

# Safety Instructions

## Prosonic M

### FMU40, FMU41, FMU42, FMU44

4-20 mA HART, PROFIBUS PA,  
FOUNDATION Fieldbus

2Ex ec IIC T6...T4 Gc X  
Ex tc IIIC T95°C...T100°C Dc X





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**About this document**

This document has been translated into several languages. Legally determined is solely the English source text.

**Associated documentation**

This document is an integral part of the following Operating Instructions:

HART:

BA00237F/00

PROFIBUS PA:

BA00238F/00

FOUNDATION Fieldbus:

BA00239F/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](http://www.endress.com) -> Downloads -> Brochures and Catalogs -> Text Search: CP00021Z
- On the CD for devices with CD-based documentation

**Manufacturer's certificates****Certificate of Conformity TP TC 012/2011**

Inspection authority:

LLC NANIO CCVE (ООО «НАНИО ЦСВЭ»)

Certificate number:

EAЭС RU C-DE.AA87.B.00982/22

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

- GOST 31610.0-2014 (IEC 60079-0:2011)
- GOST 31610.7-2017 (IEC 60079-7:2015)
- GOST IEC 60079-31-2013

**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

FMU4x	-	*****	+	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: Prosonic M



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*

FMU40, FMU41, FMU42, FMU44

*Basic specifications*

Position 1 (Approval)		
Selected option		Description
FMU4x	P	EAC 2Ex ec IIC T6...T4 Gc X
	W	EAC Ex tc IIIC T95°C...T100°C Dc X

Position 3 (Power Supply, Output)		
Selected option		Description
FMU4x	B, J, P	2-wire; 4-20mA HART
	D, K, Q	2-wire; PROFIBUS PA
	F, L, R	2-wire; FOUNDATION Fieldbus
	G, M, S	4-wire 90-250VAC; 4-20 mA HART
	H, N, T	4-wire 10,5-32VDC; 4-20 mA HART

Position 4 (Operation)		
Selected option		Description
FMU4x	1	W/o display, via communication
	2	4-line display VU331, Envelope curve display on site
	3 <sup>1)</sup>	Prepared for FHX40, remote display (accessory)

1) Only in connection with Position 5 = A

Position 5 (Housing)		
Selected option		Description
FMU4x	A	F12 Alu, coated, IP68 NEMA6P
	C	T12 Alu, coated, IP68 NEMA6P, separate conn. compartment
	D	T12 Alu, coated, IP68 NEMA6P + OVP, separate conn. compartment, OVP = overvoltage protection

*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.
- 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.
- Avoid electrostatic charging:
  - Of plastic surfaces (e.g. enclosure, sensor element, special varnishing, attached additional plates, ..)
  - Of isolated capacities (e.g. isolated metallic plates)

**Safety instructions:**  
**Special conditions**

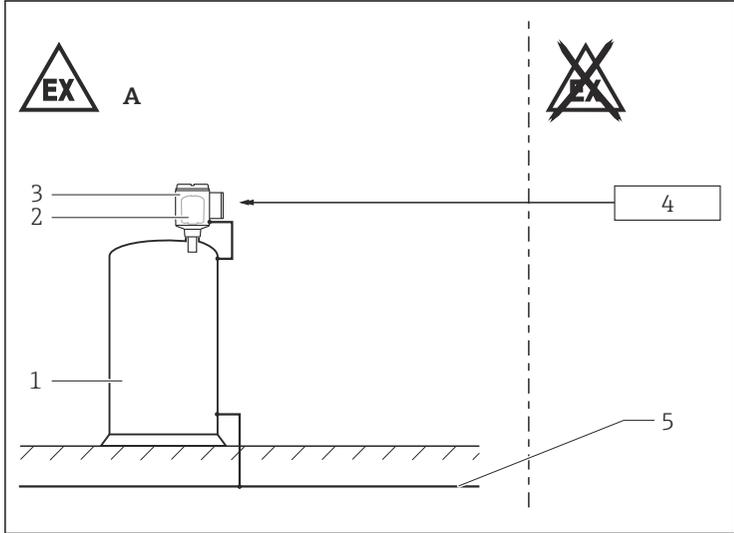
Permitted ambient temperature range at the electronics enclosure:

Zone 2:  $-25\text{ °C} \leq T_a \leq +70\text{ °C}$

Zone 22:  $-40\text{ °C} \leq T_a \leq +80\text{ °C}$

- Observe the information in the temperature tables.
- 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 ( $\leq 0.5\text{ m}$ ) generating strong electrostatic charges.

## Safety instructions: Installation



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- 1 Zone 2  
 1 Tank, hazardous area Zone 2  
 2 Electronic insert  
 3 Enclosure  
 4 Supply depending upon equipment version  
 5 Local potential equalization

- Continuous service temperature of the connecting cable:  $\geq T_a + 5 \text{ K}$ .
- In potentially explosive atmospheres: Do not disconnect electrical connections when energized.
- Devices which are supplied by a plug (e.g. PROFIBUS PA or FOUNDATION Fieldbus): Do not loosen or detach the plug as long as power is switched on.
- The maximum voltage  $U_m$  of the power circuit or the signal circuit must not be exceeded if an external display (e.g. FHX40) or a service adapter (e.g. Commubox FXA193) is connected to the device.
- The following components of the device correspond to the low risk of mechanical danger. Mount in a protected position if installed within a hazardous location area rated Zone 2 or Zone 22 if mechanical danger is expected:
  - Cover with inspection window
  - Plug connectors of devices for supply/communication

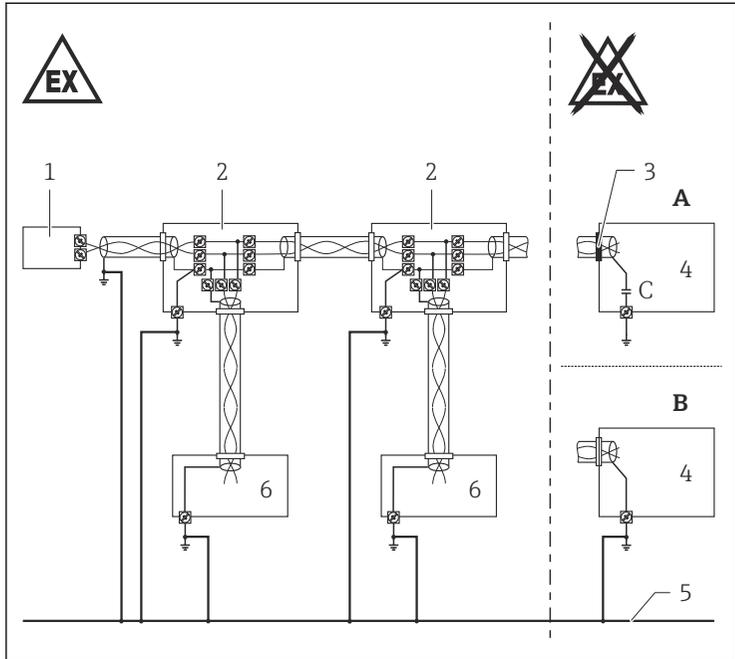
*Basic specification, Position 5 = A*

- The input power circuit or the signal circuit in case of 4-wire versions of the device is isolated from ground and has a dielectric strength of at least  $500 V_{\text{rms}}$ .
- Option:
  - Remote display, e.g. FHX40 (Observe Safety Instructions)
  - Service interface: Commubox with associated ToF cable (Observe Safety Instructions)

*Basic specification, Position 5 = C, D*

- Do not open the terminal compartment when energized.
- Option:
  - Service interface: Commubox with associated ToF cable (Observe Safety Instructions)

## PROFIBUS PA, FOUNDATION Fieldbus



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A Version 1: Use small capacitors (e.g. 1 nF, 1 500 V dielectric strength, ceramic).

Total capacitance connected to the screen may not exceed 10 nF.

B Version 2

1 Terminating resistor

2 Distributor/T box

3 Screen insulated

4 Supply unit/Segment coupler

5 Potential equalization (secured in high degree)

6 Field device

## Temperature tables

### Application in gas

Device type FMU40

Temperature class	Ambient temperature T <sub>a</sub> (ambient)		
	Basic specification, Position 3 =		
	B, J, P with Position 5 = A	B, J, P with Position 5 = C, D	D, K, Q, F, L, R
T6	-20 to +50 °C	-20 to +50 °C	-20 to +50 °C
T5	-20 to +70 °C	-20 to +65 °C	-20 to +65 °C
T4	-20 to +70 °C	-20 to +70 °C	-20 to +70 °C

Device type FMU41, FMU42, FMU44

Temperature class	Ambient temperature T <sub>a</sub> (ambient)		
	Basic specification, Position 3 =		
	B, J, P with Position 5 = A	B, J, P with Position 5 = C, D	D, K, Q, F, L, R
T6	-25 to +50 °C	-25 to +50 °C	-25 to +50 °C
T5	-25 to +70 °C	-25 to +65 °C	-25 to +65 °C
T4	-25 to +70 °C	-25 to +70 °C	-25 to +70 °C

### Application in dust

Device type FMU40, FMU41

Basic specification, Position 3 = G, H, M, N, S, T

Ex tc IIIC T100°C Dc

An irreversible thermal fuse with a switch-off temperature of 115 °C is implemented in the transmitter.

Maximum temperature	Sensor	Electronics enclosure
Max. ambient temperature	-20 to +80 °C	-20 to +80 °C
Max. surface temperature at an ambient temperature of 40 °C	60 °C	44 °C
Max. surface temperature at an ambient temperature of 80 °C	100 °C	84 °C

*Device type FMU42, FMU44*

*Basic specification, Position 3 = G, H, M, N, S, T*  
 Ex tc IIIC T100°C Dc

An irreversible thermal fuse with a switch-off temperature of 115 °C is implemented in the transmitter.

Maximum temperature	Sensor	Electronics enclosure
Max. ambient temperature	-40 to +80 °C	-40 to +80 °C
Max. surface temperature at an ambient temperature of 40 °C	60 °C	44 °C
Max. surface temperature at an ambient temperature of 80 °C	100 °C	84 °C

*Device type FMU40, FMU41*

*Basic specification, Position 3 = B, D, F, J, K, L, P, Q, R*  
 Ex tc IIIC T95°C Dc

Maximum temperature	Sensor	Electronics enclosure
Max. ambient temperature	-20 to +80 °C	-20 to +80 °C
Max. surface temperature at an ambient temperature of 40 °C	55 °C	44 °C
Max. surface temperature at an ambient temperature of 80 °C	95 °C	84 °C

*Device type FMU42, FMU44**Basic specification, Position 3 = B, D, F, J, K, L, P, Q, R*

Ex tc IIIC T95°C Dc

Maximum temperature	Sensor	Electronics enclosure
Max. ambient temperature	-40 to +80 °C	-40 to +80 °C
Max. surface temperature at an ambient temperature of 40 °C	55 °C	44 °C
Max. surface temperature at an ambient temperature of 80 °C	95 °C	84 °C

**Connection data**

- Tightening torque of the terminal screws: 0.3 to 0.4 Nm.
- Strip the insulation of the connection wires with suitable length. Bare parts of the wires must not emerge from the terminal.
- Ensure that the wires are securely clamped.

Power supply			
<i>Basic specification, Position 3 =</i>			
<i>G, M, S</i>	<i>H, N, T</i>	<i>B, J, P</i>	<i>D, K, Q, F, L, R</i>
90 to 253 V <sub>AC</sub> 4 VA 50/60 Hz	10.5 to 32 V <sub>DC</sub> 1 W	U = 30 V <sub>DC</sub> I ≤ 22 mA P <sub>I</sub> ≤ 726 mW	U = 32 V <sub>DC</sub> I ≤ 15 mA P <sub>I</sub> ≤ 528 mW

Signal circuit	
4 to 20 mA	active or passive







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