

# Safety Instructions

## Remote display FHX50B

ATEX, IECEx: Ex ia IIC T6 Gb  
Ex ia IIIC Txxx°C Db





# Remote display FHX50B

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### Associated documentation

All documentation is available on the Internet:  
[www.endress.com/Deviceviewer](http://www.endress.com/Deviceviewer)  
 (enter the serial number from the nameplate).



If not yet available, a translation into EU languages can be ordered.

To commission the device, please observe the Operating Instructions pertaining to the device:

SD02991F

### Supplementary documentation

Explosion protection brochure: CP00021Z

The explosion protection brochure is available on the Internet:  
[www.endress.com/Downloads](http://www.endress.com/Downloads)

### General notes: Combined approval

Ex ia IIC Zone 1	Ex ia IIIIC Zone 21

The device is designed for operation in explosive gas or explosive dust atmosphere as shown in the sketch above. In the event of potentially explosive gas-air and dust-air mixtures occurring simultaneously: Suitability requires further assessment.



A sequential change between gas and dust explosion protection is only possible if:

- A period with non-explosive atmosphere is realized during the transition or
- Special examinations are done which are not covered by the certificate

### Certificates and declarations

#### EU Declaration of Conformity

Declaration Number:  
EU\_01109

The EU Declaration of Conformity is available on the Internet:  
[www.endress.com/Downloads](http://www.endress.com/Downloads)

## EU type-examination certificate

Certificate number:  
SEV 23 ATEX 0666 X

List of applied standards: See EU Declaration of Conformity.

## IEC Declaration of Conformity

Certificate number:  
IECEX SEV 23.0002X

Affixing the certificate number certifies conformity with the following standards (depending on the device version):

- IEC 60079-0 : 2017
- IEC 60079-11 : 2011

**Certificate holder**    Endress+Hauser SE+Co. KG  
Hauptstraße 1  
79689 Maulburg, Germany  
Address of the manufacturing plant: See nameplate.

**Other standards**    Among other things, the following standards shall be observed in their current version for proper installation:

- IEC/EN 60079-14: "Explosive atmospheres - Part 14: Electrical installations design, selection and erection"
- EN 1127-1: "Explosive atmospheres - Explosion prevention and protection - Part 1: Basic concepts and methodology"

**Extended order code**    The extended order code is indicated on the nameplate, which is affixed to the device in such a way that it is clearly visible. Additional information about the nameplate is provided in the associated Operating Instructions.

### Structure of the extended order code

FHX50B	–	*****	+	A*B*C*D*E*F*G*..
<i>(Device type)</i>		<i>(Basic specifications)</i>		<i>(Optional specifications)</i>

\* = Placeholder  
At this position, an option (number or letter) selected from the specification is displayed instead of the placeholders.

### *Basic specifications*

The features that are absolutely essential for the device (mandatory features) are specified in the basic specifications. The number of positions depends on the number of features available. The selected option of a feature can consist of several positions.

### *Optional specifications*

The optional specifications describe additional features for the device (optional features). The number of positions depends on the number of features available. The features have a 2-digit structure to aid identification (e.g. JA). The first digit (ID) stands for the feature group and consists of a number or a letter (e.g. J = Test, Certificate). The second digit constitutes the value that stands for the feature within the group (e.g. A = 3.1 material (wetted parts), inspection certificate).

More detailed information about the device is provided in the following tables. These tables describe the individual positions and IDs in the extended order code which are relevant to hazardous locations.

### **Extended order code: Remote display**



The following specifications reproduce an extract from the product structure and are used to assign:

- This documentation to the device (using the extended order code on the nameplate).
- The device options cited in the document.

### *Device type*

FHX50B

### *Basic specifications*

Position 1, 2 (Approval)		
Selected option		Description
FHX50B	BK	ATEX II 2 G Ex ia IIC T6...T1 Gb ATEX II 2 D Ex ia IIIC Txxx°C Db IECEX Ex ia IIC T6...T1 Gb IECEX Ex ia IIIC Txxx°C Db

Position 4 (Housing, Material)		
Selected option		Description
FHX50B	B	Single compartment; Alu, coated

Position 5 (Electrical Connection, Cable)		
Selected option		Description
FHX50B	2	Gland M20, brass nickel plated; w/o
	3	Gland M20, 316L; w/o
	5	Thread M20; w/o
	6	Thread G1/2; w/o
	7	Thread NPT1/2; w/o

### Optional specifications

ID Jx, Kx (Test, Certificate, Declaration)		
Selected option		Description
FHX50B	JL	Ambient temperature -50°C/-58°F

## Safety instructions: General



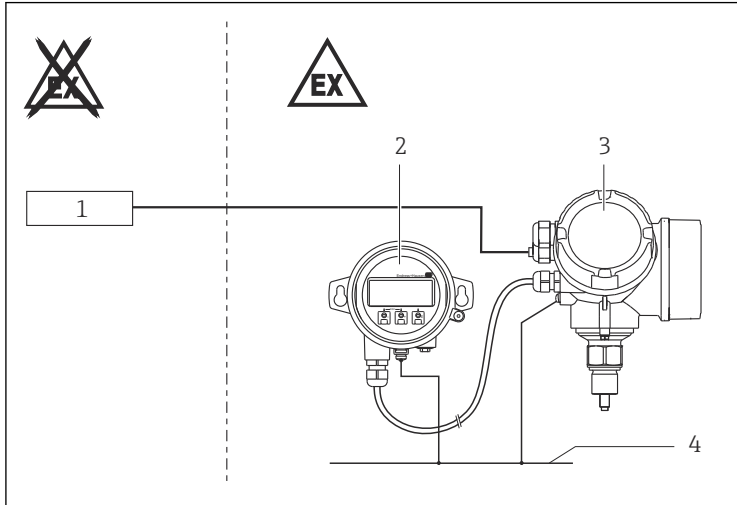
The FHX50B remote display can only be operated with compatible Endress+Hauser measuring devices.

- The device is intended to be used in explosive atmospheres as defined in the scope of IEC 60079-0 or equivalent national standards. If no potentially explosive atmospheres are present or if additional protective measures have been taken: The device may be operated according to the manufacturer's specifications.
- Comply with the installation and safety instructions in the Operating Instructions.
- Staff must meet the following conditions for mounting, electrical installation, commissioning and maintenance of the device:
  - Be suitably qualified for their role and the tasks they perform
  - Be trained in explosion protection
  - Be familiar with national regulations
- Install the device according to the manufacturer's instructions and national regulations.
- Do not operate the device outside the specified electrical, thermal and mechanical parameters.
- Only use the device in media to which the wetted materials have sufficient durability.
- Avoid electrostatic charging:
  - Of plastic surfaces (e.g. enclosure, sensor element, special varnishing, attached additional plates, ...)
  - Of isolated capacities (e.g. isolated metallic plates)
- Alterations to the device can affect the explosion protection and must be carried out by staff authorized to perform such work by Endress+Hauser.

**Safety instructions:**  
**Special conditions**

- To avoid electrostatic charging: Do not rub surfaces with a dry cloth.
- In the event of additional or alternative special varnishing on the enclosure or other metal parts or for adhesive plates:
  - Observe the danger of electrostatic charging and discharge.
  - Do not install in the vicinity of processes ( $\leq 0.5$  m) generating strong electrostatic charges.
- Avoid sparks caused by impact and friction.

**Safety instructions:**  
**Installation**



A0032629

- 1 Power supply or certified associated apparatus (dependent on Endress+Hauser measuring device)
- 2 FHX50B in Zone 1 or Zone 21
- 3 Endress+Hauser measuring device
- 4 Local potential equalization

- After aligning (rotating) the enclosure, retighten the fixing screw.
- Continuous service temperature of the connecting cable:  $-40$  °C to  $\geq +85$  °C.
- Observe the pertinent guidelines when interconnecting intrinsically safe circuits.
- Observe the maximum process conditions according to the manufacturer's Operating Instructions.
- Install the device to exclude any mechanical damage or friction during the application. Pay particular attention to flow conditions and tank fittings.



- Perform the following to achieve the degree of protection IP66/67:
  - Screw the cover tight.
  - Mount the cable entry correctly.
- Seal unused entry glands with suitable sealing plugs that correspond to the type of protection.
- Supplied cable glands and metallic sealing plugs comply with the requirements of type of protection marked on the nameplate.
- The plastic sealing plug is used only as transport protection.

*Basic specification, Position 5 = 7*

Observe the requirements according to IEC/EN 60079-14 for conduit systems and the wiring- and installation instructions of the suitable Safety Instructions (XA). In addition, observe national regulations and standards for conduit systems.

*Optional specification, ID Jx, Kx = JL*

Continuous service temperature of the connecting cable:  
 -50 °C to  $\geq +85$  °C; in accordance with the range of service temperature taking into account additional influences of the process conditions ( $T_{a,min}$ ), ( $T_{a,max} + 20$  K).

### Intrinsic safety

- The device is only suitable for connection to certified, intrinsically safe equipment with explosion protection Ex ia / Ex ib.
- The intrinsically safe input power circuit of the device is isolated from ground. The dielectric strength is at least 500  $V_{rms}$ .

### Potential equalization

Integrate the device into the local potential equalization.

## Temperature tables

### Ex ia IIC T6...T1 Gb



- The specified ambient temperature ranges exclusively refer to the explosion protection and must not be exceeded. Operationally permitted ambient temperature ranges can be restricted depending on the version: See Operating Instructions.
- Do not exceed the max. ambient temperature at the enclosure.



*Optional specification, ID Jx, Kx = JL*

Lower limit of the ambient temperature for explosion protection changes to -50 °C.

Temperature class	Ambient temperature range
T6...T1	$-40\text{ °C} \leq T_a \leq +60\text{ °C}$

**Ex ia IIIc T<sub>xxx</sub>°C Db**

- The specified surface temperature takes into account all direct heat influences from the ambient temperature and from self-heating at the enclosure.
- The specified ambient temperature ranges exclusively refer to the explosion protection and must not be exceeded. Operationally permitted ambient temperature ranges can be restricted depending on the version: See Operating Instructions.
- Do not exceed the max. ambient temperature at the enclosure.



Protection type of enclosure: IP66/67

Specific conditions of use:

The surface temperature for equipment protection level (EPL) Db is: T<sub>L</sub> xxx °C (with dust accumulation T<sub>L</sub>)



T<sub>L</sub> marking:

The assigned surface temperature without dust layer is the same.

Temperature class	Ambient temperature range
T <sub>L</sub> 80 °C	-40 °C ≤ T <sub>a</sub> ≤ +60 °C

**Connection data**

Power supply
U <sub>i</sub> ≤ 6 V I <sub>i</sub> ≤ 53 mA P <sub>i</sub> ≤ 200 mW C <sub>i</sub> ≤ 15.5 μF L <sub>i</sub> = 0

For connection to Endress+Hauser devices with intrinsically safe display only.

**Connectable transmitters**

The device must meet the following conditions to be connected to an Endress+Hauser measuring device:

- The device has an intrinsically safe display circuit
- The device is specifically defined as "Prepared for display FHX50B"

The measuring device that has already been prepared for the FHX50B has an intrinsically safe display circuit with the following characteristic values:

#### Power supply

$U_i \leq 6 \text{ V}$   
 $I_i \leq 53 \text{ mA}$   
 $P_i \leq 200 \text{ mW}$   
 $C_i \leq 11 \text{ }\mu\text{F}$   
 $L_i = 0$

#### Connectable cables

- Cables which are optionally available from Endress+Hauser: can be ordered up to a total length of 30 m.
- Maximum cable length: 60 m.
- A customer's cable can be used provided the effective capacitance of the cable does not exceed the following value:  
Total capacitance of cable  $C_c \leq 1.6 \text{ }\mu\text{F}$  (wire to wire)

#### Cable entry: Connection compartment

Cable gland: *Basic specification, Position 5 = 2*

Thread	Clamping range	Material	Sealing insert	O-ring
M20x1,5	ø 8 to 10.5 mm	Ms, nickel-plated	Silicone	EPDM (ø 17x2)

Cable gland: *Basic specification, Position 5 = 3*

Thread	Clamping range	Material	Sealing insert	O-ring
M20x1,5	ø 7 to 12 mm	1.4404	NBR	EPDM (ø 17x2)



- The tightening torque refers to cable glands installed by the manufacturer:
  - Recommended: 3.5 Nm
  - Maximum: 10 Nm
- This value may be different depending on the type of cable. However, the maximum value must not be exceeded.
- Only suitable for fixed installation. The operator must pay attention to a suitable strain relief of the cable.
- To maintain the ingress protection of the enclosure: Install the enclosure cover, cable glands and blind plugs correctly.



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