Brief Operating Instructions
Flowmeter
Proline 10

IO-Link 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 [EH]

People for Process Automation

1.

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

Endress+Hauser

Serial number

2. www.endress.com/deviceviewer

Endress+Hauser
Operations App

Download on the
App Store

ANDROID APP ON
Google Play

3.

A0023555

Brief operating instructions Flowmeter

The device consists of a transmitter and a sensor.

The process of commissioning these two components is described in two separate manuals which 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
• Mounting procedure

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
• Mounting procedure
• 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   Warnings

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

This symbol alerts you to a potentially dangerous situation. Failure to avoid the situation may result in a minor or mild injury.

NOTICE

This symbol alerts you to a potentially harmful situation. Failure to avoid the situation may result in damage to the facility or to something in the facility's vicinity.

1.1.2   Electronics

⎓	Direct current
∼	Alternating current
≂	Direct current and alternating current
⏚	Terminal connection for potential equalization

1.1.3   Device communication

☀	Bluetooth is enabled.
▣	LED is off.
▨	LED flashing.
▨	LED lit.

1.1.4   Tools

◖⟋	Flat blade screwdriver
◯⟋	Hexagon wrench
⟍⟋	Wrench

1.1.5   Types of information

☑☑	Preferred procedures, processes or actions
☑	Permitted procedures, processes or actions

	Forbidden procedures, processes or actions
	Additional information
	Reference to documentation
	Reference to page
	Reference to graphic
▶	Measure or individual action to be observed
1., 2.,...	Series of steps
↳	Result of a step
	Help in the event of a problem
	Visual inspection
	Write-protected parameter

2 Safety instructions

2.1 Requirements for specialist personnel

▸ Installation, electrical connection, commissioning, diagnostics and maintenance of the device must only be carried out by trained, specialist personnel authorized by the facility's owner-operator.
▸ Before commencing work, the trained, specialist personnel must carefully read, understand and adhere to the Operating Instructions, additional documentation and certificates.
▸ Comply with national regulations.

2.2 Requirements for operating personnel

▸ Operating personnel are authorized by the facility's owner-operator and are instructed according to the requirements of the task.
▸ Before commencing work, the operating personnel must carefully read, understand and adhere to the instructions provided in the Operating Instructions and additional documentation.

2.3 Incoming acceptance and transport

▸ Transport the device in a correct and appropriate manner.

2.4 Adhesive labels, tags and engravings

▸ Pay attention to all the safety instructions and symbols on the device.

2.5   Environment and process

▶ Only use the device for the measurement of appropriate media.
▶ Keep within the device-specific pressure range and temperature range.
▶ Protect the device from corrosion and the influence of environmental factors.

2.6   Workplace safety

▶ Wear the required protective equipment according to national regulations.
▶ Do not ground the welding unit by means of the device.
▶ Wear protective gloves if working on and with the device with wet hands.

2.7   Installation

▶ Do not remove protective covers or protective caps on the process connections until just
  before you install the sensor.
▶ Do not damage or remove the liner on the flange.
▶ Observe tightening torques.

2.8   Electrical connection

▶ Comply with national installation regulations and guidelines.
▶ Observe cable specifications and device specifications.
▶ Check the cable for damage.
▶ Provide (establish) potential equalization.
▶ Provide (establish) grounding.

2.9   Surface temperature

Media with elevated temperatures can cause the surfaces of the device to become hot. For this
reason, note the following:
▶ Mount suitable touch protection.
▶ Wear suitable protective gloves.

2.10   Commissioning

▶ Install the device only if it is in proper technical condition, free from errors and faults.
▶ Only put the device into operation once you have performed the post-installation check and
  post-connection check.

2.11   Modifications to the device

▶ Only carry out modifications or repairs after consulting beforehand with an
  Endress+Hauser service organization.
▶ Install spare parts and accessories according to the Installation Instructions.
▶ Only use original spare parts and original accessories from Endress+Hauser.

3   Product information

3.1   Designated use

The device is intended only for the flow measurement of liquids and gases.

Depending on the version ordered, the device measures potentially explosive, flammable, poisonous and oxidizing media.

Devices for use in a hazardous area, in hygienic applications, or where there is an increased risk due to process pressure, are labeled accordingly on the nameplate.

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

3.2   Product design

The transmitter and sensor form a mechanical unit.
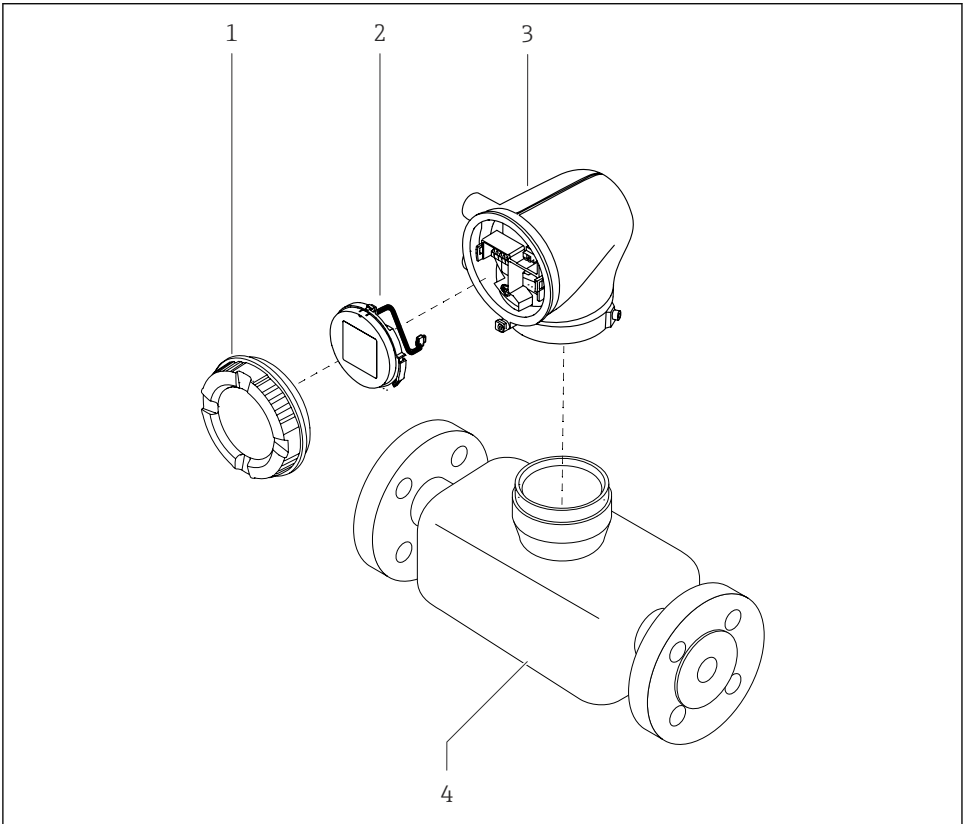
A0043525

⊡ *1   Main device components*

1   Housing cover
2   Display module
3   Transmitter housing
4   Sensor

4   Installation

For detailed information about installing the sensor, see the Brief Operating Instructions
for the sensor → 🖺 3

4.1 Turning the transmitter housing

Order code for "Housing", option
"Aluminum"

A0041095

1. Loosen the fixing screws on both sides of the transmitter housing.

2. **NOTICE**

   Overrotation of the transmitter housing!
   Interior cables are damaged.
   ▶ Turn the transmitter housing a maximum of 180° in each direction.

   Turn the transmitter housing to the desired position.

3. Tighten the screws in the logically reverse sequence.

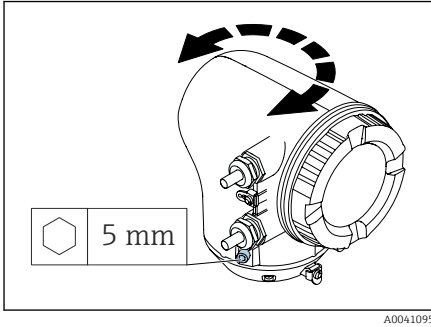Order code for "Housing", option
"Polycarbonate"

A0050149

1. Loosen the screw on the housing cover.

2. Open the housing cover.

3. Loosen the grounding screw (below the display).

4. Loosen the fixing screws on both sides of the transmitter housing.

5. **NOTICE**

   Overrotation of the transmitter housing!
   Interior cables are damaged.
   ▶ Turn the transmitter housing a maximum of 180° in each direction.

   Turn the transmitter housing to the desired position.

6. Tighten the screws in the logically reverse sequence.

4.2   Post-installation check

Is the device undamaged (visual inspection)?	❑
Does the device comply with the measuring point specifications? For example: • Process temperature • Process pressure • Ambient temperature • Measuring range	❑
Has the correct orientation been selected for the device?	❑
Does the direction of the arrow on the device match the flow direction of the medium?	❑
Is the device protected against precipitation and sunlight?	❑

5   Electrical connection

5.1   Connecting requirements

5.1.1   Notes on the electrical connection

⚠ WARNING

Live parts!
Incorrect work performed on the electrical connections can result in an electric shock.
▶ Have electrical connection work carried out by appropriately trained specialists only.
▶ Comply with applicable federal/national installation codes and regulations.
▶ Comply with national and local workplace safety regulations.
▶ Ground the device carefully and provide potential equalization.
▶ Connect protective earthing to all outer ground terminals.

5.1.2   Additional protective measures

The following protective measures are required:
• Set up a disconnecting device (switch or power-circuit breaker) to easily disconnect the device from the supply voltage.
• The DC power unit must be tested to ensure it meets technical safety requirements (e.g. PELV, SELV) with limited power sources (e.g. class 2).
• Plastic sealing plugs act as safeguards during transportation and must be replaced by suitable, individually approved installation material.
• Connection examples: → 🕮 16

5.2   Requirements for connecting cable

5.2.1   Electrical safety

As per applicable national regulations.

5.2.2   Permitted temperature range

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

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

• A standard installation cable is sufficient.
• Provide grounding according to applicable national codes and regulations.

5.2.4   Signal cable

IO-Link:
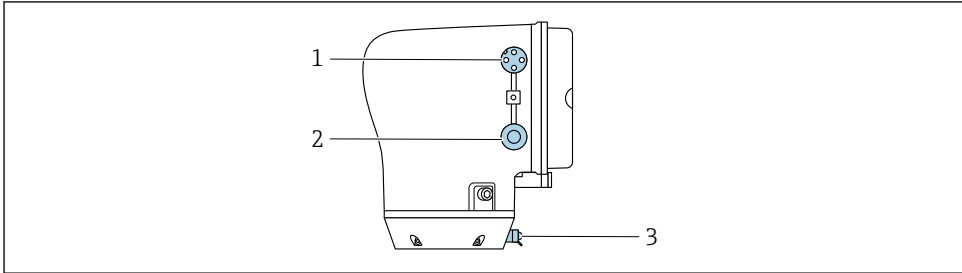Twisted three- or four-core cable M12 A-coded according to IEC 61076-2-101 recommended with
• Conductor cross-section: 0.34 mm^2 (AWG22)
• Max. cable length: 20 m

5.3 Ground cable requirements

Copper wire: at least 6 mm^2 (0.0093 in^2)
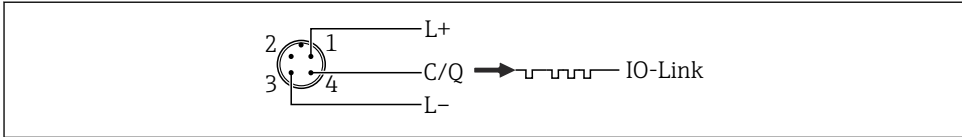
5.4   Transmitter connection

5.4.1   Transmitter terminal connections

1   M12 plug for power supply (supply voltage) and signals (IO-Link)
2   Dummy plug
3   Outer ground terminal

Pin assignment of IO-Link device plug

🖻 *2   M12 A-coded (IEC 61076-2-101)*

1   PIN 1: power supply
2   PIN 2: not used
3   PIN 3: reference potential for power supply/output
*4   PIN 4: output 1 (IO-link)*

5.4.2   Wiring the transmitter

> Pay attention to the requirements for the power supply cable and signal cable → 🖹 12 .

> - Connect protective earthing to the outer signal terminals.
> - Connect the IO-Link signal cable to M12.

5.5   Ensuring potential equalization

No special measures for potential equalization are required.
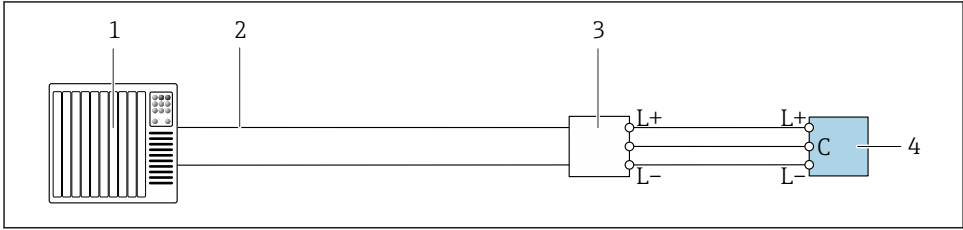
5.6   Removing a cable

3 (0.12)

1.

2.

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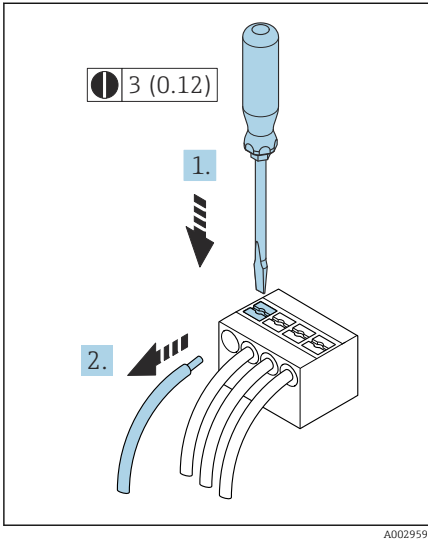
1. Use a flat-blade screwdriver to press down on the slot between the two terminal holes and hold.

2. Remove the cable end from the terminal.

🔲 *3   Engineering unit mm (in)*

5.7 Examples of electric terminals
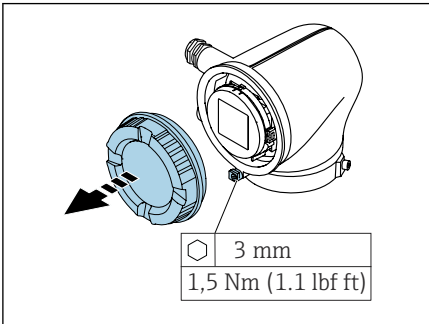
5.7.1 IO-Link

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⊡ 4   *Connection example for IO-Link, only non-hazardous area*
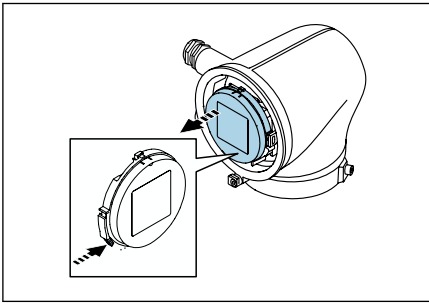
1   Automation system (e.g. PLC)
2   Industrial Ethernet or fieldbus
3   IO-Link master
4   Transmitter

5.8   Hardware settings

5.8.1   Enabling write protection

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1. Loosen the Allen key of the securing clamp.
2. Open the housing cover counterclockwise.
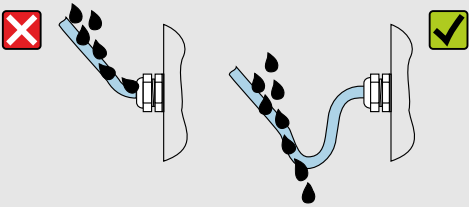

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3. Press the tab of the display module holder.
4. Remove the display module from the display module holder.

A0044412
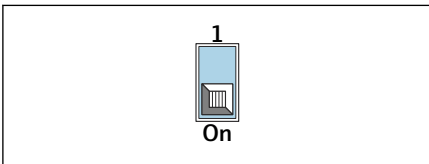
5. Set the write protection switch on the back of the display module to the **On** position.
    ↳   Write protection is enabled.
6. Follow the sequence in the reverse order to reassemble.

5.9 Post-connection check

Is the protective earthing established correctly?	❑
Are the device and cable undamaged (visual check)?	❑
Do the cables meet the requirements?	❑
Is the terminal assignment correct?	❑
Are all the cable glands installed, firmly tightened and leak-tight?	❑
Are dummy plugs inserted in unused cable entries?	❑
Are transportation plugs replaced by dummy plugs?	❑
Are the housing screws and housing cover tightened?	❑
Do the cables loop down before the cable gland ("water trap")? A0042316	❑
Does the supply voltage match the specifications on the transmitter nameplate?	❑

6   Operation

6.1   Overview of the operating options
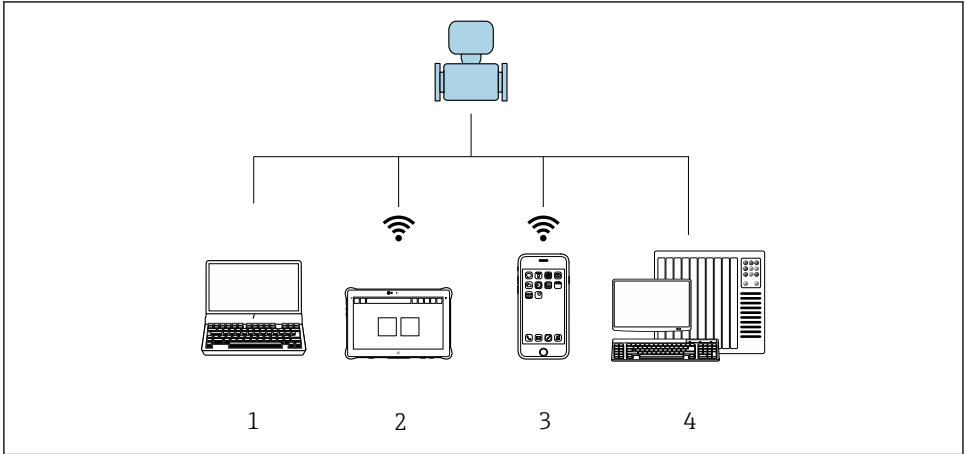
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1   Computer with operating tool, e.g. FieldCare, DeviceCare or IODD operating tools
2   Field Xpert SMT70 via Bluetooth, e.g. SmartBlue App
3   Tablet or smartphone via Bluetooth, e.g. SmartBlue App
4   Automation system, e.g. PLC

6.2   Operation via SmartBlue App

The device can be operated and configured with the SmartBlue App.

- The SmartBlue App must be downloaded onto a mobile device for this purpose.
- For information on the compatibility of the SmartBlue App with mobile devices, see **Apple App Store (iOS devices)** or **Google Play Store (Android devices).**
- Incorrect operation by unauthorized persons is prevented by means of encrypted communication and password encryption.
- The Bluetooth® function can be deactivated after initial device setup.
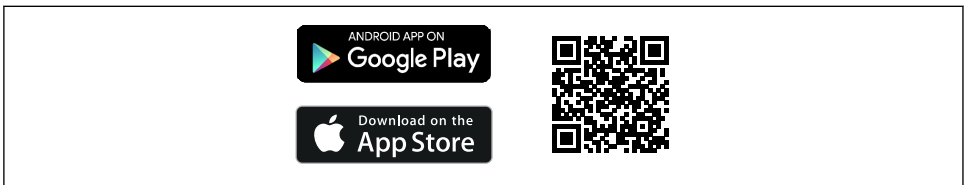
A0033202

🖼 *5   QR code for free Endress+Hauser SmartBlue App*

Download and installation:

1. Scan the QR code or enter **SmartBlue** in the search field of the Apple App Store (iOS) or Google Play Store (Android).

2. Install and start the SmartBlue App.

3. For Android devices: enable location tracking (GPS) (not required for iOS devices).

4. Select a device that is ready to receive from the device list displayed.

Login:

1. Enter the user name: admin

2. Enter the initial password: serial number of the device

[i] Change the password after logging in for the first time.

[i] Forgotten your password? Contact Endress+Hauser Service.

7 System integration

[📖] For detailed information on system integration, see the Operating Instructions for the device.
Overview of device description files:
- Current version data for the device
- Operating tools

8 Commissioning

8.1 Post-installation check and post-connection check

Before commissioning the device, make sure that the post-installation and post-connection checks have been performed:
- Post-installation check → 🖺 11
- Post-connection check → 🖺 18

8.2   Switching on the device

▶ Switch on the supply voltage for the device.
   ↳ The local display switches from the start screen to the operational display.
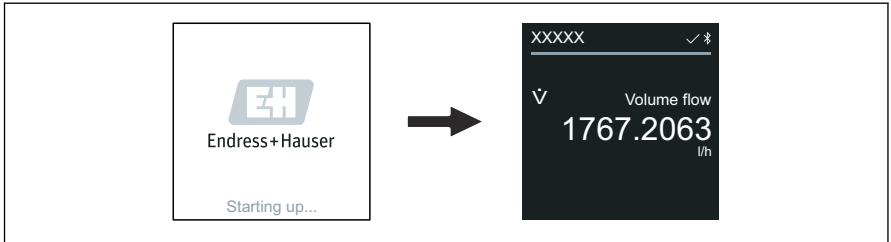
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ℹ If device startup is not successful, the device displays an error message to this effect .

8.3 Commissioning the device

8.3.1 SmartBlue App

ℹ️ Information on the SmartBlue App: Operating Instructions

Connecting the SmartBlue App to the device

1. Enable Bluetooth on the mobile handheld terminal, tablet or smartphone.
2. Start the SmartBlue App.
   ↳ A Live List shows all the devices available.
3. Select the desired device.
   ↳ The SmartBlue App shows the device login.
4. Under user name, enter **admin**.
5. Under password, enter the device's serial number. See nameplate for serial number.
6. Confirm your entries.
   ↳ The SmartBlue App connects to the device and displays the main menu.

8.4 Backing up or duplicating the device data

The device does not have a memory module. However, using an operating tool based on the FDT technology (e.g. FieldCare) or the SmartBlue App, the following options are available:
- Save/recover configuration data
- Duplicate device configurations
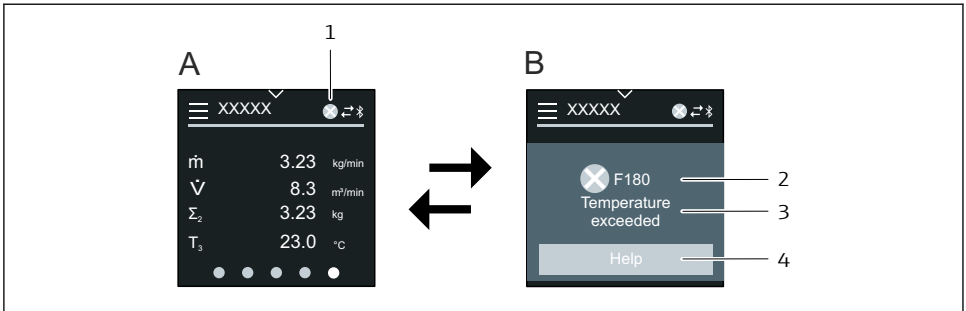- Transfer all relevant parameters when replacing electronic inserts

For more information: Operating Instructions

9 Diagnosis and troubleshooting

9.1 Diagnostic information on local display

9.1.1 Diagnostic message

The local display alternates between displaying faults as a diagnostic message and displaying the operational display screen.

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A   Operational display in alarm condition
B   Diagnostic message
1   Diagnostic behavior
2   Diagnostic behavior with diagnostic code
3   Short text
4   Open information on remedial measures (HART and Modbus RS485 only)

If two or more diagnostic events are pending simultaneously, the local display only shows the diagnostic message with the highest priority.

Other diagnostic events that have occurred can be opened as follows:
- Via FieldCare
- Via DeviceCare
- Via IO-Link

For detailed information on diagnostic information, see the Operating Instructions for the device

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