

# Safety Instructions

## Deltabar S

### PMD75, FMD77, FMD78

4-20 mA HART, PROFIBUS PA,  
FOUNDATION Fieldbus

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

IECEX: Ex ia IIC T6...T4 Ga/Gb





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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](http://www.endress.com) -> Downloads -> Manuals and Datasheets -> Type: Ex Safety Instruction (XA) -> Text Search: ...
- In the Device Viewer: [www.endress.com](http://www.endress.com) -> Product tools -> Access device specific information -> Check device features



If not yet available, the document can be ordered.

## Associated documentation

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

HART

- BA00270P/00
- BA00274P/00

PROFIBUS PA

- BA00294P/00
- BA00296P/00

FOUNDATION Fieldbus

- BA00301P/00
- BA00303P/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

### EU Declaration of Conformity

Declaration Number:  
EG03034

The EU Declaration of Conformity is available:

In the download area of the Endress+Hauser website:  
[www.endress.com](http://www.endress.com) -> Downloads -> Declaration -> Type: EU Declaration -> Product Code: ...

### **EU type-examination certificate**

Certificate number:  
KEMA 03 ATEX 1561 X

List of applied standards: See EU Declaration of Conformity.

### **IEC Declaration of Conformity**

Certificate number:  
IECEX KEM06.0011 X

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

- IEC 60079-0 : 2017
- 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

PMD75, 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 S



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*

PMD75

*Basic specifications*

Position 1 (Approval)		
Selected option		Description
PMD75	1	ATEX II 1/2 G Ex ia IIC T6...T4 Ga/Gb
	6 <sup>1)</sup>	ATEX II 1/2 G Ex ia IIC T6...T4 Ga/Gb, WHG
	I	IECEx Ex ia IIC T6...T4 Ga/Gb

1) Only in connection with Position 2 = A, B, C, D, E, F

Position 2 (Output, Operating)		
Selected option		Description
PMD75	A, B, C	4-20 mA HART
	D, E, F	4-20 mA HART, L <sub>1</sub> = 0
	M, N, O	PROFIBUS PA
	P, Q, R	FOUNDATION Fieldbus

Position 10 (Additional Option 1)		
Selected option		Description
PMD75	M	Overvoltage protection

Position 11 (Additional Option 2)		
Selected option		Description
PMD75	G	Separate enclosure, cable length see additional spec. + enclosure mounting bracket, wall/pipe, 316L
	M	Overvoltage protection

*Optional specifications*

ID Jx (Test, Certificate)		
Selected option		Description
PMD75	JN <sup>1)</sup>	Ambient temperature transmitter -50 °C/-58 °F

1) Only in connection with Position 1 = 1, I



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*

FMD77, FMD78

### *Basic specifications*

Position 1 (Approval)		
Selected option		Description
FMD7x	1	ATEX II 1/2 G Ex ia IIC T6...T4 Ga/Gb
	6 <sup>1)</sup>	ATEX II 1/2 G Ex ia IIC T6...T4 Ga/Gb, WHG
	I	IECEX Ex ia IIC T6...T4 Ga/Gb

- 1) Only in connection with Position 2 = A, B, C, D, E, F

Position 2 (Output, Operating)		
Selected option		Description
FMD7x	A, B, C	4-20 mA HART
	D, E, F	4-20 mA HART, L <sub>i</sub> = 0
	M, N, O	PROFIBUS PA
	P, Q, R	FOUNDATION Fieldbus

Position 11 (Additional Option 1)		
Selected option		Description
FMD7x	M	Overvoltage protection

Position 12 (Additional Option 2)		
Selected option		Description
FMD7x	G	Separate enclosure, cable length see additional spec. + enclosure mounting bracket, wall/pipe, 316L
	M	Overvoltage protection



*Optional specifications*

ID Jx (Test, Certificate)		
Selected option		Description
FMD7x	JN <sup>1)</sup>	Ambient temperature transmitter -50 °C/-58 °F

1) Only in connection with Position 1 = 1, I

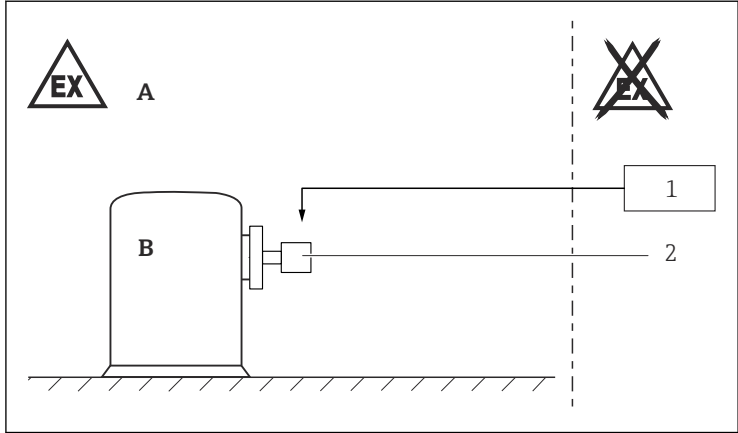
**Safety instructions:**  
**General**

- 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.
- Avoid electrostatic charging:
  - Of plastic surfaces (e.g. enclosure, sensor element, special varnishing, attached additional plates, ..)
  - Of isolated capacities (e.g. isolated metallic plates)

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

- In the case of process connections made of polymeric material or with polymeric coatings, avoid electrostatic charging of the plastic surfaces.
- For light metal flanges or flange faces (e.g. titanium, zirconium), avoid sparks caused by impact and friction.
- To avoid electrostatic charging: Do not rub surfaces with a dry cloth.
- In the event of additional or alternative special varnishing on the housing 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.

## Safety instructions: Installation



A0041997

- A Zone 1, Electronic
- B Zone 0, Process
- 1 Certified associated apparatus
- 2 PMD75, FMD77, FMD78

After aligning (rotating) the enclosure, retighten the fixing screw.

### Intrinsic safety

- The intrinsically safe input power circuit of the device is isolated from ground. The dielectric strength is at least  $500 V_{\text{rms}}$ .
- When the device is connected to certified intrinsically safe circuits of Category Ex ib for Equipment Groups IIC and IIB, the type of protection changes to Ex ib IIC and Ex ib IIB. Do not operate the sensor in Zone 0 if connecting to an intrinsically safe circuit of Category Ex ib.

### Overvoltage protection

Device type PMD75, Basic specification, Position 10 + 11 and  
 Device type FMD77, FMD78, Basic specification, Position 11 + 12 = M  
 The intrinsically safe input power circuit of the device is isolated from ground. The dielectric strength is at least  $290 V_{\text{rms}}$ .

## 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.
- Associated devices with galvanic isolation between the intrinsically safe and non-intrinsically safe circuits are preferred.
- Overvoltage protection is not required depending on the design of this device.

## Temperature tables



*Optional specification, ID Jx = JN*

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

Temperature class	Process temperature $T_p$ (process)	Ambient temperature $T_a$ (ambient): enclosure
T6	$\leq 80$ °C	$-40$ °C $\leq T_a \leq +40$ °C
T4	$\leq 120$ °C <sup>1)</sup>	$-40$ °C $\leq T_a \leq +70$ °C

1) Only Device type PMD75



Do not exceed the max. ambient temperature at the enclosure.

*Device type PMD75*

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

*Device type FMD77*

Deratings between process temperature and ambient temperature at the enclosure depending on the way of installation as well as functional aspects: See Operating Instructions.

*Device type FMD78*

The external heat influence depends only on the mountig position of the transmitter itself. Therefore a sufficient capillary length to mount the enclosure at a position with an allowed ambient temperature must be ordered.

**Connection data***Basic specification, Position 2 = A, B, C, D, E, F*

Power supply
$U_i \leq 30 V_{DC}$ $I_i \leq 300 \text{ mA}$ $P_i \leq 1 \text{ W}$ $C_i \leq 11.8 \text{ nF}$ $L_i \leq 225 \mu\text{H}^{1)}$ or $L_i = 0^{2)}$

- 1) Basic specification, Position 2 = A, B, C  
 2) Basic specification, Position 2 = D, E, F

*Basic specification, Position 2 = M, N, O, P, Q, R*

Power supply	
FISCO  $U_i \leq 17.5 V_{DC}$ $I_i \leq 500 \text{ mA}$ $P_i \leq 5.5 \text{ W}$ $C_i \leq 5 \text{ nF}$ $L_i \leq 10 \mu\text{H}$	Entity  $U_i \leq 24 V_{DC}$ $I_i \leq 250 \text{ mA}$ $P_i \leq 1.2 \text{ W}$ $C_i \leq 5 \text{ nF}$ $L_i \leq 10 \mu\text{H}$









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