

# Safety Instructions

## Display FHX50

Ex ic IIC T6...T1 Gc

Ex ic III C T100°C/T105°C Dc





# Display FHX50

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**About this document**

This document has been translated into several languages. Legally determined is solely the English source text.

**Associated documentation**

This document is an integral part of the following Operating Instructions:

SD01007F/00

**Supplementary documentation**

Explosion-protection brochure: CP00021Z/11

The Explosion-protection brochure is available:

- In the download area of the Endress+Hauser website:  
[www.endress.com](http://www.endress.com) -> Downloads -> Brochures and Catalogs -> Text Search: CP00021Z
- On the CD for devices with CD-based documentation

**Manufacturer's certificates****NEPSI Declaration of Conformity**

Certificate number:  
GYJ22.1807X

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

- GB/T 3836.1-2021
- GB/T 3836.4-2021

**Manufacturer address**

Endress+Hauser SE+Co. KG  
Hauptstraße 1  
79689 Maulburg, Germany

Address of the manufacturing plant: See nameplate.

**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

|                      |   |                               |   |                                  |
|----------------------|---|-------------------------------|---|----------------------------------|
| FHX50                | – | *****                         | + | 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: Display FHX50



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*

FHX50

*Basic specifications*

| Position 1, 2 (Approval) |    |                                   |
|--------------------------|----|-----------------------------------|
| Selected option          |    | Description                       |
| FHX50                    | NH | NEPSI Ex ic IIC T6...T1 Gc        |
|                          | NN | NEPSI Ex ic IIIC T100°C/T105°C Dc |

| Position 3 (Display, Operation) |   |   |
|---------------------------------|---|---|
| Selected option                 |   | Description   |
| FHX50                           | A | None, use existing device display                         |
|                                 | C | SD02 4-line, push buttons + data backup function          |
|                                 | E | SD03 4-line, illum., touch control + data backup function |

| Position 4 (Housing) |   |                                  |
|----------------------|---|----------------------------------|
| Selected option      |   | Description                      |
| FHX50                | B | Single compartment, 316L         |
|                      | C | Single compartment, alu, coated  |
|                      | D | Single compartment, plastics PBT |

| Position 5 (Cable) |   |   |
|--------------------|---|---|
| Selected option    |   | Description   |
| FHX50              | A | 5m + M12 plug                                       |
|                    | B | 10m + M12 plug                                      |
|                    | D | 20m + M12 plug                                      |
|                    | E | 30m + M12 plug                                      |
|                    | 1 | Provided by customer, M16, max 60m                  |
|                    | 2 | Provided by customer, NPT1/2, max 60m <sup>1)</sup> |

1) Only in connection with Position 4 = B, C

| Position 6 (Option Measurement Device) |   |   |
|--|---|---|
| Selected option                        |   | Description                                   |
| FHX50                                  | A | Prepared for remote display FHX50             |
|  | B | Not prepared for display FHX50 + retrofit kit |

*Optional specifications*

| ID Jx (Test, Certificate) |    |  |
|---------------------------|----|--|
| Selected option           |    | Description                            |
| FHX50                     | JN | Ambient temperature transmitter -50 °C |

**Safety instructions:**  
**General**

- 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
- For installation, use and maintenance of the device, users must also observe the requirements stated in the Operating Instructions and the standards:
  - GB 50257-2014: "Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineering".
  - GB/T 3836.13-2021: "Explosive atmospheres, Part 13: Equipment repair, overhaul, reclamation and modification".
  - GB/T 3836.15-2017: "Explosive atmospheres, Part 15: Electrical installations design, selection and erection".
  - GB/T 3836.16-2017: "Explosive atmospheres, Part 16: Electrical installations inspection and maintenance".
  - GB/T 3836.18-2017: "Explosive atmospheres, Part 18: Intrinsically safe electrical systems".
  - GB 15577-2018: "Safety regulations for dust explosive prevention and protection". (Only if installed in dust hazardous area.)
- 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.
- Avoid electrostatic charging:
  - Of plastic surfaces (e.g. enclosure, sensor element, special varnishing, attached additional plates, ..)
  - Of isolated capacities (e.g. isolated metallic plates)
- Modifications 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**

Permitted ambient temperature range at the electronics enclosure:  
 $-40\text{ °C} \leq T_a \leq +80\text{ °C}$

*Optional specification, ID Jx = JN*

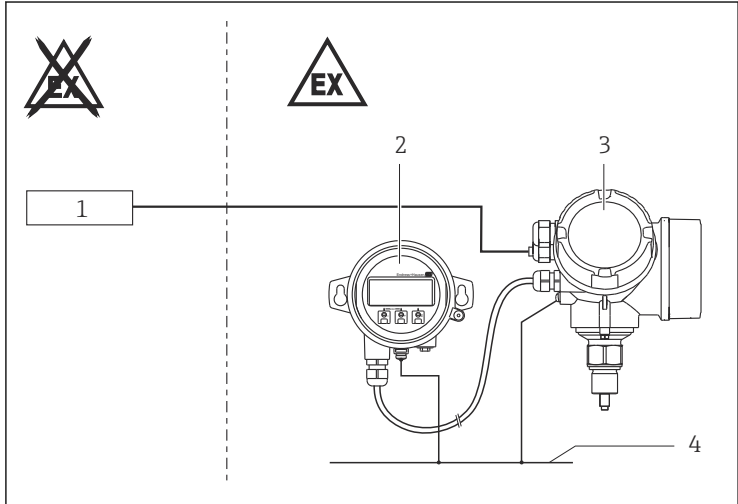
Permitted ambient temperature range at the electronics enclosure:  
 $-50\text{ °C} \leq T_a \leq +80\text{ °C}$

- Observe the information in the temperature tables.
- 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.

*Basic specification, Position 4 = D*

Avoid electrostatic charging of the enclosure (e.g. friction, cleaning, maintenance, strong medium flow).

## Safety instructions: Installation



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- 1 Power supply or certified associated apparatus (dependent on Endress+Hauser measuring device)
- 2 Display FHX50 in Zone 2, Zone 22
- 3 Endress+Hauser measuring device
- 4 Local potential equalization

Continuous service temperature of the connecting cable:

$-40^{\circ}\text{C}$  to  $\geq +85^{\circ}\text{C}$ ; in accordance with the range of service temperature taking into account additional influences of the process conditions ( $T_{a,\text{min}}$ ), ( $T_{a,\text{max}} + 20$  K).

*Optional specification, ID Jx = JN*

Continuous service temperature of the connecting cable:

$-50^{\circ}\text{C}$  to  $\geq +85^{\circ}\text{C}$ ; 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).

### Potential equalization

Integrate the device into the local potential equalization.

## Temperature tables

*Basic specification, Position 4 = B, C*

| Zone 2               |                   |
|----------------------|-------------------|
| Temperature class T6 | $T_a \leq +60$ °C |

| Zone 22                                   |         |
|---|---------|
| Max. surface temperature at $T_a + 80$ °C | +100 °C |

*Basic specification, Position 4 = D*

| Zone 2               |                   |
|----------------------|-------------------|
| Temperature class T6 | $T_a \leq +55$ °C |

| Zone 22                                   |         |
|---|---------|
| Max. surface temperature at $T_a + 80$ °C | +105 °C |

## Connection data

### FHX50

| Power supply and signal circuit   |
|---|
| $U_1 = 7,3$ V<br>$I_1 = 157$ mA<br>$P_1 = 362$ mW<br><br>effective inner inductance $L_1 = 0$<br>effective inner capacitance $C_1 = 263$ nF |

The device can be connected to a measuring device which has an intrinsically safe display circuit. For more information see "Connectable transmitters" section.

### Connectable transmitters

- To connect the device to a measuring device, such as a measuring device from Endress+Hauser, it must meet the following conditions:
  - The device has an intrinsically safe display circuit
  - The device specifically bears the information "Prepared for display FHX50"
  - The device is prepared for display FHX50 using the retrofit kit
- Please note the "Connectable transmitters" section in the Special Documentation SD01007F provided!

*Basic specification, Position  $\bar{6}$  = A, B*

All transmitters for which the device structure provides the "Prepared for display FHX50" (A) option can be converted using the retrofit kit (B). Please note the "Extended order code" section in the Safety Instructions (XA) included with the transmitter.

The measuring device which has already been prepared for the FHX50 or converted using the retrofit kit has an intrinsically safe display circuit with protection type Ex ic IIC, Ex ic IIIC and with the following characteristic values:

| Power supply and signal circuit   |
|---|
| $U_o = 7.3 \text{ V}$<br>$I_o = 157 \text{ mA}$<br>$P_o = 362 \text{ mW}$<br><br>effective outer inductance $L_o = 149 \mu\text{H}$<br>effective outer capacitance $C_o = 388 \text{ nF}$ |

### 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.
- The customer's own cable can be used if the total effective inductance and capacitance of the cable do not exceed the following values respectively:
  - Total inductance of cable  $L_c = 149 \mu\text{H}$
  - Total capacitance of cable  $C_c = 125 \text{ nF}$

### Display module

- Display module present in the measuring device: The display module removed during conversion using the retrofit kit can be installed in the FHX50.
- Display module present in the FHX50: No action necessary.
- Display module not present: Display module must be ordered.

*Basic specification, Position 6 = B*

- For information on the suitability of the display module for conversion, see the "Connectable transmitters" section.
- Identification marking to identify the suitability of the display module: [AA], [AB] or [AC].



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