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Safety Instructions
Prosonic M
FMU40, FMU41, FMU42, FMU44

4-20 mA HART, PROFIBUS PA,
FOUNDATION Fieldbus

0/1 Ex db [ia] IIC T6...T4 Ga/Gb X
1Ex db [ia] IIC T6...T4 Gb X

Endress+Hauser
People for Process Automation

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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 -> 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:
ЕАЭС 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 IEC 60079-1-2013

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*..
(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: 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	M	EAC 0/1 Ex db [ia] IIC T6...T4 Ga/Gb X EAC 1Ex db [ia] IIC T6...T4 Gb X

Position 3 (Power Supply, Output)		
Selected option		**Description**
FMU4x	B, J, P	2-wire; 4-20 mA HART
	D, K, Q	2-wire; PROFIBUS PA
	F, L, R	2-wire; FOUNDATION Fieldbus

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

Position 5 (Housing)		
Selected option		**Description**
FMU4x	C	T12 Alu, coated, IP68 NEMA6P, separate conn. compartment

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.
- Avoid electrostatic charging:
  - Of plastic surfaces (e.g. enclosure, sensor element, special varnishing, attached additional plates, ..)
  - Of isolated capacities (e.g. isolated metallic plates)
- Refer to the temperature tables for the relationship between the permitted ambient temperature for the electronics enclosure, depending on the range of application and the temperature class.

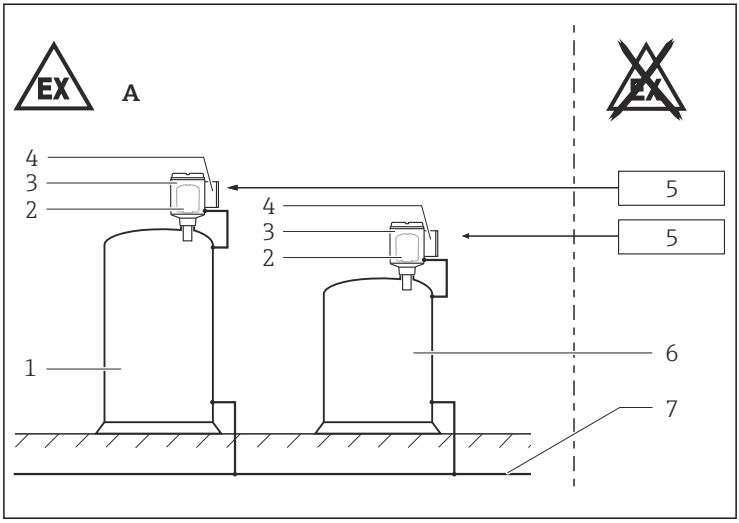
Safety instructions: Special conditions

Permitted ambient temperature range at the electronics enclosure:
$-40\ °C \leq T_a \leq +60\ °C$

- 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 (≤ 0.5 m) generating strong electrostatic charges.

Device type FMU42, FMU44
Avoid electrostatic charging of the sensor (e.g. do not rub dry and install outside the filling flow).

Safety instructions: Installation



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A Zone 1
1 Tank, hazardous area Zone 0
2 Electronic insert
3 Enclosure
4 Connection compartment (Ex db)
5 Power supply
6 Tank, hazardous area Zone 1
7 Local potential equalization

- In potentially explosive atmospheres:
  - Do not disconnect the electrical connection of the power supply circuit when energized.
  - Do not open the connection compartment cover when energized.
- Only use certified cable entries suitable for the application. Observe national regulations and standards.
- When operating the transmitter enclosure at an ambient temperature under −20 °C, use appropriate cables and cable entries permitted for this application.
- Continuous service temperature of the connecting cable: ≥ T_a +5 K.
- When connecting through a conduit entry approved for this purpose, mount the associated sealing unit directly at the enclosure.
- Seal unused entry glands with approved Ex db sealing plugs.
- Option:
  - Remote display, e.g. FHX40 (Observe Safety Instructions)
  - Service interface: Commubox with associated ToF cable (Observe Safety Instructions)

Potential equalization

Integrate the device into the local potential equalization.

Safety instructions: Ex d joints

- If required or if in doubt: ask manufacturer for specifications.
- Flameproof joints are not intended to be repaired.

Temperature tables

Zone 1 - Application

Observe the permitted temperature range.

Temperature class	Ambient temperature T_a (ambient)	Process temperature T_p (process)
T6, T5, T4	−40 to +60 °C	max. 80 °C

Connection data

Connection compartment Ex db

Power supply	
Basic specification, Position 3 =	
B, J, P	*D, K, Q, F, L, R*
U_e = 30 V_{DC} U_m ≤ 250 V_{AC}	U_e = 32 V_{DC} U_m ≤ 250 V_{AC}

Option

Remote display, e.g. FHX40:
Power supply and signal circuit with protection type: intrinsic safety Ex ia IIC, Ex ia IIB.

Power supply
U_o = 4.2 V I_o = 34 mA P_o = 36 mW effective inner inductance L_i = negligible effective inner capacitance C_i = negligible Characteristic curve: linear

Connecting the Commubox service interface with the associated ToF cable

Commubox output + ToF cable						
U_o = 3.74 V I_o = 9.9 mA P_o = 9.2 mW effective inner inductance L_i = negligible effective inner capacitance C_i = negligible Characteristic curve: linear						
For material group IIC: ▪ permitted outer inductance $L_o \leq 340$ mH ▪ permitted outer capacitance $C_o \leq 100$ µF						
When interconnected to a Prosonic M, the following results apply:						
	L_o =	0.15 mH	0.5 mH	1 mH	2 mH	5 mH
for material group IIC	C_o =	≤ 8 µF	≤ 7 µF	≤ 5.5 µF	≤ 5 µF	≤ 4 µF
for material group IIB	C_o =	10 µF				

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