

Safety Instructions

Deltabar FMD71, FMD72

4-20 mA HART

ATEX: II 1/2 G Ex db [ia] IIC T6...T4 Ga/Gb

II 1/2 G Ex db [ia] IIC T6...T3 Ga/Gb

IECEX: Ex db [ia] IIC T6...T4 Ga/Gb

Ex db [ia] IIC T6...T3 Ga/Gb



Document: XA00620P-C

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

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About this document



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

The document translated into EU languages is available:

- In the download area of the Endress+Hauser website:
www.endress.com -> Downloads -> Manuals and Datasheets -> Type: Ex Safety Instruction (XA) -> Text Search: ...
- In the Device Viewer: www.endress.com -> Product tools -> Access device specific information -> Check device features

Associated documentation

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

BA01044P/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

EU Declaration of Conformity

Declaration Number:

EG12011

The EU Declaration of Conformity is available:

In the download area of the Endress+Hauser website:

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

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

EU type-examination certificate

Certificate number:

FM 12 ATEX 0039 X

List of applied standards: See EU Declaration of Conformity.

IEC Declaration of Conformity

Certificate number:

IECEX FMG 12.0016 X

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

- IEC 60079-0 : 2017
- IEC 60079-1 : 2014
- IEC 60079-11 : 2011
- IEC 60079-26 : 2014

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

FMD7x	-	*****	+	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: Deltabar



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

FMD71, FMD72

Basic specifications

Position 1, 2 (Approval)		
Selected option		Description
FMD71	BC	ATEX II 1/2 G Ex db ia IIC T6...T4 Ga/Gb ATEX II 1/2 G Ex db ia IIC T6...T3 Ga/Gb
	IB	IECEX Ex db ia IIC T6...T4 Ga/Gb IECEX Ex db ia IIC T6...T3 Ga/Gb
FMD72	BC	ATEX II 1/2 G Ex db ia IIC T6...T4 Ga/Gb
	IB	IECEX Ex db ia IIC T6...T4 Ga/Gb

Position 5 (Housing Transmitter)		
Selected option		Description
FMD7x	A	Aluminium T14
	B	Stainless steel T14

Optional specifications

No options specific to hazardous locations are available.

**Safety instructions:
General**

- 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.
- Only use the device in media to which the wetted materials have sufficient durability.

**Safety instructions:
Special conditions**

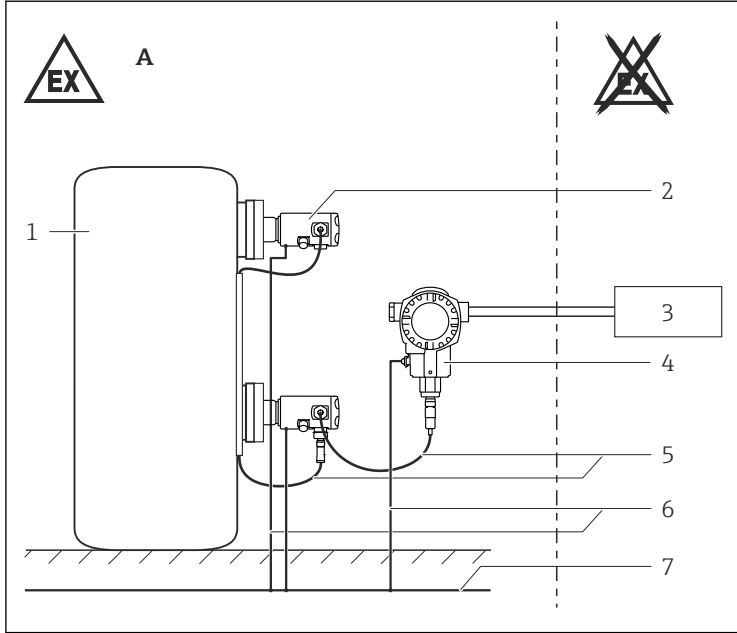
- For light metal flanges or flange faces (e.g. titanium, zirconium), avoid sparks caused by impact and friction.
- In the case of process connections made of polymeric material or with polymeric coatings, avoid electrostatic charging of the plastic surfaces.
- In the event of additional or alternative 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.
- For repair: Contact the manufacturer for dimensional information on the flameproof joints.
- The sensors can be installed in the boundary wall between Zone 0 and the less hazardous area Zone 1. In this configuration, the process connection is installed in Zone 0, while the sensor housing is installed in Zone 1.

Potential Electrostatic Charging Hazard

Avoid electrostatic charging:

- Of plastic surfaces (e.g. housing, sensor element, special varnishing, attached additional plates, ..)
- Of isolated capacities (e.g. isolated metallic plates)

**Safety
instructions:
Installation**



A0032294



- 1 Tank; Zone 0
 2 Sensor module
 3 Certified associated apparatus
 4 Transmitter housing (Ex d)
 5 Ex ia circuits
 6 Potential equalization line
 7 Potential equalization

- In potentially explosive atmospheres: Do not open the connection compartment cover and the electronics compartment cover when energized.
- The connection cables to the sensor modules are intrinsically safe circuits (Ex ia). Observe the pertinent guidelines when intrinsically safe plants are installed.
- Sensor modules may only be connected to the transmitter and interconnected to each other. Any further connections are not allowed.

- Transmitter housing and sensor modules must have the same ground potential (e.g. transmitter housing and sensor modules all mounted to the same metal structure).
If potential equalisation can not be achieved by the installation, the devices must be interconnected with a suitable bonding conductor using the external ground connections.
- Before operation:
 - Screw in the cover all the way.
 - Tighten the securing clamp on the cover.
- Seal unused entry glands with supplied metal blind plug. Alternative use only suitable, separate approved Ex d blanking elements.
- The plastic sealing plug is used only as transport protection.
- Connect the device:
 - Using suitable cable and wire entries of protection type "Flameproof Enclosure (Ex d)".
 - Using piping systems of protection type "Flameproof Enclosure (Ex d)".
- When connecting through a conduit entry approved for this purpose, mount the associated sealing unit directly at the housing.

**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

Device type FMD71

Compact version

Type of protection

ATEX: II 1/2 G Ex db [ia] IIC T6...T4 Ga/Gb,

IECEX: Ex db [ia] IIC T6...T4 Ga/Gb

Temperature class	Process temperature T_p (process)	Ambient temperature T_a (ambient): housing
T6	$\leq 80\text{ °C}$	$-40\text{ °C} \leq T_a \leq +40\text{ °C}$
T4	$\leq 125\text{ °C}$	$-40\text{ °C} \leq T_a \leq +70\text{ °C}$



The process temperatures refer to the temperature at the separation membrane.

High-temperature version

Type of protection

ATEX: II 1/2 G Ex db [ia] IIC T6...T3 Ga/Gb,

IECEX: Ex db [ia] IIC T6...T3 Ga/Gb

Temperature class	Process temperature T_p (process)	Ambient temperature T_a (ambient): housing
T6	$\leq 80\text{ °C}$	$-40\text{ °C} \leq T_a \leq +40\text{ °C}$
T4	$\leq 135\text{ °C}$	$-40\text{ °C} \leq T_a \leq +70\text{ °C}$
T3	$\leq 150\text{ °C}$	$-40\text{ °C} \leq T_a \leq +70\text{ °C}$



The process temperatures refer to the temperature at the separation membrane.

Device type FMD72

Type of protection

ATEX: II 1/2 G Ex db [ia] IIC T6...T4 Ga/Gb,

IECEX: Ex db [ia] IIC T6...T4 Ga/Gb

Temperature class	Process temperature T_p (process)	Ambient temperature T_a (ambient): housing
T6	$\leq 80\text{ }^\circ\text{C}$	$-40\text{ }^\circ\text{C} \leq T_a \leq +40\text{ }^\circ\text{C}$
T4	$\leq 125\text{ }^\circ\text{C}$	$-40\text{ }^\circ\text{C} \leq T_a \leq +70\text{ }^\circ\text{C}$



- The process temperatures refer to the temperature at the separation membrane.
- Higher temperatures are permitted depending on the type of diaphragm seal.
- Do not exceed the max. ambient temperature at the housing.

Connection data

Electrical data
$U \leq 45\text{ V}_{\text{DC}}$ $P \leq 1.1\text{ W}$



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