

# Safety Instructions

## Cerabar PMC51B, PMP51B

Ex ia IIIC T<sub>200</sub> xxx°C Da/Db

Ex ia IIIC T<sub>L</sub> xxx°C Db



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# Cerabar PMC51B, PMP51B

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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](http://www.endress.com/Deviceviewer)

(enter the serial number from the nameplate).

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

PMC51B

BA02009P, TI01506P

PMP51B

BA02011P, TI01508P

**Supplementary documentation**

Explosion protection brochure: CP00021Z

The explosion protection brochure is available on the Internet:

[www.endress.com/Downloads](http://www.endress.com/Downloads)

**Certificates and declarations****Certificate of Conformity TP TC 012/2011**

Inspection authority:

LLP "T-Standard" (TOO/ЖИIC "Т-Стандарт")

Certificate number:

EA9C KZ 7500525.01.01.01734

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

- GOST 31610.0-2019 (IEC 60079-0:2017)
- GOST 31610.11-2014 (IEC 60079-11:2011)

**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

|                  |   |                           |   |                              |
|------------------|---|---------------------------|---|------------------------------|
| PMx51B           | – | *****                     | + | A*B*C*D*E*F*G*..             |
| (Device<br>type) |   | (Basic<br>specifications) |   | (Optional<br>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: 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                   | GH | EAC Ex ia IIIC T <sub>200</sub> xxx°C Da/Db |
| PMP51B                   |    | EAC Ex ia IIIC T <sub>L</sub> xxx°C Db      |

| Position 3, 4 (Output) |    |                                                        |
|------------------------|----|--------------------------------------------------------|
| Selected option        |    | Description                                            |
| PMC51B                 | BA | 2-wire, 4-20 mA HART                                   |
| PMP51B                 | BB | 2-wire, 4-20 mA HART, switch output <sup>1)</sup>      |
|                        | BC | 2-wire, 4-20 mA HART + 4 to 20 mA analog <sup>1)</sup> |
|                        | DA | 2-wire, PROFIBUS PA                                    |
|                        | FA | PROFINET over Ethernet-APL, 10Mbit/s                   |

1) Only in connection with Position 6 = J

| 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

| ID Px, Rx (Accessory Enclosed) |    |                                              |
|--------------------------------|----|----------------------------------------------|
| Selected option                |    | Description                                  |
| PMC51B                         | PA | Weather protection cover, 316L <sup>1)</sup> |
| PMP51B                         |    |                                              |

1) Only in connection with Position 6 = J

### 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.

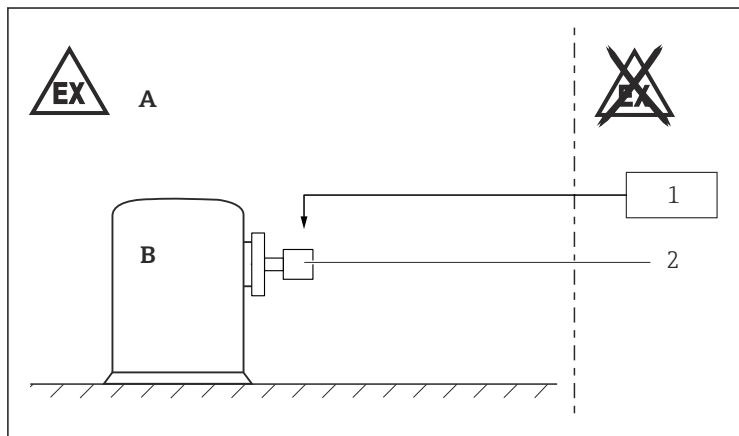
**Safety instructions:**  
**Specific conditions of use**

- 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 ( $\leq 0.5$  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**



A0041997

- A Zone 21, Electronic
- B Zone 20 or Zone 21, Process
- 1 Associated intrinsically safe power supply units
- 2 PMC51B, PMP51B

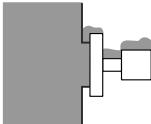
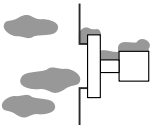
- After aligning (rotating) the enclosure, retighten the fixing screw.
- Continuous service temperature of the connecting cable:  $\geq T_a + 20\text{ K}$ .
- Perform the following to achieve the degree of protection IP66/67:
  - Screw the cover tight.
  - Mount the cable entry correctly.
- Seal unused 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.
- 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.

Basic specification, Position 5 = N

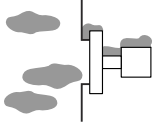
Observe the requirements according to IEC/EN 60079-14 for conduit systems and the wiring and installation instructions of the suitable Safety Instructions (XA). In addition, observe national regulations and standards for conduit systems.

Permitted ambient conditions

Ex ia IIIC T<sub>200</sub> xxx°C Da/Db

| Process<br>Zone 20                                |                                                                                     | Enclosure<br>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<sub>L</sub> xxx°C Db

| Process<br>Zone 21                                              |                                                                                   | Enclosure<br>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<sub>rms</sub>.

Potential equalization

Integrate the device into the local potential equalization.

Overvoltage protection

Only device type *PMC51B*

For installations which require overvoltage protection to comply with national regulations or standards, install the device with suitable external overvoltage protection.

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 ia IIC T<sub>200</sub> 135 °C Da/Db  
Ex ia IIC T<sub>L</sub> 135 °C Db

| Temperature class | Process temperature T <sub>p</sub><br>(process) | Ambient temperature T <sub>a</sub> (ambient) |               |
|-------------------|-------------------------------------------------|----------------------------------------------|---------------|
|                   |                                                 | Basic specification, Position 3, 4 =         |               |
|                   |                                                 | BA, DA, FA                                   | BB, BC        |
| T135 °C           |                                                 | Basic specification, Position 6 =            |               |
|                   |                                                 | B, J                                         | J             |
|                   |                                                 | -40 to +60 °C                                | -40 to +55 °C |
|                   |                                                 | -40 to +60 °C                                | -40 to +55 °C |
|                   | +80 °C                                          | -40 to +60 °C                                | -40 to +55 °C |
|                   | +100 °C                                         | -40 to +55 °C                                | -40 to +50 °C |
|                   | +125 °C                                         | -40 to +50 °C                                | -40 to +45 °C |

Specific conditions of use:

- The surface temperature is
  - for equipment protection level (EPL) Da: T<sub>200</sub> 135 °C (with 200 mm dust deposit)
  - and equipment protection level (EPL) Db: T<sub>L</sub> 135 °C (with dust accumulation T<sub>L</sub>)
- The surface temperature is for equipment protection level (EPL) Db: T<sub>L</sub> 135 °C (with dust accumulation T<sub>L</sub>)

 T<sub>L</sub> marking:  
The assigned surface temperature without dust layer is the same.

Device Type **PMP51B**

Ex ia IIC T<sub>200</sub> 125 °C Da/Db  
Ex ia IIC T<sub>L</sub> 125 °C Db

| Temperature class | Process temperature T <sub>p</sub><br>(process) | Ambient temperature T <sub>a</sub> (ambient) |               |
|-------------------|-------------------------------------------------|----------------------------------------------|---------------|
|                   |                                                 | Basic specification, Position 3, 4 =         |               |
|                   |                                                 | BA, DA, FA                                   | BB, BC        |
| T125 °C           |                                                 | Basic specification, Position 6 =            |               |
|                   |                                                 | B, J                                         | J             |
|                   |                                                 | -40 to +65 °C                                | -40 to +55 °C |
|                   |                                                 | -40 to +60 °C                                | -40 to +55 °C |
|                   | +80 °C                                          | -40 to +60 °C                                | -40 to +55 °C |
|                   | +100 °C                                         | -40 to +55 °C                                | -40 to +50 °C |
|                   | +125 °C                                         | -40 to +50 °C                                | -40 to +45 °C |

Basic specification, Position 10 = G

| Temperature class | Process temperature T <sub>p</sub><br>(process) | Ambient temperature T <sub>a</sub> (ambient)       |               |
|-------------------|-------------------------------------------------|----------------------------------------------------|---------------|
|                   |                                                 | Basic specification, Position 3, 4 =<br>BA, DA, FA |               |
|                   |                                                 | BB, BC                                             |               |
| T125 °C           |                                                 | Basic specification, Position 6 =<br>B, J          |               |
|                   |                                                 | J                                                  |               |
|                   |                                                 | -40 to +70 °C                                      | -40 to +60 °C |
|                   |                                                 | -40 to +60 °C                                      | -40 to +60 °C |
|                   |                                                 | -40 to +60 °C                                      | -40 to +55 °C |
|                   |                                                 | -40 to +60 °C                                      | -40 to +55 °C |
|                   |                                                 | -40 to +55 °C                                      | -40 to +50 °C |
|                   |                                                 | -40 to +50 °C                                      |               |

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

| Temperature class | Process temperature T <sub>p</sub><br>(process) | Ambient temperature T <sub>a</sub> (ambient)       |               |
|-------------------|-------------------------------------------------|----------------------------------------------------|---------------|
|                   |                                                 | Basic specification, Position 3, 4 =<br>BA, DA, FA |               |
|                   |                                                 | BB, BC                                             |               |
| T125 °C           |                                                 | Basic specification, Position 6 =<br>B, J          |               |
|                   |                                                 | J                                                  |               |
|                   |                                                 | -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 |
|                   |                                                 | -40 to +70 °C                                      | -40 to +70 °C |

Specific conditions of use:

- The surface temperature is
  - for equipment protection level (EPL) Da: T<sub>200</sub> 125 °C (with 200 mm dust deposit)
  - and equipment protection level (EPL) Db: T<sub>L</sub> 125 °C (with dust accumulation T<sub>L</sub>)
- The surface temperature is
  - for equipment protection level (EPL) Db: T<sub>L</sub> 125 °C (with dust accumulation T<sub>L</sub>)



T<sub>L</sub> marking:  
The assigned surface temperature without dust layer is the same.

Connection data

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

| Power supply                                                                                                                              |                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Channel 1<br><br>$U_i \leq 30\text{ V}_{DC}$<br>$I_i \leq 300\text{ mA}$<br>$P_i \leq 1\text{ W}$<br>$C_i \leq 10\text{ nF}$<br>$L_i = 0$ | Channel 2 (only BB, BC)<br><br>$U_i \leq 30\text{ V}_{DC}$<br>$I_i \leq 300\text{ mA}$<br>$P_i \leq 1\text{ W}$<br>$C_i \leq 10\text{ nF}$<br>$L_i = 0$ |

Basic specification, Position 3, 4 = DA

| Power supply                                                                                                                              |                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| FISCO<br><br>$U_i \leq 17.5\text{ V}_{DC}$<br>$I_i \leq 380\text{ mA}$<br>$P_i \leq 5.32\text{ W}$<br>$C_i \leq 5\text{ nF}$<br>$L_i = 0$ | Entity<br><br>$U_i \leq 24\text{ V}_{DC}$<br>$I_i \leq 300\text{ mA}$<br>$P_i \leq 1.2\text{ W}$<br>$C_i \leq 5\text{ nF}$<br>$L_i = 0$ |

Basic specification, Position 3, 4 = FA

| Power supply                                                                                                                               |                                                                                                                                           |
|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 2-WISE<br><br>$U_i \leq 17.5\text{ V}_{DC}$<br>$I_i \leq 380\text{ mA}$<br>$P_i \leq 5.32\text{ W}$<br>$C_i \leq 5\text{ nF}$<br>$L_i = 0$ | Entity<br><br>$U_i \leq 17.5\text{ V}_{DC}$<br>$I_i \leq 300\text{ mA}$<br>$P_i \leq 1.2\text{ W}$<br>$C_i \leq 5\text{ nF}$<br>$L_i = 0$ |

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

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

| Thread  | Clamping range | Material          | Sealing insert | O-ring        |
|---------|----------------|-------------------|----------------|---------------|
| M20x1,5 | ø 8 to 10.5 mm | Ms, nickel-plated | Silicone       | EPDM (ø 17x2) |

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

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

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- 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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