

Safety Instructions

Deltabar PMD75B, PMD78B

II 1/2 G Ex ia IIC T6...T1 Ga/Gb

II 1/2 D Ex ia IIIC Txxx°C Da/Db



Deltabar PMD75B, PMD78B

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Associated documentation

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

- PMD75B
BA02014P/00, TI01511P/00
- PMD78B
BA02015P/00, TI01512P/00

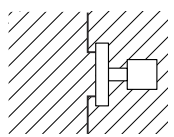
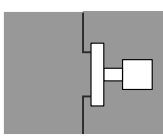
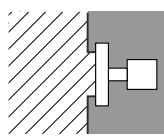
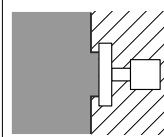
Supplementary documentation

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

**General notes:
Combined approval**

							
Ex ia IIC	Zone 1	Ex ia IIC	Zone 21	Ex ia IIC	Zone 21	Ex ia IIC	Zone 1
Zone 0 or Zone 1		Zone 20 or Zone 21		Zone 0 or Zone 1		Zone 20 or Zone 21	

The device is designed for operation in explosive gas or explosive dust atmosphere as shown in the sketch above. In the event of potentially explosive gas-air and dust-air mixtures occurring simultaneously: Suitability requires further assessment.

-  A sequential change between gas and dust explosion protection is only possible if:
 - A period with non-explosive atmosphere is realized during the transition or
 - Special examinations are done which are not covered by the certificate

Manufacturer's certificates

UK Declaration of Conformity

Declaration Number:
UK00027

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 21UKEX2337X

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

PMD7xB	-	*****	+	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

Device type

PMD75B, PMD78B

Basic specifications

Position 1, 2 (Approval)		
Selected option		Description
PMD75B	UK	UK Ex II 1/2 G Ex ia IIC T6...T1 Ga/Gb
PMD78B		UK Ex II 2 G Ex ia IIC T6...T1 Gb
		UK Ex II 1/2 D Ex ia IIIC Txxx°C Da/Db
		UK Ex II 2 D Ex ia IIIC Txxx°C Db

Position 6 (Housing, Material)		
Selected option		Description
PMD75B	B	Single compartment; Alu, coated
PMD75B	J	Dual compartment; Alu, coated
PMD78B	K	Dual compartment; 316L
	M	Dual compartment L-shape; Alu, coated

Position 7 (Electrical Connection)		
Selected option		Description
PMD75B	B	Gland M20, brass nickel plated, IP66/68 NEMA Type 4X/6P
PMD78B	C	Gland M20, 316L, IP66/68 NEMA Type 4X/6P
	F	Thread M20, IP66/68 NEMA Type 4X/6P
	G	Thread G1/2, IP66/68 NEMA Type 4X/6P
	H	Thread NPT1/2, IP66/68 NEMA Type 4X/6P

Optional specifications

ID Nx, Ox (Accessory Mounted)		
Selected option		Description
PMD75B	NA	Overvoltage protection ¹⁾
PMD78B		

1) Only in connection with Position 6 = J, K, M

ID Px, Rx (Accessory Enclosed)		
Selected option		Description
PMD75B	PA	Weather protection cover, 316L
PMD78B		

Safety instructions: General

- Devices suitable for zone separation (marked Ga/Gb or Da/Db) are always suitable for installation in the less critical zone (Gb or Db). Due to space limitations the corresponding marking maybe not indicated on the nameplate.
- 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.
- Do not operate the device outside the specified electrical, thermal and mechanical parameters.

- 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)
- Modifications to the device can affect the explosion protection and must be carried out by staff authorized to perform such work by Endress+Hauser.

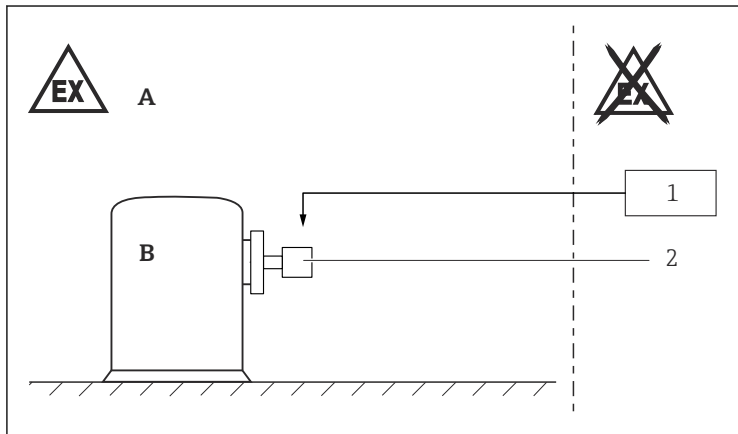
Safety instructions:
Special conditions

- 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 (≤ 0.5 m) generating strong electrostatic charges.
- Avoid sparks caused by impact and friction.

Optional specification, ID Px, Rx = PA

Connect the weather protection cover to the local potential equalization.

Safety instructions:
Installation



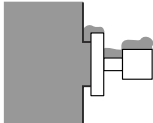
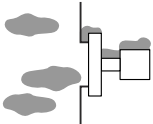
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- A Zone 1 or Zone 21, Electronic
- B Zone 0, Zone 1 or Zone 20, Zone 21, Process
- 1 Associated intrinsically safe power supply units
- 2 PMD75B, PMD78B

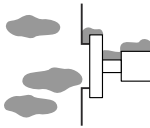
- After aligning (rotating) the enclosure, retighten the fixing screw.
- When the device is connected to certified intrinsically safe circuits of Category Ex ib for Equipment Groups IIC and IIB, the type of protection changes to Ex ib IIC and Ex ib IIB. Do not operate the sensor in Zone 0 if connecting to an intrinsically safe circuit of Category Ex ib.
- When the device is connected to certified intrinsically safe circuits of Category Ex ib for Equipment Groups IIIC and IIIB, the type of protection changes to Ex ib IIIC and Ex ib IIIB. Do not operate the sensor in Zone 20 if connecting to an intrinsically safe circuit of Category Ex ib.
- Continuous service temperature of the connecting cable: $\geq T_a + 20 \text{ K}$.
- Observe the pertinent guidelines when interconnecting intrinsically safe circuits.
- Observe the maximum process conditions according to the manufacturer's Operating Instructions.
- Install the device to exclude any mechanical damage or friction during the application. Pay particular attention to flow conditions and tank fittings.
- Perform the following to achieve the degree of protection IP66/67:
 - Screw the cover tight.
 - Mount the cable entry correctly.
- Seal unused entry glands with suitable sealing plugs that correspond to the type of protection.
- Supplied cable glands and metallic sealing plugs comply with the requirements of type of protection marked on the nameplate.
- The plastic sealing plug is used only as transport protection.

Permitted ambient conditions

Ex ia IIIC Txxx°C Da/Db

Process Zone 20	Enclosure Zone 21
Continuous dust submersion 	Dust accumulation or temporary explosive dust atmosphere
Continuous explosive dust atmosphere and deposits 	Dust accumulation or temporary explosive dust atmosphere

Ex ia IIIC T_{xxx}°C Db

Process Zone 21	Enclosure Zone 21
Continuous dust deposits or temporary explosive dust atmosphere 	Dust accumulation or temporary explosive dust atmosphere

Intrinsic safety

- The device is only suitable for connection to certified, intrinsically safe equipment with explosion protection Ex ia / Ex ib.
- The intrinsically safe input power circuit of the device is isolated from ground. The dielectric strength is at least 500 V_{rms}.

Optional specification, ID Nx, Ox = NA

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

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.
- Only use the device in media to which the wetted materials have sufficient durability (e.g. process connection seal).

**Temperature
tables**
Ex ia IIC T₆...T₁ Ga/Gb

- The specified ambient and process temperature ranges exclusively refer to the explosion protection and must not be exceeded. Operationally permitted ambient temperature ranges can be restricted depending on the version: See Operating Instructions.
 - Do not exceed the max. ambient temperature at the enclosure.
 - The process temperatures refer to the temperature at the separation membrane.

Device Type PMD75B

Temperature class	Process temperature range	Ambient temperature range
T6	$-40\text{ °C} \leq T_p \leq +80\text{ °C}$	$-40\text{ °C} \leq T_a \leq +50\text{ °C}$
T4...T1	$-40\text{ °C} \leq T_p \leq +100\text{ °C}$	$-40\text{ °C} \leq T_a \leq +55\text{ °C}$
	$-40\text{ °C} \leq T_p \leq +85\text{ °C}$	$-40\text{ °C} \leq T_a \leq +60\text{ °C}$
	$-40\text{ °C} \leq T_p \leq +60\text{ °C}$	$-40\text{ °C} \leq T_a \leq +60\text{ °C}$

Device Type PMD78B

Temperature class	Process temperature range	Ambient temperature range
T6	$-40\text{ °C} \leq T_p \leq +80\text{ °C}$	$-40\text{ °C} \leq T_a \leq +50\text{ °C}$
T4	$-40\text{ °C} \leq T_p \leq +130\text{ °C}$	$-40\text{ °C} \leq T_a \leq +70\text{ °C}$
T3	$-40\text{ °C} \leq T_p \leq +190\text{ °C}$	
T2	$-40\text{ °C} \leq T_p \leq +285\text{ °C}$	
T1	$-40\text{ °C} \leq T_p \leq +400\text{ °C}$	

Ex ia IIIC Txxx°C Da/Db



- The specified surface temperature takes into account all direct heat influences from process heat and self-heating at the enclosure.
- Surface temperatures at the process side maybe higher and must be considered by the user (e.g. at high temperature process connections).
- The T-marking is based on the process temperature of the compact designs.
- The specified ambient and process temperature ranges exclusively refer to the explosion protection and must not be exceeded. Operationally permitted ambient temperature ranges can be restricted depending on the version: See Operating Instructions.
- Do not exceed the max. ambient temperature at the enclosure.
- The process temperatures refer to the temperature at the separation membrane.

For detailed information see Technical Information.



Protection type of enclosure: IP66/67

Device Type PMD75BEx ia IIIC T₂₀₀ 100°C Da/DbEx ia IIIC T_L 100°C Db

Maximum surface temperature	Process temperature range	Ambient temperature range
T100 °C	-40 °C ≤ T _p ≤ +80 °C	-40 °C ≤ T _a ≤ +60 °C
	-40 °C ≤ T _p ≤ +100 °C	-40 °C ≤ T _a ≤ +55 °C

Specific conditions of use:

- The surface temperature is
 - for equipment protection level (EPL) Da: T₂₀₀ 100 °C (with 200 mm dust deposit)
 - and equipment protection level (EPL) Db: T_L 100 °C (with dust accumulation T_L)
- The surface temperature is for equipment protection level (EPL) Db: T_L 100 °C (with dust accumulation T_L)

T_L marking:

The assigned surface temperature without dust layer is the same.

Device Type PMD78BEx ia IIIC T₂₀₀ 100°C Da/DbEx ia IIIC T_L 100°C Db

Maximum surface temperature	Process temperature range	Ambient temperature range
T100 °C	-40 °C ≤ T _p ≤ +400 °C	-40 °C ≤ T _a ≤ +70 °C

Specific conditions of use:

- The surface temperature is
 - for equipment protection level (EPL) Da: T₂₀₀ 100 °C (with 200 mm dust deposit)
 - and equipment protection level (EPL) Db: T_L 100 °C (with dust accumulation T_L)
- The surface temperature is for equipment protection level (EPL) Db: T_L 100 °C (with dust accumulation T_L)

T_L marking:

The assigned surface temperature without dust layer is the same.

Connection data

Power supply
$U_i \leq 30 V_{DC}$ $I_i \leq 300 \text{ mA}$ $P_i \leq 1 \text{ W}$ $C_i \leq 10 \text{ nF}$ $L_i = 0$

Ex ia IIIC Txxx°C Da/Db**Cable entry: Connection compartment**Cable gland: *Basic specification, Position 7 = B*

Thread	Clamping range	Material	Sealing insert	O-ring
M20x1,5	$\varnothing 8$ to 10.5 mm ¹⁾ $\varnothing 6.5$ to 13 mm ²⁾	Ms, nickel-plated	Silicone	EPDM ($\varnothing 17 \times 2$)

1) Standard

2) Separate clamping inserts available

Cable gland: *Basic specification, Position 7 = C*

Thread	Clamping range	Material	Sealing insert	O-ring
M20x1,5	$\varnothing 7$ to 12 mm	1.4404	NBR	EPDM ($\varnothing 17 \times 2$)



- The tightening torque refers to cable glands installed by the manufacturer:
 - Recommended: 3.5 Nm
 - Maximum: 10 Nm
- This value may be different depending on the type of cable. However, the maximum value must not be exceeded.
- Only suitable for fixed installation. The operator must pay attention to a suitable strain relief of the cable.
- To maintain the ingress protection of the enclosure: Install the enclosure cover, cable glands and blind plugs correctly.



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