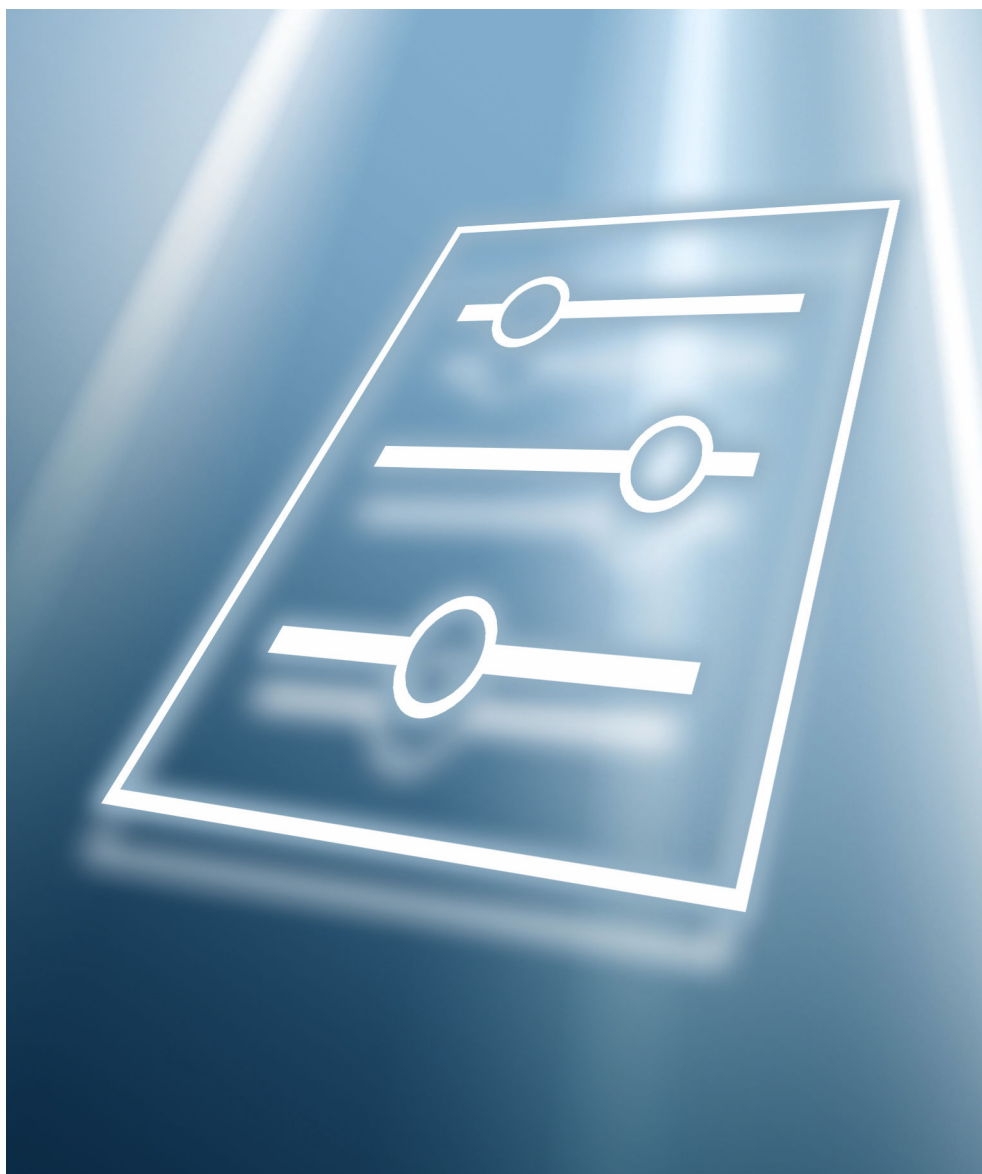


Description of Device Parameters **Micropilot FMR20B, FMR30B**

Radar
HART



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** (→  104) 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	Simulation	
2	Navigation	Diagnostics → Simulation → Simulation
3	Prerequisite	Options marked with *: The corresponding device function must be available and configured.
4	Description	Simulates one or more process variables and/or events. Warning: - Output will reflect the simulated value or event.
5	Selection	<ul style="list-style-type: none"> ■ Off ■ Distance ■ Level ■ Level linearized * ■ Current output ■ Diagnostic event simulation ■ Foam index * ■ Build-up index *
6	Factory setting	Off

- 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	Timestamp	
2	Navigation	Diagnostics → Active diagnos. → Timestamp
3	Description	Displays the timestamp for the currently active diagnostic message.
4	User interface	Days (d), hours (h), minutes (m), seconds (s)
5	Factory setting	
6	Additional information	Access: <ul style="list-style-type: none"> ■ Read access: Operator ■ Write access: -

- 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



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

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






















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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	<ul style="list-style-type: none"> ■ Operating time of the device until the event occurs ■ Symbol for diagnostic behavior ■ Code for diagnostic behavior ■ Event text ■ Corrective measure
-----------------------	---

Additional information	Access: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Symbol for event behavior ■ Code for diagnostic behavior ■ Operation time of occurrence ■ Event text
-----------------------	---

Factory setting	0
------------------------	---

Additional information	Access: <ul style="list-style-type: none"> ■ 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:
	<ul style="list-style-type: none"> ■ 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:
	<ul style="list-style-type: none"> ■ 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:
	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Cancel ■ Clear data
Factory setting	Cancel
Additional information	Access: <ul style="list-style-type: none"> ■ 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	<p>Minimum or maximum measured value by device.</p> <p>Note: This value can be reset via the "Reset min./max." parameter. This value is also reset when device is reset.</p>
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	<ul style="list-style-type: none"> ■ None ■ Drain/fill speed ■ Level ■ Flow * ■ Reset all
Factory setting	None

3.2.5 Simulation

Navigation   Diagnostics → Simulation

Simulation



Navigation	 Diagnostics → Simulation → Simulation
Description	<p>Simulates one or more process variables and/or events.</p> <p>Warning: Output will reflect the simulated value or event.</p>
Selection	<ul style="list-style-type: none"> ■ 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 (→  46)

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 (→  43)


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 (→  89)

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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none">■ 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	<ul style="list-style-type: none">■ 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	<ul style="list-style-type: none"> ■ Customer reference curve ■ Not active
Factory setting	Not active
Additional information	Access: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Delivery reference curve available ■ Customer reference curve available
Factory setting	Customer reference curve available
Additional information	<p>The delivery reference curve is recorded at the factory before delivery.</p> <p>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.</p> <p>Access:</p> <ul style="list-style-type: none"> ■ Read access: Maintenance ■ Write access: -

3.2.8 Diagnostic settings

Navigation  Diagnostics → Diag. settings



Properties

Navigation  Diagnostics → Diag. settings → Properties

Navigation

Additional information *"941 Echo lost" submenu*

941 Diagnostic behavior

Navigation   Diagnostics → Diag. settings → Properties → 941 Diag. 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	<ul style="list-style-type: none"> ■ Last valid value ■ Ramp at echo lost ■ Value echo lost ■ Alarm
------------------	---

Factory setting	Last valid value
------------------------	------------------


941 Event category

Navigation	  Diagnostics → Diag. settings → Properties → 941Event category
-------------------	---

Selection	<ul style="list-style-type: none"> ■ 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 → 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 → Ramp echo lost
-------------------	--

Description	<p>Slope of the ramp in the case of an echo loss.</p> <p>Note:</p> <p>If the slope is positive (+), the output increases until it reaches 100%.</p> <p>If the slope is negative (-), the output decreases until it reaches 0%.</p>
--------------------	--

User entry	Signed floating-point number
-------------------	------------------------------

Factory setting	0.0 %/min
------------------------	-----------

Delay echo lost

**Navigation**

Diagnostics → Diag. settings → Properties → 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 → 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 → 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 → 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: <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: Expert

Echo lost window left



Navigation	Diagnostics → Diag. settings → Properties → 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: <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: Expert

Draining speed



Navigation	Diagnostics → Diag. settings → Properties → 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: <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: Expert

Filling speed



Navigation	Diagnostics → Diag. settings → Properties → 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: <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: Expert

Navigation

Additional information *"942 In safety distance" submenu*

942 Diagnostic behavior



Navigation	Diagnostics → Diag. settings → Properties → 942 Diag. behav.
Selection	<ul style="list-style-type: none"> ■ Off ■ Alarm ■ Warning ■ Self holding
Factory setting	Warning

942 Event category



Navigation	Diagnostics → Diag. settings → Properties → 942Event category
Selection	<ul style="list-style-type: none"> ■ 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 → Safety distance
User entry	-200 000 to 125 000 mm
Factory setting	0 mm

Acknowledge alarm



Navigation	Diagnostics → Diag. settings → Properties → Acknowl. alarm
Selection	<ul style="list-style-type: none"> ▪ 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 → 941 Diag. behav.
Description	<p>Defines the behavior of the output in case of an echo loss.</p> <p>"Last valid value" Last valid value is kept.</p> <p>"Ramp at echo lost" Output value is continuously shifted towards 0 % or 100 %.</p> <p>"Value echo lost" Output assumes a defined value.</p> <p>"Alarm" Device generates an alarm.</p>

Selection	<ul style="list-style-type: none"> ■ 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 category
-------------------	--



Selection	<ul style="list-style-type: none"> ■ Failure (F) ■ Function check (C) ■ Out of specification (S) ■ Maintenance required (M) ■ No effect (N)
------------------	--

Factory setting	Out of specification (S)
------------------------	--------------------------

Navigation

Additional information	<i>"942 In safety distance" submenu</i>
-------------------------------	---

942 Diagnostic behavior

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

Selection	<ul style="list-style-type: none"> ■ Off ■ Alarm ■ Warning ■ Self holding
------------------	---

Factory setting	Warning
------------------------	---------

942 Event category

Navigation	Diagnostics → Diag. settings → Configuration → Process → 942Event category
Selection	<ul style="list-style-type: none"> ■ 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	<table> <thead> <tr> <th><i>SI units</i></th> <th><i>US units</i></th> </tr> </thead> <tbody> <tr> <td>■ %</td> <td>■ ft</td> </tr> <tr> <td>■ m</td> <td>■ in</td> </tr> <tr> <td>■ mm</td> <td></td> </tr> </tbody> </table>	<i>SI units</i>	<i>US units</i>	■ %	■ ft	■ m	■ in	■ mm	
<i>SI units</i>	<i>US units</i>								
■ %	■ 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	<table> <thead> <tr> <th><i>SI units</i></th> <th><i>US units</i></th> </tr> </thead> <tbody> <tr> <td>■ mm</td> <td>■ ft</td> </tr> <tr> <td>■ m</td> <td>■ in</td> </tr> </tbody> </table>	<i>SI units</i>	<i>US units</i>	■ mm	■ ft	■ m	■ in
<i>SI units</i>	<i>US units</i>						
■ 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 °C

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	<p>Displays the current totalizer counter value.</p> <p>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.</p> <p>Example of how to calculate the current totalizer counter when the value exceeds the 7 digit display limit of the operating tool: - Value of "Totalizer value" parameter: 1,968,457 m³ - Value of "Totalizer overflow" parameter: $1 \times 10^7 \text{ m}^3 = 10,000,000 \text{ m}^3$ - Current totalizer reading: 11,968,457 m³</p>
User interface	Positive floating-point number
Factory setting	01
Totalizer overflow	
Navigation	 Application → Measured values → Tot. overflow
Description	<p>Displays the current totalizer overflow.</p> <p>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.</p> <p>Example of how to calculate the current totalizer counter when the value exceeds the 7 digit display limit of the operating tool: - Value of "Totalizer value " parameter: 1,968,457 m³ - Value of "Totalizer overflow " parameter: $1 \times 10^7 \text{ m}^3 = 10,000,000 \text{ m}^3$ - Current totalizer reading: 11,968,457 m³</p>
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	<ul style="list-style-type: none"> ■ Liquid ■ Solid
Factory setting	Liquid

Operating mode

Navigation	 Application → Sensor → Basic settings → Operating mode
Description	Select operating mode.
Selection	<ul style="list-style-type: none"> ■ Level linearized ■ Flow
Factory setting	Level linearized

Application

Navigation	 Application → Sensor → Basic settings → Application
Description	Select application type.
Selection	<ul style="list-style-type: none"> ■ Stirred vessel ■ Standard measurement ■ Workbench test
Factory setting	Stirred vessel

Additional information	<ul style="list-style-type: none"> ■ 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

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.

Navigation

Additional information "Adjustment" submenu

Maximum draining speed solid 

Navigation  Application → Sensor → Advanced set. → 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

* Visibility depends on order options or device settings

Maximum filling speed solid 	
Navigation	 Application → Sensor → Advanced set. → Max. fill. solid
Description	<p>By selecting the maximum expected filling and draining speed the signal evaluation is automatically optimized for the process.</p> <p>Note: The filling and draining speeds can be set separately as the filling and draining procedures may be different.</p> <p>Note: With the "No filter/ test" option all signal evaluation filters are deactivated. This option should exclusively be used for tests.</p>
Selection	<ul style="list-style-type: none"> ■ 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. → Max drain liquid
Description	<p>By selecting the maximum expected filling and draining speed the signal evaluation is automatically optimized for the process.</p> <p>Note: The filling and draining speeds can be set separately as the filling and draining procedures may be different.</p> <p>Note: With the "No filter/test" option all signal evaluation filters are deactivated. This option should exclusively be used for tests.</p>
Selection	<ul style="list-style-type: none"> ■ 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

* Visibility depends on order options or device settings

Maximum filling speed liquid




Navigation	Application → Sensor → Advanced set. → Max. fill liquid
Description	<p>By selecting the maximum expected filling and draining speed the signal evaluation is automatically optimized for the process.</p> <p>Note: The filling and draining speeds can be set separately as the filling and draining procedures may be different.</p> <p>Note: With the "No filter/test" option all signal evaluation filters are deactivated. This option should exclusively be used for tests.</p>
Selection	<ul style="list-style-type: none"> ■ 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. → Damping out.
Description	<p>The damping is effective before the measured value is further processed, i.e., before the following processes:</p> <ul style="list-style-type: none"> - Scaling - Limit value monitoring - Forwarding to display - Forwarding to Analog Input Block <p>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.</p>
User entry	0.0 to 1200.0 s
Factory setting	0.0 s

* Visibility depends on order options or device settings

Evaluation sensitivity	
Navigation	 Application → Sensor → Advanced set. → Evaluation sens.
Description	<p>Selection of the evaluation sensitivity</p> <p>Options to select from:</p> <ul style="list-style-type: none"> - "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	<ul style="list-style-type: none"> ▪ Low ▪ Medium ▪ High
Factory setting	Medium

First echo sensitivity	
Navigation	 Application → Sensor → Advanced set. → First echo sens.
Description	<p>This parameter describes the band for First Echo evaluation. Is measured / calculated down from the peak of the current level echo.</p> <p>Options to select from:</p> <ul style="list-style-type: none"> "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	<ul style="list-style-type: none"> ▪ Low ▪ Medium ▪ High
Factory setting	Medium

Frequency mode


Navigation  Application → Sensor → Advanced set. → Frequency mode

Description Displays the device-specific measurement configuration.

Selection

- Mode 1
- Mode 2
- Mode 3
- Mode 4
- Mode 5
- Mode 6
- Mode 7
- Mode 8

Factory setting Mode 2

Navigation

Additional information *"Mapping" submenu*

Active map


Navigation  Application → Sensor → Advanced set. → 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. → 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. → Confirm distance
Description	State whether the measured distance and the actual distance are the same.
Selection	<ul style="list-style-type: none"> ■ Modify map ■ Distance ok ■ Distance unknown ■ Level <=0
Factory setting	Distance unknown


Mapping start point



Navigation	 Application → Sensor → Advanced set. → 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: <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: Expert

Mapping end point



Navigation	 Application → Sensor → Advanced set. → 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. → 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. → 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. → 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. → 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	0 to 1 200 s
Factory setting	5 s
Additional information	Access: <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: Expert

Record map



Navigation	Application → Sensor → Advanced set. → Record map
Selection	<ul style="list-style-type: none"> ■ No ■ Overlay map ■ Delete cust map
Factory setting	No

Navigation

Additional information *"Distance" submenu*


Maximum measuring distance



Navigation	Application → Sensor → Advanced set. → Max. meas. dist.
Description	<p>If the preset measuring range differs significantly from the maximum measuring distance, it is recommended to enter the maximum measuring distance here.</p> <p>Example: Continuous level monitoring in the upper third of a tank/silo.</p> <p>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.</p>
User entry	0 to 125 000 mm

Factory setting 20 000 mm

Upper blank out

Navigation  Application → Sensor → Advanced set. → 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. → 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. → 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: <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: Expert
-------------------------------	--

L max. fill speed

Navigation	 Application → Sensor → Advanced set. → 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: <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: Expert
-------------------------------	--

Level limit mode

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

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

Selection	<ul style="list-style-type: none"> ■ Off ■ Low limit ■ High limit ■ Low and High Limit
------------------	--

Factory setting	Low limit
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High limit

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

Description	Defines the upper limit of the output value.
--------------------	--

User entry	Signed floating-point number
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Factory setting	0 %
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Low limit



Navigation	Application → Sensor → Advanced set. → 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. → 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. → 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: <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: Expert


Echo evaluation

Navigation  Application → Sensor → Advanced set. → Echo evaluation

Navigation

Additional information *"Echo evaluation" submenu*

Echo curve statistic 

Navigation  Application → Sensor → Advanced set. → 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 → 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 → 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: <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: Expert

Echo curve smoothing



Navigation	Application → Sensor → Advanced set. → 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: <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: Expert

Weighting curve offset



Navigation	Application → Sensor → Advanced set. → 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: <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: Expert

Window size weighting curve



Navigation	Application → Sensor → Advanced set. → 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: <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: Expert

Maximum value weighting curve



Navigation	Application → Sensor → Advanced set. → 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: <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: Expert

First echo band



Navigation	Application → Sensor → Advanced set. → 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: <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: Expert

DSC Mode



Navigation	Application → Sensor → Advanced set. → Echo evaluation → DSC Mode
Description	Select DSC mode.
Selection	<ul style="list-style-type: none"> ■ Off ■ Manual ■ Auto
Factory setting	Manual
Additional information	<ul style="list-style-type: none"> ■ Off: The signal control is deactivated. ■ Manual: The signal control is activated with a fixed value. ■ Auto: The signal control operates automatically. <p>Access:</p> <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: Expert

DSC Factor



Navigation	Application → Sensor → Advanced set. → Echo evaluation → DSC Factor
Description	Displays the actual factor for signal control.
User entry	0 to 1
Factory setting	0.75
Additional information	<p>Access:</p> <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: Expert

Actual DSC Factor

Navigation	Application → Sensor → Advanced set. → Echo evaluation → ActualDSCFactor
Description	Displays the actual factor for signal control.
User interface	0 to 1
Factory setting	0
Additional information	<p>Access:</p> <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: -

Navigation**Additional information** *"Tank bottom evaluation" submenu***Tank bottom range** **Navigation** Application → Sensor → Advanced set. → Echo evaluation → 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 → 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 → 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: <ul style="list-style-type: none"> ▪ Read access: Expert ▪ Write access: Expert
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Navigation

Additional information	<i>"Echo tracking" submenu</i>
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Evaluation mode

Navigation	 Application → Sensor → Advanced set. → Echo evaluation → Evaluation mode
Description	Defines the evaluation mode for the echo tracking.
Selection	<ul style="list-style-type: none"> ▪ FlexTracking ▪ FlexTracking - Weak signals ▪ FixTracking ▪ FixTracking - Weak signals
Factory setting	FlexTracking

Reset evaluation

Navigation	 Application → Sensor → Advanced set. → Echo evaluation → Reset evaluation
Description	Restarts level determination.
Selection	<ul style="list-style-type: none"> ▪ Reset done ▪ Yes
Factory setting	Reset done

Window size tracking


Navigation	 Application → Sensor → Advanced set. → Echo evaluation → Wind.size track.
User entry	0 to 20 500 mm
Factory setting	250 mm

Additional information	Access: <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: Expert
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Navigation

Additional information	<i>"Debug" submenu</i>
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Debug parameter index

Navigation	 Application → Sensor → Advanced set. → Echo evaluation → Debug parm. idx
User entry	0 to 65 535
Factory setting	2
Additional information	Access: <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: Expert

Debug array index


Navigation	 Application → Sensor → Advanced set. → Echo evaluation → Debug array indx
User entry	0 to 255
Factory setting	0
Additional information	Access: <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: Expert

Status

Navigation	 Application → Sensor → Advanced set. → Echo evaluation → 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 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 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	<i>SI units</i>	<i>US units</i>	<i>Imperial units</i>
	<ul style="list-style-type: none"> ■ STon ■ t ■ kg ■ cm³ ■ dm³ ■ m³ ■ hl ■ l ■ % ■ mm ■ m 	<ul style="list-style-type: none"> ■ lb ■ UsGal ■ ft³ ■ ft ■ in 	<ul style="list-style-type: none"> impGal
	<p><i>Custom-specific units</i> Free text</p>		

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

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 %


* Visibility depends on order options or device settings

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	<p>Activate or deactivate table. The table can only be activated if the table values:</p> <ul style="list-style-type: none"> - are present in at least 2 value pairs - do not exceed the sensor limits - represent a function which is monotonically ascending or descending
Selection	<ul style="list-style-type: none"> ■ 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

Volume flow unit

Navigation  Application → Sensor → Flow settings → Volume flow unit

Description Select volume flow unit.

Selection

SI units

- cm³/s
- cm³/min
- cm³/h
- cm³/d
- dm³/s
- dm³/min
- dm³/h
- dm³/d
- m³/s
- m³/min
- m³/h
- m³/d
- l/s
- l/min
- l/h
- l/d
- hl/s
- hl/min
- hl/h
- hl/d
- Ml/h
- Ml/d

Other units

- in³/s
- in³/min
- in³/h
- in³/d

US units

- ft³/s
- ft³/min
- ft³/h
- ft³/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)

Factory setting l/h

Decimal places


Navigation	Application → Sensor → Flow settings → Decimal places
Selection	<ul style="list-style-type: none"> ■ x ■ x.X ■ x.XX ■ x.XXX ■ x.XXXX
Factory setting	x.XX


Linearization type

Navigation	Application → Sensor → Flow settings → Lineariz. type
Description	Select linearization type.
Selection	<ul style="list-style-type: none"> ■ Flume ■ Weir ■ Standard formula ■ Table
Factory setting	Flume

Table mode


Navigation	Application → Sensor → Flow settings → Table mode
Description	<p>Defines the editing mode of the linearization table.</p> <p>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"</p>
Selection	<ul style="list-style-type: none"> ■ Manual ■ Semiautomatic * ■ Clear table ■ Sort table *
Factory setting	Manual

* Visibility depends on order options or device settings

Flume type 

Navigation  Application → Sensor → Flow 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

Weir type 

Navigation  Application → Sensor → Flow 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 → 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 → 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 → 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 → Palmer Bowlus

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

Selection	<ul style="list-style-type: none"> ■ 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 → 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 → 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 → 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 → 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 → 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 → 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 → 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 → 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 → 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 → 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 → Flume width
Description	Select flume width (b).
Selection	<ul style="list-style-type: none"> ■ 1 in ■ 2 in ■ 4 in ■ 8 in
Factory setting	1 in

Flume width (b)



Navigation	Application → Sensor → Flow settings → Flume width
Description	Select flume width (b).
Selection	<ul style="list-style-type: none"> ■ 2 in ■ 4 in ■ 8 in ■ 16 in
Factory setting	2 in

Flume width (b)



Navigation	Application → Sensor → Flow settings → Flume width
Description	Select flume width (b).
Selection	<ul style="list-style-type: none"> ■ 3 in ■ 6 in ■ 12 in ■ 24 in
Factory setting	3 in

H flume



Navigation	Application → Sensor → Flow settings → H flume
Description	<p>Select a flume or weir type.</p> <p>An overview of the flumes and weirs can be found in the Operating Instructions.</p>

Selection	<ul style="list-style-type: none"> ■ 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 → Inner diameter
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Description	Enter the inner diameter (d).
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User entry	100 to 100 000 mm
-------------------	-------------------

Factory setting	1 000 mm
------------------------	----------

Roughness coefficient

Navigation	 Application → Sensor → Flow 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 → Slope
-------------------	--

Description	Enter the slope (m).
--------------------	----------------------

User entry	0 to 1
-------------------	--------

Factory setting	0.01
------------------------	------

Alpha (α)



Navigation  Application → Sensor → Flow 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 → 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 → 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 → 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 → 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 → Flow exponent

Description Enter the flow exponent (x).

User entry Positive floating-point number

Factory setting 1

Trapezoidal weir

Navigation  Application → Sensor → Flow 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 → Weir width

Description Enter the weir width (b).

User entry Positive floating-point number

Factory setting 1 000 mm

Crest width (b)



Navigation Application → Sensor → Flow 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 → 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 → 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 → Notch angle
Description	Enter the notch angle (α).
User entry	20 to 100°
Factory setting	90°

Validation

Navigation	Application → Sensor → Flow settings → Validation
Description	Result of the validation of the flume or weir dimensions (plausibility check).
User interface	<ul style="list-style-type: none"> ■ 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 → Flow calculation
Description	If the function is activated, the measured value is converted into the corresponding volume flow rate.
Selection	<ul style="list-style-type: none"> ■ Disable ■ Enable
Factory setting	Disable

Maximum flow

**Navigation**

Application → Sensor → Flow settings → 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 → 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 → 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 → 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

Navigation	Application → Sensor → Flow settings → Totalizer
Description	Activate or deactivate the totalizer for volume flow.
Selection	<ul style="list-style-type: none"> ■ Disable ■ Enable
Factory setting	Disable

Totalizer unit

Navigation	Application → Sensor → Flow settings → Totalizer unit																											
Description	Select the unit of the totalizer for the totalized volume flow.																											
Selection	<table> <thead> <tr> <th><i>SI units</i></th> <th><i>US units</i></th> <th><i>Imperial units</i></th> </tr> </thead> <tbody> <tr> <td>■ cm³</td> <td>■ ft³</td> <td>■ gal (imp)</td> </tr> <tr> <td>■ dm³</td> <td>■ in³</td> <td>■ Mgal (imp)</td> </tr> <tr> <td>■ m³</td> <td>■ gal (us)</td> <td></td> </tr> <tr> <td>■ l</td> <td>■ Mgal (us)</td> <td></td> </tr> <tr> <td>■ hl</td> <td>■ bbl (us;liq.)</td> <td></td> </tr> <tr> <td>■ Ml Mega</td> <td>■ bbl (us;beer)</td> <td></td> </tr> <tr> <td></td> <td>■ bbl (us;oil)</td> <td></td> </tr> <tr> <td></td> <td>■ bbl (us;tank)</td> <td></td> </tr> </tbody> </table>	<i>SI units</i>	<i>US units</i>	<i>Imperial units</i>	■ cm ³	■ ft ³	■ gal (imp)	■ dm ³	■ in ³	■ Mgal (imp)	■ m ³	■ gal (us)		■ l	■ Mgal (us)		■ hl	■ bbl (us;liq.)		■ Ml Mega	■ bbl (us;beer)			■ bbl (us;oil)			■ bbl (us;tank)	
<i>SI units</i>	<i>US units</i>	<i>Imperial units</i>																										
■ cm ³	■ ft ³	■ gal (imp)																										
■ dm ³	■ in ³	■ Mgal (imp)																										
■ m ³	■ gal (us)																											
■ l	■ Mgal (us)																											
■ hl	■ bbl (us;liq.)																											
■ Ml Mega	■ bbl (us;beer)																											
	■ bbl (us;oil)																											
	■ bbl (us;tank)																											
Factory setting	1																											

Decimal places



Navigation	Application → Sensor → Flow settings → Decimal places
Selection	<ul style="list-style-type: none"> ■ x ■ x.x ■ x.xx ■ x.xxx ■ x.xxxx
Factory setting	x.xx

Failure behavior



Navigation	Application → Sensor → Flow settings → Failure behavior
Description	Select the behavior of the totalizer in the event of an error.
Selection	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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 \leq “low saturation”, the output current is set to “low saturation”. If Measured value \geq “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	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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 1 000 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 date of the last configuration change. Use this format yyyy-mm-dd
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	<p>Indicates the type of locking.</p> <p>"Safety locked" (SW) Unlock the device by entering the appropriate access code in "Enter safety unlocking code".</p> <p>"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.</p>
User interface	<ul style="list-style-type: none"> ■ Safety locked ■ Temporarily locked

Configuration counter

Navigation	 System → Device manag. → Config. counter
Description	<p>Displays the counter for changes to the device parameters.</p> <p>Additional information:</p> <ul style="list-style-type: none"> - If the value for a static parameter is changed when optimizing or configuring the parameter, the counter is incremented by 1. This is to enable tracking different parameter versions. - When multiple parameters are changed simultaneously, e.g. when loading parameters into the device from an external source such as FieldCare, the counter may display a higher value. The counter cannot be reset, nor is it reset to a default value on performing a device reset. - Once the counter has reached the value 65535, it restarts at 0.
User interface	0 to 65 535
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	<ul style="list-style-type: none"> ■ 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.

User role

Navigation  System → User manag. → User role

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

User interface

- Operator
- Maintenance
- Expert
- Production
- Development

Factory setting Maintenance


Change user role

Navigation  System → User manag. → Change user role

Description It is possible to change the user role.
If the actual role is 'Maintenance', the 'Enter access code' will be prompted.
If the actual role is 'Operator', a 'Maintenance' password will be required.

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


Password

Navigation  System → User manag. → Password



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

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


Enter access code 


Navigation	 System → User manag. → Ent. access code
Description	For authorized service personnel only.
User entry	0 to 9999
Factory setting	0



Status password entry

Navigation	  System → User manag. → Status pw entry
Description	Use this function to display the status of the password verification.
User interface	<ul style="list-style-type: none"> ■ ----- ■ 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
User entry	Character string comprising numbers, letters and special characters (1)


New password 

Navigation	  System → User manag. → New password
Description	<p>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.</p>
User entry	Character string comprising numbers, letters and special characters (16)



Confirm new password 

Navigation	  System → User manag. → Confirm password
Description	Enter the new password again to confirm.
User entry	Character string comprising numbers, letters and special characters (16)


Change password 

Navigation	 System → User manag. → Change password
Description	Changes the 'Maintenance' password.
User entry	Character string comprising numbers, letters and special characters (1)


Old password 

Navigation	  System → User manag. → Old password
Description	Enter the current password, to subsequently change the existing password.
User entry	Character string comprising numbers, letters and special characters (16)


Delete password 

Navigation	 System → 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?
User entry	Character string comprising numbers, letters and special characters (1)


Reset password

Navigation	 System → User manag. → Reset password
Description	Enter a code to reset the current "Maintenance" password. The code is delivered by your local support.
User entry	Character string comprising numbers, letters and special characters (16)

3.4.3 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	<ul style="list-style-type: none"> ■ Disable ■ Enable
Factory setting	Enable

3.4.4 Display

Navigation   System → Display

Language


Navigation	 System → Display → Language
Description	Set display language
Selection	<ul style="list-style-type: none"> ■ English ■ Deutsch * ■ Français * ■ Español *

* Visibility depends on order options or device settings

- Italiano *
- Nederlands *
- Portuguesa *
- Polski *
- русский язык (Russian) *
- Svenska *
- Türkçe *
- 中文 (Chinese) *
- 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

* Visibility depends on order options or device settings

Decimal places 1 ... 4


Navigation	System → Display → Decimal places 1
Description	This selection does not affect the measurement and calculation accuracy of the device.
Selection	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ 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	<ul style="list-style-type: none"> ■ Light ■ Dark
Factory setting	Dark

3.4.5 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

3.4.6 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 alphanumeric 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	AAFFFFAAFF

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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ▪ Read access: Operator ▪ Write access: Expert


XML build number

Navigation	System → Information → XML build no.
User interface	Positive integer
Factory setting	232
Additional information	Access: <ul style="list-style-type: none"> ▪ Read access: Expert ▪ Write access: -

Checksum

Navigation	System → Information → Checksum
Description	Checksum for Firmware version.
User interface	Positive integer
Factory setting	0


3.4.7 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	AAFFFFAAFF
Additional information	Access: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ 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 AFFFFFFAFFFF

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 AAFFFFAAFF

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: <ul style="list-style-type: none"> ■ 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: <ul style="list-style-type: none"> ■ Read access: Expert ■ Write access: -


3.4.8 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 65535 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 time stamp when the CRC was last stored following completion of the safety lock wizard.

User interface Character string comprising numbers, letters and special characters

Activate SW option

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

Description 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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