KA01524F/00/EN/02.21
71534965
2021-08-02

Brief Operating Instructions
Micropilot FMR20
HART

Free space radar
For bulk solids

These Instructions are Brief Operating Instructions; they are not a substitute for the Operating Instructions pertaining to the device.

For detailed information, refer to the Operating Instructions and other documentation.

Available for all device versions via:
- Internet: www.endress.com/deviceviewer
- Smart phone/Tablet: Endress+Hauser Operations App

Endress+Hauser
People for Process Automation

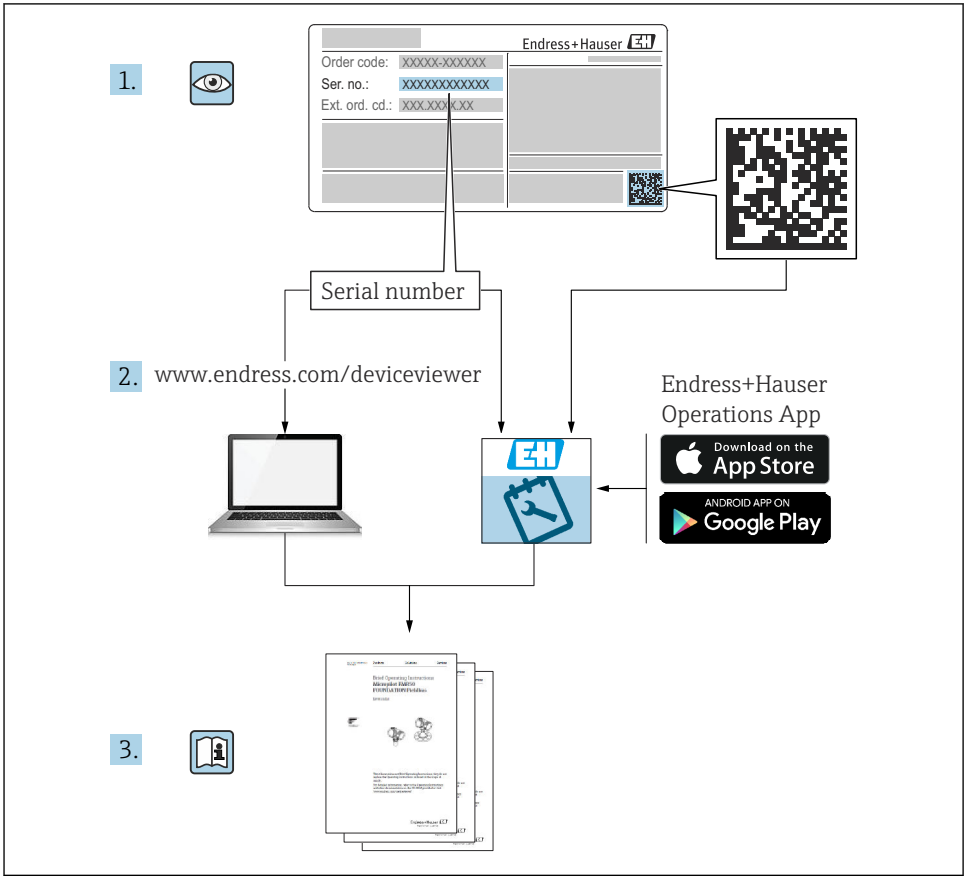
1.
Endress+Hauser
Order code: XXXXX-XXXXXX
Ser. no.: XXXXXXXXXXXX
Ext. ord. cd.: XXX.XXX-XXX
Serial number
2.
www.endress.com/deviceviewer
Endress+Hauser
Operations App
Download on the
App Store
ANDROID APP ON
Google Play
3.

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Table of contents

1 About this document

1.1 Symbols used

1.1.1 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 dangerous situation. Failure to avoid this situation can result in serious or fatal injury.

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

NOTICE
This symbol contains information on procedures and other facts which do not result in personal injury.

1.1.2 Symbols for certain types of information and graphics

Permitted
Procedures, processes or actions that are permitted

Forbidden
Procedures, processes or actions that are forbidden

Tip
Indicates additional information

Reference to graphic

Notice or individual step to be observed

1., 2., 3.
Series of steps

Result of a step

1, 2, 3, ...
Item numbers

A, B, C, ...
Views

1.2 Documentation

The following documentation types are available in the Downloads section of the Endress +Hauser website (www.endress.com/downloads):

For an overview of the scope of the associated Technical Documentation, refer to the following:
- *W@M Device Viewer* (www.endress.com/deviceviewer): Enter the serial number from nameplate
- *Endress+Hauser Operations App*: Enter the serial number from the nameplate or scan the 2D matrix code (QR code) on the nameplate

1.3 Supplementary documentation

BA02096F
Operating Instructions FMR20 HART for bulk solids

TI01043K
Technical Information RIA15

BA01170K
Operating Instructions RIA15

1.4 Registered trademarks

HART®
Registered trademark of the FieldComm Group, Austin, Texas, USA

Apple®
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2 Basic safety instructions

2.1 Requirements for personnel

The personnel for installation, commissioning, diagnostics and maintenance must fulfill the following requirements:
- ▶ Trained, qualified specialists must have a relevant qualification for this specific function and task.
- ▶ Personnel must be authorized by the plant owner/operator.
- ▶ Be familiar with federal/national regulations.

- Before starting work: personnel must read and understand the instructions in the manual and supplementary documentation as well as the certificates (depending on the application).
- Personnel must follow instructions and comply with general policies.

The operating personnel must fulfill the following requirements:
- Personnel are instructed and authorized according to the requirements of the task by the facility's owner-operator.
- Personnel follow the instructions in this manual.

2.2 Intended use

Application and media
The measuring device described in these Operating Instructions is intended for continuous, non-contact level measurement of solids. Because of its operating frequency of approx. 26 GHz, a maximum radiated pulsed power of 5.7 mW and an average power output of 0.015 mW, use outside of closed, metallic vessels is also permitted. If operated outside of closed vessels, the device must be mounted in accordance with the instructions in the "Installation" section. The operation of the devices does not present any health risk.

If the limit values specified in the "Technical data" and the conditions listed in the manual and additional documentation are observed, the measuring device may be used for the following measurements only:
- Measured process variables: distance
- Calculable process variables: volume or mass in any shape of vessel

To ensure that the measuring device remains in proper condition for the operation time:
- Use the measuring device only for media to which the process-wetted materials have an adequate level of resistance.
- Observe the limit values (see "Technical data").

Incorrect use
The manufacturer is not liable for damage caused by improper or non-designated use.

Clarification of borderline cases:
- With regard to special media and media used for cleaning, please contact the manufacturer. Endress+Hauser will be happy to assist in clarifying the corrosion-resistant properties of wetted materials but does not accept any warranty or liability.

Residual risks
Due to heat transfer from the process as well as power dissipation within the electronics, the temperature of the electronics housing and the assemblies contained therein may rise to 80 °C (176 °F) during operation. When in operation, the sensor can reach a temperature close to the medium temperature.

Danger of burns from contact with surfaces!
- In the event of elevated medium temperatures, ensure protection against contact to prevent burns.

2.3 Workplace safety

For work on and with the device:
- ▶ Wear the required personal protective equipment according to federal/national regulations.

2.4 Operational safety

Risk of injury!
- ▶ Operate the device only if it is in proper technical condition, free from errors and faults.
- ▶ The operator is responsible for interference-free operation of the device.

Hazardous area

To eliminate the risk of danger to persons or the facility when the device is used in the approval-related area (e.g. explosion protection, pressure equipment safety):
- ▶ Check the nameplate to verify if the device ordered can be put to its intended use in the approval-related area.
- ▶ Observe the specifications in the separate supplementary documentation that is an integral part of this manual.

2.5 Product safety

This measuring device is designed in accordance with good engineering practice to meet state-of-the-art safety requirements, has been tested, and left the factory in a condition in which it is safe to operate. It meets general safety standards and legal requirements.

2.5.1 CE mark

The measuring system meets the legal requirements of the applicable EU Directives. These are listed in the corresponding EU Declaration of Conformity along with the standards applied.

The manufacturer confirms successful testing of the device by affixing to it the CE mark.

2.5.2 EAC conformity

The measuring system meets the legal requirements of the applicable EAC guidelines. These are listed in the corresponding EAC Declaration of Conformity together with the standards applied.

The manufacturer confirms successful testing of the device by affixing to it the EAC mark.

2.6 IT security

We only provide a warranty if the device is installed and used as described in the Operating Instructions. The device is equipped with security mechanisms to protect it against any inadvertent changes to the device settings.

IT security measures in line with operators' security standards and designed to provide additional protection for the device and device data transfer must be implemented by the operators themselves.

2.7 Device-specific IT security

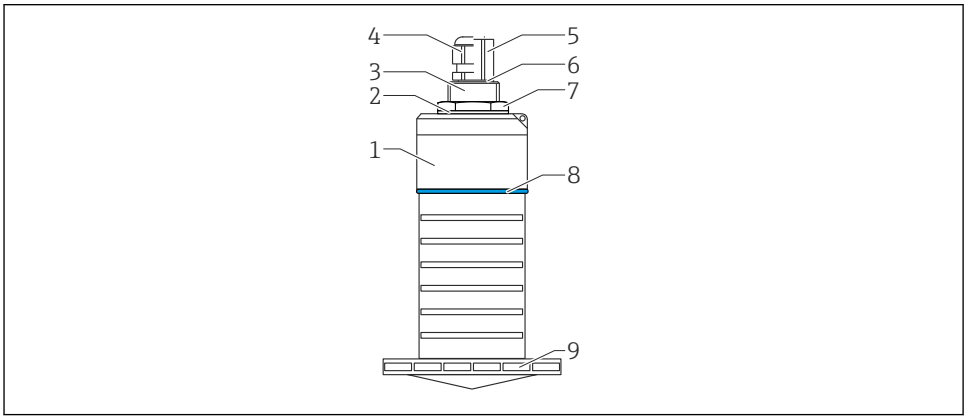
2.7.1 Access via Bluetooth® wireless technology

Signal transmission via Bluetooth® wireless technology uses a cryptographic technique tested by Fraunhofer AISEC

- The device is not visible via *Bluetooth*® wireless technology without the SmartBlue App
- Only one point-to-point connection between **one** sensor and **one** smartphone or tablet is established
- The *Bluetooth*® wireless technology interface can be disabled via SmartBlue, FieldCare and DeviceCare

3 Product description

3.1 Product design



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1 Overview of materials

80 mm (3 in) antenna
1 *Sensor housing; PVDF*
2 *Seal; EPDM*
3 *Process connection, rear side; PVDF*
4 *Cable gland; PA*
5 *Conduit adapter; CuZn nickel-plated*
6 *O-ring; EPDM*
7 *Counter nut; PA6.6*
8 *Design ring; PBT-PC*
9 *Process connection, front side; PVDF*

4 Incoming acceptance and product identification

4.1 Goods acceptance

Check the following during goods acceptance:
- Are the order codes on the delivery note and the product sticker identical?
- Are the goods undamaged?
- Do the nameplate data match the ordering information on the delivery note?
- If required (see nameplate): Are the safety instructions (XA) provided?

If one of these conditions is not met, please contact the manufacturer's sales office.

4.2 Product identification

The following options are available for the identification of the measuring device:
- Nameplate specifications
- Extended order code with breakdown of the device features on the delivery note

▶ Enter the serial number from the nameplates into *W@M Device Viewer* (www.endress.com/deviceviewer)
  ↳ All the information about the measuring device and the scope of the associated Technical Documentation are displayed.

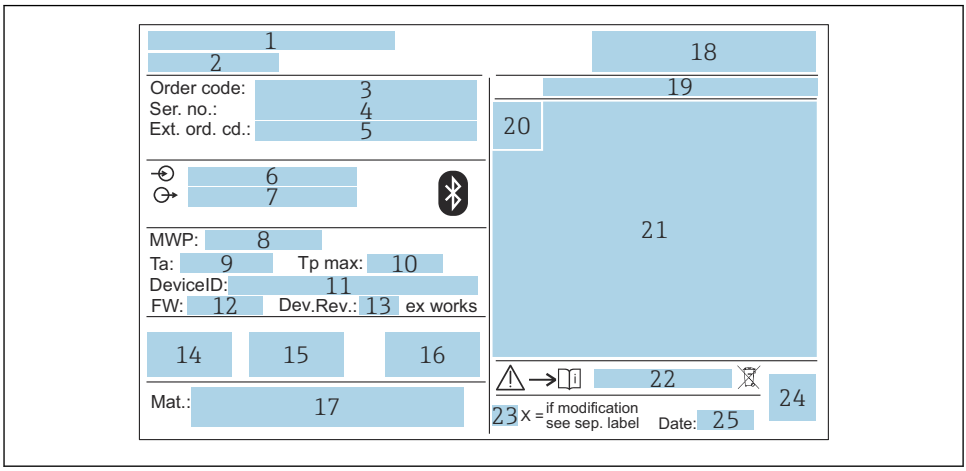
▶ Enter the serial number from the nameplate into the *Endress+Hauser Operations App* or use the *Endress+Hauser Operations App* to scan the 2-D matrix code (QR Code) provided on the nameplate
  ↳ All the information about the measuring device and the scope of the associated Technical Documentation are displayed.

4.3 Manufacturer address

Endress+Hauser SE+Co. KG
Hauptstraße 1
79689 Maulburg, Germany

Place of manufacture: See nameplate.

4.4 Nameplate



2 *Nameplate of Micropilot*

1 *Manufacturer address*
2 *Device name*
3 *Order code*
4 *Serial number (Ser. no.)*
5 *Extended order code (Ext. ord. cd.)*
6 *Supply voltage*
7 *Signal outputs*
8 *Process pressure*
9 *Permitted ambient temperature (T_a)*
10 *Maximum process temperature*
11 *Device ID*
12 *Firmware version (FW)*
13 *Device revision (Dev.Rev.)*
14 *CE mark*
15 *Additional information about the device version (certificates, approvals)*
16 *RCM*
17 *Materials in contact with process*
18 *Logo*
19 *Degree of protection: e.g. IP, NEMA*
20 *Certificate symbol*
21 *Certificate- and approval-specific data*
22 *Document number of the Safety Instructions: e.g. XA, ZD, ZE*

23 Modification mark
24 2-D matrix code (QR code)
25 Date of manufacture: year-month

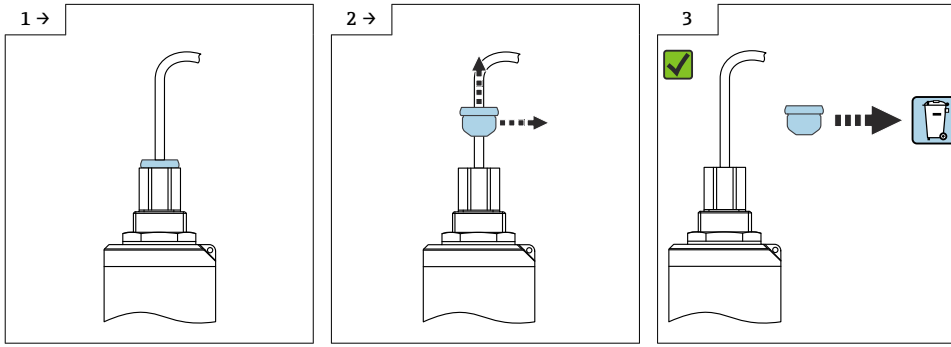
Up to 33 characters of the extended order code are indicated on the nameplate. If the extended order code contains additional characters, these cannot be displayed.

However, the complete extended order code can also be displayed via the device operating menu: **Extended order code 1 to 3** parameter

5 Installation

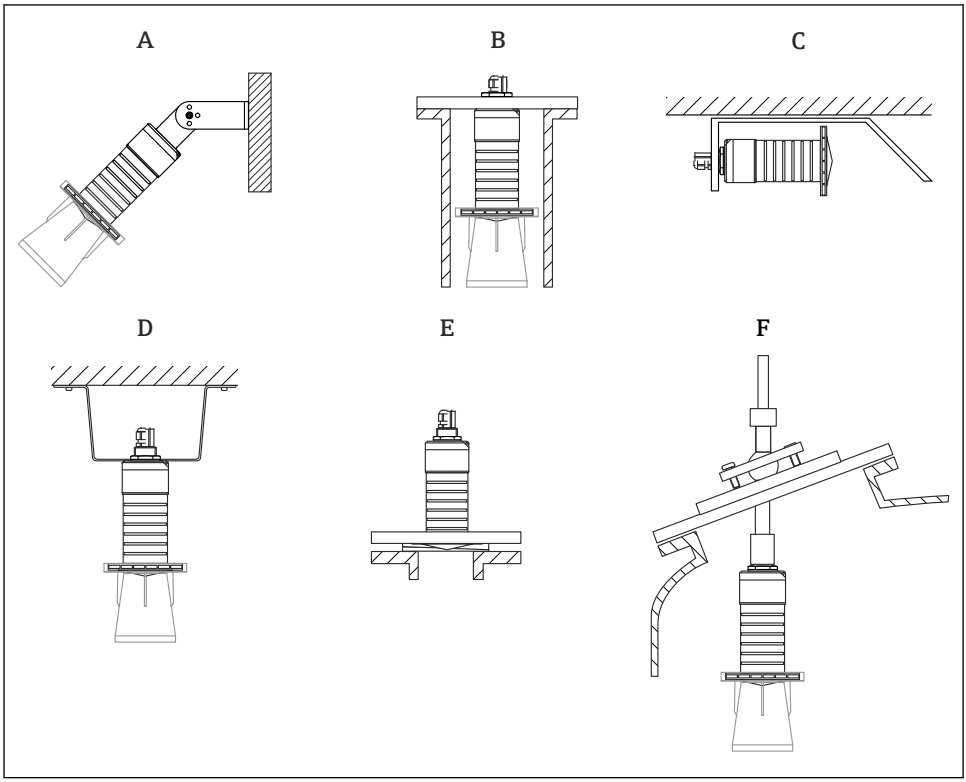
Removing the cable transportation guard

In the case of devices with a rear-side process connection "FNPT1/2 conduit", the cable protective plug must be removed before installation.



5.1 Installation conditions

5.1.1 Installation types



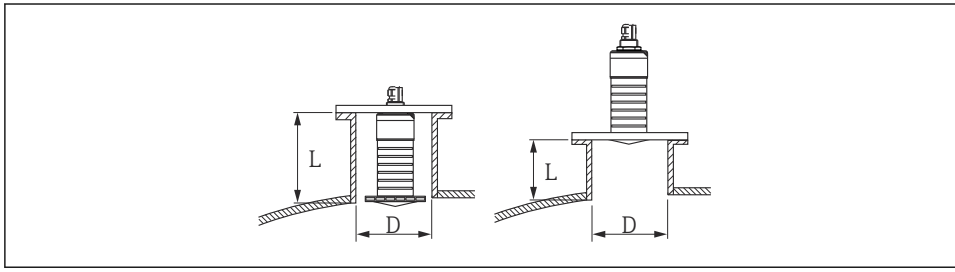
3 *Wall, ceiling or nozzle installation*

A Wall or ceiling mounting, adjustable
B Mounted at rear thread
C Horizontal installation in cramped spaces
D Ceiling installation with counter nut (included in delivery)
E Installation with adjustable flange seal
F Installation with FAU40 alignment unit

Caution!
- The sensor cables are not designed as supporting cables. Do not use them for suspension purposes.
- Always operate the device in a vertical position in free-space applications.

5.1.2 Nozzle installation

The antenna should project out of the nozzle for optimum measurement. The interior of the nozzle must be smooth and may not contain any edges or welded joints. The edge of the nozzle should be rounded if possible.



4 Nozzle installation

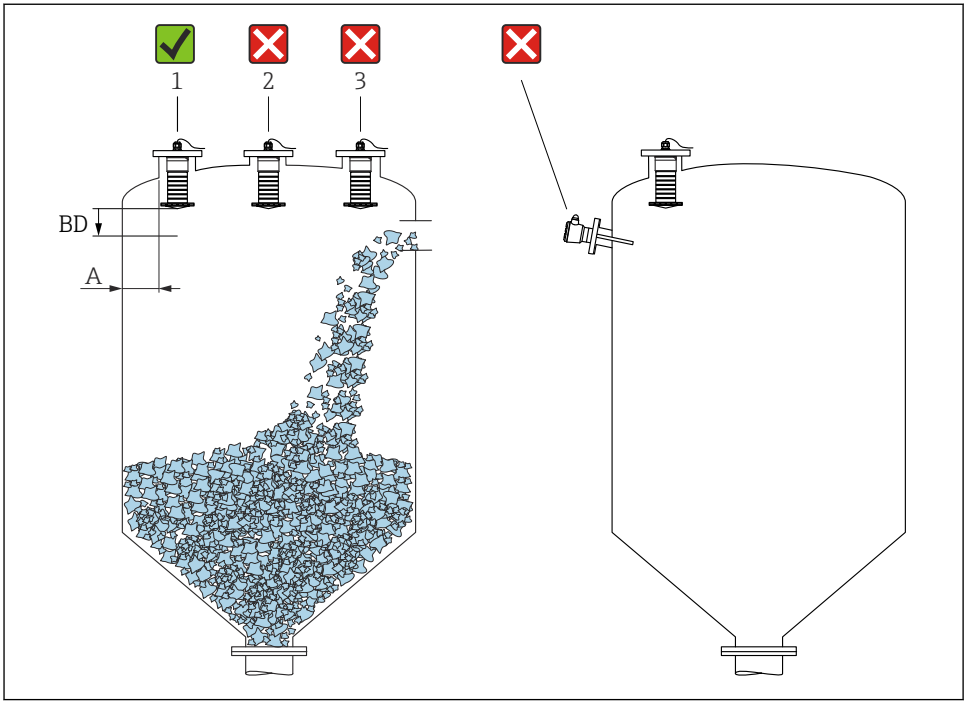
The maximum nozzle length **L** depends on the nozzle diameter **D**.

Please note the limits for the diameter and length of the nozzle.

80 mm (3 in) antenna, installation inside nozzle
- D: min. 120 mm (4.72 in)
- L: max. 205 mm (8.07 in) + D × 4.5

80 mm (3 in) antenna, installation outside nozzle
- D: min. 80 mm (3 in)
- L: max. D × 4.5

5.1.3 Position for installation on a vessel

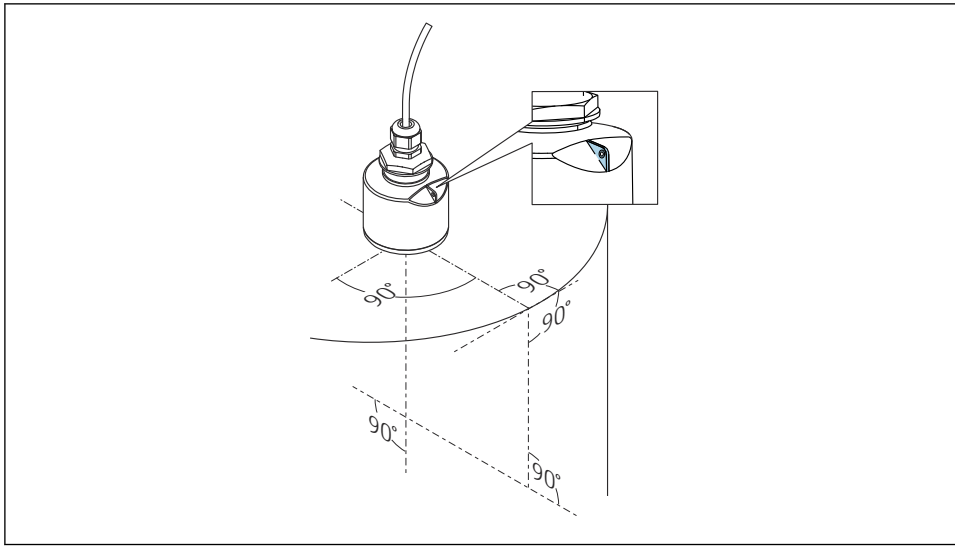


5 Installation position on a vessel

- If possible install the sensor so that its lower edge is inside the vessel.
- Recommended distance **A** wall - nozzle outer edge: ~ ⅙ of the vessel diameter. Under no circumstances should the device be mounted closer than 15 cm (5.91 in) to the vessel wall.
- Do not install the sensor in the middle of the vessel.
- Avoid measurements through the filling curtain.
- Avoid internal fixtures such as limit switches.
- No signals are evaluated within the Blocking distance (BD). It can therefore be used to suppress interference signals (e.g. the effects of condensate) in the vicinity of the antenna.
  An automatic Blocking distance of at least 0.1 m (0.33 ft) is configured as standard. However, this can be overwritten manually (0 m (0 ft) is also permitted).
  Automatic calculation:
  Blocking distance = Empty calibration - Full calibration - 0.2 m (0.656 ft).
  Each time a new entry is made in the **Empty calibration** parameter or **Full calibration** parameter, the **Blocking distance** parameter is recalculated automatically using this formula.
  If the result of the calculation is a value <0.1 m (0.33 ft), the Blocking distance of 0.1 m (0.33 ft) will continue to be used.

5.1.4 Device alignment for installation on a vessel

- Align the antenna so that it is perpendicular to the product surface
- Align the eyelet with lug towards the vessel wall as well as possible



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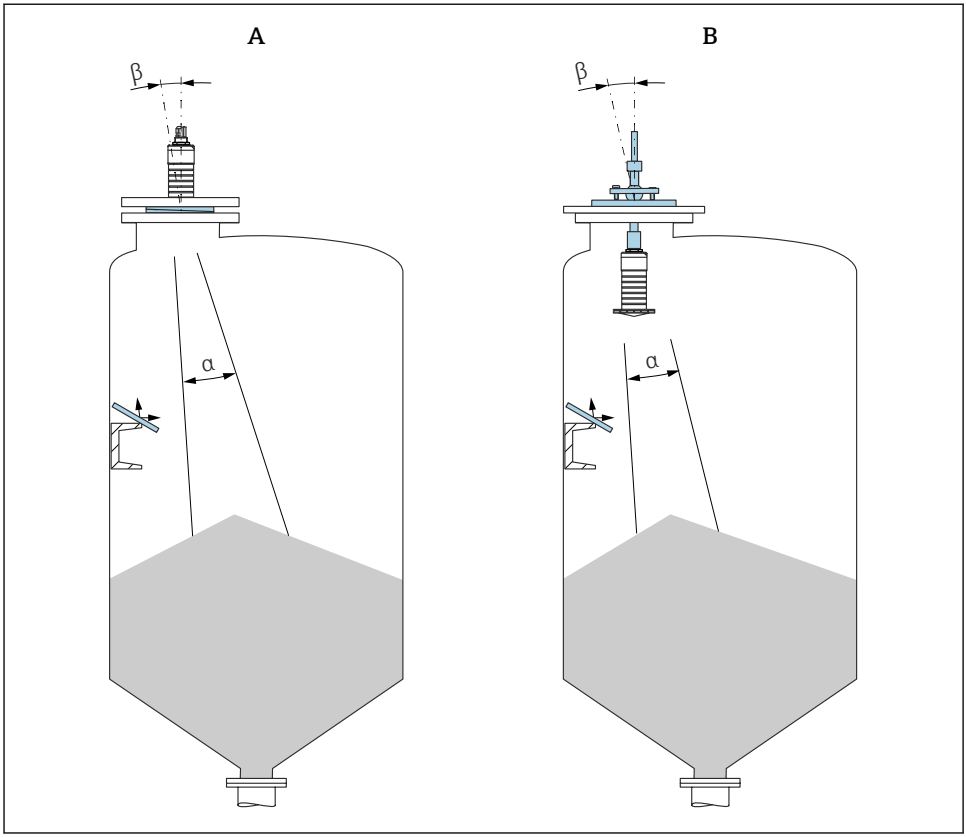
6 *Device alignment for installation on a vessel*

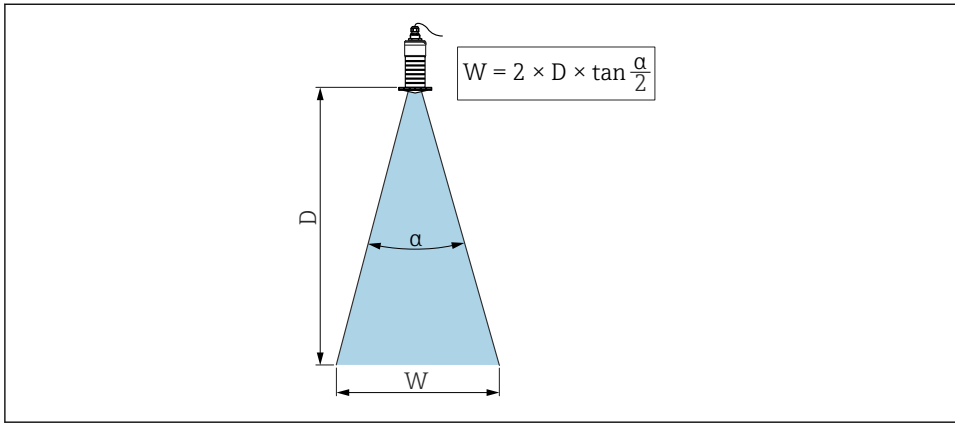


7 Aligning the sensor with the product cone

A Installation with adjustable flange seal
B Installation with FAU40 alignment unit

To avoid disturbance echoes, use metal plates installed at an angle (where necessary)

5.1.5 Beam angle



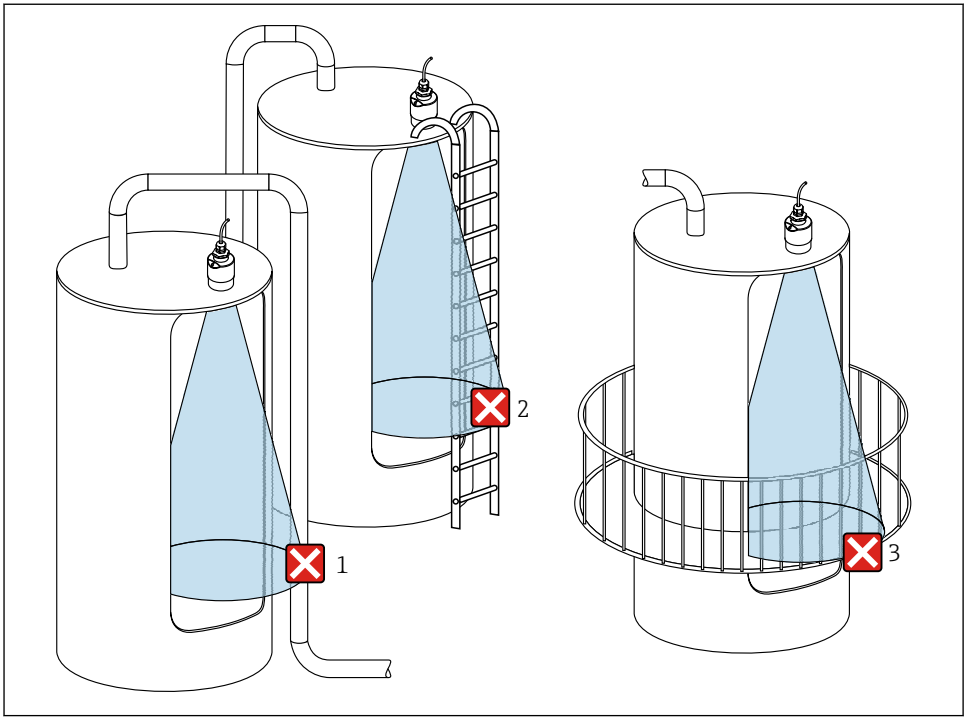
8 Relationship between beam angle α, distance D and beamwidth diameter W

The beam angle is defined as the angle **α** at which the power energy of the radar waves reaches half the value of the maximum power density (3dB width). Microwaves are also emitted outside the signal beam and can be reflected off interfering installations.

Beam diameter **W** as a function of beam angle **α** and distance **D**.

80 mm (3 in) antenna with or without a flooding protection tube, α 12 °
W = D × 0.21

5.1.6 Measurement in plastic vessels



9 *Measurement in a plastic vessel with a metallic, interfering installation outside of the vessel*

1 *Pipe, tubing*
2 *Ladder*
3 *Grate, railing*

If the outer wall of the vessel is made of a non-conductive material (e.g. GFR), microwaves can also be reflected by interfering installations outside of the vessel.

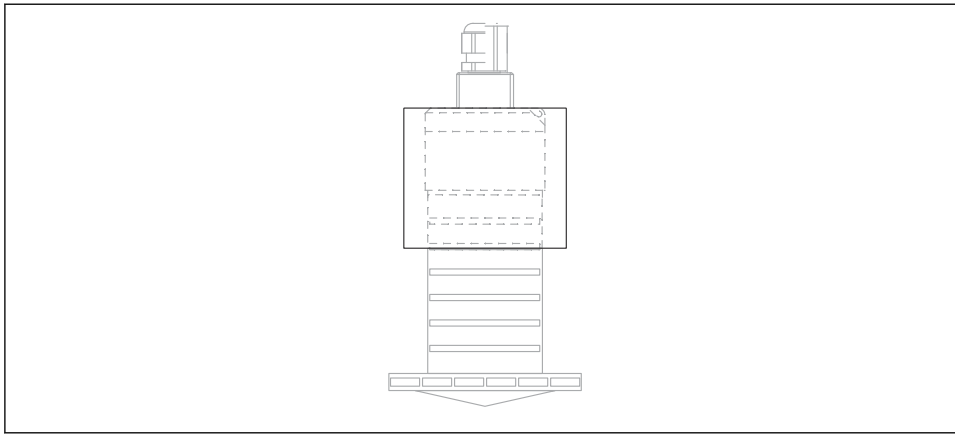
Please ensure there are no interfering installations made of a conductive material in the signal beam (see the beam angle section for information on calculating the beamwidth diameter).

Please contact the manufacturer for further information.

5.1.7 Weather protection cover

A weather protection cover is recommended for outdoor use.

The weather protection cover can be ordered as an accessory or together with the device via the product structure "Accessory enclosed".



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10 Weather protection cover

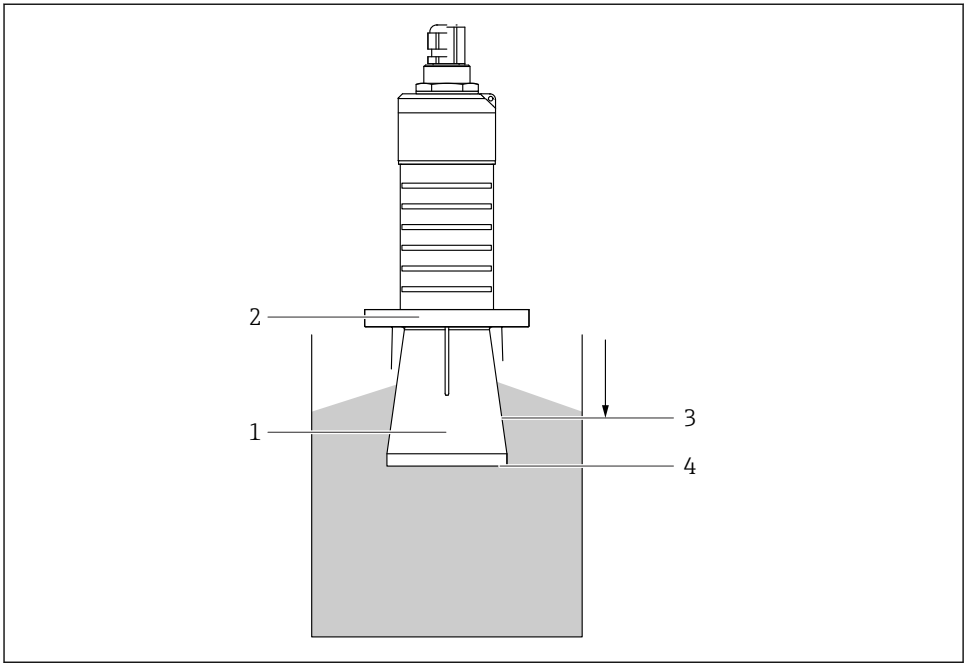
The sensor is not completely covered by the weather protection cover.

5.1.8 Use of flooding protection tube

In free-field installations and/or in applications where there is a risk of flooding, the flooding protection tube must be used.

Optimum results are achieved with coarse-grained material and the use of the flooding protection tube.

The flooding protection tube can be ordered as an accessory or together with the device via the product structure "Accessory enclosed".



11 Function of flooding protection tube

1 Empty space
2 O-ring (EPDM) seal
3 Blocking distance
4 Max. level

The tube is screwed directly onto the sensor and seals off the system by means of an O-ring making it air-tight. In the event of flooding, the empty space that develops in the tube ensures a defined detection of the maximum level directly at the end of the tube. Due to the fact that the Blocking distance is inside the tube, multiple echoes are not analyzed.

Configuration parameters for flooding protection tube

Configuring the blocking distance when using the flooding protection tube

► Navigate to: Main menu → Setup → Advanced setup → Blocking distance
↳ Enter 100 mm (4 in).

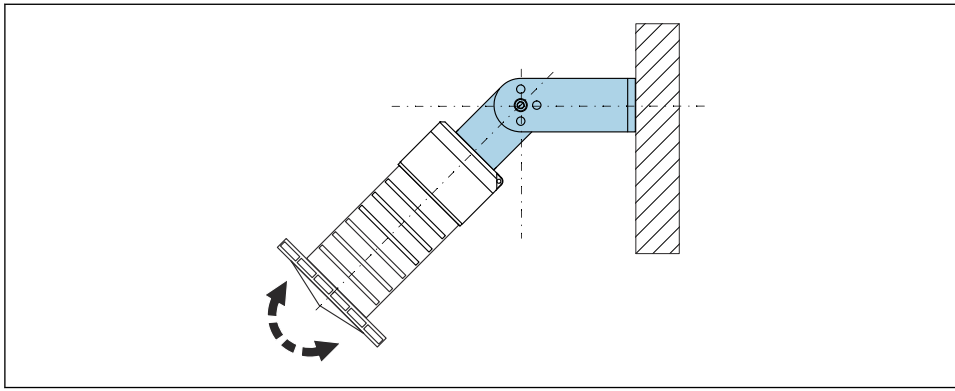
Perform a mapping after the flooding protection tube has been installed and the blocking distance has been configured

1. Navigate to: Setup → Confirm distance
↳ Compare the distance displayed with the actual value in order to start the recording of an interference echo map.

2. Navigate to: Setup → Mapping end point
   ↳ This parameter determines the distance up to which the new mapping is to be recorded.
3. Navigate to: Setup → Present mapping
   ↳ Displays the distance up to which a mapping has already been recorded.

5.1.9 Installation with mounting bracket, adjustable

The mounting bracket can be ordered as an accessory or together with the device via the product structure "Accessory enclosed".



12 *Installation with mounting bracket, adjustable*

- Wall or ceiling installation is possible.
- Using the mounting bracket, position the antenna so that it is perpendicular to the product surface.

NOTICE

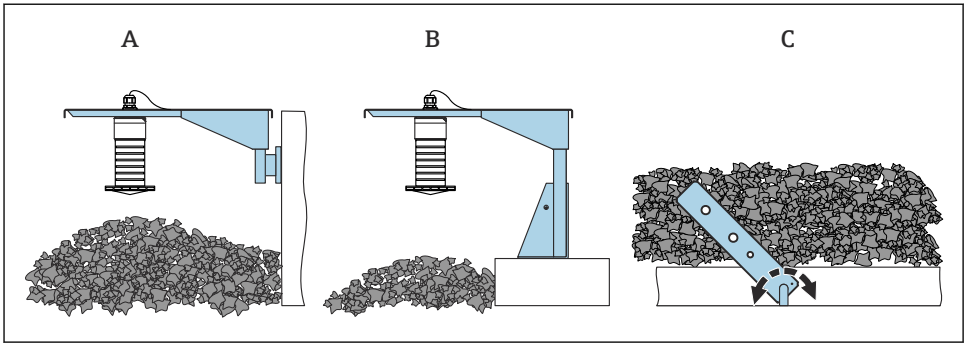
There is no conductive connection between the mounting bracket and transmitter housing.

Electrostatic charging possible.

► Integrate the mounting bracket in the local potential equalization system.

5.1.10 Cantilever installation, with pivot

The cantilever, wall bracket and mounting frame are available as accessories.

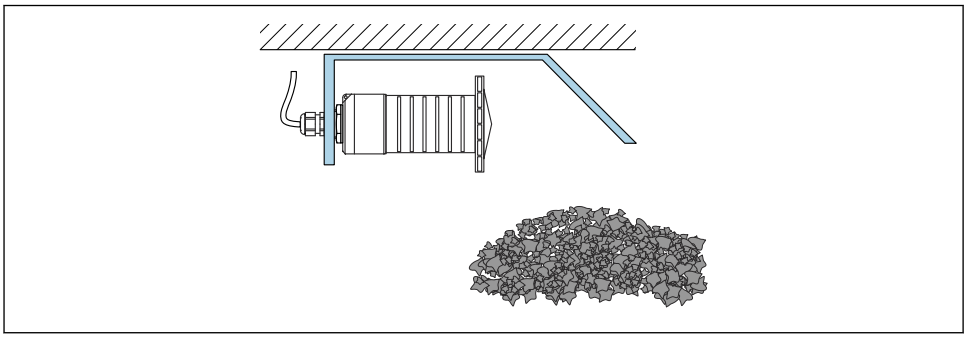


13 *Cantilever installation, with pivot*

A Cantilever with wall bracket
B Cantilever with mounting frame
C Cantilever, pivotable

5.1.11 Installation with the horizontal mounting bracket

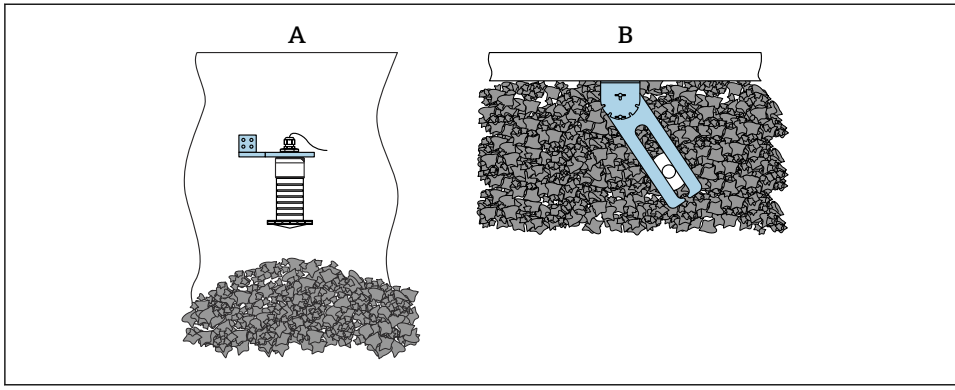
The mounting bracket can be ordered together with the device via the product structure "Accessory enclosed".



14 *Installation with the horizontal mounting bracket (without flooding protection tube)*

5.1.12 Installation with pivotable mounting bracket

The pivotable mounting bracket can be ordered together with the device via the product structure "Accessory enclosed".



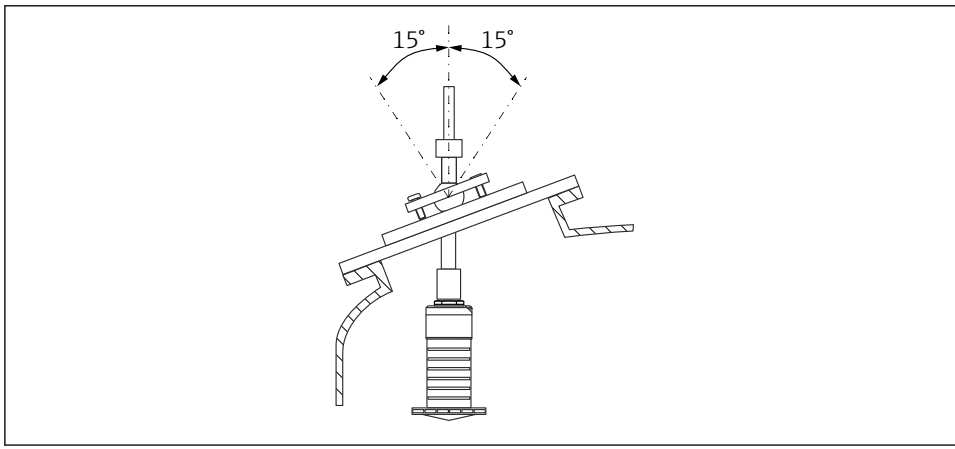
15 Installation, pivotable and adjustable

A Cantilever with wall bracket
B Cantilever pivotable and adjustable (to align the device with the medium to be measured)

5.1.13 FAU40 alignment unit

An angle of inclination of up to 15 ° in all directions can be set for the antenna axis using the FAU40 alignment unit. The alignment unit is used to optimally direct the radar beam at the bulk solids.

The FAU40 alignment unit is available as an accessory.

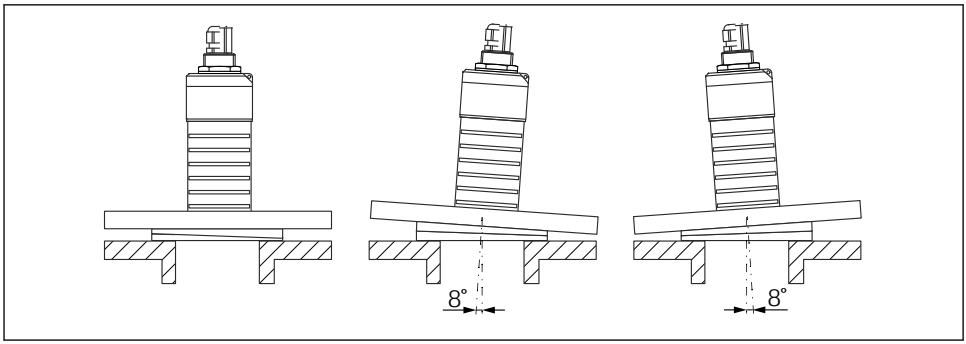


16 Micropilot FMR20 with alignment unit

5.1.14 Adjustable flange seal

The radar beam can be optimally directed at the bulk solids using the adjustable flange seal.

The adjustable flange seal can be ordered together with the device via the product structure "Accessory enclosed".



17 Micropilot FMR20 with adjustable flange seal

5.2 Post-installation check

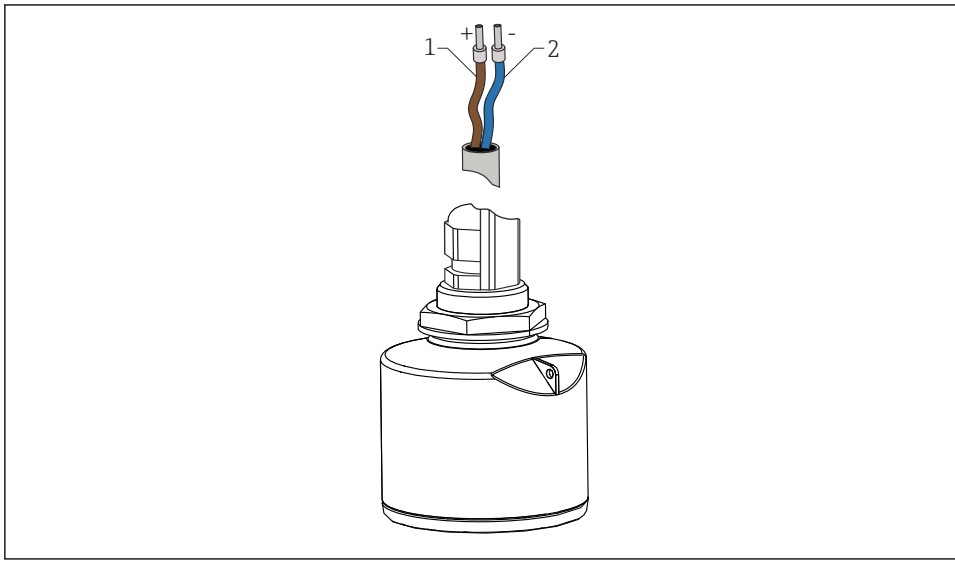
❑ Is the device or cable undamaged (visual inspection)?

❑ Is the device adequately protected from wet conditions and direct sunlight?

❑ Is the device properly secured?

6 Electrical connection

6.1 Cable assignment



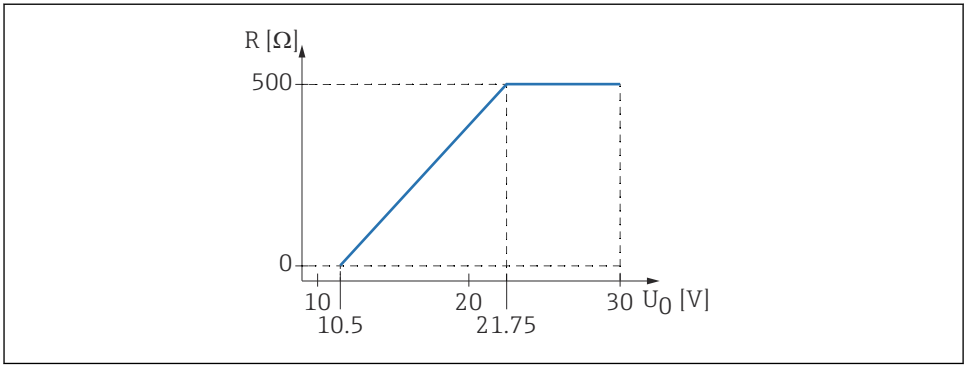
18 Cable assignment

1 Plus, brown wire
2 Minus, blue wire

6.2 Supply voltage

10.5 to 30 V_{DC}

An external power supply is necessary.



19 Maximum load R, depending on supply voltage U_0 of power supply unit

Battery operation
The sensor's *Bluetooth*® wireless technology communication can be disabled to increase the operating life of the battery.

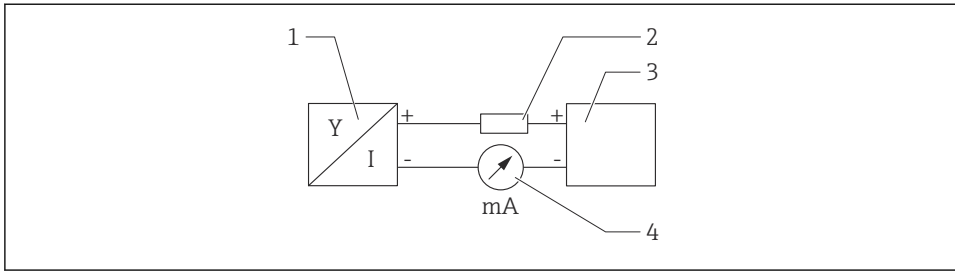
Potential equalization
No special measures for potential equalization are required.

Various power supply units can be ordered as an accessory from Endress+Hauser.

6.3 Connecting the device

6.3.1 Block diagram of 4 to 20 mA HART

Connection of the device with HART communication, power source and 4 to 20 mA display



20 *Block diagram of HART connection*

1 *Measuring device with HART communication*
2 *HART communication resistor*
3 *Power supply*
4 *Multimeter or ammeter*

The HART communication resistor of 250 Ω in the signal line is always necessary in the case of a low-impedance power supply.

The voltage drop to be taken into account is:
Max. 6 V for 250 Ω communication resistor

6.4 Connection with RIA15

FMR20 connection options with RIA15 (can be ordered together with the device) are described in Operating Instructions BA01578F.

6.5 Post-connection check

❑ Is the device or cable undamaged (visual inspection)?

❑ Do the mounted cables have adequate strain relief?

❑ Are the cable glands mounted and firmly tightened?

❑ Does the supply voltage match the specifications on the nameplate?

❑ No reverse polarity, is terminal assignment correct?

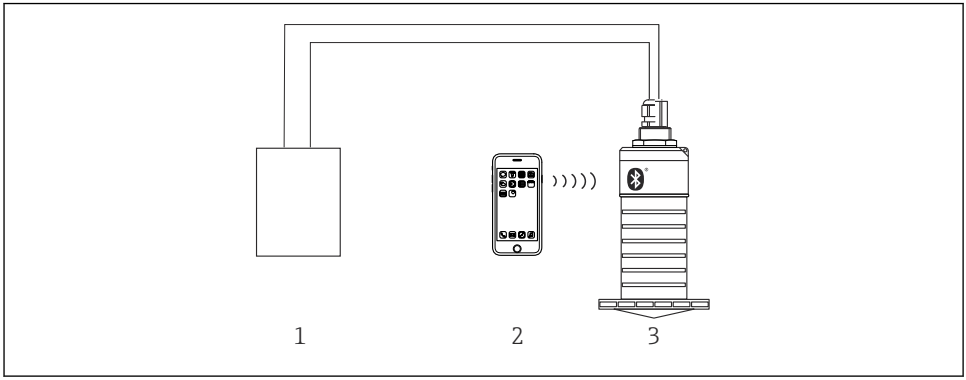
❑ Has the voltage drop across the process indicator and communication resistor been taken into account?

7 Operability

7.1 Operating concept

- 4 to 20 mA, HART
- Menu guidance with brief explanations of the individual parameter functions in the operating tool
- Optional: SmartBlue (app) via *Bluetooth*® wireless technology

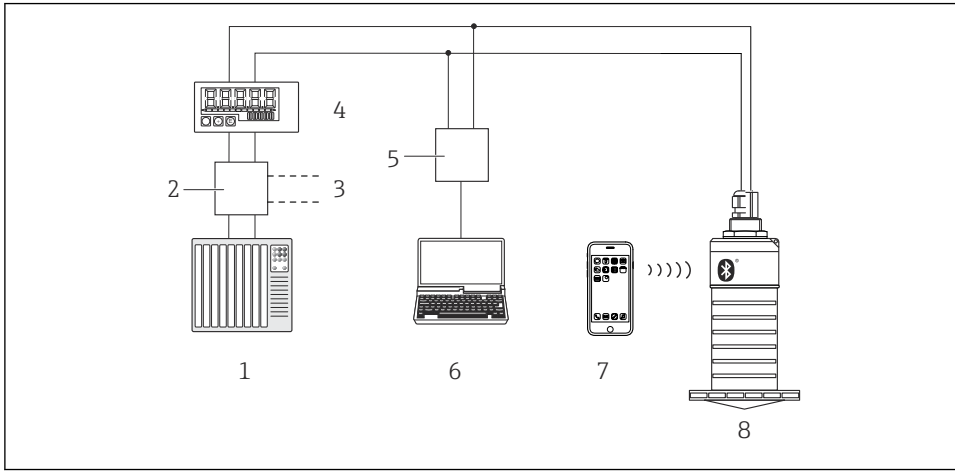
7.2 Operation via Bluetooth® wireless technology



21 Possibilities for remote operation via Bluetooth® wireless technology

1 Transmitter power supply unit
2 Smartphone / tablet with SmartBlue (app)
3 Transmitter with Bluetooth® wireless technology

7.3 Via HART protocol



22 *Options for remote operation via HART protocol*

1 *PLC (programmable logic controller)*
2 *Transmitter power supply unit, e.g. RN221N (with communication resistor)*
3 *Connection for Commubox FXA195*
4 *Loop-powered RIA15 process indicator*
5 *Commubox FXA195 (USB)*
6 *Computer with operating tool (FieldCare, DeviceCare)*
7 *Smartphone / tablet with SmartBlue (app)*
8 *Transmitter with Bluetooth® wireless technology*

8 System integration via HART protocol

8.1 Overview of the device description files

Manufacturer ID
17 (0x11)

Device type ID
44 (0x112c)

HART specification
7.0

8.2 Measured variables via HART protocol

The following measured values are assigned to the HART variables:

Primary variable (PV)
Level linearized (PV)

Secondary variable (SV)
Distance (SV)

Tertiary variable (TV)
Relative echo amplitude (TV)

Quaternary variable (QV)
Temperature (QV)

9 Commissioning and operation

Perform the post-installation check and the post-connection check prior to commissioning the measuring point.

9.1 Commissioning via SmartBlue (App)

9.1.1 Device requirements

Commissioning via SmartBlue is only possible if the device has Bluetooth capability (Bluetooth module installed at the factory prior to delivery or retrofitted).

9.1.2 SmartBlue system requirements

SmartBlue system requirements
SmartBlue is available as a download from the Google Play Store for Android devices and from the iTunes Store for iOS devices.

- Devices with iOS:
  iPhone 4S or higher from iOS 9; iPad 2 or higher from iOS 9; iPod touch 5th generation or higher from iOS 9
- Devices with Android:
  From Android 4.4 KitKat and *Bluetooth*® 4.0

9.1.3 SmartBlue App

1. Scan the QR code or enter "SmartBlue" in the search field of the App Store.

23 Download link

2. Start SmartBlue.
3. Select device from livelist displayed.

4. Enter the login data:
   ↳ User name: admin
   Password: serial number of the device
5. Tap the icons for more information.

After logging in for the first time, change the password!

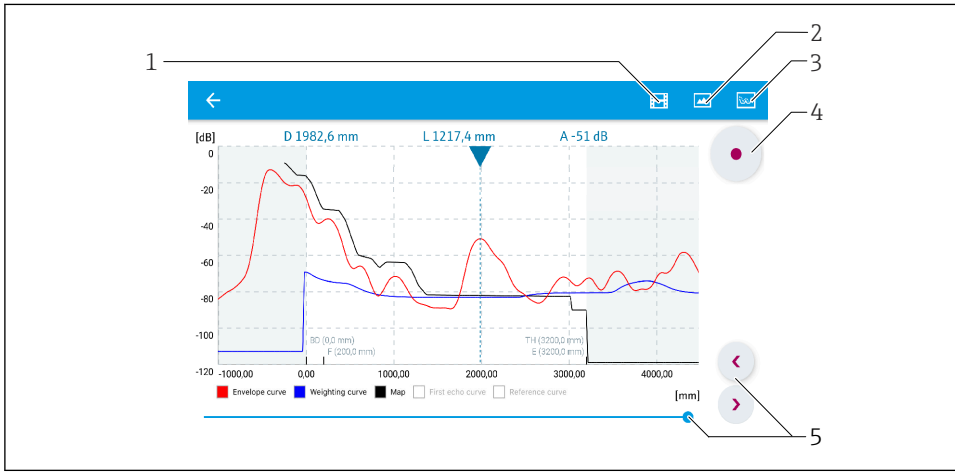
9.1.4 Envelope curve display in SmartBlue

Envelope curves can be displayed and recorded in SmartBlue.

In addition to the envelope curve, the following values are displayed:

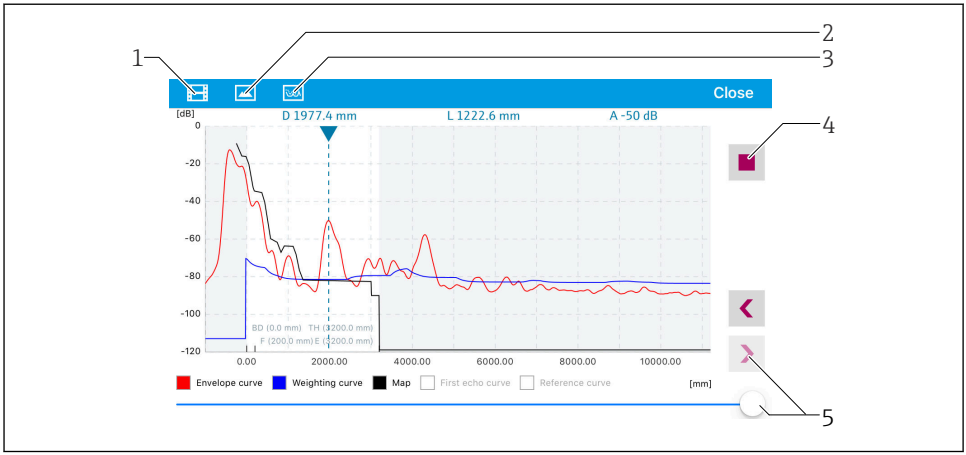
- D = Distance
- L = Level
- A = Absolute amplitude

- With screenshots, the displayed section (zoom function) is saved
- With video sequences, the whole area without zoom function is saved all the time



24 *Envelope curve display (sample) in SmartBlue for Android*

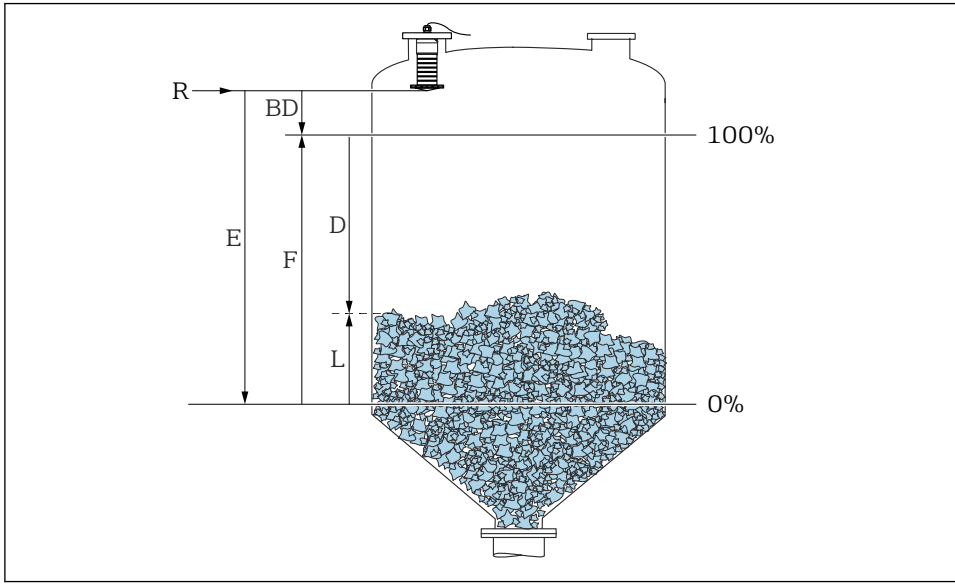
1 *Record video*
2 *Create screenshot*
3 *Display mapping menu*
4 *Start/stop video recording*
5 *Move time on time axis*



25 Envelope curve display (sample) in SmartBlue for iOS

1 *Record video*
2 *Create screenshot*
3 *Display mapping menu*
4 *Start/stop video recording*
5 *Move time on time axis*

9.2 Configuring level measurement via operating software



26 *Configuration parameters for level measurement in bulk solids*

R *Reference point of measurement*
D *Distance*
L *Level*
E *Empty calibration (= zero point)*
F *Full calibration (= span)*
BD *Blocking distance*

9.2.1 Via SmartBlue

1. Navigate to: Setup → Distance unit
   ↳ Select unit of length for distance calculation
2. Navigate to: Setup → Empty calibration
   ↳ Specify empty distance E (distance from reference point R to minimum level)
3. Navigate to: Setup → Full calibration
   ↳ Specify full distance F (span: max. level - min. level)
4. Navigate to: Setup → Distance
   ↳ Shows the distance D that is currently measured from the reference point (lower edge of flange / last sensor thread) to the level
5. Navigate to: Setup → Confirm distance
   ↳ Compare the distance displayed with the actual value in order to start the recording of an interference echo map

6. Navigate to: Setup → Mapping end point
   ↳ This parameter determines the distance up to which the new mapping is to be recorded
7. Navigate to: Setup → Present mapping
   ↳ Displays the distance up to which a mapping has already been recorded
8. Setup → Confirm distance
9. Navigate to: Setup → Level
   ↳ Shows the level L measured
10. Navigate to: Setup → Signal quality
    ↳ Displays the signal quality of the analyzed level echo

10 Diagnostics and troubleshooting

10.1 General errors

Error	Possible cause	Solution
Device does not respond	Supply voltage does not match the specification on the nameplate	Apply correct voltage
	The polarity of the supply voltage is wrong	Correct the polarity
	The cables do not contact the terminals properly	Ensure electrical contact between the cable and the terminal
HART communication does not function	Communication resistor missing or incorrectly installed	Install the communication resistor (250 Ω) correctly
	Commubox is connected incorrectly	Connect Commubox correctly
	The communication resistor of the Commubox is switched on or off	Check the communication resistor and connections For details, see Technical Information TI00404F
Device measures incorrectly	Configuration error	▪ Check and correct the parameter configuration ▪ Carry out mapping
Display values not plausible (linearization)	SmartBlue and FieldCare/DeviceCare active at the same time	Log off FieldCare/DeviceCare and disconnect or Log off SmartBlue and disconnect (connection via SmartBlue has priority)
Linearized output value not plausible	Linearization error	SmartBlue: Check linearization table FieldCare/DeviceCare: Check linearization table Check the vessel selection in the linearization module

Error	Possible cause	Solution
RIA15 no display	The polarity of the supply voltage is wrong	Correct the polarity
	The cables do not contact the terminals properly	Ensure electrical contact between the cable and the terminal
	RIA15 defective	Replace RIA15
RIA15 start sequence keeps running through	Supply voltage too low	▪ Increase supply voltage ▪ Switch off backlight

10.2 Error - SmartBlue operation

Error	Possible cause	Solution
Device is not visible in the live list	No Bluetooth connection	Enable Bluetooth function on smartphone or tablet
		Bluetooth function of sensor disabled, perform recovery sequence
Device is not visible in the live list	The device is already connected with another smartphone/tablet	Only **one** point-to-point connection is established between a sensor and a smartphone or tablet
Device is visible in the live list but cannot be accessed via SmartBlue	Android end device	Is the location function permitted for the app, was it approved the first time?
		GPS or positioning function must be activated for certain Android versions in conjunction with Bluetooth
		Activate GPS - close the app fully and restart - enable the positioning function for the app
Device is visible in the live list but cannot be accessed via SmartBlue	Apple end device	Log in as standard Enter user name "admin" Enter initial password (device serial number) paying attention to lower/upper case
Login via SmartBlue not possible	Device is being put into operation for the first time	Enter initial password (device serial number) and change. Pay attention to lower/upper case when entering the serial number.
Device cannot be operated via SmartBlue	Incorrect password entered	Enter correct password
Device cannot be operated via SmartBlue	Password forgotten	Contact the Endress+Hauser Service department
Device cannot be operated via SmartBlue	The sensor temperature is too high	If the ambient temperature results in an elevated sensor temperature of >60 °C (140 °F), Bluetooth communication may be disabled. Shield the device, isolate it and cool it down if necessary.
TAG in SmartBlue and HART do not match	System-related	The device ID (TAG) is transferred to the live list via Bluetooth® to facilitate device identification. The tag is abbreviated in the middle since the HART tag can be up to 32 characters long but Bluetooth® can only use 29 characters as the device name: e.g: "FMR20N12345678901234567890123456" becomes "FMR20N12345678~567890123456"

10.3 Diagnostic event in the operating tool

If a diagnostic event is present in the device, the status signal appears in the top left status area of the operating tool along with the corresponding symbol for the event level in accordance with NAMUR NE 107:

- Failure (F)
- Function check (C)
- Out of specification (S)
- Maintenance required (M)

Calling up remedial measures

▶ Navigate to the **Diagnostics** menu
↳ In the **Actual diagnostics** parameter the diagnostic event is shown with event text

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