



# IECEx Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.:	<b>IECEx DEK 11.0014X</b>	Page 1 of 4	<u>Certificate history:</u>
Status:	<b>Current</b>	Issue No: 4	Issue 3 (2018-07-05)
Date of Issue:	2022-05-31		Issue 2 (2018-03-23)
			Issue 1 (2016-08-05)
			Issue 0 (2016-03-30)
Applicant:	<b>Endress+Hauser SE+Co. KG</b> Hauptstrasse 1 79689 Maulburg Germany		
Equipment:	<b>Ultrasonic Smart Level Transmitter Prosonic M, Models FMU40-..., FMU41-..., FMU42-..., FMU44-..., FMU43-...</b>		
Optional accessory:			
Type of Protection:	<b>Ex i, Ex d, Ex t, Ex e</b>		
Marking:	Ex ia IIC T6 ... T4 Ga/Gb or Ex ia IIC T6 ... T4 Gb or Ex db [ia] IIC T6 ... T4 Ga/Gb or Ex db [ia] IIC T6 ... T4 Gb or Ex ec IIC T6 ... T4 Gc.  Ex ta/tb IIIC Txx °C Da/Db or Ex tb IIIC Txx °C Db or Ex ta/tc IIIC Txx °C Da/Dc or Ex tc IIIC Txx °C Dc.  Refer to Annex 1 for detailed marking.		

Approved for issue on behalf of the IECEx  
Certification Body:

**R. Schuller**

Position:

**Certification Manager**

Signature:  
(for printed version)

Date:  
(for printed version)

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**DEKRA Certification B.V.**  
Meander 1051  
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Netherlands





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Manufacturer: **Endress + Hauser**  
Hauptstrasse 1  
79689 Maulburg  
Germany

Manufacturing locations: **Endress + Hauser**  
Hauptstrasse 1  
79689 Maulburg  
Germany

**Additional Manufacturing Locations are included in Annex 2**

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

## STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

[IEC 60079-0:2017](#) Explosive atmospheres - Part 0: Equipment - General requirements  
Edition:7.0

[IEC 60079-1:2014-06](#) Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"  
Edition:7.0

[IEC 60079-11:2011](#) Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"  
Edition:6.0

[IEC 60079-26:2014-10](#) Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga  
Edition:3.0

[IEC 60079-31:2013](#) Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"  
Edition:2

[IEC 60079-7:2017](#) Explosive atmospheres - Part 7: Equipment protection by increased safety "e"  
Edition:5.1

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

## TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

[NL/DEK/ExTR11.0010/04](#)

Quality Assessment Report:

[DE/TUN/QAR06.0003/09](#)



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## **EQUIPMENT:**

Equipment and systems covered by this Certificate are as follows:

The Ultrasonic Level Transmitters Prosonic M Model FMU40-..... (with 1½" sensor diameter), Model FMU41-..... (with 2" sensor diameter), Model FMU42-..... (with 3" sensor diameter), Model FMU43-..... (with 4" sensor diameter) and Model FMU44-..... are used for continuous, contactless level measurement of fluids and coarse bulk materials in an explosive atmosphere caused by the presence of combustible gases, liquids, mists or dusts.

For description, type designation, thermal data and electrical data, refer to Annex 1

## **SPECIFIC CONDITIONS OF USE: YES as shown below:**

- For description, type designation, thermal data and electrical data, refer to Annex 1;
- Electrostatic charging shall be avoided on model FMU44 only, refer to installation manual;
- Low risk of mechanical danger for specific enclosures as specified in Installation manual;  
This concerns the windowed cover of enclosures in types of protection Ex e and Ex t;
- The flameproof joints of enclosure type T12 are not intended to be repaired



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**DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)**

- Assessment according to new editions of the standards
- Change of temperatures

**Annexes:**

[225044700-Annex 1\\_1.pdf](#)

[225044700-Annex 2.pdf](#)

## Description

The Ultrasonic Level Transmitters Prosonic M Model FMU40-..... (with 1½" sensor diameter), Model FMU41-..... (with 2" sensor diameter), Model FMU42-..... (with 3" sensor diameter), Model FMU43-..... (with 4" sensor diameter) and Model FMU44-..... are used for continuous, contactless level measurement of fluids and coarse bulk materials in an explosive atmosphere caused by the presence of combustible gases, liquids, mists or dusts.

The Level Transmitter detects the level by measuring the reflection of ultrasonic pulses and converts the measurement signal into an electrical signal. Depending on the electronics insert applied, the level transmitter has a 2 wire 4 - 20 mA current output signal with digital communication (HART) or a fieldbus interface (either Profibus or Foundation Fieldbus).

In addition to the sensor diameter and output signal, the level transmitters differ in type of enclosure (Type F12, F23, or T12), process connection and cable entry.

Optionally a display module with local read-out and adjustment may be present (model FMU4-...2...); or facilities for connection of an external display (such as Endress+Hauser Type FHX40), separately certified for use in a hazardous area are present (model FMU4-...3...). These facilities can also be used for connection of a certified intrinsically safe Service Interface, like Endress+Hauser Commubox Type FXA193 with ToF cable.

The terminal compartment of level transmitters with electronics enclosure Type T12, for installation in a hazardous area requiring the use of apparatus of equipment protection level Gb, is in type of protection flameproof enclosure "d" or increased safety "e".

Intrinsically safe apparatus with electronics enclosure Type T12-OVP (Model FMU4.-C...D..) are provided with integral overvoltage protection.

The enclosure of the level transmitter provides a degree of protection of at least IP65 according to IEC 60529.

Note: The model codes of Level Transmitters Model FMU42-..... and Model FMU44-..... include a 7th additional digit that is included in the 6th digit of the general model code FMU4.-....., where applicable. The 6th and 7th digit are representing not safety distinguishing features. Types:

<b>Compact ultrasonic level transmitters Prosonic M</b>	<b>FMU40 – abcdef</b> (1½"-Sensor)
	<b>FMU41 – abcdef</b> (2"-Sensor)
	<b>FMU42 – abcdefg</b> (3"-Sensor)
	<b>FMU44 – abcdefg</b>
	<b>FMU43 – abcdef</b> (4"-Sensor)

### a Type designation

Where "a" represents a single number or character, defining the marking, approval and type of protection for each model: FMU40-a, FMU41-a, FMU42-a, FMU44-a and FMU43-a:

#### FMU40-a: concerns approval, part of KEMA 02ATEX1006 and IECEx DEK 11.0014 X:

- 1 = (ATEX II 1/2 G or II 2 G Ex ia IIC T6...T4 Ga/Gb or Ex ia IIC T6...T4 Gb) or
- 2 = (ATEX II 1/2 D or II 2 D Ex ta/tb IIIC T104...115 °C Da/Db or Ex tb IIIC T95...115 °C Db) or
- 4 = (ATEX II 1/2 G or II 2 G Ex db [ia] IIC T6...T4 Ga/Gb or Ex db [ia] IIC T6...T4 Gb) or
- 5 = (ATEX II 1/3 D or II 3 D Ex ta/tc IIIC T104 °C Da/Dc) or
- B = (IEC Ex ec IIC T6... T4 Gc) or
- C = (IEC Ex ia IIC T6 Ga/Gb) or
- D = (IEC Ex db [ia] IIC T6 Ga/Gb) or
- X = (IEC Ex ta/tc IIIC T104 °C Da/Dc) or
- Z = (IEC Ex ta/tb IIIC T104 °C...115 °C Da/Db, Alu) or
- O = (IEC Ex tc IIIC T95 °C...100 °C Dc)

**FMU41–a: concerns approval, part of KEMA 02ATEX1006 X and IECEX DEK 11.0014**

**X:**

- 1 = (ATEX II 1/2 G or II 2 G Ex ia IIC T6...T4 Ga/Gb or Ex ia IIC T6...T4 Gb) or
- 2 = (ATEX II 1/2 D or II 2 D Ex ta/tb IIIC T104...115 °C Da/Db or Ex tb IIIC T95...115 °C Db) or
- 4 = (ATEX II 1/2 G or II 2 G Ex db [ia] IIC T6...T4 Ga/Gb or Ex db [ia] IIC T6...T4 Gb) or
- 5 = (ATEX II 1/3 D or II 3 D Ex ta/tc IIIC T104 °C Da/Dc) or
- B = (IEC Ex ec IIC T6...T4 Gc) or
- C = (IEC Ex ia IIC T6...T4 Ga/Gb) or
- D = (IEC Ex db [ia] IIC T6...T4 Ga/Gb) or
- X = (IEC Ex ta/tc IIIC T104 °C Da/Dc) or
- Z = (IEC Ex ta/tb IIIC T104 °C...115 °C Da/Db, Alu) or
- O = (IEC Ex tc IIIC T95 °C...100 °C Dc)

**FMU42–a: concerns approval, part of KEMA 02ATEX1006 X and IECEX DEK 11.0014**

**X:**

- 1 = (ATEX II 1/2 G or II 2 G Ex ia IIC T6...T4 Ga/Gb or Ex ia IIC T6...T4 Gb) or
- 2 = (ATEX II 1/2 D or II 2 D Ex ta/tb IIIC T104...115 °C Da/Db or Ex tb IIIC T95...115 °C Db) or
- 4 = (ATEX II 1/2 G or II 2 G Ex db [ia] IIC T6...T4 Ga/Gb or Ex db [ia] IIC T6...T4 Gb) or
- 5 = (ATEX II 1/3 D or II 3 D Ex ta/tc IIIC T104 °C Da/Dc) or
- B = (IEC Ex ec IIC T6...T4 Gc) or
- C = (IEC Ex ia IIC T6...T4 Ga/Gb) or
- D = (IEC Ex db [ia] IIC T6...T4 Ga/Gb) or
- X = (IEC Ex ta/tc IIIC T104 °C Da/Dc) or
- Z = (IEC Ex ta/tb IIIC T104 °C...115 °C Da/Db, Alu) or
- O = (IEC Ex tc IIIC T95 °C...100 °C Dc)

**FMU44–a: concerns approval, part of KEMA 02ATEX1006 X and IECEX DEK 11.0014**

**X:**

- 1 = (ATEX II 1/2 G or II 2 G Ex ia IIC T6...T4 Ga/Gb or Ex ia IIC T6...T4 Gb) or
- 2 = (ATEX II 1/2 D or II 2 D Ex ta/tb IIIC T104...115 °C Da/Db or Ex tb IIIC T95...115 °C Db) or
- 4 = (ATEX II 1/2 G or II 2 G Ex db [ia] IIC T6...T4 Ga/Gb or Ex db [ia] IIC T6...T4 Gb) or
- 5 = (ATEX II 1/3 D or II 3 D Ex ta/tc IIIC T104 °C Da/Dc) or
- B = (IEC Ex ec IIC T6...T4 Gc) or
- C = (IEC Ex ia IIC T6...T4 Ga/Gb) or
- D = (IEC Ex db [ia] IIC T6...T4 Ga/Gb) or
- X = (IEC Ex ta/tc IIIC T104 °C Da/Dc) or
- Z = (IEC Ex ta/tb IIIC T104 °C...115 °C Da/Db, Alu) or
- O = (IEC Ex tc IIIC T95 °C...100 °C Dc)

**FMU43–a: concerns approval, part of KEMA 02ATEX1018 X and IECEX DEK 11.0014 X:**

- 2 = (ATEX II 1/2 D or II 2 D Ex ta/tb IIIC T84...115 °C Da/Db or Ex tb IIIC T84...115 °C
- 5 = (ATEX II 1/3 D or II 3 D Ex ta/tc IIIC T84 °C Da/Dc) or
- X = (IEC Ex ta/tc IIIC T84 °C Da/Dc) or
- Z = (IEC Ex ta/tb IIIC T84 °C...115 °C Da/Db, Alu) or
- O = (IEC Ex tc IIIC T84 °C Dc)

**b = Process connection**

Single number of characters, which define standardized threaded bosses or flanges, refer to instruction manual for details.

**c = Power Supply, Communication**

- B = (2-wire, 4..20 mA-loop (HART)) or
- D = (2-wire, Profibus PA (FISCO or Entity, IS version only)) or
- F = (2-wire, Foundation Fieldbus (FISCO or Entity, IS version only)) or
- G = (4-wire, 90 .. 253) V AC, 4..20 mA (HART)) or
- H = (4-wire, 10.5 .. 32 V DC, 4..20 mA (HART)) or
- J = (2-wire, 4..20 mA-loop (HART), 5-point linearity protocol) or
- K = (2-wire, Profibus PA (FISCO or Entity, IS version only), 5-point linearity protocol) or

- L = (2-wire, Foundation Fieldbus (FISCO or Entity, IS version only), 5-point lin. Prot.) or
- M = (4-wire, 90 .. 253) V AC, 4..20 mA (HART), 5-point linearity protocol) or
- N = (4-wire, 10.5 .. 32 V DC, 4..20 mA (HART), 5-point protocol) or
- P = (2-wire, 4..20 mA-loop (HART), 3-point linearity protocol) or
- Q = (2-wire, Profibus PA (FISCO or Entity, IS version only), 3-point lin. Prot.) or
- R = (2-wire, Foundation Fieldbus (FISCO or Entity, IS version only), 3-point lin. Prot.) or
- S = (4-wire, 90 .. 253) V AC, 4..20 mA (HART), 3-point linearity protocol) or
- T = (4-wire, 10.5 .. 32 V DC, 4..20 mA (HART), 3-point protocol)

**d = Display**

- 1 = (without display) or
- 2 = (with integral display and communication on site) or
- 3 = (prepared for connection of remote display)

**e = Enclosure**

- A = (F12 coated aluminium housing, IP68, 4X/6P) or
- C = (T12 coated aluminium housing, IP68, 4X/6P) or
- D = (T12 coated alu. housing w. integrated surge protection, IP68, 4X/6P) or
- 1 = (F12 coated aluminium housing, IP68, 4X/6P with UKCA marking) or
- 2 = (T12 coated aluminium housing, IP68, 4X/6P with UKCA marking) or
- 3 = (T12 coated alu. housing w. integr. surge protection, IP68, 4X/6P w. UKCA marking) or
- Y = (F23 stainless steel SS308 housing IP68, 4X/6P)

**f = Cable entry**

- 2 = (cable gland M20 x 1.5) or
- 3 = (cable entry G ½") or
- 4 = (cable entry NPT ½") or
- 5 = (M12 Profibus PA plug) or
- 6 = (7/8" Foundation Fieldbus plug) or
- x = (Y cable gland M20 x 1.5, e.g. WADI for e.g. F12 with remote display FHX 40))

**g = Sealing sensor / flange**

- 2 = (VITON flat sealing) or
- 3 = (EPDM flat sealing) or
- x = (Special version)

## Electrical data

### 2-wire HART, model FMU4.-a.c.e.. (where a = C or 1, c = B, J or P and e = A or Y)

Supply and output circuit (terminals 1 and 2):

in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with following maximum values:

$U_i = 30 \text{ V}$ ;  $I_i = 300 \text{ mA}$ ;  $P_i = 1 \text{ W}$ ;  $C_i = 13 \text{ nF}$ ;  $L_i = 0 \text{ mH}$ .

### 2-wire FISCO Fieldbus, model FMU4.-a.c.e.. (where a = C or 1, c = D,F,K,L,Q,R and e = A or Y)

Supply and output circuit Profibus PA or Foundation Fieldbus (terminals 1 and 2):

in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe fieldbus according to FISCO, with following maximum values:

$U_i = 17.5 \text{ V}$ ;  $I_i = 500 \text{ mA}$ ;  $P_i = 5.5 \text{ W}$ ;  $C_i = 5 \text{ nF}$ ;  $L_i = 10 \text{ }\mu\text{H}$ ; or

in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with following maximum values:

$U_i = 24 \text{ V}$ ;  $I_i = 250 \text{ mA}$ ;  $P_i = 1.2 \text{ W}$ ;  $C_i = 5 \text{ nF}$ ;  $L_i = 10 \text{ }\mu\text{H}$ .

### 2-wire Fieldbus, model FMU4.-a.c.D.. (where a = C or 1, c = D,F,K,L,Q or R)

Supply and output circuit Profibus PA or Foundation Fieldbus (terminals 1 and 2):

in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe fieldbus, with following maximum values:

$U_i = 17.5 \text{ V}$ ;  $I_i = 273 \text{ mA}$ ;  $P_i = 1.2 \text{ W}$ ;  $C_i = 5 \text{ nF}$ ;  $L_i = 10 \text{ }\mu\text{H}$ ; or

in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with following maximum values:

$U_i = 24 \text{ V}$ ;  $I_i = 250 \text{ mA}$ ;  $P_i = 1.2 \text{ W}$ ;  $C_i = 5 \text{ nF}$ ;  $L_i = 10 \text{ }\mu\text{H}$ .

### External display connection, model FMU4.-a..d.. (where a = C or 1, d = 3)

Output circuit for external display (connector):

in type of protection intrinsic safety Ex ia IIC, with following maximum values:

$U_o = 4.2 \text{ V}$ ;  $I_o = 34 \text{ mA}$ ;  $P_o = 36 \text{ mW}$ ;  $C_o = 4 \text{ }\mu\text{F}$ ;  $L_o = 5 \text{ mH}$ .

The connection of Service Interface Commubox Model FXA193 with ToF-cable to the display output circuit is permitted under the same conditions.

For versions of the Prosonic M with overvoltage protection, model FMU4.-....e.. (where e = D), the dielectric strength of at least 500 V of the intrinsically safe circuits is limited to 290 V only by the overvoltage protection.

### Supply and output model FMU4.-a.c.e.. (where a = D or 4, c = B,D,F,J,K,L,P,Q or R and e = C)

Supply and output circuit (terminals 1 and 2):

in type of protection flame proof Ex d, with following maximum values:

$U \leq 30 \text{ V}$ ;  $I = 4 \text{ to } 20 \text{ mA}$ ;  $U_m = 32 \text{ V}$  (Model FMU4.-C.B...);  $U_m = 253 \text{ V}$  (other models).

### 2W HART, or Profibus, or foundation Fieldbus, for model FMU4.-a.c.e..

(where a = D or 4, c = B,D,F,J,K,L,P,Q or R and e = C)

Supply and output circuit (terminals 1 and 2):

in type of protection flame proof Ex d, with following maximum values:

$U_e = 32 \text{ V}$ ;  $U_m = 250 \text{ V}$ .

### 2W Profibus, or foundation Fieldbus, for model FMU4.-a.c.e..

(where a = X, Z, 2 or 5, c = D,F,K,L,Q or R and e = A or C)

Supply and output circuit (terminals 1 and 2):

in type of protection Ex ta/tb, with following maximum values:

$U_e = 32 \text{ V}$ .



2W HART for model FMU4.-a.c.e.. (where a = X, Z, 2 or 5, c = B, J or P and e = A or C)

Supply and output circuit (terminals 1 and 2):

in type of protection Ex ta/tb, with following maximum values:

$U_e = 30 \text{ V}$ .

4W HART high voltage version, for model FMU4.-.c.... (where c = G, M or S)

Supply and 4..20 mA output circuit (active or passive):

in type of protection Ex ta/tb, with following maximum values:

$U = 90 \dots 253 \text{ V AC } 50/60 \text{ Hz}$ .

4W HART low voltage version, for model FMU4.-.c.... (where c = H, N or T)

Supply and 4..20 mA output circuit (active or passive):

in type of protection Ex ta/tb, with following maximum values:

$U = 10.5 \dots 32 \text{ V DC}$ .

For EPL Gc or EPL Dc connections, in type of protection 'Ex tc' or 'Ex ec', the following is applicable:

Enclosure type	Type of Protection	4 ...20 mA HART (c = B, J or P)	Profibus PA (c = D, K or Q)	Foundation Fieldbus (c = F, L or R)
F12, T12, T12-OVP Model: FMU4x- <b>abcdefg</b> where: e = A, C or D	Ex ec IIC T6...T4 Gc Model: FMU4x- <b>abcdefg</b> Where: a = B or G	$U = 30 \text{ VDC}$ $I \leq 22 \text{ mA}$ $P_i \leq 726 \text{ mW}$ $U_{\text{electr.}} \leq 21 \text{ V}$	$U = 32 \text{ VDC}$ $I \leq 13 \text{ mA}$ $P_i \leq 458 \text{ mW}$ $U_{\text{electr.}} \leq 14.1 \text{ V}$	$U = 32 \text{ VDC}$ $I \leq 15 \text{ mA}$ $P_i \leq 528 \text{ mW}$ $U_{\text{electr.}} \leq 14.1 \text{ V}$
F12, T12 Model: FMU4x- <b>abcdefg</b> Where: e = A or C	Ex tc IIIC Txx°C Dc Model: FMU4x- <b>abcdefg</b> Where: a = 6	$U = 30 \text{ VDC}$ $I \leq 22 \text{ mA}$ $P_i \leq 726 \text{ mW}$ $U_{\text{electr.}} \leq 21 \text{ V}$ $P \leq 899 \text{ mW}$	$U = 32 \text{ VDC}$ $I \leq 13 \text{ mA}$ $P_i \leq 458 \text{ mW}$ $U_{\text{electr.}} \leq 14.1 \text{ V}$ $P \leq 690 \text{ mW}$	$U = 32 \text{ VDC}$ $I \leq 15 \text{ mA}$ $P_i \leq 528 \text{ mW}$ $U_{\text{electr.}} \leq 14.1 \text{ V}$ $P \leq 690 \text{ mW}$

+10 % Safety factor acc. IEC / EN 60079-7

For EPL Dc connections, in type of protection 'Ex tc', the following is applicable:

Enclosure type	Type of Protection	4W-HART Low Voltage version Model: FMU4x- <b>abcdefg</b> Where: c = H, N or T	
F12, T12 Model: FMU4x- <b>abcdefg</b> where: e = A or C	Ex tc IIIC Txx°C Dc Model: FMU4x- <b>abcdefg</b> Where: a = 6	$U_{\text{Power}} = 90 \dots 253 \text{ VDC}$ $P \leq 4 \text{ VA}$ $U_{\text{Signal}} \leq 21.4 \text{ V (active), } 600\Omega$ $U_{\text{electr.}} \leq 20.4 \text{ V, } P \leq 784 \text{ mW}$	$U_{\text{Power}} \leq 10.5 \dots 32 \text{ VDC}$ $P \leq 1000 \text{ mW}$

**Thermal data**

Ambient temperature range: -40 °C to max. +80 °C (depending on the type).

Process temperature range Ex db and Ex ia: -40 °C to max. +80 °C (max. +60 °C for Zone 0).

Process temperature range Ex t: FMU40: -20 °C to max. +80 °C  
 FMU41: -37 °C to max. +80 °C  
 FMU42, 43, 44: -40 °C to max. +80 °C

Process temperature range Ex ec: FMU40: -20 °C to max. +70 °C  
 FMU41, 42, 43, 44: -25 °C to max. +70 °C

Ambient and process temperature range is depending on supply/communication interface and temperature class, is in accordance with the following table:

Type of protection Ex ia, Ex d, Ex ec*)		models FMU40/41/42/44		
		Maximum ambient temperature		
		Ex ia	Ex ec	Ex d
Temperature class	T6	60 °C	50 °C	60 °C
	T5	75 °C (80 °C for HART)	65 °C (70 °C for HART)	
	T4	80 °C	70 °C	

Type of protection Ex t		models FMU40/41/42/44	
		2W HART/PA/FF	4W HART
Maximum ambient/process temperature		80 °C	80 °C
Max. surface temperature T	ta/tb	104 °C	115 °C
	ta/tc	104 °C	104 °C
	tb or tc *)	95 °C	100 °C

Type of protection Ex t		model FMU43	
		PA/FF	4W HART
Maximum ambient temperature		80 °C	80 °C
Max. surface temperature T	ta/tb	84 °C	115 °C
	ta/tc	84 °C	84 °C
	tb or tc *)	84 °C	84 °C

\*) : for IECEx only

When the temperature under rated conditions is higher than 67 °C at the cable or conduit entry point, or higher than 80 °C at the branching point of the conductors, suitable heat resistant cables or conductors for conduit shall be used.

If the transmitter is used in type of protection Ex d at an ambient temperature of less than -20 °C, suitable conduit entries certified for this condition shall be used according to IEC 60079-1, clause 13.2.2.

## Annex 2 to IECEx DEK 11.0014X

### Manufacturing locations:

1. Endress+Hauser SE+Co. KG  
Hauptstraße 1  
79689 Maulburg  
Germany
2. Endress+Hauser (USA) Automation Instrumentation Inc.  
2340 Endress Place  
Greenwood, Indiana 46143  
USA
3. Endress+Hauser (Suzhou) Automation Instrumentation Co. Ltd.  
China – Singapore Industrial Park (SIP)  
Su-Hong-Zhong-Lu, No. 491  
Jiangsu Province, 215021 Suzhou  
China
4. Endress+Hauser (India) Automation Instrumentation Pvt. Ltd.  
M-192, Waluj  
Aurangabad – 431136  
Maharashtra State  
India
5. Endress+Hauser Yamanashi Co. Ltd.  
862-1, Sakaigawa-cho  
Fuefuki-shi  
406 0846 Yamanashi  
Japan
6. Endress+Hauser (Brasil),  
Estrada Municipal Antonio Sesti  
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