



# 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.: **IECEX SEV 16.0004X**

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Certificate history:

Status: **Current**

Issue No: 10

Issue 9 (2021-09-21)

Issue 8 (2021-07-21)

Issue 7 (2020-08-19)

Issue 6 (2020-03-04)

Issue 5 (2020-02-28)

Issue 4 (2019-02-06)

Issue 3 (2018-12-12)

Issue 2 (2016-11-24)

Issue 1 (2016-11-22)

Issue 0 (2016-06-29)

Date of Issue: 2021-12-23

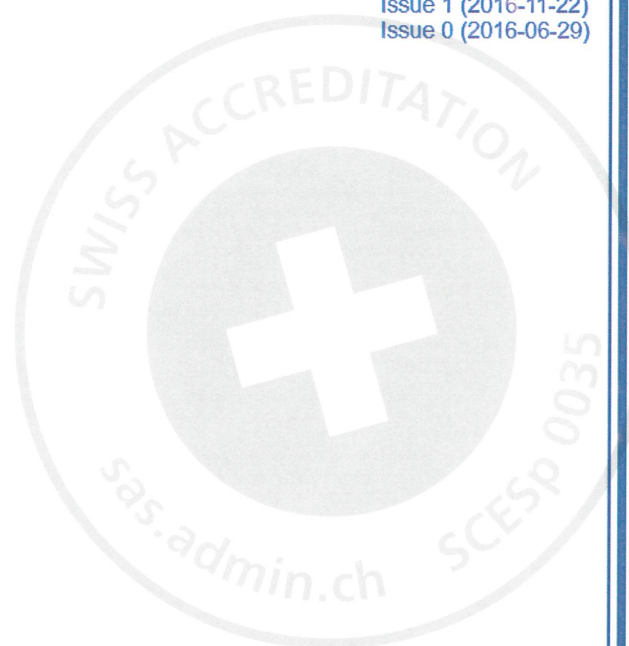
Applicant: **Endress + Hauser SE + Co. KG**  
Hauptstrasse 1  
79689 Maulburg  
Germany

Equipment: **Radar level sensor Type: FMR20 DN40/80**

Optional accessory:

Type of Protection: **Ex "ia"**

Marking: **Ex ia IIC T4...T1 Ga**  
**Ex ia IIC T4...T1 Ga/Gb**



Approved for issue on behalf of the IECEx  
Certification Body:

**Martin Plüss**

Position:

**Manager Product Certification**

Signature:  
(for printed version)

Date:

*2021-12-23*

1. This certificate and schedule may only be reproduced in full.
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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

Additional manufacturing locations: **Endress + Hauser**  
This equipment may be manufactured at any Endress + Hauser facility listed on the current QAR DE/TUN/QAR06.0003/\*\*, that has been audited for the manufacture of the type of product and Ex protection listed on this certificate.  
**Germany**

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 60079-11:2011** 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

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/ExTR16.0004/09**

Quality Assessment Report:

**DE/TUN/QAR06.0003/09**





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## EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

Endress + Hauser, FMR20 is a level liquid sensor which can be used within tanks as well as in free space. The FMR20 device is designed for use in explosive atmospheres. Its purpose is the continuous liquid level measurement as well as the operation in utility and environmental applications. This complies measurements of the filling level in free-space and within storage tanks and reservoirs, open basins, pumping shafts, canal systems below and above ground. Since the device can be mounted in an explosive atmosphere, it needs to fulfil the common standards of Europe and North America.

The measuring device FMR20 is intended for continuous, non-contact level measurement in liquids. Because of its operating frequency of approx. 26 GHz, a maximum radiated pulsed power of 1.0 mW and an average power output of 10 µW, unrestricted use outside of closed, metallic vessels is also permitted. Operation does not pose a risk to health or the environment.

Classification of installation and use: stationary  
Ingress protection: IP68  
Rated ambient temperature range (°C): -40 °C ... +80 °C  
Rated ambient temperature range (°C) for Ex Components: N/A

Temperature:

| Temperature class | Rated ambient temperature | Rated process temperature |
|-------------------|---------------------------|---------------------------|
| T4...T1           | -40 °C ... +80 °C         | -40 °C ... +80 °C         |

See Annexe for electrical data and ratings.

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

Because the risk of electrostatic discharges, there are additional measures necessary during installation and operation. The following warning marking is placed on the equipment:  
**WARNING – POTENTIAL ELECTROSTATIC CHARGING HAZARD – SEE INSTRUCTIONS**

The FMR20 is for use under atmospheric conditions only. Pressure range: 80...110 kPa (0.8...1.1 bar).



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

Update and modification of referenced drawings.

This CoC replaces CoC IECEx SEV 16.0004X Issue 9

**Annex:**

[IECEX SEV 16.0004 app i10.pdf](#)



**Annexe to:** IECEx SEV 16.0004X

**Issue No.: 10**

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**Applicant Name:** Endress+Hauser SE+Co. KG

**Equipment:** Radar level sensor

**Rating:**

FMR20 option A and P (2-wire, 4-20mA HART):

Supply circuit:

Type of protection Intrinsic Safety Ex ia IIC.

|                       |    |   |        |
|-----------------------|----|---|--------|
| Maximum input voltage | Ui | = | 30 V   |
| Maximum input current | Ii | = | 100 mA |
| Maximum input power   | Pi | = | 750 mW |
| Inductance            | Li | = | 35 µH  |
| Capacitance           | Ci | = | 15 nF  |

**FMR20 option R (4-wire, Modbus RS485):**

Supply:

Type of protection Intrinsic Safety Ex ia IIC.

|                       |    |   |          |
|-----------------------|----|---|----------|
| Maximum input voltage | Ui | = | 30 V     |
| Maximum input current | Ii | = | 100 mA   |
| Maximum input power   | Pi | = | 650 mW   |
| Inductance            | Li | = | 20 µH    |
| Capacitance           | Ci | = | 10 nF    |
| Inductance cable      | Lc | = | 0.8 µH/m |
| Capacitance cable     | Cc | = | 45 pF/m  |

**RS485-IS-Fieldbus:**

Type of protection Intrinsic Safety Ex ia IIC.

|                        |    |   |                |
|------------------------|----|---|----------------|
| Maximum output voltage | Uo | = | 4.2 V          |
| Maximum output current | Io | = | 149 mA         |
| Linear characteristic  |    |   |                |
| Maximum input voltage  | Ui | = | 4.2 V          |
| Maximum input current  | Ii | = | 4.8 A          |
| Inductance             | Li | = | negligibly low |
| Capacitance            | Ci | = | 97 µF          |
| Inductance cable       | Lc | = | 0.8 µH/m       |
| Capacitance cable      | Cc | = | 45 pF/m        |

Cables (loop resistance) type of cable A or B acc. To IEC 60079-25 with the following parameters per unit length:

$$L'/R' \leq 15 \mu\text{H}/\Omega$$

Concentrated reactances in the cable run of the external RS485-IS-fieldbus system are not permitted.