

Installation Instructions

Sensor electronics module


FMG50

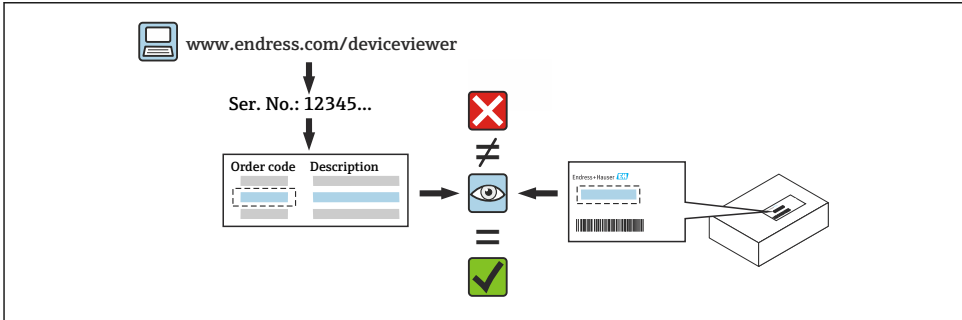
Gammapilot FMG50



1 Intended use

- A defective unit can only be replaced with a functioning unit of the same type.
- Use only original parts from Endress+Hauser.
- Check in the W@M Device Viewer if the spare part is suitable for the existing measuring device.


 In some measuring devices, an overview of spare parts is provided inside the device. If the spare part set is listed in the overview, it is not necessary to check the Device Viewer.



2 Personnel authorized to carry out repairs

Technical staff must comply with the following requirements for repair, mounting, electrical installation and commissioning of the measuring devices:

- Specialized technical staff must be trained in instrument safety.
- They must be familiar with the individual operating conditions of the devices.
- In the case of Ex-certified measuring devices, they must also be trained in explosion protection.

 Technical staff carrying out work are responsible for ensuring that the work is carried out safely and to the required quality standard. They must also guarantee the safety of the device following repair.

3 Safety instructions

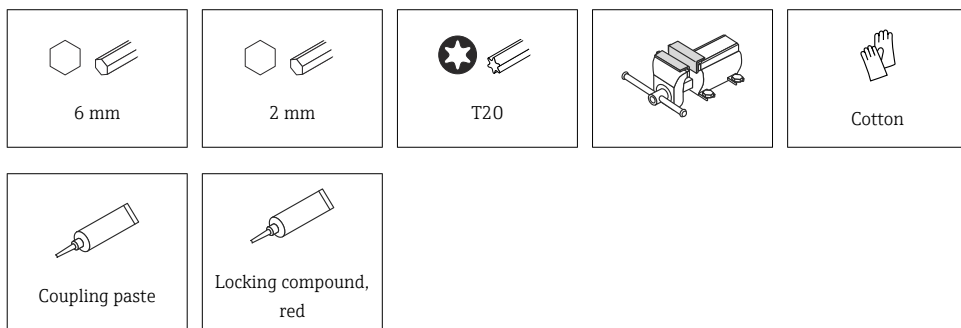
- Comply with national regulations governing mounting, electrical installation, commissioning, maintenance and repair procedures.
- Device is live! Risk of fatal injury from electric shock. Open the device only when the device is deenergized.
- For devices intended for use in hazardous locations, please observe the instructions in the Ex documentation (XA).
- In the case of devices in safety-related applications in accordance with IEC 61508 or IEC 61511: Commission in accordance with Operating Instructions after repair.

- Before removing the device: set the process to a safe state and purge the pipe of dangerous process substances.
- Risk of burns from hot surfaces! Before commencing work: allow the system and device to cool down to a touchable temperature.
- In the case of devices in custody transfer, the custody transfer status no longer applies once the seal has been removed.
- Observe the Operating Instructions for the device.
- Risk of damage to electronic components! Ensure you have a working environment protected from electrostatic discharge.
- After removing the electronics compartment cover: risk of electrical shock due to missing touch protection!
Switch the device off before removing internal covers.
- Modifications to the device are not permitted.
- Only open the housing for short periods. Avoid ingress of foreign bodies, moisture or contaminants.
- Replace defective seals only with original seals from Endress+Hauser.
- If threads are damaged or defective, the device must be repaired.
- Do not lubricate threads (e.g. of electronics compartment cover or connection compartment cover).
- If spacing is reduced or the dielectric strength of the device is not guaranteed during repair work, perform a test on completion of the work (e.g. high-voltage test in accordance with the manufacturer's instructions).
- Service connector:
 - Do not connect in potentially explosive atmospheres.
 - Only connect to Endress+Hauser service devices.
- Observe the instructions for transporting and returning the device outlined in the Operating Instructions.

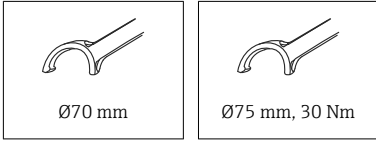


Contact Endress+Hauser Service if you have questions: www.addresses.endress.com

4 Tools list



Also required for FMG50 with PVT scintillator:



5 Removing the sensor electronics module

The removal procedure varies depending on whether a PVT scintillator or NaI scintillator is used.

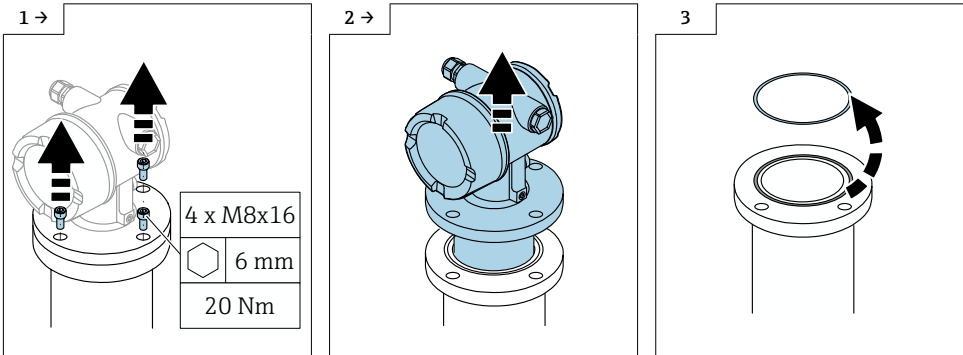


- Gloves must be worn when handling the scintillator!
- Ensure that the environment is dust-free.

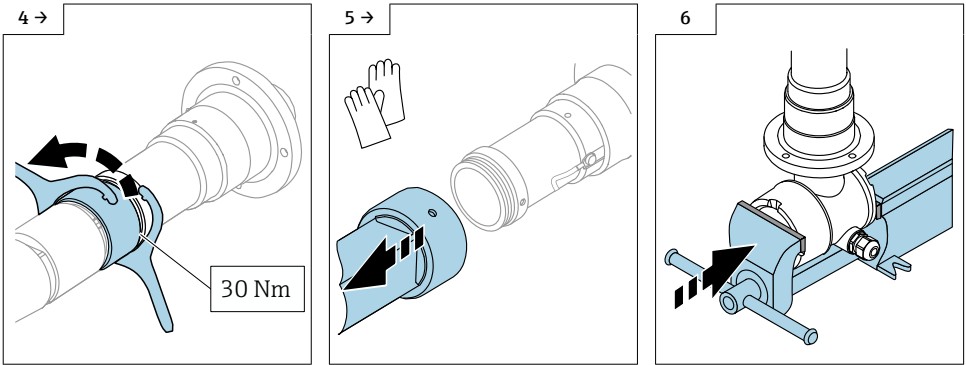
NOTICE

The use of incorrect screws on the thermowell will cause the device to leak.

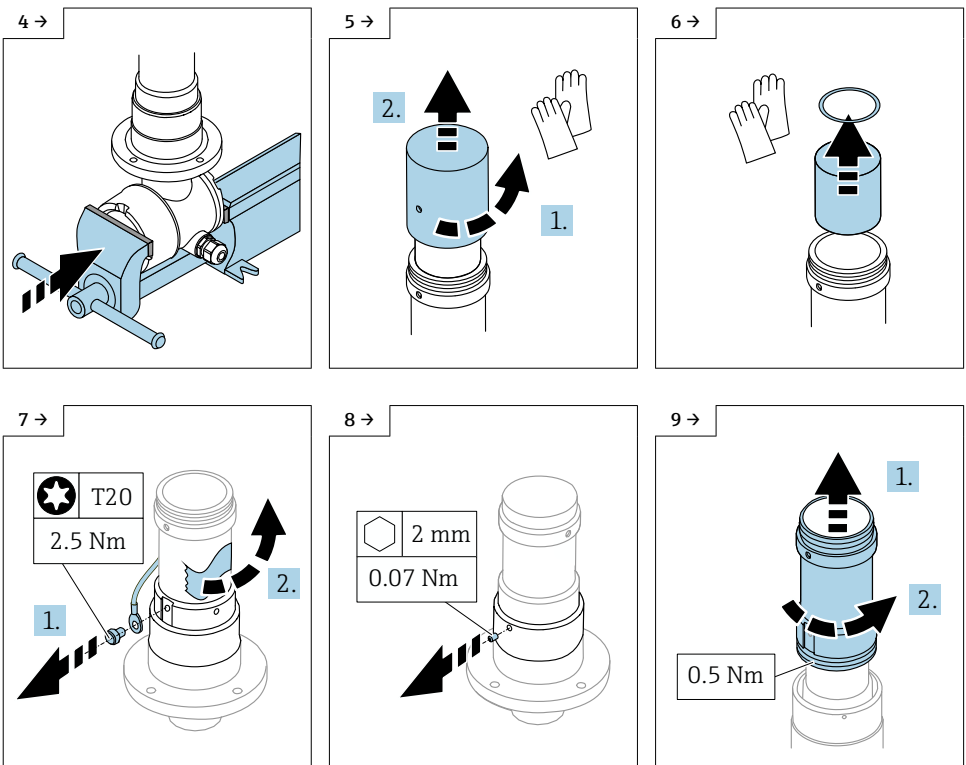
- Use only original screws: DIN912/DIN EN ISO 4762 M8x16 material: A4-70

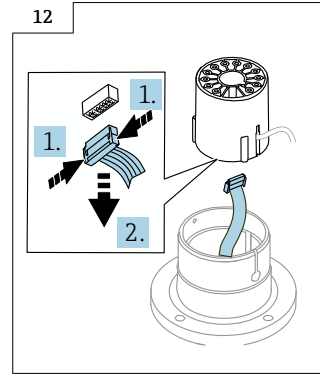
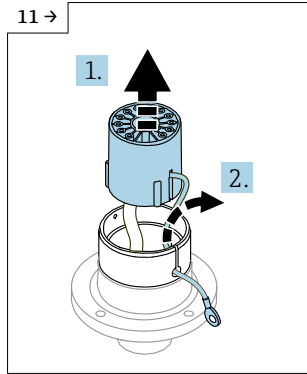
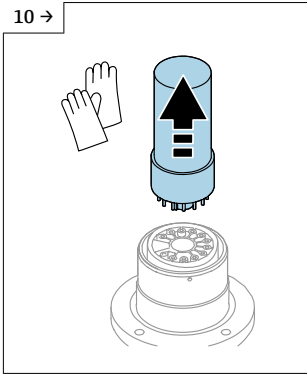


PVT scintillator



NaI scintillator



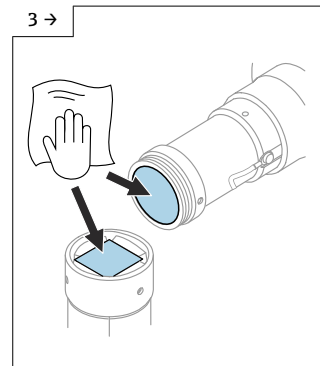
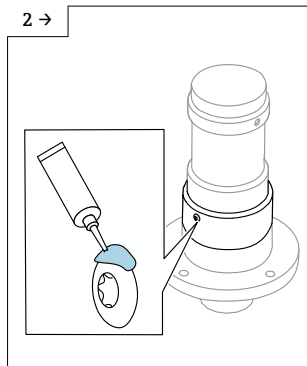
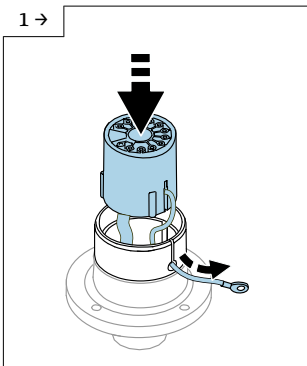


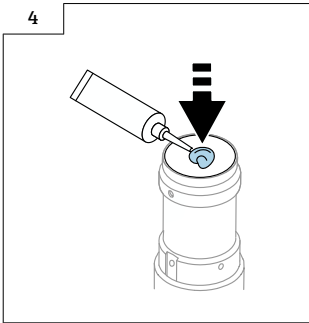
6 Installing the sensor electronics module

Installation is performed by following the removal procedure in reverse order.

Note the following:

1. Take care when inserting the sensor electronics to prevent the connecting cables from jamming.
2. Secure the set screw using locking compound.
3. Clean contact surfaces with a soft, lint-free cloth.
4. Apply coupling paste (1 to 1.5 ml), but do not distribute across the surface! The coupling paste will independently distribute itself across the entire end face as you continue with assembly.





7 Adapting the HV Start Value after replacing sensor component

The **High Voltage Start Value** parameter should be adapted after a sensor component change.

Preparation:

1. Set the source container to the ON position.
2. The Pulse rate is displayed in FieldCare/DeviceCare or in the SmartBlue app.
3. Navigate to: Application → Measured values → Pulse rate
4. The Pulse rate must be ≥ 500 cnt/s for 5 min.



Alternatively a test radiation source may be used, **e.g.** place thorium welding rods on the detector measuring range.

1. Select Expert user role.
2. Navigate to: System → User management → Enter access code
3. Enter the access code: "4685".
4. Navigate to: Application → Sensor → Sensor Trim Gamma → High voltage output value
5. Read off the High voltage output value and enter it in the High Voltage Start Value parameter field.
6. Carry out a new background calibration.
7. Set the source container to the OFF position.
8. Perform background calibration with the commissioning wizard.

8 Final inspection

Once the spare part has been replaced, carry out a high-voltage test.

This requires the use of a high-voltage testing device with the following characteristics:

- Output voltage depending on the device version:
 - Devices without overvoltage protection: 500 V_{AC} or 707 V_{DC}
 - Devices with overvoltage protection: 410 V_{DC} (lower testing voltage, otherwise discharge tubes will ignite)
- Tripping current: 2.5 mA; discharge time 1.5 s
- Rise time of testing voltage: 2 s
- Hold time of testing voltage: 60 s

8.1 Preparation

Prior to performing the high-voltage test, use an ohmmeter to verify that there is minimum contact resistance (0.1 Ω) between the PAL connectors and the housing. At the terminals of the FMG50, use a wire jumper to short-circuit the signal circuits as illustrated in the diagrams.

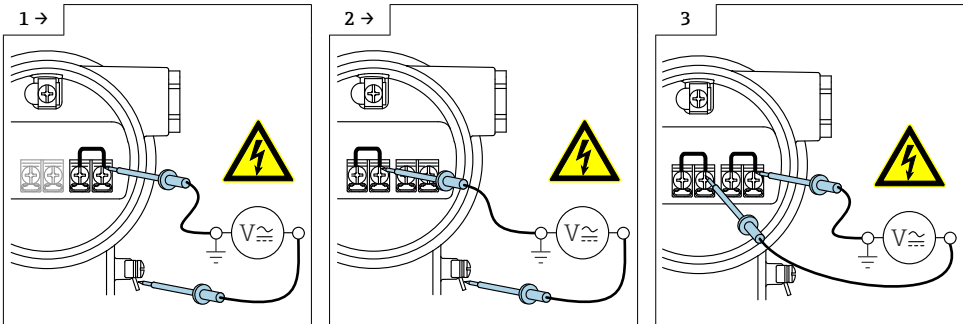
⚠ DANGER

Danger! High voltage!

- ▶ During the test, place the device on an insulated surface, without ground connection.

Test steps

- 2-wire electronics module: step 1
- 4-wire electronics module: steps 1 - 3



9 Disposal



If required by the Directive 2012/19/EU on waste electrical and electronic equipment (WEEE), our products are marked with the depicted symbol in order to minimize the disposal of WEEE as unsorted municipal waste. Such products may not be disposed of as unsorted municipal waste and can be returned to Endress+Hauser for disposal at conditions stipulated in our General Terms and Conditions or as individually agreed.

9.1 Battery disposal

- The end user is legally obliged to return used batteries.
- The end user can return old batteries or electronic assemblies containing these batteries free of charge to Endress+Hauser.



In accordance with German law regulating the use of batteries (BattG §28 Para 1 Number 3), this symbol is used to denote electronic assemblies that must not be disposed of as household waste.



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