BA01987S/00/EN/06.24-00
71669586
2024-08-15

Operating Instructions
FieldPort SWA50

Intelligent Bluetooth® adapter for HART field devices

Endress+Hauser
People for Process Automation

Revision history

Product version	Operating Instructions	Changes	Comments
1.00.XX	BA01987S/04/EN/02.20	–	Initial version
1.00.XX	BA01987S/04/EN/03.21	Supply voltage	Corrections
1.00.XX	BA01987S/04/EN/04.21	Alignment Range Note on status signal Notes and references "Diagnostics" section	Amendments and changes
1.01.XX	BA01987S/04/EN/05.24	Following sections: ▪ Range ▪ Operation options ▪ Commissioning ▪ Description of SmartBlue app for SWA50 ▪ Description of DTM for SWA50 ▪ Updating the firmware ▪ Diagnostics ▪ Menu overview	Additions and changes based on ▪ New SWA50 firmware incl. MSD ▪ Changeover of Field Xpert operation from MSD to DTM

Table of contents

1 About this document

1.1 Purpose of this document

These Operating Instructions contain all the information that is required in the various phases of the life cycle of the device: from product identification, incoming acceptance and storage, to mounting, connection, operation and commissioning through to troubleshooting, maintenance and disposal.

1.2 Symbols

1.2.1 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.

1.2.2 Symbols for certain types of information

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
▶	Notice or individual step to be observed
1., 2., 3...	Series of steps
	Result of a step
	Help in the event of a problem
	Visual inspection

1.2.3 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
	Hazardous area		Safe area (non-hazardous area)

1.2.4 Electrical symbols

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.
	**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.

1.2.5 SmartBlue app icons

Icon	Meaning
	SmartBlue
	Accessible field devices
	Home
	Menu
	Settings

1.3 Terms and abbreviations

Term	Description
DeviceCare	Universal configuration software for Endress+Hauser HART, PROFIBUS, FOUNDATION Fieldbus and Ethernet field devices
DTM	Device Type Manager
FieldCare	Scalable software tool for device configuration and integrated plant asset management solutions
Loop-powered adapter	Loop-powered adapter

1.4 Valid versions

Component	Version
Software	V1.01.xx
Hardware	V1.00.xx

1.5 Documentation

Current documentation such as Operating Instructions, 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**.

Ex documentation
All explosion-protection data are provided in separate Ex documentation. The relevant Ex documentation is delivered with the Ex devices as standard.

If there is additional documentation for the device version, the documentation code of this supplementary documentation is specified on the nameplate.

1.6 Registered trademarks

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

Bluetooth®
The *Bluetooth®* word mark and logos are registered trademarks owned by the Bluetooth SIG, Inc. and any use of such marks by Endress+Hauser is under license. Other trademarks and trade names are those of their respective owners.

Apple®
Apple, the Apple logo, iPhone, and iPod touch are trademarks of Apple Inc., registered in the U.S. and other countries. App Store is a service mark of Apple Inc.

Android®
Android, Google Play and the Google Play logo are trademarks of Google Inc.

2 Basic safety instructions

2.1 Requirements for personnel

The personnel for installation, commissioning, diagnostics and maintenance must meet the following requirements:
- Trained, qualified specialists: must have a relevant qualification for this specific role and task and have been trained by Endress+Hauser. Experts at the Endress+Hauser service organization.
- Personnel must be authorized by the plant owner/operator.
- Personnel must be familiar with regional and national regulations.
- Before starting work: personnel must read and understand the instructions in the manual and supplementary documentation as well as the certificates (depending on the application).
- Personnel must follow instructions and comply with general policies.

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

2.2 Designated use

The FieldPort SWA50 is a loop-powered adapter that converts the HART signal of the connected HART field device into a reliable and encrypted Bluetooth signal. The FieldPort SWA50 can be retrofitted to all 2-wire or 4-wire HART field devices.

The Bluetooth signal may not be used to replace the wiring in the case of safety applications with a control function.

Incorrect use

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

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 interference-free operation of the device.

Modifications to the device

Unauthorized modifications to the device are not permitted and can lead to unforeseeable dangers:
- If modifications are nevertheless required, consult with Endress+Hauser.

2.5 Product safety

This 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.

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

2.6 IT security

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

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

For detailed information, see the Security Manual SD02984S (www.endress.com/SWA50)

2.7 Device-specific IT security

2.7.1 Access via Bluetooth® wireless technology

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

- Connection via Bluetooth® is not possible without specific Endress+Hauser devices or the *SmartBlue app*.
- Only one point-to-point connection between **one** FieldPort SWA50 device and **one** smartphone or tablet is established.
- The *Bluetooth*® wireless technology interface can be protected incrementally by means of hardware locking. → 43
- The hardware locking cannot be disabled or bypassed using operating tools.

3 Product description

3.1 Function

The FieldPort SWA50 converts the HART signal of the connected HART field device into a reliable and encrypted Bluetooth® or WirelessHart signal. The FieldPort SWA50 can be retrofitted to all 2-wire or 4-wire HART field devices.

The following operating tools are available for the FieldPort SWA50:
- The Endress+Hauser SmartBlue app for mobile devices
- An Endress+Hauser Field Xpert SMTxx tablet PC
- The Endress+Hauser FieldCare SFE500 field device configuration tool

Depending on the operating tool, the following functions are available:
- Configuration of the FieldPort SWA50
- Visualization of the measured values of the connected HART field device
- Visualization of the current status of the FieldPort SWA50 and the connected HART field device
- Configuration of the connected HART field device

HART field devices can be connected to the Netilion Cloud via the FieldPort SWA50 and a FieldEdge device.

Detailed information on Netilion Cloud: https://netilion.endress.com

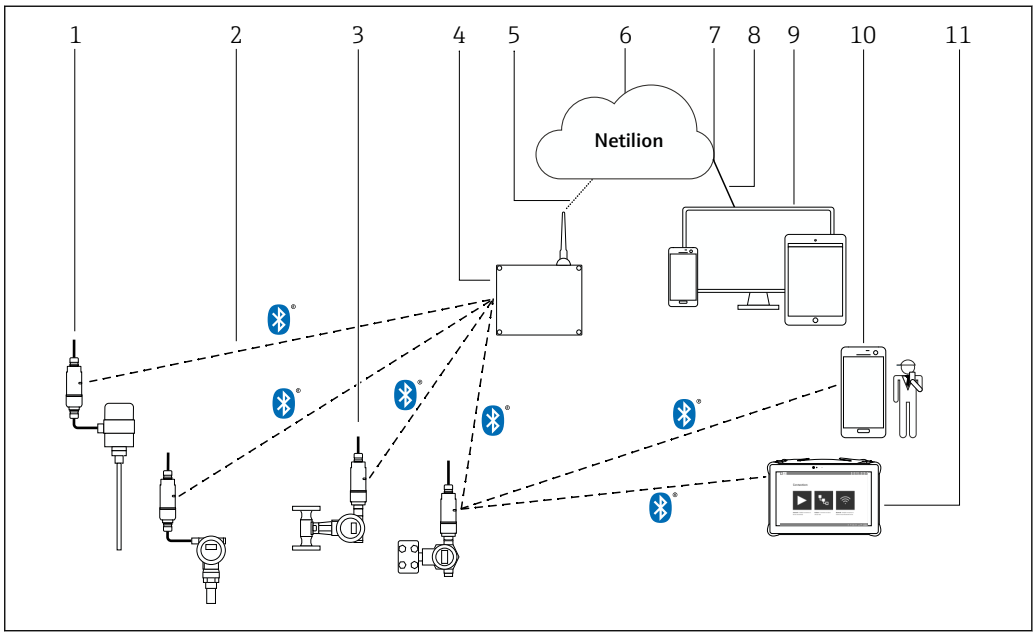
NOTICE

Safety applications with control functions via Bluetooth signal

Undesirable behavior of safety application

▶ Do not use a wireless signal such as Bluetooth in a safety application with a control function.

3.2 System architecture of the FieldPort SWA50 Bluetooth version



1 *System architecture of SWA50 Bluetooth version*

1 *HART field device with FieldPort SWA50, remote mounting*
2 *Encrypted wireless connection via Bluetooth®*
3 *HART field device with FieldPort SWA50, direct mounting*
4 *FieldEdge SGC200*
5 *LTE connection*
6 *Netilion Cloud*
7 *Application Programming Interface (API)*
8 *https Internet connection*
9 *Internet browser-based Netilion Service app or user application*
10 *Endress+Hauser SmartBlue app*
11 *Endress+Hauser Field Xpert, e.g. SMTxx*

4 Incoming acceptance and product identification

4.1 Incoming acceptance

- Check the packaging for visible damage arising from transportation
- Open the packaging carefully
- Check the contents for visible damage
- Check that the delivery is complete and nothing is missing
- Retain all the accompanying documents

The device may not be put into operation if the contents are found to be damaged beforehand. In this case, please contact your Endress+Hauser Sales Center: www.addresses.endress.com

Return the device to Endress+Hauser in the original packaging where possible.

Scope of delivery
- FieldPort SWA50
- Cable glands as per ordered version
- Optional: mounting bracket

Documentation included in delivery
- Brief Operating Instructions
- Depends on the version ordered: Safety Instructions

4.2 Product identification

4.2.1 Nameplate

The nameplate of the device is lasered onto the housing.

Additional information about the device is available as follows:
- Enter the serial number specified on the nameplate into the Device Viewer (www.endress.com → Product tools → Access device specific information → Device Viewer (from the serial number to device information and documentation) → Select option → Enter serial number): All information relating to the device is then displayed.
- Enter the serial number specified on the nameplate into the Endress+Hauser Operations App: All information relating to the device is then displayed.

4.2.2 Manufacturer's address

Endress+Hauser SE+Co. KG

Hauptstraße 1

79689 Maulburg

Germany

www.endress.com

4.3 Storage and transport

- The components are packed in such a way that they are fully protected against shock when in storage and during transportation.
- The permitted storage temperature is −40 to +85 °C (−40 to 185 °F).
- Store the components in the original packaging in a dry place.
- Where possible, only transport the components in the original packaging.

5 Mounting

5.1 Mounting instructions

- Pay attention to the alignment and range. → 13
- Observe a distance of at least 6 cm from walls and pipes. Pay attention to the expansion of the Fresnel zone.
- Avoid mounting in close proximity to high-voltage devices.
- For a better connection, mount the FieldPort SWA50 in sight of a FieldEdge SGC200.
- Pay attention to the effect of vibrations at the mounting location.

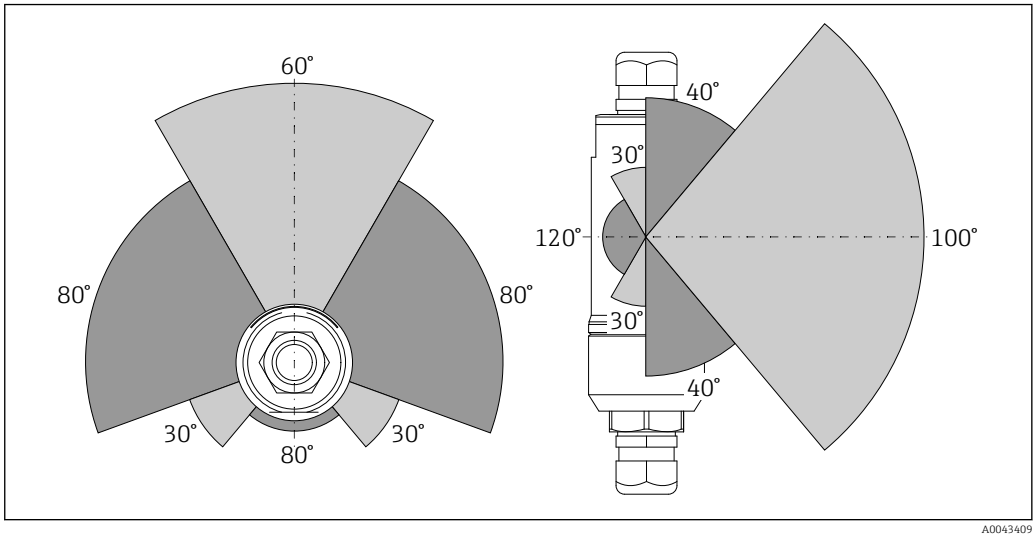
We recommend that you protect the FieldPort SWA50 against precipitation and direct sunlight. In order not to reduce signal quality, do not use a metal cover.

For detailed information on the vibration resistance, see the Technical Information for the FieldPort SWA50 (TI01468S)

5.2 Range

The range depends on the alignment of the FieldPort SWA50, the mounting location and the environmental conditions.

Since the antenna of the WirelessHART gateway is aligned vertically as a general rule, the ideal orientation for the FieldPort SWA50 is also vertical. If the antennas are aligned differently, this can greatly reduce the antenna range.

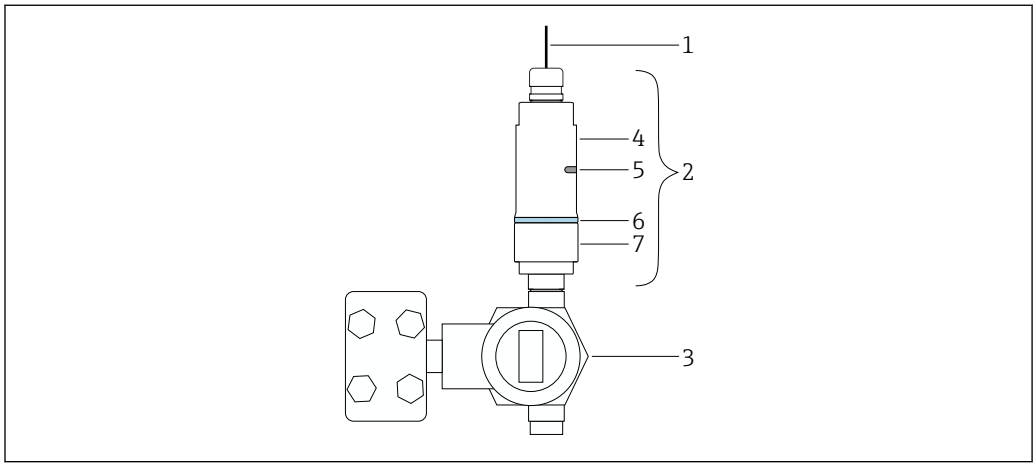


2 *Different ranges depending on the position of the transmission window*

Bluetooth
Up to 30 m (98 ft) without obstacles when FieldPort SWA50 is optimally aligned

5.3 Mounting options

5.3.1 "Direct mounting" version

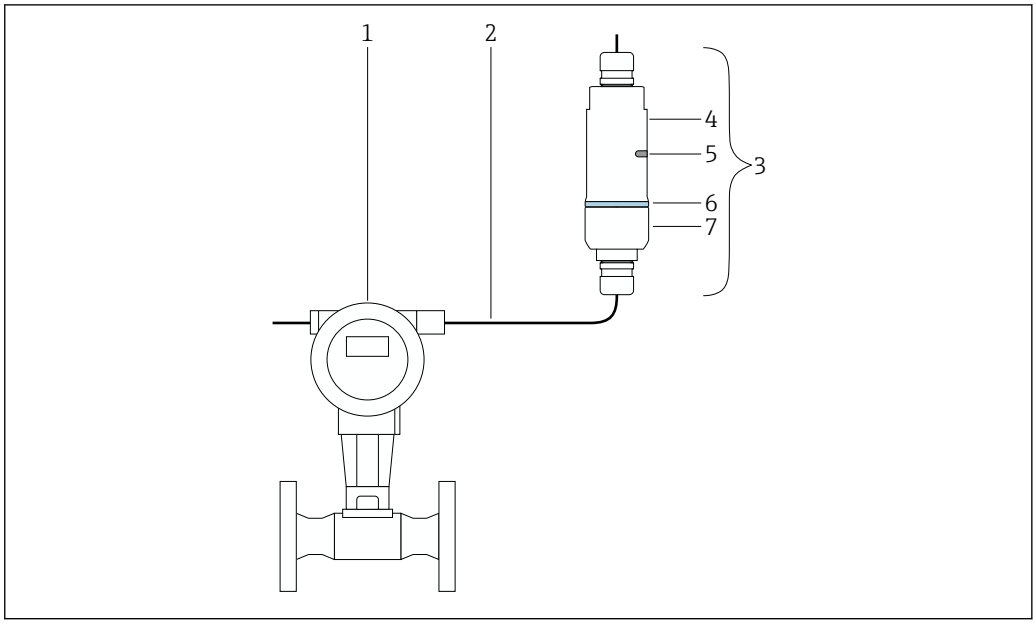


3 *Example of direct mounting*

1 Cable
2 FieldPort SWA50 "direct mounting" version
3 HART field device
4 Bottom housing section
5 Transmission window
6 Design ring
7 Top housing section

Montage sequence for the "direct mounting" version: → 15

5.3.2 "Remote mounting" version



4 *Example of remote mounting*

1 *HART field device*
2 *Cable*
3 *FieldPort SWA50 "remote mounting" version*
4 *Housing base*
5 *Transmission window*
6 *Design ring*
7 *Top housing section*

For remote mounting, we recommend the optional mounting bracket → 25. Alternatively, you can secure the remote version using pipe clips.

Mounting sequence for the "remote mounting" version: → 21

5.4 Mounting the "direct mounting" version

NOTICE

Damaged seals.
IP degree of protection is no longer guaranteed.
- ▶ Do not damage seals.

NOTICE

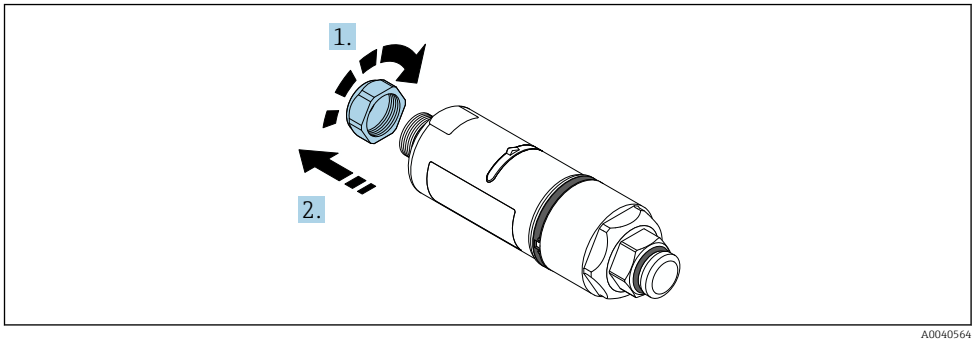
Supply voltage is present during installation.
Possible damage to the device.
- ▶ Switch off supply voltage prior to installation.
- ▶ Make sure the device is de-energized.
- ▶ Secure it against being switched back on.

Electrical connection: → 29

Tools required
- Wrench AF24
- Wrench AF36

Mounting the FieldPort SWA50

1.



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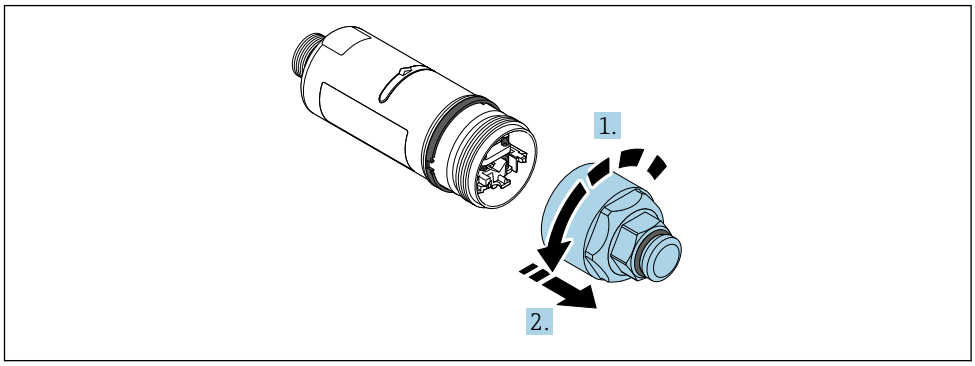

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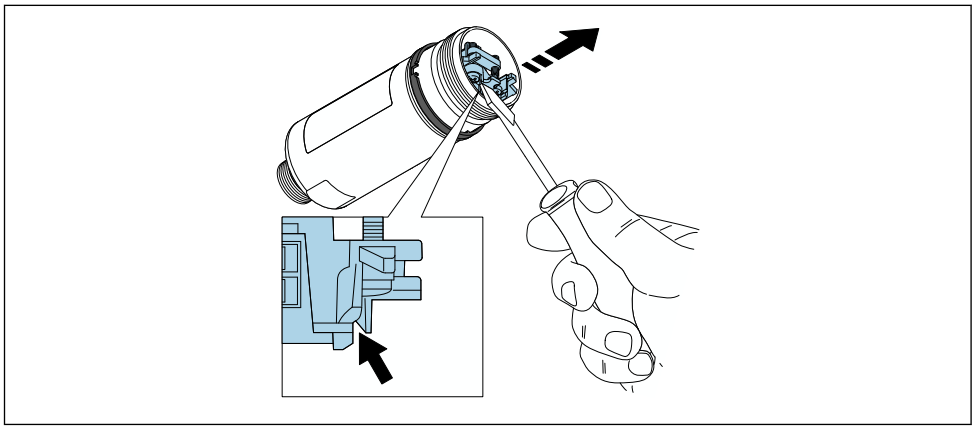

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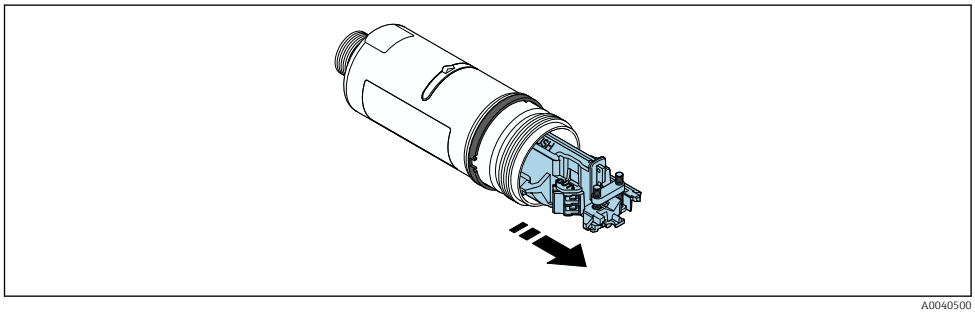

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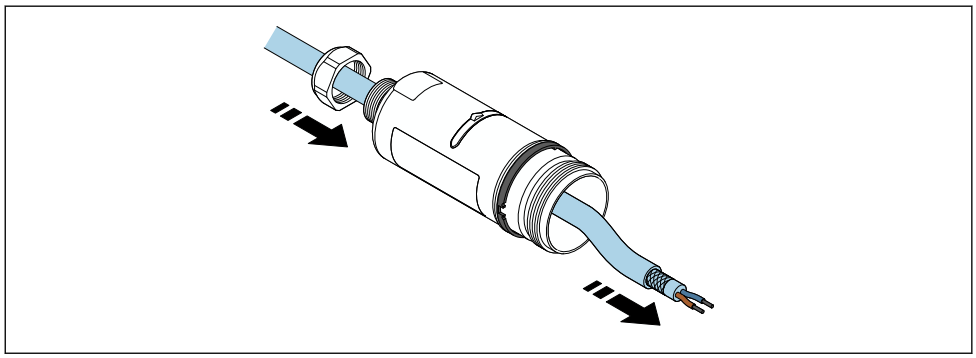
5.



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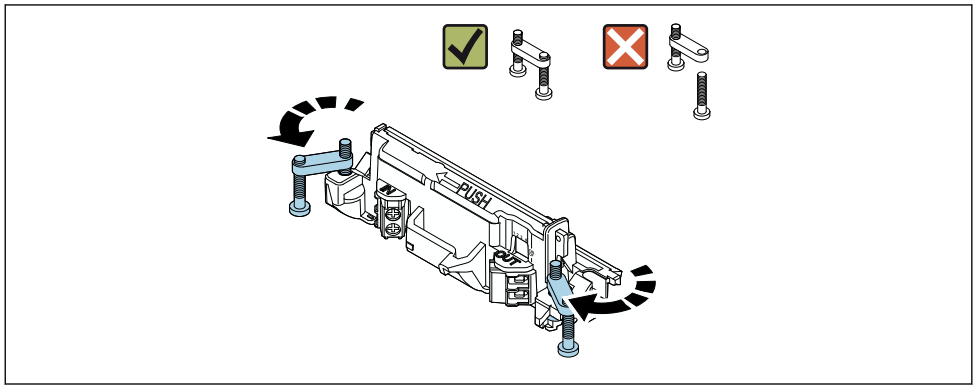

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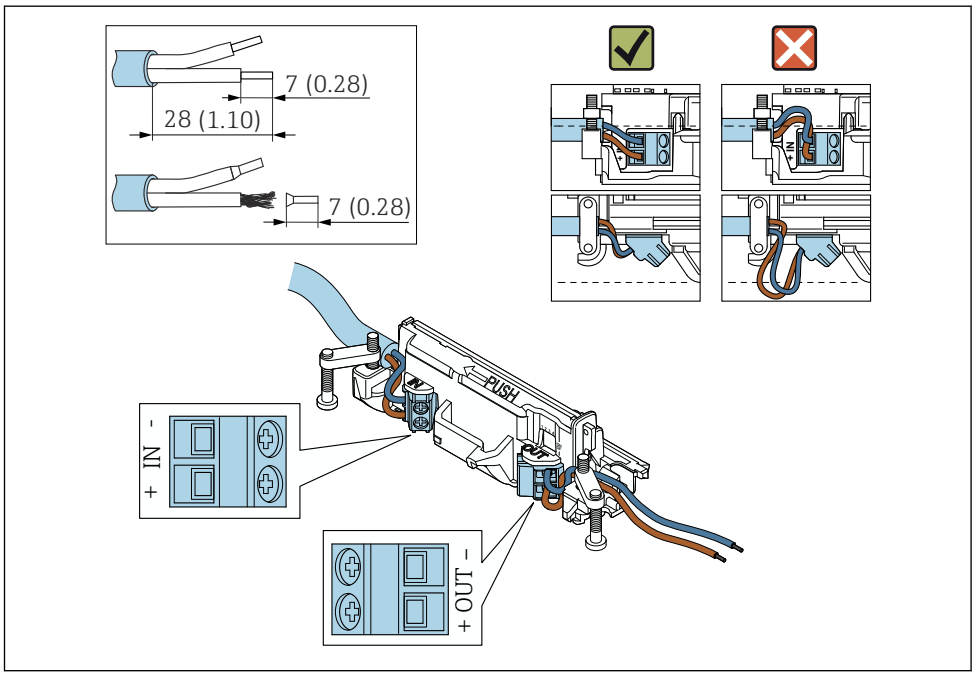
7.

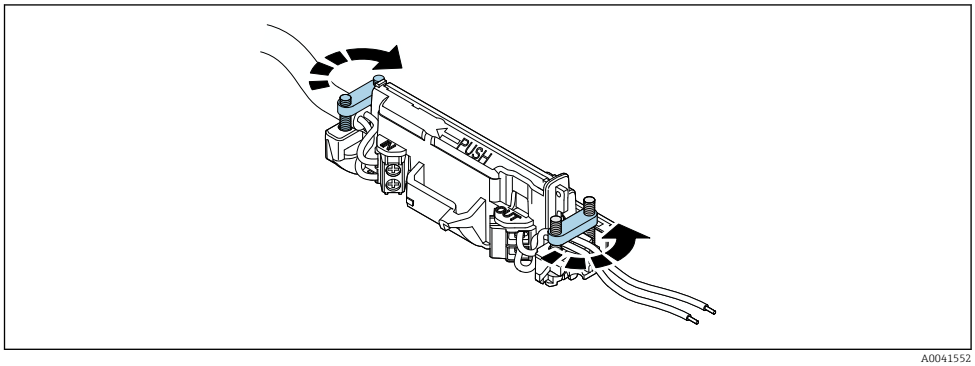


Ensure that the cores are of sufficient length to be connected in the field device. Do not shorten the cores to the required length until you are connecting them in the field device.

If you use a cable gland for a shielded cable, pay attention to the information on stripping the wire → 30.

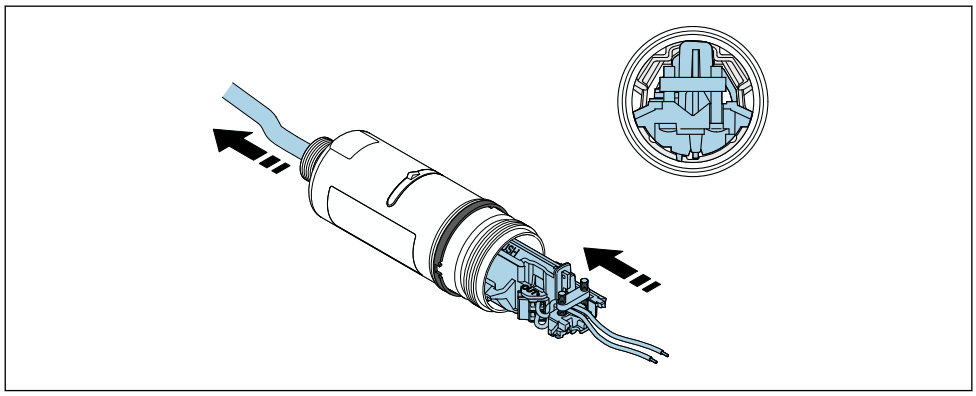
- Electrical connection for 2-wire HART field devices with passive current output: → 31
- Electrical connection for 4-wire HART field devices with passive current output: → 31
- Electrical connection for 4-wire HART field devices with active current output: → 31
- Electrical connection for FieldPort SWA50 without HART field device: → 32

8.



Tighten screws for strain relief. Torque: 0.4 Nm ± 0.04 Nm

9.



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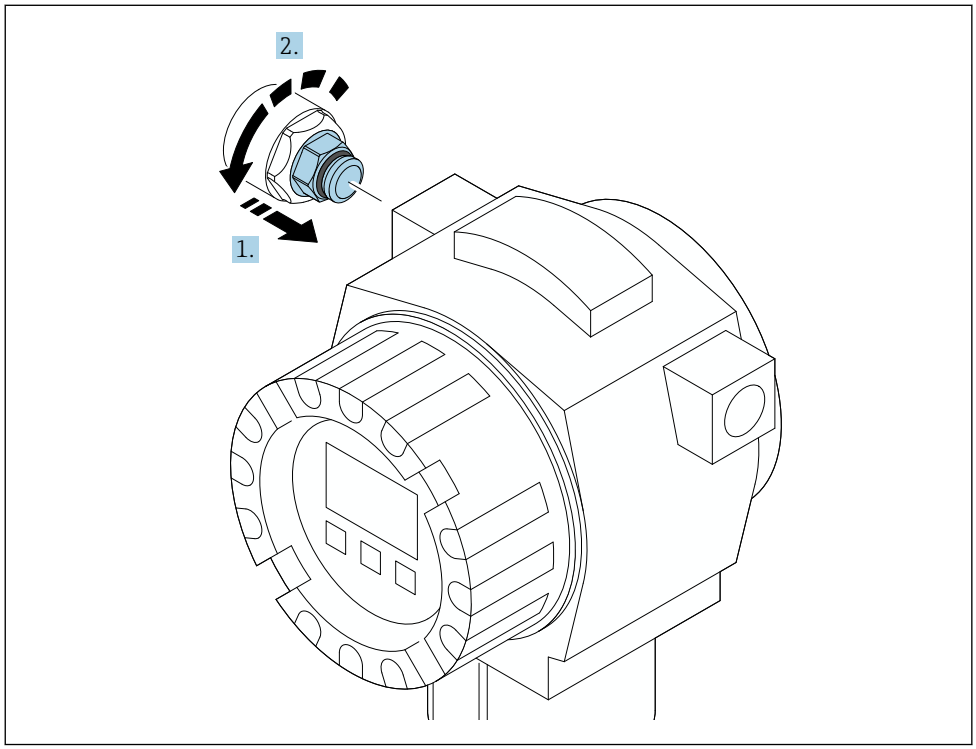
Slide the electronic insert into the guide inside the housing.

10.



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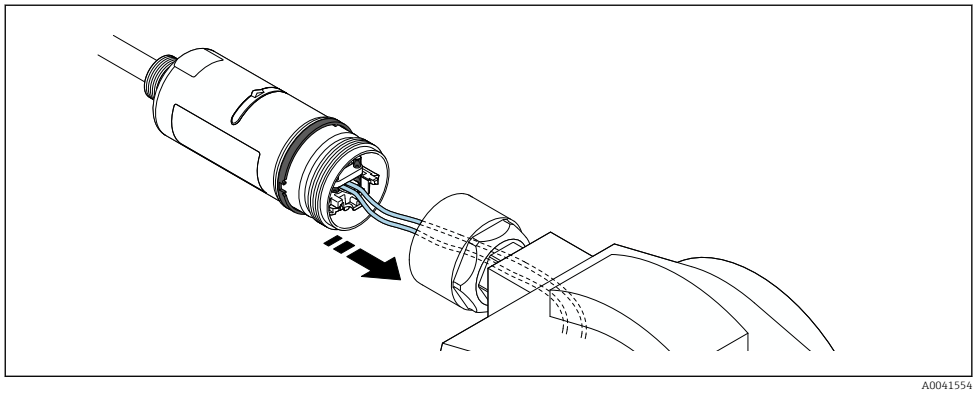
For information regarding torque, see the field device documentation.

11.



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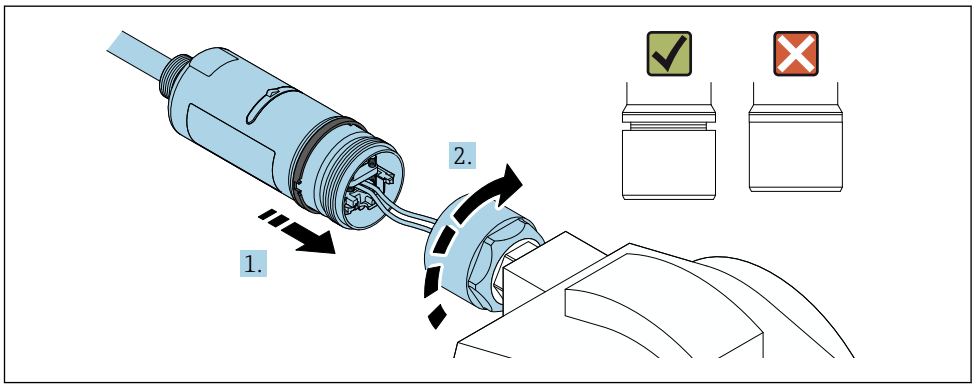
Ensure that the cores are of sufficient length to be connected in the field device.
Shorten the cores in the field device to the required length.

12.



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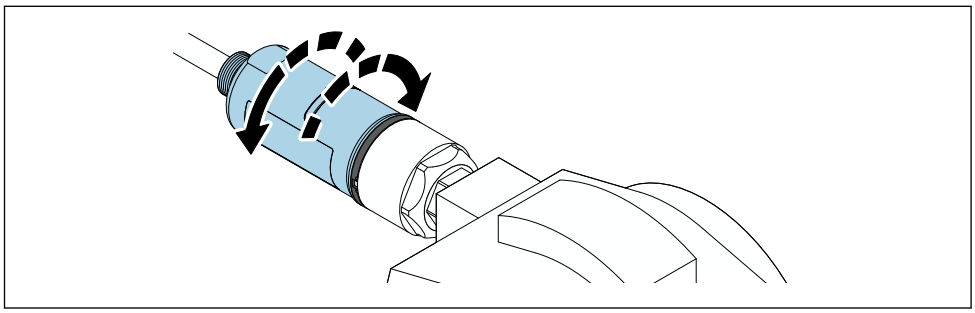
Do not tighten the top housing section yet, so that you are still able to rotate the bottom housing section.

13.



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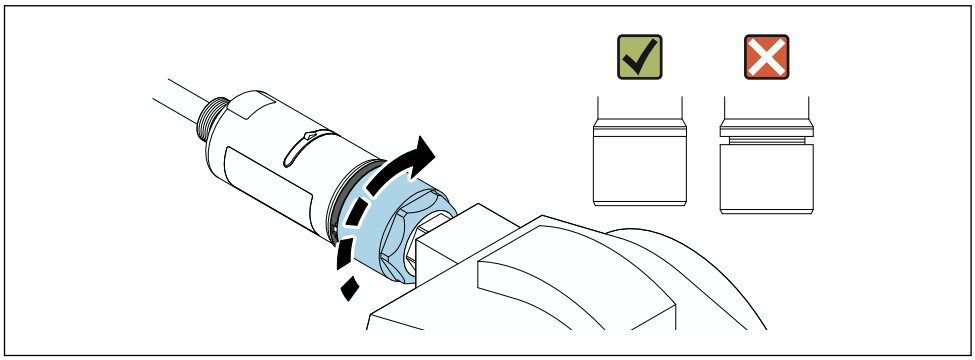
Align the bottom housing section with the transmission window according to the network architecture → 13.

To avoid wire breaks, rotate the bottom housing section by a maximum of ± 180°.

14.



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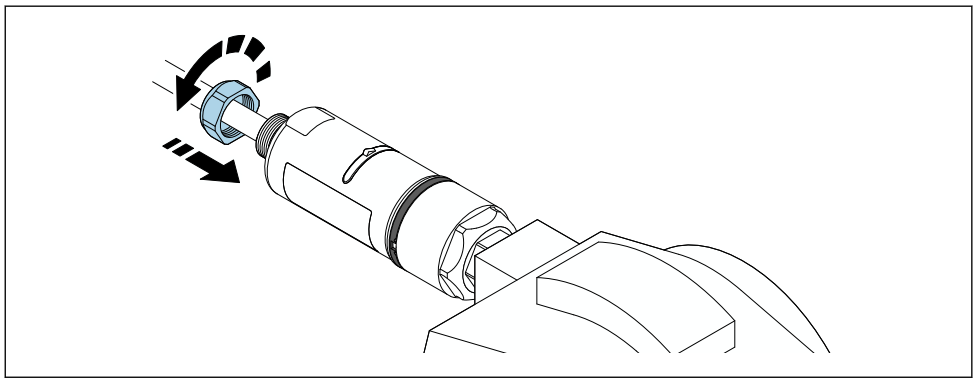
Tighten the top housing section so that the blue design ring can still be rotated afterwards. Torque: 5 Nm ± 0.05 Nm

15.



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16. Perform commissioning → 36.

5.5 Mounting the "remote mounting" version

NOTICE

Damaged seal.

IP degree of protection is no longer guaranteed.

- Do not damage seal.

NOTICE

Supply voltage is present during installation.

Possible damage to the device.

- Switch off supply voltage prior to installation.
- Make sure the device is de-energized.
- Secure it against being switched back on.

For remote mounting, we recommend the optional mounting bracket. Alternatively, you can secure the remote version using pipe clips.

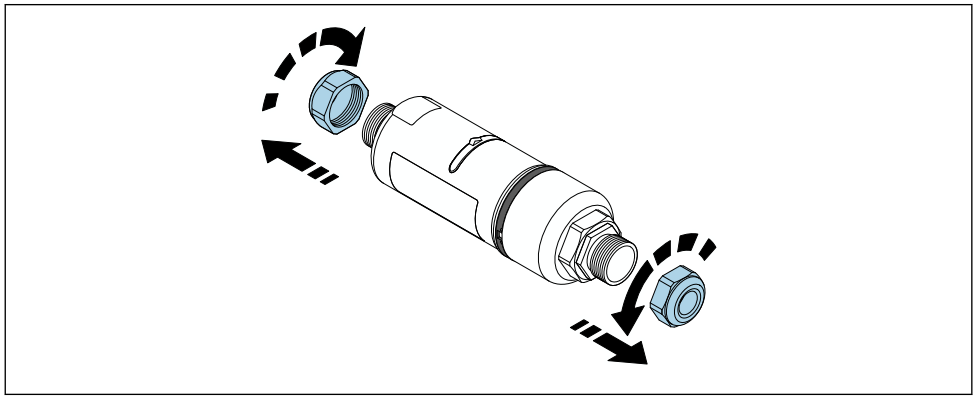
Electrical connection: → 29

Tools required

- Wrench AF27
- Wrench AF36

Mounting the FieldPort SWA50

1.



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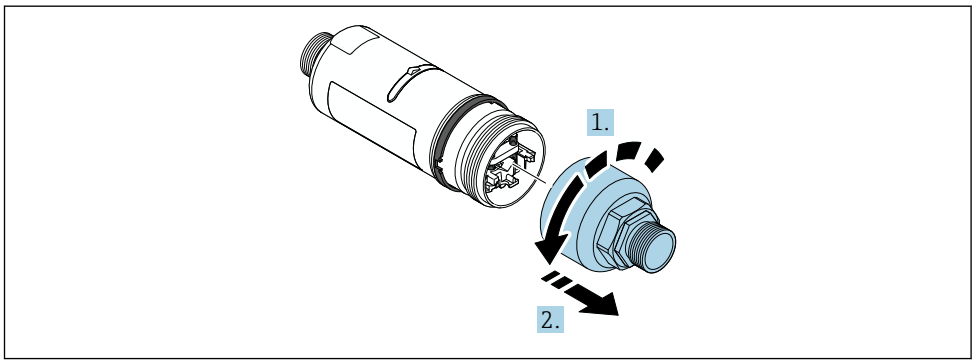
2.



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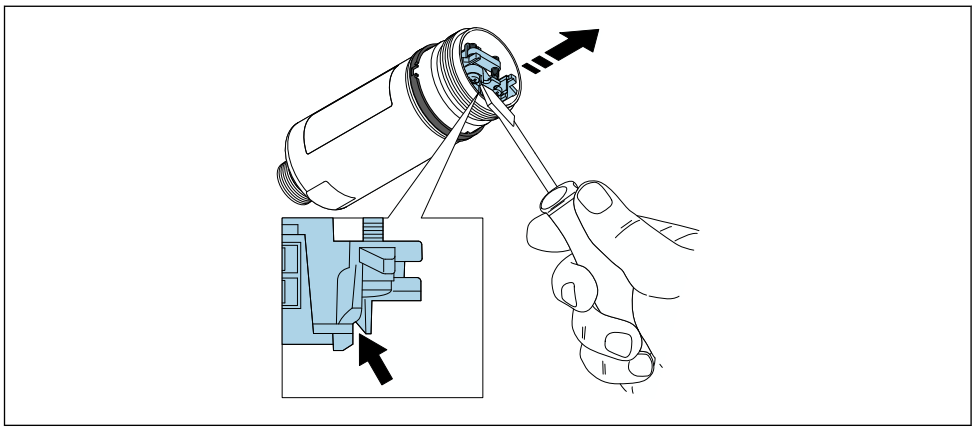

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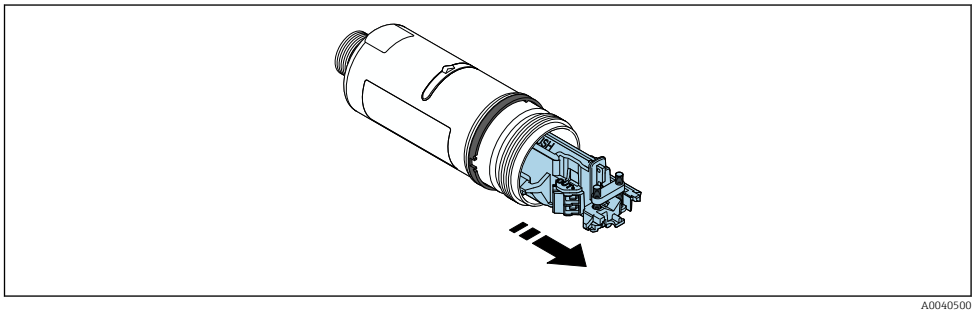

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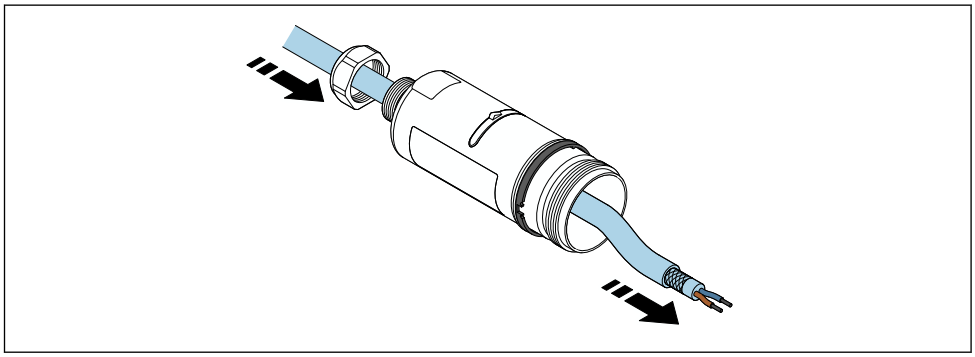
5. If you are mounting the FieldPort SWA50 using the optional mounting bracket, follow the instructions in the "Mounting the mounting bracket and FieldPort SWA50" section→ 27.

6.



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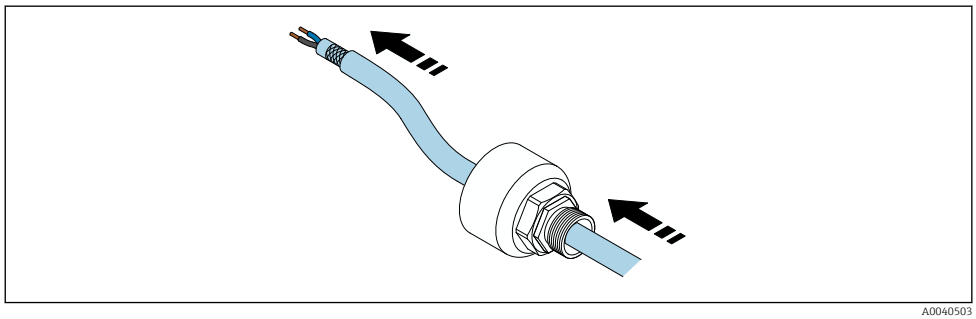

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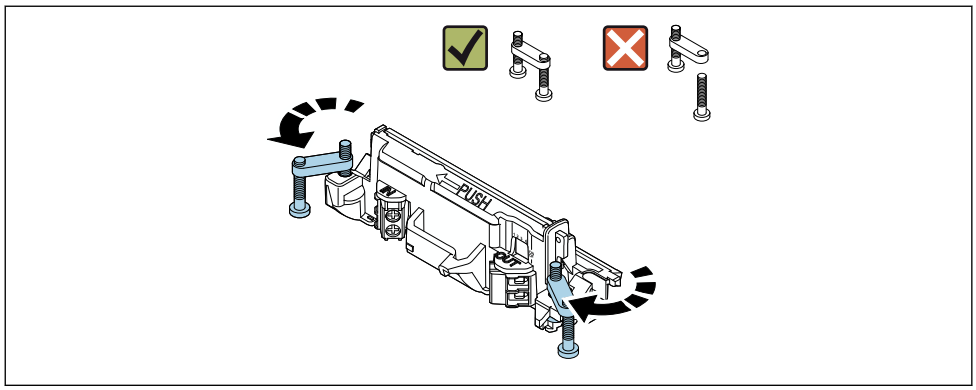

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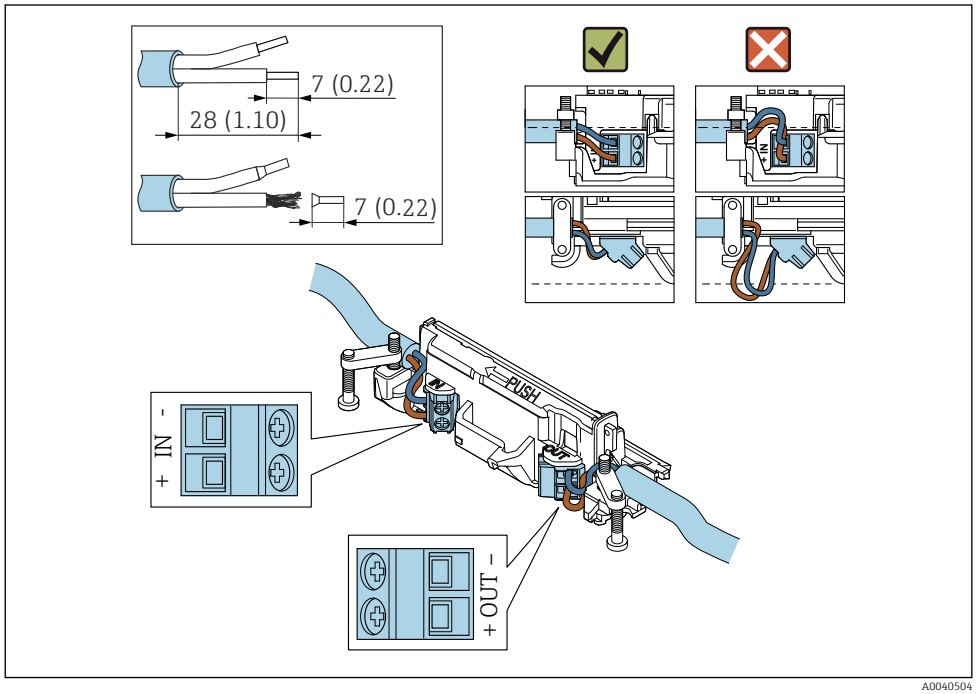

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If you use a cable gland for a shielded cable, pay attention to the information on stripping the wire → 30.

- Electrical connection for 2-wire HART field devices with passive current output: → 31
- Electrical connection for 4-wire HART field devices with passive current output: → 31
- Electrical connection for 4-wire HART field devices with active current output: → 31
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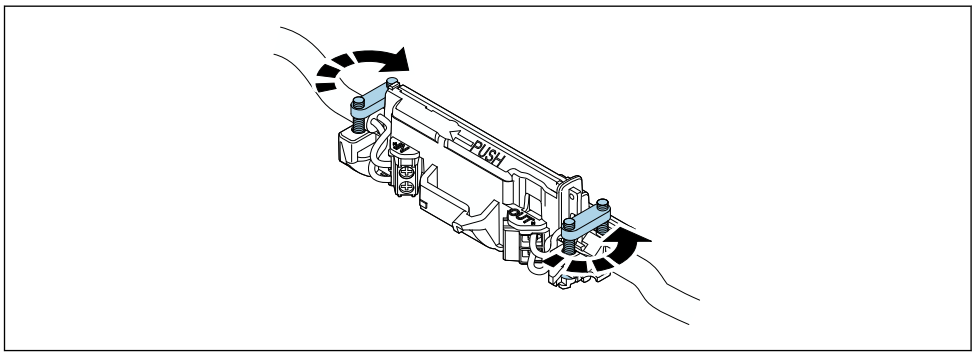
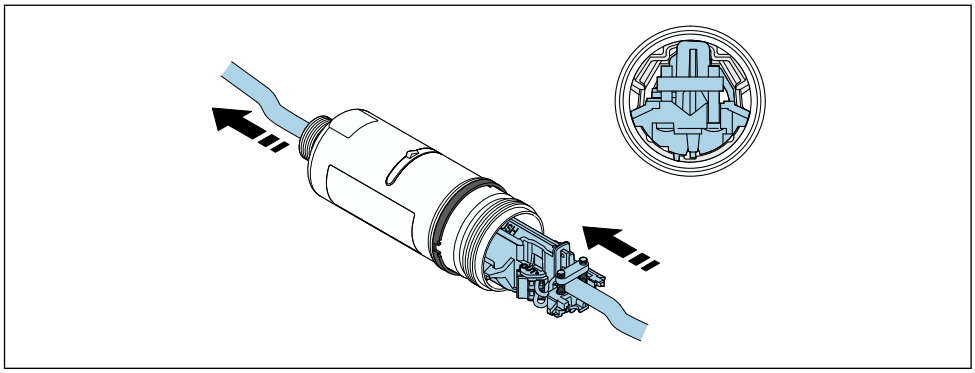
10.



A0040507

Tighten screws for strain relief. Torque: 0.4 Nm ± 0.04 Nm

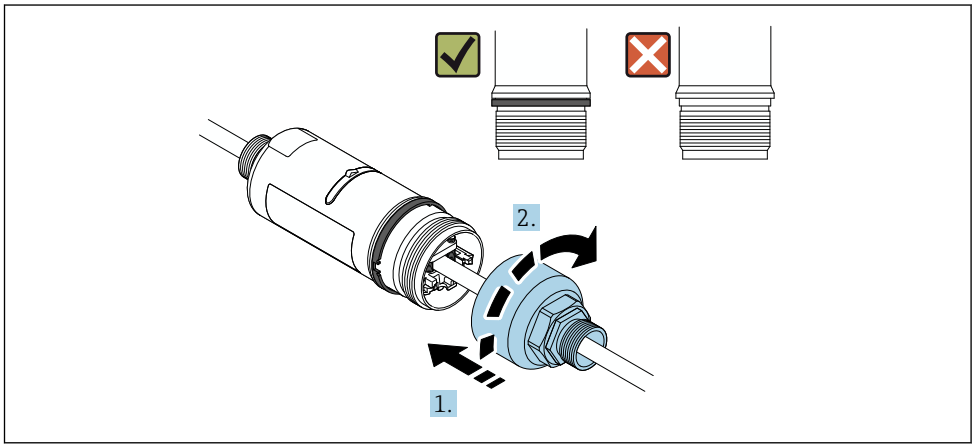
11.



A0040508

Slide the electronic insert into the guide inside the housing.

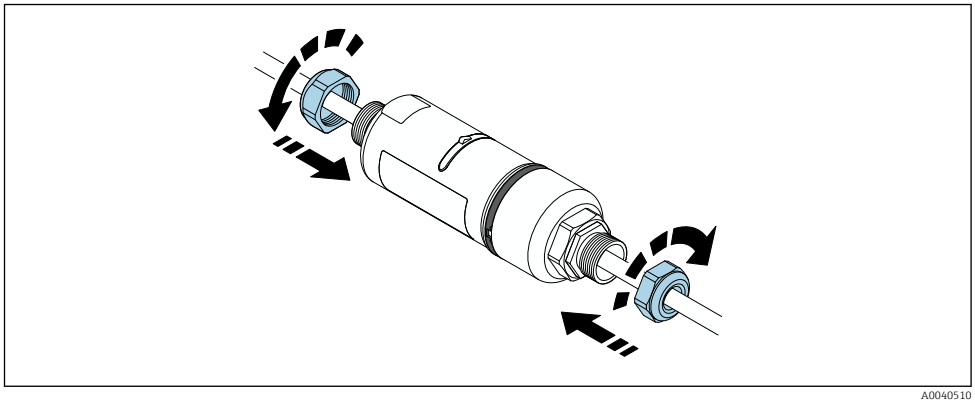
12.



A0040509

Tighten the top housing section so that the blue design ring can still be rotated afterwards. Torque: 5 Nm ± 0.05 Nm

13.



A0040510

14. Perform commissioning → 36.

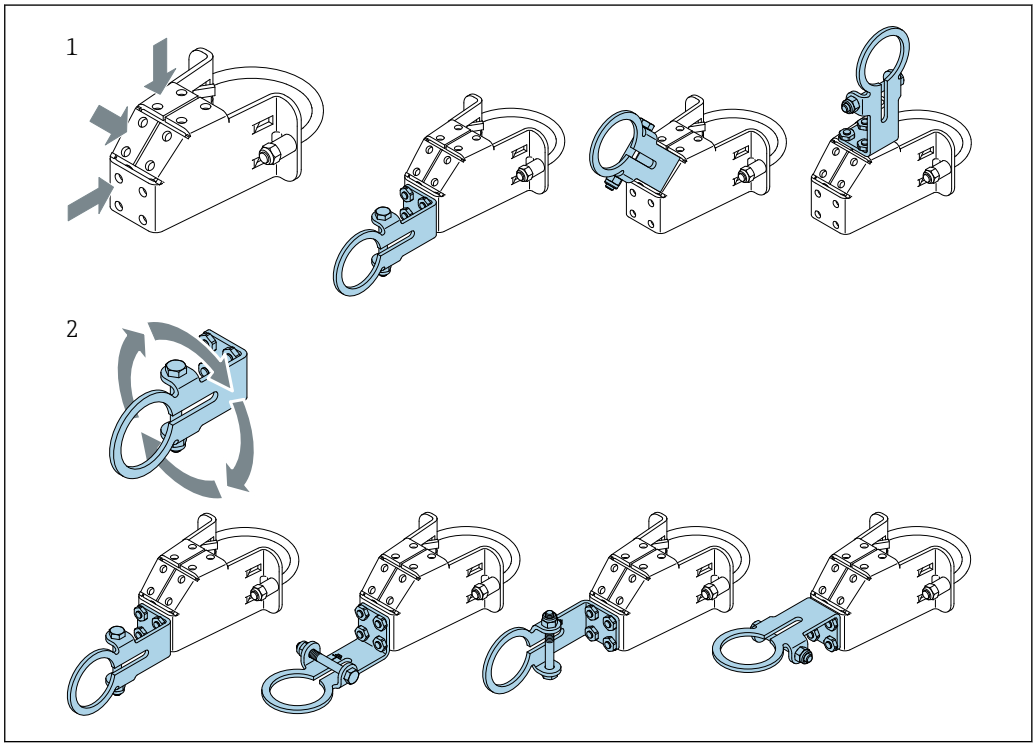
5.6 Installing the FieldPort SWA50 with mounting bracket

5.6.1 Mounting and alignment options

The mounting bracket can be mounted as follows:
- On pipes with a maximum diameter of 65 mm
- On walls

The FieldPort can be aligned as follows using the support bracket:
- Via the various mounting positions on the mounting bracket
- By rotating the support bracket

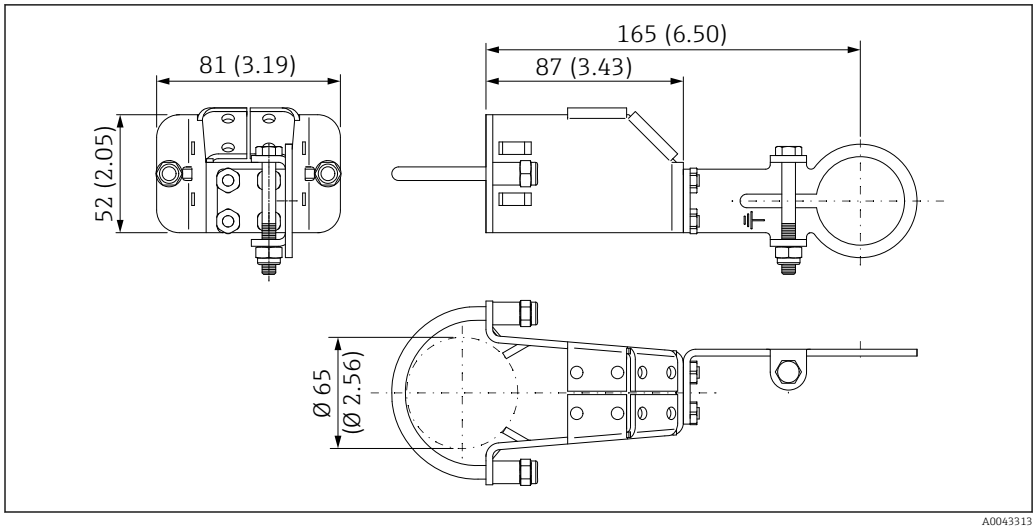
Pay attention to the alignment and range → 13.



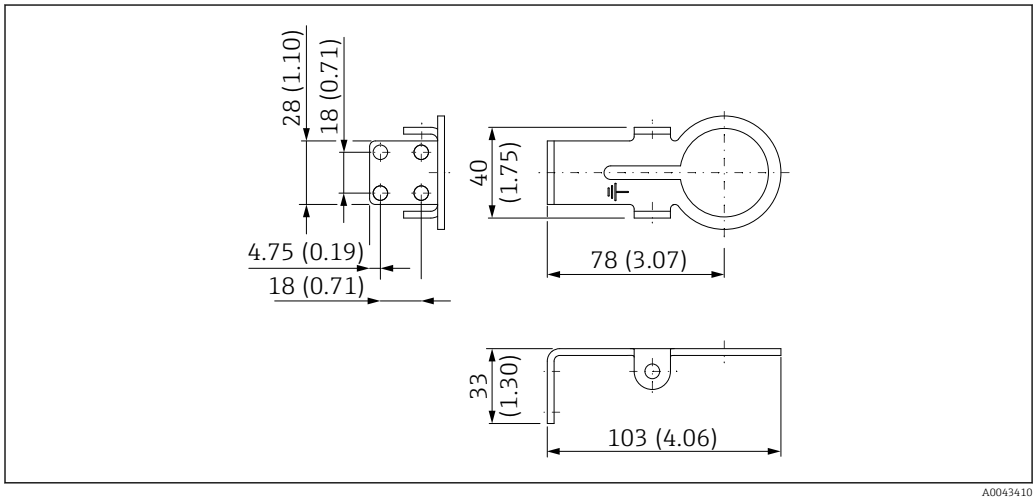
5 *Alignment options via support bracket*

1 Various mounting positions on support bracket
2 By rotating the support bracket

5.6.2 Dimensions

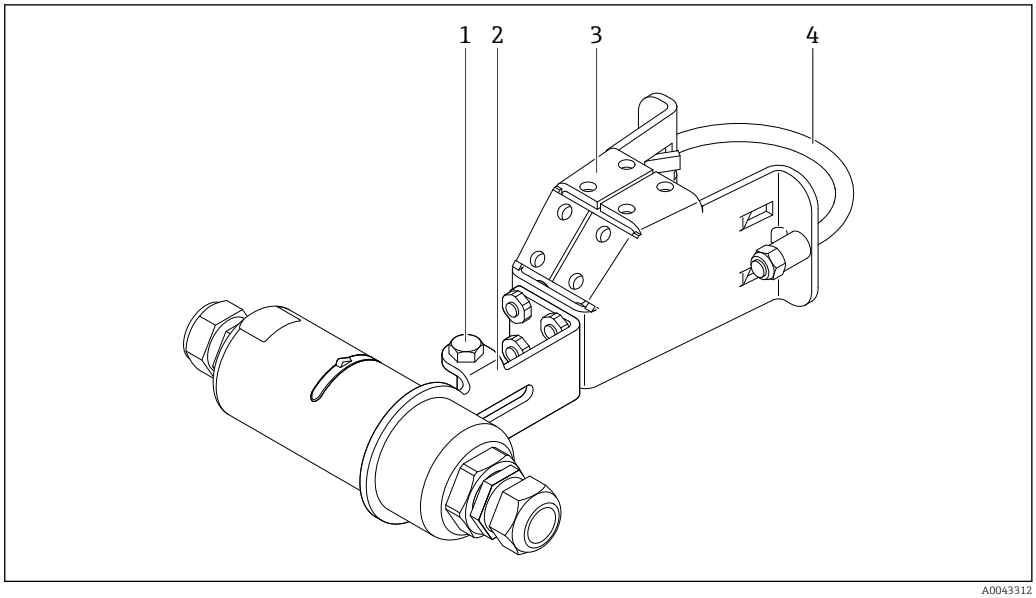


6 Dimensions of mounting bracket – pipe mounting



7 Dimensions of retaining bracket – wall mounting

5.6.3 Installing the mounting bracket and FieldPort SWA50



8 *FieldPort SWA50 mounted via optional mounting bracket*

1 *Hexagonal-headed bolt for securing and grounding*
2 *Support bracket*
3 *Mounting bracket*
4 *Round bracket*

If you are mounting the FieldPort SWA50 using the mounting bracket, you must remove the design ring between the top housing section and the bottom housing section.

Tools required
- Wrench AF10
- Allen key size 4

Installing the mounting bracket on a pipe

▶ Secure the mounting bracket to the pipe at the desired location. Torque: minimum 5 Nm

If you change the position of the support bracket on the mounting bracket, tighten the four hexagonal-headed bolts with a torque of 4 Nm to 5 Nm.

Installing the mounting bracket on a wall

▶ Secure the support bracket to the wall at the desired location. The screws must be suitable for the wall.

Mounting the FieldPort SWA50

Pay attention to the "Mounting the "remote mounting" version" section → 21.

1. Unscrew the cable glands of the FieldPort SWA50.
2. Unscrew the top housing section.
3. Remove the electronic insert from the housing.
4. Remove the design ring from the bottom housing section.
5. Slide the bottom housing section into the eyelet of the support bracket.

6. Carry out electrical connection for the FieldPort SWA50.
7. Slide the electronic insert into the bottom housing section.
8. Loosely screw on the top housing section.
9. Align the bottom housing section with the transmission window of the FieldPort SWA50 according to the network architecture. The transmission window is located under the black plastic seal.
10. Tighten the top housing section. Torque: 5 Nm ± 0.05 Nm
11. Connect the protective ground to the hexagonal-headed bolt.
12. Tighten the hexagonal-headed bolt so that the FieldPort SWA50 is secured in the mounting bracket.

5.7 Post-mounting check

Is the device undamaged (visual inspection)?	❑
Does the device comply with the required specifications? For example: ▪ Ambient temperature ▪ Humidity ▪ Explosion protection	❑
Are the screws that provide strain relief for the electronic insert tightened with the correct torque?	❑
Is the top housing section tightened with the correct torque?	❑
Are all securing screws, such as those for the optional mounting bracket, firmly tightened?	❑
Are the measuring point identification and labeling correct (visual inspection)?	❑
Is the device aligned correctly with regard to the antenna range? → 🖹 13	❑

6 Electrical connection

NOTICE

Short-circuit at OUT+ and OUT– terminals

Damage to device

- ▶ Depending on the application, connect either the field device, PLC, transmitter or resistor to the OUT+ and OUT– terminals.
- ▶ Never short-circuit the OUT+ and OUT– terminals.

6.1 Supply voltage

- Loop-powered 4 to 20 mA
- 24 V DC (min. 4 V DC, max. 30 V DC): min. 3.6 mA loop current required for start-up
- The supply voltage or the power unit must be tested to ensure it meets safety requirements and the requirements for SELV, PELV or Class 2

Voltage drop

- If internal HART communication resistor is deactivated
  - 3.2 V in operation
  - < 3.8 V at start-up
- If internal HART communication resistor is activated (270 Ohm)
  - < 4.2 V at 3.6 mA loop current
  - < 9.3 V at 22.5 mA loop current

To select the supply voltage, pay attention to the voltage drop via the FieldPort SWA50. The remaining voltage must be high enough to enable the start-up and operation of the HART field device.

6.2 Cable specification

Use cables that are suitable for the anticipated minimum and maximum temperatures.

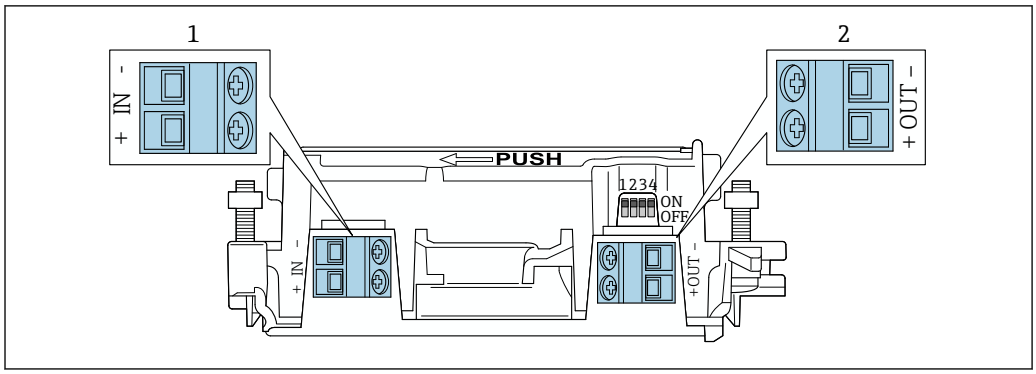
Observe grounding concept of the plant.

2 x 0.25 mm² to 2 x 1.5 mm²

You can use unshielded cable with or without ferrules and shielded cable with or without ferrules.

If you select the "direct mounting" version and the "4-wire HART field device with active current output and PLC or transmitter" electrical connection version, you can use core cross-sections of 0.75 mm² at maximum. If larger core cross-sections are required, we recommend remote mounting.

6.3 Terminal assignment



9 *FieldPort SWA50 terminal assignment*

1 Input terminal IN
2 Output terminal OUT

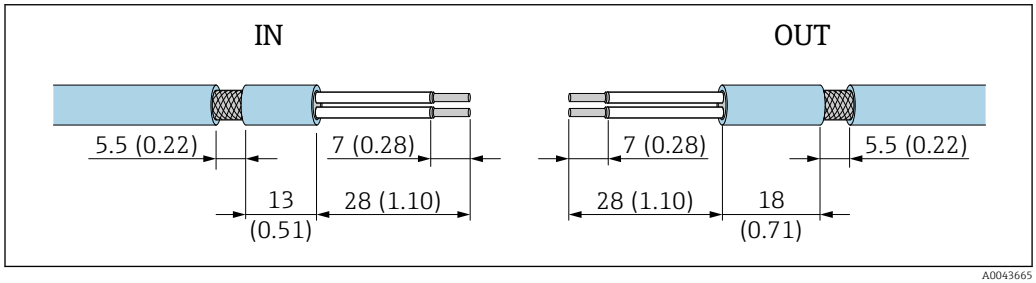
Application	Input terminal IN	Output terminal OUT
2-wire HART field device → 11, 31	Cable from supply voltage, PLC with active current output or transmitter with active current output	Cable to 2-wire HART field device
4-wire HART field device with passive current output → 12, 31	Cable from supply voltage, PLC with active current output or transmitter with active current output	Cable to 4-wire HART field device
4-wire HART field device with active current output → 31	Cable from 4-wire field device with active 4 to 20 mA HART output	PLC or transmitter with passive current output (optional), alternatively wire bridge between terminals OUT+ and OUT–
FieldPort SWA50 without field device → 15, 33	Cable from supply voltage for FieldPort SWA50	Resistor between terminals OUT+ and OUT–

6.4 Stripping in the case of a cable gland for shielded cable

If you are using shielded cables and wish to connect the cable shield to the FieldPort SWA50, you must use cable glands for shielded cable.

If you have ordered the "Brass M20 for shielded cable" option for the cable glands, you will receive the following cable glands:
- "Direct mounting" version: 1 cable gland for shielded cable
- "Remote mounting" version: 2 cable glands for shielded cable

When mounting a cable gland for shielded cable, we recommend the following dimensions for stripping. The dimensions for input terminal IN and output terminal OUT are different.

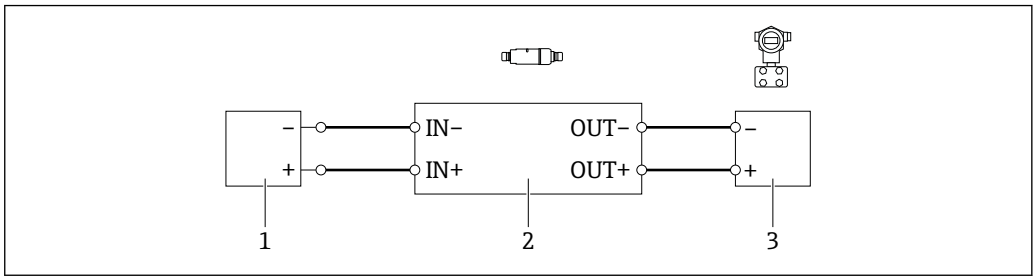


10 *Recommended dimensions for stripping in the case of cable glands for shielded cable for input terminal IN and output terminal OUT*

- Sealing area (jacket): Φ 4 to 6.5 mm (0.16 to 0.25 in)
- Shielding: Φ2.5 to 6 mm (0.1 to 0.23 in)

6.5 2-wire HART field device with passive current output

Some grounding concepts require shielded cables. If connecting the cable shield to the FieldPort SWA50, you must use a cable gland for shielded cable. See ordering information.

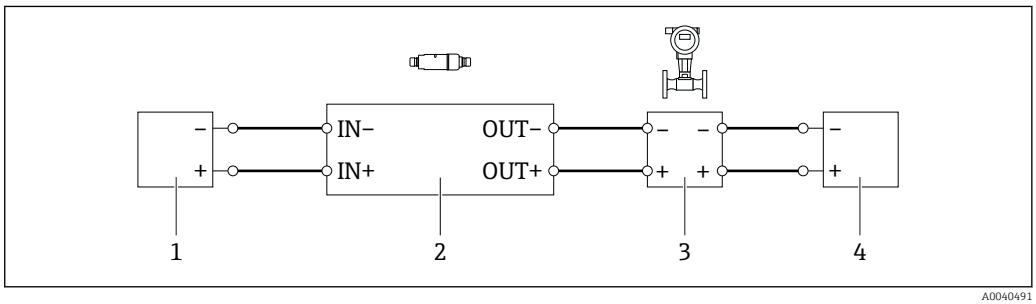


11 *Electrical connection for 2-wire HART field devices with passive current output (optional grounding not shown)*

1 *Supply voltage (SELV, PELV or Class 2) or PLC with active current input or transmitter with active current input*
2 *Electronic insert SWA50*
3 *2-wire field device 4 to 20 mA-HART*

6.6 4-wire HART field device with passive current output

Some grounding concepts require shielded cables. If connecting the cable shield to the FieldPort SWA50, you must use a cable gland for shielded cable. See ordering information.

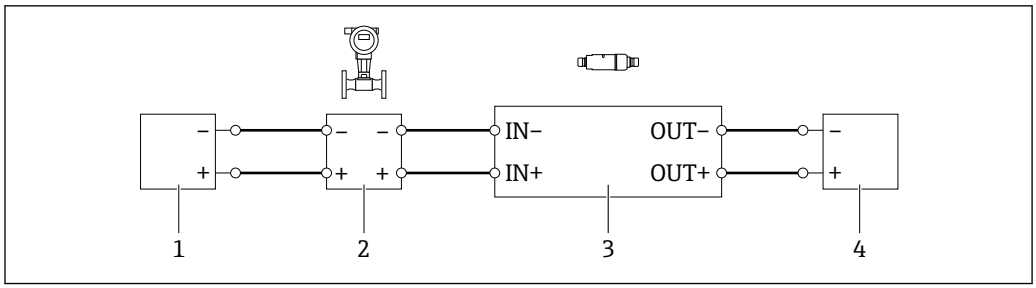


12 *Electrical connection for 4-wire HART field devices with passive current output (optional grounding not shown)*

1 *Supply voltage (SELV, PELV or Class 2) or PLC with active current input or transmitter with active current input*
2 *Electronic insert SWA50*
3 *4-wire field device with passive 4 to 20 mA-HART output*
4 *Supply voltage for 4-wire field device*

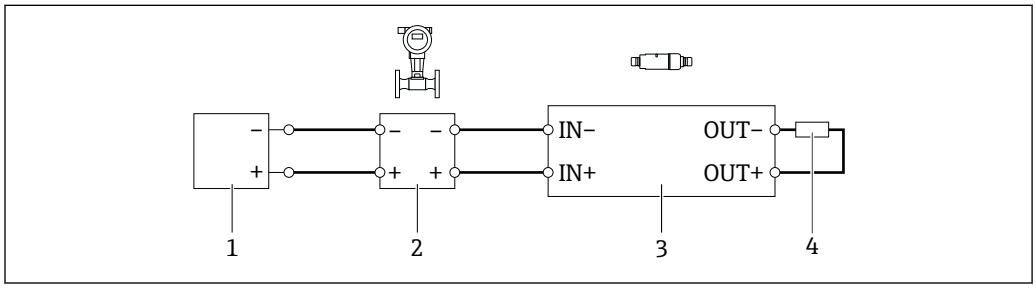
6.7 4-wire HART field device with active current output

Some grounding concepts require shielded cables. If connecting the cable shield to the FieldPort SWA50, you must use a cable gland for shielded cable. See ordering information.



13 *Electrical connection for 4-wire HART field devices with active current output (optional grounding not shown) – PLC or transmitter at OUT terminals*

1 *Supply voltage (SELV, PELV or Class 2) for 4-wire HART field device*
2 *4-wire field device with active 4 to 20 mA HART output*
3 *Electronic insert SWA50*
4 *PLC or transmitter with passive current input*



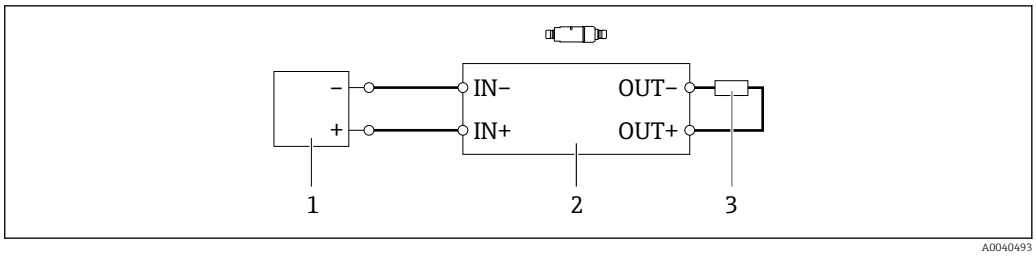
14 *Electrical connection for 4-wire HART field devices with active current output (optional grounding not shown) – resistor at OUT terminals*

1 *Supply voltage (SELV, PELV or Class 2) for 4-wire HART field device*
2 *4-wire field device with active 4 to 20 mA HART output*
3 *Electronic insert SWA50*
4 *Resistance 250 to 500 Ohm min. 250 mW between terminals OUT+ and OUT–*

If you select the "direct mounting" version and the "4-wire HART field device with active current output and PLC or transmitter" electrical connection version, you can use core cross-sections of 0.75 mm² maximum. The wires that you insert into the shorter top housing section must be connected to the IN terminals opposite, and the wires that you insert into the longer bottom housing section must be connected to the OUT terminals opposite. If larger core cross-sections are required, we recommend remote mounting.

6.8 FieldPort SWA50 without HART field device (repeater)

Using this connection version, you can preconfigure the FieldPort SWA50 or use it as a repeater.



15 *FieldPort SWA50 without HART field device (optional grounding not shown)*

1 *Supply voltage FieldPort SWA50, 20 to 30 VDC (SELV, PELV or Class 2)*
2 *Electronic insert SWA50*
3 *Resistance 1.5 kOhm and min. 0.5 W between terminals OUT+ and OUT–*

6.9 Post-connection check

Are the device and cable undamaged (visual check)?	❑
Do the cables comply with the requirements?	❑
Is the terminal assignment correct?	❑
Have the cables been connected in such a way that no wires, insulation and / or cable shields are jammed?	❑
Is the supply voltage correct?	❑
Is the FieldPort SWA50 grounded, if necessary?	❑

7 Operation options

7.1 Overview of operation options

You have the following operation options for the FieldPort SWA50:
- The Endress+Hauser SmartBlue app for mobile devices
- An Endress+Hauser Field Xpert SMTxx tablet PC
- The Endress+Hauser FieldCare SFE500 field device configuration tool

7.2 Operation via SmartBlue app

The SmartBlue app for mobile devices is available in the Google Play Store and in the Apple App Store.

An encrypted point-to-point connection is established between the FieldPort SWA50 and the mobile device. It is only possible to connect the FieldPort SWA50 and the connected HART field device via Bluetooth using the SmartBlue app. Configuration of the connected HART field device is not possible via the SmartBlue app.

7.3 Operation via Field Xpert

You have the following operation options with a Field Xpert SMTxx:
- Configuration via an encrypted point-to-point connection using Bluetooth
- Local configuration using a modem and the DTM for the FieldPort SWA50

If a DTM is available for the HART field device, it is also possible to configure it via the Field Xpert SMT. In the case of a Bluetooth connection, the HART commands are tunneled via the Bluetooth channel.

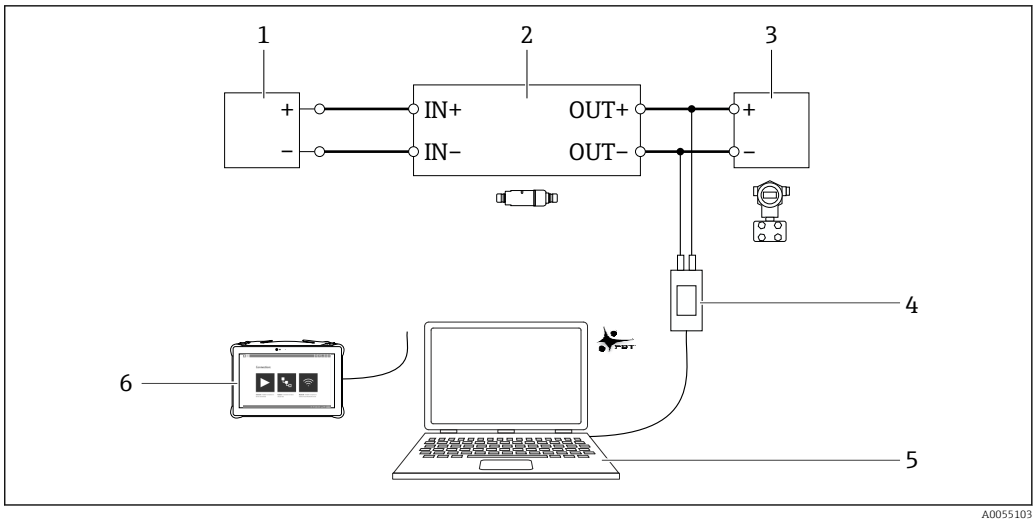
7.4 Operation via FieldCare

You have the following operation options with FieldCare SFE500:
Local configuration using a modem and the DTM for the FieldPort SWA50

If a DTM is available for the HART field device, it is also possible to configure it via FieldCare.

7.5 Local operation via Field Xpert or FieldCare

Local operation via Field Xpert or FieldCare takes place via a modem such as Commubox FXA195.



16 *Connection example of the modem for local operation via Field Xpert SMTxx or FieldCare SFE500*

1 *Supply voltage or PLC with active current input or transmitter with active current input*
2 *Electronic insert SWA50 (internal communication resistor enabled)*
3 *2-wire field device 4 to 20 mA HART*
4 *Endress+Hauser Commubox FXA195 USB/HART modem*
5 *PC with FieldCare SFE500*
6 *Field Xpert SMT tablet PC*

8 Commissioning

8.1 Overview of operation options

You have the following options for commissioning the FieldPort SWA50:
- The Endress+Hauser SmartBlue app for mobile devices and → 37
- An Endress+Hauser Field Xpert SMTxx tablet PC → 40
- The Endress+Hauser FieldCare SFE500 field device configuration tool → 42

Observe the requirements for commissioning: → 36

8.2 Requirements

8.2.1 Requirements of the FieldPort SWA50

- The FieldPort SWA50 is electrically connected.
- Post-mounting check has been carried out → 28.
- Post-connection check has been carried out → 33.
- DIP switch 1 for Bluetooth communication must be set to ON → 43.
  (Factory setting for DIP switch 1: ON)

8.2.2 Information required for commissioning

You will need the following information for commissioning:
- HART device address of HART field device
- Device tag of HART field device in Bluetooth network
  - Long tag for HART-6 and HART-7 field devices
  - (Short) tag for HART-5 field devices

8.2.3 Points to check before commissioning

HART master

In addition to the FieldPort SWA50, only one other HART master is permitted in the HART loop. This other HART master and the FieldPort SWA50 may not be of the same master type. You can configure the master type either via the "HART master type" parameter or "Master Type".

HART communication resistor

For HART communication, you require either the internal HART communication resistor of the FieldPort SWA50 or a HART communication resistor outside the FieldPort SWA50 in the 4 to 20 mA loop.

Requirements for "internal HART communication resistor":
The "Internal" option is set for the "Communication resistor" parameter.

Requirements for "HART communication resistor outside the FieldPort SWA50":
- The HART communication resistor of ≥ 250 Ohm is outside the FieldPort SWA50 in the 4 to 20 mA loop.
- The HART communication resistor must be wired in series between the "IN+" terminal of the FieldPort SWA50 and the supply voltage, such as the PLC or active barrier.
- The "External" option is set for the "Communication resistor" parameter.

8.2.4 Initial password

The initial password can be found on the nameplate.

8.3 Putting the FieldPort SWA50 into operation

8.3.1 Commissioning via SmartBlue app

Install the SmartBlue app

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

▶

Scan the QR code.

↳ The Google Play or App Store page is opened to download the SmartBlue app.

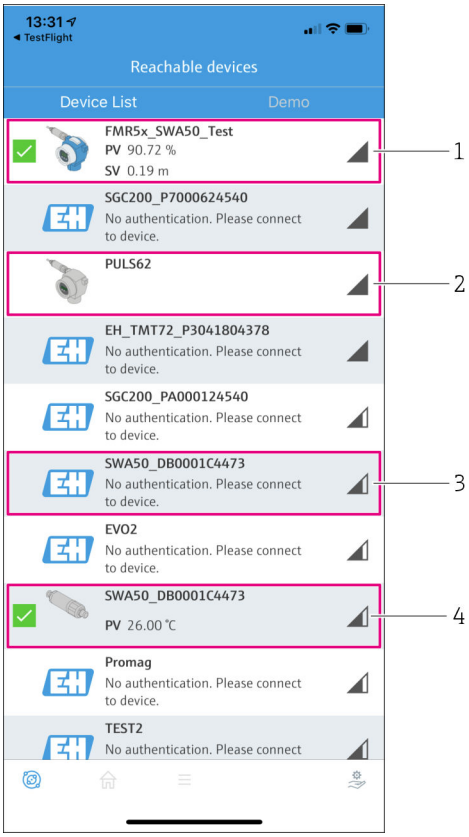
System requirements

Please see either the Google Play or App Store page for the system requirements of the SmartBlue app.

Starting the SmartBlue app and logging in

1. Switch on the supply voltage for the FieldPort SWA50.

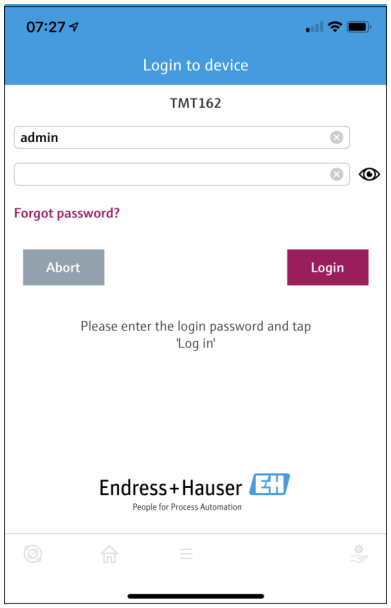
2. Start the SmartBlue app on the smartphone or tablet.
   ↳ An overview of accessible devices is displayed.



17 *Reachable devices (live list)*

1 *Example of FieldPort SWA50 with Endress+Hauser HART field device, already connected to SmartBlue app*
2 *Example of FieldPort SWA50 with HART field device of another manufacturer, already connected to SmartBlue app*
3 *Example of FieldPort SWA50, not yet connected to SmartBlue app*
4 *Example of FieldPort SWA50 without HART field device, already connected to SmartBlue app*

3. Select device from list.
   ↳ The "Login to device" page is displayed.



18 *Login*

You can establish only **one** point-to-point connection between **one** FieldPort SWA50 and **one** smartphone or tablet.

- Log in. Enter **admin** as the user name and enter the initial password. The password can be found on the nameplate.
  ↳ Once the connection has been established successfully, the "Device information" page is displayed for the selected device. → 44

Change the password after logging in for the first time.

Checking and adjusting the HART configuration

Perform the following steps to ensure good communication between the FieldPort SWA50 and the connected HART field device.

- The parameters listed in this section can be found on the "HART Configuration" page.
- Navigation: Root menu > System > FieldPort SWA50 > Connectivity > HART configuration

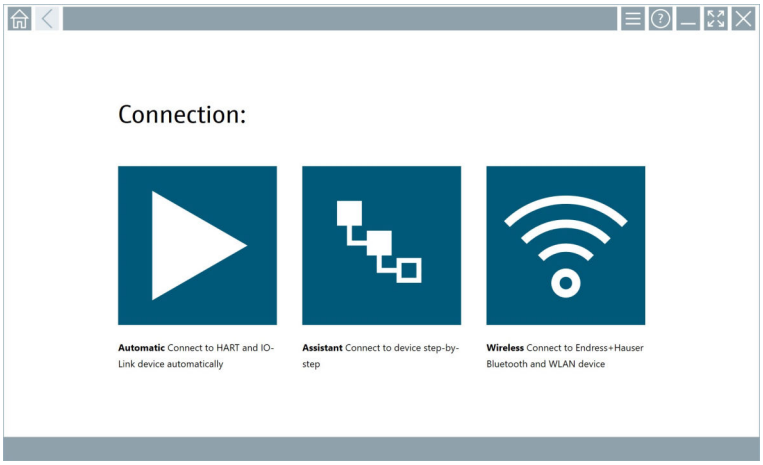
1. Use the "HART address field device" parameter to check the HART address of the HART field device and configure the address if necessary. The same HART address must be used for the HART field device in the HART field device and in the FieldPort SWA50.
2. Use the "Communication resistor" parameter to check the setting for the HART communication resistor. If there is no HART communication resistor outside the FieldPort SWA50 in the 4 to 20 mA loop, you must enable the internal HART communication resistor.
3. Use the "HART master type" parameter to check the setting for an additional HART master in the HART loop. In addition to the FieldPort SWA50, only one other HART master is permitted in the HART loop. This other HART master and the FieldPort SWA50 may not be of the same master type.

8.3.2 Commissioning via Field Xpert

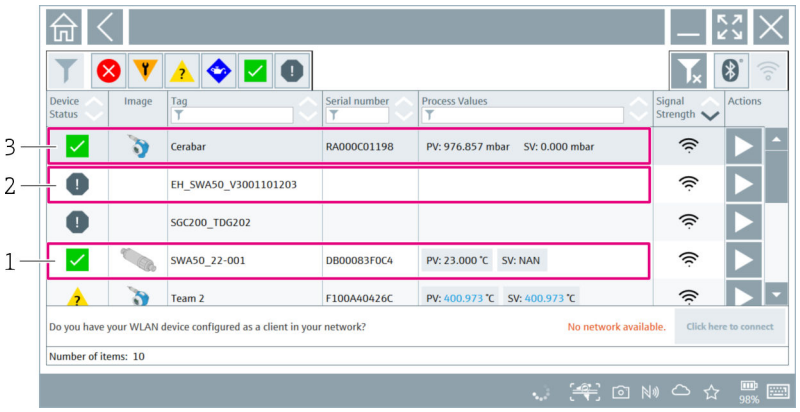
- For detailed information on operation with the Field Xpert SMT50, see BA02053S
- For detailed information on operation with the Field Xpert SMT70, see BA01709S
- For detailed information on operation with the Field Xpert SMT77, see BA01923S

Starting the Field Xpert and logging in

1. Switch on the supply voltage for the FieldPort SWA50.
2. Start the Field Xpert tablet PC. To do so, double-click Field Xpert on the start screen.
   ↳ The following view is displayed:



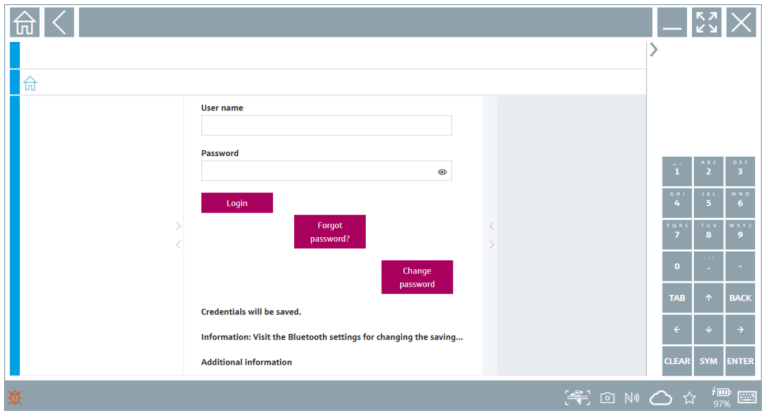
3. Tap the icon.
   ↳ A list of all available WIFI and Bluetooth devices appears.
4. Check whether the icon is enabled. If the icon is not enabled, tap the icon.
   ↳ A list of all available Bluetooth devices appears.



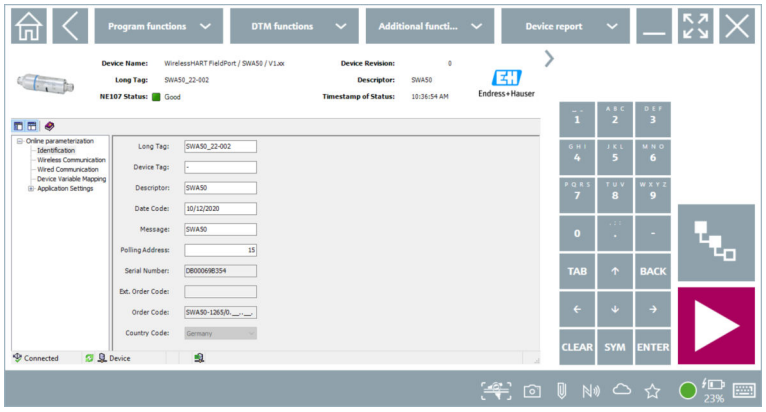
19 *Reachable devices (live list)*

1 *Example of FieldPort SWA50 without HART field device, already connected to Field Xpert*
2 *Example of FieldPort SWA50, not yet connected to Field Xpert*
3 *Example of FieldPort SWA50 with Endress+Hauser HART field device, already connected to Field Xpert*

5. Tap the ▶ icon next to the device that is to be configured.
   ↳ The Login dialog box appears.



6. Log in. Enter **admin** as the user name and enter the initial password. The initial password can be found on the nameplate.
   ↳ The "Online Parameterization" page of the SWA50 DTM is displayed.



   Use the ▶ icon to open the DTM of the connected HART field device.

Change the password after logging in for the first time.

Checking and adjusting the HART configuration

Perform the following steps to ensure good communication between the FieldPort SWA50 and the connected HART field device.

- The parameters listed in this section can be found on the "Wired Communication" page.
- Navigation: Online Parametrization > Wired Communication

1. Use the "HART address field device" parameter to check the HART address of the HART field device and configure the address if necessary. The same HART address must be used for the HART field device in the HART field device and in the FieldPort SWA50.
2. Use the "Communication Resistor" parameter to check the setting for the HART communication resistor. If there is no HART communication resistor outside the FieldPort SWA50 in the 4 to 20 mA loop, you must enable the internal HART communication resistor.

3. Use the "Master Type" parameter to check the setting for an additional HART master in the HART loop. In addition to the FieldPort SWA50, only one other HART master is permitted in the HART loop. This other HART master and the FieldPort SWA50 may not be of the same master type.

8.3.3 Commissioning via FieldCare

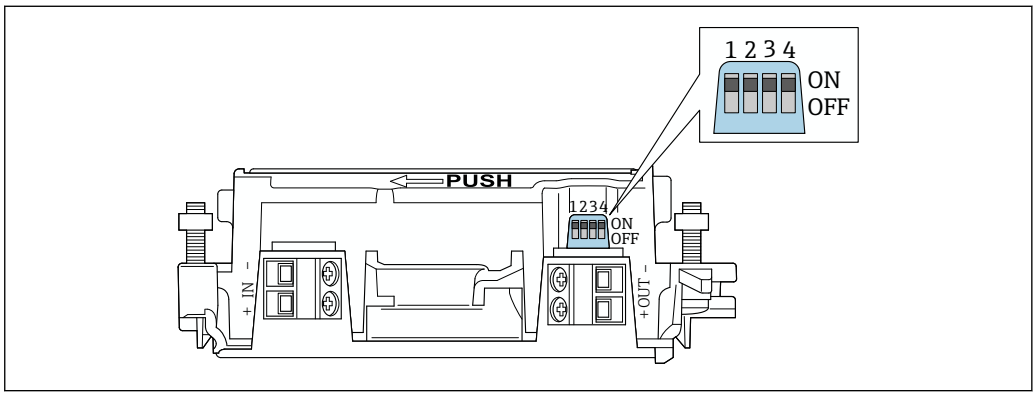
1. Enable the "Prefer FDT1.2.1 scanning" option in FieldCare. Path: FieldCare > Extras > Options > "Scanning" tab > " section Scan Result
2. Integrate the FieldPort SWA50 into a FieldCare project in accordance with the Operating Instructions for FieldCare.
3. Configure the FieldPort SWA50 → 54.

For detailed information on operation with FieldCare , see BA00065S

9 Operation

9.1 Hardware locking

The DIP switches for hardware-locking are located on the electronic insert.



20 DIP switches for hardware-locking of functions

DIP switch	Function	Description	Factory setting
1	Bluetooth communication	▪ ON: Communication via Bluetooth is possible, e.g. via SmartBlue App, Field Xpert and FieldEdge SGC200. ▪ OFF: Communication via Bluetooth is not possible.	ON
2	Firmware update	▪ ON: You can carry out firmware updates. ▪ OFF: You cannot carry out firmware updates.	ON
3	Configuration via Bluetooth	▪ ON: Configuration via Bluetooth is possible, e.g. via SmartBlue App and Field Xpert. ▪ OFF: Configuration via Bluetooth is not possible. A connection set up via the FieldEdge SGC200 between the FieldPort SWA50 and the Netilion Cloud remains active.	ON
4	Reserve	–	–

9.2 LEDs

2 LEDs
- Green: Flashes four times at start-up to indicate that the device is operational
- Orange: Flashes every 2 seconds to indicate that a squawk function has been enabled
  Activate the squawk function in the SmartBlue app using the "Identification" parameter
  → 43

The LEDs are located on the electronic insert and are not visible from the outside.

10 Description of SmartBlue app for SWA50

10.1 Menu overview (Navigation)

Menu overview (Navigation): → 74

10.2 "Device information" page

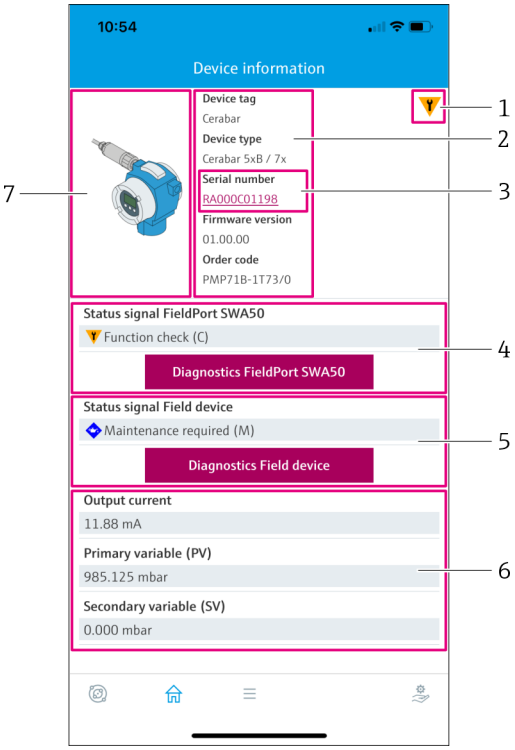
The following display options are possible for the "Device information" page:
- FieldPort SWA50 with HART field device from Endress+Hauser
- FieldPort SWA50 with HART field device from another manufacturer
- FieldPort SWA50 without connected or accessible HART field device

Information about the serial number shown

The actual serial number is displayed for Endress+Hauser field devices with HART 6 and HART 7. A unique serial number is calculated for field devices from other manufacturers and for Endress+Hauser field devices with HART 5. The calculated serial number does not correspond to the actual serial number of the field device.

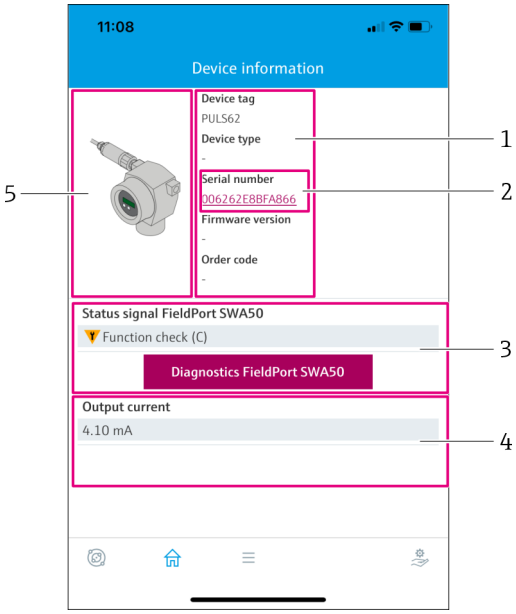
Information on the status signal indicated in the top line

When the Endress+Hauser field device is connected, the status signal displayed in the top line is a combination of the status signal of the connected HART field device and the status signal of the FieldPort SWA50.



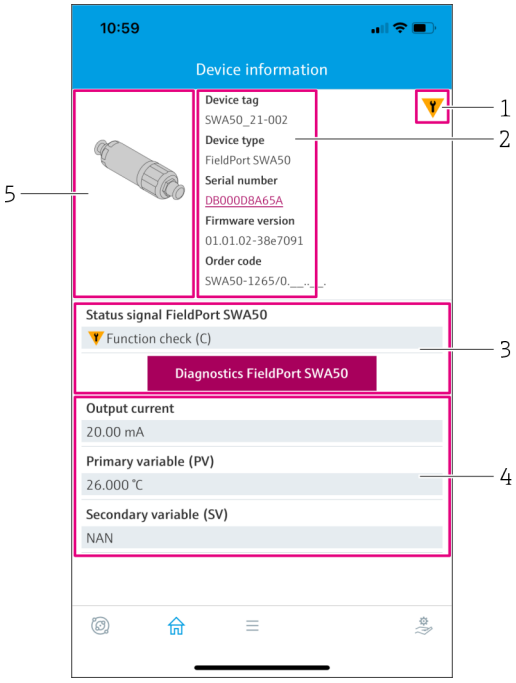
21 *"Device information" view – Example of the SWA50 with Endress+Hauser HART field device*

1 *Combined status signal, consisting of the status for the SWA50 and the status of the connected HART field device*
2 *Information about the HART field device connected to the SWA50. Firmware version, order code and device type are only displayed for Endress+Hauser field devices with HART 6 and HART 7.*
3 *Serial number. In the case of HART field devices, this is a unique number generated by the SWA50 consisting of Device type, Manufacturer ID and Device ID.*
4 *Status signal of the SWA50. If the status is not OK, the button for the "Diagnostics FieldPort SWA50" page is shown.*
5 *Status signal of the connected HART field device. If the status is not OK, the button for the "Diagnostics Field device" page is shown.*
6 *Process values of HART field device*
7 *Product image of Endress+Hauser HART field device with SWA50*



22 *"Device information" view – example for SWA50 with HART field device from another manufacturer*

1 *Information about the HART field device connected to the SWA50. Firmware version, order code, device type and status are displayed only for Endress+Hauser field devices with HART 6 and HART 7.*
2 *Serial number. In the case of HART field devices from other manufacturers, this is a unique number generated by the SWA50 consisting of Device type, Manufacturer ID and Device ID.*
3 *Status signal of the SWA50. If the status is not OK, the button for the "Diagnostics FieldPort SWA50" page is shown.*
4 *Output current of HART field device*
5 *Product image of HART field device from another manufacturer with SWA50*



23 *"Device information" view – example for SWA50 without connected or accessible HART field device*

1 *Status signal for SWA50*
2 *Information about the SWA50*
3 *Status signal of the SWA50. If the status is not OK, the button for the "Diagnostics FieldPort SWA50" page is shown.*
4 *Measured values of the SWA50. The output current 20 mA is always displayed in this case*
5 *Product image of SWA50, since HART field device is either not connected or not accessible*

10.3 "Diagnostics: FieldPort SWA50" page

Navigation: Root menu > Diagnostics > FieldPort SWA50

This page displays information about the FieldPort SWA50 which may be relevant for diagnostics.

Parameter	Description
Device tag	Shows the SWA50 device tag
Status signal FieldPort SWA50	Shows the current NAMUR NE 107 status of the SWA50 **Possible notifications** ▪ OK ▪ Failure (F): Failure (F) ▪ Maintenance required (M): Maintenance required (M) ▪ Out of specification (S): Not within specification (S) ▪ Function check (C): Function check (C) ▪ Not categorized: Not categorized
Actual diagnostics	Shows the diagnostic number with the highest priority currently. → 🖹 66
Active diagnostics	Shows the associated diagnostic text for the diagnostic number displayed by the "Actual diagnostics" parameter
Additional device status	Shows other states of the SWA50 **Possible notifications** ▪ Lowpower mode: Low power mode is enabled. ▪ Additional status for field device: Additional status information available for the field device. See field device for this status information. ▪ SWA50: WirelessHART off: WirelessHART is disabled (Do not attempt to join). ▪ SWA50: do not scan for field device: No search takes place for a connected field device for the SWA50 ▪ HART device configuration locked: HART device configuration is locked for the SWA50. ▪ Connected field device changed: The configuration for the field device connected to the SWA50 was changed. ▪ Block transfer pending: The block transfer is pending. ▪ DIP switch 2 ON: FW update enabled: DIP switch 2 is set to the ON position. Firmware updates are possible. ▪ DIP switch 3 ON: Config via BT enabled: DIP switch 3 is set to the ON position. Configuration via Bluetooth is possible, e.g. via the SmartBlue app and Field Xpert.
"Connectivity" button	The "Connectivity" page is opened. → 🖹 51
Configuration counter	Shows the number of configuration changes for the SWA50
Reboot	Shows the number of restarts of the SWA50
Operating time from restart	Shows the uptime of the SWA50 since the last restart
Received Bluetooth signal strength	Shows the current Bluetooth radio signal strength in dB
Reduce Bluetooth radio transmit power	Indicates whether the Bluetooth output power of the SWA50 is reduced or not **Possible notifications** ▪ Yes ▪ No
"Identification" button	Enable squawk function for 1 minute. **Response** ▪ SWA50: The orange LED flashes at intervals of 2 seconds. ▪ Feldgerät: Falls das Feldgerät die Squawk-Funktion unterstützt, wird die Funktion am Feldgerät aktiviert.

10.4 "Diagnostics: Field device" page

Navigation: Root menu > Diagnostics > Field device

This page displays information about the HART field device which may be relevant for diagnostics.

The diagnostic information is displayed only for Endress+Hauser HART field devices.

Parameter	Description
Device tag	Shows the device tag of the HART field device
Device type	Shows the device type of the HART field device in HEX format, e.g. 0x1128
Status signal field device	Shows the current NAMUR NE 107 status of the HART field device depending on the information available from the HART field device. The data base that makes up the device status varies depending on HART standard 5, 6 or 7 and the generation of the field device. **Possible notifications** ▪ OK ▪ Failure (F): Failure (F) ▪ Maintenance required (M): Maintenance required (M) ▪ Out of specification (S): Not within specification (S) ▪ Function check (C): Function check (C)
Actual diagnostics	Shows the internal service ID or the diagnostic number with the highest priority depending on the device type. The service ID is displayed in accordance with the LIT-18 specification. The "Actual diagnostics" parameter is called up via the device-specific HART command 231.
Device status	Shows currently pending information from the device status byte. **Possible notifications** ▪ Device malfunction (F): Device fault (F) ▪ Configuration changed (OK): Configuration changed (OK) ▪ More status available (OK): Additional status information available (OK) ▪ Loop current fixed (OK): Fixed value for loop current (OK) ▪ Loop current saturated (S): Loop current saturated (S) ▪ Non-primary variable out of limits (S): Non-primary variable (SV, TV, QV) outside limit values (S) ▪ Primary variable out of limits (S): Primary variable (PV) outside limit values (S)
Extended device status	Shows currently pending information from the extended device status byte. **Possible notifications** ▪ Maintenance required (M): Maintenance required (M) ▪ Device variable alert (OK): One of the device variables is in the alarm or warning state ▪ Critical power failure (F): Critical condition of supply voltage (F) ▪ Failure (F): Fault (F) ▪ Out of specification (S): Not within specification (S) ▪ Function check (C): Function check required (C)

Parameter	Description
Standard Status 0	Shows additional device status information from the standard section of HART command 48 (byte 8). **Requirement** HART field devices with HART 7 or higher **Possible notifications** ▪ Device variable simulation active (C): Simulation of device variables active (C) ▪ Non-volatile memory defect (F): Flash memory faulty (F) ▪ Volatile memory defect (F): RAM faulty (F) ▪ Watchdog reset executed (F): Watchdog restart (F) ▪ Power supply conditions out of range (S): Supply voltage not within specification (S) ▪ Environmental conditions out of range (S): Ambient conditions not within specification (S) ▪ Electronic defect (F): Electronics module faulty (F) ▪ Device configuration locked (OK): Device configuration locked (OK)
Standard Status 1	Shows additional device status information from the standard section of HART command 48 (byte 9). **Requirement** HART field devices with HART 7 or higher **Possible notifications** ▪ Status simulation active (OK): Device status simulation active (OK) ▪ Discrete variable simulation active (C): Measured value simulation active (C) ▪ Event notification overflow (OK): Overflow of event notifications (OK) ▪ Battery / power supply needs maintenance (M): Battery or power supply needs maintenance (M)
Configuration counter	Shows the number of configuration changes for the HART field device

10.5 "Application: FieldPort SWA50" page

10.5.1 "Measured values" page (FieldPort SWA50)

Navigation: Root menu > Application > FieldPort SWA50 > Measured values

This page shows the measured values of the FieldPort SWA50.

Parameter	Description
Primary variable (PV)	Shows the primary variable of the SWA50 **Factory setting** Temperature [°]
Secondary variable (SV)	Shows the secondary variable of the SWA50 **Factory setting** Bluetooth signal strength [dB]
Tertiary variable (TV)	Shows the tertiary variable of the SWA50 **Factory setting** NAN
Quanternary variable (QV)	Shows the quaternary variable of the SWA50 **Factory setting** Field device loop current [mA] If no field device is connected to the SWA50, 20 mA is always displayed.

10.5.2 "HART info" page (FieldPort SWA50)

Navigation: Root menu > Application > FieldPort SWA50 > HART info

This page shows the HART information of the FieldPort SWA50.

Parameter	Description
Device type	Shows the device type of the SWA50 in HEX format (0x11F3)
Manufacturer ID	Shows the manufacturer ID of the SWA50 in HEX format, 0x11 for Endress+Hauser
HART revision	Shows the HART version of the SWA50, e.g. 7
HART descriptor	Shows the description that was entered for the SWA50.
HART message	Shows the message that was entered for the SWA50. The message is transmitted via the HART protocol at the request of the master.
Device ID	Shows the device ID of the SWA50, e.g. 0x7A2F51
No. of preambles	Shows the number of preambles entered.
HART data code	Shows the date that was entered for the SWA50, e.g. 2020-03-31. The date provides information about a specific event, for example, such as the last configuration change.
Device revision	Shows the hardware revision of the SWA50

10.6 "Application: Field device" page

10.6.1 "Measured values" page (Field device)

Navigation: Root menu > Application > Field device > Measured values

This page shows the measured values of the HART field device that is connected to the FieldPort SWA50. If a HART field device is not connected or the HART field device cannot be reached, this page shows the measured values of the FieldPort SWA50.

The measured values PV, SV, TV and QV are displayed for Endress+Hauser devices only.

Parameter	Description
Output current	Shows the output current of the HART field device
Primary variable (PV)	Shows the primary variable of the Endress+Hauser HART field device
Secondary variable (SV)	Shows the secondary variable of the Endress+Hauser HART field device
Tertiary variable (TV)	Shows the tertiary variable of the Endress+Hauser HART field device
Quanternary variable (QV)	Shows the quaternary variable of the Endress+Hauser HART field device

10.6.2 "HART info" page (Field device)

Navigation: Root menu > Application > Field device > HART info

This page shows the HART information of the HART field device that is connected to the FieldPort SWA50.

The HART information is displayed for Endress+Hauser devices only.

Parameter	Description
Device type	Shows the device type of the HART field device in HEX format, e.g. 0x1128
Manufacturer ID	Shows the manufacturer ID of the HART field device in HEX format, e.g. 0x11 for Endress+Hauser
HART revision	Shows the HART version of the HART field device, e.g. 7
HART descriptor	Shows the description that was entered for the field device.

Parameter	Description
HART message	Shows the message that was entered for the HART field device. The message is transmitted via the HART protocol at the request of the master.
Device ID	Shows the device ID of the HART field device, e.g. 0x7A2F51
No. of preambles	Shows the number of preambles entered.
HART data code	Shows the date that was entered for the HART field devices, e.g. 2020-03-31. The date provides information about a specific event such as the last configuration change.
Device revision	Shows the hardware revision of the HART field device

10.7 "System: FieldPort SWA50" page

10.7.1 "Device management" page (FieldPort SWA50)

Navigation: Root menu > System > FieldPort SWA50 > Device management

Parameter	Description
Device tag	Enter device tag for SWA50.

10.7.2 "Connectivity" page (FieldPort SWA50)

Navigation: Root menu > System > FieldPort SWA50 > Connectivity

"Bluetooth configuration" page

Navigation: Root menu > System > FieldPort SWA50 > Connectivity > Bluetooth configuration

Use this page to configure the Bluetooth connection and perform firmware updates for the FieldPort SWA50.

Page	Description
Reduce radio transmit power	Enable and disable a reduction in the transmission power of the SWA50. **Options** ▪ Yes: The transmission power of the SWA50 is reduced. ▪ No: The transmission power of the SWA50 is not reduced. **Factory setting** No
Change Bluetooth password	Change password. To change it, you must enter the user name, the current password and the new password. **Factory setting** ▪ User name: admin ▪ The password can be found on the nameplate.
Firmware update	→ 68

"HART configuration" page

Navigation: Root menu > System > FieldPort SWA50 > Connectivity > HART configuration

Use this page to configure the HART parameters for the FieldPort SWA50. In addition, you can configure the HART address of the connected HART field device.

Parameter	Description
HART address field device	Configure the HART address of the HART field device. **User entry** 0 to 255 **Factory setting** 0
HART master type	Select HART master type. **Options** ▪ Primary master ▪ Secondary master **Factory setting** Secondary master
Communication resistor	Select installation site of HART communication resistor. **Options** ▪ External: Use an external communication resistor provided by the customer onsite between the IN+ terminal and the supply voltage. ▪ Internal: Use an internal communication resistor of the SWA50. **Factory setting** External
HART address SWA50	Configure the HART address of the SWA50 for slave access to SWA50. **User entry** 0 to 63 **Factory setting** 15

10.7.3 "Geolocation" page (FieldPort SWA50)

Navigation: Root menu > System > FieldPort SWA50 > Gelocation

Use this page to configure information on the position of the FieldPort SWA50.

Parameter	Description
Location description	Enter a description of the location (32 characters maximum).
"Take over data from mobile device" button	If the mobile device has location information, you can adopt this information by tapping on the button for the SWA50.
Longitude	Enter longitude [°].
Latitude	Enter latitude [°].
Altitude	Enter height [m].

10.7.4 "Information" page (FieldPort SWA50)

Navigation: Root menu > System > FieldPort SWA50 > Information

This page displays information on the FieldPort SWA50.

Parameter	Description
Wireless communication	Shows the connection type, such as "Bluetooth" or "WirelessHART"
Device name	Shows the device name for the SWA50
Manufacturer	Shows the manufacturer, "Endress+Hauser" in this case
Serial number	Shows the serial number of the SWA50
Order code	Shows the order code

Parameter	Description
Extended order code 1	Shows the extended order code 1
Extended order code 2	Shows the extended order code 2
Extended order code 3	Shows the extended order code 3
Firmware version	Shows the active firmware version
Hardware version	Shows the active hardware version

10.8 "System: Field device" page

Navigation: Root menu > System > Field device

The "Field device" page is available for Endress+Hauser devices only.

10.8.1 "Device management" page (Field device)

Navigation: Root menu > System > Field device > Device management

Parameter	Description
Device tag	Shows the device tag of the HART field device

10.8.2 "Information" page (Field device)

Navigation: Root menu > System > Field device > Information

This page shows information about the HART field device that is connected to the FieldPort SWA50.

This information is displayed for Endress+Hauser field devices with HART 6 and higher.

Parameter	Description
Device name	Shows the device name of the HART field device
Manufacturer	Shows the manufacturer of the HART field device
Serial number	Shows the serial number of the HART field device
Order code	Shows the order code of the HART field device
Extended order code 1	Shows the first part of the extended order code of the HART field device
Extended order code 2	Shows the second part of the extended order code of the HART field device
Extended order code 3	Shows the third part of the extended order code of the HART field device
Firmware version	Shows the active firmware revision of the HART field device

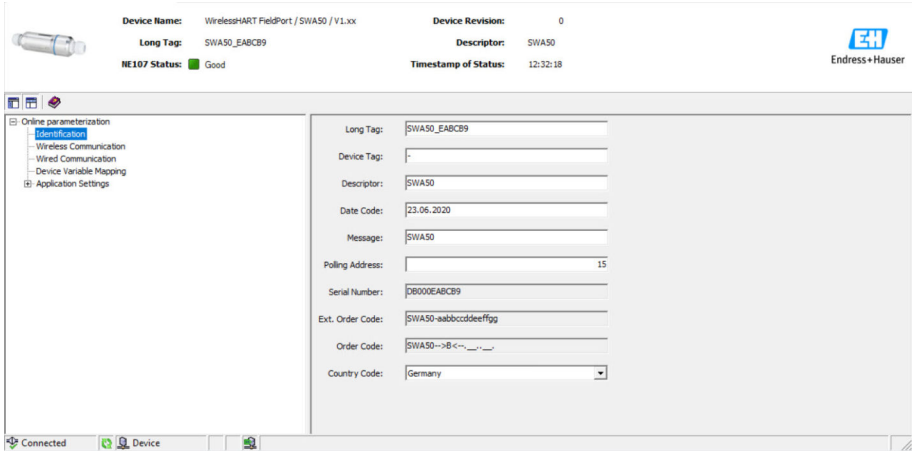
11 Description of DTM for SWA50

11.1 Identification

Use this page to configure the parameters necessary to identify the FieldPort SWA50.

The factory settings are displayed in the relevant fields.

Navigation
Online parameterization > Identifcation



"Identification" parameter description page

Parameter	Description
Long Tag	**Requirement** Devices from HART version 6.0 **Description** Enter a tag for the SWA50. This parameter is used for unique identification of the SWA50 in the network and in the plant. The parameter is used to set the burst mode and the event notification. **User entry** Max. 32 characters from the ISO Latin 1 character set **Factory setting** SWA50_"Serial Number" The tag must be unique in the WirelessHART network.
Device Tag	**Description** Enter a tag for the SWA50. **User entry** Max. 8 characters from the packed ASCII character set **Factory setting** –
Descriptor	**Description** Enter the description for the SWA50, e.g. function or location. **User entry** Max. 16 characters from the packed ASCII character set **Factory setting** SWA50
Date Code	**Description** Enter the date of a specific event, such as the last change. **User entry** DD.MM.YYYY

Parameter	Description
Message	**Description** Enter the message that can be used as desired. **User entry** Max. 32 characters from the packed ASCII character set **Factory setting** SWA50
Polling Address	**Description** Enter the HART address of the SWA50 on the wired interface. **User entry** 0 to 63 **Factory setting** 15 **Additional information** Since the "Long Tag" parameter and the MAC address are used to identify the SWA50 in the wireless network, you can assign the same device address to different SWA50 devices.
Serial Number	**Description** Shows the serial number of the SWA50.
Ext. Order Code	**Description** Shows the detailed order number of the SWA50.
Order Code	**Description** Shows the order code of the SWA50.
Country Code	**Description** Select the country where the SWA50 is operated. **Factory setting** Germany **Additional information** The selected country controls the signal strength in accordance with national restrictions and thus the possible settings for the "Radio Power" parameter.

You can use the following characters for parameters for which you should enter characters from the packed ASCII character set: @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [\ ] ^ _ SP ! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ?

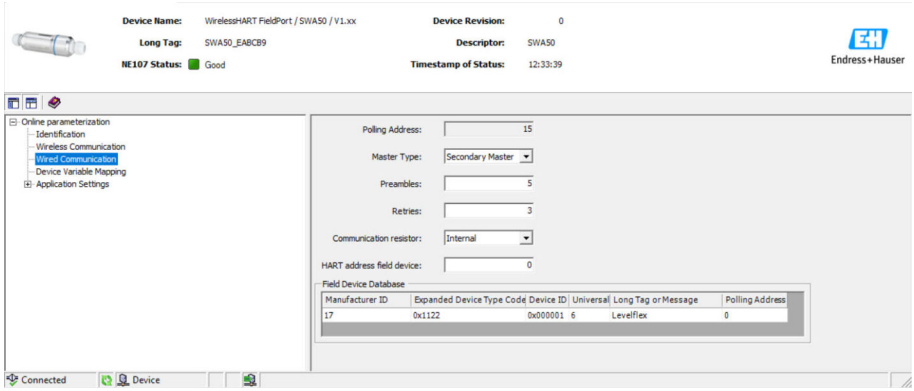
11.2 Wireless Communication

This page only applies to the FieldPort SWA50 with WirelessHART (SWA50 - _ _ B _ _ _).

11.3 Wired Communication

Use this page to configure the parameters required for HART communication between the FieldPort SWA50 and the connected HART field device.

Navigation
Online parameterization > Wired Communication



"Wired communication" parameter description page

Parameter	Description
Polling Address	**Description** Shows the HART address of the SWA50. **Factory setting** 15
Master Type	**Description** Select the HART master type for the SWA50. **Options** ▪ Primary master ▪ Secondary master **Factory setting** Secondary master In addition to the SWA50, only one other HART master is permitted in the HART loop. This other HART master and the SWA50 may not be of the same master type.
Preambles	**Description** Enter the number of preambles. **User entry** 5 to 50 **Factory setting** 5
Retries	**Description** Enter the number of attempts to establish communication between the SWA50 and the HART field device. **User entry** 2 to 5 **Factory setting** 3
Communication resistor	**Description** Select the installation location of the HART communication resistor. **Options** ▪ External: Use external and customer-supplied communication resistor. The communication resistor must be ≥ 250 Ohm and wired in series between the "IN +" terminal of the SWA50 and the supply voltage, such as the PLC or active barrier. ▪ Internal: Use an internal communication resistor of the SWA50. **Factory setting** External

Parameter	Description
HART Adress Field Device	**Description** Enter the HART address of the HART field device. **User entry** 0 to 63 **Factory setting** 0
Field Device Database	**Description** Shows the HART information of the HART field device that is connected to the SWA50.

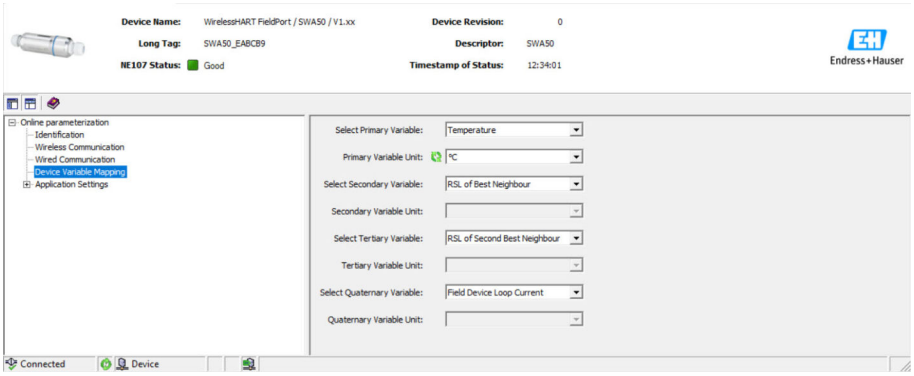
11.4 Device Variable Mapping

The FieldPort SWA50 can output the value and status of different variables. Use this page to configure the four variables PV, SV, TV and QV that are displayed in the network.

Variables for selection

Option	Description
Field Device Loop Current	Loop current of field device
RSL of Best Neighbour	Signal strength of neighbor with highest signal strength
RSL of Second Best Neighbour	Signal strength of neighbor with second-highest signal strength
Temperature	Current temperature measured by the SWA50

Navigation
Online parameterization > Device Variable Mapping



"Device Variable Mapping" parameter description page

Parameter	Description
Select Primary Variable	**Description** Select the primary variable. **Options** See the "Variables for selection" table. **Factory setting** Temperature
Primary Variable Unit	**Description** Select the unit for the primary variable. **Options** The options depend on the variable selected. **Factory setting** °C

Parameter	Description
Select Secondary Variable	**Description** Select the secondary variable. **Options** See the "Variables for selection" table. **Factory setting** RSL of Best Neighbour
Secondary Variable Unit	**Description** Select the unit for the secondary variable. **Options** The options depend on the variable selected. **Factory setting** dBm
Select Tertiary Variable	**Description** Select the tertiary variable. **Options** See the "Variables for selection" table. **Factory setting** RSL of Second Best Neighbour
Tertiary Variable Unit	**Description** Select the unit for the tertiary variable. **Options** The options depend on the variable selected. **Factory setting** dBm
Select Quaternary Variable	**Description** Select the quaternary variable. **Options** See the "Variables for selection" table. **Factory setting** Field Device Loop Current
Quaternary Variable Unit	**Description** Select the unit for the quaternary variable. **Options** The options depend on the variable selected. **Factory setting** mA

11.5 Burst Mode

This page only applies to the FieldPort SWA50 with WirelessHART (SWA50 - _ _ B _ _ _).

11.6 Event Notification

This page only applies to the FieldPort SWA50 with WirelessHART (SWA50 - _ _ B _ _ _).

12 Diagnostics

12.1 Calling up diagnostics

Call up diagnostics in Field Xpert

- Select the **Diagnosis** menu in **DTM functions**.
  - The "Diagnosis" window is opened.

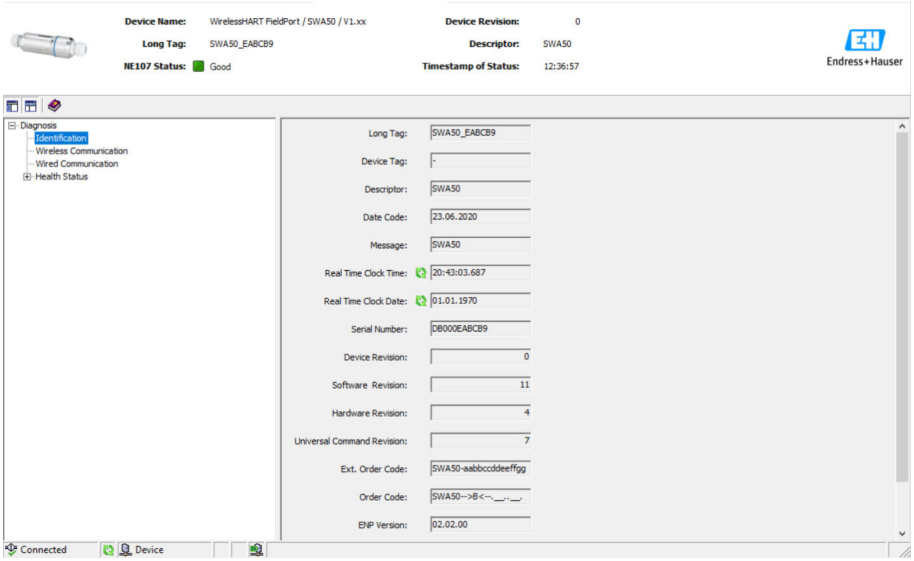
Call up diagnostics in FieldCare

1. Click on the **SWA50** in the network view.
2. Open the context menu.
3. Select the **Diagnosis** menu.
   - The "Diagnosis" window is opened.

12.2 Identification

This page shows information about the FieldPort SWA50.

Navigation
Diagnosis > Identification



"Identification" parameter description page

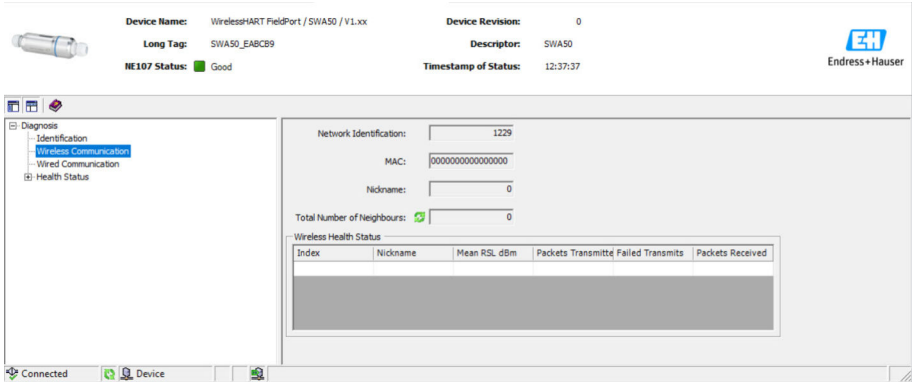
Parameter	Description
Long Tag	Shows the long character string that was entered for the SWA50. This parameter is used for unique identification of the SWA50 in the network and in the plant. The parameter is used to set the burst mode and the event notification.
Device Tag	Shows the device tag that was entered for the SWA50.
Descriptor	Shows the description that was entered for the SWA50. This parameter is used for the description of the SWA50, e.g. function or location.
Date Code	Shows the date that was entered for the SWA50. The date is used to identify a particular event, e.g. the last change.
Message	Shows the message entered. The message can be used as desired. The message is transmitted via the HART protocol at the request of the master.

Parameter	Description
Real Time Clock Time	Shows the network system time.
Real Time Clock Date	Shows the network system date.
Serial Number	Shows the serial number of the SWA50.
Device Revision	Shows the device version of the SWA50.
Software Revision	Shows the software version of the SWA50.
Hardware Revision	Shows the hardware version of the SWA50.
Universal Command Revision	Shows the HART protocol version supported by the SWA50.
Ext. Order Code	Shows the detailed order number of the SWA50.
Order Code	Shows the order code of the SWA50.
ENP Version	Shows the version of the SWA50 electronic nameplate.

12.3 Wireless Communication

This page shows information about the operation of the FieldPort SWA50. The information is updated every five minutes.

Navigation
Diagnosis > Wireless Communication



"Wireless Communication" parameter description page

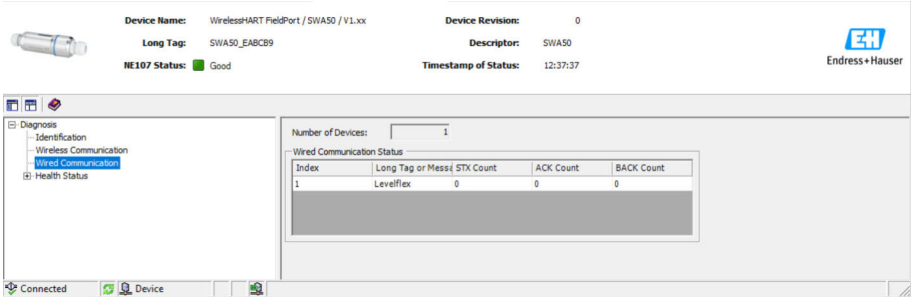
Parameter	Description
Network Identification	Shows the identification number of the network to which the SWA50 connects.
MAC	Shows the MAC address of the SWA50.
Nickname	Shows the short name of the SWA50 for internal use in the network.

Parameter	Description
Total Number of Neighbours	Shows the number of WirelessHart devices that are in the vicinity of the SWA50 and to which a connection has been established.
Wireless Health Status	Shows important parameters for network communication ▪ Index: ID of neighboring device ▪ Nickname: Short name of neighboring device ▪ Mean RSL dBm: Average signal strength of neighbor since the SWA50 established a connection to the network ▪ Packets Transmitted: Number of packets sent by the SWA50 since a connection was established to the network ▪ Failed Transmits: Number of packets sent by the SWA50 that have not reached their destination after retries since a connection was established to the network ▪ Packets Received: Number of packets received by the SWA50 since a connection was established to the network These parameters show the values since the last time the SWA50 successfully connected to the WirelessHart network. The values are reset if the connection is lost.

12.4 Wired Communication

This page displays information about the HART field device that is connected to the FieldPort SWA50.

Navigation
Diagnosis > Wired Communication



"Wired Communication" parameter description page

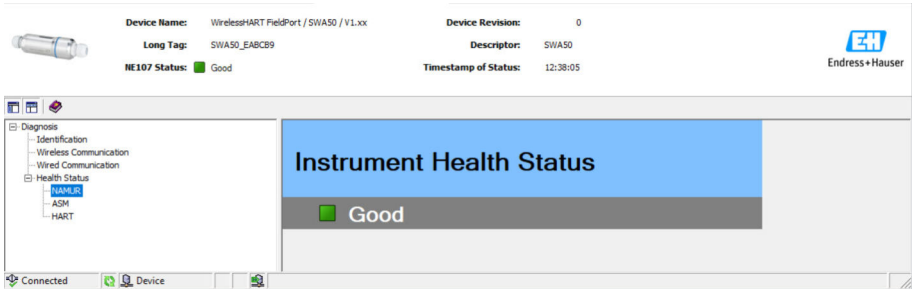
Parameter	Description
Number of Devices	Shows the following: ▪ 0: No HART field device is connected to the SWA50. ▪ 1: A HART field device is connected to the SWA50.
Wired Communication Status	Displays important parameters for network communication ▪ Index: ID of the connected HART field device ▪ Long Tag or Message: Long tag of the connected HART field device ▪ STX Count: Number of feedback messages received by the SWA50 from the connected HART field device ▪ ACK Count: Number of feedback messages that the SWA50 has received from HART field devices ▪ BACK Count: Number of burst modes

12.5 Health Status

This page shows diagnostic information for the FieldPort SWA50 in accordance with the following guidelines and following specification:
- NAMUR guideline NE 107
- ASM guidelines
- HART specification

12.5.1 NAMUR NE 107

Navigation
Diagnosis > Health Status > NAMUR

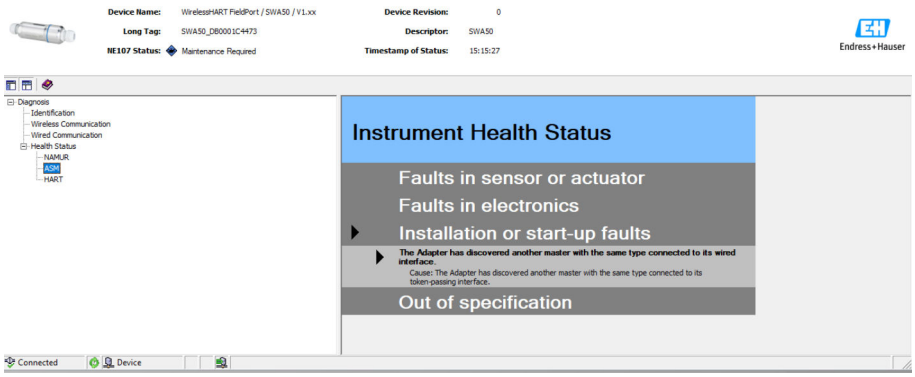


Possible device status

Device status	Translation
Good	Good
Failure (F)	Failure
Maintenance required (M)	Maintenance required
Out Of Specification (S)	Out of specification
Function Check (C)	Function check

12.5.2 ASM

Navigation
Diagnosis > Health Status > ASM

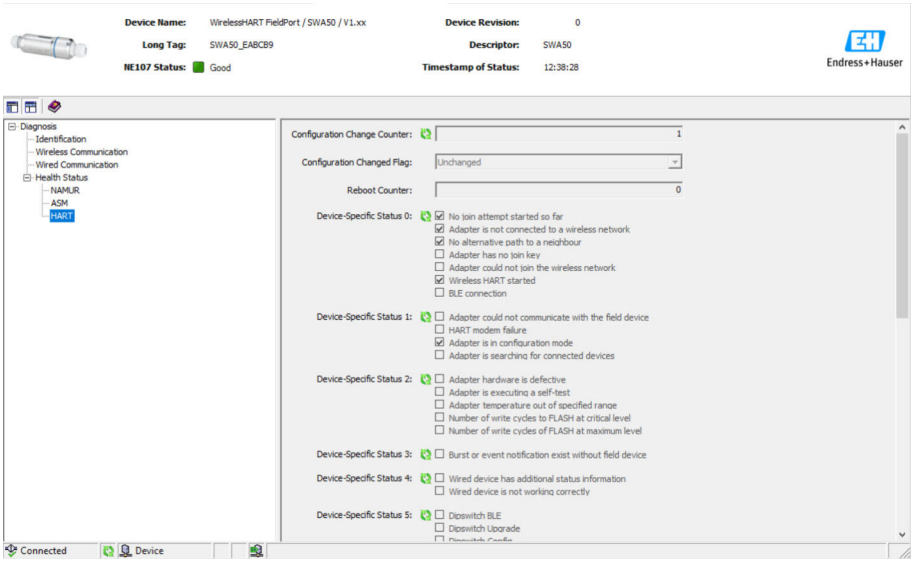


Possible device status

Device status	Translation
Good	Good
Faults in the sensor or actuator element	Faults in the sensor or in the actuator element
Faults in the electronics	Faults in the electronics
Installation faults, fault during start-up	Installation faults, faults during commissioning
Faults due to process influence, faults due to non-compliance with specified operating conditions	Faults due to process influence, faults due to non-compliance with specified operating conditions

12.5.3 HART

Navigation
Diagnose > Health Status > HART



If a check box is selected, the statement is true.

Possible device status

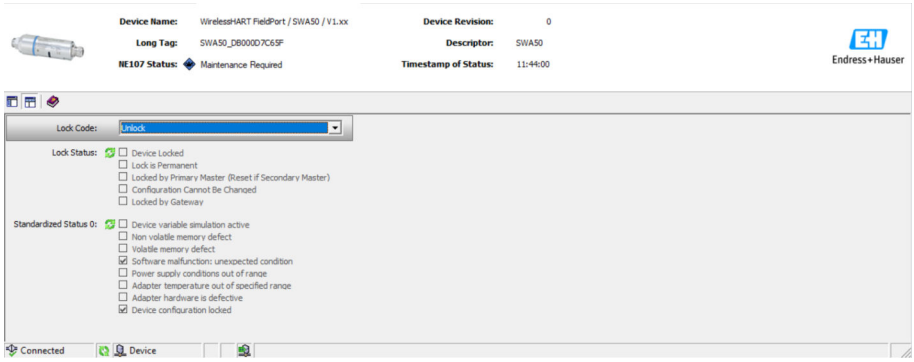
Parameter	Description
Configuration Change Counter	Shows the number of configuration changes
Configuration Changed Flag	Shows a change in the configuration since the last communication
Reboot Counter	Shows the number of SWA50 restarts
Real Clock Time	Shows the system time

13 Other DTM functions

13.1 Lock / Unlock

Use this page to protect the FieldPort SWA50 against unauthorized access via the DTM. If locking is enabled and DIP switch 3 is set to "On", configuration via Bluetooth is still possible.

If the "The device is write-protected (Device configuration locked)" option is enabled in the "Standardized Status 0" section, DIP switch 3 is set to "Off" and configuration via Bluetooth is not possible.



"Lock / Unlock" parameter description page

Parameter	Description
Lock Code	Select the type of locking for the DTM to the SWA50. **Options** ▪ Unlocked: The SWA50 is unprotected. All parameters can be changed. ▪ Lock Temporary: The SWA50 is locked. A restart of the SWA50 or a power outage disables the lock. ▪ Lock Permanent: The SWA50 is permanently locked. A restart of the SWA50 or a power outage do **not** disable the lock. The lock can be lifted via the "Lock Code" parameter. ▪ Lock All: The SWA50 is permanently locked for all masters. If you select another option for the "Lock Code" parameter, the new option takes immediate effect.
Lock Status	Shows the current access status of the DTM to the SWA50. If a check box is selected, the statement is true. **Possible notifications** ▪ Device Locked: SWA50 is locked ▪ Lock is Permanent: Permanently locked ▪ Locked by Primary Master (Reset if Secondary Master): The SWA50 was locked by the primary master. To unlock the device, the secondary master must restart. ▪ Configuration cannot be changed: Configuration cannot be changed ▪ Locked by Gateway: The SWA50 is locked by the gateway

Lock Code	Lock Status
Unlocked	–
Lock Temporary	Device Locked
Lock Permanent	Lock is Permanent
Lock All	Device Locked, Locked is permanent and Configuration can not be changed
–	Locked by Primary Master (Reset if Secondary Master) Locking was triggered by the primary master.

Lock Code	Lock Status
Lock All	Configuration cannot be changed
–	Locked by Gateway Locking was triggered by a gateway.

14 Diagnostics and troubleshooting

14.1 Diagnostics

If a diagnostic event has occurred, the status signal appears in Netilion together with the corresponding symbol for the event level according to NAMUR NE 107.

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

Diagnostic number	Short text	Corrective measure	Status signal
Electronics			
202	Self-test active.	Wait until self-test is completed.	F
314	Critical number of write cycles to memory reached.	▪ Make sure that no cyclic configuration change is automatically sent to the FieldPort. ▪ Change the FieldPort.	M
315	The hardware of the FieldPort is defective.	Change the FieldPort.	F
316	The hardware of the FieldPort is defective.	Change the FieldPort.	F
Configuration			
501	HART field device not working correctly.	Check the HART field device.	F
502	Additional status information for HART field device	–	F
504	FieldPort cannot communicate with the HART field device	▪ Connect the HART field device. ▪ Check the HART field device and wiring. ▪ Check the HART address of the HART field device. ▪ Increase the Start-up time.	F
508	FieldPort is in the configuration mode	–	–
509	DIP switch 1: Bluetooth communication enabled	–	–
510	DIP switch 2: Firmware update enabled	–	–
511	DIP switch 3: Configuration via Bluetooth enabled	–	–
512	DIP switch 4: Reserve	–	–
Process			
803	Loop current	▪ Check wiring. The loop current must be between 3.6 mA and 22.5 mA. ▪ Change HART field device.	F
825	Operating temperature	▪ Check ambient temperature. ▪ Check process temperature.	S
900	Bluetooth connected to config. device	–	–
903	FieldPort is looking for connected device.	–	–
905	Wireless module started	–	–
906	Power save mode	–	–

14.2 Troubleshooting

Fault	Measure
No communication between HART field device and FieldPort.	Check the settings of the HART parameters in the FieldPort. ▪ SmartBlue app: Root menu > System > FieldPort SWA50 > Connectivity > HART Configuration → 🖹 51 ▪ Field Xpert and FieldCare: "Wired communication" page → 🖹 55
No Bluetooth communication between FieldPort and the SmartBlue app.	Check whether Bluetooth communication is enabled → 🖹 43.
No Bluetooth communication between FieldPort and Field Xpert.	Check whether Bluetooth communication is enabled → 🖹 43.
No process values of HART field devices of other manufacturers in the SmartBlue app.	For third-party HART field devices, use the Field Xpert . For device variables, see Technical Information TI01468S

15 Maintenance

15.1 General maintenance

We recommend periodic visual inspections of the device.

15.2 Updating the firmware

You can run firmware updates for the FieldPort SWA50 via the SmartBlue app.

Requirements
- The smartphone battery is charged or the smartphone is connected to a power supply.
- The Bluetooth signal quality of the smartphone is sufficient.
- In the case of the FieldPort SWA50, DIP switch 2 must be set to ON → 📄 43. (Factory setting of DIP switch 2: ON)

NOTICE

Error during firmware update. The firmware update includes uploading the firmware package and installing the new firmware.

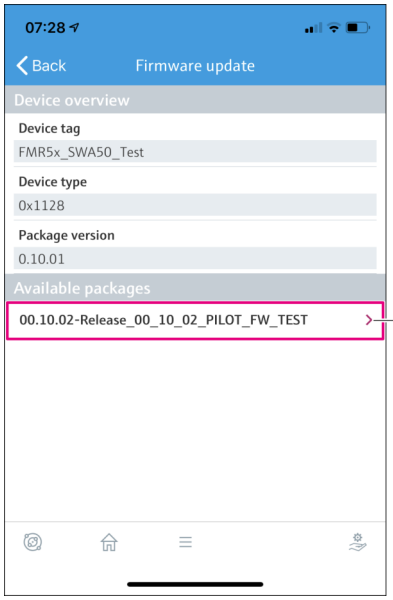
Incorrect firmware installation

- ▶ The supply voltage must be applied during the entire firmware update process.
- ▶ The loop current must be at least 10 mA during the entire firmware update process. The firmware update includes uploading the firmware package and installing the new firmware.
- ▶ Wait until the firmware update has finished. The firmware update takes approx. 10 to 20 minutes. If the FieldPort SWA50 is actively connected to a WirelessHART network, the firmware download process takes longer.

At least 10 mA must be generated by the connected HART field device during the firmware update. This can be achieved by simulating the current output at the HART field device, for example. You can check the current value in the SmartBlue app on the "Device information" page. → 📄 44

If a HART field device is not connected to the FieldPort SWA50 or if the HART field device cannot be reached, it is presumed that the loop current is at least 10 mA. In this case, the SmartBlue app shows 20 mA for the loop current.→ 📄 32

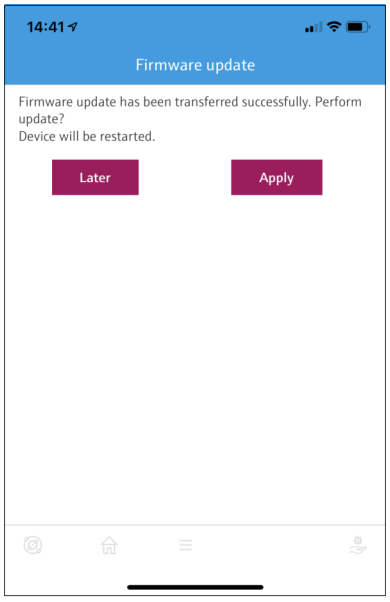
1. Copy update packages to the SmartBlue app.
2. Open the **Firmware update** page. Navigation: Root menu > System > FieldPort SWA50 > Connectivity > Bluetooth configuration
3. Select update package from the list of available packages.



24 *"Firmware update" page*

1 Example of a package

4. Tap the **Start update** button to upload the firmware package to the FieldPort SWA50. If the update cannot be uploaded, the error message "Internal firmware update error" is displayed.
5. Wait until the firmware package is uploaded. Uploading of the firmware package takes approx. 5 to 10 minutes. The remaining time is displayed. If the FieldPort SWA50 is actively connected to a WirelessHart network, the upload takes longer.
   ↳ Once the firmware package has been uploaded successfully, the following view is displayed:



6. Make sure that a loop current of at least 10 mA is present during installation of the new firmware.

7. Tap either the **Apply** button or **Later** button.
   ↳ **Apply** button: Installation of the new firmware on the FieldPort SWA50 is initiated immediately.
   Later button: Installation of the new firmware is initiated the next time the FieldPort SWA50 is restarted.
8. Wait for installation of the new firmware. During installation of the new firmware, the FieldPort SWA50 or the connected field device disappears from the live list of the SmartBlue app. The device is not displayed in the live list until the firmware has been successfully installed. The installation takes approx. 6 minutes.
9. Connect the FieldPort SWA50 to the SmartBlue app again.
10. Use the "Firmware version" parameter to check whether the new firmware is installed. → 52

If the firmware package is not fully uploaded or is not correctly installed, the FieldPort SWA50 operates with the old firmware.

16 Repair

16.1 General notes

Repairs may only be performed by Endress+Hauser staff or by individuals authorized and trained by Endress+Hauser.

16.2 Disposal

If required by the Directive 2012/19/EU on waste electrical and electronic equipment (WEEE), the product is marked with the depicted symbol in order to minimize the disposal of WEEE as unsorted municipal waste. Do not dispose of products bearing this marking as unsorted municipal waste. Instead, return them to Endress+Hauser for disposal under the applicable conditions.

17 Accessories

Optional accessories:
Mounting bracket (order number: 71520242)

Detailed information about the accessories is available from your Endress+Hauser sales organization: www.addresses.endress.com or on the product page

18 Technical data

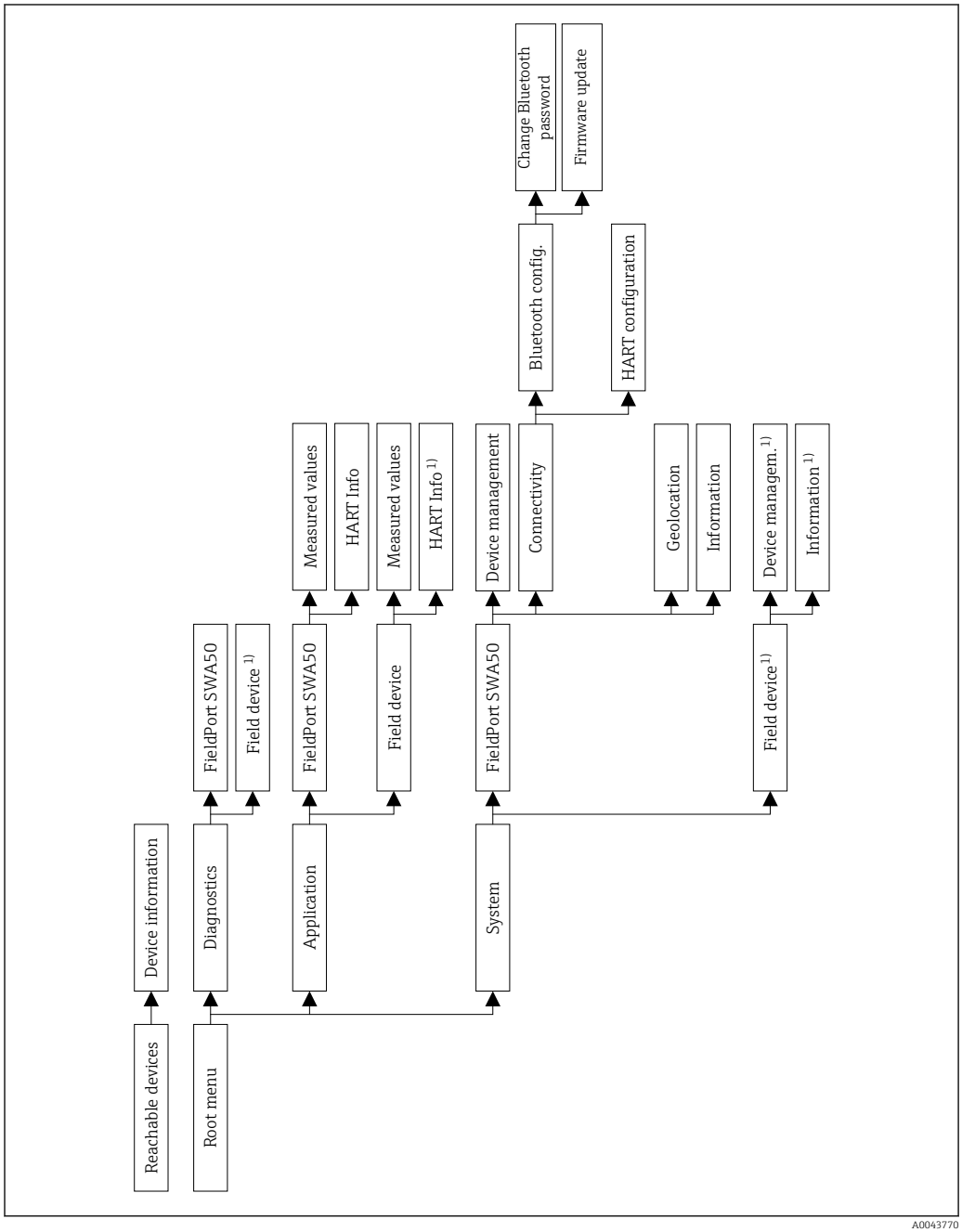
For detailed information on "technical data": see Technical Information TI01468S

19 Appendix

19.1 Menu overview (SmartBlue app navigation)

19.1.1 FieldPort SWA50 with Bluetooth

Pages and parameters that are marked with 1) are only shown for Endress+Hauser devices.



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