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Technical Information
Liquiline CM42B

Two-wire transmitter
Field device and device for DIN rail mounting





Measurement with digital or analog sensors

Field 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 onsite display or optionally using a smartphone or other mobile devices via Bluetooth.

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

Benefits

- Comfortable operation and configuration:
  The intuitive operating concept makes commissioning and configuration on-site easy and fast. Bluetooth connection and the SmartBlue app provide an overview of the measuring point on your smartphone or tablet.
- Unique security:
  The Bluetooth connection features a unique security concept that prevents intrusion and enables sophisticated role management of the operating staff. You profit from external and internal security.
- Suitable for all process environments:
  The transmitter is available as stainless steel, plastic or DIN-rail version. Simply select the suitable version to integrate it into a skid, use it in hygienic environments or apply it in hazardous areas.
- Increased process safety and uptime:
  Memosens technology provides you with reliable, digital data transmission and high availability of measured values. Plug & play of pre-calibrated sensors reduces process downtime for calibration.
- Seamless system integration:
  Liquiline CM42B offers HCF-certified HART communication which makes integration into your process control system easy and secure.

Endress+Hauser
People for Process Automation

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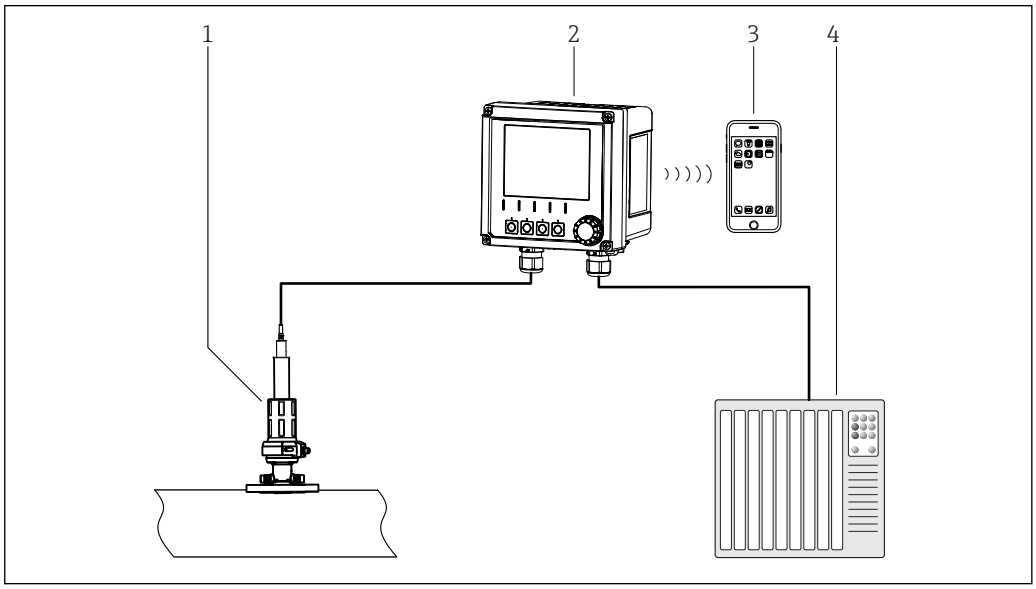
Accessories 42

Function and system design

Measuring system

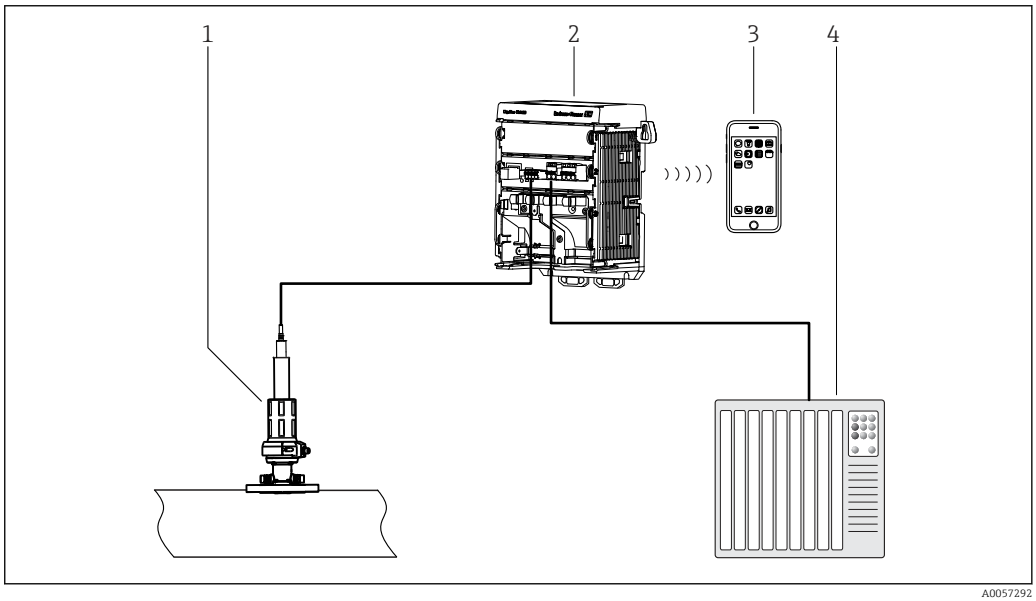
The overview shows examples of measuring systems. Additional sensors and assemblies are available for your application-specific conditions.

A complete measuring system comprises the following components:
- Liquiline CM42B transmitter
- Sensor
- Assemblies suitable for the sensor used
- Measuring cable



1 *Example of a measuring system with Liquiline CM42B field device*

1 *Measuring point with sensor and assembly*
2 *Liquiline CM42B*
3 *Mobile device with SmartBlue app, connection via Bluetooth LE (optional)*
4 *PLC (programmable logic controller)*



2 *Example of a measuring system with Liquiline CM42B for DIN rail mounting*

1 *Measuring point with sensor and assembly*
2 *Liquiline CM42B*
3 *Mobile device with SmartBlue app, connection via Bluetooth LE (optional)*
4 *PLC (programmable logic controller)*

Sensor connection

Sensors with Memosens protocol

Sensor types	Sensors
Digital sensors with inductive Memosens plug-in head or sensors with fixed cable and the support of the Memosens protocol If not otherwise ordered, the device is factory-configured for pH/ORP sensors. A different measuring parameter can be factory-configured via the “Device type” ordering option. The measurement parameter can be changed via the Device menu.	▪ pH sensors ▪ ORP sensors ▪ pH/ORP combined sensors ▪ Oxygen sensors, amperometric ▪ Oxygen sensors, optic ▪ Conductivity sensors, inductive ▪ Conductivity sensors, conductive

Analog sensors (only field device)

Sensor types	Sensors
The measuring parameter depends on the order. Upgrading to Memosens is possible via accessories.	▪ pH sensors ▪ ORP sensors ▪ pH/ORP combined sensors ▪ Conductivity sensors, inductive ▪ Conductivity sensors, conductive

Communication and data processing

Types of communication:
- Current output 1: 4 to 20 mA, passive, optional HART
- Current output 2 (optional): 4 to 20 mA, passive
- Bluetooth® LE wireless technology (optional)

Reliability

Reliable function

Memosens
Memosens makes your measuring point safer and more reliable:
- Non-contact, digital signal transmission enables optimum galvanic isolation
- No contact corrosion
- Completely watertight
- Sensor can be calibrated in a lab, thus increasing the availability of the measuring point in the process
- Intrinsically safe electronics mean operation in hazardous areas is not a problem.
- Predictive maintenance thanks to recording of sensor data, e.g.:
  - Total hours of operation
  - Hours of operation with very high or very low measured values
  - Hours of operation at high temperatures
  - Number of steam sterilizations
  - Sensor condition

Safety

Secure signal transmission via Bluetooth® LE

Signal transmission via Bluetooth® wireless technology uses a cryptographic technique tested by the Fraunhofer Institute.

Security levels for Endress and Hauser Bluetooth infrastructure – [1]:
- Protocol: **High**
- Algorithms: **High**

Measured against:
- The security objectives, e.g. confidentiality, integrity, availability, etc.
- The risk analysis, e.g. key distribution, authentication, password recovery, etc.
- The attack model, e.g. motivation for attack, time required, expertise in electronics, etc.
- The weak-point analysis

For comparison: The general Bluetooth standard is classified as "Low".

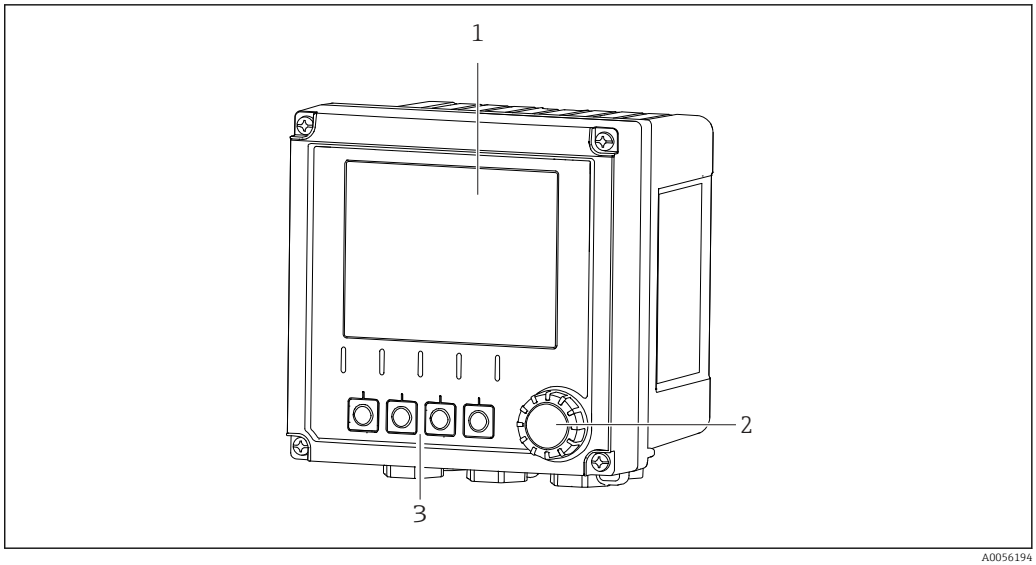
1) Multi-level scale for security assessments in accordance with Fraunhofer AISEC cryptographic technique: "Very low", "Low", "High", "Very high"

Protection against unauthorized access:
- Password-protected
- Without the SmartBlue app, the device is not visible via Bluetooth® wireless technology.
- Only one point-to-point connection is established between a sensor and a smartphone or tablet.
- The Bluetooth® wireless technology interface can be disabled via the onsite user interface.
- Bluetooth® is optional. The device can be ordered with this functionality enabled.
  If ordered with Bluetooth® disabled, Bluetooth® can be enabled at a later stage by means of an activation code (accessory kit) linked to the serial number.

Device architecture

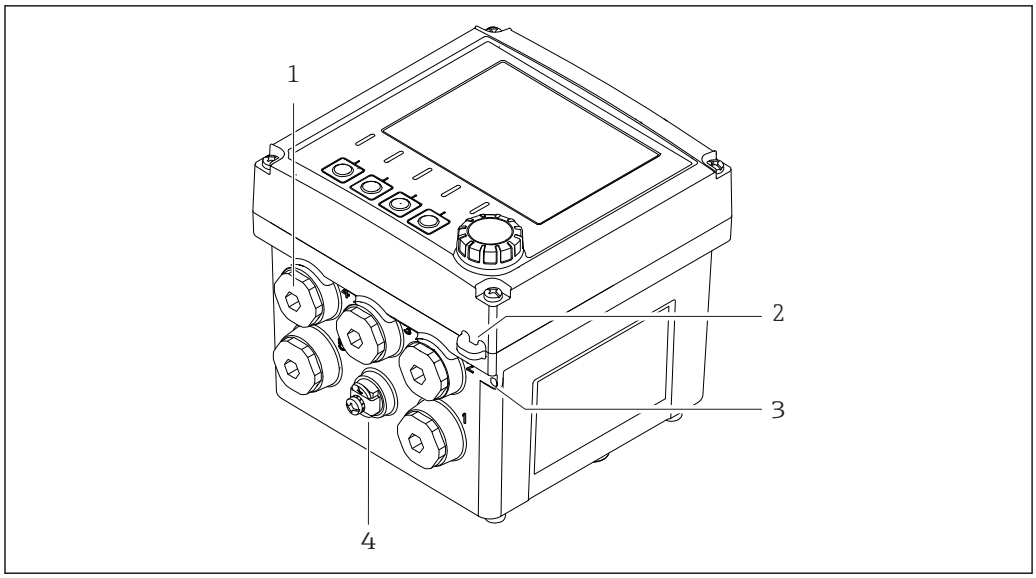
Field device

Housing closed



3 Exterior view

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

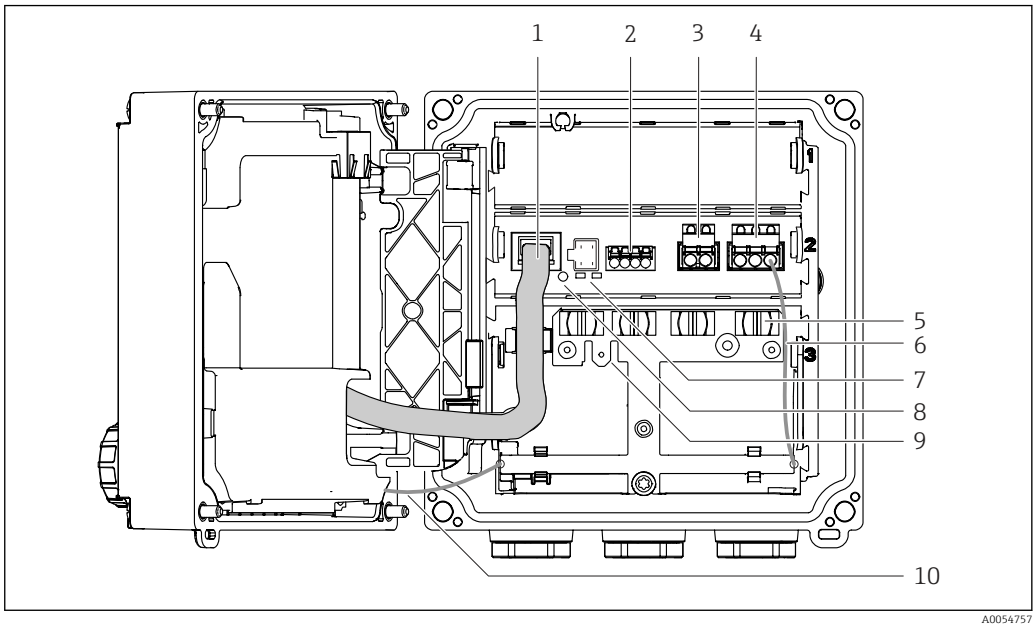


4 Exterior view

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

Housing open

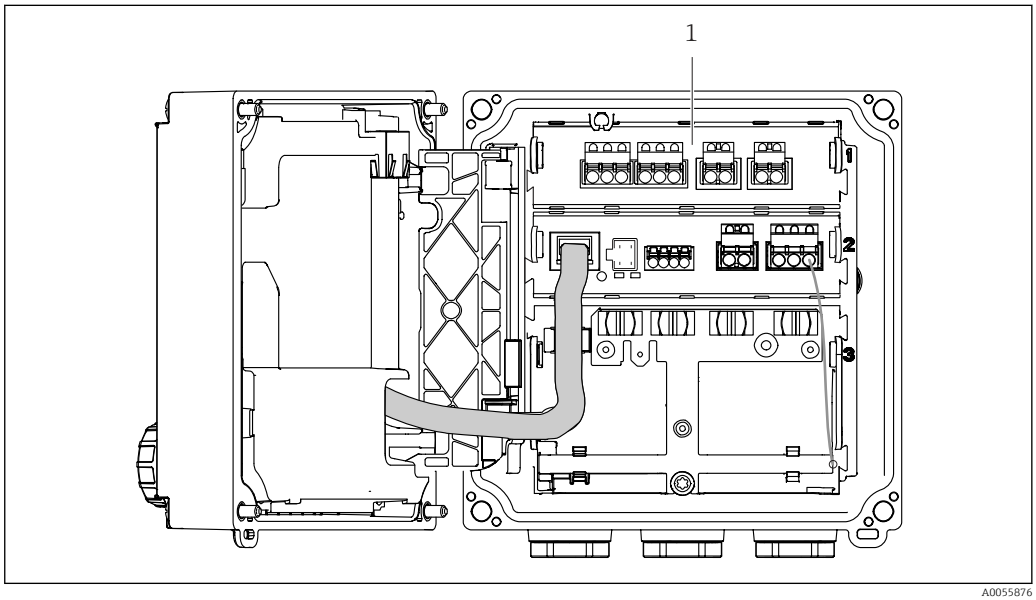
Version for MEMOSENS sensors



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 grounding connection for blade receptacle 6.35 mm x 0.8 mm (0.25 in x 0.032 in), usage optional
10 Internal ground cable for display (only for devices with a stainless steel housing), wired at the factory

The status LEDs are only active if the display is not connected.

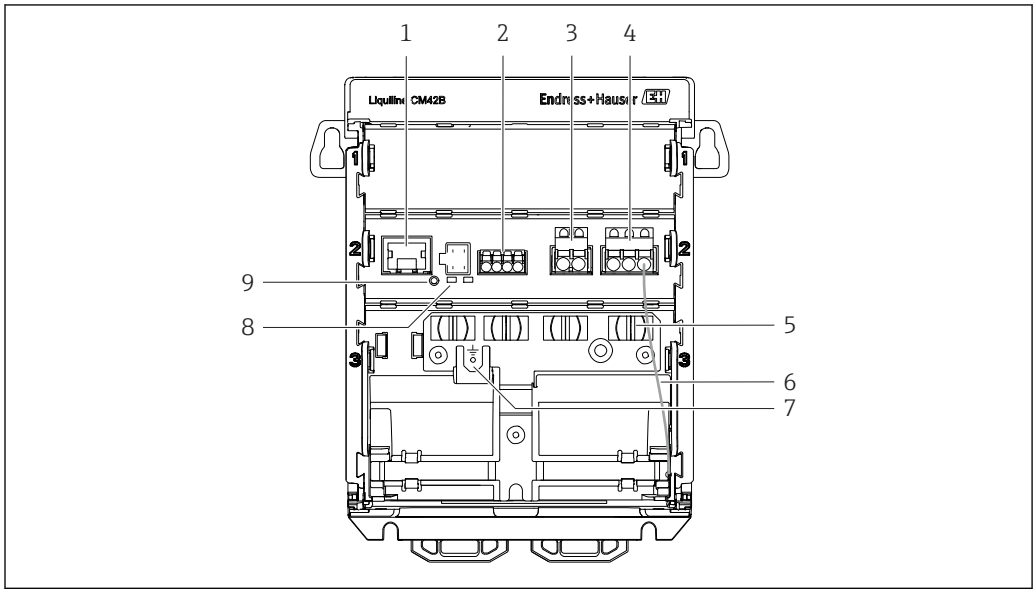
Version for analog sensors (pH/ORP, inductive/conductive conductivity)



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

Device for DIN rail mounting

Device

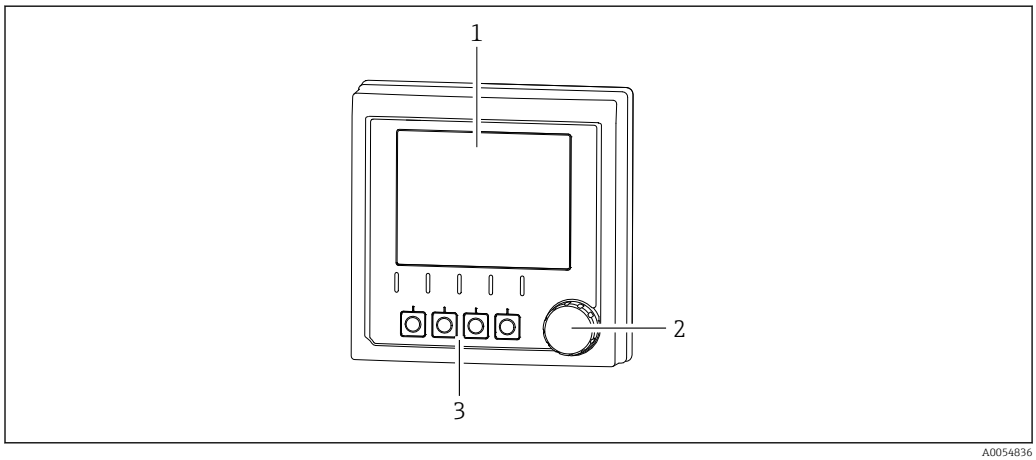


1 RJ50 socket for display cable
2 Memosens input
3 Current output 1: 4 to 20 mA/optional HART, passive
4 Current output 2 (optional): 4 to 20 mA, passive
5 Cable mounting rail
6 Internal ground cable (wired at the factory)
7 Connection for potential equalization or functional earth, connection established via cable lug 6.35 mm
8 Status LEDs
9 Reset button

The status LEDs are only active if no external display is connected.

An external display with operating elements is available as an additional ordering option.

Display (optional)



5 External display (optional)

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

Input

Measured variable

- pH
- ORP
- pH/ORP
- Conductivity
- Dissolved oxygen

Unless otherwise ordered, the device is factory-configured for the connection of pH/ORP sensors. A different measuring parameter can be preconfigured via the “Device type” ordering option. The measuring parameter can be changed at any time.

Measuring range

→ Documentation of the connected sensor

Type of input

Depending on the ordered variant, the device has one of the following types of input:
- Digital sensor input for Memosens sensors
- Sensor input for analog sensors (only field device)
  - pH/ORP
  - Conductivity, inductive
  - Conductivity, conductive

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 input

Cable specifications

- Memosens data cable or fixed sensor cable, in each case with ferrules
- Cable length max. 100 m (330 ft)

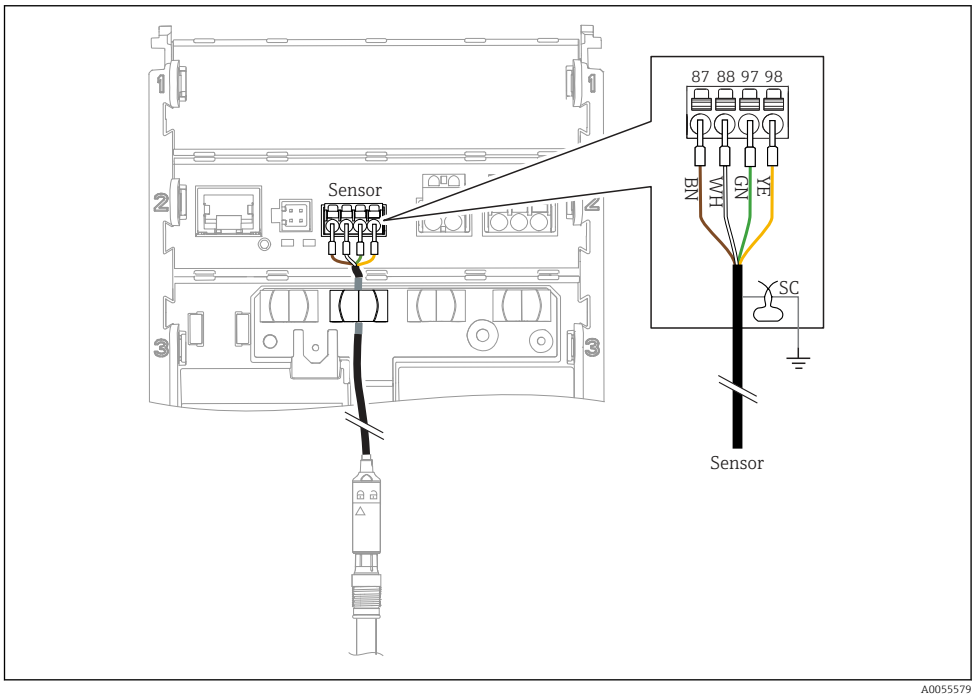
Ex specifications

Max. output voltage U_o	5 V
Max. output current I_o	100 mA
Max. output power P_o	120 mW
Max. internal inductance L_i	Negligible
Max. internal capacitance C_i	15.6 µF
Max. external inductance L_o	3.5 mH
Max. external capacitance C_o	100 µF

Connecting Memosens sensors

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

1.



6 *Connecting Memosens sensors*

Connect the sensor cable as shown in the illustration.

2. Ground the cable shield via the ground terminal.

Analog input of conductivity, measured inductively (only field device)

Cable specifications

- Cable length max. 55 m (180 ft)
- For cable types, see the documentation of the connected sensor

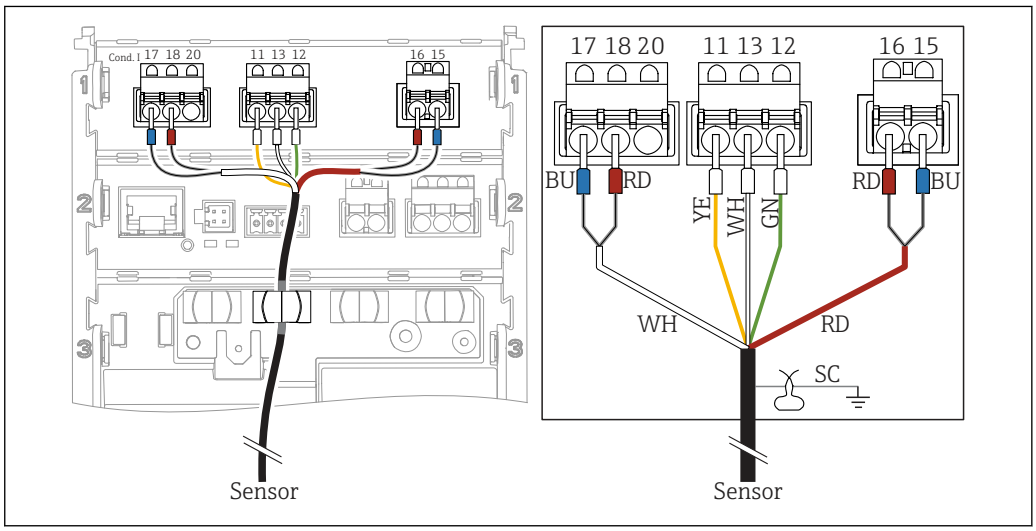
Temperature sensors

- Pt100
- Pt1000

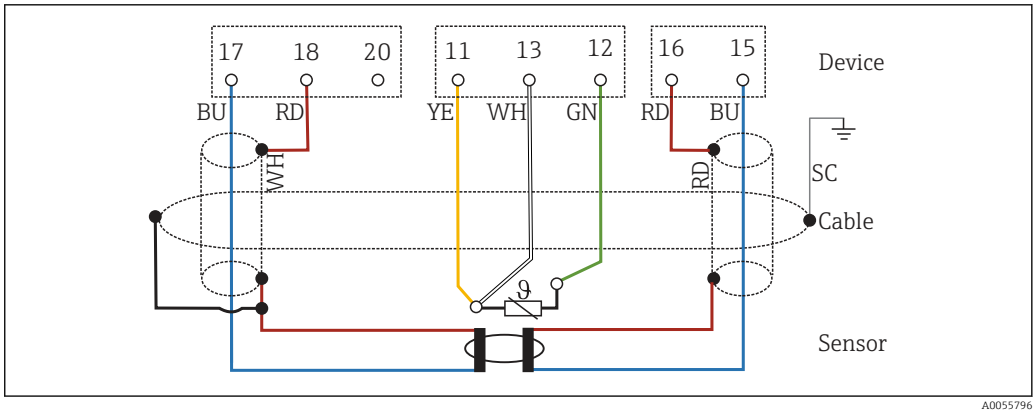
Ex specifications

Max. output voltage U_o	7.6 V
Max. output current I_o	95 mA
Max. output power P_o	100 mW
Max. internal inductance L_i	Negligible
Max. external inductance L_o	3.5 mH
Max. internal capacitance C_i	480 nF
Max. external capacitance C_o	10.4 µF

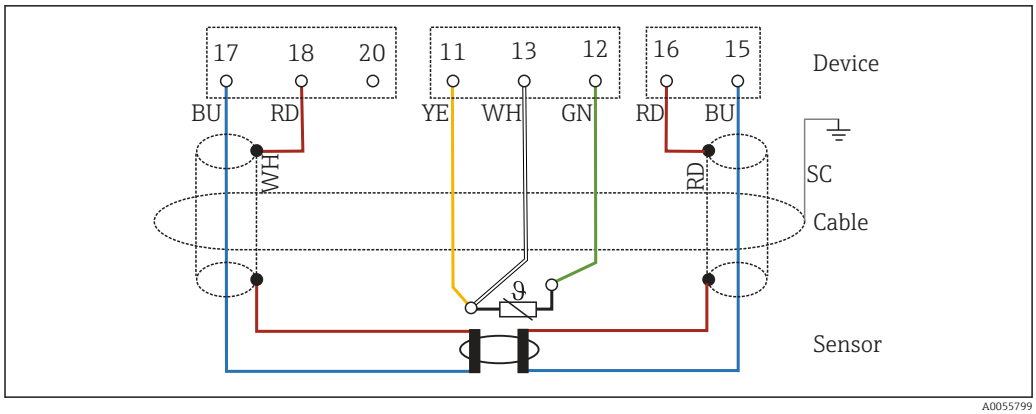
Connecting analog conductivity sensors (inductive)



7 *Device view*



8 *Wiring diagram CLS50*



9 *Wiring diagram CLS54*

1. Connect the sensor as shown in the illustration.
2. Ground the cable shield via the ground terminal.

Analog input of conductivity, measured conductively (only field device)

Cable specifications

- Cable length max. 15 m (49.2 ft)
- For cable types, see the documentation of the connected sensor

Temperature sensors

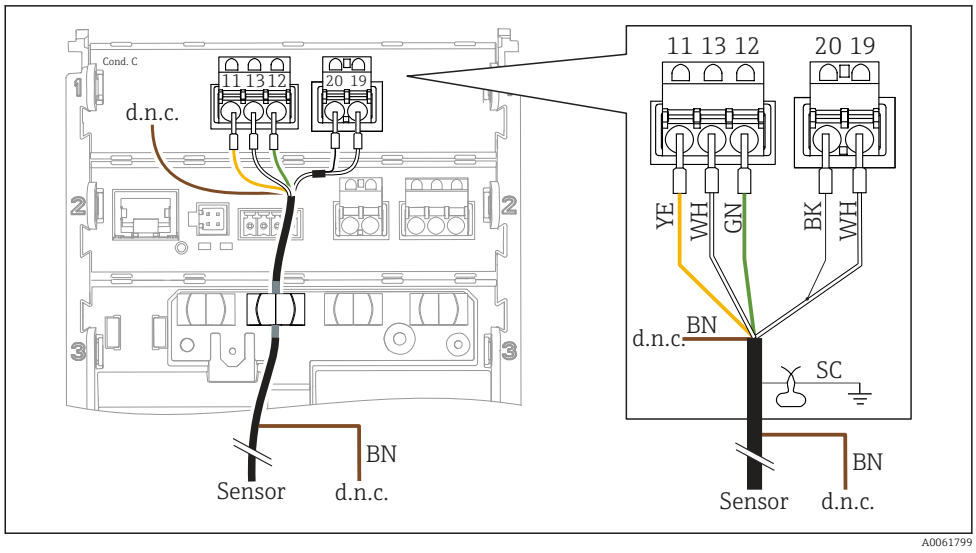
- Pt100
- Pt1000

Ex specifications

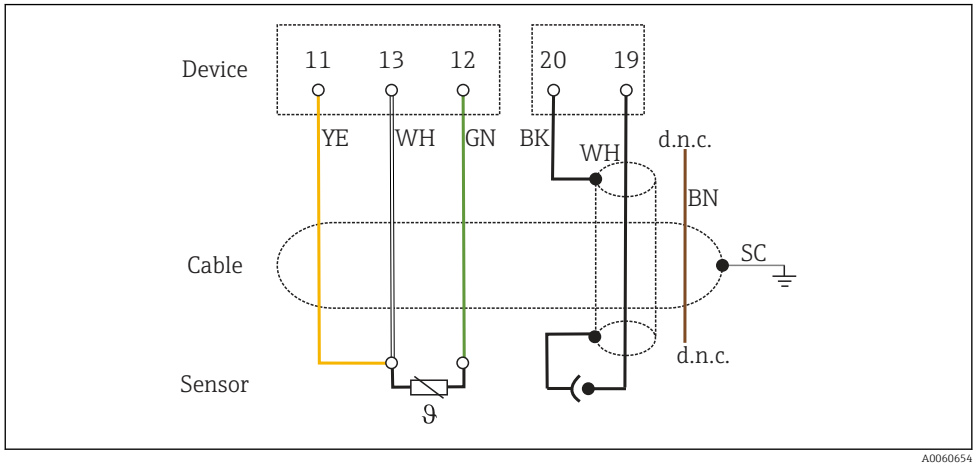
Max. output voltage U_o	8.2 V
Max. output current I_o	30 mA
Max. output power P_o	38 mW
Max. internal inductance L_i	Negligible
Max. external inductance L_o	30 mH
Max. internal capacitance C_i	0 nF
Max. external capacitance C_o	7.6 µF

Connecting analog conductivity sensors (conductive)

1.



10 *Device view*



11 *Wiring diagram*

Connect the sensor as shown in the illustration.

2. Ground the cable shield via the ground terminal.

pH/ORP analog input (only field device)

Cable specifications

Analog pH sensors and analog ORP sensors from Endress+Hauser
- Recommended cable length max. 30 m (98 ft)
- For cable types, see the documentation of the connected sensor

Pfaudler electrodes type 03/04, type 18, type 40, pH Reiner
Cable length max. 10 m

Temperature sensors

- Pt100
- Pt1000

Input impedance

> 10^{12} Ω (at rated operating conditions)

Input leakage current

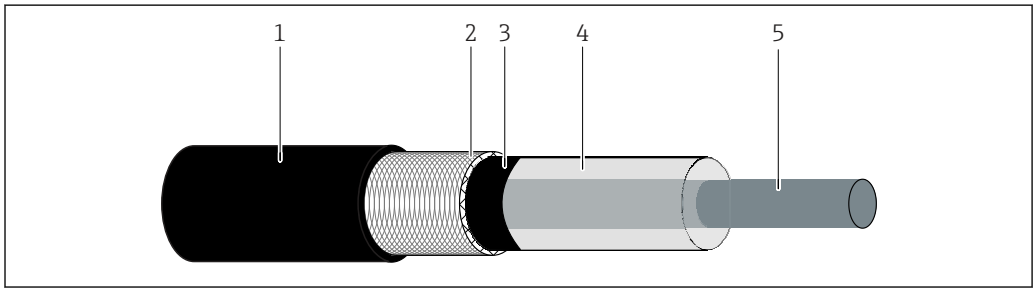
< 10^{-13} A (at rated operating conditions)

Ex specifications

Max. output voltage U_o	5 V
Max. output current I_o	30 mA
Max. output power P_o	37.5 mW
Max. internal inductance L_i	Negligible
Max. external inductance L_o	30 mH
Max. internal capacitance C_i	1 µF
Max. external capacitance C_o	100 µF

Connecting analog pH sensors

Note on connecting coaxial cables



12 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

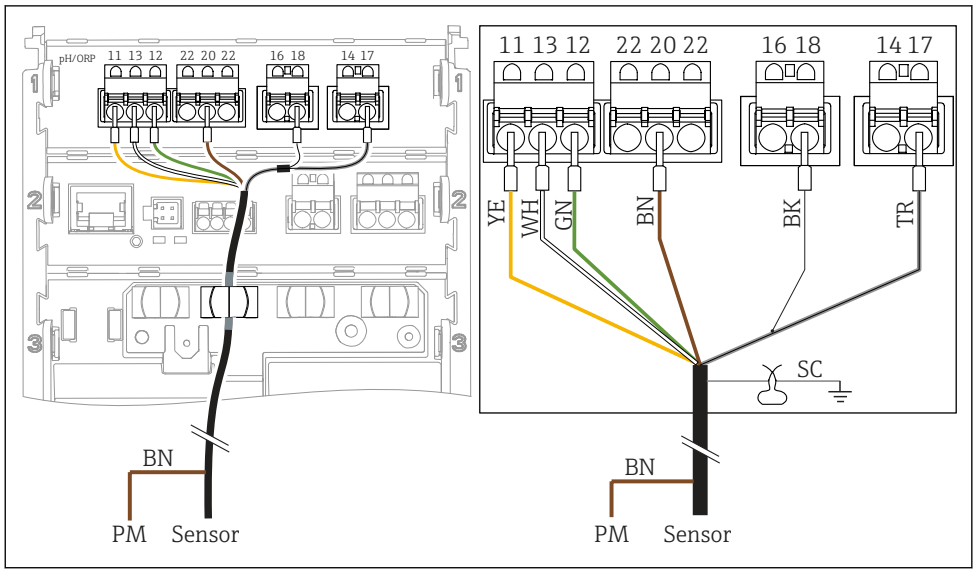
1. Completely remove the semi-conductive polymer layer (3) up to the end of the shield.
2. Ensure that the inner insulation (4) of the coaxial cable is not in contact with other components. Ensure there is an air gap around all components; otherwise, measurement errors may occur.

Unconnected cables

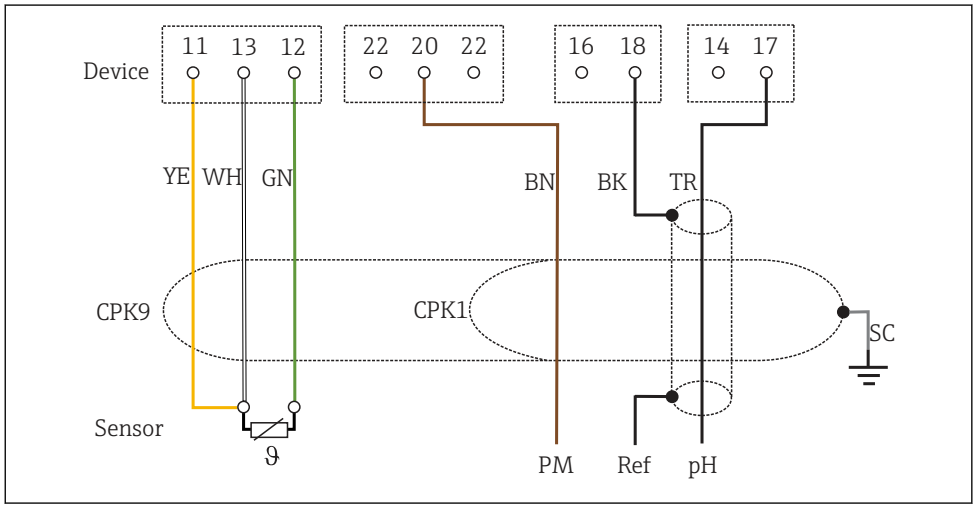
- Route unconnected cables (marked with d.n.c.) in such a way that they are not in contact with other connections.

Connecting pH glass electrodes with PML (symmetrical)

1.



13 *Device view*



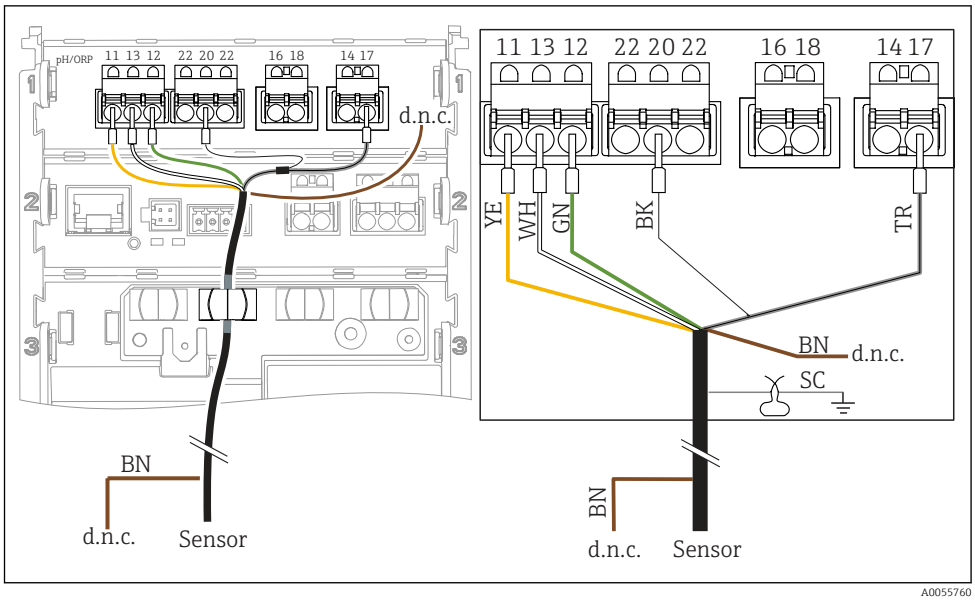
14 *Wiring diagram*

Connect the sensor as shown in the illustration.

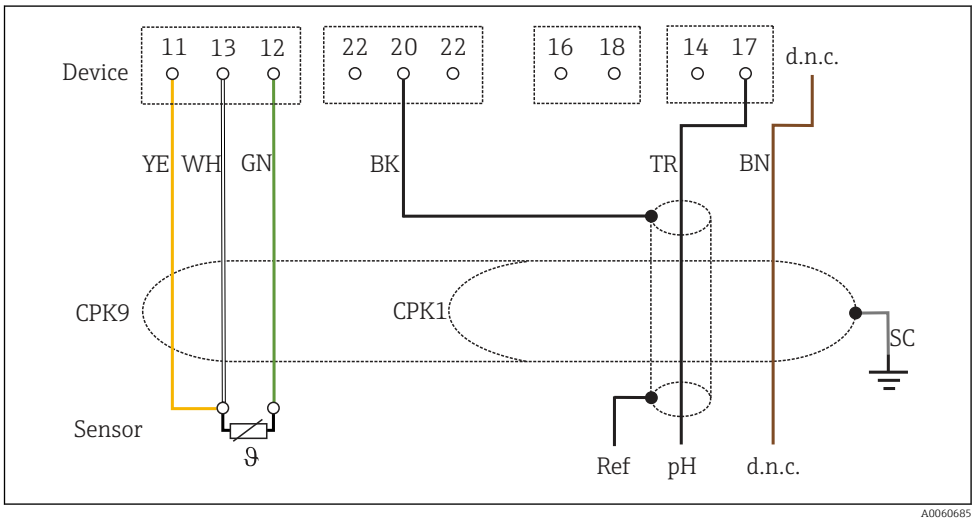
2. Ground the cable shield via the shield clamp.

Connecting glass sensors without PML (asymmetrical)

1.



15 *Device view*

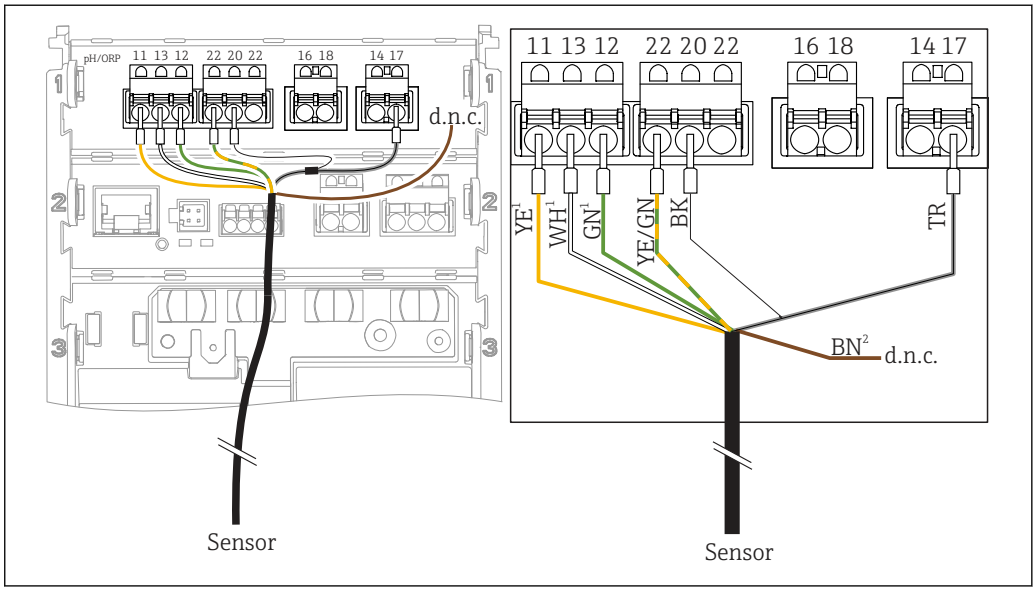


16 *Wiring diagram*

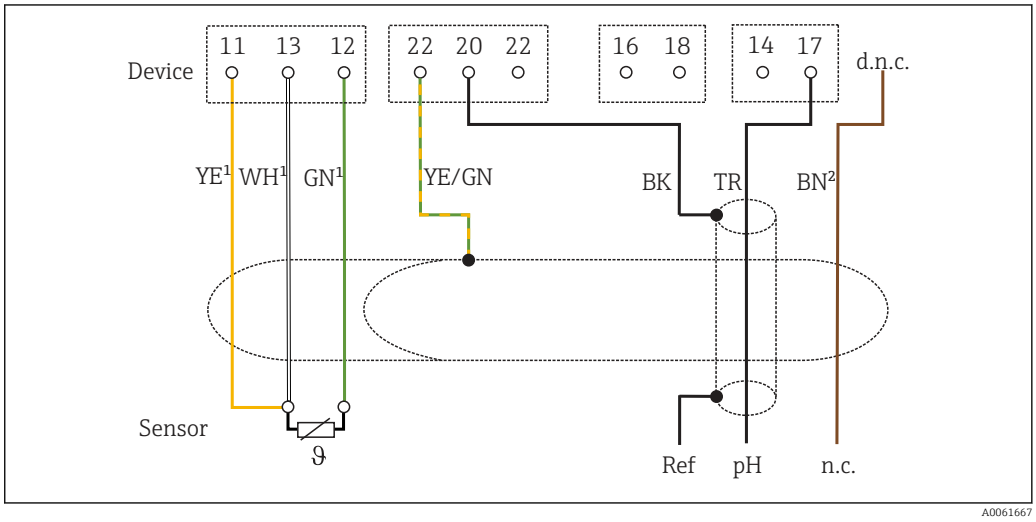
Connect the sensor as shown in the illustration.

2. Ground the cable shield via the shield clamp.

Connecting ORP sensor CPF82 and pH sensor CPF81, without PML (asymmetrical) in each case with a fixed cable



17 *Device view*



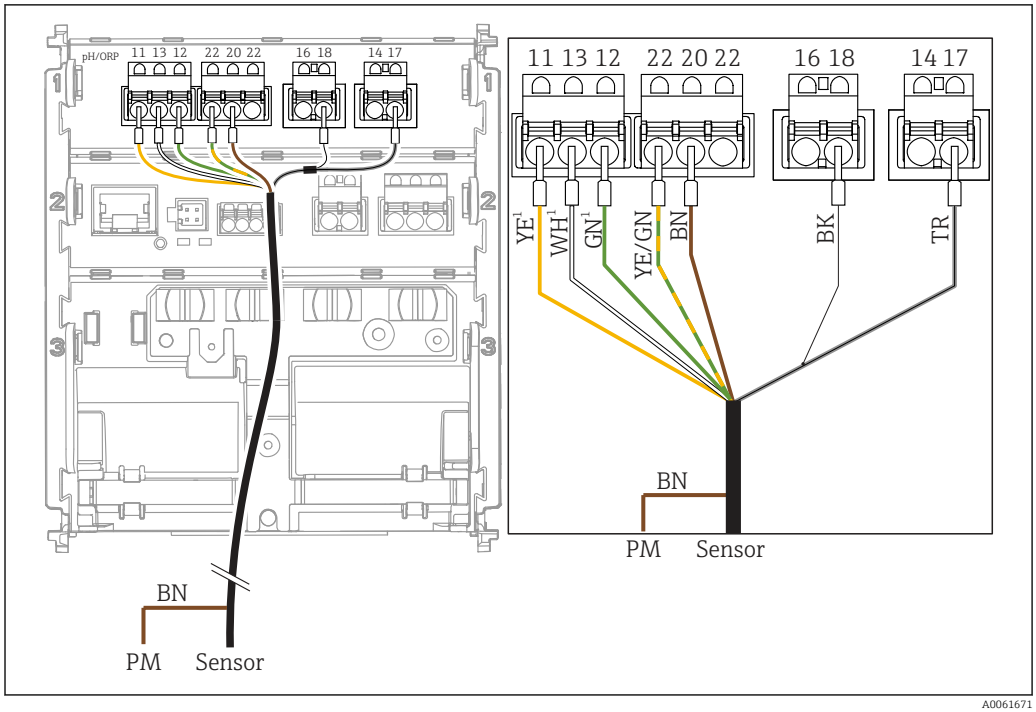
18 *Wiring diagram*

[1]: Only available for version with temperature sensor

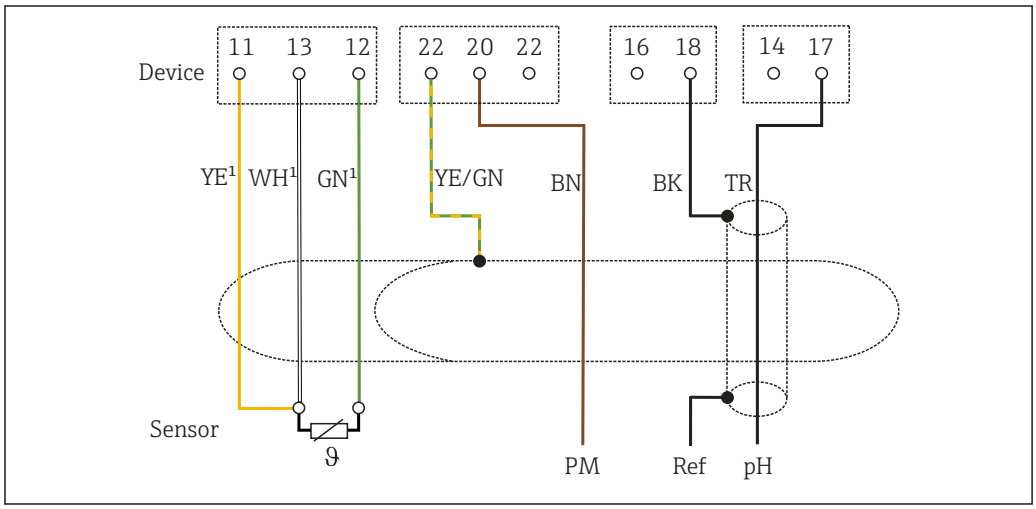
[2]: Not available depending on the version

▶ Connect the sensor as shown in the illustration.

Connecting pH sensor CPF81 with PAL (asymmetrical) with a fixed cable



19 *Device view*



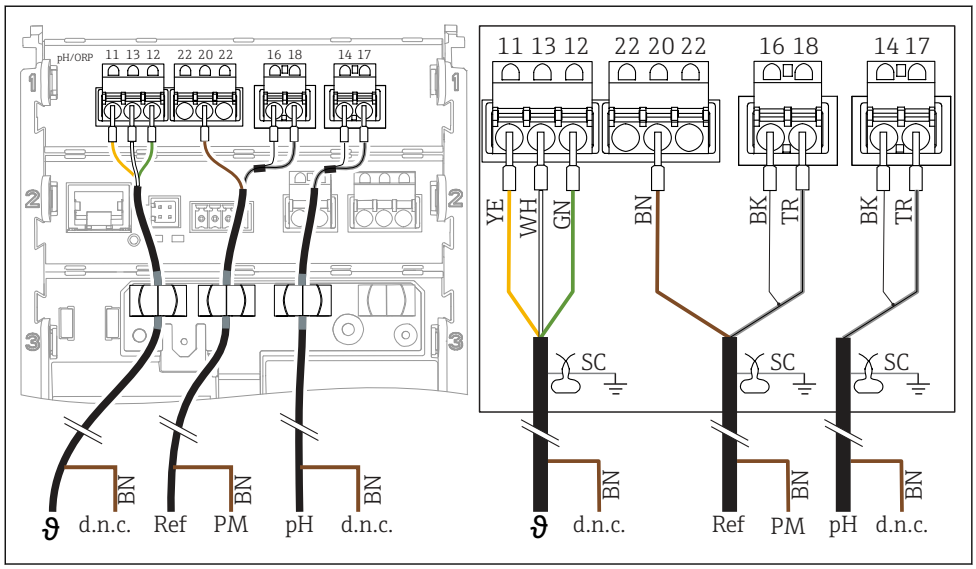
20 *Wiring diagram*

[1]: Only available for version with temperature sensor

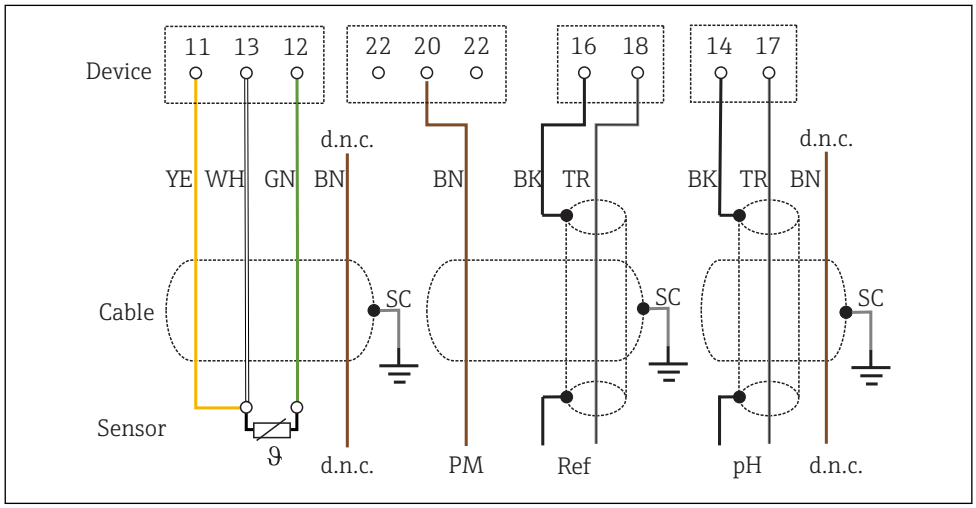
► Connect the sensor as shown in the illustration.

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

1.



21 *Device view*



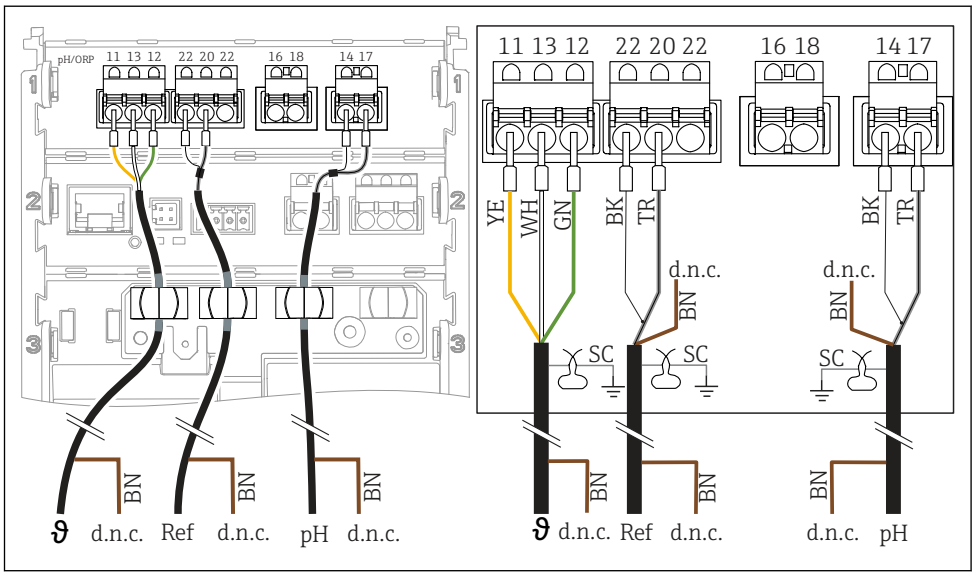
22 *Wiring diagram*

Connect the sensor as shown in the illustration.

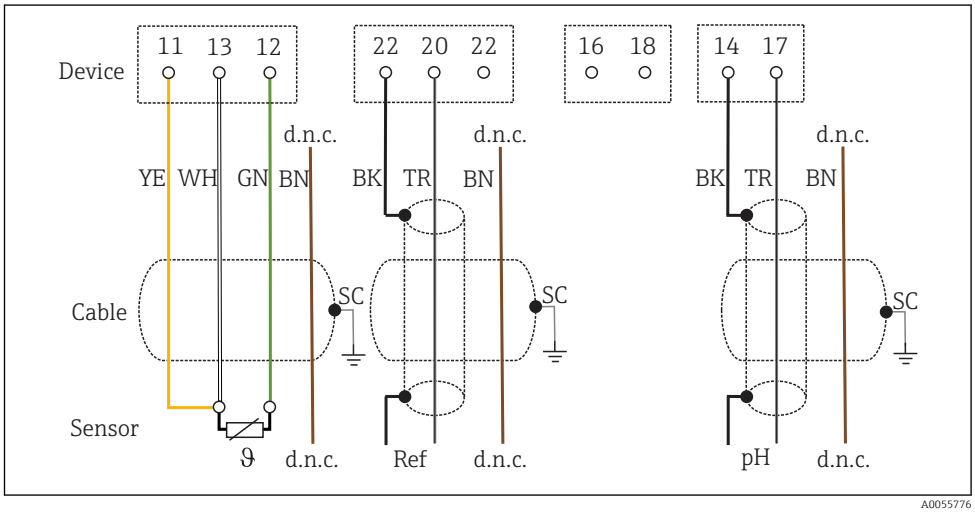
2. Ground cable shields via shield clamps.

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

1.



23 *Device view*



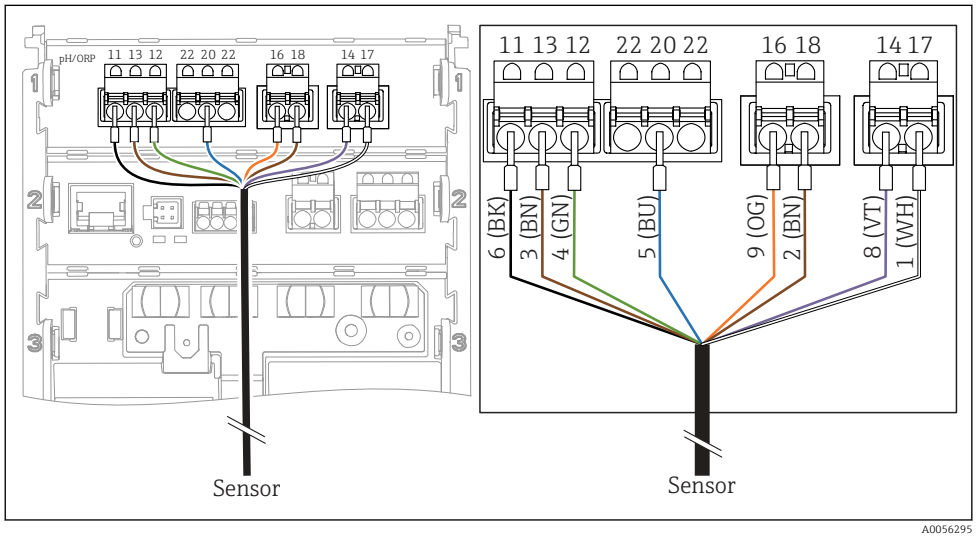
24 *Wiring diagram*

Connect the sensor as shown in the illustration.

2. Ground cable shields via shield clamps.

Connecting pH enamel electrodes

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

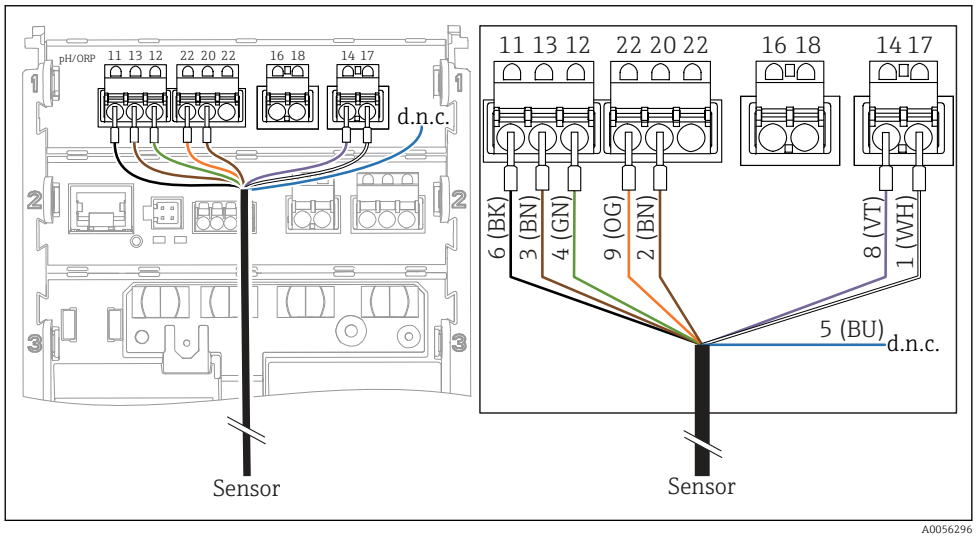
1. 

A0056295

   Connect the sensor as shown in the illustration.

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

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

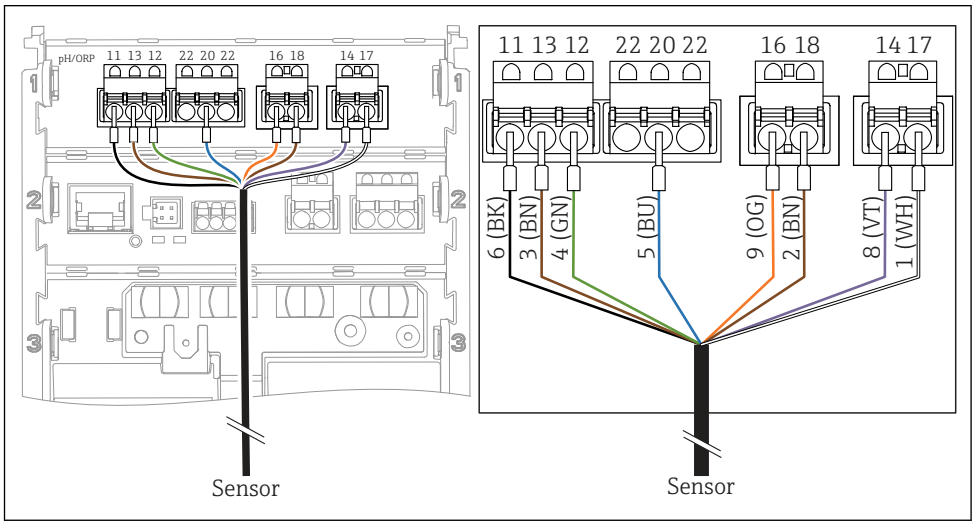
1. 

A0056296

   Connect the sensor as shown in the illustration.

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

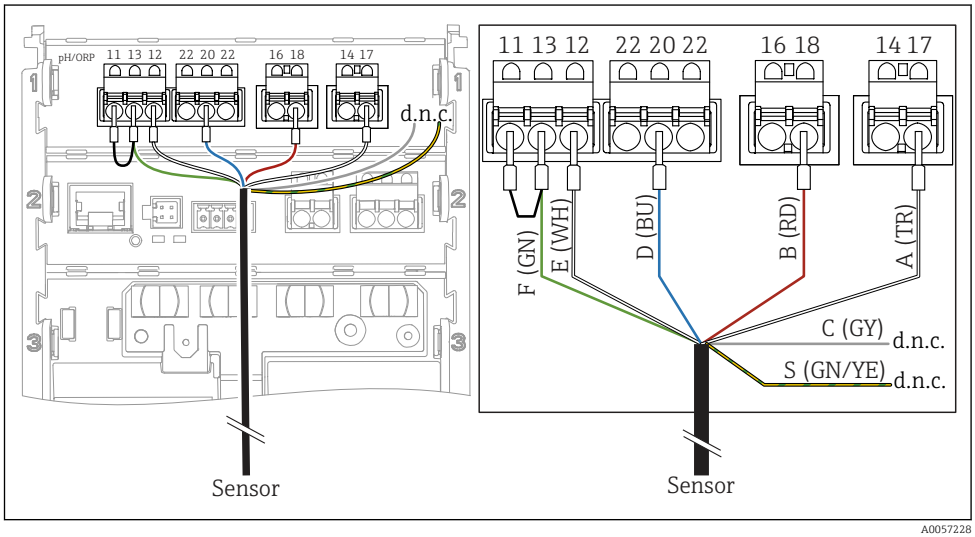
Pfaudler electrode, relative (type 18/type 40) with PML (symmetrical) with LEMOSA cable

1. 

   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. 

   Connect the sensor as shown in the illustration.

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

Output

Output signal

Passive current output

Current output 1
- 4 to 20 mA, passive, optionally with HART support
- Galvanic isolations
  - Against current output 2
  - Depends on the device version against the analog sensor input

Current output 2 (optional)
- 4 to 20 mA, passive
- Galvanic isolations
  - Against current output 1
  - Depends on the device version against the analog sensor input or against the Memosens input

HART

HART	
Signal encoding	FSK ± 0.5 mA above current signal
Data transmission	1200 baud
Galvanic isolation	See current output 1
Load (communication resistor)	250 Ω

Protocol-specific data

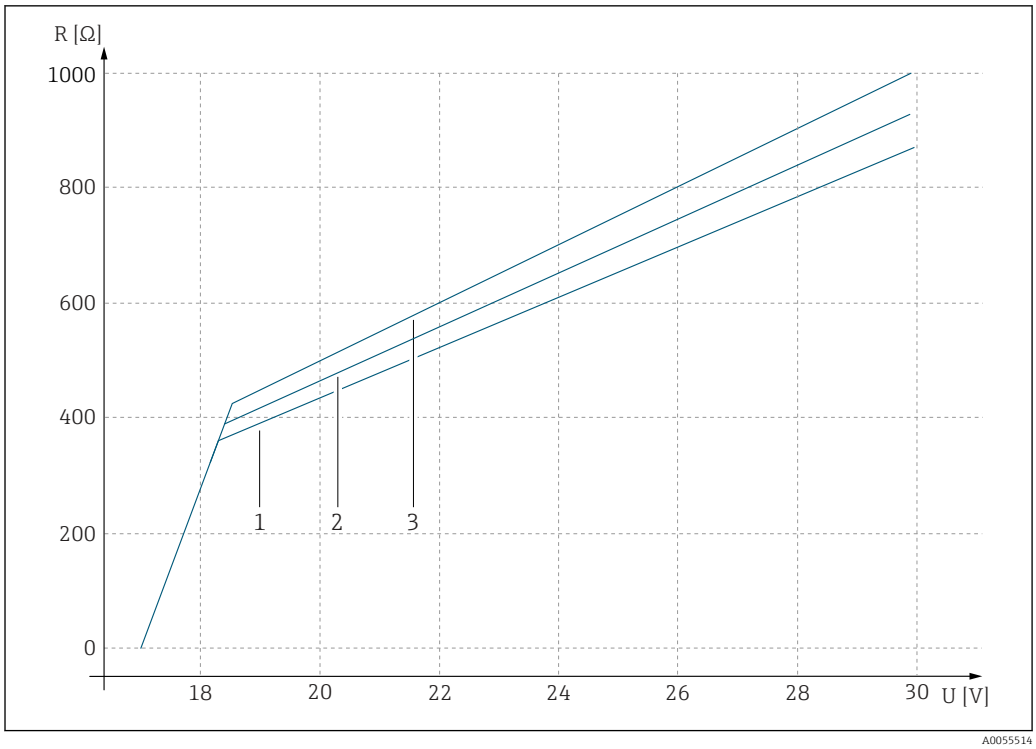
Manufacturer ID	0x0011
Device type	0x11A4 (pH), 0x11A5 (conductivity), 0x11A6 (oxygen)
Device revision	1
Manufacturer name	Endress+Hauser
Model name	Depends on the measuring principle
HART version	7.9
Device description files (DD/DTM)	www.endress.com/hart https://www.fieldcommgroup.org/registered-products Device Integration Manager DIM
Device variables	PV, SV, TV and QV can be selected from all device variables. All measured values are each available as a device variable.
Supported features	FDI packages

Signal on alarm as per NAMUR NE 43

The following values can be selected:
- < **3.6 mA**
- 21.5 mA
- 22.0 mA
- 22.5 mA
- 23.0 mA

Load

For load, see characteristic curve.



U Supply voltage [V]
R Load [Ω]
1 Max. load with configured failure current 23 mA
2 Max. load with configured failure current 21.5 mA
3 Max. load with configured failure current < 3.6 mA

Output span

3.6 to 23 mA

Ex connection data

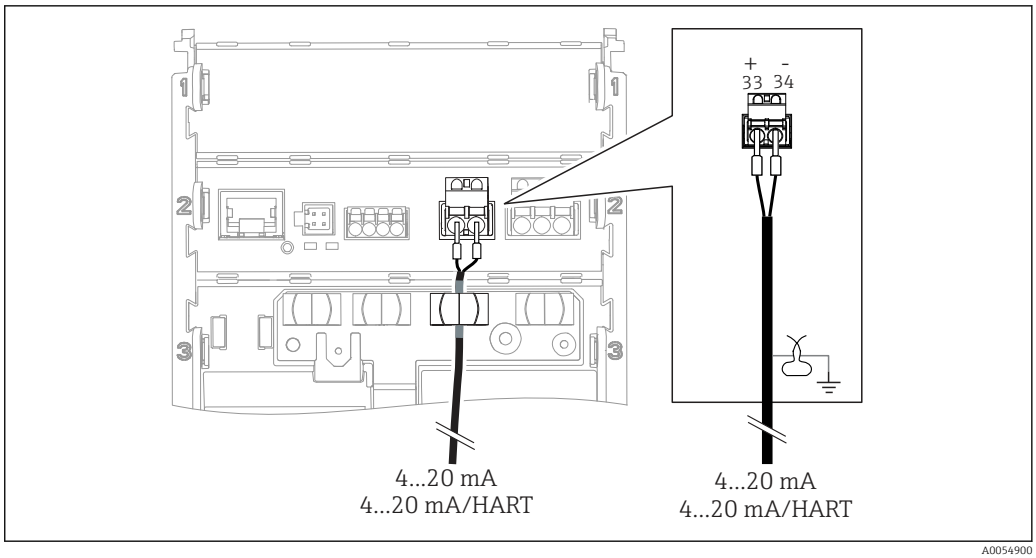
Intrinsically safe power supply and signal circuits	
Max. input voltage U_i	30 V
Max. input current I_i	100 mA
Max. input power P_i	750 mW
Max. internal inductance L_i	30 µH
Max. internal capacitance C_i	Current output 1: 15.2 nF Current output 2: 7.9 nF

Connecting the power supply and signal circuit

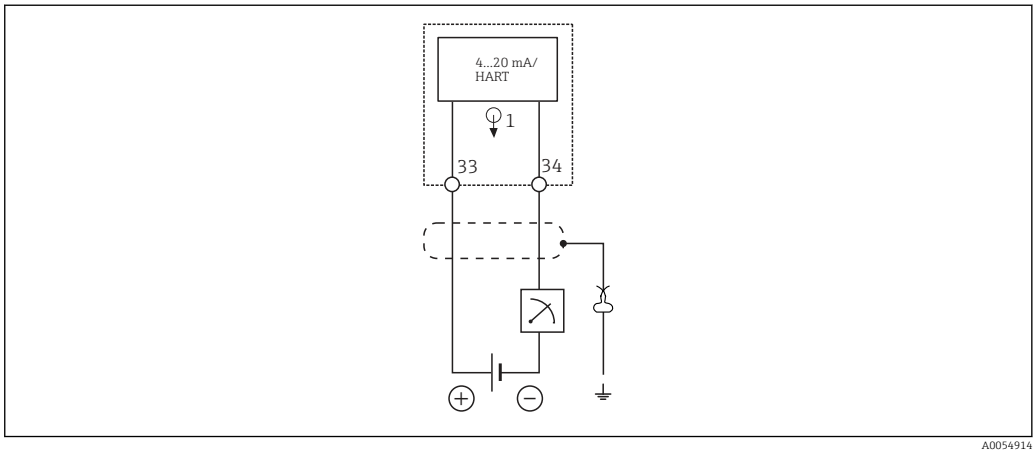
Shielded cables are required if HART (optional for current output 1) is used. If HART is not used, unshielded cables can also be used.

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

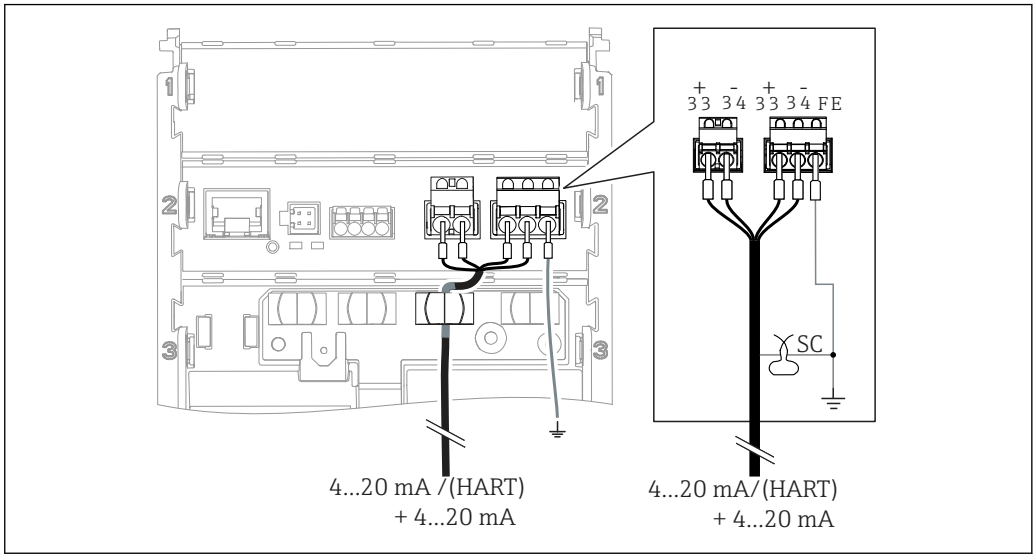
The type of shield connection depends on the anticipated interference influence. Grounding one side of the shield is sufficient to suppress electrical fields. To suppress interference due to an alternating magnetic field, the shield must be earthed on both sides.



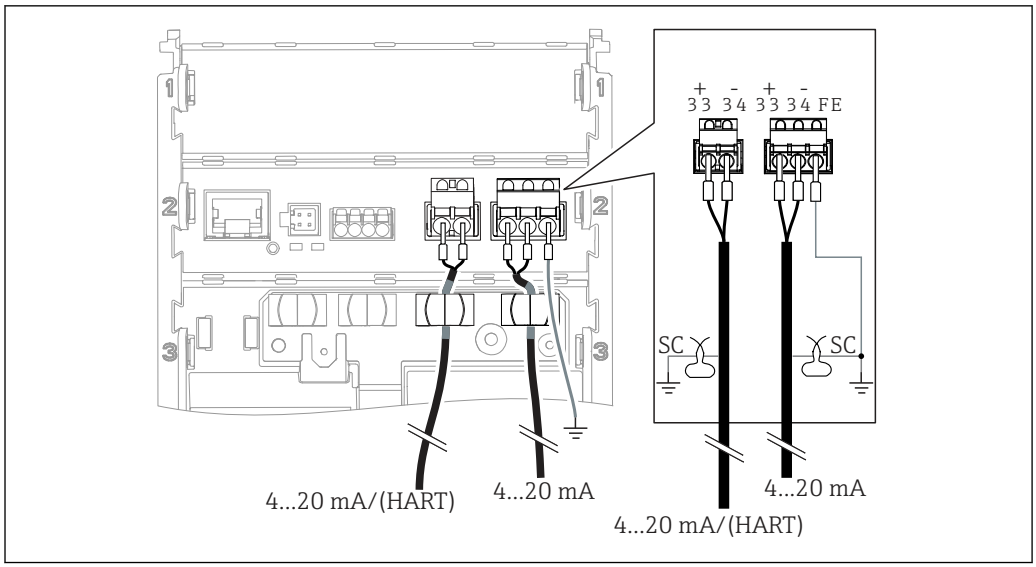
25 *Connection of 1 current output (example: device with HART)*



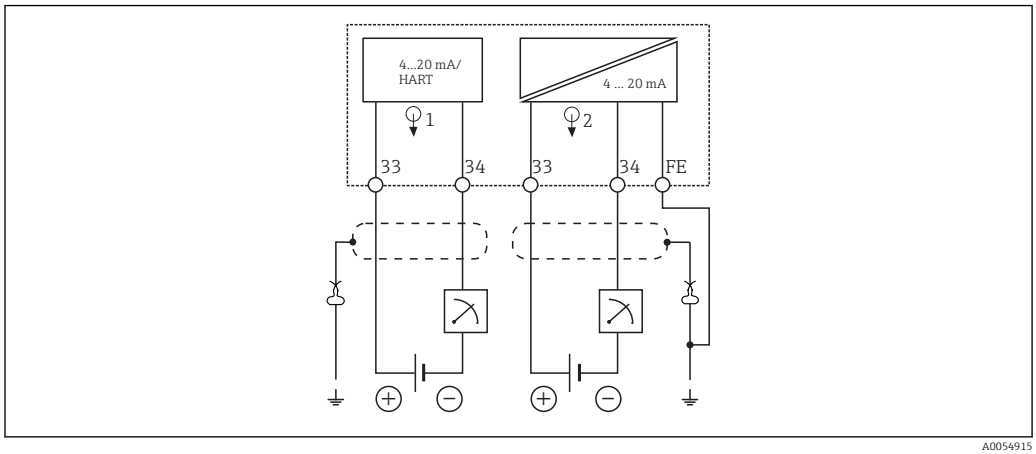
26 *Wiring diagram: 1 current output (current output with HART)*



27 *Connection of 2 current outputs via 1 shielded cable (current output 1 with HART)*



28 *Connection of 2 current outputs via 2 shielded cables (current output 1 with HART)*



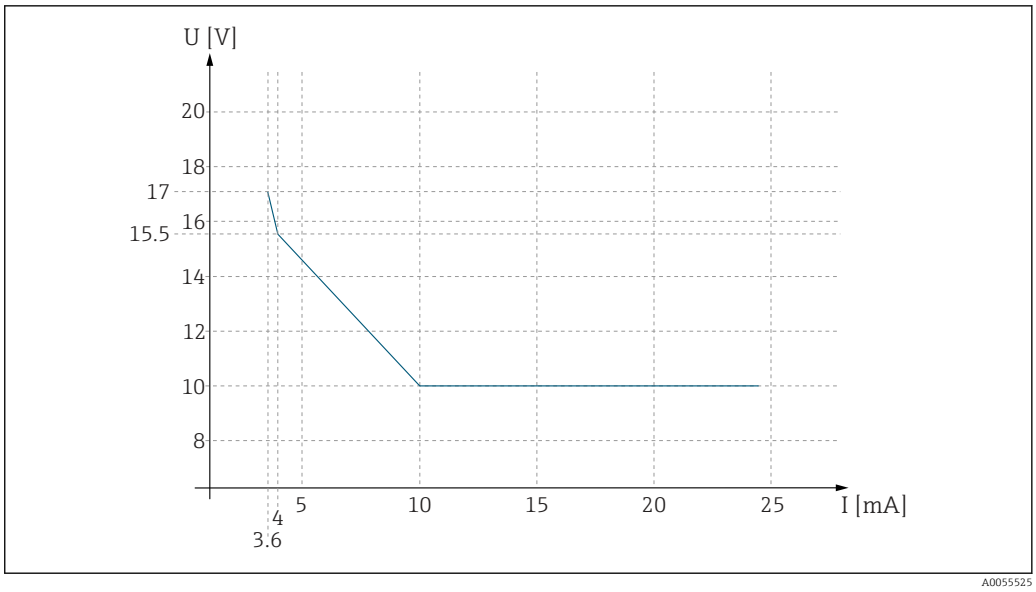
29 *Wiring diagram: 2 current outputs (current output 1 with HART)*

Energy supply

Supply voltage

The power supply must comply with the relevant safety requirements and be separated from the mains voltage by double or reinforced insulation. (ELV)

- For supply voltage, see characteristic curve
- Max. supply voltage: 30 V DC



30 Min. supply voltage at the transmitter depending on the output current

U Supply voltage [V DC]
I Output current [mA]

Cable specification

Qualified cable glands (only field device)

Cable gland	Clamping area, permitted cable diameter
M20x1.5	6 to 12 mm (0.24 to 0.47 in) 5 to 9 mm (0.2 to 0.35 in)
NPT1/2 via M20x1.5 to NPT1/2 adapter	6 to 12 mm (0.24 to 0.47 in) 5 to 9 mm (0.2 to 0.35 in)
G1/2 via M20x1.5 to G1/2 adapter	7 to 12 mm (0.28 to 0.47 in) 4 to 9 mm (0.16 to 0.35 in)

Two cable glands are included in the scope of delivery. Two additional cable glands, including the required adapters, can be ordered via the “Cable gland kit” ordering option.

Cable cross-section

Terminal connector is suitable for strands and ferrules.

Cable cross-section: 0.25 mm^2 (≙23 AWG) to 2.5 mm^2 (≙12 AWG)

Connection cable for external display (optional)

RJ50

Length (cable supplied): 3 m (10 ft)

Max. permitted length: 3 m (10 ft)

Performance characteristics

Resolution

Current output

< 5 µA

Response time

Current output

t_{90} = max. 500 ms for an increase from 0 to 20 mA

Tolerance

Current output

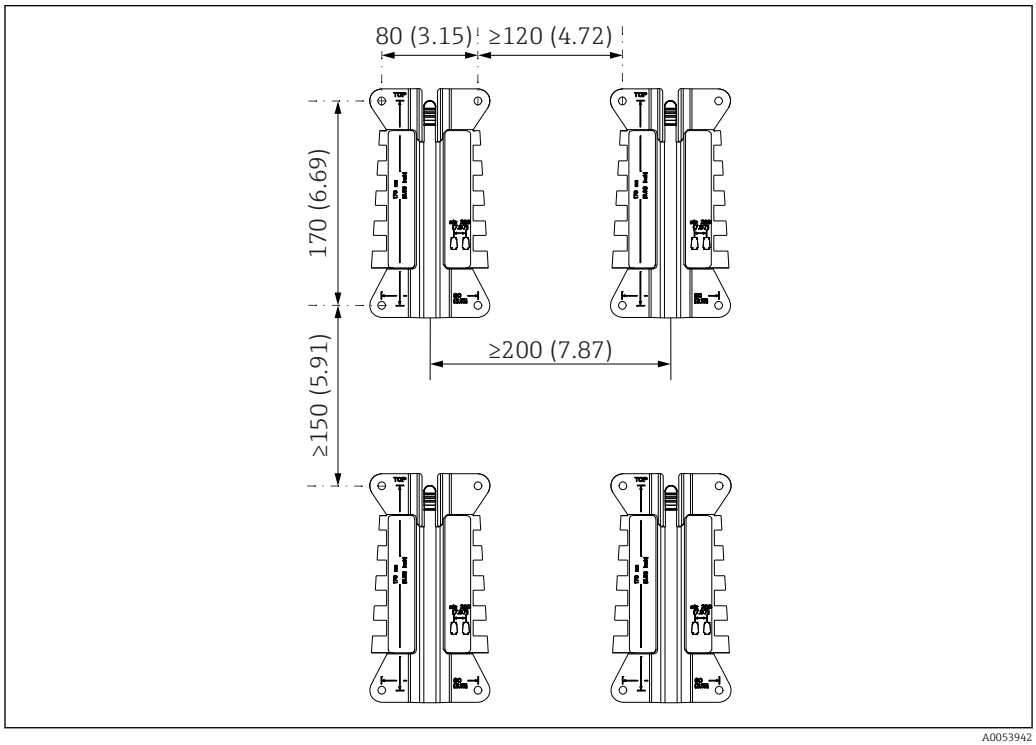
Typical measuring tolerances:
< ±20 µA (if current value = 4 mA)
< ±50 µA (for current values 4 to 20 mA)
at 25 °C (77 °F) each

additional tolerance depending on the temperature:
< 1.5 µA/K

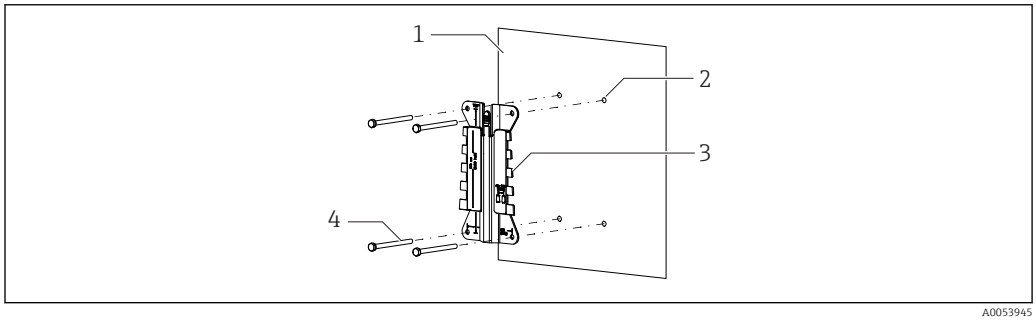
Installation

Field device

Wall mounting



31 Mounting clearances in mm (in)

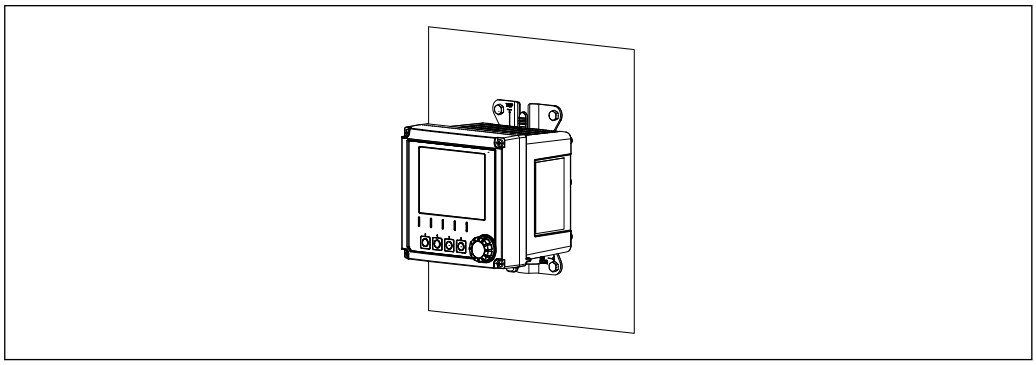


32 Wall mounting

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)

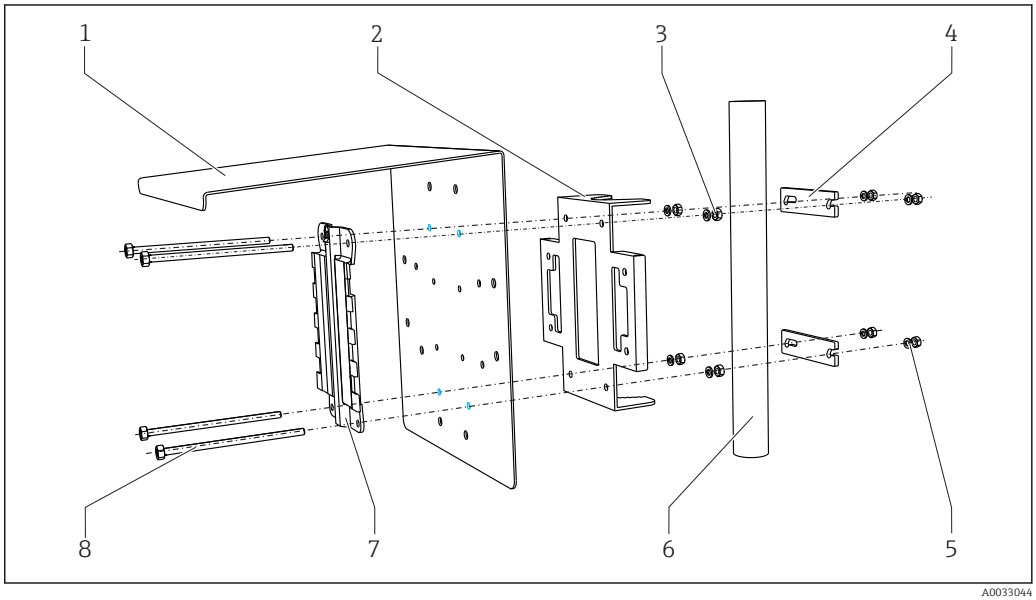


A0057522

33 *Device installed*

Post mounting

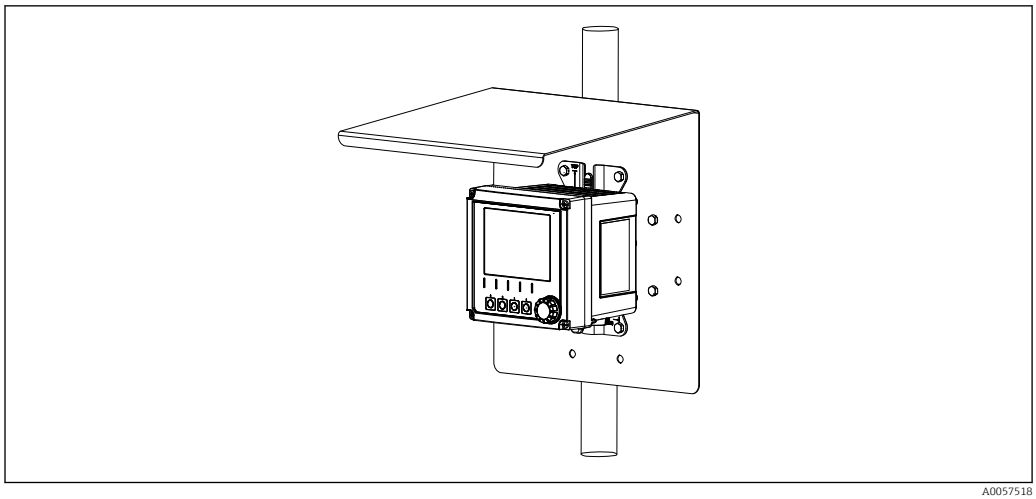
You require the post mounting kit (optional) to mount the unit on a pipe, post or railing (square or circular, clamping range 20 to 61 mm (0.79 to 2.40")).



A0033044

34 *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)*

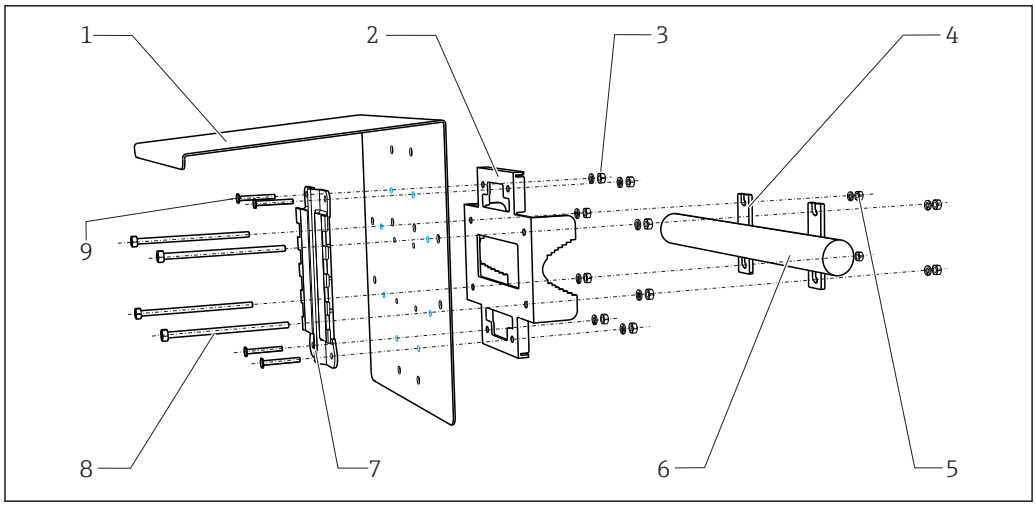


A0057518

35 Device installed

Rail mounting

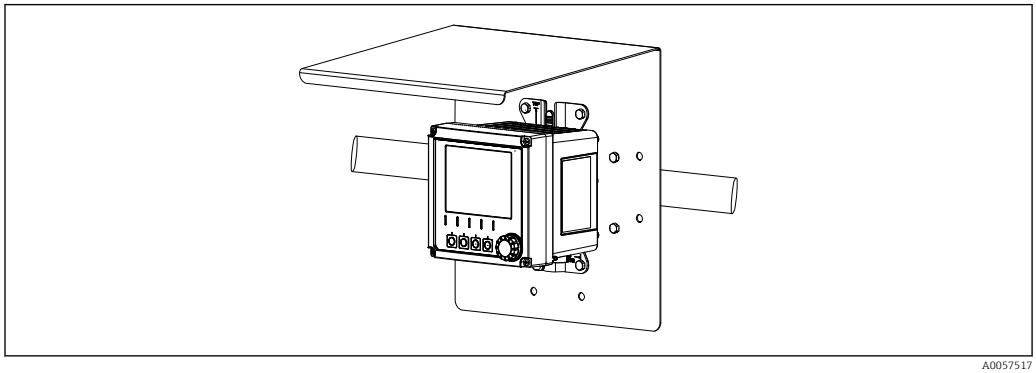
You require the post mounting kit (optional) to mount the unit on a pipe, post or railing (square or circular, clamping range 20 to 61 mm (0.79 to 2.40")).



A0012668

36 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)*		



A0057517

37 Device installed

Installing the adapters for conduit installation

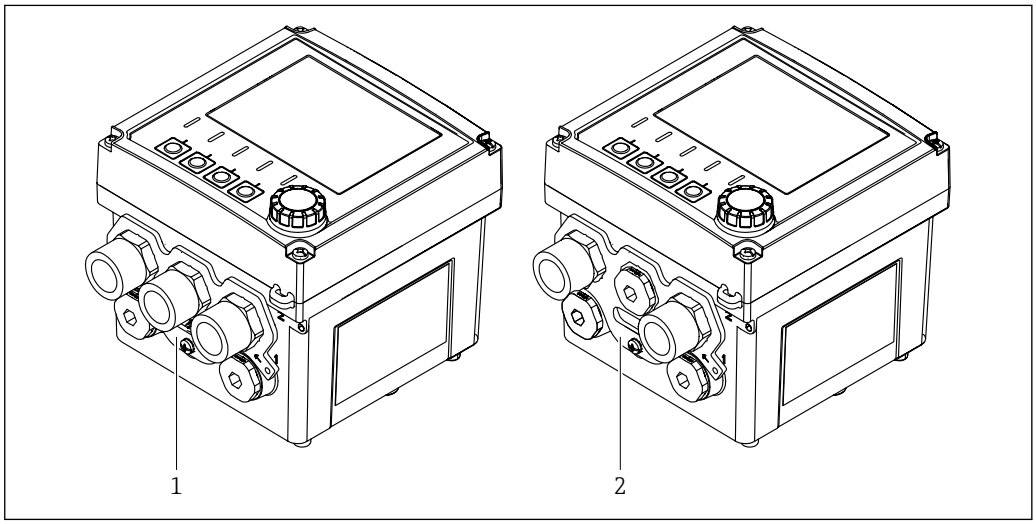
The adapters are included in the scope of delivery in accordance with the order.

If conduit adapters are ordered, no cable glands are included in the scope of delivery.

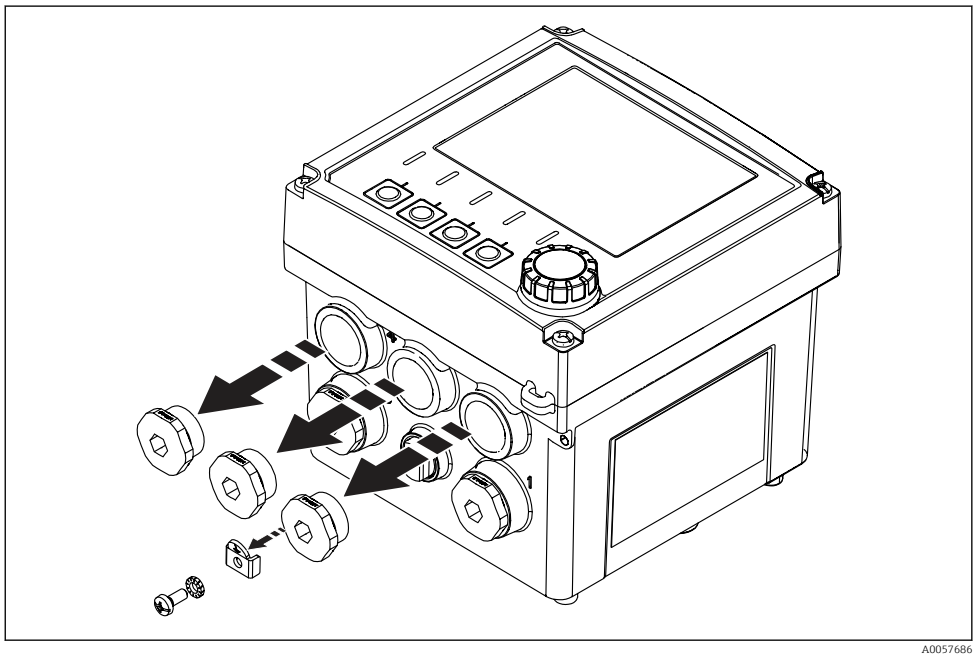
NOTICE

Leaks due to conduit adapter without connected pipe

- With two pipes: Mount adapters at positions 2 and 4. Leave the sealing plugs at all the other positions.
- With three pipes: Mount adapters at positions 2, 3 and 4. Leave the sealing plugs at all the other positions.
- If a non-piped conduit adapter is mounted, seal it with a sealing plug (customer-supplied).

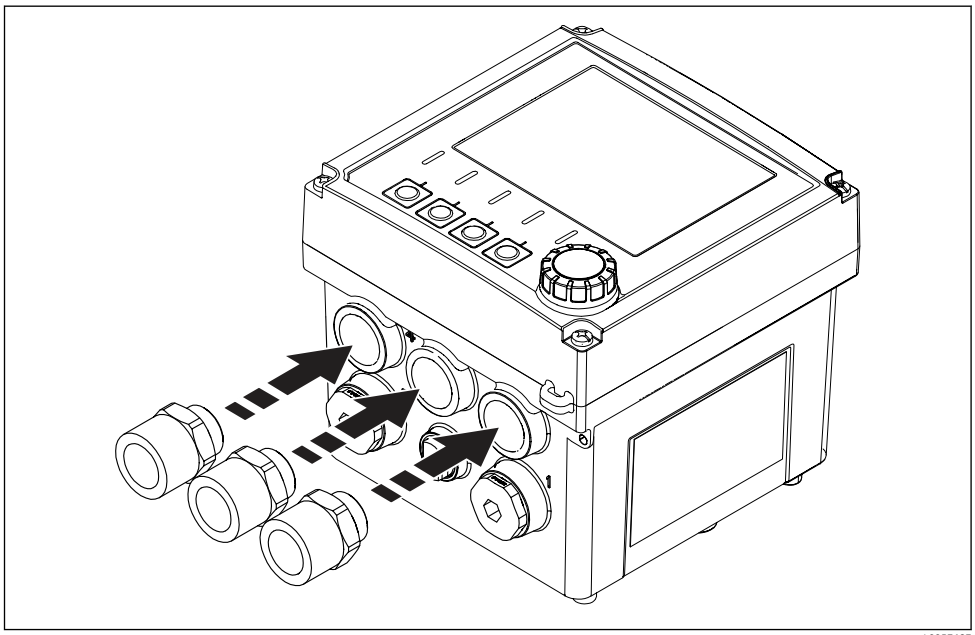


1 Example: Three conduit adapters mounted at positions 2, 3 and 4
2 Example: Two conduit adapters mounted at positions 2 and 4

1. 

   Remove the sealing plug.
2. Remove the screw, securing disk and retaining plate from the potential equalization connection.

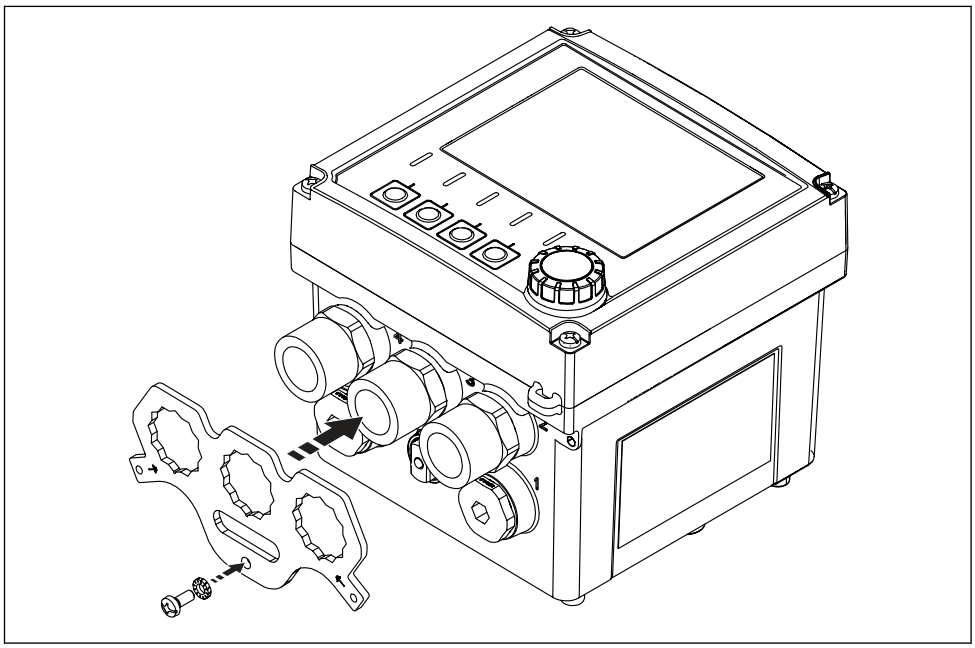
3.



A0057687

Screw in the conduit adapter. Tightening torque 2.5 to 3 Nm.

4.



A0057690

Fit the conduit adapter support on the adapters or sealing plugs. Where necessary, align the adapters or sealing plugs by turning them.

5. Screw the conduit adapter bracket onto the equipotential bonding terminal using the screw and lock washer.

6. Bolt the piping with the adapters.

Device for DIN rail mounting

Mounting on DIN rail as per IEC 60715

NOTICE

Condensation on the device

Potential device failure

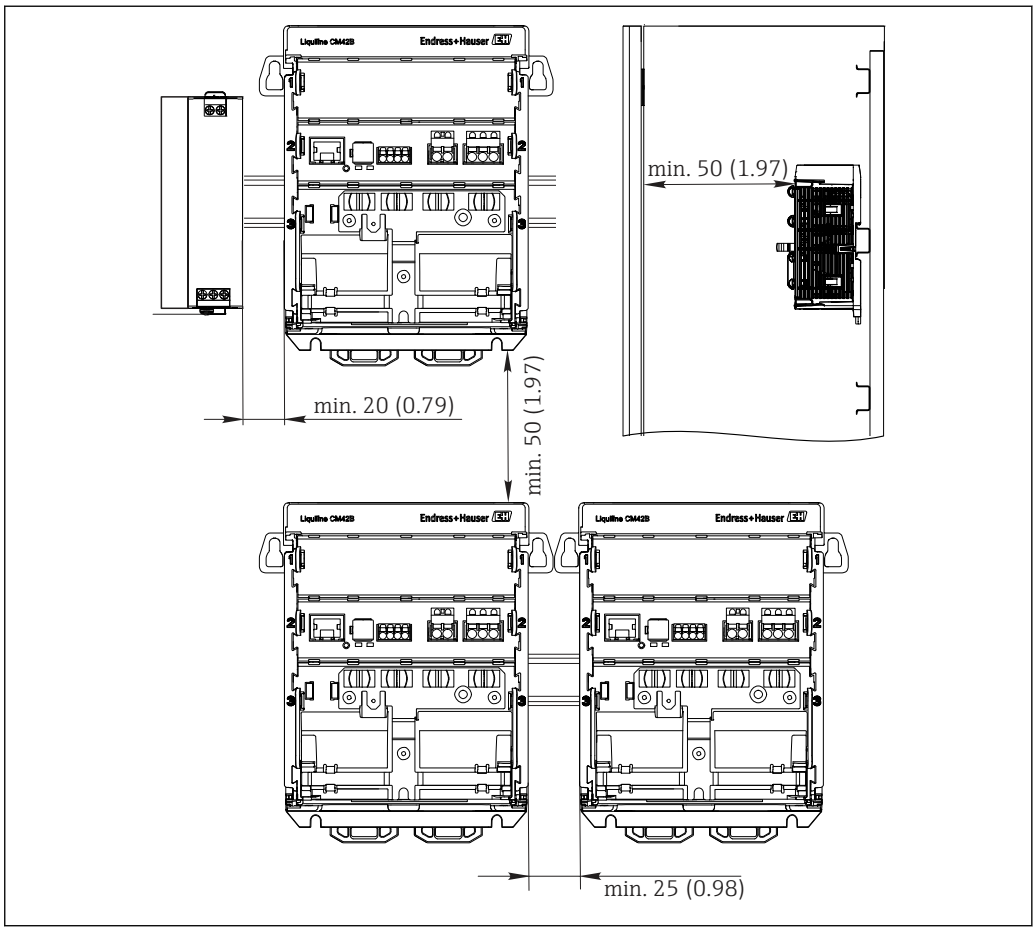
- The device complies with the IP20 degree of protection. It is designed only for environments with non-condensing moisture.
- Comply with the specified ambient conditions, e.g. by installing the device in an appropriate protective enclosure.

NOTICE

Incorrect mounting location in the control cabinet, spacing regulations not observed

Possible malfunctions as a result of heat buildup and interference from neighboring devices!

- ▶ Do not position the device directly above sources of heat.
- ▶ The components are designed for convection-based cooling. Avoid heat buildup. Ensure openings are not covered, e.g. by cables.
- ▶ Observe the specified distances to other devices.
- ▶ Physically separate the device from frequency converters and high-voltage devices.



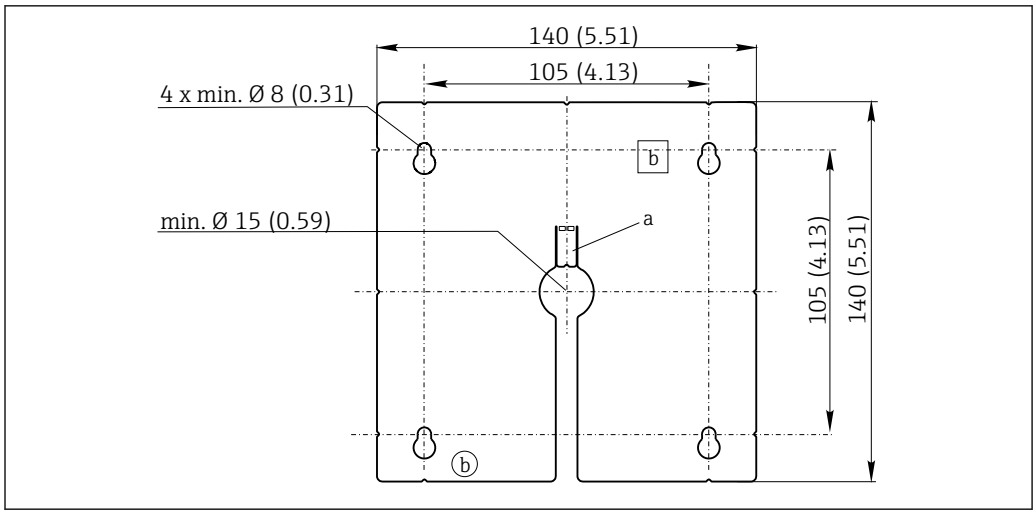
38 *Minimum clearance in mm (in)*

Minimum clearances required:

- Distance at the side, to other devices and control cabinet wall:
  at least 20 mm (0.79 inches)
- above and below the device and depth distance (to control cabinet door or other devices installed there):
  at least 50 mm (1.97 inches)

Mounting the external display (optional)

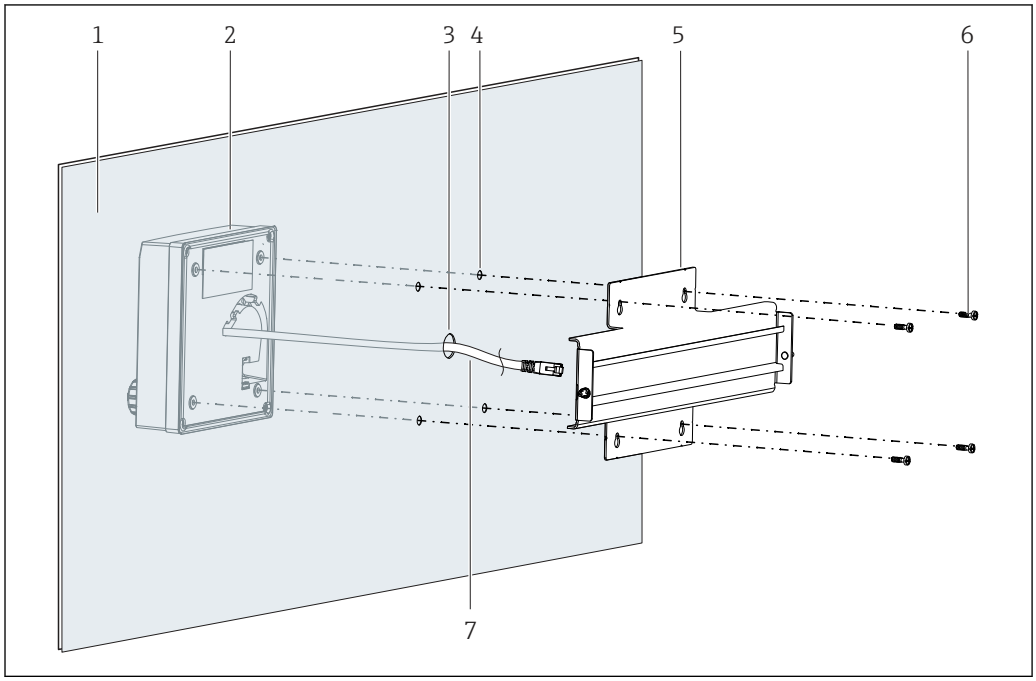
The mounting plate also serves as the drilling template. The side markings are used to mark the drill holes.



39 Mounting plate of external display, dimensions in mm (in)

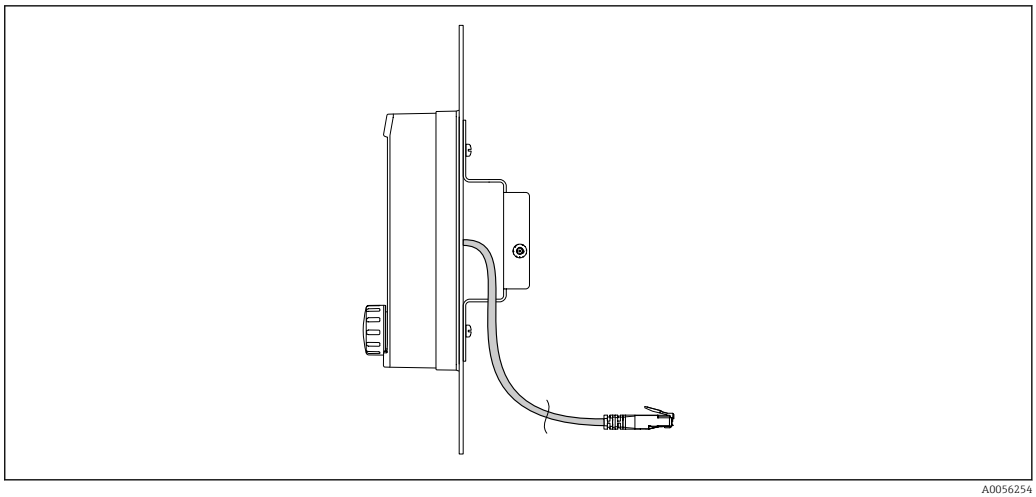
a Retaining tab
b Production-related recesses, no function for the user

Mounting on panel (incl. display)



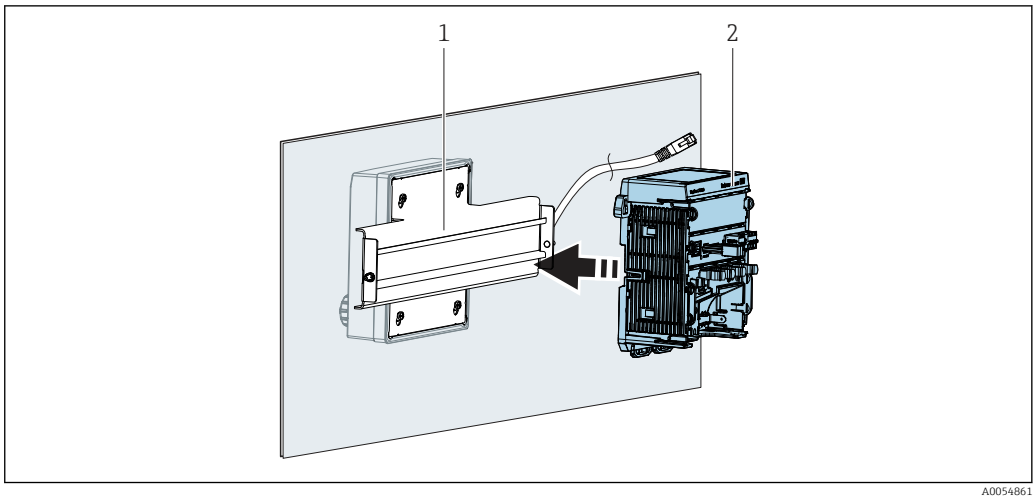
40 Mounting the external display and DIN rail

1 Panel/mounting surface
2 External display
3 Drill hole for display cable
4 Drill holes for screws
5 Mounting plate with DIN rail
6 Screws
7 Display cable



A0056254

41 Layout of the display cable



A0054861

42 Mounting the transmitter

1 DIN rail
2 Transmitter

Environment

Ambient temperature range	**Non-Ex version** -30 to 70 °C (-20 to 160 °F) For Ex versions, please refer to the relevant safety instructions (XA) on the online product pages.
Storage temperature	-40 to +80 °C (-40 to 176 °F)
Operating height	<3000 m (6500 ft)
Relative humidity	10 to 95 %, non-condensing
Degree of protection	**Field device** IP66/67 as per IEC 60529 Housing protection rating NEMA Type 4X as per UL 50E

Device for DIN rail mounting

Device
IP20

External display (optional)
IP66 front-panel, when installed correctly including seal for door/wall

Electromagnetic compatibility (EMC)

According to IEC 61326-1
- Interference immunity: Table 2 (industrial environments)
- Interference emission: Class B (residential environments)

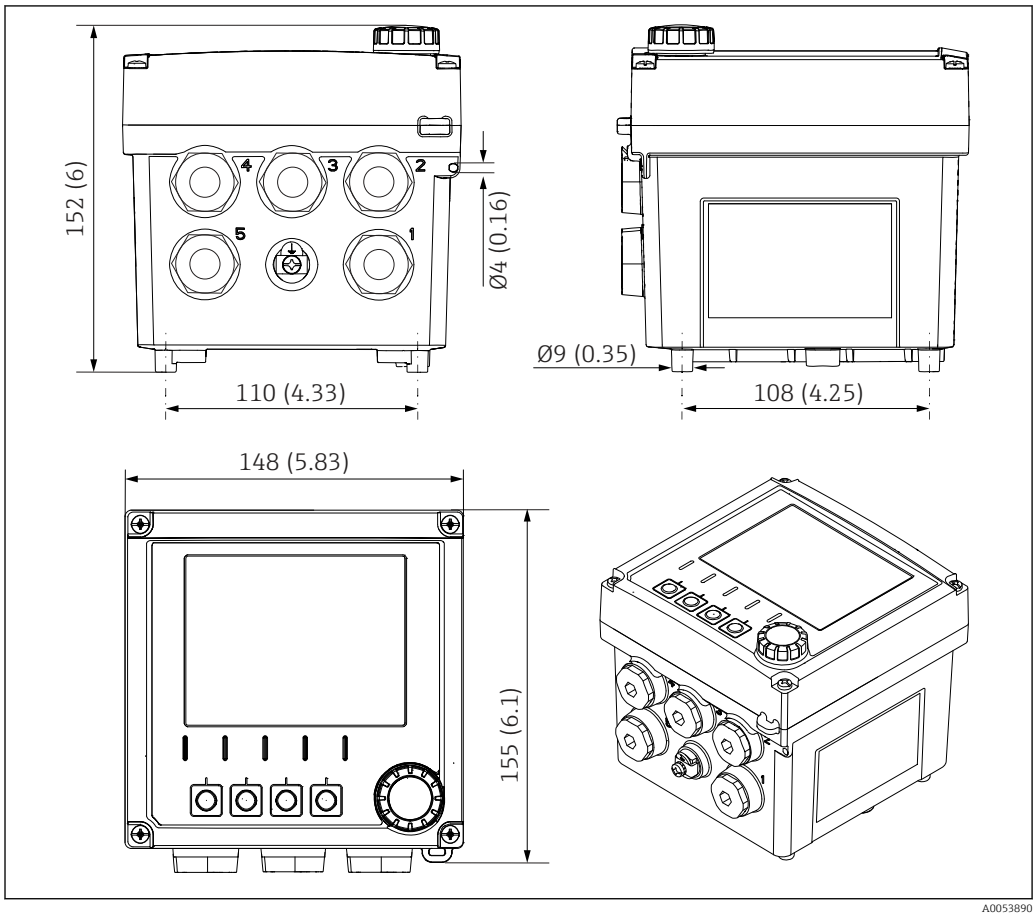
Pollution degree (only field device)

The product is suitable for pollution degree 4.

Mechanical construction

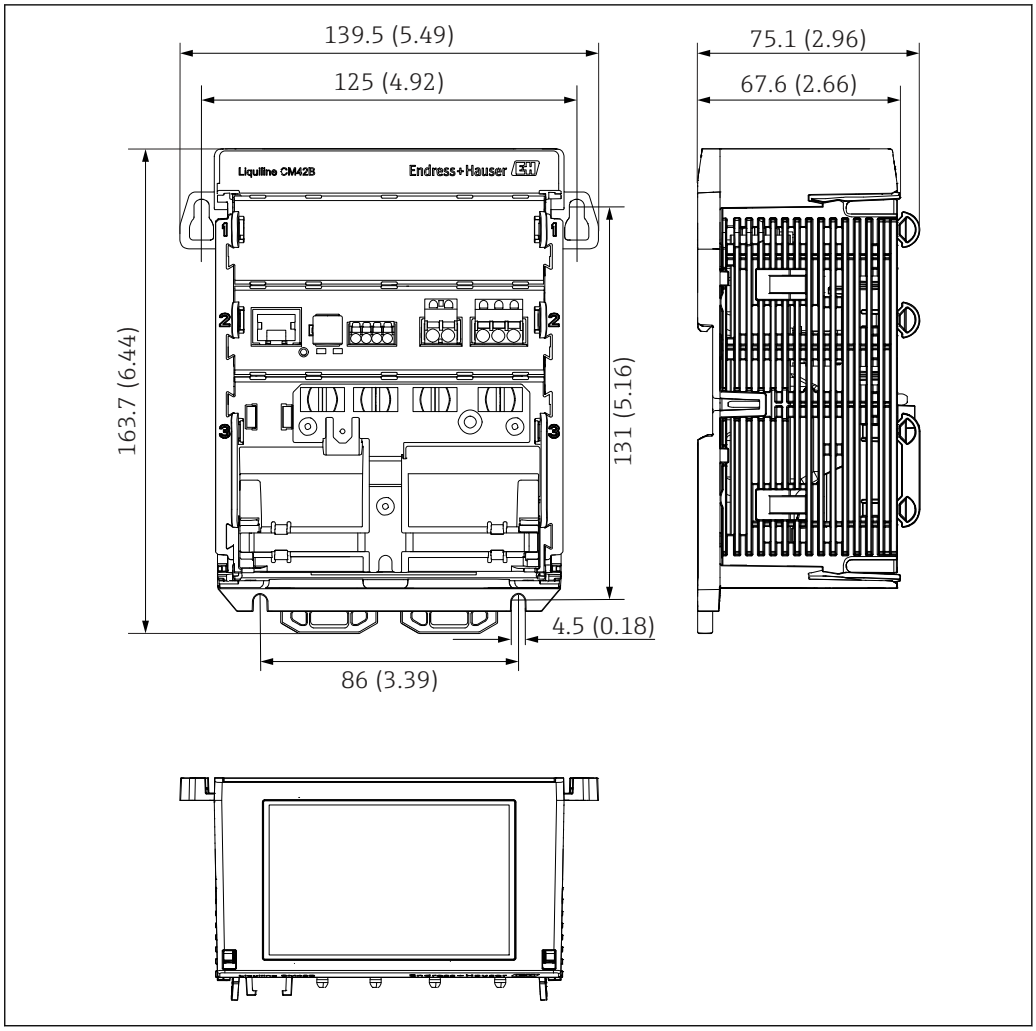
Dimensions

Field device



43 Dimensions of field housing in mm (in)

Device for DIN rail mounting



44 *Dimensions of device in mm (inches)*

Materials

Field device

Plastic housing	
Housing	PC-FR (polycarbonate, flame-retarding)
Mounting plate	PC-FR (polycarbonate, flame-retarding)
Housing seals	EPDM

Stainless steel housing	
Housing	Stainless steel 1.4408
Mounting plate	Stainless steel 1.4408
Housing seals	EPDM

Other materials	
Cable glands	PA
Sealing plug	PA
Adapter for G or NPT cable glands (plastic housing)	PA
Adapter for G or NPT cable glands (stainless steel housing)	Stainless steel 1.4404

Device for DIN rail mounting

Housing	PC-FR (polycarbonate, flame-retarding)
External display (optional)	PC-FR (polycarbonate, flame-retarding)

Weight

Field device

Plastic housing
1.5 kg (3.3 lbs)

Stainless steel housing
4 kg (8.8 lbs)

Device for DIN rail mounting

0.43 kg (0.95 lbs)

User interface

Operation concept

Operation and settings via:
- Operating elements on the device
- SmartBlue app (The full range of functions can be enabled by entering an activation code).
- Control station via HART (The full range of functions can be enabled by entering an activation code).

Operation at the device

User management

The local display menu offers user management functions with 2 user roles:
- Operator
- Maintenance

Both roles can be protected via a PIN as an option.

Set PINs

It is recommended to set PINs after initial commissioning.

1. Navigate to the path: **Menu/System/Security/Device PINs**
2. Set 4-digit PINs for the user roles. Only one PIN can be set for the **Operator** role if a PIN has already been set for the **Maintenance** role.

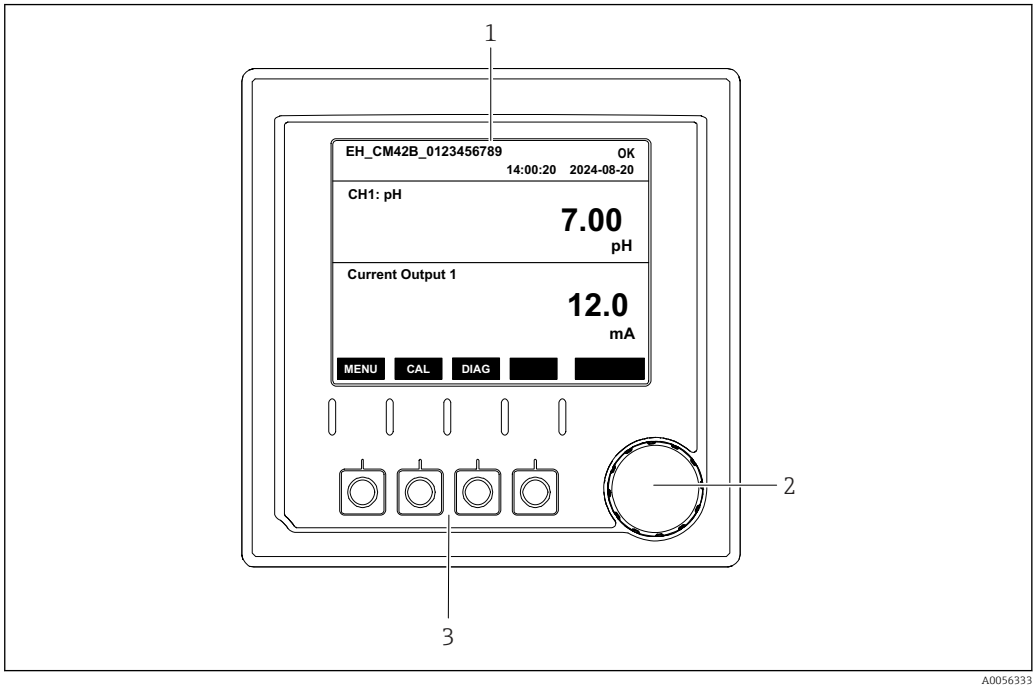
Overview of function access

PIN status	Device operation
No PINs set (as-delivered state)	Full access to the device menu is possible without login.
PIN set for **Maintenance** user role	▪ The **Operator** user role functions can be accessed without login. ▪ Login with a PIN is required for the **Maintenance** user role functions. ▪ When the menu is called up, the **Operator** user role functions are displayed. ▪ Login with a PIN is required to access the **Maintenance** user role functions.
PIN set for **Maintenance** and **Operator** user roles	▪ Measured values are displayed without logging in ▪ To access additional features, you must log in to a user role using the corresponding PIN. ▪ The login options for both user roles are displayed when you call up the menu.

Overview of user role access rights

User role	Access rights
Operator	▪ Operating ▪ Calibration and adjustment functions ▪ Change and reset your PIN
Maintenance	▪ Operating ▪ Calibration and adjustment functions ▪ Configuration and maintenance ▪ Change and reset your PIN and **Operator** user role PIN

Operating elements



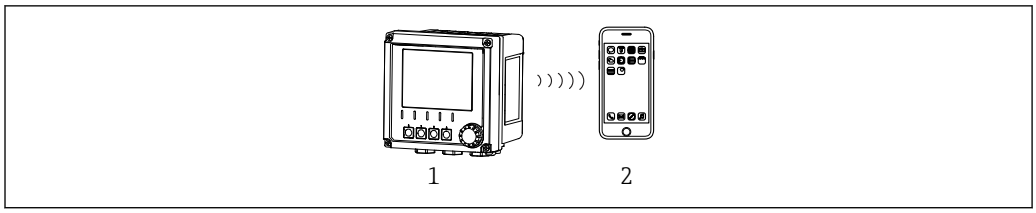
45 *Operating elements*

1 Display
2 Navigator
3 Soft keys

Operation via the SmartBlue app

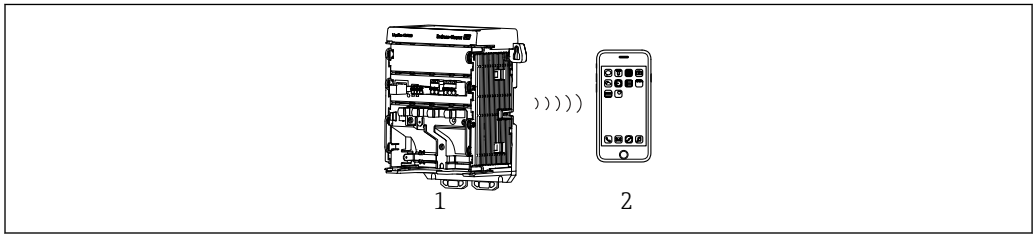
Access to the operating menu via the SmartBlue app

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 (field device)

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



47 Options for remote operation via Bluetooth® LE wireless technology (device for DIN rail mounting)

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

The SmartBlue app is available to 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:

▶



Download the SmartBlue app via a QR code.

After logging in for the first time, the password can be changed and other user accounts activated.

You can drag additional information (e.g. main menu) onto the screen by swiping across the screen.

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:
- Admin
- Operator
- Maintenance
- Auditor
- Recovery

The **Admin** and Recovery accounts are activated in the device as-delivered state.

Activating other user accounts

▶ Navigate to the path: **Menu/System/Security**

Overview of user account access rights

User account	Access rights
Admin	▪ Activate/deactivate user accounts ▪ Change your password and passwords of **Operator**, **Maintenance** and **Auditor** user accounts ▪ Security settings ▪ All other access rights for **Operator**, **Maintenance** and **Auditor** user accounts
Operator	▪ Operating ▪ Calibration and adjustment functions ▪ Change your password
Maintenance	▪ Operating ▪ Calibration and adjustment functions ▪ Configuration and maintenance ▪ Change your password
Auditor	▪ Read access and export logbooks ▪ Change your password
Recovery	Reset admin password. In order to do this, please contact Endress+Hauser Service.

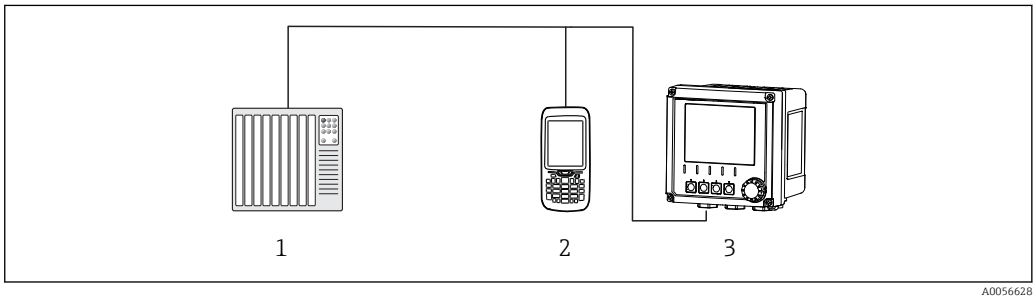
Functions via the SmartBlue app

An activation code is required for full operation of the device via the SmartBlue app.

Without this activation code, the SmartBlue app offers the following functions:
- Firmware update
- **Security** menu
- Export of information for the service

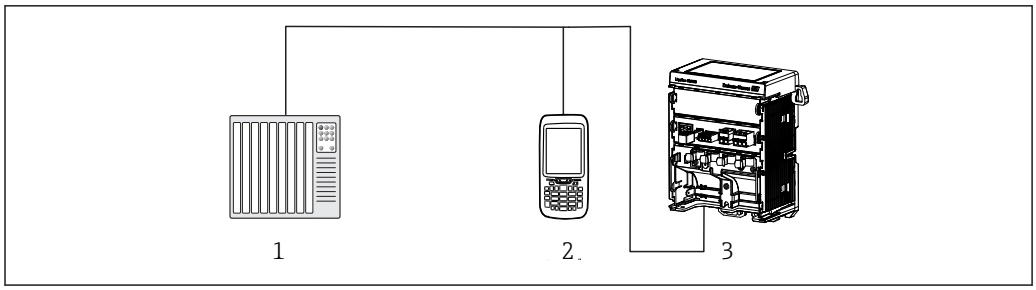
Remote operation

HART



48 Wiring options for remote operation via HART protocol (field device)

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



49 *Wiring options for remote operation via HART protocol (device for DIN rail mounting)*

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

Certificates and approvals

Current certificates and approvals for the product are available at www.endress.com on the relevant product page:

1. Select the product using the filters and search field.
2. Open the product page.
3. Select **Downloads**.

Ordering information

Product page

www.endress.com/CM42B

Product Configurator

1. **Configure**: Click this button on the product page.
2. Select **Extended selection**.
   ↳ The Configurator opens in a separate window.
3. Configure the device according to your requirements by selecting the desired option for each feature.
   ↳ In this way, you receive a valid and complete order code for the device.
4. **Add to cart**: Add the configured product to the shopping cart.

For many products, you also have the option of downloading CAD or 2D drawings of the selected product version.

5. **CAD**: Open this tab.
   ↳ The drawing window is displayed. You have a choice between different views. You can download these in selectable formats.

Scope of delivery

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

Accessories

The latest list of accessories, all compatible sensors and activation codes is provided on the product page: www.endress.com/CM42B



www.addresses.endress.com

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