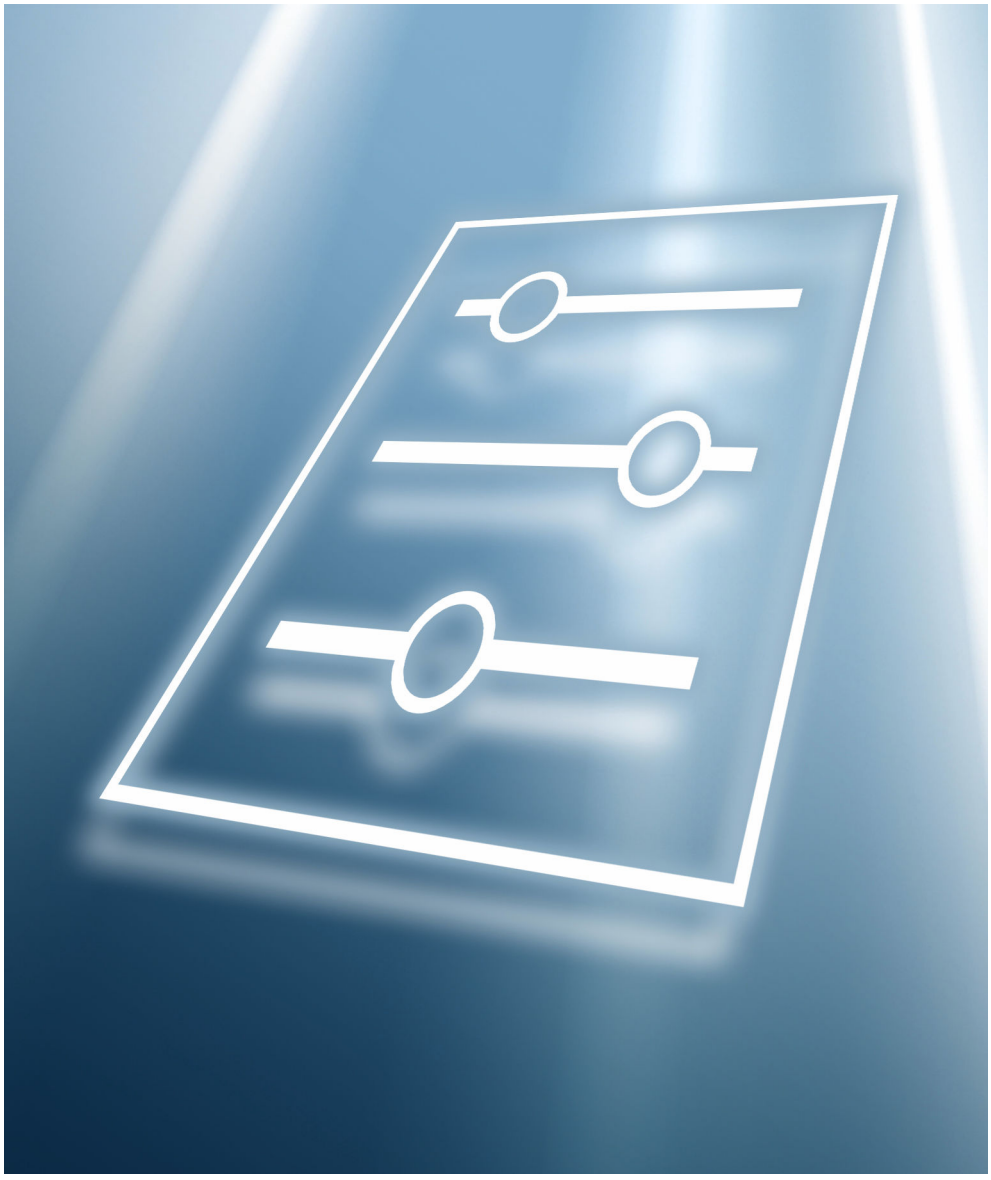
GP01161P/00/EN/02.24-00
71647905
2024-03-26

Valid as of version
01.00.zz (Device firmware)

Description of Device Parameters
Cerabar PMC71B

Process pressure measurement
HART



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

- Scaled variable transfer function → 46
- Pressure value 1 → 47
- Scaled variable value 1 → 47
- Pressure value 2 → 47
- Scaled variable value 2 → 47
- Lower Range Limit → 48
- Upper Range Limit → 48
- Minimum span → 48

▶ Output settings → 48

- Lower range value output → 48
- Upper range value output → 49
- Current range output → 49
- Failure behavior current output → 49
- Failure current → 49
- Loop current mode → 50
- Assign HART variables? → 50

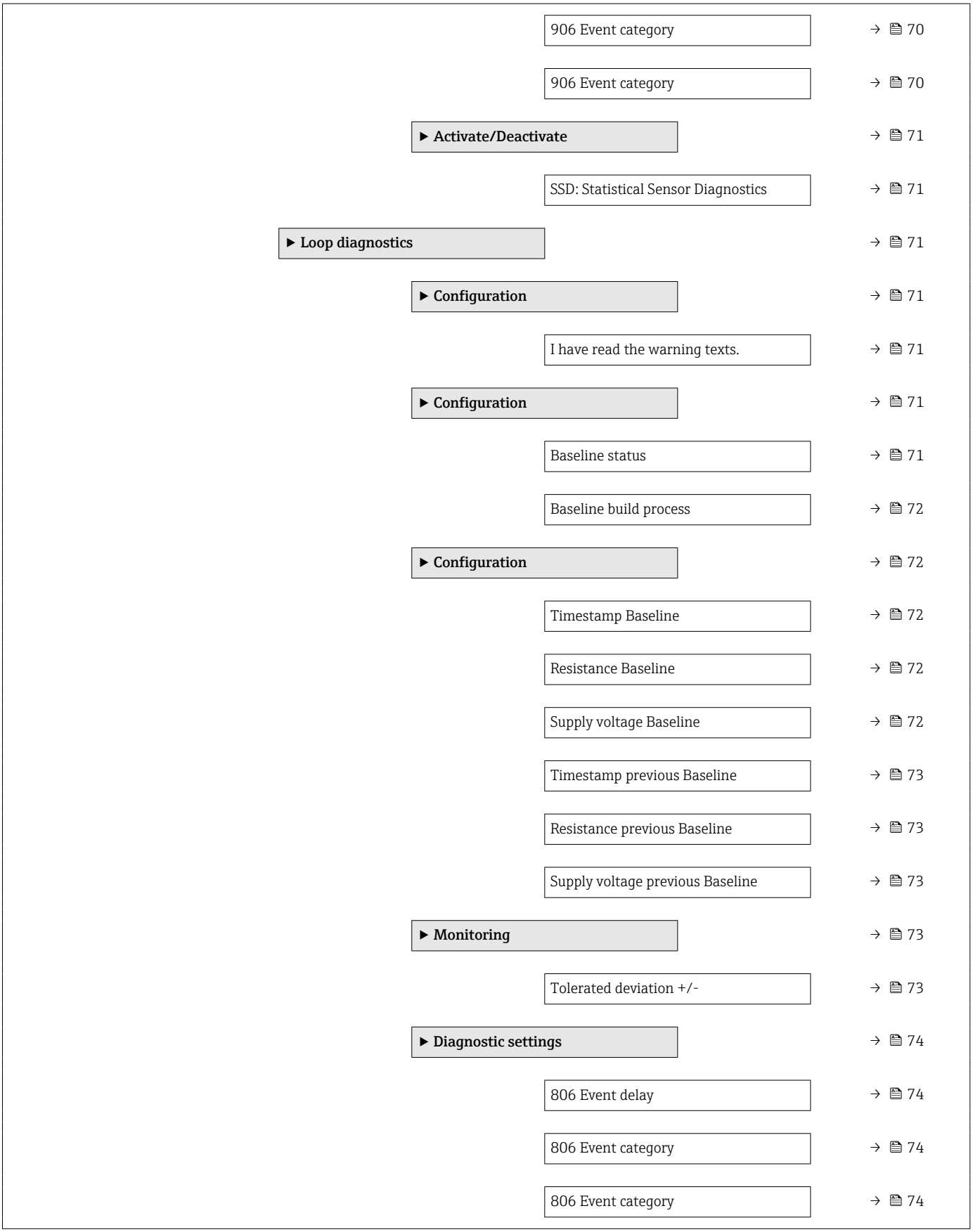
▶ Output settings → 50

- Process variable output current → 50
- Current range output → 51
- Lower range value output → 51
- Upper range value output → 51
- Failure behavior current output → 51
- Failure current → 52

- Loop current mode → 52
- Assign HART variables? → 52
- ▶ **Output settings** → 52
  - Assign PV → 52
  - Assign SV → 53
  - Assign TV → 53
  - Assign QV → 54
- ▶ **Heartbeat Technology** → 114
- ▶ **Heartbeat Verification** → 55
  - ▶ **Heartbeat Configuration** → 55
    - Heartbeat Verification → 55
  - ▶ **Mainboard module** → 55
    - System status → 55
    - Output current → 55
    - Software integrity → 56
    - RAM check → 56
    - ROM check → 56
    - Loop diagnostics → 57
  - ▶ **Sensor module** → 57
    - Sensor integrity → 57
    - Membrane integrity → 57
    - Sensor/membrane integrity → 58
    - Statistical Sensor Diagnostics → 58
    - Analog path integrity → 58
  - ▶ **Verification result** → 59

	Verification result	→ 59
	Save protocol?	→ 59
▶ **Finish**		→ 59
	Inspector	→ 59
	Location	→ 59
	Notes	→ 60
	Plant operator	→ 60
	Operating time (Verification)	→ 60
	Date/time Heartbeat Verification	→ 60
▶ **SSD: Statistical Sensor Diagnostics**		→ 60
▶ **Configuration**		→ 61
	Status summary	→ 61
	Status summary	→ 61
	Status summary	→ 61
	Status summary	→ 62
	Status summary	→ 62
	Status summary	→ 62
	Status summary	→ 63
	Status summary	→ 63
	Status summary	→ 63
	System status	→ 64
	Signal status	→ 64
	Signal noise status	→ 64
	Baseline build process	→ 64
	Sample rate	→ 65

- ▶ **Monitoring** → 66
  - Signal status → 66
  - Current Baseline signal → 66
  - Baseline Signal Upper Control Line → 66
  - Baseline Signal Control Line → 66
  - Baseline Signal Lower Control Line → 67
  - Signal minimum value → 67
  - Signal maximum value → 67
- ▶ **Monitoring** → 67
  - Signal noise status → 67
  - Current Baseline noise → 68
  - Baseline Signal Noise Upper Control Line → 68
  - Baseline Signal Noise Control Line → 68
  - Baseline Signal Noise Lower Control Line → 68
  - Baseline Signal Noise Minimum → 69
  - Signal noise minimum value → 69
  - Signal noise maximum value → 69
- ▶ **Diagnostic settings** → 69
  - SSD Monitoring delay time → 69
  - 900 Event category → 69
  - 900 Event category → 69
  - 900 Diagnostic behavior → 70
  - 900 Diagnostic behavior → 70
  - SSD Out of range delay time → 70


906 Event category → 70
906 Event category → 70
▶ Activate/Deactivate → 71
SSD: Statistical Sensor Diagnostics → 71
▶ Loop diagnostics → 71
▶ Configuration → 71
I have read the warning texts. → 71
▶ Configuration → 71
Baseline status → 71
Baseline build process → 72
▶ Configuration → 72
Timestamp Baseline → 72
Resistance Baseline → 72
Supply voltage Baseline → 72
Timestamp previous Baseline → 73
Resistance previous Baseline → 73
Supply voltage previous Baseline → 73
▶ Monitoring → 73
Tolerated deviation +/- → 73
▶ Diagnostic settings → 74
806 Event delay → 74
806 Event category → 74
806 Event category → 74

806 Diagnostic behavior → 74

806 Diagnostic behavior → 74

▶ **Activate/Deactivate** → 75

Loop diagnostics → 75

▶ **Process window** → 75

▶ **Pressure range** → 75

500 Process alert pressure → 75

Low alert value → 75

High alert value → 76

Counter underruns of user limit Pmin → 76

Counter overruns of user limit Pmax → 76

500 Diagnostic behavior → 77

500 Diagnostic behavior → 77

500 Event category → 77

500 Event category → 77

▶ **Pressure range** → 77

501 Process alert scaled variable → 77

Low alert value → 78

High alert value → 78

501 Diagnostic behavior → 78

501 Diagnostic behavior → 78

501 Event category → 79

501 Event category → 79

▶ **Temperature range** → 79

User temperature process alert → 79

- Low alert value → 79
- High alert value → 79
- Counter underruns of user limit Tmin → 80
- Counter overruns of user limit Tmax → 80
- 502 Diagnostic behavior → 80
- 502 Diagnostic behavior → 80
- 502 Event category → 80
- 502 Event category → 80

▶ Safety mode → 81

- **▶ Preparation** → 81
  - I have read the warning texts. → 81
- **▶ Preparation** → 81
  - Enter safety unlocking code → 81
  - Locking status → 81
- **▶ Preparation** → 83
  - Character test string → 83
  - Confirm → 83
- **▶ Preparation** → 84
  - Device tag → 84
  - Device name → 84
  - Serial number → 85
  - Firmware version → 85
  - Hardware version → 85
  - Confirm → 85
- **▶ Preparation** → 86

- Minimum sensor temperature → 110
- Counter limit underruns sensor Tmin → 110
- Counter underruns of user limit Tmin → 110
- Minimum terminal voltage → 110
- Minimum electronics temperature → 110
- Reset user defined counters P and T → 111
- Pressure max → 111
- Counter limit overruns sensor Pmax → 111
- Counter overruns of user limit Pmax → 111
- Maximum sensor temperature → 111
- Counter limit overruns sensor Tmax → 112
- Counter overruns of user limit Tmax → 112
- Maximum terminal voltage → 112
- Maximum electronics temperature → 112

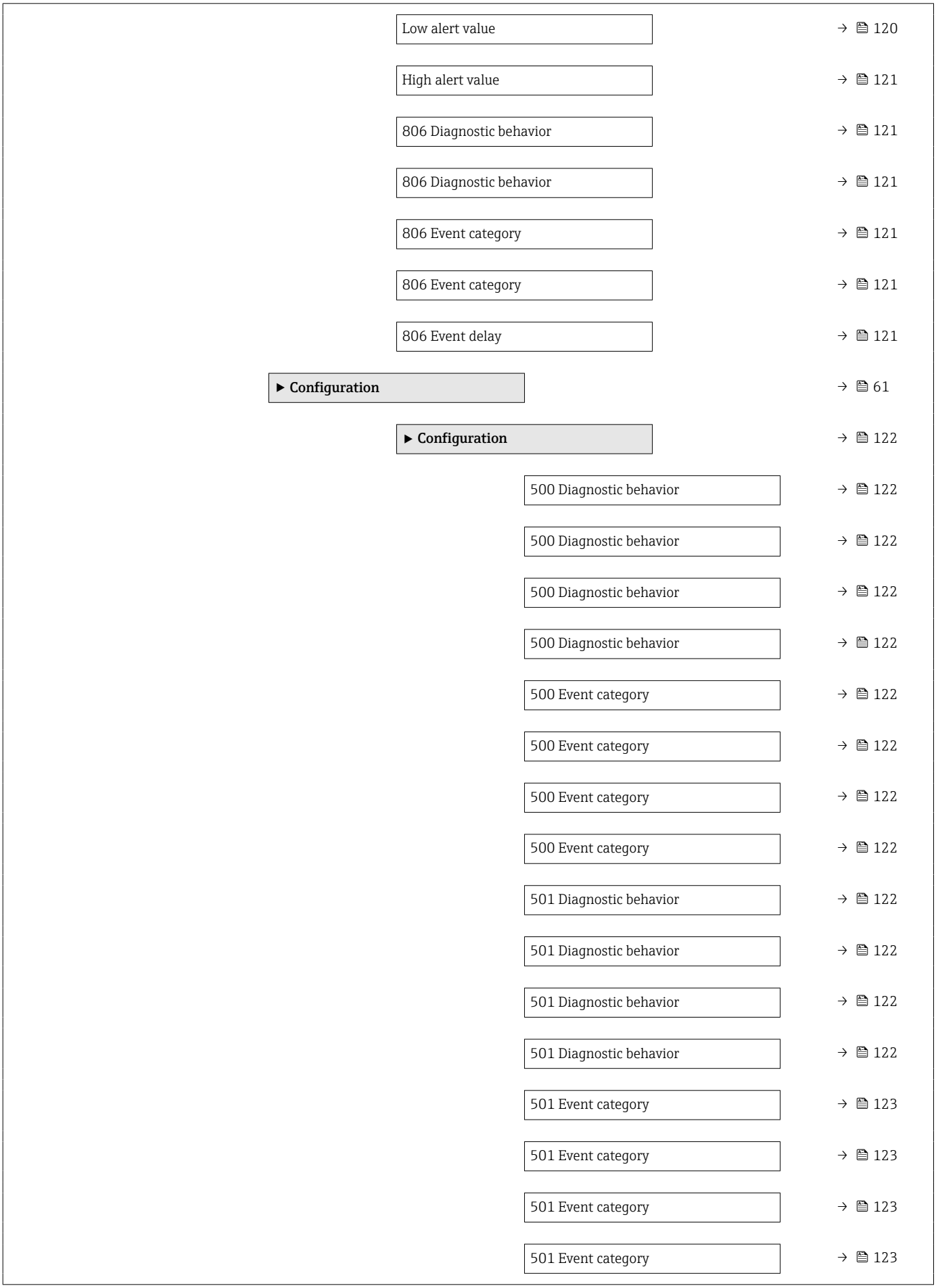
► Simulation → 113

- Simulation → 113
- Value pressure simulation → 113
- Value current output → 113
- Diagnostic event simulation → 113

► Heartbeat Technology → 114

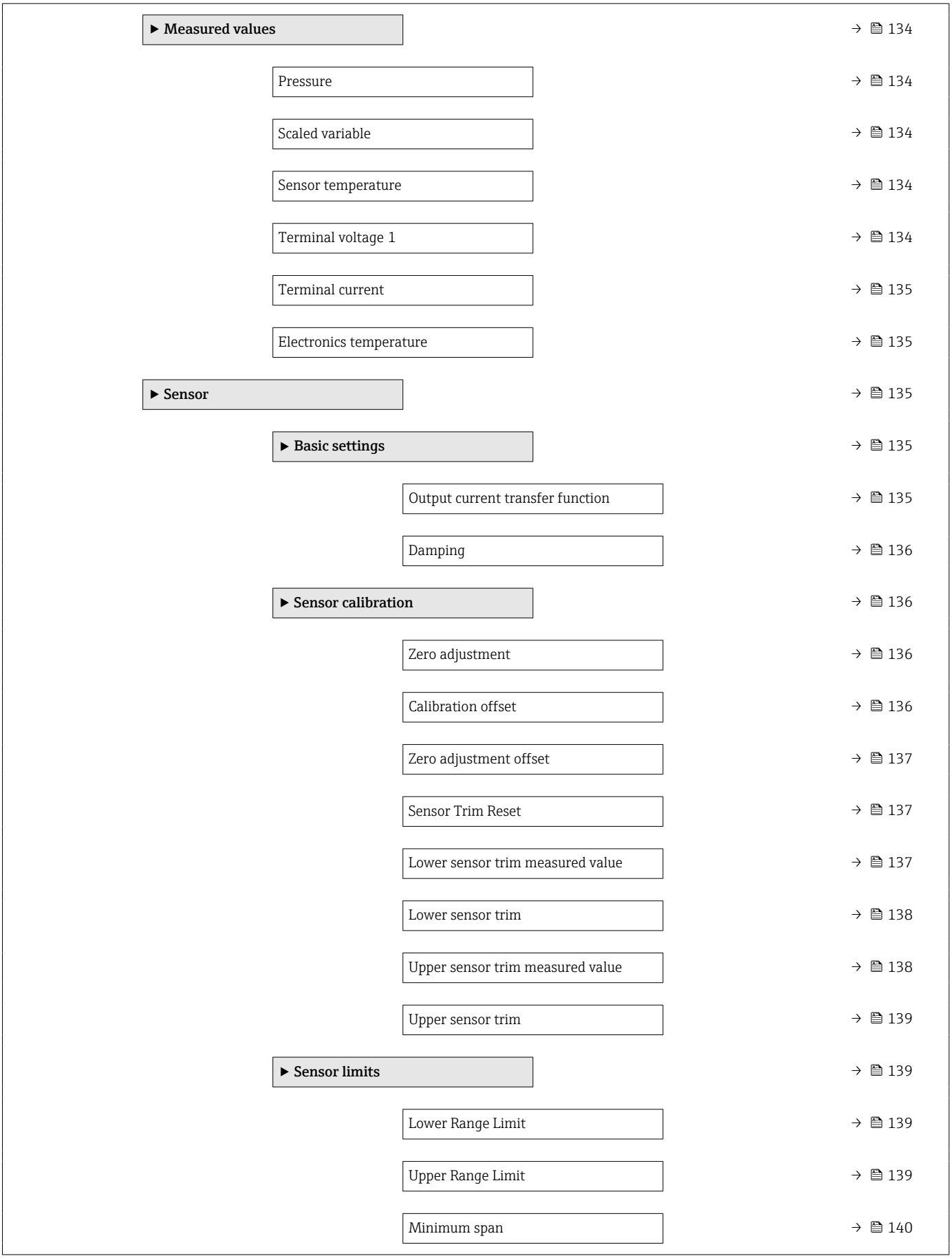
► Heartbeat Verification → 114

- Date/time Heartbeat Verification → 114
- Operating time (Verification) → 114
- Verification result → 114
- Status → 115


Low alert value → 120
High alert value → 121
806 Diagnostic behavior → 121
806 Diagnostic behavior → 121
806 Event category → 121
806 Event category → 121
806 Event delay → 121
▶ Configuration → 61
▶ Configuration → 122
500 Diagnostic behavior → 122
500 Diagnostic behavior → 122
500 Diagnostic behavior → 122
500 Diagnostic behavior → 122
500 Event category → 122
500 Event category → 122
500 Event category → 122
500 Event category → 122
501 Diagnostic behavior → 122
501 Diagnostic behavior → 122
501 Diagnostic behavior → 122
501 Diagnostic behavior → 122
501 Event category → 123
501 Event category → 123
501 Event category → 123
501 Event category → 123

	502 Diagnostic behavior	→ 123
	502 Diagnostic behavior	→ 123
	502 Diagnostic behavior	→ 123
	502 Diagnostic behavior	→ 123
	502 Event category	→ 123
	502 Event category	→ 123
	502 Event category	→ 123
	502 Event category	→ 123
▶ **Process**		→ 124
	806 Diagnostic behavior	→ 124
	806 Diagnostic behavior	→ 124
	806 Diagnostic behavior	→ 124
	806 Diagnostic behavior	→ 124
	806 Diagnostic behavior	→ 124
	806 Diagnostic behavior	→ 124
	806 Event category	→ 124
	806 Event category	→ 124
	806 Event category	→ 124
	806 Event category	→ 124
	806 Event category	→ 124
	806 Event category	→ 124
	822 Diagnostic behavior	→ 124
	822 Event category	→ 125
	Sensor pressure range behavior	→ 125
	841 Event category	→ 125

	900 Event category	→ 126
	900 Event category	→ 126
	900 Event category	→ 126
	900 Event category	→ 126
	900 Diagnostic behavior	→ 126
	900 Diagnostic behavior	→ 126
	900 Diagnostic behavior	→ 126
	900 Diagnostic behavior	→ 126
	906 Diagnostic behavior	→ 126
	906 Diagnostic behavior	→ 126
	906 Diagnostic behavior	→ 126
	906 Diagnostic behavior	→ 126
	906 Event category	→ 126
	906 Event category	→ 126
	906 Event category	→ 126
	906 Event category	→ 126
Application		→ 131
▶ **Measuring units**		→ 131
Pressure unit		→ 131
Decimal places pressure		→ 131
Temperature unit		→ 131
Scaled variable unit		→ 132
Free text		→ 133
Decimal places scaled variable		→ 133


▶ Measured values → 134
Pressure → 134
Scaled variable → 134
Sensor temperature → 134
Terminal voltage 1 → 134
Terminal current → 135
Electronics temperature → 135
▶ Sensor → 135
▶ Basic settings → 135
Output current transfer function → 135
Damping → 136
▶ Sensor calibration → 136
Zero adjustment → 136
Calibration offset → 136
Zero adjustment offset → 137
Sensor Trim Reset → 137
Lower sensor trim measured value → 137
Lower sensor trim → 138
Upper sensor trim measured value → 138
Upper sensor trim → 139
▶ Sensor limits → 139
Lower Range Limit → 139
Upper Range Limit → 139
Minimum span → 140

Sensor temperature lower range limit	→ 140
Sensor temperature upper range limit	→ 140
▶ **Scaled variable**	→ 140
Assign PV	→ 140
Scaled variable unit	→ 141
Free text	→ 141
Pressure	→ 142
Scaled variable transfer function	→ 142
Lower range value output	→ 142
Upper range value output	→ 142
Activate table	→ 143
Pressure value 1	→ 143
Scaled variable value 1	→ 143
Pressure value 2	→ 143
Scaled variable value 2	→ 143
Pressure	→ 144
Scaled variable	→ 144
▶ **Wet calibration**	→ 144
Zero	→ 144
Pressure value 1	→ 144
Span	→ 144
Pressure value 2	→ 145
Zero	→ 144
Lower range value output	→ 145

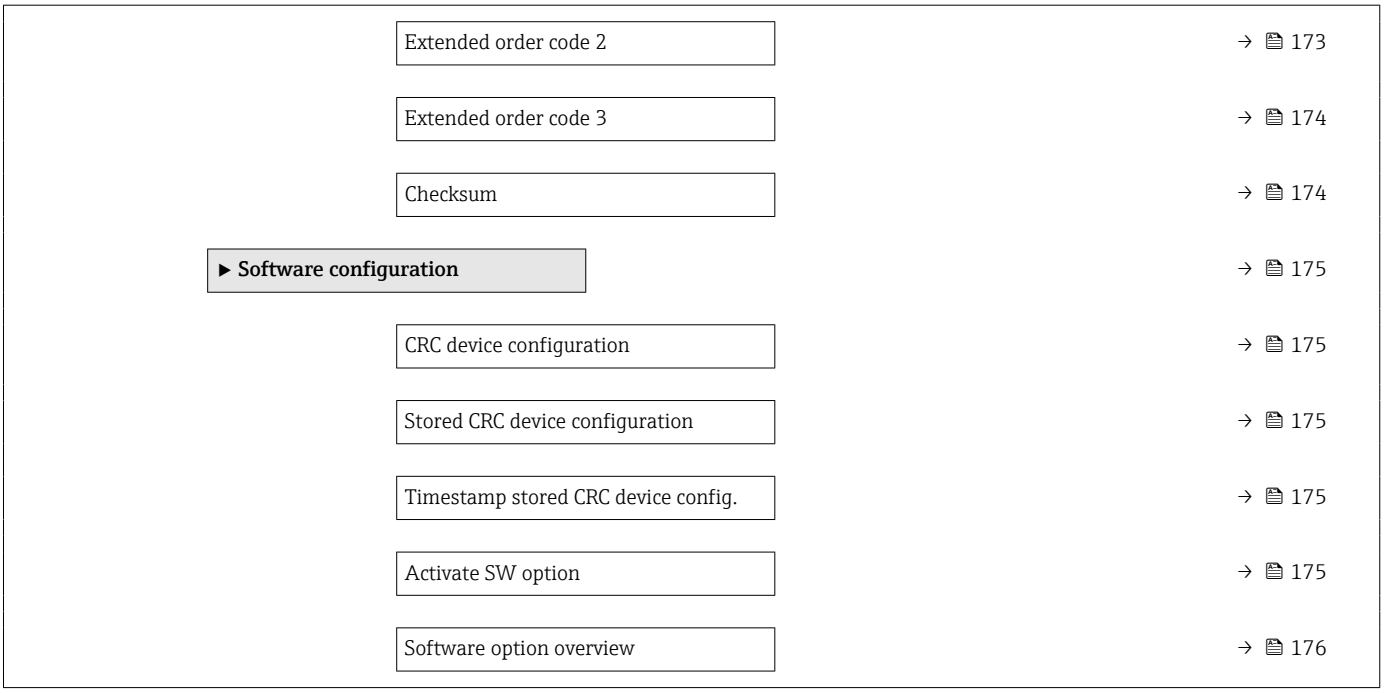
- Span → 144
- Upper range value output → 145
- ▶ **Current output** → 147
  - Assign PV → 147
  - Measuring mode current output → 147
  - Current range output → 147
  - Lower range value output → 148
  - Upper range value output → 148
  - Failure behavior current output → 148
  - Failure current → 148
  - Output current → 149
  - Terminal current → 149
- ▶ **HART output** → 150
  - ▶ **Configuration** → 150
    - HART address → 150
    - HART short tag → 150
    - Device tag → 150
    - No. of preambles → 151
    - Loop current mode → 151
  - ▶ **HART output** → 151
    - Assign PV → 151
    - Primary variable (PV) → 151
    - Assign SV → 152
    - Secondary variable (SV) → 152
    - Assign TV → 152

Tertiary variable (TV)	→ 153
Assign QV	→ 153
Quaternary variable (QV)	→ 154
▶ **Burst configuration 1**	→ 154
Burst mode 1	→ 154
Burst command 1	→ 155
Burst variable 0	→ 155
Burst variable 1	→ 156
Burst variable 2	→ 156
Burst variable 3	→ 156
Burst variable 4	→ 156
Burst variable 5	→ 157
Burst variable 6	→ 157
Burst variable 7	→ 157
Burst trigger mode	→ 157
Burst trigger level	→ 158
Min. update period	→ 158
Max. update period	→ 158
▶ **Information**	→ 159
Device ID	→ 159
Device type	→ 159
Device revision	→ 159
HART short tag	→ 160
HART revision	→ 160
HART descriptor	→ 160

- HART message → 160
- HART date code → 161

System → 162

- **▶ Device management** → 162
  - Device tag → 162
  - Locking status → 162
  - Configuration counter → 163
  - Reset device → 163
- **▶ User management** → 164
  - User role → 164
  - Password → 164
  - Enter access code → 164
  - Status password entry → 165
  - New password → 165
  - Confirm new password → 165
  - Status password entry → 165
  - Old password → 165
  - New password → 165
  - Confirm new password → 165
  - Status password entry → 165
  - Reset password → 166
  - Status password entry → 165
  - Old password → 165
  - Status password entry → 165


Extended order code 2
→ 173
Extended order code 3
→ 174
Checksum
→ 174
▶ Software configuration
→ 175
CRC device configuration
→ 175
Stored CRC device configuration
→ 175
Timestamp stored CRC device config.
→ 175
Activate SW option
→ 175
Software option overview
→ 176

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

"Guidance" menu
- Commissioning (→ 34)
- Heartbeat Technology (→ 55)
- Safety mode (→ 81)
- Proof test (→ 94)

"Diagnostics" menu
- Active diagnostics (→ 106)
- Event logbook (→ 108)
- Minimum/maximum values (→ 109)
- Simulation (→ 113)
- Heartbeat Technology (→ 114)
- Diagnostic settings (→ 69)

"Application" menu
- Measuring units (→ 131)
- Measured values (→ 134)
- Sensor (→ 135)
- Current output (→ 147)
- HART output (→ 150)

"System" menu
- Device management (→ 162)
- User management (→ 164)
- Bluetooth configuration (→ 166)
- Display (→ 166)
- Geolocation (→ 170)
- Information (→ 159)
- Software configuration (→ 175)

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 (→ 34)
  - Device tag (→ 34)
  - Device name (→ 34)
  - Serial number (→ 34)
  - Extended order code 1 (→ 35)
  - Extended order code 2 (→ 35)
  - Extended order code 3 (→ 35)
  - Locking status (→ 36)
  - HART short tag (→ 37)
  - HART date code (→ 37)
  - HART descriptor (→ 37)
  - HART message (→ 37)
  - HART address (→ 38)
- Measurement adjustments (→ 38)
  - Assign PV (→ 38)
  - Damping (→ 38)
  - Pressure unit (→ 39)
  - Temperature unit (→ 39)
  - Scaled variable unit (→ 40)
  - Zero adjustment (→ 42)
  - Pressure (→ 43)
- Output settings (→ 43)
  - Output current transfer function (→ 43)
  - Lower Range Limit (→ 44)
  - Upper Range Limit (→ 44)
  - Minimum span (→ 44)
  - Pressure (→ 45)
  - Scaled variable (→ 45)
  - Lower range value output (→ 45)
  - Upper range value output (→ 45)
  - Scaled variable transfer function (→ 43)
  - Pressure value 1 (→ 47)
  - Current range output (→ 49)
  - Failure behavior current output (→ 49)
  - Failure current (→ 49)
  - Loop current mode (→ 50)
  - Assign HART variables? (→ 50)
  - Process variable output current (→ 50)
  - Assign PV (→ 38)
  - Assign SV (→ 53)
  - Assign TV (→ 53)
  - Assign QV (→ 54)

3.1.3 Heartbeat Technology

Heartbeat Technology 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.
Special Documentation "Heartbeat Monitoring + Verification"

SD02525P

"Heartbeat Verification" wizard

This wizard is used to start an automatic verification of the device functionality.
The results can be documented as a verification report.

"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.

"Loop diagnostics" wizard

Using this wizard, changes in the current-voltage loop characteristics (baseline) can be used to detect unwanted installation anomalies such as creep currents caused by terminal corrosion or a deteriorating power supply that can lead to an incorrect 4-20 mA measured value.

"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 Safety mode

The write protection guards the device settings against overwriting. In addition, it is recommended for safety applications to confirm the safety relevant device settings. This ensures that the correct values have been entered and downloaded to device.

This input can be used as the confirmation sequence instead of manual checklists.
After the safety relevant device settings have been confirmed, the device is marked with the property Safety-locked. This indicates that the safety relevant parameter settings have been checked and evaluated as correct.

To unlock the safety locking the sequence needs to be restarted. The safety locking is deactivated when the safety unlocking code (= safety locking code) is entered.

3.1.5 Proof testing

The proof test will simulate the current output.
The safety function is not guaranteed during proof test. Alternative process control in manual must be taken to ensure process safety.

Note: It is only possible to perform a proof test when the device has no alarm and the hardware write protection switch is off.

3.2 "Guidance" menu

Navigation Guidance

3.2.1 "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 unique name for the measuring point to identify the device quickly within the plant.

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

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
- Safety 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.

HART short tag

Navigation Guidance → Commissioning → Device ident. → HART short tag

Description Defines the short tag for the measuring point.

Maximum length: 8 characters
Allowed characters: A-Z, 0-9, certain special characters

User entry Max. 8 characters: A to Z, 0 to 9 and certain special characters (e.g. punctuation marks, @, %).

HART date code

Navigation Guidance → Commissioning → Device ident. → HART date code

Description Date of the last configuration change

User entry Character string comprising numbers, letters and special characters (10)

Additional information Date format: YYYY-MM-DD

Make sure you adhere to this format when entering the date. Otherwise errors may occur in individual HART commands.

HART descriptor

Navigation Guidance → Commissioning → Device ident. → HART descriptor

Description Description for the measuring point.

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

HART message

Navigation Guidance → Commissioning → Device ident. → HART message

Description A HART message which is sent via the HART protocol when requested by the master.

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

HART address

Navigation Guidance → Commissioning → Device ident. → HART address

Description Define the HART address of the device.

User entry 0 to 63

Additional information
- The measured value can only be transmitted via the current value if the address is set to "0". The current is fixed at 4.0 mA for all other addresses (Multidrop mode).
- Only addresses in the range 0 to 15 are permitted for a system according to HART 5.0.
- All addresses in the range 0 to 63 are permitted for a system with HART 6.0 and higher.

"Measurement adjustments" wizard

Navigation Guidance → Commissioning → Meas. adjust.

Assign PV

Navigation Guidance → Commissioning → Meas. adjust. → Assign PV

Description Use this function to select a measured variable (HART device variable) for the primary dynamic variable (PV).

Selection
- Pressure
- Scaled variable

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

"Measurement adjustments" wizard

Navigation Guidance → Commissioning → Meas. adjust.

Pressure unit

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

Selection

SI units	*US units*	*Other units*
▪ MPa ▪ kPa ▪ Pa ▪ bar ▪ mbar ▪ torr ▪ atm ▪ kgf/cm² ▪ gf/cm²	psi	▪ 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	*US units*
▪ °C ▪ K	°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

Selection

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

Scaled variable unit

Navigation Guidance → Commissioning → Meas. adjust. → Scaled 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
- ℃
- K

US units
℉

Factory setting

Country-specific:
- ℃
- ℉

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

Output current transfer function

Navigation Guidance → Commissioning → Output settings → Curr. trans.func

Description

Linear
The linear pressure signal is used for the current output. The flow must be calculated in the evaluation unit.

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

User interface

- Linear
- Square root *

"Output settings" wizard

Navigation Guidance → Commissioning → Output settings

Scaled variable transfer function

Navigation Guidance → Commissioning → Output settings → Scaled function

Description

"Linear'
The linear pressure signal is used for the output signal. The flow must be calculated in the evaluation unit.

"Square root" (Deltabar)
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.

* Visibility depends on order options or device settings

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

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

* Visibility depends on order options or device settings

"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

Lower range value output

Navigation Guidance → Commissioning → Output settings → Low.range outp

Description Depending on which variable has been selected as "Process variable output current ", define the related lower (4 mA) and upper range values (20 mA).

User entry Signed floating-point number

Upper range value output

Navigation Guidance → Commissioning → Output settings → Upp.range outp

Description Depending on which variable has been selected as "Process variable output current ", define the related lower (4 mA) and upper range values (20 mA).

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

Scaled variable transfer function

Navigation Guidance → Commissioning → Output settings → Scaled function

Description "Linear'
The linear pressure signal is used for the output signal. The flow must be calculated in the evaluation unit.

"Square root" (Deltabar)
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 → Pressure 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 → Scaled 1

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

User interface Signed floating-point number

Pressure value 2

Navigation Guidance → Commissioning → Output settings → Pressure 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 → Scaled 2

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

User entry Signed floating-point number

* Visibility depends on order options or device 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

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

Lower range value output

Navigation Guidance → Commissioning → Output settings → Low.range outp

Description Depending on which variable has been selected as "Process variable output current ", define the related lower (4 mA) and upper range values (20 mA).

User entry Signed floating-point number

Upper range value output

Navigation Guidance → Commissioning → Output settings → Upp.range outp

Description Depending on which variable has been selected as "Process variable output current ", define the related lower (4 mA) and upper range values (20 mA).

User entry Signed floating-point number

Current range output

Navigation Guidance → Commissioning → Output settings → Current range

Description Defines the current range used to transmit the measured or calculated value.
In brackets are indicated the “low saturation value” and the “high saturation value”.
If Measured value ≤ “low saturation”, the output current is set to “low saturation”.
If Measured value ≥ “high saturation”, the output current is set to ”high saturation”.

Note:
Currents below 3.6 mA or above 21.5 mA can be used to signal an alarm.

Selection
- 4...20 mA (4...20.5 mA)
- 4...20 mA NE (3.8...20.5 mA)
- 4...20 mA US (3.9...20.8 mA)

Failure behavior current output

Navigation Guidance → Commissioning → Output settings → Failure behav.

Description Defines which current the output assumes in the case of an error.
Min: < 3.6 mA
Max: >21.5 mA

Note: The hardware DIP Switch for alarm current has priority over software setting.

Selection
- Min.
- Max.

Failure current

Navigation Guidance → Commissioning → Output settings → Failure current

Description Enter current output value in alarm condition

User entry 21.5 to 23 mA

Loop current mode

Navigation Guidance → Commissioning → Output settings → Loop curr mode

Description If Loop current mode is disabled, Multi-drop communication mode is activated. Multi-drop is a HART digital communication mode where multiple devices may share the same pair of wires for power and communications.
In this mode the output current is fixed.

User interface
- Disable
- Enable

Assign HART variables?

Navigation Guidance → Commissioning → Output settings → Assign HART var?

Description Up to four HART variables can be transmitted via the HART protocol.
Select "Yes" to show/assign measuring variables to these HART variables.

Selection
- No
- Yes

"Output settings" wizard

Navigation Guidance → Commissioning → Output settings

Process variable output current

Navigation Guidance → Commissioning → Output settings → Proc.var.curr.

Description Determines which process variable is transmitted via the current output.

User interface
- Pressure
- Scaled variable

Current range output

Navigation Guidance → Commissioning → Output settings → Current range

Description Defines the current range used to transmit the measured or calculated value.
In brackets are indicated the “low saturation value” and the “high saturation value”.
If Measured value ≤ “low saturation”, the output current is set to “low saturation”.
If Measured value ≥ “high saturation”, the output current is set to ”high saturation”.

Note:
Currents below 3.6 mA or above 21.5 mA can be used to signal an alarm.

Selection
- 4...20 mA (4...20.5 mA)
- 4...20 mA NE (3.8...20.5 mA)
- 4...20 mA US (3.9...20.8 mA)

Lower range value output

Navigation Guidance → Commissioning → Output settings → Low.range outp

Description Depending on which variable has been selected as "Process variable output current ", define the related lower (4 mA) and upper range values (20 mA).

User entry Signed floating-point number

Upper range value output

Navigation Guidance → Commissioning → Output settings → Upp.range outp

Description Depending on which variable has been selected as "Process variable output current ", define the related lower (4 mA) and upper range values (20 mA).

User entry Signed floating-point number

Failure behavior current output

Navigation Guidance → Commissioning → Output settings → Failure behav.

Description Defines which current the output assumes in the case of an error.
Min: < 3.6 mA
Max: >21.5 mA

Note: The hardware DIP Switch for alarm current has priority over software setting.

Selection
- Min.
- Max.

Failure current

Navigation Guidance → Commissioning → Output settings → Failure current

Description Enter current output value in alarm condition

User entry 21.5 to 23 mA

Loop current mode

Navigation Guidance → Commissioning → Output settings → Loop curr mode

Description If Loop current mode is disabled, Multi-drop communication mode is activated. Multi-drop is a HART digital communication mode where multiple devices may share the same pair of wires for power and communications.
In this mode the output current is fixed.

User interface
- Disable
- Enable

Assign HART variables?

Navigation Guidance → Commissioning → Output settings → Assign HART var?

Description Up to four HART variables can be transmitted via the HART protocol.
Select "Yes" to show/assign measuring variables to these HART variables.

Selection
- No
- Yes

"Output settings" wizard

Navigation Guidance → Commissioning → Output settings

Assign PV

Navigation Guidance → Commissioning → Output settings → Assign PV

Description Use this function to select a measured variable (HART device variable) for the primary dynamic variable (PV).

Selection
- Pressure
- Scaled variable

Assign SV

Navigation Guidance → Commissioning → Output settings → Assign SV

Description Use this function to select a measured variable (HART device variable) for the secondary dynamic variable (SV).

Selection
- Pressure
- Scaled variable
- Sensor temperature
- Sensor pressure
- Electronics temperature
- Terminal current *
- Terminal voltage *
- Median of pressure signal *
- Noise of pressure signal *
- Signal noise detected *
- Percent of range
- Loop current
- Not used

Additional information *Selection*
- **Sensor pressure** option
  Sensor Pressure is the raw signal from sensor before damping and position adjustment.
- **Terminal current** option
  The terminal current is the read-back current on terminal block.
- **Signal noise detected** option
  0 % - Signal noise is within the permissible range.
  100 % - Signal noise is outside of the permissible range.
- **Loop current** option
  The loop current is the output current set by the applied pressure.

Assign TV

Navigation Guidance → Commissioning → Output settings → Assign TV

Description Use this function to select a measured variable (HART device variable) for the tertiary (third) dynamic variable (TV).

Selection
- Pressure
- Scaled variable
- Sensor temperature
- Sensor pressure
- Electronics temperature
- Terminal current *

* Visibility depends on order options or device settings

- Terminal voltage *
- Median of pressure signal *
- Noise of pressure signal *
- Signal noise detected *
- Percent of range
- Loop current
- Not used

Additional information *Selection*

- **Sensor pressure** option
  Sensor Pressure is the raw signal from sensor before damping and position adjustment.
- **Terminal current** option
  The terminal current is the read-back current on terminal block.
- **Signal noise detected** option
  0 % - Signal noise is within the permissible range.
  100 % - Signal noise is outside of the permissible range.
- **Loop current** option
  The loop current is the output current set by the applied pressure.

Assign QV

Navigation Guidance → Commissioning → Output settings → Assign QV

Description Use this function to select a measured variable (HART device variable) for the quaternary (fourth) dynamic variable (QV).

Selection

- Pressure
- Scaled variable
- Sensor temperature
- Sensor pressure
- Electronics temperature
- Terminal current *
- Terminal voltage *
- Median of pressure signal *
- Noise of pressure signal *
- Signal noise detected *
- Percent of range
- Loop current
- Not used

Additional information *Selection*

- **Sensor pressure** option
  Sensor Pressure is the raw signal from sensor before damping and position adjustment.
- **Terminal current** option
  The terminal current is the read-back current on terminal block.
- **Signal noise detected** option
  0 % - Signal noise is within the permissible range.
  100 % - Signal noise is outside of the permissible range.
- **Loop current** option
  The loop current is the output current set by the applied pressure.

* Visibility depends on order options or device settings

3.2.2 "Heartbeat Technology" submenu

"Heartbeat Verification" wizard

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif.

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

Output current

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

Description Checks whether read-back current at the output matches the current set by the device.

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

Loop diagnostics

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

Description Checks whether the voltage/current values are within range or the voltage/current baseline defined with wizard.
"Failed" can indicate faulty power supply or grounding / wiring.

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

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

Analog path integrity

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

Description Checks if the analog path of the sensor has changed from state of delivery.

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

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

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 Heartbeat 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

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
- Process dynamic too high

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

Counter Baseline creation SSD

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

Description Specifies how often the baseline has been rebuilt.

User interface Positive integer

Baseline is available

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

Description Indicates whether a baseline already exists.

User interface
- Please select
- No
- Yes

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 signal during the learning phase.

User interface Signed floating-point number

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

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

Description Select category for diagnostic message.

Selection
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

900 Diagnostic behavior

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

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

Description
Select category for diagnostic message.

Selection
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

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

I have read the warning texts.

Navigation Guidance → Heartbeat Techn. → Loop diagn. → Configuration → warning texts

Description The characterization of the electrical loop requires intermediate generation of a current output of 4 mA and 20 mA.
Therefore, do not use the device in an active current loop during initialization of the Signal Loop Diagnostics.

Selection Yes

Baseline status

Navigation Guidance → Heartbeat Techn. → Loop diagn. → Configuration → Baseline status

Description "Failed"
Means, baseline is not available or creation not possible.

"Success"
Baseline is available.

User interface
- Failed
- Success

Baseline build process

Navigation Guidance → Heartbeat Techn. → Loop diagn. → Configuration → Baseline process

User interface 0 to 100 %

Timestamp Baseline

Navigation Guidance → Heartbeat Techn. → Loop diagn. → Configuration → Timestamp BL

Description Time stamp when the baseline was recorded (current-voltage curve).
At this time, the upper terminal voltage (U1) was determined at 4 mA and the lower terminal voltage
(U2) was determined at 20 mA.

User interface Character string comprising numbers, letters and special characters

Resistance Baseline

Navigation Guidance → Heartbeat Techn. → Loop diagn. → Configuration → Resistance BL

Description Displays the resistance value of the baseline (slope of the current-voltage curve).

User interface Positive floating-point number

Supply voltage Baseline

Navigation Guidance → Heartbeat Techn. → Loop diagn. → Configuration → Supply volt. BL

Description Displays the point from which the baseline is built (voltage at the point where the current-voltage curve is generated).

User interface 0.0 to 50.0 V

Timestamp previous Baseline

Navigation Guidance → Heartbeat Techn. → Loop diagn. → Configuration → Timestamp pre BL

Description Time stamp when the previous baseline was recorded (current-voltage curve).
At this time, the upper terminal voltage (U1) was determined at 4 mA and the lower terminal voltage
(U2) was determined at 20 mA.

User interface Character string comprising numbers, letters and special characters

Resistance previous Baseline

Navigation Guidance → Heartbeat Techn. → Loop diagn. → Configuration → Resist. pre. BL

Description Displays the resistance value of the previous baseline (slope of the previous current-voltage curve).

User interface Positive floating-point number

Supply voltage previous Baseline

Navigation Guidance → Heartbeat Techn. → Loop diagn. → Configuration → Voltage pre. BL

Description Displays the point from which the previous baseline is built (voltage at the point where the previous current-voltage curve was generated).

User interface 0.0 to 50.0 V

Tolerated deviation +/-

Navigation Guidance → Heartbeat Techn. → Loop diagn. → Monitoring → Toler. deviation

Description A value should be chosen to ensure that normal voltage deviations do not lead to unwanted messages.

Default
1.5 V DC

User entry 0.5 to 3.0 V

806 Event delay

Navigation Guidance → Heartbeat Techn. → Loop diagn. → Diag. settings → 806 Event delay

Description Displays how long the triggering status must be present until an event message is issued. Used to filter out short-term signal interference.

User entry 0 to 60 s

806 Event category

Navigation Guidance → Heartbeat Techn. → Loop diagn. → Diag. settings → 806Event category

Description Select category for diagnostic message.

Selection
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

806 Diagnostic behavior

Navigation Guidance → Heartbeat Techn. → Loop diagn. → Diag. settings → 806 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).

If the permissible conditions are reached again, the warning is no longer available in the instrument.

Selection
- Warning
- Logbook entry only

Loop diagnostics

Navigation Guidance → Heartbeat Techn. → Loop diagn. → Activ./Deactiv. → Loop diagn.

Description Enable/disable loop diagnostics.

Note:
If the function is disabled, there is no analysis and no event message.

Selection
- Disable
- Enable

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 "Off" 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 range.
If this limit value is exceeded or undercut, a diagnostic 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 range.
If this limit value is exceeded or undercut, a diagnostic 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

Selection
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

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 "Off" 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 range.
If this limit value is exceeded or undercut, a diagnostic 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 range.
If this limit value is exceeded or undercut, a diagnostic 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

Selection
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

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 "Off" 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 range.
If this limit value is exceeded or undercut, a diagnostic 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 range.
If this limit value is exceeded or undercut, a diagnostic 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

Selection

- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

3.2.3 "Safety mode" wizard

Navigation Guidance → Safety mode

"Preparation" wizard

Navigation Guidance → Safety mode → Preparation

I have read the warning texts.

Navigation Guidance → Safety mode → Preparation → warning texts

Description
- Prior to using the wizard, read the Functional Safety Manual or the WHG documentation.
- In the wizard, safety-relevant parameter settings of the device will be shown.
- The user must confirm the correctness of these settings.
- By clicking "Finish" at the end of the wizard, the device is safety locked.
- A documentation of the safety-relevant parameter settings can be generated at the end of the wizard.
- The device can be unlocked via this wizard in case the device is safety locked.
- If the wizard is aborted, the device locking status will not be changed!

Selection Yes

"Preparation" wizard

Navigation Guidance → Safety mode → Preparation

Enter safety unlocking code

Navigation Guidance → Safety mode → Preparation → Safe.unlock code

Description The Safety locking/unlocking code can be found in the corresponding safety manual or the WHG documentation.

User entry 0 to 65 535

Locking status

Navigation Guidance → Safety mode → Preparation → Locking status

Description Displays the active write protection.

User interface

- Hardware locked
- Safety 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.

"Preparation" wizard

Navigation Guidance → Safety mode → Preparation

Proof test via Bluetooth allowed?

Navigation Guidance → Safety lock → Preparation → BLE proof test

Description

After completion of the Safety mode wizard, the device will be write protected via software lock.

To use the proof test wizard (optional), the device does not have to be unlocked.

It must be defined, if the proof test wizard via Bluetooth is allowed.

Selection

- No
- Yes

"Preparation" wizard

Navigation Guidance → Safety lock → Preparation

Enter safety locking code

Navigation Guidance → Safety lock → Preparation → Safety code

Description Enter the locking code to start the SIL/WHG locking sequence.

User entry 0 to 65 535

Additional information

Locking codes
- WHG: 7450
- SIL: 7452
- SIL and WHG: 7454

"Preparation" wizard

Navigation Guidance → Safety mode → Preparation

Character test string

Navigation Guidance → Safety mode → Preparation → Char.test string

Description The following character string is displayed:
0123456789+-,.

Set the "Confirm" parameter to "Yes" if this string is rendered correctly.
Set the "Confirm" parameter to "No" if this string is not rendered correctly. Safety locking is not possible in this case.

User interface Character string comprising numbers, letters and special characters

Confirm

Navigation Guidance → Safety mode → Preparation → Confirm

Description The following character string is displayed:
0123456789+-,.

Set the "Confirm" parameter to "Yes" if this string is rendered correctly.
Set the "Confirm" parameter to "No" if this string is not rendered correctly. Safety locking is not possible in this case.

Selection

- No
- Yes

"Preparation" wizard

Navigation Guidance → Safety mode → Preparation

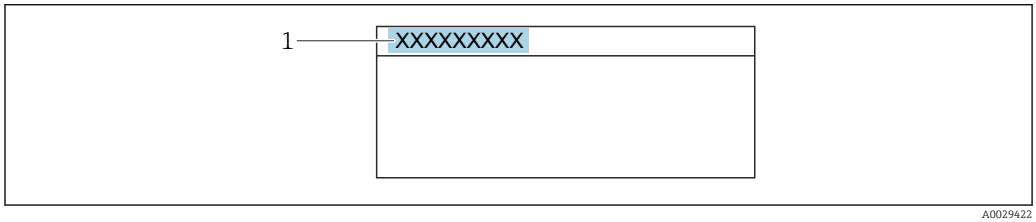
Device tag

Navigation Guidance → Safety mode → Preparation → 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 Guidance → Safety mode → Preparation → 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 → Safety mode → Preparation → 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

Firmware version

Navigation Guidance → Safety mode → Preparation → 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 Guidance → Safety mode → Preparation → Hardware version

User interface Character string comprising numbers, letters and special characters

Confirm

Navigation Guidance → Safety mode → Preparation → Confirm

Description Confirm connection to the correct device.

Selection
- No
- Yes

"Preparation" wizard

Navigation Guidance → Safety mode → Preparation

CRC device configuration

Navigation Guidance → Safety mode → Preparation → 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

Stored CRC device configuration

Navigation Guidance → Safety mode → Preparation → Stored CRC conf.

Description Stored CRC after the last safety lock. Factory delivery is 65535 means that the device has not yet been safety locked.

User interface 0 to 65 535

Timestamp stored CRC device config.

Navigation Guidance → Safety mode → Preparation → Time stored CRC

Description Gives the time stamp when the CRC was last stored following completion of the safety lock wizard.

User interface Character string comprising numbers, letters and special characters

Operating time

Navigation Guidance → Safety mode → Preparation → Operating time

Description Indicates how long the device has been in operation.

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

Configuration counter

Navigation Guidance → Safety mode → Preparation → Config. counter

Description Displays the counter for changes to the device parameters.

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

User interface 0 to 65 535

"Confirmation" wizard

Navigation Guidance → Safety mode → Confirmation

Zero adjustment offset

Navigation Guidance → Safety mode → Confirmation → Zero offset

Guidance → Safety mode → Confirmation → Zero offset

Description Assigned value of zero adjustment due to mounting position.

User interface Character string comprising numbers, letters and special characters

HP/LP swap

Navigation Guidance → Safety mode → Confirmation → HP/LP swap

Description Assigned setting high pressure / low pressure.

User interface
- No
- Yes

Damping

Navigation Guidance → Safety mode → Confirmation → Damping

Description Assigned damping value.

User interface Character string comprising numbers, letters and special characters

Sensor pressure range behavior

Navigation Guidance → Safety mode → Confirmation → P-range behavior

Description Assigned event behavior in case of over/under pressure outside of measuring range.

User interface
- Alarm
- Warning
- Remark
- Special

Confirm

Navigation Guidance → Safety mode → Confirmation → Confirm
Guidance → Safety mode → Confirmation → Confirm

Selection
- No
- Yes

"Confirmation" wizard

Navigation Guidance → Safety mode → Confirmation

Output current transfer function

Navigation Guidance → Safety mode → Confirmation → Curr. trans.func

Description Assigned transfer function for current output.

NOTE
"Square root" is only available with differential pressure measurement.

User interface
- Linear
- Square root

Low cutoff

Navigation Guidance → Safety mode → Confirmation → Low cutoff

User interface Character string comprising numbers, letters and special characters

Confirm

Navigation Guidance → Safety mode → Confirmation → Confirm

Selection
- No
- Yes

"Confirmation" wizard

Navigation Guidance → Safety mode → Confirmation

Measuring mode current output

Navigation Guidance → Safety mode → Confirmation → Output mode

Description Assigned setting of curve form of current output.

User interface
- Standard
- Inverse
- Bi-directional

Failure behavior current output

Navigation Guidance → Safety mode → Confirmation → Failure behav.

Description Assigned value of current output in case of an error.

User interface
- Min.
- Max.

Current range output

Navigation Guidance → Safety mode → Confirmation → Current range

Description Assigned current range used to transmit the measured value.

User interface
- 4...20 mA (4...20.5 mA)
- 4...20 mA NE (3.8...20.5 mA)
- 4...20 mA US (3.9...20.8 mA)
- Customer specific

Lower range value output

Navigation Guidance → Safety mode → Confirmation → Low.range outp

Description Assigned value 4 mA.

User interface Character string comprising numbers, letters and special characters

Upper range value output

Navigation Guidance → Safety mode → Confirmation → Upp.range outp

Description Assigned value 20 mA.

User interface Character string comprising numbers, letters and special characters

Assign PV

Navigation Guidance → Safety mode → Confirmation → Assign PV

Description Identifies the process variable linked with the primary variable. Primary variable is used in HART as current output.

User interface
- Pressure
- Scaled variable

Confirm

Navigation Guidance → Safety mode → Confirmation → Confirm

Selection
- No
- Yes

"Confirmation" wizard

Navigation Guidance → Safety mode → Confirmation

Zero adjustment offset

Navigation Guidance → Safety mode → Confirmation → Zero offset

Description Assigned value of zero adjustment due to mounting position.

User interface Character string comprising numbers, letters and special characters

Confirm

Navigation Guidance → Safety mode → Confirmation → Confirm

Selection
- No
- Yes

"Locking" wizard

Navigation Guidance → Safety mode → Locking

Enter safety locking code

Navigation Guidance → Safety mode → Locking → Safety code

Description Enter the locking code to start the SIL/WHG locking sequence.

User entry 0 to 65 535

Additional information **Locking codes**
- WHG: 7450
- SIL: 7452
- SIL and WHG: 7454

Locking status

Navigation Guidance → Safety mode → Locking → Locking status

Description Displays the active write protection.

User interface
- Hardware locked
- Safety 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.

Save protocol?

Navigation Guidance → Safety mode → Locking → Save protocol?

Description The Report can be saved for archiving.

Selection
- No
- Yes

"Finish" wizard

Navigation Guidance → Proof test → Finish

Inspector

Navigation
Guidance → Proof test → Finish → Inspector
Guidance → Safety mode → Result → 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 → Proof test → Finish → Location
Guidance → Safety mode → Result → Location

Description
The entered value will be included in the report.

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

Date/time

Navigation
Guidance → Safety mode → Result → Date/time

User interface
Character string comprising numbers, letters and special characters

Notes

Navigation
Guidance → Proof test → Finish → Notes
Guidance → Safety mode → Result → 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 → Proof test → Finish → Plant operator
- Guidance → Safety mode → Result → Plant operator

Description The entered value will be included in the report.

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

3.2.4 "Proof test" wizard

Navigation Guidance → Proof test

"Preparation Proof test" wizard

Navigation Guidance → Proof test → Prep. test

I have read the warning texts.

Navigation Guidance → Proof test → Prep. test → warning texts

Description Loss of Safety function of protective system using safety-related output signal 4 to 20 mA
- Read Functional safety manual or WHG documentation.
- Do not use safety-related output signal 4 to 20 mA for Safety function of protective system
- Suitable measures must be taken to guarantee process safety during the proof test

Selection Yes

"Preparation Proof test" wizard

Navigation Guidance → Proof test → Prep. test

Visual inspection

Navigation Guidance → Proof test → Prep. test → Visual inspect.

Description The visual inspection may include:
- Cable gland
- Wiring
- Terminal block
- Housing/ housing lid
- Mechanical and electrical installation

For further information refer to safety manual or WHG documentation.

Selection
- Please select
- Failed
- Passed

Notes

Navigation Guidance → Proof test → Prep. test → Notes

Description The entered value will be included in the report.

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

"Preparation Proof test" wizard

Navigation Guidance → Proof test → Prep. test

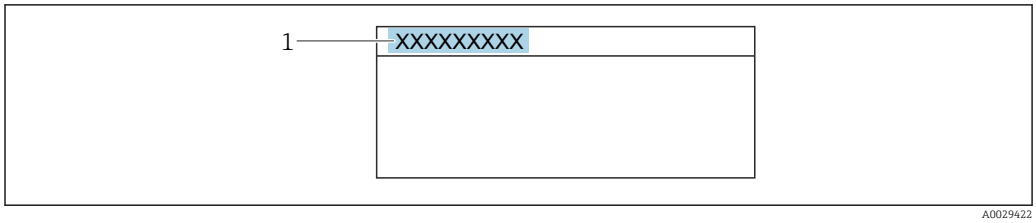
Device tag

Navigation Guidance → Proof test → Prep. test → 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 Guidance → Proof test → Prep. test → 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 → Proof test → Prep. test → 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

Firmware version

Navigation Guidance → Proof test → Prep. test → 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 Guidance → Proof test → Prep. test → Hardware version

User interface Character string comprising numbers, letters and special characters

"Preparation Proof test" wizard

Navigation Guidance → Proof test → Prep. test

CRC device configuration

Navigation Guidance → Proof test → Prep. test → 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

Stored CRC device configuration

Navigation Guidance → Proof test → Prep. test → Stored CRC conf.

Description Stored CRC after the last safety lock. Factory delivery is 65535 means that the device has not yet been safety locked.

User interface 0 to 65 535

Timestamp stored CRC device config.

Navigation Guidance → Proof test → Prep. test → Time stored CRC

Description Gives the time stamp when the CRC was last stored following completion of the safety lock wizard.

User interface Character string comprising numbers, letters and special characters

Operating time

Navigation Guidance → Proof test → Prep. test → Operating time

Description Indicates how long the device has been in operation.

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

Configuration counter

Navigation Guidance → Proof test → Prep. test → Config. counter

Description Displays the counter for changes to the device parameters.

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

User interface 0 to 65 535

"Preparation Proof test" wizard

Navigation Guidance → Proof test → Prep. test

Select test procedure

Navigation Guidance → Proof test → Prep. test → Select test proc

Description The proof test of the device can be done using the following test procedures:

Test procedure A with wizard (PTC > 90%):
- Simulate and check the min and max alarm current.
- Approach and check the lower and upper measured value.
- Confirm safety function.

Test procedure B with wizard (PTC > 50%):
-Verify the current measured value with a plausibility check.
- Simulate and check the min and max alarm current.
- Confirm safety function.

For additional test procedures without wizard, refer to safety manual.

Selection
- Please select
- Test procedure A
- Test procedure B

Safety function?

Navigation Guidance → Proof test → Prep. test → Safety function?

Selection
- Please select
- MAX monitoring
- MIN monitoring
- Range monitoring

"Simulation and check failure current" wizard

Navigation Guidance → Proof test → Simulation

Failure current (high alarm)

Navigation Guidance → Proof test → Simulation → Fail. current (high alarm)

Description Actually set value for high failure current.

User interface 21.5 to 23 mA

Confirm

Navigation Guidance → Proof test → Simulation → Confirm

Description Confirm that the displayed value corresponds to the set high failure current.

Selection
- Please select
- No
- Yes

(High) Is safety function triggered?

Navigation Guidance → Proof test → Simulation → (High)Funct. trigg?

Description Confirm that the output current triggers the required safety function.

Selection Yes

Terminal current (high alarm)

Navigation Guidance → Proof test → Simulation → Term. curr. (HA)

Description Internally readback terminal current (high alarm).

User interface Signed floating-point number

Confirm

Navigation Guidance → Proof test → Simulation → Confirm

Description Confirm that the readback terminal current corresponds to the set high failure current within tolerance +-0,32mA.

Selection
- Please select
- No
- Yes

(Low) Is safety function triggered?

Navigation Guidance → Proof test → Simulation → (Low)Funct. trigg?

Description Confirm that the output current triggers the required safety function.

Selection Yes

"Proof test" wizard

Navigation Guidance → Proof test → Proof test

Setpoint 1

Navigation Guidance → Proof test → Proof test → Setpoint 1

Description Physically apply a reference pressure for upper range.

User entry Signed floating-point number

Pressure 1

Navigation Guidance → Proof test → Proof test → Pressure 1

Description Pressure output

User interface Signed floating-point number

Terminal current 1

Navigation Guidance → Proof test → Proof test → Terminal curr. 1

Description Terminal current for upper range.

User interface 0 to 30 mA

Current deviation 1

Navigation Guidance → Proof test → Proof test → Curr. deviati 1

Description Decide if the terminal current for upper range corresponding to the applied pressure is within tolerance.

Selection
- Please select
- Failed
- Passed

Setpoint 2

Navigation Guidance → Proof test → Proof test → Setpoint 2

Description Physically apply a reference pressure for lower range.

User entry Signed floating-point number

Pressure 2

Navigation Guidance → Proof test → Proof test → Pressure 2

Description Pressure output

User interface Signed floating-point number

Terminal current 2

Navigation Guidance → Proof test → Proof test → Terminal curr. 2

Description Terminal current for lower range.

User interface 0 to 30 mA

Current deviation 2

Navigation Guidance → Proof test → Proof test → Curr. deviati 2

Description Decide if the terminal current for lower range corresponding to the applied pressure is within tolerance.

Selection
- Please select
- Failed
- Passed

"Finish" wizard

Navigation Guidance → Proof test → Finish

Active diagnostics

Navigation Guidance → Proof test → Finish → 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

Summary

Navigation Guidance → Proof test → Finish → Summary

User interface
- Passed
- Failed
- Unknown

Decision of inspector

Navigation Guidance → Proof test → Finish → Decision of insp

Description Responsible for the evaluation of the proof test is the inspector.
The summary displayed is not a binding inspection decision.

Selection
- Please select
- Failed
- Passed

Inspector

Navigation Guidance → Proof test → 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 → Proof test → Finish → Location

Description The entered value will be included in the report.

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

Date/time proof test

Navigation Guidance → Proof test → Finish → Date/time

Description This value is updated with every proof test and with inspector decision „Passed“.

User interface Character string comprising numbers, letters and special characters

Notes

Navigation Guidance → Proof test → 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 → Proof test → Finish → Plant operator

Description The entered value will be included in the report.

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

3.3 "Diagnostics" menu

Navigation Diagnostics

3.3.1 "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 (→ 103).

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 (→ 107).

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)

3.3.2 "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

Clear event list

Navigation Diagnostics → Event logbook → Clear event list

Description Use this function to process the current values in the event logbook.

Selection
- Cancel
- Clear data

Additional information *Description*

Once this function has been executed, the events list is empty and all the events are deleted.

The events list can be exported using an operating tool (e.g. FieldCare.

3.3.3 "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

3.3.4 "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
- Current output
- Diagnostic event simulation
- Pressure

Value pressure simulation

Navigation Diagnostics → Simulation → Pressure

User entry Signed floating-point number

Value current output

Navigation Diagnostics → Simulation → Current output

Description Defines the value of the simulated output current.

User entry 3.59 to 23 mA

Diagnostic event simulation

Navigation Diagnostics → Simulation → Diagnostic event

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

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

Additional information *Description*

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

3.3.5 "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 Heartbeat 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

"Loop diagnostics" submenu

Navigation Diagnostics → Heartbeat Techn. → Loop diagn.

Rebuild baseline

Navigation Diagnostics → Heartbeat Techn. → Loop diagn. → Reb. baseline

Description Notice
The current output is simulated.
Bridge the PLC or take other appropriate measures to prevent an erroneous triggering of alarm messages or changes in the control loop behavior.

The baseline should be rebuilt if planned changes have been made in the loop.

Selection
- No
- Yes

Tolerated deviation +/-

Navigation Diagnostics → Heartbeat Techn. → Loop diagn. → Toler. deviation

Description A value should be chosen to ensure that normal voltage deviations do not lead to unwanted messages.

Default
1.5 V DC

User entry 0.5 to 3.0 V

Baseline status

Navigation Diagnostics → Heartbeat Techn. → Loop diagn. → Baseline status

Description
"Failed"
Means, baseline is not available or creation not possible.

"Success"
Baseline is available.

User interface
- Failed
- Success

Loop diagnostics

Navigation Diagnostics → Heartbeat Techn. → Loop diagn. → Loop diagn.

Description
Enable/disable loop diagnostics.

Note:
If the function is disabled, there is no analysis and no event message.

Selection
- Disable
- Enable

Terminal voltage 1

Navigation Diagnostics → Heartbeat Techn. → Loop diagn. → Terminal volt. 1

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

User interface 0.0 to 50.0 V

Clamping voltage lower threshold

Navigation Diagnostics → Heartbeat Techn. → Loop diagn. → Lower threshold

User interface 0.0 to 50.0 V

Clamping voltage upper threshold

Navigation Diagnostics → Heartbeat Techn. → Loop diagn. → Upper threshold

User interface 0.0 to 50.0 V

806 Event delay

Navigation Diagnostics → Heartbeat Techn. → Loop diagn. → 806 Event delay

Description Displays how long the triggering status must be present until an event message is issued. Used to filter out short-term signal interference.

User entry 0 to 60 s

"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
- Process dynamic too high

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

Counter Baseline creation SSD

Navigation Diagnostics → Heartbeat Techn. → SSD → Counter Baseline

Description Specifies how often the baseline has been rebuilt.

User interface Positive integer

3.3.6 "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 "Off" 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 range.
If this limit value is exceeded or undercut, a diagnostic 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 range.
If this limit value is exceeded or undercut, a diagnostic 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 "Off" 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 range.
If this limit value is exceeded or undercut, a diagnostic 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 range.
If this limit value is exceeded or undercut, a diagnostic 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 "Off" 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 range.
If this limit value is exceeded or undercut, a diagnostic 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 range.
If this limit value is exceeded or undercut, a diagnostic event is generated. There is no hysteresis.

User entry −50 to 150 °C

806 Diagnostic behavior

Navigation Diagnostics → Diag. settings → Properties → 806 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).

If the permissible conditions are reached again, the warning is no longer available in the instrument.

Selection
- Warning
- Logbook entry only

806 Event category

Navigation Diagnostics → Diag. settings → Properties → 806Event category

Description Select category for diagnostic message.

Selection
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

806 Event delay

Navigation Diagnostics → Diag. settings → Properties → 806 Event delay

Description Displays how long the triggering status must be present until an event message is issued. Used to filter out short-term signal interference.

User entry 0 to 60 s

"Configuration" submenu

Navigation Diagnostics → Diag. settings → Configuration → Configuration

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

Selection
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

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

Selection
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

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

Selection
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

"Process" submenu

Navigation Diagnostics → Diag. settings → Configuration → Process

806 Diagnostic behavior

Navigation Diagnostics → Diag. settings → Configuration → Process → 806 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).

If the permissible conditions are reached again, the warning is no longer available in the instrument.

Selection
- Warning
- Logbook entry only

806 Event category

Navigation Diagnostics → Diag. settings → Configuration → Process → 806Event category

Description Select category for diagnostic message.

Selection
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

822 Diagnostic behavior

Navigation Diagnostics → Diag. settings → Configuration → Process → 822 Diag. behav.

User interface
- Alarm
- Warning
- Logbook entry only

822 Event category

Navigation Diagnostics → Diag. settings → Configuration → Process → 822 Event category

Selection
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

Sensor pressure range behavior

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

Description

Select event behavior

"Alarm":
Current output adopts the set alarm current.

"Warning":
Current output unchanged. Message is displayed digitally (factory setting).

"Logbook entry only":
No digital or analog forwarding of the message.

"Special":
– Lower sensor limit undercut: Current output < 3.6 mA.
– Upper sensor limit exceeded: Current output 21 to 23 mA, depending on the setting.

Regardless of the setting, the message appears on the display. If the permissible conditions are reached again, the warning message disappears.

Selection
- Alarm
- Warning
- Logbook entry only
- Special

841 Event category

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

Selection
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

900 Event category

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

Description Select category for diagnostic message.

Selection
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

900 Diagnostic behavior

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

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 digital or analog transmission of the message.

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

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

Description Select category for diagnostic message.

Selection
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

"Process" submenu

Navigation Diagnostics → Diag. settings → Configuration → Process

806 Diagnostic behavior

Navigation Diagnostics → Diag. settings → Configuration → Process → 806 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).

If the permissible conditions are reached again, the warning is no longer available in the instrument.

Selection
- Warning
- Logbook entry only

806 Event category

Navigation Diagnostics → Diag. settings → Configuration → Process → 806Event category

Description Select category for diagnostic message.

Selection
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

822 Diagnostic behavior

Navigation Diagnostics → Diag. settings → Configuration → Process → 822 Diag. behav.

User interface
- Alarm
- Warning
- Logbook entry only

822 Event category

Navigation Diagnostics → Diag. settings → Configuration → Process → 822 Event category

Selection
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

Sensor pressure range behavior

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

Description

Select event behavior

"Alarm":
Current output adopts the set alarm current.

"Warning":
Current output unchanged. Message is displayed digitally (factory setting).

"Logbook entry only":
No digital or analog forwarding of the message.

"Special":
– Lower sensor limit undercut: Current output < 3.6 mA.
– Upper sensor limit exceeded: Current output 21 to 23 mA, depending on the setting.

Regardless of the setting, the message appears on the display. If the permissible conditions are reached again, the warning message disappears.

Selection
- Alarm
- Warning
- Logbook entry only
- Special

841 Event category

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

Selection
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

900 Event category

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

Description Select category for diagnostic message.

Selection
- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

900 Diagnostic behavior

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

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 digital or analog transmission of the message.

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

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

Description Select category for diagnostic message.

Selection

- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- No effect (N)

3.4 "Application" menu

Navigation Application

3.4.1 "Measuring units" submenu

Navigation Application → Measuring units

Pressure unit

Navigation Application → Measuring units → Pressure unit

Selection

SI units
- MPa
- kPa
- Pa
- bar
- mbar
- 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

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
  The decimal place is configured automatically.
  Example: Unit mbar: one decimal place. Unit bar: four decimal places
- 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 → Scaled 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

3.4.2 "Measured values" submenu

Navigation Application → Measured values

Sensor pressure

Navigation Application → Measured values → Sensor pressure

User interface Signed floating-point number

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

Terminal current

Navigation Application → Measured values → Terminal curr.

Description Shows the current value of the current output which is currently measured

User interface 0 to 30 mA

Electronics temperature

Navigation Application → Measured values → Electronics temp

Description Displays the current temperature of the main electronics.

User interface Signed floating-point number

3.4.3 "Sensor" submenu

Navigation Application → Sensor

"Basic settings" submenu

Navigation Application → Sensor → Basic settings

Output current transfer function

Navigation Application → Sensor → Basic settings → Curr. trans.func

Description Linear
The linear pressure signal is used for the current output. The flow must be calculated in the evaluation unit.

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

User interface
- Linear
- Square root *

Damping

Navigation Application → Sensor → Basic settings → 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 calibration" 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

* Visibility depends on order options or device settings

Description Enter the value by which the measured value should be corrected, e.g., a position adjustment for absolute pressure sensors.

User entry Signed floating-point number

Zero adjustment offset

Navigation Application → Sensor → Sensor cal. → Zero offset

User entry Signed floating-point number

Sensor Trim Reset

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

Selection
- No
- Confirm

Lower sensor trim measured value

Navigation Application → Sensor → Sensor cal. → LowerTrimMeasVal

User interface Signed floating-point number

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.

Note:

The value entered can be at maximum "Sensor pressure" +/- 10 % of the permitted maximum pressure (URL).

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 measured value

Navigation Application → Sensor → Sensor cal. → UpperTrimMeasVal

User interface Signed floating-point number

Upper sensor trim

Navigation Application → Sensor → Sensor cal. → UpperSensor 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.

Note:

The value entered can be at maximum "Sensor pressure" +/- 10 % of the permitted maximum pressure (URL).

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

"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

Assign PV

Navigation Application → Sensor → Scaled variable → Assign PV

Description Use this function to select a measured variable (HART device variable) for the primary dynamic variable (PV).

Selection
- Pressure
- Scaled variable

Scaled variable unit

Navigation Application → Sensor → Scaled variable → Scaled 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 → Scaled function

Description

"Linear'
The linear pressure signal is used for the output signal. The flow must be calculated in the evaluation unit.

"Square root" (Deltabar)
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

Lower range value output

Navigation Application → Sensor → Scaled variable → Low.range outp

Description Depending on which variable has been selected as "Process variable output current ", define the related lower (4 mA) and upper range values (20 mA).

User entry Signed floating-point number

Upper range value output

Navigation Application → Sensor → Scaled variable → Upp.range outp

Description Depending on which variable has been selected as "Process variable output current ", define the related lower (4 mA) and upper range values (20 mA).

User entry Signed floating-point number

* Visibility depends on order options or device settings

Activate table

Navigation Application → Sensor → Scaled variable → Activate table

Selection
- Disable
- Enable

Pressure value 1

Navigation Application → Sensor → Scaled variable → Pressure 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 → Scaled 1

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

User interface Signed floating-point number

Pressure value 2

Navigation Application → Sensor → Scaled variable → Pressure 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 → Scaled 2

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

User entry Signed floating-point number

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

"Wet calibration" submenu

Navigation Application → Sensor → Wet calibration

Zero

Navigation Application → Sensor → Wet calibration → Zero

Selection
- No
- Confirm

Pressure value 1

Navigation Application → Sensor → Wet calibration → Pressure 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

Span

Navigation Application → Sensor → Wet calibration → Span

Selection
- No
- Confirm

Pressure value 2

Navigation Application → Sensor → Wet calibration → Pressure 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

Lower range value output

Navigation Application → Sensor → Wet calibration → Low.range outp

Description Depending on which variable has been selected as "Process variable output current ", define the related lower (4 mA) and upper range values (20 mA).

User entry Signed floating-point number

Upper range value output

Navigation Application → Sensor → Wet calibration → Upp.range outp

Description Depending on which variable has been selected as "Process variable output current ", define the related lower (4 mA) and upper range values (20 mA).

User entry Signed floating-point number

"Wet calibration" submenu

Navigation Application → Sensor → Wet calibration

Zero

Navigation Application → Sensor → Wet calibration → Zero

Selection
- No
- Confirm

Pressure value 1

Navigation Application → Sensor → Wet calibration → Pressure 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

Span

Navigation Application → Sensor → Wet calibration → Span

Selection
- No
- Confirm

Pressure value 2

Navigation Application → Sensor → Wet calibration → Pressure 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

Lower range value output

Navigation Application → Sensor → Wet calibration → Low.range outp

Description Depending on which variable has been selected as "Process variable output current ", define the related lower (4 mA) and upper range values (20 mA).

User entry Signed floating-point number

Upper range value output

Navigation Application → Sensor → Wet calibration → Upp.range outp

Description Depending on which variable has been selected as "Process variable output current ", define the related lower (4 mA) and upper range values (20 mA).

User entry Signed floating-point number

3.4.4 "Current output" submenu

Navigation Application → Curr.output

Assign PV

Navigation Application → Curr.output → Assign PV

Description Use this function to select a measured variable (HART device variable) for the primary dynamic variable (PV).

Selection
- Pressure
- Scaled variable

Measuring mode current output

Navigation Application → Curr.output → Output mode

Description Select curve of current output.

Selection
- Standard
- Inverse
- Bi-directional

Current range output

Navigation Application → Curr.output → Current range

Description Defines the current range used to transmit the measured or calculated value.
In brackets are indicated the “low saturation value” and the “high saturation value”.
If Measured value ≤ “low saturation”, the output current is set to “low saturation”.
If Measured value ≥ “high saturation”, the output current is set to ”high saturation”.

Note:
Currents below 3.6 mA or above 21.5 mA can be used to signal an alarm.

Selection
- 4...20 mA (4...20.5 mA)
- 4...20 mA NE (3.8...20.5 mA)
- 4...20 mA US (3.9...20.8 mA)

Lower range value output

Navigation Application → Curr.output → Low.range outp

Description Depending on which variable has been selected as "Process variable output current ", define the related lower (4 mA) and upper range values (20 mA).

User entry Signed floating-point number

Upper range value output

Navigation Application → Curr.output → Upp.range outp

Description Depending on which variable has been selected as "Process variable output current ", define the related lower (4 mA) and upper range values (20 mA).

User entry Signed floating-point number

Failure behavior current output

Navigation Application → Curr.output → Failure behav.

Description Defines which current the output assumes in the case of an error.
Min: < 3.6 mA
Max: >21.5 mA

Note: The hardware DIP Switch for alarm current has priority over software setting.

Selection
- Min.
- Max.

Failure current

Navigation Application → Curr.output → Failure current

Description Enter current output value in alarm condition

User entry 21.5 to 23 mA

Output current

Navigation Application → Curr.output → Output curr.

Description Shows the value currently calculated for the current output

User interface 3.59 to 23 mA

Terminal current

Navigation Application → Curr.output → Terminal curr.

Description Shows the current value of the current output which is currently measured

User interface 0 to 30 mA

4 mA trim value

Navigation Application → Curr.output → 4 mA trim value

Description Enter the trim value for the 4 mA current output.

Note:
Simulation must be active.

User entry 3 to 5 mA

20 mA trim value

Navigation Application → Curr.output → 20 mA trim value

Description Enter the trim value for the 20 mA current output.

Note:
Simulation must be active.

User entry 18 to 22 mA

3.4.5 "HART output" submenu

Navigation Application → HART output

"Configuration" submenu

Navigation Application → HART output → Configuration

HART address

Navigation Application → HART output → Configuration → HART address

Description Define the HART address of the device.

User entry 0 to 63

Additional information
- The measured value can only be transmitted via the current value if the address is set to "0". The current is fixed at 4.0 mA for all other addresses (Multidrop mode).
- Only addresses in the range 0 to 15 are permitted for a system according to HART 5.0.
- All addresses in the range 0 to 63 are permitted for a system with HART 6.0 and higher.

HART short tag

Navigation Application → HART output → Configuration → HART short tag

Description Defines the short tag for the measuring point.

Maximum length: 8 characters
Allowed characters: A-Z, 0-9, certain special characters

User entry Max. 8 characters: A to Z, 0 to 9 and certain special characters (e.g. punctuation marks, @, %).

Device tag

Navigation Application → HART output → Configuration → Device tag

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

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

No. of preambles

Navigation Application → HART output → Configuration → No. of preambles

Description Defines the number of preambles in the HART telegram

User entry 5 to 20

Loop current mode

Navigation Application → HART output → Configuration → Loop curr mode

Description If Loop current mode is disabled, Multi-drop communication mode is activated. Multi-drop is a HART digital communication mode where multiple devices may share the same pair of wires for power and communications.
In this mode the output current is fixed.

Selection
- Disable
- Enable

"HART output" submenu

Navigation Application → HART output → HART output

Assign PV

Navigation Application → HART output → HART output → Assign PV

Description Use this function to select a measured variable (HART device variable) for the primary dynamic variable (PV).

Selection
- Pressure
- Scaled variable

Primary variable (PV)

Navigation Application → HART output → HART output → Primary var (PV)

Description Shows the first HART value (PV).

Additional information

Assign SV

Navigation Application → HART output → HART output → Assign SV

Description Use this function to select a measured variable (HART device variable) for the secondary dynamic variable (SV).

Selection
- Pressure
- Scaled variable
- Sensor temperature
- Sensor pressure
- Electronics temperature
- Terminal current *
- Terminal voltage *
- Median of pressure signal *
- Noise of pressure signal *
- Signal noise detected *
- Percent of range
- Loop current
- Not used

Additional information *Selection*
- **Sensor pressure** option
  Sensor Pressure is the raw signal from sensor before damping and position adjustment.
- **Terminal current** option
  The terminal current is the read-back current on terminal block.
- **Signal noise detected** option
  0 % - Signal noise is within the permissible range.
  100 % - Signal noise is outside of the permissible range.
- **Loop current** option
  The loop current is the output current set by the applied pressure.

Secondary variable (SV)

Navigation Application → HART output → HART output → Second.var(SV)

Description Shows the second HART value (SV).

Assign TV

Navigation Application → HART output → HART output → Assign TV

Description Use this function to select a measured variable (HART device variable) for the tertiary (third) dynamic variable (TV).

* Visibility depends on order options or device settings

Selection

- Pressure
- Scaled variable
- Sensor temperature
- Sensor pressure
- Electronics temperature
- Terminal current *
- Terminal voltage *
- Median of pressure signal *
- Noise of pressure signal *
- Signal noise detected *
- Percent of range
- Loop current
- Not used

Additional information

Selection

- **Sensor pressure** option
  Sensor Pressure is the raw signal from sensor before damping and position adjustment.
- **Terminal current** option
  The terminal current is the read-back current on terminal block.
- **Signal noise detected** option
  0 % - Signal noise is within the permissible range.
  100 % - Signal noise is outside of the permissible range.
- **Loop current** option
  The loop current is the output current set by the applied pressure.

Tertiary variable (TV)

Navigation Application → HART output → HART output → Tertiary var(TV)

Description Shows the third HART value (TV).

Assign QV

Navigation Application → HART output → HART output → Assign QV

Description Use this function to select a measured variable (HART device variable) for the quaternary (fourth) dynamic variable (QV).

Selection

- Pressure
- Scaled variable
- Sensor temperature
- Sensor pressure
- Electronics temperature
- Terminal current *
- Terminal voltage *
- Median of pressure signal *
- Noise of pressure signal *
- Signal noise detected *

* Visibility depends on order options or device settings

- Percent of range
- Loop current
- Not used

Additional information *Selection*

- **Sensor pressure** option
  Sensor Pressure is the raw signal from sensor before damping and position adjustment.
- **Terminal current** option
  The terminal current is the read-back current on terminal block.
- **Signal noise detected** option
  0 % - Signal noise is within the permissible range.
  100 % - Signal noise is outside of the permissible range.
- **Loop current** option
  The loop current is the output current set by the applied pressure.

Quaternary variable (QV)

Navigation Application → HART output → HART output → Quaterna.var(QV)

Description Shows the fourth value (QV).

"Burst configuration 1" submenu

Navigation Application → HART output → Burst config. 1

Burst mode 1

Navigation Application → HART output → Burst config. 1 → Burst mode 1

Description Use this function to select whether to activate the HART burst mode for burst message X.

Selection

- Off
  The measuring device transmits data only when requested by the HART master.
- On
  The measuring device transmits data regularly without being requested.

Additional information *Selection*

- Off
  The measuring device transmits data only when requested by the HART master.
- On
  The measuring device transmits data regularly without being requested.

Burst command 1

Navigation Application → HART output → Burst config. 1 → Burst command 1

Description Use this function to select the HART command that is sent to the HART master.

Selection
- Primary variable (PV)
- Loop Current and Percent of Range
- Dynamic Variables
- Device variables with status
- Device variables
- Additional device status

Additional information

Selection

- Command 1
  Read out the primary variable.
- Command 2
  Read out the current and the main measured value as a percentage.
- Command 3
  Read out the dynamic HART variables and the current.
- Command 9
  Read out the dynamic HART variables including the related status.
- Command 33
  Read out the dynamic HART variables including the related unit.
- Command 48
  Read out the complete device diagnostics.

"Command 33" option

The HART device variables are defined via Command 107.

Commands

- Information about the defined details of the command: HART specifications
- The measured variables (HART device variables) are assigned to the dynamic variables in the **Output** submenu.

Burst variable 0

Navigation Application → HART output → Burst config. 1 → Burst variable 0

Description For HART command 9 and 33: select the HART device variable or the process variable.

Selection
- Pressure
- Scaled variable
- Sensor temperature
- Sensor pressure
- Electronics temperature
- Measured current *
- Terminal voltage 1 *
- Median of pressure signal *
- Noise of pressure signal *

* Visibility depends on order options or device settings

- Signal noise detected *
- Percent of range
- Measured current
- Primary variable (PV)
- Secondary variable (SV)
- Tertiary variable (TV)
- Quaternary variable (QV)
- Not used

Additional information *Selection*

If a burst message is not configured, the **Not used** option is set.

Burst variable 1

Navigation Application → HART output → Burst config. 1 → Burst variable 1

Description For HART command 9 and 33: select the HART device variable or the process variable.

Selection Please refer to the **Burst variable 0** parameter (→ 155).

Burst variable 2

Navigation Application → HART output → Burst config. 1 → Burst variable 2

Description For HART command 9 and 33: select the HART device variable or the process variable.

Selection Please refer to the **Burst variable 0** parameter (→ 155).

Burst variable 3

Navigation Application → HART output → Burst config. 1 → Burst variable 3

Description For HART command 9 and 33: select the HART device variable or the process variable.

Selection Please refer to the **Burst variable 0** parameter (→ 155).

Burst variable 4

Navigation Application → HART output → Burst config. 1 → Burst variable 4

Description For HART command 9: select the HART device variable or the process variable.

* Visibility depends on order options or device settings

Selection Please refer to the **Burst variable 0** parameter (→ 155).

Burst variable 5

Navigation Application → HART output → Burst config. 1 → Burst variable 5

Description For HART command 9: select the HART device variable or the process variable.

Selection Please refer to the **Burst variable 0** parameter (→ 155).

Burst variable 6

Navigation Application → HART output → Burst config. 1 → Burst variable 6

Description For HART command 9: select the HART device variable or the process variable.

Selection Please refer to the **Burst variable 0** parameter (→ 155).

Burst variable 7

Navigation Application → HART output → Burst config. 1 → Burst variable 7

Description For HART command 9: select the HART device variable or the process variable.

Selection Please refer to the **Burst variable 0** parameter (→ 155).

Burst trigger mode

Navigation Application → HART output → Burst config. 1 → Trigger mode

Description Use this function to select the event that triggers burst message X.

Selection
- Continuous
- Window *
- Rising *
- Falling *
- On change

* Visibility depends on order options or device settings

Additional information *Selection*

- Continuous
  The message is sent continuously, at least at intervals corresponding to the time frame specified in the **Burst min period** parameter (→ 158).
- Window
  The message is sent if the specified measured value has changed by the value in the **Burst trigger level** parameter (→ 158).
- Rising
  The message is sent if the specified measured value exceeds the value in the **Burst trigger level** parameter (→ 158).
- Falling
  The message is sent if the specified measured value drops below the value in the **Burst trigger level** parameter (→ 158).
- On change
  The message is sent if a measured value changes in the burst message.

Burst trigger level

Navigation Application → HART output → Burst config. 1 → Trigger level

Description Use this function to enter the burst trigger value.

User entry Signed floating-point number

Additional information *Description*

Together with the option selected in the **Burst trigger mode** parameter (→ 157) the burst trigger value determines the time of burst message X.

Min. update period

Navigation Application → HART output → Burst config. 1 → Min. upd. per.

Description Use this function to enter the minimum time span between two burst commands of burst message X.

User entry Positive integer

Max. update period

Navigation Application → HART output → Burst config. 1 → Max. upd. per.

Description Use this function to enter the maximum time span between two burst commands of burst message X.

User entry Positive integer

"Information" submenu

Navigation Application → HART output → Information

Device ID

Navigation Application → HART output → Information → Device ID

Description Use this function to view the device ID for identifying the measuring device in a HART network.

User interface 6-digit hexadecimal number

Additional information *Description*

In addition to the device type and manufacturer ID, the device ID is part of the unique ID. Each HART device is uniquely identified by the unique device ID.

Device type

Navigation Application → HART output → Information → Device type

Description Displays the device type with which the measuring device is registered with the HART Communication Foundation.

User interface 2-digit hexadecimal number

Factory setting 0x54

Factory setting 0x5A

Additional information *Description*

The device type is specified by the manufacturer. It is needed to assign the appropriate device description file (DD) to the device.

Device revision

Navigation Application → HART output → Information → Device revision

Description Displays the device revision with which the device is registered with the HART Communication Foundation.

User interface 2-digit hexadecimal number

Additional information *Description*

The device revision is needed to assign the appropriate device description file (DD) to the device.

HART short tag

Navigation Application → HART output → Information → HART short tag

Description Defines the short tag for the measuring point.

Maximum length: 8 characters
Allowed characters: A-Z, 0-9, certain special characters

User entry Max. 8 characters: A to Z, 0 to 9 and certain special characters (e.g. punctuation marks, @, %).

HART revision

Navigation Application → HART output → Information → HART revision

Description Shows the HART revision of the device.

HART descriptor

Navigation Application → HART output → Information → HART descriptor

Description Description for the measuring point.

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

HART message

Navigation Application → HART output → Information → HART message

Description A HART message which is sent via the HART protocol when requested by the master.

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

HART date code

Navigation Application → HART output → Information → HART date code

Description Date of the last configuration change

User entry Character string comprising numbers, letters and special characters (10)

Additional information Date format: YYYY-MM-DD

Make sure you adhere to this format when entering the date. Otherwise errors may occur in individual HART commands.

3.5 "System" menu

Navigation System

3.5.1 "Device management" submenu

Navigation System → Device manag.

Device tag

Navigation System → Device manag. → Device tag

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

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

Locking status

Navigation System → Device manag. → Locking status

Description Displays the active write protection.

User interface
- Hardware locked
- Safety 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 Displays the counter for changes to the device parameters.

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

User interface 0 to 65 535

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

3.5.2 "User management" submenu

Navigation System → User manag.

User role

Navigation System → User manag. → User role

Description Displays the access authorization to the parameters via the operating tool.

User interface
- Operator
- Maintenance
- Expert

Additional information *Description*

Access authorization can be modified via the **Enter access code** parameter.

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

User interface

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

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. → Confirm password

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 delivered by your local support.

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

3.5.3 "Bluetooth configuration" submenu

Navigation System → Bluetooth conf.

Bluetooth activation

Navigation System → Bluetooth conf. → 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

3.5.4 "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
- 1 bargraph + 1 value
- 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 (→ 167)...**Value 8 display** parameter **Value 4 display** parameter (→ 169) 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
- Current output
- Sensor temperature
- Percent of range

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 (→ 167) 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
- Current output
- Sensor temperature
- Percent of range

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 (→ 167) 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
- Current output
- Sensor temperature
- Percent of range

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 (→ 167) 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
- Current output
- Sensor temperature
- Percent of range

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 (→ 167) 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 Ⓔ buttons simultaneously
- Stronger: Press the ⊕ and Ⓔ buttons simultaneously

3.5.5 "Geolocation" submenu

Navigation System → Geolocation

Process Unit Tag

Navigation System → Geolocation → Process Unit Tag

Description Enter the process unit in which the device is installed.

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

Location Description

Navigation System → Geolocation → Location Descr.

Description Use this function to enter a description of the location so that the device can be located in the plant.

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

Longitude

Navigation System → Geolocation → Longitude

Description Use this function to enter the longitude coordinates that describe the device location.

User entry −180 to 180 °

Latitude

Navigation System → Geolocation → Latitude

Description Use this function to enter the latitude coordinates that describe the device location.

User entry −90 to 90 °

Altitude

Navigation System → Geolocation → Altitude

Description Use this function to enter the altitude data that describe the device location.

User entry Signed floating-point number

Location method

Navigation System → Geolocation → Location method

Description Use this function to select the data format for specifying the geographic location. The codes for specifying the location are based on the US National Marine Electronics Association (NMEA) Standard NMEA 0183.

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

3.5.6 "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 –

XML build number

Navigation System → Information → XML build no.

User interface Positive integer

Checksum

Navigation System → Information → Checksum

Description Checksum for Firmware version.

User interface Positive integer

3.5.7 "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

Stored CRC device configuration

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

Description Stored CRC after the last safety lock. Factory delivery is 65535 means that the device has not yet been safety locked.

User interface 0 to 65 535

Timestamp stored CRC device config.

Navigation System → Softw. config. → Time stored CRC

Description Gives the time stamp when the CRC was last stored following completion of the safety lock wizard.

User interface Character string comprising numbers, letters and special characters

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

- SIL
- WHG
- Heartbeat Verification
- Heartbeat Monitoring

Index

Symbols

0 ... 9

A

B

C

D

P

Q

R

S

www.addresses.endress.com

Endress+Hauser

People for Process Automation