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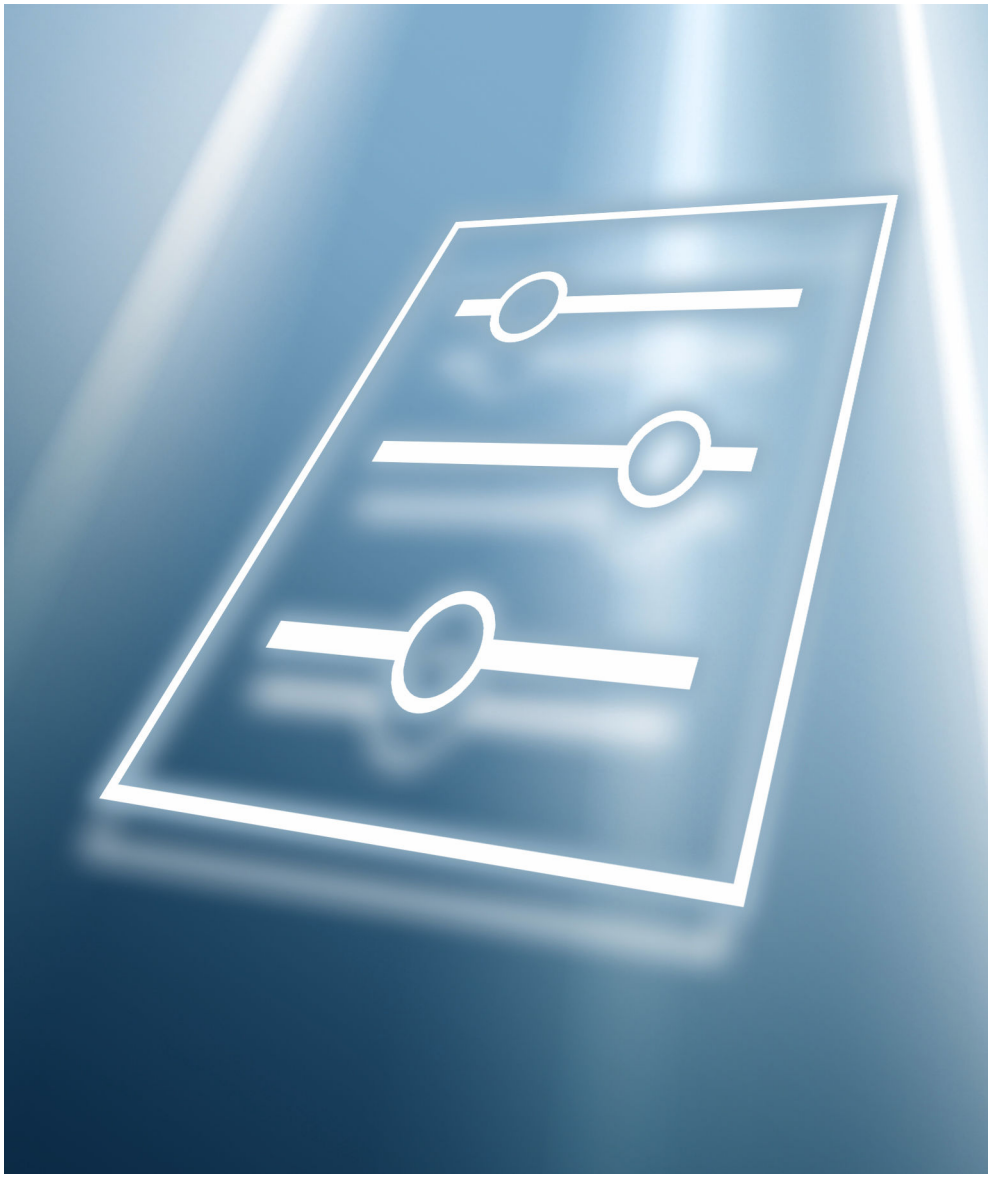
2025-07-30

01.00.zz (Device firmware)

Description of Device Parameters
Micropilot FMR20B, FMR30B

Radar
HART



Endress+Hauser
People for Process Automation

1 About this document

1.1 Document function

The document is part of the Operating Instructions and serves as a reference for parameters.

Tasks that require detailed knowledge of the function of the device:
- Starting up measurements under difficult conditions
- Optimal adjustment of measurements to difficult conditions
- Detailed configuration of communication interface
- Fault diagnosis in difficult cases

1.2 Target group

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

1.3 Document structure

The document consists of a general part and a specific part.

The structure of the document and its components are explained in the general part (section 1).

The specific part starts with an overview of the device operating menu, which is the focus of this manual.

The description of the device parameters follows the overview of the operating menu. The description is divided into 4 main menus and their submenus.

The 4 main menus:
- Guidance
- Diagnostics
- Application
- System

In the "Description of device parameters" section, the menus, submenus and parameters are displayed in the same way as they are laid out in the menu structure for the **operating tool**.

An operating tool is software, such as FieldCare, which can be used to display and edit the data and parameters stored in the device on a PC or laptop. Compared to operation via the local display, an operating tool offers more options. It provides additional information, such as graphics and help texts, which explain the properties of the parameters.

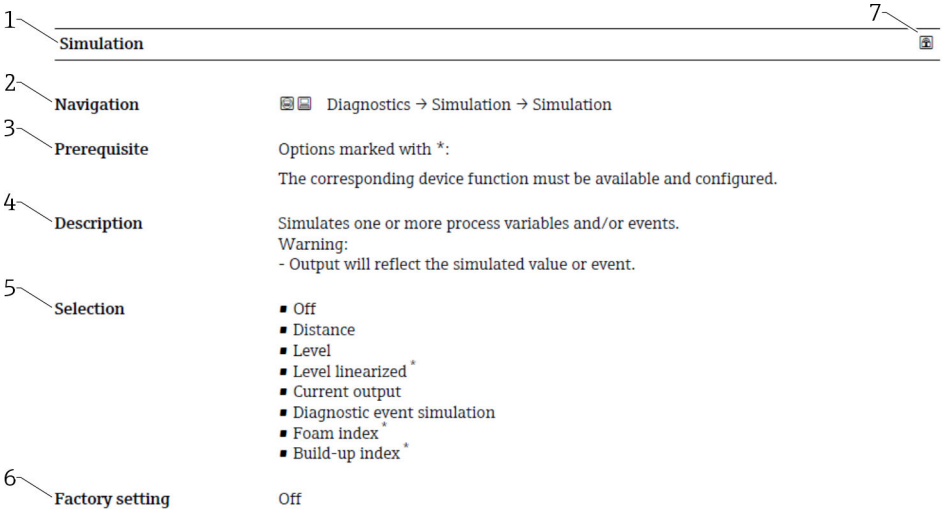
The submenus visible to a user depend on the **User role (→ 107)** they are logged in with. This document lists the submenus and their parameters that are available to the User role **Maintenance**.

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

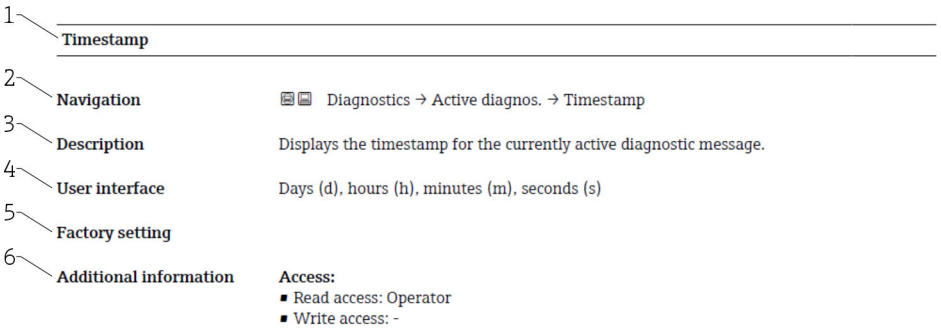
For information on operating options, see the Operating Instructions.

1.4 Elements of parameter descriptions

Parameter descriptions are structured and made up of a number of elements. Depending on the parameter, more or fewer elements may be available. Below are 2 examples of different parameters:



1 *Name: Parameter designation (Label)*
2 *Navigation: Navigation path to the parameter. The graphics indicate whether the path applies to the onsite display, the operating tool or both.*
3 *Prerequisite: The marked options can only be selected under the condition specified in each case*
4 *Description: Description of the parameter function*
5 *Selection: List of the individual options for the parameter*
6 *Factory setting: Default setting on leaving the factory*
7 *The lock symbol indicates that the parameter is write-protected*



1 *Name: Parameter designation (Label)*
2 *Navigation: Navigation path to the parameter. The graphics indicate whether the path applies to the onsite display, the operating tool or both.*
3 *Description: Description of the parameter function*
4 *User interface: Display value/data of the parameter*
5 *Factory setting: Default setting on leaving the factory*
6 *Additional information:*
Read and write access: Information on access rights that users with certain roles have to the parameter

Additional information at the end of the parameter description can refer to all elements of the parameter description and expand them.

1.5 Symbols

1.5.1 Safety symbols

⚠ DANGER
This symbol alerts you to a dangerous situation. Failure to avoid this situation will result in serious or fatal injury.

⚠ WARNING
This symbol alerts you to a potentially dangerous situation. Failure to avoid this situation can result in serious or fatal injury.

⚠ CAUTION
This symbol alerts you to a potentially dangerous situation. Failure to avoid this situation can result in minor or medium injury.

NOTICE
This symbol alerts you to a potentially harmful situation. Failure to avoid this situation can result in damage to the product or something in its vicinity.

1.5.2 Symbols for certain types of information

- Indicates additional information
- Reference to documentation
- Operation via local display
- Operation via operating tool
- Write-protected parameter

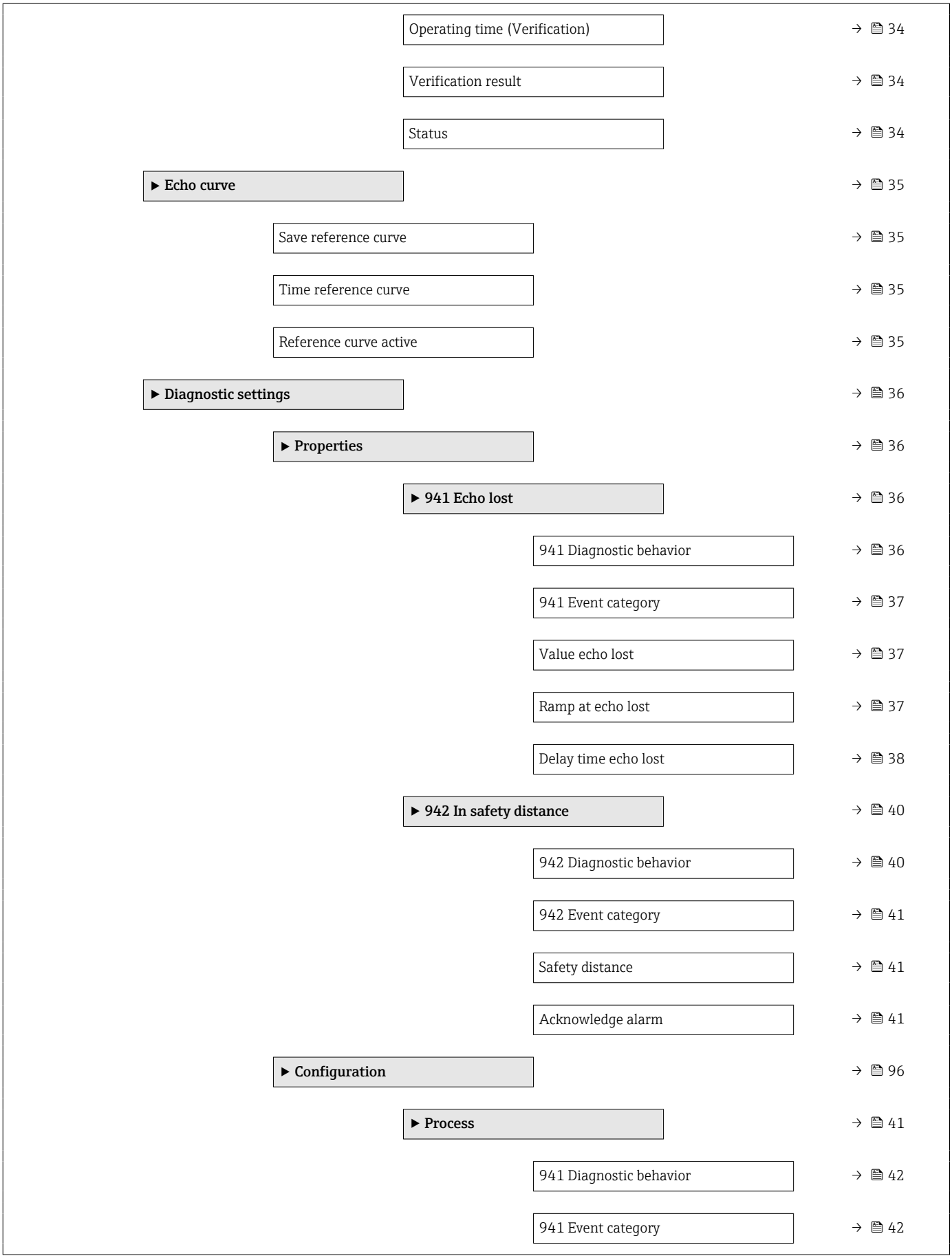
1.6 Documentation

For an overview of the scope of the associated Technical Documentation, refer to the following:
- *Device Viewer* (www.endress.com/deviceviewer): Enter the serial number from the nameplate
- *Endress+Hauser Operations app*: Enter serial number from nameplate or scan matrix code on nameplate.

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

2 Overview of the operating menu

Navigation Operating tool


Operating time (Verification) → 34
Verification result → 34
Status → 34
▶ Echo curve → 35
Save reference curve → 35
Time reference curve → 35
Reference curve active → 35
▶ Diagnostic settings → 36
▶ Properties → 36
▶ 941 Echo lost → 36
941 Diagnostic behavior → 36
941 Event category → 37
Value echo lost → 37
Ramp at echo lost → 37
Delay time echo lost → 38
▶ 942 In safety distance → 40
942 Diagnostic behavior → 40
942 Event category → 41
Safety distance → 41
Acknowledge alarm → 41
▶ Configuration → 96
▶ Process → 41
941 Diagnostic behavior → 42
941 Event category → 42

- 942 Diagnostic behavior → 43
- 942 Event category → 43

Application → 44

- **▶ Measuring units** → 44
  - Level unit → 44
  - Length unit → 44
  - Temperature unit → 44
- **▶ Measured values** → 45
  - Level linearized → 45
  - Flow → 45
  - Totalizer value → 45
  - Totalizer overflow → 46
  - Level → 46
  - Terminal voltage 1 → 46
  - Terminal current → 47
  - Electronics temperature → 47
  - Output current → 47
  - Distance → 47
  - Unfiltered distance → 48
  - Sensor temperature → 48
- **▶ Sensor** → 48
  - **▶ Basic settings** → 48
    - Medium type → 48
    - Operating mode → 49
    - Application → 49

- Empty calibration → 50
- Full calibration → 50
- ▶ **Advanced settings** → 51
  - ▶ **Adjustment** → 51
    - Maximum draining speed solid → 51
    - Maximum filling speed solid → 51
    - Maximum draining speed liquid → 52
    - Maximum filling speed liquid → 52
    - Damping output → 53
    - Evaluation sensitivity → 53
    - First echo sensitivity → 54
    - Frequency mode → 54
  - ▶ **Mapping** → 55
    - Active map → 55
    - Distance → 55
    - Confirm distance → 55
    - Mapping end point → 56
    - Record map → 58
  - ▶ **Distance** → 58
    - Maximum measuring distance → 58
    - Upper blank out → 58
    - Output mode → 59
    - Level limit mode → 60
    - High limit → 60

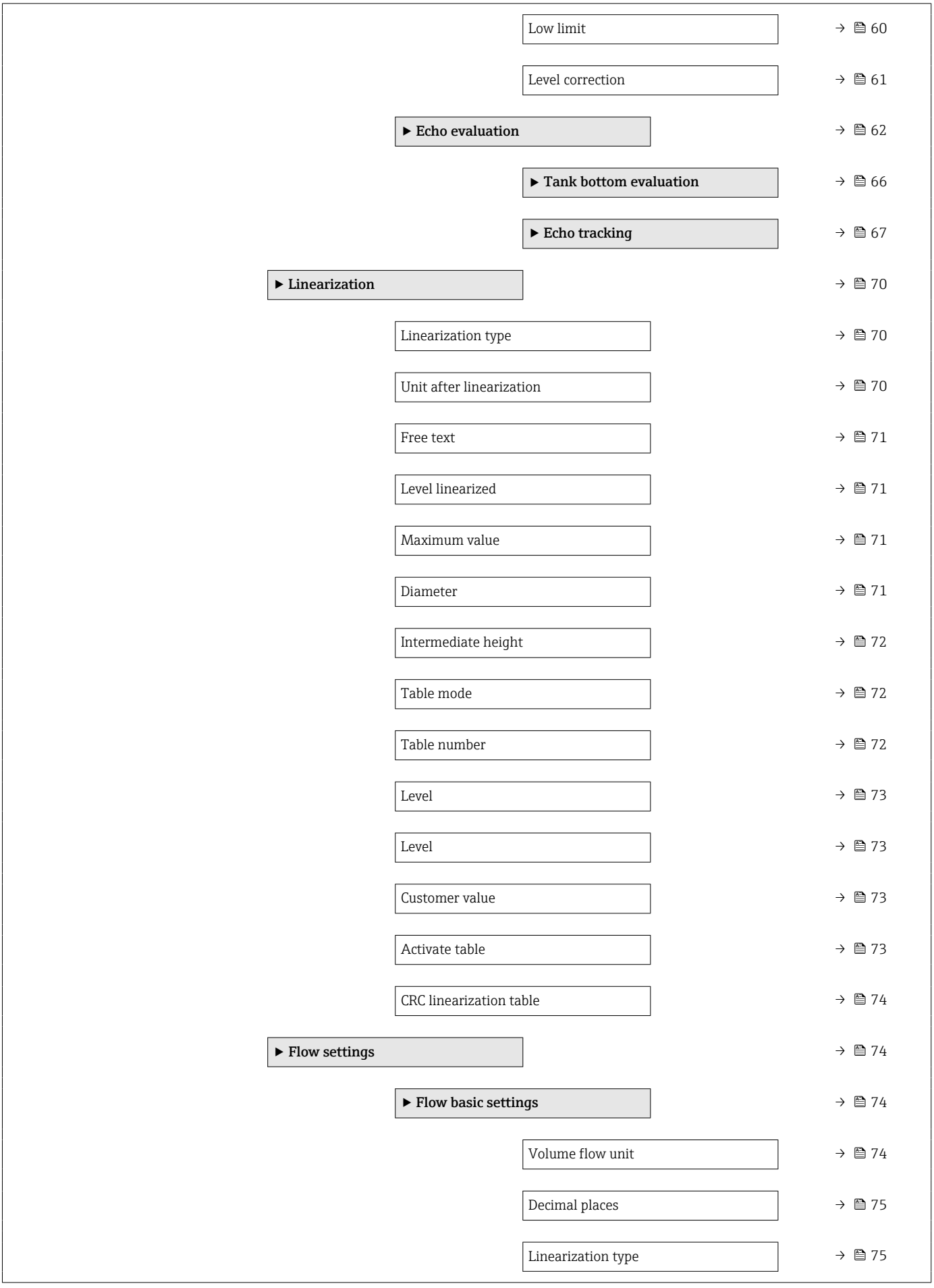

Low limit → 60
Level correction → 61
▶ Echo evaluation → 62
▶ Tank bottom evaluation → 66
▶ Echo tracking → 67
▶ Linearization → 70
Linearization type → 70
Unit after linearization → 70
Free text → 71
Level linearized → 71
Maximum value → 71
Diameter → 71
Intermediate height → 72
Table mode → 72
Table number → 72
Level → 73
Level → 73
Customer value → 73
Activate table → 73
CRC linearization table → 74
▶ Flow settings → 74
▶ Flow basic settings → 74
Volume flow unit → 74
Decimal places → 75
Linearization type → 75

Table mode	→ 76
Flume type	→ 76
Weir type	→ 77
Khafagi Venturi flume	→ 77
Venturi flume	→ 77
Parshall flume	→ 78
Palmer Bowlus flume	→ 78
Approach width (B)	→ 79
Approach diameter (Da)	→ 79
Throat diameter (D)	→ 79
Throat width (b)	→ 79
Throat length (L)	→ 80
Hump height (p)	→ 80
Side slope (m)	→ 80
Leopold Lagco flume	→ 80
Flume length (L)	→ 81
Flume width (b)	→ 81
H flume	→ 82
Inner diameter (d)	→ 83
Roughness coefficient	→ 83
Slope (m)	→ 83
Alpha (α)	→ 83
Beta (β)	→ 84
Gamma (γ)	→ 84
C	→ 84

- Measuring mode current output → 92
- Current range output → 93
- Lower range value output → 93
- Upper range value output → 93
- Failure behavior current output → 94
- Failure current → 94
- Output current → 94
- Terminal current → 94

▶ HART output → 96

▶ Configuration → 96

- HART address → 96
- HART short tag → 96
- Device tag → 96
- No. of preambles → 97
- Loop current mode → 97

▶ HART output → 97

- Assign PV → 97
- Primary variable (PV) → 98
- Assign SV → 98
- Secondary variable (SV) → 98
- Assign TV → 99
- Tertiary variable (TV) → 99
- Assign QV → 99
- Quaternary variable (QV) → 100

- ▶ **User management** → 107
  - User role → 107
  - Delete password → 107
  - Forgot password? → 108
- ▶ **Enter password** → 108
  - Password → 108
  - Enter access code → 108
  - Status password entry → 108
- ▶ **Define password** → 109
  - New password → 109
  - Confirm new password → 109
  - Status password entry → 109
- ▶ **Change password** → 110
  - Old password → 110
  - New password → 110
  - Confirm new password → 110
  - Status password entry → 111
- ▶ **Recover password** → 111
  - Reset password → 111
  - Status password entry → 111
- ▶ **Bluetooth configuration** → 112
  - Bluetooth activation → 112
- ▶ **Display** → 112
  - Language → 112
  - Format display → 113

	Timestamp stored CRC device config.	→ 125
	Activate SW option	→ 125
	Software option overview	→ 125

3 Description of device parameters

3.1 Guidance

In the **Guidance** menu, the user can quickly perform basic tasks, such as commissioning. These primarily consist of guided wizards and cross-thematic special functions.

Navigation Guidance

3.1.1 Overview

The **Guidance** menu contains the following submenus and wizards:
- Commissioning
- Heartbeat Technology
  Heartbeat Verification
- Safety mode
- Proof test
- Import/Export
- Compare

3.1.2 Commissioning

Run the **Commissioning** wizard to commission the device. Enter the appropriate value in each parameter or select the appropriate option.

⚠ WARNING

If the wizard is canceled before all the necessary parameters have been configured, any settings already made are saved.
The device may be in an undefined state!
▶ Use these functions to reset the device to factory settings.

Navigation Guidance → Commissioning

Parameters for "Commissioning" wizard

The following parameters are configured in this wizard:
- **Device identification**
  - Device tag
  - Device name
  - Serial number
  - Extended order code 1 ... 3
  - Locking status
  - HART short tag
  - HART date code
  - HART descriptor
  - HART message
  - HART address

- **Measurement adjustments**
  - Distance unit
  - Temperature unit
  - Level unit
  - Medium type
  - Operating mode
  - Application
  - Empty calibration
  - Full calibration
  - Level
  - Displayed level/distance correct?
  - Show possible signals in?
  - Distance
  - Level
  - Linearization type
  - Unit after linearization
  - Maximum value
  - Diameter
  - Intermediate height
  - Diameter
  - Level linearized
  - Table mode
  - Table number
  - Level
  - Customer value
  - Activate table
  - Maximum value
  - Flume type
  - Weir type
  - Volume flow unit
  - Decimal places
  - Khafagi Venturi flume
  - Venturi flume
  - Parshall flume
  - Palmer Bowlus flume
  - Approach width (B)
  - Throat width (b)
  - Throat length (L)
  - Hump height (p)
  - Side slope (m)
  - Validation
  - Approach diameter (Da)
  - Alpha (α)
  - Beta (β)
  - Gamma (γ)
  - C
  - Maximum level (h_max)
  - Flow exponent (x)
  - Maximum flow
  - Trapezoidal weir
  - Weir width (b)
  - Crest width (b)
  - Crest height (p)
  - Crest length (L)
  - Notch angle (α)
  - Totalizer
  - Totalizer unit
  - Failure behavior
  - Totalizer value

- Totalizer overflow
- Low flow cutoff
- Low flow cutoff value

- **Output settings**
  - Process variable output current
  - Current range output
  - Lower range value output
  - Upper range value output
  - Failure behavior current output
  - Failure current
  - Loop current mode
  - Assign HART variables?
    This function comprises several parameters, including the **Assign PV** parameter.

3.1.3 Heartbeat Technology

Heartbeat Technology offers the following functions:
- Diagnostics through continuous self-monitoring
- In situ verification of measuring instruments in the application

Special Documentation on Heartbeat Technology is available via the Internet:
www.endress.com → Download

Navigation Guidance → Heartbeat Techn.

Heartbeat Verification

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

Navigation Guidance → Heartbeat Techn. → Heartbeat Verif.

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.

Navigation Guidance → Safety mode

3.1.5 Proof test

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.

Navigation Guidance → Proof test

3.1.6 Import/Export

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

Create configuration report
Device documentation can be saved in PDF format under Create configuration report. This device documentation contains the following general device information:
- Information on device parameters
- Information on Linearization
- Echo curve
- Event list
- Diagnostic list

Navigation Guidance → Import/Export

3.1.7 Compare

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

Navigation Guidance → Compare

3.2 Diagnostics

Navigation Diagnostics

3.2.1 Active diagnostics

Navigation Diagnostics → Active diagnos.

Active diagnostics

Navigation Diagnostics → Active diagnos. → Active diagnos.

Description Displays the currently active diagnostic message.

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

User interface
- Operating time of the device until the event occurs
- Symbol for diagnostic behavior
- Code for diagnostic behavior
- Event text
- Corrective measure

Additional information
Access:
- Read access: Operator
- Write access: -

Timestamp

Navigation Diagnostics → Active diagnos. → Timestamp

Description Displays the timestamp for the currently active diagnostic message.

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

Additional information
Access:
- Read access: Operator
- Write access: -

Previous diagnostics

Navigation Diagnostics → Active diagnos. → Prev.diagnostics

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

User interface
- Symbol for event behavior
- Code for diagnostic behavior
- Operation time of occurrence
- Event text

Factory setting 0

Additional information
Access:
- Read access: Operator
- Write access: -

Timestamp

Navigation Diagnostics → Active diagnos. → Timestamp

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

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

Additional information **Access:**
- Read access: Operator
- Write access: -

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)

Additional information **Access:**
- Read access: Operator
- Write access: -

Operating time

Navigation Diagnostics → Active diagnos. → Operating time

Description Indicates how long the device has been in operation.

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

Additional information **Access:**
- Read access: Operator
- Write access: -

3.2.2 Diagnostic list

Navigation Diagnostics → Diagnostic list

3.2.3 Event logbook

Navigation Diagnostics → Event logbook

Clear event list

Navigation Diagnostics → Event logbook → Clear event list

Description Delete all entries of the event list.

Selection
- Cancel
- Clear data

Factory setting Cancel

Additional information
Access:
- Read access: Expert
- Write access: Expert

3.2.4 Minimum/maximum values

Navigation Diagnostics → Min/max val.

Min. level value

Navigation Diagnostics → Min/max val. → Min. level value

Description Minimum or maximum measured value by device.

Note:
This value can be reset via the "Reset min./max." parameter.
This value is also reset when device is reset.

User interface Signed floating-point number

Time min. level

Navigation Diagnostics → Min/max val. → Time min. level

Description Displays operating time at which the lowest level was measured.

Note:
This value can be reset via the "Reset min./max. " parameter.
This value is also reset when device is reset.

User interface Character string comprising numbers, letters and special characters

Max. level value

Navigation Diagnostics → Min/max val. → Max. level value

Description Minimum or maximum measured value by device.

Note:
This value can be reset via the "Reset min./max." parameter.
This value is also reset when device is reset.

User interface Signed floating-point number

Time max. level

Navigation Diagnostics → Min/max val. → Time max. level

Description Displays operating time at which the highest level was measured.

Note:
This value can be reset via the "Reset min./max. " parameter.
This value is also reset when device is reset.

User interface Character string comprising numbers, letters and special characters

Minimum flow value

Navigation Diagnostics → Min/max val. → Min. flow value

Description Displays the lowest volume flow measured since the last reset.

Note:
This value can be reset via the "Reset min./max. " parameter.
This value is also reset when "Operating mode" of the device is switched or the device is reset.

User interface Signed floating-point number

Maximum flow value

Navigation Diagnostics → Min/max val. → Max. flow value

Description Displays the highest volume flow measured since the last reset.

Note:
This value can be reset via the "Reset min./max. " parameter.
This value is also reset when "Operating mode" of the device is switched or the device is reset.

User interface Signed floating-point number

Maximum draining speed

Navigation Diagnostics → Min/max val. → Max. drain speed

Description Displays highest draining speed measured since the last reset.

Note:
This value can be reset via the "Reset min./max. " parameter.
This value is also reset when device is reset.

User interface Positive floating-point number

Maximum filling speed

Navigation Diagnostics → Min/max val. → Max. fill. speed

Description Displays highest filling speed measured since the last reset.

Note:
This value can be reset via the "Reset min./max. " parameter.
This value is also reset when device is reset.

User interface Positive floating-point number

Counter overfilling

Navigation Diagnostics → Min/max val. → Count overfill.

Description Displays the number of underfills (level < 0 %) or overfills (level > 100 %).

Note:
This value can be reset via the "Reset min./max. " parameter.
This value is also reset when device is reset.

User interface 0 to 65 535

Factory setting 0

Counter underfilling

Navigation Diagnostics → Min/max val. → Count underfill.

Description Displays the number of underfills (level < 0 %) or overfills (level > 100 %).

Note:
This value can be reset via the "Reset min./max. " parameter.
This value is also reset when device is reset.

User interface 0 to 65 535

Factory setting 0

Minimum sensor temperature

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

Description Displays lowest or highest sensor temperature measured so far.

User interface −150 to 200 °C

Time min. sensor temperature

Navigation Diagnostics → Min/max val. → Time min s. temp

Description Displays operating time at which the lowest sensor temperature was measured so far.

User interface Character string comprising numbers, letters and special characters

Maximum sensor temperature

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

Description Displays lowest or highest sensor temperature measured so far.

User interface −150 to 200 °C

Time max. sensor temperature

Navigation Diagnostics → Min/max val. → Time max s. temp

Description Displays operating time at which the highest sensor temperature was measured so far.

User interface Character string comprising numbers, letters and special characters

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

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

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

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

Reset min./max.

Navigation Diagnostics → Min/max val. → Reset min/max

Description Resets the drag indicator of the selected process variable.

Selection
- None
- Drain/fill speed
- Level
- Flow *
- Reset all

Factory setting None

3.2.5 Simulation

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
- Distance
- Level
- Level linearized *
- Flow *
- Current output
- Diagnostic event simulation

* Visibility depends on order options or device settings

Factory setting Off

Simulation distance

Navigation Diagnostics → Simulation → Sim distance

Prerequisite Simulation = Distance (→ 47)

User entry −999 900 to 999 900 mm

Factory setting 0 mm

Process variable value

Navigation Diagnostics → Simulation → Proc. var. value

Prerequisite Simulation = Level linearized (→ 45)

Description Defines the value of the selected variable.
The outputs assume values or states according to this value.

User entry Signed floating-point number

Factory setting 0

Value current output

Navigation Diagnostics → Simulation → Current output

Prerequisite Simulation = Current output (→ 92)

Description Defines the value of the simulated output current.

User entry 3.59 to 23 mA

Factory setting 3.59 mA

Diagnostic event simulation

Navigation Diagnostics → Simulation → Diagnostic event

Prerequisite Simulation = Diagnostic event simulation

Description

Select the diagnostic event to be simulated.

Note:
To terminate the simulation, select "Off".

Selection

062 Sensor connection faulty
151 Sensor electronic failure
203 HART Device Malfunction
204 HART Electronic Defect
242 Firmware incompatible
252 Module incompatible
270 Main electronics defective
272 Main electronics faulty
273 Main electronics defective
282 Data storage inconsistent
283 Memory content inconsistent
287 Memory content inconsistent
388 Electronics and HistoROM defective
410 Data transfer failed
412 Processing download
420 HART Device Configuration Locked
421 HART Loop Current fixed
430 Configuration faulty
431 Trim required
435 Linearization faulty
437 Configuration incompatible
438 Dataset different
441 Current output 1 saturated
452 Calculation error detected
484 Failure mode simulation active
485 Process variable simulation active
491 Current output 1 simulation active
538 Configuration Sensor Unit invalid
585 Simulation distance
586 Record map
801 Supply voltage too low
802 Supply voltage too high
805 Loop current faulty
807 No Baseline due to insuf. volt. at 20 mA
825 Electronics temperature
826 Sensor temperature out of range
843 Process value above limit
844 Process value out of specification
846 HART Non-Primary Variable Out of Limit

847 HART Primary Variable Out of Limit

848 HART Device Variable Alert

941 Echo lost

942 In safety distance

968 Level limited

Factory setting Off

Simulated flow value

Navigation Diagnostics → Simulation → Sim. flow value

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

Warning:
Output will reflect the simulated value or event.

User entry Positive floating-point number

Factory setting 0 l/h

3.2.6 Heartbeat Technology

Navigation Diagnostics → Heartbeat Techn.

Heartbeat Verification

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

Factory setting 01.01.1970 00:00:00

Operating time (Verification)

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

Description Value of the operating hours counter at the time of verification.

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

Verification result

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

Description Result of Heartbeat Verification.

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

Factory setting Not done

Status

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

Description Shows the actual status.

User interface
- Done
- Busy
- Failed
- Not done

Factory setting Not done

3.2.7 Echo curve

Navigation Diagnostics → Echo curve

Save reference curve

Navigation Diagnostics → Echo curve → Save ref. curve

Description Saves the currently measured echo curve as a reference curve in the device.

Note:
When the guided commissioning is executed the first time, the reference curve is automatically saved at the end.
In the case of manual commissioning (menu), it is recommended to actively save the reference curve immediately after commissioning.

Selection
- Customer reference curve
- Not active

Factory setting Not active

Additional information

Access:
- Read access: Maintenance
- Write access: Maintenance

Time reference curve

Navigation Diagnostics → Echo curve → Time ref. curve

Description Displays the timestamp of the recording of the reference curve.

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

Additional information Timestamp of the recording of the reference curve.

Access:
- Read access: Operator
- Write access: -

Reference curve active

Navigation Diagnostics → Echo curve → Ref.curve active

Description Displays if a customer reference curve has been stored in the device.

User interface
- Delivery reference curve available
- Customer reference curve available

Factory setting
Customer reference curve available

Additional information
The delivery reference curve is recorded at the factory before delivery.

A customer reference curve is recorded as standard at the end of the Guidance → Commissioning . These reference curves can be used for diagnosing problems when troubleshooting.

Access:
- Read access: Maintenance
- Write access: -

3.2.8 Diagnostic settings

Navigation Diagnostics → Diag. settings

Properties

Navigation Diagnostics → Diag. settings → Properties

941 Echo lost

Navigation Diagnostics → Diag. settings → Properties → 941 Echo lost

941 Diagnostic behavior

Navigation
Diagnostics → Diag. settings → Properties → 941 Echo lost → 941Diag. behav.

Description
Defines the behavior of the output in case of an echo loss.

"Last valid value"
Last valid value is kept.

"Ramp at echo lost"
Output value is continuously shifted towards 0 % or 100 %.

"Value echo lost"
Output assumes a defined value.

"Alarm"
Device generates an alarm.

Selection
- Last valid value
- Ramp at echo lost
- Value echo lost
- Alarm

Factory setting Last valid value

941 Event category

Navigation Diagnostics → Diag. settings → Properties → 941 Echo lost → 941Event categ.

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

Factory setting Out of specification (S)

Value echo lost

Navigation Diagnostics → Diag. settings → Properties → 941 Echo lost → Value echo lost

Description Value of the output in case of an echo loss.

User entry Signed floating-point number

Factory setting 0 %

Ramp at echo lost

Navigation Diagnostics → Diag. settings → Properties → 941 Echo lost → Ramp echo lost

Description Slope of the ramp in the case of an echo loss.

Note:
If the slope is positive (+), the output increases until it reaches 100 %.

If the slope is negative (-), the output decreases until it reaches 0 %.

User entry Signed floating-point number

Factory setting 0.0 %/min

Delay echo lost

Navigation Diagnostics → Diag. settings → Properties → 941 Echo lost → Delay echo lost

Description Activate or deactivate the delay time in case of echo loss.
After an echo loss, the device allows the delay time to pass before the reaction defined in parameter "941 Diagnostic behavior" occurs. This way it can be avoided that temporary disturbances interrupt the measurement unnecessarily.

Selection
- Off
- On

Factory setting On

Additional information **Access:**
- Read access: Expert
- Write access: Expert

Delay time echo lost

Navigation Diagnostics → Diag. settings → Properties → 941 Echo lost → DlyTimeEchoLost

Description Enter the delay time in case of echo loss.
After an echo loss, the device allows the delay time defined here to pass before the reaction defined in parameter "941 Diagnostic behavior" occurs. This way it can be avoided that temporary disturbances interrupt the measurement unnecessarily.

User entry 0 to 99 999.9 s

Factory setting 0 s

Delay time echo jump

Navigation Diagnostics → Diag. settings → Properties → 941 Echo lost → DlyTimeEchoJump

Description Enter the delay time for the echo jump.

User entry 0 to 99 999.9 s

Factory setting 0 s

Additional information **Access:**
- Read access: Expert
- Write access: Expert

Echo lost window right

Navigation Diagnostics → Diag. settings → Properties → 941 Echo lost → Echo l.win.right

Description Enter the initial width of the extended search window in the direction of decreasing levels.

User entry 0 to 99 900 mm

Factory setting 4 000 mm

Additional information **Access:**
- Read access: Expert
- Write access: Expert

Echo lost window left

Navigation Diagnostics → Diag. settings → Properties → 941 Echo lost → Echo l.win.left

Description Enter the initial width of the extended search window in the direction of increasing levels.

User entry 0 to 99 000 mm

Factory setting 4 000 mm

Additional information **Access:**
- Read access: Expert
- Write access: Expert

Draining speed

Navigation Diagnostics → Diag. settings → Properties → 941 Echo lost → Draining speed

Description Enter the opening speed of the extended search window in the direction of decreasing levels.

User entry Signed floating-point number

Factory setting 599 994 cm/min

Additional information **Access:**
- Read access: Expert
- Write access: Expert

Filling speed

Navigation Diagnostics → Diag. settings → Properties → 941 Echo lost → Filling speed

Description Enter the opening speed of the extended search window in the direction of increasing levels.

User entry Signed floating-point number

Factory setting 599 994 cm/min

Additional information

Access:
- Read access: Expert
- Write access: Expert

942 In safety distance

Navigation Diagnostics → Diag. settings → Properties → 942 In saf. dist

942 Diagnostic behavior

Navigation Diagnostics → Diag. settings → Properties → 942 In saf. dist → 942Diag. behav.

Description Sets the behavior of the output when the safety distance is exceeded.

"Off"

No alarm or warning is generated.

"Alarm"
An alarm is generated.

"Warning"
A warning is generated.

"Self holding"
An alarm is generated. The alarm remains even if the signal is again outside the safety distance. To deactivate the alarm, the "Acknowledge alarm" parameter must be manually set to "Yes".

Selection
- Off
- Alarm
- Warning
- Self holding

Factory setting Warning

942 Event category

Navigation Diagnostics → Diag. settings → Properties → 942 In saf. dist → 942Event categ.

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

Factory setting Out of specification (S)

Safety distance

Navigation Diagnostics → Diag. settings → Properties → 942 In saf. dist → Safety distance

User entry −200 000 to 125 000 mm

Factory setting 0 mm

Acknowledge alarm

Navigation Diagnostics → Diag. settings → Properties → 942 In saf. dist → Acknowl. alarm

Selection
- No
- Yes

Factory setting No

Configuration

Navigation Diagnostics → Diag. settings → Configuration → Process

Navigation

Additional information *"941 Echo lost" submenu*

941 Diagnostic behavior

Navigation Diagnostics → Diag. settings → Configuration → Process → 941Diag. behav.

Description Defines the behavior of the output in case of an echo loss.

"Last valid value"
Last valid value is kept.

"Ramp at echo lost"
Output value is continuously shifted towards 0 % or 100 %.

"Value echo lost"
Output assumes a defined value.

"Alarm"
Device generates an alarm.

Selection
- Last valid value
- Ramp at echo lost
- Value echo lost
- Alarm

Factory setting Last valid value

941 Event category

Navigation Diagnostics → Diag. settings → Configuration → Process → 941Event categ.

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

Factory setting Out of specification (S)

Navigation

Additional information *"942 In safety distance" submenu*

942 Diagnostic behavior

Navigation Diagnostics → Diag. settings → Configuration → Process → 942Diag. behav.

Description Sets the behavior of the output when the safety distance is exceeded.

"Off"

No alarm or warning is generated.

"Alarm"
An alarm is generated.

"Warning"
A warning is generated.

"Self holding"
An alarm is generated. The alarm remains even if the signal is again outside the safety distance. To deactivate the alarm, the "Acknowledge alarm" parameter must be manually set to "Yes".

Selection
- Off
- Alarm
- Warning
- Self holding

Factory setting Warning

942 Event category

Navigation Diagnostics → Diag. settings → Configuration → Process → 942Event categ.

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

Factory setting Out of specification (S)

3.3 Application

Navigation Application

3.3.1 Measuring units

Navigation Application → Measuring units

Level unit

Navigation Application → Measuring units → Level unit

Description Select unit for level measurement.

Selection

SI units	*US units*
▪ %	▪ ft
▪ m	▪ in
▪ mm	

Factory setting %

Length unit

Navigation Application → Measuring units → Length unit

Description Select the length unit for distance measurement.
It is used, e.g., for the basic calibration ("Empty calibration" or "Full calibration").

Selection

SI units	*US units*
▪ mm	▪ ft
▪ m	▪ in

Factory setting mm

Temperature unit

Navigation Application → Measuring units → Temperature unit

Description Select the temperature unit.

Selection

SI units	*US units*
▪ °C	°F
▪ K	

Factory setting ℃

3.3.2 Measured values

Navigation Application → Measured values

Level linearized

Navigation Application → Measured values → Level linearized

Description Displays the linearized level.

User interface Signed floating-point number

Factory setting 0 %

Flow

Navigation Application → Measured values → Flow

Description Displays the current volume flow.

User interface Signed floating-point number

Factory setting 0 l/h

Totalizer value

Navigation Application → Measured values → Totalizer value

Description Displays the current totalizer counter value.

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

Example of how to calculate the current totalizer counter when the value exceeds the 7 digit display limit of the operating tool:
- Value of "Totalizer value" parameter: 1,968,457 m^3
- Value of "Totalizer overflow" parameter: 1 × 10^7 m^3 = 10,000,000 m^3
- Current totalizer reading: 11,968,457 m^3

User interface Positive floating-point number

Factory setting 0 l

Totalizer overflow

Navigation Application → Measured values → Tot. overflow

Description Displays the current totalizer overflow.

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

Example of how to calculate the current totalizer counter when the value exceeds the 7 digit display limit of the operating tool:
- Value of "Totalizer value " parameter: 1,968,457 m^3
- Value of "Totalizer overflow " parameter: 1 × 10^7 m^3 = 10,000,000 m^3
- Current totalizer reading: 11,968,457 m^3

User interface Positive floating-point number

Factory setting 0

Level

Navigation Application → Measured values → Level

Description Displays the actual measured level.

User interface −99 999.9 to 200 000.0 %

Factory setting 0.0 %

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

Factory setting 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

Factory setting 0 mA

Electronics temperature

Navigation Application → Measured values → Electronics temp

Description Displays the current temperature of the main electronics.

User interface Signed floating-point number

Factory setting 0 °C

Output current

Navigation Application → Measured values → Output curr.

Description Displays the value currently calculated for the current output

User interface 3.59 to 23 mA

Factory setting 3.59 mA

Distance

Navigation Application → Measured values → Distance

Description Distance from reference point to medium surface.

Note:
The reference point is specified in the respective Operating Instructions.

User interface Signed floating-point number

Factory setting 0 mm

Unfiltered distance

Navigation Application → Measured values → Unfiltered dist.

Description Displays the distance from the reference point of the measurement to the medium surface without the influence of the signal filters.

Note:
The reference point is specified in the respective Operating Instructions.

User interface Signed floating-point number

Factory setting 0 mm

Sensor temperature

Navigation Application → Measured values → Sensor temp.

Description Displays the current temperature of the sensor electronics.

User interface −150 to 200 °C

Factory setting −150 °C

3.3.3 Sensor

Navigation Application → Sensor

Basic settings

Navigation Application → Sensor → Basic settings

Medium type

Navigation Application → Sensor → Basic settings → Medium type

Description Select whether the measured medium is liquid or solid.

Selection
- Liquid
- Solid

Factory setting Liquid

Operating mode

Navigation Application → Sensor → Basic settings → Operating mode

Description Select operating mode.

Selection
- Level linearized
- Flow

Factory setting Level linearized

Application

Navigation Application → Sensor → Basic settings → Application

Description Select application type.

Selection
- Stirred vessel
- Standard measurement
- Level measurement *
- Workbench test

Factory setting Stirred vessel

Additional information
- Stirred vessel: Vessel with agitator.
- Standard measurement: Standard measurement for liquid applications.
- Workbench test: All signal filters are deactivated. This mode should only be used for test purposes.

Application

Navigation Application → Sensor → Basic settings → Application

Description Select application type.

Selection
- Silo
- Bunker (wide area)
- Stockpile/Profile measurement
- Crusher/belt
- Workbench test

Factory setting Workbench test

* Visibility depends on order options or device settings

Additional information

- Silo: Silo for bulk material (tall and narrow)
- Bunker (wide area): Storage bunker for solids (wide area). Visibility depends on order options or device settings
- Stockpile/Profile measurement: Open stockpile or profile measurement of the stockpile. Visibility depends on order options or device settings
- Crusher/belt: Crusher or conveyor belt. Visibility depends on order options or device settings
- Workbench test: All signal filters are deactivated. This mode should only be used for test purposes.

Empty calibration

Navigation Application → Sensor → Basic settings → Empty calibr.

Description Enter the distance from the reference point of the measurement to the minimum level (0 %).

Note:
The reference point is specified in the respective Operating Instructions.

User entry 0 to 125 000 mm

Factory setting 20 000 mm

Full calibration

Navigation Application → Sensor → Basic settings → Full calibr.

Description Distance between minimum level (0 %) and maximum level (100 %).

User entry 1 to 125 000 mm

Factory setting 20 000 mm

Advanced settings

Navigation Application → Sensor → Advanced set.

Adjustment

Navigation Application → Sensor → Advanced set. → Adjustment

Maximum draining speed solid

Navigation Application → Sensor → Advanced set. → Adjustment → Max.drain solid

Description By selecting the maximum expected filling and draining speed the signal evaluation is automatically optimized for the process.

Note:
The filling and draining speeds can be set separately as the filling and draining procedures may be different.

Note:
With the "No filter/test" option all signal evaluation filters are deactivated. This option should exclusively be used for tests.

Selection
- No filter/test *
- Very slow < 0.5 m (1.6 ft)/h *
- Slow < 1 m (3.3 ft)/h *
- Medium < 2 m (6.5 ft)/h *
- Standard < 4 m (13 ft)/h *
- Fast < 8 m (26 ft)/h *
- Very fast > 8 m (26 ft)/h *

Factory setting Standard < 4 m (13 ft)/h

Maximum filling speed solid

Navigation Application → Sensor → Advanced set. → Adjustment → Max. fill. solid

Description By selecting the maximum expected filling and draining speed the signal evaluation is automatically optimized for the process.

Note:
The filling and draining speeds can be set separately as the filling and draining procedures may be different.

Note:
With the "No filter/ test" option all signal evaluation filters are deactivated. This option should exclusively be used for tests.

* Visibility depends on order options or device settings

Selection
- No filter/test *
- Very slow < 0.5 m (1.6 ft)/h *
- Slow < 1 m (3.3 ft)/h *
- Medium < 2 m (6.5 ft)/h *
- Standard < 4 m (13 ft)/h *
- Fast < 8 m (26 ft)/h *
- Very fast > 8 m (26 ft)/h *

Factory setting Standard < 4 m (13 ft)/h

Maximum draining speed liquid

Navigation Application → Sensor → Advanced set. → Adjustment → Max drain liquid

Description By selecting the maximum expected filling and draining speed the signal evaluation is automatically optimized for the process.

Note:
The filling and draining speeds can be set separately as the filling and draining procedures may be different.

Note:
With the "No filter/test" option all signal evaluation filters are deactivated. This option should exclusively be used for tests.

Selection
- No filter/test *
- Slow < 1 cm (0.4 in)/min *
- Medium < 10 cm (4 in)/min *
- Standard < 1 m (40 in)/min *
- Fast < 2 m (80 in)/min *
- Very fast > 2 m (80 in)/min *

Factory setting Standard < 1 m (40 in)/min

Maximum filling speed liquid

Navigation Application → Sensor → Advanced set. → Adjustment → Max. fill liquid

Description By selecting the maximum expected filling and draining speed the signal evaluation is automatically optimized for the process.

Note:
The filling and draining speeds can be set separately as the filling and draining procedures may be different.

Note:
With the "No filter/test" option all signal evaluation filters are deactivated. This option should exclusively be used for tests.

* Visibility depends on order options or device settings

Selection
- No filter/test *
- Slow < 1 cm (0.4 in)/min *
- Medium < 10 cm (4 in)/min *
- Standard < 1 m (40 in)/min *
- Fast < 2 m (80 in)/min *
- Very fast > 2 m (80 in)/min *

Factory setting Standard < 1 m (40 in)/min

Damping output

Navigation Application → Sensor → Advanced set. → Adjustment → Damping out.

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 0.0 to 1200.0 s

Factory setting 0.0 s

Evaluation sensitivity

Navigation Application → Sensor → Advanced set. → Adjustment → Evaluation sens.

Description Selection of the evaluation sensitivity

Options to select from:

- "Low"
Interferers but also small level signals are not recognized. The weighting curve is located high.

- "Medium"
The weighting curve is in a medium region.

- "High"
Small level signals but also interferers can be reliably detected. The weighting curve is located low.

Selection
- Low
- Medium
- High

* Visibility depends on order options or device settings

Factory setting Medium

First echo sensitivity

Navigation Application → Sensor → Advanced set. → Adjustment → First echo sens.

Description This parameter describes the band for First Echo evaluation.
Is measured / calculated down from the peak of the current level echo.

Options to select from:

"Low"
The band for the first echo evaluation is very narrow. The evaluation stays longer at the found echo respectively does not jump to the next Echo or distortion signal.

"Medium"
The band for the first echo evaluation has an average width.

"High"
The band for the first echo evaluation is broad. The evaluation jumps earlier to the next echo or distortion signal.

Selection
- Low
- Medium
- High

Factory setting Medium

Frequency mode

Navigation Application → Sensor → Advanced set. → Adjustment → Frequency mode

Description Displays the device-specific measurement configuration.

Selection
- Mode 1
- Mode 2
- Mode 3
- Mode 4
- Mode 5

Factory setting Mode 2

Mapping

Navigation Application → Sensor → Advanced set. → Mapping

Active map

Navigation Application → Sensor → Advanced set. → Mapping → Active map

Description Select the mapping curve that is to be active. Alternatively, the option "No map" can be selected.

Selection
- Factory map
- Customer map
- No map

Factory setting Factory map

Additional information
- Factory map: The device activates the mapping curve recorded in the factory. This curve cannot be edited or deleted.
- Customer map: If a customer map has been recorded, this can be activated in order to minimize distortions in the application. This curve can be edited.
- No map

Distance

Navigation Application → Sensor → Advanced set. → Mapping → Distance

Description Distance from reference point to medium surface.

Note:
The reference point is specified in the respective Operating Instructions.

User interface Signed floating-point number

Factory setting 0 mm

Confirm distance

Navigation Application → Sensor → Advanced set. → Mapping → Confirm distance

Description State whether the measured distance and the actual distance are the same.

Selection
- Modify map
- Distance ok
- Distance unknown
- Level <=0

Factory setting Distance unknown

Mapping start point

Navigation Application → Sensor → Advanced set. → Mapping → Map. start point

Description Enter the initial distance for the mapping.

User entry −999 900 to 999 900 mm

Factory setting −250 mm

Additional information **Access:**
- Read access: Expert
- Write access: Expert

Mapping end point

Navigation Application → Sensor → Advanced set. → Mapping → Map. end point

Description Defines up to which distance the new mapping has to be recorded.
Remark: Make sure the level signal is not covered by the mapping.

User entry 0.1 to 125 mm

Factory setting 100 mm

Map gap

Navigation Application → Sensor → Advanced set. → Mapping → Map gap

Description Enter the distance between the defined and the actual end of the map.

User entry 0 to 100 000 mm

Factory setting 190 mm

Additional information **Access:**
- Read access: Expert
- Write access: Expert

End of mapping

Navigation Application → Sensor → Advanced set. → Mapping → End of mapping

Description Define the behavior of the mapping curve at the end of the map.

Selection
- Adjustable
- Last map value

Factory setting Adjustable

Additional information
Access:
- Read access: Expert
- Write access: Expert

End map. ampl.

Navigation Application → Sensor → Advanced set. → Mapping → End map. ampl.

Description Enter the minimum amplitude of the mapping curve.

User entry −99 999.0 to 99 999.0 dB

Factory setting −100 dB

Additional information
Access:
- Read access: Expert
- Write access: Expert

Mapping overlay time

Navigation Application → Sensor → Advanced set. → Mapping → Map overlay time

Description Enter the duration for which a map is recorded. During this time, the largest amplitude values that occur are overlapped.

User entry 1 to 600 s

Factory setting 5 s

Additional information
Access:
- Read access: Expert
- Write access: Expert

Record map

Navigation Application → Sensor → Advanced set. → Mapping → Record map

Selection
- No
- Overlay map
- Delete cust map

Factory setting No

Distance

Navigation Application → Sensor → Advanced set. → Distance

Maximum measuring distance

Navigation Application → Sensor → Advanced set. → Distance → Max. meas. dist.

Description If the preset measuring range differs significantly from the maximum measuring distance, it is recommended to enter the maximum measuring distance here.

Example:
Continuous level monitoring in the upper third of a tank/silo.

Note:
For tanks or silos with a conical outlet, this parameter should not be changed, as in this type of applications Empty calibration is usually not much smaller than the tank/silo height.

User entry 0 to 125 000 mm

Factory setting 20 000 mm

Upper blank out

Navigation Application → Sensor → Advanced set. → Distance → Upper blank out

Description Displays the distance from the reference point to slightly above the maximum level (100 %).
The value is calculated by the device to suppress signals in this range.
The value can also be adjusted manually.

Note:
No evaluation takes place in the upper blank out area.

User entry 0 to 125 000 mm

Factory setting 0 mm

Output mode

Navigation Application → Sensor → Advanced set. → Distance → Output mode

Description Select output mode between:

Ullage:
Displays the remaining ullage.

or

Level linearized:
Display the measured level.
Note: If linearization has been activated, the linearized level is displayed here.

Selection
- Ullage
- Level linearized

Factory setting Level linearized

L max. drain speed

Navigation Application → Sensor → Advanced set. → Distance → L max draining

Description Enter the maximum draining speed.

User entry 0.0 to 50 000.0 %/min

Factory setting 0.0 %/min

Additional information **Access:**
- Read access: Expert
- Write access: Expert

L max. fill speed

Navigation Application → Sensor → Advanced set. → Distance → L max.fill speed

Description Enter the maximum filling speed.

User entry 0.0 to 50 000.0 %/min

Factory setting 0.0 %/min

Additional information **Access:**
- Read access: Expert
- Write access: Expert

Level limit mode

Navigation Application → Sensor → Advanced set. → Distance → Level limit mode

Description Determines whether the output value is limited by an upper or lower limit (or by both).

Selection
- Off
- Low limit
- High limit
- Low and High Limit

Factory setting Low limit

High limit

Navigation Application → Sensor → Advanced set. → Distance → High limit

Description Defines the upper limit of the output value.

User entry Signed floating-point number

Factory setting 0 %

Low limit

Navigation Application → Sensor → Advanced set. → Distance → Low limit

Description Defines the lower limit of the output value.

User entry −200 000.0 to 200 000.0 %

Factory setting 0.0 %

Level correction

Navigation Application → Sensor → Advanced set. → Distance → Level correction

Description Value is added to the measured level to compensate for a constant level error.

Level correction > 0:
The level is increased by this value.

Level correction < 0:
The level is decreased by this value.

User entry −200 000.0 to 200 000.0 %

Factory setting 0.0 %

Antenna zero distance

Navigation Application → Sensor → Advanced set. → Distance → Ant. zero dist.

Description Displays the zero point adjustment of the antenna at state of delivery.

Note:
This parameter is adjusted to the device at the factory and should not be changed.

User entry 0 to 10 000 mm

Factory setting 230 mm

Additional information **Access:**
- Read access: Expert
- Write access: Expert

Echo evaluation

Navigation Application → Sensor → Advanced set. → Echo evaluation

Echo evaluation

Navigation Application → Sensor → Advanced set. → Echo evaluation → Echo evaluation

Echo curve statistic

Navigation Application → Sensor → Advanced set. → Echo evaluation → Echo evaluation → Ec. curve stat.

Description Activate or deactivate the weighted echo curve statistics.

Selection
- Off
- On

Factory setting On

Additional information **Access:**
- Read access: Expert
- Write access: Expert

Echo curve statistics up

Navigation Application → Sensor → Advanced set. → Echo evaluation → Echo evaluation → EC. stat. up

Description Enter the number of measuring cycles to define the weighting of the last echo curve for ascending signals.

User entry 0 to 30

Factory setting 1

Additional information **Access:**
- Read access: Expert
- Write access: Expert

Echo curve statistic down

Navigation Application → Sensor → Advanced set. → Echo evaluation → Echo evaluation → ECS in down

Description Enter the number of measuring cycles to define the weighting of the last echo curve for descending signals.

User entry 0 to 30

Factory setting 1

Additional information **Access:**
- Read access: Expert
- Write access: Expert

Echo curve smoothing

Navigation Application → Sensor → Advanced set. → Echo evaluation → Echo evaluation → EC. smoothing

Description Enter window width for echo curve smoothing.

User entry 0 to 9 900 mm

Factory setting 35 mm

Additional information **Access:**
- Read access: Expert
- Write access: Expert

Weighting curve offset

Navigation Application → Sensor → Advanced set. → Echo evaluation → Echo evaluation → WgthCurveOffset

Description Enter offset of the weighting curve.

User entry −9 999.0 to 9 999.0 dB

Factory setting 12 dB

Additional information **Access:**
- Read access: Expert
- Write access: Expert

Window size weighting curve

Navigation Application → Sensor → Advanced set. → Echo evaluation → Echo evaluation → WindowWgthCurve

Description Enter width of the weighting curve window.

User entry 0 to 9 900 mm

Factory setting 800 mm

Additional information **Access:**
- Read access: Expert
- Write access: Expert

Maximum value weighting curve

Navigation Application → Sensor → Advanced set. → Echo evaluation → Echo evaluation → MaxValWghtCurve

Description Enter maximum amplitude of the weighting curve.

User entry −9 999.0 to 9 999.0 dB

Factory setting 100 dB

Additional information **Access:**
- Read access: Expert
- Write access: Expert

First echo band

Navigation Application → Sensor → Advanced set. → Echo evaluation → Echo evaluation → First echo band

Description Enter width of the first echo band.

User entry 0.0 to 100.0 dB

Factory setting 10 dB

Additional information **Access:**
- Read access: Expert
- Write access: Expert

DSC Mode

Navigation Application → Sensor → Advanced set. → Echo evaluation → Echo evaluation → DSC Mode

Description Select DSC mode.

Selection
- Off
- Manual
- Auto

Factory setting Manual

Additional information
- Off: The signal control is deactivated.
- Manual: The signal control is activated with a fixed value.
- Auto: The signal control operates automatically.

Access:
- Read access: Expert
- Write access: Expert

DSC Factor

Navigation Application → Sensor → Advanced set. → Echo evaluation → Echo evaluation → DSC Factor

Description Displays the actual factor for signal control.

User entry 0 to 1

Factory setting 0.75

Additional information
Access:
- Read access: Expert
- Write access: Expert

Actual DSC Factor

Navigation Application → Sensor → Advanced set. → Echo evaluation → Echo evaluation → ActualDSCFactor

Description Displays the actual factor for signal control.

User interface 0 to 1

Factory setting 0

Additional information

Access:
- Read access: Expert
- Write access: -

Tank bottom evaluation

Navigation Application → Sensor → Advanced set. → Echo evaluation → Tank bottom eval

Tank bottom range

Navigation Application → Sensor → Advanced set. → Echo evaluation → Tank bottom eval → TB range

Description

Determines the range in which the physical bottom echo is searched for.
The bottom range extends downwards and starts at level 0 % "Empty calibration". It ends at the entered value.

Note: If the level 0 % "Empty calibration" is far above the physical bottom, the bottom range starts at the entered "Maximum measuring distance".

User entry 0 to 312 500 mm

Factory setting 15 000 mm

Min. amplitude TBD

Navigation Application → Sensor → Advanced set. → Echo evaluation → Tank bottom eval → Min. ampl. TBD

Description Enter the minimum amplitude for tank bottom detection.

User entry –99 to 9 999.0 dB

Factory setting 10 dB

Additional information

Access:
- Read access: Expert
- Write access: Expert

Lower level area

Navigation Application → Sensor → Advanced set. → Echo evaluation → Tank bottom eval → Lower level area

Description Enter lower level area.
In this defined range, the first echo band is lowered to the weighting curve.

User entry 0 to 125 000 mm

Factory setting 400 mm

Additional information **Access:**
- Read access: Expert
- Write access: Expert

Echo tracking

Navigation Application → Sensor → Advanced set. → Echo evaluation → Echo tracking

Evaluation mode

Navigation Application → Sensor → Advanced set. → Echo evaluation → Echo tracking → Evaluation mode

Description Defines the evaluation mode for the echo tracking.

Selection
- FlexTracking
- FlexTracking - Weak signals
- FixTracking
- FixTracking - Weak signals

Factory setting FlexTracking

Reset evaluation

Navigation Application → Sensor → Advanced set. → Echo evaluation → Echo tracking → Reset evaluation

Description Restarts level determination.

Selection
- Reset done
- Yes

Factory setting Reset done

Window size tracking

Navigation Application → Sensor → Advanced set. → Echo evaluation → Echo tracking → Wind.size track.

User entry 0 to 20 500 mm

Factory setting 250 mm

Additional information **Access:**
- Read access: Expert
- Write access: Expert

Debug

Navigation Application → Sensor → Advanced set. → Echo evaluation → Debug

Debug parameter index

Navigation Application → Sensor → Advanced set. → Echo evaluation → Debug → Debug parm. idx

User entry 0 to 65 535

Factory setting 2

Additional information **Access:**
- Read access: Expert
- Write access: Expert

Debug array index

Navigation Application → Sensor → Advanced set. → Echo evaluation → Debug → Debug array indx

User entry 0 to 255

Factory setting 0

Additional information **Access:**
- Read access: Expert
- Write access: Expert

Status

Navigation Application → Sensor → Advanced set. → Echo evaluation → Debug → Status

User entry 0 to 255

Factory setting 0

Additional information **Access:**
- Read access: Expert
- Write access: Expert

Debug value

Navigation Application → Sensor → Advanced set. → Echo evaluation → Debug → Debug value

User interface Signed floating-point number

Factory setting 4.0

Additional information **Access:**
- Read access: Expert
- Write access: -

Debug value integer32

Navigation Application → Sensor → Advanced set. → Echo evaluation → Debug → Debug val. int32

User interface Positive integer

Factory setting 0

Additional information **Access:**
- Read access: Expert
- Write access: -

Linearization

Navigation Application → Sensor → Linearization

Linearization type

Navigation Application → Sensor → Linearization → Lineariz. type

Description Select type of linearization.

Selection
- None
- Linear
- Table
- Pyramid bottom
- Conical bottom
- Angled bottom
- Horizontal cylinder
- Sphere

Factory setting None

Unit after linearization

Navigation Application → Sensor → Linearization → Unit lineariz.

Description Defines the unit of the linearized value.

Note:
The selected unit is only used to be indicated on the display. The measured value is not transformed according to the selected unit.

Note:
If "Free text" is selected, an additional parameter "Free text" appears in which the designation of the unit can be defined.

Selection

SI units
- STon
- t
- kg
- cm^3
- dm^3
- m^3
- hl
- l
- %
- mm
- m

US units
- lb
- UsGal
- ft^3
- ft
- in

Imperial units
impGal

Custom-specific units
Free text

Factory setting %

Free text

Navigation Application → Sensor → Linearization → Free text

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

Factory setting Free text

Level linearized

Navigation Application → Sensor → Linearization → Level linearized

Description Displays the linearized level.

User interface Signed floating-point number

Factory setting 0 %

Maximum value

Navigation Application → Sensor → Linearization → Maximum value

Description Linearized value corresponding to a level of 100 %.

User entry −200 000 to 200 000.0 %

Factory setting 100.0 %

Diameter

Navigation Application → Sensor → Linearization → Diameter

Description Diameter of the spherical tank or horizontal cylinder tank.

User entry 0.001 to 125 000 mm

Factory setting 20 000 mm

Intermediate height

Navigation Application → Sensor → Linearization → Intermed. height

Description Height of the pyramid, conical or angled bottom

User entry 0 to 125 000 mm

Factory setting 0 mm

Table mode

Navigation Application → Sensor → Linearization → Table mode

Description Defines the editing mode of the linearization table.

Note:
DeviceCare and FieldCare contain a graphical tool for the easy creation of a linearization table.
Device Care: "Additional functions" -> "Linearization table"
FieldCare: "Device Operation" -> "Device Functions" -> "Additional functions" -> "Linearization table"

Selection
- Manual
- Semiautomatic *
- Clear table
- Sort table *

Factory setting Manual

Table number

Navigation Application → Sensor → Linearization → Table number

Description Enter or change the table point.

User entry 1 to 32

Factory setting 1

* Visibility depends on order options or device settings

Level

Navigation Application → Sensor → Linearization → Level

Description Enter level value of the table point (value before linearization).

User entry Signed floating-point number

Factory setting 0 %

Level

Navigation Application → Sensor → Linearization → Level

Description Displays measured level (value before linearization). This value is transmitted to the table.

User interface Signed floating-point number

Factory setting 0.0 %

Customer value

Navigation Application → Sensor → Linearization → Customer value

Description Enter linearized value for the table point.

User entry Signed floating-point number

Factory setting 0 %

Activate table

Navigation Application → Sensor → Linearization → Activate table

Description Activate or deactivate table.
The table can only be activated if the table values:
- are present in at least 2 value pairs
- do not exceed the sensor limits
- represent a function which is monotonically ascending or descending

Selection
- Disable
- Enable

Factory setting Disable

CRC linearization table

Navigation Application → Sensor → Linearization → CRC lin. table

Description CRC checksum based on the current parameter settings of the linearization table. Can be used to detect changes in the parameter settings.

User interface 0 to 65 535

Factory setting 0

Flow settings

Navigation Application → Sensor → Flow settings

Flow basic settings

Navigation Application → Sensor → Flow settings → Basic settings

Volume flow unit

Navigation Application → Sensor → Flow settings → Basic settings → Volume flow unit

Description Select volume flow unit.

Selection

SI units
- cm^3/s
- cm^3/min
- cm^3/h
- cm^3/d
- dm^3/s
- dm^3/min
- dm^3/h
- dm^3/d
- m^3/s
- m^3/min
- m^3/h
- m^3/d
- l/s
- l/min
- l/h
- l/d
- hl/s
- hl/min
- hl/h
- hl/d
- Ml/h
- Ml/d

US units
- ft^3/s
- ft^3/min
- ft^3/h
- ft^3/d
- gal/s (us)
- gal/min (us)
- gal/h (us)
- gal/d (us)
- Mgal/d (us)
- bbl/s (us;liq.)
- bbl/min (us;liq.)
- bbl/h (us;liq.)
- bbl/d (us;liq.)
- bbl/s (us;beer)
- bbl/min (us;beer)
- bbl/h (us;beer)
- bbl/d (us;beer)
- bbl/s (us;oil)
- bbl/min (us;oil)
- bbl/h (us;oil)
- bbl/d (us;oil)
- bbl/s (us;tank)
- bbl/min (us;tank)
- bbl/h (us;tank)
- bbl/d (us;tank)

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

Other units
- in^3/s
- in^3/min
- in^3/h
- in^3/d

Factory setting l/h

Decimal places

Navigation Application → Sensor → Flow settings → Basic settings → Decimal places

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

Factory setting x.xx

Linearization type

Navigation Application → Sensor → Flow settings → Basic settings → Lineariz. type

Description Select linearization type.

Selection
- Flume
- Weir
- Standard formula
- Table

Factory setting Flume

Table mode

Navigation Application → Sensor → Flow settings → Basic settings → Table mode

Description Defines the editing mode of the linearization table.

Note:
DeviceCare and FieldCare contain a graphical tool for the easy creation of a linearization table.
Device Care: "Additional functions" -> "Linearization table"
FieldCare: "Device Operation" -> "Device Functions" -> "Additional functions" -> "Linearization table"

Selection
- Manual
- Semiautomatic *
- Clear table
- Sort table *

Factory setting Manual

Flume type

Navigation Application → Sensor → Flow settings → Basic settings → Flume type

Description Select flume type.

Selection
- Khafagi Venturi flume
- Venturi flume
- Parshall flume
- Palmer Bowlus flume
- Trapezoidal flume (ISO 4359)
- Rectangular flume (ISO 4359)
- U-shaped flume (ISO 4359)

Factory setting Khafagi Venturi flume

* Visibility depends on order options or device settings

Weir type

Navigation Application → Sensor → Flow settings → Basic settings → Weir type

Description Select weir type.

Selection
- Trapezoidal weir
- Rectang. broad-crested weir (ISO 3846)
- Thin-plate rectangular weir (ISO 1438)
- Thin-plate triangular weir (ISO 1438)

Factory setting Trapezoidal weir

Khafagi Venturi flume

Navigation Application → Sensor → Flow settings → Basic settings → Khafagi Venturi

Description Select a flume or weir type.

An overview of the flumes and weirs can be found in the Operating Instructions.

Selection
- HQV302
- HQV303
- HQV304
- HQV305
- HQV306
- HQV308
- HQV310
- HQV313
- HQV316

Factory setting HQV302

Venturi flume

Navigation Application → Sensor → Flow settings → Basic settings → Venturi

Description Select a flume or weir type.

An overview of the flumes and weirs can be found in the Operating Instructions.

Selection
- HQI415
- HQI425
- HQI430
- HQI440
- HQI450
- HQI480

Factory setting HQI415

Parshall flume

Navigation Application → Sensor → Flow settings → Basic settings → Parshall

Description Select a flume or weir type.

An overview of the flumes and weirs can be found in the Operating Instructions.

Selection
- 1 in
- 2 in
- 3 in
- 6 in
- 9 in
- 1 ft
- 1.5 ft
- 2 ft
- 3 ft
- 4 ft
- 5 ft
- 6 ft
- 8 ft
- 10 ft
- 12 ft

Factory setting 1 in

Palmer Bowlus flume

Navigation Application → Sensor → Flow settings → Basic settings → Palmer Bowlus

Description Select a flume or weir type.

An overview of the flumes and weirs can be found in the Operating Instructions.

Selection
- 6 in
- 8 in
- 10 in
- 12 in
- 15 in
- 18 in
- 21 in
- 24 in
- 27 in
- 30 in

Factory setting 6 in

Approach width (B)

Navigation Application → Sensor → Flow settings → Basic settings → Approach width

Description Enter the approach width (B).

User entry Positive floating-point number

Factory setting 2 000 mm

Approach diameter (Da)

Navigation Application → Sensor → Flow settings → Basic settings → Approach diam.

Description Enter the approach diameter (Da).

User entry Positive floating-point number

Factory setting 400 mm

Throat diameter (D)

Navigation Application → Sensor → Flow settings → Basic settings → Throat diameter

Description Enter the throat diameter (D).

User entry Positive floating-point number

Factory setting 400 mm

Throat width (b)

Navigation Application → Sensor → Flow settings → Basic settings → Throat width

Description Enter the throat width (b).

User entry Positive floating-point number

Factory setting 500 mm

Throat length (L)

Navigation Application → Sensor → Flow settings → Basic settings → Throat length

Description Enter the throat length (L).

User entry Positive floating-point number

Factory setting 3 000 mm

Hump height (p)

Navigation Application → Sensor → Flow settings → Basic settings → Hump height

Description Enter hump height (p).

User entry Positive floating-point number

Factory setting 150 mm

Side slope (m)

Navigation Application → Sensor → Flow settings → Basic settings → Side slope

Description Enter the side slope (m).

User entry 0.0 to 1 000

Factory setting 1

Leopold Lagco flume

Navigation Application → Sensor → Flow settings → Basic settings → Leopold Lagco

Description Select a flume or weir type.

An overview of the flumes and weirs can be found in the Operating Instructions.

Selection
- 6 in
- 8 in
- 10 in
- 12 in
- 15 in
- 18 in
- 21 in

- 24 in
- 30 in
- 4 in

Factory setting 4 in

Flume length (L)

Navigation Application → Sensor → Flow settings → Basic settings → Flume length

Description Select flume length (L).

Selection
- 18 in
- 36 in
- 54 in
- 108 in

Factory setting 18 in

Flume width (b)

Navigation Application → Sensor → Flow settings → Basic settings → Flume width

Description Select flume width (b).

Selection
- 12 in
- 24 in
- 48 in
- 72 in

Factory setting 12 in

Flume width (b)

Navigation Application → Sensor → Flow settings → Basic settings → Flume width

Description Select flume width (b).

Selection
- 1 in
- 2 in
- 4 in
- 8 in

Factory setting 1 in

Flume width (b)

Navigation Application → Sensor → Flow settings → Basic settings → Flume width

Description Select flume width (b).

Selection
- 2 in
- 4 in
- 8 in
- 16 in

Factory setting 2 in

Flume width (b)

Navigation Application → Sensor → Flow settings → Basic settings → Flume width

Description Select flume width (b).

Selection
- 3 in
- 6 in
- 12 in
- 24 in

Factory setting 3 in

H flume

Navigation Application → Sensor → Flow settings → Basic settings → H flume

Description Select a flume or weir type.

An overview of the flumes and weirs can be found in the Operating Instructions.

Selection
- 0.5 ft
- 0.75 ft
- 1 ft
- 1.5 ft
- 2 ft
- 2.5 ft
- 3 ft
- 4.5 ft

Factory setting 0.5 ft

Inner diameter (d)

Navigation Application → Sensor → Flow settings → Basic settings → Inner diameter

Description Enter the inner diameter (d).

User entry 100 to 100 000 mm

Factory setting 1 000 mm

Roughness coefficient

Navigation Application → Sensor → Flow settings → Basic settings → Roughness coeff.

Description Enter the roughness coefficient.
More information can be found in the Operating Instructions.

User entry 0 to 1

Factory setting 0.01

Slope (m)

Navigation Application → Sensor → Flow settings → Basic settings → Slope

Description Enter the slope (m).

User entry 0 to 1

Factory setting 0.01

Alpha (α)

Navigation Application → Sensor → Flow settings → Basic settings → Alpha (α)

Description Enter Alpha (α).
Note:
Regardless of the set volume flow rate unit, for the standard formula the device calculates the volume flow rate Q in m^3/h.
The level h is in mm.
The values for alpha, beta, gamma and C are not converted and must be entered accordingly.

User entry Positive floating-point number

Factory setting 1.5

Beta (β)

Navigation Application → Sensor → Flow settings → Basic settings → Beta (β)

Description Enter Beta (β).

Note:
Regardless of the set volume flow rate unit, for the standard formula the device calculates the volume flow rate Q in m^3/h.
The level h is in mm.
The values for alpha, beta, gamma and C are not converted and must be entered accordingly.

User entry Positive floating-point number

Factory setting 1

Gamma (γ)

Navigation Application → Sensor → Flow settings → Basic settings → Gamma (γ)

Description Enter Gamma (γ).

Note:
Regardless of the set volume flow rate unit, for the standard formula the device calculates the volume flow rate Q in m^3/h.
The level h is in mm.
The values for alpha, beta, gamma and C are not converted and must be entered accordingly.

User entry Signed floating-point number

Factory setting 0

C

Navigation Application → Sensor → Flow settings → Basic settings → C

Description Enter C.

Note:
Regardless of the set volume flow rate unit, for the standard formula the device calculates the volume flow rate Q in m^3/h.
The level h is in mm.
The values for alpha, beta, gamma and C are not converted and must be entered accordingly.

User entry Positive floating-point number

Factory setting 1

Maximum level (h_max)

Navigation Application → Sensor → Flow settings → Basic settings → Maximum level

Description Enter the maximum level (h_max).

User entry Positive floating-point number

Factory setting 1 000 mm

Flow exponent (x)

Navigation Application → Sensor → Flow settings → Basic settings → Flow exponent

Description Enter the flow exponent (x).

User entry Positive floating-point number

Factory setting 1

Trapezoidal weir

Navigation Application → Sensor → Flow settings → Basic settings → Trapezoidal weir

Description Select a flume or weir type.
An overview of the flumes and weirs can be found in the Operating Instructions.

Selection
- T0/H3
- T0/T5

Factory setting T0/H3

Weir width (b)

Navigation Application → Sensor → Flow settings → Basic settings → Weir width

Description Enter the weir width (b).

User entry Positive floating-point number

Factory setting 1000 mm

Crest width (b)

Navigation Application → Sensor → Flow settings → Basic settings → Crest width

Description Enter crest or notch width (b).

User entry Positive floating-point number

Factory setting 500 mm

Crest height (p)

Navigation Application → Sensor → Flow settings → Basic settings → Crest height

Description Enter the crest height (p).

User entry Positive floating-point number

Factory setting 150 mm

Crest length (L)

Navigation Application → Sensor → Flow settings → Basic settings → Crest length

Description Enter the crest length (L).

User entry Positive floating-point number

Factory setting 150 mm

Notch angle (α)

Navigation Application → Sensor → Flow settings → Basic settings → Notch angle

Description Enter the notch angle (α).

User entry 20 to 100 °

Factory setting 90 °

Validation

Navigation Application → Sensor → Flow settings → Basic settings → Validation

Description Result of the validation of the entered parameters (plausibility check).

User interface
- Validation pending
- Validation passed
- Unexpected error
- Invalid angle
- Validation failed
- Full calibration too low
- Throat wider than flume
- Crest width too small
- Invalid length
- Invalid Full calibration
- Invalid Full calibration to height ratio
- Invalid throat to approach ratio
- Throat width too small
- Invalid crest length to height ratio
- Invalid Full calib. to length ratio
- Invalid crest height
- Validation failed

Factory setting Validation pending

Volume flow calculation

Navigation Application → Sensor → Flow settings → Basic settings → Flow calculation

Description If the function is activated, the measured value is converted into the corresponding volume flow rate.

Selection
- Disable
- Enable

Factory setting Disable

Flow advanced settings

Navigation Application → Sensor → Flow settings → AdvancedSettings

Maximum flow

Navigation Application → Sensor → Flow settings → AdvancedSettings → Max. flow

Description Maximum flow in the selected unit.
The maximum flow corresponds to an output current of 20 mA (factory settings).
An adjustable default value is preset for each curve.

Note:
- If the value is exceeded, the device generates a diagnostic message "844 Process value out of specification".
- This parameter is available for the linearization types flume, weir and formula.

User entry Positive floating-point number

Factory setting 0 l/h

Flow correction factor

Navigation Application → Sensor → Flow settings → AdvancedSettings → CorrectionFactor

Description Enter correction factor for the volume flow rate.
The calculated volume flow rate is multiplied by this factor.

User entry 0.8 to 2.0

Factory setting 1.0

Additional information **Access:**
- Read access: Expert
- Write access: Expert

Low flow cutoff

Navigation Application → Sensor → Flow settings → AdvancedSettings → Low flow cutoff

Description Activate or deactivate "Low flow cutoff".
Low flow cutoff prevents the detection of flow rates that drop below the specified low flow cutoff value.

Selection
- Disable
- Enable

Factory setting Disable

Low flow cutoff value

Navigation Application → Sensor → Flow settings → AdvancedSettings → LowFlowCutoffVal

Description Enter the low flow cutoff value in percent, based on the maximum flow rate.

User entry 0 to 100.0 %

Factory setting 0 %

Totalizer settings

Navigation Application → Sensor → Flow settings → TotalizerSetting

Totalizer

Navigation Application → Sensor → Flow settings → TotalizerSetting → Totalizer

Description Activate or deactivate the totalizer for volume flow.

Selection
- Disable
- Enable

Factory setting Disable

Totalizer unit

Navigation Application → Sensor → Flow settings → TotalizerSetting → Totalizer unit

Description Select the unit of the totalizer for the totalized volume flow.

Selection

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

US units
- ft^3
- in^3
- gal (us)
- Mgal (us)
- bbl (us;liq.)
- bbl (us;beer)
- bbl (us;oil)
- bbl (us;tank)

Imperial units
- gal (imp)
- Mgal (imp)

Factory setting l

Decimal places

Navigation Application → Sensor → Flow settings → TtotalizerSetting → Decimal places

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

Factory setting x.xx

Failure behavior

Navigation Application → Sensor → Flow settings → TtotalizerSetting → Failure behavior

Description Select the behavior of the totalizer in the event of an error.

Selection
- Pause totalizer
- Continue with last valid value

Factory setting Pause totalizer

Signal information

Navigation Application → Sensor → Signal inform.

Signal quality

Navigation Application → Sensor → Signal inform. → Signal quality

Description Displays the quality of the evaluated level signal.

User interface
- Strong
- Medium
- Weak
- No signal

Factory setting Strong

Absolute echo amplitude

Navigation Application → Sensor → Signal inform. → Abs. echo ampl.

Description Shows the absolute amplitude of the evaluated level signal.

User interface −150.0 to 32.0 dB

Factory setting 0.0 dB

Relative echo amplitude

Navigation Application → Sensor → Signal inform. → Relat.echo ampl.

Description Shows the relative amplitude (i.e. the distance to the evaluation curve) of the evaluated level signal.

User interface 0.0 to 150.0 dB

Factory setting 0.0 dB

Sensor cycle time

Navigation Application → Sensor → Signal inform. → Sens. cycle time

Description Displays the cycle time of the measurement.

User interface 0 to 65 535 ms

Factory setting 0 ms

Additional information **Access:**
- Read access: Expert
- Write access: -

Actual IF gain

Navigation Application → Sensor → Signal inform. → Actual IF gain

Description Displays the actual gain of the intermediate frequency.

User interface 0 to 1 000

Factory setting 0

Additional information **Access:**
- Read access: Expert
- Write access: -

3.3.4 Current output

Navigation Application → Curr.output

Assign PV

Navigation Application → Curr.output → Assign PV

Description Assign a measured variable to the primary dynamic variable (PV).

Additional information:
The assigned measured variable is also used by the current output.

Selection
- Level linearized
- Distance
- Flow *

Factory setting Level linearized

Measuring mode current output

Navigation Application → Curr.output → Output mode

Description Select curve of current output.

Selection
- Standard
- Inverse

Factory setting Standard

* Visibility depends on order options or device settings

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)

Factory setting 4 ... 20 mA NE (3.8 ... 20.5 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

Factory setting 0.0 %

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

Factory setting 100.0 %

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 (if available) has priority over software setting.

Selection
- Min.
- Max.

Factory setting Min.

Failure current

Navigation Application → Curr.output → Failure current

Description Enter current output value in alarm condition.

User entry 21.5 to 23 mA

Factory setting 22.5 mA

Output current

Navigation Application → Curr.output → Output curr.

Description Displays the value currently calculated for the current output

User interface 3.59 to 23 mA

Factory setting 3.59 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

Factory setting 0 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

Factory setting 4 mA

Additional information **Access:**
- Read access: Expert
- Write access: Expert

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

Factory setting 20 mA

Additional information **Access:**
- Read access: Expert
- Write access: Expert

3.3.5 HART output

Navigation Application → HART output

Configuration

Navigation Application → HART output → Configuration

HART address

Navigation Application → HART output → Configuration → HART address

Description Enter the address to exchange data via the HART protocol.

User entry 0 to 63

Factory setting 0

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

Factory setting SHORTTAG

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)

Factory setting x0B

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

Factory setting 5

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

Factory setting Enable

HART output

Navigation Application → HART output → HART output

Assign PV

Navigation Application → HART output → HART output → Assign PV

Description Assign a measured variable to the primary dynamic variable (PV).

Additional information:
The assigned measured variable is also used by the current output.

Selection
- Level linearized
- Distance
- Flow *

Factory setting Level linearized

* Visibility depends on order options or device settings

Primary variable (PV)

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

Description Shows the current measured value of the primary dynamic variable (PV)

User interface Signed floating-point number

Factory setting 100.0 %

Assign SV

Navigation Application → HART output → HART output → Assign SV

Description Assign a measured variable to the second dynamic variable (SV).

Selection
- Level linearized
- Distance
- Electronics temperature
- Sensor temperature
- Absolute echo amplitude
- Relative echo amplitude
- Area of incoupling
- Percent of range
- Loop current
- Flow *
- Totalizer value *
- Not used

Factory setting Distance

Secondary variable (SV)

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

Description Shows the current measured value of the secondary dynamic variable (SV)

User interface 0 to 410.10498687664 mm

Factory setting 0 mm

* Visibility depends on order options or device settings

Assign TV

Navigation Application → HART output → HART output → Assign TV

Description Assign a measured variable to the tertiary dynamic variable (TV).

Selection
- Level linearized
- Distance
- Electronics temperature
- Sensor temperature
- Absolute echo amplitude
- Relative echo amplitude
- Area of incoupling
- Percent of range
- Loop current
- Flow *
- Totalizer value *
- Not used

Factory setting Absolute echo amplitude

Tertiary variable (TV)

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

Description Shows the current measured value of the tertiary (third) dynamic variable (TV)

User interface −150.0 to 0.0 deciBel

Factory setting −150.0 deciBel

Assign QV

Navigation Application → HART output → HART output → Assign QV

Description Assign a measured variable to the quaternary dynamic variable (QV).

Selection
- Level linearized
- Distance
- Electronics temperature
- Sensor temperature
- Absolute echo amplitude
- Relative echo amplitude
- Area of incoupling
- Percent of range
- Loop current

* Visibility depends on order options or device settings

- Flow *
- Totalizer value *
- Not used

Factory setting Relative echo amplitude

Quaternary variable (QV)

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

Description Shows the current measured value of the quaternary (fourth) dynamic variable (QV)

User interface −150.0 to 0.0 deciBel

Factory setting −150.0 deciBel

Burst configuration 1

Navigation Application → HART output → Burst config. 1

Burst mode

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

Description Switch HART burst mode for burst message on

Selection
- Off
- On

Factory setting Off

Burst command

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

Description Select the HART command that is sent to the HART master

Selection
- Primary variable (PV)
- Loop Current and Percent of Range
- Dynamic Variables

* Visibility depends on order options or device settings

- Device variables with status
- Device variables
- Additional device status

Factory setting Loop Current and Percent of Range

Burst variable 0 ... 3

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

Description For HART command 9 and 33, assign a HART device variable or process variable to burst variable

Selection
- Level linearized
- Distance
- Electronics temperature
- Sensor temperature
- Absolute echo amplitude
- Relative echo amplitude
- Area of incoupling
- Percent of range
- Loop current
- Primary variable (PV)
- Secondary variable (SV)
- Tertiary variable (TV)
- Quaternary variable (QV)
- Flow *
- Totalizer value *
- Not used

Factory setting Level linearized

Burst variable 4 ... 7

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

Description For HART command 33, assign a HART device variable or process variable to burst variable

Selection
- Level linearized
- Distance
- Electronics temperature
- Sensor temperature
- Absolute echo amplitude
- Relative echo amplitude
- Area of incoupling
- Percent of range
- Loop current
- Primary variable (PV)

* Visibility depends on order options or device settings

- Secondary variable (SV)
- Tertiary variable (TV)
- Quaternary variable (QV)
- Flow *
- Totalizer value *
- Not used

Factory setting Not used

Burst trigger mode

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

Description Select the event that triggers the burst message

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

Factory setting Continuous

Burst trigger level

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

Description Enter the burst trigger value that determines together with the option selected in "Burst trigger mode" parameter the time of burst message

User entry Signed floating-point number

Factory setting 2.0E-38

Min. update period

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

Description Enter the minimum time span between two burst responses of one burst message

User entry Positive integer

Factory setting 1000 ms

* Visibility depends on order options or device settings

Max. update period

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

Description Enter the maximum time span between two burst responses of one burst message

User entry Positive integer

Factory setting 2 000 ms

Information

Navigation Application → HART output → Information

Device ID

Navigation Application → HART output → Information → Device ID

Description Shows the device ID for identifying the device in a HART network

User interface Positive integer

Factory setting 123 456

Device type

Navigation Application → HART output → Information → Device type

Description Displays the device type with which the device is registered with the HART FieldComm Group.

User interface 0 to 65 535

Factory setting 4 574

Device revision

Navigation Application → HART output → Information → Device revision

Description Displays the device revision with which the device is registered with the HART FieldComm Group.

User interface 0 to 255

Factory setting 1

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

Factory setting SHORTTAG

HART revision

Navigation Application → HART output → Information → HART revision

Description Displays the revision of the HART protocol for the device.

User interface 5 to 7

Factory setting 7

HART descriptor

Navigation Application → HART output → Information → HART descriptor

Description Use this function to define a description for the measuring point.

Maximum length: 16 characters
Allowed characters: A-Z, 0-9, certain special characters

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

Factory setting x0B

HART message

Navigation Application → HART output → Information → HART message

Description Use this function to define a HART message which is sent via the HART protocol when requested by the master.

Maximum length: 32 characters
Allowed characters: A-Z, 0-9, certain special characters

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

Factory setting x0B

HART date code

Navigation Application → HART output → Information → HART date code

Description Enter data for individual use

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

Factory setting 2009-07-20

3.4 System

Navigation System

3.4.1 Device management

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)

Factory setting x0B

Locking status

Navigation System → Device manag. → Locking status

Description Indicates the type of locking.

"Safety locked" (SW)
Unlock the device by entering the appropriate access code in "Enter safety unlocking code".

"Temporarily locked" (SW)
The device is temporarily locked by processes in the device (e.g. data upload/download, reset). The device will automatically be unlocked after completion of these processes.

User interface
- Safety locked
- Temporarily locked

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 65 535, it restarts at 0.

User interface 0 to 65 535

Factory setting 0

Reset device

Navigation System → Device manag. → Reset device

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

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

* Visibility depends on order options or device settings

Factory setting Cancel

3.4.2 User management

Navigation System → User manag.

3.4.3 User management

Navigation System → User manag.

Navigation System → User manag. → User manag.

User role

Navigation System → User manag. → User manag. → User role

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

User interface
- Operator
- Maintenance
- Expert

Factory setting Maintenance

Delete password

Navigation System → User manag. → User manag. → Delete password

Description Deletes the 'Maintenance' password.
After deleting, the 'Operator' role will be no more available.
All users have read/write access rights.

User entry Character string comprising numbers, letters and special characters (1)

Forgot password?

Navigation
- System → User manag. → Forgot password?
- System → User manag. → User manag. → Forgot password?

User entry
Character string comprising numbers, letters and special characters (1)

Enter password

Navigation System → User manag. → Enter password

Password

Navigation
System → User manag. → Enter password → 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. → Enter password → Ent. access code

Description
For authorized service personnel only.

User entry
0 to 9 999

Factory setting
0

Status password entry

Navigation
System → User manag. → Enter password → 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

Factory setting --------

Define password

Navigation System → User manag. → Define password

New password

Navigation System → User manag. → Define password → 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. → Define password → Confirm password

Description Enter the new password again to confirm.

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

Status password entry

Navigation System → User manag. → Define password → 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

Factory setting --------

Change password

Navigation System → User manag. → Change password

Old password

Navigation System → User manag. → Change password → Old password

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

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

New password

Navigation System → User manag. → Change password → 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. → Change password → Confirm password

Description Enter the new password again to confirm.

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

Status password entry

Navigation System → User manag. → Change password → 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

Factory setting --------

Recover password

Navigation System → User manag. → Recover password

Reset password

Navigation System → User manag. → Recover password → 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)

Status password entry

Navigation System → User manag. → Recover password → 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

Factory setting --------

3.4.4 Bluetooth configuration

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

Factory setting Enable

3.4.5 Display

Navigation System → Display

Language

Navigation System → Display → Language

Description Set display language

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

* Visibility depends on order options or device settings

- 日本語 (Japanese) *
- 한국어 (Korean) *
- Bahasa Indonesia *
- čeština (Czech) *

Factory setting English

Format display

Navigation System → Display → Format display

Description Select how measured values are shown on the display

Selection
- 1 value, max. size
- Bargraph
- 2 values

Factory setting 1 value, max. size

Value 1 display

Navigation System → Display → Value 1 display

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

Selection
- Level linearized
- Distance
- Absolute echo amplitude
- Relative echo amplitude
- Area of incoupling
- Current output
- Terminal voltage
- Electronics temperature
- Sensor temperature
- Flow
- Totalizer value
- Unfiltered distance

Factory setting Level linearized

Decimal places 1 ... 4

Navigation System → Display → Decimal places 1

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

* Visibility depends on order options or device settings

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

Factory setting x.xx

Value 2 display

Navigation System → Display → Value 2 display

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

Selection
- None
- Level linearized
- Distance
- Absolute echo amplitude
- Relative echo amplitude
- Area of incoupling
- Terminal voltage
- Electronics temperature
- Sensor temperature
- Flow
- Totalizer value
- Current output
- Unfiltered distance

Factory setting Distance

Decimal places 2

Navigation System → Display → Decimal places 2

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

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

Factory setting x

Rotation display

Navigation System → Display → Rotation display

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

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

Factory setting 0 degree

Color scheme

Navigation System → Display → Color scheme

Description Select the preferred color scheme.

Selection
- Light
- Dark

Factory setting Dark

3.4.6 Geolocation

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)

Factory setting Process Unit Tag

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)

Factory setting somewhere

Longitude

Navigation System → Geolocation → Longitude

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

User entry −180 to 180 °

Factory setting 0 °

Latitude

Navigation System → Geolocation → Latitude

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

User entry −90 to 90 °

Factory setting 0 °

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

Factory setting 0 m

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

Factory setting No fix

3.4.7 Information

Navigation System → Information

Device name

Navigation System → Information → Device name

Description Use this function to display the device name. It can also be found on the nameplate.

User interface Character string comprising numbers, letters and special characters

Factory setting x0B

Manufacturer

Navigation System → Information → Manufacturer

Description Displays the manufacturer.

User interface Character string comprising numbers, letters and special characters

Factory setting Endress+Hauser

Serial number

Navigation System → Information → Serial number

Description The serial number is a unique alphanumerical code identifying the device.
It is printed on the nameplate.
In combination with the Operations app it allows to access all device related documentation.

User interface Character string comprising numbers, letters and special characters

Factory setting AAFFFFAAFFF

Order code

Navigation System → Information → Order code

Description Shows the device order code.

User interface Character string comprising numbers, letters and special characters

Factory setting - none -

Additional information **Access:**
- Read access: Operator
- Write access: Expert

Firmware version

Navigation System → Information → Firmware version

Description Displays the device firmware version installed.

User interface Character string comprising numbers, letters and special characters

Factory setting 01.00

Hardware version

Navigation System → Information → Hardware version

User interface Character string comprising numbers, letters and special characters

Factory setting 01.00.00

Extended order code 1 ... 3

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 comprising numbers, letters and special characters

Additional information **Access:**
- Read access: Operator
- Write access: Expert

XML build number

Navigation System → Information → XML build no.

User interface Positive integer

Factory setting 275

Additional information **Access:**
- Read access: Expert
- Write access: -

Checksum

Navigation System → Information → Checksum

Description Checksum for Firmware version.

User interface Positive integer

Factory setting 0

3.4.8 Additional information

Navigation System → Additional info

Sensor

Navigation System → Additional info → Sensor

Serial number

Navigation System → Additional info → Sensor → Serial number

Description Shows the serial number of the module

User interface Character string comprising numbers, letters and special characters

Factory setting AAFFFFAAFFF

Additional information **Access:**
- Read access: Expert
- Write access: -

Firmware version

Navigation System → Additional info → Sensor → Firmware version

Description Displays the firmware version of the module.

User interface Positive integer

Factory setting 0

Additional information **Access:**
- Read access: Expert
- Write access: -

Build no. software

Navigation System → Additional info → Sensor → Build no. softw.

Description Shows the build number of the module firmware

User interface 0 to 65 535

Factory setting 0

Additional information **Access:**
- Read access: Expert
- Write access: -

Hardware version

Navigation System → Additional info → Sensor → Hardware version

Description Displays the hardware version of the module.

User interface Character string comprising numbers, letters and special characters

Factory setting - none -

Additional information **Access:**
- Read access: Expert
- Write access: -

Checksum

Navigation System → Additional info → Sensor → Checksum

Description Checksum for Firmware version.

User interface Positive integer

Factory setting 0

Additional information **Access:**
- Read access: Expert
- Write access: -

Electronics

Navigation System → Additional info → Electronics

Serial number

Navigation System → Additional info → Electronics → Serial number

Description Shows the serial number of the module

User interface Character string comprising numbers, letters and special characters

Factory setting AAFFFFAAFFF

Additional information **Access:**
- Read access: Expert
- Write access: -

Firmware version

Navigation System → Additional info → Electronics → Firmware version

Description Displays the firmware version of the module.

User interface Positive integer

Factory setting 0

Additional information **Access:**
- Read access: Expert
- Write access: -

Build no. software

Navigation System → Additional info → Electronics → Build no. softw.

Description Shows the build number of the module firmware

User interface 0 to 65 535

Factory setting 0

Additional information **Access:**
- Read access: Expert
- Write access: -

Hardware version

Navigation System → Additional info → Electronics → Hardware version

Description Displays the hardware version of the module.

User interface Character string comprising numbers, letters and special characters

Factory setting - none -

Additional information **Access:**
- Read access: Expert
- Write access: -

Display/Bluetooth

Navigation System → Additional info → Displ./Bluetooth

Serial number

Navigation System → Additional info → Displ./Bluetooth → Serial number

Description Shows the serial number of the module

User interface Character string comprising numbers, letters and special characters

Factory setting AAFFFFAAFFF

Additional information **Access:**
- Read access: Expert
- Write access: -

Firmware version

Navigation System → Additional info → Displ./Bluetooth → Firmware version

Description Displays the firmware version of the module.

User interface Positive integer

Factory setting 0

Additional information **Access:**
- Read access: Expert
- Write access: -

Build no. software

Navigation System → Additional info → Displ./Bluetooth → Build no. softw.

Description Shows the build number of the module firmware

User interface 0 to 65 535

Factory setting 0

Additional information **Access:**
- Read access: Expert
- Write access: -

Hardware version

Navigation System → Additional info → Displ./Bluetooth → Hardware version

Description Displays the hardware version of the module.

User interface Character string comprising numbers, letters and special characters

Factory setting - none -

Additional information **Access:**
- Read access: Expert
- Write access: -

3.4.9 Software configuration

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

Factory setting 65 535

Stored CRC device configuration

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

Description Stored CRC after the last safety lock. Factory delivery is 65 535 means that the device has not yet been safety locked.

User interface 0 to 65 535

Factory setting 65 535

Timestamp stored CRC device config.

Navigation System → Softw. config. → Time stored CRC

Description Gives the timestamp 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 Enter the application package code or code of another re-ordered functionality to enable it

User entry Positive integer

Factory setting 0

Software option overview

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

Description Shows all enabled software options

User interface
- WHG
- Heartbeat Verification
- Bluetooth

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