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71679110
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Safety Instructions
Deltabar PMD50

Ex ia IIC T4...T1 Ga/Gb
Ex db IIC T6...T1 Gb
Ex ta IIIC T_{200} 100 °C Da
Ex tb IIIC T100 °C Db

Endress+Hauser
People for Process Automation

Deltabar PMD50

Table of contents

About this document

The document number of these Safety Instructions (XA) must match the information on the nameplate.

Associated documentation

All documentation is available on the Internet:
www.endress.com/Deviceviewer
(enter the serial number from the nameplate).

To commission the device, please observe the Operating Instructions pertaining to the device:

BA02333P

Supplementary documentation

Special Documentation for cable gland M20 Ex d: SD02550F

Explosion protection brochure: CP00021Z

The explosion protection brochure is available on the Internet:
www.endress.com/Downloads

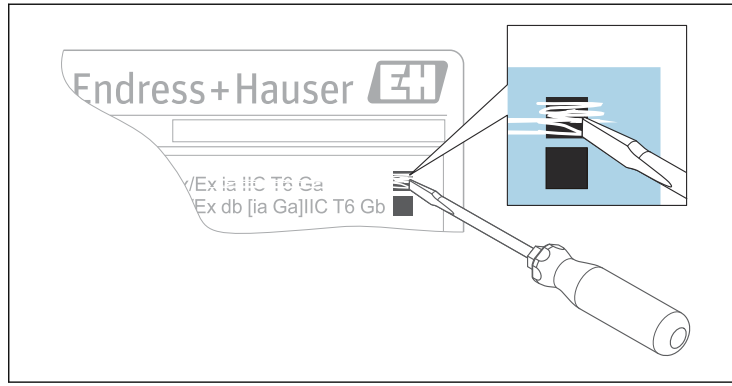
General notes: Combined approval

The device is suitable for installation with explosion protection "Intrinsic safety Ex ia" or "Flameproof enclosure Ex db" or "Equipment dust ignition protection by enclosure Ex t".

- Before initial commissioning, specify the type of protection.
- It is not permitted to change the type of protection after initial commissioning as this can jeopardize the explosion protection.

For aluminum enclosures:
Void out the explosion protection that is not used on the nameplate.

For stainless steel enclosures:
Using a striking tool, mark the explosion protection used, or void out the explosion protection that is not used.



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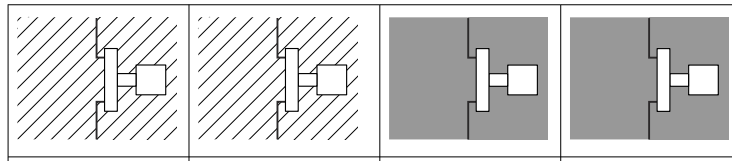
Depending on the type of protection used: Observe the safety instructions for installation with explosion protection "Intrinsic safety Ex ia", "Flameproof enclosure Ex db" or "Equipment dust ignition protection by enclosure Ex t".



Ex ia IIC		Ex db IIC		Ex ta IIIC		Ex tb IIIC	
Zone 0 or Zone 1	Zone 1	Zone 1	Zone 1	Zone 20	Zone 20	Zone 21	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.

Certificates and declarations

Certificate of Conformity

Certificate number:
CML 24JPN2358X

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

- JNIOSH-TR-46-1:2020
- JNIOSH-TR-46-2:2018
- JNIOSH-TR-46-6:2015
- IEC 60079-26:2021
- JNIOSH-TR-46-9:2018

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

PMD50	–	**********	+	A*B*C*D*E*F*G*..
(Device type)		*(Basic specifications)*		*(Optional specifications)*

* = 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

PMD50

Basic specifications

Position 1, 2 (Approval)		
Selected option		**Description**
PMD50	JN	JPN Ex ia IIC T4...T1 Ga/Gb JPN Ex db IIC T6...T1 Gb JPN Ex ta IIIC T_{200} 100 °C Da JPN Ex tb IIIC T100 °C Db

Position 6 (Housing, Material)		
Selected option		**Description**
PMD50	J	Dual compartment; Alu, coated
	K	Dual compartment; 316L

Position 7 (Electrical Connection)		
Selected option		**Description**
PMD50	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

No options specific to hazardous locations are available.

Safety instructions: General

- The device is intended to be used in explosive atmospheres as defined in the scope of IEC 60079-0 or equivalent national standards. If no potentially explosive atmospheres are present or if additional protective measures have been taken: The device may be operated according to the manufacturer's specifications.
- 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)
- Alterations 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: Specific conditions of use

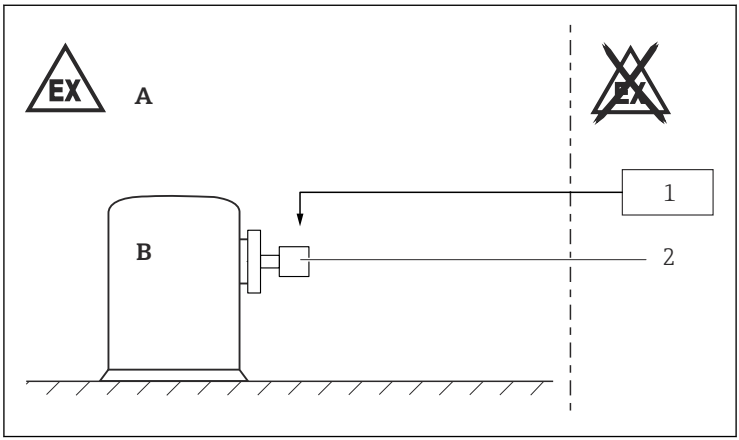
- In the case of process connections made of polymeric material or with polymeric coatings, avoid electrostatic charging of the plastic surfaces.
- For light metal flanges or flange faces (e.g. titanium, zirconium), avoid sparks caused by impact and friction.
- To avoid electrostatic charging: Do not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

- The user must mark the nameplate with the type of protection used – this must not be changed. For further details, refer to the marking requirements in the "General notes: Combined approval" chapter of this document.
- Flameproof joints are not intended to be repaired.
- Material specification of the separating element: > 1 mm glass feedthrough, edged with > 1 mm stainless steel and ≥ 0.3 mm welds between the glass feedthrough and the stainless steel.

Ex ta, Ex tb
The device must be operated with a 100 mA fuse.

Ex ia IIC T4...T1 Ga/Gb

Safety instructions: Installation



A Zone 1, Electronic
B Zone 0 or Zone 1, Process
1 Associated intrinsically safe power supply units
2 PMD50

- 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.
- Continuous service temperature of the connecting cable: $\geq T_a$+20 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.

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}.

Potential equalization

Integrate the device into the local potential equalization.

Temperature tables

- 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.

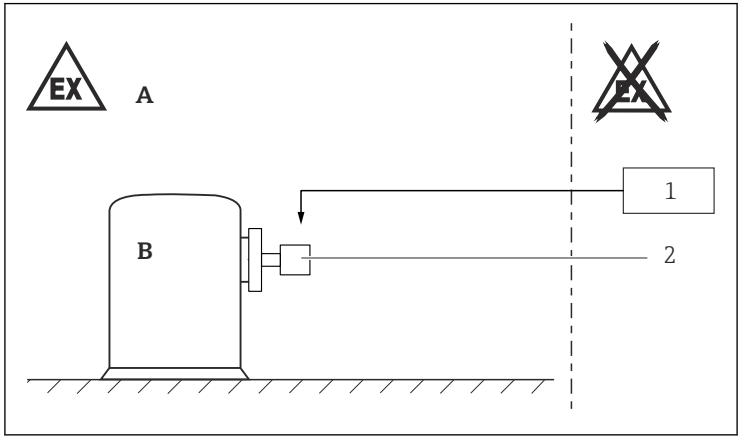
Temperature class	Process temperature T_p (process)	Ambient temperature T_a (ambient)
T4...T1	+60 °C	–40 to +70 °C
	+85 °C	–40 to +65 °C
	+100 °C	–40 to +55 °C

Connection data

Power supply
$U_i \leq 30\ V_{DC}$ $I_i \leq 100\ mA$ $P_i \leq 0.7\ W$ $C_i \leq 10\ nF$ $L_i = 0$

Ex db IIC T6...T1 Gb

Safety instructions: Installation



A Zone 1, Electronic
B Zone 1, Process
1 Power supply
2 PMD50

- After aligning (rotating) the enclosure, retighten the fixing screw.
- Do not open the covers in a potentially explosive atmosphere.
- Before operation:
  - Screw in the cover all the way.
  - Tighten the securing screw on the cover.
- Connect the device:
  - Using suitable cable and wire entries of protection type "Flameproof Enclosure (Ex db)".
  - Using piping systems of protection type "Flameproof Enclosure (Ex db)".
- When connecting through a conduit entry approved for this purpose, mount the associated sealing unit directly at the enclosure.
- Seal unused entry glands with approved sealing plugs that correspond to the type of protection. The plastic transport sealing plug does not meet this requirement and must therefore be replaced during installation.
- Only use certified cable entries or sealing plugs. The metal sealing plugs supplied meet this requirement.
- Only use genuine spare parts from Endress+Hauser which are specified for the device.

Basic specification, Position 7 = G
Flameproof equipment with G threaded holes is not intended for new installations, but only for replacing equipment in existing installations. Use of this equipment shall comply with the local installation requirements.

Safety instructions: Ex d joints

- Flameproof joints are not intended to be repaired.
- If required or if in doubt: ask manufacturer for specifications.

Temperature tables

- 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.

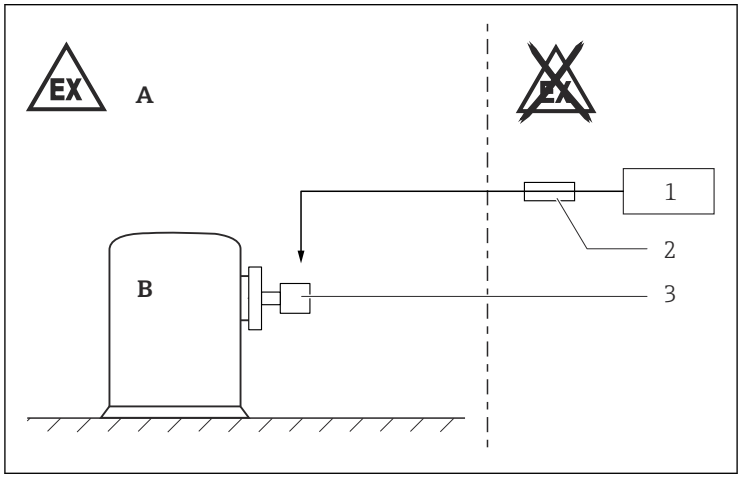
Temperature class	Process temperature T_p (process)	Ambient temperature T_a (ambient)
T6	+80 °C	–40 to +60 °C
T4...T1	+85 °C	–40 to +60 °C
	+100 °C	–40 to +55 °C

Connection data

Power supply
$U \leq 35\ V_{DC}$ $P \leq 1\ W$

Ex ta IIIC T_{200} 100 °C Da, Ex tb IIIC T100 °C Db

Safety instructions: Installation

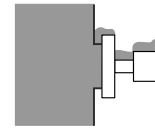
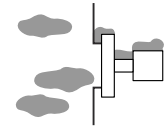


A Zone 20 or Zone 21, Electronic
B Zone 20 or Zone 21, Process
1 Power supply
2 Fuse
3 PMD50

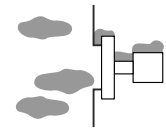
- After aligning (rotating) the enclosure, retighten the fixing screw.
- Do not open in a potentially explosive dust atmosphere.
- Seal unused entry glands with approved sealing plugs that correspond to the type of protection. The plastic transport sealing plug does not meet this requirement and must therefore be replaced during installation.
- Seal the cable entry or piping tight (see protection type of enclosure in the "Temperature tables" chapter).
- Before operation:
  - Screw in the cover all the way.
  - Tighten the securing screw on the cover.

Permitted ambient conditions

Ex ta IIIC T_{200} 100 °C Da

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

Ex tb IIIC T100 °C Db

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

Temperature tables

- 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.

Basic specification, Position 6 = K
When using the stainless steel enclosure: Reduce the admissible ambient temperature by 5 K.

Protection type of enclosure: IP66/67

Ex ta IIIC T_{200} 100 °C Da

Maximum surface temperature	Process temperature range	Ambient temperature range	Temperature rise on the electronics
T100 °C	−40 °C ≤ T_p ≤ +60 °C	−40 °C ≤ T_a ≤ +60 °C	40 K

Specific conditions of use:
The surface temperature for equipment protection level (EPL) Da is: T_{200} 100 °C (with 200 mm dust deposit)

Ex tb IIIC T_L 100 °C Db

Maximum surface temperature	Process temperature range	Ambient temperature range
T100 °C	−40 °C ≤ T_p ≤ +100 °C	−40 °C ≤ T_a ≤ +70 °C

Specific conditions of use:
The surface temperature for equipment protection level (EPL) Db is: 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 ≤ 35 V_{DC} P ≤ 1 W

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