

Description of Device Parameters

FlexView FMA90

Control unit for level and flow measurements
HART output

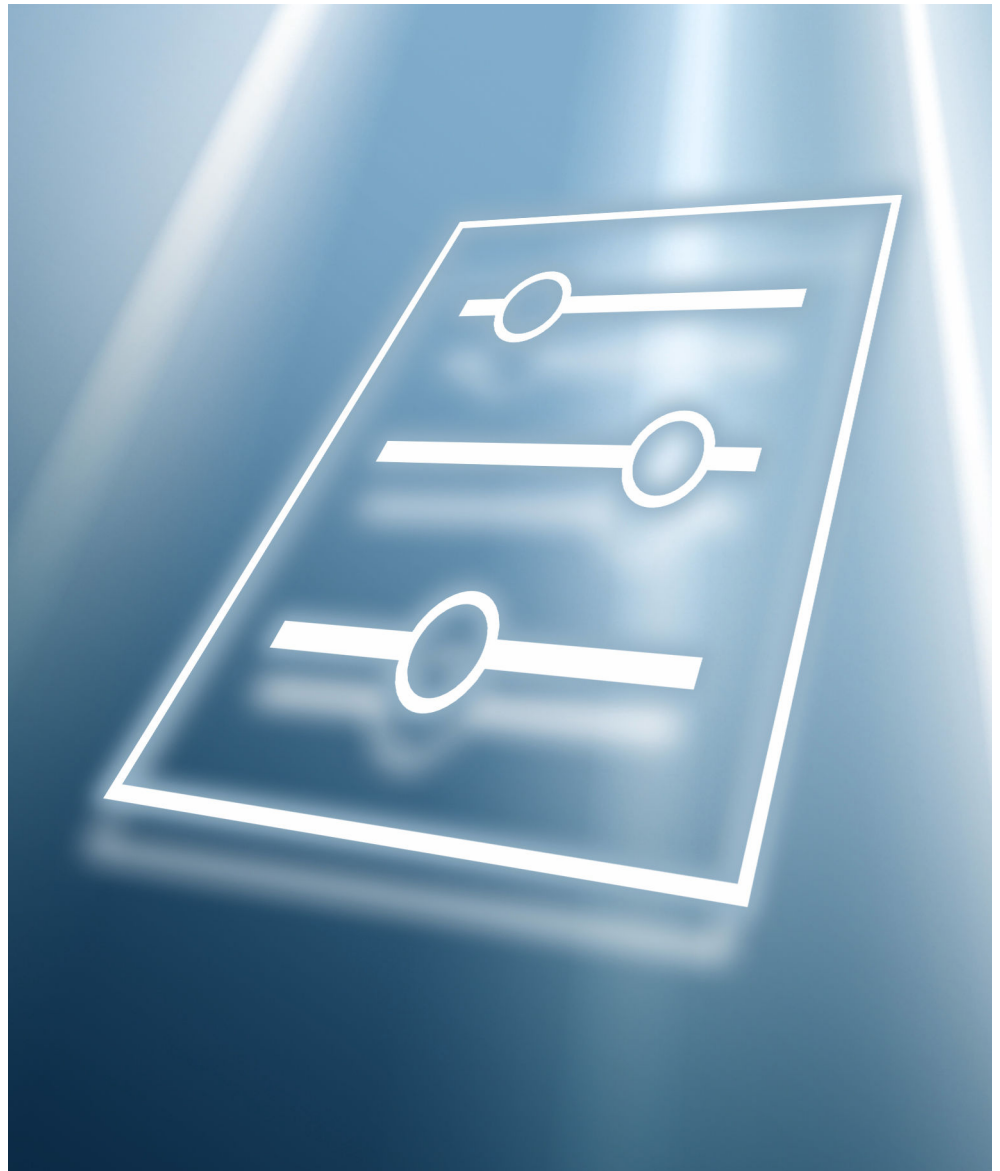


Table of contents

1	About this document	3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
----------	----------------------------------	----------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

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 main menus and their submenus.

The main menus:

- Guidance
- Diagnostics
- Application
- System
- Visualization (→  267)
- Help (→  208)

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 they are logged in with. This document lists the submenus and their parameters that are available to the **Maintenance** user role with the **Advanced maintenance mode** view.

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



For information on operating options, see the Operating Instructions.

1.3.1 Special instructions

-  For some HART parameters, question marks "?????" may be displayed as the unit. This is the case if the unit has not yet been read out by the connected sensor (the factory setting of the FlexView FMA90 is shown).
-   Read-only parameters can be set by "Service" or "Maintenance" users, depending on their permission level.

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

3

Prerequisite

4

Description

5

Selection

6

Factory setting

7



  Diagnostics → Simulation → Simulation

Options marked with *:
The corresponding device function must be available and configured.

Simulates one or more process variables and/or events.
Warning:
- Output will reflect the simulated value or event.

■ Off

■ Distance

■ Level

■ Level linearized *

■ Current output

■ Diagnostic event simulation

■ Foam index *

■ Build-up index *

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

3

Description

4

User interface

5

Factory setting

6

Additional information

  Diagnostics → Active diagnos. → Timestamp

Displays the timestamp for the currently active diagnostic message.

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

Access:
■ 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

DANGER

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

WARNING

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

CAUTION

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

NOTICE

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

1.5.2 Symbols for certain types of information

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

1.6 Documentation

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

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

2 Overview of the operating menu

Navigation

 Operating tool

Guidance	→  8
Diagnostics	→  9
▶ Active diagnostics	→  9
▶ Diagnostic list	→  11
▶ Event logbook	→  11
▶ Minimum/maximum values	→  12
▶ Simulation	→  15
▶ Diagnostic settings	→  21
▶ HART master	→  40
Application	→  42
▶ Measured values	→  42
▶ Operating mode	→  56
▶ Measuring units	→  60
▶ Sensors	→  62
▶ Level	→  98
▶ Pump control	→  113
▶ Flow	→  13
▶ Backwater detection	→  173
▶ Calculations	→  175
▶ Totalizer	→  177
▶ Rake control	→  177
▶ Digital inputs	→  183
▶ Limits	→  184

► Current output	→ 📄 191
► HART output	→ 📄 194
► Relay	→ 📄 202
► Open collector	→ 📄 205
Visualization	→ 📄 267
Add group	→ 📄 267
Delete group	→ 📄 267
► Group 1 to 6	→ 📄 268

3 Description of device parameters

3.1 "Guidance" menu

In the **Guidance** menu, the user can quickly perform basic tasks, such as commissioning. This menu primarily consists of guided wizards and special functions covering multiple areas.

Navigation  Guidance

3.1.1 Overview

The **Guidance** menu contains the following submenus and wizards:

- Commissioning
- Certificate management (→  8)
- Import/Export

3.1.2 "Commissioning" wizard

Run the **Commissioning** wizard in order to commission the device quickly and easily. Enter the appropriate value in each parameter or select the appropriate option in the menu for this purpose. Detailed settings for the applications in question can be configured in the **Application** menu (→  42).

NOTICE

If the wizard is canceled before all the necessary parameters have been configured, any settings already set are saved.

The device may be in an undefined state!

- Reset the device to factory settings.

Navigation  Guidance → Commissioning

3.1.3 "Certificate management" submenu

A certificate must be created for secure communication using TLS. All of the settings for creating and managing the certificate are carried out in this wizard. In the first step of the wizard, a Certificate signing request (CSR) must be created. The CSR must then be signed by a trusted authority. The resulting certificate must then be uploaded back to the device. Alternatively, a self-signed certificate can also be used, although security is then limited in this case.



A self-signed certificate is automatically installed on the device. Install the downloaded certificate in the browser.

3.1.4 "Import/Export" submenu



This function is only available for device access via the web server.

Guidance → Import/Export

"Create documentation" parameter

Device documentation can be saved in PDF format in the **"Create documentation" parameter** parameter. This device documentation contains the following device information:

- Information on all device parameters
- Diagnostic list
- Information on hardware configuration
- Information on software configuration

"Save parameterization" parameter

Use the **"Save parameterization" parameter** to save the device configuration (*.deh).

"Load parameterization" parameter

Use the **"Load parameterization" parameter** to load the device configuration (*.deh).

"License information" parameter

The license information can be saved as a text file (*.txt) under the **"License information" parameter**.

3.2 "Diagnostics" menu

Navigation  Diagnostics

3.2.1 "Active diagnostics" submenu

Navigation  Diagnostics → Active diagnostics

Actual diagnostics

Navigation	 Diagnostics → Active diagnostics → Actual diagnostics (350074)
Description	Displays the current occurred diagnostic event along with its diagnostic information.
User interface	■ Status signal ■ Diagnostic code ■ Event text ■ Remedial action

Timestamp

Navigation	 Diagnostics → Active diagnostics → Timestamp (350059)
Description	Displays the timestamp for the currently active diagnostic message.

Previous diagnostics

Navigation	  Diagnostics → Active diagnostics → Previous diagnostics (350075)
Description	Shows the diagnostic event that occurred prior to the current diagnostic event along with its diagnostic information.
User interface	■ Status signal ■ Diagnostic code ■ Event text ■ Remedial action

Timestamp

Navigation	  Diagnostics → Active diagnostics → Timestamp (350011)
Description	Shows the timestamp of the previous diagnostic message.

Operating time

Navigation	  Diagnostics → Active diagnostics → Operating time (350018)
Description	Indicates how long the device has been in operation.

Operating time from restart

Navigation	  Diagnostics → Active diagnostics → Operating time from restart (350017)
Description	Shows the time the device has been in operation since the last device restart.

Operating hours of the on-site display

Navigation	  Diagnostics → Active diagnostics → Operating hours of the on-site display (350270)
-------------------	--

Counter power on

Navigation	  Diagnostics → Active diagnostics → Counter power on (350083)
User interface	Positive integer

Factory setting 0

Sensor 1 to 2 diagnostic code

Navigation   Diagnostics → Active diagnostics → Sensor 1 to 2 diagnostic code (3370115–1 to 2)

User interface Character string comprising numbers, letters and special characters

Factory setting ??????????

3.2.2 "Diagnostic list" submenu

 All currently pending diagnostic messages with a maximum of 10 events are displayed in the Diagnostic list submenu, sorted by priority (highest first). Each entry contains: Status signal as symbol, diagnostic code, description, timestamp, remedial action, channel information and service ID. Detailed information on the possible diagnostic messages can be found in the Operating Instructions for the device.

Navigation   Diagnostics → Diagnostic list

3.2.3 "Event logbook" submenu

 Displays the event messages. Event messages are displayed in chronological order. The event history includes diagnostics and information events. The symbol in front of the timestamp indicates whether the event has started or ended.

A "Direct ID#" is displayed in the event logbook for each configuration change (e.g., "160108-000-000"), clearly identifying the relevant parameters. This ID can be used to run a search in this document so that the parameter can be clearly assigned.

Structure of the "Direct-ID#" (example):

- 1st part **160108**-000-000 = relevant parameter
- 2nd part 160108-**000**-000 = field index (e.g., support point)
- Part 3, e.g. 160108-000-**001** = instance (e.g. channel 1, relay 1)

Important: When searching, it is sufficient to search only for the first part of the ID (e.g. "160108").

Navigation   Diagnostics → Event logbook

Filter options

Navigation   Diagnostics → Event logbook → Filter options (350020)

Description Define which category of event messages is shown in the Events list submenu.

3.2.4 "Minimum/maximum values" submenu

Navigation   Diagnostics → Minimum/maximum values

Minimum electronics temperature

Navigation   Diagnostics → Minimum/maximum values → Minimum electronics temperature (350072)

User interface -150.0 to 200.0 °C

Maximum electronics temperature

Navigation   Diagnostics → Minimum/maximum values → Maximum electronics temperature (350069)

User interface -150.0 to 200.0 °C

"Level linearized" submenu

Navigation   Diagnostics → Minimum/maximum values → Level linearized

Minimum level 1 to 2 linearized

Navigation   Diagnostics → Minimum/maximum values → Level linearized → Minimum level 1 to 2 linearized (3520130-1 to 2)

Description Displays the lowest linearized level value measured so far. The value can be reset together with the timestamp.

User interface Signed floating-point number

Timestamp minimum level 1 to 2 linearized

Navigation   Diagnostics → Minimum/maximum values → Level linearized → Timestamp minimum level 1 to 2 linearized (3520131-1 to 2)

Description Displays the timestamp of the lowest linearized level value measured so far.

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

Maximum level 1 to 2 linearized

Navigation	  Diagnostics → Minimum/maximum values → Level linearized → Maximum level 1 to 2 linearized (3520132-1 to 2)
Description	Displays the highest linearized level value measured so far.
User interface	Signed floating-point number

Timestamp maximum level 1 to 2 linearized

Navigation	  Diagnostics → Minimum/maximum values → Level linearized → Timestamp maximum level 1 to 2 linearized (3520133-1 to 2)
Description	Displays the timestamp of the highest linearized level value measured so far.
User interface	Days (d), hours (h), minutes (m), seconds (s)

Reset min./max. 1 ... 2



Navigation	  Diagnostics → Minimum/maximum values → Level linearized → Reset min./max. 1 ... 2 (3520134-1 ... 2)
Description	Resets the minimum or the maximum linearized level values to date (drag indicators) together with the respective timestamps.
Selection	■ No ■ Yes
Factory setting	No

"Flow" submenu

Navigation   Diagnostics → Minimum/maximum values → Flow

Minimum flow value 1 to 2

Navigation	  Diagnostics → Minimum/maximum values → Flow → Minimum flow value 1 to 2 (3880131-1 to 2)
Description	Displays the lowest volume flow measured since the last reset.

User interface Signed floating-point number

Factory setting Positive floating-point number

Timestamp minimum flow 1 to 2

Navigation   Diagnostics → Minimum/maximum values → Flow → Timestamp minimum flow 1 to 2 (3880133-1 to 2)

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

Maximum flow value 1 to 2

Navigation   Diagnostics → Minimum/maximum values → Flow → Maximum flow value 1 to 2 (3880132-1 to 2)

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

User interface Signed floating-point number

Timestamp maximum flow 1 to 2

Navigation   Diagnostics → Minimum/maximum values → Flow → Timestamp maximum flow 1 to 2 (3880134-1 to 2)

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

Reset drag indicator



Navigation   Diagnostics → Minimum/maximum values → Flow → Reset drag indicator (3880016)

Selection

- No
- Yes

Factory setting No

3.2.5 "Simulation" submenu

Navigation   Diagnostics → Simulation

"Sensor 1 to 2 simulation" submenu

Navigation   Diagnostics → Simulation → Sensor 1 to 2 simulation

Simulation 	
Navigation	  Diagnostics → Simulation → Sensor 1 to 2 simulation → Simulation (2960080–1 to 2)
Description	Select process variable for simulation, which is thereby activated. Selecting 'Off' will deactivate the simulation.
Selection	■ Off ■ Current ■ HART Value ■ Level sensor ■ Level linearized ■ Flow
Factory setting	Off
Current 	
Navigation	  Diagnostics → Simulation → Sensor 1 to 2 simulation → Current (2960081–1 to 2)
Prerequisite	The simulation variable must be current.
Description	Enter current value as process variable for simulation.
User entry	0.0 to 22.5 mA
Factory setting	3.59 mA
HART Value 	
Navigation	  Diagnostics → Simulation → Sensor 1 to 2 simulation → HART Value (2960082–1 to 2)
Prerequisite	The simulation variable must be a HART value.
Description	Enter HART value (PV) as process variable for simulation.

User entry -200 000.0 to 200 000.0

Factory setting 0.0

Level sensor



Navigation Diagnostics → Simulation → Sensor 1 to 2 simulation → Level sensor (2960083-1 to 2)

Prerequisite The simulation variable must be level.

Description Enter level value of the sensor as process variable for simulation.

User entry Signed floating-point number

Factory setting 0.0 mm

Level linearized



Navigation Diagnostics → Simulation → Sensor 1 to 2 simulation → Level linearized (2960086-1 to 2)

Prerequisite The simulation variable must be level linearized.

Description Enter linearized level value as process variable for simulation.

User entry -200 000.0 to 200 000.0 %

Factory setting 0.0 %

Flow



Navigation Diagnostics → Simulation → Sensor 1 to 2 simulation → Flow (2960088-1 to 2)

Prerequisite The simulation variable must be flow.

Description Enter flow value as process variable for simulation.

User entry Positive floating-point number

Factory setting 0.0 l/h

"Current output simulation" submenu

Navigation   Diagnostics → Simulation → Current output simulation

Current output 1 to 2 simulation

Navigation	  Diagnostics → Simulation → Current output simulation → Current output 1 to 2 simulation (2570017-1 to 2)
Description	Switch the simulation of the current output on and off.
Selection	■ Off ■ On
Factory setting	Off

Value current output 1 to 2

Navigation	  Diagnostics → Simulation → Current output simulation → Value current output 1 to 2 (2570018-1 to 2)
Prerequisite	The current output simulation is active.
Description	Enter the current value for simulation.
User entry	0.0 to 22.5 mA
Factory setting	3.59 mA

"Digital output simulation" submenu

Navigation   Diagnostics → Simulation → Digital output simulation

Simulation relay 1 to 5

Navigation	  Diagnostics → Simulation → Digital output simulation → Simulation relay 1 to 5 (2860080-1 to 5)
Prerequisite	Relays are activated as outputs.
Description	Switch simulation of the relay output on and off.

Selection

- Simulation off
- Switched off
- Switched on

Factory setting Simulation off

Simulation open collector 1 to 3



Navigation   Diagnostics → Simulation → Digital output simulation → Simulation open collector 1 to 3 (3320080-1 to 3)

Prerequisite Open collectors are activated as outputs.

Description Switch simulation of the open collector on and off.

Selection

- Simulation off
- Switched off
- Switched on

Factory setting Simulation off

"Digital input simulation" submenu

Navigation   Diagnostics → Simulation → Digital input simulation

Digital input simulation 1 to 4



Navigation   Diagnostics → Simulation → Digital input simulation → Digital input simulation 1 to 4 (3090050-1 to 4)

Description Switch digital input simulation on and off.

Selection

- Simulation off
- Switched off
- Switched on

Factory setting Simulation off

"Diagnostic event simulation" submenu

Navigation  Diagnostics → Simulation → Diagnostic event simulation

Simulation		
Navigation	 Diagnostics → Simulation → Diagnostic event simulation → Simulation (350229)	
Description	Simulates one or more process variables and/or events. Warning: Output will reflect the simulated value or event.	
Selection	■ Off ■ Diagnostics	
Factory setting	Off	
Diagnostic event simulation		
Navigation	 Diagnostics → Simulation → Diagnostic event simulation → Diagnostic event simulation (350143)	
Prerequisite	Diagnostic simulation is active.	
Description	Select a diagnostic event to simulate this event.	
Selection	■ Off ■ 041 Sensor breakage detected ■ 046 Sensor limit exceeded ■ 201 Electronics faulty ■ 230 Date/time incorrect ■ 233 Battery low ■ 234 Battery empty ■ 252 Module incompatible ■ 275 I/O module defective ■ 331 Firmware update failed ■ 332 Restart modules ■ 402 Initialization active ■ 411 Up-/download active ■ 412 Processing download ■ 416 Warning occurred for HART device ■ 425 Communication certificate faulty ■ 426 Communication certificate expired ■ 427 Communication certificate expiring soon ■ 440 Device not calibrated ■ 441 Current output saturated ■ 485 Process variable simulation active ■ 486 Current input simulation active ■ 491 Current output simulation active ■ 494 Switch output simulation active ■ 496 Status input simulation active	

- 498 Open collector simulation active
- 500 Relay output buffer full
- 501 Open collector output buffer full
- 502 LAN/WLAN - IP address conflict
- 538 Calculation configuration faulty
- 550 Pump control pump direction wrong
- 551 Pump control pump rate not reached
- 552 Pump control same switch-on points
- 553 Pump pump error
- 554 Pump control storm func. on < off
- 555 Pump control pump direction wrong
- 556 Pump max. operating hours reached
- 557 Pump control pump direction wrong
- 560 Sensor write configuration failed
- 561 Sensor read configuration failed
- 570 Rake control switch point configuration
- 577 Sensor configuration faulty
- 578 Pump control configuration faulty
- 579 Level configuration faulty
- 580 Flow configuration faulty
- 701 Sensor PV fixed
- 702 Sensor PV uncertain
- 703 Sensor PV bad
- 710 Sensor device failure
- 711 Sensor check function
- 712 Sensor out of specification
- 713 Sensor maintenance required
- 715 Sensor malfunction
- 716 Sensor process value out of limits
- 721 Sensor echo lost
- 722 Sensor buildup detected
- 723 Sensor foam detected
- 724 Sensor in safety distance
- 725 Sensor mapping failed
- 726 Sensor communication lost
- 727 Sensor multi master collision
- 730 Sensor configuration mismatch
- 732 Sensor wrong sensor type detected
- 740 Sensor SV fixed
- 741 Sensor SV uncertain
- 742 Sensor SV bad
- 743 Sensor TV fixed
- 744 Sensor TV uncertain
- 745 Sensor TV bad
- 746 Sensor QV fixed
- 747 Sensor QV uncertain
- 748 Sensor QV bad
- 879 Sensor input overloaded
- 950 Backwater detected
- 955 Level downstream > level upstream
- 956 Rake control calculation error
- 968 Sensor level limit reached
- 970 Flow value out of specification
- 971 Flow value above limit
- 972 Level value out of limits

Factory setting

Off

Channel 	
Navigation	  Diagnostics → Simulation → Diagnostic event simulation → Channel (350323)
Prerequisite	The diagnostics are simulated and there are at least two channels for the diagnostics in question.
Description	Assign the corresponding channel to the selected diagnostic event.
User entry	1 to 255
Factory setting	1

3.2.6 "Diagnostic settings" submenu

 Each diagnostic event is assigned a certain diagnostic behavior. The user can change this assignment for specific diagnostic events. This configuration is described in detail in the Operating Instructions pertaining to the device.

Navigation   Diagnostics → Diagnostic settings

"Properties" submenu

Navigation   Diagnostics → Diagnostic settings → Properties

Alarm delay 	
Navigation	  Diagnostics → Diagnostic settings → Properties → Alarm delay (350071)
Description	Sets the length of time in seconds that diagnostic messages are suppressed.
User entry	0.0 to 60.0 s
Factory setting	0.0 s

"Sensor" submenu

Navigation  Diagnostics → Diagnostic settings → Sensor

701 Diagnostic behavior

Navigation	 Diagnostics → Diagnostic settings → Sensor → 701 Diagnostic behavior (3867011)
Selection	■ Off ■ Alarm ■ Warning ■ Logbook entry only
Factory setting	Warning

701 Status signal

Navigation	 Diagnostics → Diagnostic settings → Sensor → 701 Status signal (3867010)
User interface	■ Failure (F) ■ Function check (C) ■ Out of specification (S) ■ Maintenance required (M) ■ Not categorized

702 Diagnostic behavior

Navigation	 Diagnostics → Diagnostic settings → Sensor → 702 Diagnostic behavior (3867021)
Selection	■ Off ■ Alarm ■ Warning ■ Logbook entry only
Factory setting	Warning

702 Status signal

Navigation	  Diagnostics → Diagnostic settings → Sensor → 702 Status signal (3867020)
User interface	■ Failure (F) ■ Function check (C) ■ Out of specification (S) ■ Maintenance required (M) ■ Not categorized

703 Diagnostic behavior



Navigation	  Diagnostics → Diagnostic settings → Sensor → 703 Diagnostic behavior (3867031)
Selection	■ Off ■ Alarm ■ Warning ■ Logbook entry only
Factory setting	Alarm

703 Status signal

Navigation	  Diagnostics → Diagnostic settings → Sensor → 703 Status signal (3867030)
User interface	■ Failure (F) ■ Function check (C) ■ Out of specification (S) ■ Maintenance required (M) ■ Not categorized

710 Diagnostic behavior



Navigation	  Diagnostics → Diagnostic settings → Sensor → 710 Diagnostic behavior (3867101)
Selection	■ Off ■ Alarm ■ Warning ■ Logbook entry only
Factory setting	Alarm

710 Status signal

Navigation   Diagnostics → Diagnostic settings → Sensor → 710 Status signal (3867100)

User interface

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

711 Diagnostic behavior



Navigation   Diagnostics → Diagnostic settings → Sensor → 711 Diagnostic behavior (3867111)

Selection

- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Warning

711 Status signal

Navigation   Diagnostics → Diagnostic settings → Sensor → 711 Status signal (3867110)

User interface

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

712 Diagnostic behavior



Navigation   Diagnostics → Diagnostic settings → Sensor → 712 Diagnostic behavior (3867121)

Selection

- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Warning

712 Status signal

Navigation	  Diagnostics → Diagnostic settings → Sensor → 712 Status signal (3867120)
User interface	■ Failure (F) ■ Function check (C) ■ Out of specification (S) ■ Maintenance required (M) ■ Not categorized

713 Diagnostic behavior



Navigation	  Diagnostics → Diagnostic settings → Sensor → 713 Diagnostic behavior (3867131)
Selection	■ Off ■ Alarm ■ Warning ■ Logbook entry only
Factory setting	Warning

713 Status signal

Navigation	  Diagnostics → Diagnostic settings → Sensor → 713 Status signal (3867130)
User interface	■ Failure (F) ■ Function check (C) ■ Out of specification (S) ■ Maintenance required (M) ■ Not categorized

715 Diagnostic behavior



Navigation	  Diagnostics → Diagnostic settings → Sensor → 715 Diagnostic behavior (3867151)
Selection	■ Off ■ Alarm ■ Warning ■ Logbook entry only
Factory setting	Alarm

715 Status signal

Navigation   Diagnostics → Diagnostic settings → Sensor → 715 Status signal (3867150)

User interface

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

716 Diagnostic behavior



Navigation   Diagnostics → Diagnostic settings → Sensor → 716 Diagnostic behavior (3867161)

Selection

- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Warning

716 Status signal

Navigation   Diagnostics → Diagnostic settings → Sensor → 716 Status signal (3867160)

User interface

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

721 Diagnostic behavior



Navigation   Diagnostics → Diagnostic settings → Sensor → 721 Diagnostic behavior (3867211)

Selection

- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Warning

721 Status signal

Navigation	  Diagnostics → Diagnostic settings → Sensor → 721 Status signal (3867210)
User interface	■ Failure (F) ■ Function check (C) ■ Out of specification (S) ■ Maintenance required (M) ■ Not categorized

722 Diagnostic behavior



Navigation	  Diagnostics → Diagnostic settings → Sensor → 722 Diagnostic behavior (3867221)
Selection	■ Off ■ Alarm ■ Warning ■ Logbook entry only
Factory setting	Warning

722 Status signal

Navigation	  Diagnostics → Diagnostic settings → Sensor → 722 Status signal (3867220)
User interface	■ Failure (F) ■ Function check (C) ■ Out of specification (S) ■ Maintenance required (M) ■ Not categorized

723 Diagnostic behavior



Navigation	  Diagnostics → Diagnostic settings → Sensor → 723 Diagnostic behavior (3867231)
Selection	■ Off ■ Alarm ■ Warning ■ Logbook entry only
Factory setting	Warning

723 Status signal

Navigation	  Diagnostics → Diagnostic settings → Sensor → 723 Status signal (3867230)
User interface	■ Failure (F) ■ Function check (C) ■ Out of specification (S) ■ Maintenance required (M) ■ Not categorized

724 Diagnostic behavior



Navigation	  Diagnostics → Diagnostic settings → Sensor → 724 Diagnostic behavior (3867241)
Selection	■ Off ■ Alarm ■ Warning ■ Logbook entry only
Factory setting	Warning

724 Status signal

Navigation	  Diagnostics → Diagnostic settings → Sensor → 724 Status signal (3867240)
User interface	■ Failure (F) ■ Function check (C) ■ Out of specification (S) ■ Maintenance required (M) ■ Not categorized

725 Diagnostic behavior



Navigation	  Diagnostics → Diagnostic settings → Sensor → 725 Diagnostic behavior (3867251)
Selection	■ Off ■ Alarm ■ Warning ■ Logbook entry only
Factory setting	Warning

725 Status signal

Navigation	  Diagnostics → Diagnostic settings → Sensor → 725 Status signal (3867250)
User interface	■ Failure (F) ■ Function check (C) ■ Out of specification (S) ■ Maintenance required (M) ■ Not categorized

740 Diagnostic behavior



Navigation	  Diagnostics → Diagnostic settings → Sensor → 740 Diagnostic behavior (3867401)
Selection	■ Off ■ Alarm ■ Warning ■ Logbook entry only
Factory setting	Warning

740 Status signal

Navigation	  Diagnostics → Diagnostic settings → Sensor → 740 Status signal (3867400)
User interface	■ Failure (F) ■ Function check (C) ■ Out of specification (S) ■ Maintenance required (M) ■ Not categorized

741 Diagnostic behavior



Navigation	  Diagnostics → Diagnostic settings → Sensor → 741 Diagnostic behavior (3867411)
Selection	■ Off ■ Alarm ■ Warning ■ Logbook entry only
Factory setting	Warning

741 Status signal

Navigation   Diagnostics → Diagnostic settings → Sensor → 741 Status signal (3867410)

User interface

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

742 Diagnostic behavior



Navigation   Diagnostics → Diagnostic settings → Sensor → 742 Diagnostic behavior (3867421)

Selection

- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Alarm

742 Status signal

Navigation   Diagnostics → Diagnostic settings → Sensor → 742 Status signal (3867420)

User interface

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

743 Diagnostic behavior



Navigation   Diagnostics → Diagnostic settings → Sensor → 743 Diagnostic behavior (3867431)

Selection

- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Warning

743 Status signal

Navigation	  Diagnostics → Diagnostic settings → Sensor → 743 Status signal (3867430)
User interface	■ Failure (F) ■ Function check (C) ■ Out of specification (S) ■ Maintenance required (M) ■ Not categorized

744 Diagnostic behavior



Navigation	  Diagnostics → Diagnostic settings → Sensor → 744 Diagnostic behavior (3867441)
Selection	■ Off ■ Alarm ■ Warning ■ Logbook entry only
Factory setting	Warning

744 Status signal

Navigation	  Diagnostics → Diagnostic settings → Sensor → 744 Status signal (3867440)
User interface	■ Failure (F) ■ Function check (C) ■ Out of specification (S) ■ Maintenance required (M) ■ Not categorized

745 Diagnostic behavior



Navigation	  Diagnostics → Diagnostic settings → Sensor → 745 Diagnostic behavior (3867451)
Selection	■ Off ■ Alarm ■ Warning ■ Logbook entry only
Factory setting	Alarm

745 Status signal

Navigation  Diagnostics → Diagnostic settings → Sensor → 745 Status signal (3867450)

User interface

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

746 Diagnostic behavior



Navigation  Diagnostics → Diagnostic settings → Sensor → 746 Diagnostic behavior (3867461)

Selection

- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Warning

746 Status signal

Navigation  Diagnostics → Diagnostic settings → Sensor → 746 Status signal (3867460)

User interface

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

747 Diagnostic behavior



Navigation  Diagnostics → Diagnostic settings → Sensor → 747 Diagnostic behavior (3867471)

Selection

- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Warning

747 Status signal

Navigation   Diagnostics → Diagnostic settings → Sensor → 747 Status signal (3867470)

User interface

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

748 Diagnostic behavior



Navigation   Diagnostics → Diagnostic settings → Sensor → 748 Diagnostic behavior (3867481)

Selection

- Off
- Alarm
- Warning
- Logbook entry only

Factory setting Alarm

748 Status signal

Navigation   Diagnostics → Diagnostic settings → Sensor → 748 Status signal (3867480)

User interface

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

"Electronics" submenu

Navigation  Diagnostics → Diagnostic settings → Electronics

230 Diagnostic behavior

Navigation	 Diagnostics → Diagnostic settings → Electronics → 230 Diagnostic behavior (3862301)
Selection	■ Off ■ Alarm ■ Warning ■ Logbook entry only
Factory setting	Alarm

230 Status signal

Navigation	 Diagnostics → Diagnostic settings → Electronics → 230 Status signal (3862300)
User interface	■ Failure (F) ■ Function check (C) ■ Out of specification (S) ■ Maintenance required (M) ■ Not categorized

"Configuration" submenu

Navigation  Diagnostics → Diagnostic settings → Configuration

426 Diagnostic behavior

Navigation	 Diagnostics → Diagnostic settings → Configuration → 426 Diagnostic behavior (3864260)
Selection	■ Off ■ Alarm ■ Warning ■ Logbook entry only
Factory setting	Warning

426 Status signal

Navigation	  Diagnostics → Diagnostic settings → Configuration → 426 Status signal (3864261)
User interface	■ Failure (F) ■ Function check (C) ■ Out of specification (S) ■ Maintenance required (M) ■ Not categorized

427 Diagnostic behavior



Navigation	  Diagnostics → Diagnostic settings → Configuration → 427 Diagnostic behavior (3864270)
Selection	■ Off ■ Alarm ■ Warning ■ Logbook entry only
Factory setting	Warning

427 Status signal

Navigation	  Diagnostics → Diagnostic settings → Configuration → 427 Status signal (3864271)
User interface	■ Failure (F) ■ Function check (C) ■ Out of specification (S) ■ Maintenance required (M) ■ Not categorized

441 Diagnostic behavior



Navigation	  Diagnostics → Diagnostic settings → Configuration → 441 Diagnostic behavior (3864411)
Selection	■ Off ■ Alarm ■ Warning ■ Logbook entry only
Factory setting	Warning

441 Status signal

Navigation	  Diagnostics → Diagnostic settings → Configuration → 441 Status signal (3864410)
User interface	■ Failure (F) ■ Function check (C) ■ Out of specification (S) ■ Maintenance required (M) ■ Not categorized

500 Diagnostic behavior



Navigation	  Diagnostics → Diagnostic settings → Configuration → 500 Diagnostic behavior (3865001)
Selection	■ Off ■ Alarm ■ Warning ■ Logbook entry only
Factory setting	Warning

500 Status signal

Navigation	  Diagnostics → Diagnostic settings → Configuration → 500 Status signal (3865000)
User interface	■ Failure (F) ■ Function check (C) ■ Out of specification (S) ■ Maintenance required (M) ■ Not categorized

501 Diagnostic behavior



Navigation	  Diagnostics → Diagnostic settings → Configuration → 501 Diagnostic behavior (3865011)
Selection	■ Off ■ Alarm ■ Warning ■ Logbook entry only
Factory setting	Warning

501 Status signal

Navigation   Diagnostics → Diagnostic settings → Configuration → 501 Status signal (3865010)

User interface

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

"Sensor 1 to 2" submenu

Navigation   Diagnostics → Diagnostic settings → Sensor 1 to 2

"Echo lost" submenu

Navigation   Diagnostics → Diagnostic settings → Sensor 1 to 2 → Echo lost

Failure behavior



Navigation   Diagnostics → Diagnostic settings → Sensor 1 to 2 → Echo lost → Failure behavior (2830011)

Description Defines the output behavior in case of a lost echo.

Selection

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

Factory setting Last valid value

Diagnostics echo lost



Navigation   Diagnostics → Diagnostic settings → Sensor 1 to 2 → Echo lost → Diagnostics echo lost (2830012)

Description Select diagnostic message in case of a lost echo.

Selection

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

Factory setting Out of specification (S)

Value echo lost



Navigation   Diagnostics → Diagnostic settings → Sensor 1 to 2 → Echo lost → Value echo lost (2830014)

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

User entry Signed floating-point number

Factory setting 0.0 mm

Ramp at echo lost



Navigation   Diagnostics → Diagnostic settings → Sensor 1 to 2 → Echo lost → Ramp at echo lost (2830015)

Description Slope of the ramp in the case of an echo loss. Positive slope: output increases to 100 %. Negative slope: output decreases to 0 %.

User entry Signed floating-point number

Factory setting 0.0 %/min

Delay time echo lost



Navigation   Diagnostics → Diagnostic settings → Sensor 1 to 2 → Echo lost → Delay time echo lost (2830013)

Description Enter the delay time in case of echo loss. After this time the device reacts as defined in "Failure behavior".

User entry 0.0 to 99 999.9 s

Factory setting 900.0 s

"In safety distance" submenu

Navigation  Diagnostics → Diagnostic settings → Sensor 1 to 2 → In safety distance

942 Diagnostic behavior

Navigation  Diagnostics → Diagnostic settings → Sensor 1 to 2 → In safety distance → 942 Diagnostic behavior (2830016)

Selection

- Off
- Alarm
- Warning
- Self holding

Factory setting Warning

942 Event category

Navigation  Diagnostics → Diagnostic settings → Sensor 1 to 2 → In safety distance → 942 Event category (2830017)

Selection

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

Factory setting Out of specification (S)

Safety distance

Navigation  Diagnostics → Diagnostic settings → Sensor 1 to 2 → In safety distance → Safety distance (2830018)

User entry -200 000.0 to 125 000.0 mm

Factory setting 0.0 mm

Acknowledge alarm

Navigation	  Diagnostics → Diagnostic settings → Sensor 1 to 2 → In safety distance → Acknowledge alarm (2830019)
Selection	No Yes
Factory setting	No

3.2.7 "HART master" submenu

Navigation   Diagnostics → HART master

"Channel 1 to 2" submenu

Navigation   Diagnostics → HART master → Channel 1 to 2

Number of queries

Navigation	  Diagnostics → HART master → Channel 1 to 2 → Number of queries (3720007–1 to 2)
User interface	Positive integer

Number of retries

Navigation	  Diagnostics → HART master → Channel 1 to 2 → Number of retries (3720008–1 to 2)
User interface	Positive integer

Number of errors

Navigation	  Diagnostics → HART master → Channel 1 to 2 → Number of errors (3720009–1 to 2)
User interface	Positive integer

Rx Signal

Navigation  Diagnostics → HART master → Channel 1 to 2 → Rx Signal (3720011–1 to 2)

User interface Signed floating-point number

Tx Signal

Navigation  Diagnostics → HART master → Channel 1 to 2 → Tx Signal (3720010–1 to 2)

User interface Signed floating-point number

Noise

Navigation  Diagnostics → HART master → Channel 1 to 2 → Noise (3720013–1 to 2)

User interface

- Low
- Medium
- High

Communication resistance

Navigation  Diagnostics → HART master → Channel 1 to 2 → Communication resistance (3720012–1 to 2)

User interface 0 to 65 535 Ohm

3.3 "Application" menu

Navigation  Application

3.3.1 "Measured values" submenu

Navigation  Application → Measured values

Temperature

Navigation  Application → Measured values → Temperature (350070)

Description Displays the currently measured device temperature.

User interface -150.0 to 200.0 °C

"Level" submenu

Navigation  Application → Measured values → Level

Level 1 to 2 linearized

Navigation  Application → Measured values → Level → Level 1 to 2 linearized (3520128-1 to 2)

Description Shows the linearized level of the corresponding sensor.

User interface Signed floating-point number

Level sensor 1 to 2

Navigation  Application → Measured values → Level → Level sensor 1 to 2 (2960130-1 to 2)

Description Displays the currently measured level of the connected sensor.

User interface Signed floating-point number

"Pump control" submenu

Navigation  Application → Measured values → Pump control

Pump 1 to 8

Navigation	 Application → Measured values → Pump control → Pump 1 to 8 (3490128-1 to 8)
Description	Displays the current switching status of the pump.
User interface	■ Off ■ On

Flush control channel 1 to 2

Navigation	 Application → Measured values → Pump control → Flush control channel 1 to 2 (3390132-1 to 2)
Description	Displays the current switching status of the flush control in this channel.
User interface	■ Off ■ On

Storm function channel 1 to 2

Navigation	 Application → Measured values → Pump control → Storm function channel 1 to 2 (3390144-1 to 2)
Description	Displays the current switching status of the storm function in this channel.
User interface	■ Off ■ On

"Pump operating data" submenu

Navigation  Application → Measured values → Pump operating data

"Pump 1 to 8" submenu

Navigation  Application → Measured values → Pump operating data
→ Pump 1 to 8

Operating hours

Navigation	 Application → Measured values → Pump operating data → Pump 1 to 8 → Operating hours (3490060–1 to 8)
Description	Displays the operating hours of the pump since the last device reset.
User interface	Positive integer

Total operating hours

Navigation	 Application → Measured values → Pump operating data → Pump 1 to 8 → Total operating hours (3490061–1 to 8)
Description	Displays the operating hours of the pump since the device was delivered.
User interface	Positive integer

Starts

Navigation	 Application → Measured values → Pump operating data → Pump 1 to 8 → Starts (3490062–1 to 8)
Description	Displays the number of pump starts since the last device reset.
User interface	Positive integer

Starts per hour

Navigation	 Application → Measured values → Pump operating data → Pump 1 to 8 → Starts per hour (3490063–1 to 8)
Description	Displays the average number of pump starts per operating hour.

User interface Positive floating-point number

Run-on starts

Navigation  Application → Measured values → Pump operating data → Pump 1 to 8 → Run-on starts (3490064–1 to 8)

Description Displays the number of run-on starts since the last device reset.

User interface Positive integer

Last run time

Navigation  Application → Measured values → Pump operating data → Pump 1 to 8 → Last run time (3490065–1 to 8)

Description Displays the operating time of the pump when it was last switched on.

User interface Positive integer

"Flow" submenu

Navigation  Application → Measured values → Flow

Flow 1 to 2

Navigation  Application → Measured values → Flow → Flow 1 to 2 (3880128–1 to 2)

Description Displays the current volume flow.

User interface Signed floating-point number

"Backwater detection" submenu

Navigation  Application → Measured values → Backwater detection

Ratio downstream / upstream

Navigation	 Application → Measured values → Backwater detection → Ratio downstream / upstream (3930129)
Description	Displays the calculated ration between upstream level and downstream level.
User interface	Signed floating-point number

Backwater detected

Navigation	 Application → Measured values → Backwater detection → Backwater detected (3930128)
User interface	■ No ■ Yes

Level value for flow calculation

Navigation	 Application → Measured values → Backwater detection → Level value for flow calculation (3880130)
Description	Displays the level value used for the flow calculation.
User interface	Signed floating-point number

Level sensor 2

Navigation	 Application → Measured values → Backwater detection → Level sensor 2 (2960130-2)
Description	Displays the currently measured level of the connected sensor.
User interface	Signed floating-point number

"Calculations" submenu

Navigation   Application → Measured values → Calculations

Level 1 + Level 2

Navigation   Application → Measured values → Calculations → Level 1 + Level 2 (3920128)

User interface Signed floating-point number

"Totalizer" submenu

Navigation   Application → Measured values → Totalizer

"Flow 1 ... 2" submenu

Navigation   Application → Measured values → Totalizer → Flow 1 to 2

Totalizer

Navigation   Application → Measured values → Totalizer → Flow 1 to 2 → Totalizer (3880135–1 to 2)

User interface Signed floating-point number

Totalizer overflow

Navigation   Application → Measured values → Totalizer → Flow 1 to 2 → Totalizer overflow (3880136–1 to 2)

User interface Signed floating-point number

"Flow 1 + Flow 2" submenu

Navigation  Application → Measured values → Totalizer → Flow 1 + Flow 2

Totalizer

Navigation  Application → Measured values → Totalizer → Flow 1 + Flow 2 → Totalizer (3920130)

User interface Signed floating-point number

Totalizer overflow

Navigation  Application → Measured values → Totalizer → Flow 1 + Flow 2 → Totalizer overflow (3920131)

User interface Signed floating-point number

"Average flow" submenu

Navigation  Application → Measured values → Totalizer → Average flow

Totalizer

Navigation  Application → Measured values → Totalizer → Average flow → Totalizer (3920130)

User interface Signed floating-point number

Totalizer overflow

Navigation  Application → Measured values → Totalizer → Average flow → Totalizer overflow (3920131)

User interface Signed floating-point number

"Flow 1 - Flow 2" submenu

Navigation   Application → Measured values → Totalizer → Flow 1 - Flow 2

Totalizer

Navigation   Application → Measured values → Totalizer → Flow 1 - Flow 2 → Totalizer (3920130)

User interface Signed floating-point number

Totalizer overflow

Navigation   Application → Measured values → Totalizer → Flow 1 - Flow 2 → Totalizer overflow (3920131)

User interface Signed floating-point number

"Flow 2 - Flow 1" submenu

Navigation   Application → Measured values → Totalizer → Flow 2 - Flow 1

Totalizer

Navigation   Application → Measured values → Totalizer → Flow 2 - Flow 1 → Totalizer (3920130)

User interface Signed floating-point number

Totalizer overflow

Navigation   Application → Measured values → Totalizer → Flow 2 - Flow 1 → Totalizer overflow (3920131)

User interface Signed floating-point number

"Rake control" submenu

Navigation  Application → Measured values → Rake control

Difference upstream - downstream

Navigation	 Application → Measured values → Rake control → Difference upstream - downstream (3460130)
Description	Displays the difference between upstream level and downstream level.
User interface	Signed floating-point number

Ratio downstream / upstream

Navigation	 Application → Measured values → Rake control → Ratio downstream / upstream (3460131)
Description	Displays the calculated ration between upstream level and downstream level.
User interface	Signed floating-point number

Level upstream

Navigation	 Application → Measured values → Rake control → Level upstream (3460132)
Description	Displays the currently measured level upstream.
User interface	Signed floating-point number

Level downstream

Navigation	 Application → Measured values → Rake control → Level downstream (3460134)
Description	Displays the currently measured level downstream.
User interface	Signed floating-point number

Rake control status

Navigation	 Application → Measured values → Rake control → Rake control status (3460128)
Description	Displays the current status of the rake control.
User interface	■ Off ■ On

"Outputs" submenu

Navigation  Application → Measured values → Outputs

"Output current" submenu

Navigation  Application → Measured values → Outputs → Output current

Output current 1 to 2

Navigation	 Application → Measured values → Outputs → Output current → Output current 1 to 2 (2570007–1 to 2)
Description	Displays the value currently calculated for the current output.
User interface	Signed floating-point number

"Relay" submenu

Navigation  Application → Measured values → Outputs → Relay

Relay output 1 to 5

Navigation	 Application → Measured values → Outputs → Relay → Relay output 1 to 5 (2860137–1 to 5)
Description	Displays the current status of the connected and activated relay output.

User interface

- Off
- On

"Open collector" submenu

Navigation  Application → Measured values → Outputs → Open collector

Open collector output

Navigation  Application → Measured values → Outputs → Open collector → Open collector output (3320137-1 to 3)

Description Displays the current status of the connected and activated open collector output.

User interface

- Off
- On

"Sensor 1 to 2" submenu for FMR20B or FMU20B

Navigation  Application → Measured values → Sensor 1 to 2

Level sensor

Navigation  Application → Measured values → Sensor 1 to 2 → Level sensor 1 to 2 (2960130-1 to 2)

Description Displays the currently measured level of the connected sensor.

User interface Signed floating-point number

Distance

Navigation  Application → Measured values → Sensor 1 to 2 → Distance (2830128-1 to 2)

Description Distance from lower edge of device flange to product surface.

User interface Signed floating-point number

Relative echo amplitude

Navigation	 Application → Measured values → Sensor 1 to 2 → Relative echo amplitude (2830129-1 to 2)
Description	Shows the relative amplitude (i.e. the distance to the evaluation curve) of the evaluated level signal.

Sensor temperature

Navigation	 Application → Measured values → Sensor 1 to 2 → Sensor temperature (2960127-1 to 2)
Description	Displays the current temperature of the sensor electronics.
User interface	-200 000.0 to 200 000.0 °C

"Sensor 1 to 2" submenu for FMX21

Navigation  Application → Measured values → Sensor 1 to 2

Level sensor 1 to 2

Navigation	 Application → Measured values → Sensor 1 to 2 → Level sensor 1 to 2 (2960130-1 to 2)
Description	Displays the currently measured level of the connected sensor.
User interface	Signed floating-point number

Pressure

Navigation	 Application → Measured values → Sensor 1 to 2 → Pressure (3300128-1 to 2)
Description	Displays the measured pressure.
User interface	Signed floating-point number

Corrected Pressure

Navigation	 Application → Measured values → Sensor 1 to 2 → Corrected Pressure (3300129-1 to 2)
Description	Displays the pressure after the position zero adjustment. This parameter will be synchronized with the connected sensor.
User interface	Signed floating-point number

Sensor temperature

Navigation	 Application → Measured values → Sensor 1 to 2 → Sensor temperature (2960127-1 to 2)
Description	Displays the current temperature of the sensor electronics.
User interface	-200 000.0 to 200 000.0 °C

"Sensor 1 to 2" submenu for Universal HART

Navigation  Application → Measured values → Sensor 1 to 2

Level sensor #

Navigation	 Application → Measured values → Sensor 1 to 2 → Level sensor 1 to 2 (2960130-1 to 2)
Description	Displays the currently measured level of the connected sensor.
User interface	Signed floating-point number

PV Value

Navigation	 Application → Measured values → Sensor 1 to 2 → PV Value (3370140-1 to 2)
Description	Displays the first HART variable (PV).
User interface	Signed floating-point number

SV Value

Navigation	 Application → Measured values → Sensor 1 to 2 → SV Value (3370141–1 to 2)
Description	Displays the second HART variable (SV).
User interface	Signed floating-point number

TV Value

Navigation	 Application → Measured values → Sensor 1 to 2 → TV Value (3370142–1 to 2)
Description	Displays the third HART variable (TV).
User interface	Signed floating-point number

QV Value

Navigation	 Application → Measured values → Sensor 1 to 2 → QV Value (3370143–1 to 2)
Description	Displays the fourth HART variable (QV).
User interface	Signed floating-point number

"Current input 1 to 2" submenu

Navigation  Application → Measured values → Current input 1 to 2

Level sensor 1 to 2

Navigation	 Application → Measured values → Current input 1 to 2 → Level sensor 1 to 2 (2960130–1 to 2)
Description	Displays the currently measured level of the connected sensor.
User interface	Signed floating-point number

Measured current 1 to 2

Navigation	 Application → Measured values → Current input 1 to 2 → Measured current 1 to 2 (1520015–1 to 2)
Description	Displays the currently measured value of the current input.
User interface	Signed floating-point number

"Digital inputs" submenu

Navigation  Application → Measured values → Digital inputs

External digital input 1 to 4

Navigation	 Application → Measured values → Digital inputs → External digital input 1 to 4 (3090129–1 to 4)
Description	Displays the current status of the connected external digital input.
User interface	■ Off ■ On

3.3.2 "Operating mode" submenu

Navigation  Application → Operating mode

Configuration mode

Navigation	 Application → Operating mode → Configuration mode (3310032)
Description	Stop normal operating mode for reconfiguration. If configuration mode is activated, the device issues a corresponding diagnostic message.
Selection	■ Off ■ On - hold outputs
Factory setting	Off

Logging interval

Navigation  Application → Operating mode → Logging interval (3310010)

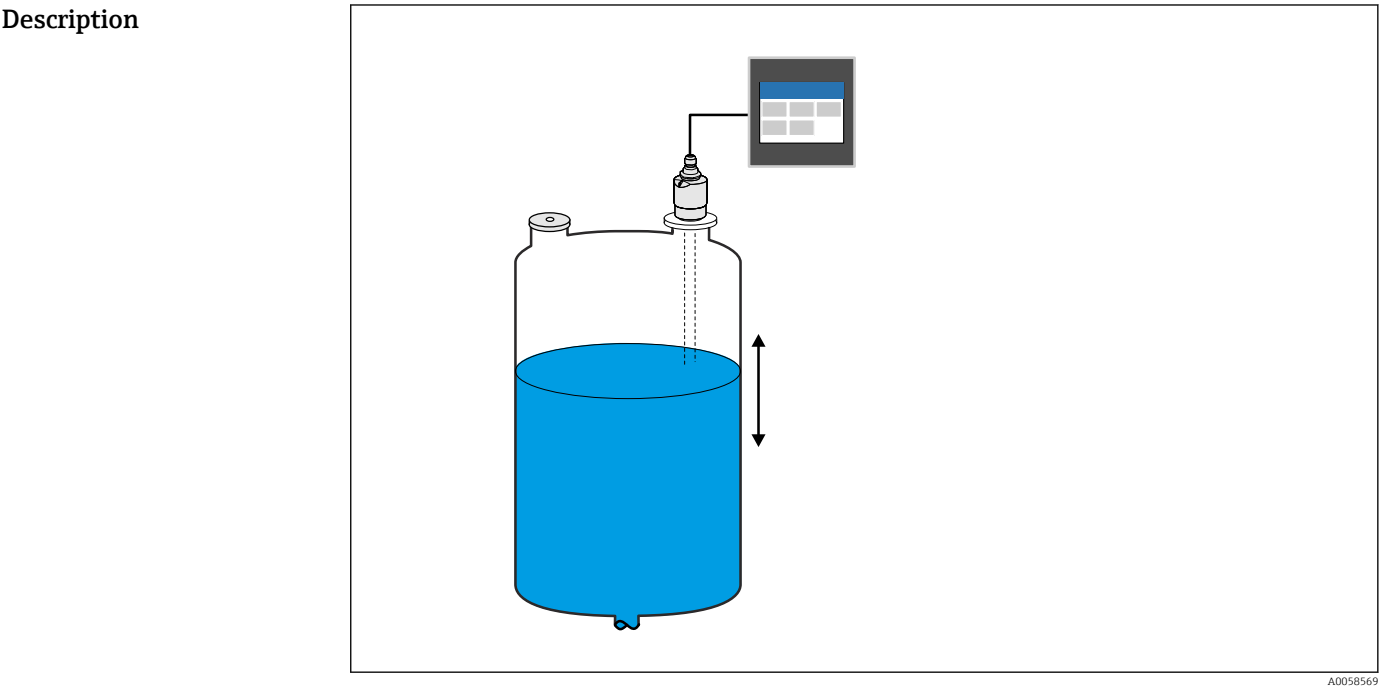
Description Define the time interval for data logging.

- Selection**
- 1 s
 - 2 s
 - 5 s
 - 15 s
 - 30 s
 - 1 min
 - 2 min
 - 5 min
 - 10 min
 - 15 min
 - 30 min

Factory setting 5 s

Level 1 to 2

Navigation  Application → Operating mode → Level 1 to 2 (3520007-1 to 2)



 1 *Level measurement mode*

- Selection**
- Off
 - On

Factory setting Off

Level calculations



- Navigation

Application → Operating mode → Level calculations (3610007)
- Selection

Off

On
- Factory setting

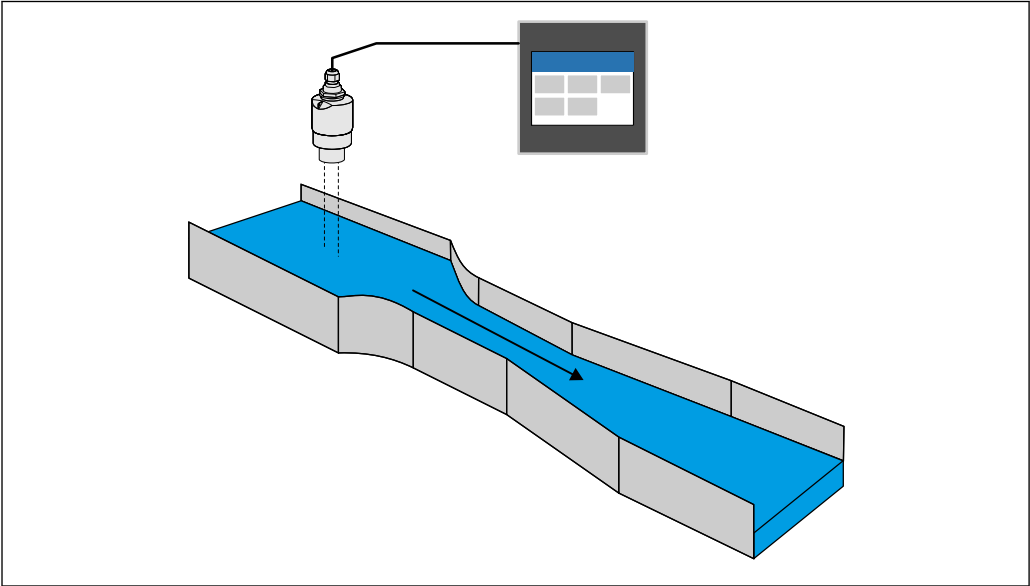
Off

Flow 1 to 2



- Navigation

Application → Operating mode → Flow 1 to 2 (3880007–1 to 2)
- Description



A0058570

2 Flow measurement mode

- Selection

Off

On
- Factory setting

Off

Flow calculations



- Navigation

Application → Operating mode → Flow calculations (3610008)
- Selection

Off

On
- Factory setting

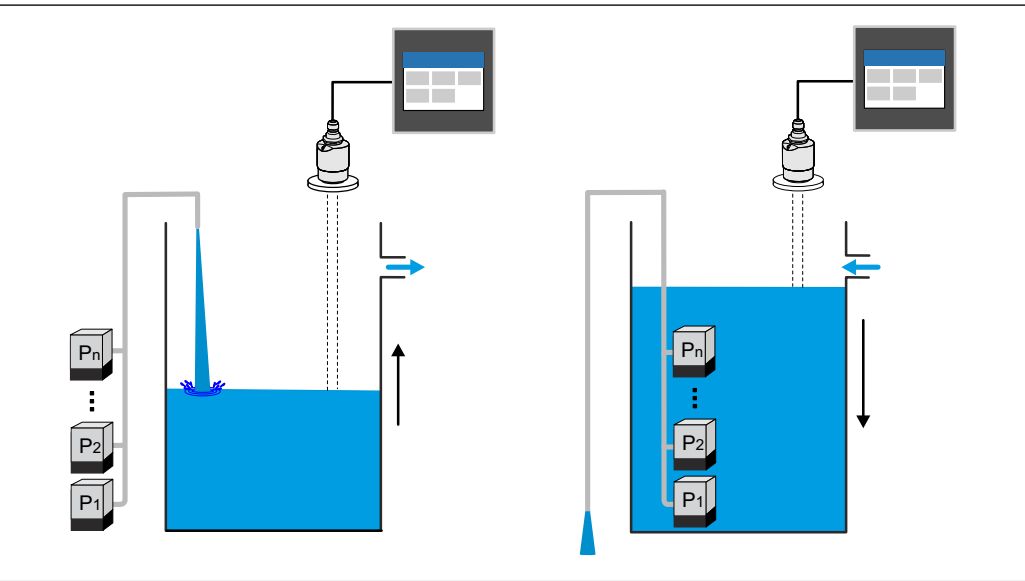
Off

Pump control 1 to 2

Navigation

Application → Operating mode → Pump control 1 to 2 (3390007-1 to 2)

Description



3 Pump control mode

Selection

- Off
- On

Factory setting

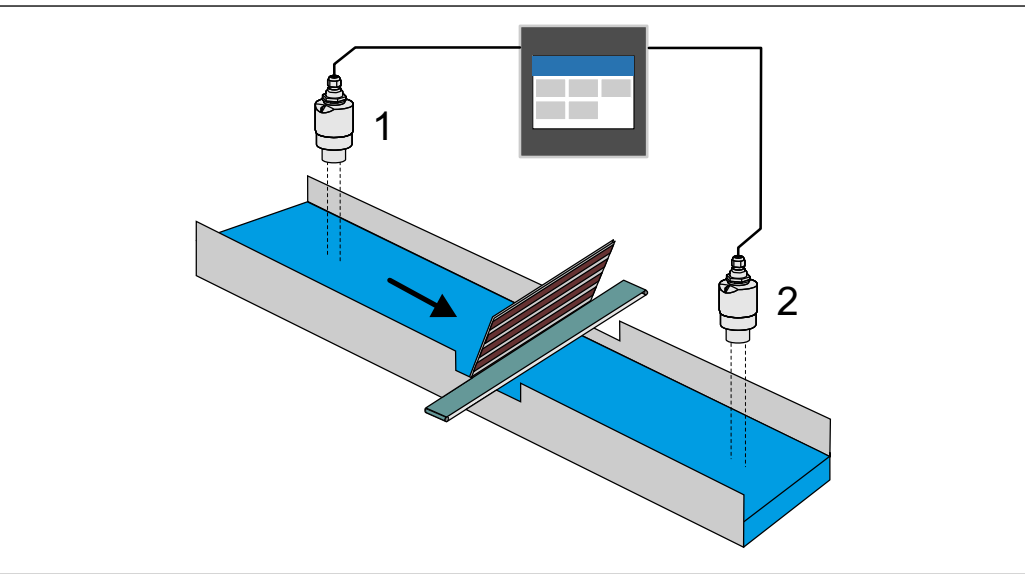
Off

Rake control

Navigation

Application → Operating mode → Rake control (3460022)

Description



4 Rake control mode

- Selection

■ Off

■ On
- Factory setting

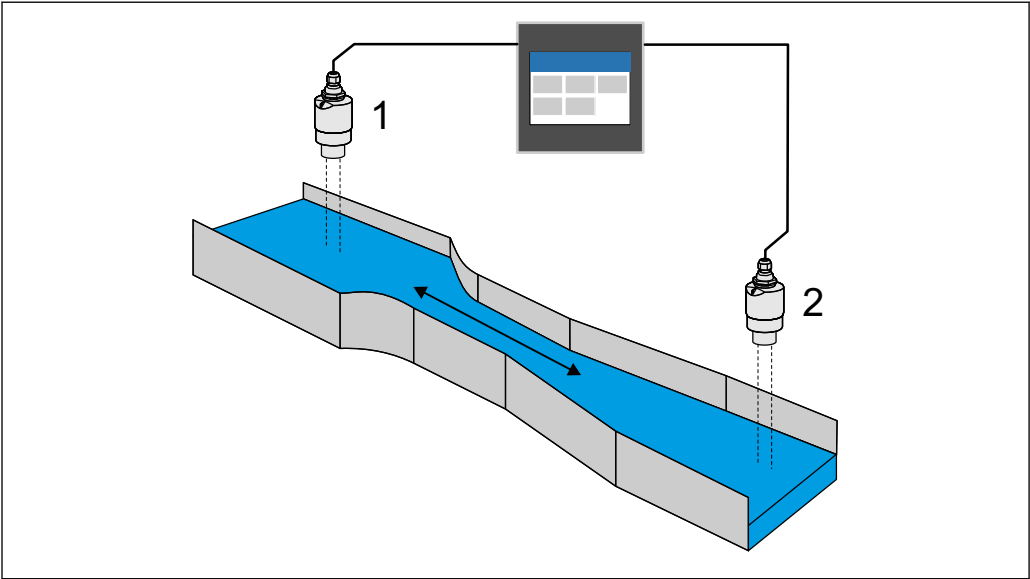
Off

Backwater detection

Navigation

Application → Operating mode → Backwater detection (3930007)

Description



The diagram illustrates the backwater detection setup. It shows a cross-section of a water channel with a central weir. Two ultrasonic sensors, labeled 1 and 2, are positioned on opposite sides of the weir. Sensor 1 is upstream, and sensor 2 is downstream. Both sensors are connected to a central control unit, represented by a screen with a grid icon. Arrows indicate the flow of water from left to right. The water level is shown rising behind the weir, which is the condition being detected.

A0058573

5

 Backwater detection mode

- Selection

■ Off

■ On
- Factory setting

Off

3.3.3 "Measuring units" submenu

Navigation

Application → Measuring units

Length unit

Navigation

Application → Measuring units → Length unit (290009)

Description

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

Selection	■ m
	■ mm
	■ ft
	■ in

Factory setting mm

Decimal places lengths

Navigation   Application → Measuring units → Decimal places lengths (290011)

Description Define the number of decimal places for displayed lengths and geometries to be entered, e.g. for tanks or flumes.

Selection	■ x
	■ x.x
	■ x.xx
	■ x.xxx
	■ x.xxxx

Factory setting x

Temperature unit

Navigation   Application → Measuring units → Temperature unit (290015)

Description Select temperature unit.

Selection	■ °C
	■ °F
	■ K

Factory setting °C

3.3.4 "Sensors" submenu

Navigation  Application → Sensors

"Sensor 1 to 2" submenu

Navigation  Application → Sensors → Sensor 1 to 2

Loop power supply

Navigation	 Application → Sensors → Sensor 1 to 2 → Loop power supply (1520025–1 to 2)
Description	Activate the power supply of the connected sensor.
Selection	■ Not active ■ Active
Factory setting	Not active

Identify sensor 1 to 2

Navigation	 Application → Sensors → Sensor 1 to 2 → Identify sensor 1 to 2
Description	Activate the automatic identification of the connected sensor. Additional information: The automatic identification is executable for HART sensors and sensors from Endress +Hauser.

Sensor type

Navigation	 Application → Sensors → Sensor 1 to 2 → Sensor type (2960008–1 to 2)
Description	Select sensor type.
Selection	■ Off ■ Sensor 4 - 20 mA ■ Micropilot FMR20B/30B ■ Prosonic FMU20B/30B ■ Waterpilot FMX21 (HART) ■ Universal HART sensor
Factory setting	Off

Device tag 	
Navigation	  Application → Sensors → Sensor 1 to 2 → Device tag (2960012-1 to 2)
Description	Enter the name for the measuring point.
User entry	Character string comprising numbers, letters and special characters (32)
Factory setting	????????????????????????????????
Medium type 	
Navigation	  Application → Sensors → Sensor 1 to 2 → Medium type (2830041-1 to 2)
Description	Select whether the measured medium is liquid or solid. This parameter will be synchronized with the connected sensor.
Selection	■ Liquid ■ Solid
Factory setting	Liquid
Application 	
Navigation	  Application → Sensors → Sensor 1 to 2 → Application (2830042-1 to 2)
Description	Select application type. This parameter will be synchronized with the connected sensor.
Selection	■ Standard measurement ■ Stirred vessel ■ Level measurement ■ Workbench test ■ Buffer vessel
Factory setting	Workbench test
Application 	
Navigation	  Application → Sensors → Sensor 1 to 2 → Application (2830043-1 to 2)
Description	Select application type. This parameter will be synchronized with the connected sensor.

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

Factory setting	Workbench test
------------------------	----------------

Pressure engineering unit


Navigation	Application → Sensors → Sensor 1 to 2 → Pressure engineering unit (3300007–1 to 2)
-------------------	--

Description	Select process pressure unit. This parameter will be synchronized with the connected sensor.
--------------------	--

Selection	<i>SI units</i>	<i>Other units</i>
	■ mbar a ■ bar ■ Pa ■ kPa ■ MPa	■ mmH2O ■ mH2O ■ ftH2O ■ inH2O ■ mmHg ■ inHg
	<i>Custom-specific units</i>	
	■ psi ■ kgf/cm²	

Factory setting	mbar a
------------------------	--------

Position zero adjust


Navigation	Application → Sensors → Sensor 1 to 2 → Position zero adjust (3300010–1 to 2)
-------------------	---

Description	Correct the measured value. The value 0.0 is assigned to the applied pressure. This parameter will be synchronized with the connected sensor.
--------------------	---

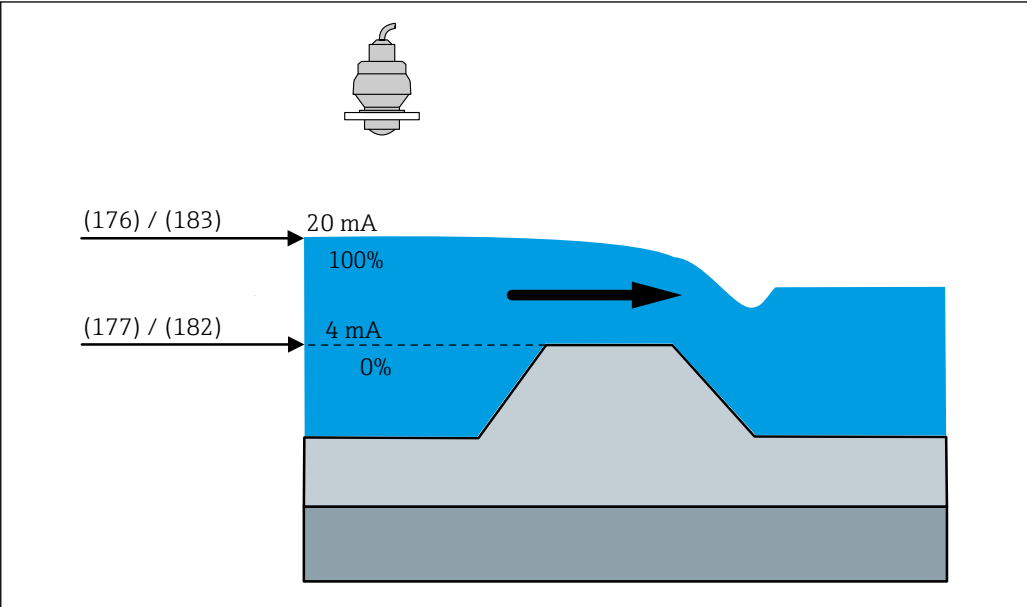
Selection	■ Cancel
	■ Confirm

Factory setting	Cancel
------------------------	--------

Corrected Pressure

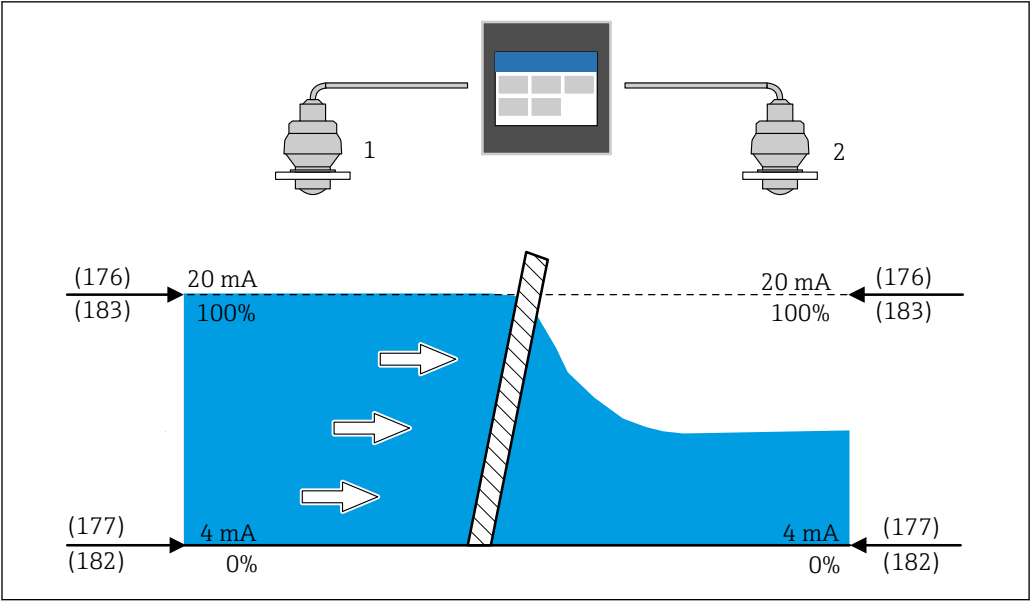
Navigation	 Application → Sensors → Sensor 1 to 2 → Corrected Pressure (3300129-1 to 2)
Description	Displays the pressure after the position zero adjustment. This parameter will be synchronized with the connected sensor.
User interface	Signed floating-point number
Factory setting	0.0 mbar

Current value at empty calibration

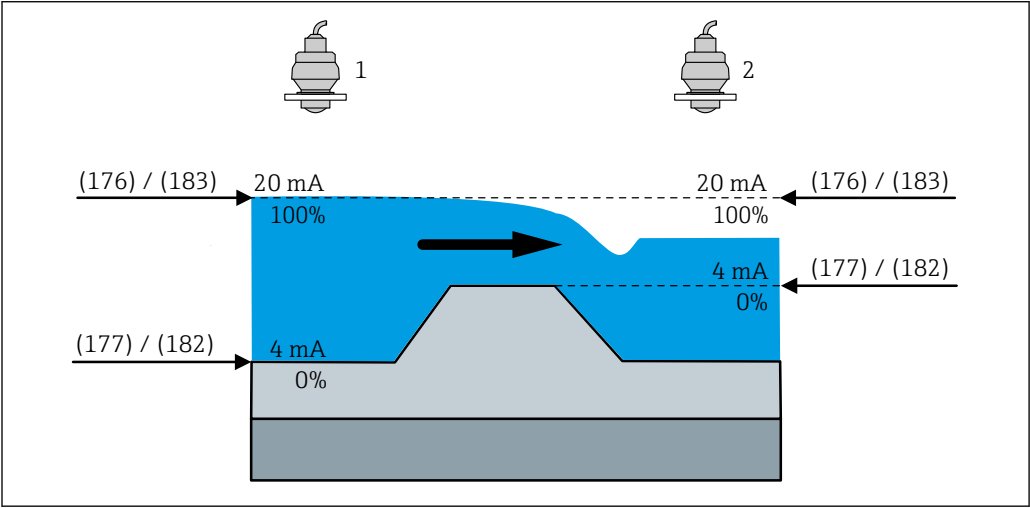
Navigation	 Application → Sensors → Sensor 1 to 2 → Current value at empty calibration (1520026-1 to 2)
Description	Enter the current value at empty calibration.
User entry	4.0 to 20.0 mA
Factory setting	4.0 mA
Additional information	

 6 Current value at empty calibration (182) flow application

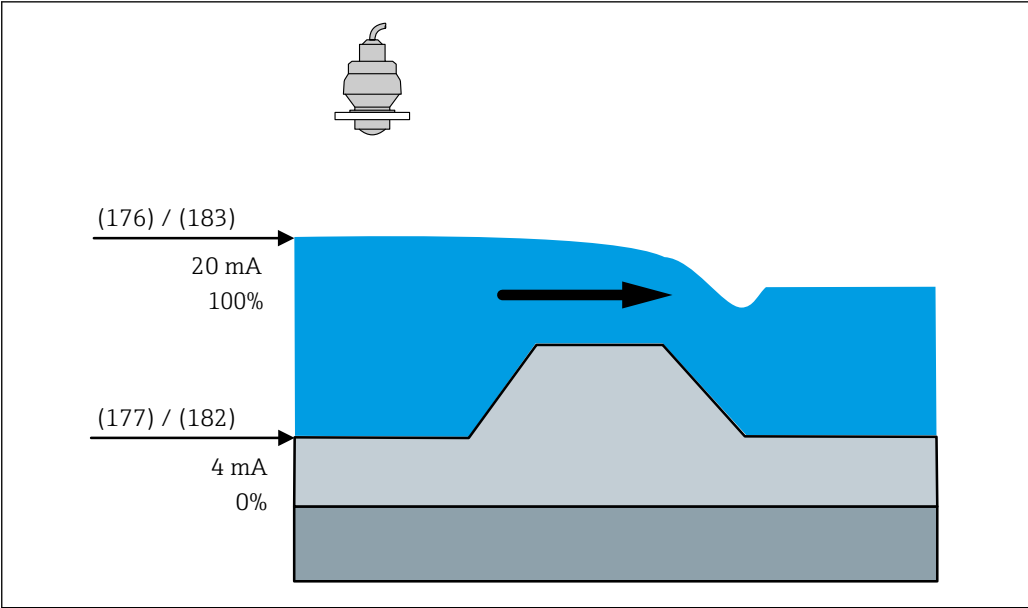
A0058973



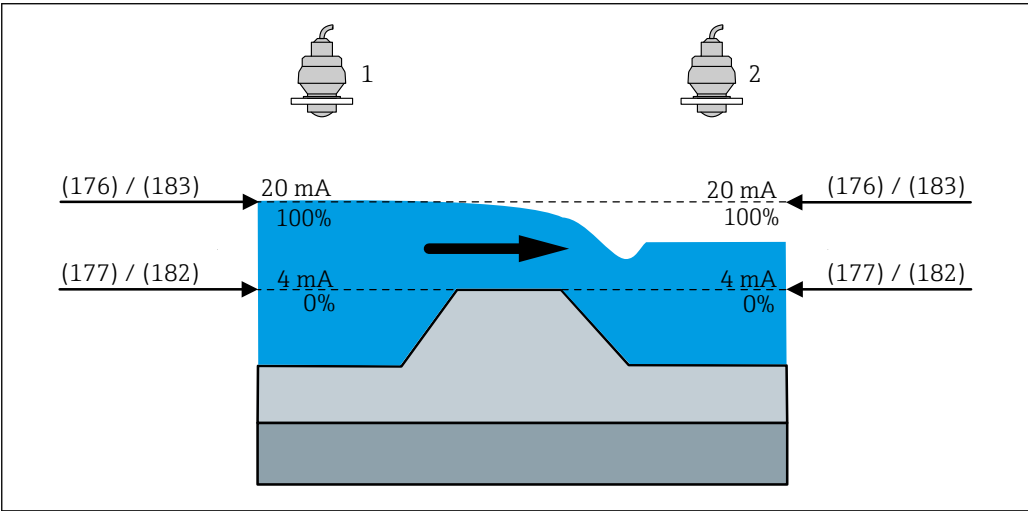
7 Current value at empty calibration (182) rake control



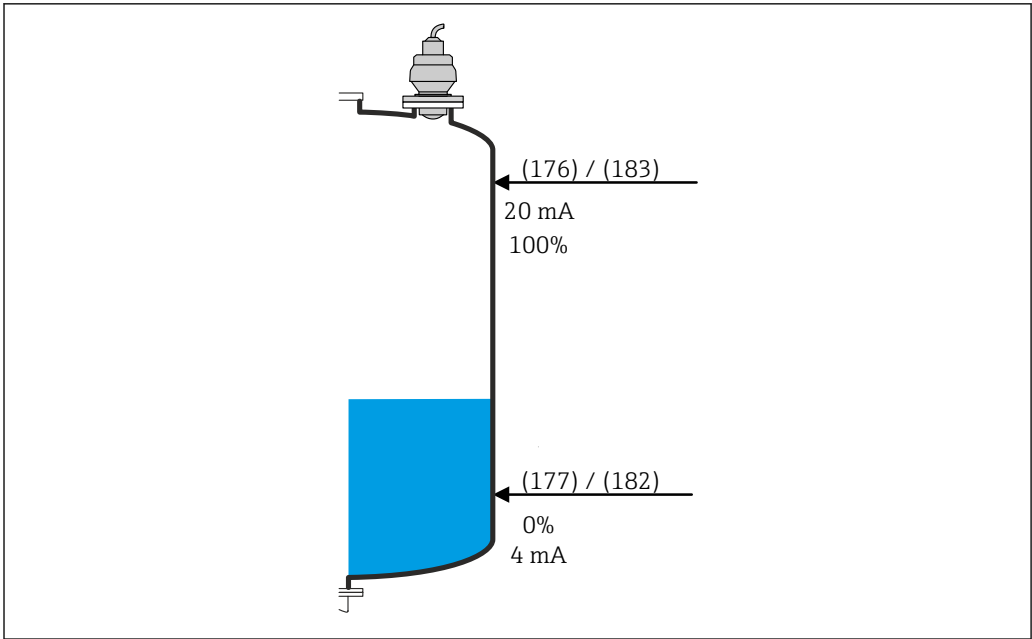
8 Current value at empty calibration (182) backwater detection



9 Current value at empty calibration (182) flow application



10 Current value at empty calibration (182) backwater detection



A0058991

11 Current value at empty calibration (182) level application

HART value (PV) at empty calibration



Navigation

Application → Sensors → Sensor 1 to 2 → HART value (PV) at empty calibration (3370030-1 to 2)

Description

Enter HART value (PV) for empty calibration. The unit is read from the sensor.

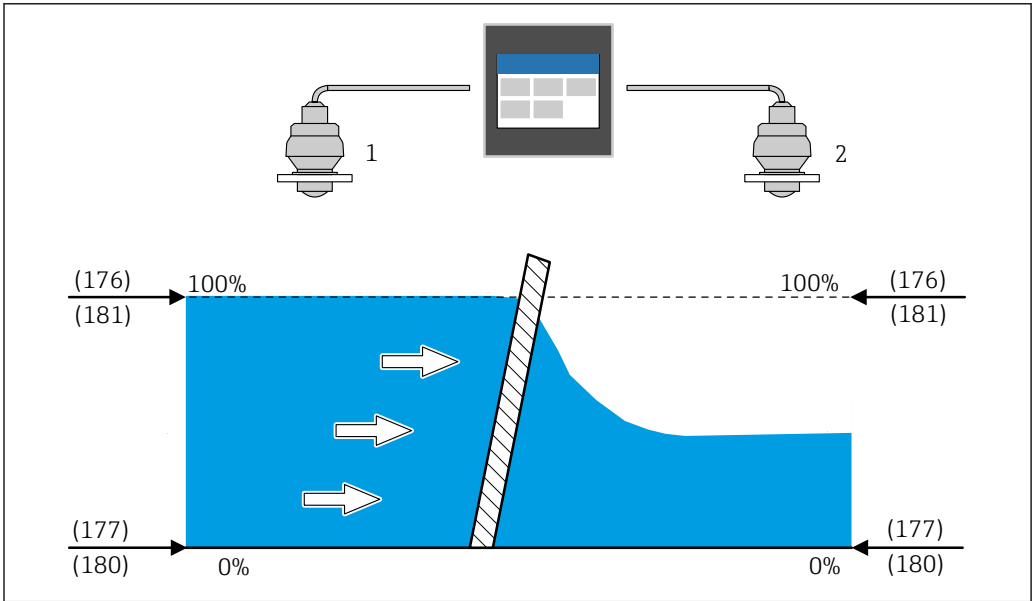
User entry

-200 000.0 to 200 000.0 ??????

Factory setting

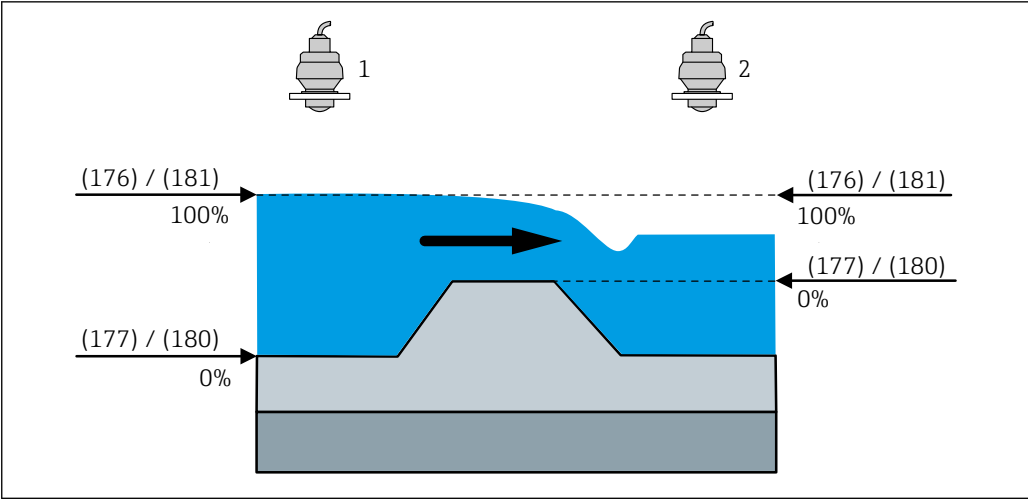
0.0 ??????

Additional information

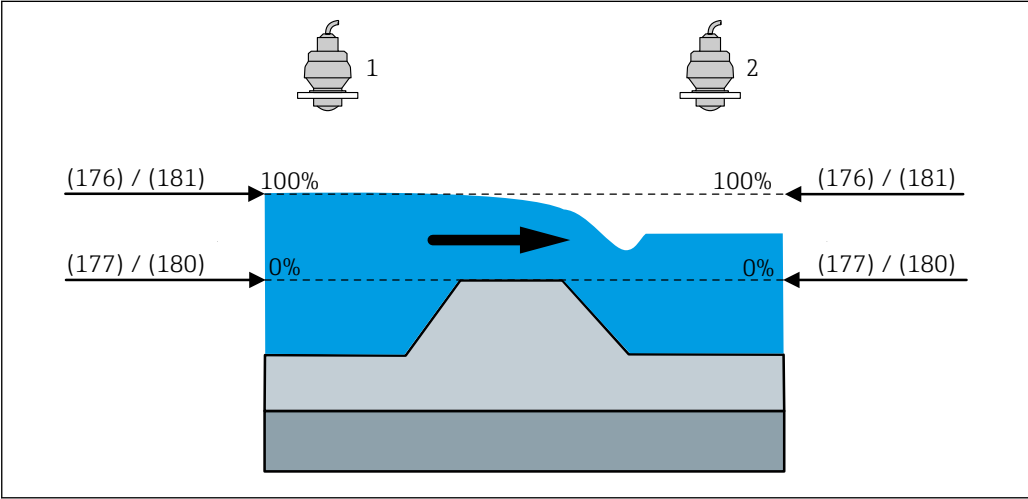


A0058974

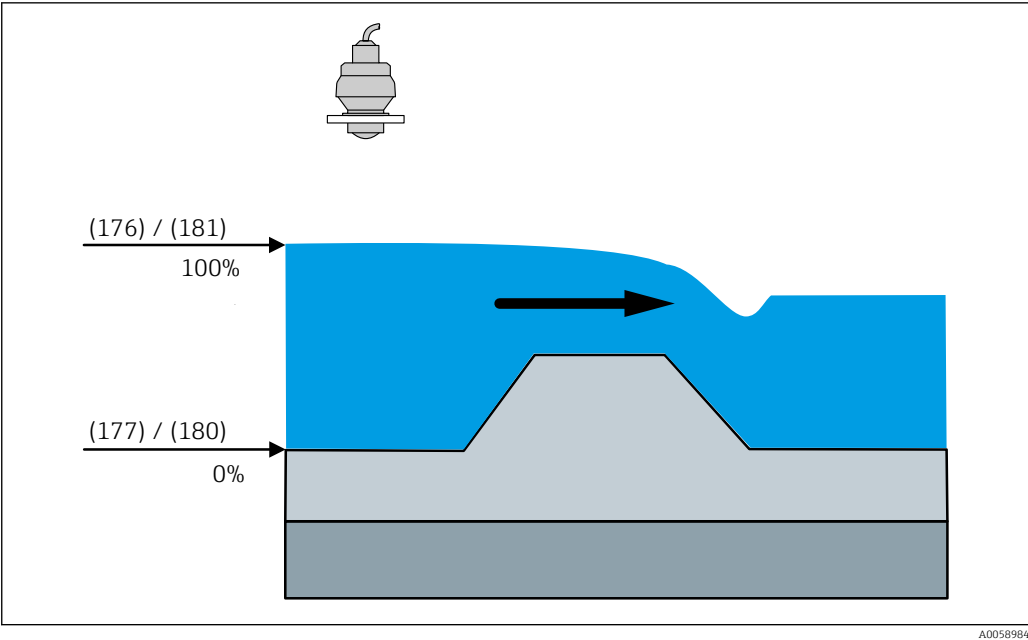
12 HART value (PV) at empty calibration (180) rake control



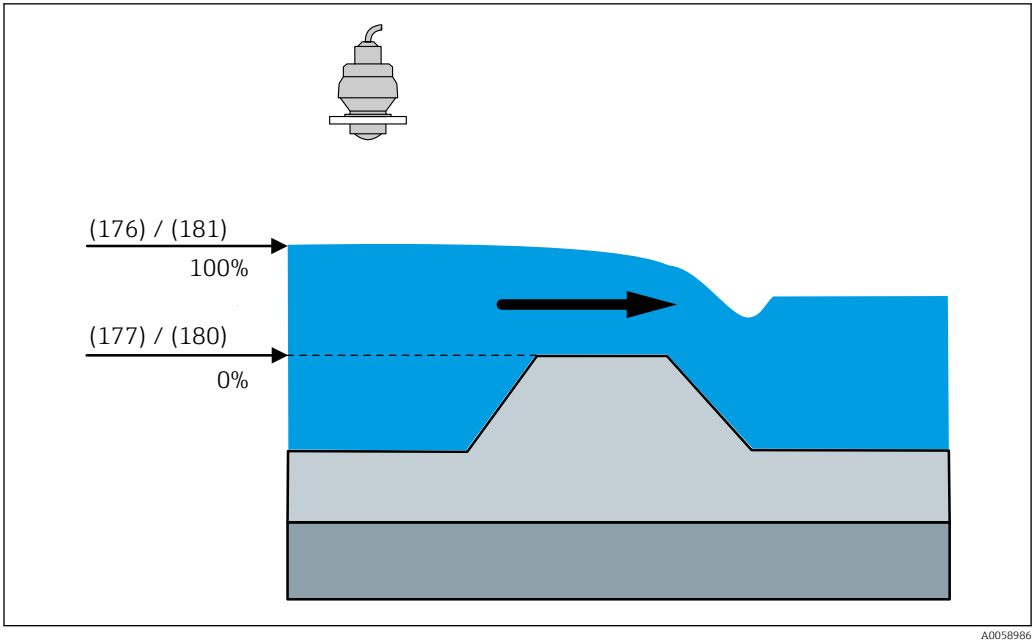
13 HART value (PV) at empty calibration (180) backwater detection



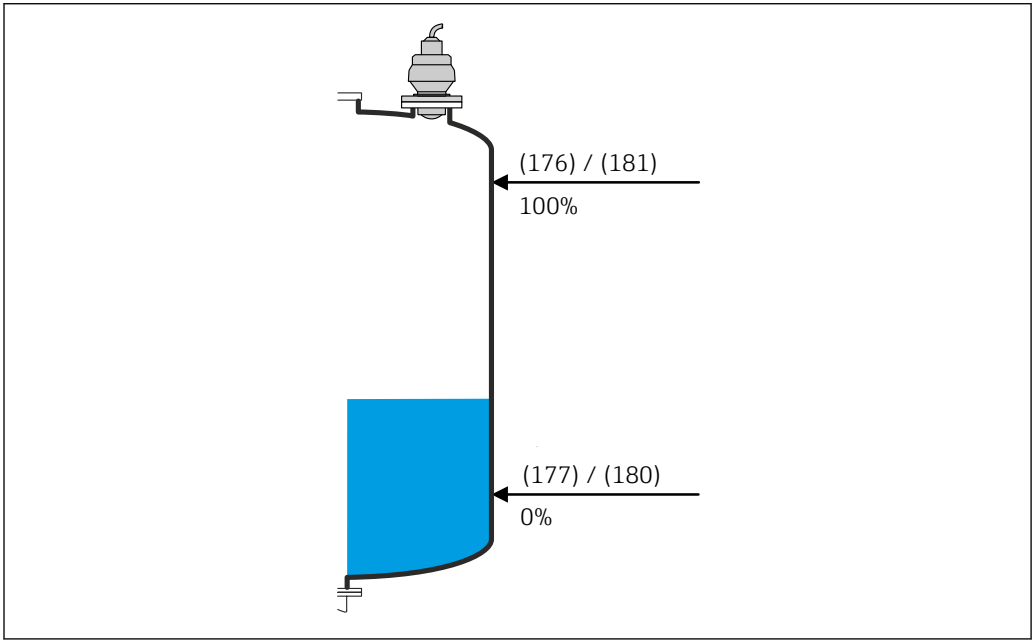
14 HART value (PV) at empty calibration (180) backwater detection



15 HART value (PV) at empty calibration (180) flow application



16 HART value (PV) at empty calibration (180) flow application



17 HART value (PV) at empty calibration (180) level application

Pressure value at empty calibration



Navigation

Application → Sensors → Sensor 1 to 2 → Pressure value at empty calibration (3300008-1 to 2)

Description

Enter the pressure value for the lower calibration point (vessel empty). This parameter will be synchronized with the connected sensor.

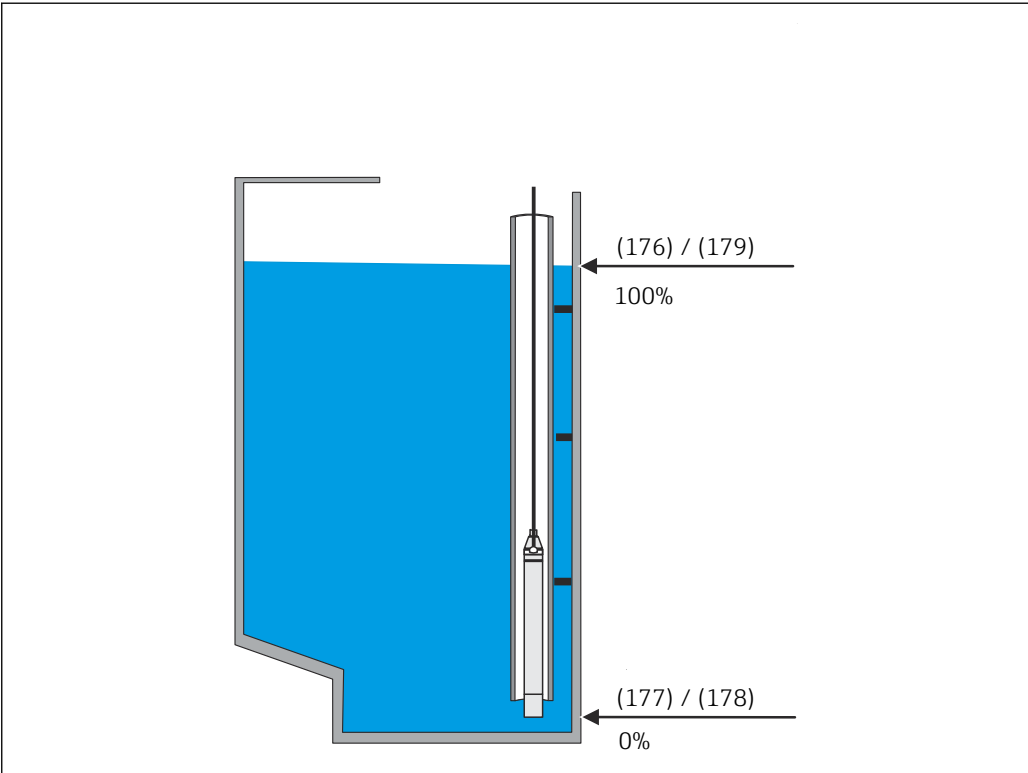
User entry

-100 000.0 to 100 000.0 mbar

Factory setting

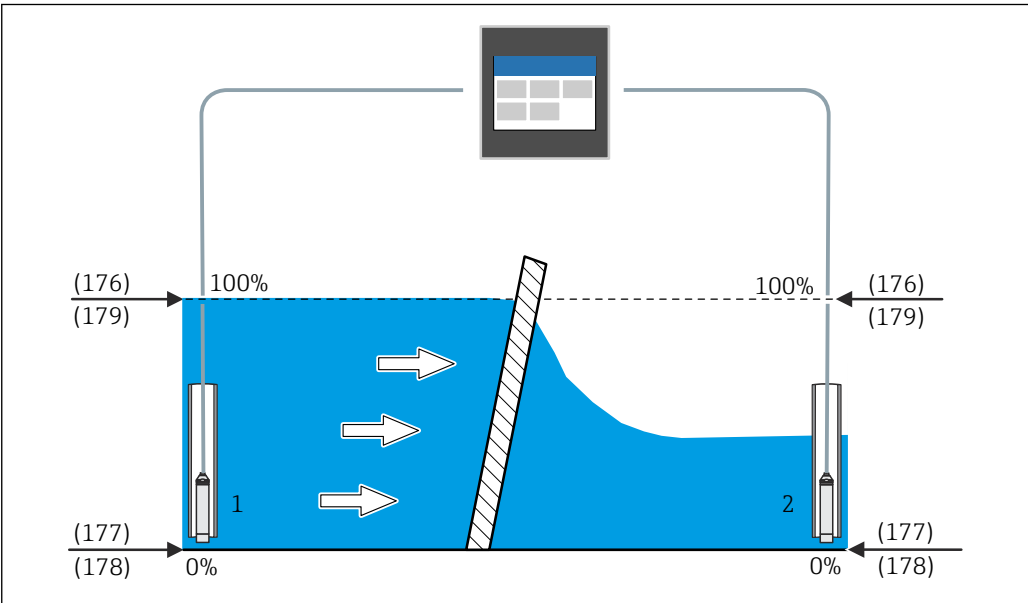
0.0 mbar

Additional information



A0058972

18 Pressure value at empty calibration (178) FMX21 level application



A0058977

19 Pressure value at empty calibration (178) FMX21 rake control

Empty calibration



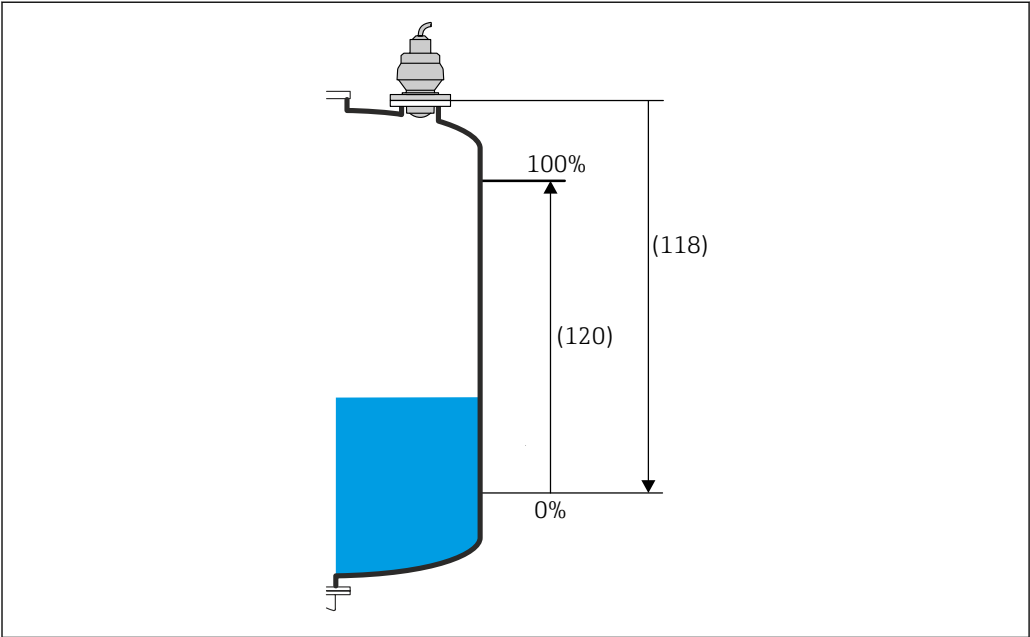
Navigation Application → Sensors → Sensor 1 to 2 → Empty calibration (2830007-1 to 2)

Description Enter distance from the reference point to the minimum level (0). This parameter will be synchronized with the connected sensor.

User entry 0.0 to 125 000.0 mm

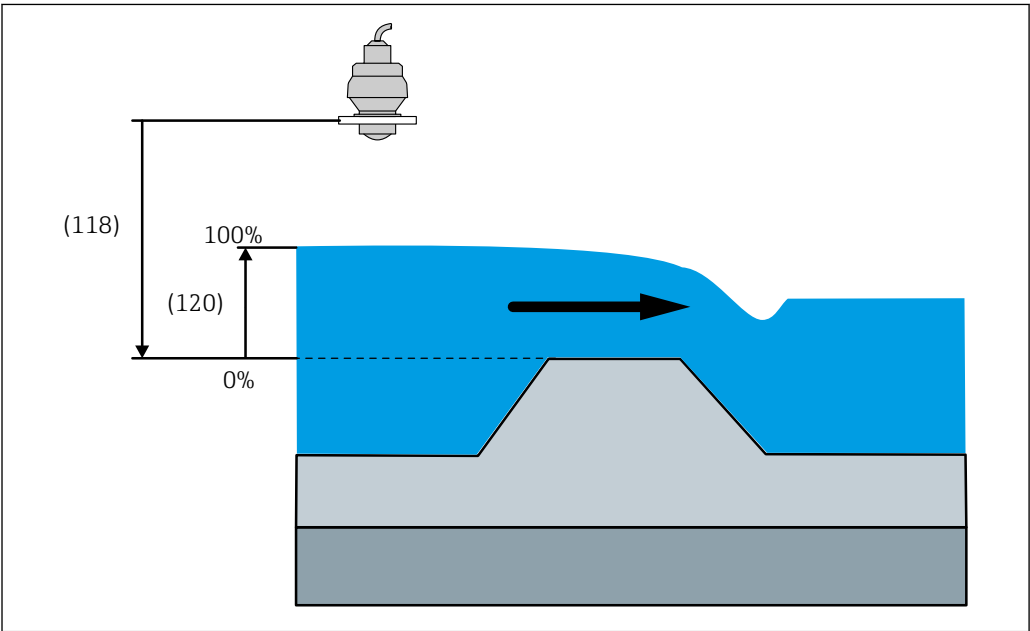
Factory setting 20 000.0 mm

Additional information



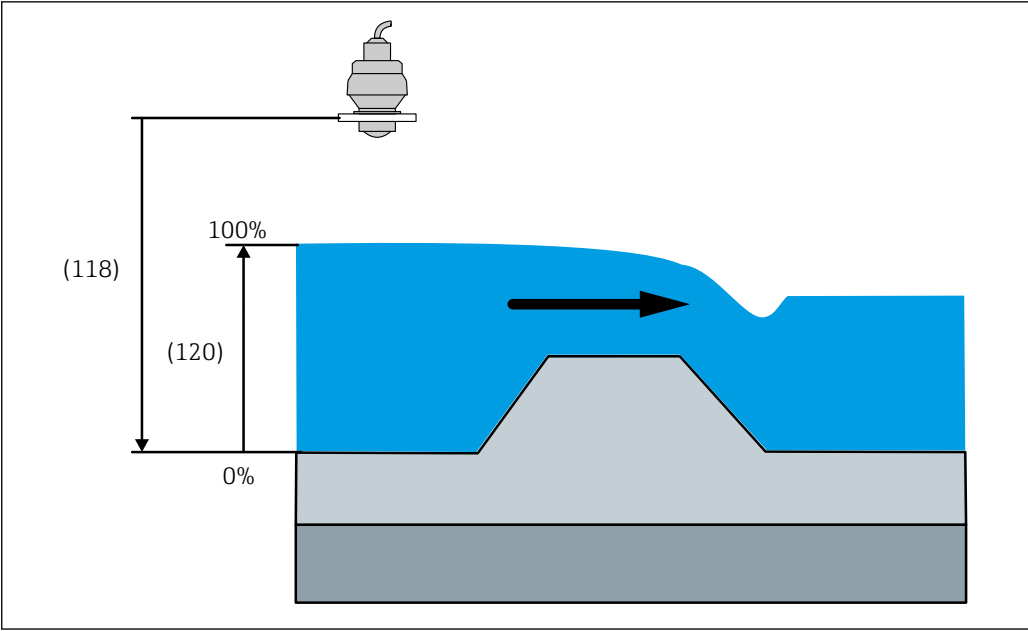
A0058538

20 Empty calibration (118) FMR20B/FMR30B level application

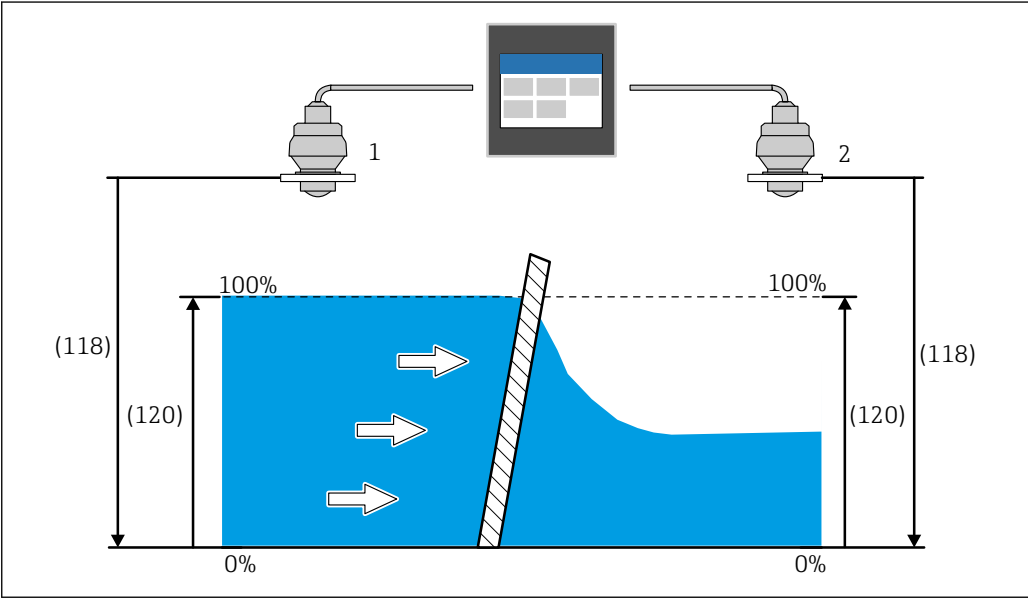


A0058976

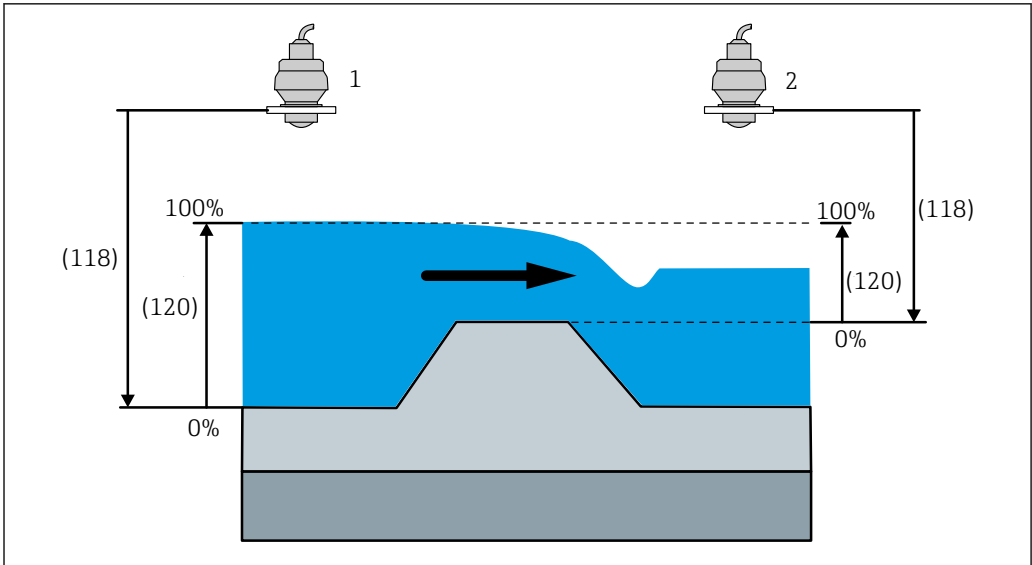
21 Empty calibration (118) FMR20B/FMR30B flow application



22 Empty calibration (118) FMR20B/FMR30B flow application

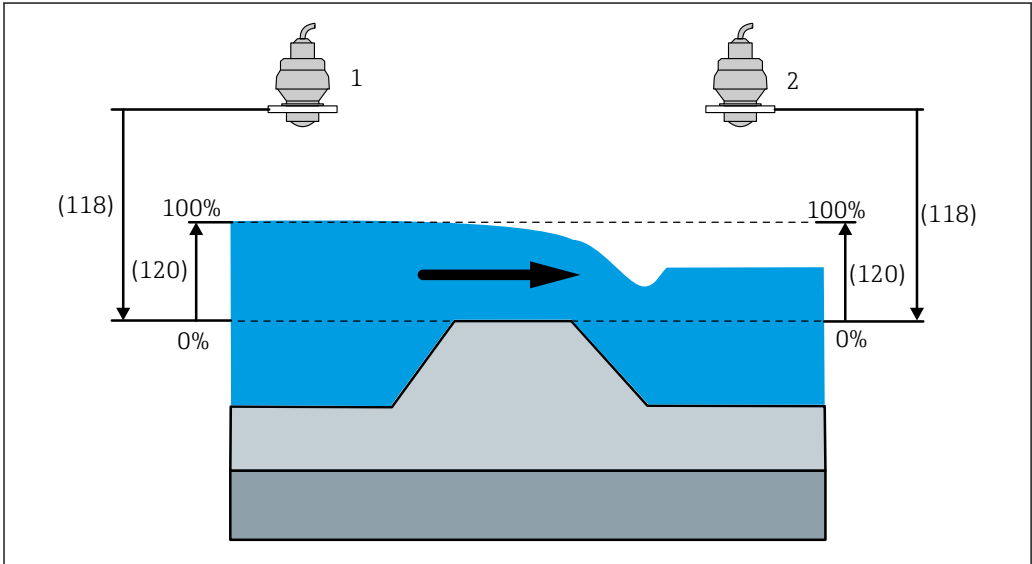


23 Empty calibration (118) FMR20B/FMR30B rake control



A0058981

24 Empty calibration (118) FMR20B/FMR30B backwater detection



A0058992

25 Empty calibration (118) FMR20B/FMR30B backwater detection

Level at empty calibration



Navigation

Application → Sensors → Sensor 1 to 2 → Level at empty calibration (2960010-1 to 2)

Description

Enter the absolute level value at empty calibration.

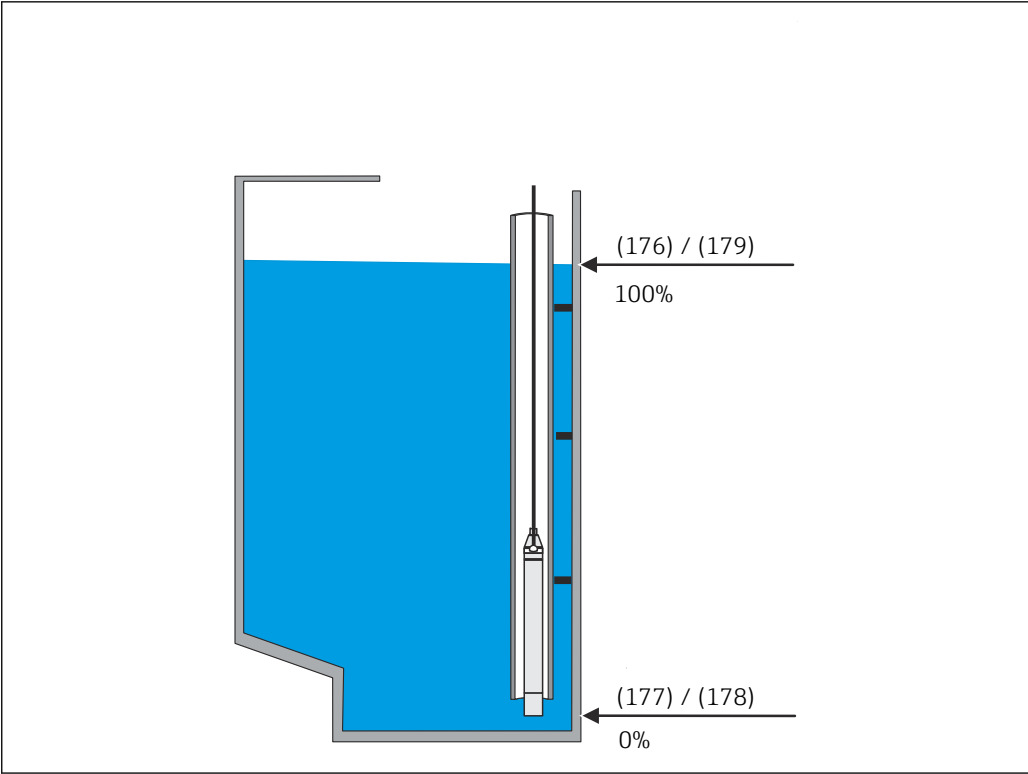
User entry

Positive floating-point number

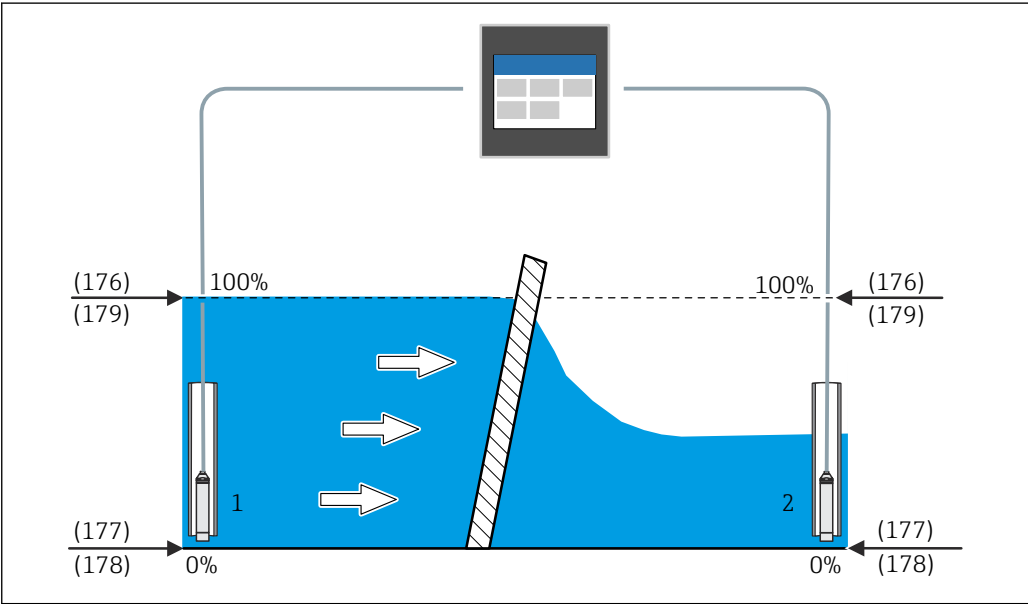
Factory setting

0.0 mm

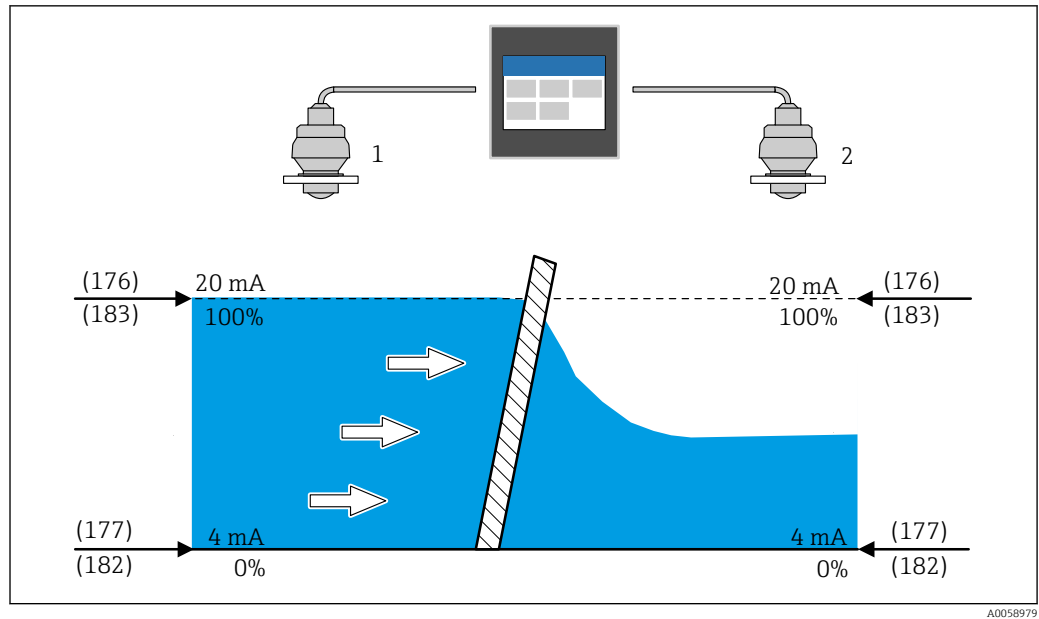
Additional information



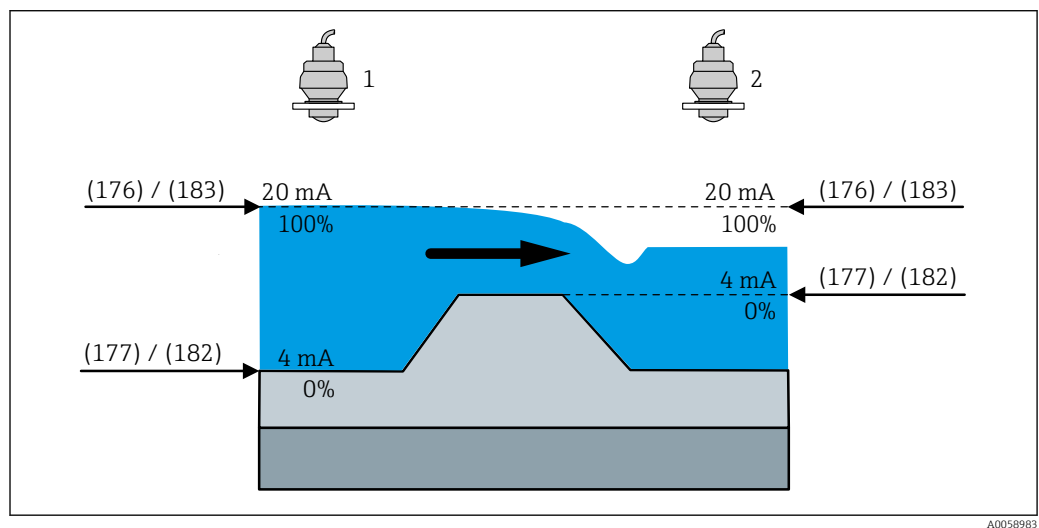
26 Level at empty calibration (177) FMX21 level application



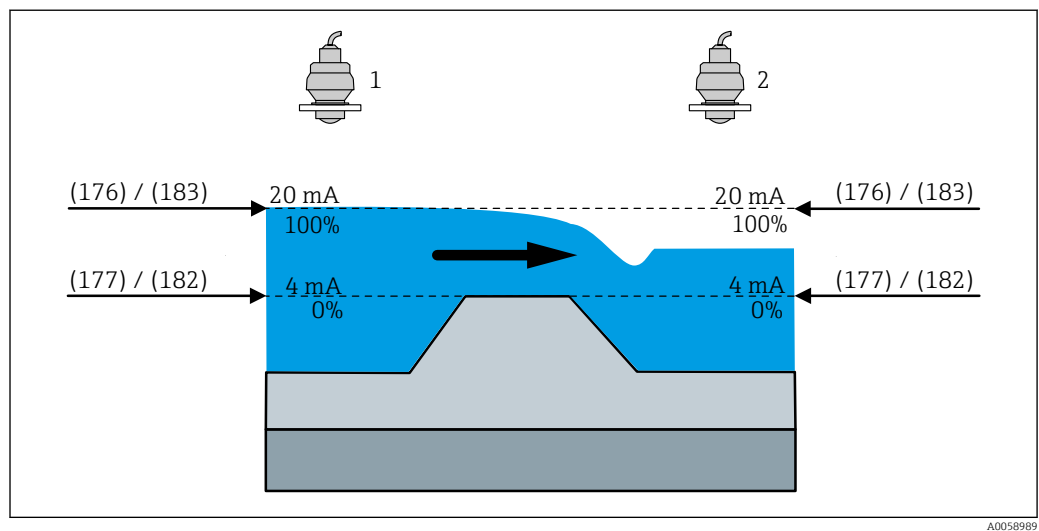
27 Level at empty calibration (177) FMX21 rake control



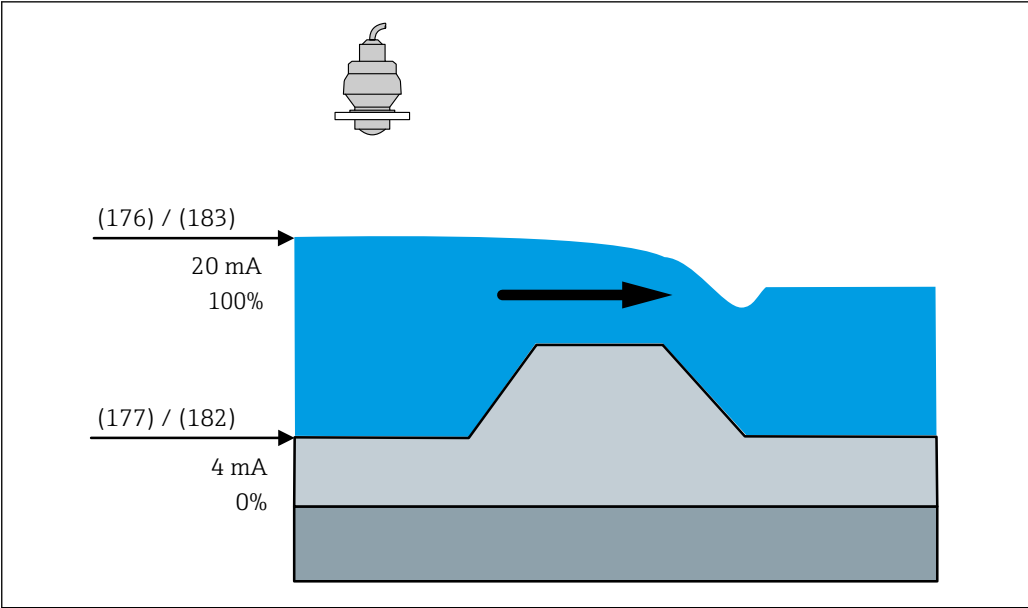
28 Level at empty calibration (177) rake control



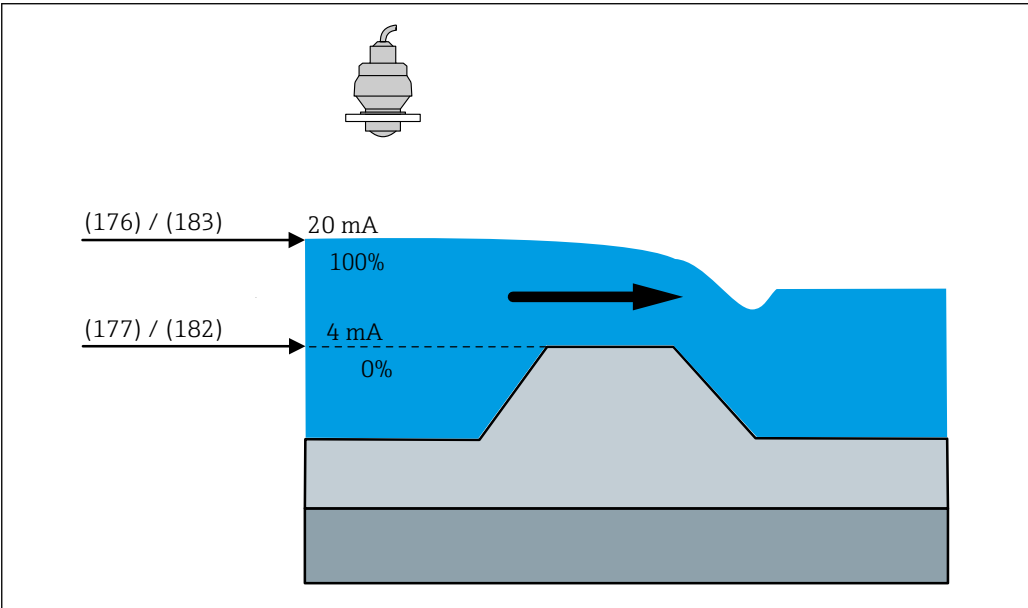
29 *Level at empty calibration (177) backwater detection*



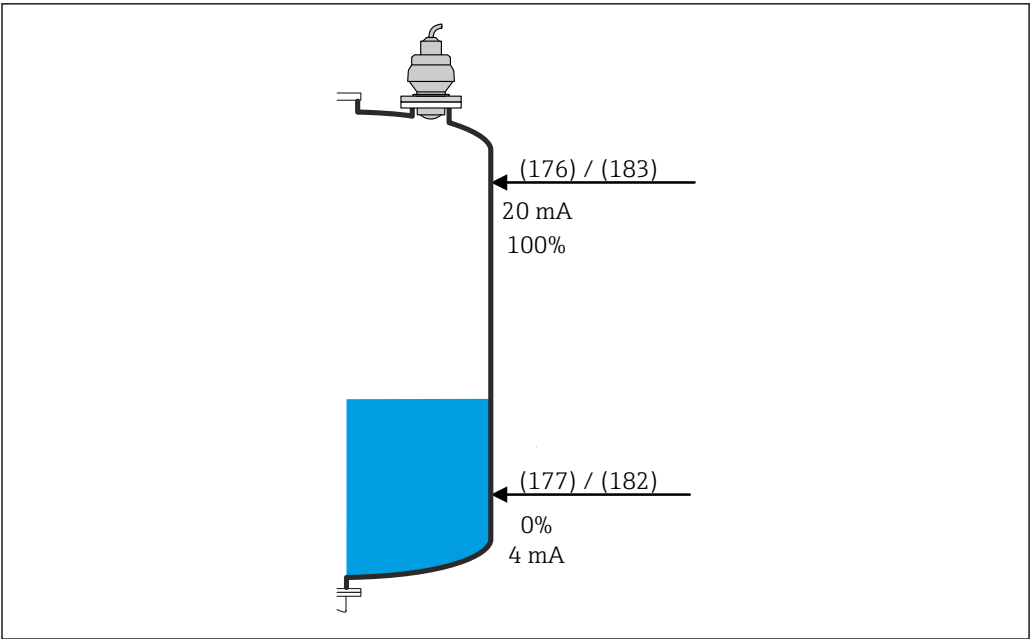
30 *Level at empty calibration (177) backwater detection*



31 Level at empty calibration (177) flow application



32 Level at empty calibration (177) flow application



A0058991

33 Level at empty calibration (177) level application

Current value at full calibration



Navigation

Application → Sensors → Sensor 1 to 2 → Current value at full calibration (1520027-1 to 2)

Description

Enter the current value at full calibration.

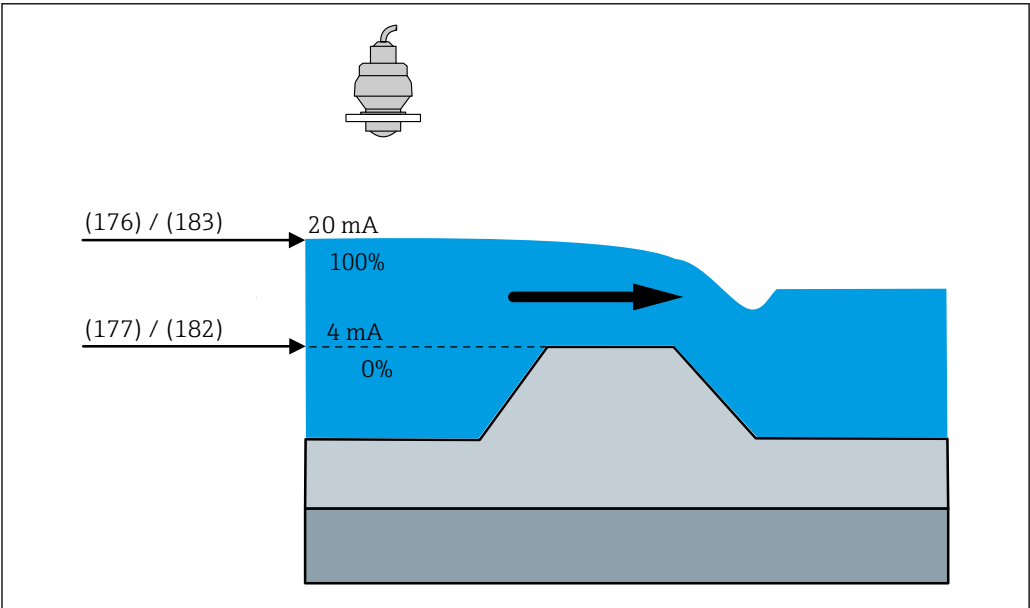
User entry

4.0 to 20.0 mA

Factory setting

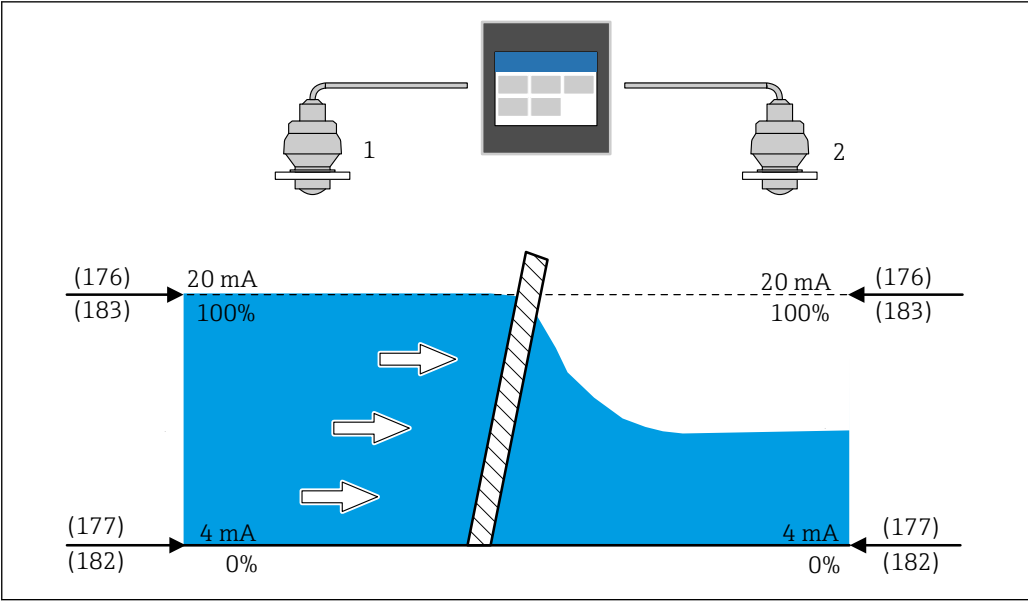
20.0 mA

Additional information

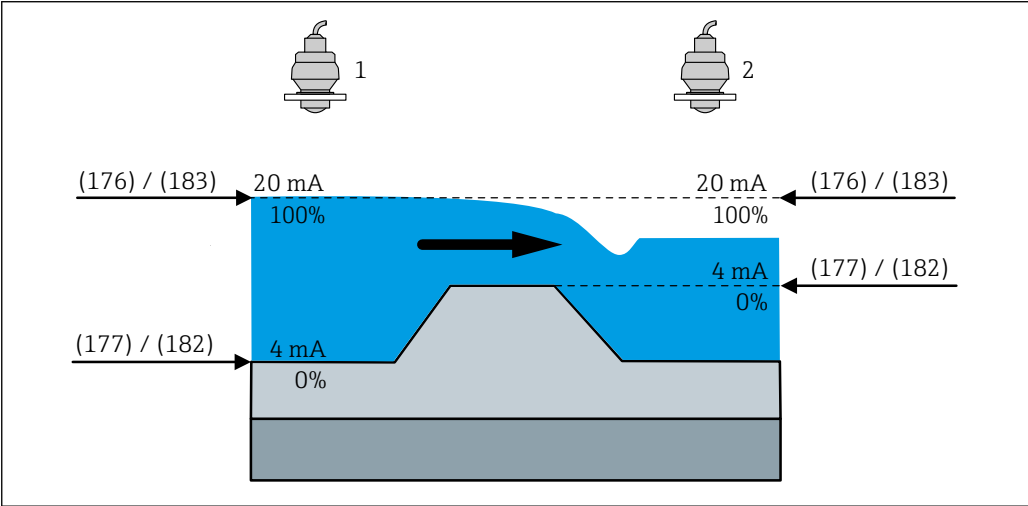


A0058973

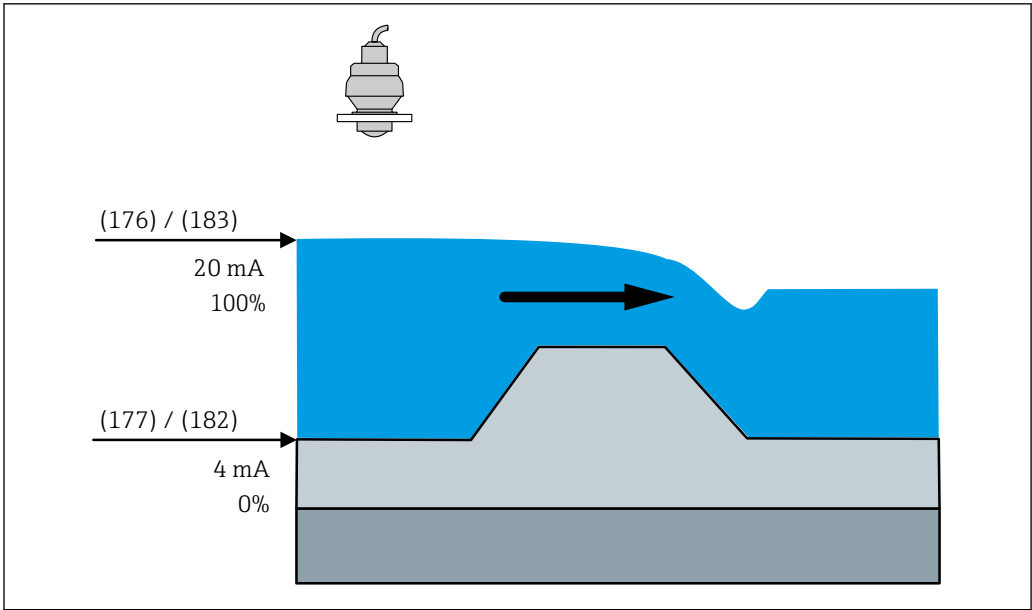
34 Current value at full calibration (183) flow application



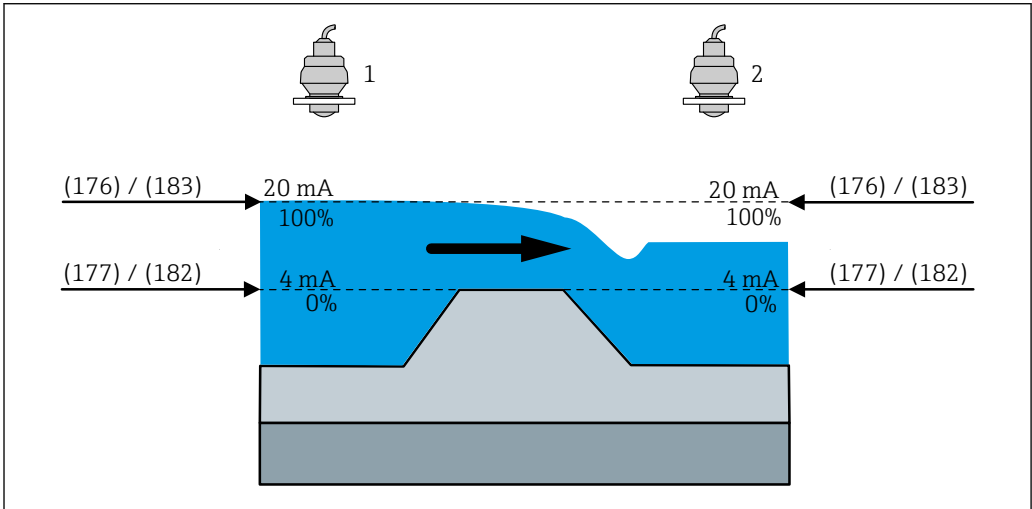
35 Current value at full calibration (183) rake control



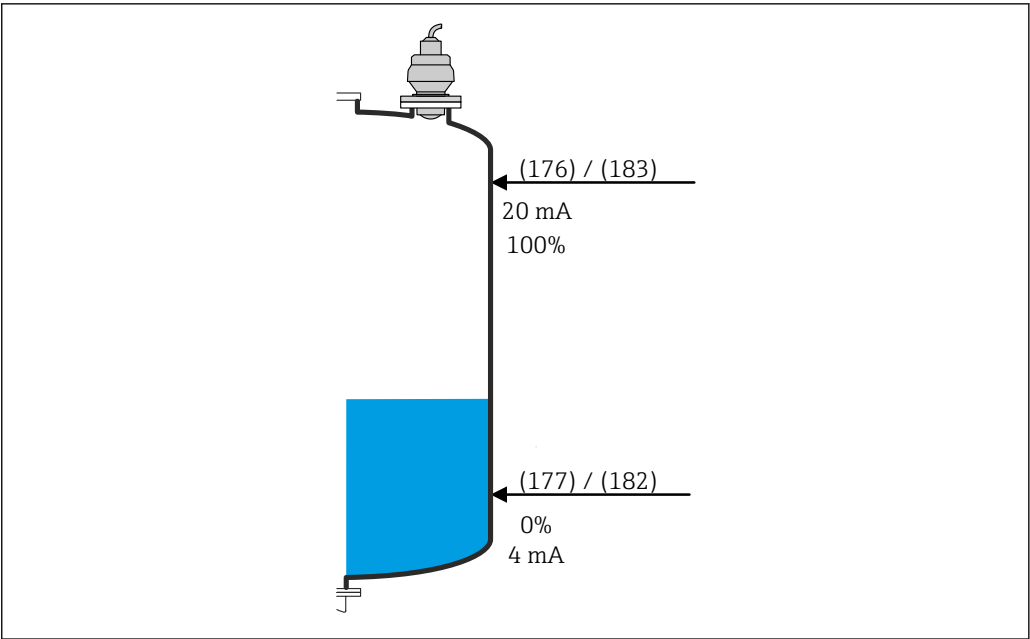
36 Current value at full calibration (183) backwater detection



37 Current value at full calibration (183) flow application



38 Current value at full calibration (183) backwater detection



39 Current value at full calibration (183) level application

HART value (PV) at full calibration

Navigation

Application → Sensors → Sensor 1 to 2 → HART value (PV) at full calibration (3370031-1 to 2)

Description

Enter HART value (PV) for full calibration. The unit is read from the sensor.

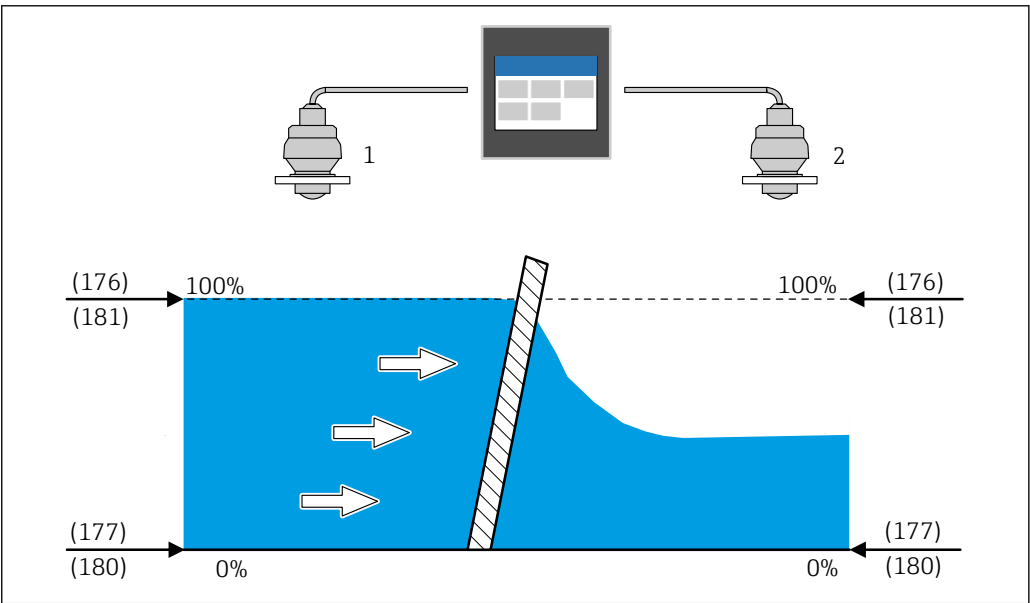
User entry

-200 000.0 to 200 000.0 ??????

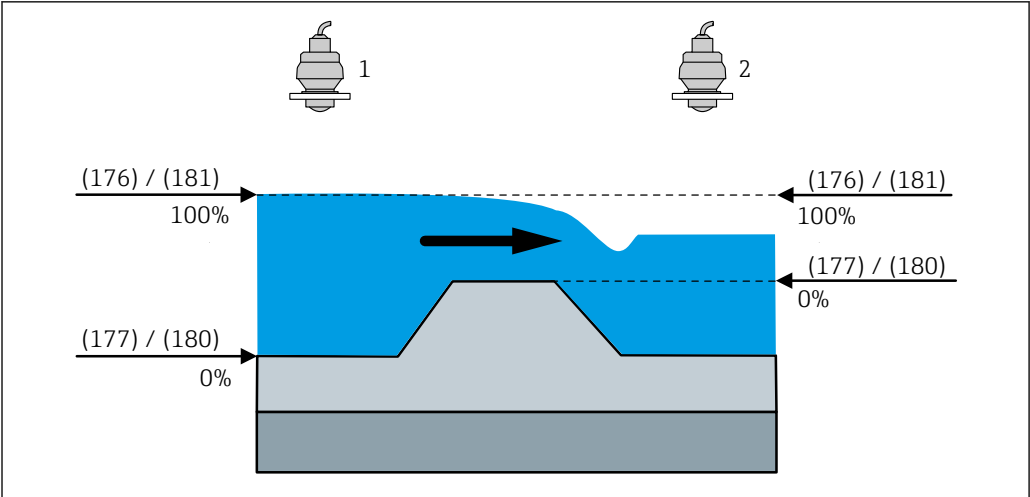
Factory setting

0.0 ??????

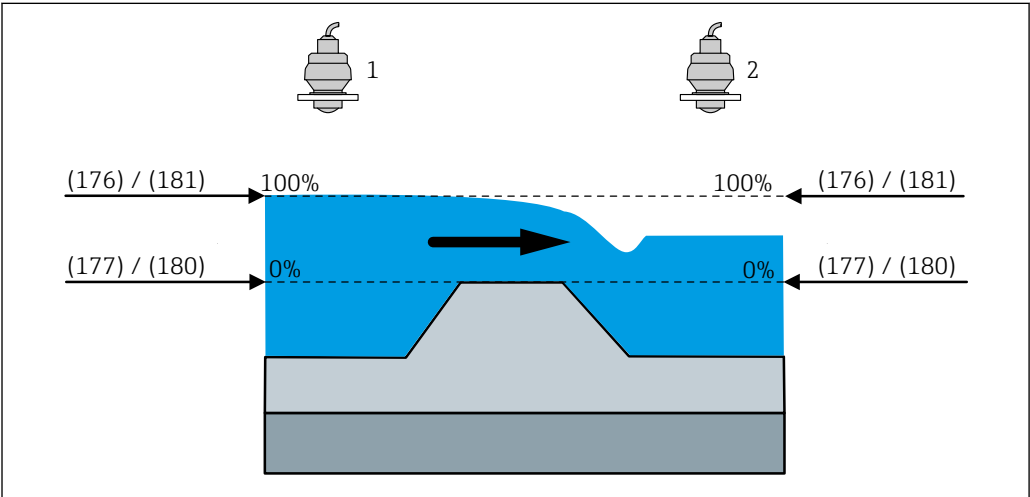
Additional information



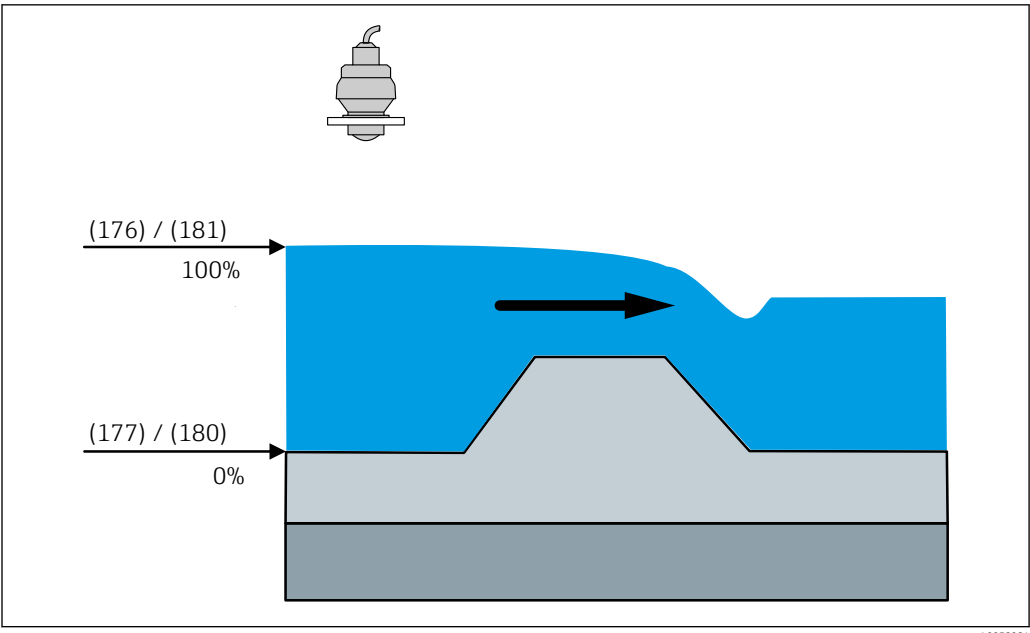
40 HART value (PV) at full calibration (181) rake control



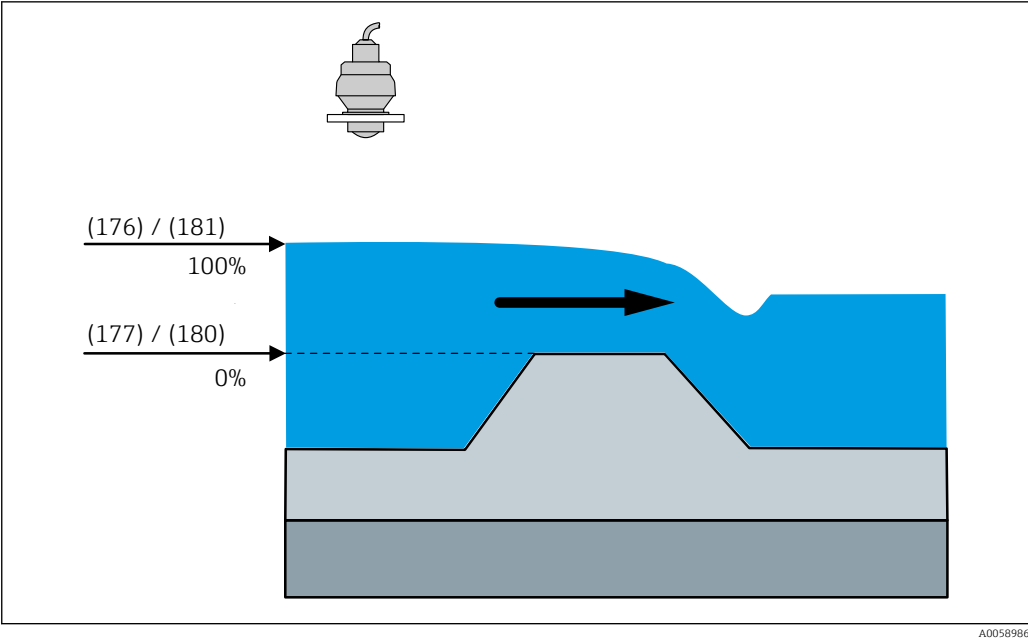
41 HART value (PV) at full calibration (181) backwater detection



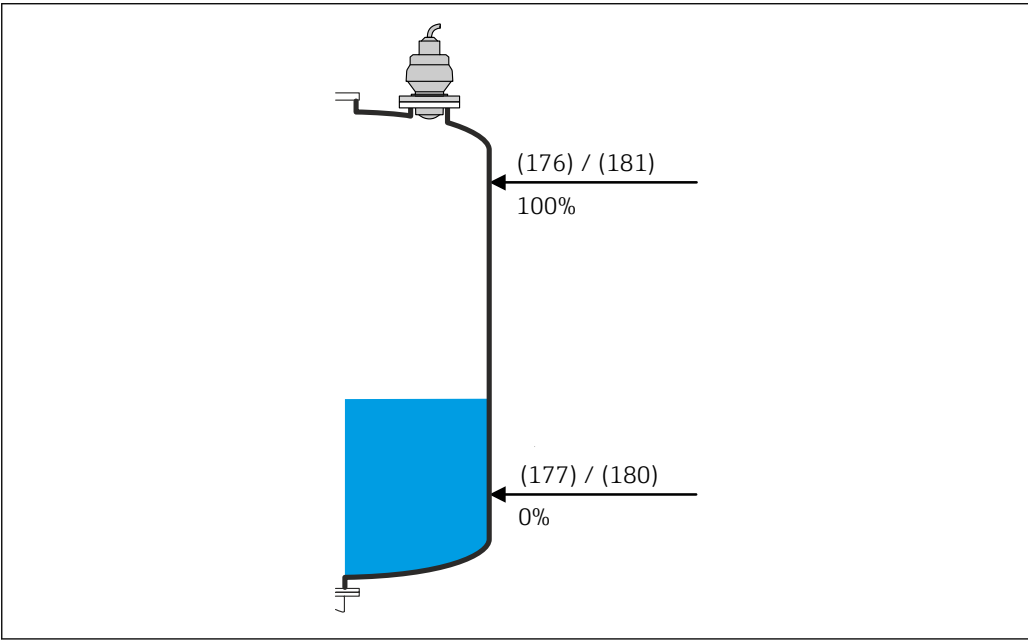
42 HART value (PV) at full calibration (181) backwater detection



43 HART value (PV) at full calibration (181) flow application



44 HART value (PV) at full calibration (181) flow application



45 HART value (PV) at full calibration (181) level application

Pressure value at full calibration

Navigation

Application → Sensors → Sensor 1 to 2 → Pressure value at full calibration (3300009-1 to 2)

Description

Enter the pressure value for the upper calibration point (vessel full). This parameter will be synchronized with the connected sensor.

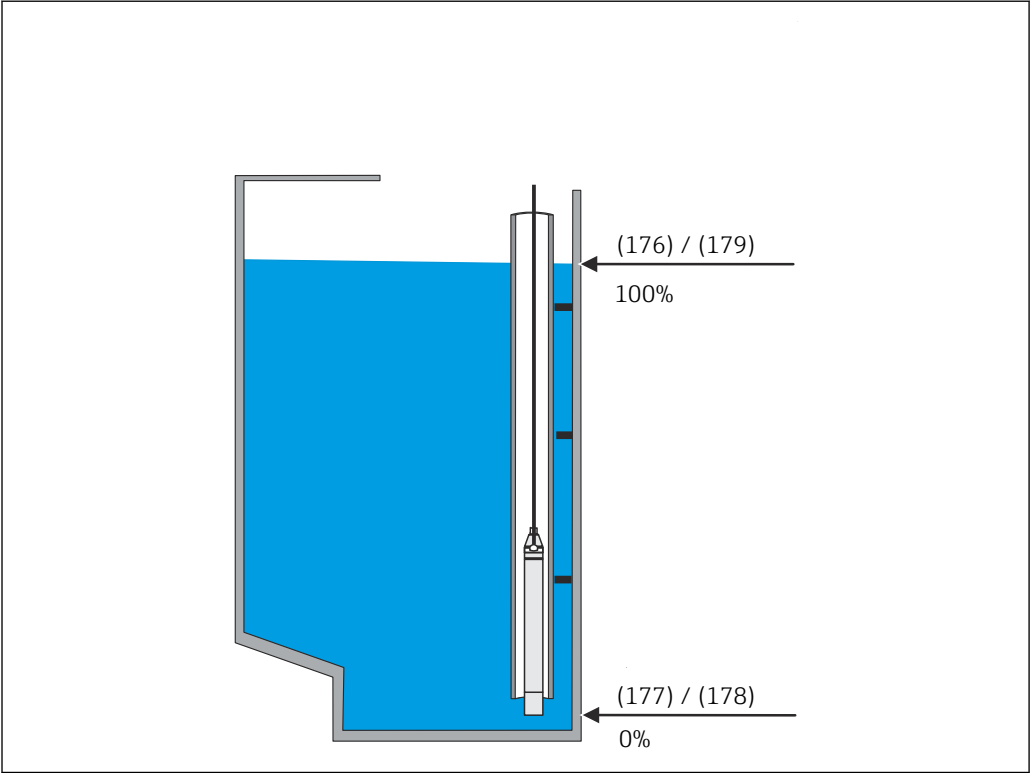
User entry

-100 000.0 to 100 000.0 mbar

Factory setting

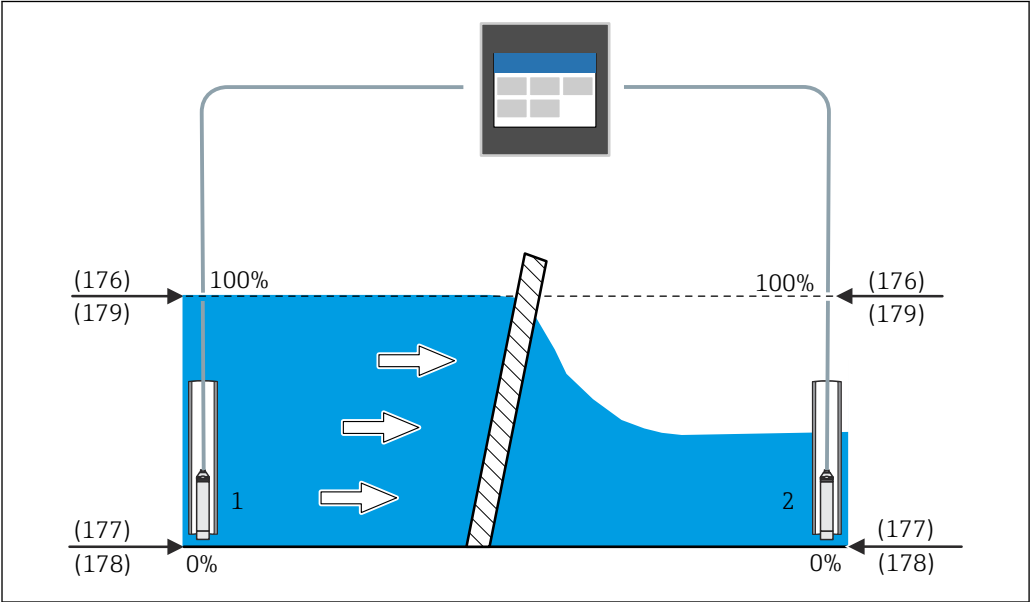
0.0 mbar

Additional information



A0058972

46 Pressure value at full calibration (179) FMX21 level application

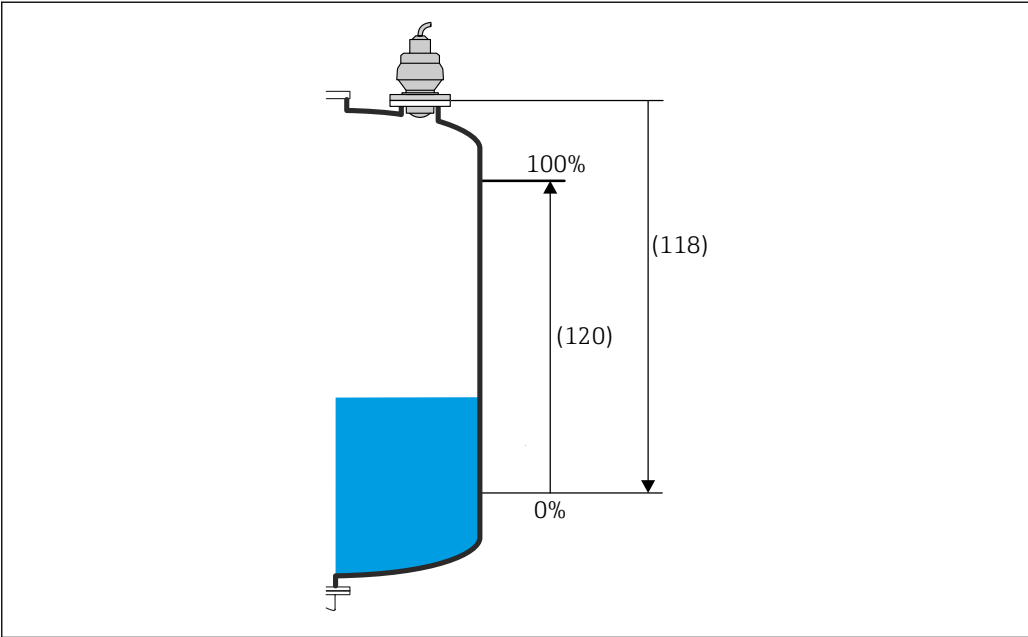


A0058977

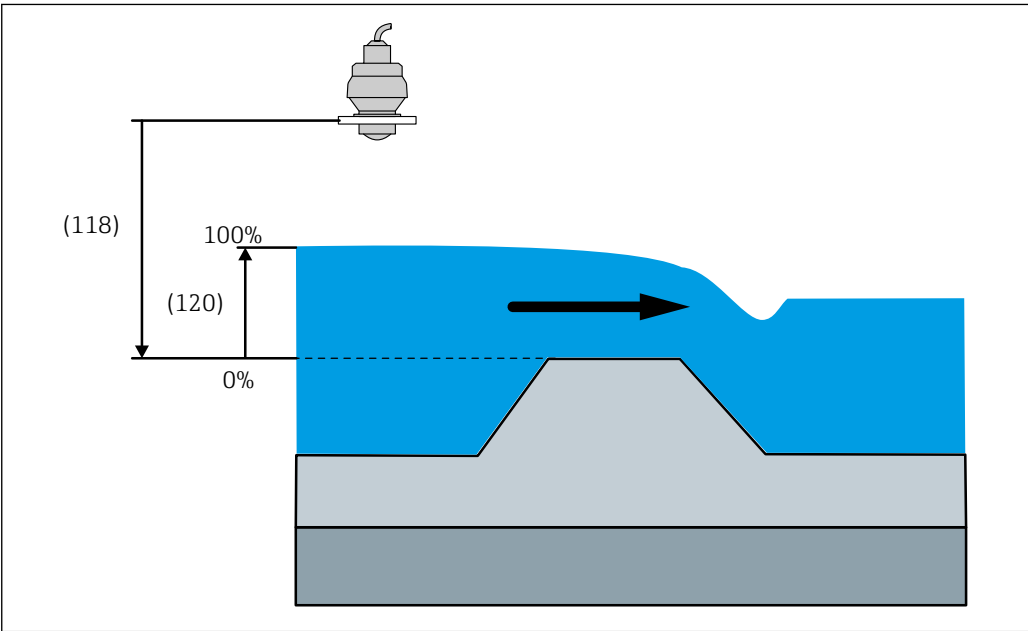
47 Pressure value at full calibration (179) FMX21 rake control

Full calibration

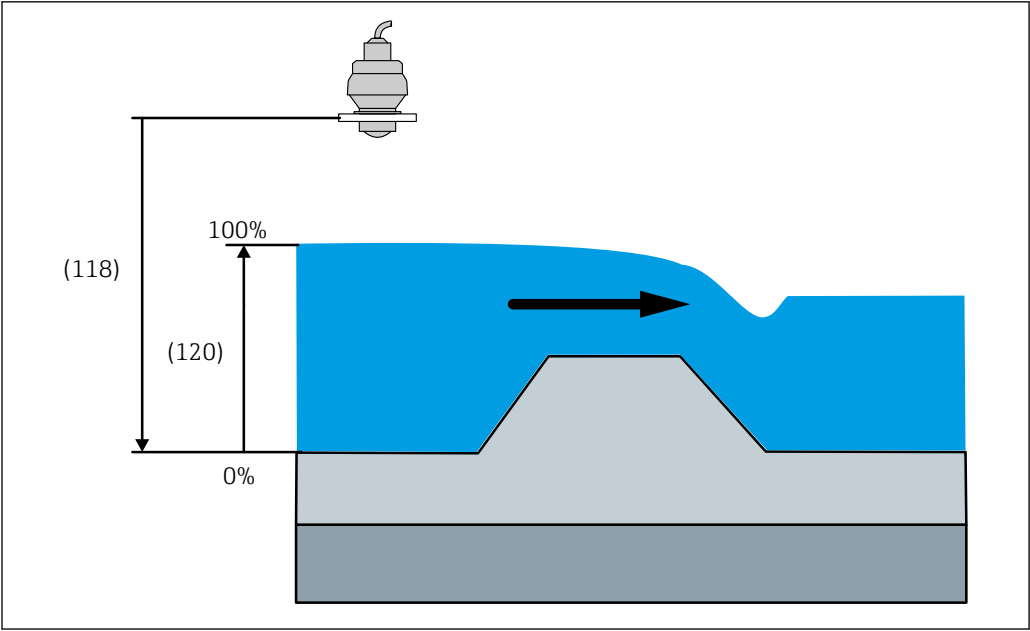
Navigation	 Application → Sensors → Sensor 1 to 2 → Full calibration (2830008-1 to 2)
Description	Enter distance between minimum level and maximum level. This parameter will be synchronized with the connected sensor.
User entry	0.0 to 125 000.0 mm
Factory setting	20 000.0 mm
Additional information	



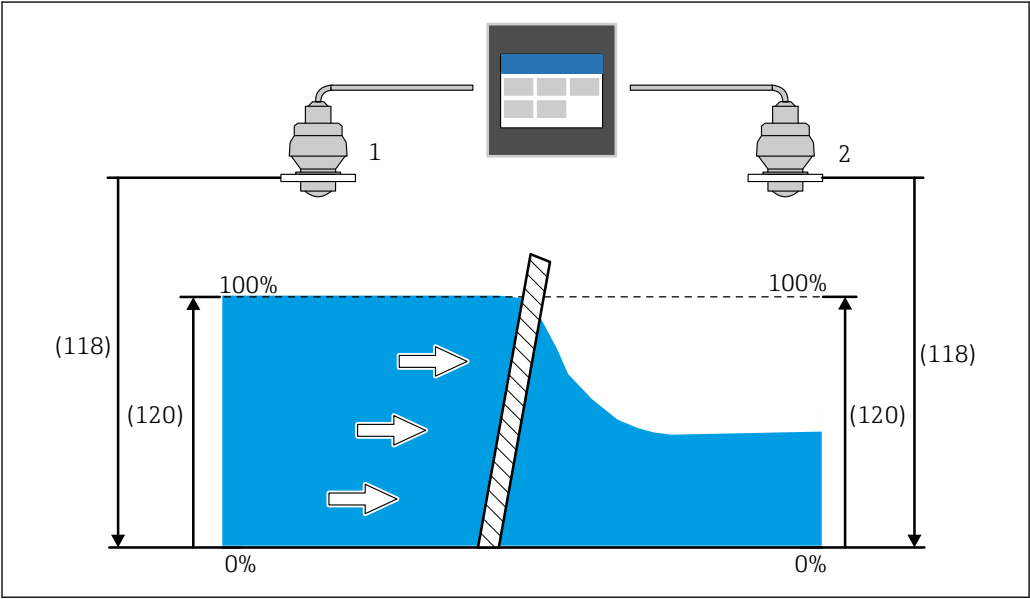
 48 Full calibration (120) FMR20B/FMR30B level application



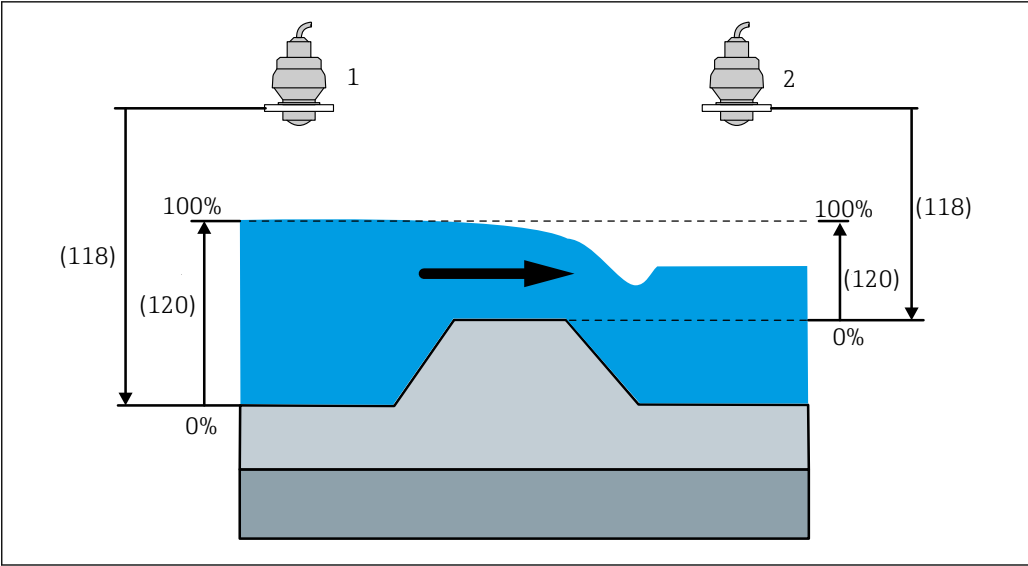
 49 Full calibration (120) FMR20B/FMR30B flow application



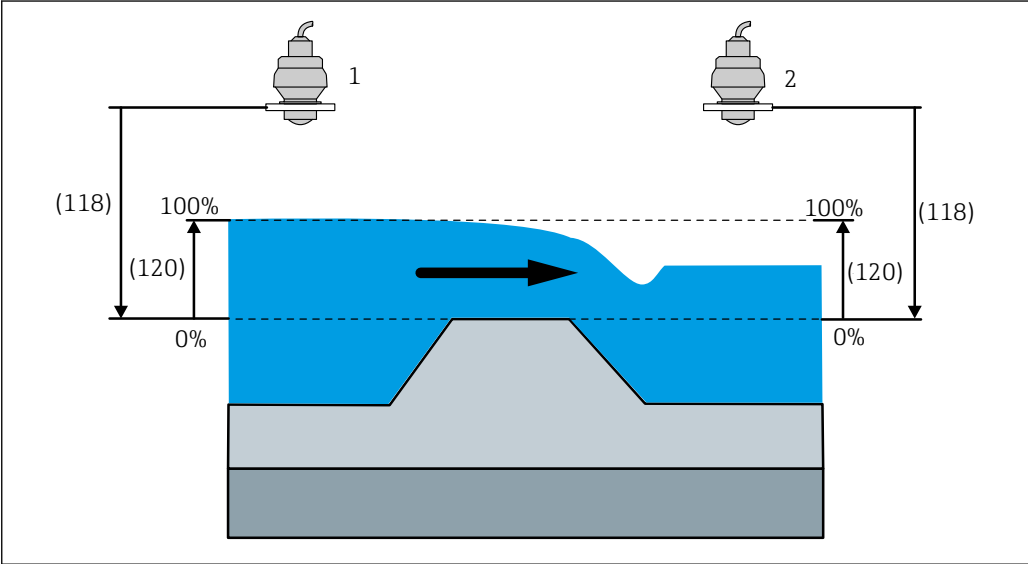
50 Full calibration (120) FMR20B/FMR30B flow application



51 Full calibration (120) FMR20B/FMR30B rake control



52 Full calibration (120) FMR20B/FMR30B backwater detection

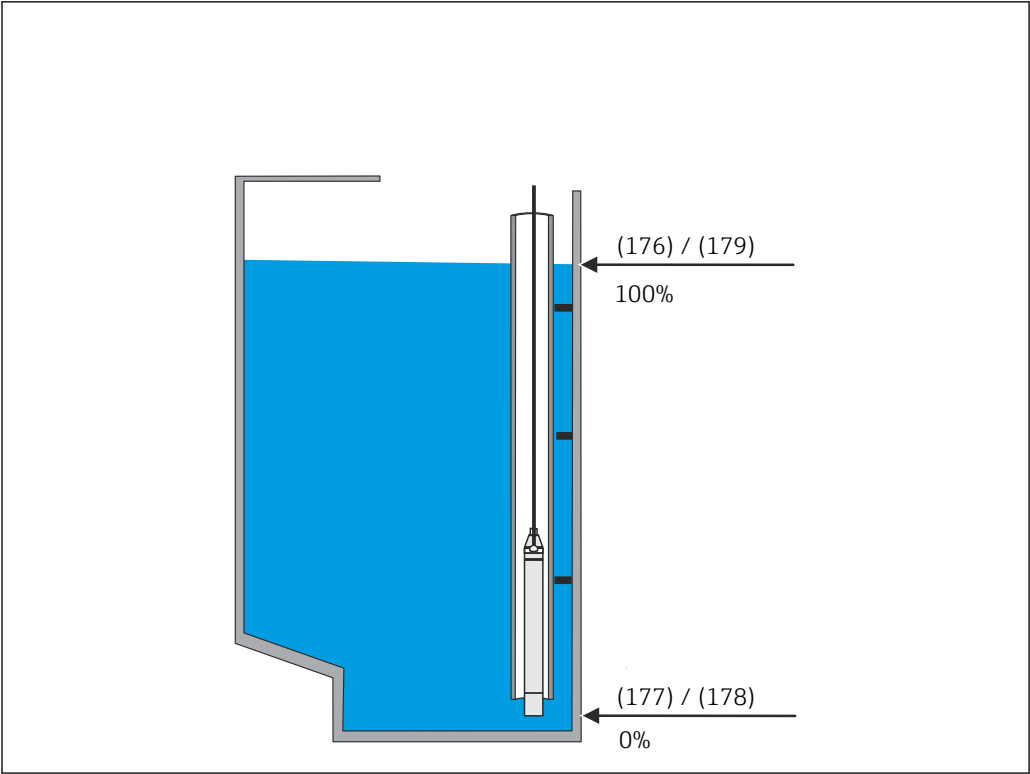


53 Full calibration (120) FMR20B/FMR30B backwater detection

Level at full calibration

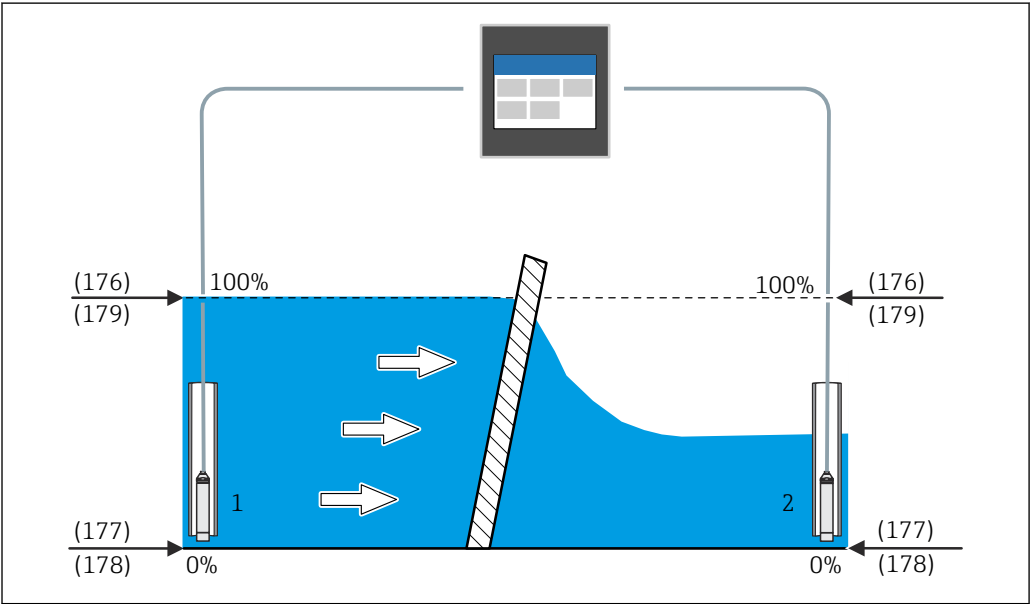
Navigation	 Application → Sensors → Sensor 1 to 2 → Level at full calibration (2960011-1 to 2)
Description	Enter the absolute level value at full calibration.
User entry	Positive floating-point number
Factory setting	0.0 mm

Additional information



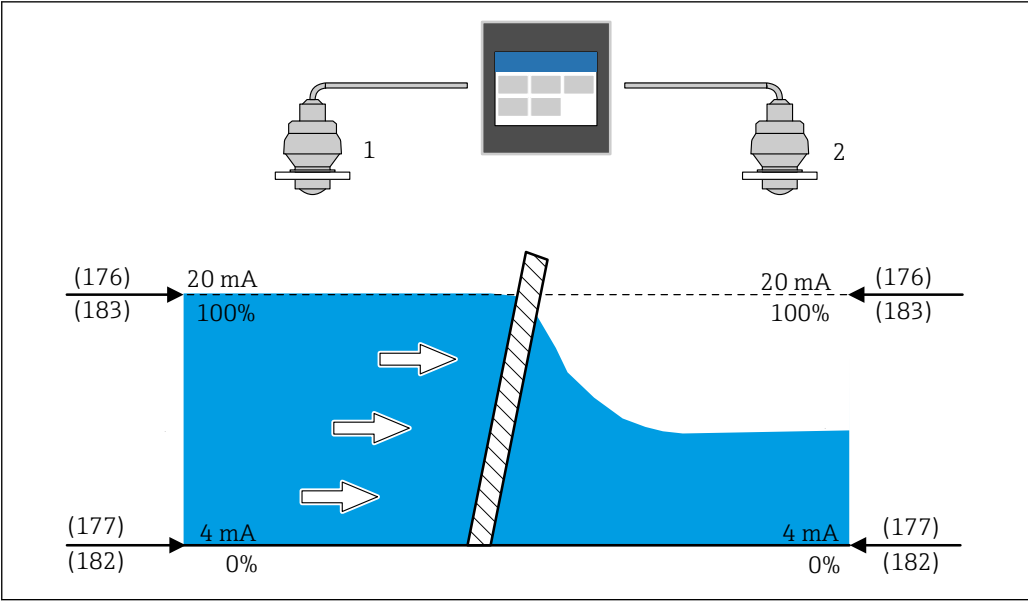
A0058972

54 Level at full calibration (176) FMX21 level application

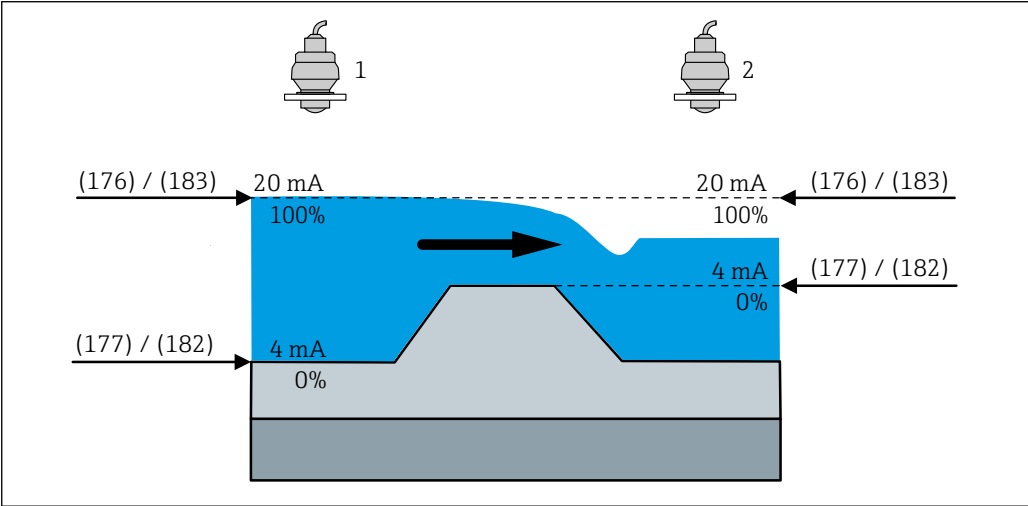


A0058977

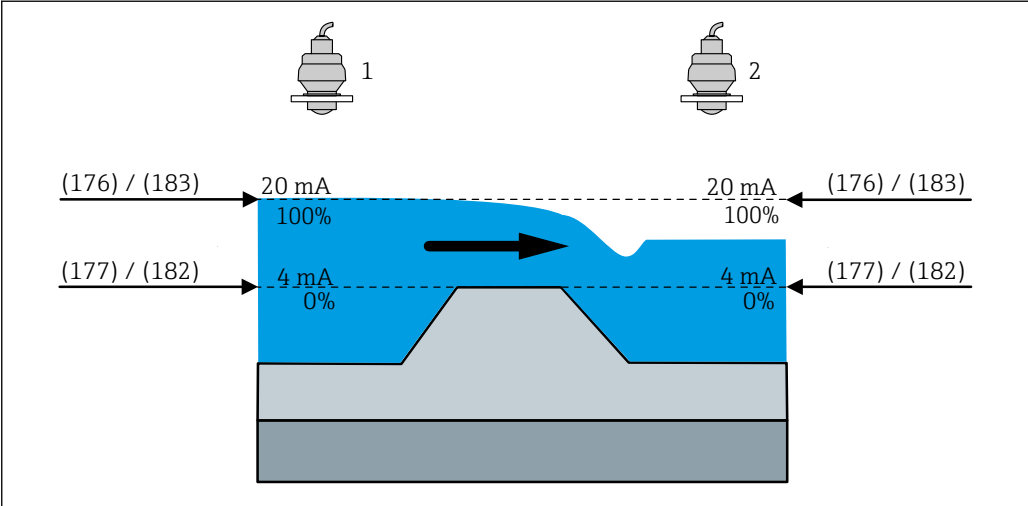
55 Level at full calibration (176) FMX21 rake control



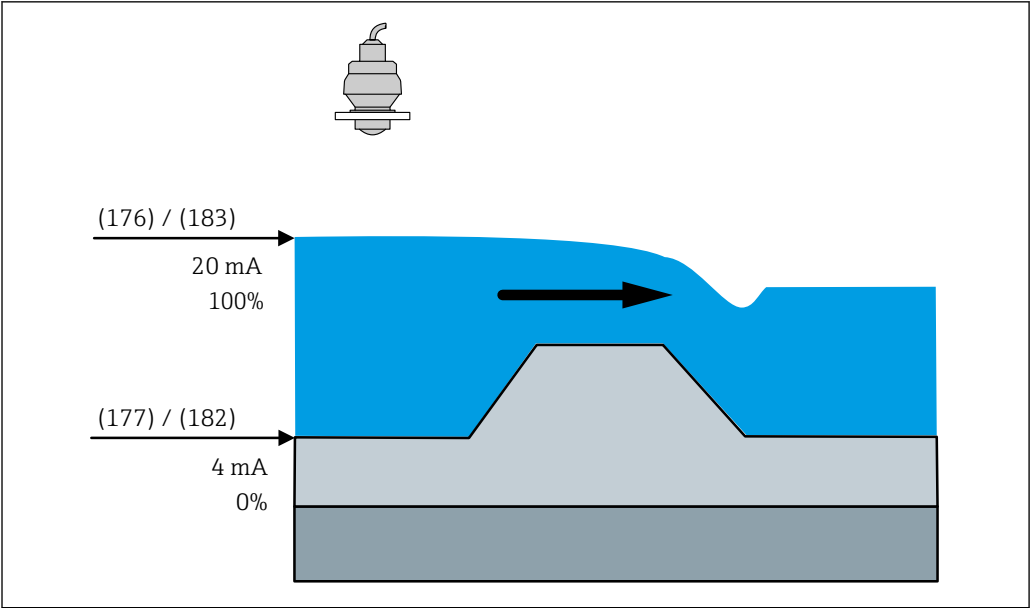
56 Level at full calibration (176) rake control



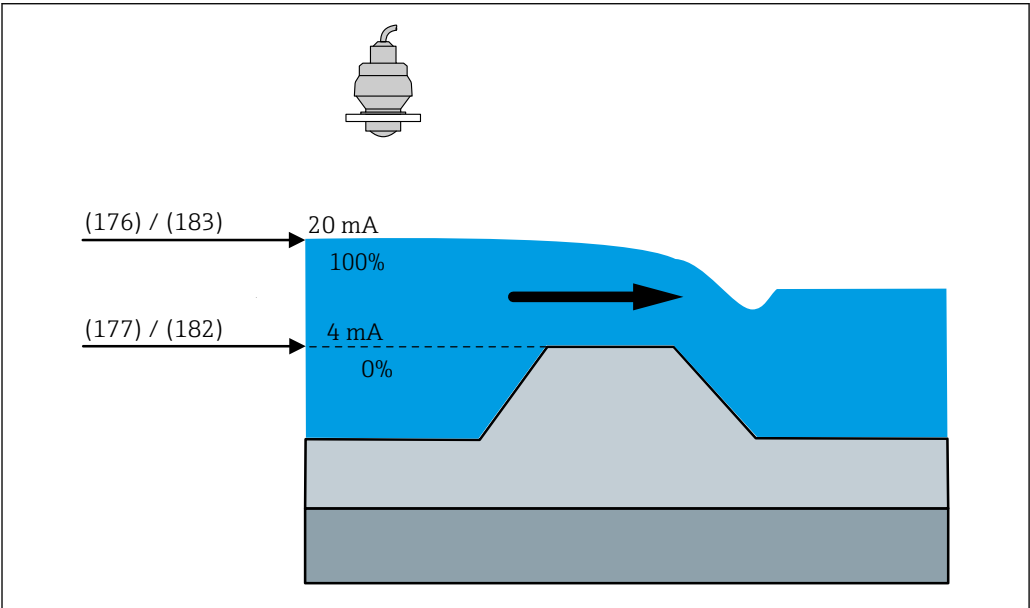
57 Level at full calibration (176) backwater detection



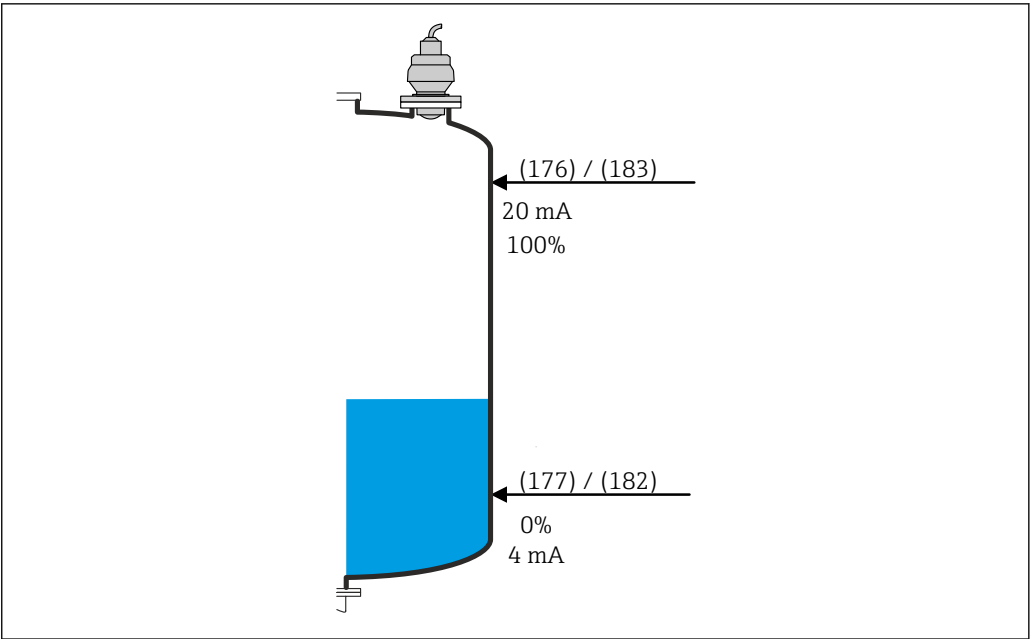
58 Level at full calibration (176) backwater detection



59 Level at full calibration (176) flow application



60 Level at full calibration (176) flow application



A0058991

61 Level at full calibration (176) level application

Level sensor 1 to 2

Navigation	Application → Sensors → Sensor 1 to 2 → Level sensor 1 to 2 (2960130-1 to 2)
Description	Displays the currently measured level of the connected sensor.
User interface	Signed floating-point number

State of communication

Navigation	Application → Sensors → Sensor 1 to 2 → State of communication (3370161-1 to 2)
Description	Displays the current status of the HART communication with the connected sensor.
User interface	■ No HART sensor detected ■ Identifying in progress ■ Synchronization in progress ■ Not synchronized with sensor ■ Wrong sensor connected ■ Connected ■ Parameter is written

"Access to sensor" submenu

Navigation  Application → Sensors → Sensor 1 to 2 → Access to sensor

Password required

Navigation	 Application → Sensors → Sensor 1 to 2 → Access to sensor → Password required (2830142)
Description	Displays whether the connected sensor requires a password to allow access to the "Maintenance" user role.
User interface	■ No ■ Yes

Password



Navigation	 Application → Sensors → Sensor 1 to 2 → Access to sensor → Password required (2830142)
Description	Enter password to gain access to the functions of the user role.
User entry	Character string comprising numbers, letters and special characters (16)

Status password entry

Navigation	 Application → Sensors → Sensor 1 to 2 → Access to sensor → Status password entry (2830141)
Description	Status of the password verification.
User interface	■ ----- ■ Wrong password ■ Password rule violated ■ Password accepted ■ Permission denied ■ Confirm PW mismatch ■ Reset password accepted ■ Invalid user role ■ Wrong sequence of entry

"Additional settings" submenu

Navigation  Application → Sensors → Sensor 1 to 2 → Additional settings

Damping

Navigation  Application → Sensors → Sensor 1 to 2 → Additional settings → Damping (2830009)

Description Setting of the time constant for the damping of the measured value. This parameter will be synchronized with the connected sensor.

User entry 0.0 to 1 200.0 s

Factory setting 0.0 s

Maximum measuring distance

Navigation  Application → Sensors → Sensor 1 to 2 → Additional settings → Maximum measuring distance (2830010)

Description Enter maximum measuring distance measured from the reference point. This parameter will be synchronized with the connected sensor.

User entry 0.0 to 125 000.0 mm

Factory setting 20 000.0 mm

Level at full calibration

Navigation  Application → Sensors → Sensor 1 to 2 → Additional settings → Level at full calibration (2960024)

Description Displays the level at full calibration, depending on the sensor used.

User entry Positive floating-point number

Factory setting 0.0 mm

Level sensor 1 to 2

Navigation	 Application → Sensors → Sensor 1 to 2 → Additional settings → Level sensor 1 to 2 (2960130-1 to 2)
Description	Displays the currently measured level of the connected sensor.
User interface	Signed floating-point number

Distance

Navigation	 Application → Sensors → Sensor 1 to 2 → Additional settings → Distance (2830128)
Description	Distance from lower edge of device flange to product surface.
User interface	Signed floating-point number

HART address



Navigation	 Application → Sensors → Sensor 1 to 2 → Additional settings → HART address (3370009)
Description	Enter adress for the data exchange via HART protocol.
User entry	0 to 63
Factory setting	0

"Current range" submenu

Navigation	 Application → Sensors → Sensor 1 to 2 → Additional settings → Current range
------------	---

Lower limit



Navigation	 Application → Sensors → Sensor 1 to 2 → Additional settings → Current range → Lower limit (1520024)
Description	Enter the lower error limit of the current input.
User entry	2.1 to 4.0 mA

Factory setting 3.7 mA

Upper limit



Navigation  Application → Sensors → Sensor 1 to 2 → Additional settings → Current range → Upper limit (1520023)

Description Enter the upper error limit of the current input.

User entry 20.0 to 22.0 mA

Factory setting 20.8 mA

"Mapping" submenu

Navigation  Application → Sensors → Sensor 1 to 2 → Additional settings → Mapping

Active map



Navigation  Application → Sensors → Sensor 1 to 2 → Additional settings → Mapping → Active map (2830020)

Description Select the mapping curve that has to be active. This parameter will be synchronized with the connected sensor.

Selection

- Factory map
- Customer map
- No map

Factory setting No map

Confirm distance



Navigation  Application → Sensors → Sensor 1 to 2 → Additional settings → Mapping → Confirm distance (2830040)

Description Select whether the measured distance and the actually distance are the same. This parameter will be synchronized with the connected sensor.

- Selection**
- Modify map
 - Distance ok
 - Distance unknown
 - Level ≤ 0

Factory setting Distance unknown

Mapping end point

Navigation   Application → Sensors → Sensor 1 to 2 → Additional settings → Mapping → Mapping end point (2830025)

Description Enter up to which distance the new mapping is to be recorded. This parameter will be synchronized with the connected sensor.

User entry 0.1 to 125 000.0 mm

Factory setting 100.0 mm

Record map

Navigation   Application → Sensors → Sensor 1 to 2 → Additional settings → Mapping → Record map (2830026)

Description Select the control of the recording of the map. This parameter will be synchronized with the connected sensor.

- Selection**
- No
 - Overlay map
 - Delete map

Factory setting No

"Failure behavior" submenu

Navigation  Application → Sensors → Sensor 1 to 2 → Additional settings → Failure behavior

Failure behavior

Navigation  Application → Sensors → Sensor 1 to 2 → Additional settings → Failure behavior → Failure behavior (2960050)

Description Settings how this channel/input behaves in case of failure.

Selection

- Invalid
- Last good
- Fixed Value

Factory setting Invalid

Failure value

Navigation  Application → Sensors → Sensor 1 to 2 → Additional settings → Failure behavior → Failure value (2960051)

Description Enter a fixed measurement value, that the device outputs in the event of a sensor failure.

User entry Signed floating-point number

Factory setting 0.0 mm

Failure delay time

Navigation  Application → Sensors → Sensor 1 to 2 → Additional settings → Failure behavior → Failure delay time (2960052)

Description Enter the delay time until the set failure behavior is activated.

User entry 0 to 999 s

Factory setting 0 s

3.3.5 "Level" submenu

Navigation  Application → Level

"Level 1 to 2 linearized" submenu

Navigation  Application → Level → Level 1 to 2 linearized

Description	
-------------	---

Navigation	 Application → Level → Level 1 to 2 linearized → Description (3520029–1 to 2)
------------	--

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

Factory setting	Level 1 (lin.)
-----------------	----------------

Unit after linearization	
--------------------------	--

Navigation	 Application → Level → Level 1 to 2 linearized → Unit after linearization (3520009–1 to 2)
------------	---

Description	Select unit for linearized value.
-------------	-----------------------------------

Selection	<i>SI units</i>
	■ Ml ■ cm³ ■ dm³ ■ m³ ■ mm ■ cm ■ m
	<i>Custom-specific units</i>
	■ % ■ l ■ hl ■ ft³ ■ in³ ■ UsGal ■ Mgal (us) ■ impGal ■ Mgal (imp) ■ bbl (us;beer) ■ bbl (us;liq.) ■ bbl (us;oil) ■ kg ■ t ■ lb ■ LTon ■ STon ■ ft ■ in ■ Free text
Factory setting	%

Free text



Navigation	Application → Level → Level 1 to 2 linearized → Free text (3520019-1 to 2)
Description	Enter the desired unit designation.
User entry	Character string comprising numbers, letters and special characters (32)
Factory setting	Free text

Decimal places



Navigation	Application → Level → Level 1 to 2 linearized → Decimal places (3520026-1 to 2)
Description	Select the number of decimal places for the display value.

Selection	■ X
	■ X.X
	■ X.XX
	■ X.XXX
	■ X.XXXX
Factory setting	X

Linearization type

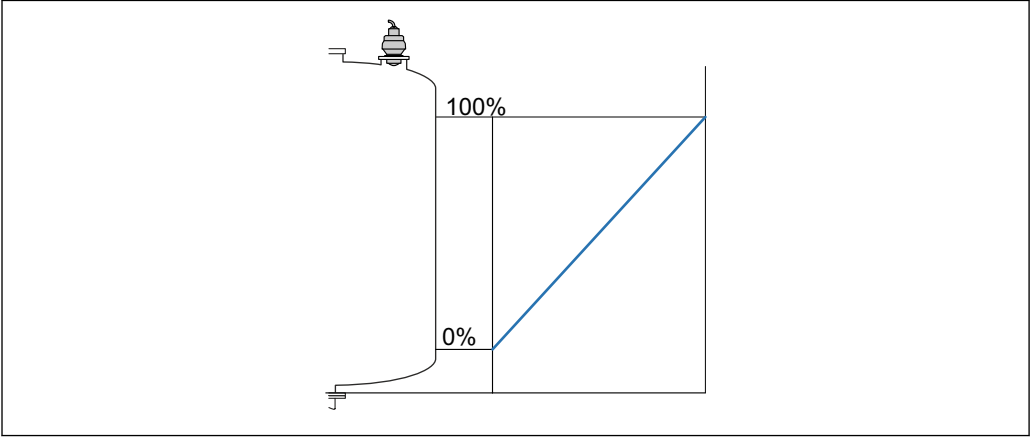
Navigation	Application → Level → Level 1 to 2 linearized → Linearization type (3520008-1 to 2)
------------	---

Description Select type of linearization.

Selection	■ None
	■ Linear
	■ Table
	■ Pyramid bottom
	■ Conical bottom
	■ Sloped bottom
	■ Horizontal cylinder
	■ Sphere

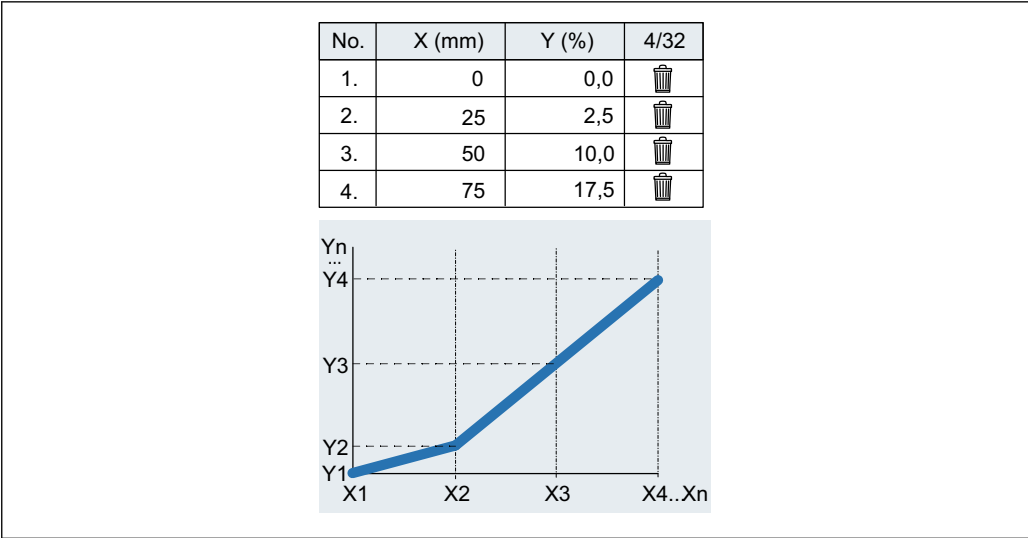
Factory setting Linear

Additional information



62 Linearization type: Linear

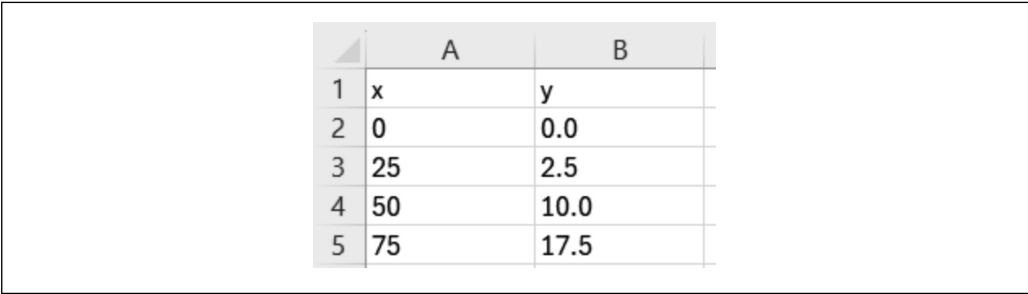
A0058175



A0058176

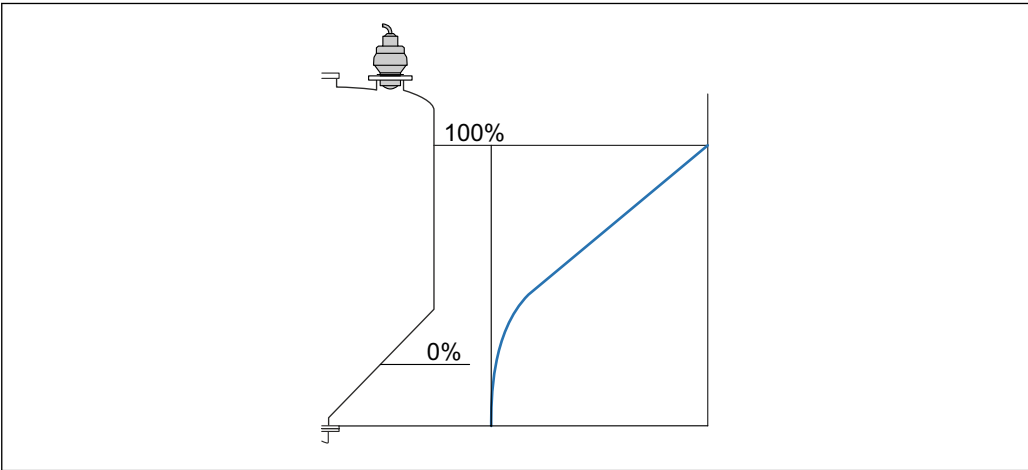
63 Linearization type: Table with up to 32 support points

A decimal point must be used as the decimal separator for the import.



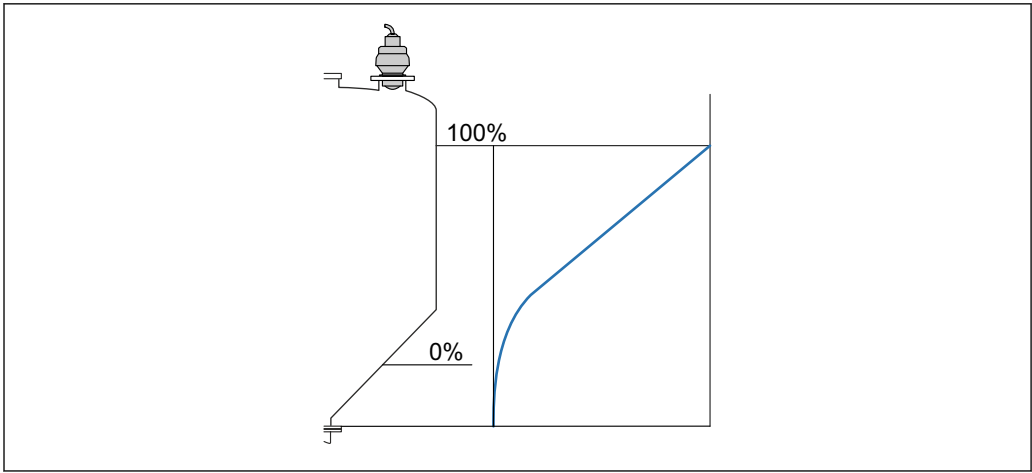
A0058963

64 Linearization type: Table (example of table in Excel)



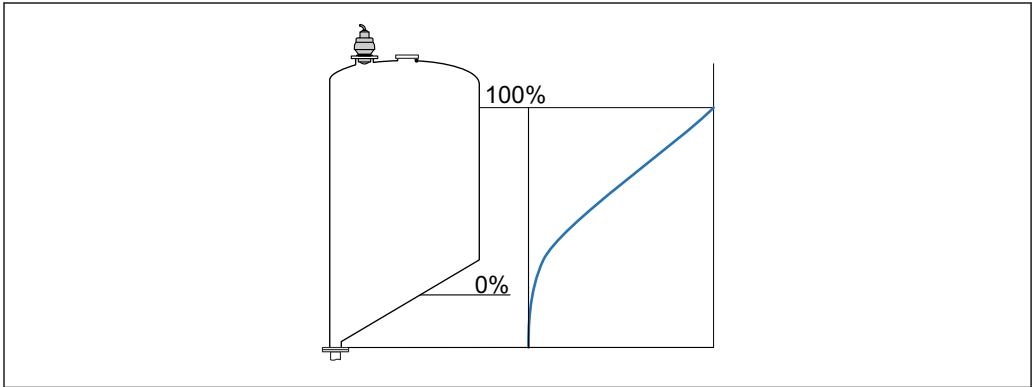
A0058177

65 Linearization type: Pyramid bottom



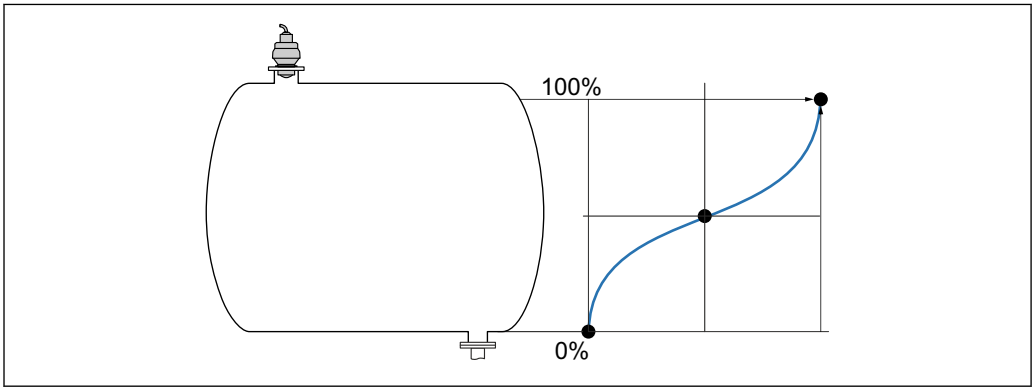
A0058177

66 Linearization type: Conical bottom



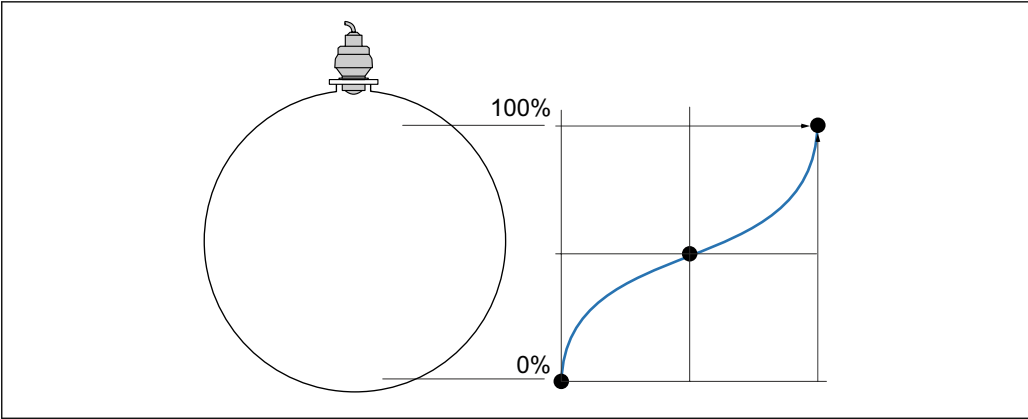
A0058178

67 Linearization type: Sloped bottom



A0058191

68 Linearization type: Horizontal cylinder



A0058192

69 Linearization type: Sphere

Maximum value



Navigation

Application → Level → Level 1 to 2 linearized → Maximum value (3520017-1 to 2)

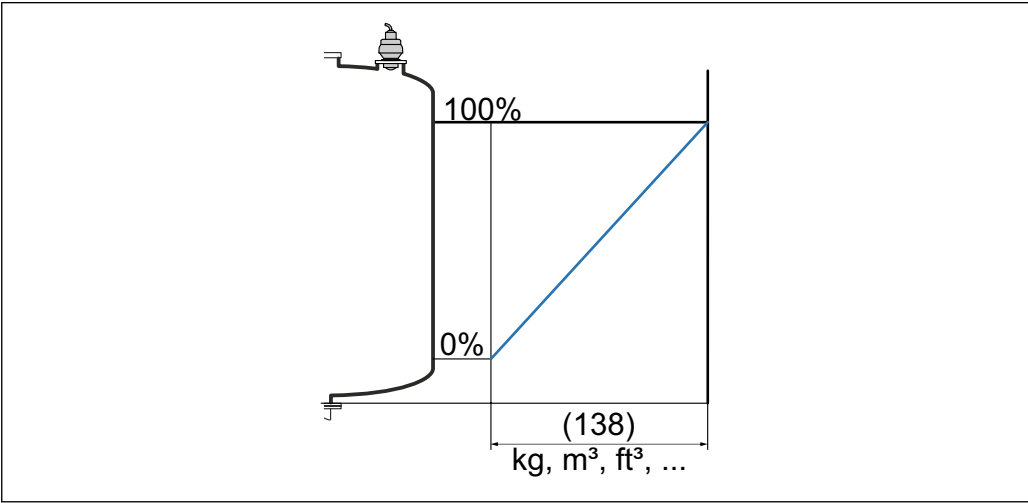
Description

Linearized value corresponding to a level of 100 %.

User entry

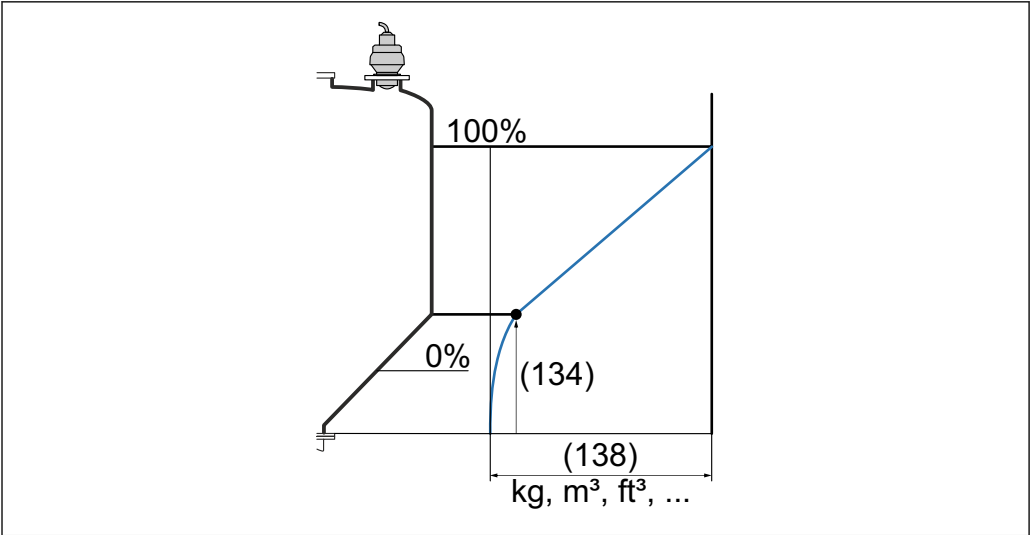
-200 000.0 to 200 000.0 %

Additional information



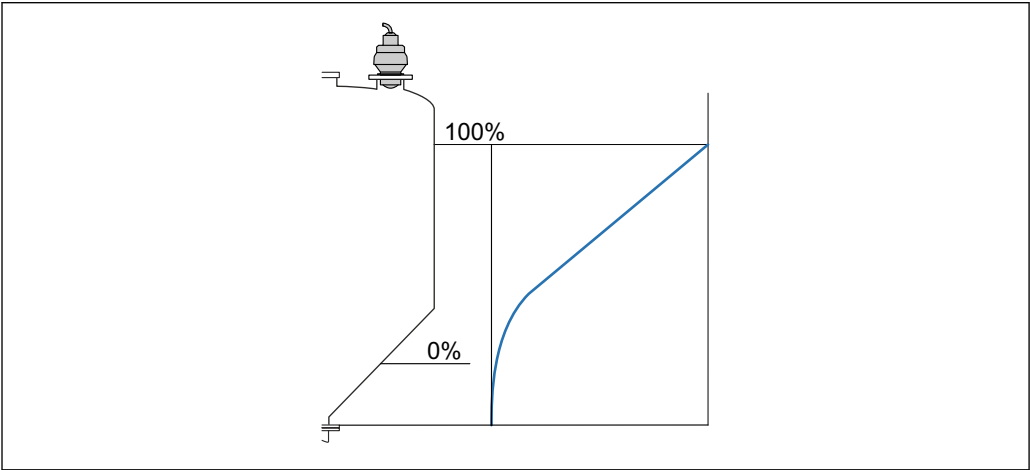
A0058619

70 Maximum value linear (138)



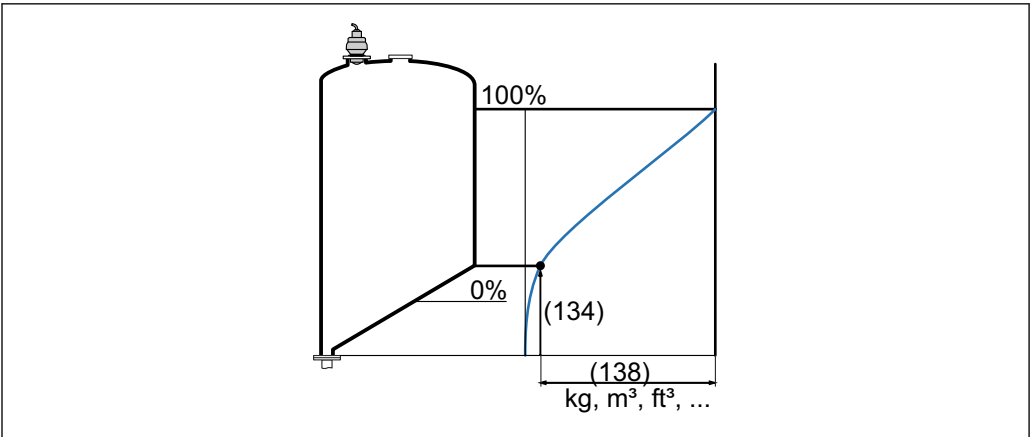
A0058620

71 Maximum value pyramid bottom (138)



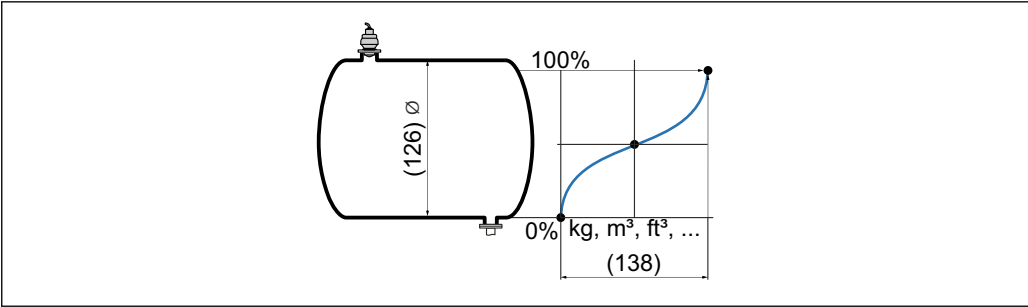
A0058177

72 Maximum value conical bottom (138)



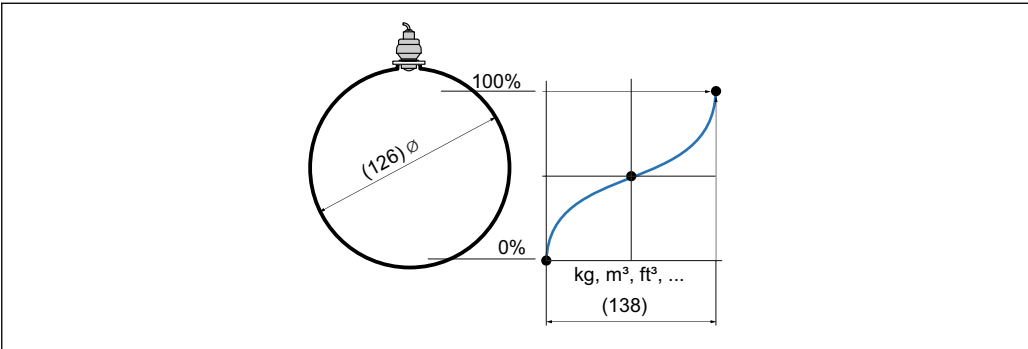
A0058617

73 Maximum value sloped bottom (138)



A0058618

74 Maximum value horizontal cylinder (138)



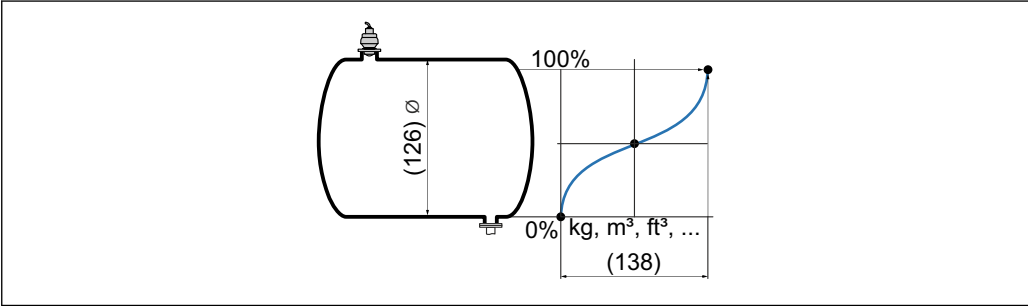
A0058621

75 Maximum value sphere (138)

Diameter

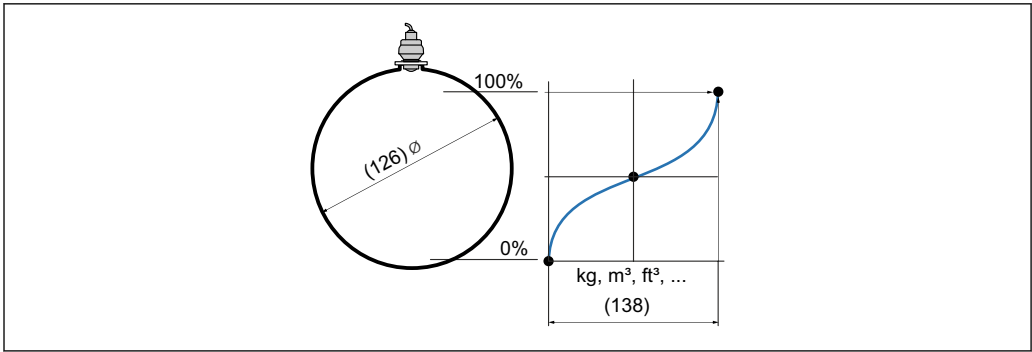


Navigation	 Application → Level → Level 1 to 2 linearized → Diameter (3520014–1 to 2)
Description	Diameter of the cylindrical or spherical tank.
User entry	Positive floating-point number
Factory setting	1.0 mm
Additional information	



A0058618

76 Diameter horizontal cylinder (126)



A0058621

77 Diameter sphere (126)

Intermediate height



Navigation

Application → Level → Level 1 to 2 linearized → Intermediate height (3520015–1 to 2)

Description

Height of the pyramid, conical or angled bottom.

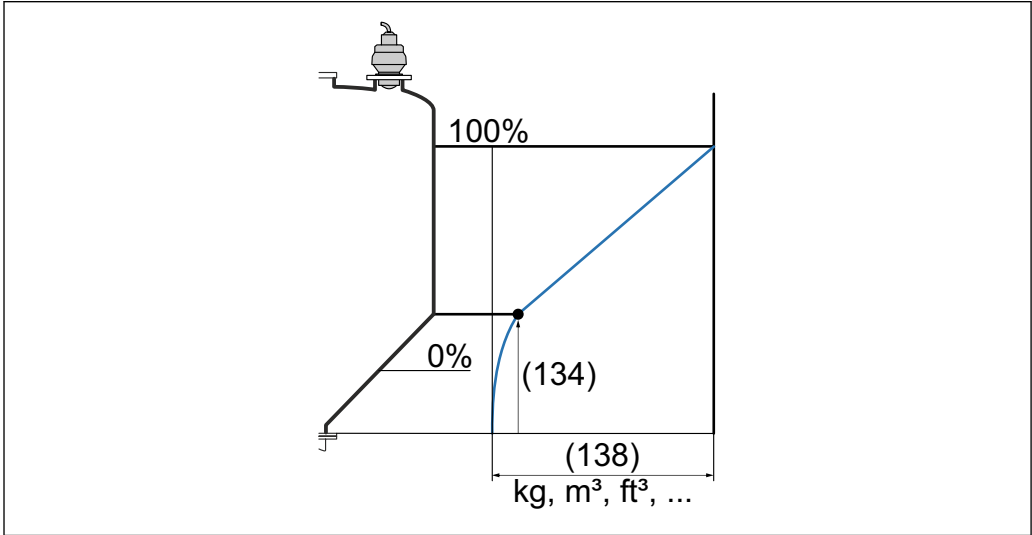
User entry

Positive floating-point number

Factory setting

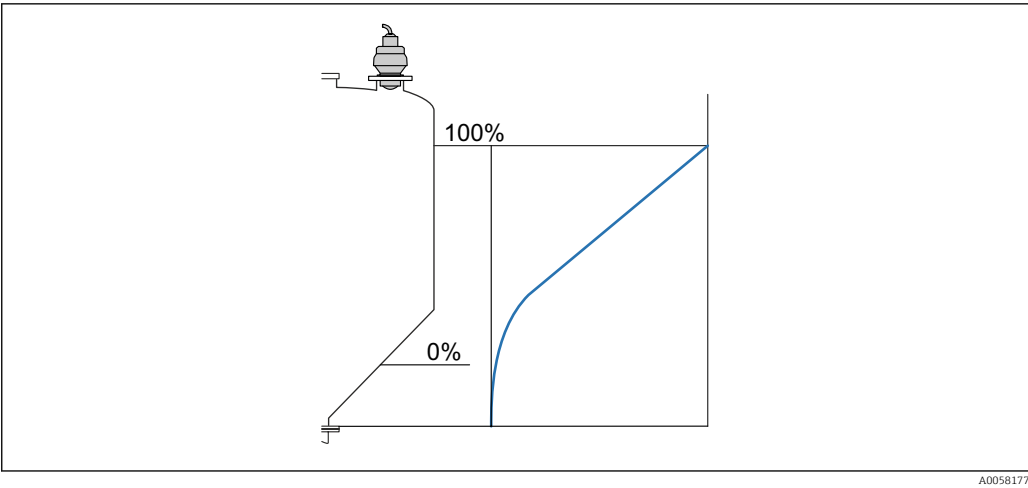
0.0 mm

Additional information

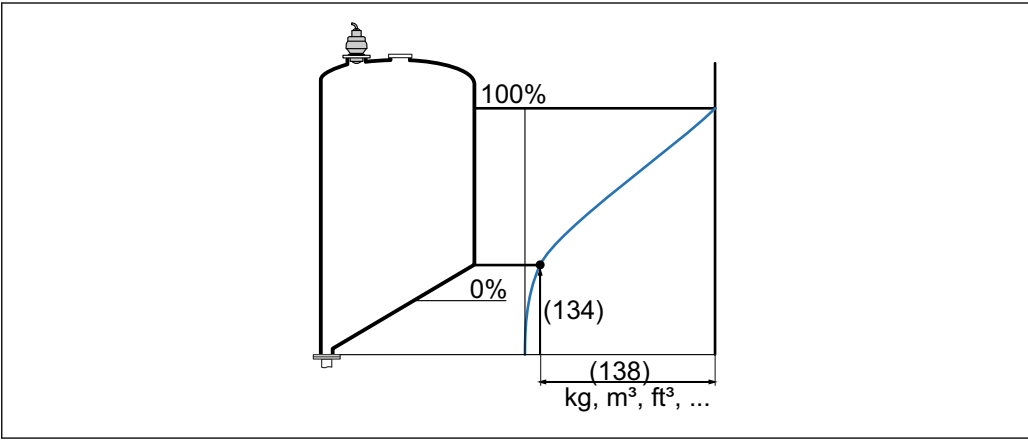


A0058620

78 Intermediate height pyramid bottom (134)



79 Intermediate height conical bottom (134)



80 Intermediate height sloped bottom (134)

Visualization zoom start		
Navigation	 Application → Level → Level 1 to 2 linearized → Visualization zoom start (3520030–1 to 2)	
Description	Enter the lower value for an enlarged area in the display (chart/bar graph).	
User entry	–200 000.0 to 200 000.0 %	
Factory setting	0.0 %	
Visualization zoom end		

Navigation	 Application → Level → Level 1 to 2 linearized → Visualization zoom end (3520031–1 to 2)
Description	Enter the upper value for an enlarged area in the display (chart/bar graph).

User entry -200 000.0 to 200 000.0 %

Factory setting 100.0 %

"Additional settings" submenu

Navigation  Application → Level → Level 1 to 2 linearized → Additional settings

Output mode

Navigation  Application → Level → Level 1 to 2 linearized → Additional settings → Output mode (3520018)

Description Select output mode.

Selection

- Level
- Ullage

Factory setting Level

Level correction

Navigation  Application → Level → Level 1 to 2 linearized → Additional settings → Level correction (3520010)

Description Level correction value (Offset) after calibration.

User entry Signed floating-point number

Factory setting 0.0 mm

"Level limit mode" submenu

Navigation  Application → Level → Level 1 to 2 linearized → Additional settings → Level limit mode

Level limit mode

Navigation  Application → Level → Level 1 to 2 linearized → Additional settings → Level limit mode → Level limit mode (3520011)

Description Select the type of level limitation. No limit, upper or lower limit, or both limits.

Selection

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

Factory setting Off

Low limit

Navigation  Application → Level → Level 1 to 2 linearized → Additional settings → Level limit mode → Low limit (3520012)

Description Specify lower limit.

User entry Signed floating-point number

Factory setting 0.0 mm

High limit

Navigation  Application → Level → Level 1 to 2 linearized → Additional settings → Level limit mode → High limit (3520013)

Description Specify upper limit.

User entry Signed floating-point number

Factory setting 0.0 mm

"Override level (ext. input 1)" submenu

Navigation  Application → Level → Level 1 to 2 linearized → Additional settings → Override level (ext. input 1)

Override level (ext. input 1)

Navigation	 Application → Level → Level 1 to 2 linearized → Additional settings → Override level (ext. input 1) → Override level (ext. input 1) (3520021)
Description	Select whether the display of the measured level should be suppressed or not while an external signal is present. Example: Redundant level limit detection.
Selection	■ Off ■ Hold current level ■ User-specific value
Factory setting	Off

User-specific value 1

Navigation	 Application → Level → Level 1 to 2 linearized → Additional settings → Override level (ext. input 1) → User-specific value 1 (3520022)
Description	Enter the level value to be displayed as long as the signal is present at the external input.
User entry	-200 000.0 to 200 000.0 %
Factory setting	100.0 %

External input 1

Navigation	 Application → Level → Level 1 to 2 linearized → Additional settings → Override level (ext. input 1) → External input 1 (3520020)
Description	Select the source that provides the external signal. If both external inputs are active, external input 2 has the higher priority.
Selection	■ Off ■ Digital input 1 ■ Digital input 2 ■ Digital input 3 ■ Digital input 4
Factory setting	Off

"Override level (ext. input 2)" submenu

Navigation  Application → Level → Level 1 to 2 linearized → Additional settings → Override level (ext. input 2)

Override level (ext. input 2)

Navigation  Application → Level → Level 1 to 2 linearized → Additional settings → Override level (ext. input 2) → Override level (ext. input 2) (3520024)

Description Select whether the display of the measured level should be suppressed or not while an external signal is present. Example: Redundant level limit detection.

Selection

- Off
- Hold current level
- User-specific value

Factory setting Off

User-specific value 2

Navigation  Application → Level → Level 1 to 2 linearized → Additional settings → Override level (ext. input 2) → User-specific value 2 (3520025)

Description Enter the level value to be displayed as long as the signal is present at the external input.

User entry -200 000.0 to 200 000.0 %

Factory setting 100.0 %

External input 2

Navigation  Application → Level → Level 1 to 2 linearized → Additional settings → Override level (ext. input 2) → External input 2 (3520023)

Description Select the source that provides the external signal. If both external inputs are active, external input 2 has the higher priority.

Selection

- Off
- Digital input 1
- Digital input 2
- Digital input 3
- Digital input 4

Factory setting Off

"Failure behavior" submenu

Navigation  Application → Level → Level 1 to 2 linearized → Additional settings → Failure behavior

Failure behavior

Navigation  Application → Level → Level 1 to 2 linearized → Additional settings → Failure behavior → Failure behavior (3520027)

- Selection
- Invalid
 - Last good
 - Fixed Value

Factory setting Invalid

Failure value

Navigation  Application → Level → Level 1 to 2 linearized → Additional settings → Failure behavior → Failure value (3520028)

User entry -200 000.0 to 200 000.0 %

Factory setting 0.0 %

3.3.6 "Pump control" submenu

Navigation  Application → Pump control

"Pump control 1 to 2" submenu

Navigation  Guidance → Commissioning → Application → Pump control 1 to 2

Navigation  Application → Pump control → Pump control 1 to 2

Assign pumps

Navigation	 Application → Pump control → Pump control 1 to 2 → Assign pumps (3390008–1 to 2)
	 Guidance → Commissioning → Application → Pump control 1 to 2 → Assign pumps (3390008–1 to 2)
Description	Assign the pumps to the control channel.
Selection	■ Pump 1 ■ Pump 2 ■ Pump 3 ■ Pump 4 ■ Pump 5 ■ Pump 6 ■ Pump 7 ■ Pump 8

Pump control function

Navigation	 Application → Pump control → Pump control 1 to 2 → Pump control function (3390011–1 to 2)
Description	Select the pump control function.
Selection	■ Limit control ■ Pump rate control
Factory setting	Limit control

Tariff control		
Navigation	  Application → Pump control → Pump control 1 to 2 → Tariff control (3390051-1 to 2)	
Description	Activate pump control via favorable electricity tariff times.	
Selection	■ Off ■ On	
Factory setting	Off	
Start time		
Navigation	  Application → Pump control → Pump control 1 to 2 → Start time (3390052-1 to 2)	
Description	Enter the start time of the tariff control with discounted electricity tariff in local time in the format hh:mm.	
User entry	Days (d), hours (h), minutes (m), seconds (s)	
Factory setting	72000	
Stop time		
Navigation	  Application → Pump control → Pump control 1 to 2 → Stop time (3390053-1 to 2)	
Description	Enter the stop time of the tariff control with discounted electricity tariff in local time in the format hh:mm.	
User entry	Days (d), hours (h), minutes (m), seconds (s)	
Factory setting	28800	

"Pump rate control settings" submenu

- Navigation

Guidance → Commissioning → Application → Pump control 1 to 2 settings
- Navigation

Application → Pump control → Pump control 1 to 2 → Pump rate control settings

Switch-on point

- Navigation

Application → Pump control → Pump control 1 to 2 → Pump rate control settings → Switch-on point (3390009)
- Guidance → Commissioning → Application → Pump control 1 to 2 settings → Switch-on point (3390009-1 to 2)

Description

Define the switch-on point for pump rate control.

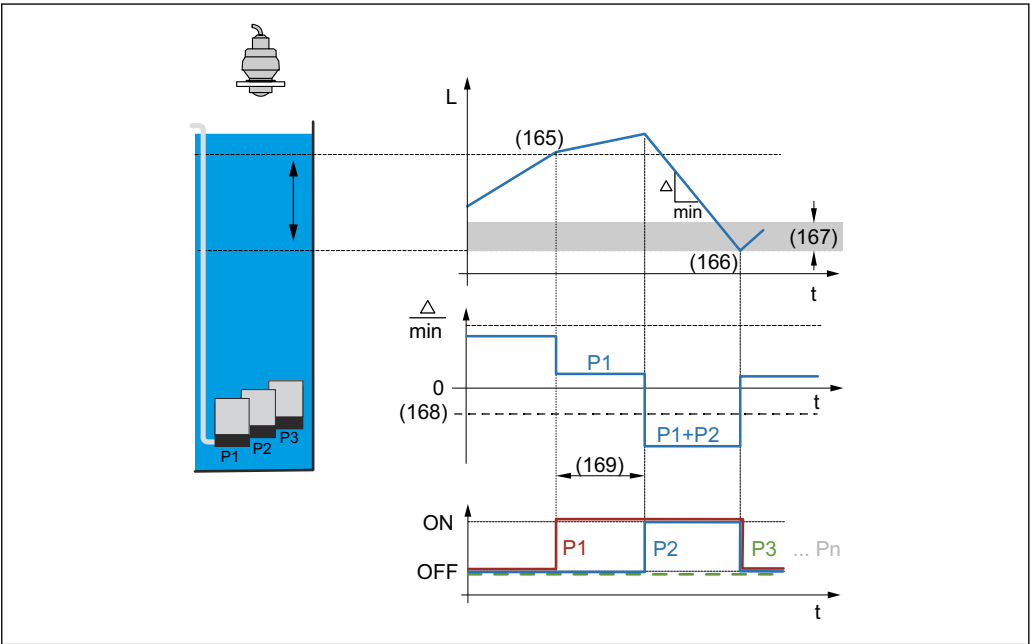
User entry

-200 000.0 to 200 000.0 %

Factory setting

20.0 %

Additional information



81 Switch-on point (165) of pump rate control

Switch-on point (tariff control)

- Navigation

Application → Pump control → Pump control 1 to 2 → Pump rate control settings → Switch-on point (tariff control) (3390054)

Description

Define the switch-on point for the pump rate control that applies when the tariff control is activated.

User entry	−200 000.0 to 200 000.0 %
Factory setting	20.0 %

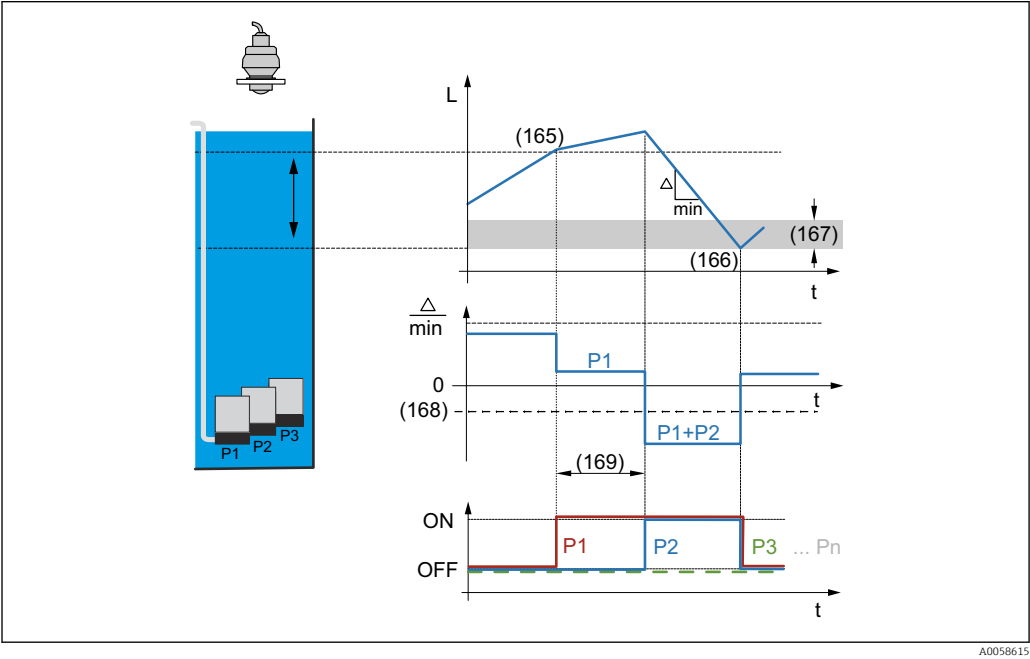
Switch-off point

Navigation	Application → Pump control → Pump control 1 to 2 → Pump rate control settings → Switch-off point (3390010) Guidance → Commissioning → Application → Pump control 1 to 2 settings → Switch-off point (3390010–1 to 2)
------------	---

Description Define the switch-off point for pump rate control.

User entry	−200 000.0 to 200 000.0 %
Factory setting	10.0 %

Additional information



82 Switch-off point (166) of pump rate control

Switch-off point (tariff control)

Navigation	Application → Pump control → Pump control 1 to 2 → Pump rate control settings → Switch-off point (tariff control) (3390055)
------------	---

Description Define the switch-off point for the pump rate control that applies when the tariff control is activated.

User entry	−200 000.0 to 200 000.0 %
Factory setting	10.0 %

Minimum pump rate per second

Navigation

- Application → Pump control → Pump control 1 to 2 → Pump rate control settings → Minimum pump rate per second (3390024)
- Guidance → Commissioning → Application → Pump control 1 to 2 settings → Minimum pump rate per second (3390024-1 to 2)

Description

Define minimum pump rate. Assigned pumps are gradually switched on (switch-on interval) until the set minimum pump rate is reached.

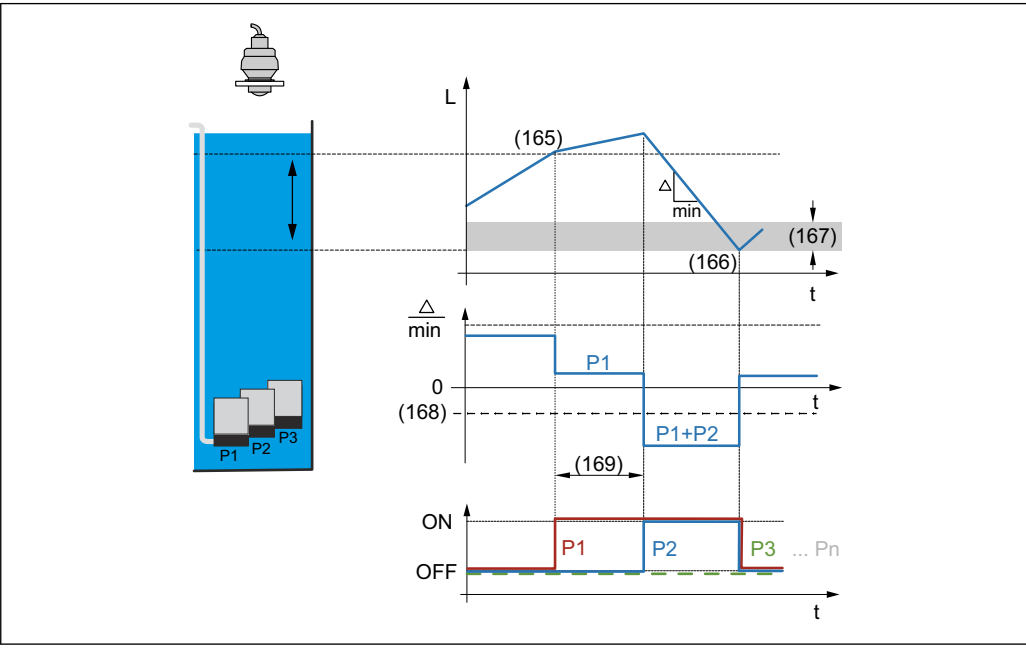
User entry

0.0 to 200 000.0 %

Factory setting

0.0 %

Additional information



83 Minimum pump rate per second (168) of pump rate control

Crust reduction

Navigation

- Application → Pump control → Pump control 1 to 2 → Pump rate control settings → Crust reduction (3390028)

Description

Define a percentage uncertainty for the switch-on and switch-off point. The switch points randomly varies within the given uncertainty range.

User entry

0.0 to 200 000.0 %

Factory setting

0.0 %

Switch-on border



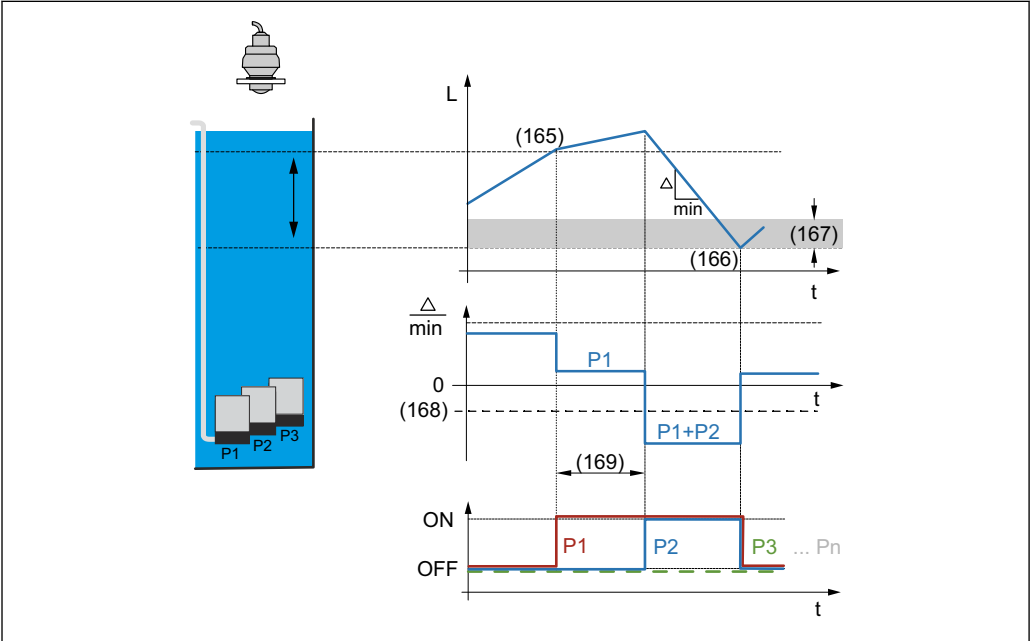
Navigation	Application → Pump control → Pump control 1 to 2 → Pump rate control settings → Switch-on border (3390025)
Description	Define the switch-on border. If the distance (level - switch-off point) is less than the switch-on limit, no further pumps are switched on.
User entry	0.0 to 200 000.0 %
Factory setting	0.0 %

Switch-on interval



Navigation	Application → Pump control → Pump control 1 to 2 → Pump rate control settings → Switch-on interval (3390023) Guidance → Commissioning → Application → Pump control 1 to 2 settings → Switch-on interval (3390023-1 to 2)
Description	Define the time interval until the next pump is switched on.
User entry	1 to 65 535 s
Factory setting	30 s

Additional information



A0058615

84 Hook up interval (169) of pump rate control

Load control
**Navigation**

-   Application → Pump control → Pump control 1 to 2 → Pump rate control settings → Load control (3390027)
-   Guidance → Commissioning → Application → Pump control 1 to 2 settings → Load control (3390027-1 to 2)

Description

Select the load control of the grouped pumps. The load type defines the order in which the pumps switch on and off.

Selection

- No
- Fixed sequence
- Time of use
- Starts
- Starts + time

Factory setting

Fixed sequence

"Limit control settings" submenu

- Navigation*   Guidance → Commissioning → Application → Pump control 1 to 2 settings
- Navigation*   Application → Pump control → Pump control 1 to 2 → Limit control settings

Simultaneous operation
**Navigation**

-   Application → Pump control → Pump control 1 to 2 → Limit control settings → Simultaneous operation (3390012)
-   Guidance → Commissioning → Application → Pump control 1 to 2 settings → Simultaneous operation (3390012-1 to 2)

Description

Activate simultaneous operation of several pumps. The pumps operate simultaneously at the defined limit values.

Selection

- No
- Yes

Factory setting

Yes

Group pumps

Navigation	Application → Pump control → Pump control 1 to 2 → Limit control settings → Group pumps (3390026) Guidance → Commissioning → Application → Pump control 1 to 2 settings → Group pumps (3390026–1 to 2)
Description	Activate a grouping of several pumps or one pump in one channel.
Selection	■ No ■ Yes
Factory setting	No

Load control

Navigation	Application → Pump control → Pump control 1 to 2 → Limit control settings → Load control (3390027) Guidance → Commissioning → Application → Pump control 1 to 2 settings → Load control (3390027–1 to 2)
Description	Select the load control of the grouped pumps. The load type defines the order in which the pumps switch on and off.
Selection	■ No ■ Fixed sequence ■ Time of use ■ Starts ■ Starts + time
Factory setting	Fixed sequence

"Run-on settings" submenu

Navigation

Application → Pump control → Pump control 1 to 2 → Run-on settings

Activate

Navigation	Application → Pump control → Pump control 1 to 2 → Run-on settings → Activate (3390039)
Selection	■ No ■ Yes

Factory setting No

Run-on interval 🔒

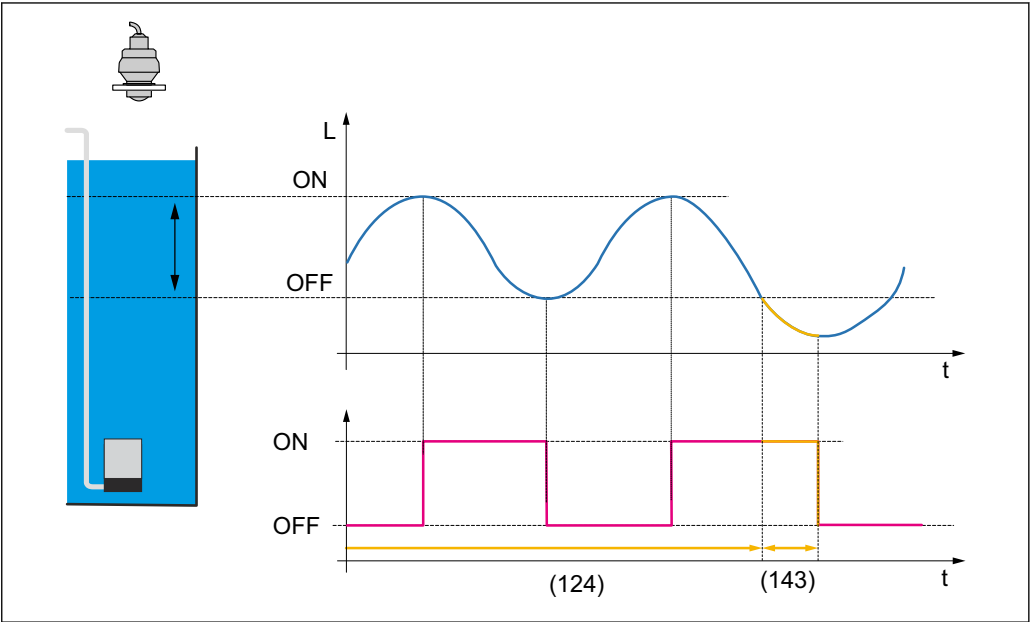
Navigation 📁📁 Application → Pump control → Pump control 1 to 2 → Run-on settings → Run-on interval (3390040)

Description Define a time interval, after which the pump will run on.

User entry 0 to 999 999 h

Factory setting 0 h

Additional information



85 Backlash interval of pump (124)

Run-on time 🔒

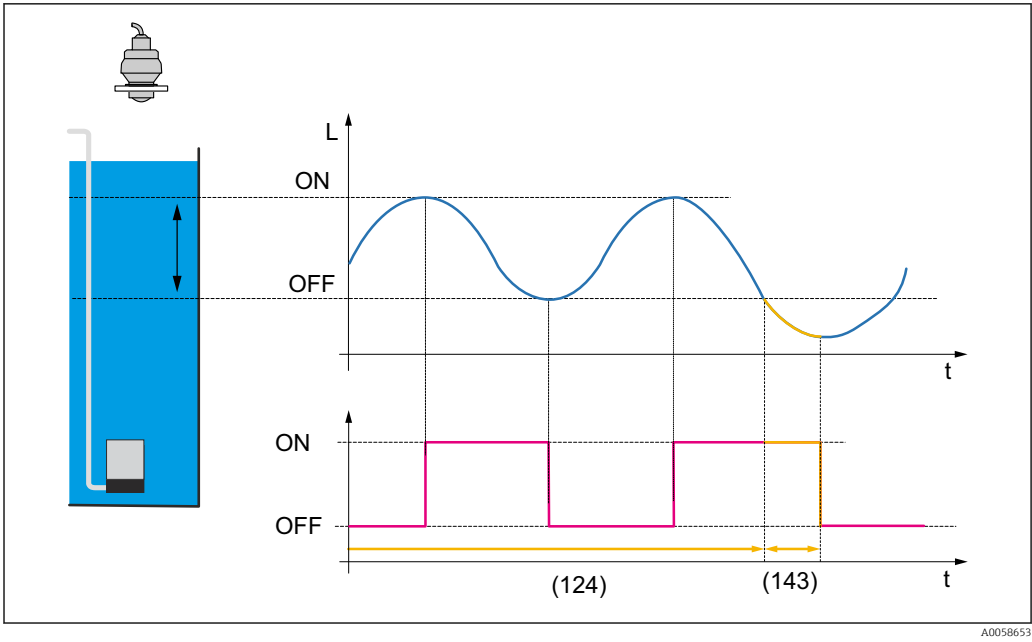
Navigation 📁📁 Application → Pump control → Pump control 1 to 2 → Run-on settings → Run-on time (3390041)

Description Define the duration of the pump run-on.

User entry 0 to 255 s

Factory setting 0 s

Additional information



"Storm function" submenu

Navigation  Application → Pump control → Pump control 1 to 2 → Storm function

Activate

Navigation  Application → Pump control → Pump control 1 to 2 → Storm function → Activate (3390067)

Selection

- No
- Yes

Factory setting No

Switch-on point

Navigation  Application → Pump control → Pump control 1 to 2 → Storm function → Switch-on point (3390068)

Description Define the switch-on point. If the measured level exceeds this value, all pumps are switched off.

User entry -200 000.0 to 200 000.0 %

Factory setting 20.0 %

Switch-off point



Navigation  Application → Pump control → Pump control 1 to 2 → Storm function → Switch-off point (3390069)

Description Define the switch-off point. If the measured level falls below this value, the storm function is deactivated.

User entry -200 000.0 to 200 000.0 %

Factory setting 10.0 %

Storm function duration



Navigation  Application → Pump control → Pump control 1 to 2 → Storm function → Storm function duration (3390070)

Description Define the maximum duration of the storm function.

User entry 0 to 999 999 min

Factory setting 60 min

"Automatic function test" submenu

Navigation  Application → Pump control → Pump control 1 to 2 → Automatic function test → Automatic function test

Activate



Navigation  Application → Pump control → Pump control 1 to 2 → Automatic function test → Activate (3390080)

Selection

- No
- Yes

Factory setting No

Switch-on point



Navigation	  Application → Pump control → Pump control 1 to 2 → Automatic function test → Switch-on point (3390081)
Description	Define the switch-on point.
User entry	–200 000.0 to 200 000.0 %
Factory setting	20.0 %

Switch-off point



Navigation	  Application → Pump control → Pump control 1 to 2 → Automatic function test → Switch-off point (3390082)
Description	Define the switch-off point.
User entry	–200 000.0 to 200 000.0 %
Factory setting	10.0 %

Maximum downtime



Navigation	  Application → Pump control → Pump control 1 to 2 → Automatic function test → Maximum downtime (3390083)
Description	Define the maximum downtime of the pumps. After this time has elapsed, the corresponding pump is switched on for the function test.
User entry	0 to 999 999 h
Factory setting	0 h

Maximum test duration



Navigation	  Application → Pump control → Pump control 1 to 2 → Automatic function test → Maximum test duration (3390084)
Description	Define the maximum function test duration. After this time has elapsed, the pumps are switched off.
User entry	0 to 65 535 s

Factory setting 60 s

"Flush control" submenu

Navigation  Application → Pump control → Pump control 1 to 2 → Flush control

Activate



Navigation  Application → Pump control → Pump control 1 to 2 → Flush control → Activate (3390094)

Selection

- No
- Yes

Factory setting No

Pump cycles



Navigation  Application → Pump control → Pump control 1 to 2 → Flush control → Pump cycles (3390095)

Description Define the number of pump cycles. The flush cycles are started within these pump cycles.

User entry 1 to 65 535

Factory setting 1

Flush cycles



Navigation  Application → Pump control → Pump control 1 to 2 → Flush control → Flush cycles (3390096)

Description Define the number of flush cycles within the number of pump cycles.

User entry 1 to 65 535

Factory setting 1

Flush duration

Navigation	 Application → Pump control → Pump control 1 to 2 → Flush control → Flush duration (3390097)
Description	Define the flush duration of a flush cycle.
User entry	1 to 255 s
Factory setting	1 s

Flush delay

Navigation	 Application → Pump control → Pump control 1 to 2 → Flush control → Flush delay (3390098)
Description	Define the delay time between the start of the pump cycle and the activation of the flush relay.
User entry	0 to 255 s
Factory setting	0 s

"Operating hours alarm" submenu

Navigation  Application → Pump control → Pump control 1 to 2 → Operating hours alarm

Operating hours alarm

Navigation	 Application → Pump control → Pump control 1 to 2 → Operating hours alarm → Operating hours alarm (3390108)
Description	Activate the operating hours alarm.
Selection	No Yes
Factory setting	No

"Pump 1 to 8" submenu

Navigation  Application → Pump control → Pump 1 to 8

Switch-on point

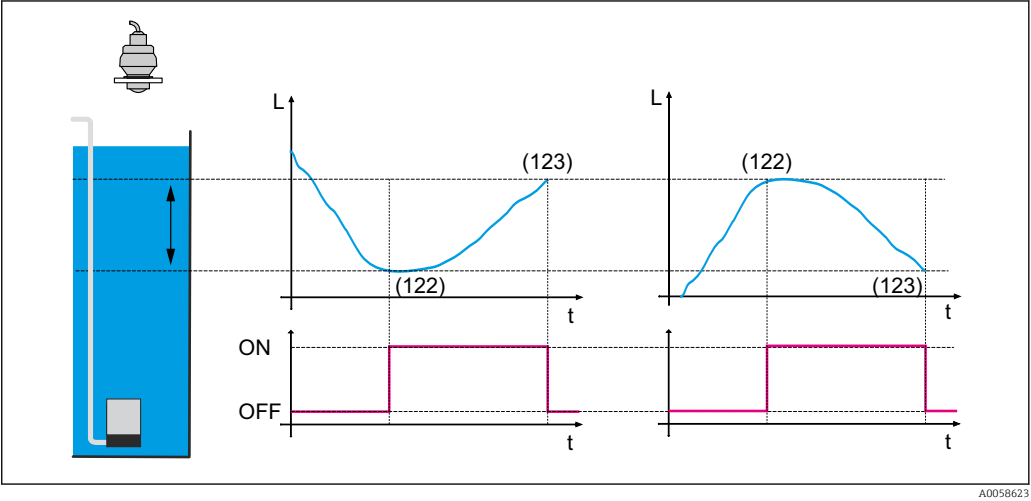
Navigation  Application → Pump control → Pump 1 to 8 → Switch-on point (3490007-1 to 8)

Description Define the switch-on point for the pump individually.

User entry -200 000.0 to 200 000.0 %

Factory setting 20.0 %

Additional information



87 Switch-on point (122) of pump

Switch-on point (tariff control)

Navigation  Application → Pump control → Pump 1 to 8 → Switch-on point (tariff control) (3490055-1 to 8)

Description Define the switch-on point for the pump individually, that applies when the tariff control is activated.

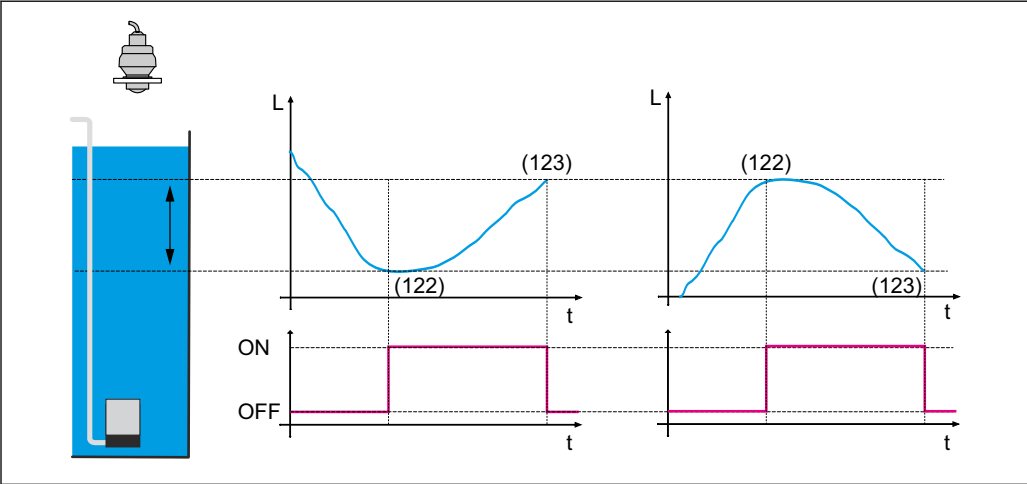
User entry -200 000.0 to 200 000.0 %

Factory setting 20.0 %

Switch-off point



Navigation	 Application → Pump control → Pump 1 to 8 → Switch-off point (3490008-1 to 8)
Description	Define the switch-off point for the pump individually.
User entry	-200 000.0 to 200 000.0 %
Factory setting	10.0 %
Additional information	



A0058623

 88 Switch-off point (123) of pump

Switch-off point (tariff control)



Navigation	 Application → Pump control → Pump 1 to 8 → Switch-off point (tariff control) (3490056-1 to 8)
Description	Define the switch-off point for the pump individually, that applies when the tariff control is activated.
User entry	-200 000.0 to 200 000.0 %
Factory setting	10.0 %

Crust reduction



Navigation	 Application → Pump control → Pump 1 to 8 → Crust reduction (3490013-1 to 8)
Description	Individually define a uncertainty for the switch-on and switch-off point of the pump. The switch points randomly varies within the uncertainty.
User entry	0.0 to 200 000.0 %

Factory setting 0.0 %

Switch-on delay 🔒

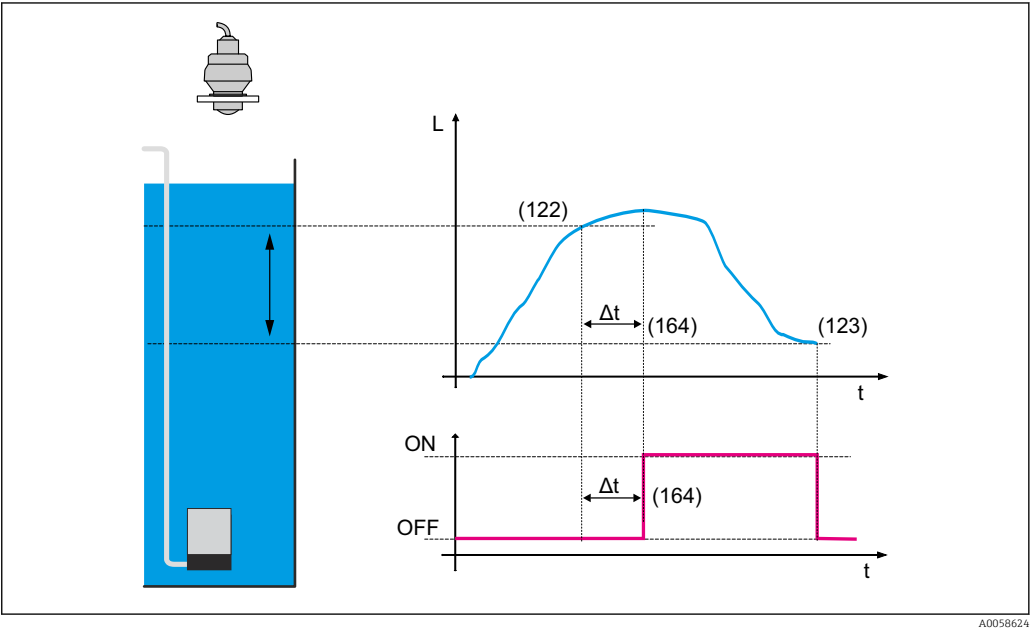
Navigation 📁📁 Application → Pump control → Pump 1 to 8 → Switch-on delay (3490012–1 to 8)

Description Define switch-on delay for the pump individually. Switch-on delay is the time from reaching the switch-on point til the pump is actually switched on.

User entry 0 to 255 s

Factory setting 0 s

Additional information



Assign to group 🔒

Navigation 📁📁 Application → Pump control → Pump 1 to 8 → Assign to group (3490009–1 to 8)

Description Assign pump to a group in the channel. Pump grouping must be activated for this.

- Selection**
- No
 - Yes

Factory setting No

Share of use



Navigation  Application → Pump control → Pump 1 to 8 → Share of use (3490010–1 to 8)

Description Set the percentage share of pump usage within a defined group.

User entry 1.0 to 100.0

Factory setting 50.0

Maximum usage time



Navigation  Application → Pump control → Pump 1 to 8 → Maximum usage time (3490011–1 to 8)

Description Specify the maximum usage time for the pump.

User entry 1 to 999 999 min

Factory setting 20 min

Failure mode



Navigation  Application → Pump control → Pump 1 to 8 → Failure mode (3490080–1 to 8)

Description Select the output behavior in case of failure.

Selection

- Invalid
- Last good
- Off
- On

Factory setting Invalid

Pump feedback



Navigation  Application → Pump control → Pump 1 to 8 → Pump feedback (3490048–1 to 8)

Description Define a digital input via which the pump outputs a feedback signal.

Selection

- Off
- Digital input 1
- Digital input 2
- Digital input 3
- Digital input 4

Factory setting	Off
------------------------	-----

Feedback meaning



Navigation	Application → Pump control → Pump 1 to 8 → Feedback meaning (3490049-1 to 8)
-------------------	--

Description	Define the meaning of the feedback.
--------------------	-------------------------------------

Selection	■ Pump start ■ Pump failure
------------------	---

Factory setting	Pump start
------------------------	------------

Feedback time



Navigation	Application → Pump control → Pump 1 to 8 → Feedback time (3490050-1 to 8)
-------------------	---

Description	Define the time, in which pump feedback is sent.
--------------------	--

User entry	0 to 255 s
-------------------	------------

Factory setting	1 s
------------------------	-----

Reset pump data



Navigation	Application → Pump control → Pump 1 to 8 → Reset pump data (3490067-1 to 8)
-------------------	---

Description	Activate reset of pump data.
--------------------	------------------------------

Selection	■ No ■ Reset operating hours ■ Reset pump starts ■ Reset run-on intervals ■ Reset all pump data
------------------	---

Factory setting	No
------------------------	----

Max. operating hours 	
Navigation	  Application → Pump control → Pump 1 to 8 → Max. operating hours (3490070-1 to 8)
Description	Activate the operating hours alarm. If this time is exceeded, an operating hours alarm is generated.
User entry	0 to 999 999 h
Factory setting	10 000 h

3.3.7 "Flow" submenu

Navigation   Application → Flow → Flow 1 to 2

Description 	
Navigation	  Application → Flow → Flow 1 to 2 → Description (3880065-1 to 2)
User entry	Character string comprising numbers, letters and special characters (32)
Factory setting	Flow 1

Volume flow unit 	
Navigation	  Application → Flow → Flow 1 to 2 → Volume flow unit (3880041-1 to 2)
Description	Select volume flow unit.

Selection*SI units*

- cm^3/s
- cm^3/min
- cm^3/h
- cm^3/d
- dm^3/s
- dm^3/min
- dm^3/h
- dm^3/d
- m^3/s
- m^3/min
- m^3/h
- m^3/d
- l/s
- l/min
- l/h
- l/d
- hl/s
- hl/min
- hl/h
- hl/d
- ML/h
- ML/d

Custom-specific units

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

Factory setting l/h

Decimal places

Navigation   Application → Flow → Flow 1 to 2 → Decimal places (3880008–1 to 2)

Description Select the number of decimal places for the display value.

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

Factory setting x.x

Linearization type

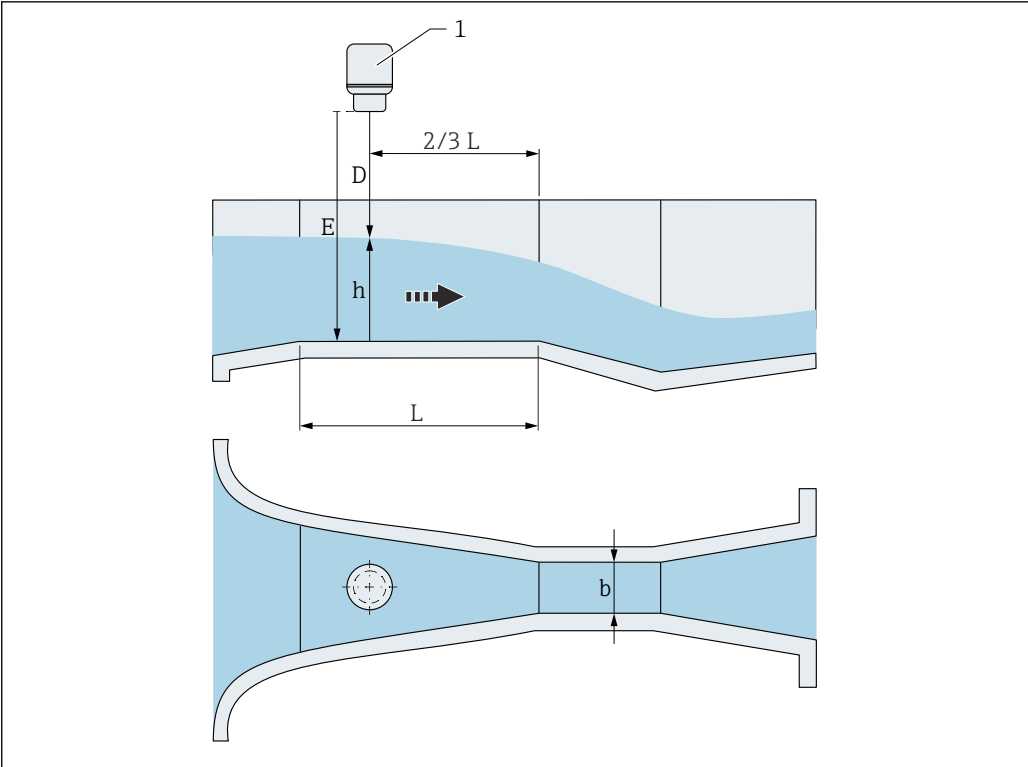
Navigation   Application → Flow → Flow 1 to 2 → Linearization type (3880013–1 to 2)

- Selection
- Flume
 - Weir
 - Pipe (Manning formula)
 - Standard formula
 - Ratiometric formula
 - Table

Factory setting Flume

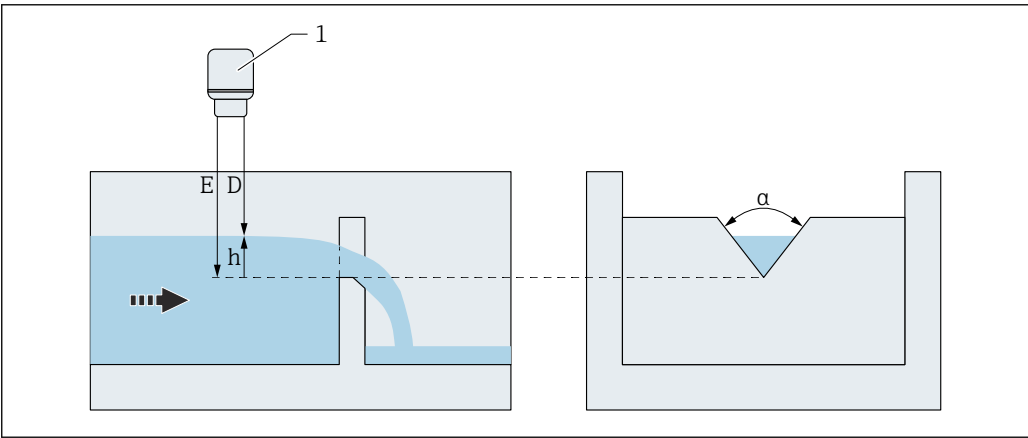
Additional information  An overview is provided in the Special Documentation (SD) on flow measurement in channels or weirs.

Additional information



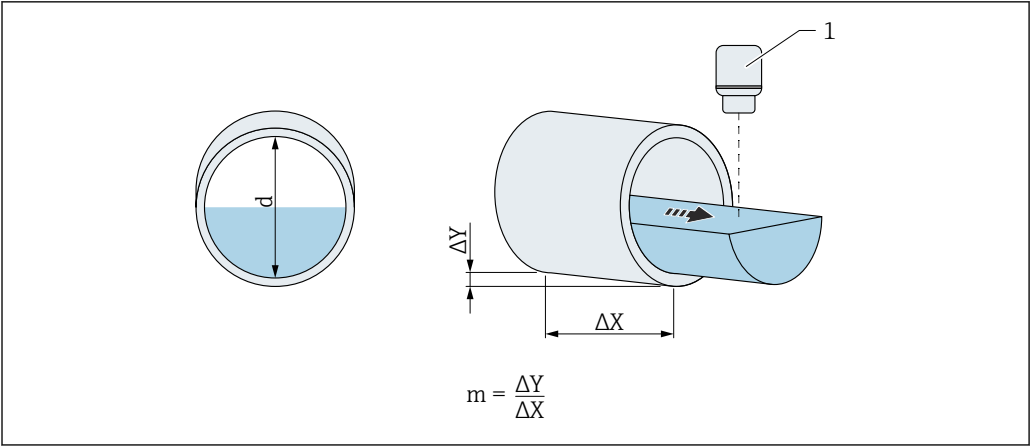
A0058007

90 Linearization type: Channel (e.g., Parshall flume)



A0058002

91 Linearization type: Weir (e.g., V-notch weir)



A0058023

92 Linearization type: Pipe profile (Manning formula)

$$Q = C \cdot (h^{\alpha} + \gamma h^{\beta})$$

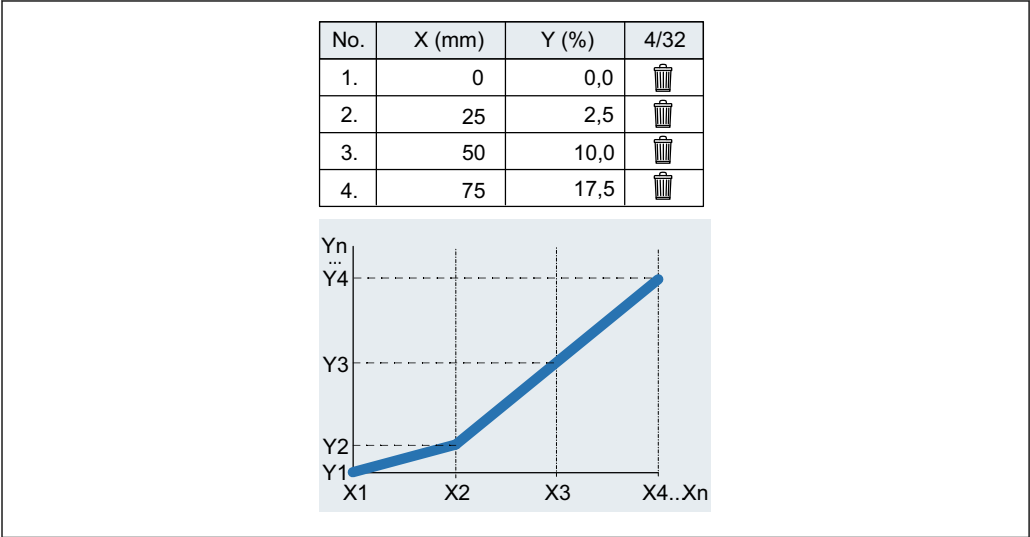
A0058962

93 Linearization type: Standard formula

$$Q = Q_{\max} \cdot \left(\frac{h}{h_{\max}}\right)^x$$

A0058024

94 Linearization type: Ratiometric formula



A0058176

95 Linearization type: Table

A decimal point must be used as the decimal separator for the import.

	A	B
1	x	y
2	0	0.0
3	25	2.5
4	50	10.0
5	75	17.5

96 Linearization type: Table (example of table in Excel)

Flume type

Navigation

Application → Flow → Flow 1 to 2 → Flume type (3880014-1 to 2)

Description

Select flume type.

Selection

- Khafagi Venturi flume
- Venturi flume
- Parshall flume
- Palmer Bowlus flume
- Trapezoidal flume (ISO 4359)
- Rectangular flume (ISO 4359)
- Leopold Lagco flume
- Cutthroat flume
- U-shaped flume (ISO 4359)
- H flume

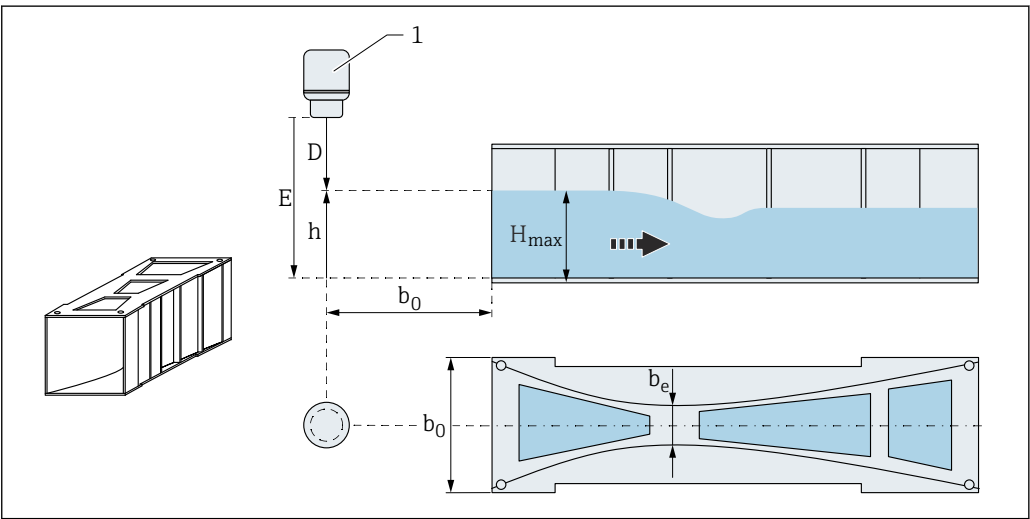
Factory setting

Khafagi Venturi flume

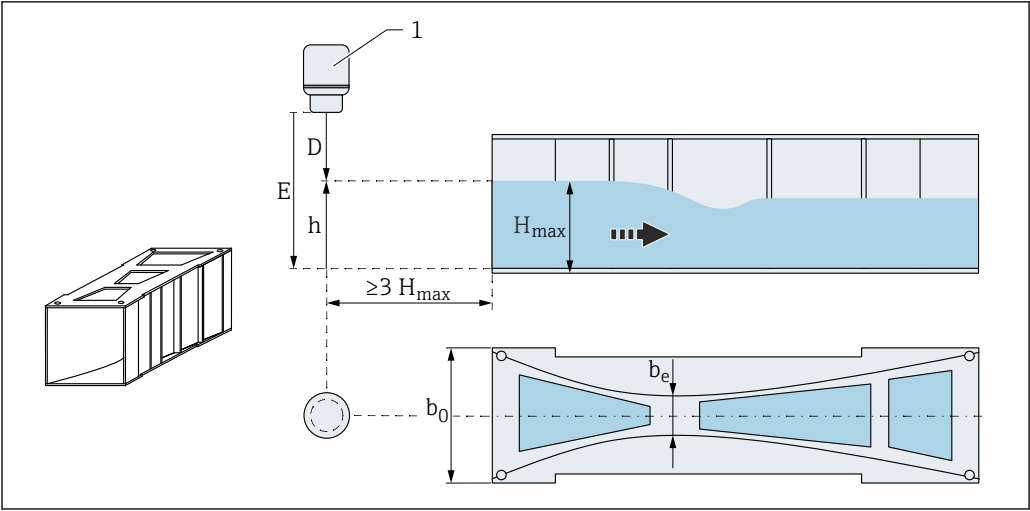
Additional information

An overview is provided in the Special Documentation (SD) on flow measurement in channels or weirs.

Additional information

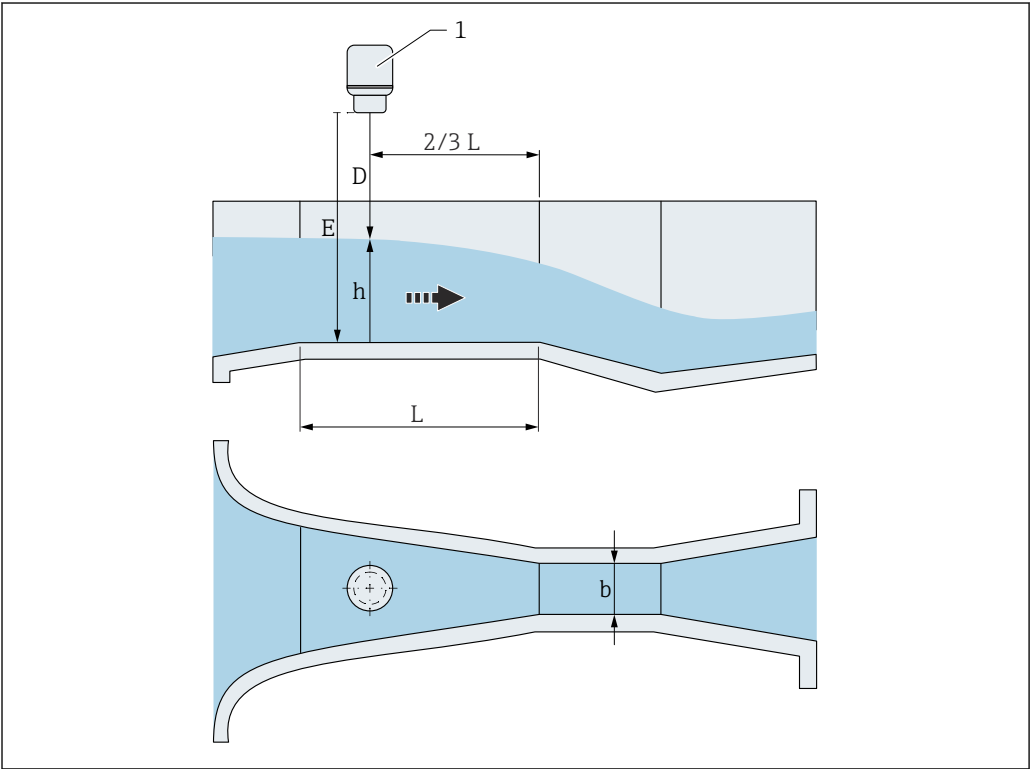


97 Channel type: Khafagi-Venturi flume



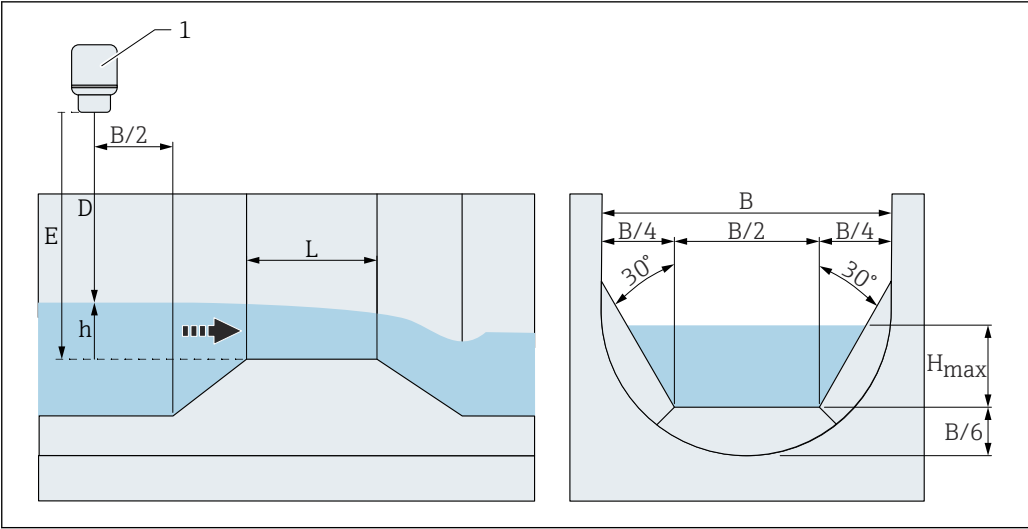
A0058005

98 Channel type: Venturi flume



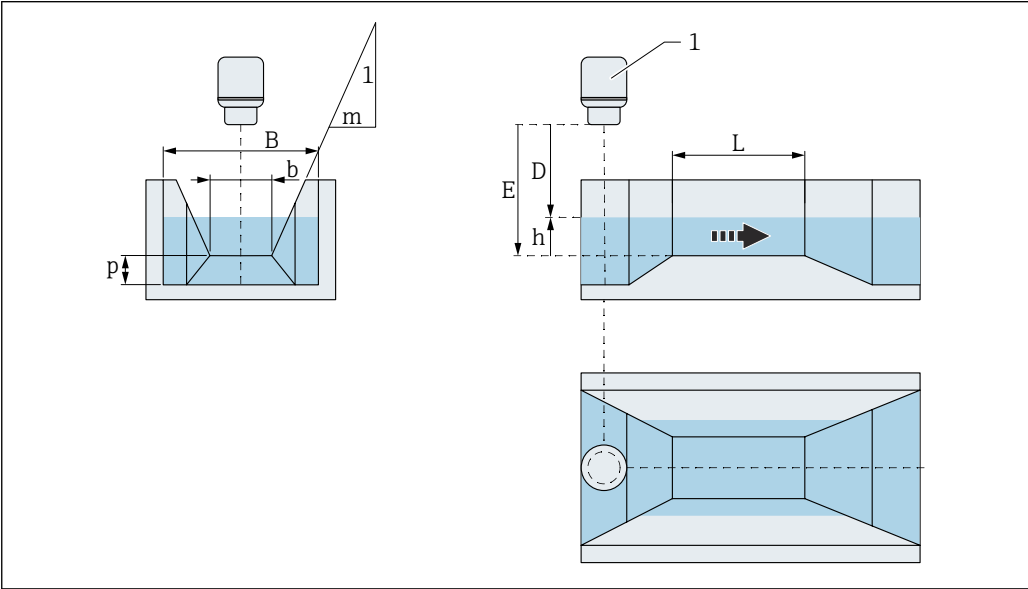
A0058007

99 Channel type: Parshall flume



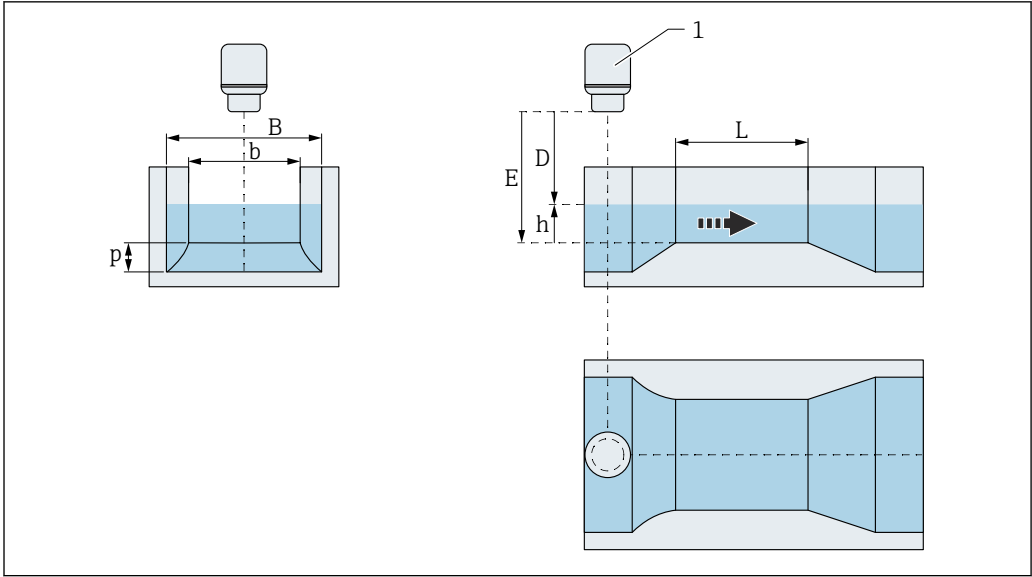
A0058008

100 Channel type: Palmer-Bowlus flume



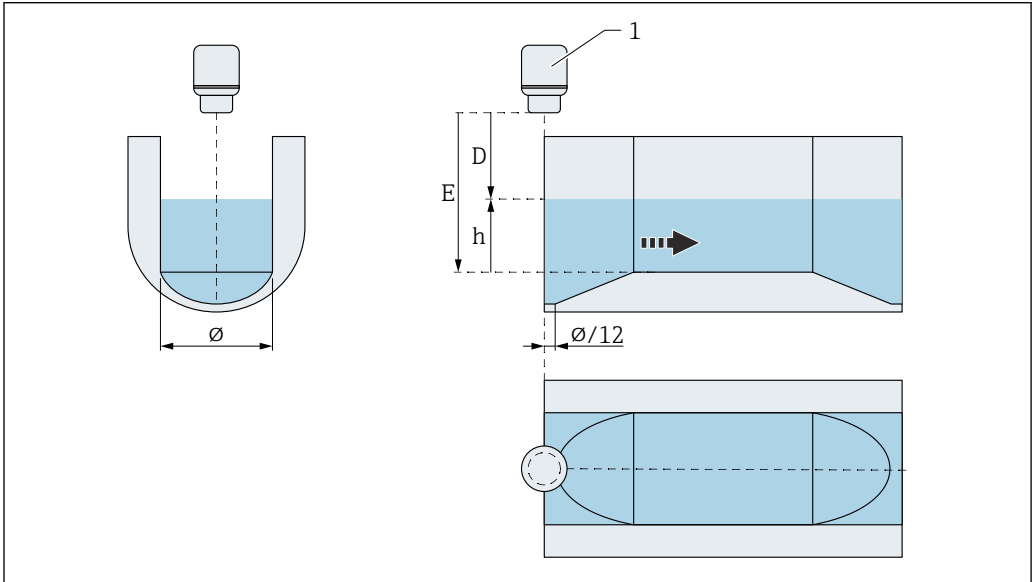
A0058016

101 Channel type: Trapezoidal flume (ISO 4359)



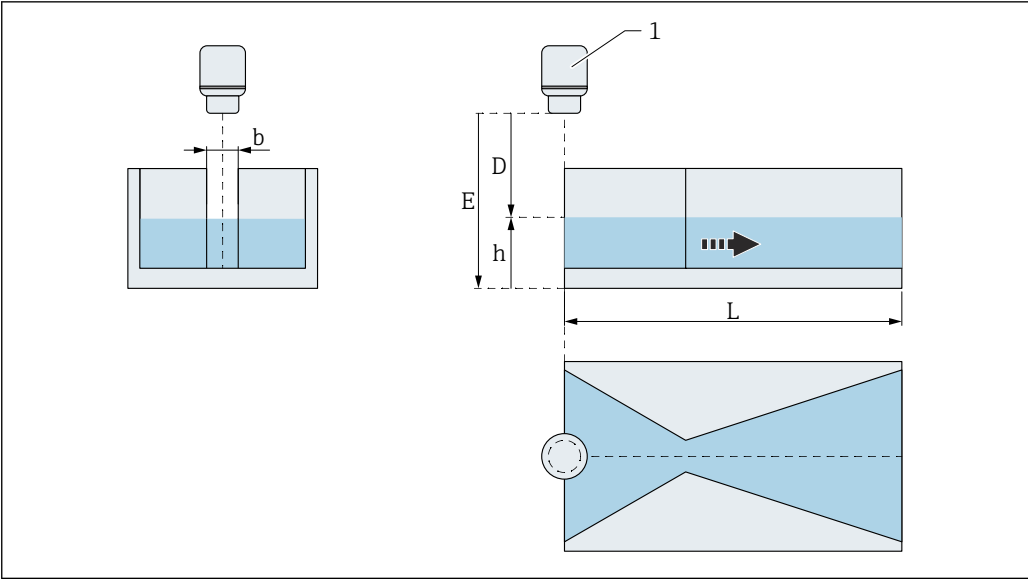
A0058017

102 Channel type: Rectangular flume (ISO 4359)



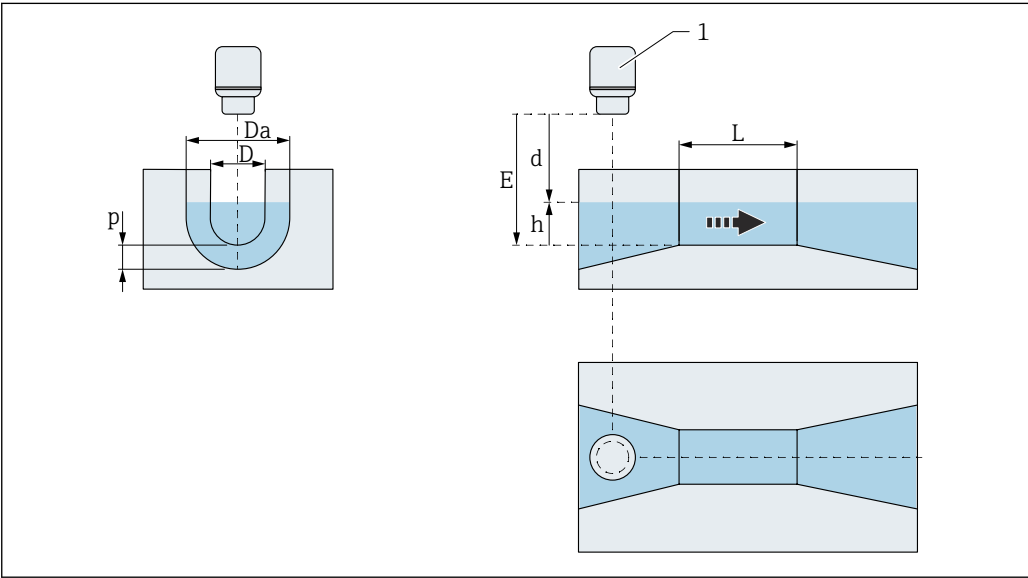
A0058013

103 Channel type: Leopold-Lagco flume



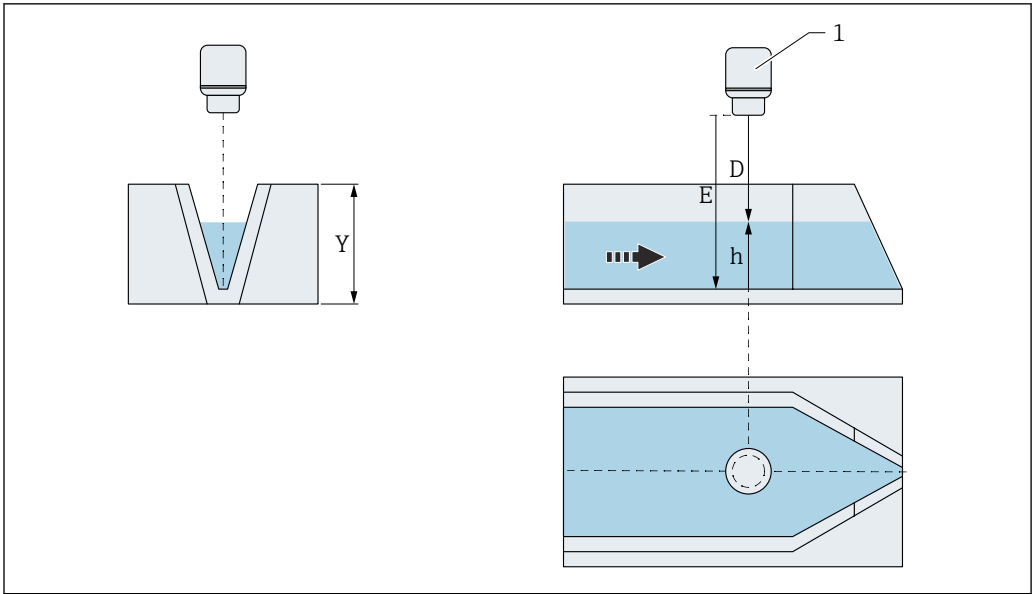
A0058014

104 Channel type: Cutthroat flume



A0058018

105 Channel type: U-shaped flume (ISO 4359)



106 Channel type: H flume

Weir type



Navigation

Application → Flow → Flow 1 to 2 → Weir type (3880021-1 to 2)

Description

Select weir type.

Selection

- Trapezoidal weir
- Round-nose broad-crested weir (ISO 4374)
- Rectang. broad-crested weir (ISO 3846)
- Thin-plate rectangular weir (ISO 1438)
- Thin-plate triangular weir (ISO 1438)

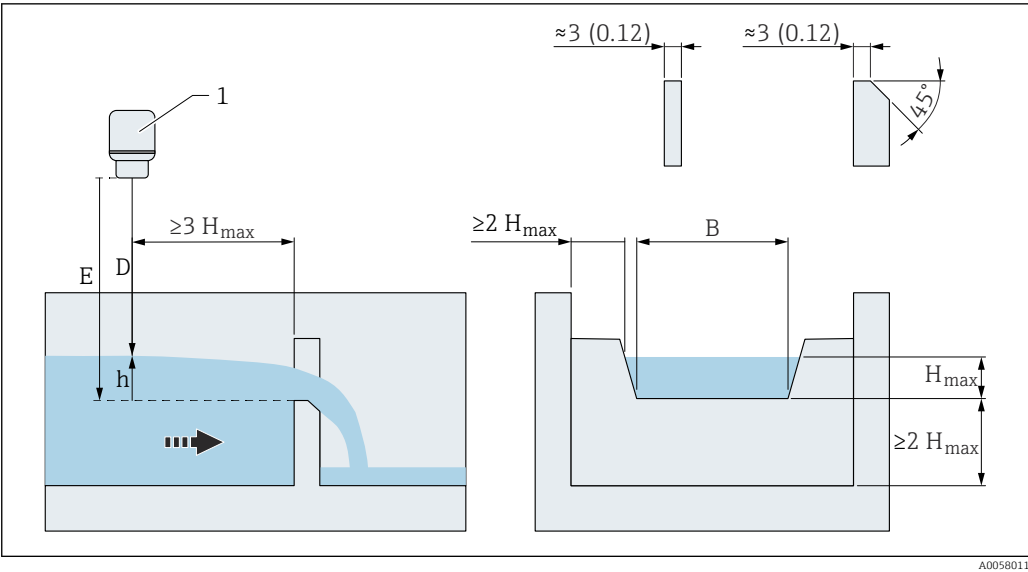
Factory setting

Trapezoidal weir

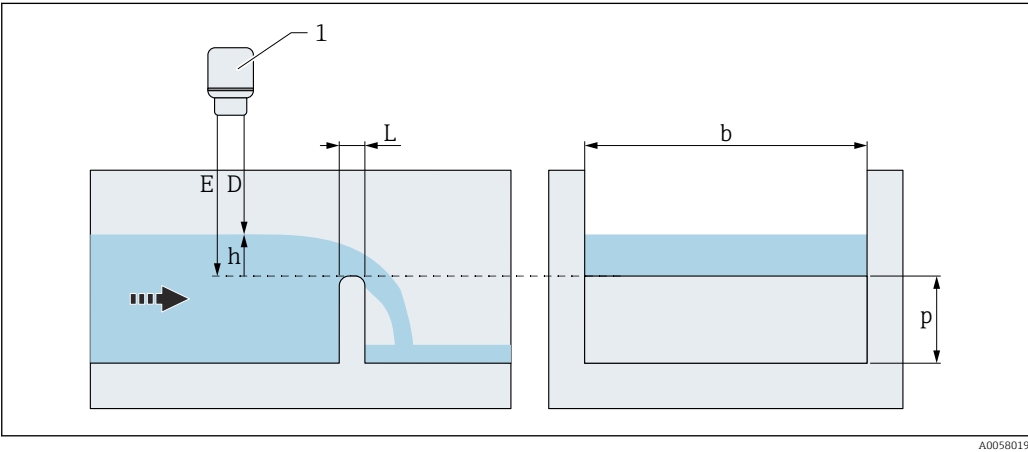
Additional information

 An overview is provided in the Special Documentation (SD) on flow measurement in channels or weirs.

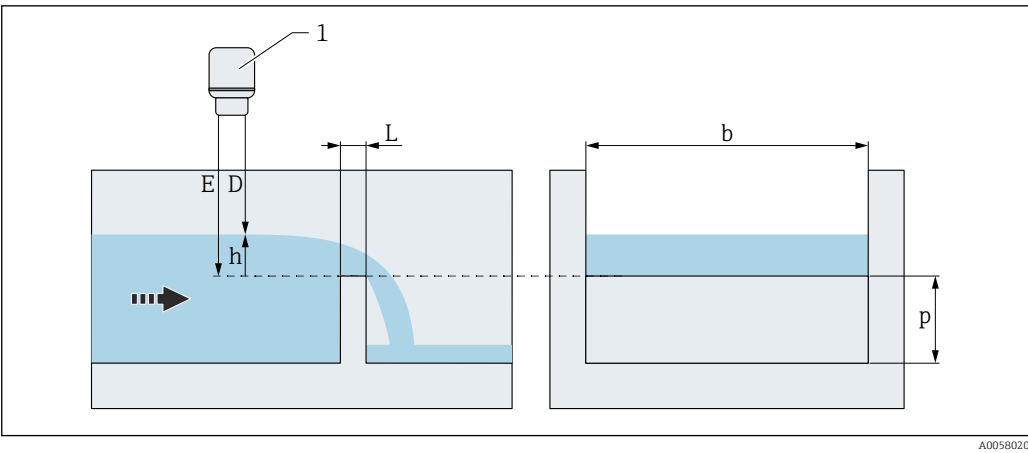
Additional information



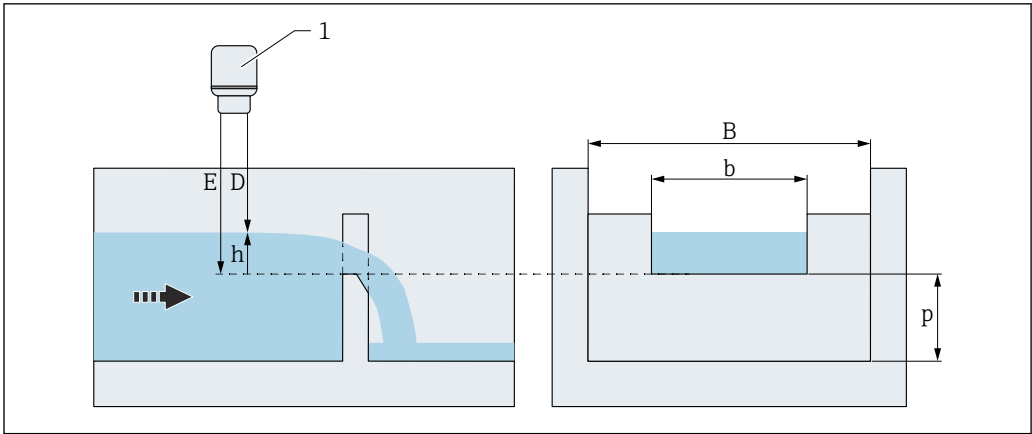
107 Weir type: Trapezoidal weir



108 Weir type: Round-nose horizontal broad-crested weir (ISO 4374)

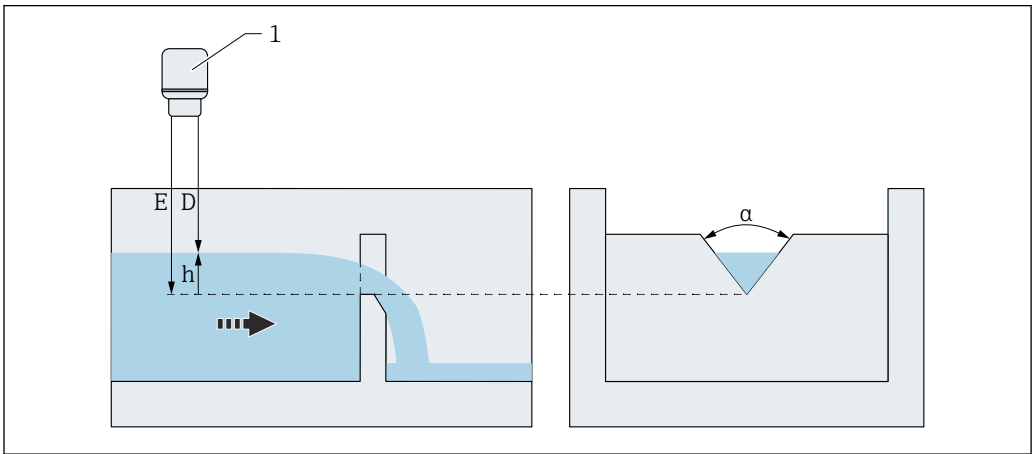


109 Weir type: Broad-crested rectangular weir (ISO 3846)



A0058021

110 Weir type: Sharp-crested rectangular weir (ISO 1438)



A0058022

111 Weir type: Sharp-crested V-notch weir (ISO 1438)

Khafagi Venturi flume



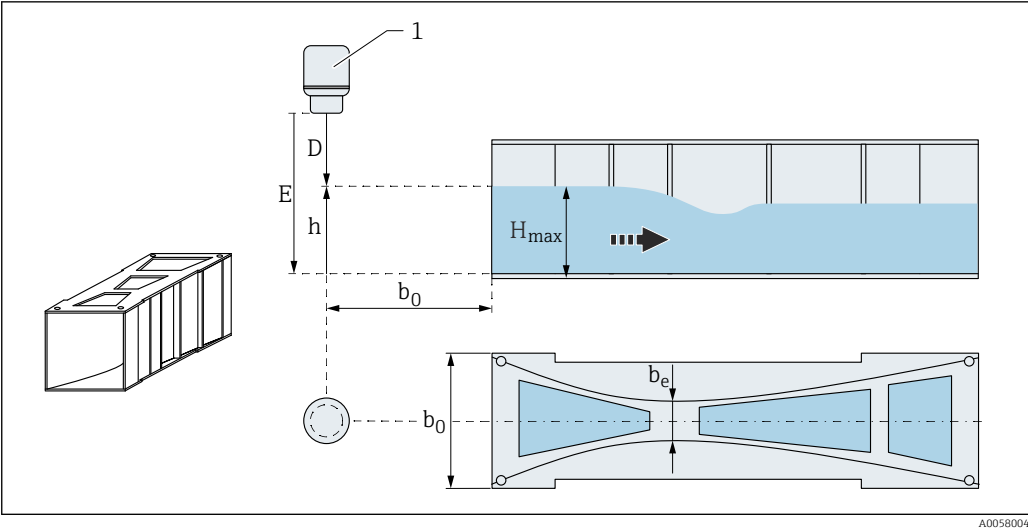
Navigation Application → Flow → Flow 1 to 2 → Khafagi Venturi flume (3880048–1 to 2)

Description Select a Khafagi Venturi flume.

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

Factory setting HQV302

Additional information  An overview is provided in the Special Documentation (SD) on flow measurement in channels or weirs.



112 Channel type: Khafagi-Venturi flume

Venturi flume

Navigation

Application → Flow → Flow 1 to 2 → Venturi flume (3880042-1 to 2)

Description

Select a Venturi flume.

Selection

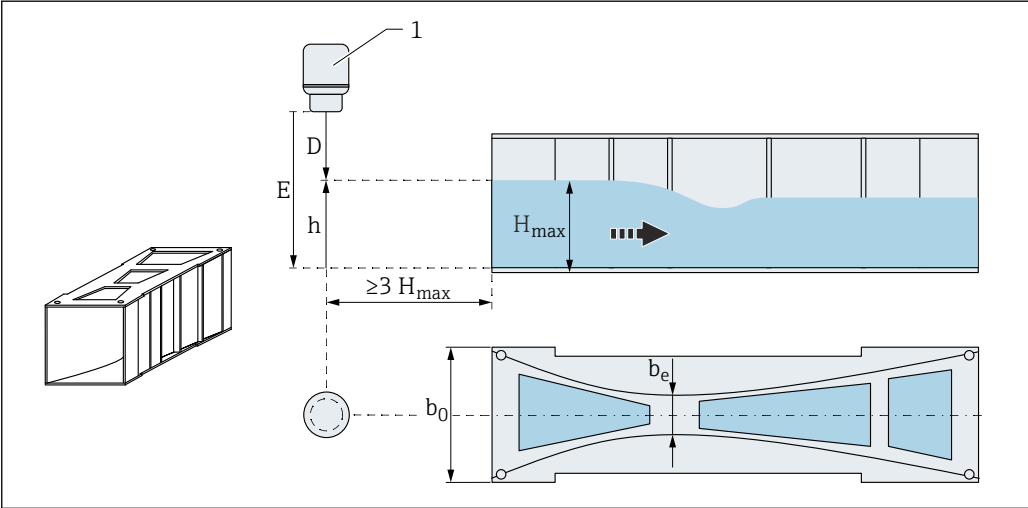
- HQI415
- HQI425
- HQI430
- HQI440
- HQI450
- HQI480
- HQI520

Factory setting

HQI415

Additional information

An overview is provided in the Special Documentation (SD) on flow measurement in channels or weirs.



113 Channel type: Venturi flume

Parshall flume



Navigation

Application → Flow → Flow 1 to 2 → Parshall flume (3880043-1 to 2)

Description

Select a Parshall flume.

Selection

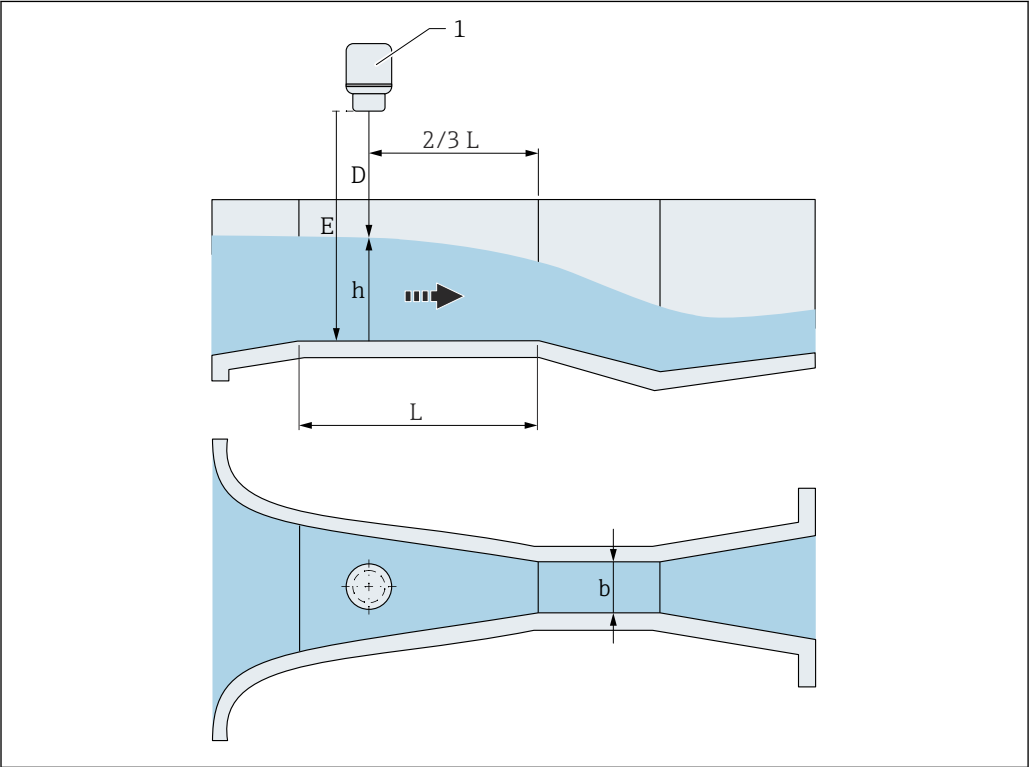
- 1 in
- 2 in
- 3 in
- 6 in
- 9 in
- 1 ft
- 1.5 ft
- 2 ft
- 3 ft
- 4 ft
- 5 ft
- 6 ft
- 8 ft
- 10 ft
- 12 ft

Factory setting

9 in

Additional information

An overview is provided in the Special Documentation (SD) on flow measurement in channels or weirs.

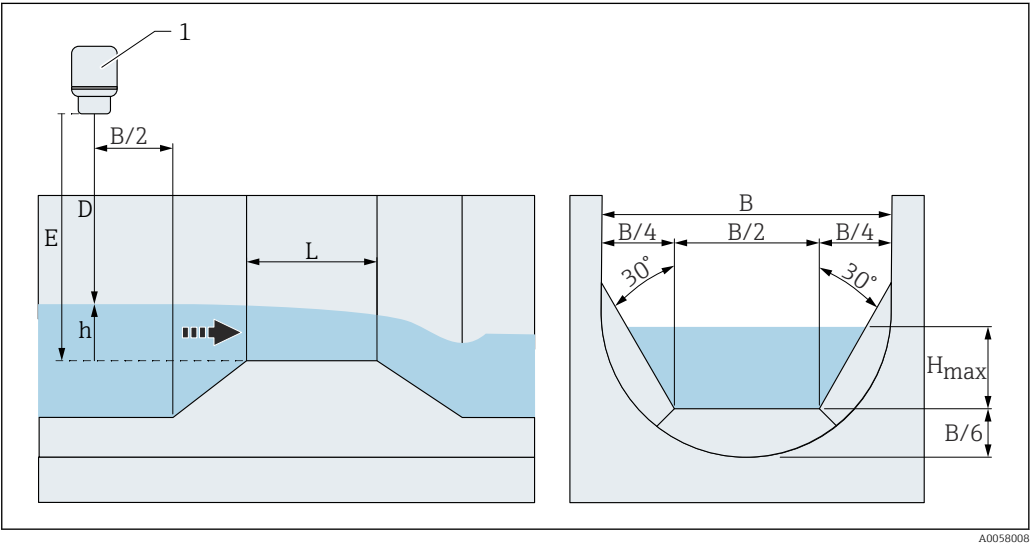


A0058007

114 Channel type: Parshall flume

Palmer Bowlus flume

Navigation	Application → Flow → Flow 1 to 2 → Palmer Bowlus flume (3880053-1 to 2)
Description	Select a Palmer Bowlus flume.
Selection	6 in 8 in 10 in 12 in 15 in 18 in 21 in 24 in 27 in 30 in
Factory setting	30 in
Additional information	An overview is provided in the Special Documentation (SD) on flow measurement in channels or weirs.

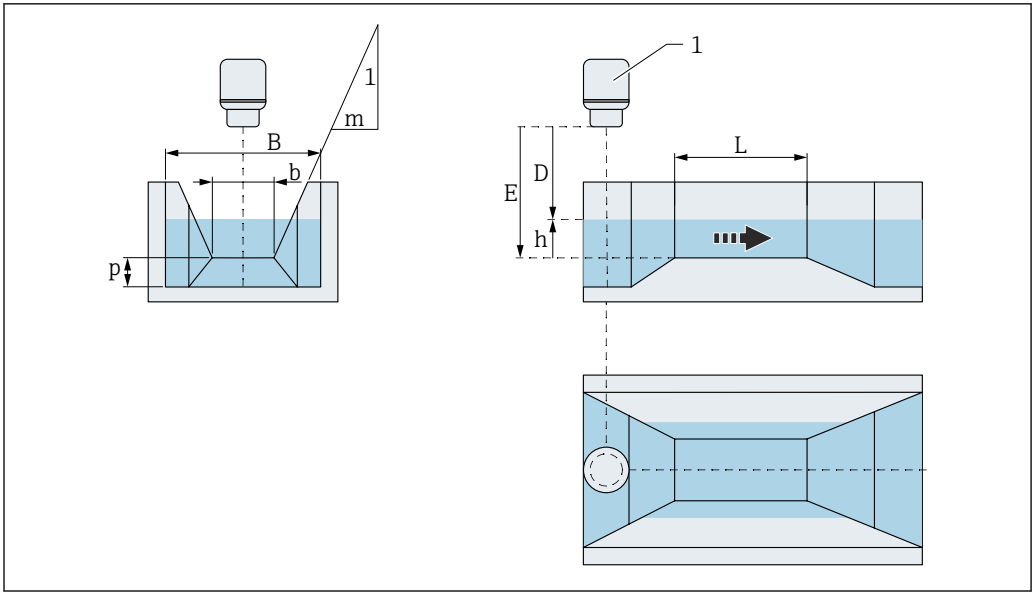


115 Channel type: Palmer-Bowlus flume

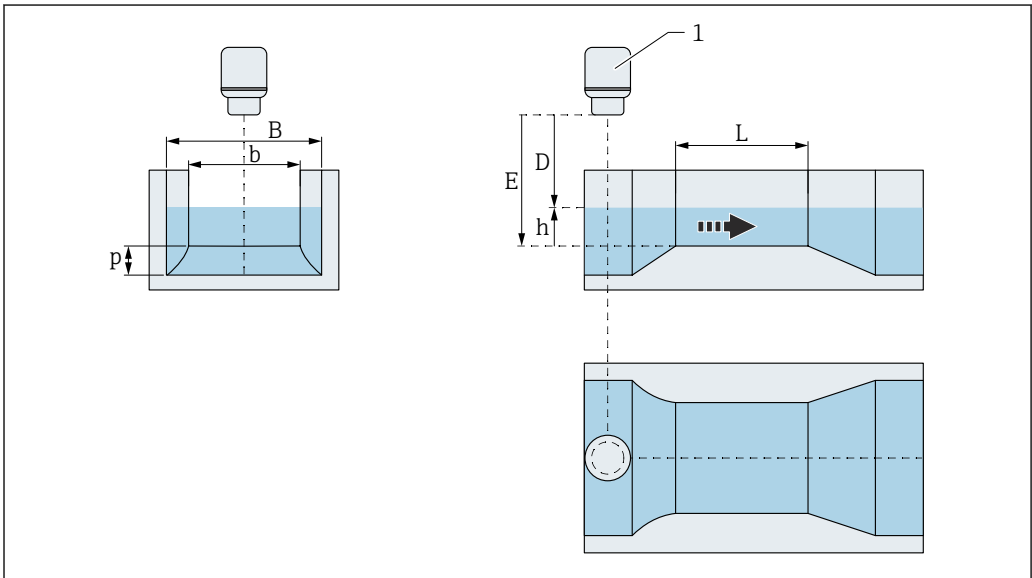
Approach width (B)

Navigation	Application → Flow → Flow 1 to 2 → Approach width (B) (3880032-1 to 2)
Description	Enter the approach width (B).
User entry	Positive floating-point number
Factory setting	2 000.0 mm

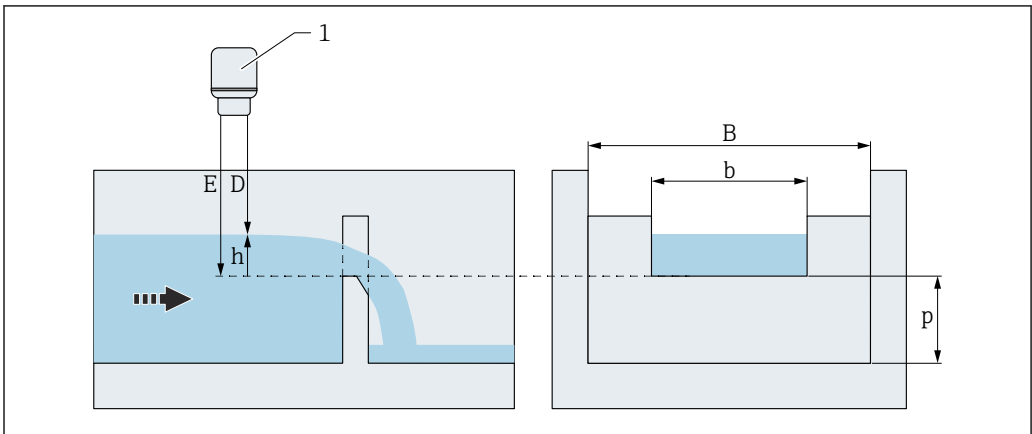
Additional information



116 Approach width B in trapezoidal flume (ISO 4359)

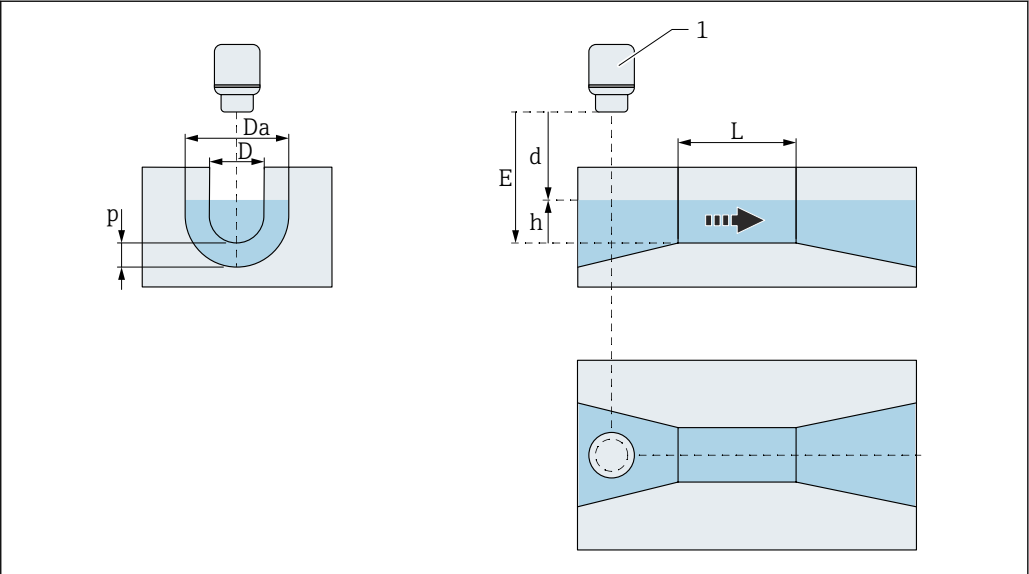


117 Approach width B in rectangular flume (ISO 4359)



118 Approach width B in broad-crested rectangular weir (ISO 1438)

Approach diameter (Da)

Navigation	 Application → Flow → Flow 1 to 2 → Approach diameter (Da) (3880024-1 to 2)
Description	Enter the approach diameter (Da).
User entry	Positive floating-point number
Factory setting	600.0 mm
Additional information	

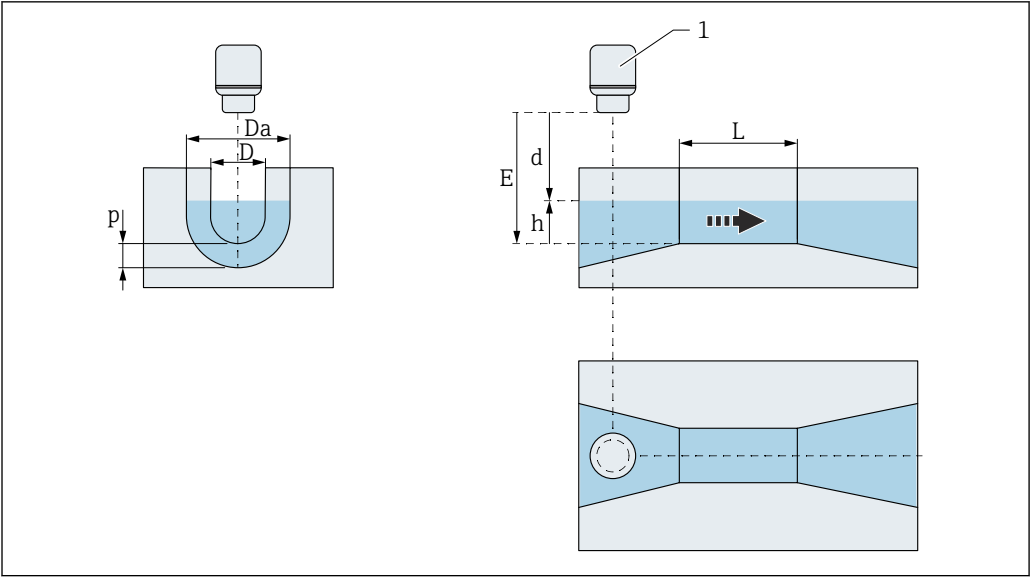
 119 Approach diameter (Da) in U-shaped flume (ISO 4359)

A0058018

Throat diameter (D)

Navigation	 Application → Flow → Flow 1 to 2 → Throat diameter (D) (3880019-1 to 2)
Description	Enter the throat diameter (D).
User entry	Positive floating-point number
Factory setting	400.0 mm

Additional information



A0058018

120 Throat diameter D in U-shaped flume (ISO 4359)

Throat length (L)



Navigation

Application → Flow → Flow 1 to 2 → Throat length (L) (3880040-1 to 2)

Description

Enter the throat length (L).

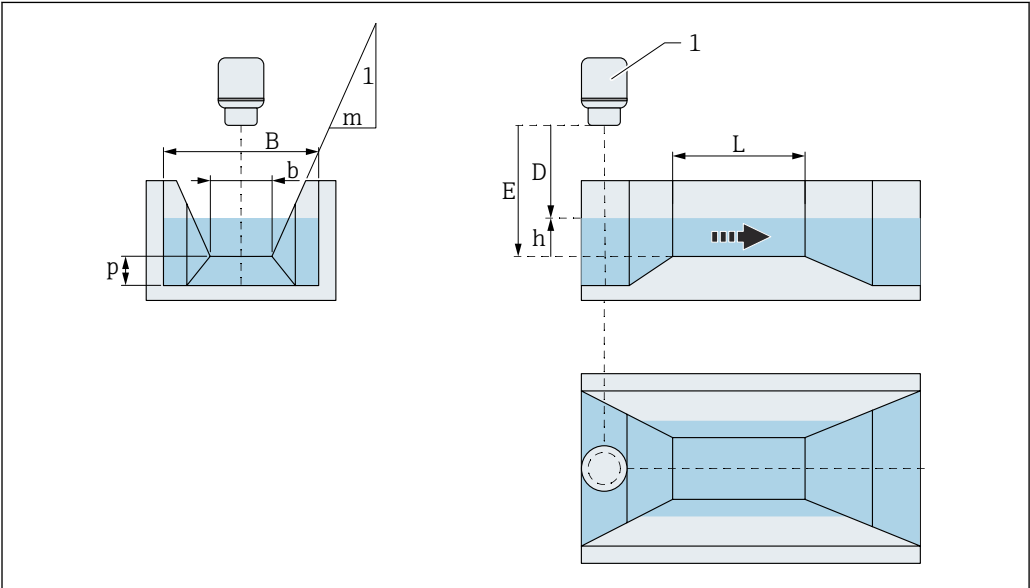
User entry

Positive floating-point number

Factory setting

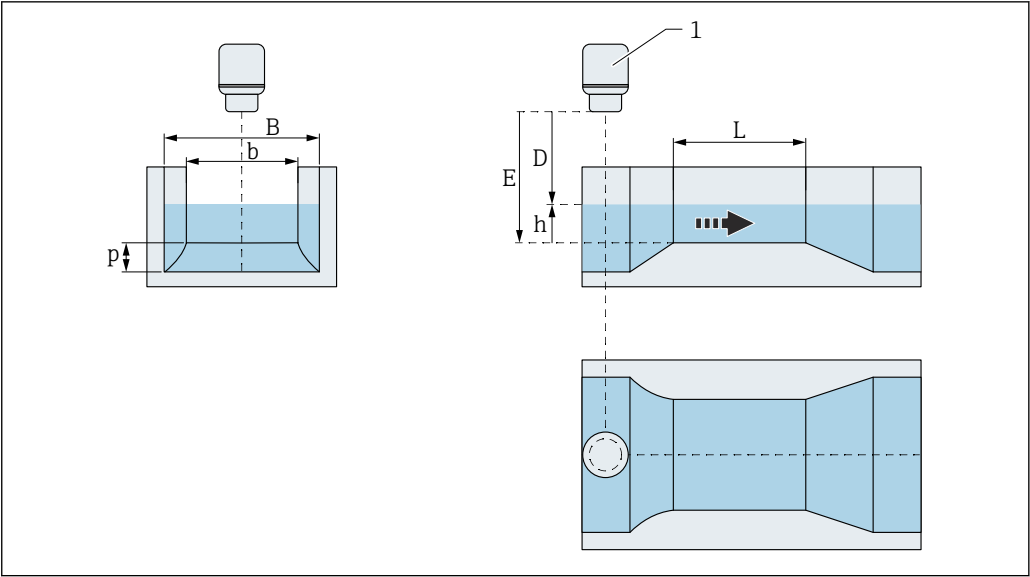
3 000.0 mm

Additional information



A0058016

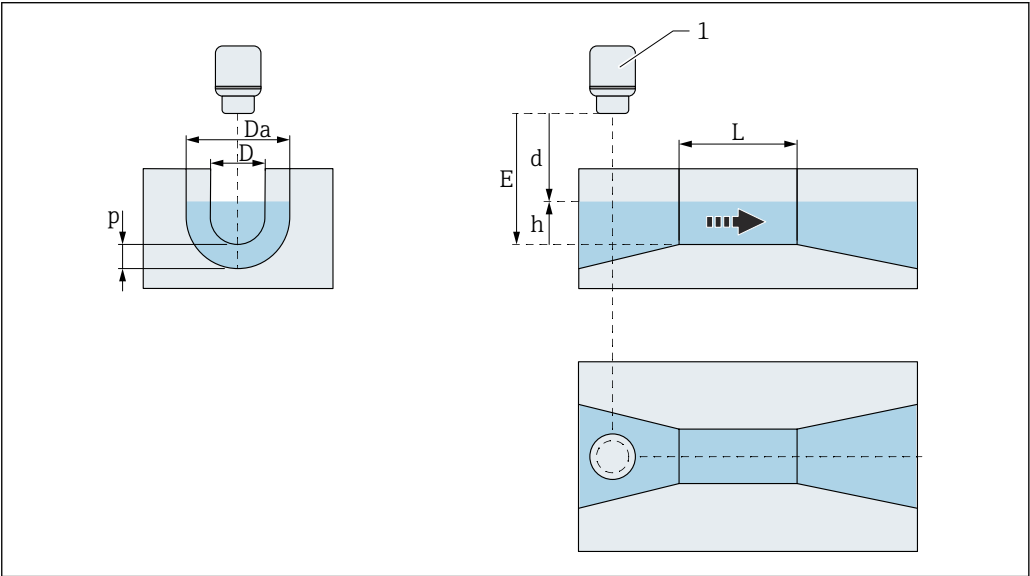
121 Throat length L in trapezoidal flume (ISO 4359)



A0058017

122 Throat length L in rectangular flume (ISO 4359)

Additional information



A0058018

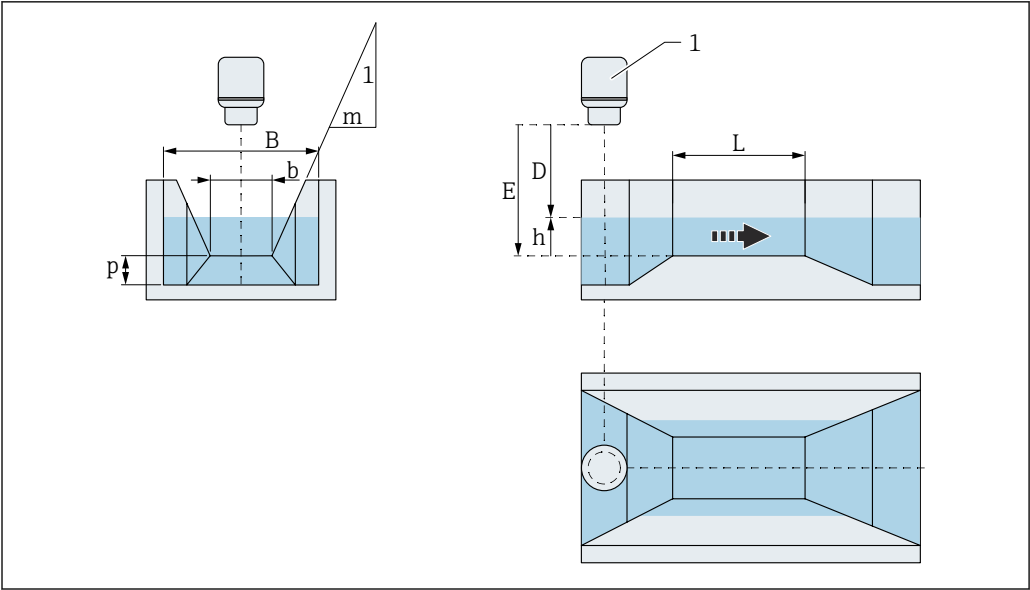
123 Throat length L in U-shaped flume (ISO 4359)

Throat width (b)



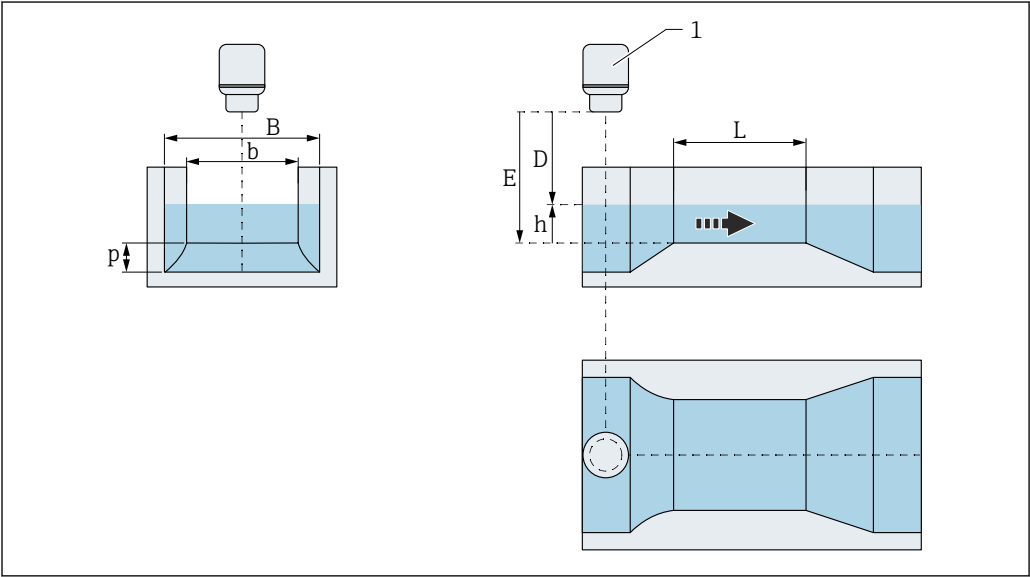
Navigation	 Application → Flow → Flow 1 to 2 → Throat width (b) (3880038-1 to 2)
Description	Enter the throat width (b).
User entry	Positive floating-point number
Factory setting	500.0 mm

Additional information



A0058016

124 Throat width b in trapezoidal flume (ISO 4359)



A0058017

125 Throat width b in rectangular flume (ISO 4359)

Hump height (p)



Navigation

 Application → Flow → Flow 1 to 2 → Hump height (p) (3880039-1 to 2)

Description

Enter hump height (p).

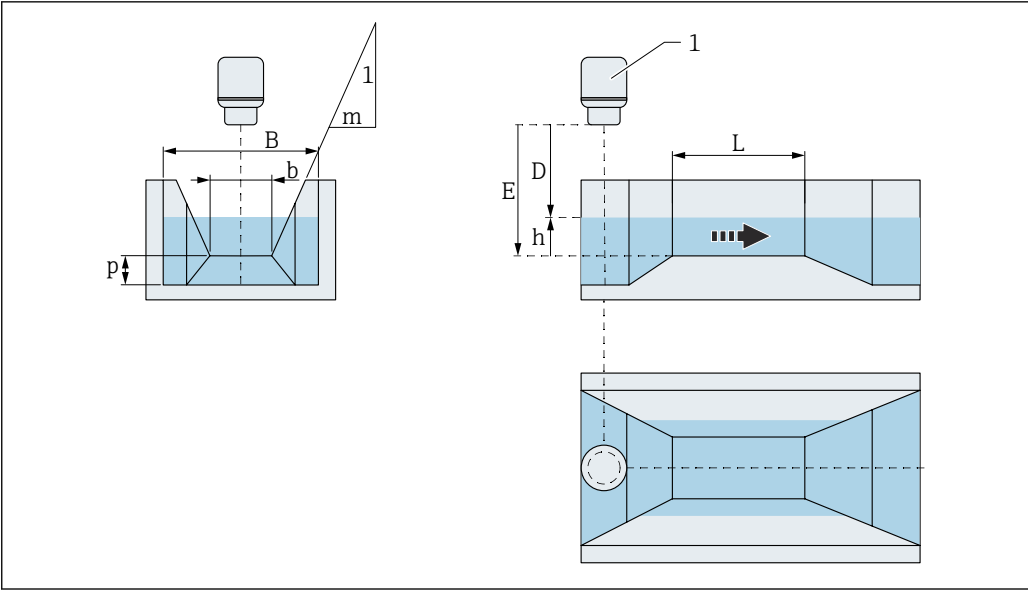
User entry

Positive floating-point number

Factory setting

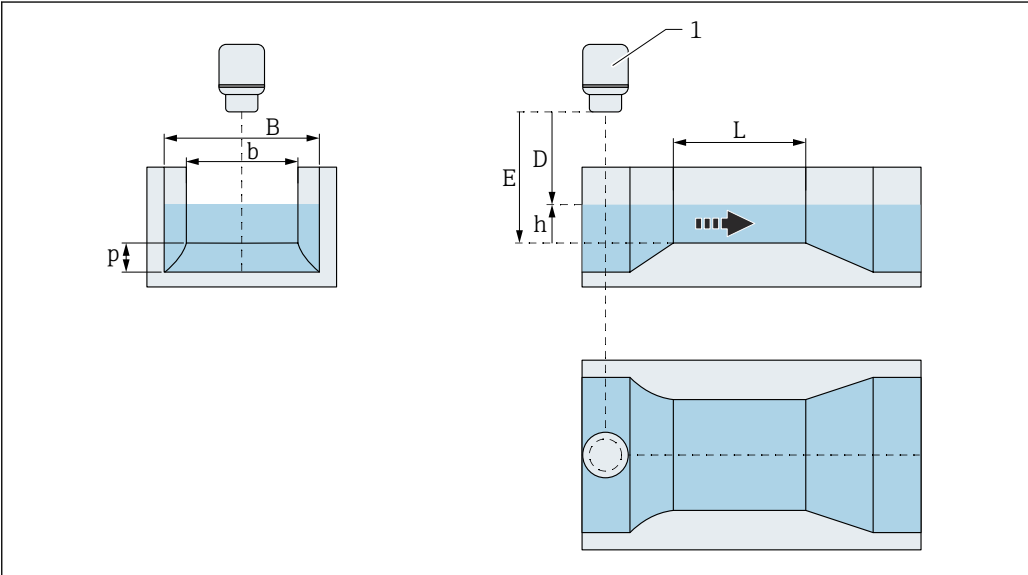
150.0 mm

Additional information



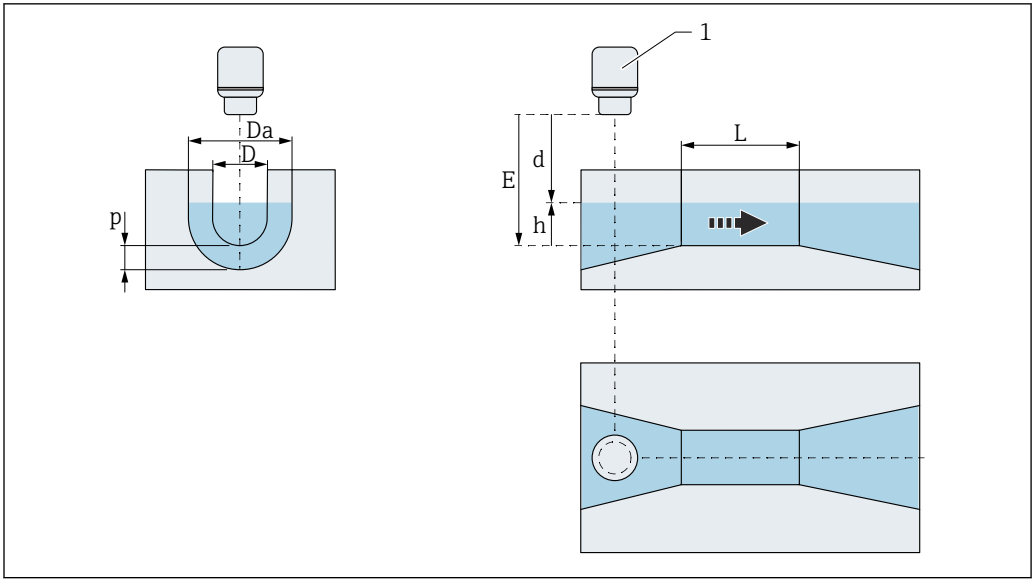
A0058016

126 Hump height p in trapezoidal flume (ISO 4359)



A0058017

127 Hump height p in rectangular flume (ISO 4359)



A0058018

128 Hump height p in U-shaped flume (ISO 4359)

Side slope (m)



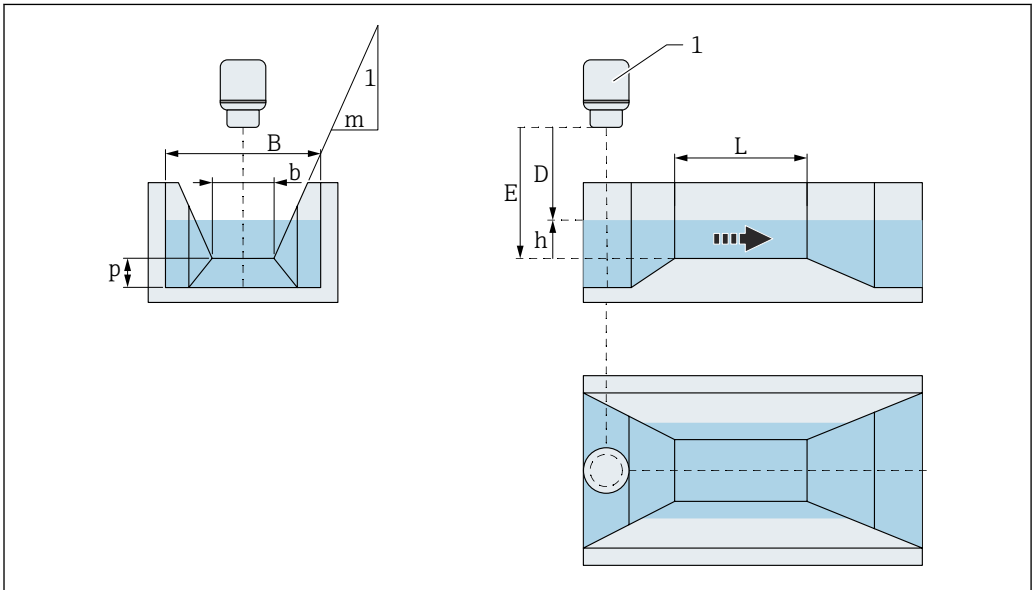
Navigation Application → Flow → Flow 1 to 2 → Side slope (m) (3880012-1 to 2)

Description Enter the side slope (m).

User entry 0.0 to 1000.0

Factory setting 1.0

Additional information

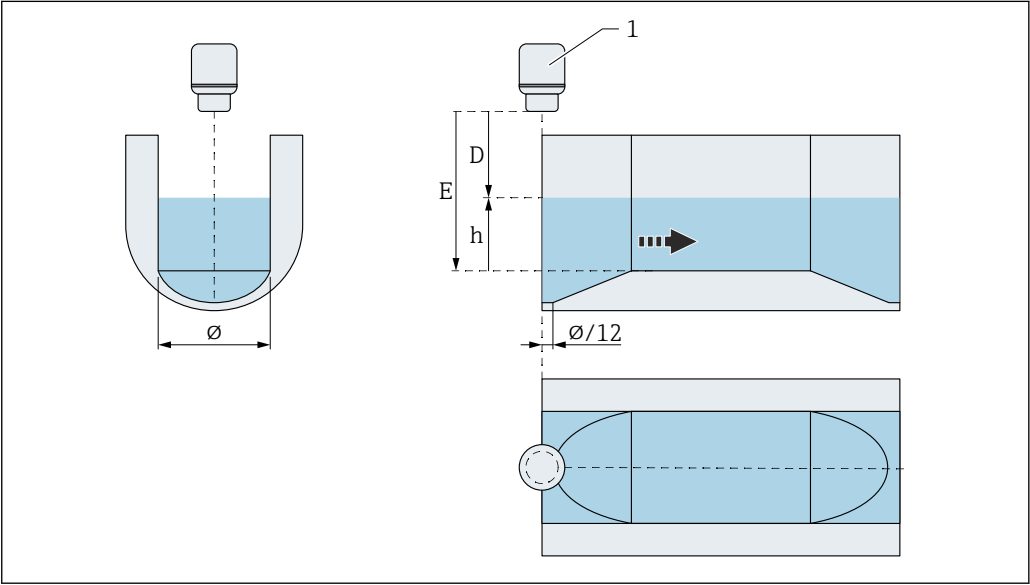


A0058016

129 Side slope m in trapezoidal flume (ISO 4359)

Leopold Lagco flume

Navigation	Application → Flow → Flow 1 to 2 → Leopold Lagco flume (3880047-1 to 2)
Description	Select a Leopold Lagco flume.
Selection	4 in 6 in 8 in 10 in 12 in 15 in 18 in 21 in 24 in 30 in
Factory setting	30 in
Additional information	An overview is provided in the Special Documentation (SD) on flow measurement in channels or weirs.



A0058013

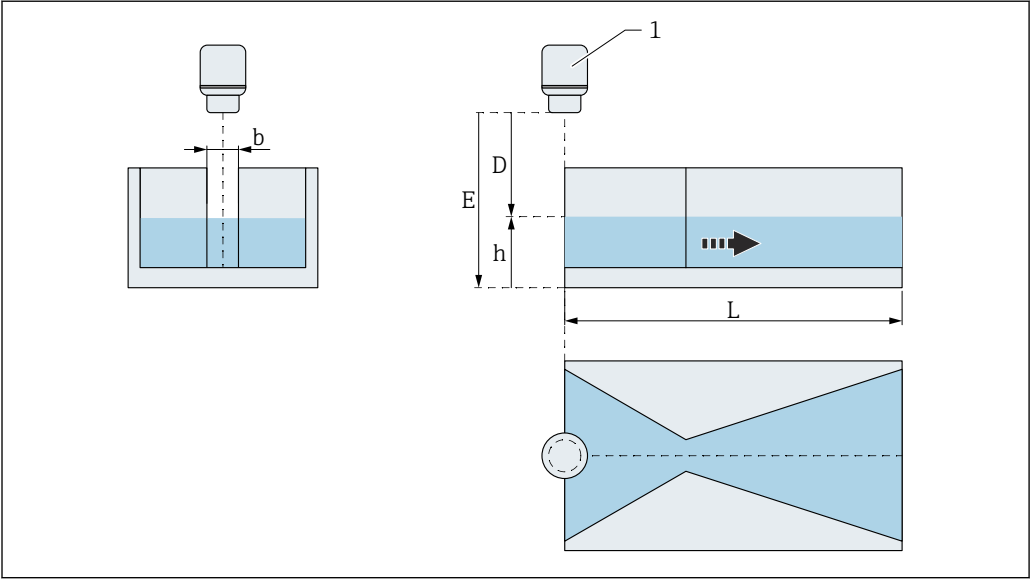
130 Channel type: Leopold-Lagco flume

Flume length (L)

Navigation	Application → Flow → Flow 1 to 2 → Flume length (L) (3880025-1 to 2)
Description	Select flume length (L).
Selection	18 in 36 in 54 in 108 in

Factory setting 108 in

Additional information



131 Channel length *L* in cutthroat flume

Flume width (b)



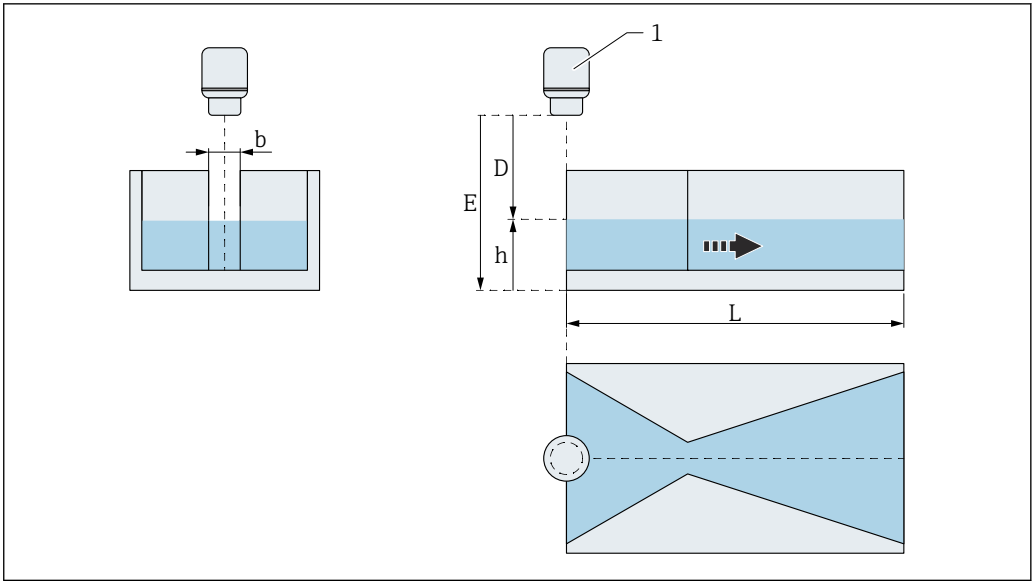
Navigation  Application → Flow → Flow 1 to 2 → Flume width (b) (3880029-1 to 2)

Description Select flume width (b).

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

Factory setting 72 in

Additional information



A0058014

132 Channel width *b* in cutthroat flume

Flume width (b)



Navigation

Application → Flow → Flow 1 to 2 → Flume width (b) (3880026-1 to 2)

Description

Select flume width (b).

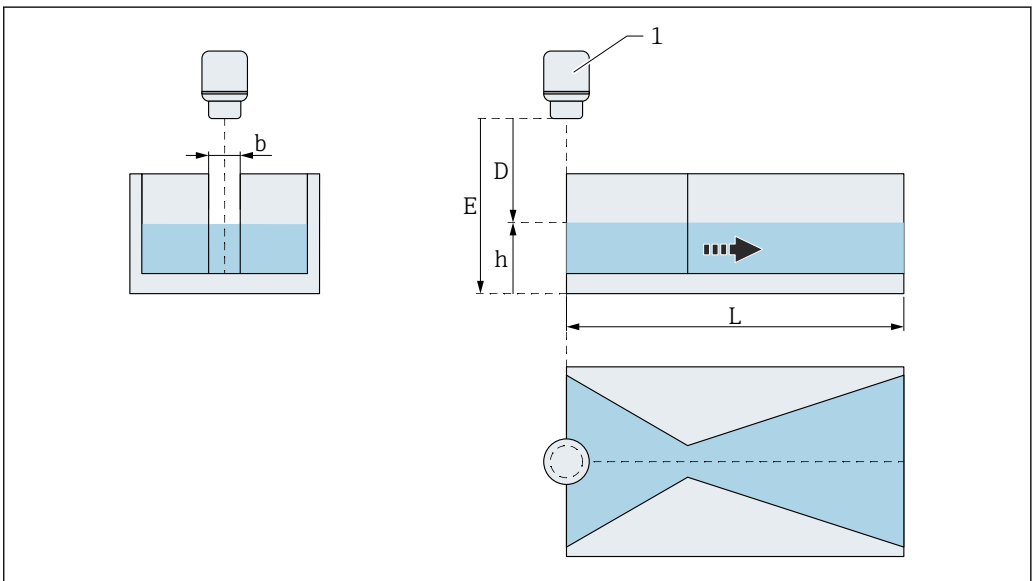
Selection

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

Factory setting

8 in

Additional information



A0058014

133 Channel width *b* in cutthroat flume

Flume width (b)



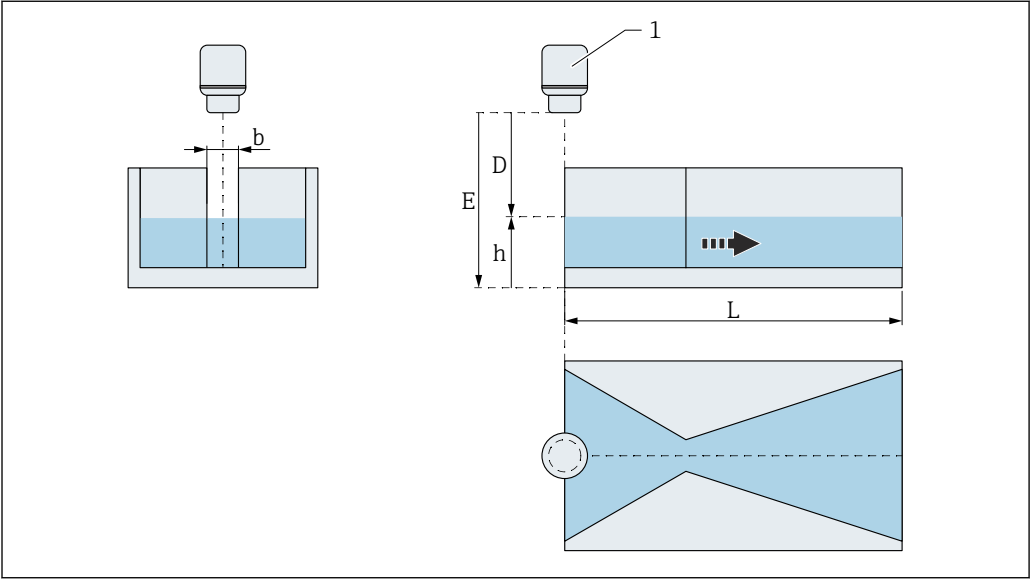
Navigation Application → Flow → Flow 1 to 2 → Flume width (b) (3880027-1 to 2)

Description Select flume width (b).

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

Factory setting 16 in

Additional information



A0058014

134 Channel width *b* in cutthroat flume

Flume width (b)



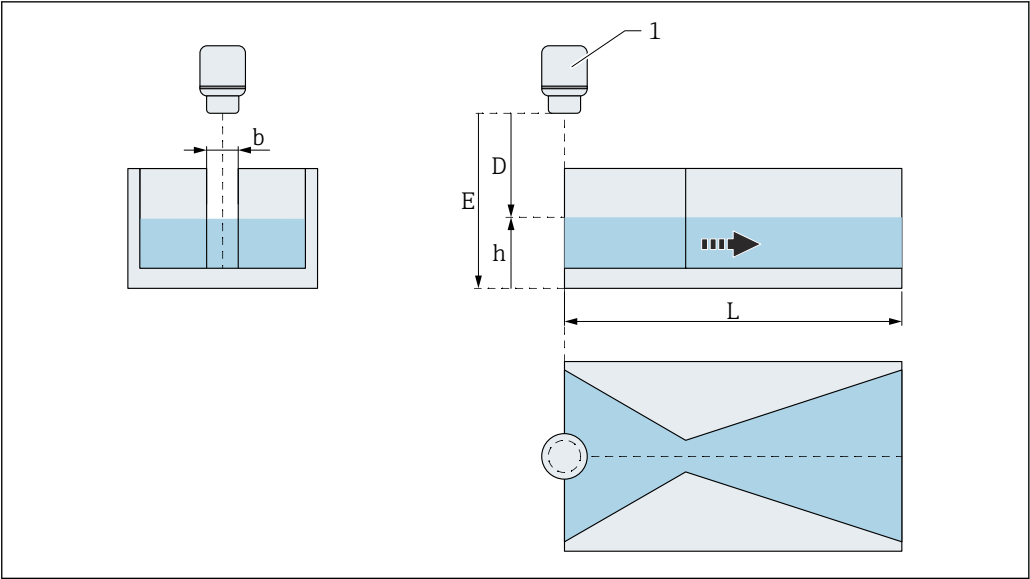
Navigation Application → Flow → Flow 1 to 2 → Flume width (b) (3880028-1 to 2)

Description Select flume width (b).

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

Factory setting 24 in

Additional information



A0058014

135 Channel width *b* in cutthroat flume

H flume



Navigation

Application → Flow → Flow 1 to 2 → H flume (3880049-1 to 2)

Description

Select an H flume.

Selection

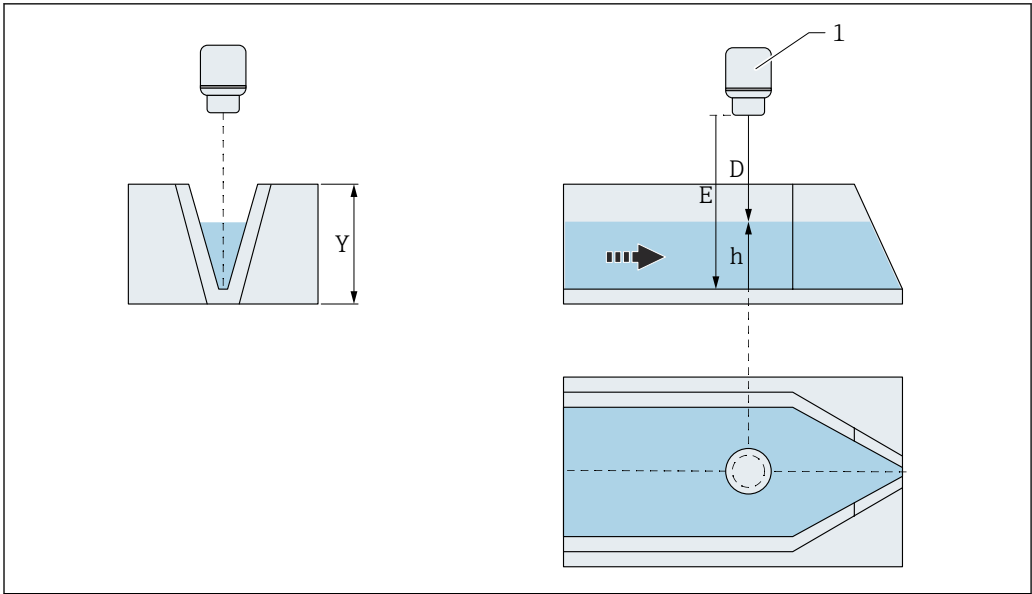
- 0.5 ft
- 0.75 ft
- 1 ft
- 1.5 ft
- 2 ft
- 2.5 ft
- 3 ft
- 4.5 ft

Factory setting

4.5 ft

Additional information

 An overview is provided in the Special Documentation (SD) on flow measurement in channels or weirs.



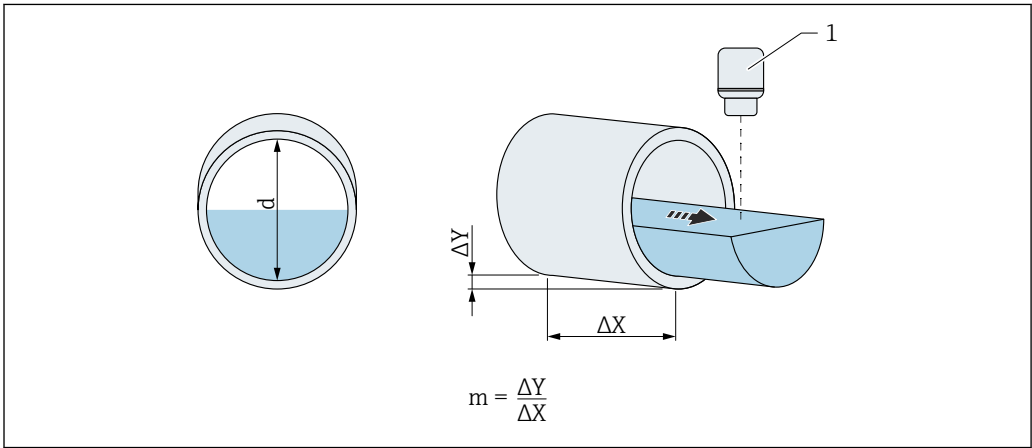
A0058015

136 Channel type: H flume

Inner diameter (d)



Navigation	Application → Flow → Flow 1 to 2 → Inner diameter (d) (3880022-1 to 2)
Description	Enter the inner diameter (d).
User entry	100.0 to 100 000.0 mm
Factory setting	1 000.0 mm
Additional information	



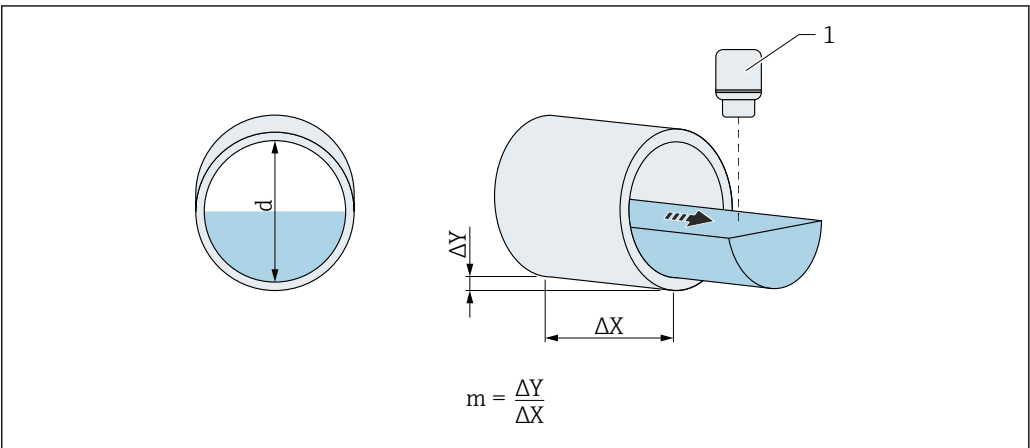
A0058023

137 Internal diameter d in pipe profile (Manning formula)

Roughness coefficient		
Navigation	Application → Flow → Flow 1 to 2 → Roughness coefficient (3880018-1 to 2)	
Description	Enter the roughness coefficient.	
User entry	0.0 to 1.0	
Factory setting	0.01	

Slope (m)		
Navigation	Application → Flow → Flow 1 to 2 → Slope (m) (3880023-1 to 2)	
Description	Enter the slope (m).	
User entry	0.0 to 1.0	
Factory setting	0.1	

Additional information



138 Slope m in pipe profile (Manning formula)

Alpha (α)		
Navigation	Application → Flow → Flow 1 to 2 → Alpha (α) (3880056-1 to 2)	
Description	Enter Alpha (α).	
User entry	0.0 to 200 000.0	
Factory setting	1.5	

Beta (β)

Navigation  Application → Flow → Flow 1 to 2 → Beta (β) (3880057-1 to 2)

Description Enter Beta (β).

User entry 0.0 to 200 000.0

Factory setting 1.0

Gamma (γ)

Navigation  Application → Flow → Flow 1 to 2 → Gamma (γ) (3880058-1 to 2)

Description Enter Gamma (γ).

User entry -200 000.0 to 200 000.0

Factory setting 0.0

C

Navigation  Application → Flow → Flow 1 to 2 → C (3880052-1 to 2)

Description Enter C.

User entry $1.0 \cdot 10^{-07}$ to 200 000.0

Factory setting 1.0

Maximum level (h_max)

Navigation  Application → Flow → Flow 1 to 2 → Maximum level (h_max) (3880034-1 to 2)

Description Enter the maximum level (h_max).

User entry Positive floating-point number

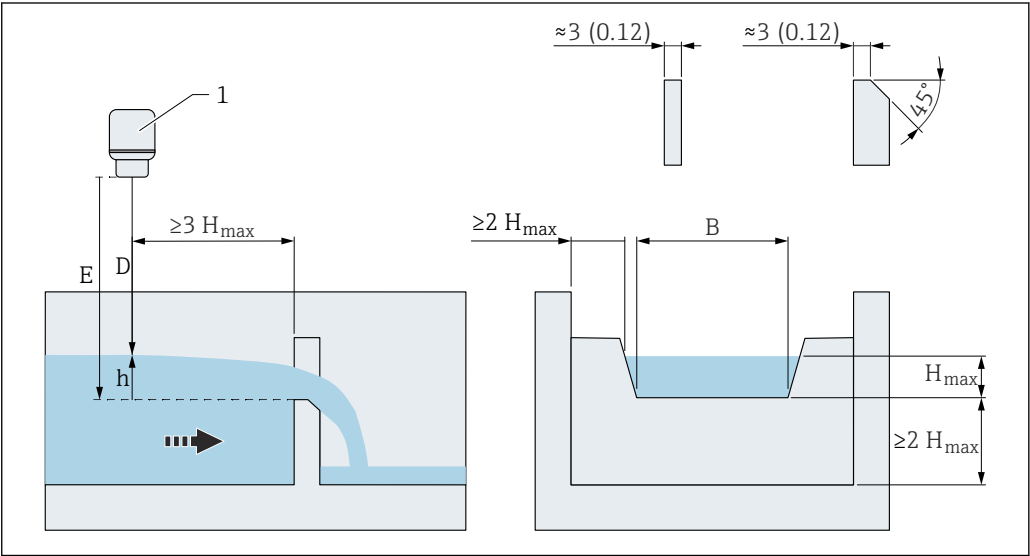
Factory setting 1 000.0 mm

Flow exponent (x) 🔒

Navigation	📄📄 Application → Flow → Flow 1 to 2 → Flow exponent (x) (3880059-1 to 2)
Description	Enter the flow exponent (x).
User entry	0.0 to 200 000.0
Factory setting	1.0

Trapezoidal weir 🔒

Navigation	📄📄 Application → Flow → Flow 1 to 2 → Trapezoidal weir (3880055-1 to 2)
Description	Select weir type.
Selection	■ T0/H3 ■ T0/T5
Factory setting	T0/H3
Additional information	📖 An overview is provided in the Special Documentation (SD) on flow measurement in channels or weirs.



📖 139 Weir type: Trapezoidal weir

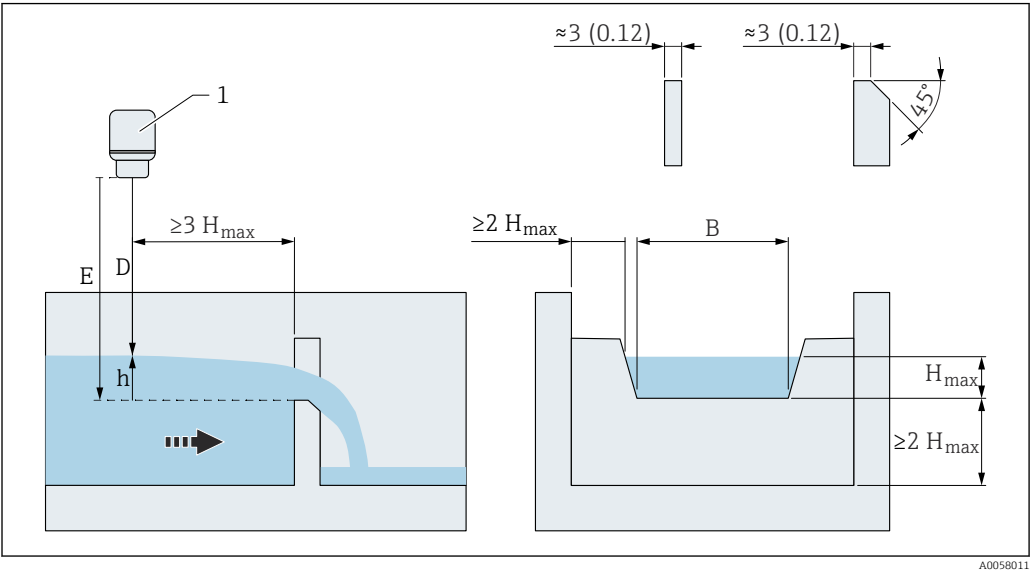
Weir width (b) 🔒

Navigation	📄📄 Application → Flow → Flow 1 to 2 → Weir width (b) (3880054-1 to 2)
Description	Enter the weir width (b).

User entry Positive floating-point number

Factory setting 1 000.0 mm

Additional information



140 Weir width in trapezoidal weir

Crest width (b)



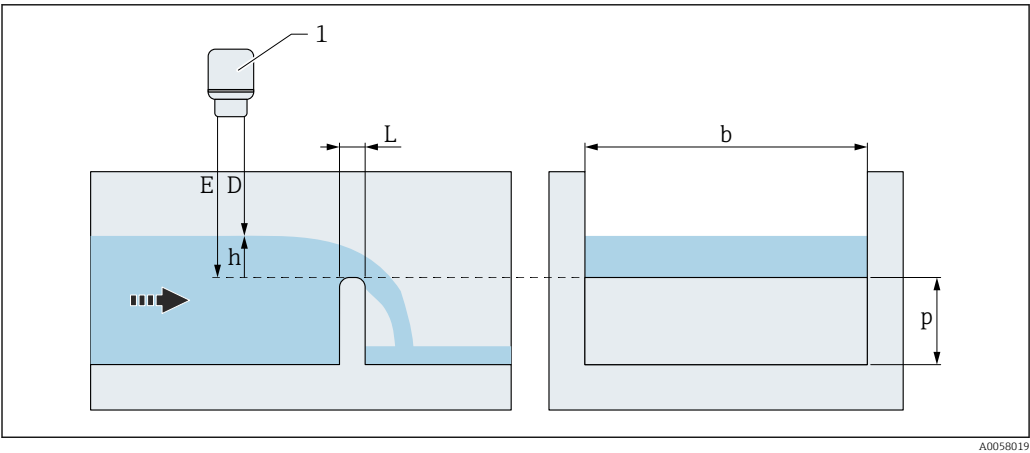
Navigation Application → Flow → Flow 1 to 2 → Crest width (b) (3880044-1 to 2)

Description Enter crest or notch width (b).

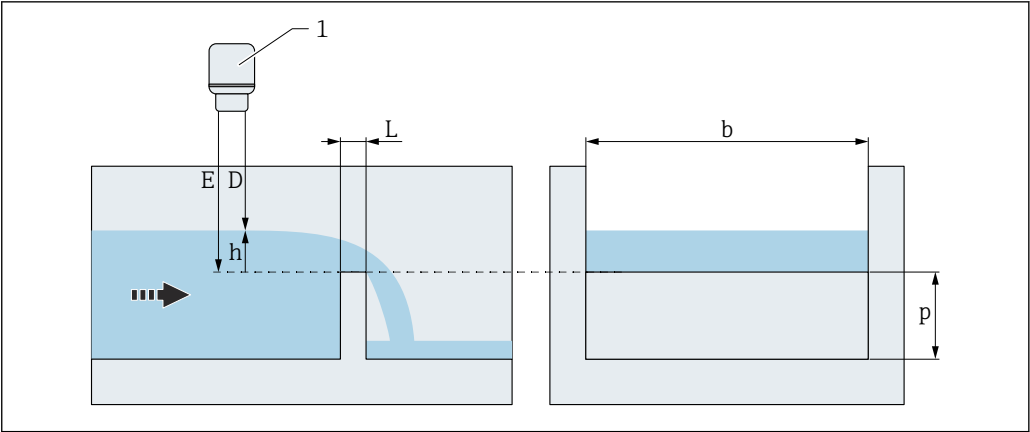
User entry Positive floating-point number

Factory setting 500.0 mm

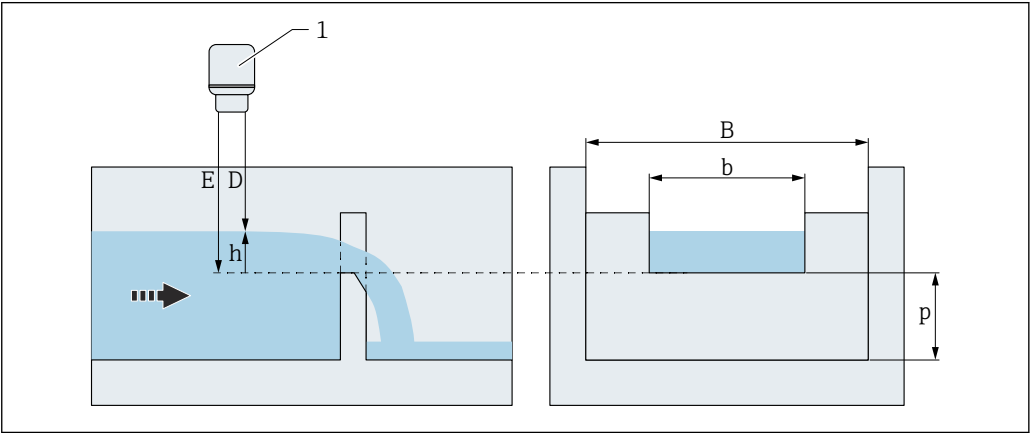
Additional information



141 Crest width b in round-nose horizontal broad-crested weir (ISO 4374)



142 Crest width b in broad-crested rectangular weir (ISO 3846)

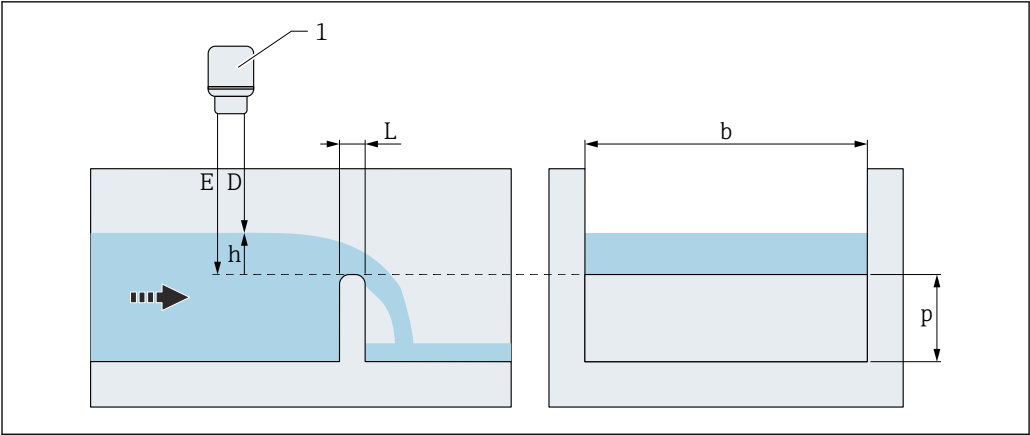


143 Crest width b in sharp-crested rectangular weir (ISO 1438)

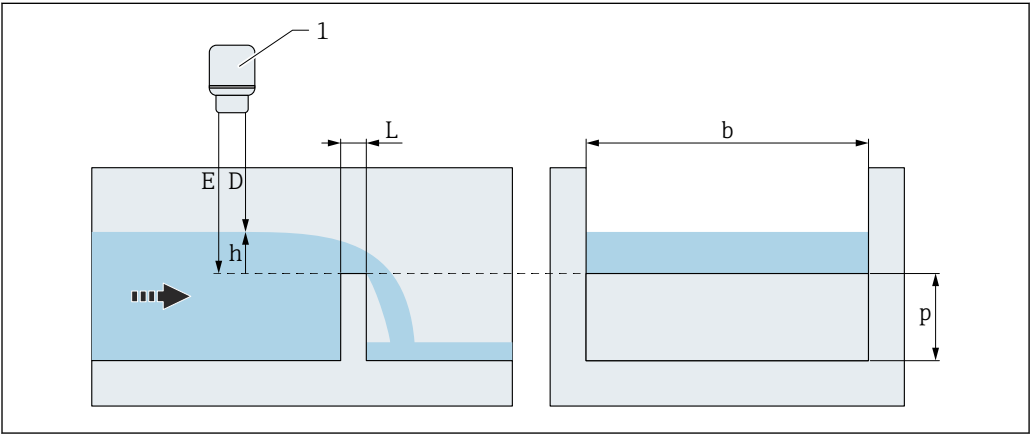
Crest height (p)

Navigation	Application → Flow → Flow 1 to 2 → Crest height (p) (3880045–1 to 2)
Description	Enter the crest height (p).
User entry	Positive floating-point number
Factory setting	300.0 mm

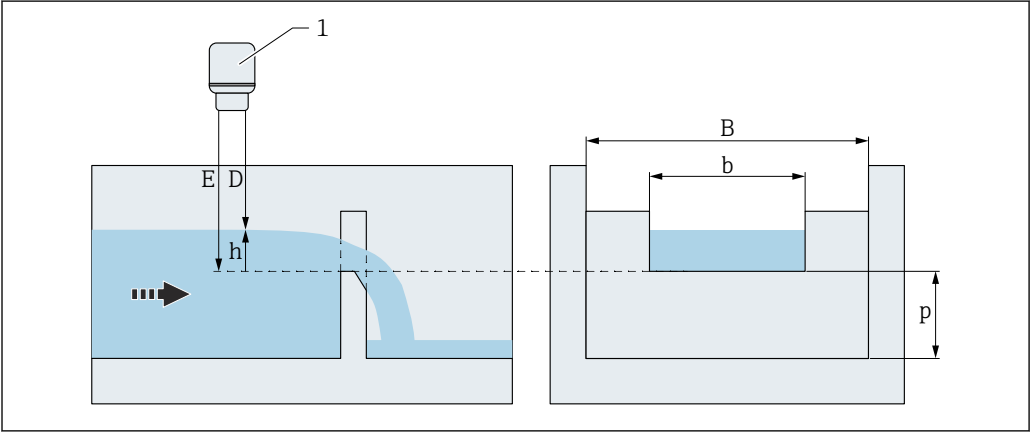
Additional information



144 Crest height in round-nose horizontal broad-crested weir (ISO 4374)



145 Crest height in broad-crested rectangular weir (ISO 3846)



146 Crest height in sharp-crested rectangular weir (ISO 1438)

Crest length (L)



Navigation

Application → Flow → Flow 1 to 2 → Crest length (L) (3880046-1 to 2)

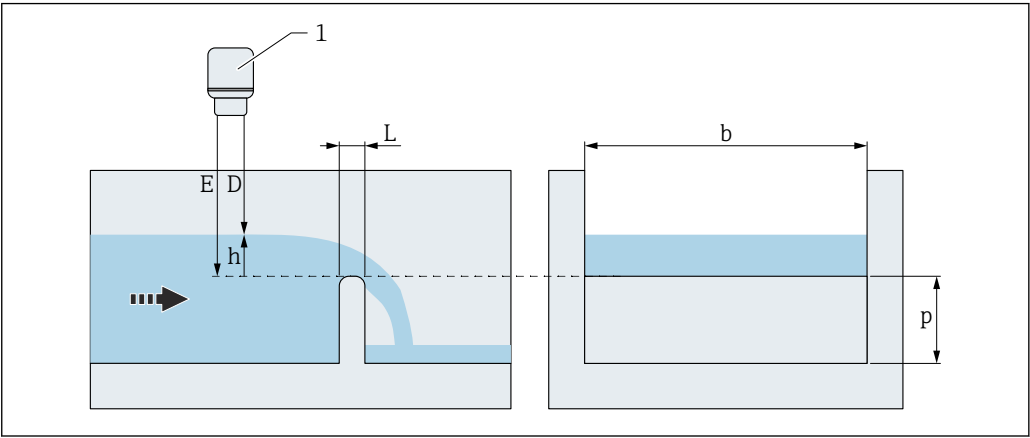
Description

Enter the crest length (L).

User entry Positive floating-point number

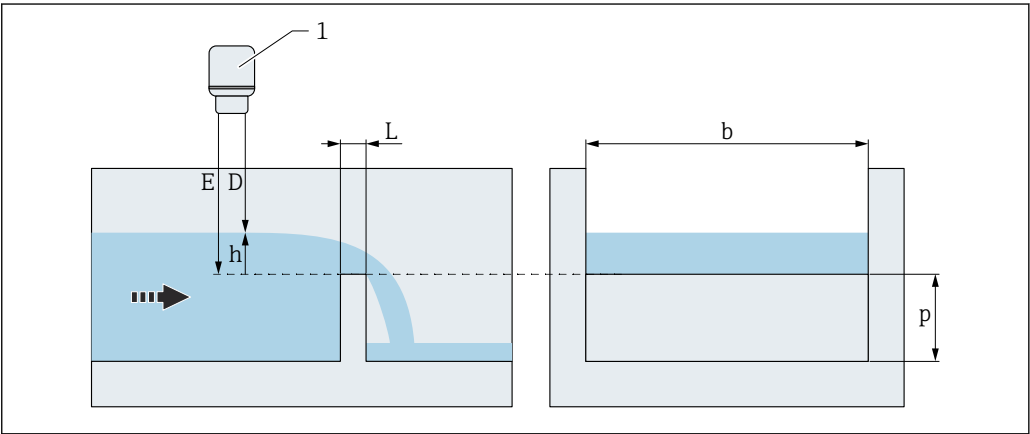
Factory setting 1 000.0 mm

Additional information



A0058019

147 Crest length L in round-nose horizontal broad-crested weir (ISO 4374)



A0058020

148 Crest length L in broad-crested rectangular weir (ISO 3846)

Notch angle (α)



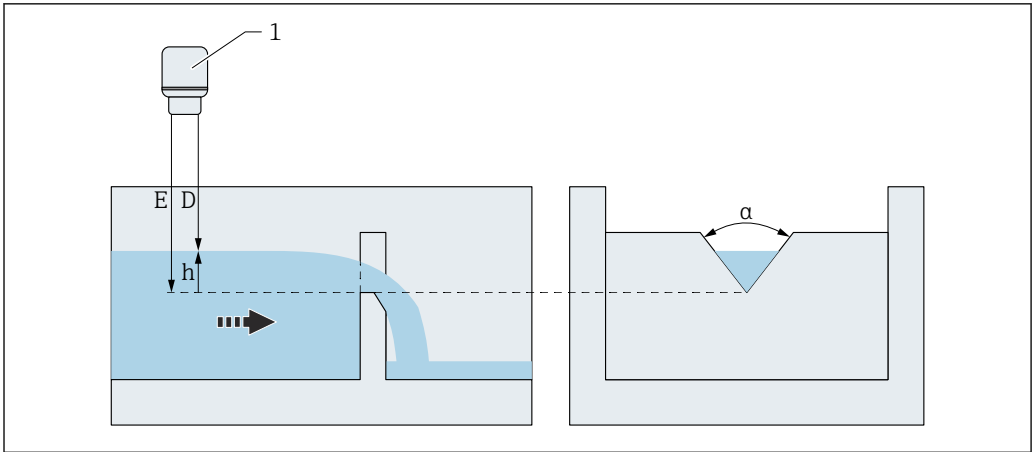
Navigation Application → Flow → Flow 1 to 2 → Notch angle (α) (3880020–1 to 2)

Description Enter the notch angle (α).

User entry 20.0 to 100.0 °

Factory setting 90.0 °

Additional information



149 Notch angle α in sharp-crested V-notch weir (ISO 1438)

Distance bottom to crest



Navigation

Application → Flow → Flow 1 to 2 → Distance bottom to crest (3880009-1 to 2)

Description

Distance from bottom of the flume or weir to crest. This allows the level to be measured from the bottom of the flume or weir to the crest.

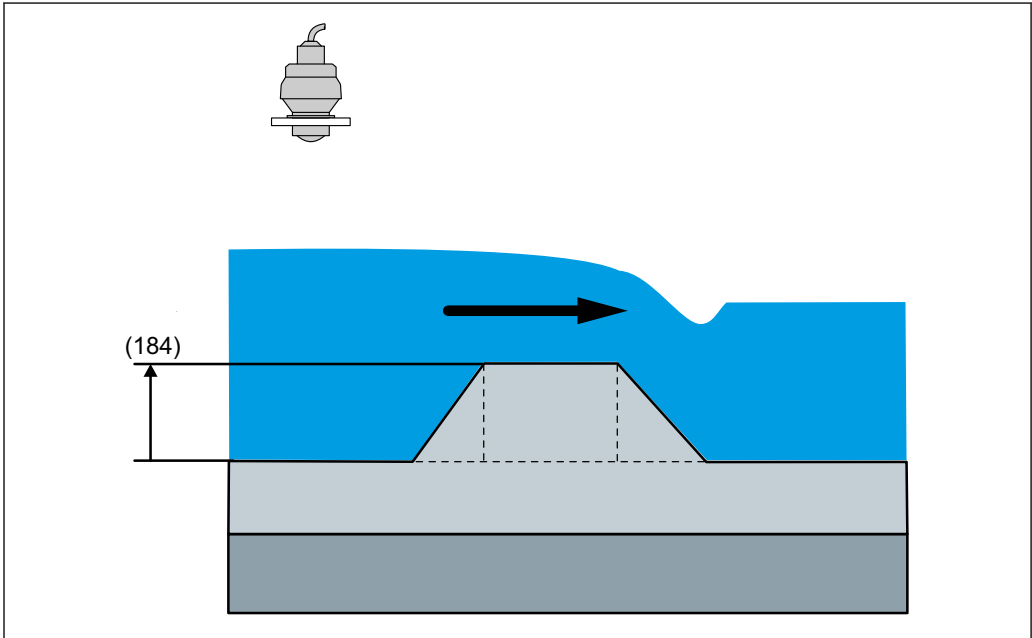
User entry

Positive floating-point number

Factory setting

0.0 mm

Additional information



150 Distance from bottom to crest (184)

Validation

Navigation  Application → Flow → Flow 1 to 2 → Validation (3880017–1 to 2)

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

User interface

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

Flow 1 to 2

Navigation  Application → Flow → Flow 1 to 2 → Flow 1 to 2 (3880128–1 to 2)

Description Displays the current volume flow.

User interface Signed floating-point number

Maximum flow

Navigation  Application → Flow → Flow 1 to 2 → Maximum flow (3880015–1 to 2)

Description Maximum flow rate in the selected unit.

User interface Positive floating-point number

Visualization zoom start



Navigation  Application → Flow → Flow 1 to 2 → Visualization zoom start (3880030–1 to 2)

Description Enter the lower value for an enlarged area in the display (chart/bar graph).

User entry Signed floating-point number

Visualization zoom end


Navigation Application → Flow → Flow 1 to 2 → Visualization zoom end (3880031–1 to 2)

Description Enter the upper value for an enlarged area in the display (chart/bar graph).

User entry Signed floating-point number

"Additional settings" submenu

Navigation Guidance → Commissioning → Application → Maximum flow 1 to 2

Navigation Application → Flow → Flow 1 to 2 → Additional settings

Default maximum flow

Navigation Application → Flow → Flow 1 to 2 → Additional settings → Default maximum flow (3880036)

Guidance → Commissioning → Application → Maximum flow 1 to 2 → Default maximum flow (3880036–1 to 2)

Description Displays the maximum flow determined by the device software. The value is calculated on the basis of the flow linearization type and the max. level.

User interface Positive floating-point number

Use user-specific maximum flow


Navigation Application → Flow → Flow 1 to 2 → Additional settings → Use user-specific maximum flow (3880033)

Guidance → Commissioning → Application → Maximum flow 1 to 2 → Use user-specific maximum flow (3880033–1 to 2)

Description Selection of whether the maximum flow entered by the user or the maximum flow specified by the device software is used.

Selection

- No
- Yes

Factory setting No

User-specific maximum flow

Navigation   Application → Flow → Flow 1 to 2 → Additional settings → User-specific maximum flow (3880035)

  Guidance → Commissioning → Application → Maximum flow 1 to 2 → User-specific maximum flow (3880035-1 to 2)

Description Enter the maximum flow value in the selected unit manually. The maximum flow corresponds to an output current of 20 mA (factory settings).

User entry Positive floating-point number

Factory setting 0.0 l/h

Low flow cutoff

Navigation   Application → Flow → Flow 1 to 2 → Additional settings → Low flow cutoff (3880010)

Description Activate or deactivate "Low flow cutoff".

Selection

- Disable
- Enable

Factory setting Disable

Low flow cutoff value

Navigation   Application → Flow → Flow 1 to 2 → Additional settings → Low flow cutoff value (3880011)

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

User entry 0.0 to 100.0 %

Factory setting 0.0 %

Failure behavior

Navigation	 Application → Flow → Flow 1 to 2 → Additional settings → Failure behavior (3880060)
Selection	■ Invalid ■ Last good ■ Fixed Value
Factory setting	Invalid

Failure value

Navigation	 Application → Flow → Flow 1 to 2 → Additional settings → Failure value (3880061)
User entry	Positive floating-point number
Factory setting	0.0 l/h

"Totalizer" submenu

Navigation  Application → Flow → Flow 1 to 2 → Totalizer

Volume unit

Navigation	 Application → Flow → Flow 1 to 2 → Totalizer → Volume unit (3880063)
Description	Select volume unit.

Selection	<i>SI units</i>
	■ l ■ hl ■ Ml Mega ■ cm³ ■ dm³ ■ m³
	<i>Custom-specific units</i>
	■ ft³ ■ in³ ■ gal (us) ■ Mgal (us) ■ bbl (us;oil) ■ bbl (us;liq.) ■ bbl (us;beer) ■ bbl (us;tank) ■ gal (imp) ■ Mgal (imp)
Factory setting	l

Decimal places

Navigation	 Application → Flow → Flow 1 to 2 → Totalizer → Decimal places (3880064)
Description	Select the number of decimal places for the display value.
Selection	■ x ■ x.x ■ x.xx ■ x.xxx ■ x.xxxx
Factory setting	x.x

3.3.8 "Backwater detection" submenu

Navigation  Application → Backwater detection

Description

Navigation	 Application → Backwater detection → Description (3930009)
User entry	Character string comprising numbers, letters and special characters (32)
Factory setting	Backwater ratio

Decimal places

Navigation   Application → Backwater detection → Decimal places (3930012)

Description Select the number of decimal places for the display value.

Selection

- X
- X.X
- X.XX
- X.XXX
- X.XXXX

Factory setting x.xx

Default value

Navigation   Application → Backwater detection → Default value (3930008)

Description Define the default value for backwater detection.

User entry 0.5 to 1.0

Factory setting 0.8

Visualization zoom start

Navigation   Application → Backwater detection → Visualization zoom start (3930010)

Description Enter the lower value for an enlarged area in the display (chart/bar graph).

User entry 0.0 to 1.0

Factory setting 0.0

Visualization zoom end

Navigation   Application → Backwater detection → Visualization zoom end (3930011)

Description Enter the upper value for an enlarged area in the display (chart/bar graph).

User entry 0.0 to 1.0

Factory setting 1.0

3.3.9 "Calculations" submenu

Navigation   Application → Calculations

"Level 1 + Level 2" submenu

Navigation   Application → Calculations → Selected calculation mode

Selected calculation mode

Navigation	  Application → Calculations → Selected calculation mode
Description	Calculated values for level and flow can be offset against each other. To do this, select the appropriate calculation mode.
User interface	■ Level 1 + Level 2 ■ Average level ■ Level 1 - Level 2 ■ Level 2 - Level 1 ■ Flow 1 + Flow 2 ■ Average flow ■ Flow 1 - Flow 2 ■ Flow 2 - Flow 1

Description



Navigation	  Application → Calculations → Selected calculation mode
Description	Enter a label text for the calculated output value.
User entry	Character string comprising numbers, letters and special characters (32)
Factory setting	Level 1 + 2

Minimum value



Navigation	  Application → Calculations → Selected calculation mode
Description	Displays the calculated minimum value which corresponds to 0 %.
User entry	-400 000.0 to 400 000.0

Maximum value



Navigation  Application → Calculations → Selected calculation mode

Description Displays the calculated maximum value which corresponds to 100 %.

User entry -400 000.0 to 400 000.0

Visualization zoom start



Navigation  Application → Calculations → Selected calculation mode

Description Enter the lower value for an enlarged area in the display (chart/bar graph).

User entry -400 000.0 to 400 000.0

Visualization zoom end



Navigation  Application → Calculations → Selected calculation mode

Description Enter the upper value for an enlarged area in the display (chart/bar graph).

User entry -400 000.0 to 400 000.0

Level 1 + Level 2

Navigation  Application → Calculations → Selected calculation mode

User interface Signed floating-point number

3.3.10 "Totalizer" submenu

Navigation   Application → Totalizer

Reset 	
Navigation	  Application → Totalizer → Reset (3410020)
Selection	■ No ■ Totalizer
Factory setting	No

3.3.11 "Rake control" submenu

Navigation   Application → Rake control

Evaluation mode 	
Navigation	  Application → Rake control → Evaluation mode (3460007)
Selection	■ Difference upstream - downstream ■ Ratio downstream / upstream
Factory setting	Difference upstream - downstream

Description 	
Navigation	  Application → Rake control → Description (3460030)
User entry	Character string comprising numbers, letters and special characters (32)
Factory setting	Difference

Description 	
Navigation	  Application → Rake control → Description (3460029)
User entry	Character string comprising numbers, letters and special characters (32)

Factory setting Ratio

Decimal places



Navigation Application → Rake control → Decimal places (3460031)

Description Select the number of decimal places for the display value.

Selection

- X
- X.X
- X.XX
- X.XXX
- X.XXXX

Factory setting X.XX

Switch-on point



Navigation Application → Rake control → Switch-on point (3460016)

Description The switch-on points are indicated in the level unit. The rake control relay is energized if the difference L1 - L2 exceeds the switch-on point.

User entry Positive floating-point number

Factory setting 0.0 mm

Switch-off point



Navigation Application → Rake control → Switch-off point (3460018)

Description The switch-off point is indicated in the level unit. The rake control relay is de-energized if the difference L1 - L2 drops below the switch-off point.

User entry Positive floating-point number

Factory setting 0.0 mm

Switch-on point		
Navigation	  Application → Rake control → Switch-on point (3460019)	
Description	The switch-on points are numbers between 0 and 1. The switch-on point must be below the switch-off point. The rake control relay is energized if the ratio $L2/L1$ falls below the switch-on point.	
User entry	0.0 to 1.0	
Factory setting	0.8	
Switch-off point		
Navigation	  Application → Rake control → Switch-off point (3460017)	
Description	The switch-off points are numbers between 0 and 1. The rake control relay is de-energized if the ratio $L2/L1$ exceeds the switch-off point.	
User entry	0.0 to 1.0	
Factory setting	0.9	
Switch delay		
Navigation	  Application → Rake control → Switch delay (3460020)	
Description	Define switch-on delay for rake control.	
User entry	0 to 255 s	
Factory setting	0 s	
Visualization zoom start		
Navigation	  Application → Rake control → Visualization zoom start (3460033)	
Description	Enter the lower value for an enlarged area in the display (chart/bar graph).	
User entry	0.0 to 1.0	
Factory setting	0.0	

Visualization zoom end



Navigation	 Application → Rake control → Visualization zoom end (3460034)
Description	Enter the upper value for an enlarged area in the display (chart/bar graph).
User entry	0.0 to 1.0
Factory setting	1.0

Visualization zoom start



Navigation	 Application → Rake control → Visualization zoom start (3460035)
Description	Enter the lower value for an enlarged area in the display (chart/bar graph).
User entry	Signed floating-point number
Factory setting	0.0 mm

Visualization zoom end



Navigation	 Application → Rake control → Visualization zoom end (3460036)
Description	Enter the upper value for an enlarged area in the display (chart/bar graph).
User entry	Signed floating-point number
Factory setting	Positive floating-point number

Description



Navigation	 Application → Rake control → Description (3460027)
User entry	Character string comprising numbers, letters and special characters (32)
Factory setting	Level upstream

Description		
Navigation	 Application → Rake control → Description (3460028)	
User entry	Character string comprising numbers, letters and special characters (32)	
Factory setting	Level downstream	
Visualization zoom start		
Navigation	 Application → Rake control → Visualization zoom start (3460037)	
Description	Enter the lower value for an enlarged area in the display (chart/bar graph).	
User entry	Signed floating-point number	
Factory setting	0.0 mm	
Visualization zoom end		
Navigation	 Application → Rake control → Visualization zoom end (3460038)	
Description	Enter the lower value for an enlarged area in the display (chart/bar graph).	
User entry	Signed floating-point number	
Factory setting	Positive floating-point number	
"Additional settings" submenu		
<i>Navigation</i>	 Application → Rake control → Additional settings	
Failure behavior		
Navigation	 Application → Rake control → Additional settings → Failure behavior (3460021)	
Selection	■ Invalid ■ Last good ■ Fixed Value	
Factory setting	Invalid	

Failure value digital

Navigation	 Application → Rake control → Additional settings → Failure value digital (3460023)
Description	Select the failure value for the digital output channel.
Selection	Off On
Factory setting	Off

Failure value analog

Navigation	 Application → Rake control → Additional settings → Failure value analog (3460025)
Description	Enter a specific value for the fixed failure behavior.
User entry	Positive floating-point number
Factory setting	0.0 mm

Failure value analog

Navigation	 Application → Rake control → Additional settings → Failure value analog (3460024)
Description	Enter a specific value for the fixed failure behavior.
User entry	0.0 to 1.0
Factory setting	0.0

3.3.12 "Digital inputs" submenu

Navigation   Application → Digital inputs

"Digital input 1 to 4" submenu

Navigation   Application → Digital inputs → Digital input 1 to 4

Description 	
Navigation	  Application → Digital inputs → Digital input 1 to 4 → Description (3090011-1 to 4)
User entry	Character string comprising numbers, letters and special characters (32)
Factory setting	Digital input 1
Invert external digital input 1 to 4 	
Navigation	  Application → Digital inputs → Digital input 1 to 4 → Invert external digital input 1 to 4 (3090012-1 to 4)
Description	Activate inverting of the digital input.
Selection	■ No ■ Yes
Factory setting	No
Failure behavior DI 1 to 4 	
Navigation	  Application → Digital inputs → Digital input 1 to 4 → Failure behavior DI 1 to 4 (3090014-1 to 4)
Description	Settings how this channel/input behaves in case of failure.
Selection	■ Invalid ■ Last good ■ Off ■ On
Factory setting	Invalid

3.3.13 "Limits" submenu

Navigation  Application → Limits

Delete limit

Navigation  Application → Limits → Delete limit (3310104)

- Selection
- No
 - Limit 1
 - Limit 2
 - Limit 3
 - Limit 4
 - Limit 5
 - Limit 6
 - Limit 7
 - Limit 8
 - Limit 9
 - Limit 10

Factory setting No

"Limit 1 to 10" submenu

Navigation  Application → Limits → Limit 1 to 10

Signal source

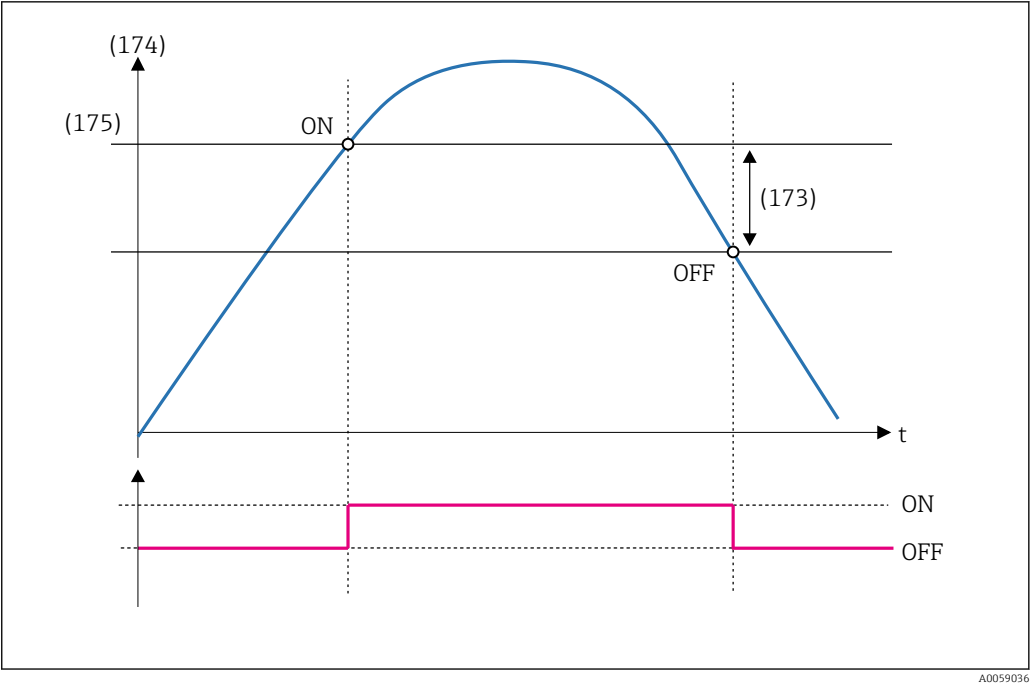
Navigation  Application → Limits → Limit 1 to 10 → Signal source (3020010–1 to 10)

Description Select the process value or calculated value to be monitored for limit violation.

- Selection
- Off
 - Level 1
 - Level 2
 - Flow 1
 - Flow 2
 - Level 1 + Level 2
 - Average level
 - Level 1 - Level 2
 - Level 2 - Level 1
 - Flow 1 + Flow 2
 - Average flow
 - Flow 1 - Flow 2
 - Flow 2 - Flow 1

Factory setting Off

Additional information



151 Selection of signal source (174)

Function

Navigation

Application → Limits → Limit 1 to 10 → Function (3020009-1 to 10)

Description

Select the limit monitoring function.

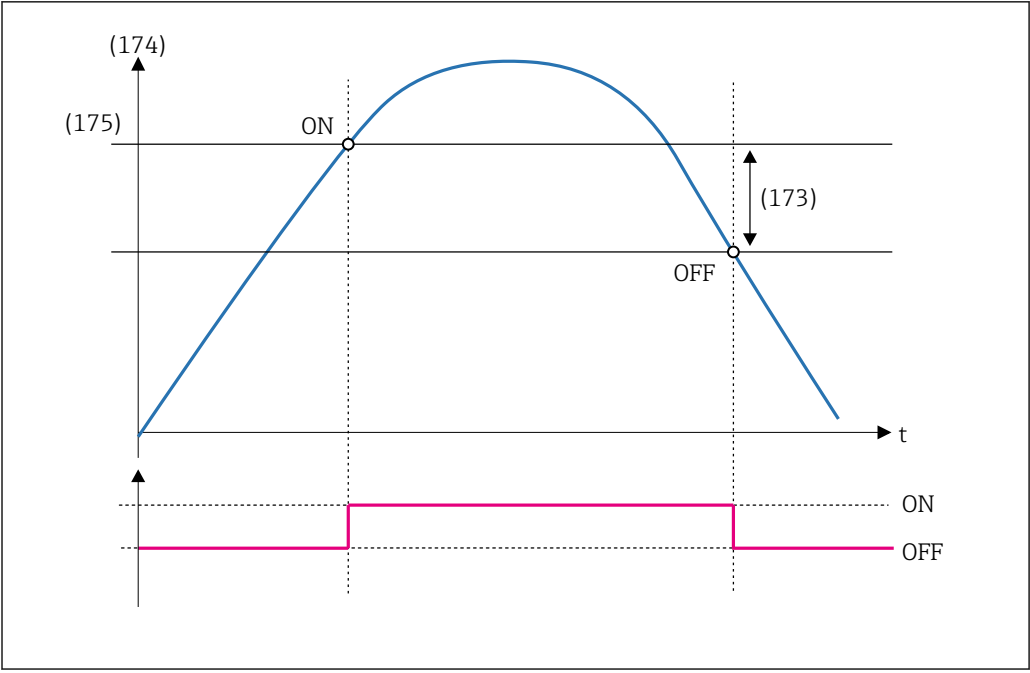
Selection

- Upper limit
- Lower limit
- Inband
- Outband

Factory setting

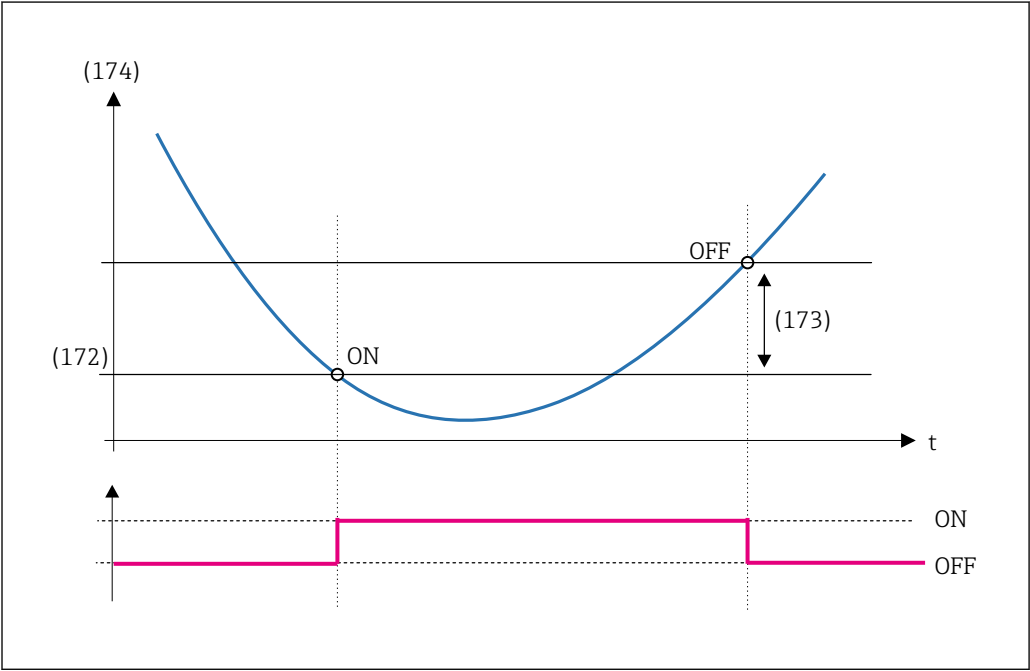
Upper limit

Additional information



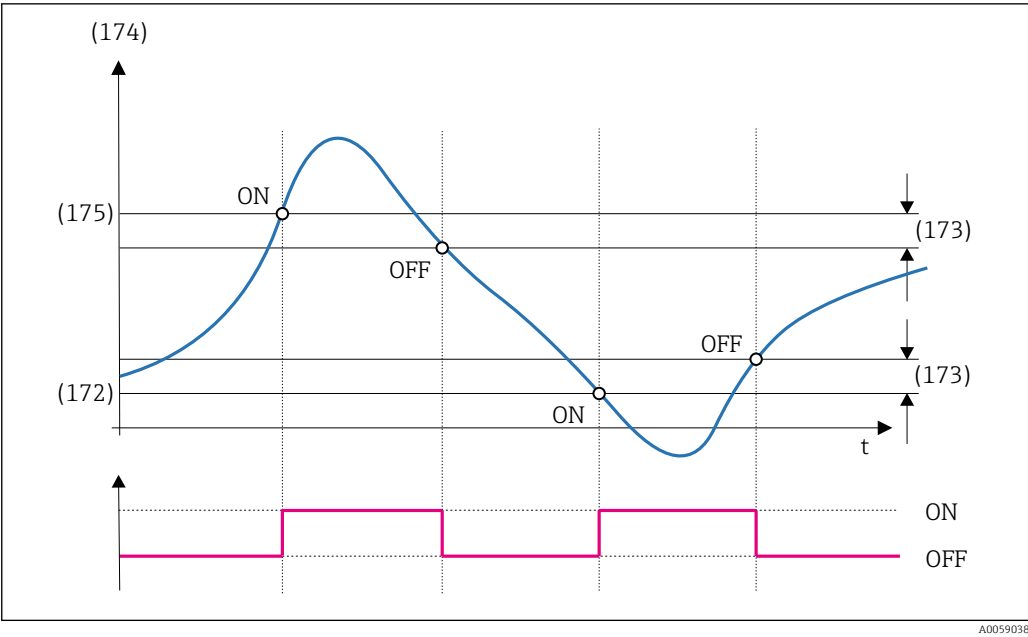
A0059036

152 'Upper limit' function

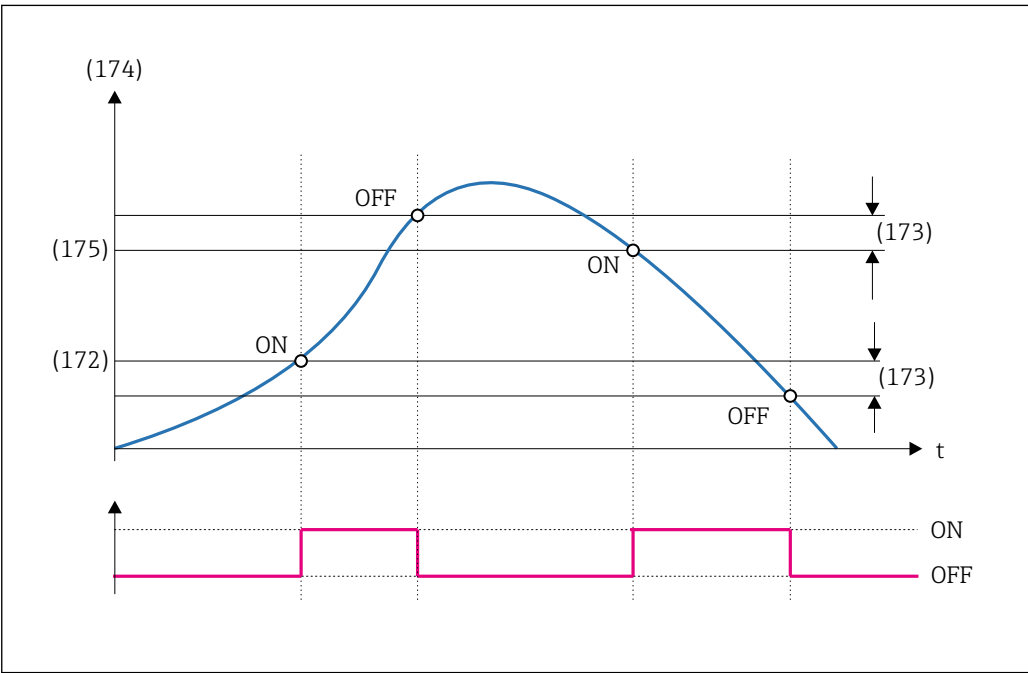


A0059037

153 'Lower limit' function



154 'Inband' function



155 'Outband' function

Upper limit

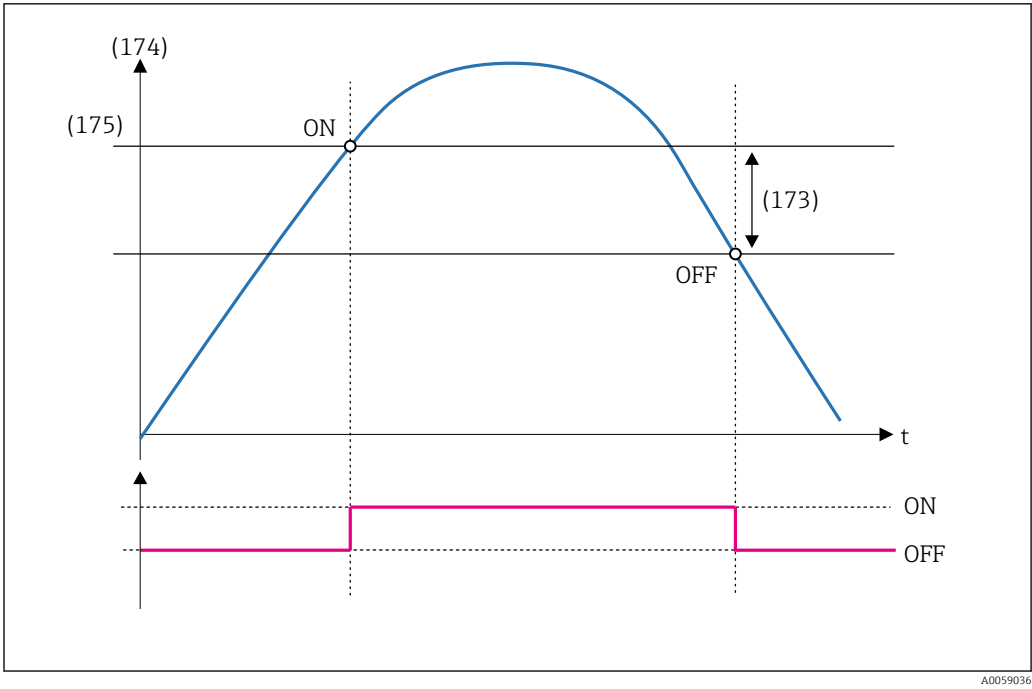
Navigation  Application → Limits → Limit 1 to 10 → Upper limit (3020013-1 to 10)

Description Enter the process value that defines the upper limit for the selected function.

User entry Signed floating-point number

Factory setting 0.0

Additional information



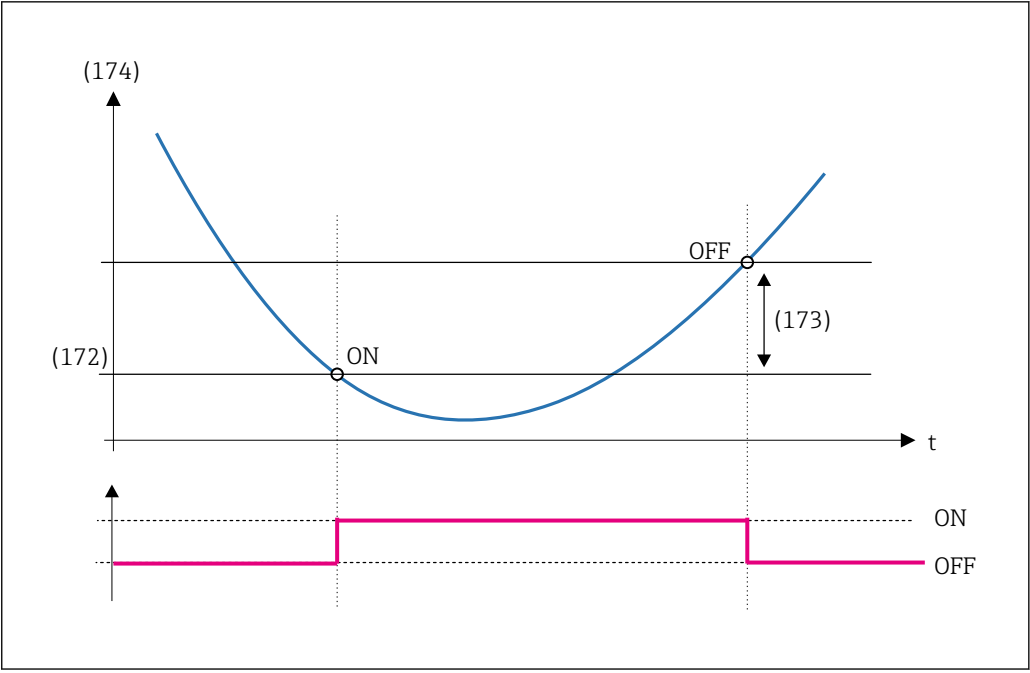
156 Entering upper limit (175)

Lower limit



Navigation	 Application → Limits → Limit 1 to 10 → Lower limit (3020012-1 to 10)
Description	Enter the process value that defines the lower limit for the selected function.
User entry	Signed floating-point number
Factory setting	0.0

Additional information



157 Entering lower limit (172)

A0059037

Hysteresis



Navigation

Application → Limits → Limit 1 to 10 → Hysteresis (3020014-1 to 10)

Description

Defines the hysteresis for the entered limit value. The hysteresis prevents constant changes of the limit value state if the level is near one of the limit values.

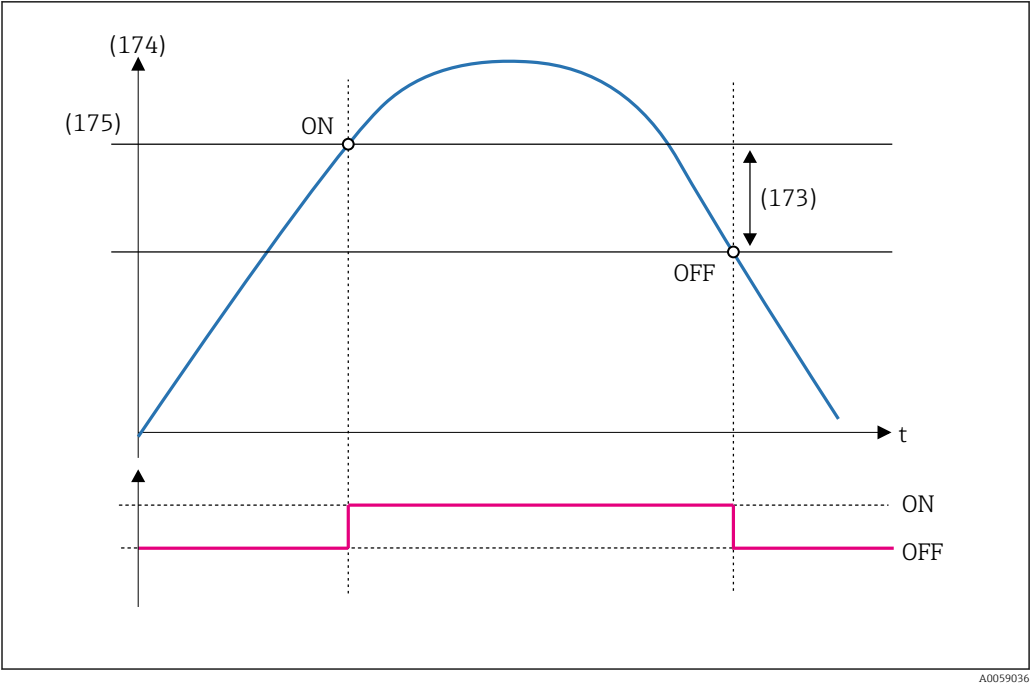
User entry

0.0 to 200 000.0

Factory setting

0.0

Additional information



158 Entering hysteresis (173)

Delay time



Navigation

Application → Limits → Limit 1 to 10 → Delay time (3020015-1 to 10)

Description

Enter the time by which the limit value violation is delayed.

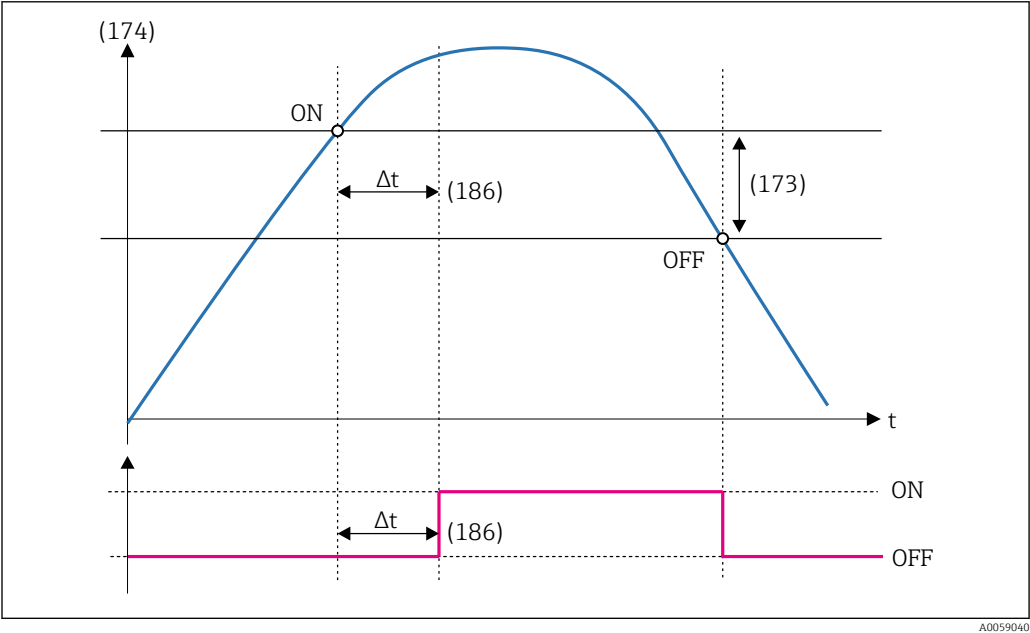
User entry

0 to 86 400 s

Factory setting

0 s

Additional information



159 Entering the time span for the delay time (186).

Save event 	
Navigation	  Application → Limits → Limit 1 to 10 → Save event (3020016-1 to 10)
Description	Saving of the limit value violation in the event logbook.
Selection	■ No ■ Yes ■ 'On' message only
Factory setting	No

3.3.14 "Current output " submenu

Navigation   Application → Current output

"Current output 1 to 2" submenu

Navigation   Application → Current output → Current output 1 to 2

Process variable output current 	
Navigation	  Application → Current output → Current output 1 to 2 → Process variable output current (2570021-1 to 2)
Description	Select the process variable for the current output.
Selection	■ Off ■ Level 1 linearized ■ Level 2 linearized ■ Flow 1 ■ Flow 2 ■ Level 1 + Level 2 ■ Average level ■ Level 1 - Level 2 ■ Level 2 - Level 1 ■ Flow 1 + Flow 2 ■ Average flow ■ Flow 1 - Flow 2 ■ Flow 2 - Flow 1 ■ Ratio backwater ■ Level upstream ■ Level downstream ■ Ratio downstream / upstream ■ Difference (rake control)
Factory setting	Off

Current range output



Navigation	 Application → Current output → Current output 1 to 2 → Current range output (2570016–1 to 2)
Description	Select current range for process value output and upper/lower level for alarm signal.
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) ■ 0...20 mA (0...20.5 mA)
Factory setting	4 ... 20 mA NE (3.8 ... 20.5 mA)

Lower range value output



Navigation	 Application → Current output → Current output 1 to 2 → Lower range value output (2570028–1 to 2)
Description	Enter 4 mA value.
User entry	–200 000.0 to 200 000.0

Upper range value output



Navigation	 Application → Current output → Current output 1 to 2 → Upper range value output (2570029–1 to 2)
Description	Enter 20 mA value.
User entry	–200 000.0 to 200 000.0

Failure behavior current output



Navigation	 Application → Current output → Current output 1 to 2 → Failure behavior current output (2570010–1 to 2)
Description	Select current output value for alarm condition.
Selection	■ Min. ■ Max.
Factory setting	Min.

Failure current		
Navigation	  Application → Current output → Current output 1 to 2 → Failure current (2570011-1 to 2)	
Description	Enter current output value in alarm condition.	
User entry	21.5 to 22.5 mA	
Factory setting	22.5 mA	
Output current 1 to 2		
Navigation	  Application → Current output → Current output 1 to 2 → Output current 1 to 2 (2570007-1 to 2)	
Description	Displays the value currently calculated for the current output.	
User interface	Signed floating-point number	
4 mA trim value		
Navigation	  Application → Current output → Current output 1 to 2 → 4 mA trim value (2570024-1 to 2)	
Description	Set the correction value for the current output at the lower range value (4 mA).	
User entry	3.85 to 4.15 mA	
Factory setting	4.0 mA	
20 mA trim value		
Navigation	  Application → Current output → Current output 1 to 2 → 20 mA trim value (2570025-1 to 2)	
Description	Set the correction value for the current output at the lower range value (4 mA).	
User entry	19.85 to 20.15 mA	
Factory setting	20.0 mA	

3.3.15 "HART output" submenu

Navigation  Application → HART output

"HART configuration" submenu

Navigation  Application → HART output → HART configuration

HART address

Navigation	 Application → HART output → HART configuration → HART address (190020)
Description	Enter address for the data exchange via HART protocol.
User entry	0 to 63
Factory setting	0

Loop current mode

Navigation	 Application → HART output → HART configuration → Loop current mode (2570009)
Description	To enable multi-drop mode, disable loop current mode.
Selection	■ Disable ■ Enable
Factory setting	Enable

HART short tag

Navigation	 Application → HART output → HART configuration → HART short tag (190034)
User entry	Character string comprising numbers, letters and special characters (8)
Factory setting	???????

Device tag 	
Navigation	  Application → HART output → HART configuration → Device tag (0031)
Description	Enter a name for the measuring point to identify the measuring device in the plant.
User entry	Character string comprising numbers, letters and special characters (32)
Factory setting	- none -

No. of preambles 	
Navigation	  Application → HART output → HART configuration → No. of preambles (190018)
Description	Defines the number of preambles in the HART telegram.
User entry	5 to 20
Factory setting	5

"Process Variables" submenu

Navigation   Application → HART output → Process Variables

Process variable output current 	
Navigation	  Application → HART output → Process Variables → Process variable output current (2570021)
Description	Select the process variable for the current output.
Selection	■ Off ■ Level 1 linearized ■ Level 2 linearized ■ Flow 1 ■ Flow 2 ■ Level 1 + Level 2 ■ Average level ■ Level 1 - Level 2 ■ Level 2 - Level 1 ■ Flow 1 + Flow 2 ■ Average flow ■ Flow 1 - Flow 2 ■ Flow 2 - Flow 1 ■ Ratio backwater

- Level upstream
- Level downstream
- Ratio downstream / upstream
- Difference (rake control)

Factory setting Off

Primary variable (PV)

Navigation  Application → HART output → Process Variables → Primary variable (PV) (190023)

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

User interface Signed floating-point number

Factory setting 0.0

Assign SV



Navigation  Application → HART output → Process Variables → Assign SV (190046)

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

- Selection**
- Not used
 - Level 1 linearized
 - Level 2 linearized
 - Flow 1
 - Flow 2
 - Level 1 + Level 2
 - Average level
 - Level 1 - Level 2
 - Level 2 - Level 1
 - Flow 1 + Flow 2
 - Average flow
 - Flow 1 - Flow 2
 - Flow 2 - Flow 1
 - Ratio backwater
 - Totalizer flow 1
 - Totalizer flow 2
 - Totalizer flow 1 + 2
 - Totalizer average flow
 - Totalizer flow 1 - 2
 - Totalizer flow 2 - 1
 - Level upstream
 - Level downstream
 - Ratio downstream / upstream
 - Difference (rake control)
 - Current sensor 1
 - Current sensor 2
 - PV sensor 1
 - SV sensor 1

- TV sensor 1
- QV sensor 1
- PV sensor 2
- SV sensor 2
- TV sensor 2
- QV sensor 2
- Totalizer overflow 1
- Totalizer overflow 2
- Totalizer overflow 1 + 2
- Totalizer overflow average
- Totalizer overflow 1 - 2
- Totalizer overflow 2 - 1

Factory setting Not used

Secondary variable (SV)

Navigation  Application → HART output → Process Variables → Secondary variable (SV) (190033)

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

User interface Signed floating-point number

Factory setting 0.0

Assign TV



Navigation  Application → HART output → Process Variables → Assign TV (190047)

Description Assign measured variable to the third dynamic variable (TV).

Selection

- Not used
- Level 1 linearized
- Level 2 linearized
- Flow 1
- Flow 2
- Level 1 + Level 2
- Average level
- Level 1 - Level 2
- Level 2 - Level 1
- Flow 1 + Flow 2
- Average flow
- Flow 1 - Flow 2
- Flow 2 - Flow 1
- Ratio backwater
- Totalizer flow 1
- Totalizer flow 2
- Totalizer flow 1 + 2
- Totalizer average flow
- Totalizer flow 1 - 2

- Totalizer flow 2 - 1
- Level upstream
- Level downstream
- Ratio downstream / upstream
- Difference (rake control)
- Current sensor 1
- Current sensor 2
- PV sensor 1
- SV sensor 1
- TV sensor 1
- QV sensor 1
- PV sensor 2
- SV sensor 2
- TV sensor 2
- QV sensor 2
- Totalizer overflow 1
- Totalizer overflow 2
- Totalizer overflow 1 + 2
- Totalizer overflow average
- Totalizer overflow 1 - 2
- Totalizer overflow 2 - 1

Factory setting

Not used

Tertiary variable (TV)

Navigation
 Application → HART output → Process Variables → Tertiary variable (TV) (190037)
Description

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

User interface

Signed floating-point number

Factory setting

0.0

Assign QV

**Navigation**
 Application → HART output → Process Variables → Assign QV (190048)
Description

Assign measured variable to quaternary (fourth) dynamic variable (QV).

Selection

- Not used
- Level 1 linearized
- Level 2 linearized
- Flow 1
- Flow 2
- Level 1 + Level 2
- Average level
- Level 1 - Level 2
- Level 2 - Level 1
- Flow 1 + Flow 2
- Average flow

- Flow 1 - Flow 2
- Flow 2 - Flow 1
- Ratio backwater
- Totalizer flow 1
- Totalizer flow 2
- Totalizer flow 1 + 2
- Totalizer average flow
- Totalizer flow 1 - 2
- Totalizer flow 2 - 1
- Level upstream
- Level downstream
- Ratio downstream / upstream
- Difference (rake control)
- Current sensor 1
- Current sensor 2
- PV sensor 1
- SV sensor 1
- TV sensor 1
- QV sensor 1
- PV sensor 2
- SV sensor 2
- TV sensor 2
- QV sensor 2
- Totalizer overflow 1
- Totalizer overflow 2
- Totalizer overflow 1 + 2
- Totalizer overflow average
- Totalizer overflow 1 - 2
- Totalizer overflow 2 - 1

Factory setting Not used

Quaternary variable (QV)

Navigation	 Application → HART output → Process Variables → Quaternary variable (QV) (190026)
Description	Shows the current measured value of the quaternary (fourth) dynamic variable (QV).
User interface	Signed floating-point number
Factory setting	0.0

"HART" submenu

Navigation  Application → HART output → HART

Device ID

Navigation	 Application → HART output → HART → Device ID (190013)
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 → HART → Device type (190057)
Description	Displays the device type with which the device is registered with the HART FieldComm Group.
User interface	0 to 65 535
Factory setting	4 573

Device revision

Navigation	 Application → HART output → HART → Device revision (190027)
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 revision

Navigation	 Application → HART output → HART → HART revision (190028)
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 → HART → HART descriptor (190012)	
Description	Enter description for the measuring point.	
User entry	Character string comprising numbers, letters and special characters (16)	
Factory setting	????????????????	
HART message		
Navigation	 Application → HART output → HART → HART message (190017)	
Description	Enter HART message which is sent via HART protocol when requested by the master.	
User entry	Character string comprising numbers, letters and special characters (32)	
Factory setting	????????????????????????????????????	
HART date code		
Navigation	 Application → HART output → HART → HART date code (190011)	
Description	Enter data for individual use.	
User entry	Character string comprising numbers, letters and special characters (10)	
Factory setting	2010-01-01	

3.3.16 "Relay" submenu

Navigation  Application → Relay

"Relay 1 to 5" submenu

Navigation  Application → Relay → Relay 1 to 5

Description

Navigation  Application → Relay → Relay 1 to 5 → Description (2860008–1 to 5)

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

Factory setting Relay 1

Function

Navigation  Application → Relay → Relay 1 to 5 → Function (2860009–1 to 5)

Description Setting of relay functions

- Selection
- Off
 - Alarm
 - Switch
 - Pulse
 - Time pulse

Factory setting Off

Signal source

Navigation  Application → Relay → Relay 1 to 5 → Signal source (2860010–1 to 5)

Description Select signal source of the relay when used as a switching output.

- Selection
- Off
 - Limit 1
 - Limit 2
 - Limit 3
 - Limit 4
 - Limit 5
 - Limit 6
 - Limit 7
 - Limit 8

- Limit 9
- Limit 10
- Pump 1
- Pump 2
- Pump 3
- Pump 4
- Pump 5
- Pump 6
- Pump 7
- Pump 8
- Rake control
- Backwater alarm
- Digital input 1
- Digital input 2
- Digital input 3
- Digital input 4
- Flush control channel 1
- Flush control channel 2
- Pump feedback alarm 1
- Pump feedback alarm 2
- Operating hours alarm 1
- Operating hours alarm 2

Factory setting Off

Signal source

Navigation   Application → Relay → Relay 1 to 5 → Signal source (2860011–1 to 5)

- Selection**
- Off
 - Flow 1
 - Flow 2
 - Flow 1 + Flow 2
 - Average flow
 - Flow 1 - Flow 2
 - Flow 2 - Flow 1

Factory setting Off

Invert

Navigation   Application → Relay → Relay 1 to 5 → Invert (2860016–1 to 5)

Description Specify the switching direction of the relay.

- Selection**
- No
 - Yes

Factory setting No

Value per pulse



Navigation  Application → Relay → Relay 1 to 5 → Value per pulse (2860012–1 to 5)

Description Select flow volume after which a pulse is generated.

User entry 0.0001 to 200 000.0

Factory setting 1.0

Pulse time



Navigation  Application → Relay → Relay 1 to 5 → Pulse time (2860017–1 to 5)

Description Define the time interval between the individual pulses.

User entry 1 to 65 000 min

Factory setting 1 min

Pulse width



Navigation  Application → Relay → Relay 1 to 5 → Pulse width (2860013–1 to 5)

Description Define duration of each individual pulse.

User entry 0.2 to 60.0 s

Factory setting 1.0 s

Reset buffer



Navigation  Application → Relay → Relay 1 to 5 → Reset buffer (2860015–1 to 5)

Description Activate reset of the pulse buffer memory.

Selection

- No
- Yes

Factory setting No

3.3.17 "Open collector" submenu

Navigation  Application → Open collector

"Open collector 1 to 3" submenu

Navigation  Application → Open collector → Open collector 1 to 3

Description 	
Navigation	 Application → Open collector → Open collector 1 to 3 → Description (3320008–1 to 3)
User entry	Character string comprising numbers, letters and special characters (32)
Factory setting	Open collector 1
Function 	
Navigation	 Application → Open collector → Open collector 1 to 3 → Function (3320009–1 to 3)
Description	Setting of open collector functions
Selection	■ Off ■ Alarm ■ Switch ■ Pulse ■ Time pulse
Factory setting	Off
Signal source 	
Navigation	 Application → Open collector → Open collector 1 to 3 → Signal source (3320010–1 to 3)
Description	Select signal source of the open collector when used as a switching output.
Selection	■ Off ■ Limit 1 ■ Limit 2 ■ Limit 3 ■ Limit 4 ■ Limit 5 ■ Limit 6

	■ Limit 7 ■ Limit 8 ■ Limit 9 ■ Limit 10 ■ Pump 1 ■ Pump 2 ■ Pump 3 ■ Pump 4 ■ Pump 5 ■ Pump 6 ■ Pump 7 ■ Pump 8 ■ Rake control ■ Backwater alarm ■ Digital input 1 ■ Digital input 2 ■ Digital input 3 ■ Digital input 4 ■ Flush control channel 1 ■ Flush control channel 2 ■ Pump feedback alarm 1 ■ Pump feedback alarm 2 ■ Operating hours alarm 1 ■ Operating hours alarm 2
Factory setting	Off

Signal source

Navigation	Application → Open collector → Open collector 1 to 3 → Signal source (3320011-1 to 3)
------------	--

Selection	■ Off ■ Flow 1 ■ Flow 2 ■ Flow 1 + Flow 2 ■ Average flow ■ Flow 1 - Flow 2 ■ Flow 2 - Flow 1
-----------	--

Factory setting	Off
-----------------	-----

Invert

Navigation	Application → Open collector → Open collector 1 to 3 → Invert (3320016-1 to 3)
------------	---

Description	Specify the switching direction of the open collector.
-------------	--

Selection	■ No ■ Yes
-----------	--

Factory setting No

Value per pulse



Navigation Application → Open collector → Open collector 1 to 3 → Value per pulse (3320012-1 to 3)

Description Select flow volume after which a pulse is generated.

User entry 0.0001 to 200 000.0

Factory setting 1.0

Pulse time



Navigation Application → Open collector → Open collector 1 to 3 → Pulse time (3320017-1 to 3)

Description Define the time interval between the individual pulses.

User entry 1 to 65 000 min

Factory setting 1 min

Pulse width



Navigation Application → Open collector → Open collector 1 to 3 → Pulse width (3320013-1 to 3)

Description Define duration of each individual pulse.

User entry 0.5 to 60 000.0 ms

Factory setting 200.0 ms

Reset buffer



Navigation Application → Open collector → Open collector 1 to 3 → Reset buffer (3320015-1 to 3)

Description Activate reset of the pulse buffer memory.

Selection

■ No

■ Yes

Factory setting

No

3.4

System

Navigation



 Help

3.4.1

"Device management" submenu

Navigation



 System → Device management

Device tag

Navigation



 System → Device management → Device tag (0031)

Description

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

User entry

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

Factory setting

- none -

Locking status

Navigation



 System → Device management → Locking status (0041)

Description

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

User interface

■ Hardware locked

■ Up-/download active

■ Software locked

Device reset

Navigation



 System → Device management → Device reset (0044)

Description

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

- Selection

■ -----

■ To factory defaults

■ To delivery settings

■ Restart device

■ Reset sensor 1 to factory defaults

■ Reset sensor 2 to factory defaults

Factory setting

Status

Navigation

 System → Device management → Status (3310009)

Description

Displays the execution progress of the device reset.

- User interface

■ Idle

■ Busy

■ Completed

Sensor startup time

Navigation

 System → Device management → Sensor startup time (3310018)

Description

Enter the startup time of the connected sensor. The switch-on process of the device is delayed by the entered time.

User entry

0 to 300 s

Factory setting

30 s

3.4.2 "Security" submenu

Navigation  System → Security

"Configuration" submenu

Navigation  System → Security → Configuration

Unauthorized access warning

Navigation  System → Security → Configuration → Unauthorized access warning (3310011)

User entry Character string comprising numbers, letters and special characters (254)

Factory setting NOTICE: You are accessing a proprietary system that remains the sole property of this organization. Any use of the system may be monitored and audited. Unauthorized access or use of the system is prohibited and may be subject to prosecution.

Service

Navigation  System → Security → Configuration → Service (3310015)

Description Activate or deactivate the access account. Recommendation for security reasons: Deactivate the access account after commissioning.

Selection

- Off
- On

Factory setting On

Production

Navigation  System → Security → Configuration → Production (3310013)

Description Activate or deactivate the access account. Recommendation for security reasons: Deactivate the access account after commissioning.

Selection

- Off
- On

Factory setting On

Developer



Navigation	System → Security → Configuration → Developer (3310014)
Description	Activate or deactivate the access account. Recommendation for security reasons: Deactivate the access account after commissioning.
Selection	■ Off ■ On
Factory setting	On

Firmware update



Navigation	System → Security → Configuration → Firmware update (3310023)
Selection	■ Off ■ On
Factory setting	Off

RLC button



Navigation	System → Security → Configuration → RLC button (3310012)
Description	Caution! If the button function is deactivated, it is no longer possible to reset forgotten user accounts or device PINs.
Selection	■ Restart ■ Reset user accounts + device PINs ■ Device reset

"Device PIN" submenu

Navigation System → Security → Device PIN

Current user

Navigation	System → Security → Device PIN → Current user (3870128)
Description	Displays the currently entered user role.

- User interface
- -----
 - Operator
 - Maintenance
 - Expert
 - Service
 - Production
 - Developer

"Certificates" submenu

Navigation   System → Security → Certificates → Common name

Status

Navigation   System → Security → Certificates → Common name → Status (3250128)

- User interface
- -----
 - Not used
 - Ok
 - Expired
 - Revoked

Serial number

Navigation   System → Security → Certificates → Common name → Serial number (3250007)

User interface Character string comprising numbers, letters and special characters

Certificate signature algorithm

Navigation   System → Security → Certificates → Common name → Certificate signature algorithm (3250008)

User interface Character string comprising numbers, letters and special characters

Key usage

Navigation  System → Security → Certificates → Common name → Key usage (3250009)

User interface

- Web server authentication
- Web client authentication
- E-mail protection

"Issued for" submenu

Navigation  System → Security → Certificates → Common name → Issued for

Subject key identifier

Navigation  System → Security → Certificates → Common name → Issued for → Subject key identifier (3250017)

User interface Character string comprising numbers, letters and special characters

Common name

Navigation  System → Security → Certificates → Common name → Issued for → Common name (3250010)

User interface Character string comprising numbers, letters and special characters

Factory setting Common name 1

Organization

Navigation  System → Security → Certificates → Common name → Issued for → Organization (3250014)

Description Enter the organization to which the certificate applies.

User interface Character string comprising numbers, letters and special characters

Organizational unit

Navigation	 System → Security → Certificates → Common name → Issued for → Organizational unit (3250015)
Description	Enter the organization unit to which the certificate applies.
User interface	Character string comprising numbers, letters and special characters

Locality

Navigation	 System → Security → Certificates → Common name → Issued for → Locality (3250013)
Description	Enter the city or locality in which the organization is located.
User interface	Character string comprising numbers, letters and special characters

State or province

Navigation	 System → Security → Certificates → Common name → Issued for → State or province (3250012)
Description	Enter the state or region in which the organization operates.
User interface	Character string comprising numbers, letters and special characters

Country code

Navigation	 System → Security → Certificates → Common name → Issued for → Country code (3250011)
Description	Select the two-digit country code of the country in which the organization operates.
User interface	■ -- ■ AD : Andorra ■ AE : United Arab Emirates ■ AF : Afghanistan ■ AG : Antigua and Barbuda ■ AI : Anguilla ■ AL : Albania ■ AM : Armenia ■ AO : Angola ■ AQ : Antarctica ■ AR : Argentina ■ AS : American Samoa

- AT : Austria
- AU : Australia
- AW : Aruba
- AX : Åland Islands
- AZ : Azerbaijan
- BA : Bosnia and Herzegovina
- BB : Barbados
- BD : Bangladesh
- BE : Belgium
- BF : Burkina Faso
- BG : Bulgaria
- BH : Bahrain
- BI : Burundi
- BJ : Benin
- BL : Saint Barthélemy
- BM : Bermuda
- BN : Brunei Darussalam
- BO : Bolivia, Plurinational State of
- BQ : Bonaire, Sint Eustatius and Saba
- BR : Brazil
- BS : Bahamas
- BT : Bhutan
- BV : Bouvet Island
- BW : Botswana
- BY : Belarus
- BZ : Belize
- CA : Canada
- CC : Cocos (Keeling) Islands
- CD : Congo, the Democratic Republic of the
- CF : Central African Republic
- CG : Congo
- CH : Switzerland
- CI : Côte d'Ivoire
- CK : Cook Islands
- CL : Chile
- CM : Cameroon
- CN : China
- CO : Colombia
- CR : Costa Rica
- CU : Cuba
- CV : Cabo Verde
- CW : Curaçao
- CX : Christmas Island
- CY : Cyprus
- CZ : Czechia
- DE : Germany
- DJ : Djibouti
- DK : Denmark
- DM : Dominica
- DO : Dominican Republic
- DZ : Algeria
- EC : Ecuador
- EE : Estonia
- EG : Egypt
- EH : Western Sahara
- ER : Eritrea
- ES : Spain
- ET : Ethiopia
- FI : Finland

- FJ : Fiji
- FK : Falkland Islands
- FM : Micronesia
- FO : Faroe Islands
- FR : France
- GR : Greece
- GB : United Kingdom of Great Britain and Northern Ireland
- GA : Gabon
- GP : Guadeloupe
- GE : Georgia
- GF : French Guiana
- GN : Guinea
- GM : Gambia
- GD : Grenada
- GG : Guernsey
- GH : Ghana
- GI : GI
- GL : Greenland
- GQ : Equatorial Guinea
- GS : South Georgia and the South Sandwich Islands
- GT : Guatemala
- GU : Guam
- GW : Guinea-Bissau
- GY : Guyana
- HK : Hong Kong
- HM : Heard Island and McDonald Islands
- HN : Honduras
- HR : Croatia
- HT : Haiti
- HU : Hungary
- IL : Israel
- IE : Ireland
- ID : Indonesia
- IM : Isle of Man
- IN : India
- IO : British Indian Ocean Territory
- IQ : Iraq
- IR : Iran
- IS : Iceland
- IT : Italy
- JE : Jersey
- JM : Jamaica
- JO : Jordan
- JP : Japan
- KH : Cambodia
- KG : Kyrgyzstan
- KE : Kenya
- KI : Kiribati
- KM : Comoros
- KN : Saint Kitts and Nevis
- KP : Korea
- KR : Korea
- KW : Kuwait
- KY : Cayman Islands
- KZ : Kazakhstan
- LU : Luxembourg
- LI : Liechtenstein
- LC : Saint Lucia
- LB : Lebanon

- LA : Lao People's Democratic Republic
- LK : Sri Lanka
- LR : Liberia
- LS : Lesotho
- LT : Lithuania
- LV : Latvia
- LY : Libya
- MH : Marshall Islands
- ME : Montenegro
- MD : Moldova
- MC : Monaco
- MA : Morocco
- MF : Saint Martin
- MG : Madagascar
- MK : North Macedonia
- ML : Mali
- MM : Myanmar
- MN : Mongolia
- MO : Macao
- MP : Northern Mariana Islands
- MQ : Martinique
- MR : Mauritania
- MS : Montserrat
- MT : Malta
- MU : Mauritius
- MV : Maldives
- MW : Malawi
- MX : Mexico
- MY : Malaysia
- MZ : Mozambique
- NE : Niger
- NF : Norfolk Island
- NG : Nigeria
- NC : New Caledonia
- NA : Namibia
- NI : Nicaragua
- NL : Netherlands
- NO : Norway
- NP : Nepal
- NR : Nauru
- NU : Niue
- NZ : New Zealand
- OM : Oman
- PA : Panama
- PE : Peru
- PF : French Polynesia
- PG : Papua New Guinea
- PH : Philippines
- PK : Pakistan
- PL : Poland
- PM : Saint Pierre and Miquelon
- PN : Pitcairn
- PR : Puerto Rico
- PS : Palestine
- PT : Portugal
- PW : Palau
- PY : Paraguay
- QA : Qatar
- RE : Réunion

- RO : Romania
- RS : Serbia
- RU : Russian Federation
- RW : Rwanda
- SA : Saudi Arabia
- SB : Solomon Islands
- SC : Seychelles
- SD : Sudan
- SE : Sweden
- SG : Singapore
- SH : Saint Helena, Ascension and Tristan da Cunha
- SI : Slovenia
- SJ : Svalbard and Jan Mayen
- SK : Slovakia
- SL : Sierra Leone
- SM : San Marino
- SN : Senegal
- SO : Somalia
- SR : Suriname
- SS : South Sudan
- ST : Sao Tome and Principe
- SV : El Salvador
- SX : Sint Maarten
- SY : Syrian Arab Republic
- SZ : Eswatini
- TC : Turks and Caicos Islands
- TD : Chad
- TJ : Tajikistan
- TK : Tokelau
- TL : Timor-Leste
- TM : Turkmenistan
- TN : Tunisia
- TR : Turkey
- TT : Trinidad and Tobago
- TF : French Southern Territories
- TG : Togo
- TH : Thailand
- TO : Tonga
- TV : Tuvalu
- TW : Taiwan
- TZ : Tanzania
- UA : Ukraine
- UG : Uganda
- UM : United States Minor Outlying Islands
- US : United States of America
- UY : Uruguay
- UZ : Uzbekistan
- VA : Holy See
- VC : Saint Vincent and the Grenadines
- VE : Venezuela
- VG : Virgin Islands
- VI : Virgin Islands
- VN : Viet Nam
- VU : Vanuatu
- WF : Wallis and Futuna
- WS : Samoa
- YE : Yemen
- YT : Mayotte

- ZA : South Africa
- ZM : Zambia
- ZW : Zimbabwe

Email

Navigation   System → Security → Certificates → Common name → Issued for → Email (3250016)

User interface Character string comprising numbers, letters and special characters

"Issued by" submenu

Navigation   System → Security → Certificates → Common name → Issued by

Authority key identifier

Navigation   System → Security → Certificates → Common name → Issued by → Authority key identifier (3250025)

User interface Character string comprising numbers, letters and special characters

Common name

Navigation   System → Security → Certificates → Common name → Issued by → Common name (3250018)

User interface Character string comprising numbers, letters and special characters

Organization

Navigation   System → Security → Certificates → Common name → Issued by → Organization (3250022)

Description Enter the organization to which the certificate applies.

User interface Character string comprising numbers, letters and special characters

Organizational unit

Navigation	 System → Security → Certificates → Common name → Issued by → Organizational unit (3250023)
Description	Enter the organization unit to which the certificate applies.
User interface	Character string comprising numbers, letters and special characters

State or province

Navigation	 System → Security → Certificates → Common name → Issued by → State or province (3250020)
Description	Enter the state or region in which the organization operates.
User interface	Character string comprising numbers, letters and special characters

Locality

Navigation	 System → Security → Certificates → Common name → Issued by → Locality (3250021)
Description	Enter the city or locality in which the organization is located.
User interface	Character string comprising numbers, letters and special characters

Country code

Navigation	 System → Security → Certificates → Common name → Issued by → Country code (3250019)
Description	Select the two-digit country code of the country in which the organization operates.
User interface	■ -- ■ AD : Andorra ■ AE : United Arab Emirates ■ AF : Afghanistan ■ AG : Antigua and Barbuda ■ AI : Anguilla ■ AL : Albania ■ AM : Armenia ■ AO : Angola ■ AQ : Antarctica ■ AR : Argentina ■ AS : American Samoa

- AT : Austria
- AU : Australia
- AW : Aruba
- AX : Åland Islands
- AZ : Azerbaijan
- BA : Bosnia and Herzegovina
- BB : Barbados
- BD : Bangladesh
- BE : Belgium
- BF : Burkina Faso
- BG : Bulgaria
- BH : Bahrain
- BI : Burundi
- BJ : Benin
- BL : Saint Barthélemy
- BM : Bermuda
- BN : Brunei Darussalam
- BO : Bolivia, Plurinational State of
- BQ : Bonaire, Sint Eustatius and Saba
- BR : Brazil
- BS : Bahamas
- BT : Bhutan
- BV : Bouvet Island
- BW : Botswana
- BY : Belarus
- BZ : Belize
- CA : Canada
- CC : Cocos (Keeling) Islands
- CD : Congo, the Democratic Republic of the
- CF : Central African Republic
- CG : Congo
- CH : Switzerland
- CI : Côte d'Ivoire
- CK : Cook Islands
- CL : Chile
- CM : Cameroon
- CN : China
- CO : Colombia
- CR : Costa Rica
- CU : Cuba
- CV : Cabo Verde
- CW : Curaçao
- CX : Christmas Island
- CY : Cyprus
- CZ : Czechia
- DE : Germany
- DJ : Djibouti
- DK : Denmark
- DM : Dominica
- DO : Dominican Republic
- DZ : Algeria
- EC : Ecuador
- EE : Estonia
- EG : Egypt
- EH : Western Sahara
- ER : Eritrea
- ES : Spain
- ET : Ethiopia
- FI : Finland

- FJ : Fiji
- FK : Falkland Islands
- FM : Micronesia
- FO : Faroe Islands
- FR : France
- GR : Greece
- GB : United Kingdom of Great Britain and Northern Ireland
- GA : Gabon
- GP : Guadeloupe
- GE : Georgia
- GF : French Guiana
- GN : Guinea
- GM : Gambia
- GD : Grenada
- GG : Guernsey
- GH : Ghana
- GI : GI
- GL : Greenland
- GQ : Equatorial Guinea
- GS : South Georgia and the South Sandwich Islands
- GT : Guatemala
- GU : Guam
- GW : Guinea-Bissau
- GY : Guyana
- HK : Hong Kong
- HM : Heard Island and McDonald Islands
- HN : Honduras
- HR : Croatia
- HT : Haiti
- HU : Hungary
- IL : Israel
- IE : Ireland
- ID : Indonesia
- IM : Isle of Man
- IN : India
- IO : British Indian Ocean Territory
- IQ : Iraq
- IR : Iran
- IS : Iceland
- IT : Italy
- JE : Jersey
- JM : Jamaica
- JO : Jordan
- JP : Japan
- KH : Cambodia
- KG : Kyrgyzstan
- KE : Kenya
- KI : Kiribati
- KM : Comoros
- KN : Saint Kitts and Nevis
- KP : Korea
- KR : Korea
- KW : Kuwait
- KY : Cayman Islands
- KZ : Kazakhstan
- LU : Luxembourg
- LI : Liechtenstein
- LC : Saint Lucia
- LB : Lebanon

- LA : Lao People's Democratic Republic
- LK : Sri Lanka
- LR : Liberia
- LS : Lesotho
- LT : Lithuania
- LV : Latvia
- LY : Libya
- MH : Marshall Islands
- ME : Montenegro
- MD : Moldova
- MC : Monaco
- MA : Morocco
- MF : Saint Martin
- MG : Madagascar
- MK : North Macedonia
- ML : Mali
- MM : Myanmar
- MN : Mongolia
- MO : Macao
- MP : Northern Mariana Islands
- MQ : Martinique
- MR : Mauritania
- MS : Montserrat
- MT : Malta
- MU : Mauritius
- MV : Maldives
- MW : Malawi
- MX : Mexico
- MY : Malaysia
- MZ : Mozambique
- NE : Niger
- NF : Norfolk Island
- NG : Nigeria
- NC : New Caledonia
- NA : Namibia
- NI : Nicaragua
- NL : Netherlands
- NO : Norway
- NP : Nepal
- NR : Nauru
- NU : Niue
- NZ : New Zealand
- OM : Oman
- PA : Panama
- PE : Peru
- PF : French Polynesia
- PG : Papua New Guinea
- PH : Philippines
- PK : Pakistan
- PL : Poland
- PM : Saint Pierre and Miquelon
- PN : Pitcairn
- PR : Puerto Rico
- PS : Palestine
- PT : Portugal
- PW : Palau
- PY : Paraguay
- QA : Qatar
- RE : Réunion

- RO : Romania
- RS : Serbia
- RU : Russian Federation
- RW : Rwanda
- SA : Saudi Arabia
- SB : Solomon Islands
- SC : Seychelles
- SD : Sudan
- SE : Sweden
- SG : Singapore
- SH : Saint Helena, Ascension and Tristan da Cunha
- SI : Slovenia
- SJ : Svalbard and Jan Mayen
- SK : Slovakia
- SL : Sierra Leone
- SM : San Marino
- SN : Senegal
- SO : Somalia
- SR : Suriname
- SS : South Sudan
- ST : Sao Tome and Principe
- SV : El Salvador
- SX : Sint Maarten
- SY : Syrian Arab Republic
- SZ : Eswatini
- TC : Turks and Caicos Islands
- TD : Chad
- TJ : Tajikistan
- TK : Tokelau
- TL : Timor-Leste
- TM : Turkmenistan
- TN : Tunisia
- TR : Turkey
- TT : Trinidad and Tobago
- TF : French Southern Territories
- TG : Togo
- TH : Thailand
- TO : Tonga
- TV : Tuvalu
- TW : Taiwan
- TZ : Tanzania
- UA : Ukraine
- UG : Uganda
- UM : United States Minor Outlying Islands
- US : United States of America
- UY : Uruguay
- UZ : Uzbekistan
- VA : Holy See
- VC : Saint Vincent and the Grenadines
- VE : Venezuela
- VG : Virgin Islands
- VI : Virgin Islands
- VN : Viet Nam
- VU : Vanuatu
- WF : Wallis and Futuna
- WS : Samoa
- YE : Yemen
- YT : Mayotte

- ZA : South Africa
- ZM : Zambia
- ZW : Zimbabwe

Email

Navigation  System → Security → Certificates → Common name → Issued by → Email (3250024)

User interface Character string comprising numbers, letters and special characters

"Validity period" submenu

Navigation  System → Security → Certificates → Common name → Validity period

Issued on

Navigation  System → Security → Certificates → Common name → Validity period → Issued on (3250030)

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

Expires on

Navigation  System → Security → Certificates → Common name → Validity period → Expires on (3250031)

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

*"SHA-256 fingerprints" submenu**Navigation*

System → Security → Certificates → Common name → SHA-256 fingerprints

Certificate

NavigationSystem → Security → Certificates → Common name → SHA-256 fingerprints
→ Certificate (3250064)**User interface**

Character string comprising numbers, letters and special characters

"Interfaces" submenu*Navigation*

System → Security → Interfaces

HART output

**Navigation**

System → Security → Interfaces → HART output (190176)

Description

Activate or deactivate the HART-function of the current output.

On: current output with HART function

Off: current output only

Selection

- Off
- On

Factory setting

Off

mDNS

**Navigation**

System → Security → Interfaces → mDNS (3310080)

Description

Multicast DNS (mDNS) is designed for small networks. Devices can be easily connected to each other in the LAN. The devices share their IP addresses, so there is no need to set up a server or directory.

Selection

- Off
- On

Factory setting

Off

3.4.3 "Connectivity" submenu

Navigation  System → Connectivity

"Ethernet" submenu

Navigation  System → Connectivity → Ethernet

"Configuration" submenu

Navigation  System → Connectivity → Ethernet → Configuration

DHCP client	
--------------------	---

Navigation	 System → Connectivity → Ethernet → Configuration → DHCP client (170014)
Description	Switch the DHCP client functionality on and off.
Selection	■ Off ■ On
Factory setting	On

IP address	
-------------------	---

Navigation	 System → Connectivity → Ethernet → Configuration → IP address (170007)
Description	Enter the IP address of the device.
User entry	Character string comprising numbers, letters and special characters (15)
Factory setting	192.168.1.212

Subnet mask	
--------------------	---

Navigation	 System → Connectivity → Ethernet → Configuration → Subnet mask (170011)
Description	Enter subnet mask of the device.
User entry	Character string comprising numbers, letters and special characters (15)
Factory setting	255.255.255.0

Default gateway

Navigation	  System → Connectivity → Ethernet → Configuration → Default gateway (170012)
Description	Enter IP address for the default gateway of the device.
User entry	Character string comprising numbers, letters and special characters (15)
Factory setting	192.168.1.1

IP address domain name server

Navigation	  System → Connectivity → Ethernet → Configuration → IP address domain name server (170084)
Description	Enter the IP address of a DNS server.
User entry	Character string comprising numbers, letters and special characters (15)
Factory setting	192.168.1.1

Port

Navigation	  System → Connectivity → Ethernet → Configuration → Port (170104)
Description	Enter TCP/IP communication port (max. 5 digits). If the network is protected by a firewall, this port may have to be released.
User entry	8 000 to 8 079
Factory setting	8 000

"Information" submenu

Navigation  System → Connectivity → Ethernet → Information

MAC address

Navigation	  System → Connectivity → Ethernet → Information → MAC address (170034)
Description	Shows the MAC address of the measuring device.

User interface Character string comprising numbers, letters and special characters

IP address

Navigation  System → Connectivity → Ethernet → Information → IP address (170078)

User interface Character string comprising numbers, letters and special characters

Factory setting 192.168.1.212

Subnet mask

Navigation  System → Connectivity → Ethernet → Information → Subnet mask (170083)

User interface Character string comprising numbers, letters and special characters

Factory setting 255.255.255.0

Default gateway

Navigation  System → Connectivity → Ethernet → Information → Default gateway (170082)

User interface Character string comprising numbers, letters and special characters

Factory setting 192.168.1.1

IP address domain name server

Navigation  System → Connectivity → Ethernet → Information → IP address domain name server (170085)

User interface Character string comprising numbers, letters and special characters

Factory setting 192.168.1.1

mDNS host name

Navigation	 System → Connectivity → Ethernet → Information → mDNS host name (3310082)
User interface	Character string comprising numbers, letters and special characters
	<i>"Port information" submenu</i>
	Navigation  System → Connectivity → Ethernet → Port information

Interface connection status

Navigation	 System → Connectivity → Ethernet → Port information → Interface connection status (170048)
User interface	■ Connected ■ Not connected

Interface speed

Navigation	 System → Connectivity → Ethernet → Port information → Interface speed (170045)
User interface	0 to 4 294 MBit/s

Duplex status

Navigation	 System → Connectivity → Ethernet → Port information → Duplex status (170047)
User interface	■ Full duplex ■ Half duplex ■ Unknown

Auto negotiation status

Navigation	 System → Connectivity → Ethernet → Port information → Auto negotiation status (170046)
User interface	■ Idle ■ In progress ■ Completed ■ Failed ■ Duplex negotiation failed

Number of received packets

Navigation	 System → Connectivity → Ethernet → Port information → Number of received packets (170049)
User interface	Positive integer
Factory setting	0

Number of sent packets

Navigation	 System → Connectivity → Ethernet → Port information → Number of sent packets (170050)
User interface	Positive integer
Factory setting	0

Number of failed received packets

Navigation	 System → Connectivity → Ethernet → Port information → Number of failed received packets (170051)
User interface	Positive integer
Factory setting	0

Number of failed sent packets

Navigation	 System → Connectivity → Ethernet → Port information → Number of failed sent packets (170052)
User interface	Positive integer
Factory setting	0

"WLAN" submenu

Navigation

 System → Connectivity → WLAN

"Configuration" submenu

Navigation

 System → Connectivity → WLAN → Configuration

WLAN

Navigation	 System → Connectivity → WLAN → Configuration → WLAN (1860012)
Description	Activate or deactivate WLAN.
Selection	■ Disable ■ Enable
Factory setting	Enable

WLAN mode

Navigation	 System → Connectivity → WLAN → Configuration → WLAN mode (1860025)
Description	Select WLAN mode.
Selection	WLAN access point
Factory setting	WLAN access point

SSID name		
Navigation	 System → Connectivity → WLAN → Configuration → SSID name (1860035)	
Description	Enter the user-defined SSID name (max. 32 characters).	
User entry	Character string comprising numbers, letters and special characters (32)	
Network security		
Navigation	 System → Connectivity → WLAN → Configuration → Network security (1860036)	
Description	Select the security type of the WLAN interface.	
Selection	■ WPA2 Personal ■ WPA2/WPA3 Personal	
Factory setting	WPA2 Personal	
WLAN passphrase		
Navigation	 System → Connectivity → WLAN → Configuration → WLAN passphrase (1860037)	
Description	Enter the network key (8 to 32 characters).	
User entry	Character string comprising numbers, letters and special characters (63)	
2.4 GHz WLAN channel		
Navigation	 System → Connectivity → WLAN → Configuration → 2.4 GHz WLAN channel (1860038)	
Description	Enter WLAN channel for 2.4 GHz.	
User entry	1 to 11	
Factory setting	6	

WLAN IP address

Navigation	  System → Connectivity → WLAN → Configuration → WLAN IP address (1860039)
Description	Enter IP address of the WLAN interface of the device.
User entry	Character string comprising numbers, letters and special characters (15)
Factory setting	192.168.2.212

WLAN subnet mask

Navigation	  System → Connectivity → WLAN → Configuration → WLAN subnet mask (1860040)
Description	Enter subnet mask of the WLAN interface of the device.
User entry	Character string comprising numbers, letters and special characters (15)
Factory setting	255.255.255.0

Transmit power level

Navigation	  System → Connectivity → WLAN → Configuration → Transmit power level (1860042)
Description	Set the transmit power level of the WLAN signal.
Selection	■ Low ■ Medium ■ High
Factory setting	High

Apply

Navigation	  System → Connectivity → WLAN → Configuration → Apply
Description	Click the "Apply" button. All changed WLAN settings will be accepted and activated in the device.

"Information" submenu

Navigation  System → Connectivity → WLAN → Information

WLAN MAC address

Navigation	 System → Connectivity → WLAN → Information → WLAN MAC address (1860013)
Description	Displays the MAC address of the WLAN interface of the device.
User interface	Character string comprising numbers, letters and special characters
Factory setting	FF-FF-FF-FF-FF-FF

"Bluetooth sensor" submenu

Navigation  System → Connectivity → Bluetooth sensor

Bluetooth 1 to 2

Navigation	 System → Connectivity → Bluetooth sensor → Bluetooth 1 to 2 (2830028–1 to 2)
Description	Enable or disable Bluetooth function.
Selection	■ Disable ■ Enable
Factory setting	Enable

"HART master" submenu

Navigation  System → Connectivity → HART master

HART master

Navigation	 System → Connectivity → HART master → HART master (3340007)
Selection	■ Primary master ■ Secondary master

Factory setting Secondary master

No. of preambles



Navigation System → Connectivity → HART master → No. of preambles (3340008)

User entry 5 to 20

Factory setting 5

3.4.4 "Web server" submenu

Navigation System → Web server

Web server functionality



Navigation System → Web server → Web server functionality (170036)

Description Activate or deactivate web server function (http or https)
http: unencrypted data transfer, recommended only for internal network.
https: encrypted data transfer between web browser and device, higher data security.

Selection

- Off
- On (http and https)
- On (https only)

Factory setting On (http and https)

Port



Navigation System → Web server → Port (170081)

Description Enter TCP/IP communication port (max. 5 digits). If the network is protected by a firewall, this port may have to be released.

User entry 80 to 4 999

Factory setting 80

Port https



Navigation	  System → Web server → Port https (170114)
Description	Enter TCP/IP communication port (max. 5 digits). If the network is protected by a firewall, this port may have to be released.
User entry	81 to 4 999
Factory setting	443

3.4.5 "Display" submenu

Navigation   System → Display

Brightness

Navigation	  System → Display → Brightness (160107)
Description	Adjust brightness.
User entry	10 to 100 %
Factory setting	70 %

Language

Navigation	  System → Display → Language (160024)
Description	Set display language.
Selection	■ English ■ Deutsch ■ Français ■ Español ■ Italiano ■ Nederlands ■ Portuguesa ■ Polski ■ русский язык (Russian) ■ Svenska ■ Türkçe ■ 中文 (Chinese) ■ 日本語 (Japanese)

- 한국어 (Korean)
- Bahasa Indonesia
- čeština (Czech)

Factory setting

English

Separator**Navigation** System → Display → Separator (160031)**Description**

Select decimal separator for displaying numerical values.

Selection

- .
- ,

Factory setting

,

Switch off display**Navigation** System → Display → Switch off display (160108)**Description**

Without operating the display it is automatically switched off after the set time.

Selection

- Never
- after 10 min.
- after 20 min.
- after 30 min.
- after 1 h.

Factory setting

Never

Display on**Navigation** System → Display → Display on (160109)**Description**

Selection of the diagnostic event at which the display switches on automatically.

Selection

- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)
- Limit value violation

Operating lock 	
Navigation	  System → Display → Operating lock (160127)
Description	Without operating the display it is automatically locked after the set time. To unlock, tap the screen and trace the specified sequence of dots with your finger, starting with the arrow.
Selection	■ Never ■ after 2 min. ■ after 5 min. ■ after 10 min. ■ after 15 min.
Factory setting	Never

Color scheme 	
Navigation	  System → Display → Color scheme (160079)
Description	Select preferred color scheme.
Selection	■ Light ■ Dark
Factory setting	Dark

3.4.6 "Date/time" submenu

Navigation   System → Date/time

"Properties" submenu

Navigation   System → Date/time → Properties

Date/time	
Navigation	  System → Date/time → Properties → Date/time (2850008)
Description	Shows the entered date and time.
User interface	Days (d), hours (h), minutes (m), seconds (s)

Factory setting 0

UTC date/time

Navigation  System → Date/time → Properties → UTC date/time (2850009)

Description Displays date and time according to UTC (UTC = Coordinated Universal Time).

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

Factory setting 0

Time zone

Navigation  System → Date/time → Properties → Time zone (2850007)

Description Displays the set time zone according to UTC (UTC = Coordinated Universal Time).

User interface

- (UTC-12:00) Baker Island
- (UTC-11:00) Midway Island, Samoa
- (UTC-10:00) Hawaii
- (UTC-09:30) Marquesas Islands
- (UTC-09:00) Alaska
- (UTC-08:00) Los Angeles, Vancouver
- (UTC-07:00) Denver, Phoenix
- (UTC-06:00) Chicago, Mexico City
- (UTC-05:00) New York, Toronto
- (UTC-04:00) Caracas, La Paz
- (UTC-03:30) Newfoundland
- (UTC-03:00) Buenos Aires, Brasilia
- (UTC-02:00) Mid Atlantic
- (UTC-01:00) Cape Verde
- (UTC+00:00) London, Lisbon
- (UTC+01:00) Berlin, Rome, Paris
- (UTC+02:00) Athens, Cairo, Kyiv
- (UTC+03:00) Kuwait, Moscow
- (UTC+03:30) Tehran
- (UTC+04:00) Abu Dhabi, Tiflis
- (UTC+04:30) Kabul
- (UTC+05:00) Islamabad, Karachi
- (UTC+05:30) New Delhi
- (UTC+05:45) Kathmandu
- (UTC+06:00) Astana, Dhaka
- (UTC+06:30) Pyinmana, Cocos Island
- (UTC+07:00) Bangkok, Jakarta
- (UTC+08:00) Singapore, Beijing
- (UTC+08:45) Australian Central Western
- (UTC+09:00) Seoul, Tokyo
- (UTC+09:30) Adelaide, Darwin
- (UTC+10:00) Brisbane, Canberra
- (UTC+11:00) Magadan, Solomon Islands

- (UTC+12:00) Auckland, Wellington
- (UTC+12:45) Chatham Islands
- (UTC+13:00) Nuku'alofa
- (UTC+14:00) Kiritimati

Date/time format


Navigation System → Date/time → Properties → Date/time format (2850014)

Description Select date and time format.

- Selection**
- DD.MM.YYYY hh:mm:ss
 - DD.MM.YYYY hh:mm:ss AM/PM
 - MM/DD/YYYY hh:mm:ss
 - MM/DD/YYYY hh:mm:ss AM/PM
 - YYYY-MM-DD HH:MM:SS
 - YYYY-MM-DD HH:MM:SS AM/PM
 - MM-DD-YYYY hh:mm:ss
 - MM-DD-YYYY hh:mm:ss AM/PM

Factory setting DD.MM.YYYY hh:mm:ss

"Daylight saving time changeover" submenu

Navigation System → Date/time → Daylight saving time changeover

Mode


Navigation System → Date/time → Daylight saving time changeover → Mode (2850020)

Description Function of summer / normal time changeover.

- Selection**
- Off
 - User-defined
 - Automatic Europe
 - Automatic USA

Factory setting Automatic Europe

"Begin daylight saving time" submenu

Navigation  System → Date/time → Daylight saving time changeover → Begin daylight saving time

Occurrence

Navigation  System → Date/time → Daylight saving time changeover → Begin daylight saving time → Occurrence (2850022)

Description Day in the selected month, when the changeover from standard time to daylight saving time takes place in spring.

Selection

- 1.
- 2.
- 3.
- 4.
- Last

Factory setting Last

Day

Navigation  System → Date/time → Daylight saving time changeover → Begin daylight saving time → Day (2850023)

Description Day of the week when the changeover from standard time to daylight saving time takes place in spring.

Selection

- Sunday
- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday

Factory setting Sunday

Month

Navigation  System → Date/time → Daylight saving time changeover → Begin daylight saving time → Month (2850024)

Description Month when the changeover from standard time to daylight saving time takes place in spring.

Selection	■ January ■ February ■ March ■ April ■ May ■ June ■ July ■ August ■ September ■ October ■ November ■ December
------------------	--

Factory setting	March
------------------------	-------

Time	
-------------	---

Navigation	  System → Date/time → Daylight saving time changeover → Begin daylight saving time → Time (2850025)
Description	Point in time at which on the day of the changeover from standard time to daylight saving time the clock is advanced by 1 hour.
User entry	00:00 ... 24:00
Factory setting	02:00

Next changeover	
------------------------	--

Navigation	  System → Date/time → Daylight saving time changeover → Begin daylight saving time → Next changeover (2850026)
Description	Displays the date when the daylight saving time changeover is performed next spring.
User interface	Character string comprising numbers, letters and special characters

*"End daylight saving time" submenu***Navigation**

System → Date/time → Daylight saving time changeover → End daylight saving time → Occurrence (2850031)

Occurrence**Navigation**

System → Date/time → Daylight saving time changeover → End daylight saving time → Occurrence (2850031)

Description

Day of the week when the changeover from daylight saving time to standard time takes place in autumn.

Selection

- 1.
- 2.
- 3.
- 4.
- Last

Factory setting

Last

Day**Navigation**

System → Date/time → Daylight saving time changeover → End daylight saving time → Day (2850032)

Description

Day of the week when the changeover from daylight saving time to standard time takes place in autumn.

Selection

- Sunday
- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday

Factory setting

Sunday

Month**Navigation**

System → Date/time → Daylight saving time changeover → End daylight saving time → Month (2850033)

Description

Month when the changeover from daylight saving time to standard time takes place in autumn.

- Selection**
- January
 - February
 - March
 - April
 - May
 - June
 - July
 - August
 - September
 - October
 - November
 - December

Factory setting October

Time



Navigation System → Date/time → Daylight saving time changeover → End daylight saving time → Time (2850034)

Description Point in time at which on the day of the changeover from daylight saving time to standard time the clock is set back by 1 hour.

User entry 00:00 ... 24:00

Factory setting 03:00

Next changeover

Navigation System → Date/time → Daylight saving time changeover → End daylight saving time → Next changeover (2850035)

Description Displays the date when the daylight saving time to standard time changeover is performed next autumn.

User interface Character string comprising numbers, letters and special characters

"Set date/time for local display" submenu

Navigation  System → Date/time → Set date/time for local display

Time zone

Navigation  System → Date/time → Set date/time for local display → Time zone (2850013)

Description Select time zone.

Selection

- (UTC-12:00) Baker Island
- (UTC-11:00) Midway Island, Samoa
- (UTC-10:00) Hawaii
- (UTC-09:30) Marquesas Islands
- (UTC-09:00) Alaska
- (UTC-08:00) Los Angeles, Vancouver
- (UTC-07:00) Denver, Phoenix
- (UTC-06:00) Chicago, Mexico City
- (UTC-05:00) New York, Toronto
- (UTC-04:00) Caracas, La Paz
- (UTC-03:30) Newfoundland
- (UTC-03:00) Buenos Aires, Brasilia
- (UTC-02:00) Mid Atlantic
- (UTC-01:00) Cape Verde
- (UTC+00:00) London, Lisbon
- (UTC+01:00) Berlin, Rome, Paris
- (UTC+02:00) Athens, Cairo, Kyiv
- (UTC+03:00) Kuwait, Moscow
- (UTC+03:30) Tehran
- (UTC+04:00) Abu Dhabi, Tiflis
- (UTC+04:30) Kabul
- (UTC+05:00) Islamabad, Karachi
- (UTC+05:30) New Delhi
- (UTC+05:45) Kathmandu
- (UTC+06:00) Astana, Dhaka
- (UTC+06:30) Pyinmana, Cocos Island
- (UTC+07:00) Bangkok, Jakarta
- (UTC+08:00) Singapore, Beijing
- (UTC+08:45) Australian Central Western
- (UTC+09:00) Seoul, Tokyo
- (UTC+09:30) Adelaide, Darwin
- (UTC+10:00) Brisbane, Canberra
- (UTC+11:00) Magadan, Solomon Islands
- (UTC+12:00) Auckland, Wellington
- (UTC+12:45) Chatham Islands
- (UTC+13:00) Nuku'alofa
- (UTC+14:00) Kiritimati

Set date

Navigation   System → Date/time → Set date/time for local display → Set date (2850010)

Description Set the current date manually if automatic time synchronization is not used.

Factory setting 0

Set time

Navigation   System → Date/time → Set date/time for local display → Set time (2850011)

Description Set the current time manually if automatic time synchronization is not used.

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

Factory setting 0

"Time synchronisation" submenu

Navigation   System → Date/time → Time synchronisation

NTP

Navigation   System → Date/time → Time synchronisation → NTP (2850050)

Description Activate or deactivate automatic date and time synchronization for the device via NTP. If enabled, select the time interval.

Selection

- Off
- Every 15 minutes
- Every 30 minutes
- Once per hour
- Once per day

Factory setting Off

NTP server 1

Navigation	 System → Date/time → Time synchronisation → NTP server 1 (2850051)
Description	Enter the address or IP address of the NTP server. Additional information: The domain name server (DNS) must be configured beforehand.
User entry	Character string comprising numbers, letters and special characters (60)

NTP server 2

Navigation	 System → Date/time → Time synchronisation → NTP server 2 (2850052)
Description	Displays the automatically determined IP address of the NTP server. Additional information: DHCP must be enabled for this.
User interface	Character string comprising numbers, letters and special characters

3.4.7 "Geolocation" submenu

Navigation  System → Geolocation

Process Unit Tag

Navigation	 System → Geolocation → Process Unit Tag (2160030)
Description	Enter the process unit in which the device is installed.
User entry	Character string comprising numbers, letters and special characters (32)
Factory setting	????????????????????????????????????

Location Description

Navigation	 System → Geolocation → Location Description (2160031)
Description	Enter a description of the location so that the device can be located in.
User entry	Character string comprising numbers, letters and special characters (32)
Factory setting	????????????????????????????????????

Longitude



Navigation	 System → Geolocation → Longitude (2160032)
Description	Enter the longitude coordinates that describe the device location.
User entry	–180.0 to 180.0 °
Factory setting	0.0 °

Latitude



Navigation	 System → Geolocation → Latitude (2160033)
Description	Enter the latitude coordinates that describe the device location.
User entry	–90.0 to 90.0 °
Factory setting	0.0 °

Altitude



Navigation	 System → Geolocation → Altitude (2160034)
Description	Enter the altitude data that describe the device location.
User entry	Signed floating-point number
Factory setting	0.0 m

Location method



Navigation	 System → Geolocation → Location method (2160035)
Description	Select the data format for specifying the geographic location.
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

Manual input mode

Navigation System → Information

Navigation



System $\rightarrow$ Information

FMA90

Endress+Hauser

Character string comprising numbers, letters and special characters

Shows the device order code.

User interface Character string comprising numbers, letters and special characters

Firmware version

Navigation  System → Information → Firmware version (0024)

Description Shows the device firmware version installed.

User interface Character string comprising numbers, letters and special characters

Hardware revision

Navigation  System → Information → Hardware revision (0072)

Description Indication of the hardware revision of the device.

User interface Character string comprising numbers, letters and special characters

Factory setting 01.00.00

Extended order code 1



Navigation  System → Information → Extended order code 1 (0050)

Description Shows the 1st part of the extended order code.

User interface Character string comprising numbers, letters and special characters

Extended order code 2



Navigation  System → Information → Extended order code 2 (0051)

Description Shows the 2nd part of the extended order code.

User interface Character string comprising numbers, letters and special characters

Extended order code 3

Navigation	 System → Information → Extended order code 3 (0052)
Description	Shows the 3rd part of the extended order code.
User interface	Character string comprising numbers, letters and special characters

XML build number

Navigation	 System → Information → XML build number (0066)
User interface	Positive integer

Device firmware revision extension

Navigation	 System → Information → Device firmware revision extension (0026)
Description	Displays the optional extension of the device firmware version.
User interface	Character string comprising numbers, letters and special characters

Battery voltage

Navigation	 System → Information → Battery voltage (3310256)
Description	Shows the currently applied battery supply voltage.
User interface	Signed floating-point number

"Sensor 1 to 2" submenu

Navigation  System → Information → Sensor 1 to 2

Manufacturer ID

Navigation	 System → Information → Sensor 1 to 2 → Manufacturer ID (3370010–1 to 2)
Description	Displays the connected sensor's manufacturer ID registered with the HART FieldComm Group.
User interface	0 to 65 535
Factory setting	0

Manufacturer

Navigation	 System → Information → Sensor 1 to 2 → Manufacturer (3370011–1 to 2)
Description	Displays the manufacturer.
User interface	Character string comprising numbers, letters and special characters
Factory setting	????????????????????????????????

Device name

Navigation	 System → Information → Sensor 1 to 2 → Device name (3370013–1 to 2)
Description	Displays the device name of the connected sensor. It can also be found on the nameplate.
User interface	Character string comprising numbers, letters and special characters
Factory setting	????????????????

Serial number

Navigation	 System → Information → Sensor 1 to 2 → Serial number (3370047–1 to 2)
Description	Displays the serial number of the connected sensor. It can be used to identify the device.
User interface	Character string comprising numbers, letters and special characters

Factory setting	????????????????
------------------------	------------------

Firmware version

Navigation	 System → Information → Sensor 1 to 2 → Firmware version (3370049–1 to 2)
-------------------	--

Description	Displays the firmware version of the connected sensor.
--------------------	--

User interface	Character string comprising numbers, letters and special characters
-----------------------	---

Factory setting	????????????????
------------------------	------------------

Hardware revision

Navigation	 System → Information → Sensor 1 to 2 → Hardware revision (3370048–1 to 2)
-------------------	---

Description	Displays the hardware revision of the device.
--------------------	---

User interface	Character string comprising numbers, letters and special characters
-----------------------	---

Factory setting	????????????????
------------------------	------------------

Order ident

Navigation	 System → Information → Sensor 1 to 2 → Order ident (3370050–1 to 2)
-------------------	---

Description	Displays information to the order ident of the connected Endress+Hauser sensor.
--------------------	---

User interface	Character string comprising numbers, letters and special characters
-----------------------	---

Factory setting	????????????????
------------------------	------------------

Extended order code 1

Navigation	 System → Information → Sensor 1 to 2 → Extended order code 1 (3370051)
-------------------	--

Description	Shows the 1st part of the extended order code.
--------------------	--

User interface	Character string comprising numbers, letters and special characters
-----------------------	---

Factory setting	????????????????
------------------------	------------------

Extended order code 2

Navigation	  System → Information → Sensor 1 to 2 → Extended order code 2 (3370052)
Description	Shows the 2nd part of the extended order code.
User interface	Character string comprising numbers, letters and special characters
Factory setting	????????????????????

Extended order code 3

Navigation	  System → Information → Sensor 1 to 2 → Extended order code 3 (3370053)
Description	Shows the 3rd part of the extended order code.
User interface	Character string comprising numbers, letters and special characters
Factory setting	????????????????????

Device ID

Navigation	  System → Information → Sensor 1 to 2 → Device ID (3370014-1 to 2)
User interface	Positive integer
Factory setting	0

Device type

Navigation	  System → Information → Sensor 1 to 2 → Device type (3370012-1 to 2)
Description	Displays the device type of the connected sensor if the manufacturer is not Endress +Hauser.
User interface	0 to 65 535
Factory setting	0

"HART info" submenu

Navigation  System → Information → HART info

Device type

Navigation	 System → Information → HART info → Device type (190057)
Description	Displays the device type with which the device is registered with the HART FieldComm Group.
User interface	0 to 65 535
Factory setting	4 573

Device revision

Navigation	 System → Information → HART info → Device revision (190027)
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 revision

Navigation	 System → Information → HART info → HART revision (190028)
Description	Displays the revision of the HART protocol for the device.
User interface	5 to 7
Factory setting	7

HART descriptor



Navigation	 System → Information → HART info → HART descriptor (190012)
Description	Enter description for the measuring point.
User entry	Character string comprising numbers, letters and special characters (16)

Factory setting ????????????????

HART message

Navigation  System → Information → HART info → HART message (190017)

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

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

Factory setting ??????????????????????????????????????

Hardware revision

Navigation  System → Information → HART info → Hardware revision (190029)

Description Displays the hardware revision of the device.

User interface 0 to 255

Factory setting 1

Software revision

Navigation  System → Information → HART info → Software revision (190030)

Description Displays the software revision of the device.

User interface 0 to 255

Factory setting 1

HART date code

Navigation  System → Information → HART info → HART date code (190011)

Description Enter data for individual use.

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

Factory setting 2010-01-01

Manufacturer ID

Navigation	 System → Information → HART info → Manufacturer ID (190058)
Description	Displays the device's manufacturer ID registered with the HART FieldComm Group.
User interface	0 to 65 535
Factory setting	17

Device ID

Navigation	 System → Information → HART info → Device ID (190013)
Description	Shows the device ID for identifying the device in a HART network.
User interface	Positive integer
Factory setting	123 456

"CPU" submenu

Navigation

 System → Information → CPU

Operating system

Navigation	 System → Information → CPU → Operating system (3310200)
User interface	Character string comprising numbers, letters and special characters

WLAN

Navigation	 System → Information → CPU → WLAN (1860057)
User interface	Character string comprising numbers, letters and special characters

Application

Navigation  System → Information → CPU → Application (3310201)

User interface Character string comprising numbers, letters and special characters

Local-HMI

Navigation  System → Information → CPU → Local-HMI (3310202)

User interface Character string comprising numbers, letters and special characters

Web-HMI

Navigation  System → Information → CPU → Web-HMI (3310203)

User interface Character string comprising numbers, letters and special characters

Web-HMI server

Navigation  System → Information → CPU → Web-HMI server (3310205)

User interface Character string comprising numbers, letters and special characters

D-Bus

Navigation  System → Information → CPU → D-Bus (3310204)

User interface Character string comprising numbers, letters and special characters

Hardware version

Navigation  System → Information → CPU → Hardware version (3310037)

Description Displays the hardware version of the module.

User interface Character string comprising numbers, letters and special characters

"Power supply" submenu

Navigation  System → Information → Power supply

Module name

Navigation	 System → Information → Power supply → Module name (10023)
Description	Shows the name of the module.
User interface	Character string comprising numbers, letters and special characters

Serial number

Navigation	 System → Information → Power supply → Serial number (10024)
Description	Shows the serial number of the module.
User interface	Character string comprising numbers, letters and special characters

Part number

Navigation	 System → Information → Power supply → Part number (10021)
User interface	Character string comprising numbers, letters and special characters

Hardware version

Navigation	 System → Information → Power supply → Hardware version (10020)
Description	Displays the hardware version of the module.
User interface	Character string comprising numbers, letters and special characters

Firmware version

Navigation	 System → Information → Power supply → Firmware version (10048)
Description	Displays the firmware version of the module.

User interface Character string comprising numbers, letters and special characters

Build no. firmware

Navigation  System → Information → Power supply → Build no. firmware (10054)

Description Shows the build number of the module firmware.

User interface Character string comprising numbers, letters and special characters

Bootloader revision

Navigation  System → Information → Power supply → Bootloader revision (10059)

User interface Character string comprising numbers, letters and special characters

"Slot 1 ... 2" submenu

Navigation  System → Information → Slot 1 ... 2

Module name

Navigation  System → Information → Slot 1 ... 2 → Module name (10023)

Description Shows the name of the module.

User interface Character string comprising numbers, letters and special characters

Serial number

Navigation  System → Information → Slot 1 ... 2 → Serial number (10024)

Description Shows the serial number of the module.

User interface Character string comprising numbers, letters and special characters

Part number

Navigation	 System → Information → Slot 1 ... 2 → Part number (10021)
User interface	Character string comprising numbers, letters and special characters

Hardware version

Navigation	 System → Information → Slot 1 ... 2 → Hardware version (10020)
Description	Displays the hardware version of the module.
User interface	Character string comprising numbers, letters and special characters

"Firmware 1 ... 2" submenu

Navigation  System → Information → Slot 1 ... 2 → Firmware 1 ... 2

Firmware version

Navigation	 System → Information → Slot 1 ... 2 → Firmware 1 ... 2 → Firmware version (10048)
Description	Displays the firmware version of the module.
User interface	Character string comprising numbers, letters and special characters

Build no. firmware

Navigation	 System → Information → Slot 1 ... 2 → Firmware 1 ... 2 → Build no. firmware (10054)
Description	Shows the build number of the module firmware.
User interface	Character string comprising numbers, letters and special characters

Bootloader revision

Navigation  System → Information → Slot 1 ... 2 → Firmware 1 ... 2 → Bootloader revision (10059)

User interface Character string comprising numbers, letters and special characters

3.4.9 "Hardware configuration" submenu

Navigation  System → Hardware configuration

Housing style

Navigation  System → Hardware configuration → Housing style (3070007)

Description Hardware or software option.

User interface

- DIN rail
- Panel
- Field housing

Display

Navigation  System → Hardware configuration → Display (3070008)

Description Hardware or software option.

User interface

- No
- 3,5" TFT Touch

Sensor connection

Navigation  System → Hardware configuration → Sensor connection (3070009)

Description Hardware or software option.

User interface

- 1x 4 ... 20 mA
- 2x 4 ... 20 mA

Current output

Navigation	 System → Hardware configuration → Current output (3070024)
Description	Hardware or software option.
User interface	■ 1x 4-20mA ■ 2x 4-20mA

Digital input

Navigation	 System → Hardware configuration → Digital input (3070011)
Description	Hardware or software option.
User interface	■ No ■ 4

Open collectors

Navigation	 System → Hardware configuration → Open collectors (3070012)
Description	Hardware or software option.
User interface	■ 1 ■ 3

Relay outputs

Navigation	 System → Hardware configuration → Relay outputs (3070010)
Description	Hardware or software option.
User interface	■ 1 ■ 5

Power supply

Navigation	 System → Hardware configuration → Power supply (3070014)
Description	Hardware or software option.

User interface	■ 100-230V (85-253V) AC (50/60Hz) ■ 10,5-32V DC
-----------------------	--

LAN ports

Navigation	 System → Hardware configuration → LAN ports (3070020)
Description	Hardware or software option.
User interface	■ Single port ■ Dual port

WLAN

Navigation	 System → Hardware configuration → WLAN (1860022)
Description	Displays whether the WLAN option is available.
User interface	■ No ■ Yes

3.4.10 "Software configuration" submenu

Navigation  System → Software configuration

CRC device configuration

Navigation	 System → Software configuration → CRC device configuration (3310033)
Description	Checksum over the device configuration.
User interface	Positive integer

Stored CRC device configuration

Navigation	 System → Software configuration → Stored CRC device configuration (3310034)
Description	Last stored configuration checksum. The delivery state is 0xFFFFFFFF, which means that the checksum was never stored.

User interface Positive integer

Timestamp stored CRC device config.

Navigation  System → Software configuration → Timestamp stored CRC device config. (3310035)

Description Timestamp when the CRC was last stored.

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

Update CRC device configuration



Navigation  System → Software configuration → Update CRC device configuration (3310036)

Selection

- No
- Yes

Factory setting No

Activate SW option



Navigation  System → Software configuration → Activate SW option (3070064)

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

User entry Character string comprising numbers, letters and special characters (30)

Application

Navigation  System → Software configuration → Application (3070015)

Description Hardware or software option.

User interface Universal

Communication

Navigation	 System → Software configuration → Communication (3070013)
Description	Hardware or software option.
User interface	■ No Fieldbus ■ HART ■ PROFINET ■ EtherNet/IP ■ Modbus TCP

ProtectBlue

Navigation	 System → Software configuration → ProtectBlue (3070018)
User interface	■ ProtectBlue Essential ■ ProtectBlue Extended

3.5 Visualization

Navigation  Visualization

Add group

Navigation	 Visualization → Add group
User entry	Add a group by clicking on the button.

Delete group

Navigation	 Visualization → Delete group (3310132)
Description	Created groups can be deleted again using the recycle bin icon.
Selection	■ No ■ Group 1 ■ Group 2 ■ Group 3 ■ Group 4 ■ Group 5 ■ Group 6

Factory settingNo

3.5.1 "Group 1 to 6" submenu

Navigation Visualization → Group 1 to 6

Description

Navigation Visualization → Group 1 to 6 → Description (3360008–1 to 6)

DescriptionEnter the label for the corresponding visualization group.

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

Factory settingGroup 1

Layout

Navigation Visualization → Group 1 to 6 → Layout (3360009–1 to 6)

DescriptionSelection of different design options for displaying measured values in a group. A maximum of 4 process values can be displayed with/without graphics.

- Selection
- 1 value
 - 1 value + graphic
 - 2 values
 - 2 values + graphic
 - 3 values
 - 3 values + graphic
 - 4 values
 - 4 values + graphic
 - 4 values (2x2)
 - 1 value large + 1 value small
 - 1 value large + 2 values small
 - 1 value large + 3 values small

Factory setting1 value

Graphic format 	
Navigation	  Visualization → Group 1 to 6 → Graphic format (3360010–1 to 6)
Description	Selection of the format in which the process value graph is displayed. The format can be selected as a curve diagram or as a vertical bar graph.
Selection	■ Chart ■ Bargraph vertical
Factory setting	Chart
 "Value 1 to 4" submenu	
	<i>Navigation</i>   Visualization → Group 1 to 6 → Group 1 to 6 → Value 1 to 4
Process variable 1 to 4 	
Navigation	  Visualization → Group 1 to 6 → Group 1 to 6 → Value 1 to 4 → Process variable 1 to 4 (3360020–1 to 4)
Description	Selection of the process value to be displayed in the visualization. Note: Totalizers display a maximum of 7 digits; totalizers (long) display the full count range.
Selection	■ Off ■ Level 1 linearized ■ Level 2 linearized ■ Flow 1 ■ Flow 2 ■ Level 1 + Level 2 ■ Average level ■ Level 1 - Level 2 ■ Level 2 - Level 1 ■ Flow 1 + Flow 2 ■ Average flow ■ Flow 1 - Flow 2 ■ Flow 2 - Flow 1 ■ Ratio backwater ■ Totalizer flow 1 ■ Totalizer flow 1 (long) ■ Totalizer flow 2 ■ Totalizer flow 2 (long) ■ Totalizer flow 1 + 2 ■ Totalizer flow 1 + 2 (long) ■ Totalizer average flow ■ Totalizer average flow (long) ■ Totalizer flow 1 - 2 ■ Totalizer flow 1 - 2 (long)

- Totalizer flow 2 - 1
- Totalizer flow 2 - 1 (long)
- Level upstream
- Level downstream
- Ratio downstream / upstream
- Difference upstream - downstream
- PV sensor 1
- SV sensor 1
- TV sensor 1
- QV sensor 1
- PV sensor 2
- SV sensor 2
- TV sensor 2
- QV sensor 2
- Digital input 1
- Digital input 2
- Digital input 3
- Digital input 4
- Relay 1
- Relay 2
- Relay 3
- Relay 4
- Relay 5
- Open collector 1
- Open collector 2
- Open collector 3

Factory setting Off

Value 1 to 4 color



Navigation  Visualization → Group 1 to 6 → Group 1 to 6 → Value 1 to 4 → Value 1 to 4 color (3360022-1 to 4)

Description Selection of the color in which the associated process variable is displayed in the visualization.

- Selection**
- Magenta
 - Cyan
 - Green
 - Yellow
 - Orange
 - Brown
 - Lilac
 - Gray

Factory setting Cyan

3.6 Help

- Product page of the device: Web page for product specifications, documentation, spare parts and accessories.
- Training videos: Web page for application videos, commissioning videos and 'how-to' videos.



www.addresses.endress.com
