

# Safety Instructions

## Micropilot FMR20B

Ex ia IIC T4 Ga  
Ex ia IIIB T135 °C Da



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# Micropilot FMR20B

## Table of contents

About this document ..... 4

Associated documentation ..... 4

Supplementary documentation ..... 4

Certificates and declarations ..... 4

Manufacturer address ..... 4

Extended order code ..... 4

Safety instructions: General ..... 6

Safety instructions: Specific conditions of use ..... 7

Safety instructions: Installation ..... 7

Temperature tables ..... 8

Connection data ..... 9

**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:

BA02364F

**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**

Certificate number:

Production Maulburg, Germany  
CPEx 25.2580 X

Production Itatiba, Brazil  
CPEx 25.2581 X

Production Greenwood, Indiana, USA  
CPEx 25.2582 X

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

- ABNT NBR IEC 60079-0:2020
- ABNT NBR IEC 60079-11:2013

**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

|                  |   |                           |   |                              |
|------------------|---|---------------------------|---|------------------------------|
| FMR20B           | – | *****                     | + | 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: Micropilot



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

FMR20B

Basic specifications

| Position 1, 2 (Approval) |    |                               |
|--------------------------|----|-------------------------------|
| Selected option          |    | Description                   |
| FMR20B                   | MA | INMETRO Ex ia IIC T4...T1 Ga  |
|                          | MK | INMETRO Ex ia IIIB T135 °C Da |

| Position 3, 4 (Output) |    |                      |
|------------------------|----|----------------------|
| Selected option        |    | Description          |
| FMR20B                 | BA | 2-wire, 4-20 mA HART |

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.
- 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.

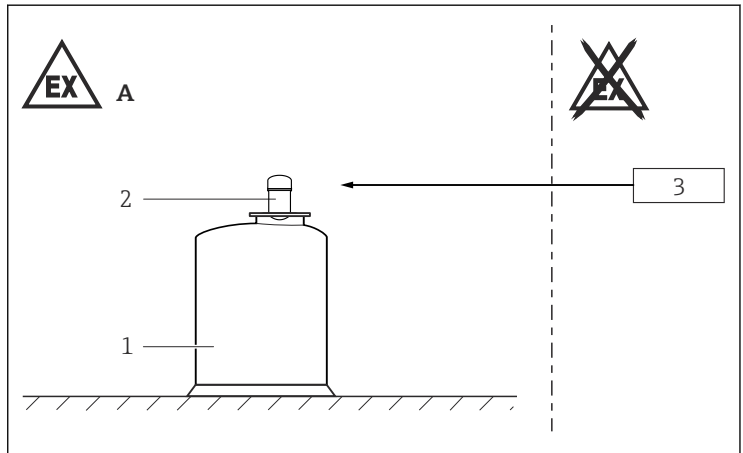
**Safety  
instructions:  
Specific  
conditions of use**

- 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.
- In the case of process connections made of polymeric material or with polymeric coatings, avoid electrostatic charging of the plastic surfaces.
- The process connection of the device must be installed in such a way that guarantees a sufficiently tight joint (IP66/67).
- It is essential for the device to use a power supply that is galvanically isolated from earth.
- When using an intrinsically safe barrier, the barrier must be connected to the same earth as the device.

**Ex ia IIIB**

The device corresponds to a low risk of mechanical danger.

**Safety  
instructions:  
Installation**



A0057606

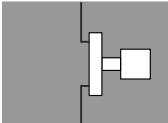
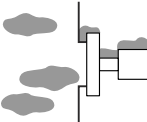


- 1 Tank; Zone 0, Zone 20  
2 Micropilot FMR20B  
3 Associated intrinsically safe power supply units

- 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.

Permitted ambient conditions

Ex ia IIIB T135 °C Da

| Process<br>Zone 20                                |                                                                                   | Enclosure<br>Zone 20                              |
|---------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------|
| Continuous dust submersion                        |  | Continuous dust submersion                        |
| Continuous explosive dust atmosphere and deposits |  | Continuous explosive dust atmosphere and deposits |

Intrinsic safety

The intrinsically safe input power circuit of the device is isolated from ground. The dielectric strength is at least 500 V<sub>rms</sub>.

Temperature tables

Ex ia IIC T4...T1 Ga

- 
- 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 maximum ambient temperature at the enclosure.

| Ambient and process temperature range |
|---------------------------------------|
| −40 °C ≤ T <sub>p</sub> ≤ +70 °C      |

Ex ia IIIB T135 °C Da



- The specified surface temperature takes into account all direct heat influences from process heat and self-heating at the enclosure.
- 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 maximum ambient temperature at the enclosure.

For detailed information see Technical Information.



Protection type of enclosure: IP66/68

| Maximum surface temperature |
|-----------------------------|
| 135 °C                      |

| Input parameters |        |         | Maximum permitted ambient or process temperature |
|------------------|--------|---------|--------------------------------------------------|
| 650 mW           | 28.9 V | 22.5 mA | −40 to 48 °C                                     |
| 594 mW           | 26.4 V | 22.5 mA | −40 to 52 °C                                     |
| 540 mW           | 24.0 V | 22.5 mA | −40 to 55 °C                                     |

Connection data

Ex ia IIC

| Power supply                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $U_i \leq 30\text{ V}_{DC}$<br>$I_i \leq 100\text{ mA}$<br>$P_i \leq 700\text{ mW}$<br>$C_i = 18\text{ nF}$<br>$L_i = 0$<br><br>Cable capacitance $C_c = 200\text{ pF/m}$<br>Cable inductance $L_c = 1\text{ }\mu\text{H/m}$ |

**Ex ia IIIB**

| Power supply                                                                                                                                                                                                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div>U<sub>I</sub> ≤ 30 V<sub>DC</sub><br/>I<sub>I</sub> ≤ 100 mA<br/>P<sub>I</sub> ≤ 650 mW<br/>C<sub>I</sub> = 18 nF<br/>L<sub>I</sub> = 0</div> <div>Cable capacitance C<sub>c</sub> = 200 pF/m<br/>Cable inductance L<sub>c</sub> = 1 μH/m</div> |

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

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