KA01730C/07/EN/01.24-00
71688789
2024-10-01

Brief Operating Instructions
Liquiline CM42B

Two-wire transmitter
Field device
Measurement with digital or analog sensors

Endress+Hauser
People for Process Automation

1 About this document

1.1 Safety information

Structure of information	Meaning
DANGER **Causes (/consequences)** If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation **will** result in a fatal or serious injury.
WARNING **Causes (/consequences)** If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation **can** result in a fatal or serious injury.
CAUTION **Causes (/consequences)** If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or more serious injuries.
NOTICE **Cause/situation** If necessary, Consequences of non-compliance (if applicable) ▶ Action/note	This symbol alerts you to situations which may result in damage to property.

1.2 Symbols

- Additional information, tips
- Permitted
- Recommended
- Not permitted or not recommended
- Reference to device documentation
- Reference to page
- Reference to graphic
- Result of an individual step

1.3 Symbols on the device

- Reference to device documentation
- Do not dispose of products bearing this marking as unsorted municipal waste. Instead, return them to the manufacturer for disposal under the applicable conditions.

1.4 Documentation

In addition to these Brief Operating Instructions , the following manuals are available on the product pages on our website:

- Operating Instructions, BA02380C
  - Device description
  - Commissioning
  - Operation
  - Device-specific diagnostics and troubleshooting
  - Maintenance
  - Repair and spare parts
  - Accessories
  - Technical data
- Security Manual, SD03215C

2 Basic safety instructions

2.1 Requirements for the personnel

- Installation, commissioning, operation and maintenance of the measuring system may be carried out only by specially trained technical personnel.
- The technical personnel must be authorized by the plant operator to carry out the specified activities.
- The electrical connection may be performed only by an electrical technician.
- The technical personnel must have read and understood these Operating Instructions and must follow the instructions contained therein.
- Faults at the measuring point may only be rectified by authorized and specially trained personnel.

Repairs not described in the Operating Instructions provided must be carried out only directly at the manufacturer's site or by the service organization.

2.2 Intended use

2.2.1 Areas of application

The device is a two-wire transmitter for connecting digital sensors with Memosens technology or analog sensors (configurable). It features a 4 to 20 mA current output with optional HART communication and can be operated via an on-site display or optionally using a smartphone or other mobile devices via Bluetooth.

The device is designed for use in the following industries:
- Chemical industry
- Life sciences
- Water and wastewater
- Food and beverage production
- Power stations
- Other industrial applications

2.2.2 Non-designated use

Any use other than that intended puts the safety of people and the measuring system at risk. Therefore, any other use is not permitted.

The manufacturer is not liable for harm caused by improper or unintended use.

2.3 Safety at the workplace

The operator is responsible for ensuring compliance with the following safety regulations:
- Installation guidelines
- Local standards and regulations
- Regulations for explosion protection

Electromagnetic compatibility

- The product has been tested for electromagnetic compatibility in accordance with the applicable international standards for industrial applications.
- The electromagnetic compatibility indicated applies only to a product that has been connected in accordance with these Operating Instructions.

2.4 Operational safety

Before commissioning the entire measuring point:

1. Verify that all connections are correct.
2. Ensure that electrical cables and hose connections are undamaged.

Procedure for damaged products:

1. Do not operate damaged products, and protect them against unintentional operation.
2. Label damaged products as defective.

During operation:

- ▶ If faults cannot be rectified,
  take products out of service and protect them against unintentional operation.

2.5 Product safety

The product is designed 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. The relevant regulations and international standards have been observed.

2.6 IT security

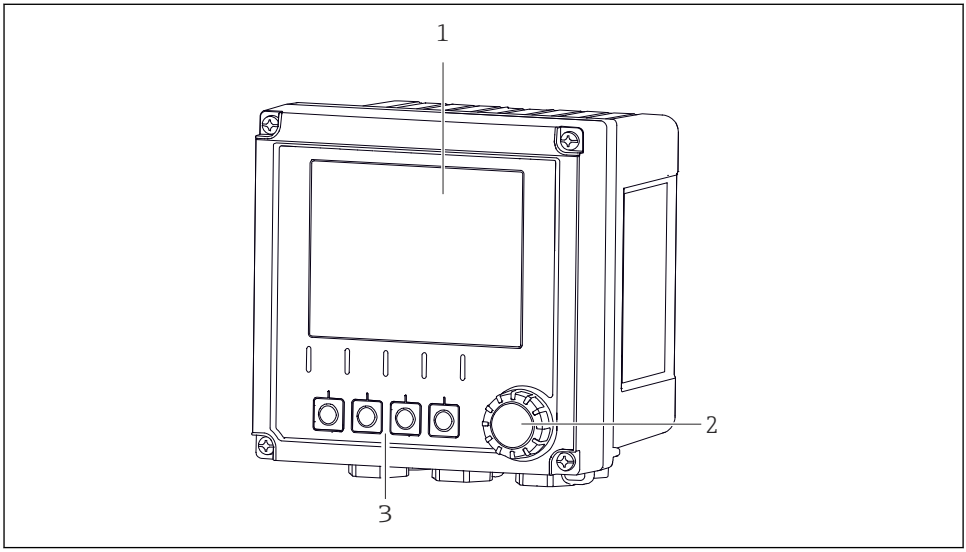
We only provide a warranty if the device is installed and used as described in the Operating Instructions and the Security Manual. The device is equipped with security mechanisms to protect it against any inadvertent changes to the device settings.

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. For further information, see the Security Manual.

3 Product description

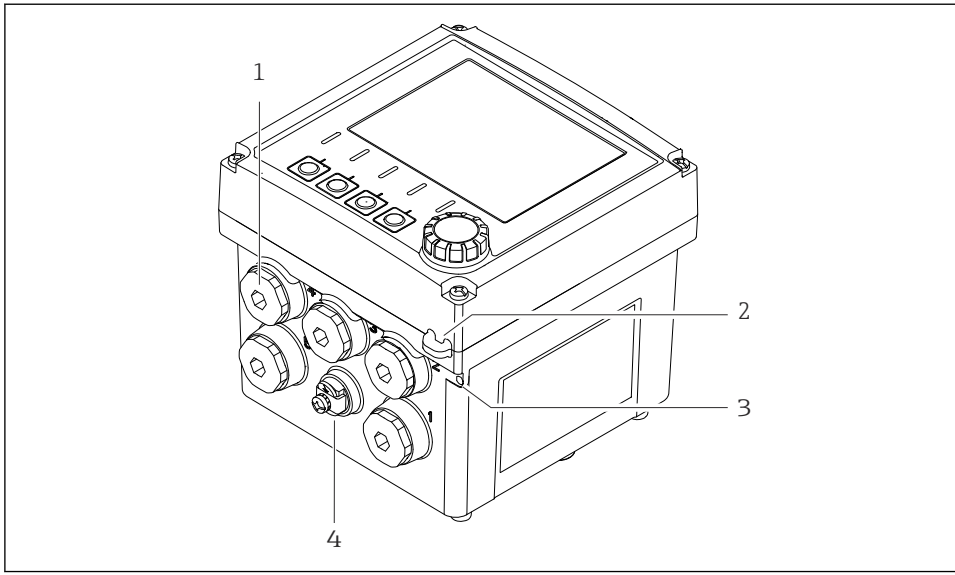
3.1 Product design

3.1.1 Housing closed



1 Exterior view

1 Display
2 Navigator
3 Soft keys, assignment depends on menu



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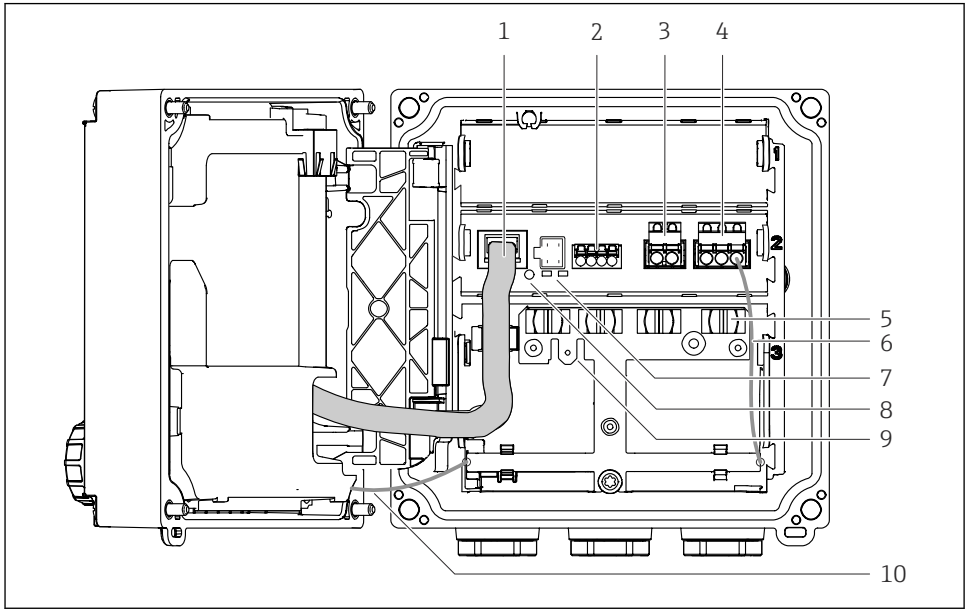
2 Exterior view

1 Connections for cable glands
2 Eyelet for security seal
3 Eyelet for Tagging (TAG)
4 Connection for potential equalization or functional ground

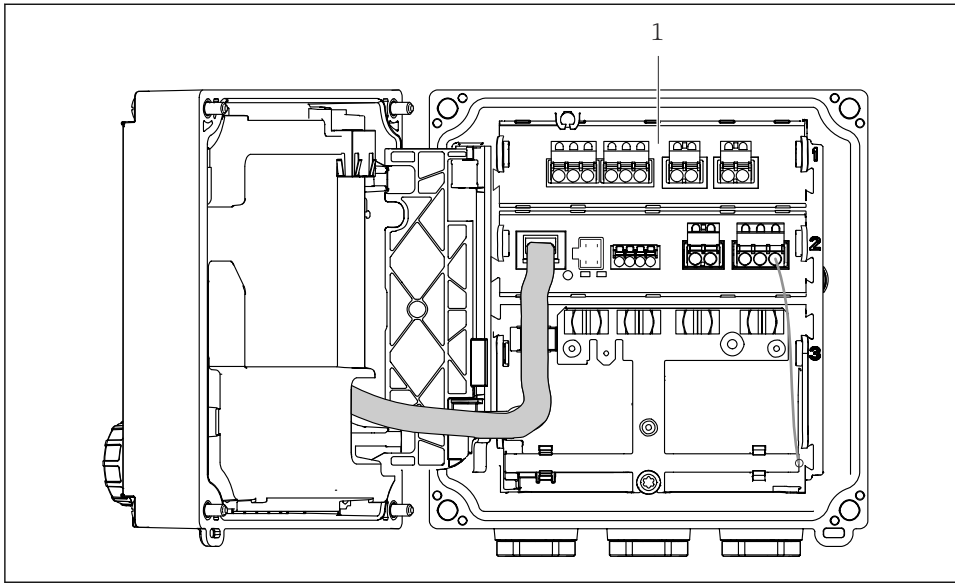
3.1.2 Housing open

Version for MEMOSENS sensors



1 Display cable
2 Memosens input
3 Current output 1: 4 to 20 mA, passive/optional HART
4 Current output 2 (optional):4 to 20 mA, passive
5 Cable mounting rail
6 Internal ground cable, wired at the factory
7 Status LEDs
8 Reset button
9 Internal ground connection for cable lug 6.35 mm, optional use
10 Internal ground cable for display (only for devices with a stainless steel housing), wired at the factory

Version for analog sensors (pH/ORP, inductive/conductive)



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1 Connection area for analog sensors (different layout depending on the version)

Connection of the sensors is described in → 📄 21.

3.1.3 Measuring parameters

Depending on the order, the transmitter is designed for digital Memosens sensors or for analog sensors. A transmitter for analog sensors can be reconfigured to Memosens. This requires an activation code and the analog input module must be removed.

A device for Memosens sensors cannot be retrofitted for analog sensors.

The following measurement parameters are possible with Memosens sensors:
- pH/ORP
- Conductivity, measured conductively
- Conductivity, measured inductively
- Dissolved oxygen, measured amperometrically
- Dissolved oxygen, measured optically

The measurement parameters and sensor type can be switched via the user interface.

The following measurement parameters are possible with analog sensors:
- pH/ORP
- Conductivity, measured conductively
- Conductivity, measured inductively

For a list of compatible sensors, see the Operating Instructions, 'Accessories' section.

4 Incoming acceptance and product identification

4.1 Incoming acceptance

1. Verify that the packaging is undamaged.
   ↳ Notify the supplier of any damage to the packaging.
   Keep the damaged packaging until the issue has been resolved.
2. Verify that the contents are undamaged.
   ↳ Notify the supplier of any damage to the delivery contents.
   Keep the damaged goods until the issue has been resolved.
3. Check that the delivery is complete and nothing is missing.
   ↳ Compare the shipping documents with your order.
4. Pack the product for storage and transportation in such a way that it is protected against impact and moisture.
   ↳ The original packaging offers the best protection.
   Make sure to comply with the permitted ambient conditions.

If you have any questions, please contact your supplier or your local Sales Center.

4.2 Product identification

4.2.1 Nameplate

The following information on the device can be found on the nameplate:
- Manufacturer identification
- Product designation
- Serial number
- Ambient conditions
- Input and output values
- Safety information and warnings
- Certificate information

► Compare the information on the nameplate with the order.

4.2.2 Identifying the product

Manufacturer address

Endress+Hauser Conducta GmbH+Co. KG
Dieselstraße 24
70839 Gerlingen
Germany

Product page

www.endress.com/CM42B

Interpreting the order code

The order code and serial number of your product can be found in the following locations:
- On the nameplate
- In the delivery papers
- On the internal label

Obtaining information on the product

1. Scan the QR code on the product.
2. Open the URL in a web browser.
3. Click the product overview.
   ↳ A new window opens. Here you fill information pertaining to your device, including the product documentation.

Obtaining information on the product (if there is no option for scanning the QR code)

1. Go to www.endress.com.
2. Page search (magnifying glass symbol): Enter valid serial number.
3. Search (magnifying glass).
   ↳ The product structure is displayed in a popup window.
4. Click the product overview.
   ↳ A new window opens. Here you fill information pertaining to your device, including the product documentation.

4.3 Scope of delivery

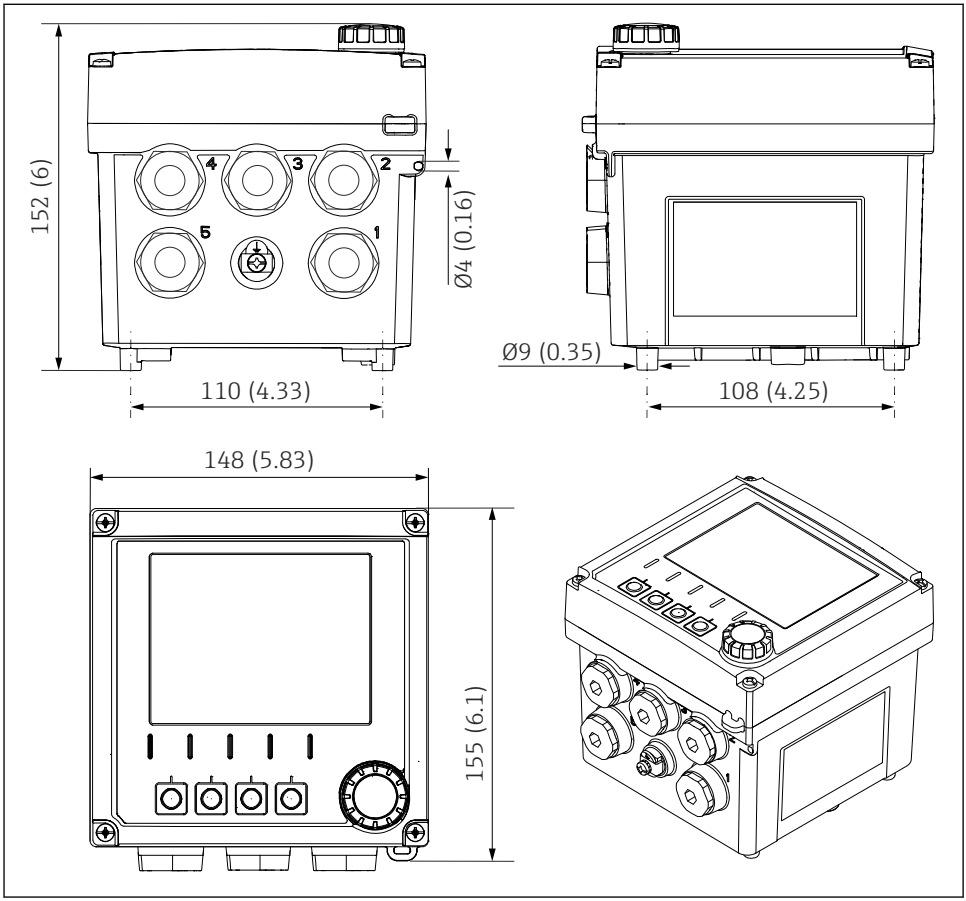
The scope of delivery includes:
- Liquiline CM42B
- Cable glands depending on order
- Mounting plate
- Brief Operating Instructions
- Safety instructions for hazardous area (for Ex versions)

▶ If you have any queries:
Please contact your supplier or local sales center.

5 Mounting

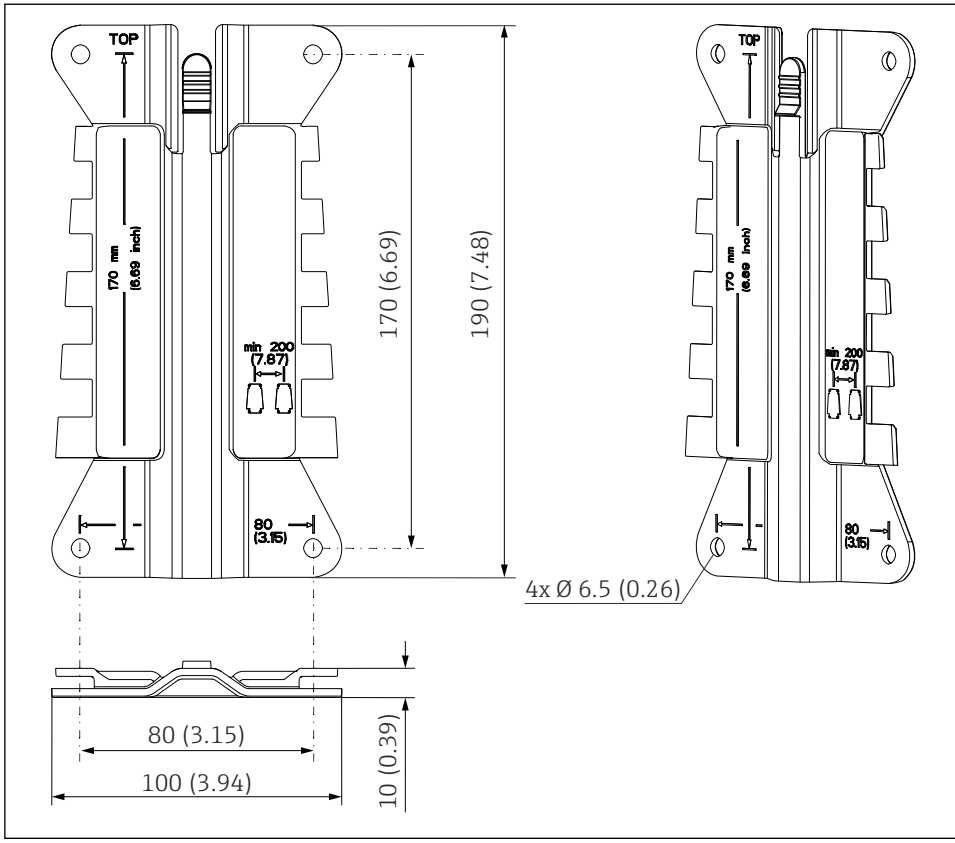
5.1 Mounting requirements

5.1.1 Dimensions



3 Dimensions of field housing in mm (in)

5.1.2 Mounting plate (included in the delivery)



4 *Dimensions of mounting plate in mm (in)*

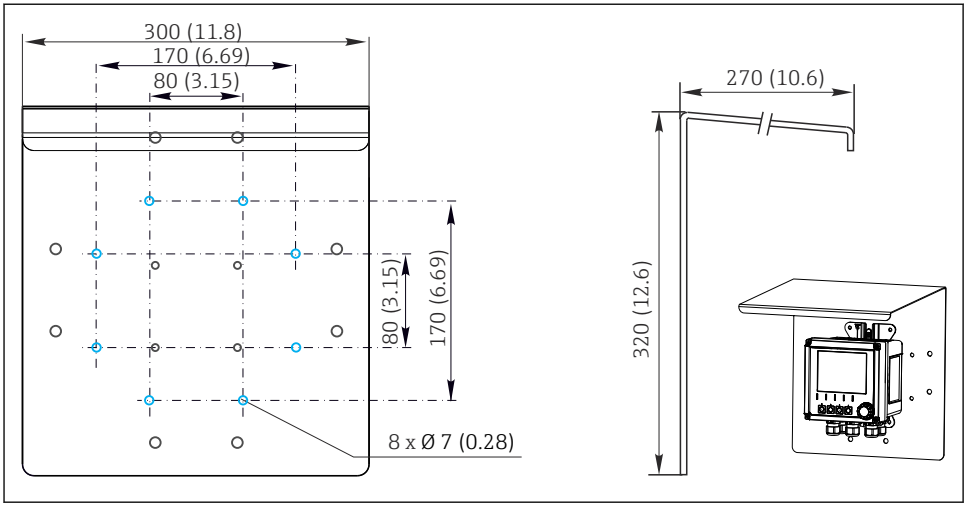
5.1.3 Weather protection cover (optional)

NOTICE

Effect of climatic conditions (rain, snow, direct sunlight etc.)

Impaired operation to complete transmitter failure are possible!

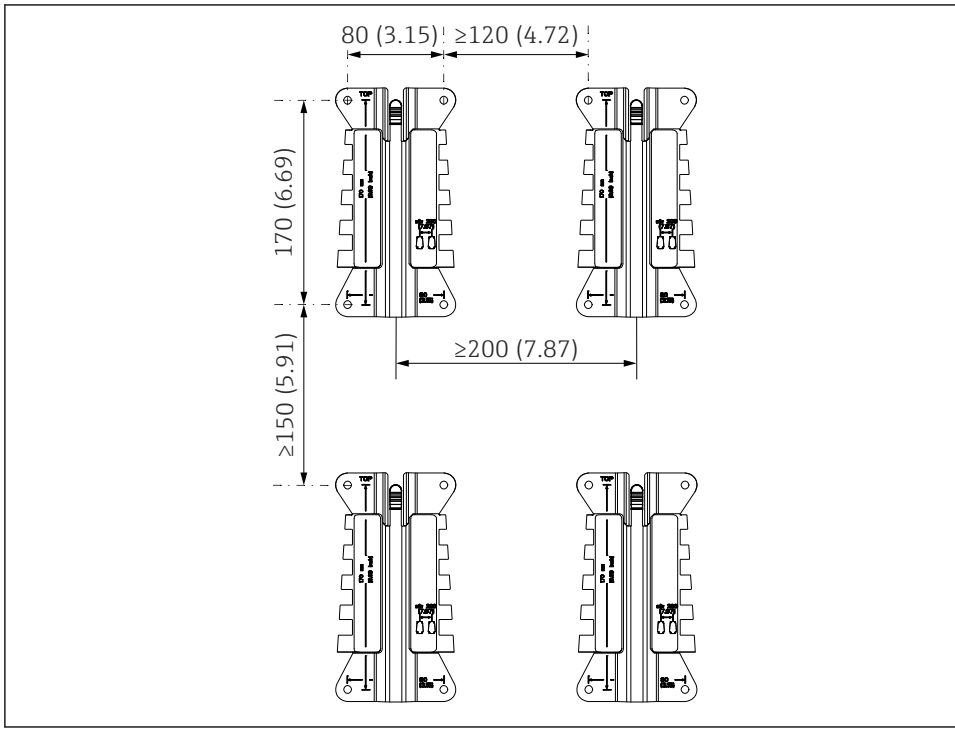
► Always use the weather protection cover (accessory) when installing the device outdoors.



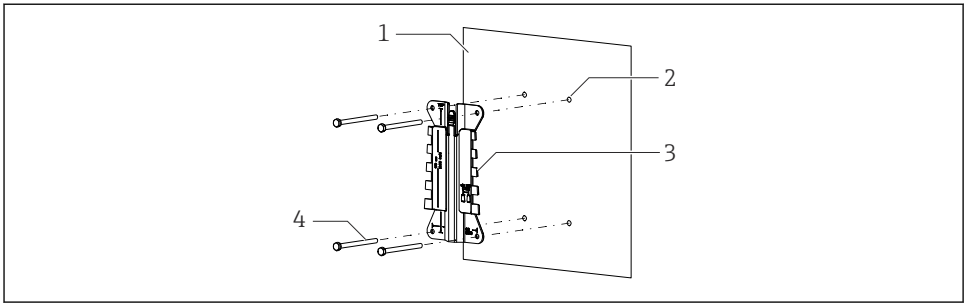
5 Dimensions of the weather protection cover in mm (in)

5.2 Mounting the device

5.2.1 Wall mounting



6 Mounting clearances in mm (in)



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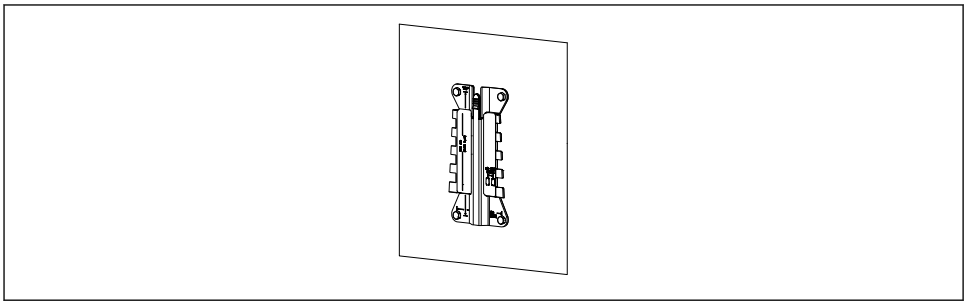
7 Wall mounting

1 Wall
2 4 drill holes
3 Mounting plate
4 Screws (not included in the scope of delivery)

The size of the drill holes depends on the mounting material used. Mounting material must be provided by the customer.

Screw diameter: max. 6 mm (0.23 in)



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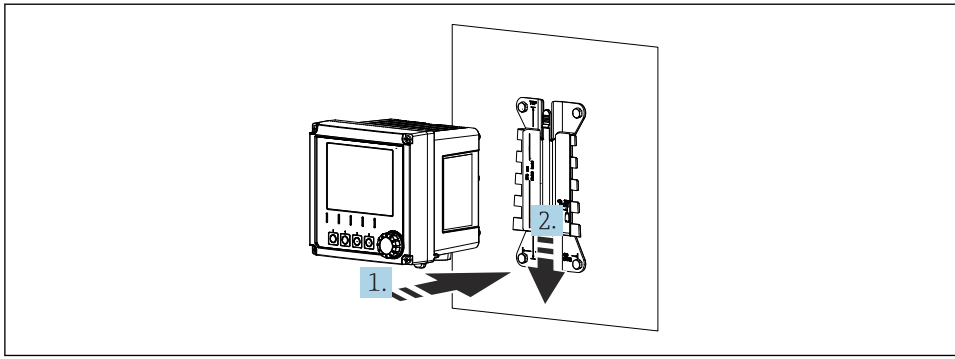
8 Mounting plate mounted on wall



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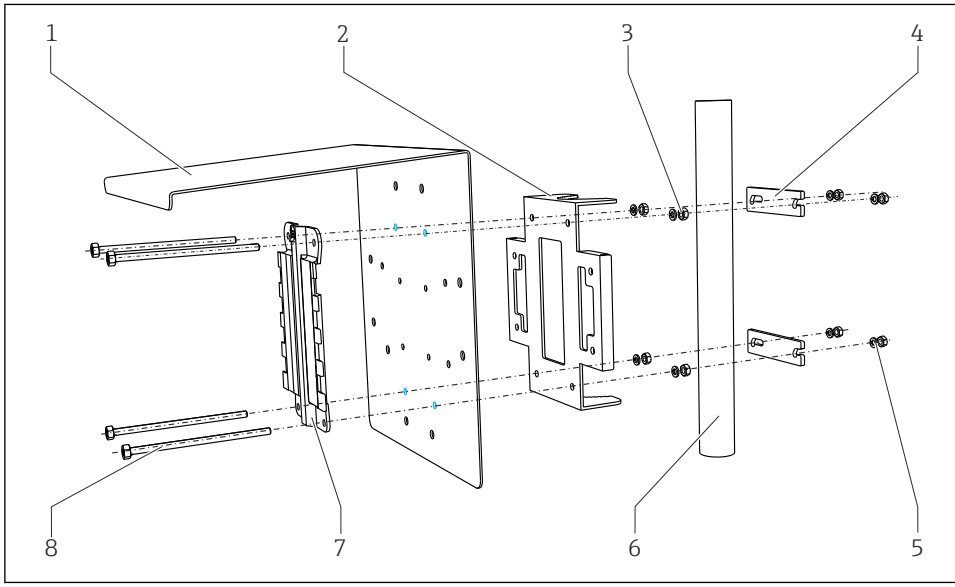
9 *Attach the device and click it into place*

1. Place the device on the mounting plate.
2. Slide the device downwards in the guide on the mounting rail until it clicks into place.

5.2.2 Post mounting

You require the post mounting kit (optional) to mount the unit on a pipe, post or railing (square or circular, clamping range 20 to 61 mm (0.79 to 2.40")).



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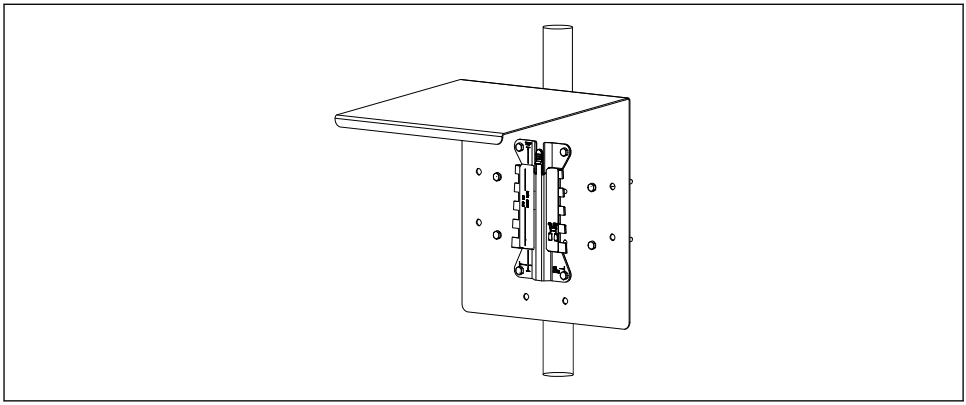
10 *Post mounting*

1	*Weather protection cover (optional)*	*5*	*Spring washers and nuts (post mounting kit)*
2	*Post mounting plate (post mounting kit)*	*6*	*Pipe or post (circular/square)*
3	*Spring washers and nuts (post mounting kit)*	*7*	*Mounting plate*
4	*Pipe clamps (post mounting kit)*	*8*	*Screws (post mounting kit)*



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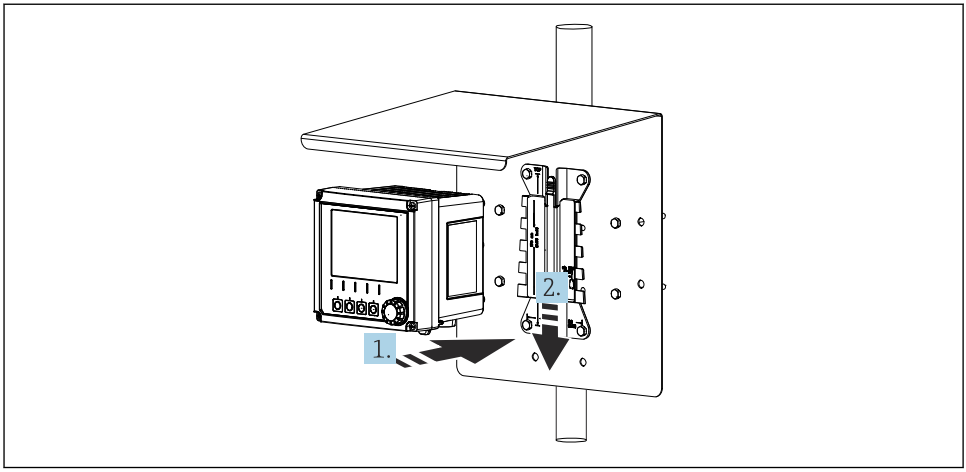
11 Post mounting



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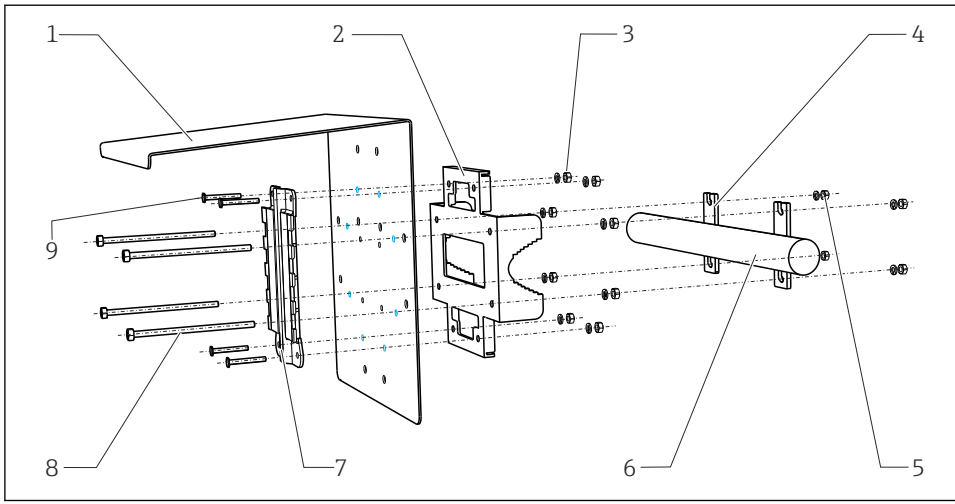
12 Attach the device and click it into place

1. Place the device on the mounting plate.
2. Slide the device downwards in the guide on the mounting rail until it clicks into place.

5.2.3 Rail mounting

You require the post mounting kit (optional) to mount the unit on a pipe, post or railing (square or circular, clamping range 20 to 61 mm (0.79 to 2.40")).



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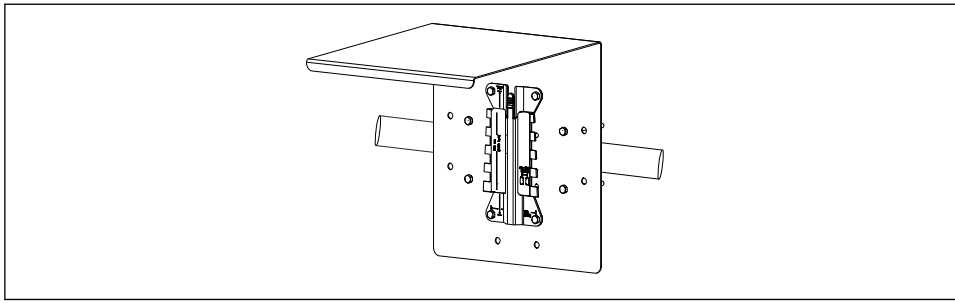
13 *Rail mounting*

1	*Weather protection cover (optional)*	6	*Pipe or railing (circular/square)*
2	*Post mounting plate (post mounting kit)*	7	*Mounting plate*
3	*Spring washers and nuts (post mounting kit)*	8	*Threaded rods (post mounting kit)*
4	*Pipe clamps (post mounting kit)*	9	*Screws (post mounting kit)*
5	*Spring washers and nuts (post mounting kit)*		



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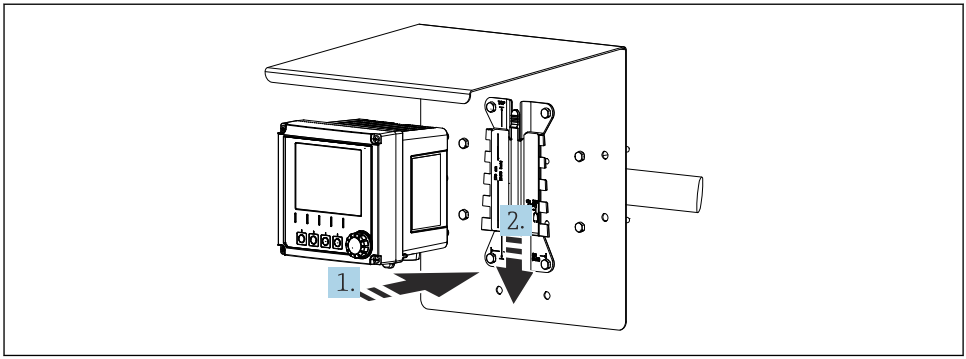
14 *Rail mounting*



15 *Attach the device and click it into place*

1. Place the device on the mounting plate.
2. Slide the device downwards in the guide on the mounting rail until it clicks into place.

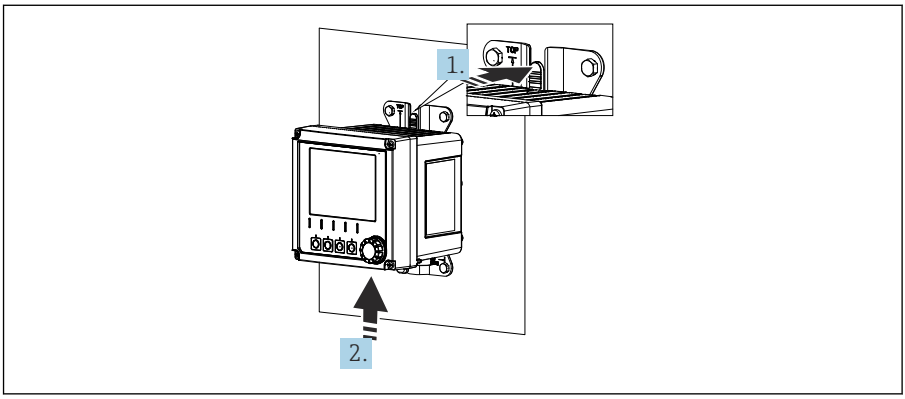
5.2.4 Disassembly (for conversion, cleaning etc.)

CAUTION

Risk of injury and damage to the device if the device is dropped

► When pushing the housing out of the holder, secure the housing to prevent it from falling.

1.



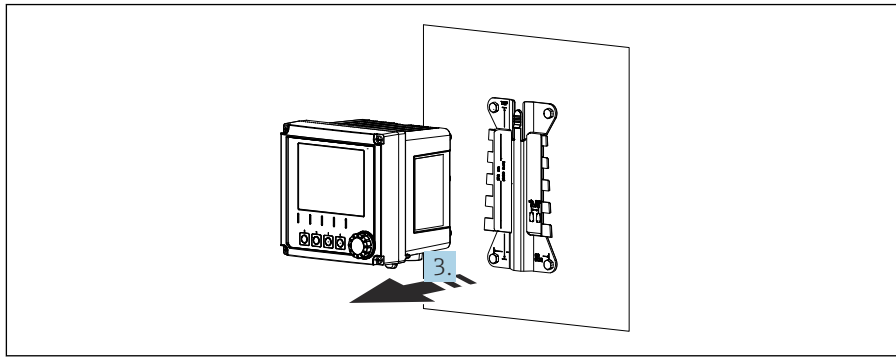
16 *Disassembly*

All cables have been removed.

Hold down the latch.

2. Push up the device to remove it from the holder.

3.



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17 *Disassembly*

Remove the device towards the front.

5.3 Post-mounting check

1. Check the device for damage after installation.
2. Check whether the device is protected against precipitation and direct sunlight (e.g. by the weather protection cover).
3. Verify that the specified installation clearances have been observed.
4. Ensure that the temperature limits are observed at the mounting location.

6 Electrical connection

6.1 Connecting requirements

6.1.1 Supply voltage

- Connect the device to a Safety Extra Low Voltage (SELV) or Protective Extra Low Voltage (PELV) system only.

6.1.2 Power units

- Use power units according to IEC 60558-2-16, IEC 62368-1 Class ES1 or IEC 61010-1.

6.1.3 Electrostatic discharge (ESD)

NOTICE

Electrostatic discharge (ESD)

Risk of damaging the electronic components

- Take personal protective measures to avoid ESD, such as discharging beforehand at PE or permanent grounding with a wrist strap, for example.

6.1.4 Unconnected cable cores

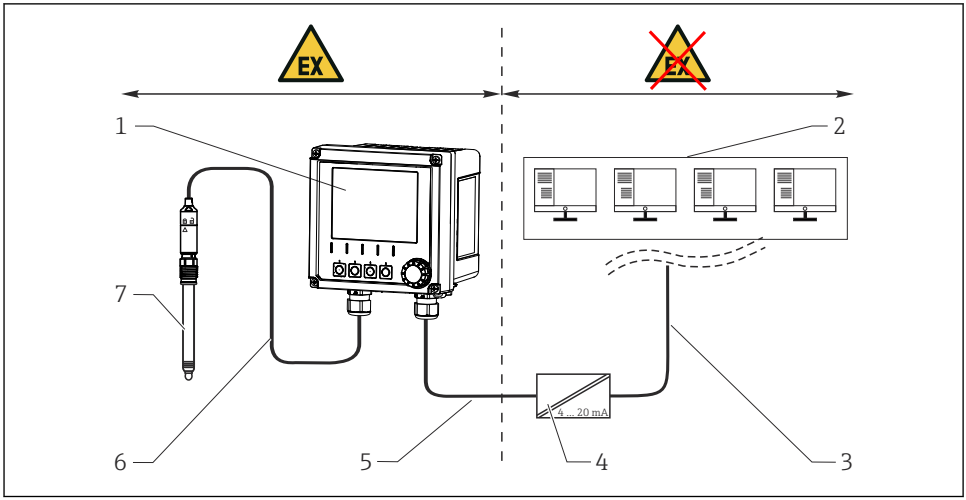
NOTICE

Unconnected cable cores can lead to malfunctions or damage to the device if they come into contact with connections, terminals and other conductive parts.

- ▶ Ensure that unconnected cable cores are not in contact with connections, terminals and other conductive parts of the device.

6.1.5 Installation in hazardous areas

Installation in hazardous area Ex ia Ga



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1 *Hazardous area version of Liquiline CM42B*
2 *Control station*
3 *4 to 20 mA signal line/optional HART*
4 *Ex ia active barrier*
5 *Supply and signal circuit Ex ia (4 to 20 mA)*
6 *Intrinsically safe sensor circuit Ex ia*
7 *Hazardous area version of sensor*

6.2 Connecting the device

6.2.1 Opening the housing

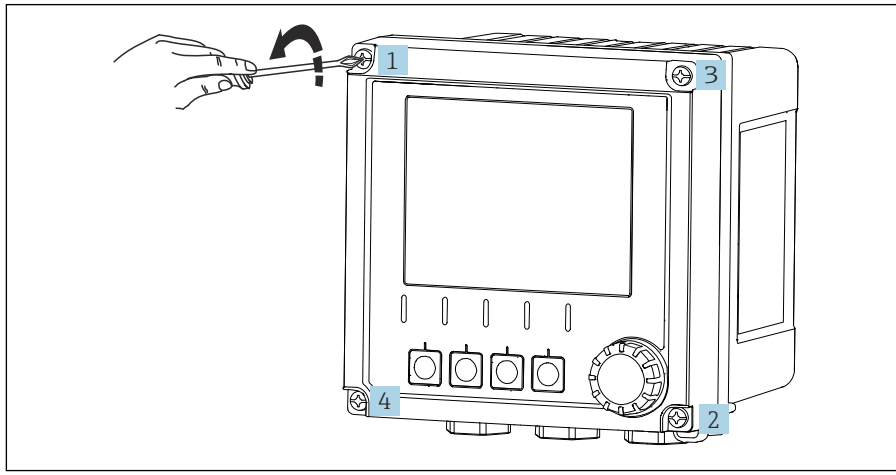
NOTICE

Cordless screwdriver, screw driller, pointed or sharp tools

The use of a cordless screwdriver or screw driller can cause damage to the threads and impair the leak-tightness of the housing. If unsuitable tools are used, they can scratch the housing or damage the seal, and thus have a negative impact on the leak-tightness of the housing.

- ▶ Do not use a cordless screwdriver or screw driller to release and tighten the housing screws.
- ▶ Do not use any sharp or pointed objects, e.g. a knife, to open the housing.
- ▶ Use a suitable handheld screwdriver only.

1.



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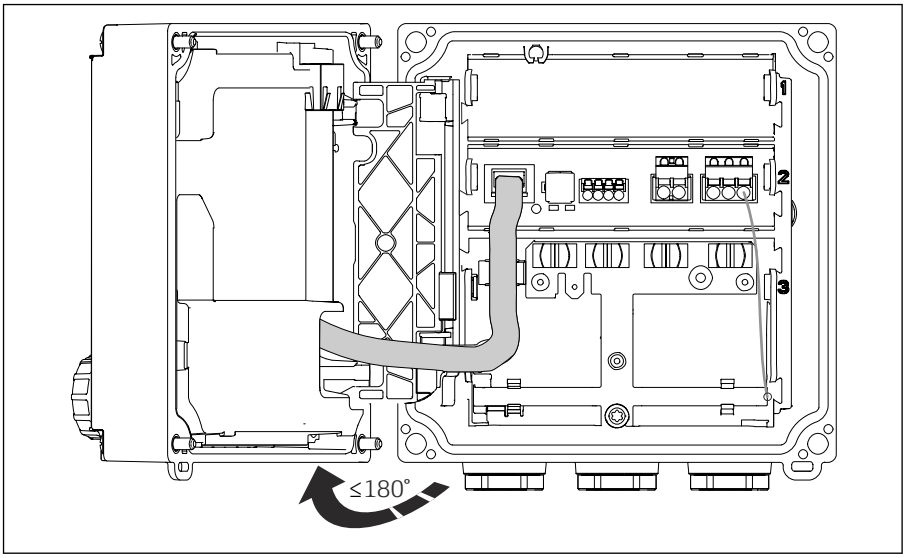
Slacken the housing screws crosswise.

2.



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Open the cover by a maximum of 180° (depending on the orientation).

3. When closing the housing: Tighten the housing screws gradually and crosswise.
Tightening torque 1 Nm

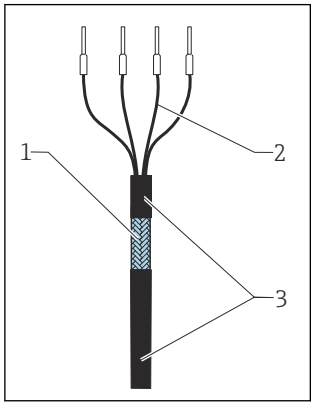
6.2.2 Connecting the cable shield

The descriptions of each of the connections specify which cables must be shielded.

Only use terminated original cables where possible.

Clamping range of grounding clamps: 4 to 11 mm (0.16 to 0.43 in)

Cable sample (does not necessarily correspond to the original cable supplied)

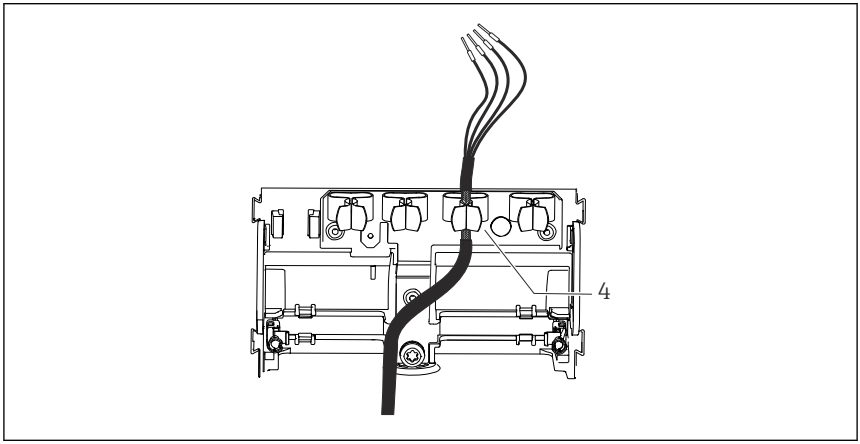


18 *Terminated cable*

1 Outer shield (exposed)
2 Cable cores with ferrules
3 Cable sheath (insulation)

1. Remove one sealing plug at the bottom of the housing.
2. Screw in a suitable cable gland.
3. Attach the gland to the cable end, making sure the gland is facing the right direction.
4. Pull the cable through the gland and into the housing.
5. Route the cable in such a way that the exposed cable shield fits into one of the grounding clamps and the cable cores can be easily routed as far as the terminal plugs.
6. Connect the cable to the grounding clamp.

7. Clamp the cable into place.



19 *Cable into grounding clamp*

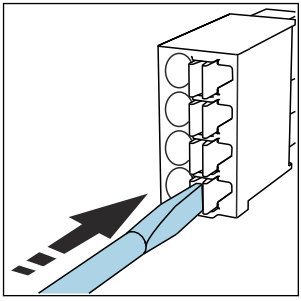
4 Grounding clamp

The cable shield is grounded by the grounding clamp. [1)]

8. Connect cable cores as per the wiring diagram.
9. Tighten the cable gland with the required torque.

6.2.3 Cable terminals

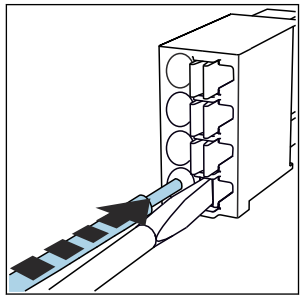
1.



Press the screwdriver against the clip (opens the terminal).

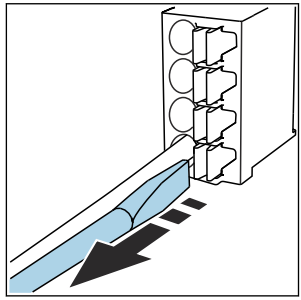
1) Refer to the instructions provided in the "Ensuring the degree of protection" section.

2.



Insert the cable until the limit stop.

3.



Remove the screwdriver (closes the terminal).

4. After connecting, check all the cable cores to ensure they are secure.

6.2.4 Mounting the cable glands

NOTICE

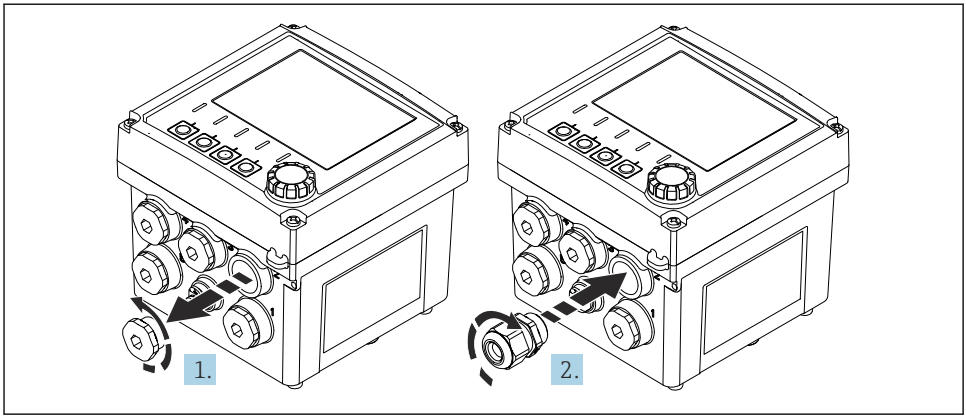
Unused cable glands installed

Housing not leak-tight

- ► Only fit cable glands at the positions where cables are fed through.
- ► Do not remove the sealing plugs at any of the other positions.

Cable glands with M20 thread

The cable glands are included in the scope of delivery in accordance with the order.

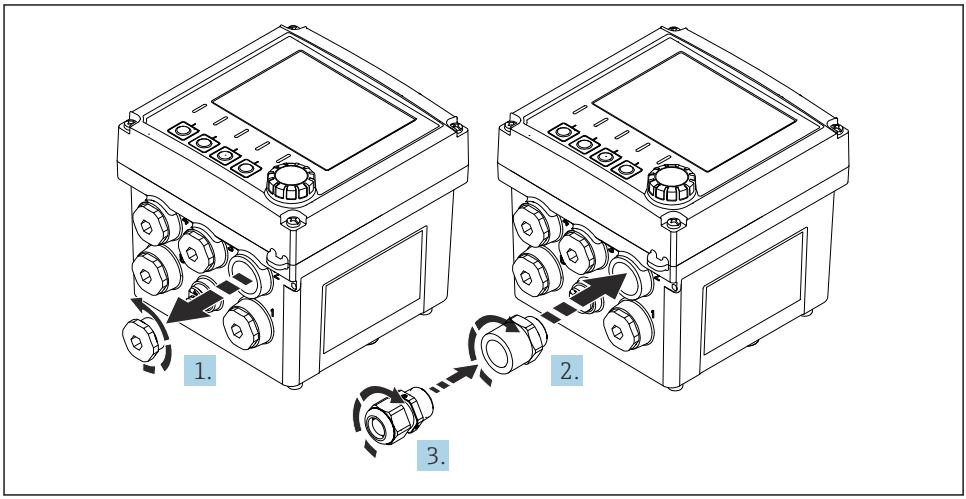


A0055833

1. Remove the sealing plug.
2. Screw in the cable gland. Tightening torque 2.5 to 3 Nm.

Cable glands with G1/2 thread or NPT1/2 thread

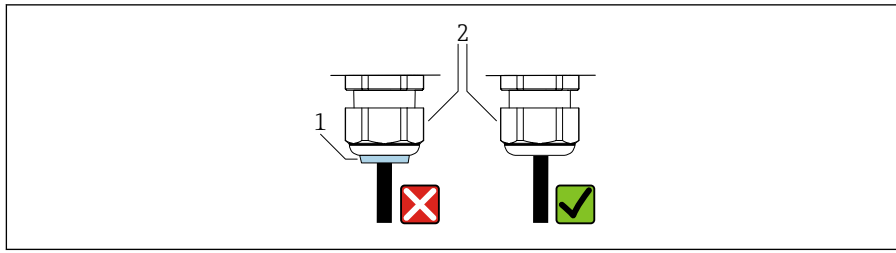
The cable glands and adapters are included in the delivery in accordance with the order.



A0055834

1. Remove the sealing plug.
2. Screw in the adapter. Tightening torque 2.5 to 3 Nm.
3. Screw the cable gland into the adapter. Tightening torque 2.5 to 3 Nm.

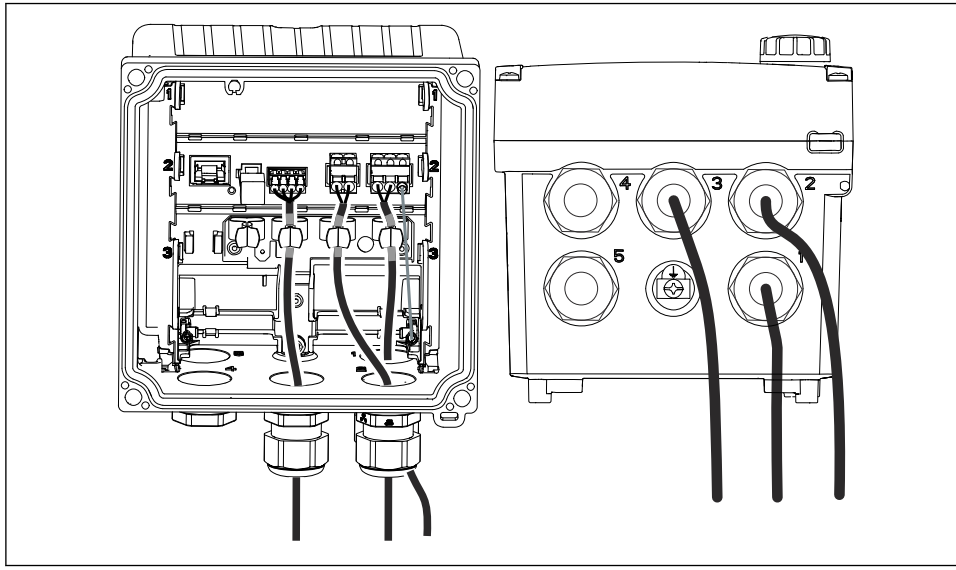
Assignment of the cable glands

1. Feed the cables through the cable glands and connect. The illustration shows an example of how the cable glands are assigned.
2. 

A0057259

   Tighten the cable gland again after the cable has been fed through. Make sure that the sealing insert (1) is flush with the pressure screw (2).

Feed through only 1 cable per cable gland.

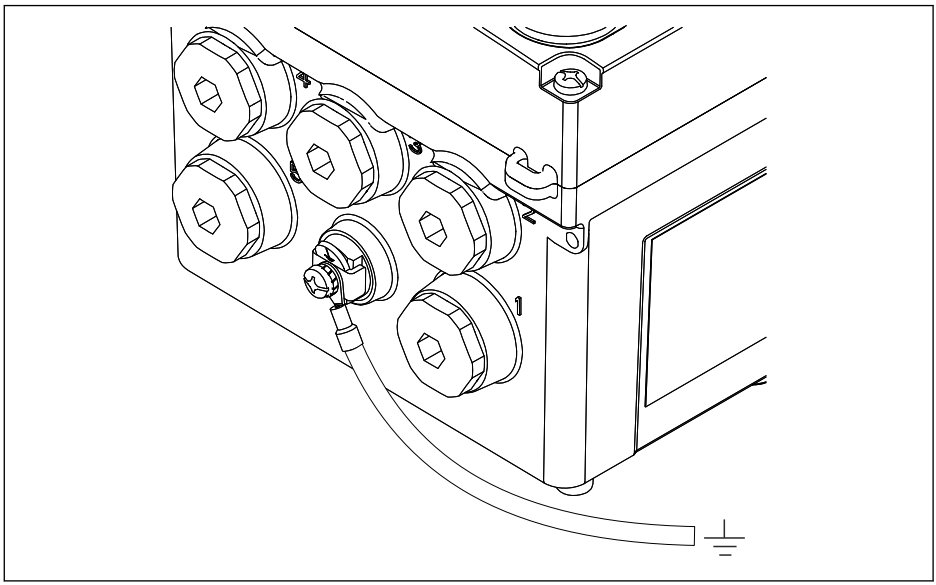


A0055836

20 Example: Current outputs 1 and 2 through cable glands 1 and 2,Memosens cable through cable gland 3

6.2.5 Connecting the potential equalization

▶



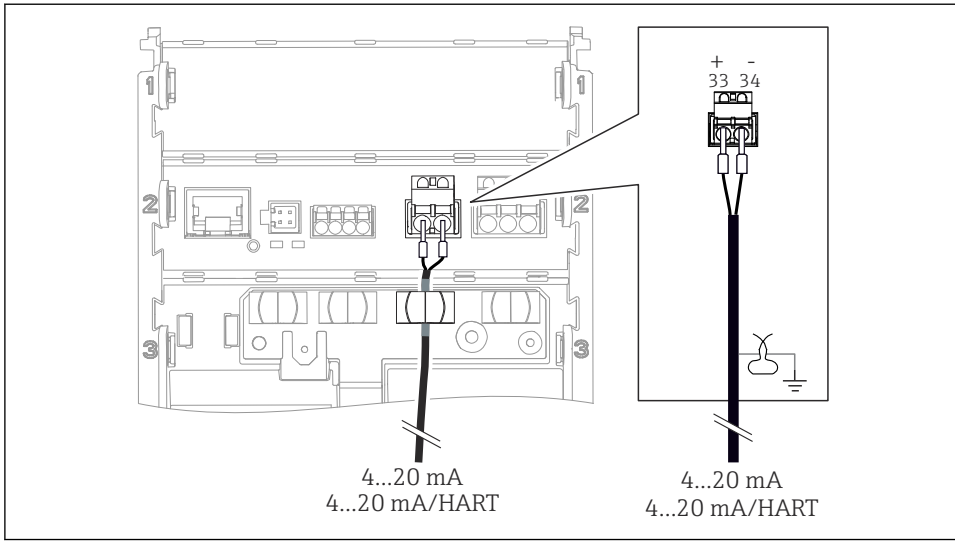
21 Potential equalization connection

Attach the potential equalization connection of the housing to the earth or to the potential equalization system with a separate line.

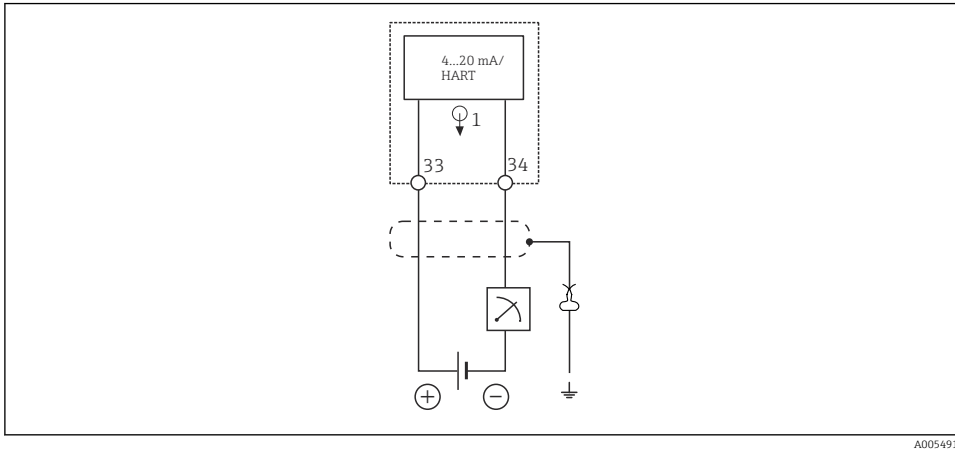
6.2.6 Connecting the power supply and signal circuit

▶ Connect the current outputs with shielded two-wire cables as described in the following illustrations.

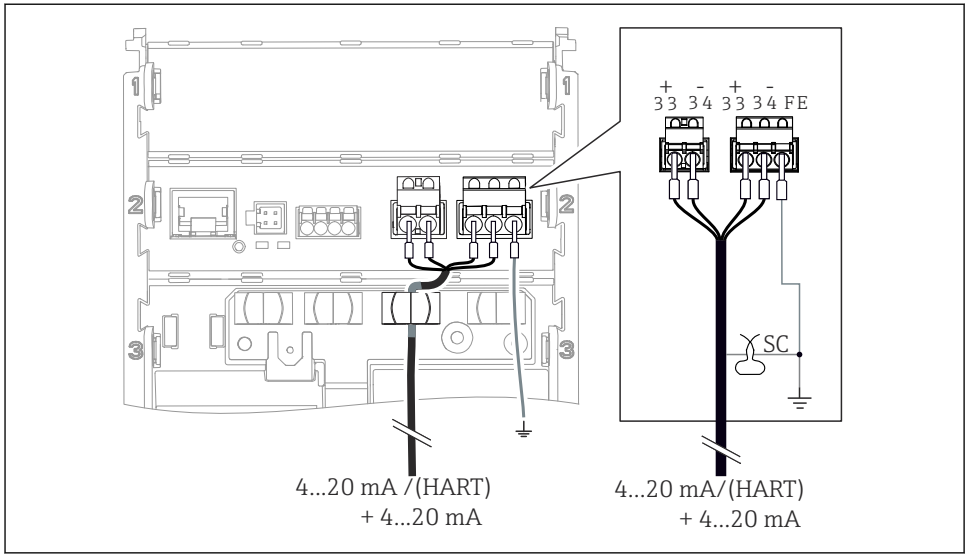
The type of shield connection depends on the anticipated interference influence. Grounding one side of the shield is sufficient to suppress electrical fields. To suppress interference due to an alternating magnetic field, the shield must be earthed on both sides.



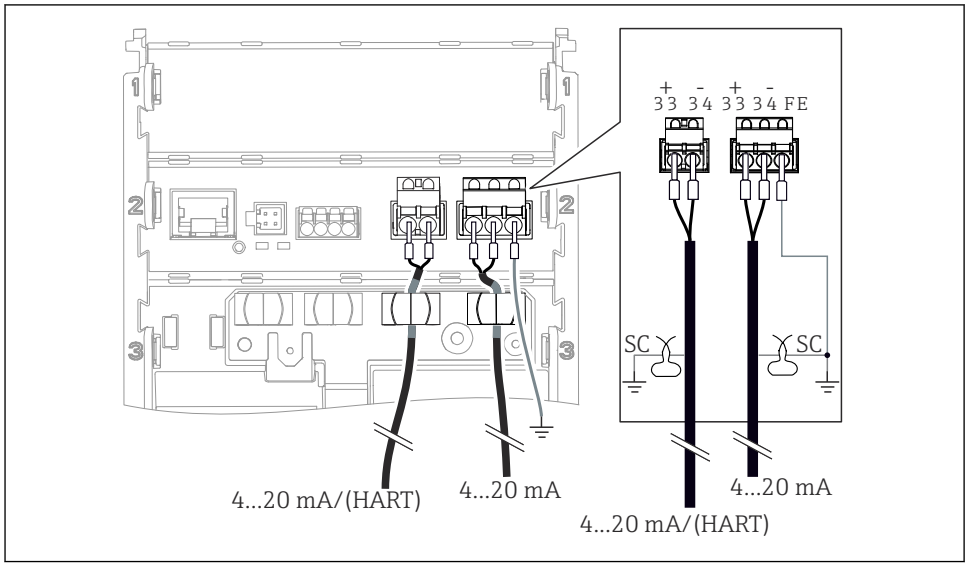
22 *Connection of 1 current output*



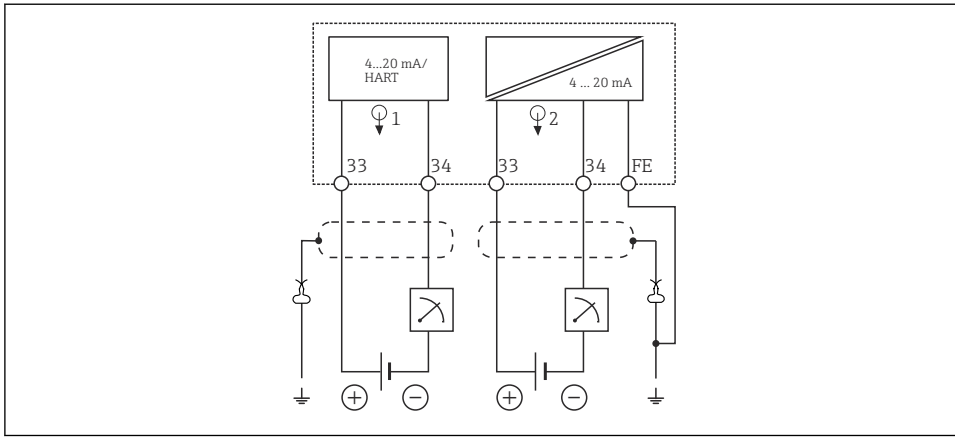
23 *Wiring diagram: 1 current output*



24 Connection of 2 current outputs via 1 cable



25 Connection of 2 current outputs via 2 cables



26 Wiring diagram: 2 current outputs

6.2.7 Connecting the sensor

Abbreviations and color codes used

Explanation of abbreviations and labels used in the following illustrations:

Abbreviation	Meaning
pH	pH signal
Ref	Signal from reference electrode
PM	Potential Matching = Potential equalization (PAL)
Sensor	Sensor
ϑ	Signal of temperature sensor
d.n.c.	do not connect!
A0056947	Cable shield grounding clamp

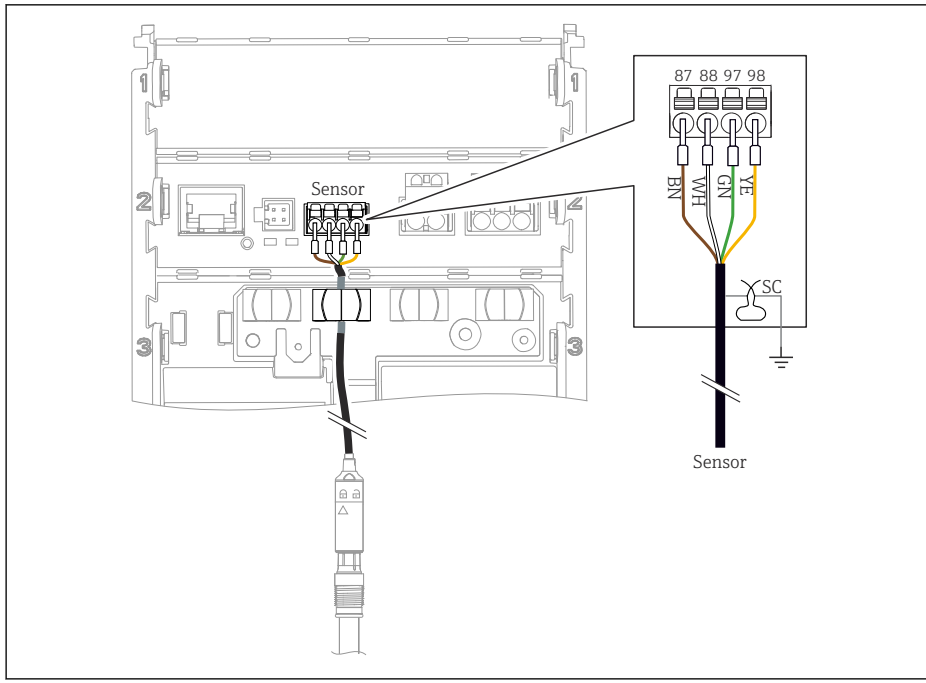
Explanation of color codes in the following illustrations:

Color code	Meaning
BK	Black
BN	Brown
BU	Blue
GN	Green
OG	Orange
RD	Red
YE	Yellow
VT	Violet
WH	White
TR	Transparent
SC	Braided shield/silver

Memosens sensors

Connecting sensors with Memosens plug-in head (via Memosens cable) and sensors with a fixed cable and Memosens protocol

▶

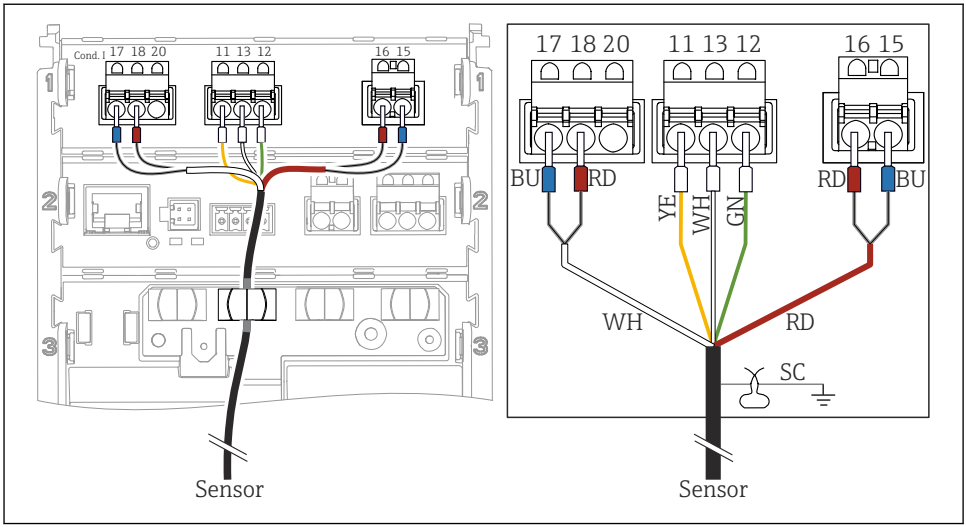


A0055579

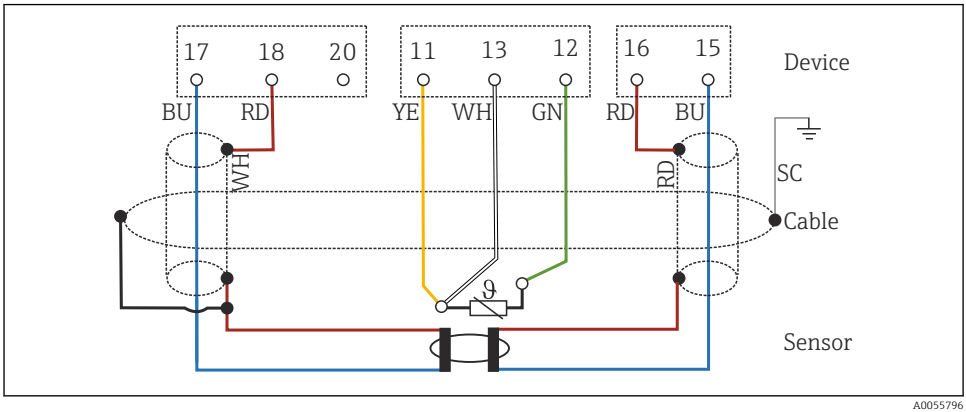
27 *Connecting Memosens sensors*

Connect the sensor cable as shown in the illustration.

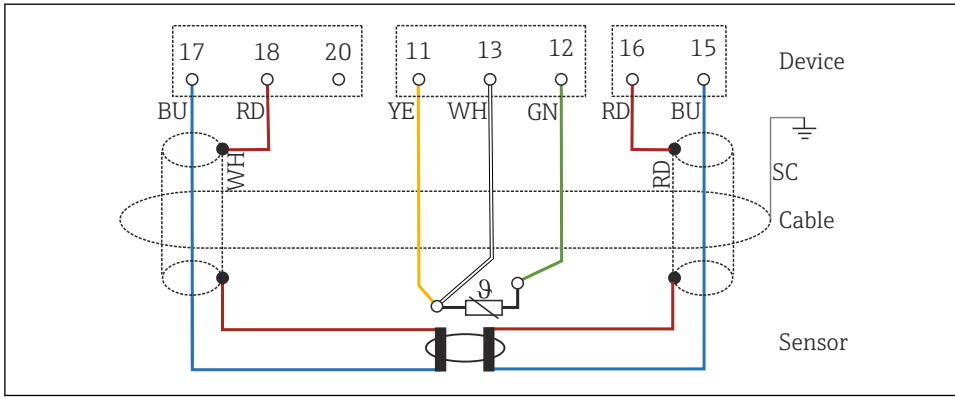
Analog conductivity sensors (inductive)



28 *Device view*



29 *Wiring diagram CLS50*

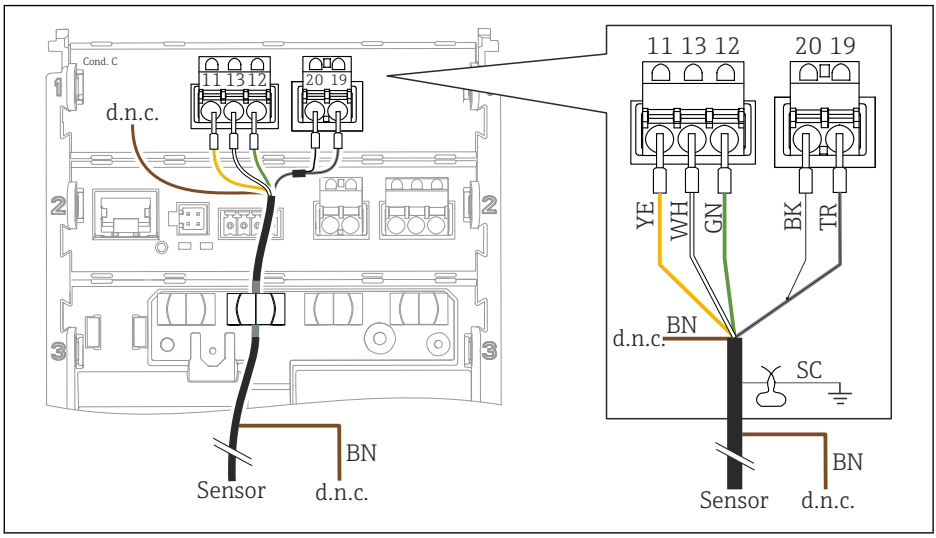


30 Wiring diagram CLS54

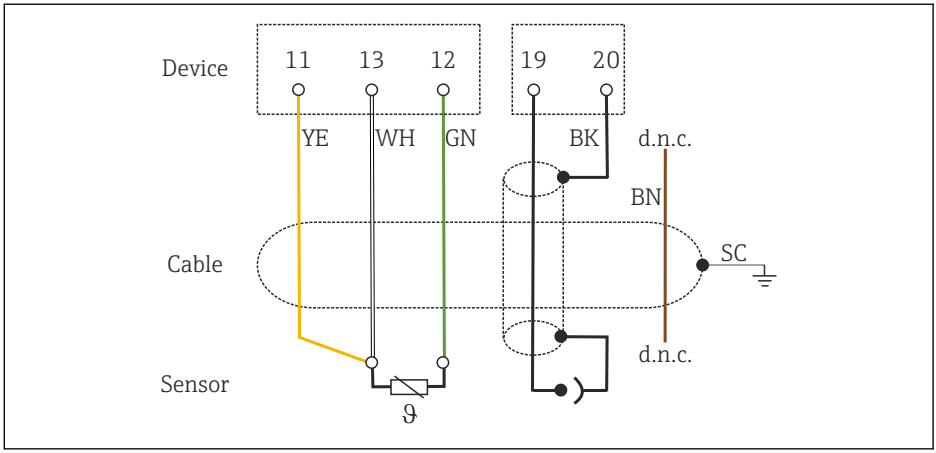
▶ Connect the sensor as shown in the illustration.

Analog conductivity sensors (conductive)

▶



31 *Device view*

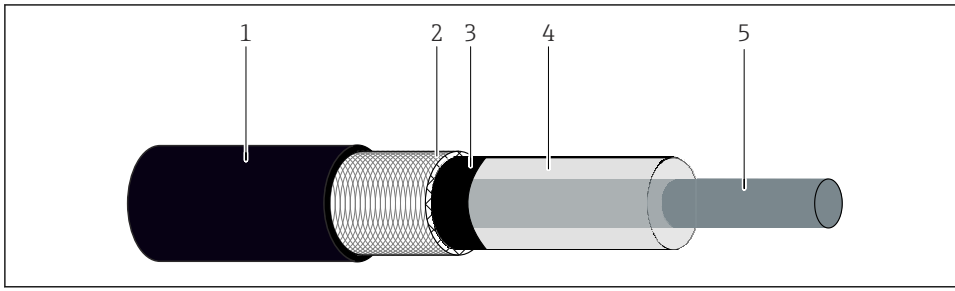


32 *Wiring diagram*

Connect the sensor as shown in the illustration.

Analog pH sensors

Note on connecting coaxial cables



33 *Coaxial cable structure*

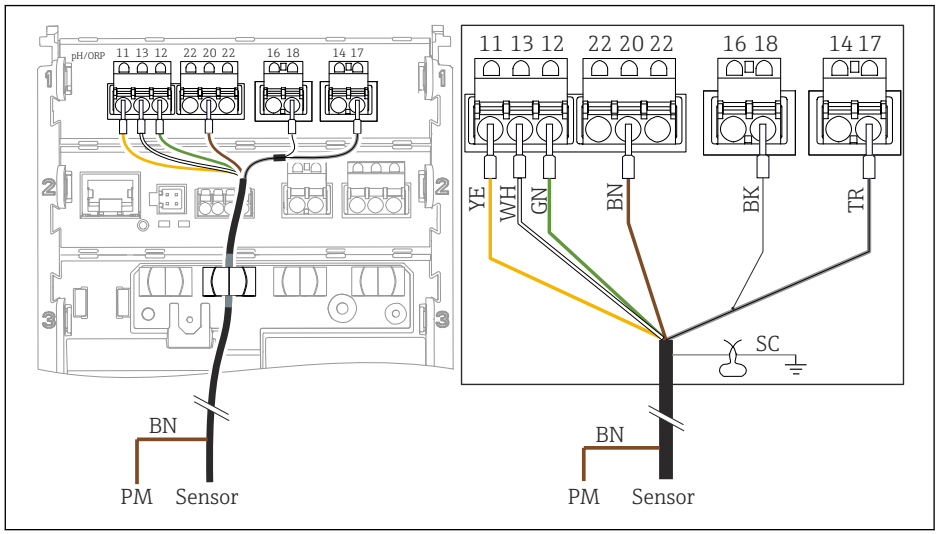
1 *Protective sheath*
2 *Shield/outer conductor of the coaxial cable*
3 *Semi-conductive polymer layer*
4 *Inner insulation*
5 *Inner conductor*

1. Completely remove the semi-conductive polymer layer (3) up to the end of the shield.
2. Ensure that the inner insulation (4) of the coaxial cable is not in contact with other components. Ensure there is an air gap around all components; otherwise measurement errors may occur.

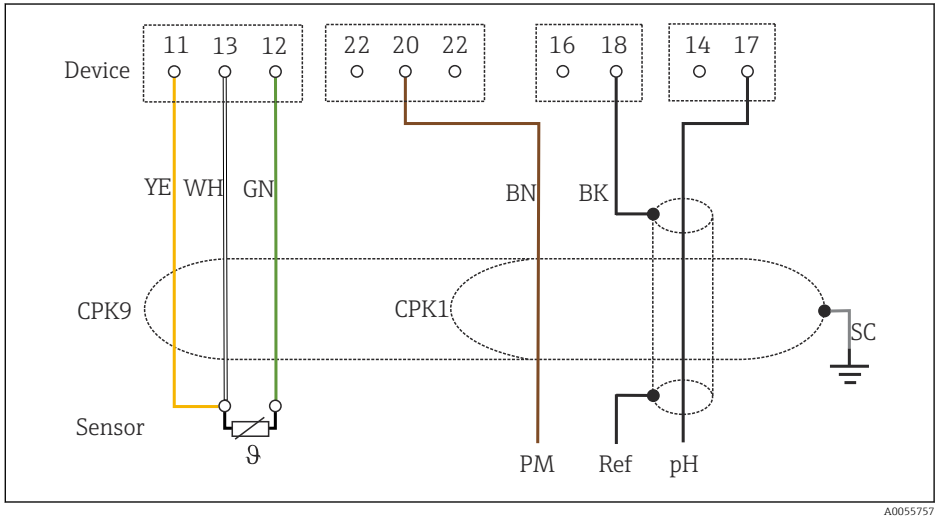
Unconnected cables

- Route unconnected cables (marked with d.n.c.) in such a way that they are not in contact with other connections.

Connecting glass sensors with PML (symmetrical)



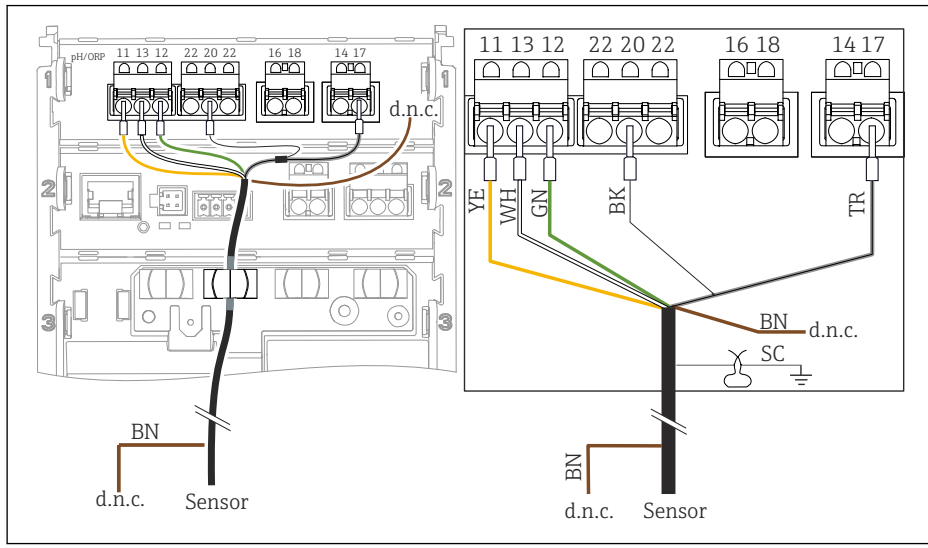
34 *Device view*



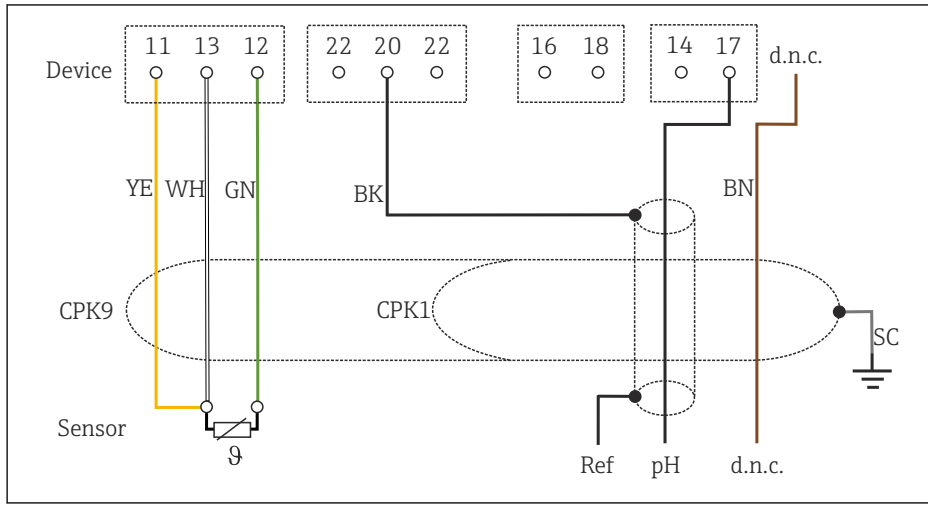
35 *Wiring diagram*

Connect the sensor as shown in the illustration.

Connecting glass sensors without PML (asymmetrical)



36 *Device view*

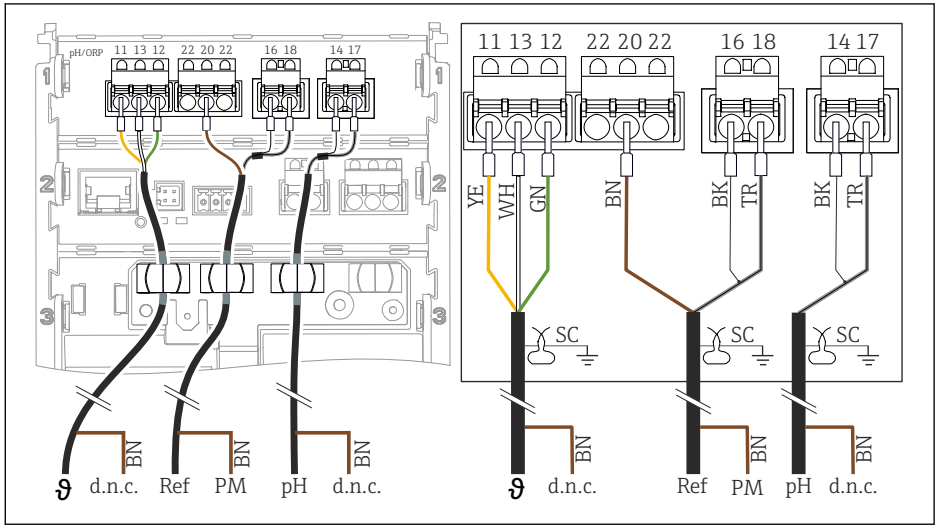


37 *Wiring diagram*

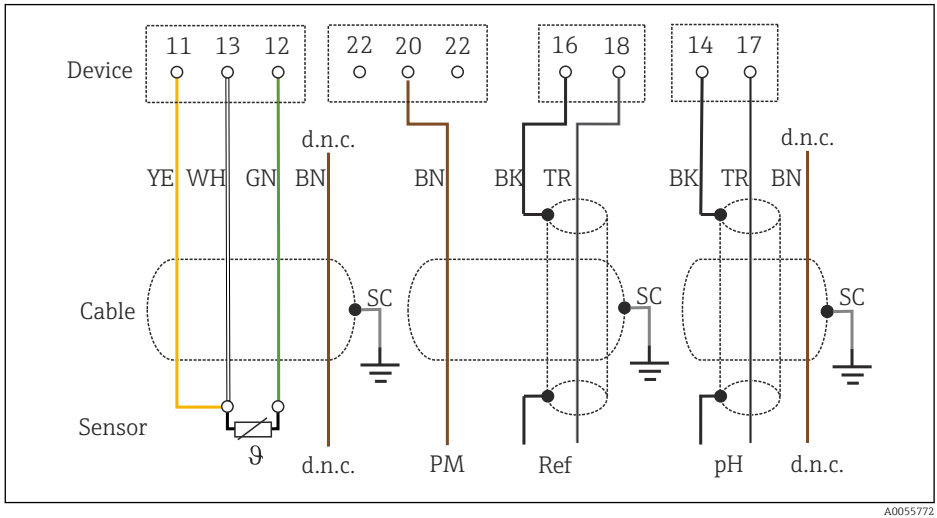
Connect the sensor as shown in the illustration.

Connecting pH single electrodes with PML (symmetrical) and separate reference electrode and separate temperature sensor

▶



38 *Device view*

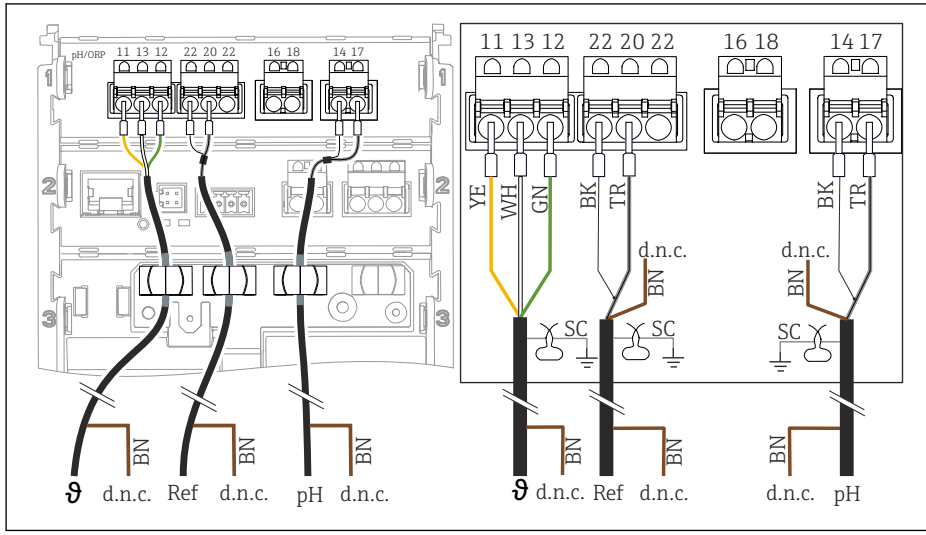


39 *Wiring diagram*

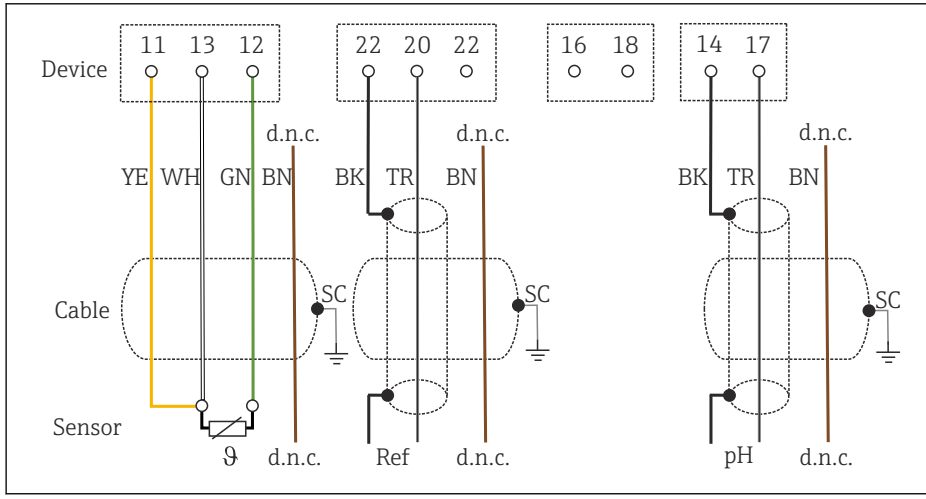
Connect the sensor as shown in the illustration.

Connecting pH single electrodes without PML (asymmetrical) and separate reference electrode and separate temperature sensor

▶



40 *Device view*



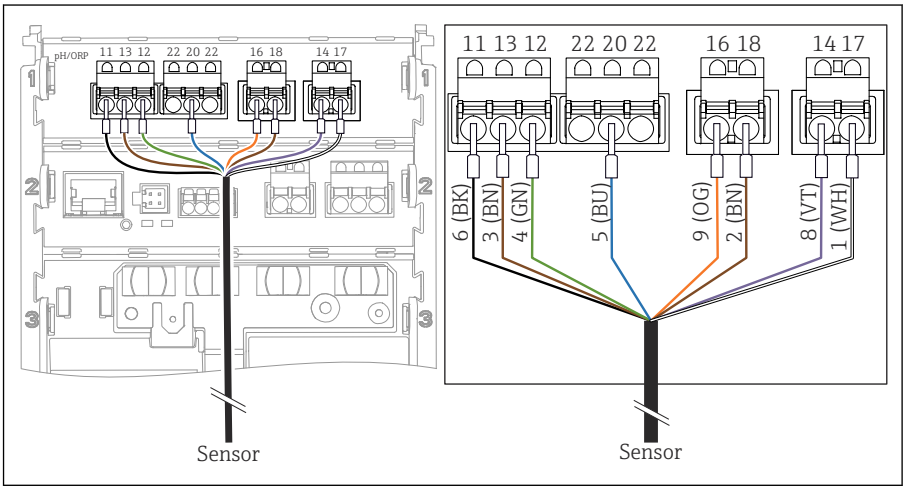
41 *Wiring diagram*

Connect the sensor as shown in the illustration.

Connecting pH enamel electrodes

Pfaudler electrode, absolute (type 03/type 04) with PML (symmetrical) with LEMOSA cable

1.

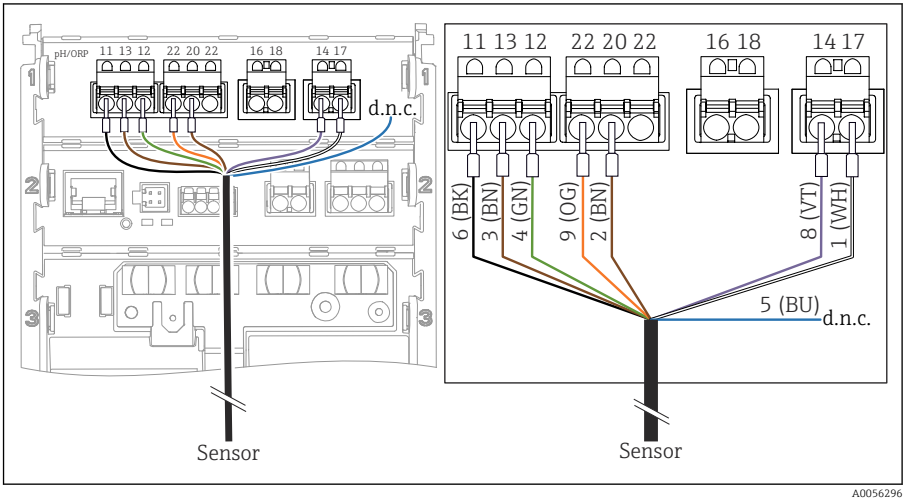


Connect the sensor as shown in the illustration.

2. Only ground the cable shield on the sensor side.

Pfaudler electrode, absolute (type 03/type 04) without PML (asymmetrical) with LEMOSA cable

1.

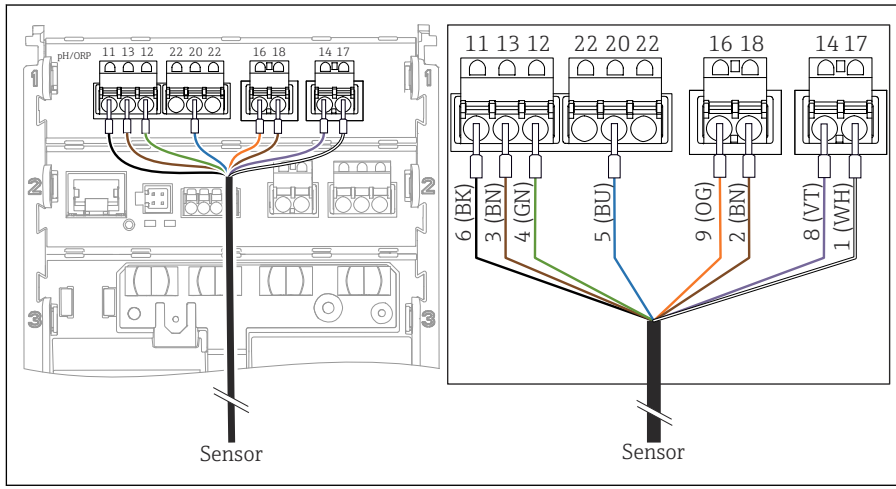


Connect the sensor as shown in the illustration.

2. Only ground the cable shield on the sensor side.

Pfaudler electrode, relative (type 18/type 40) with PML (symmetrical) with LEMOSA cable

1.



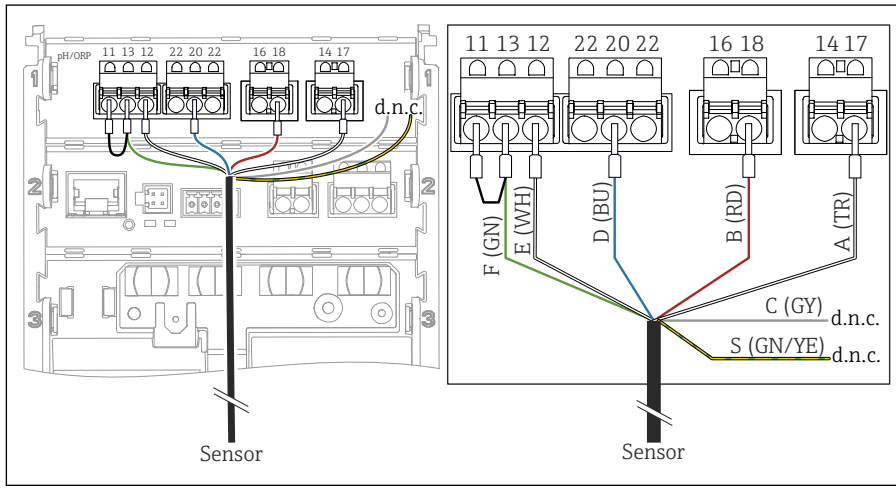
A0056295

Connect the sensor as shown in the illustration.

2. Only ground the cable shield on the sensor side.

pH-Reiner Pfaudler electrode with PML (symmetrical) with VARIOPIN cable

1.



A0057228

Connect the sensor as shown in the illustration.

2. Only ground the cable shield on the sensor side.

6.3 Ensuring the degree of protection

Only the mechanical and electrical connections which are described in these instructions, and which are necessary for the required intended use, may be established on the device delivered.

► Exercise care when carrying out the work.

Individual types of protection permitted for this product (impermeability (IP), electrical safety, EMC interference immunity, explosion protection) can no longer be guaranteed if, for example:

- Covers are left off
- Different power units to the ones permitted are used
- Cable glands are not tightened sufficiently
- Unsuitable cable diameters are used for the cable glands
- The housing cover is not properly secured (risk of moisture entering due to inadequate sealing)
- Cables/cable ends are loose or insufficiently tightened
- Cable shields not grounded using grounding clamp in accordance with the instructions
- Grounding is not ensured by connection for potential equalization

6.4 Post-connection check

⚠ WARNING

Connection errors

The safety of people and of the measuring point is under threat. The manufacturer does not accept any responsibility for errors that result from failure to comply with the instructions in this manual.

► Put the device into operation only if you can answer **yes** to **all** the following questions.

- Are the device and cable undamaged (visual inspection)?
- Do the cables have adequate strain relief?
- Are the cables routed without loops and cross-overs?
- Does the supply voltage match the information on the nameplate?
- No reverse polarity?
- Correct terminal assignment?

7 Operation options

7.1 Overview of operation options

Operation and settings via:

- Operating elements on the device
- SmartBlue app (does not support the full range of functions)
- PLC control station (via HART)

7.2 Access to operating menu via on-site display

7.2.1 User management

The on-site display menu offers user management functions. There are 2 roles in user management:
- Operator
- Maintenance

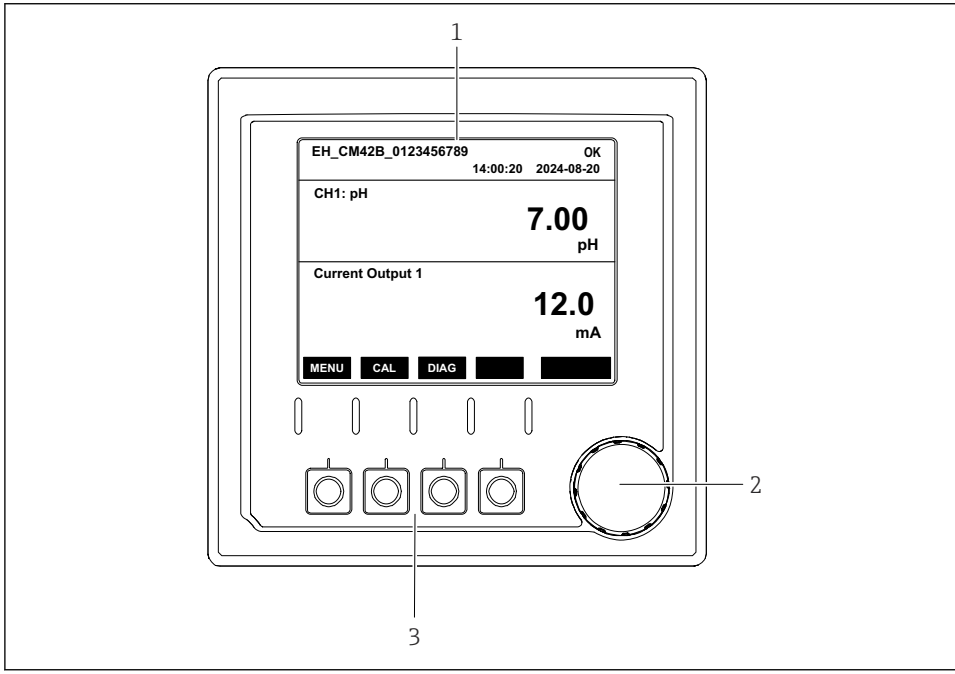
Both roles can be protected via a PIN as an option. Only one PIN can be set for the Operator role if a PIN is also set for the Maintenance role.

Each role can change its own PIN.

It is recommended to set the PINs after initial commissioning.

If PINs are set, the two roles appear first when the menu is called up. To access other menu items, login is required with a role.

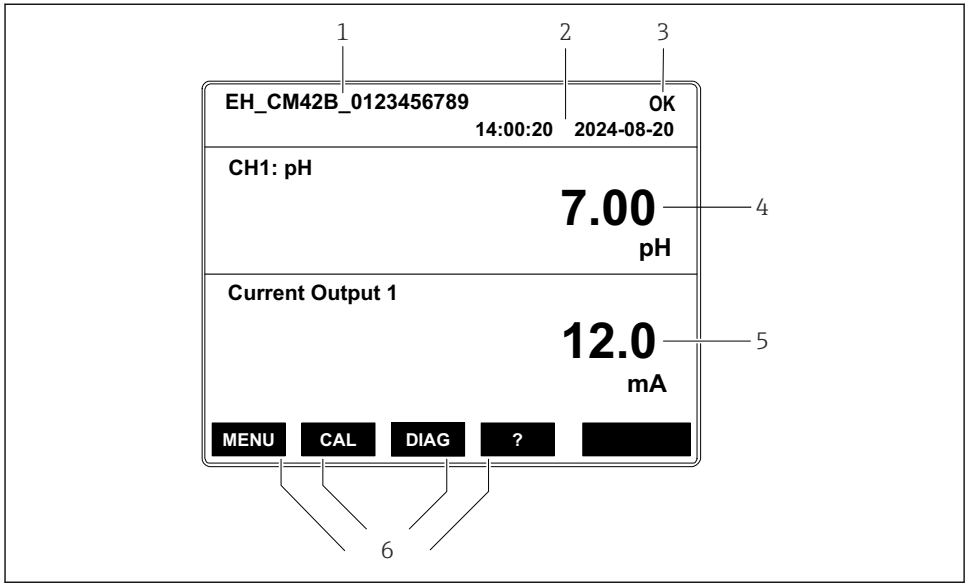
7.2.2 Operating elements



42 Operating elements

1 Display
2 Navigator
3 Soft keys

7.2.3 Structure of the display

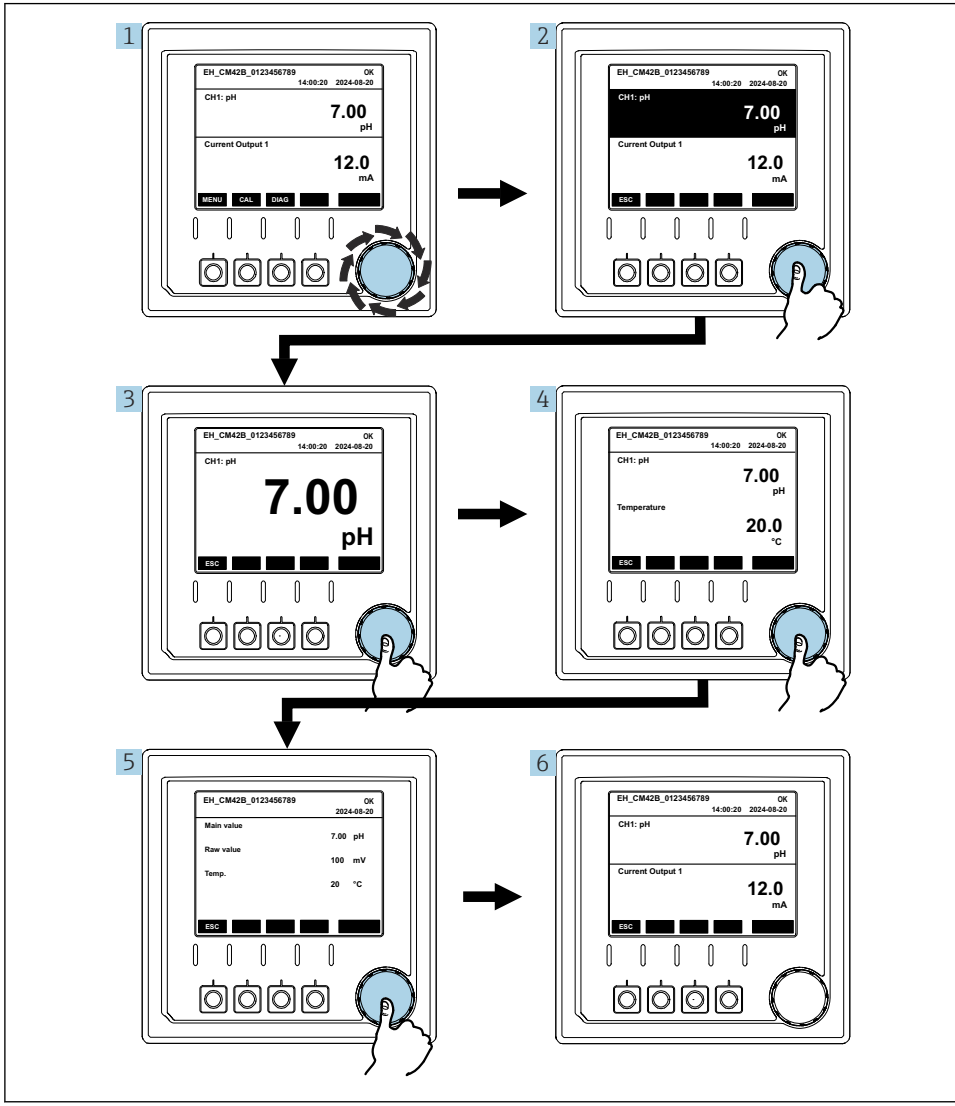


43 *Structure of the display: Start screen (device with one current output)*

1 *Device name or menu path*
2 *Date and time*
3 *Status symbols*
4 *Primary value display*
5 *Display of current output value (depending on the order, the device has 1 or 2 current outputs, the illustration shows a device with one current output)*
6 *Assignment of the soft keys*

7.2.4 Navigating through the display

Measured values



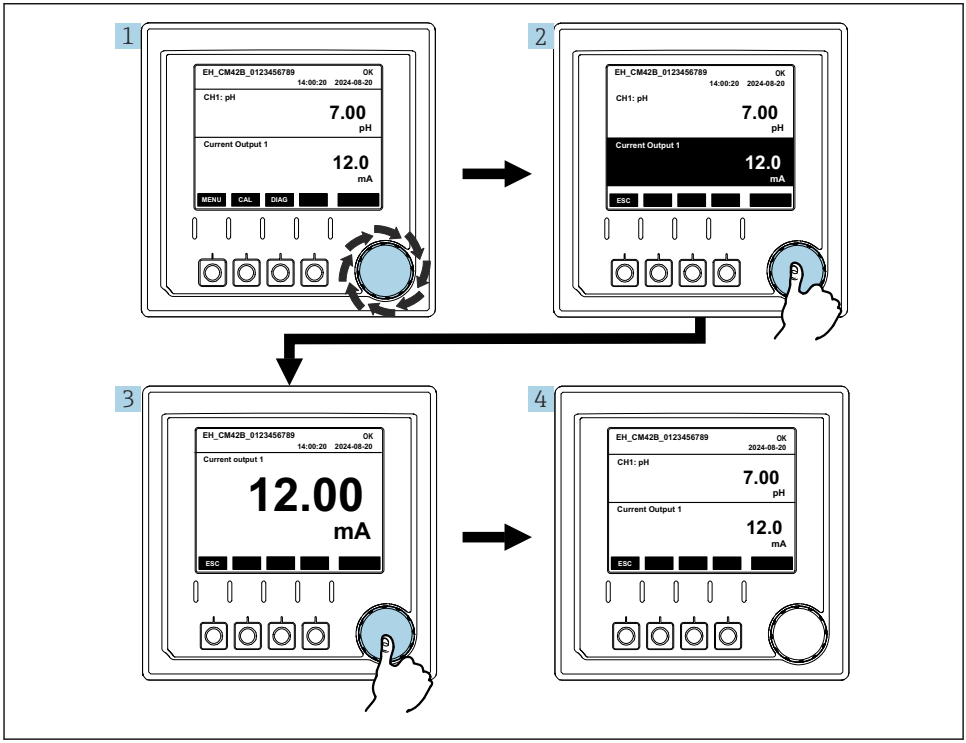
A0056209

44 *Navigating through measured values*

1. Press the navigator, or turn the navigator and continue turning.
   ↳ Measured value is selected (inverted display).

2. Press the navigator.
   ↳ The display shows the primary value.
3. Press the navigator.
   ↳ The display shows the primary value and temperature.
4. Press the navigator.
   ↳ The display shows the primary value, temperature and secondary measured values.
5. Press the navigator.
   ↳ The display shows the primary value and current outputs.

Current output

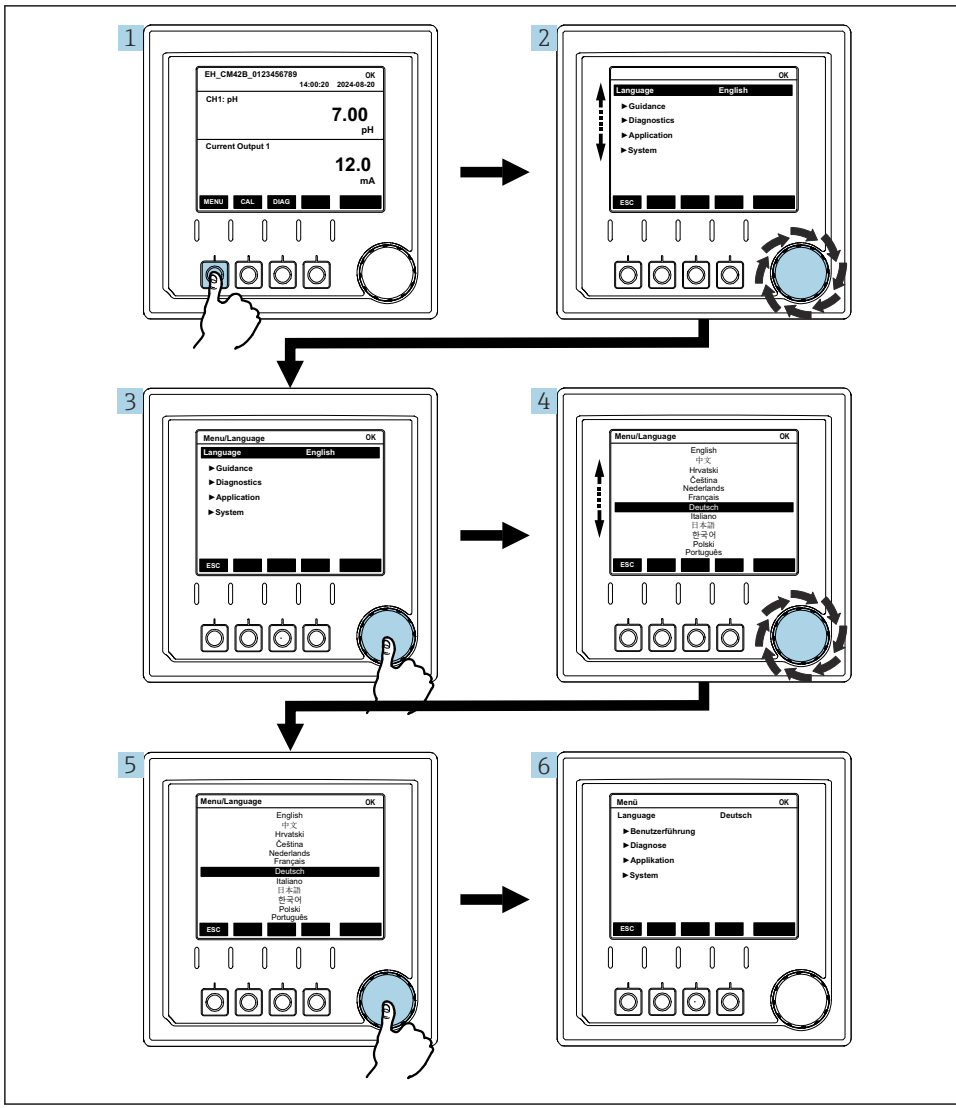


45 *Navigation, displaying a current output*

1. Press the navigator, or turn the navigator and continue turning.
   ↳ Current output is selected (black background).
2. Press the navigator.
   ↳ The display shows the current output details.

3. Press the navigator.
   ↳ The display shows the primary value and current outputs.

7.2.5 Operation concept menus



A0056305

The options available in the menu depend on the specific user authorization.

1. Press the soft key.
   ↳ The menu is called up.
2. Turn the navigator.
   ↳ The menu item is selected.
3. Press the navigator.
   ↳ The function is called up.
4. Turn the navigator.
   ↳ The value is selected (e.g. from a list).
5. Press the navigator.
   ↳ The setting is adopted.

7.3 Access to the operating menu via the operating tool

7.3.1 Access to the operating menu via the SmartBlue app

The SmartBlue App is available for download from the Google Play Store for Android devices and from the Apple App Store for iOS devices.

System requirements
- Mobile device with Bluetooth® 4.0 or higher
- Internet access

Download the SmartBlue app:

▶

A0033202

Download the SmartBlue app via QR code.

Connect the device to the SmartBlue app:

1. Bluetooth is enabled on the mobile device.
   Activate Bluetooth on the device: **Menu/System/Connectvity/Bluetooth/Bluetooth module**

2.

A0029747

Launch the SmartBlue app on the mobile device.

↳ The live list displays all of the devices that are within range.

3. Tap the device to select it.

4. Log in with username and password.

Initial access data:
- Username: admin
- Default password: Serial number of the device

If the mainboard of the device is replaced, the default password of the admin account may change.

This is the case if a generic kit that was not ordered for the serial number of the device was used when replacing the mainboard.

In this case, the module serial number of the mainboard is the default password.

7.3.2 Smartblue app accounts

The SmartBlue app is protected against unauthorized access by means of password-protected accounts. The authentication options of the mobile device can be used to log into the accounts.

The following accounts are available:
- operator
- maintenance
- admin

7.3.3 Functions via the Smartblue app

The SmartBlue app supports the following functions:
- Firmware update
- User management
- Export of information for the service

8 System integration

8.1 Integrating the measuring instrument into the system

Interfaces for measured value transmission (depending on order):
- 4 to 20 mA current output (passive)
- HART

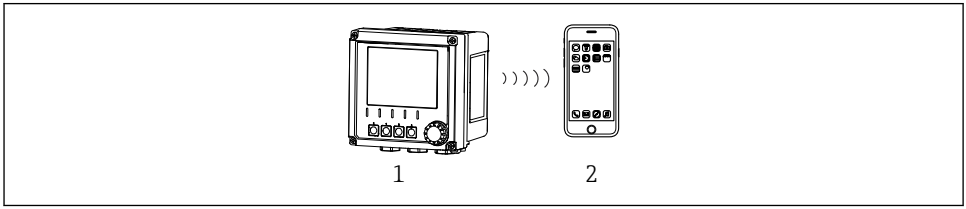
8.1.1 Current output

Depending on the order, the device has 1 or 2 current outputs.

- Signal range 4 to 20 mA (passive)
- The assignment of a process value to a current value is configurable within the signal range.
- Failure current can be configured from list.

8.1.2 Bluetooth® LE wireless technology

With the Bluetooth® LE wireless technology (energy-efficient wireless transmission) option that can be ordered, the device can be controlled via mobile devices.

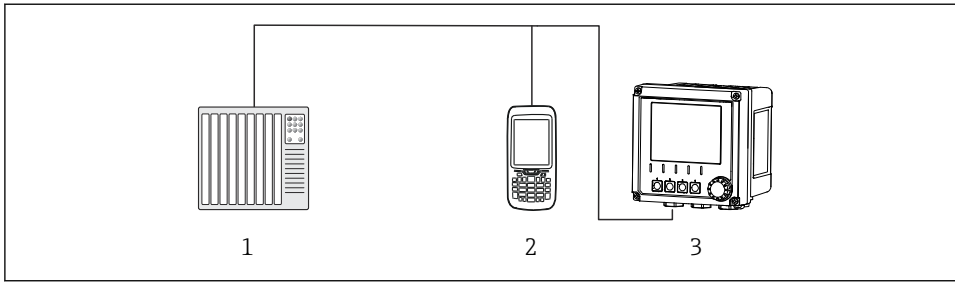


46 Options for remote operation via Bluetooth® LE wireless technology

1 Transmitter with Bluetooth® LE wireless technology
2 Smartphone / tablet with SmartBlue (app)

8.1.3 HART

HART operation is possible via the different hosts.



47 *Wiring options for remote operation via HART protocol*

1 PLC (programmable logic controller)
2 HART operating unit (e.g. SFX350), optional
3 Transmitter

The device can communicate via the HART protocol using current output 1 (depending on order).

Follow the steps below to integrate the device into the system for this purpose:

1. Connect the HART modem or HART handheld terminal to current output 1 (communication load 250 - 500 Ohm).
2. Establish a connection via the HART device.
3. Operate the transmitter via the HART device. To do so, follow the HART device Operating Instructions.

More detailed information on HART communication is provided on the product pages on the Internet (→ BA00486C).

9 Commissioning

9.1 Preliminaries

- Connect the device.
  - The device starts and displays the measured value.

Bluetooth® must be enabled on the mobile device for operation via the SmartBlue app.

9.2 Post-installation and function check

WARNING

Incorrect connection, incorrect supply voltage
Safety risks for staff and device malfunctions!
- Check that all connections have been established correctly in accordance with the wiring diagram.
- Ensure that the supply voltage matches the voltage indicated on the nameplate.

9.3 Time and date

▶ Configure the time and date under the following path: **Menu/System/Date and Time**

When using the Smartblue app, the date and time can also be automatically transferred from the mobile device.

9.4 Configuring the operating language

▶ Configure the operating language under the following path: **Menu/Language**.

10 Maintenance

10.1 Cleaning

10.1.1 Transmitter

▶ Clean the front of the housing using commercially available cleaning agents only.

The front is resistant to:
- Ethanol (for a short time)
- Diluted acids (max. 2% HCl)
- Diluted bases (max. 3% NaOH)
- Soap-based household cleaning agents

NOTICE

Cleaning agents not permitted

Damage to the housing surface or housing seal
- ▶ Never use concentrated mineral acids or alkaline solutions for cleaning.
- ▶ Never use organic cleaners such as acetone, benzyl alcohol, methanol, methylene chloride, xylene or concentrated glycerol cleaner.
- ▶ Never use high-pressure steam for cleaning.

10.2 Replacing the battery

Battery type: 3V button cell, xR2032

Only replace the battery when the device is in a de-energized state.

In the case of devices in hazardous areas, only use the batteries that are specified in the relevant XA documentation.

1. Disconnect all cables
   ↳ to de-energize the device.
2. Remove the plug-in module. To do this, press the locking clips on the sides together.
3. Replace the battery at the bottom of the plug-in module.
4. Insert the plug-in module again until the clips on the side click into place.

5. Connect the cables.

Dispose of batteries correctly

▶ Always dispose of batteries in accordance with local regulations on battery disposal.

11 Technical data

Voltage input	Nom. 24 V DC Min. 17 V DC Max. 30V DC ELV
Current	4 – 20 mA loop Max. 23 mA
Degree of protection	IP66/IP67 (IEC 60529)
Macro environment	Pollution degree 4
Micro environment	Pollution degree 2
Weight	Plastic housing: 1.5 kg (3.3 lbs) Stainless steel housing: 4 kg (8.8 lbs)
Dimensions	147 mm x 155 mm 146 mm (5.79 in x 6.1 in x 5.75 in)

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