

Safety Instructions

Display FHX50

Control Drawing IS



Document: XA01095F-C

Safety instructions for electrical apparatus for explosion-hazardous areas →  3



Display FHX50

Table of contents

Associated documentation	4
Manufacturer address	4
Extended order code	4
Safety instructions: General	6
Safety instructions: Special conditions	6
Safety instructions: Installation	7
Temperature tables	8
Connection data	8

Associated documentation This document is an integral part of the following Operating Instructions:
SD01007F/00

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	CB	CSA C/US IS Class I, Division 1, Group A, B, C, D

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)		
Option sélectionnée		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 (Housing) = B or C

Position 6 (Option Measurement Device)		
Selected option		Description
FHX50	A	Prepared for remote display FHX50

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. housing, 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 housing:
 $-40\text{ °C} \leq T_a \leq +80\text{ °C}$

Optional specification, ID Jx (Test, Certificate) = JN

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

- Observe the information in the temperature tables.
- In the event of additional or alternative special varnishing on the housing or other metal parts:
 - Observe the danger of electrostatic charging and discharge.
 - Do not rub surfaces with a dry cloth.

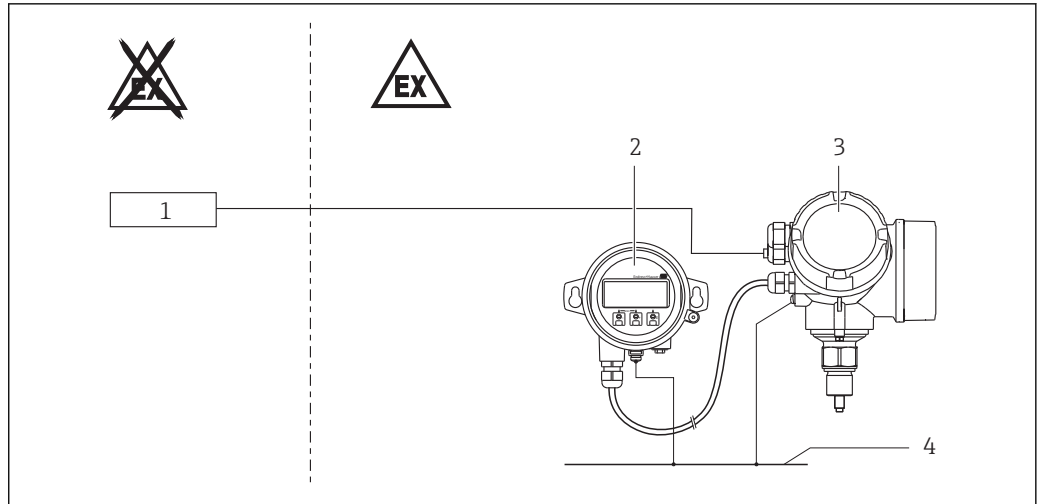
Basic specification, Position 5 (Housing) = C

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

Basic specification, Position 5 (Housing) = D

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

Safety instructions: Installation



1

- 1 Power supply or certified associated apparatus (dependent on Endress+Hauser measuring device)
- 2 Display FHX50 in Zone 0/1, Cl. I, Div. 1, Gr. A, B, C, D or Cl. I, Div. 2, Gr. A, B, C, D
- 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 (Test, Certificate) = 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

The FHX50 is intrinsically safe for Class I, Div. 1, Group A, B, C, D when connected to approved¹⁾ Endress+Hauser measuring devices with intrinsically safe FHX50 remote display option. Refer to installation instructions of measuring device for additional conditions of use.

Division 2

The FHX50 is suitable for installation in Class I, Div. 2, Group A, B, C, D when connected to approved¹⁾ Endress+Hauser measuring devices with FHX50 remote display option. Measuring device provides a non-incendive field wiring circuit to the FHX50 display. Refer to installation instructions of measuring device for additional conditions of use.

Potential equalization

Integrate the device into the local potential equalization.

1) Approved, as defined in the Canadian Electrical Code, Part I or National Electrical Code (ANSI/NFPA 70), for the country in use.

Temperature tables*Basic specification, Position 4 (Housing) = B, C*

Zone 0, Zone 1, Class I, Div. 1 or Class I, Div. 2	
Temperature class T6	$T_a \leq +60\text{ °C}$

Basic specification, Position 4 (Housing) = D

Zone 0, Zone 1, Class I, Div. 1 or Class I, Div. 2	
Temperature class T6	$T_a \leq +55\text{ °C}$

Connection data**FHX50**

Power supply and signal circuit
$U_i = 7.3\text{ V}$ $I_i = 157\text{ mA}$ $P_i = 362\text{ mW}$ effective inner inductance $L_i = 0$ effective inner capacitance $C_i = 263\text{ nF}$

The device can be connected to an approved ²⁾ measuring device which has an intrinsically safe display circuit.

Connectable transmitters

To connect the device to an approved ²⁾ measuring device, such as a measuring device from Endress+Hauser, it must meet the following conditions:

- The device has an intrinsically safe display circuit with specified entity parameters:

$$U_o \leq U_i$$

$$I_o \leq I_i$$

$$P_o \leq P_i$$

$$C_o \geq C_i + C_{\text{cable}}$$

$$L_o \geq L_i + L_{\text{cable}}$$

- The device specifically bears the information "Prepared for display FHX50"

The measuring device which has already been prepared for the FHX50 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 $C_c = 125\text{ nF}$

2) Approved, as defined in the Canadian Electrical Code, Part I or National Electrical Code (ANSI/NFPA 70), for the country in use.



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