



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

Certificate No.: **IECEX SEV 22.0028X** Page 1 of 5 [Certificate history:](#)
Status: **Current** Issue No: 0
Date of Issue: 2022-08-18
Applicant: **Endress+Hauser SE+Co. KG**
Hauptstraße 1
79689 Maulburg
Germany
Equipment: **Microwave units Micropilot, Type: FMR6xB**
Optional accessory:
Type of Protection: **d, e, i, t**
Marking: Refer to marking at general product information

Approved for issue on behalf of the IECEx
Certification Body:

Martin Plüss

Position:

Manager Product Certification

Signature:
(for printed version)

Date:
(for printed version)

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.



Certificate issued by:

Eurofins Electric & Electronic Product Testing AG
Luppenstrasse 3
8320 FEHRALTORF .
Switzerland



E&E



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Manufacturer: **Endress+Hauser SE+Co. KG**
Hauptstraße 1
79689 Maulburg
Germany

Manufacturing
locations:

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 60079-26:2021-02](#) Explosive atmospheres - Part 26: Equipment with Separation Elements or combined Levels of Protection
Edition:4.0

[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:

[CH/SEV/ExTR22.0030/00](#)

Quality Assessment Report:

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



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

Microwave units Micropilot, Type: FMR6xB

The microwave units Micropilot, type series FMR6xB are used for the contactless, continuous level measurement of liquid and solid media in explosion hazardous areas with gas or dust atmosphere.

The Micropilot is a "down-looking" measuring system that works according to the principle of the modulated continuous wave radar (Frequency Modulated Continuous Wave, FMCW). The antenna shines an electromagnetic wave with continuously changing frequency. This wave is reflected by the product and received again by the antenna.

The measured variable is the distance between the reference point R and the product surface. The product can be a liquid or a solid product. The electronic transforms this into an electrical signal which is evaluated and put out as analogue (e.g. 4..20mA) measurement values.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. For EPL Ga enclosures made of aluminium must be installed protected from impact and friction.
2. To avoid electrostatic charging: Do not rub surfaces with a dry cloth.



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Equipment (continued):

See Annexe



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Additional information:

Annex:

[IECEX SEV 22.0028X app i0.pdf](#)

Annexe to: IECEX SEV 22.0028X
Issue No.: 0
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Applicant Name: Endress+Hauser SE+Co. KG
Equipment: Microwave units Micropilot
(15) General product information

The microwave units Micropilot, type series FMR6xB are used for the contactless, continuous level measurement of liquid and solid media in explosion hazardous areas with gas or dust atmosphere. The Micropilot is a "down-looking" measuring system that works according to the principle of the modulated continuous wave radar (Frequency Modulated Continuous Wave, FMCW). The antenna shines an electromagnetic wave with continuously changing frequency. This wave is reflected by the product and received again by the antenna.

The measured variable is the distance between the reference point R and the product surface. The product can be a liquid or a solid product.

The electronic transforms this into an electrical signal which is evaluated and put out as analogue (e.g. 4..20mA) measurement values.

Classification of installation and use:

stationary

Ingress protection:

IP66 / IP67 / IP68

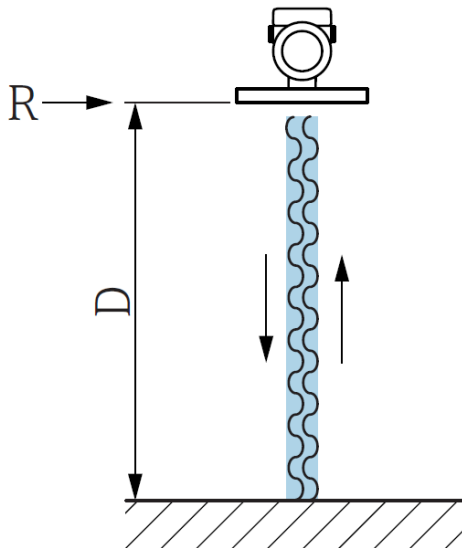
Rated ambient temperature range (°C):

Refer to Temperature classification at general product information for details

Rated ambient temperature range (°C) for Ex Components:

N/A

Measurement principle for Level:



Rating:

Type of protection ia:

For MA10 - 4..20 mA (HART):

$U_i \leq 30 \text{ V DC}$, $I_i \leq 300 \text{ mA}$, $P_i \leq 1 \text{ W}$, $C_i \leq 10 \text{ nF}$, $L_i = 0$

For MA11 - Profibus PA, Foundation Fieldbus:

FISCO : $U_i \leq 17,5 \text{ V DC}$, $I_i \leq 380 \text{ mA}$, $P_i \leq 5,32 \text{ W}$, $C_i \leq 5 \text{ nF}$, $L_i = 0$

Entity : $U_i \leq 24 \text{ V DC}$, $I_i \leq 300 \text{ mA}$, $P_i \leq 1,2 \text{ W}$, $C_i \leq 5 \text{ nF}$, $L_i = 0$

For MA12 - PROFINET APL:

2-WISE: $U_i \leq 17,5 \text{ VDC}$, $I_i \leq 380 \text{ mA}$, $P_i \leq 5,32 \text{ W}$, $C_i \leq 5 \text{ nF}$, $L_i = 0$

Entity : $U_i \leq 17,5 \text{ VDC}$, $I_i \leq 300 \text{ mA}$, $P_i \leq 1,2 \text{ W}$, $C_i \leq 5 \text{ nF}$, $L_i = 0$

Types of protection db or ec or ta or tb or tc:

For MA10: 4..20 mA (HART):

$U \leq 35 \text{ V DC}$, $P \leq 1 \text{ W}$




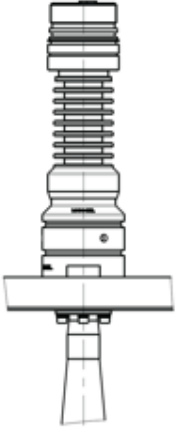
For MA11: Profibus PA, Foundation Fieldbus :

$U \leq 32 \text{ V DC}$ $P \leq 0.7 \text{ W}$

For MA12 : Profisafe APL:

$U \leq 15 \text{ V DC}$ $P \leq 0.7 \text{ W}$

Temperature classification:

| Type 1 Compact dust/gas | Type 2 Standard | Type 3 Standard | Type 4 XT/HT |
|---|---|--|--|
| T_{p_max} | | | |
| 80°C /130°C | 150°C | 200°C | 280°C/450° C |
|  |  |  |  |

| Ex ia IIC T6...T1: | | Type 1 | Type 2 | Type 3 | Type 4 |
|---|-----------------------------|--------------------------|----------|----------|----------|
| T-Class | $T_{p_range}^{1)}$ [°C] | T_{amb_range} [°C] | | | |
| T6 | -40...80 | -50...46 | | | |
| T5 | -40...95 | -50...61 | | | |
| T4-T1 | -40...130 | -50...65 | | | |
| T3 | -40...150 | - | -50...65 | | |
| | -40...195 | - | - | -50...65 | |
| T2-T1 | -40...200 | - | - | -50...65 | |
| | -40...280 | - | - | -50...65 | |
| T1 | -40...440 | - | - | - | -50...65 |
| <small>1) Possible down to -196°C</small> | | | | | |
| Ex db IIC T6...T1: | | Type 1 | Type 2 | Type 3 | Type 4 |
| T-Class | $T_{p_range}^{1)}$ [°C] | T_{amb_range} [°C] | | | |
| T6 | -40...80 | - | -60...74 | | |
| T5 | -40...95 | - | -60...79 | | |
| T4-T1 | -40...130 | - | -60...79 | | |
| T3 | -40...150 | - | -60...79 | | |
| | -40...195 | - | - | -60...79 | |
| T2-T1 | -40...200 | - | - | -60...79 | |
| | -40...280 | - | - | -60...79 | |
| T1 | -40...440 | - | - | - | -60...77 |

| Ex ec IIC T6...T1: | | | | | |
|--------------------|--|--------------------------------|--------|----------|----------|
| | | Type 1 | Type 2 | Type 3 | Type 4 |
| T- Class | T _{p_range} ¹⁾ [°C] | T _{amb_range} [°C] | | | |
| T6-T1 | -40...80 | -20...74 | | -20...74 | |
| T5 | -40...95 | - | | -40...79 | |
| T4-T1 | -40...130 | - | | -40...79 | |
| T3-T1 | -40...150 | - | | -40...79 | |
| | -40...195 | - | - | -40...79 | |
| T2-T1 | -40...200 | - | - | -40...79 | |
| | -40...280 | - | - | | |
| T1 | -40...440 | - | - | - | -40...77 |

| Ex ta/tb IIIC Txxx°C: | | | | | |
|--|--|--------------------------------|----------|----------|----------|
| | | Type 1 | Type 2 | Type 3 | Type 4 |
| | T _{p_range} ¹⁾ [°C] | T _{amb_range} [°C] | | | |
| Ex ta/tb IIIC T _L 80°C Da/Db | -20...80 | -20...65 | -40...65 | - | - |
| Ex ta/tb IIIC T _L 100°C Da/Db | -40...100 | - | -40...60 | -40...65 | - |
| Ex ta/tb IIIC T _L 130°C Da/Db | -40...130 | - | -40...55 | - | - |
| Ex ta/tb IIIC T _L 150°C Da/Db | -40...150 | - | -40...50 | -40...60 | -40...70 |
| Ex ta/tb IIIC T _L 200°C Da/Db | -40...200 | - | - | -40...55 | -40...65 |
| Ex ta/tb IIIC T _L 280°C Da/Db | -40...280 | - | - | - | -40...55 |
| Ex ta/tb IIIC T _L 200°C Da/Db | -40...450 | - | - | - | -40...30 |

| Ex ia IIIC Txxx°C: | | | | | |
|---|--|--------------------------------|----------|----------|----------|
| | | Type 1 | Type 2 | Type 3 | Type 4 |
| | T _{p_range} ¹⁾ [°C] | T _{amb_range} [°C] | | | |
| Ex ia IIIC T _L 80°C Da/Db | -20...80 | -20...55 | -40...60 | - | - |
| Ex ia IIIC T _L 100°C Da/Db | -40...100 | - | -40...55 | -40...60 | - |
| Ex ia IIIC T _L 130°C Da/Db | -40...130 | - | -40...50 | - | - |
| Ex ia IIIC T _L 150°C Da/Db | -40...150 | - | -40...45 | -40...55 | -40...65 |
| Ex ia IIIC T _L 200°C Da/Db | -40...200 | - | - | -40...50 | -40...60 |
| Ex ia IIIC T _L 280°C Da/Db | -40...280 | - | - | - | -40...50 |
| Ex ia IIIC T _L 200°C Da/Db | -40...450 | - | - | - | -40...30 |

1) Details for Deratings see relevant Safety Instruction for each explosion protection

Measurement Section, including Additional Narrative Remarks (as deemed applicable)

Marking:

The following marking strings are possible for all types and in combination with each other.

- Ⓔ II 2G Ex db IIC T6...T1 Gb
- Ⓔ II 1/2G Ex db IIC T6...T1 Ga/Gb
- Ⓔ II 3G Ex ec IIC T6...T1 Gc
- Ⓔ II 1G Ex ia IIC T6...T1 Ga
- Ⓔ II 2G Ex ia IIC T6...T1 Gb
- Ⓔ II 1/2G Ex ia IIC T6...T1 Ga/Gb
- Ⓔ II 2D Ex ia IIIC Txxx °C Db
- Ⓔ II 1/2D Ex ia IIIC Txxx °C Da/Db
- Ⓔ II 2D Ex tb IIIC Txxx °C Db
- Ⓔ II 1/2D Ex tb IIIC Txxx °C Da/Db
- Ⓔ II 3D Ex tc IIIC Txxx °C Dc

For types with MA11 module and FISCO the following text is added to the marking:
FISCO field device

For types with MA12 module and 2-WISE the following text is added to the marking:
2-WISE
2-WISE power load