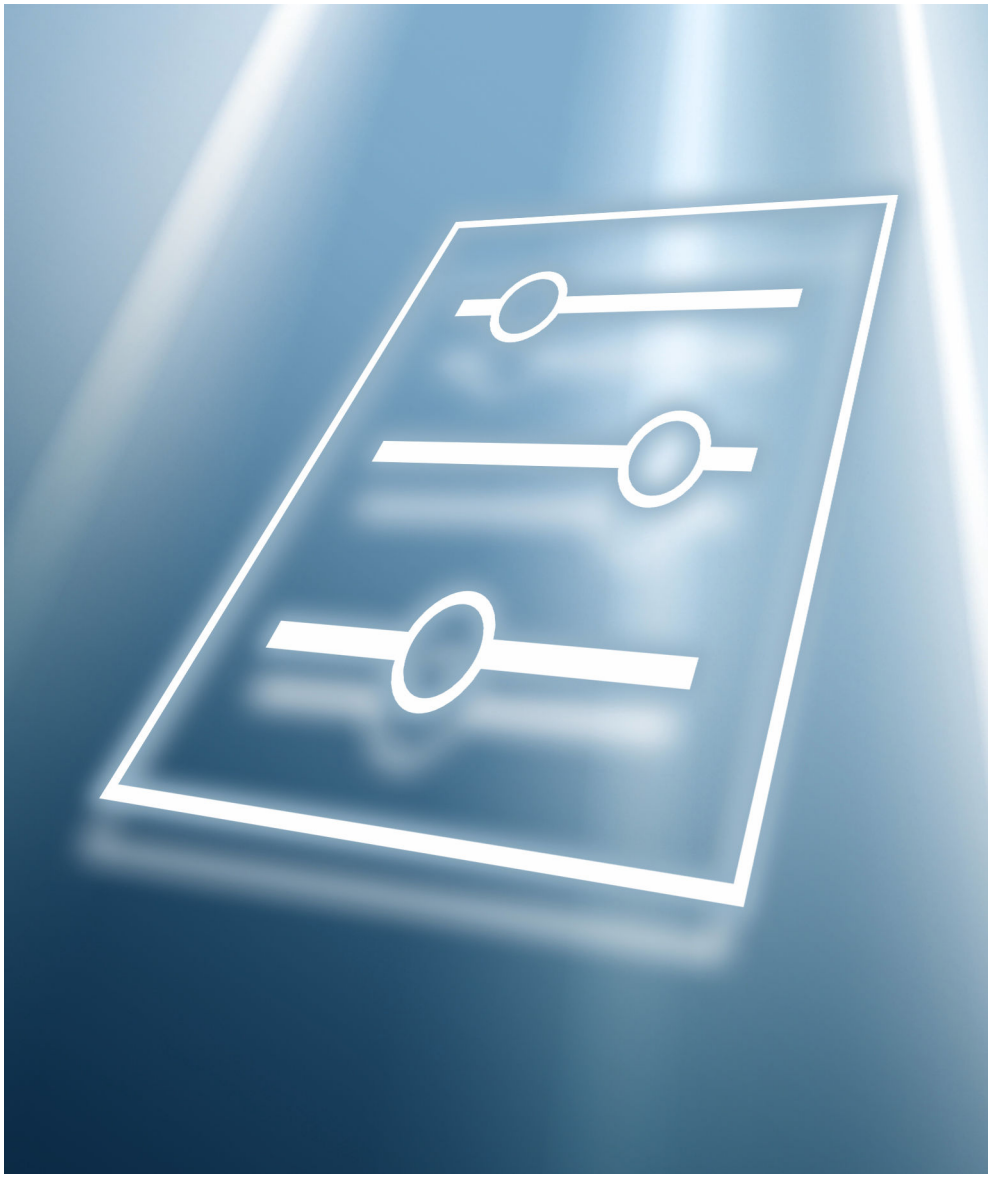
GP01192P/00/EN/01.22-00
71606666
2022-12-20

Valid as of version
01.00.zz (Device firmware)

Description of Device Parameters
Cerabar PMC71B

Process pressure measurement
PROFINET with Ethernet-APL

ethernet-apl™
advanced physical layer



Endress+Hauser
People for Process Automation

Table of contents

1 About this document

1.1 Document function

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

Performance of tasks that require detailed knowledge of the functioning of the device:
- Commissioning measurements under difficult conditions
- Optimal adaptation of the measurement to difficult conditions
- Detailed configuration of the communication interface
- Error diagnostics in difficult cases

1.2 Target group

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

1.3 Using this document

1.3.1 Information on the document structure

This document lists the submenus and parameters that are available when the **"Maintenance" option** user role is enabled.

For the operating concept of the operating menus, see the Operating Instructions.

1.3.2 Structure of a parameter description

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

- Navigation: Navigation path to the parameter via the local display
- 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
- User entry: Input range for the parameter
- User interface: Display value/data of the parameter
- Additional information:
  - On individual options
  - On display values/data
  - On the input range
  - On the factory setting
  - On the parameter function

1.4 Symbols used

1.4.1 Symbols for certain types of Information

Additional information:

Reference to documentation:

Operation via local display:

Operation via operating tool:

Write-protected parameter:

1.5 Documentation

1.5.1 Standard documentation

Operating Instructions

The Operating Instructions are available via the Internet: www.endress.com → Download

1.5.2 Supplementary device-dependent documentation

Special Documentation

The Special Documentation is available via the Internet: www.endress.com → Download

2 Overview of the operating menu

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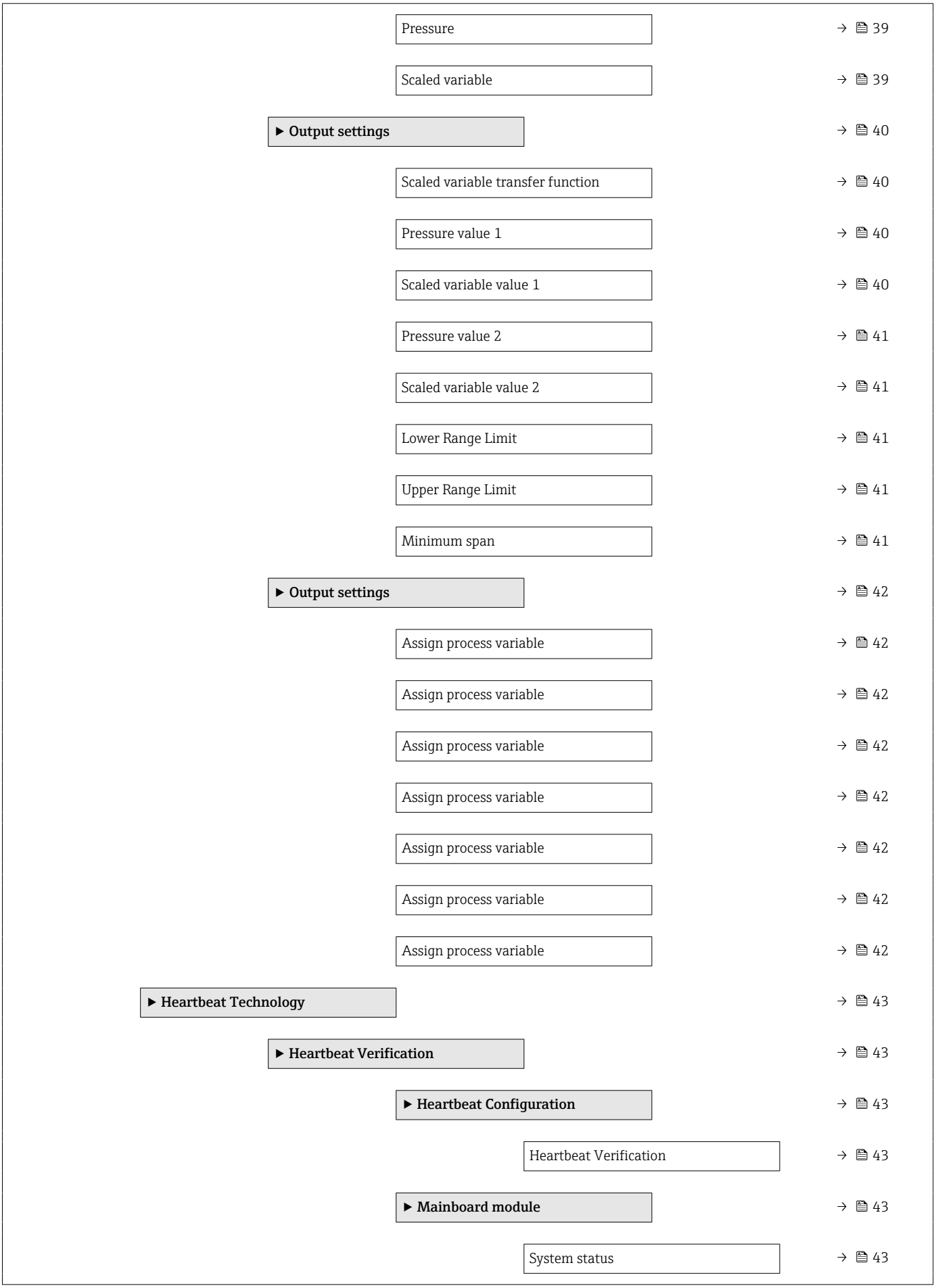
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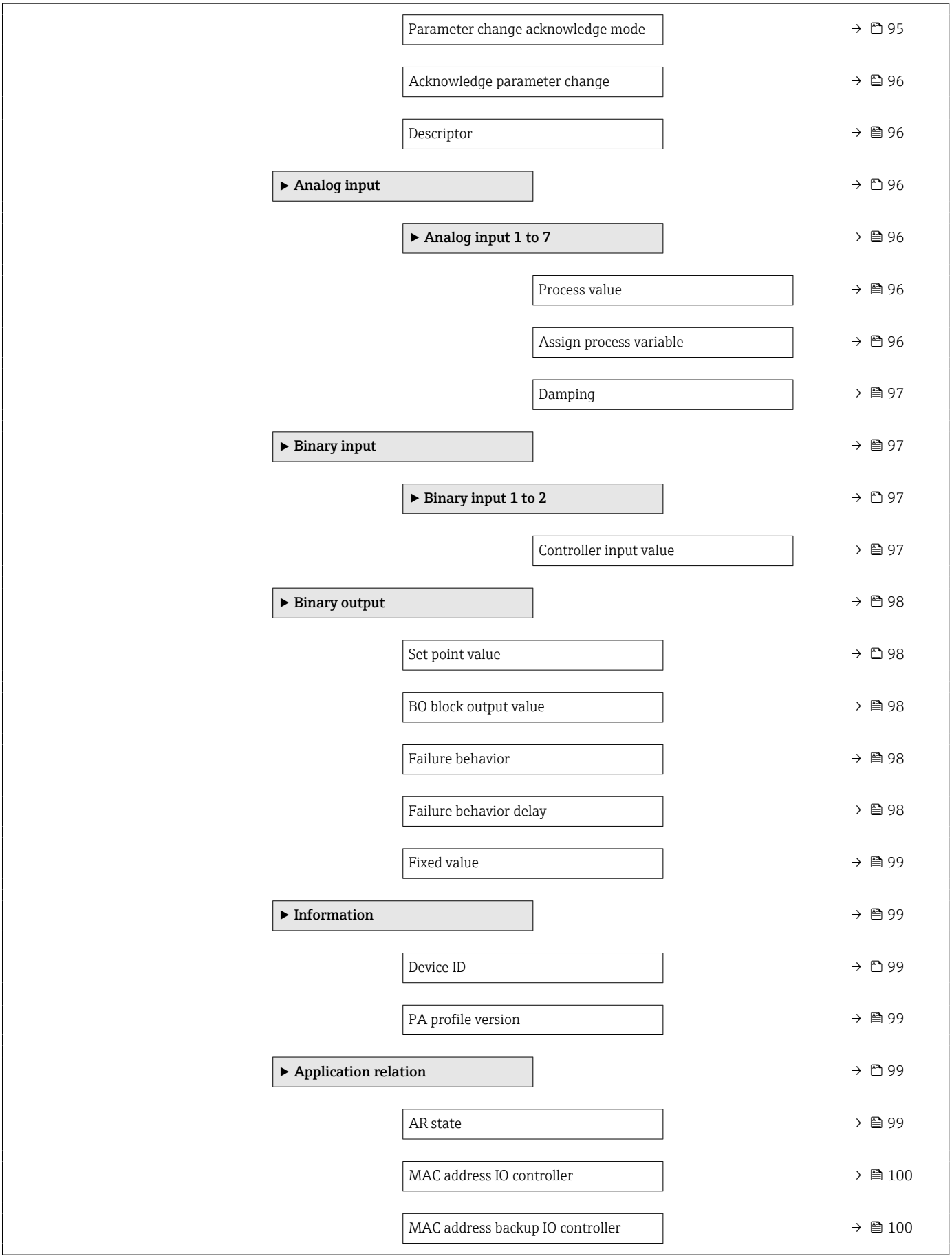
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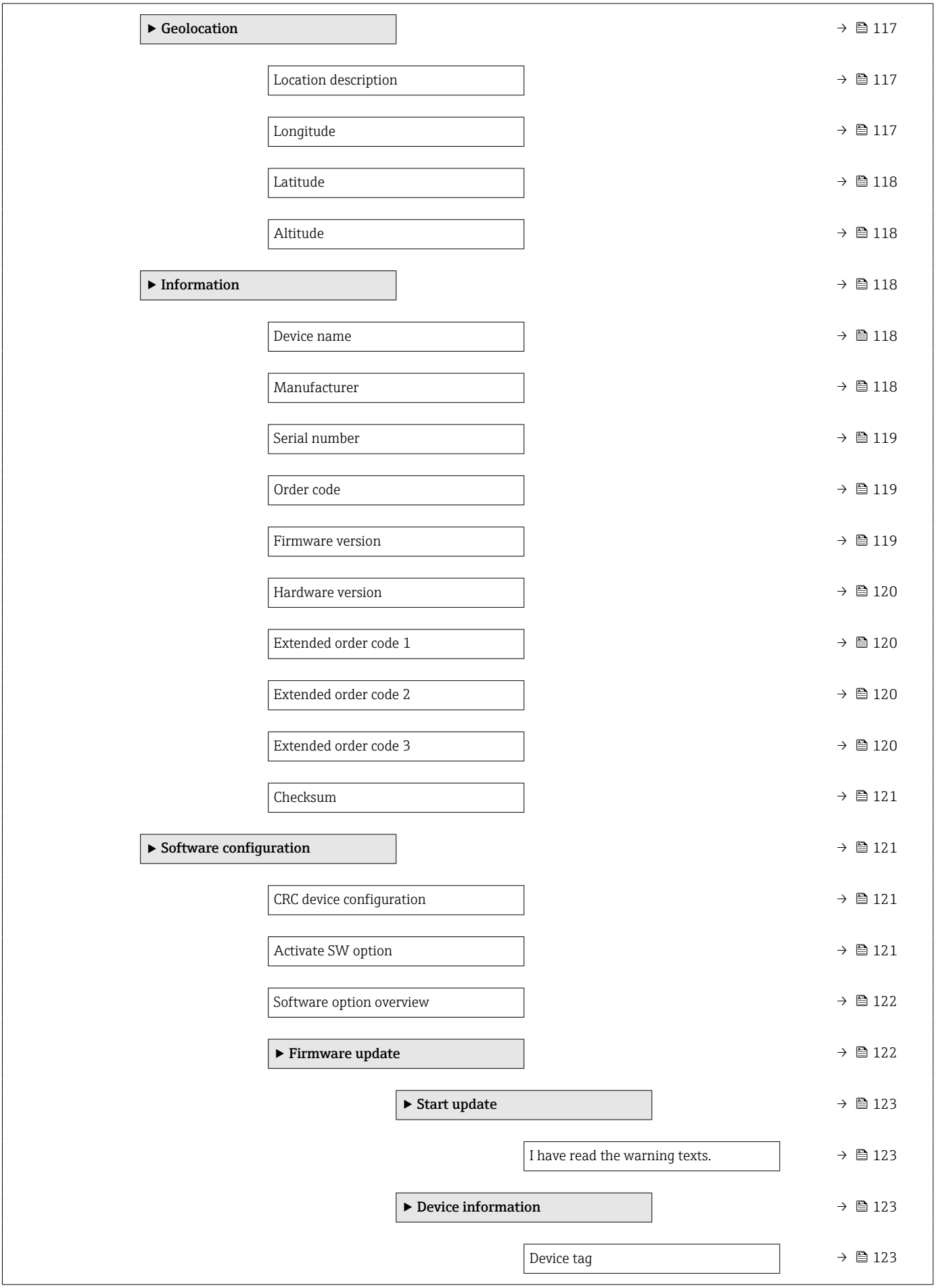
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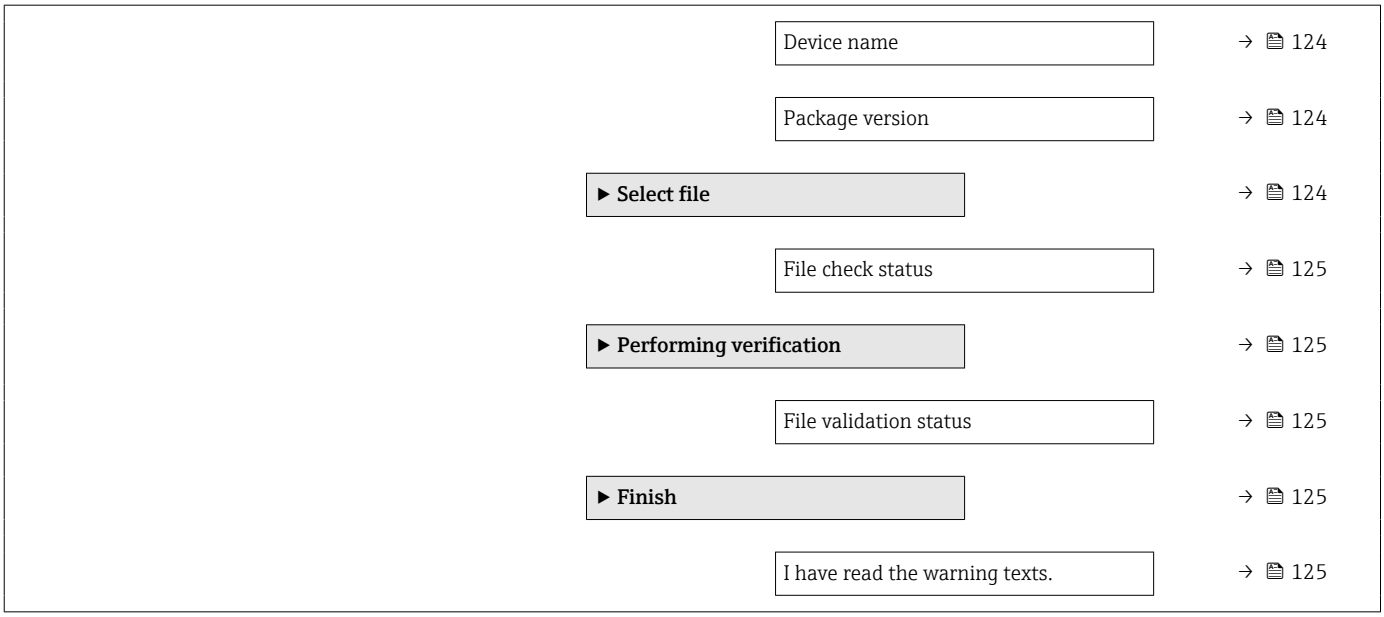
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3 Description of device parameters

In the following section, the parameters are listed according to the menu structure of the operating tool.

The operating menu is dynamic and adapts the choice of parameters to the selected options.

3.1 User navigation

The Guidance main menu contains functions which enable users to perform basic tasks swiftly, e.g. commissioning.
These are primarily guided wizards and cross-subject special functions.

Navigation Guidance

3.1.1 Overview of the operating menu

User navigation
- Commissioning (→ 28)
- Heartbeat Technology (→ 43)
  - Heartbeat Verification (→ 43)
  - SSD: Statistical Sensor Diagnostics (→ 49)
  - Process window (→ 60)
- Import/Export→ 26
- Compare→ 26

3.1.2 Commissioning

Run this wizard to put the device into operation. Enter the appropriate value in each parameter or select the appropriate option.

If the wizard is canceled before all the necessary parameters have been configured, any settings already made are saved. For this reason, the device may then be in an undefined state!

In such situations, it is advisable to reset the device to the factory default settings.

The following parameters are configured in the Commissioning wizard:

- **Device identification (→ 28)**
  This page summarizes the most important data characterizing the device. Some of the parameters can be edited, others are displayed for information only.
  - Device tag (→ 28)
  - Device name (→ 28)
  - Serial number (→ 28)
  - Extended order code 1 (→ 29)
  - Extended order code 2 (→ 29)
  - Extended order code 3 (→ 29)
  - Locking status (→ 30)
  - Time zone (→ 31)
  - Date/time (→ 32)
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- **Output settings (→ 38)**
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  - Scaled variable value 2 (→ 41)
  - Assign process variable (→ 42)

3.1.3 "Heartbeat Technology" submenu

The **Heartbeat Technology** submenu (→ 43) offers diagnostic functionality through continuous self-monitoring, the transmission of additional measured variables to an external Condition Monitoring system and the in-situ verification of measuring devices in the application.

"SSD: Statistical Sensor Diagnostics" wizard

Using statistical analysis of the pressure signal, process anomalies such as plugged impulse lines can be detected. This wizard supports the settings and thresholds that should lead to a diagnostic message.

"Process window" wizard

This wizard uses user-defined limits for pressure and temperature to detect unwanted installation or application anomalies.

Applications:
- Defective heat tracer or insulation
- Frozen process connections
- Dynamic pressure peaks etc.

3.1.4 Import / Export

Save / Load
- **Save:** The device settings can be saved in a .deh file.
- **Load:** The device settings saved in a .deh file can be written to the device.

Create documentation
- Device documentation can be saved in PDF format under "Create documentation".
- This documentation contains the following general device information:
  - Information on device parameters
  - Information on linearization
  - Echo curves
  - Event list
  - Diagnostic list

3.1.5 Compare

Compare datasets
This function can be used to compare the following datasets:
- Datasets in the .deh file format from the import/export function
- Datasets with the configuration currently in the device

3.2 "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

Pressure

Navigation Device info → Pressure

Scaled variable

Navigation Device info → Scaled variable

User interface Signed floating-point number

Do not show this message again

Navigation Device info → Don't show again

Selection Yes

3.3 "Guidance" menu

Navigation Guidance

3.3.1 "Commissioning" wizard

Navigation Guidance → Commissioning

"Device identification" wizard

Navigation Guidance → Commissioning → Device ident.

Device tag

Navigation Guidance → Commissioning → Device ident. → Device tag

Description Enter a name for the measuring point to identify the measuring device in the plant

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

Device name

Navigation Guidance → Commissioning → Device ident. → Device name

Description Displays the name of the transmitter. It can also be found on the nameplate of the transmitter.

User interface Max. 32 characters such as letters or numbers.

Serial number

Navigation Guidance → Commissioning → Device ident. → Serial number

Description Displays the serial number of the measuring device.

The number can be found on the nameplate of the sensor and transmitter.

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

Additional information *Description*

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

Extended order code 1

Navigation Guidance → Commissioning → Device ident. → Ext. order cd. 1

Description The extended order code is an alphanumeric code containing all information to identify the device and its options.

User interface Character string

Factory setting –

Additional information *Description*

The extended order code indicates the version of all the features of the product structure for the measuring device and thus uniquely identifies the measuring device.

Extended order code 2

Navigation Guidance → Commissioning → Device ident. → Ext. order cd. 2

Description The extended order code is an alphanumeric code containing all information to identify the device and its options.

The extended order code can also be found on the nameplate of the sensor and transmitter in the "Ext. ord. cd." field.

User interface Character string

Factory setting –

Extended order code 3

Navigation Guidance → Commissioning → Device ident. → Ext. order cd. 3

Description The extended order code is an alphanumeric code containing all information to identify the device and its options.

The extended order code can also be found on the nameplate of the sensor and transmitter in the "Ext. ord. cd." field.

User interface Character string

Factory setting –

"Device identification" wizard

Navigation Guidance → Commissioning → Device ident.

Locking status

Navigation Guidance → Commissioning → Device ident. → Locking status

Description Displays the active write protection.

User interface
- Hardware locked
- Temporarily locked

Additional information *User interface*

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

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

Selection

Function scope of the "Locking status" parameter

Options	Description
None	The access status displayed in the **Access status display** parameter applies. Only appears on local display.
Hardware locked	The DIP switch for hardware locking is activated on the main electronics module. This prevents write access to the parameters (e.g. via the local display or operating tool).
Temporarily locked	Write access to the parameters is temporarily locked due to device-internal processing (e.g. data upload/download, reset). Once the internal processing has been completed, the parameters can be changed once again.

"Device identification" wizard

Navigation Guidance → Commissioning → Device ident.

Time zone

Navigation Guidance → Commissioning → Device ident. → 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-02:30
- UTC-02:00
- UTC-01:00
- UTC 00:00
- UTC+01:00
- UTC+02:00
- UTC+03:00
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- UTC+04:00
- UTC+04:30
- UTC+05:00
- UTC+05:30
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- 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+13:45
- UTC+14:00

Date/time

Navigation Guidance → Commissioning → Device ident. → Date/time

Description Displays the date and time entered.

User interface Character string comprising numbers, letters and special characters

"Device identification" wizard

Navigation Guidance → Commissioning → Device ident.

PROFINET device name

Navigation Guidance → Commissioning → Device ident. → PROFINET DevName

Description Up to 240 characters are allowed.
The following syntax must be used:
- 1 or more identifiers, separated with [.]
- Identifier length is 1 to 63 characters
- Identifier consists of [a-z 0-9] only lowercase letters and numbers allowed.

User entry Character string comprising numbers, letters and special characters (240)

PROFINET device name

Navigation Guidance → Commissioning → Device ident. → PROFINET DevName

Description Shows the short form of the PROFINET device name for the measuring point

User interface Character string comprising numbers, letters and special characters

IP address

Navigation Guidance → Commissioning → Device ident. → IP address

Description Enter the IP address of the measuring device

User entry Character string comprising numbers, letters and special characters (15)

Descriptor

Navigation Guidance → Commissioning → Device ident. → Descriptor

Description Enter a description for the measuring point

User entry Character string comprising numbers, letters and special characters (54)

MAC address

Navigation Guidance → Commissioning → Device ident. → MAC Address

Description Shows the MAC address of the measuring device

User interface Character string comprising numbers, letters and special characters

Device ID

Navigation Guidance → Commissioning → Device ident. → Device ID

User interface 0 to 65 535

Manufacturer ID

Navigation Guidance → Commissioning → Device ident. → Manufacturer ID

User interface 0 to 65 535

"Measurement adjustments" wizard

Navigation Guidance → Commissioning → Meas. adjust.

Damping

Navigation Guidance → Commissioning → Meas. adjust. → Damping

Description The damping is effective before the measured value is further processed, i.e., before the following processes:
- Scaling
- Limit value monitoring
- Forwarding to display
- Forwarding to Analog Input Block

Note:
The Analog Input Block has its own “Damping” parameter. In the measurement chain, only one of the two attenuation parameters shall have a value other than 0.
Otherwise, the signal will be attenuated several times.

User entry 0 to 999.0 s

Assign scaled variable?

Navigation Guidance → Commissioning → Meas. adjust. → Scaled variable?

Selection
- No
- Yes

"Measurement adjustments" wizard

Navigation Guidance → Commissioning → Meas. adjust.

Pressure unit

Navigation Guidance → Commissioning → Meas. adjust. → Pressure unit

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

Selection

SI units
- MPa
- kPa
- Pa
- bar
- mbar a
- torr
- atm
- kgf/cm²
- gf/cm²

US units
psi

Other units
- inH2O
- inH2O (4°C)
- mmH2O
- mmH2O (4°C)
- mH2O
- mH2O (4°C)
- ftH2O
- inHg
- mmHg

Temperature unit

Navigation Guidance → Commissioning → Meas. adjust. → Temperature unit

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

Selection

SI units
- °C
- K

US units
°F

Factory setting Country-specific:
- °C
- °F

Additional information *Selection*

"Measurement adjustments" wizard

Navigation Guidance → Commissioning → Meas. adjust.

Pressure unit

Navigation Guidance → Commissioning → Meas. adjust. → Pressure unit

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

Selection

SI units
- MPa
- kPa
- Pa
- bar
- mbar a
- torr
- atm
- kgf/cm²
- gf/cm²

US units
psi

Other units
- inH2O
- inH2O (4°C)
- mmH2O
- mmH2O (4°C)
- mH2O
- mH2O (4°C)
- ftH2O
- inHg
- mmHg

Scaled variable unit

Navigation Guidance → Commissioning → Meas. adjust. → SV unit

Description Use 'Free text', first selection, if the desired unit is not available in the selection list. It is possible to define a customer specific unit with another parameter.

Selection

SI units
- %
- mm
- cm
- m
- l
- hl
- m^3
- g
- kg
- t
- g/s
- kg/s
- kg/min
- kg/h
- t/min
- t/h
- t/d
- m^3/s
- m^3/min
- m^3/h
- m^3/d
- l/s
- l/min
- l/h
- Nm^3/h
- Nl/h
- Sm^3/s
- Sm^3/min
- Sm^3/h
- Sm^3/d
- Nm^3/s
- g/cm^3
- kg/m^3
- Nm^3/min
- Nm^3/d

US units
- ft
- in
- ft^3
- gal (us)
- bbl (us;oil)
- oz
- lb
- STon
- lb/s
- lb/min
- lb/h
- STon/min
- STon/h
- STon/d
- ft^3/s
- ft^3/min
- ft^3/h
- ft^3/d
- gal/s (us)
- gal/min (us)
- gal/h (us)
- gal/d (us)
- bbl/s (us;oil)
- bbl/min (us;oil)
- bbl/h (us;oil)
- bbl/d (us;oil)
- Sft^3/min
- Sft^3/h
- Sft^3/d

Imperial units
- gal (imp)
- gal/s (imp)
- gal/min (imp)
- gal/h (imp)

Custom-specific units
Free text

Free text

Navigation Guidance → Commissioning → Meas. adjust. → Free text

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

Temperature unit

Navigation Guidance → Commissioning → Meas. adjust. → Temperature unit

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

Selection

SI units	*US units*
▪ °C	°F
▪ K	

Factory setting Country-specific:
▪ °C
▪ °F

Additional information *Selection*

"Measurement adjustments" wizard

Navigation Guidance → Commissioning → Meas. adjust.

Zero adjustment

Navigation Guidance → Commissioning → Meas. adjust. → Zero adjustment

Description Due to the mounting position of the measuring instrument, a pressure shift may occur. The pressure shift can be corrected with the zero adjustment.

Selection
▪ No
▪ Confirm

Pressure

Navigation Guidance → Commissioning → Meas. adjust. → Pressure

"Output settings" wizard

Navigation Guidance → Commissioning → Output settings

Scaled variable transfer function

Navigation Guidance → Commissioning → Output settings → Scal. v. trans.

Description

'Linear'
The linear pressure signal is used for the output signal. The flow must be calculated in the evaluation unit. Deviating from the bar graph (output signal), the digital value on the display shows continues to be the eradicated value.

'Square root'
The root flow signal is used for the output signal. The 'Flow (square root)' output signal is indicated on the on-site display with a root symbol.

'Table'
The output is defined according to the scaled variable / pressure table entered.

Selection

- Linear
- Square root *
- Table

"Output settings" wizard

Navigation Guidance → Commissioning → Output settings

Lower Range Limit

Navigation Guidance → Commissioning → Output settings → LRL

Description Indicates the lower measuring limit of the sensor.

User interface Signed floating-point number

* Visibility depends on order options or device settings

Upper Range Limit

Navigation Guidance → Commissioning → Output settings → URL

Description Indicates the upper measuring limit of the sensor.

User interface Signed floating-point number

Minimum span

Navigation Guidance → Commissioning → Output settings → Minimum span

Description Specifies the smallest possible measuring span of the sensor.

User interface Signed floating-point number

"Output settings" wizard

Navigation Guidance → Commissioning → Output settings

Pressure

Navigation Guidance → Commissioning → Output settings → Pressure

User entry Signed floating-point number

Scaled variable

Navigation Guidance → Commissioning → Output settings → Scaled variable

User entry Signed floating-point number

"Output settings" wizard

Navigation Guidance → Commissioning → Output settings

Scaled variable transfer function

Navigation Guidance → Commissioning → Output settings → Scal. v. trans.

Description

'Linear'
The linear pressure signal is used for the output signal. The flow must be calculated in the evaluation unit. Deviating from the bar graph (output signal), the digital value on the display shows continues to be the eradicated value.

'Square root'
The root flow signal is used for the output signal. The 'Flow (square root)' output signal is indicated on the on-site display with a root symbol.

'Table'
The output is defined according to the scaled variable / pressure table entered.

Selection

- Linear
- Square root *
- Table

Pressure value 1

Navigation Guidance → Commissioning → Output settings → P. value 1

Description Enter pressure for the first scaling point. 'Scaled variable value 1' will be allocated to this pressure.

User entry Signed floating-point number

Scaled variable value 1

Navigation Guidance → Commissioning → Output settings → Sc. var.value 1

Description Enter value for the first scaling point. This value is allocated to 'Pressure value 1'.

User interface Signed floating-point number

* Visibility depends on order options or device settings

Pressure value 2

Navigation Guidance → Commissioning → Output settings → P. value 2

Description Enter pressure for the second scaling point. 'Scaled variable value 2' will be allocated to this pressure.

User entry Signed floating-point number

Scaled variable value 2

Navigation Guidance → Commissioning → Output settings → Sc. var.value 2

Description Enter value for the second scaling point. This value is allocated to 'Pressure value 2'.

User entry Signed floating-point number

Lower Range Limit

Navigation Guidance → Commissioning → Output settings → LRL

Description Indicates the lower measuring limit of the sensor.

User interface Signed floating-point number

Upper Range Limit

Navigation Guidance → Commissioning → Output settings → URL

Description Indicates the upper measuring limit of the sensor.

User interface Signed floating-point number

Minimum span

Navigation Guidance → Commissioning → Output settings → Minimum span

Description Specifies the smallest possible measuring span of the sensor.

User interface Signed floating-point number

"Output settings" wizard

Navigation Guidance → Commissioning → Output settings

Assign process variable

Navigation

Guidance → Commissioning → Output settings → Assign variable
Guidance → Commissioning → Output settings → Assign variable
Guidance → Commissioning → Output settings → Assign variable
Guidance → Commissioning → Output settings → Assign variable
Guidance → Commissioning → Output settings → Assign variable
Guidance → Commissioning → Output settings → Assign variable
Guidance → Commissioning → Output settings → Assign variable

Description

Select a process variable

User interface

- Pressure *
- Scaled variable *
- Sensor temperature *
- Sensor pressure *
- Electronics temperature *
- Median of pressure signal *
- Noise of pressure signal *

Additional information

User interface

"Sensor pressure" option
Sensor Pressure is the raw signal from sensor before damping and position adjustment.

* Visibility depends on order options or device settings

3.3.2 "Heartbeat Technology" submenu

Navigation Guidance → Heartbeat Techn.

"Heartbeat Verification" wizard

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif.

"Heartbeat Configuration" wizard

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Heartbeat Config

Heartbeat Verification

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Heartbeat Config → Heartbeat Verif.

Selection
- Start verification
- Show results

"Mainboard module" wizard

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Mainboard module

System status

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Mainboard module → System status

Description Checks active measurement device errors at diagnostical behavior 'alarm'.
If an active error is detected, then verification will be performed but the overall result will always be 'Failed'.

User interface
- Not done
- Passed
- Not done
- Failed

Terminal voltage

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Mainboard module → Terminal volt.

Description Checks whether the voltage at the supply terminals is within the specified limits.
Exceeding the maximum terminal voltage can damage the device.
If the supply voltage is permanently in the maximum range, the useful life of the device can be reduced.
If the terminal voltage falls below the minimum, the device can fail.

User interface
- Not done
- Passed
- Not done
- Failed

Module operating voltages

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Mainboard module → Module op. volt.

Description Checks, if the internal module voltages are within the allowable range.

User interface
- Not done
- Passed
- Not done
- Failed

Software integrity

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Mainboard module → Software integ.

Description Checks whether the function blocks of the software are executed in the correct order.

User interface
- Not done
- Passed
- Not done
- Failed

RAM check

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Mainboard module → RAM check

Description Checks the correct function of the RAM (Random Access Memory).

User interface
- Not done
- Passed
- Not done
- Failed

ROM check

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Mainboard module → ROM check

Description Checks the correct function of the ROM memory (Read-Only-Memory).

User interface
- Not done
- Passed
- Not done
- Failed

"Sensor module" wizard

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Sensor module

Sensor integrity

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Sensor module → Sensor integrity

Description Checks the integrity of the sensor. Scope of check depends on sensor type used.

User interface
- Not done
- Passed
- Not done
- Failed

Membrane integrity

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Sensor module → Membrane integr.

Description Checks the integrity of the membrane.

Notice:
Not included in the scope of testing for metallic membranes.

User interface
- Not done
- Passed
- Not done
- Failed

Sensor/membrane integrity

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Sensor module → Sensor/membrane

Description Checks the integrity of the sensor and membrane.

User interface
- Not done
- Passed
- Not done
- Failed

Statistical Sensor Diagnostics

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Sensor module → SSD

Description Checks whether the actual values are within the defined signal noise thresholds.

User interface
- Not done
- Passed
- Not done
- Failed

Sensor temperature verification

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Sensor module → Sensor temp. ver

User interface
- Not done
- Passed
- Not done
- Failed

Analog path integrity

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Sensor module → Analog path

User interface
- Not done
- Passed
- Not done
- Failed

"Verification result" wizard

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Verific. result

Verification result

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Verific. result → Verific. result

User interface
- Not done
- Passed
- Not done
- Failed

Save protocol?

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Verific. result → Save protocol?

Description The Report can be saved for archiving.

Selection
- No
- Yes

"Finish" wizard

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Finish

Inspector

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Finish → Inspector

Description The entered inspector name will be included in the report.

User entry Character string comprising numbers, letters and special characters (96)

Location

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Finish → Location

Description The entered value will be included in the report.

User entry Character string comprising numbers, letters and special characters (96)

Notes

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Finish → Notes

Description The entered value will be included in the report.

User entry Character string comprising numbers, letters and special characters (255)

Plant operator

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Finish → Plant operator

Description The entered value will be included in the report.

User entry Character string comprising numbers, letters and special characters (96)

Operating time (Verification)

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Finish → Operating time

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

Date/time Heartbeat Verification

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif. → Finish → Date/time Heartbeat Verification

Description Date and time of last Hearbeat Verification.

This value is updated with every Heartbeat verification.

Note:
If time information is not available, e.g. Heartbeat verification is started from display, '--------' is shown.

User interface Character string comprising numbers, letters and special characters

"SSD: Statistical Sensor Diagnostics" wizard

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag

"Configuration" wizard

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Configuration

Status summary

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Configuration → Status summary

Description Activate SSD.

User interface
- Deactivated
- Learning phase
- Monitoring inactive
- Monitoring active
- Monitoring active with event
- No baseline

Status summary

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Configuration → Status summary

Description Please wait. Function is not ready.

User interface
- Deactivated
- Learning phase
- Monitoring inactive
- Monitoring active
- Monitoring active with event
- No baseline

Status summary

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Configuration → Status summary

Description The signal noise is too small for the teach-in phase.

Note:
Teach-in is only possible while the process is running.

Measures:
Check valve position.
If necessary, perform the teach-in procedure later while the process is running.

User interface
- Deactivated
- Learning phase
- Monitoring inactive
- Monitoring active
- Monitoring active with event
- No baseline

Status summary

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Configuration → Status summary

Description The teach-in phase is completed. Continue or terminate the configuration.

User interface
- Deactivated
- Learning phase
- Monitoring inactive
- Monitoring active
- Monitoring active with event
- No baseline

Status summary

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Configuration → Status summary

Description The SSD is not active because the average value of the raw signal is outside the limits.
The SSD is reactivated as soon as the average value is within the limits again.
Adjust the limits if necessary.

User interface
- Deactivated
- Learning phase
- Monitoring inactive
- Monitoring active
- Monitoring active with event
- No baseline

Status summary

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Configuration → Status summary

Description The SSD has detected an event (e.g. blocked impulse line).
Check whether maintenance work is required.

User interface
- Deactivated
- Learning phase
- Monitoring inactive
- Monitoring active
- Monitoring active with event
- No baseline

Status summary

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Configuration → Status summary

Description The SSD is not active because the process conditions are too dynamic for reliable operation.
If necessary, teach in a new baseline or adjust the sampling rate.

The SSD is reactivated as soon as the average value of the raw signal is within the limits.

User interface
- Deactivated
- Learning phase
- Monitoring inactive
- Monitoring active
- Monitoring active with event
- No baseline

Status summary

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Configuration → Status summary

Description The current signal noise is too small to activate the SSD.

User interface
- Deactivated
- Learning phase
- Monitoring inactive
- Monitoring active
- Monitoring active with event
- No baseline

Status summary

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Configuration → Status summary

Description Baseline could not be created with following reasons:
- There is not enough signal noise during building baseline phase.
- There is a process change during building baseline phase.

User interface
- Deactivated
- Learning phase
- Monitoring inactive
- Monitoring active
- Monitoring active with event
- No baseline

System status

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Configuration → System status

User interface
- Idle
- No sufficient signal noise
- Stable
- Not stable
- Verify System Dynamics

Signal status

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Configuration → Signal status

User interface
- Idle
- Building Baseline
- Verifying Baseline
- Verifying baseline failed

- Monitoring
- Out of range
- Monitoring inactive

Signal noise status

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Configuration → Noise status

User interface
- Idle
- Building Baseline
- Verifying Baseline
- Verifying baseline failed
- Monitoring
- Out of range
- Monitoring inactive

Baseline build process

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Configuration → Baseline process

User interface 0 to 100 %

Sample rate

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Configuration → Sample rate

Description Determines the sampling rate depending on the process conditions:

'Fast'
homogeneous stable process with Gauss distribution.

'Medium'
dynamic process

'Slow'
extremely dynamic variable process

Selection
- Fast
- Medium
- Slow

"Monitoring" wizard

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Monitoring

Signal status

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Monitoring → Signal status

User interface
- Idle
- Building Baseline
- Verifying Baseline
- Verifying baseline failed
- Monitoring
- Out of range
- Monitoring inactive

Current Baseline signal

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Monitoring → Curr. Baseline

Description Current average of the raw signal.

User interface Signed floating-point number

Baseline Signal Upper Control Line

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Monitoring → Baseline S. UCL

Description Upper limit for the average value of the raw signal. If the average value is above this limit, the SSD is inactive.

Note:
This parameter should not be greater than 'Signal maximum value'.

User entry Signed floating-point number

Baseline Signal Control Line

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Monitoring → Baseline S. CL

Description Learned-in mean of the raw signal.

User interface Signed floating-point number

Baseline Signal Lower Control Line

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Monitoring → Baseline S. LCL

Description Lower limit for the average value of the raw signal. If the average value is below this limit, the SSD is inactive.

Note:
This parameter should not be less than 'Signal minimum value'.

User entry Signed floating-point number

Signal minimum value

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Monitoring → Minimum value

Description Minimum mean of the raw signal during the learning phase.

User interface Signed floating-point number

Signal maximum value

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Monitoring → Maximum value

Description Maximum mean of the raw signalo during the learning phase.

User interface Signed floating-point number

"Monitoring" wizard

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Monitoring

Signal noise status

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Monitoring → Noise status

User interface
- Idle
- Building Baseline
- Verifying Baseline
- Verifying baseline failed
- Monitoring
- Out of range
- Monitoring inactive

Current Baseline noise

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Monitoring → Current noise

Description Current signal noise (standard deviation) of the raw signal.

User interface Signed floating-point number

Baseline Signal Noise Upper Control Line

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Monitoring → Baseline SN. UCL

Description Upper limit for the noise of the raw signal. If the noise is above this limit, the SSD is inactive.

Note:
This parameter should not be greater than 'Signal noise maximum value'.

User entry Signed floating-point number

Baseline Signal Noise Control Line

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Monitoring → Baseline SN. CL

Description Learned-in noise of the raw signal.

User interface Signed floating-point number

Baseline Signal Noise Lower Control Line

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Monitoring → Baseline SN. LCL

Description Lower limit for the noise of the raw signal. If the noise is below this limit, the SSD is inactive.

Note:
This parameter should not be less than 'Signal noise minimum value'.

User entry Signed floating-point number

Baseline Signal Noise Minimum

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Monitoring → Baseline SN. Min

Description Minimum value of the signal noise.
Below this value, the SSD cannot be activated.

User entry Signed floating-point number

Signal noise minimum value

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Monitoring → Min. noise value

Description Minimum measured signal noise during the learning phase.

User interface Signed floating-point number

Signal noise maximum value

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Monitoring → Max noise value

Description Maximum measured signal noise during the learning phase.

User interface Signed floating-point number

"Diagnostic settings" wizard

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Diag. settings

SSD Monitoring delay time

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Diag. settings → SSD Verz. Zeit

User entry 0 to 86 400 s

900 Event category

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Diag. settings → 900Event category

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

900 Diagnostic behavior

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Diag. settings → 900 Diag. behav.

Description Select event behavior

'Logbook entry only':
No forwarding of the message via the fieldbus.

'Warning': Warning message is transmitted via the fieldbus (default setting).

Regardless of the setting, the message appears on the display. If the permissible conditions are reached again, the warning is no longer available in the instrument.

Selection
- Warning
- Logbook entry only

SSD Out of range delay time

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Diag. settings → SSD Delay time

User entry 0 to 604 800 s

906 Event category

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Diag. settings → 906Event category

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

906 Diagnostic behavior

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Diag. settings → 906 Diag. behav.

Description Select event behavior

'Logbook entry only':
No forwarding of the message via the fieldbus.

'Warning': Warning message is transmitted via the fieldbus (default setting).

Regardless of the setting, the message appears on the display. If the permissible conditions are reached again, the warning is no longer available in the instrument.

Selection
- Off
- Warning
- Logbook entry only

"Activate/Deactivate" wizard

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Activ./ Deactiv.

SSD: Statistical Sensor Diagnostics

Navigation Guidance → Heartbeat Techn. → Stat. Sens. Diag → Activ./Deactiv. → Stat. Sens. Diag

Description Enable or disable SSD.

After selecting 'Disable', no statistical sensor diagnosis takes place. No diagnostic messages are output.

Selection
- Disable
- Enable

"Process window" wizard

Navigation Guidance → Heartbeat Techn. → Process window

"Pressure range" wizard

Navigation Guidance → Heartbeat Techn. → Process window → Pressure range

500 Process alert pressure

Navigation Guidance → Heartbeat Techn. → Process window → Pressure range → 500 Pressure

Description Define whether user-defined pressure limits should be set.
If 'No' is selected, no analysis will take place and no event message will be generated.

Selection
- Off
- On

Low alert value

Navigation Guidance → Heartbeat Techn. → Process window → Pressure range → Low alert value

Description Set area.
If this limit value is exceeded or undercut, an event is generated. There is no hysteresis.

User entry Signed floating-point number

High alert value

Navigation Guidance → Heartbeat Techn. → Process window → Pressure range → High alert value

Description Set area.
If this limit value is exceeded or undercut, an event is generated. There is no hysteresis.

User entry Signed floating-point number

Counter underruns of user limit Pmin

Navigation Guidance → Heartbeat Techn. → Process window → Pressure range → Counter < P user

Description Counts how many times the value underruns the minimum values defined by the user. User defined minimum values are shown in Diagnostic/Diagnostic settings/Properties menu.

User interface 0 to 65 535

Counter overruns of user limit Pmax

Navigation Guidance → Heartbeat Techn. → Process window → Pressure range → Counter > P user

Description Counts how many times the value overruns the maximum values defined by the user. User defined maximum values are shown in Diagnostic/Diagnostic settings/Properties menu.

User interface 0 to 65 535

500 Diagnostic behavior

Navigation Guidance → Heartbeat Techn. → Process window → Pressure range → 500 Diag. behav.

Description Select event behavior

'Logbook entry only':
no digital or analog transmission of the message

'Warning': Current output unchanged. Message is output digitally (default).

'Alarm': Current output assumes the set alarm current.

Regardless of the setting, the message appears on the display. If the permissible conditions are reached again, the warning is no longer available in the instrument.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

500 Event category

Navigation Guidance → Heartbeat Techn. → Process window → Pressure range → 500Event category

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

"Pressure range" wizard

Navigation Guidance → Heartbeat Techn. → Process window → Pressure range

501 Process alert scaled variable

Navigation Guidance → Heartbeat Techn. → Process window → Pressure range → 501 Scaled var.

Description
Define whether user-defined limits should be set.
If 'No' is selected, no analysis will take place and no event message will be generated.

Selection
- Off
- On

Low alert value

Navigation Guidance → Heartbeat Techn. → Process window → Pressure range → Low alert value

Description
Set area.
If this limit value is exceeded or undercut, an event is generated. There is no hysteresis.

User entry
Signed floating-point number

High alert value

Navigation Guidance → Heartbeat Techn. → Process window → Pressure range → High alert value

Description Set area.
If this limit value is exceeded or undercut, an event is generated. There is no hysteresis.

User entry Signed floating-point number

501 Diagnostic behavior

Navigation Guidance → Heartbeat Techn. → Process window → Pressure range → 501 Diag. behav.

Description Select event behavior

'Logbook entry only':
no digital or analog transmission of the message

'Warning': Current output unchanged. Message is output digitally (default).

'Alarm': Current output assumes the set alarm current.

Regardless of the setting, the message appears on the display. If the permissible conditions are reached again, the warning is no longer available in the instrument.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

501 Event category

Navigation Guidance → Heartbeat Techn. → Process window → Pressure range → 501Event category

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

"Temperature range" wizard

Navigation Guidance → Heartbeat Techn. → Process window → Temp. range

User temperature process alert

Navigation Guidance → Heartbeat Techn. → Process window → Temp. range → UserTemp alert

Description Define whether the user-defined sensor temperature limits should be set. If 'No' no analysis and therefore no event message will take place.

Selection
- Off
- On

Low alert value

Navigation Guidance → Heartbeat Techn. → Process window → Temp. range → Low alert value

Description Set area.
If this limit value is exceeded or undercut, an event is generated. There is no hysteresis.

User entry −50 to 150 °C

High alert value

Navigation Guidance → Heartbeat Techn. → Process window → Temp. range → High alert value

Description Set area.
If this limit value is exceeded or undercut, an event is generated. There is no hysteresis.

User entry −50 to 150 °C

Counter underruns of user limit Tmin

Navigation Guidance → Heartbeat Techn. → Process window → Temp. range → Counter < T user

User interface 0 to 65 535

Counter overruns of user limit Tmax

Navigation Guidance → Heartbeat Techn. → Process window → Temp. range → Counter > T user

User interface 0 to 65 535

502 Diagnostic behavior

Navigation Guidance → Heartbeat Techn. → Process window → Temp. range → 502 Diag. behav.

Description Select event behavior

'Logbook entry only':
no digital or analog transmission of the message

'Warning': Current output unchanged. Message is output digitally (default).

'Alarm': Current output assumes the set alarm current.

Regardless of the setting, the message appears on the display. If the permissible conditions are reached again, the warning is no longer available in the instrument.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

502 Event category

Navigation Guidance → Heartbeat Techn. → Process window → Temp. range → 502Event category

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

3.4 "Diagnostics" menu

Navigation Diagnostics

3.4.1 "Active diagnostics" submenu

Navigation Diagnostics → Active diagnos.

Active diagnostics

Navigation Diagnostics → Active diagnos. → Active diagnos.

Prerequisite A diagnostic event has occurred.

Description Displays the current diagnostic message. If two or more messages occur simultaneously, the message with the highest priority is shown on the display.

User interface Symbol for diagnostic behavior, diagnostic code and short message.

Additional information *User interface*

Additional pending diagnostic messages can be viewed in the **Diagnostic list** submenu.

Example

For the display format:
⊗F271 Main electronic failure

Timestamp

Navigation Diagnostics → Active diagnos. → Timestamp

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

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

Additional information *User interface*

The diagnostic message can be viewed via the **Actual diagnostics** parameter (→ 66).

Example

For the display format:
24d12h13m00s

Previous diagnostics

Navigation Diagnostics → Active diagnos. → Prev.diagnostics

Prerequisite Two diagnostic events have already occurred.

Description Displays the diagnostic message that occurred before the current message.

User interface Symbol for diagnostic behavior, diagnostic code and short message.

Additional information *User interface*

Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the E key.

Example

For the display format:
⊗F271 Main electronic failure

Timestamp

Navigation Diagnostics → Active diagnos. → Timestamp

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

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

Additional information *User interface*

The diagnostic message can be viewed via the **Previous diagnostics** parameter (→ 67).

Example

For the display format:
24d12h13m00s

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.

Additional information Maximum time: 9 999 d (≈ 27 years)

3.4.2 "Event logbook" submenu

Navigation Diagnostics → Event logbook

Filter options

Navigation Diagnostics → Event logbook → Filter options

Description Use this function to select the category whose event messages are displayed in the event list of the operating tool.

Selection
- All
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- Information (I)
- Not categorized

Additional information *Description*

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

3.4.3 "Minimum/maximum values" submenu

Navigation Diagnostics → Min/max val.

Pressure min

Navigation Diagnostics → Min/max val. → Pressure min

Description Minimum or maximum value measured by device.

User interface Signed floating-point number

Counter limit underruns sensor Pmin

Navigation Diagnostics → Min/max val. → Counter P < Pmin

Description Counts how many times the value underruns the sensor specific minimum values. Sensor specific minimum values are shown in Application/Sensor menu.

User interface 0 to 65 535

Counter underruns of user limit Pmin

Navigation Diagnostics → Min/max val. → Counter < P user

Description Counts how many times the value underruns the minimum values defined by the user. User defined minimum values are shown in Diagnostic/Diagnostic settings/Properties menu.

User interface 0 to 65 535

Minimum sensor temperature

Navigation Diagnostics → Min/max val. → Min. sensor temp

Description Minimum or maximum value measured by device.
Users cannot reset this value.

User interface −273.15 to 9 726.85 °C

Counter limit underruns sensor Tmin

Navigation Diagnostics → Min/max val. → Counter T < Tmin

Description Counts how many times the value underruns/overruns the sensor specific minimum/maximum values.
Sensor specific minimum/maximum values are shown in Application/Sensor menu.

User interface 0 to 65 535

Counter underruns of user limit Tmin

Navigation Diagnostics → Min/max val. → Counter < T user

User interface 0 to 65 535

Minimum terminal voltage

Navigation Diagnostics → Min/max val. → Min.term.volt.

Description Minimum or maximum measured terminal (supply) voltage.

User interface 0.0 to 50.0 V

Minimum electronics temperature

Navigation Diagnostics → Min/max val. → Min.electr.temp.

Description Minimum or maximum measured main electronics temperature.

User interface Signed floating-point number

Reset user defined counters P and T

Navigation Diagnostics → Min/max val. → Reset count. P T

Selection
- Cancel
- Confirm

Pressure max

Navigation Diagnostics → Min/max val. → Pressure max

Description Minimum or maximum value measured by device.

User interface Signed floating-point number

Counter limit overruns sensor Pmax

Navigation Diagnostics → Min/max val. → Counter P > Pmax

Description Counts how many times the value overruns the sensor specific maximum values.
Sensor specific maximum values are shown in Application/Sensor menu.

User interface 0 to 65 535

Counter overruns of user limit Pmax

Navigation Diagnostics → Min/max val. → Counter > P user

Description Counts how many times the value overruns the maximum values defined by the user.
User defined maximum values are shown in Diagnostic/Diagnostic settings/Properties menu.

User interface 0 to 65 535

Maximum sensor temperature

Navigation Diagnostics → Min/max val. → Max. sensor temp

Description Minimum or maximum value measured by device.
Users cannot reset this value.

User interface −273.15 to 9 726.85 °C

Counter limit overruns sensor Tmax

Navigation Diagnostics → Min/max val. → Counter T > Tmax

Description Counts how many times the value underruns/overruns the sensor specific minimum/maximum values.
Sensor specific minimum/maximum values are shown in Application/Sensor menu.

User interface 0 to 65 535

Counter overruns of user limit Tmax

Navigation Diagnostics → Min/max val. → Counter > T user

User interface 0 to 65 535

Maximum terminal voltage

Navigation Diagnostics → Min/max val. → Max.term.voltage

Description Minimum or maximum measured terminal (supply) voltage.

User interface 0.0 to 50.0 V

Maximum electronics temperature

Navigation Diagnostics → Min/max val. → Max.electr.temp.

Description Minimum or maximum measured main electronics temperature.

User interface Signed floating-point number

3.4.4 "Simulation" submenu

Navigation Diagnostics → Simulation

Simulation

Navigation Diagnostics → Simulation → Simulation

Description Simulates one or more process variables and/or events.

Warning:
Output will reflect the simulated value or event.

Selection
- Off
- Pressure
- Diagnostic event simulation

Diagnostic event simulation

Navigation Diagnostics → Simulation → Diag. event sim.

Description Use this function to select a diagnostic event for the simulation process that is activated.

Selection
- Off
- Diagnostic event picklist (depends on the category selected)

Additional information *Description*

For the simulation, you can choose from the diagnostic events of the category selected in the **Diagnostic event category** parameter.

Value pressure simulation

Navigation Diagnostics → Simulation → Value pressure

User entry Signed floating-point number

3.4.5 "Heartbeat Technology" submenu

Navigation Diagnostics → Heartbeat Techn.

"Heartbeat Verification" submenu

Navigation Diagnostics → Heartbeat Techn. → Heartbeat Verif.

Date/time Heartbeat Verification

Navigation Diagnostics → Heartbeat Techn. → Heartbeat Verif. → Date/time Heartbeat Verification

Description Date and time of last Hearbeat Verification.

This value is updated with every Heartbeat verification.

Note:
If time information is not available, e.g. Heartbeat verification is started from display, '--------' is shown.

User interface Character string comprising numbers, letters and special characters

Operating time (Verification)

Navigation Diagnostics → Heartbeat Techn. → Heartbeat Verif. → Operating time

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

Verification result

Navigation Diagnostics → Heartbeat Techn. → Heartbeat Verif. → Verific. result

User interface
- Not done
- Passed
- Not done
- Failed

Status

Navigation Diagnostics → Heartbeat Techn. → Heartbeat Verif. → Status

Description Displays the current status of the verification.

User interface
- Done
- Busy
- Failed
- Not done

"Statistical Sensor Diagnostics" submenu

Navigation Diagnostics → Heartbeat Techn. → SSD

SSD: Statistical Sensor Diagnostics

Navigation Diagnostics → Heartbeat Techn. → SSD → Stat. Sens. Diag

Description
Enable or disable SSD.

After selecting 'Disable', no statistical sensor diagnosis takes place. No diagnostic messages are output.

Selection
- Disable
- Enable

System status

Navigation Diagnostics → Heartbeat Techn. → SSD → System status

User interface
- Idle
- No sufficient signal noise
- Stable
- Not stable
- Verify System Dynamics

Signal status

Navigation Diagnostics → Heartbeat Techn. → SSD → Signal status

User interface
- Idle
- Building Baseline
- Verifying Baseline
- Verifying baseline failed
- Monitoring
- Out of range
- Monitoring inactive

Signal noise status

Navigation Diagnostics → Heartbeat Techn. → SSD → Noise status

User interface
- Idle
- Building Baseline
- Verifying Baseline
- Verifying baseline failed
- Monitoring
- Out of range
- Monitoring inactive

3.4.6 "Diagnostic settings" submenu

Navigation Diagnostics → Diag. settings

"Properties" submenu

Navigation Diagnostics → Diag. settings → Properties

SSD Out of range delay time

Navigation Diagnostics → Diag. settings → Properties → SSD Delay time

User entry 0 to 604 800 s

SSD Monitoring delay time

Navigation Diagnostics → Diag. settings → Properties → SSD Verz. Zeit

User entry 0 to 86 400 s

500 Process alert pressure

Navigation Diagnostics → Diag. settings → Properties → 500 Pressure

Description Define whether user-defined pressure limits should be set.
If 'No' is selected, no analysis will take place and no event message will be generated.

Selection
- Off
- On

Low alert value

Navigation Diagnostics → Diag. settings → Properties → Low alert value

Description Set area.
If this limit value is exceeded or undercut, an event is generated. There is no hysteresis.

User entry Signed floating-point number

High alert value

Navigation Diagnostics → Diag. settings → Properties → High alert value

Description Set area.
If this limit value is exceeded or undercut, an event is generated. There is no hysteresis.

User entry Signed floating-point number

501 Process alert scaled variable

Navigation Diagnostics → Diag. settings → Properties → 501 Scaled var.

Description Define whether user-defined limits should be set.
If 'No' is selected, no analysis will take place and no event message will be generated.

Selection
- Off
- On

Low alert value

Navigation Diagnostics → Diag. settings → Properties → Low alert value

Description Set area.
If this limit value is exceeded or undercut, an event is generated. There is no hysteresis.

User entry Signed floating-point number

High alert value

Navigation Diagnostics → Diag. settings → Properties → High alert value

Description Set area.
If this limit value is exceeded or undercut, an event is generated. There is no hysteresis.

User entry Signed floating-point number

User temperature process alert

Navigation Diagnostics → Diag. settings → Properties → UserTemp alert

Description Define whether the user-defined sensor temperature limits should be set. If 'No' no analysis and therefore no event message will take place.

Selection
- Off
- On

Low alert value

Navigation Diagnostics → Diag. settings → Properties → Low alert value

Description Set area.
If this limit value is exceeded or undercut, an event is generated. There is no hysteresis.

User entry −50 to 150 °C

High alert value

Navigation Diagnostics → Diag. settings → Properties → High alert value

Description Set area.
If this limit value is exceeded or undercut, an event is generated. There is no hysteresis.

User entry −50 to 150 °C

"Configuration" submenu

Navigation Diagnostics → Diag. settings → Configuration → Configuration

436 Diagnostic behavior

Navigation Diagnostics → Diag. settings → Configuration → Configuration → 436 Diag. behav.

Selection
- Warning
- Logbook entry only

436 Event category

Navigation Diagnostics → Diag. settings → Configuration → Configuration → 436 Event category

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

500 Diagnostic behavior

Navigation Diagnostics → Diag. settings → Configuration → Configuration → 500 Diag. behav.

Description

Select event behavior

'Logbook entry only':
no digital or analog transmission of the message

'Warning': Current output unchanged. Message is output digitally (default).

'Alarm': Current output assumes the set alarm current.

Regardless of the setting, the message appears on the display. If the permissible conditions are reached again, the warning is no longer available in the instrument.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

500 Event category

Navigation Diagnostics → Diag. settings → Configuration → Configuration → 500Event category

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

501 Diagnostic behavior

Navigation Diagnostics → Diag. settings → Configuration → Configuration → 501 Diag. behav.

Description

Select event behavior

'Logbook entry only':
no digital or analog transmission of the message

'Warning': Current output unchanged. Message is output digitally (default).

'Alarm': Current output assumes the set alarm current.

Regardless of the setting, the message appears on the display. If the permissible conditions are reached again, the warning is no longer available in the instrument.

Selection
- Off
- Alarm
- Warning
- Logbook entry only

501 Event category

Navigation Diagnostics → Diag. settings → Configuration → Configuration → 501Event category

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

502 Diagnostic behavior

Navigation Diagnostics → Diag. settings → Configuration → Configuration → 502 Diag. behav.

Description

Select event behavior

'Logbook entry only':
no digital or analog transmission of the message

'Warning': Current output unchanged. Message is output digitally (default).

'Alarm': Current output assumes the set alarm current.

Regardless of the setting, the message appears on the display. If the permissible conditions are reached again, the warning is no longer available in the instrument.

Selection

- Off
- Alarm
- Warning
- Logbook entry only

502 Event category

Navigation Diagnostics → Diag. settings → Configuration → Configuration → 502Event category

User interface

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

"Process" submenu

Navigation Diagnostics → Diag. settings → Configuration → Process

Sensor pressure range behavior

Navigation Diagnostics → Diag. settings → Configuration → Process → P-range behavior

Description Alarm and warning messages appear on the display. If the permissible conditions are reached again, the warning message disappears.

Select event behavior:

'Alarm':
The signal outputs assume the specified alarm condition. A diagnostic message is generated.

'Warning':
The signal outputs assume the specified warning condition. A diagnostic message is generated.

'Logbook entry only':
No digital or analog forwarding of the message. A diagnostic message is written in the logbook.

Selection
- Alarm
- Warning
- Logbook entry only

841 Event category

Navigation Diagnostics → Diag. settings → Configuration → Process → 841 Event category

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

900 Event category

Navigation Diagnostics → Diag. settings → Configuration → Process → 900Event category

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

900 Diagnostic behavior

Navigation Diagnostics → Diag. settings → Configuration → Process → 900 Diag. behav.

Description Select event behavior

'Logbook entry only':
No forwarding of the message via the fieldbus.

'Warning': Warning message is transmitted via the fieldbus (default setting).

Regardless of the setting, the message appears on the display. If the permissible conditions are reached again, the warning is no longer available in the instrument.

Selection
- Warning
- Logbook entry only

906 Diagnostic behavior

Navigation Diagnostics → Diag. settings → Configuration → Process → 906 Diag. behav.

Description Select event behavior

'Logbook entry only':
No forwarding of the message via the fieldbus.

'Warning': Warning message is transmitted via the fieldbus (default setting).

Regardless of the setting, the message appears on the display. If the permissible conditions are reached again, the warning is no longer available in the instrument.

Selection
- Off
- Warning
- Logbook entry only

906 Event category

Navigation Diagnostics → Diag. settings → Configuration → Process → 906Event category

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

3.5 "Application" menu

Navigation Application

3.5.1 "Measured values" submenu

Navigation Application → Measured values

Pressure

Navigation Application → Measured values → Pressure

Scaled variable

Navigation Application → Measured values → Scaled variable

User interface Signed floating-point number

Sensor temperature

Navigation Application → Measured values → Sensor temp.

User interface −273.15 to 9 726.85 °C

Terminal voltage 1

Navigation Application → Measured values → Terminal volt. 1

Description Shows the current terminal voltage that is applied at the output

User interface 0.0 to 50.0 V

Electronics temperature

Navigation Application → Measured values → Electronics temp

Description Displays the current temperature of the main electronics.

User interface Signed floating-point number

3.5.2 "Measuring units" submenu

Navigation Application → Measuring units

Pressure unit

Navigation Application → Measuring units → Pressure unit

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

Selection

SI units	*US units*	*Other units*
▪ MPa ▪ kPa ▪ Pa ▪ bar ▪ mbar a ▪ torr ▪ atm ▪ kgf/cm² ▪ gf/cm²	psi	▪ inH2O ▪ inH2O (4°C) ▪ mmH2O ▪ mmH2O (4°C) ▪ mH2O ▪ mH2O (4°C) ▪ ftH2O ▪ inHg ▪ mmHg

Decimal places pressure

Navigation Application → Measuring units → Decimal pressure

Description This selection does not affect the measurement and calculation accuracy of the device.

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

Temperature unit

Navigation Application → Measuring units → Temperature unit

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

Selection	*SI units* ▪ °C ▪ K	*US units* °F
Factory setting	Country-specific: ▪ °C ▪ °F	
Additional information	*Selection*	

Scaled variable unit

Navigation Application → Measuring units → SV unit

Description Use 'Free text', first selection, if the desired unit is not available in the selection list. It is possible to define a customer specific unit with another parameter.

Selection

SI units
- %
- mm
- cm
- m
- l
- hl
- m^3
- g
- kg
- t
- g/s
- kg/s
- kg/min
- kg/h
- t/min
- t/h
- t/d
- m^3/s
- m^3/min
- m^3/h
- m^3/d
- l/s
- l/min
- l/h
- Nm^3/h
- Nl/h
- Sm^3/s
- Sm^3/min
- Sm^3/h
- Sm^3/d
- Nm^3/s
- g/cm^3
- kg/m^3
- Nm^3/min
- Nm^3/d

US units
- ft
- in
- ft^3
- gal (us)
- bbl (us;oil)
- oz
- lb
- STon
- lb/s
- lb/min
- lb/h
- STon/min
- STon/h
- STon/d
- ft^3/s
- ft^3/min
- ft^3/h
- ft^3/d
- gal/s (us)
- gal/min (us)
- gal/h (us)
- gal/d (us)
- bbl/s (us;oil)
- bbl/min (us;oil)
- bbl/h (us;oil)
- bbl/d (us;oil)
- Sft^3/min
- Sft^3/h
- Sft^3/d

Imperial units
- gal (imp)
- gal/s (imp)
- gal/min (imp)
- gal/h (imp)

Custom-specific units
Free text

Free text

Navigation Application → Measuring units → Free text

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

Decimal places scaled variable

Navigation Application → Measuring units → Decimal scaled

Description This selection does not affect the measurement and calculation accuracy of the device.

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

3.5.3 "Sensor" submenu

Navigation Application → Sensor → Sensor cal.

Zero adjustment

Navigation Application → Sensor → Sensor cal. → Zero adjustment

Description Due to the mounting position of the measuring instrument, a pressure shift may occur. The pressure shift can be corrected with the zero adjustment.

Selection
- No
- Confirm

Calibration offset

Navigation Application → Sensor → Sensor cal. → Calibr offset

Prerequisite Absolute pressure sensor

User entry Signed floating-point number

Zero adjustment offset

Navigation Application → Sensor → Sensor cal. → Zero adj. offset

User entry Signed floating-point number

Sensor Trim Reset

Navigation Application → Sensor → Sensor cal. → Sen. Trim Reset

Selection
- No
- Confirm

Lower sensor trim

Navigation Application → Sensor → Sensor cal. → LowerSensor trim

Description These two parameters allow a recalibration of the sensor, i.e., if you want to fit the sensor to the measuring range. The highest accuracy is obtained when the value for the 'Lower sensor trim' is as close as possible to 'LRV' (lower range value) and the value for 'Upper sensor trim' as close as possible to 'URV' (upper range value).

There must be a known reference pressure when setting a new lower or upper sensor characteristic curve value. The more accurate the reference pressure is during recalibration, the higher the accuracy of the pressure transmitter later. A new value is assigned to the applied pressure using 'Lower sensor trim' and 'Upper sensor trim' parameters.

Proceed as follows:
- Apply reference pressure for lower range value ('LRV')
- Enter the measured reference pressure at 'Lower sensor trim' and confirm
- Apply reference pressure for upper range value ('URV')
- Enter the measured reference pressure at 'Upper sensor trim' and confirm
- The sensor is now calibrated

User entry Signed floating-point number

Upper sensor trim

Navigation Application → Sensor → Sensor cal. → UpperSensor trim

User entry Signed floating-point number

Lower range value

Navigation Application → Sensor → Sensor cal. → Lower range val.

Description The calibrated span corresponds to the span between the LRV and URV.

Factory setting: 0 to URL.
Other calibrated spans can be ordered as customized span.

User entry Signed floating-point number

Upper range value

Navigation Application → Sensor → Sensor cal. → Upper range val.

Description The calibrated span corresponds to the span between the LRV and URV.

Factory setting: 0 to URL.
Other calibrated spans can be ordered as customized span.

User entry Signed floating-point number

"Sensor configuration" submenu

Navigation Application → Sensor → Sensor conf.

Damping

Navigation Application → Sensor → Sensor conf. → Damping

Description The damping is effective before the measured value is further processed, i.e., before the following processes:
- Scaling
- Limit value monitoring
- Forwarding to display
- Forwarding to Analog Input Block

Note:
The Analog Input Block has its own “Damping” parameter. In the measurement chain, only one of the two attenuation parameters shall have a value other than 0.
Otherwise, the signal will be attenuated several times.

User entry 0 to 999.0 s

"Sensor limits" submenu

Navigation Application → Sensor → Sensor limits

Lower Range Limit

Navigation Application → Sensor → Sensor limits → LRL

Description Indicates the lower measuring limit of the sensor.

User interface Signed floating-point number

Upper Range Limit

Navigation Application → Sensor → Sensor limits → URL

Description Indicates the upper measuring limit of the sensor.

User interface Signed floating-point number

Minimum span

Navigation Application → Sensor → Sensor limits → Minimum span

Description Specifies the smallest possible measuring span of the sensor.

User interface Signed floating-point number

Sensor temperature lower range limit

Navigation Application → Sensor → Sensor limits → Sens.temp.lo.lim

User interface −273.15 to 9 726.85 °C

Sensor temperature upper range limit

Navigation Application → Sensor → Sensor limits → Sens.temp.up.lim

User interface −273.15 to 9 726.85 °C

"Scaled variable" submenu

Navigation Application → Sensor → Scaled variable

Scaled variable unit

Navigation Application → Sensor → Scaled variable → SV unit

Description Use 'Free text', first selection, if the desired unit is not available in the selection list. It is possible to define a customer specific unit with another parameter.

Selection

SI units
- %
- mm
- cm
- m
- l
- hl
- m^3
- g
- kg
- t
- g/s
- kg/s
- kg/min
- kg/h
- t/min
- t/h
- t/d
- m^3/s
- m^3/min
- m^3/h
- m^3/d
- l/s
- l/min
- l/h
- Nm^3/h
- Nl/h
- Sm^3/s
- Sm^3/min
- Sm^3/h
- Sm^3/d
- Nm^3/s
- g/cm^3
- kg/m^3
- Nm^3/min
- Nm^3/d

US units
- ft
- in
- ft^3
- gal (us)
- bbl (us;oil)
- oz
- lb
- STon
- lb/s
- lb/min
- lb/h
- STon/min
- STon/h
- STon/d
- ft^3/s
- ft^3/min
- ft^3/h
- ft^3/d
- gal/s (us)
- gal/min (us)
- gal/h (us)
- gal/d (us)
- bbl/s (us;oil)
- bbl/min (us;oil)
- bbl/h (us;oil)
- bbl/d (us;oil)
- Sft^3/min
- Sft^3/h
- Sft^3/d

Imperial units
- gal (imp)
- gal/s (imp)
- gal/min (imp)
- gal/h (imp)

Custom-specific units
Free text

Free text

Navigation Application → Sensor → Scaled variable → Free text

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

Pressure

Navigation Application → Sensor → Scaled variable → Pressure

Scaled variable transfer function

Navigation Application → Sensor → Scaled variable → Scal. v. trans.

Description

'Linear'
The linear pressure signal is used for the output signal. The flow must be calculated in the evaluation unit. Deviating from the bar graph (output signal), the digital value on the display shows continues to be the eradicated value.

'Square root'
The root flow signal is used for the output signal. The 'Flow (square root)' output signal is indicated on the on-site display with a root symbol.

'Table'
The output is defined according to the scaled variable / pressure table entered.

Selection

- Linear
- Square root *
- Table

Pressure value 1

Navigation Application → Sensor → Scaled variable → P. value 1

Description Enter pressure for the first scaling point. 'Scaled variable value 1' will be allocated to this pressure.

User entry Signed floating-point number

Scaled variable value 1

Navigation Application → Sensor → Scaled variable → Sc. var.value 1

Description Enter value for the first scaling point. This value is allocated to 'Pressure value 1'.

User interface Signed floating-point number

* Visibility depends on order options or device settings

Pressure value 2

Navigation Application → Sensor → Scaled variable → P. value 2

Description Enter pressure for the second scaling point. 'Scaled variable value 2' will be allocated to this pressure.

User entry Signed floating-point number

Scaled variable value 2

Navigation Application → Sensor → Scaled variable → Sc. var.value 2

Description Enter value for the second scaling point. This value is allocated to 'Pressure value 2'.

User entry Signed floating-point number

Activate table

Navigation Application → Sensor → Scaled variable → Activate table

Selection
- Disable
- Enable

Pressure

Navigation Application → Sensor → Scaled variable → Pressure

User entry Signed floating-point number

Scaled variable

Navigation Application → Sensor → Scaled variable → Scaled variable

User entry Signed floating-point number

3.5.4 "PROFINET" submenu

Navigation Application → PROFINET

"Configuration" submenu

Navigation Application → PROFINET → Configuration

PROFINET device name

Navigation Application → PROFINET → Configuration → PROFINET DevName

Description Shows the short form of the PROFINET device name for the measuring point

User interface Character string comprising numbers, letters and special characters

PROFINET device name

Navigation Application → PROFINET → Configuration → PROFINET DevName

Description Up to 240 characters are allowed.
The following syntax must be used:
- 1 or more identifiers, separated with [.]
- Identifier length is 1 to 63 characters
- Identifier consists of [a-z 0-9] only lowercase letters and numbers allowed.

User entry Character string comprising numbers, letters and special characters (240)

Parameter change acknowledge mode

Navigation Application → PROFINET → Configuration → ParaChngAcknMode

Description Select how to acknowledge the displayed flag when changing the device configuration:
- "Auto acknowledge": the flag disappears automatically after 20 seconds.
- "Manual acknowledge": the flag must be acknowledged manually.

Selection
- Auto acknowledge
- Manual acknowledge

Acknowledge parameter change

Navigation Application → PROFINET → Configuration → AcknParaChange

Description If the Option "Manual acknowledge" is selected as the acknowledgement type, then a parameter change must be acknowledged with the "Reset update event flag" option.

Selection
- No acknowledge
- Reset update event flag

Descriptor

Navigation Application → PROFINET → Configuration → Descriptor

Description Enter a description for the measuring point

User entry Character string comprising numbers, letters and special characters (54)

"Analog input 1 to 7" submenu

Navigation Application → PROFINET → Analog input → Analog input 1 to 7

Process value

Navigation Application → PROFINET → Analog input → Analog input 1 to 7 → Process value

Description Shows the process value reported to the controller for further processing

User interface Signed floating-point number

Assign process variable

Navigation Application → PROFINET → Analog input → Analog input 1 to 7 → Assign variable

Description Select a process variable

User interface
- Pressure *
- Scaled variable *
- Sensor temperature *

* Visibility depends on order options or device settings

- Sensor pressure *
- Electronics temperature *
- Median of pressure signal *
- Noise of pressure signal *

Additional information *User interface*

"Sensor pressure" option
Sensor Pressure is the raw signal from sensor before damping and position adjustment.

Damping

Navigation Application → PROFINET → Analog input → Analog input 1 to 7 → Damping

Description Enter time constant for input damping (PT1 element). Damping reduces the effect of fluctuations in the measured value on the output signal.

User entry Positive floating-point number

"Binary input 1 to 2" submenu

Navigation Application → PROFINET → Binary input → Binary input 1 to 2

Controller input value

Navigation Application → PROFINET → Binary input → Binary input 1 to 2 → ControllInputVal

Description Shows for each device function the state reported to the controller for further processing

User interface 0 to 255

* Visibility depends on order options or device settings

"Binary output" submenu

Navigation Application → PROFINET → Binary output

Set point value

Navigation Application → PROFINET → Binary output → Set point value

User entry 0 to 255

BO block output value

Navigation Application → PROFINET → Binary output → BOBlockOutValue

Description Shows for each device function the state reported to the measuring device for further processing

User entry 0 to 255

Failure behavior

Navigation Application → PROFINET → Binary output → Failure behavior

Description Select failure behavior in the event of a failure (value with status 'Bad')

Selection
- Fixed value
- Last valid value
- Actual value

Failure behavior delay

Navigation Application → PROFINET → Binary output → FailBehavDelay

Description Enter a delay until in the event of a failure (value with status 'Bad') the failure behavior specified applies

User entry Positive floating-point number

Fixed value

Navigation Application → PROFINET → Binary output → Fixed value

Description Enter value to report in the event of a failure (value with status 'Bad')

User entry 0 to 255

"Information" submenu

Navigation Application → PROFINET → Information

Device ID

Navigation Application → PROFINET → Information → Device ID

User interface 0 to 65 535

PA profile version

Navigation Application → PROFINET → Information → PA profile vers.

User interface 0 to 65 535

"Application relation" submenu

Navigation Application → PROFINET → Applicat. relat.

AR state

Navigation Application → PROFINET → Applicat. relat. → AR state

Description Shows whether an AR connection and a system redundancy have been established

User interface
- Active
- Not active
- Redundancy 1AR active
- Redundancy 2AR active

MAC address IO controller

Navigation Application → PROFINET → Applicat. relat. → MAC IO contr.

Description Shows the MAC address of the only or of the primary IO controller

User interface Character string comprising numbers, letters and special characters

MAC address backup IO controller

Navigation Application → PROFINET → Applicat. relat. → MAC backup IO c.

Description Shows the MAC adress of the backup IO controller

User interface Character string comprising numbers, letters and special characters

IP address IO controller

Navigation Application → PROFINET → Applicat. relat. → IP IO controller

Description Shows the IP address of the only or of the primary IO controller

User interface Character string comprising numbers, letters and special characters

IP address backup IO controller

Navigation Application → PROFINET → Applicat. relat. → IP backup IO c.

Description Shows the IP adress of the backup IO controller

User interface Character string comprising numbers, letters and special characters

3.6 "System" menu

Navigation System

3.6.1 "Device management" submenu

Navigation System → Device manag.

Device tag

Navigation System → Device manag. → Device tag

Description Enter a name for the measuring point to identify the measuring device in the plant

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

Locking status

Navigation System → Device manag. → Locking status

Description Displays the active write protection.

User interface
- Hardware locked
- Temporarily locked

Additional information *User interface*

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

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

Selection

Function scope of the "Locking status" parameter

Options	Description
None	The access status displayed in the **Access status display** parameter applies. Only appears on local display.
Hardware locked	The DIP switch for hardware locking is activated on the main electronics module. This prevents write access to the parameters (e.g. via the local display or operating tool).
Temporarily locked	Write access to the parameters is temporarily locked due to device-internal processing (e.g. data upload/download, reset). Once the internal processing has been completed, the parameters can be changed once again.

Configuration counter

Navigation System → Device manag. → Config. counter

Description Shows the number of changes made to static parameters (e.g. configuration parameters)

User interface 0 to 65 535

Reset device

Navigation System → Device manag. → Reset device

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

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

Additional information *Selection*

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

* Visibility depends on order options or device settings

3.6.2 "User management" submenu

Navigation System → User manag.

User role

Navigation System → User manag. → User role

Description Shows the access authorization to the parameters via the operating tool

User interface
- Operator
- Maintenance
- Expert
- Production
- Development

Password

Navigation System → User manag. → Password

Description Enter the password for the 'Maintenance' user role to get access to the functionality of this role.

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

Enter access code

Navigation System → User manag. → Ent. access code

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

User entry 0 to 9 999

Status password entry

Navigation System → User manag. → Status pw entry

Description Use this function to display the status of the password verification.

User interface
- --------
- Wrong password
- Password rule violated

- Password accepted
- Permission denied
- Confirm PW mismatch
- Reset password accepted
- Invalid user role
- Wrong sequence of entry

New password

Navigation System → User manag. → New password

Description Define the new 'Maintenance' password.
A new password is valid after it has been confirmed within the 'Confirm new password' parameter.
Any valid password consists of 4 to 16 characters and can contain letters and numbers.

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

Confirm new password

Navigation System → User manag. → Conf. new passw.

Description Enter the new password again to confirm.

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

Old password

Navigation System → User manag. → Old password

Description Enter the current password, to subsequently change the existing password.

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

Reset password

Navigation System → User manag. → Reset password

Description Enter a code to reset the current 'Maintenance' password.
The code is deliverd by your local support.

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

3.6.3 "Connectivity" submenu

Navigation System → Connectivity

"Interfaces" submenu

Navigation System → Connectivity → Interfaces

Display operation

Navigation System → Connectivity → Interfaces → DisplayOperation

Selection
- Disable
- Enable

Web server functionality

Navigation System → Connectivity → Interfaces → Webserver funct.

Description Switch web server on and off, switch off HTML.

Selection
- Disable
- Enable

Bluetooth activation

Navigation System → Connectivity → Interfaces → Bluetooth active

Description If Bluetooth is deactivated, it can only be reactivated via the display or the operating tool. Reactivating via the SmartBlue app is not possible.

Selection
- Disable
- Enable

Service (UART-CDI)

Navigation System → Connectivity → Interfaces → Service (CDI)

Selection
- Disable
- Enable

"Bluetooth" submenu

Navigation System → Connectivity → Bluetooth

Bluetooth activation

Navigation System → Connectivity → Bluetooth → Bluetooth active

Description If Bluetooth is deactivated, it can only be reactivated via the display or the operating tool. Reactivating via the SmartBlue app is not possible.

Selection
- Disable
- Enable

"Ethernet" submenu

Navigation System → Connectivity → Ethernet

MAC address

Navigation System → Connectivity → Ethernet → MAC Address

Description Shows the MAC address of the measuring device

User interface Character string comprising numbers, letters and special characters

IP address

Navigation System → Connectivity → Ethernet → IP address

Description Enter the IP address of the measuring device

User entry Character string comprising numbers, letters and special characters (15)

Subnet mask

Navigation System → Connectivity → Ethernet → Subnet mask

Description Enter subnet mask of the measuring device

User entry Character string comprising numbers, letters and special characters (15)

Default gateway

Navigation System → Connectivity → Ethernet → Default gateway

Description Enter IP address for the default gateway of the measuring device

User entry Character string comprising numbers, letters and special characters (15)

Service IP active

Navigation System → Connectivity → Ethernet → Service IP act.

User interface
- No
- Yes

Interface connection status

Navigation System → Connectivity → Ethernet → Interface status

User interface
- Connected
- Not connected

Interface speed

Navigation System → Connectivity → Ethernet → Interface speed

User interface Positive integer

Duplex status

Navigation System → Connectivity → Ethernet → Duplex status

User interface
- Full duplex
- Half duplex
- Unknown

Auto negotiation status

Navigation System → Connectivity → Ethernet → Auto negot.stat.

User interface
- Idle
- In progress
- Completed
- Failed
- Speed detection failed

Received packet number

Navigation System → Connectivity → Ethernet → RX packet no.

User interface Positive integer

Sent packet number

Navigation System → Connectivity → Ethernet → TX packet number

User interface Positive integer

Number of failed received packets

Navigation System → Connectivity → Ethernet → FailRcvdPackets

User interface Positive integer

Number of failed sent packets

Navigation System → Connectivity → Ethernet → FailTXPacketsNo.

User interface Positive integer

Signal to noise ratio

Navigation System → Connectivity → Ethernet → SNR

Description Shows the signal to noise ratio of the Ethernet-APL connection. A value >21dB is good and >23dB is excellent.

User interface Signed floating-point number

Number of failed received packets

Navigation System → Connectivity → Ethernet → FailRXPacketsNo.

Description Shows the number of failed received packets.

User interface 0 to 65 535

Active TCP connections

Navigation System → Connectivity → Ethernet → Act. TCP connec.

User interface 0 to 65 535

Supported TCP connections

Navigation System → Connectivity → Ethernet → Supported TCP

User interface 0 to 65 535

TCP connection requests

Navigation System → Connectivity → Ethernet → TCPConnecRequest

User interface 0 to 65 535

TCP connection timeouts

Navigation System → Connectivity → Ethernet → TCPConnecTimeout

User interface 0 to 255

Number of TCP connections closed

Navigation System → Connectivity → Ethernet → TCPConnect.close

User interface 0 to 255

Number of received TCP packets

Navigation System → Connectivity → Ethernet → No.RX TCP Packet

User interface Positive integer

TCP sent packet number

Navigation System → Connectivity → Ethernet → TCP TX PacketNo.

User interface Positive integer

Number of TCP failed received packets

Navigation System → Connectivity → Ethernet → TCPFailRXPackets

User interface Positive integer

Available UDP ports

Navigation System → Connectivity → Ethernet → Avail. UDP ports

User interface Positive integer

UDP received packet number

Navigation System → Connectivity → Ethernet → UDP RX PacketNo.

User interface Positive integer

UDP sent packet number

Navigation System → Connectivity → Ethernet → UDP TX PacketNo.

User interface Positive integer

Number of UDP failed received packets

Navigation System → Connectivity → Ethernet → UDPFailRXPackets

User interface Positive integer

3.6.4 "Display" submenu

Navigation System → Display

Language

Navigation System → Display → Language

Prerequisite A local display is provided.

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

Selection
- English
- Deutsch
- Français
- Español
- Italiano
- Nederlands
- Portuguesa
- Polski
- русский язык (Russian)
- Svenska
- Türkçe
- 中文 (Chinese)

- 日本語 (Japanese)
- 한국어 (Korean)
- Bahasa Indonesia
- tiếng Việt (Vietnamese)
- čeština (Czech)

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

Format display

Navigation System → Display → Format display

Prerequisite A local display is provided.

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

Selection
- 1 value, max. size
- 2 values

Additional information *Description*

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

- The **Value 1 display** parameter (→ 112)...**Value 8 display** parameter **Value 4 display** parameter (→ 114) are used to specify which measured values are shown on the local display and in what order.
- If more measured values are specified than the display mode selected permits, then the values alternate on the device display. The display time until the next change is configured using the **Display interval** parameter.

Value 1 display

Navigation System → Display → Value 1 display

Prerequisite A local display is provided.

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

Selection
- Pressure
- Scaled variable
- Sensor temperature

Additional information

Description

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

The **Format display** parameter (→ 112) is used to specify how many measured values are displayed simultaneously and how.

Dependency

The unit of the displayed measured value is taken from the **System units** submenu.

Value 2 display

Navigation System → Display → Value 2 display

Prerequisite A local display is provided.

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

Selection

- None
- Pressure
- Scaled variable
- Sensor temperature

Additional information

Description

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

The **Format display** parameter (→ 112) is used to specify how many measured values are displayed simultaneously and how.

Dependency

The unit of the displayed measured value is taken from the **System units** submenu.

Value 3 display

Navigation System → Display → Value 3 display

Prerequisite A local display is provided.

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

Selection

- None
- Pressure
- Scaled variable
- Sensor temperature

Additional information

Description

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

The **Format display** parameter (→ 112) is used to specify how many measured values are displayed simultaneously and how.

Selection

The unit of the displayed measured value is taken from the **System units** submenu.

Value 4 display

Navigation System → Display → Value 4 display

Prerequisite A local display is provided.

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

Selection
- None
- Pressure
- Scaled variable
- Sensor temperature

Additional information

Description

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

The **Format display** parameter (→ 112) is used to specify how many measured values are displayed simultaneously and how.

Selection

The unit of the displayed measured value is taken from the **System units** submenu.

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 %

Factory setting Depends on the display

Additional information

Set the contrast via the push-buttons:
- Weaker: Press the ⊖ and E buttons simultaneously
- Stronger: Press the ⊕ and E buttons simultaneously

3.6.5 "Date/time" submenu

Navigation System → Date/time

Date/time

Navigation System → Date/time → Date/time

Description Displays the date and time entered.

User interface Character string comprising numbers, letters and special characters

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-02:30
- 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+13:45
- UTC+14:00

Enable NTP

Navigation System → Date/time → Enable NTP

Selection
- No
- Yes

NTP server address

Navigation System → Date/time → NTP server add.

Description IP address of the NTP server.

User entry Character string comprising numbers, letters and special characters (64)

Clock synchronized

Navigation System → Date/time → Clock synch.

Description Timestamp of last synchronization with an NTP server.

User interface Character string comprising numbers, letters and special characters

3.6.6 "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

3.6.7 "Information" submenu

Navigation System → Information

Device name

Navigation System → Information → Device name

Description Displays the name of the transmitter. It can also be found on the nameplate of the transmitter.

User interface Max. 32 characters such as letters or numbers.

Manufacturer

Navigation System → Information → Manufacturer

User interface Character string comprising numbers, letters and special characters

Serial number

Navigation System → Information → Serial number

Description Displays the serial number of the measuring device.

The number can be found on the nameplate of the sensor and transmitter.

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

Additional information *Description*

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

Order code

Navigation System → Information → Order code

Description Shows the device order code.

User interface Character string composed of letters, numbers and certain punctuation marks (e.g. /).

Factory setting –

Additional information *Description*

The order code is generated from the extended order code through a process of reversible transformation. The extended order code indicates the attributes for all the device features in the product structure. The device features are not directly readable from the order code.

Uses of the order code
- To order an identical spare device.
- To identify the device quickly and easily, e.g. when contacting Endress+Hauser.

Firmware version

Navigation System → Information → Firmware version

Description Displays the device firmware version that is installed.

User interface Character string in the format xx.yy.zz

Additional information *User interface*

The Firmware version is also located:
- On the title page of the Operating instructions
- On the transmitter nameplate

Hardware version

Navigation System → Information → Hardware version

User interface Character string comprising numbers, letters and special characters

Extended order code 1

Navigation System → Information → Ext. order cd. 1

Description The extended order code is an alphanumeric code containing all information to identify the device and its options.

User interface Character string

Factory setting –

Additional information *Description*

The extended order code indicates the version of all the features of the product structure for the measuring device and thus uniquely identifies the measuring device.

Extended order code 2

Navigation System → Information → Ext. order cd. 2

Description The extended order code is an alphanumeric code containing all information to identify the device and its options.

The extended order code can also be found on the nameplate of the sensor and transmitter in the "Ext. ord. cd." field.

User interface Character string

Factory setting –

Extended order code 3

Navigation System → Information → Ext. order cd. 3

Description The extended order code is an alphanumeric code containing all information to identify the device and its options.

The extended order code can also be found on the nameplate of the sensor and transmitter in the "Ext. ord. cd." field.

User interface Character string

Factory setting –

Checksum

Navigation System → Information → Checksum

Description Checksum for Firmware version.

User interface Positive integer

3.6.8 "Software configuration" submenu

Navigation System → Softw. config.

CRC device configuration

Navigation System → Softw. config. → CRC device conf.

Description CRC device configuration based on current settings of safety relevant parameters. The CRC device configuration is unique and can be used to detect changes in safety relevant parameter settings.

User interface 0 to 65 535

Activate SW option

Navigation System → Softw. config. → Activate SW opt.

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

User entry Max. 10-digit string of numbers.

Factory setting Depends on the software option ordered

Additional information *Description*

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

User entry

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

NOTE!

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

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

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

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

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

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

Example for a software option

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

Software option overview

Navigation System → Softw. config. → SW option overv.

Description Shows all enabled software options

User interface
- Heartbeat Verification
- Heartbeat Monitoring

"Firmware update" wizard

Depending on device and software interface, it is possible to update main software, sensor and display firmware.

Be sure to have a valid firmware package (e.g.: Device_Name_BusType_Vxx.yy.zz_bbbb_pkgVuu.vv.ww.sfu) already available on your system.

A list of available firmware can be found on “www.endress.com” or asking to local service supplier.

If the firmware is validated, a further confirmation will be prompted before to start the update process.
It is always possible to cancel the firmware update process before final confirmation.

Navigation System → Softw. config. → Firmware update

"Start update" wizard

Warning: Firmware update is irreversible. It is not always possible to downgrade the firmware after a successfully update to ensure compatibility.

Be sure to save configuration before to start the firmware update process.

After firmware confirmation a device restart can occur; be sure to consider all the related safety measures.

Navigation System → Softw. config. → Firmware update → Start update

I have read the warning texts.

Navigation System → Softw. config. → Firmware update → Start update → warning texts

Selection Yes

"Device information" wizard

Warning: Firmware update is irreversible. It is not always possible to downgrade the firmware after a successfully update to ensure compatibility.

Be sure to save configuration before to start the firmware update process.

After firmware confirmation a device restart can occur; be sure to consider all the related safety measures.

Navigation System → Softw. config. → Firmware update → Device info

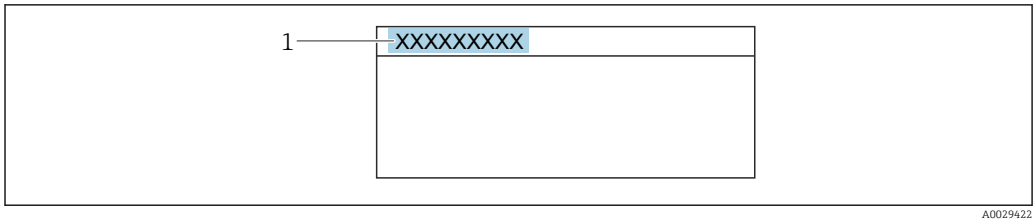
Device tag

Navigation System → Softw. config. → Firmware update → Device info → Device tag

Description Displays a unique name for the measuring point so it can be identified quickly within the plant. The name is displayed in the header.

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

Additional information *User interface*



1 Position of the header text on the display

The number of characters displayed depends on the characters used.

Device name

Navigation System → Softw. config. → Firmware update → Device info → Device name

Description Displays the name of the transmitter. It can also be found on the nameplate of the transmitter.

User interface Max. 32 characters such as letters or numbers.

Package version

Navigation System → Softw. config. → Firmware update → Device info → Package version

Description Current version of installed firmware package.
The package is an '.sfu' extension file containing
all needed device software components.

User interface Positive integer

"Select file" wizard

Select firmware update file to be transferred to the device.

Navigation System → Softw. config. → Firmware update → Select file

File check status

Navigation System → Softw. config. → Firmware update → Select file → File check st.

User interface
- Active
- Failed
- Not done
- Passed

"Performing verification" wizard

Navigation System → Softw. config. → Firmware update → Perform.verific.

File validation status

Navigation System → Softw. config. → Firmware update → Perform.verific. → File val. st.

User interface
- Active
- Failed
- Not done
- Passed

"Finish" wizard

Caution: Firmware updates are irreversible.

Firmware update has been transferred successfully. Continue to start update.

Navigation System → Softw. config. → Firmware update → Finish

I have read the warning texts.

Navigation System → Softw. config. → Firmware update → Finish → warning texts

Selection Yes

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