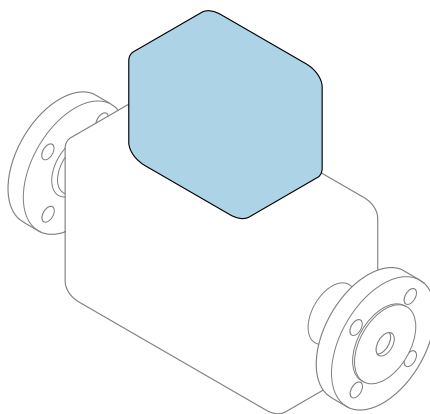# Brief Operating Instructions
Flowmeter
Proline 300
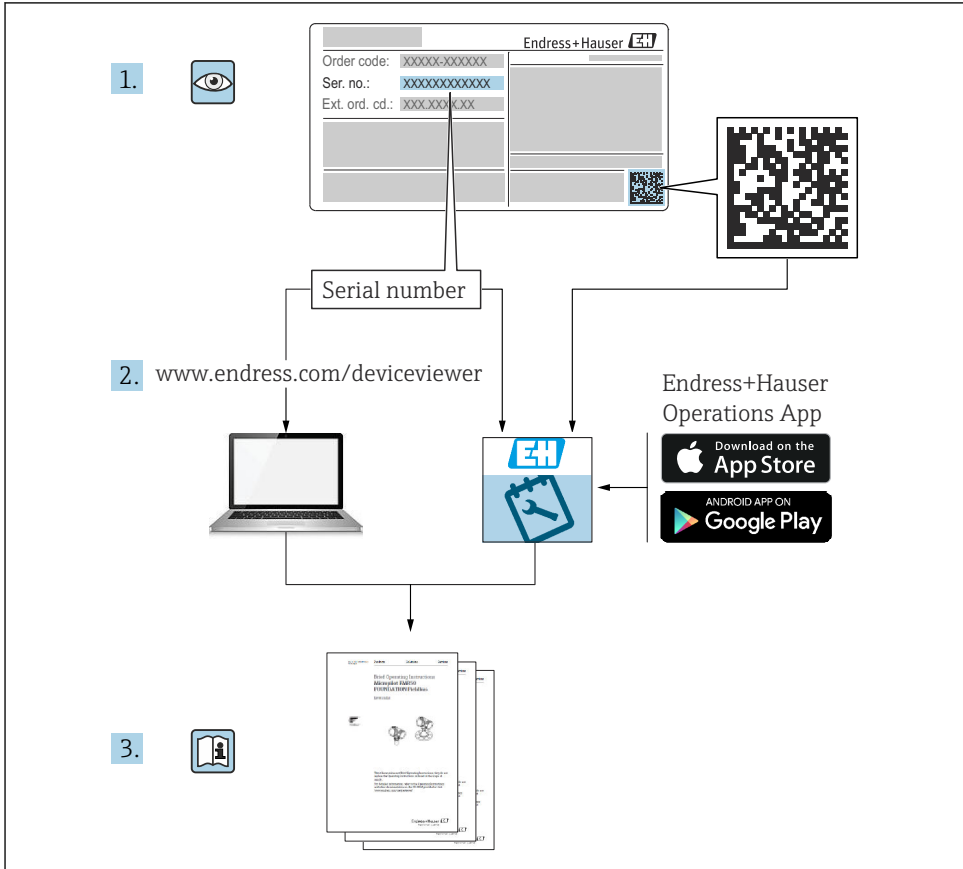
HART transmitter
with Coriolis sensor

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

Brief Operating Instructions part 2 of 2: Transmitter
Contain information about the transmitter.

Brief Operating Instructions part 1 of 2: Sensor → 🖺 3

Endress+Hauser 🔳

People for Process Automation

Order code: XXXXX-XXXXXX
Ser. no.: XXXXXXXXXXXX
Ext. ord. cd.: XXX.XXXX.XX
Endress+Hauser

Serial number

www.endress.com/deviceviewer

Endress+Hauser
Operations App

A0023555

Brief Operating Instructions for flowmeter

The device consists of a transmitter and a sensor.

The process of commissioning these two components is described in two separate manuals that together form the Brief Operating Instructions for the flowmeter:
• Brief Operating Instructions Part 1: Sensor
• Brief Operating Instructions Part 2: Transmitter

Please refer to both parts of the Brief Operating Instructions when commissioning the device, as the contents of the manuals complement one another:

Brief Operating Instructions Part 1: Sensor
The Sensor Brief Operating Instructions are aimed at specialists with responsibility for installing the measuring device.
• Incoming acceptance and product identification
• Storage and transport
• Installation

Brief Operating Instructions Part 2: Transmitter
The Transmitter Brief Operating Instructions are aimed at specialists with responsibility for commissioning, configuring and parameterizing the measuring device (until the first measured value).
• Product description
• Installation
• Electrical connection
• Operation options
• System integration
• Commissioning
• Diagnostic information

Additional device documentation

These Brief Operating Instructions are **Brief Operating Instructions Part 2: Transmitter**.

The "Brief Operating Instructions Part 1: Sensor" are available via:
• Internet: www.endress.com/deviceviewer
• Smart phone/tablet: *Endress+Hauser Operations App*

Detailed information about the device can be found in the Operating Instructions and the other documentation:
• Internet: www.endress.com/deviceviewer
• Smart phone/tablet: *Endress+Hauser Operations App*

Table of contents

1   About this document

1.1   Symbols

1.1.1   Safety symbols

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

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

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

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

1.1.2   Symbols for certain types of information

Symbol	Meaning	Symbol	Meaning
✓	**Permitted** Procedures, processes or actions that are permitted.	✓✓	**Preferred** Procedures, processes or actions that are preferred.
✗	**Forbidden** Procedures, processes or actions that are forbidden.	🛈	**Tip** Indicates additional information.
📖	Reference to documentation	📄	Reference to page
🖼	Reference to graphic	1. , 2. , 3. ...	Series of steps
↳	Result of a step	👁	Visual inspection

1.1.3   Electrical symbols

Symbol	Meaning	Symbol	Meaning
⎓	Direct current	∼	Alternating current
≂	Direct current and alternating current	⏚	**Ground connection** A grounded terminal which, as far as the operator is concerned, is grounded via a grounding system.

Symbol	Meaning
⏚	**Potential equalization connection (PE: protective earth)** Ground terminals that must be connected to ground prior to establishing any other connections. The ground terminals are located on the interior and exterior of the device: • Interior ground terminal: potential equalization is connected to the supply network. • Exterior ground terminal: device is connected to the plant grounding system.

1.1.4   Communication-specific symbols

Symbol	Meaning	Symbol	Meaning
(WLAN icon)	**Wireless Local Area Network (WLAN)** Communication via a wireless, local network.	(Bluetooth icon)	Promass 10 **Bluetooth** Wireless data transmission between devices over a short distance.
(LED icon)	**LED** Light emitting diode is on.	(LED icon)	**LED** Light emitting diode is off.
(LED icon)	**LED** Light emitting diode is flashing.		

1.1.5   Tool symbols

Symbol	Meaning	Symbol	Meaning
(Torx icon)	Torx screwdriver	(Flat-blade icon)	Flat-blade screwdriver
(Phillips icon)	Phillips head screwdriver	(Allen key icon)	Allen key
(wrench icon)	Open-ended wrench		

1.1.6   Symbols in graphics

Symbol	Meaning	Symbol	Meaning
1, 2, 3,...	Item numbers	1. , 2. , 3. ...	Series of steps
A, B, C, ...	Views	**A-A, B-B, C-C, ...**	Sections
(EX icon)	Hazardous area	(non-EX icon)	Safe area (non-hazardous area)
(flow icon)	Flow direction		

2   Safety instructions

2.1   Requirements for the personnel

The personnel must fulfill the following requirements for its tasks:
▶ Trained, qualified specialists must have a relevant qualification for this specific function and task.
▶ Are authorized by the plant owner/operator.
▶ Are familiar with federal/national regulations.
▶ Before starting work, read and understand the instructions in the manual and supplementary documentation as well as the certificates (depending on the application).
▶ Follow instructions and comply with basic conditions.

2.2   Intended use

Application and media
- The measuring device described in this manual is intended only for the flow measurement of liquids and gases.
- The measuring device described in this manual is intended only for the flow measurement of liquids.

Depending on the version ordered, the measuring device can also measure potentially explosive, flammable, poisonous and oxidizing media.

Measuring devices for use in hazardous areas, in hygienic applications or in applications where there is an increased risk due to process pressure, are marked accordingly on the nameplate.

To ensure that the measuring device remains in proper condition for the operation time:
▶ Keep within the specified pressure and temperature range.
▶ Only use the measuring device in full compliance with the data on the nameplate and the general conditions listed in the Operating Instructions and supplementary documentation.
▶ Based on the nameplate, check whether the ordered device is permitted for the intended use in the hazardous area (e.g. explosion protection, pressure vessel safety).
▶ Use the measuring device only for media to which the process-wetted materials are sufficiently resistant.
▶ If the ambient temperature of the measuring device is outside the atmospheric temperature, it is absolutely essential to comply with the relevant basic conditions as specified in the device documentation.
▶ Protect the measuring device permanently against corrosion from environmental influences.

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

⚠ WARNING

Danger of breakage due to corrosive or abrasive fluids and ambient conditions!
▶ Verify the compatibility of the process fluid with the sensor material.
▶ Ensure the resistance of all fluid-wetted materials in the process.
▶ Keep within the specified pressure and temperature range.

NOTICE

Verification for borderline cases:
▶ For special fluids and fluids for cleaning, Endress+Hauser is glad to provide assistance in verifying the corrosion resistance of fluid-wetted materials, but does not accept any warranty or liability as minute changes in the temperature, concentration or level of contamination in the process can alter the corrosion resistance properties.

Residual risks

⚠ WARNING

If the temperature of the media or electronics unit is high or low, this may cause the surfaces of the device to become hot or cold. This poses a risk of burns or frostbite!
▶ In the case of hot or cold medium temperatures, install appropriate protection against contact.

Only applies for Proline Promass A, E, F, O, X and Cubemass C

⚠ WARNING

Danger of housing breaking due to measuring tube breakage!
If a measuring tube ruptures, the pressure inside the sensor housing will rise according to the operating process pressure.
▶ Use a rupture disk.

⚠ WARNING

Danger from medium escaping!
For device versions with a rupture disk: medium escaping under pressure can cause injury or material damage.
▶ Take precautions to prevent injury and material damage if the rupture disk is actuated.

2.3   Workplace safety

When working on and with the device:
▶ Wear the required personal protective equipment as per national regulations.

2.4   Operational safety

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

2.5   Product safety

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

It meets general safety standards and legal requirements. It also complies with the EU directives listed in the device-specific EU Declaration of Conformity. Endress+Hauser confirms this by affixing the CE mark to the device.

Furthermore, the device meets the legal requirements of the applicable UK regulations (Statutory Instruments). These are listed in the UKCA Declaration of Conformity along with the designated standards.

By selecting the order option for UKCA marking, Endress+Hauser confirms a successful evaluation and testing of the device by affixing the UKCA mark.

Contact address Endress+Hauser UK:
Endress+Hauser Ltd.
Floats Road
Manchester M23 9NF
United Kingdom
www.uk.endress.com

2.6   IT security

Our warranty is valid only if the product is installed and used as described in the Operating Instructions. The product is equipped with security mechanisms to protect it against any inadvertent changes to the settings.

IT security measures, which provide additional protection for the product and associated data transfer, must be implemented by the operators themselves in line with their security standards.

2.7   Device-specific IT security

The device offers a range of specific functions to support protective measures on the operator's side. These functions can be configured by the user and guarantee greater in-operation safety if used correctly.

For detailed information on device-specific IT security, see the Operating Instructions for the device.

2.7.1   Access via service interface (CDI-RJ45)

The device can be connected to a network via the service interface (CDI-RJ45). Device-specific functions guarantee the secure operation of the device in a network.

The use of relevant industrial standards and guidelines that have been defined by national and international safety committees, such as IEC/ISA62443 or the IEEE, is recommended.

This includes organizational security measures such as the assignment of access authorization as well as technical measures such as network segmentation.

🛈 Transmitters with an Ex de approval may not be connected via the service interface (CDI-RJ45)!

Order code for "Approval transmitter + sensor", options (Ex de): BA, BB, C1, C2, GA, GB, MA, MB, NA, NB

3   Product description

The device consists of a Proline 300 transmitter and a Proline Promass or Cubemass Coriolis sensor.

The device is available as a compact version:
The transmitter and sensor form a mechanical unit.
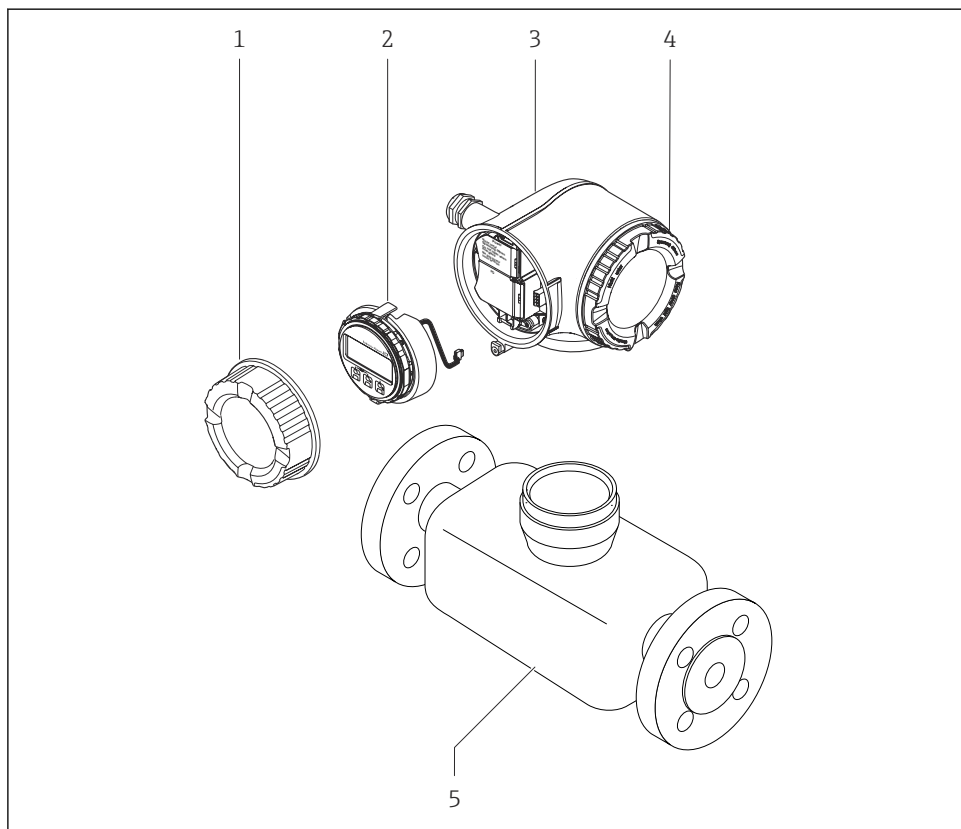
A0029586

1   Connection compartment cover
2   Display module
3   Transmitter housing
4   Electronics compartment cover
5   Sensor

Use of the device with the remote display and operating module DKX001 → 🖺 23.

For detailed information on the product description, see the Operating Instructions for the device → 🖺 3

4 Mounting

For detailed information about mounting the sensor, see the Sensor Brief Operating
Instructions → 🖹 3

4.1 Turning the transmitter housing

To provide easier access to the connection compartment or display module, the transmitter
housing can be turned.
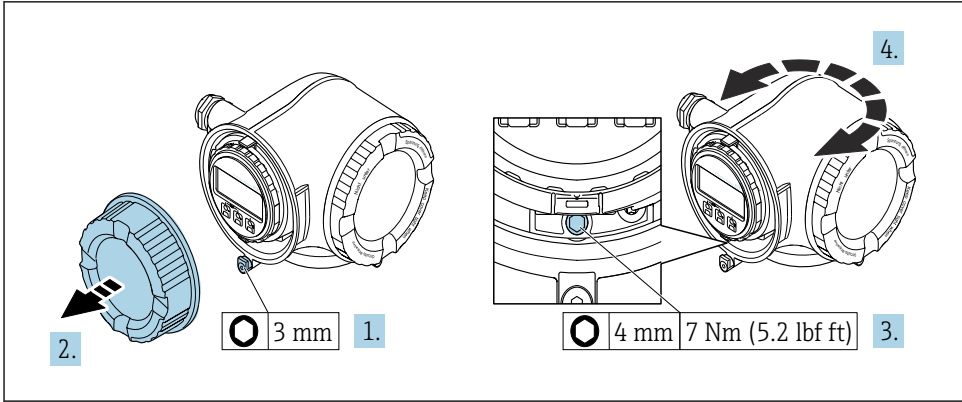
🖾 1   Non-Ex housing

1. Depending on the device version: Loosen the securing clamp of the connection
   compartment cover.
2. Unscrew the connection compartment cover.
3. Loosen the securing screw.
4. Turn the housing to the desired position.
5. Tighten the securing screw.
6. Screw on the connection compartment cover.
7. Depending on the device version: Attach the securing clamp of the connection
   compartment cover.
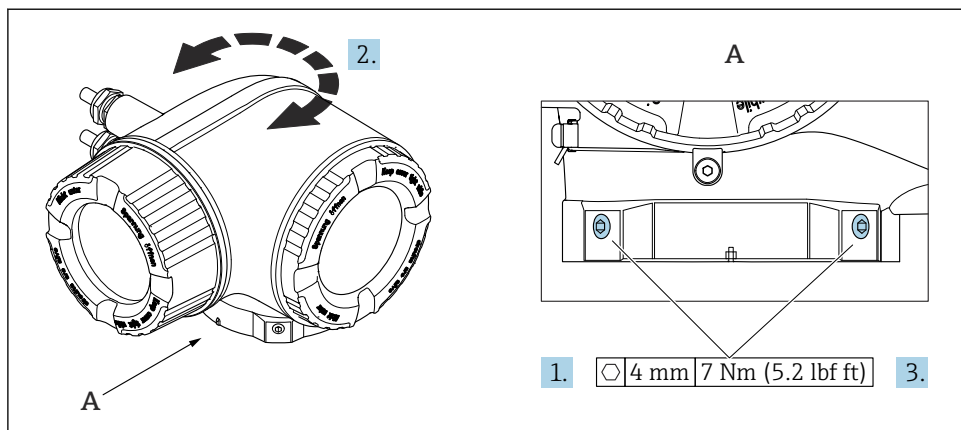
A0043150

⊠ *2*　　*Ex housing*

1. Loosen the fixing screws.
2. Turn the housing to the desired position.
3. Tighten the securing screws.

4.2   Turning the display module

The display module can be turned to optimize display readability and operability.
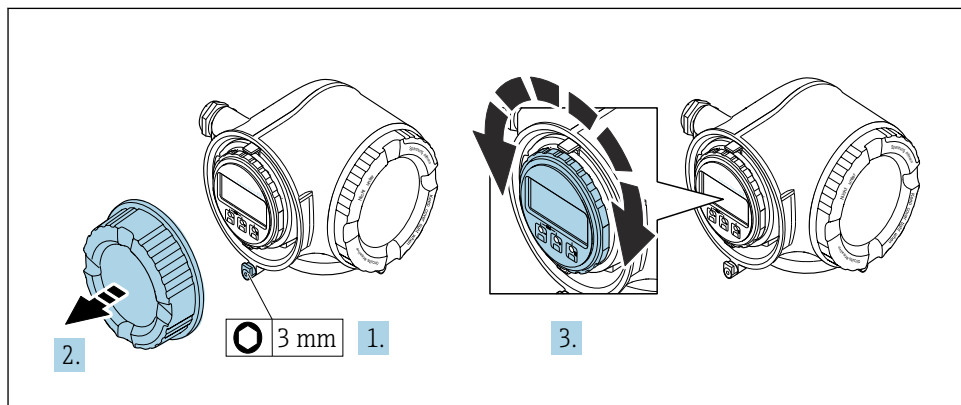
A0030035

1. Depending on the device version: Loosen the securing clamp of the connection compartment cover.

2. Unscrew the connection compartment cover.

3. Turn the display module to the desired position: max. 8 × 45° in each direction.

4. Screw on the connection compartment cover.

5. Depending on the device version: Attach the securing clamp of the connection compartment cover.

4.3   Cover lock

NOTICE

**Order code "Housing", option L "Cast, stainless": The covers of the transmitter housing
are provided with a borehole to lock the cover.**
The cover can be locked using screws and a chain or cable provided by the customer on site.
▶ The use of stainless steel chains or cables is recommended.
▶ If a protective coating is applied, it is recommended to use a heat shrink tube to protect the
  housing paint.

A0029800
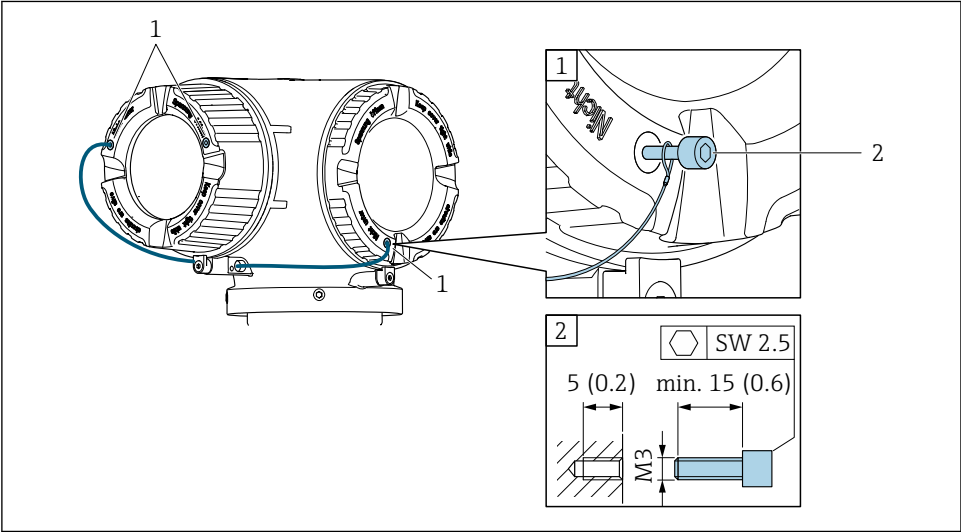
1   Cover borehole for the securing screw
2   Securing screw to lock the cover

4.4   Transmitter post-installation check

The post-installation check must always be performed after the following tasks:
• Turning the transmitter housing
• Turning the display module

Is the device undamaged (visual inspection)?	❑
Turning the transmitter housing: • Is the securing screw firmly tightened? • Is the connection compartment cover screwed on tightly? • Is the securing clamp firmly tightened?	❑
Turning the display module: • Is the connection compartment cover screwed on tightly? • Is the securing clamp firmly tightened?	❑

5 Electrical connection

⚠ WARNING

Live parts! Incorrect work performed on the electrical connections can result in an electric shock.

▶ Set up a disconnecting device (switch or power-circuit breaker) to easily disconnect the device from the supply voltage.

▶ In addition to the device fuse, include an overcurrent protection unit with max. 10 A in the plant installation.

5.1 Electrical safety

In accordance with applicable national regulations.

5.2 Connecting requirements

5.2.1 Required tools

- For cable entries: Use corresponding tools
- For securing clamp: Allen key 3 mm
- Wire stripper
- When using stranded cables: Crimper for wire end ferrule
- For removing cables from terminal: Flat blade screwdriver ≤ 3 mm (0.12 in)

5.2.2 Requirements for connecting cable

The connecting cables provided by the customer must fulfill the following requirements.

Protective grounding cable for the outer ground terminal

Conductor cross-section < 2.1 mm² (14 AWG)

The use of a cable lug enables the connection of larger cross-sections.

The grounding impedance must be less than 2 Ω.

Permitted temperature range

- The installation guidelines that apply in the country of installation must be observed.
- The cables must be suitable for the minimum and maximum temperatures to be expected.

Power supply cable (incl. conductor for the inner ground terminal)

Standard installation cable is sufficient.

Signal cable

Current output 4 to 20 mA HART

A shielded cable is recommended. Observe grounding concept of the plant.

Current output 0/4 to 20 mA

• Standard installation cable is sufficient
• For custody transfer measurement, use a shielded cable: tin-plated copper braid, optical cover ≥ 85 %

Pulse /frequency /switch output

• Standard installation cable is sufficient
• For custody transfer measurement, use a shielded cable: tin-plated copper braid, optical cover ≥ 85 %

Double pulse output

• Standard installation cable is sufficient
• For custody transfer measurement, use a shielded cable: tin-plated copper braid, optical cover ≥ 85 %

Relay output

Standard installation cable is sufficient.

Current input 0/4 to 20 mA

• Standard installation cable is sufficient
• For custody transfer measurement, use a shielded cable: tin-plated copper braid, optical cover ≥ 85 %

Status input

• Standard installation cable is sufficient
• For custody transfer measurement, use a shielded cable: tin-plated copper braid, optical cover ≥ 85 %

Cable diameter

• Cable glands supplied:
  M20 × 1.5 with cable Ø 6 to 12 mm (0.24 to 0.47 in)
• Spring-loaded terminals: Suitable for strands and strands with ferrules.
  Conductor cross-section 0.2 to 2.5 mm² (24 to 12 AWG).

Requirements for connecting cable – remote display and operating module DKX001

Optionally available connecting cable

Standard cable	2 × 2 × 0.34 mm² (22 AWG) PVC cable with common shield (2 pairs, pair-stranded)
Flame resistance	According to DIN EN 60332-1-2
Oil resistance	According to DIN EN 60811-2-1

Shield	Tin-plated copper braid, optical cover ≥ 85 %
Capacitance: core/shield	≤ 200 pF/m
L/R	≤ 24 µH/Ω
Available cable length	5 m (15 ft)/10 m (35 ft)/20 m (65 ft)/30 m (100 ft)
Operating temperature	When mounted in a fixed position: −50 to +105 ℃ (−58 to +221 ℉); when cable can move freely: −25 to +105 ℃ (−13 to +221 ℉)

Standard cable - customer-specific cable

With the following order option, no cable is supplied with the device and must be provided by the customer:
Order code for DKX001: Order code **040** for "Cable", option **1** "None, provided by customer, max 300 m"

A standard cable with the following minimum requirements can be used as the connecting cable, even in the hazardous area (Zone 2, Class I, Division 2 and Zone 1, Class I, Division 1):

Standard cable	4 wires (2 pairs); pair-stranded with common shield, minimum wire cross-section 0.34 mm^2 (22 AWG)
Shield	Tin-plated copper braid, optical cover ≥ 85 %
Cable impedance (pair)	Minimum 80 Ω
Capacitance: core/shield	Maximum 1 000 nF for Zone 1, Class I, Division 1
L/R	Maximum 24 µH/Ω for Zone 1, Class I, Division 1

5.2.3   Terminal assignment

Transmitter: supply voltage, input/outputs

The terminal assignment of the inputs and outputs depends on the individual order version of the device. The device-specific terminal assignment is documented on an adhesive label in the terminal cover.

Supply voltage		Input/output 1		Input/output 2		Input/output 3	
1 (+)	2 (−)	26 (+)	27 (−)	24 (+)	25 (−)	22 (+)	23 (−)
		Device-specific terminal assignment: adhesive label in terminal cover.					

ℹ️   Terminal assignment of the remote display and operating module → 🖺 23.

5.2.4   Preparing the measuring device

NOTICE

Insufficient sealing of the housing!
Operational reliability of the measuring device could be compromised.
▶ Use suitable cable glands corresponding to the degree of protection.

1. Remove dummy plug if present.

2. If the measuring device is supplied without cable glands:
   Provide suitable cable gland for corresponding connecting cable.

3. If the measuring device is supplied with cable glands:
   Observe requirements for connecting cables → 🖺 16.

5.3   Connecting the measuring device

NOTICE

**Limitation of electrical safety due to incorrect connection!**
▶ Have electrical connection work carried out by appropriately trained specialists only.
▶ Observe applicable federal/national installation codes and regulations.
▶ Comply with local workplace safety regulations.
▶ Always connect the protective ground cable ⏚ before connecting additional cables.
▶ For use in potentially explosive atmospheres, observe the information in the device-specific Ex documentation.

5.3.1   Connecting the transmitter
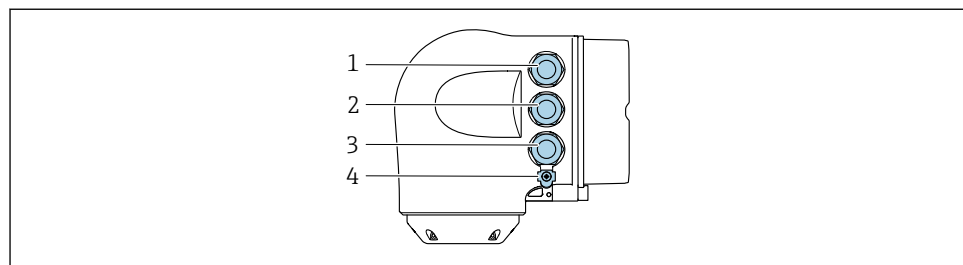
A0026781

1   Terminal connection for supply voltage
2   Terminal connection for signal transmission, input/output
3   Terminal connection for signal transmission, input/output or terminal connection for network
       connection via service interface (CDI-RJ45); optional: connection for external WLAN antenna or
       remote display and operating module DKX001
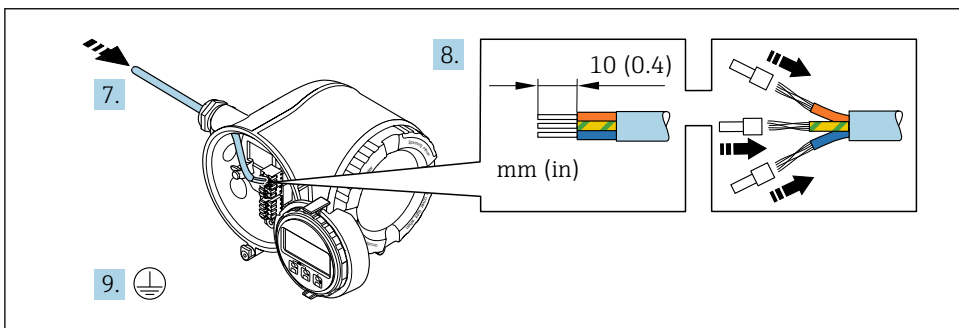*4   Protective earth (PE)*
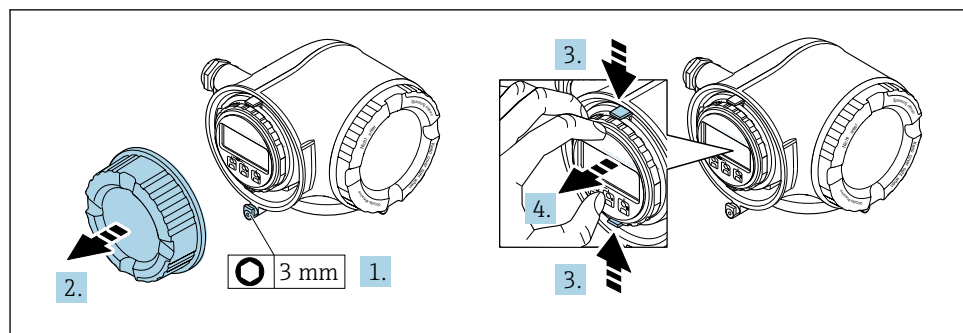
A0029813

1. Loosen the securing clamp of the connection compartment cover.

2. Unscrew the connection compartment cover.

3. Squeeze the tabs of the display module holder together.

4. Remove the display module holder.
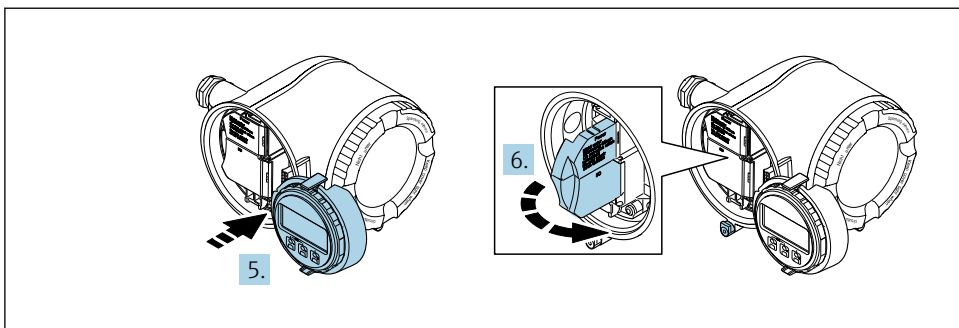
A0029814

5. Attach the holder to the edge of the electronics compartment.

6. Open the terminal cover.

A0029815

7. Push the cable through the cable entry. To ensure tight sealing, do not remove the sealing ring from the cable entry.

8. Strip the cable and cable ends. In the case of stranded cables, also fit ferrules.

9. Connect the protective ground.
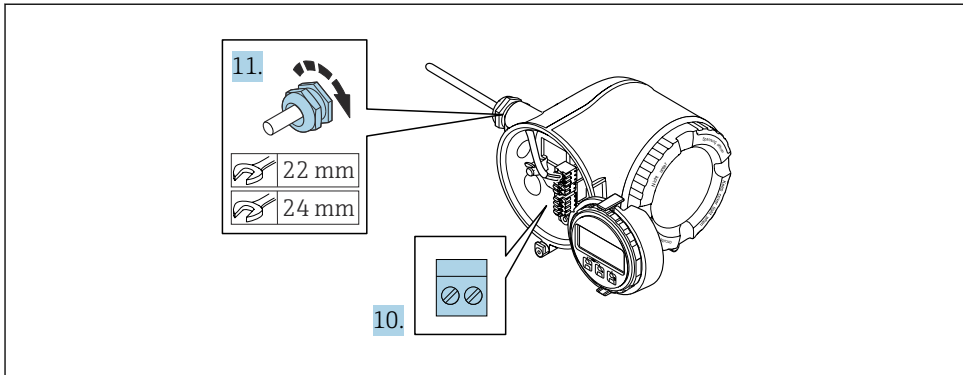
A0029816

10. Connect the cable according to the terminal assignment.
   ↳ **Signal cable terminal assignment:** The device-specific terminal assignment is
      documented on an adhesive label in the terminal cover.
      Supply voltage terminal assignment: Adhesive label in the terminal cover or
      → 🗎 19.

11. Firmly tighten the cable glands.
   ↳ This concludes the cable connection process.

12. Close the terminal cover.

13. Fit the display module holder in the electronics compartment.

14. Screw on the connection compartment cover.

15. Secure the securing clamp of the connection compartment cover.

5.3.2   Connecting the remote display and operating module DKX001

The remote display and operating module DKX001 is available as an optional extra.

- The remote display and operating module DKX001 is only available for the following housing version: order code for "Housing": option A "Aluminum, coated"
- The remote display and operating module DKX001 is only available for the following housing versions, order code for "Housing":
  - Option A "Aluminum, coated"
  - Option L "Cast, stainless"
- The measuring device is always supplied with a dummy cover when the remote display and operating module DKX001 is ordered directly with the measuring device. Display or operation at the transmitter is not possible in this case.
- If ordered subsequently, the remote display and operating module DKX001 may not be connected at the same time as the existing measuring device display module. Only one display or operation unit may be connected to the transmitter at any one time.

A0027518
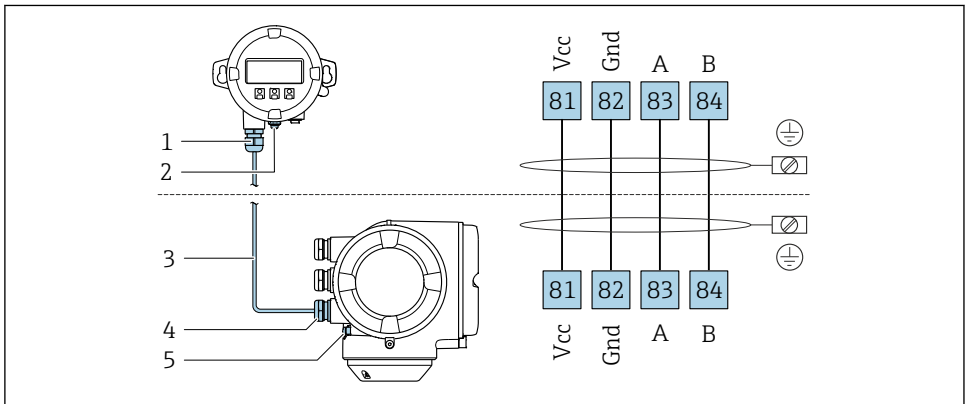
1   Remote display and operating module DKX001
2   Terminal connection for potential equalization (PE)
3   Connecting cable
4   Measuring device
5   Terminal connection for potential equalization (PE)

5.4   Ensuring potential equalization

5.4.1   Requirements

No special measures for potential equalization are required.

For devices intended for use in hazardous locations, please observe the guidelines in the Ex documentation (XA).

5.5   Ensuring the degree of protection

The measuring device fulfills all the requirements for the degree of protection IP66/67, Type 4X enclosure.

To guarantee the degree of protection IP66/67, Type 4X enclosure, carry out the following steps after the electrical connection:

1. Check that the housing seals are clean and fitted correctly.
2. Dry, clean or replace the seals if necessary.
3. Tighten all housing screws and screw covers.
4. Firmly tighten the cable glands.
5. To ensure that moisture does not enter the cable entry:
   Route the cable so that it loops down before the cable entry ("water trap").

   ↳

   A0029278
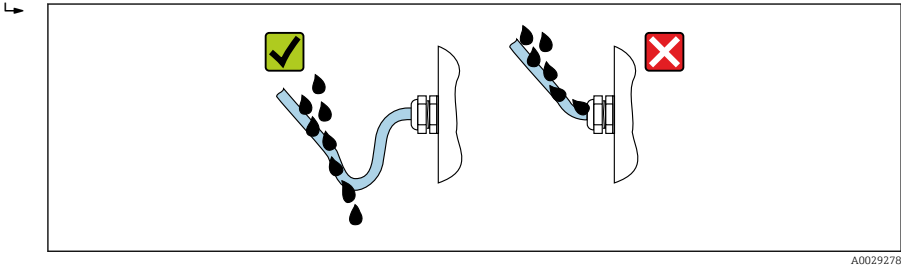
6. Insert dummy plugs (corresponding to the housing degree of protection) into unused cable entries.

5.6   Post-connection check

|	
Are cables or the device undamaged (visual inspection)?	❑
Is the protective earthing established correctly?	
Do the cables used comply with the requirements ?	❑
Do the mounted cables have adequate strain relief?	❑
Are all cable glands installed, securely tightened and leak-tight? Cable run with "water trap" → 🖹 24?	❑
Is the terminal assignment correct ?	❑
If supply voltage is present, do values appear on the display module?	❑
Are dummy plugs inserted in unused cable entries and have transportation plugs been replaced with dummy plugs?	

6 Operation options

6.1 Overview of operation options

A0034513
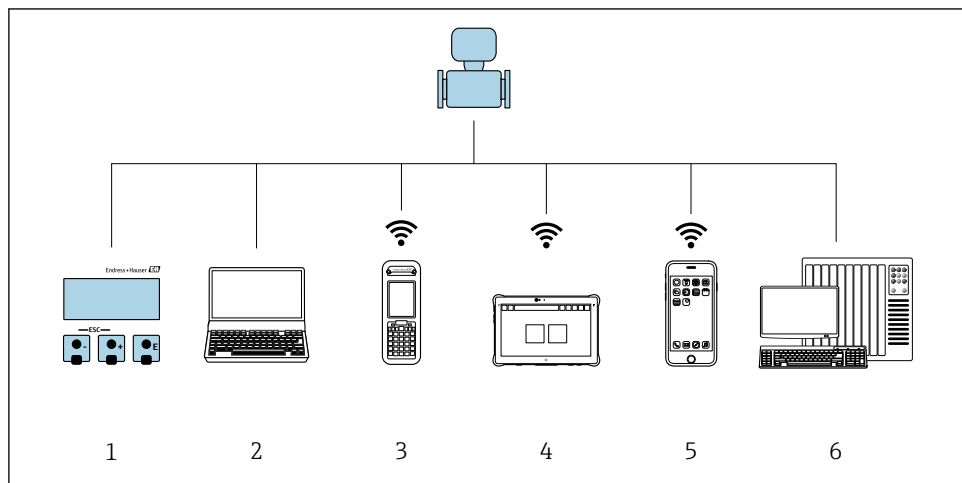
1 Local operation via display module
2 Computer with Web browser (e.g. Internet Explorer) or with operating tool (e.g. FieldCare, DeviceCare, AMS Device Manager, SIMATIC PDM)
3 Field Xpert SFX350 or SFX370
4 Field Xpert SMT70
5 Mobile handheld terminal
6 Control system (e.g. PLC)

6.2 Structure and function of the operating menu

6.2.1 Structure of the operating menu
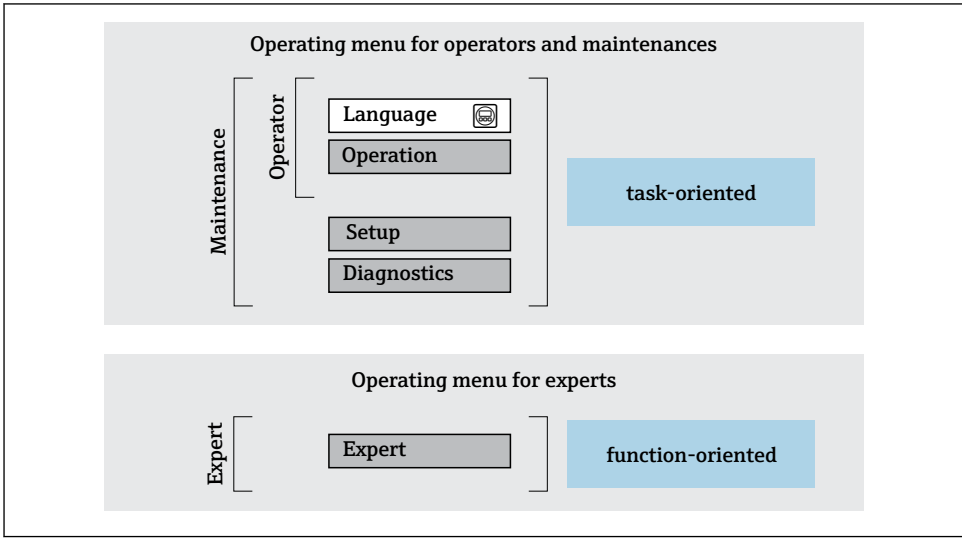
A0014058-EN

⊠ *3*   *Schematic structure of the operating menu*

6.2.2 Operating philosophy

The individual parts of the operating menu are assigned to certain user roles (operator, maintenance etc.). Each user role contains typical tasks within the device lifecycle.

For detailed information on the operating philosophy, see the Operating Instructions for the device.

Only applies for Proline Promass F, O, Q and X

For custody transfer, once the device has been put into circulation or sealed, its operation is restricted.

6.3   Access to the operating menu via the local display
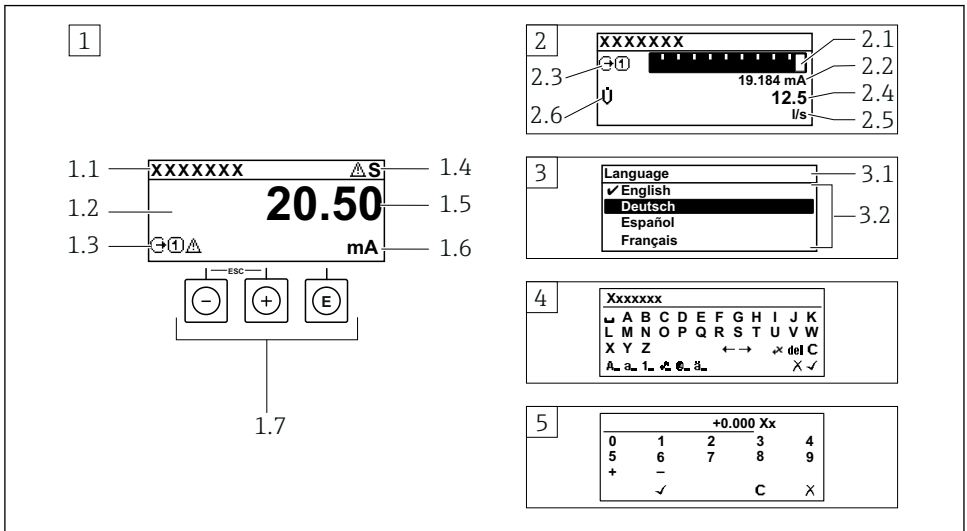
A0014013

1   Operational display with measured value shown as "1 value, max." (example)
1.1   Device tag
1.2   Display area for measured values (4-line)
1.3   Explanatory symbols for measured value: Measured value type, measuring channel number, symbol for diagnostic behavior
1.4   Status area
1.5   Measured value
1.6   Unit for the measured value
1.7   Operating elements
2   Operational display with measured value shown as "1 bar graph + 1 value" (example)
2.1   Bar graph display for measured value 1
2.2   Measured value 1 with unit
2.3   Explanatory symbols for measured value 1: measured value type, measuring channel number
2.4   Measured value 2
2.5   Unit for measured value 2
2.6   Explanatory symbols for measured value 2: measured value type, measuring channel number
3   Navigation view: picklist of a parameter
3.1   Navigation path and status area
3.2   Display area for navigation: ✔ designates the current parameter value
4   Editing view: text editor with input mask
5   Editing view: numeric editor with input mask

6.3.1 Operational display

| Explanatory symbols for the measured value	Status area

• Depends on the device version, e.g.:
  • Ụ̇: Volume flow
  • ṁ: Mass flow
  • ρ: Density
  • G: Conductivity
  • 🌡: Temperature
• Σ: Totalizer
• ➔: Output
• ➔: Input
• ①...④: Measurement channel number [1]
• Diagnostic behavior [2]
  • ⊗: Alarm
  • ⚠: Warning
	The following symbols appear in the status area of the operational display at the top right:
	• Status signals
	  • **F**: Failure
	  • **C**: Function check
	  • **S**: Out of specification
	  • **M**: Maintenance required
	• Diagnostic behavior
	  • ⊗: Alarm
	  • ⚠: Warning
	• 🔒: Locking (locked via hardware))
	• ↔: Communication via remote operation is active.

1)   If there is more than one channel for the same measured variable type (totalizer, output etc.).
2)   For a diagnostic event that concerns the displayed measured variable.

6.3.2 Navigation view

Status area	Display area

The following appears in the status area of the navigation view in the top right corner:
• In the submenu
  • The direct access code for the parameter you are navigating to (e.g. 0022-1)
  • If a diagnostic event is present, the diagnostic behavior and status signal
• In the wizard
  If a diagnostic event is present, the diagnostic behavior and status signal
	• Icons for menus
	  • ⊗: Operation
	  • 🔧: Setup
	  • ⚕: Diagnostics
	  • ✈: Expert
	• ▶: Submenus
	• ▷: Wizards
	• ✎: Parameters within a wizard
	• 🔒: Parameter locked

6.3.3 Editing view

Text editor		Text correction symbols under ⌧C↔	
✓	Confirms selection.	C	Clears all entered characters.
X	Exits the input without applying the changes.	➔	Moves the input position one position to the right.
C	Clears all entered characters.	⬅	Moves the input position one position to the left.
⌧C↔	Switches to the selection of the correction tools.	⌫	Deletes one character immediately to the left of the input position.
Aa1@	Toggle • Between upper-case and lower-case letters • For entering numbers • For entering special characters		

Numeric editor			
☐✓	Confirms selection.	☐←	Moves the input position one position to the left.
☐X	Exits the input without applying the changes.	☐.	Inserts decimal separator at the cursor position.
☐−	Inserts minus sign at the cursor position.	☐C	Clears all entered characters.

6.3.4   Operating elements

Keys and meaning

ⓔ   **Enter key**
 	
With an operational display
Pressing the key briefly opens the operating menu.
 	
In a menu, submenu
• Pressing the key briefly:
  • Opens the selected menu, submenu or parameter.
  • Starts the wizard.
  • If help text is open:
    Closes the help text of the parameter.
• Pressing the key for 2 s in the case of a parameter:
  If present, opens the help text for the function of the parameter.
 	
With a wizard: Opens the editing view of the parameter.
 	
With a text and numeric editor
• Pressing the key briefly confirms your selection.
• Pressing the key for 2 s confirms the entry.

⊖   **Minus key** • *In a menu, submenu:* Moves the selection bar upwards in a picklist. • *With a wizard:* Confirms the parameter value and goes to the previous parameter. • *With a text and numeric editor:* Moves the cursor position to the left.
⊕   **Plus key** • *In a menu, submenu:* Moves the selection bar downwards in a picklist. • *With a wizard:* Confirms the parameter value and goes to the next parameter. • *With a text and numeric editor:* Moves the cursor position to the right.

⊕ + ⊖   **Escape key combination (press keys simultaneously)**
 	
In a menu, submenu
• Pressing the key briefly:
  • Exits the current menu level and takes you to the next higher level.
  • If help text is open, closes the help text of the parameter.
• Pressing the key for 2 s in the case of a parameter: Returns you to the operational display ("home position").
 	
With a wizard: Exits the wizard and takes you to the next higher level.
 	
With a text and numeric editor: Closes the editor view without applying any changes.

Keys and meaning
▢ + ▢   **Minus/Enter key combination (press the keys simultaneously)**
With an operational display: • If keypad lock is active: Pressing the key for 3 s deactivates the keypad lock. • If keypad lock is not active: Pressing the key for 3 s opens the context menu including the option for activating the keypad lock.

6.3.5   Further information

For further information on the following topics, see the Operating Instructions for the device
- Calling up help text
- User roles and related access authorization
- Disabling write protection via access code
- Enabling and disabling the keypad lock

6.4   Access to the operating menu via the operating tool

For detailed information on access via FieldCare and DeviceCare, see the Operating Instructions for the device → 🖪 3

6.5   Access to the operating menu via the Web server

The operating menu can also be accessed via the Web server. See the Operating Instructions for the device.

7   System integration

For detailed information on system integration, see the Operating Instructions for the device → 🖪 3

- Overview of device description files:
  - Current version data for the device
  - Operating tools
- Measured variables via HART protocol
- Burst mode functionality in accordance with HART 7 Specification
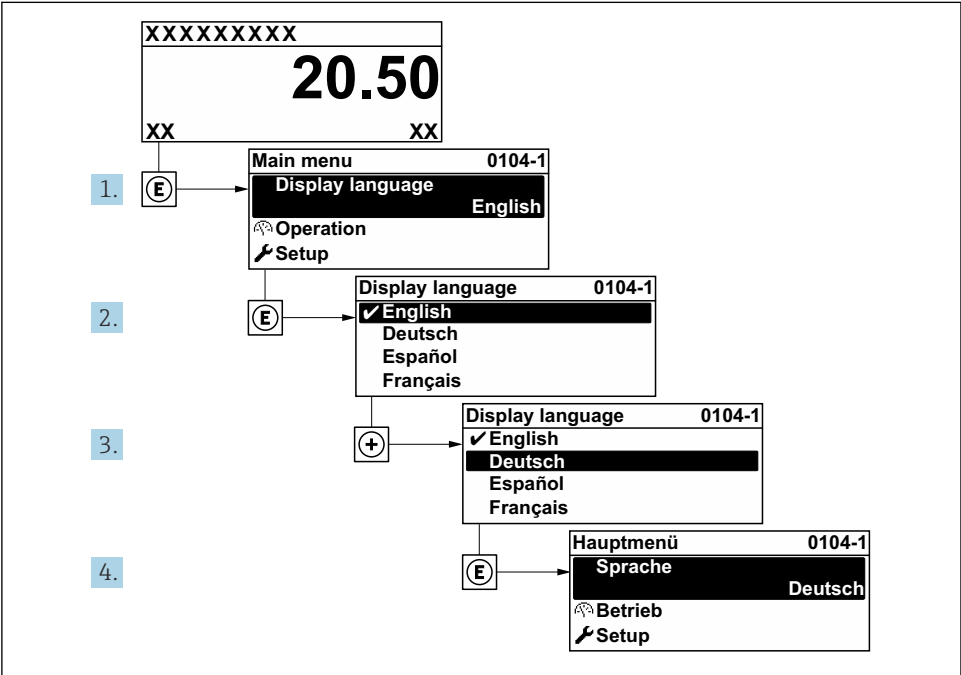
8   Commissioning

8.1   Function check

Before commissioning the measuring device:

▶ Make sure that the post-installation and post-connection checks have been performed.

- Checklist for "Post-mounting check" → 🗎 15
- Checklist for "Post-connection check" → 🗎 24

8.2   Setting the operating language

Factory setting: English or ordered local language

🖼 *4   Taking the example of the local display*

8.3   Configuring the measuring device

The **Setup** menu with its submenus and various guided wizards is used for fast commissioning of the measuring device. They contain all the parameters required for configuration, such as for measurement or communication.

ℹ️ The number of submenus and parameters can vary depending on the device version. The selection can vary depending on the order code.

Example: Available submenus, wizards	Meaning
System units	Configuration of the units for all measured values
Medium selection	Definition of the medium
I/O configuration	User configurable I/O module

Example: Available submenus, wizards	Meaning
Current input	Configuration of the input/output type
Status input	
Current output 1 to n	
Pulse/frequency/switch output 1 to n	
Relay output	
Double pulse output	
Display	Configuration of the display format on the local display
Low flow cut off	Configuration of the low flow cut off
Partially filled pipe detection	Configuration of the detection of partially filled and empty pipes
Advanced setup	Additional parameters for configuration: • Calculated process variables • Sensor adjustment • Totalizer • Display • WLAN settings • Data backup • Administration

8.4 Protecting settings from unauthorized access

The following write protection options exist in order to protect the configuration of the measuring device from unintentional modification:
• Protect access to parameters via access code
• Protect access to local operation via key locking
• Protect access to measuring device via write protection switch

For detailed information on protecting the settings against unauthorized access, see the Operating Instructions for the device.

For detailed information on protecting the settings against unauthorized access in custody transfer applications, see the Special Documentation for the device.

9   Diagnostic information

Faults detected by the self-monitoring system of the measuring device are displayed as a diagnostic message in alternation with the operational display. The message about remedial measures can be called up from the diagnostic message, and contains important information on the fault.
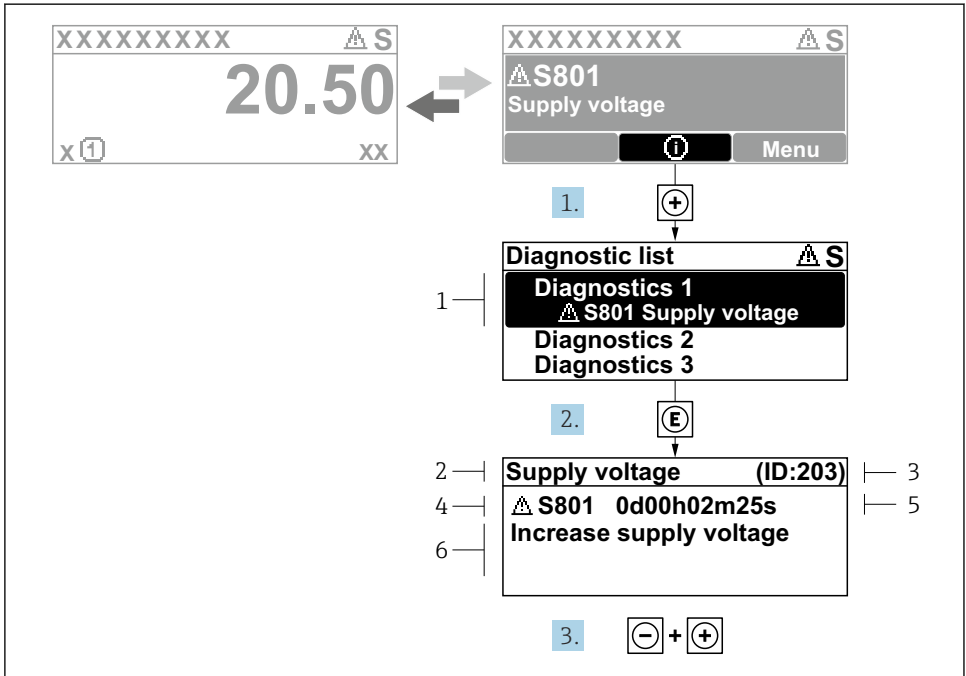
⊠ 5   Message for remedial measures

1   Diagnostic information
2   Short text
3   Service ID
4   Diagnostic behavior with diagnostic code
5   Operation time when error occurred
6   Remedial measures

1. The user is in the diagnostic message.
    Press ⊞ (ⓘ symbol).
    - ↳ The **Diagnostic list** submenu opens.

2. Select the desired diagnostic event with ⊞ or ⊟ and press 𝔼 .
    - ↳ The message about the remedial measures opens.

3. Press ⊟ + ⊞ simultaneously.
    - ↳ The message about the remedial measures closes.

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