

Safety Instructions

Deltabar PMD75B, PMD78B

Control Drawing IS, XP
for devices with combined approval



Deltabar PMD75B, PMD78B

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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:

PMD75B

BA02014P, TI01511P

PMD78B

BA02015P, TI01512P

**General notes:
Combined approval**

The device is suitable for installation as intrinsically safe, explosionproof/flameproof, suitable for Class II, III, Div. 1 or suitable for Class I, Div. 2.

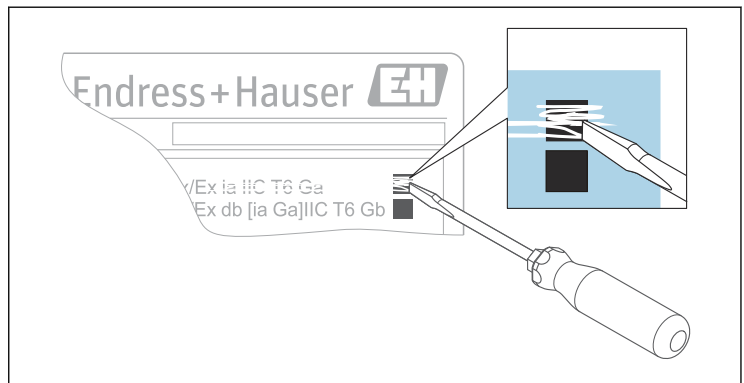
- Before initial commissioning, specify the type of protection.
- It is not permitted to change the type of protection after initial commissioning as this can jeopardize the explosion protection.

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 appropriate safety instructions included in this document.

Certificates and declarations	CSA C/US certificate Certificate number: 80066208
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 PMD7xB – ***** + 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*Device type*

PMD75B, PMD78B

Basic specifications

Position 1, 2 (Approval)		
Selected option		Description
PMD75B	C1	CSA C/US IS Cl. I, II, III, Div. 1, Gp. A-G; Cl. I, Zone 0, AEx/Ex ia IIC Ga
PMD78B		CSA C/US Cl. I, II, III, Div. 1, Gp. A-G; Cl. I, Zone 1, AEx/Ex db IIC Gb
		CSA C/US Cl. II, III, Div. 1, Gp. E-G
		CSA C/US Cl. I, Div. 2, Gp. A-D

Position 3, 4 (Output)		
Selected option		Description
PMD75B	BA	2-wire, 4-20 mA HART
PMD78B	BB	2-wire, 4-20 mA HART, switch output ¹⁾
	BC	2-wire, 4-20 mA HART + 4 to 20 mA analog ¹⁾
	DA	2-wire, PROFIBUS PA
	FA	PROFINET over Ethernet-APL, 10Mbit/s

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

Position 5 (Display, Operation)		
Selected option		Description
PMD75B	N	Prepared for display FHX50B + Thread NPT1/2
PMD78B		

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
	N	Dual compartment L-shape; 316L

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, N

ID Px, Rx (Accessory Enclosed)		
Selected option		Description
PMD75B	PA	Weather protection cover, 316L ¹⁾
PMD78B		
PMD75B	PB	Weather protection cover, plastic ²⁾

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

2) Only in connection with Position 6 = B

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.
- 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**

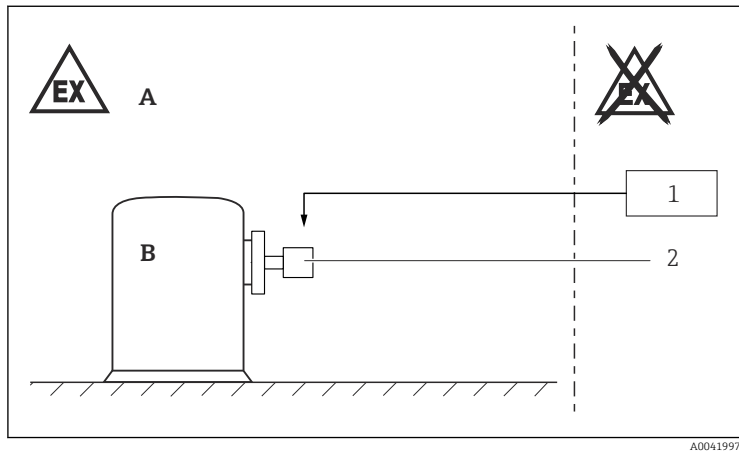
- In the case of process connections made of polymeric material or with polymeric coatings, avoid electrostatic charging of the plastic surfaces.
- For light metal flanges or flange faces (e.g. titanium, zirconium), avoid sparks caused by impact and friction.
- To avoid electrostatic charging: Do not 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.
- Flameproof joints are not intended to be repaired.

Optional specification, ID Px, Rx = PA

Connect the weather protection cover to the local potential equalization.

Intrinsic Safety, AEx/Ex ia installation

Safety instructions: Installation



A0041997

- A Zone 0; Class I, II, III, Div. 1, Groups A-G
 B Process;
 Zone 0; Class I, II, III, Div. 1, Groups A-G
 1 Associated apparatus [Ex ia], intrinsically safe power supply units
 2 PMD75B, PMD78B

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

Potential equalization

Integrate the device into the local potential equalization.

Intrinsic safety

General

- Install per National Electrical Code (NFPA70) or Canadian Electrical Code, Part I (C22.1), as applicable.
- For transmitter parameters: See "Connection data" section.
- Associated devices with galvanic isolation between the intrinsically safe and non-intrinsically safe circuits are preferred.

- Control room equipment may not use or generate over $250 V_{\text{rms}}$.
- Always follow the installation instructions provided by the intrinsic safety barrier manufacturer when installing this equipment.
- **WARNINGS:** Substitution of components may impair intrinsic safety.
- The transmitter enclosure is to be connected to ground via internal or external ground terminals.
- The intrinsically safe input power circuit of the device is isolated from ground. The dielectric strength is at least $500 V_{\text{rms}}$.

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 $290 V_{\text{rms}}$.

4-20 mA HART

Basic specification, Position 3, 4 = BB, BC

- When both channels are used, wiring for each channel must use grounded/shielded pairs.
- Care must be taken in the length of cable/conductor insulation and shielding removed so as to avoid excessive lengths of exposed conductors and prevent conductors of channel 1 from contacting conductors of channel 2.
- The configuration of the intrinsic safety barrier(s) must be approved for the country in use and Install according to the manufacturer's instructions.

Basic specification, Position 3, 4 = BA, BB, BC

Entity installation

Use an intrinsic safety barrier or other associated equipment that is approved for the country in use and satisfies the following conditions:
 $U_o \leq U_i$, $I_o \leq I_i$, $C_o \geq C_i + C_{\text{cable}}$, $L_o \geq L_i + L_{\text{cable}}$ and $P_o \leq P_i$.

PROFIBUS PA

Basic specification, Position 3, 4 = DA

FISCO installation

- The FISCO concept allows interconnection of intrinsically safe apparatus to associated apparatus not specifically examined in such combination. The criteria for interconnection is that the voltage (U_i), the current (I_i) and the power (P_i) which intrinsically safe apparatus can receive and remain intrinsically safe, considering faults, must be equal or greater than the voltage (U_o), the current (I_o) and the power (P_o) levels which can be delivered by the associated apparatus, considering faults and applicable factors. In addition, the maximum unprotected capacitance (C_i) and inductance (L_i) of each apparatus (other than the termination) connected to the fieldbus must be less than or equal to 5 nF and 10 μ H respectively.
- In each segment only one active device, normally the associated apparatus, is allowed to provide the necessary energy for the fieldbus system. The voltage U_o of the associated apparatus has to be limited to the range of 14 to 24 V_{DC}. All other equipment connected to the bus cable has to be passive, meaning that they are not allowed to provide energy to the system, except to a leakage current of 50 μ A for each connected device. Separately powered equipment needs a galvanic isolation to assure that the intrinsically safe fieldbus circuit remains passive.
- The cable used to interconnect the devices needs to have the parameters in the following range:
 - Loop resistance, R: 15 to 150 Ω /km
 - Inductance per unit length, L: 0.4 to 1 mH/km
 - Capacitance per unit length, C: 80 to 200 nF/km
 - $C = C_{\text{line/line}} + 0.5 C_{\text{line/screen}}$, if both lines are floating, or
 - $C = C_{\text{line/line}} + C_{\text{line/screen}}$, if the screen is connected to one line
 - Length of spur cable: 30 m
 - Length of trunk cable: 1 km
 - Length of splice: 1 m
- At each end of the trunk cable an approved infallible line termination with the following parameters is suitable:
 - R = 90 to 100 Ω
 - C = 0 to 2.2 μ F
- One of the allowed terminations might already be integrated in the associated apparatus.
- The number of passive devices connected to the bus segment is not limited due to IS reasons. If the above rules are respected, up to a total length of 1 000 m (sum of the length of trunk cable and all spur cables), the inductance and capacitance of the cable will not impair the intrinsic safety of the installation.

Entity installation

Use an intrinsic safety barrier or other associated equipment that is approved for the country in use and satisfies the following conditions:

$$U_o \leq U_i, I_o \leq I_i, C_o \geq C_i + C_{\text{cable}}, L_o \geq L_i + L_{\text{cable}} \text{ and } P_o \leq P_i.$$

Ethernet - APL

Basic specification, Position 3, 4 = FA

2-WISE installation

- The 2-WISE concept allows interconnection of intrinsically safe apparatus and associated apparatus not specially assessed for such a combination. For the acceptance of the interconnection of the different intrinsically safe circuits of these apparatus, the comparison of the voltage U_i with U_o , the current I_i with I_o , and the power P_i with P_o of the interconnected circuits must demonstrate that U_i , I_i and P_i are equal to or greater than U_o , I_o and P_o of the connected circuits. In addition, the maximum internal capacitance (C_i) and maximum internal inductance (L_i) of each apparatus (other than those from auxiliary devices) connected to a 2-WISE system must not exceed 5 nF and 10 H respectively.
- In a powered 2-WISE system only 2 ports (power source and power load) are allowed to be connected at the opposite ends of a cable, with a maximum of two auxiliary devices connected in between. The power source port supplies DC power to the system, and the power load port consumes DC power from the system. Auxiliary device ports may also consume DC power from the system. The voltage U_o of a power source port must be in the range of 14 to 17.5 V.
- Any other device connected to the cable shall be passive, meaning that it is not allowed to provide energy to the system, with the exception of a leakage current of 1 mA for a power load port and a leakage current of 50 A for each auxiliary device port. The intrinsically safe circuit of a 2-WISE port shall be galvanically isolated from non-intrinsically safe circuits.
- The parameters of cable used to interconnect 2-WISE ports must be as follows:
 - Cable resistance, R_c : 15 to 150 Ω/km
 - Cable inductance, L_c : 0.4 to 1 mH/km
 - Cable capacitance, C_c : 45 to 200 nF/km
 - $C = C_{\text{line/line}} + 0.5 C_{\text{line/screen}}$, if both lines are floating, or
 - $C = C_{\text{line/line}} + C_{\text{line/screen}}$, if the screen is connected to one line
 - Length of cable (not including cable stubs): $\leq 200 \text{ m}$
 - Length of cable stubs: $\leq 1 \text{ m}$
- If the above rules are respected, the inductance and the capacitance of the cable will not impair the intrinsic safety of the installation.

Entity installation

Use an intrinsic safety barrier or other associated equipment that is approved for the country in use and satisfies the following conditions:

$U_o \leq U_i$, $I_o \leq I_i$, $C_o \geq C_i + C_{\text{cable}}$, $L_o \geq L_i + L_{\text{cable}}$ and $P_o \leq P_i$.

Process seals

Device Type PMD75B

- The device is rated Single Seal in accordance with UL122701 and does not require the use of an external secondary process seal.
- The Single Seal rating is valid for a maximum pressure of up to 420 bar and a maximum process temperature (T_p) up to 100 °C.

Device Type PMD78B

- The device is rated Single Seal in accordance with UL122701 and does not require the use of an external secondary process seal.
- The Single Seal rating is valid for a maximum pressure of up to 420 bar and a maximum process temperature (T_p) up to 400 °C.



- Limitation of the Maximum Working Pressure (MWP) for each device is marked on the nameplate and must not be exceeded! This value may be less than 420 bar.
- Limitation of the maximum process temperature (T_p) with regards to the device options, temperature code rating and maximum ambient temperature as specified in the "Temperature tables" section of this document must be considered!
- Verify the chemical compatibility of the process fluid with the process seal material (see field "Mat." on the nameplate)!

Temperature tables



Optional specification, ID Px, Rx = PB

When using the weather protection cover: Reduce the admissible ambient temperature by 10 K.

Class I, Div. 1 / Zone 0



- 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 T _p (process)	Ambient temperature T _a (ambient)	
		Basic specification, Position 3, 4 =	
		BA, DA, FA	BB, BC
		Basic specification, Position 6 =	
		B, J, K, M, N	J, K, M, N
T6	+60 °C	-40 to +45 °C	-40 to +45 °C
	+70 °C	-40 to +45 °C	-40 to +45 °C
	+80 °C	-40 to +45 °C	-40 to +40 °C
T4	+60 °C	-40 to +65 °C	-40 to +55 °C
	+85 °C	-40 to +60 °C	-40 to +50 °C
	+100 °C	-40 to +60 °C	-40 to +50 °C

Device Type PMD78B

Temperature class	Process temperature T _p (process)	Ambient temperature T _a (ambient)	
		Basic specification, Position 3, 4 =	
		BA, DA, FA	BB, BC
		Basic specification, Position 6 =	
		J, K, M, N	J, K, M, N
T6	+80 °C	-40 to +50 °C	-40 to +55 °C
T4	+130 °C	-40 to +70 °C	-40 to +60 °C
T3	+190 °C	-40 to +70 °C	-40 to +60 °C
T2	+290 °C	-40 to +70 °C	-40 to +60 °C
T1	+400 °C	-40 to +70 °C	-40 to +60 °C

Class II, III, Div. 1

- 
- 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.

Device Type PMD75B

Maximum surface temperature	Process temperature T _p (process)	Ambient temperature T _a (ambient)	
		Basic specification, Position 3, 4 = BA, DA, FA BB, BC	
		Basic specification, Position 6 = B, J, K, M, N J, K, M, N	
T100 °C	+60 °C	-40 to +65 °C	-40 to +60 °C
	+85 °C	-40 to +60 °C	-40 to +55 °C
	+100 °C	-40 to +60 °C	-40 to +55 °C

Device Type PMD78B

Maximum surface temperature	Process temperature T _p (process)	Ambient temperature T _a (ambient)	
		Basic specification, Position 3, 4 =	
		BA, DA, FA	BB, BC
T100 °C		Basic specification, Position 6 =	
		J, K, M, N	J, K, M, N
		-40 to +70 °C	-40 to +70 °C
		-40 to +70 °C	-40 to +70 °C
		-40 to +70 °C	-40 to +70 °C
		-40 to +70 °C	-40 to +70 °C
		-40 to +70 °C	-40 to +70 °C

Connection data

Basic specification, Position 3, 4 = BA, BB, BC

Power supply	
Channel 1	Channel 2 (only BB, BC)
U _I ≤ 30 V _{DC} I _I ≤ 300 mA P _I ≤ 1 W C _i ≤ 10 nF L _i = 0	U _I ≤ 30 V _{DC} I _I ≤ 300 mA P _I ≤ 1 W C _i ≤ 10 nF L _i = 0

Basic specification, Position 3, 4 = DA

Power supply	
FISCO	Entity
U _I ≤ 17.5 V _{DC} I _I ≤ 380 mA P _I ≤ 5.32 W C _i ≤ 5 nF L _i = 0	U _I ≤ 24 V _{DC} I _I ≤ 300 mA P _I ≤ 1.2 W C _i ≤ 5 nF L _i = 0

Basic specification, Position 3, 4 = FA

Power supply	
2-WISE	Entity
U _I ≤ 17.5 V _{DC} I _I ≤ 380 mA P _I ≤ 5.32 W C _i ≤ 5 nF L _i = 0	U _I ≤ 17.5 V _{DC} I _I ≤ 300 mA P _I ≤ 1.2 W C _i ≤ 5 nF L _i = 0

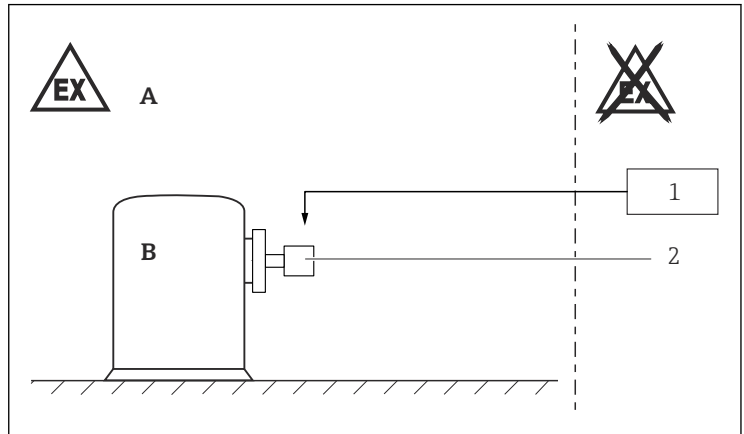
In connection with: *Basic specification, Position 5 = N*
Installation according to the specifications of FHX50B.



Only the type of protection suitable for the device shall be connected!

Explosionproof, AEx/Ex d installation

Safety instructions: Installation



A0041997

- A Zone 1; Class I, II, III, Div. 1, Groups A-G
 B Process;
 Zone 1; Class I, II, III, Div. 1, Groups A-G
 1 Power supply
 2 PMD75B, PMD78B

- After aligning (rotating) the enclosure, retighten the fixing screw.
- In potentially explosive atmospheres: Do not open the connection compartment cover and the electronics compartment cover when energized.
- Before operation:
 - Screw in the cover all the way.
 - Tighten the securing clamp on the cover.
- Continuous service temperature of the connecting cable: $\geq T_a + 20\text{ K}$.
- 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.

Explosionproof / Flameproof

Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III;
 Class I, Zone 1, AEx/Ex db IIC Gb

- Install per National Electrical Code (NFPA70) or Canadian Electrical Code, Part I (C22.1), as applicable.
- Use wiring and sealing methods appropriate for the location.
- XP conduit seal required within 450 mm (18 in) of the enclosure.

- For the maximum supply voltage: See "Connection data" section.
- Seal unused entries with approved 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. The metal sealing plugs supplied meet this requirement.
- The transmitter enclosure is to be connected to ground via internal or external ground terminals.
- WARNINGS: Keep covers tight when explosive atmosphere is present.
- Flameproof joints are not intended to be repaired.

Class II, III, Div. 1, Groups E, F, G

- Install per National Electrical Code (NFPA70) or Canadian Electrical Code, Part I (C22.1), as applicable.
- Use wiring and sealing methods appropriate for the location.
- Use a dust-tight seal for wiring at the conduit/cable entry.
- Seal unused entries with approved 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. The metal sealing plugs supplied meet this requirement.
- WARNINGS: Keep covers tight when explosive atmosphere is present.

Process seals

Device Type PMD75B

- The device is rated Single Seal in accordance with UL122701 and does not require the use of an external secondary process seal.
- The Single Seal rating is valid for a maximum pressure of up to 420 bar and a maximum process temperature (T_p) up to 100 °C.

Device Type PMD78B

- The device is rated Single Seal in accordance with UL122701 and does not require the use of an external secondary process seal.
- The Single Seal rating is valid for a maximum pressure of up to 420 bar and a maximum process temperature (T_p) up to 400 °C.



- Limitation of the Maximum Working Pressure (MWP) for each device is marked on the nameplate and must not be exceeded! This value may be less than 420 bar.
- Limitation of the maximum process temperature (T_p) with regards to the device options, temperature code rating and maximum ambient temperature as specified in the "Temperature tables" section of this document must be considered!
- Verify the chemical compatibility of the process fluid with the process seal material (see field "Mat." on the nameplate)!

Temperature tables

Class I, Div. 1 / Zone 1



- 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	$-40\text{ °C} \leq T_p \leq +80\text{ °C}$	$-40\text{ °C} \leq T_a \leq +60\text{ °C}$
T4	$-40\text{ °C} \leq T_p \leq +85\text{ °C}$	$-40\text{ °C} \leq T_a \leq +65\text{ °C}$
	$-40\text{ °C} \leq T_p \leq +100\text{ °C}$	$-40\text{ °C} \leq T_a \leq +60\text{ °C}$

Device Type PMD78B

Temperature class	Process temperature range	Ambient temperature range
T6	$-40\text{ °C} \leq T_p \leq +80\text{ °C}$	$-40\text{ °C} \leq T_a \leq +60\text{ °C}$
T4	$-40\text{ °C} \leq T_p \leq +125\text{ °C}$	$-40\text{ °C} \leq T_a \leq +70\text{ °C}$
T3	$-40\text{ °C} \leq T_p \leq +190\text{ °C}$	$-40\text{ °C} \leq T_a \leq +70\text{ °C}$
T2	$-40\text{ °C} \leq T_p \leq +290\text{ °C}$	$-40\text{ °C} \leq T_a \leq +70\text{ °C}$
T1	$-40\text{ °C} \leq T_p \leq +400\text{ °C}$	$-40\text{ °C} \leq T_a \leq +70\text{ °C}$

Class II, III, Div. 1

- 
 - 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.



Basic specification, Position 6 = K, N

When using the stainless steel enclosure: Reduce the admissible ambient temperature by 5 K.

Device Type PMD75B

Maximum surface temperature	Process temperature range	Ambient temperature range
T100 °C	$-40\text{ °C} \leq T_p \leq +100\text{ °C}$	$-40\text{ °C} \leq T_a \leq +65\text{ °C}$

Device Type PMD78B

Maximum surface temperature	Process temperature range	Ambient temperature range
T100 °C	$-40\text{ °C} \leq T_p \leq +400\text{ °C}$	$-40\text{ °C} \leq T_a \leq +70\text{ °C}$

Connection data

Basic specification, Position 3, 4 = BA, BB, BC

Power supply	
Channel 1 $U \leq 35\text{ V}_{DC}$ $P \leq 1\text{ W}$	Channel 2 (only BB, BC) $U \leq 35\text{ V}_{DC}$ $P \leq 1\text{ W}$

*Basic specification, Position 3, 4 = DA***Power supply**

$U \leq 32 \text{ V}_{\text{DC}}$
 $P \leq 0.7 \text{ W}$

*Basic specification, Position 3, 4 = FA***Power supply**

$U \leq 15 \text{ V}_{\text{DC}}$
 $P \leq 0.7 \text{ W}$

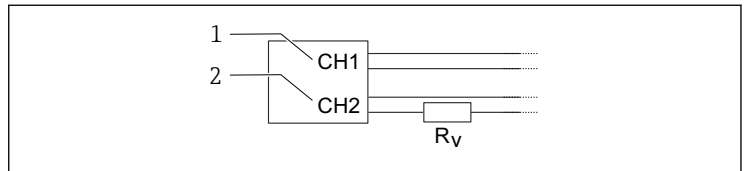
In connection with: *Basic specification, Position 5 = N*
 Installation according to the specifications of FHX50B.



Only the type of protection suitable for the device shall be connected!

Serial resistance (R_V)

Basic specification, Position 3, 4 = BC (only channel 2)



A0053816

- 1 4 to 20 mA
- 2 Switch output

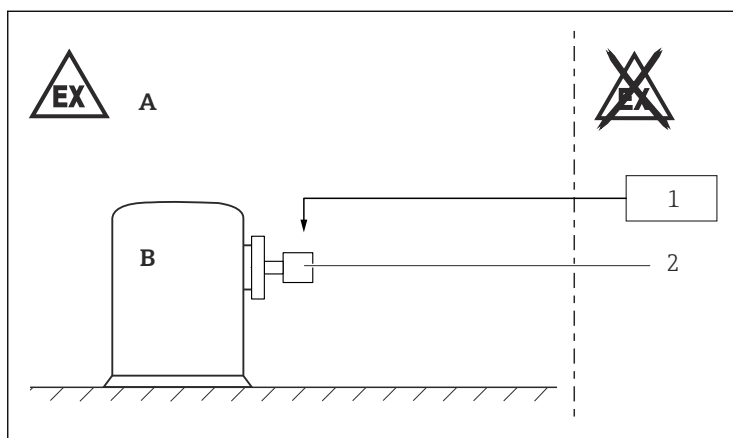
The power consumption have to be limited for certain applications.

- Recommended: Power consumption $\leq 1 \text{ W}$. This is obtained for a supply voltage up to 27 V_{DC} .
- For higher supply voltages (U_{max}): Insert a serial resistance (R_V) in order to limit the power consumption, see table below.

U _{max} [V]	R _V min
35	199 Ω
34	171 Ω
33	143 Ω
32	115 Ω
31	88 Ω
30	60 Ω
29	32 Ω
28	4 Ω
27	0 Ω

Class II, III, Div. 1 installation

Safety instructions: Installation



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- A Class II, III, Div. 1, Groups E-G
 B Process;
 Class II, III, Div. 1, Groups E-G
 1 Power supply
 2 PMD75B, PMD78B

- After aligning (rotating) the enclosure, retighten the fixing screw.
- In potentially explosive atmospheres: Do not open the connection compartment cover and the electronics compartment cover when energized.
- Before operation:
 - Screw in the cover all the way.
 - Tighten the securing clamp on the cover.
- Continuous service temperature of the connecting cable: $\geq T_a + 20\text{ K}$.
- 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.

**Class II, III, Div. 1,
Groups E, F, G**

- Install per National Electrical Code (NFPA70) or Canadian Electrical Code, Part I (C22.1), as applicable.
- Use wiring and sealing methods appropriate for the location.
- Use a dust-tight seal for wiring at the conduit/cable entry.
- Seal unused entries with approved 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. The metal sealing plugs supplied meet this requirement.
- WARNINGS: Keep covers tight when explosive atmosphere is present.

**Temperature
tables**

-  *Optional specification, ID Px, Rx = PB*
When using the weather protection cover: Reduce the admissible ambient temperature by 10 K.
- 
 - 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.
-  *Basic specification, Position 6 = K, N*
When using the stainless steel enclosure: Reduce the admissible ambient temperature by 5 K.

Device Type PMD75B

Maximum surface temperature	Process temperature range	Ambient temperature range
T100 °C	$-40\text{ °C} \leq T_p \leq +100\text{ °C}$	$-40\text{ °C} \leq T_a \leq +65\text{ °C}$

Device Type PMD78B

Maximum surface temperature	Process temperature range	Ambient temperature range
T100 °C	$-40\text{ °C} \leq T_p \leq +400\text{ °C}$	$-40\text{ °C} \leq T_a \leq +70\text{ °C}$

Connection data

Basic specification, Position 3, 4 = BA, BB, BC

Power supply	
Channel 1 $U \leq 35 V_{DC}$ $P \leq 1 W$	Channel 2 (only BB, BC) $U \leq 35 V_{DC}$ $P \leq 1 W$

Basic specification, Position 3, 4 = DA

Power supply
$U \leq 32 V_{DC}$ $P \leq 0.7 W$

Basic specification, Position 3, 4 = FA

Power supply
$U \leq 15 V_{DC}$ $P \leq 0.7 W$

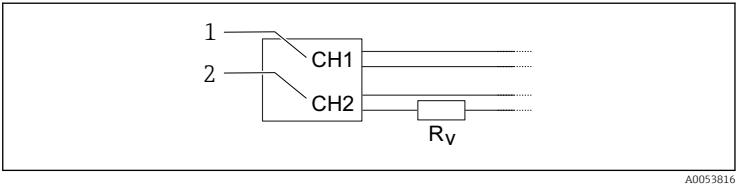
In connection with: Basic specification, Position 5 = N
Installation according to the specifications of FHX50B.



Only the type of protection suitable for the device shall be connected!

Serial resistance (R_V)

Basic specification, Position 3, 4 = BC (only channel 2)



- 1 4 to 20 mA
- 2 Switch output

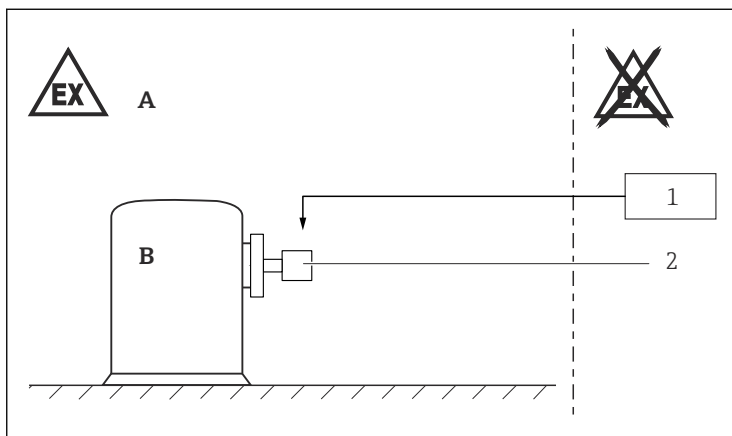
The power consumption have to be limited for certain applications.

- Recommended: Power consumption $\leq 1 W$. This is obtained for a supply voltage up to $27 V_{DC}$.
- For higher supply voltages (U_{max}): Insert a serial resistance (R_V) in order to limit the power consumption, see table below.

U _{max} [V]	R _v min
35	199 Ω
34	171 Ω
33	143 Ω
32	115 Ω
31	88 Ω
30	60 Ω
29	32 Ω
28	4 Ω
27	0 Ω

Class I, Div. 2 installation

Safety instructions: Installation



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- A Class I, Div. 2, Groups A-D
 B Process;
 Class I, Div. 2, Groups A-D
 1 Power supply
 2 PMD75B, PMD78B

- After aligning (rotating) the enclosure, retighten the fixing screw.
- In potentially explosive atmospheres: Do not open the connection compartment cover and the electronics compartment cover when energized.
- Before operation:
 - Screw in the cover all the way.
 - Tighten the securing clamp on the cover.
- Continuous service temperature of the connecting cable: $\geq T_a + 20\text{ K}$.
- 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.

Class I, Div. 2, Groups A, B, C, D

- Install per National Electrical Code (NFPA70) or Canadian Electrical Code, Part I (C22.1), as applicable.
- Use wiring and sealing methods appropriate for the location.
- The device is a nonincendive (NI) electrical equipment per UL121201 and CSA C22.2 No. 213.
- Enclosure is not required to be explosionproof/flameproof when installed in Class I, Division 2 locations.
- WARNINGS: Substitution of components may impair suitability for hazardous locations. Do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous.

Basic specification, Position 5 = N

When prepared for use with an approved remote display FHX50B, remote display is suitable for Class I, Division 2 locations only and connection between transmitter enclosure and remote display is nonincendive field wiring.

Process seals

Device Type PMD75B

- The device is rated Single Seal in accordance with UL122701 and does not require the use of an external secondary process seal.
- The Single Seal rating is valid for a maximum pressure of up to 420 bar and a maximum process temperature (T_p) up to 100 °C.

Device Type PMD78B

- The device is rated Single Seal in accordance with UL122701 and does not require the use of an external secondary process seal.
- The Single Seal rating is valid for a maximum pressure of up to 420 bar and a maximum process temperature (T_p) up to 400 °C.



- Limitation of the Maximum Working Pressure (MWP) for each device is marked on the nameplate and must not be exceeded! This value may be less than 420 bar.
- Limitation of the maximum process temperature (T_p) with regards to the device options, temperature code rating and maximum ambient temperature as specified in the "Temperature tables" section of this document must be considered!
- Verify the chemical compatibility of the process fluid with the process seal material (see field "Mat." on the nameplate)!

Temperature tables

-  *Optional specification, ID Px, Rx = PB*
When using the weather protection cover: Reduce the admissible ambient temperature by 10 K.
- 
 - 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	$-40\text{ °C} \leq T_p \leq +80\text{ °C}$	$-40\text{ °C} \leq T_a \leq +60\text{ °C}$
T4	$-40\text{ °C} \leq T_p \leq +100\text{ °C}$	$-40\text{ °C} \leq T_a \leq +60\text{ °C}$
	$-40\text{ °C} \leq T_p \leq +85\text{ °C}$	$-40\text{ °C} \leq T_a \leq +65\text{ °C}$

Device Type PMD78B

Temperature class	Process temperature range	Ambient temperature range
T6	$-40\text{ °C} \leq T_p \leq +80\text{ °C}$	$-40\text{ °C} \leq T_a \leq +60\text{ °C}$
T4	$-40\text{ °C} \leq T_p \leq +130\text{ °C}$	$-40\text{ °C} \leq T_a \leq +70\text{ °C}$
T3	$-40\text{ °C} \leq T_p \leq +190\text{ °C}$	$-40\text{ °C} \leq T_a \leq +70\text{ °C}$
T2	$-40\text{ °C} \leq T_p \leq +290\text{ °C}$	$-40\text{ °C} \leq T_a \leq +70\text{ °C}$
T1	$-40\text{ °C} \leq T_p \leq +400\text{ °C}$	$-40\text{ °C} \leq T_a \leq +70\text{ °C}$

Connection data

Basic specification, Position 3, 4 = BA, BB, BC

Power supply	
Channel 1 $U \leq 35\text{ V}_{DC}$ $P \leq 1\text{ W}$	Channel 2 (only BB, BC) $U \leq 35\text{ V}_{DC}$ $P \leq 1\text{ W}$

Basic specification, Position 3, 4 = DA

Power supply
$U \leq 32\text{ V}_{DC}$ $P \leq 0.7\text{ W}$

Basic specification, Position 3, 4 = FA

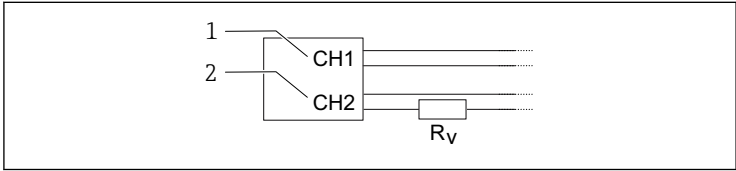
Power supply
$U \leq 15\text{ V}_{\text{DC}}$ $P \leq 0.7\text{ W}$

In connection with: *Basic specification, Position 5 = N*
Installation according to the specifications of FHX50B.

 Only the type of protection suitable for the device shall be connected!

Serial resistance (R_V)

Basic specification, Position 3, 4 = BC (only channel 2)



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- 1 4 to 20 mA
- 2 Switch output

The power consumption have to be limited for certain applications.

- Recommended: Power consumption $\leq 1\text{ W}$. This is obtained for a supply voltage up to 27 V_{DC} .
- For higher supply voltages (U_{max}): Insert a serial resistance (R_V) in order to limit the power consumption, see table below.

$U_{\text{max}}\text{ [V]}$	$R_V\text{ min}$
35	199 Ω
34	171 Ω
33	143 Ω
32	115 Ω
31	88 Ω
30	60 Ω
29	32 Ω
28	4 Ω
27	0 Ω



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