

# Safety Instructions

## Silopilot FMM20, FMM50

II 1/2 D Ex ta/tb IIIC T99°C Da/Db  
II 2 D Ex tb IIIC T99°C Db



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# Silopilot FMM20, FMM50

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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)



If not yet available, a translation into EU languages can be ordered.

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

- BA00286F (FMM50)
- BA00334F (FMM20)

**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****EU Declaration of Conformity**

Declaration Number:

EU\_01069

The EU Declaration of Conformity is available on the Internet:

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

**EU type-examination certificate**

Certification number:

BVS 05 ATEX E 049

List of applied standards: See EU Declaration of Conformity.

**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

FMM20/50 - \*\*\*\*\* - A\*B\*C\*D\*E\*F\*..  
*(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: Silopilot



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*

FMM20

*Basic specifications*

Position 1 (approval)		
Selected option		Description
FMM20	BA	ATEX II 1/2 D Ex ta/tb IIIC T99°C Da/Db ATEX II 2 D Ex tb IIIC T99°C Db

Position 5 (supply voltage)		
Selected option		Description
FMM20	1	90 to 253 V AC, 50/60 Hz
	3	20 to 28 V DC

Position 6 (output)		
Selected option		Description
FMM20	A	0/4 to 20 mA + 2x relays, adjustable
	C	0/4 to 20 mA + 4x relays, adjustable

Position 7 (ambient temperature)		
Selected option		Description
FMM20	D	-20 to +60 °C (-4 to +140 °F)
	E	-40 to +60 °C (-40 to +140 °F) + heater
	F	-20 to +60 °C (-4 to +140 °F) + extended climate resistance
	G	-40 to +60 °C (-40 to +140 °F) + heater + extended climate resistance

Position 8 (process temperature)		
Selected option		Description
FMM20	1	-20 to +70 °C (-4 to +158 °F)
	2	-20 to +150 °C (-4 to +302 °F)

*Optional specifications*

No options specific to hazardous locations are available.

*Device type*

FMM50

*Basic specifications*

Position 1 (approval)		
Selected option	Description	
FMM50	BA	ATEX II 1/2 D Ex ta/tb IIIC T99°C Da/Db ATEX II 2 D Ex tb IIIC T99°C Db

Position 6 (supply voltage)		
Selected option	Description	
FMM50	1	180 to 253 V AC, 50/60 Hz
	2	90 to 127 V AC, 50/60 Hz

Position 7 (output)		
Selected option	Description	
FMM50	A	0/4 to 20 mA + 2x relays, adjustable
	C	0/4 to 20 mA + 6x relays, adjustable

Position 8 (ambient temperature)		
Selected option	Description	
FMM50	A	-20 to +70 °C (-4 to +158 °F)
	B	-40 to +70 °C (-40 to +158 °F) + heater
	C	-20 to +70 °C (-4 to +158 °F) + extended climate resistance
	D	-40 to +70 °C (-40 to +158 °F) + heater + extended climate resistance

Position 9 (process temperature)		
Selected option	Description	
FMM50	1	-20 to +70 °C (-4 to +158 °F)
	2	-20 to +150 °C (-4 to +302 °F)
	3	-20 to +230 °C (-4 to +446 °F)

*Optional specifications*

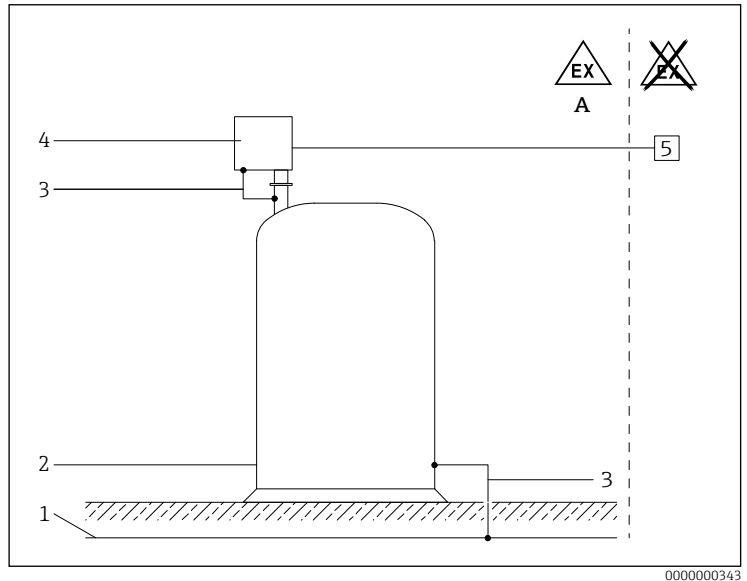
No options specific to hazardous locations are available.

- Safety instructions:**
- General**
- Staff must satisfy 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.
  - The device is intended for use in potentially explosive atmospheres as defined within the scope of IEC 60079-0 or equivalent national standards. If no explosive atmosphere is present or additional protective measures have been taken: Device can be operated according to the manufacturer's specifications.
  - Do not operate the device outside the specified electrical, thermal and mechanical parameters.
  - Use the device only in media to which the process-wetted materials are adequately resistant.
  - Avoid electrostatic charge:
    - from plastic surfaces (e.g. enclosure, special paint, additional labels attached, ..)
    - from insulated capacitors (e.g. insulated metallic labels)
  - Modifications to the device may compromise explosion protection and must be carried out by staff authorized by Endress+Hauser.
  - The suitability of the classification must be checked for the application.
  - Degree of protection after installing and connection:
    - With closed enclosure: IP67
    - With closed enclosure and with the use of the external start button: IP65

- Safety instructions:**
- Specific conditions of use**
- Permitted ambient temperature range at electronics enclosure:
    - FMM20: -20 to +60 °C / -40 to +60 °C with optional heater
    - FMM50: -20 to +70 °C / -40 to +70 °C with optional heater
  - Permitted process temperature range:
    - FMM20: -20 to +150 °C
    - FMM50: -20 to +230 °C
  - Permitted process temperature above device flange:
    - FMM20: -20 to +60 °C / -40 to +60 °C with optional heater
    - FMM50: -20 to +70 °C / -40 to +70 °C with optional heater



## Safety instructions: Installation



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- A Zone 21  
 1 Potential equalization  
 2 Vessel (Zone 20, Zone 21)  
 3 Potential matching line  
 4 FMM20, FMM50  
 5 Power and signal circuits

- Pay attention to the installation and safety instructions in the Operating Instructions.
- Observe maximum process conditions in accordance with associated Operating Instructions of the manufacturer.
- 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.
- Observe the maximum thermal load of the cables and lines introduced.
- Only use the cable gland for the connection of permanently installed cables and lines; the operator must ensure appropriate strain relief.
- The cable gland is to be mounted, so that it is protected against mechanical damage (degree of the mechanical risk "low", impact energy: 4 Joule, as per EN 60079-0).
- The device may only be operated when the enclosure is closed.
- Observe a waiting time of 15 minutes before opening the electronics compartment after switching off the power supply.
- The operator must ensure that product cone discharges do not occur.
- The device must be integrated into the local potential matching line.

- Safety instructions:**
- Zone 20**
- In the event of potentially explosive vapor/air mixtures, operate the device only under atmospheric conditions.
  - If no potentially explosive mixtures are present, or if additional protective measures have been taken, the device may also be operated under non-atmospheric conditions in accordance with the manufacturer's specifications.
  - Only use the device in media to which the wetted materials have sufficient durability.

## Connection data

### Device type FMM20

Terminal	Connection data
1.1, 1.2, 1.3 (supply voltage)	$U \leq 253 \text{ V AC}$ $U \leq 28 \text{ V DC}$
2.1, 2.2, 2.3 (relay 1) 2.4, 2.5, 2.6 (relay 2) 2.7, 2.8, 2.9 (relay 3, optional) 2.10, 2.11, 2.12 (relay 4, optional)	$U \leq 250 \text{ V AC} / 6 \text{ A}$
3.9, 3.10 (4 to 20 mA)	$R_L \leq 600 \Omega$
3.4, 3.5 (optocoupler output)	$U \leq 30 \text{ V DC}$ $I \leq 10 \text{ mA}$
3.1, 3.3, 3.6, 3.8 (signal inputs, active)	$U \leq 24 \text{ V DC}$

### Device type FMM50

Terminal	Connection data
1.1, 1.2, 1.3 (supply voltage)	FMM50-*****1*: $U \leq 253 \text{ V AC}$ FMM50-*****2*: $U \leq 127 \text{ V AC}$
2.1, 2.2, 2.3 (relay 1) 2.4, 2.5, 2.6 (relay 2) 2.7, 2.8, 2.9 (relay 3, optional) 2.10, 2.11, 2.12 (relay 4, optional) 2.13, 2.14, 2.15 (relay 5, optional) 2.16, 2.17, 2.18 (relay 6, optional)	$U \leq 250 \text{ V AC} / 6 \text{ A}$
3.9, 3.10 (4 to 20 mA)	$R_L \leq 600 \Omega$
3.1, 3.2, 3.3, 3.4 (signal inputs, active)	$U \leq 24 \text{ V DC}$



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