- **Diagnostic behavior** option
  Emits a pulse if there is a pending diagnostic event of the assigned behavioral category.
- **Limit** option
  Emits a pulse if a limit value specified for the process variable has been reached.
- **Flow direction check** option
  Emits a pulse when the flow direction changes.
- **Status** option
  Emits a pulse to indicate the device status for empty pipe detection or low flow cut off, whichever option is assigned to the switch output.

Assign diagnostic behavior

Navigation Application → Pulse/switch 1 to n → Assign diag. beh

Description Select the diagnostic behavior for which the switch output should emit a pulse.

Selection
- Alarm
- Alarm or warning
- Warning

Additional information *Selection*
- **Alarm** option
  The switch output only emits a pulse for diagnostic events of the "Alarm" category.
- **Alarm or warning** option
  The switch output emits a pulse for diagnostic events of the "Alarm" or "Warning" category.
- **Warning** option
  The switch output only emits a pulse for diagnostic events of the "Warning" category.

Assign limit

Navigation Application → Pulse/switch 1 to n → Assign limit

Description Select the process variable to monitor in case the specified limit value is exceeded. If a limit value for the selected process variable is exceeded, the output emits a pulse.

Selection
- Off
- Volume flow
- Flow velocity
- Conductivity *
- Totalizer 1
- Totalizer 2
- Totalizer 3
- Pressure *
- Battery state of charge

Assign status

Navigation Application → Pulse/switch 1 to n → Assign status

Description Select the device status to display for the switch output.

Additional information:
If the switch on point for empty pipe detection / low flow cut off is reached, the output is conductive. Otherwise, the switch output is non-conductive.

Selection
- Empty pipe detection
- Low flow cut off

Value per pulse

Navigation Application → Pulse/switch 1 to n → Value per pulse

Description Enter the measured value to which a pulse corresponds.

Additional information:
Weighting of the pulse output with a quantity.
The lower the pulse value, the
– better the resolution.
– higher the frequency of the pulse response.

User entry Signed floating-point number

* Visibility depends on order options or device settings

Pulse width

Navigation Application → Pulse/switch 1 to n → Pulse width

Description Specify the duration of the output pulse.

Additional information:
The maximum pulse rate is defined by fmax = 1 / (2 × pulse width). The interval between two pulses (P) is at least as long as the specified pulse width (B).
The maximum flow is defined by Qmax = fmax × pulse value. If the flow exceeds these limit values, the measuring device displays the diagnostic message "443 Pulse output faulty".

Example:
- Pulse value: 0.1 g
- Pulse width: 0.1 ms
- fmax: 1 / (2 × 0.1 ms) = 5 kHz
- Qmax: 5 kHz × 0.1 g = 0.5 kg/s

User entry 0.1 to 500 ms

Failure mode

Navigation Application → Pulse/switch 1 to n → Failure mode

Description Specify how the output should behave in the event of a device alarm.

Additional information:
For safety reasons, it is recommended that the behavior of the output in the event of a device alarm be predefined.

Selection
- Actual value
- No pulses

Additional information *Selection*

- **Actual value** option
  In the event of a device alarm, the pulse output continues based on the current flow measurement. The issue is ignored.
  Additional information:
  A device alarm indicates a serious malfunction of the measuring device that may impact the measurement quality to the point that accuracy can no longer be ensured. This option is only recommended if the necessary safeguards are in place to ensure that no alarm condition can impact the measurement quality.
- **No pulses** option
  In the event of a device alarm, the pulse output is switched off.

Switch-on value

Navigation Application → Pulse/switch 1 to n → Switch-on value

Description Enter limit value for the switch-on point (process variable > switch-on value = closed, conductive).

Additional information:
To use a hysteresis: Switch-on point > Switch-off point.

User entry Signed floating-point number

Switch-off value

Navigation Application → Pulse/switch 1 to n → Switch-off value

Description Enter limit value for the switch-off point (process variable < switch-off value = open, non-conductive).

Additional information:
To use a hysteresis: Switch-on point > Switch-off point.

User entry Signed floating-point number

Failure mode

Navigation Application → Pulse/switch 1 to n → Failure mode

Description Specify how the output should behave in the event of a device alarm.

Additional information:
For safety reasons, it is recommended that the behavior of the output in the event of a device alarm be predefined.

Selection
- Actual status
- Open
- Closed

Additional information *Selection*
- **Actual status** option
  In the event of a device alarm, the issue is ignored and the switch output adopts the behavior currently specified for the "Switch output function" parameter.
- **Open** option
  In the event of a device alarm, the switch output's transistor is set to "non-conductive".

Assign flow direction check

Navigation Application → Pulse/switch 1 to n → Assign dir.check

Description Select process variable for flow direction monitoring.

Selection
- Off
- Volume flow

Switch state 1 to n

Navigation Application → Pulse/switch 1 to n → Switch state 1 to n

Description Indicates the current switch output status.

User interface
- Open
- Closed

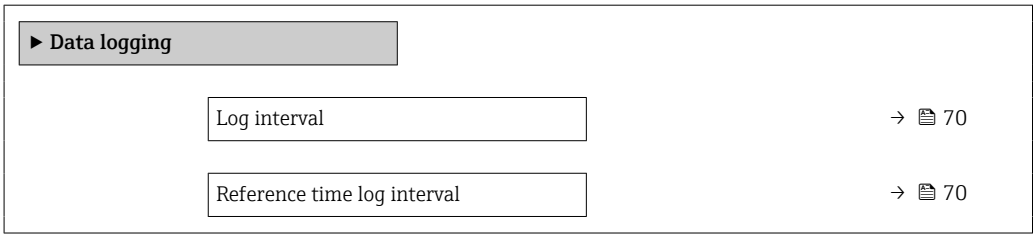
Additional information *User interface*
- **Open** option
  The switch output is not conductive.
- **Closed** option
  The switch output is conductive.

5.7 "Custody transfer" submenu

For detailed information on the parameter descriptions for "custody transfer", see the Special Documentation for the device

5.8 "Data logging" submenu

Navigation Application → Data logging



Log interval

Navigation Application → Data logging → Log interval

Description Select the interval at which to log measured values.

Selection
- 15 seconds
- 30 seconds
- 1 minute
- 5 minutes
- 10 minutes
- 15 minutes
- 30 minutes
- 1 hour
- 2 hours
- 4 hours
- 6 hours
- 12 hours
- 24 hours

Reference time log interval

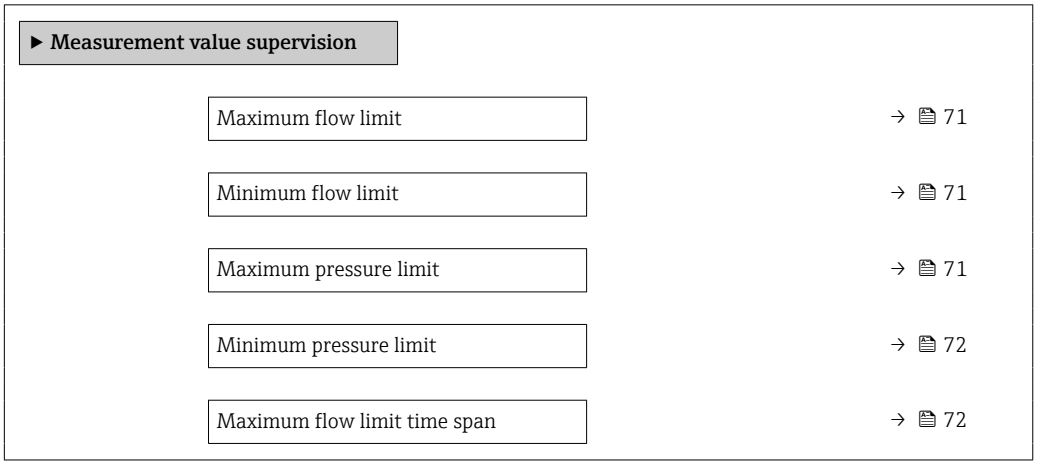
Navigation Application → Data logging → IntervalRefTime

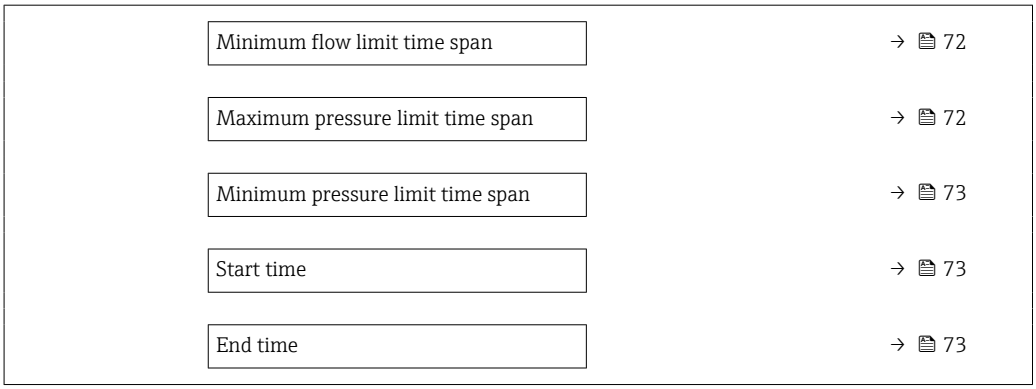
Description Enter the reference time to which the log interval for data logging refers. Data is logged at this time. Additional information: The measured value log entry times (3) derive from the reference time specified (1) and the log interval (2).

User entry Positive integer

5.9 "Measured value supervision" submenu

Navigation Application → MeasValSupervis.





Upper flow limit value

Navigation Application → MeasValSupervis. → Upper flow limit

Description Enter the upper flow limit value to monitor the flow. If the flow is greater than the specified limit value, the measuring device generates a diagnostic message.

User entry Signed floating-point number

Lower flow limit value

Navigation Application → MeasValSupervis. → Lower flow limit

Description Enter the lower flow limit value to monitor the flow. If the flow is less than the specified limit value, the measuring device generates a diagnostic message.

User entry Signed floating-point number

Upper pressure limit value

Navigation Application → MeasValSupervis. → UppPressureLimit

Description Enter the upper pressure limit value to monitor the pressure. If the pressure is higher than the specified limit value, the measuring device generates a diagnostic message.

User entry Positive floating-point number

Lower pressure limit value

Navigation Application → MeasValSupervis. → LowPressureLimit

Description Enter the lower pressure limit value to monitor the pressure. If the pressure is lower than the specified limit value, the measuring device generates a diagnostic message.

User entry Positive floating-point number

Time-dependent upper flow limit value

Navigation Application → MeasValSupervis. → TimedepUpperFlow

Description Enter an upper flow limit value to monitor the flow for the specified time span. If the flow within the specified time span is greater than the specified limit value, the measuring device generates a diagnostic message.

Additional information:
The applicable time period is specified using the "Start time time-dependent limit values" and the "End time time-dependent limit values" parameters.

User entry Signed floating-point number

Time-dependent lower flow limit value

Navigation Application → MeasValSupervis. → TimedepLowerFlow

Description Enter a lower flow limit value to monitor the flow for the specified time span. If the flow within the specified time span is less than the specified limit value, the measuring device generates a diagnostic message.

Additional information:
The applicable time period is specified using the "Start time time-dependent limit values" and the "End time time-dependent limit values" parameters.

User entry Signed floating-point number

Time-depen. upper pressure limit value

Navigation Application → MeasValSupervis. → TimedepUppPress

Description Enter an upper pressure limit value to monitor the pressure for the specified time span. If the pressure within the specified time span is higher than the specified limit value, the measuring device generates a diagnostic message.

Additional information:
The applicable time period is specified using the "Start time time-dependent limit values" and the "End time time-dependent limit values" parameters.

User entry Positive floating-point number

Time-depen. lower pressure limit value

Navigation Application → MeasValSupervis. → TimedepLowPress

Description Enter the lower pressure limit value to monitor the pressure for the specified time span. If the pressure within the specified time span is lower than the specified limit value, the measuring device generates a diagnostic message.

Additional information:
The applicable time period is specified using the "Start time time-dependent limit values" and the "End time time-dependent limit values" parameters.

User entry Positive floating-point number

Start time time-dependent limit values

Navigation Application → MeasValSupervis. → StartTime limits

Description Enter the start time for the time period that applies to the time-dependent flow and pressure limit values.

User entry Positive integer

End time time-dependent limit values

Navigation Application → MeasValSupervis. → End time limits

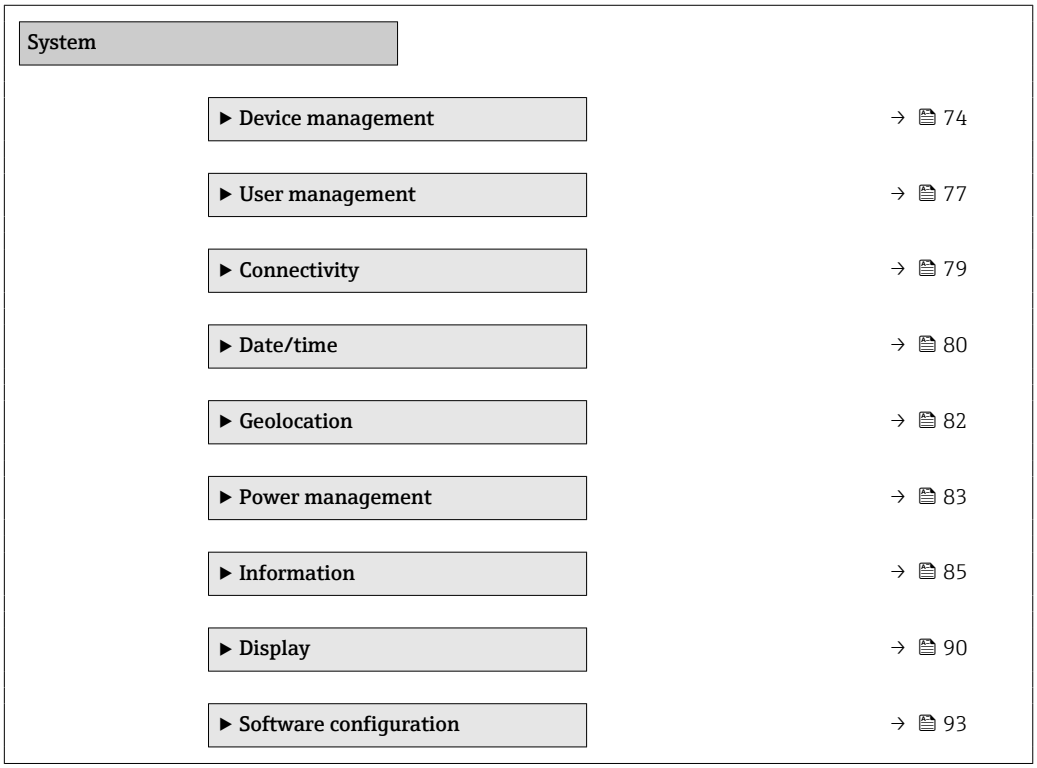
Description Enter the end time for the time period that applies to the time-dependent flow and pressure limit values.

User entry Positive integer

6 "System" menu

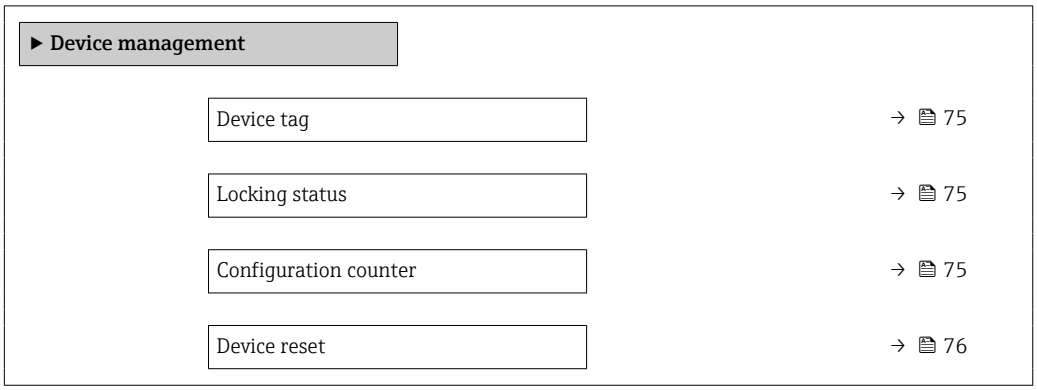
Overall device management and security settings – management of system settings and adaption to operational requirements.

Navigation System



6.1 "Device management" submenu

Navigation System → Device manag.



Device tag

Navigation System → Device manag. → Device tag

Description Enter a unique name for the measuring point to identify the device quickly within the plant.

User entry Character string comprising numbers, letters and special characters (#32)

Locking status

Navigation System → Device manag. → Locking status

Description Indicates the write protection with the highest priority that is currently active.

User interface
- Hardware locked
- CT active - defined parameters
- CT active - all parameters
- Temporarily locked

Additional information *User interface*
- **Hardware locked** option
  The DIP switch for the hardware lock is enabled. As a result write access to the parameters is locked.
- **Temporarily locked** option
  Due to internal procedures that are currently in progress (e.g. data upload/download, reset, etc.), write access to the parameters is temporarily locked.The parameters can be modified again, once the internal procedures are complete.

Configuration counter

Navigation System → Device manag. → Config. counter

Description Displays the counter for changes to the device parameters.

Additional information:
- If the value for a static parameter is changed when optimizing or configuring the parameter, the counter is incremented by 1. This is to enable tracking different parameter versions.
- When multiple parameters are changed simultaneously, e.g. when loading parameters into the device from an external source such as FieldCare, the counter may display a higher value. The counter cannot be reset, nor is it reset to a default value on performing a device reset.
- Once the counter has reached the value 65535, it restarts at 0.

User interface 0 to 65 535

Device reset

Navigation System → Device manag. → Device reset

Description Reset the device configuration - either entirely or in part - to a defined state.

Selection
- Cancel
- To delivery settings
- Restart device
- Restore S-DAT backup *
- Shut down device
- Create T-DAT backup
- Restore T-DAT backup *

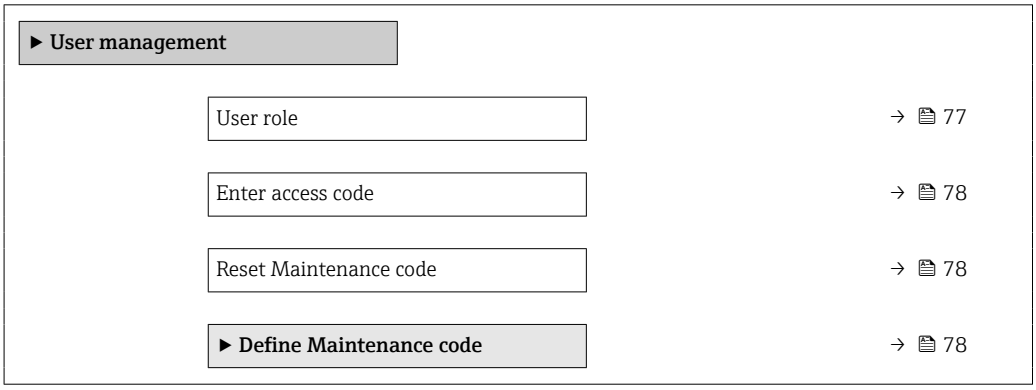
Additional information *Selection*
- **To delivery settings** option
  Every parameter for which a customer-specific default setting was ordered is reset to the customer-specific value. All other parameters are reset to the factory setting.
- **Restart device** option
  The restart resets every parameter with data stored in volatile memory (RAM) to the factory setting (e.g. measured value data). The device configuration remains unchanged.
- **Delete powerfail data** option
  Deletes the powerfail data segment in the T-DAT or (if applicable) the T-DAT partition of the S-DAT.
  Additional information:
  This function resolves the following memory content error: "283 Memory content inconsistent" with Service ID 225 and Service ID 721.
- **Delete T-DAT** option
  Deletes the T-DAT or (if applicable) the T-DAT partition of the S-DAT. On performing this delete operation, all parameters on the T-DAT are reset to the default values.
  Additional information:
  This function can be used to resolve any memory content issue on the T-DAT.
  NOTE
  The powerfail data and device delivery settings will no longer be available on performing this delete operation!
- **Reset faulty parameters** option
  Resets all faulty parameters to default values when the following memory content error occurs: "283 Memory content inconsistent" with Service ID 367.
  Additional information:
  Only faulty parameters are reset. All parameters that are reset are logged in the logbook.

* Visibility depends on order options or device settings

- **Delete delivery settings** option
  Deletes the delivery settings on the T-DAT or (if applicable) T-DAT partition of the S-DAT.
  Additional information:
  This function resolves the following memory content error: "311 Sensor electronics (ISEM) faulty" with Service ID 226.
  NOTE
  The device delivery settings will no longer be available on performing this delete operation!
- **Restore S-DAT backup** option
  Restore the data that is saved on the S-DAT. The data record is restored from the electronics memory to the S-DAT.
- **Create T-DAT backup** option
  Create T-DAT backup.

6.2 "User management" submenu

Navigation System → User manag.



User role

Navigation System → User manag. → User role

Description Displays the role the user is currently logged on in. The role determines the user's access rights for the parameters.

Additional information:
- Until a Maintenance code has been set in the "Define Maintenance code" parameter, all users are automatically logged on in the Maintenance role. Once the Maintenance code has been set, all users are automatically logged on in the Operator role.
- The access rights can be changed via the "Enter access code" parameter.

User interface
- Operator
- Maintenance
- Service
- Production
- Development

Additional information *User interface*

- **Operator** option
  Provides only read access to parameters.
- **Maintenance** option
  Provides read and write access to parameters.
  Additional information:
  For some parameters, the user must be logged on in the Service role to obtain write access.
- **Service** option
  Provides read and write access to Service parameters.

Enter access code

Navigation System → User manag. → Ent. access code

Description For users logged on in the Operator role, enter the Maintenance code to change the access status to Maintenance and disable write protection of parameters. For users logged on in the Maintenance role, enter the Service code to change the access status to Service and enable read and write access to Service parameters.

User entry 0 to 9 999

Reset Maintenance code

Navigation System → User manag. → Reset Maint code

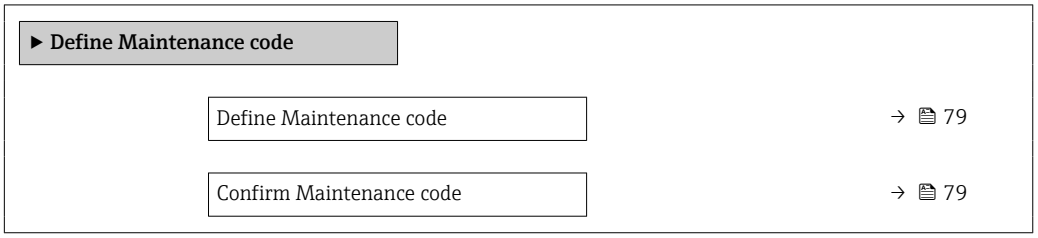
Description Enter the code provided by Endress+Hauser Technical Support to reset the Maintenance code.

User entry Character string comprising numbers, letters and special characters (#32)

6.2.1 "Define access code" wizard

Complete this wizard to specify an access code for the Maintenance role.

Navigation System → User manag. → Def. access code



Define Maintenance code

Navigation System → User manag. → Def. Maint. code → Def. Maint. code

Description Specify an access code that is required to obtain the access rights for the Maintenance role.

User entry 0 to 9 999

Confirm Maintenance code

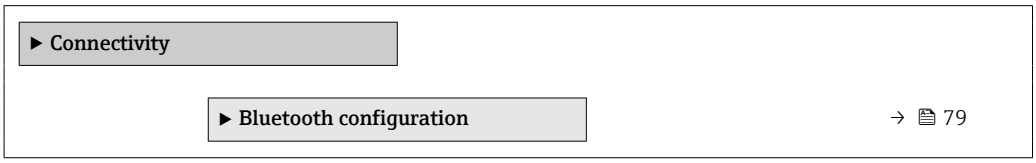
Navigation System → User manag. → Def. Maint. code → Conf. Maint code

Description Confirm the access code entered for the Maintenance role.

User entry 0 to 9 999

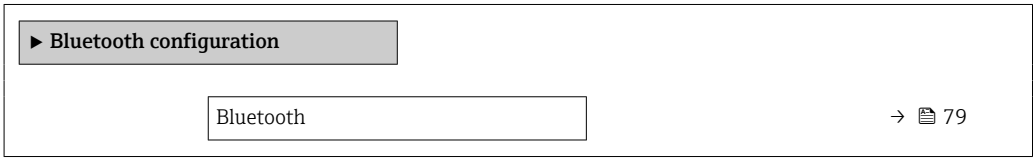
6.3 "Connectivity" submenu

Navigation System → Connectivity



6.3.1 "Bluetooth configuration" submenu

Navigation System → Connectivity → Bluetooth conf.



Bluetooth

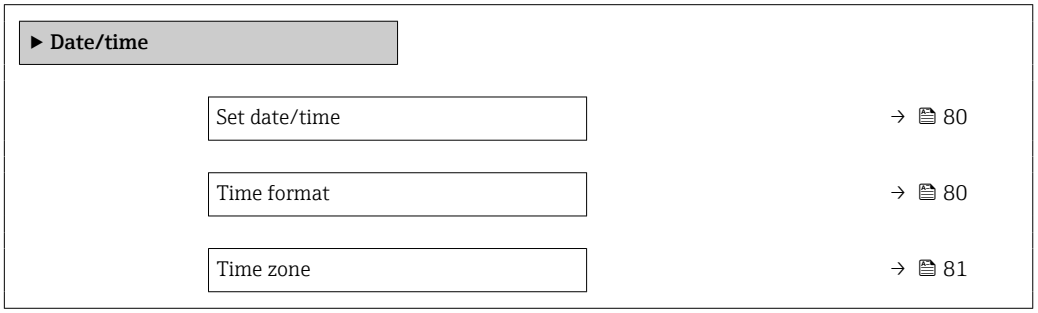
Navigation System → Connectivity → Bluetooth conf. → Bluetooth

Description Enable or disable Bluetooth.

Selection
- Enable
- On touch
- Not available *

6.4 "Date/time" submenu

Navigation System → Date/time



Set date/time

Navigation System → Date/time → Set date/time

Description Set the date and local time. Every time the date or time is changed, a logbook entry is created.

User entry Positive integer

Time format

Navigation System → Date/time → Time format

Description Select time format.

Selection
- 24 h
- 12 h AM/PM

* Visibility depends on order options or device settings

Time zone

Navigation System → Date/time → Time zone

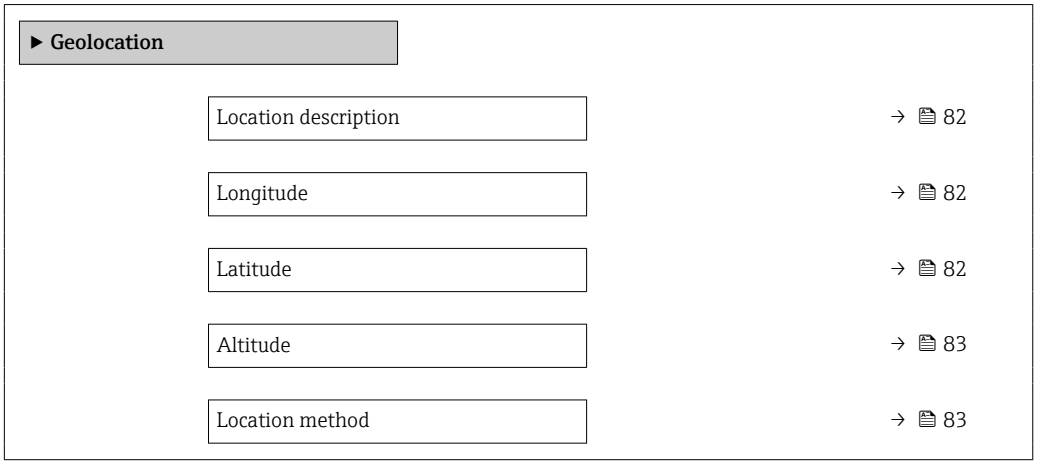
Description Select the time zone. Every time the time zone is changed, a logbook entry is created.

Selection

Other units
- UTC-12:00
- UTC-11:00
- UTC-10:00
- UTC-09:30
- UTC-09:00
- UTC-08:00
- UTC-07:00
- UTC-06:00
- UTC-05:00
- UTC-04:00
- UTC-03:30
- UTC-03:00
- UTC-02:00
- UTC-01:00
- UTC 00:00
- UTC+01:00
- UTC+02:00
- UTC+03:00
- UTC+03:30
- UTC+04:00
- UTC+04:30
- UTC+05:00
- UTC+05:30
- UTC+05:45
- UTC+06:00
- UTC+06:30
- UTC+07:00
- UTC+08:00
- UTC+08:45
- UTC+09:00
- UTC+09:30
- UTC+10:00
- UTC+10:30
- UTC+11:00
- UTC+12:00
- UTC+12:45
- UTC+13:00
- UTC+14:00

6.5 "Geolocation" submenu

Navigation System → Geolocation



Location description

Navigation System → Geolocation → Location descr.

Description Enter a description for the location

User entry Character string comprising numbers, letters and special characters (#32)

Longitude

Navigation System → Geolocation → Longitude

Description Enter the longitude.

User entry −180 to 180 °

Latitude

Navigation System → Geolocation → Latitude

Description Enter latitude

User entry −90 to 90 °

Altitude

Navigation System → Geolocation → Altitude

Description Enter altitude

User entry Signed floating-point number

Location method

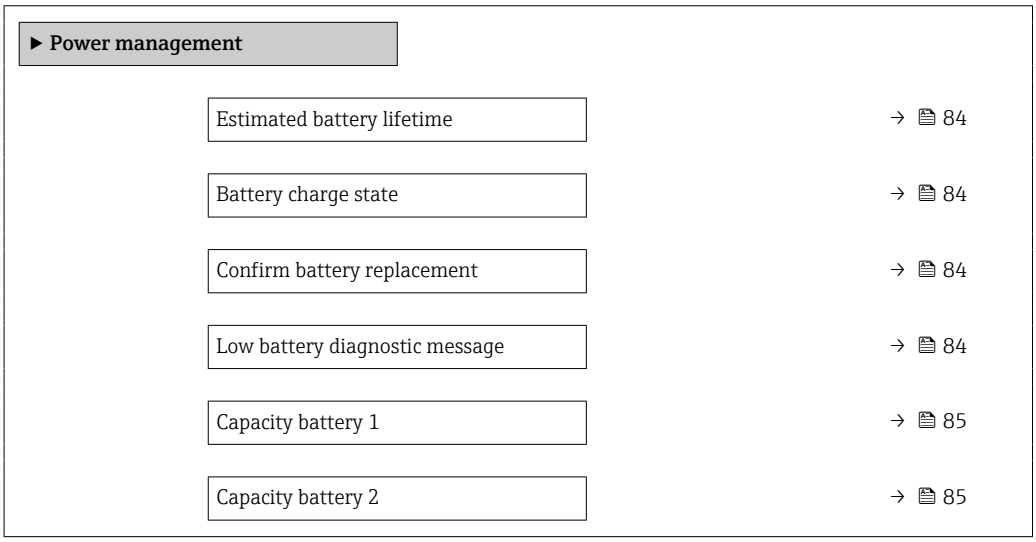
Navigation System → Geolocation → Location method

Description Select the location method.

Selection
- No fix
- GPS or Standard Positioning Service fix
- Differential GPS fix
- Precise positioning service (PPS) fix
- Real Time Kinetic (RTK) fixed solution
- Real Time Kinetic (RTK) float solution
- Estimated dead reckoning
- Manual input mode
- Simulation Mode

6.6 "Power management" submenu

Navigation System → Power management



Estimated battery lifetime

Navigation System → Power management → EstBattLifetime

Description Displays the approx. remaining life of the batteries. If the remaining life is less than 180 days, the measuring device generates a diagnostic message for diagnostic event "960 Low battery diagnostic message".

Additional information:
The remaining battery life until a diagnostic message is triggered can be modified for diagnostic event "890 Battery low" in the "Battery lifetime is less than 180 days" parameter.

User interface Positive floating-point number

Battery charge state

Navigation System → Power management → BattChargeState

Description Shows the charge state of the batteries.

User interface 0 to 100 %

Confirm battery replacement

Navigation System → Power management → Conf. replacem.

Description Confirm battery replacement by selecting the appropriate battery.

Selection
- Cancel
- Battery 1
- Battery 2 *

Low battery diagnostic message

Navigation System → Power management → LowBatteryDiagn

Description Set remaining battery life for diagnostic event "890Battery low". When this lifespan is reached, the respective diagnostic message is generated.

User entry Positive floating-point number

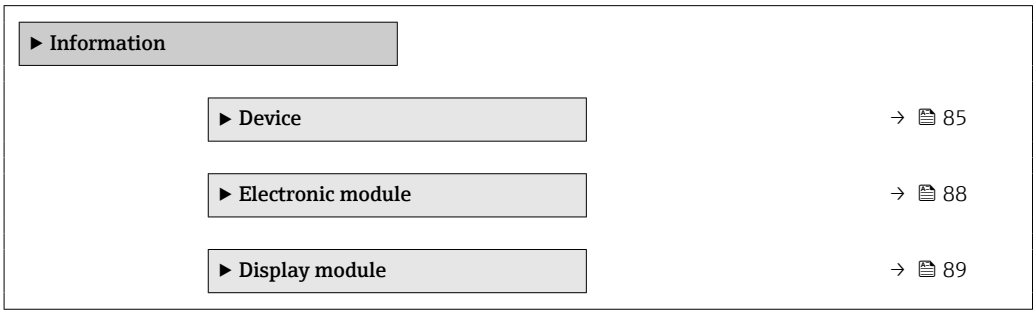
* Visibility depends on order options or device settings

Capacity battery 1	
Navigation	System → Power management → Capacity batt. 1
Description	Enter capacity for new battery with 100 % charge state.
User entry	Positive floating-point number

Capacity battery 2	
Navigation	System → Power management → Capacity batt.2
Description	Enter capacity for new battery with 100 % charge state.
User entry	Positive floating-point number

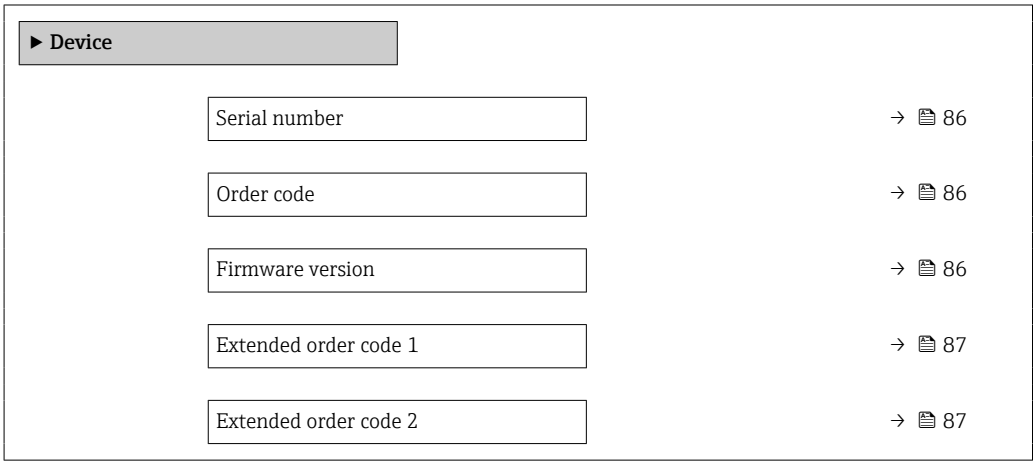
6.7 "Information" submenu

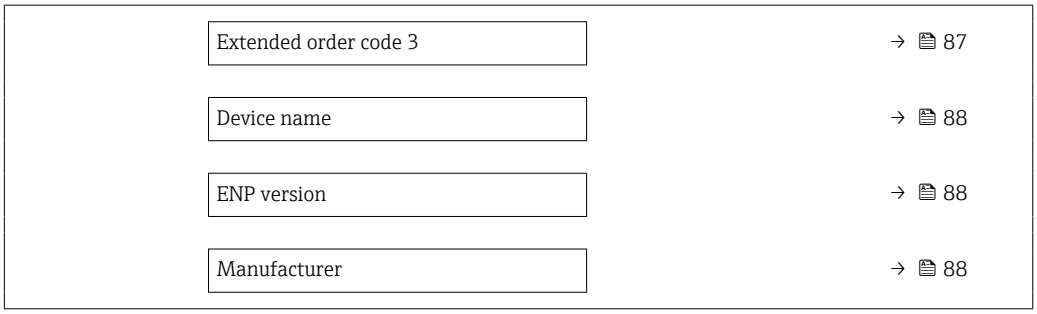
Navigation System → Information



6.7.1 "Device" submenu

Navigation System → Information → Device





Serial number

Navigation System → Information → Device → Serial number

Description Displays the serial number of the measuring device. The serial number can be used to identify the measuring device and to retrieve further information on the measuring device, such as the related documentation, via the Device Viewer or Operations app.

Additional information:
The serial number can also be found on the nameplate of the sensor and transmitter.

User interface Character string comprising numbers, letters and special characters (#11)

Order code

Navigation System → Information → Device → Order code

Description Displays the device order code.

Additional information:
The order code can be used for instance to order a replacement or spare device or to verify that the device features specified on the order form match the shipping note.

User interface Character string comprising numbers, letters and special characters (#20)

Firmware version

Navigation System → Information → Device → Firmware version

Description Displays the device firmware version installed.

User interface Character string comprising numbers, letters and special characters (#8)

Extended order code 1

Navigation System → Information → Device → Ext. order cd. 1

Description Displays the first, second and/or third part of the extended order code. Due to character length restrictions, the extended order code is split into a maximum of 3 parameters. The extended order code indicates for each feature in the product structure the selected option, thereby uniquely identifying the device model.

Additional information:
The extended order code can also be found on the nameplate.

User interface Character string comprising numbers, letters and special characters (#20)

Extended order code 2

Navigation System → Information → Device → Ext. order cd. 2

Description Displays the first, second and/or third part of the extended order code. Due to character length restrictions, the extended order code is split into a maximum of 3 parameters. The extended order code indicates for each feature in the product structure the selected option, thereby uniquely identifying the device model.

Additional information:
The extended order code can also be found on the nameplate.

User interface Character string comprising numbers, letters and special characters (#20)

Extended order code 3

Navigation System → Information → Device → Ext. order cd. 3

Description Displays the first, second and/or third part of the extended order code. Due to character length restrictions, the extended order code is split into a maximum of 3 parameters. The extended order code indicates for each feature in the product structure the selected option, thereby uniquely identifying the device model.

Additional information:
The extended order code can also be found on the nameplate.

User interface Character string comprising numbers, letters and special characters (#20)

Device name

Navigation System → Information → Device → Device name

Description Displays the name of the transmitter.

Additional information:
The name can also be found on the transmitter's nameplate.

User interface Character string comprising numbers, letters and special characters (#16)

ENP version

Navigation System → Information → Device → ENP version

Description Displays the version of the electronic nameplate (ENP).

User interface Character string comprising numbers, letters and special characters (#16)

Manufacturer

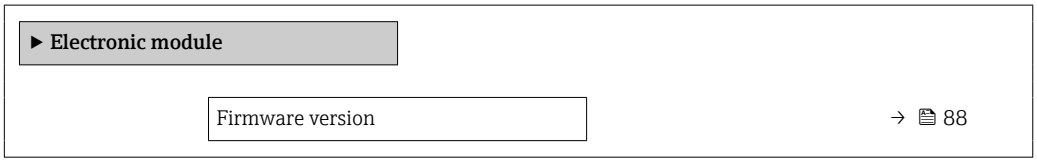
Navigation System → Information → Device → Manufacturer

Description Displays the manufacturer.

User interface Character string comprising numbers, letters and special characters (#32)

6.7.2 "Electronic module" submenu

Navigation System → Information → Electr. module



Firmware version

Navigation System → Information → Electr. module → Firmware version

Description Displays the firmware version of the module.

User interface Positive integer

Build no. software

Navigation System → Information → Electr. module → Build no. softw.

Description Displays the build number of the module firmware.

User interface 0 to 65 535

Bootloader revision

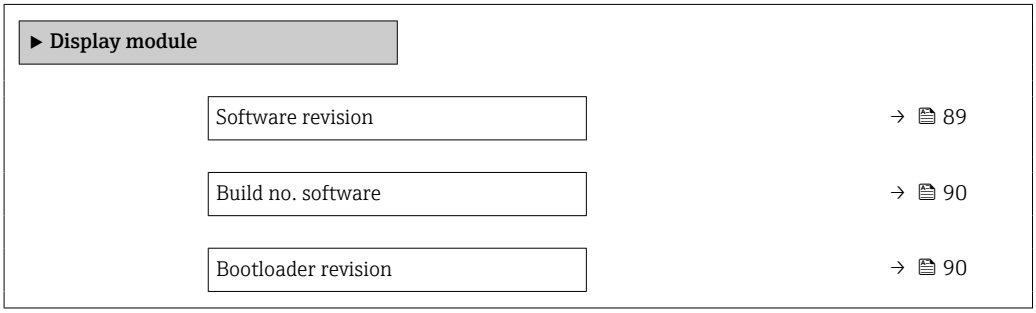
Navigation System → Information → Electr. module → Bootloader rev.

Description Displays the bootloader revision of the module firmware.

User interface Positive integer

6.7.3 "Display module" submenu

Navigation System → Information → Display module



Firmware version

Navigation System → Information → Display module → Firmware version

Description Displays the firmware version of the module.

User interface Positive integer

Build no. software

Navigation System → Information → Display module → Build no. softw.

Description Displays the build number of the module firmware.

User interface 0 to 65 535

Bootloader revision

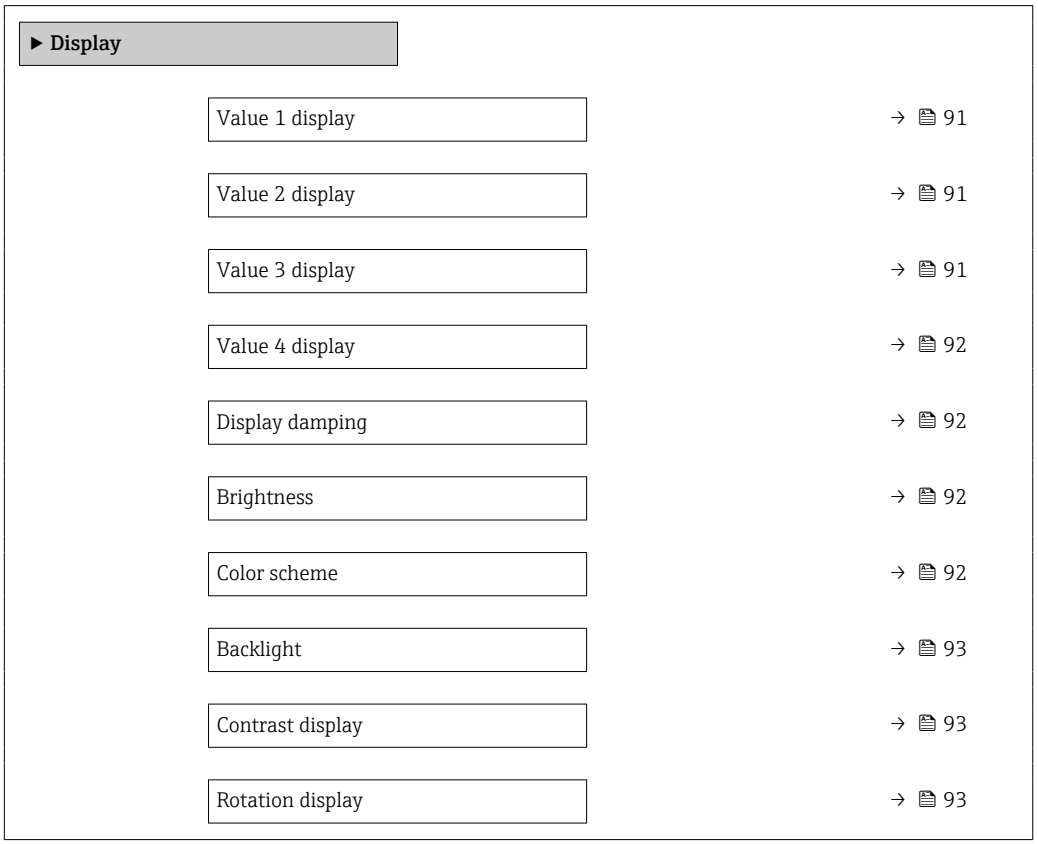
Navigation System → Information → Display module → Bootloader rev.

Description Displays the bootloader revision of the module firmware.

User interface Positive integer

6.8 "Display" submenu

Navigation System → Display



Value 1 display

Navigation System → Display → Value 1 display

Description Select the measured value that is displayed first on the local display.

Additional information:
The applicable unit of measure is specified in the "System units" submenu.

Selection
- Volume flow
- Conductivity *
- Pressure *
- Totalizer 1
- Totalizer 2
- Totalizer 3

Value 2 display

Navigation System → Display → Value 2 display

Description Select the measured value that is shown second on the local display.

Additional information:
The applicable unit of measure is specified in the "System units" submenu.

Selection
- None
- Volume flow
- Conductivity *
- Pressure *
- Totalizer 1
- Totalizer 2
- Totalizer 3

Value 3 display

Navigation System → Display → Value 3 display

Description Select the measured value that is shown third on the local display.

Additional information:
The applicable unit of measure is specified in the "System units" submenu.

Selection
- None
- Volume flow
- Conductivity *
- Pressure *
- Totalizer 1
- Totalizer 2
- Totalizer 3

* Visibility depends on order options or device settings

Value 4 display

Navigation System → Display → Value 4 display

Description Select the measured value that is shown fourth on the local display.

Additional information:
The applicable unit of measure is specified in the "System units" submenu.

Selection
- None
- Volume flow
- Conductivity *
- Pressure *
- Totalizer 1
- Totalizer 2
- Totalizer 3

Display damping

Navigation System → Display → Display damping

Description Enter time constant (PT1 element) to set reaction time of the display to fluctuations in the measured value.

Additional information:
- The smaller the time constant the faster the display reacts to fluctuations in the measured value.
- If the time constant is set to 0, damping is deactivated.

User entry 0.0 to 999.9 s

Brightness

Navigation System → Display → Brightness

Description Adjust brightness.

User entry 0 to 100 %

Color scheme

Navigation System → Display → Color scheme

Description Select preferred color scheme.

* Visibility depends on order options or device settings

Selection
- Light
- Dark

Backlight

Navigation System → Display → Backlight

Description Switch the local display backlight on / off.

Selection
- Disable
- Enable

Contrast display

Navigation System → Display → Contrast display

Description Adjust local display contrast setting to ambient conditions (e.g. lighting or reading angle).

User entry 20 to 80 %

Rotation display

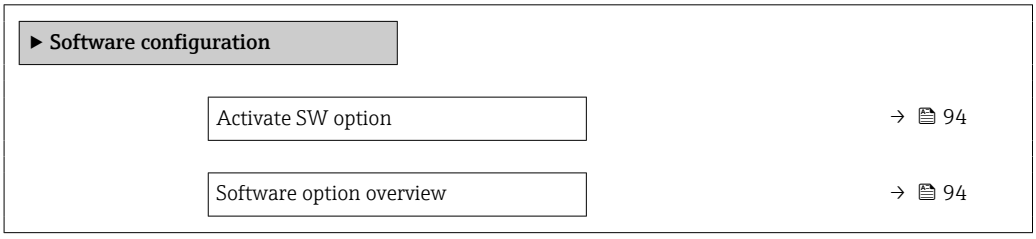
Navigation System → Display → Rotation display

Description Select rotation angle of the display text to optimize local display readability.

Selection
- Auto
- 0 degree
- 90 degree
- 180 degree
- 270 degree

6.9 "Software configuration" submenu

Navigation System → Software config.



Activate SW option

Navigation System → Software config. → Activate SW opt.

Description Enter application package code or code of the functionality ordered separately to activate it.

Additional information:
- If a measuring device was ordered with an add-on software option, the activation code is programmed into the measuring device ex factory.
- After entering the activation code: Check whether the new software option is displayed in the "Software option overview" parameter and therefore active.

NOTE
If an an invalid code is entered the software options that have already been activated are invalidated!
Before entering a new activation code: Create a record of the existing activation code.

User entry Positive integer

Software option overview

Navigation System → Software config. → SW option overv.

Description Displays all software options included in the order ex factory or ordered at a later date that have been enabled via the operating interface.

Additional information:
If a new software option is not displayed after entering the activation code, the code entered was inaccurate or invalid. In this case, contact the appropriate Endress+Hauser sales organization to activate the software option.

User interface
- Extended data logger
- Heartbeat Verification
- Custody transfer
- Heartbeat Monitoring

Index

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