

Safety Instructions

Deltabar S

PMD75, FMD77, FMD78

4-20 mA HART, PROFIBUS PA, FOUNDATION Fieldbus

EAC: Ga/Gb Ex ia IIC T6...T4
Ex ia IIIC T85°C Da/Db



Document: XA01593P-C

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

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Associated documentation	<p>This document is an integral part of the following Operating Instructions:</p> <p>HART</p> <ul style="list-style-type: none">■ BA00270P/00■ BA00274P/00 <p>PROFIBUS PA</p> <ul style="list-style-type: none">■ BA00294P/00■ BA00296P/00 <p>FOUNDATION Fieldbus</p> <ul style="list-style-type: none">■ BA00301P/00■ BA00303P/00										
Supplementary documentation	<p>Explosion-protection brochure: CP00021Z/11</p> <p>The Explosion-protection brochure is available:</p> <ul style="list-style-type: none">■ In the download area of the Endress+Hauser website: www.endress.com -> Downloads -> Media Type: Documentation -> Documentation Type: Brochures and catalogs -> Text Search: CP00021Z■ On the CD for devices with CD-based documentation										
Manufacturer's certificates	<p>Certificate of Conformity TP TC 012/2011</p> <p>Inspection authority: LLC NANIO CCVE (ООО «НАНИО ЦСВЭ»)</p> <p>Certificate number: TC RU C-DE.AA87.B.01064</p> <p>Affixing the certificate number certifies conformity with the following standards (depending on the device version):</p> <ul style="list-style-type: none">■ GOST 31610.0-2014 (IEC 60079-0:2011)■ GOST 31610.11-2014 (IEC 60079-11:2011)■ GOST 31610.26-2012/IEC 60079-26:2006										
Manufacturer address	<p>Endress+Hauser SE+Co. KG Hauptstraße 1 79689 Maulburg, Germany Address of the manufacturing plant: See nameplate.</p>										
Extended order code	<p>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.</p> <p>Structure of the extended order code</p> <table><tr><td>PMD75, FMD7x</td><td>–</td><td>*****</td><td>+</td><td>A*B*C*D*E*F*G*..</td></tr><tr><td>(Device type)</td><td></td><td>(Basic specifications)</td><td></td><td>(Optional specifications)</td></tr></table> <p>* = Placeholder At this position, an option (number or letter) selected from the specification is displayed instead of the placeholders.</p>	PMD75, FMD7x	–	*****	+	A*B*C*D*E*F*G*..	(Device type)		(Basic specifications)		(Optional specifications)
PMD75, FMD7x	–	*****	+	A*B*C*D*E*F*G*..							
(Device type)		(Basic specifications)		(Optional specifications)							

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	3	ATEX II 1/2 G Ex ia IIC T6...T4 Ga/Gb ATEX II 1/2 D Ex ia IIIC T85°C Da/Db

Position 2 (Output, Operating)		
Selected option		Description
PMD75	A, B, C	4-20 mA HART
	D, E, F	4-20 mA HART, L _i = 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	M	Overvoltage protection

Optional specifications

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

ID Lx (Additional Approval)		
Selected option		Description
PMD75	L8	EAC marking

 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	3	ATEX II 1/2 G Ex ia IIC T6...T4 Ga/Gb ATEX II 1/2 D Ex ia IIIC T85°C Da/Db

Position 2 (Output, Operating)		
Selected option		Description
FMD7x	A, B, C	4-20 mA HART
	D, E, F	4-20 mA HART, L _i = 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	M	Overvoltage protection

Optional specifications

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

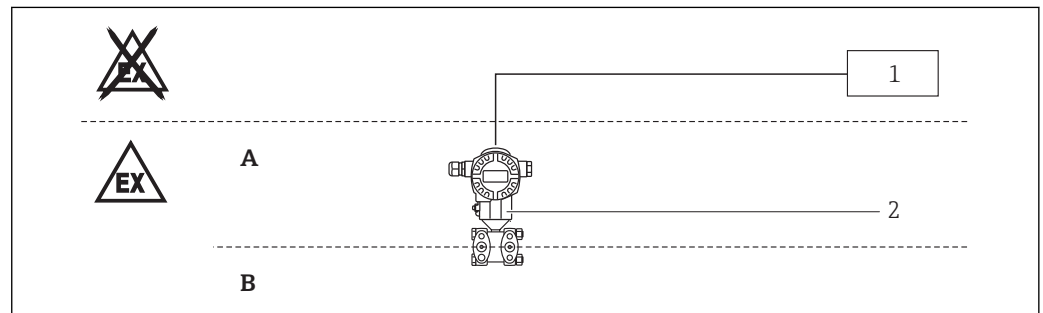
ID Lx (Additional Approval)		
Selected option		Description
FMD7x	L8	EAC marking

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

Safety instructions: Special conditions

- For light metal flanges or flange faces (e.g. titanium, zirconium), avoid sparks caused by impact and friction.
- 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.

Safety instructions: Installation

- A Zone 1, Zone 21, Electronic
 B Zone 0, Zone 20, Process
 1 Certified associated apparatus
 2 PMD75, FMD77, FMD78

- After aligning (rotating) the housing, retighten the fixing screw.
- The device is designed for operation in Zone 1 or Zone 21 (housing) as well as Zone 0 or Zone 20 (process connection). In the event of potentially explosive gas-air and dust-air mixtures occurring simultaneously: Suitability requires further assessment.

Intrinsic safety

- The intrinsically safe input power circuit of the device is isolated from ground. The dielectric strength is at least 500 V_{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 (Additional Option 1 + 2) = M

Device type FMD77, FMD78, Basic specification, Position 11 + 12 (Additional Option 1 + 2) = M

The intrinsically safe input power circuit of the device is isolated from ground. The dielectric strength is at least 290 V_{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.

**Safety instructions:
Zone 20, Zone 21**

- Seal the cable entry or piping tight (see ingress protection of housing in the "Temperature tables" chapter).
- Connect the device using suitable cable and wire entries of protection type "Equipment dust ignition protection by enclosure (Ex t)" or "Increased safety (Ex e)" (ingress protection of at least IP65). Lay connecting cable and secure.

Temperature tables

Type of protection	Temperature class	Process temperature T _p (process)	Ambient temperature T _a (ambient): housing
EAC: Ga/Gb Ex ia IIC T6...T4	T6	≤ 80 °C	–40 °C ≤ T _a ≤ +40 °C
	T4	≤ 120 °C ¹⁾	–40 °C ≤ T _a ≤ +70 °C

1) Only Device type PMD75



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

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 housing 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 mounting position of the transmitter itself. Therefore a sufficient capillary length to mount the housing at a position with an allowed ambient temperature must be ordered.

Type of protection	Ingress protection of housing	Max. surface temperature at max. ambient temperature	Ambient temperature T _a (ambient): housing
EAC: Ex ia IIIC T85°C Da/Db	IP66/67	+85 °C ¹⁾	–40 °C ≤ T _a ≤ +70 °C

1) Maximum thickness of the dust layer: 5 mm

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

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

Connection data

Basic specification, Position 2 (Output, Operating) = A, B, C, D, E, F

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

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

Basic specification, Position 2 (Output, Operating) = M, N, O, P, Q, R

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



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