

Safety Instructions

Display FHX50

II 1 G Ex ia IIC T6...T1 Ga

II 2 D Ex ia IIIC Txx°C Db



Display FHX50

Table of contents

Associated documentation	4
Supplementary documentation	4
Manufacturer's certificates	4
Manufacturer address	4
Other standards	4
Extended order code	5
Safety instructions: General	7
Safety instructions: Special conditions	7
Safety instructions: Installation	8
Safety instructions: Zone 0	9
Temperature tables	9
Connection data	9

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 -> Downloads -> Brochures and Catalogs -> Text Search: CP00021Z
- On the CD for devices with CD-based documentation

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

Declaration Number:

UK_00059

The UK Declaration of Conformity is available:

In the download area of the Endress+Hauser website:

www.endress.com -> Downloads -> Declaration ->

Type: UKCA Declaration -> Product Code: ...

UKCA type-examination certificate

Certificate number:

CML 21UKEX2446X

List of applied standards: See UK Declaration of Conformity.

Manufacturer address

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

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	UA	UK Ex II 1 G Ex ia IIC T6...T1 Ga
	UM	UK Ex II 2 D Ex ia IIIC Txx°C Db

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 ¹⁾

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
- 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 ($\leq 0.5\text{ m}$) generating strong electrostatic charges.

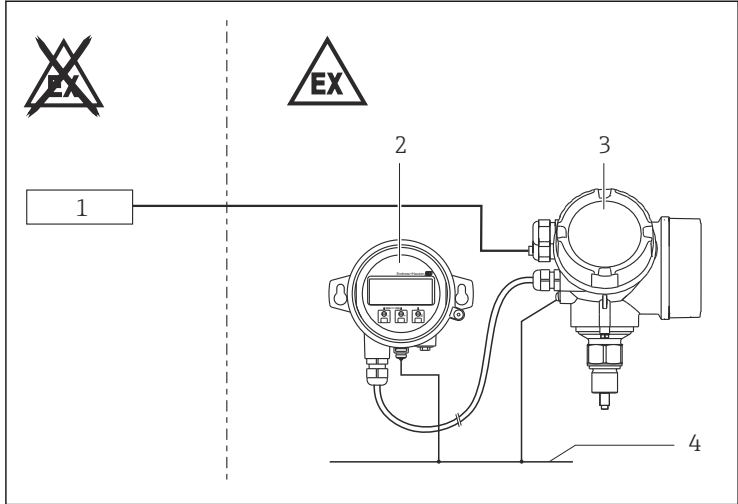
Basic specification, Position 4 = C

In Zone 0, avoid sparks caused by impact and friction.

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 0/1/2, Zone 21 or 22
- 3 Endress+Hauser measuring device
- 4 Local potential equalization

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

Optional specification, ID Jx = JN

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

Intrinsic safety

- When the device is connected to an intrinsically safe circuit Ex ib, the type of protection changes to Ex ib. Do not operate intrinsically safe circuits Ex ib in Zone 0 or Zone 20.
- When the device is connected to an intrinsically safe circuit Ex ic, the type of protection changes to Ex ic. Do not operate intrinsically safe circuits Ex ic in Zone 0, Zone 1 or Zone 20, Zone 21.

Potential equalization

Integrate the device into the local potential equalization.

Safety instructions:
Zone 0

- In the event of potentially explosive vapor/air mixtures, only operate the device under atmospheric conditions.
 - Temperature: -20 to +60 °C
 - Pressure: 80 to 110 kPa (0.8 to 1.1 bar)
 - Air with normal oxygen content, usually 21 % (V/V)
- If no potentially explosive mixtures are present, or if additional protective measures have been taken, the device may also be operated under non-atmospheric conditions in accordance with the manufacturer's specifications.

Temperature tables

Basic specification, Position 4 = B, C

Zone 0, Zone 1, Zone 2	
Temperature class T6	$T_a \leq +60\text{ °C}$

Zone 21, Zone 22	
Max. surface temperature at an ambient temperature of 80 °C	+100 °C

Basic specification, Position 4 = D

Zone 0, Zone 1, Zone 2	
Temperature class T6	$T_a \leq +55\text{ °C}$

Zone 21, Zone 22	
Max. surface temperature at an ambient temperature of 80 °C	+105 °C

Connection data

FHX50

Power supply and signal circuit
$U_1 = 7.3\text{ V}$ $I_1 = 157\text{ mA}$ $P_1 = 362\text{ mW}$ effective inner inductance $L_1 = 0$ effective inner capacitance $C_1 = 263\text{ nF}$

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 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 the following characteristic values:

Power supply and signal circuit
$U_o = 7.3 \text{ V}$ $I_o = 157 \text{ mA}$ $P_o = 362 \text{ mW}$ effective outer inductance $L_o = 149 \text{ }\mu\text{H}$ 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 $L_c = 149 \text{ }\mu\text{H}$
 - 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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