

Safety Instructions

Cerabar PMC51B, PMP51B

ATEX, IECEx: Ex ta/tb IIIC Txxx°C Da/Db
Ex tb IIIC Txxx°C Db



Cerabar PMC51B, PMP51B

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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 -> Downloads -> Manuals and Datasheets -> Type: Ex Safety Instruction (XA) -> Text Search: ...
- In the Device Viewer: 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:

PMC51B
BA02009P/00, TI01506P/00
PMP51B
BA02011P/00, TI01508P/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

Manufacturer's certificates

EU Declaration of Conformity

Declaration Number:
EU_01084

The EU Declaration of Conformity is available:
In the download area of the Endress+Hauser website:
www.endress.com -> Downloads -> Declaration -> Type: EU Declaration -> Product Code: ...

EU type-examination certificate

Certificate number:
DEKRA 22ATEX0051 X

List of applied standards: See EU Declaration of Conformity.

IEC Declaration of Conformity

Certificate number:
IECEX DEK 22.0037 X

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

- IEC 60079-0 : 2017
- IEC 60079-31 : 2013

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

PMx51B	–	*****	+	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: Cerabar



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

PMC51B, PMP51B

Basic specifications

Position 1, 2 (Approval)		
Selected option		Description
PMC51B	BG	ATEX II 1/2 G Ex ta/tb IIIC T _{xxx} °C Da/Db
PMP51B		ATEX II 2 D Ex tb IIIC T _{xxx} °C Db IECEX Ex ta/tb IIIC T _{xxx} °C Da/Db IECEX Ex tb IIIC T _{xxx} °C Db

Position 3, 4 (Output)		
Selected option		Description
PMC51B	BA	2-wire, 4-20 mA HART
PMP51B	DA	2-wire, PROFIBUS PA
	FA	2-wire, PROFINET, 10Mbit/s (APL)

Position 5 (Display, Operation)		
Selected option		Description
PMC51B	M	Prepared for display FHX50B + Gland M20
PMP51B	N	Prepared for display FHX50B + Thread NPT1/2
	O	Prepared for display FHX50B + Thread M20

Position 6 (Housing, Material)		
Selected option		Description
PMC51B	B	Single compartment; Alu, coated
PMP51B	J	Dual compartment; Alu, coated

Position 7 (Electrical Connection)		
Selected option		Description
PMC51B	B	Gland M20, brass nickel plated, IP66/68 NEMA Type 4X/6P
PMP51B	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

Position 10 (Diaphragm Seal Type)		
Selected option		Description
PMP51B	G	Temperature isolator
	M m capillary, 316L
	N m capillary, PVC>316L
	O m capillary, PTFE>316L
	R ft capillary, 316L
	S ft capillary, PVC>316L
	T ft capillary, PTFE>316L

Optional specifications

No options specific to hazardous locations are available.

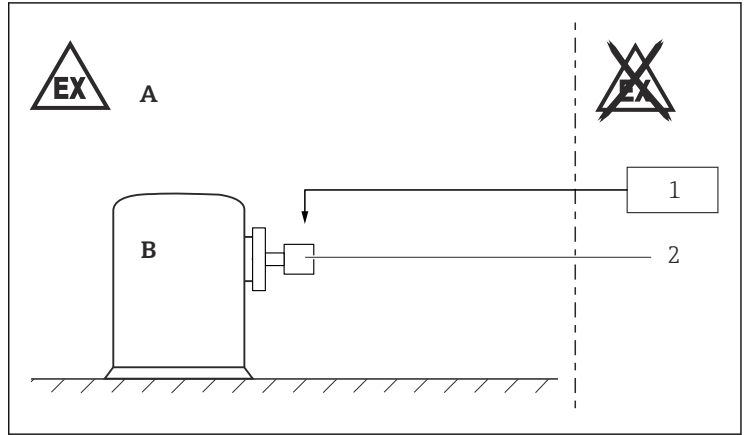
**Safety
instructions:
General**

- 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)
- 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**

- 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.

Safety instructions: Installation



A0041997

- A Zone 21, Electronic
 B Zone 20 or Zone 21, Process
 1 Power supply
 2 PMC51B, PMP51B

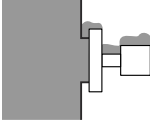
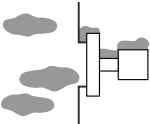
- After aligning (rotating) the enclosure, retighten the fixing screw.
- Do not open in a potentially explosive dust atmosphere.
- Seal the cable entry or piping tight (see protection type of enclosure in the "Temperature tables" chapter).
- Before operation:
 - Screw in the cover all the way.
 - Tighten the securing screw on the cover.

Basic specification, Position 5 = N

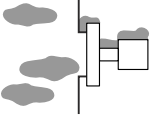
Observe the requirements according to IEC/EN 60079-14 for conduit systems and the wiring- and installation instructions of the suitable Safety Instructions (XA). In addition, observe national regulations and standards for conduit systems.

Permitted ambient conditions

Ex ta/tb 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 tb IIIC Txxx°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.



Protection type of enclosure: IP66/67

Device Type PMC51B

Ex ta/tb IIIC T₂₀₀ 125°C Da/Db

Ex tb IIIC T_L 125°C Db

Maximum surface temperature	Process temperature range	Ambient temperature range
T125 °C	$-40\text{ °C} \leq T_p \leq +70\text{ °C}$	$-40\text{ °C} \leq T_a \leq +65\text{ °C}$
	$-40\text{ °C} \leq T_p \leq +100\text{ °C}$	$-40\text{ °C} \leq T_a \leq +60\text{ °C}$
	$-40\text{ °C} \leq T_p \leq +125\text{ °C}$	$-40\text{ °C} \leq T_a \leq +55\text{ °C}$

Specific conditions of use:

- The surface temperature is
 - for equipment protection level (EPL) Da: T₂₀₀ 125 °C (with 200 mm dust deposit)
 - and equipment protection level (EPL) Db: T_L 125 °C (with dust accumulation T_L)
- The surface temperature is for equipment protection level (EPL) Db: T_L 125 °C (with dust accumulation T_L)



T_L marking:

The assigned surface temperature without dust layer is the same.

Device Type PMP51B

Ex ta/tb IIIC T₂₀₀ 125°C Da/Db

Ex tb IIIC T_L 125°C Db

Maximum surface temperature	Process temperature range	Ambient temperature range
T125 °C	$-40\text{ °C} \leq T_p \leq +80\text{ °C}$	$-40\text{ °C} \leq T_a \leq +65\text{ °C}$
	$-40\text{ °C} \leq T_p \leq +100\text{ °C}$	$-40\text{ °C} \leq T_a \leq +60\text{ °C}$
	$-40\text{ °C} \leq T_p \leq +125\text{ °C}$	$-40\text{ °C} \leq T_a \leq +50\text{ °C}$

Basic specification, Position 10 = G

Maximum surface temperature	Process temperature range	Ambient temperature range
T125 °C	$-40\text{ °C} \leq T_p \leq +190\text{ °C}$	$-40\text{ °C} \leq T_a \leq +60\text{ °C}$
	$-40\text{ °C} \leq T_p \leq +290\text{ °C}$	$-40\text{ °C} \leq T_a \leq +55\text{ °C}$
	$-40\text{ °C} \leq T_p \leq +400\text{ °C}$	$-40\text{ °C} \leq T_a \leq +50\text{ °C}$

Basic specification, Position 10 = M, N, O, R, S, T

Maximum surface temperature	Process temperature range	Ambient temperature range
T125 °C	$-40\text{ °C} \leq T_p \leq +190\text{ °C}$	$-40\text{ °C} \leq T_a \leq +70\text{ °C}$
	$-40\text{ °C} \leq T_p \leq +290\text{ °C}$	
	$-40\text{ °C} \leq T_p \leq +400\text{ °C}$	

Specific conditions of use:

- The surface temperature is
 - for equipment protection level (EPL) Da: T_{200} 125 °C (with 200 mm dust deposit)
 - and equipment protection level (EPL) Db: T_L 125 °C (with dust accumulation T_L)
- The surface temperature is for equipment protection level (EPL) Db: T_L 125 °C (with dust accumulation T_L)



T_L marking:

The assigned surface temperature without dust layer is the same.

Connection data*Basic specification, Position 3 = BA*

Power supply
$U \leq 35\text{ V}_{DC}$ $P \leq 1\text{ W}$

Basic specification, Position 3 = DA

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

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

U ≤ 15 V_{DC}
P ≤ 0.7 W

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



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

Cable entry: Connection compartment**Ex tb**

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

Thread	Clamping range	Material	Sealing insert	O-ring
M20x1,5	∅ 8 to 10.5 mm ¹⁾ ∅ 6.5 to 13 mm ²⁾	Ms, nickel-plated	Silicone	EPDM (∅ 17x2)

- 1) Standard
2) Separate clamping inserts available

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

Thread	Clamping range	Material	Sealing insert	O-ring
M20x1,5	∅ 7 to 12 mm	1.4404	NBR	EPDM (∅ 17x2)



- 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.
- The cable glands are suitable for a low risk of mechanical danger (4 Joule) and must be mounted in a protected position if larger impact energy levels are expected.
- To maintain the ingress protection of the enclosure: Install the enclosure cover, cable glands and blind plugs correctly.



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