



# 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 FMG 25.0025X</b>                                                     | Page 1 of 4 | <a href="#">Certificate history:</a> |
| Status:             | <b>Current</b>                                                                | Issue No: 0 |                                      |
| Date of Issue:      | 2025-07-07                                                                    |             |                                      |
| Applicant:          | <b>Endress+Hauser SE+Co. KG</b><br>Hauptstraße 1<br>Maulburg 79689<br>Germany |             |                                      |
| Equipment:          | <b>FMR20B/30B Radar Level Device</b>                                          |             |                                      |
| Optional accessory: |                                                                               |             |                                      |
| Type of Protection: | <b>Intrinsic Safety 'ia'</b>                                                  |             |                                      |
| Marking:            | Ex ia IIC T4 Ga<br>Ex ia IIIB T135°C Da                                       |             |                                      |

Approved for issue on behalf of the IECEx  
Certification Body:

**J. E. Marquedant**

Position:

**VP, Manager - Electrical Systems**

Signature:  
(for printed version)

Date:  
(for printed version)

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Certificate issued by:

**FM Approvals LLC**  
One Technology Way  
Norwood MA 02062  
United States of America

**FM Approvals**



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Date of issue: 2025-07-07

Issue No: 0

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

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

**Endress+Hauser (USA) Automation Instrumentation Inc.**  
2340 Endress Place  
Greenwood , Indiana 46143  
United States of America

**Endress+Hauser (Suzhou) Automation Instrumentation Co. Ltd.**  
China – Singapore Industrial Park (SIP)  
Su-Hong-Zhong-Lu, No. 491  
Jiangsu Province, 215021 Suzhou  
China

## See following pages for more 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 60079-11:2023** Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"  
Edition:7.0

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:

**US/FMG/ExTR25.0023/00**

Quality Assessment Report:

**DE/TUN/QAR06.0003/11**



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## **EQUIPMENT:**

Equipment and systems covered by this Certificate are as follows:

See Annex for Electrical Ratings, Thermal Ratings and Model Code details

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

1. To avoid electrostatic charging: Do not rub surfaces with a dry cloth.
2. 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 ( $\leq 0.5$  m) generating strong electrostatic charges.
3. Avoid sparks caused by impact and friction.
4. In the case of process connections made of polymeric material or with polymeric coatings, avoid electrostatic charging of the plastic surfaces.
5. The process connection of the device must be installed in such a way that guarantees a sufficiently tight joint (IP66/67).
6. Applications in which the process temperature exceeds the maximum surface temperature limits of the required maximum surface temperature: The ignition hazard posed by hot surfaces on the process connecting parts of the device must be taken into account.
7. It is essential for the device to use a power supply that is galvanically isolated from earth.
8. When using an intrinsically safe barrier, the barrier must be connected to the same earth as the device.
9. Refer to the temperature tables for various ambient and process temperature ranges.



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Additional manufacturing locations:

**Endress+Hauser (India) Automation  
Instrumentation Pvt. Ltd.**

M-192, Waluj MIDC  
Maharashtra State  
Chhatrapati Sambhajnagar (former  
Aurangabad) 431 136  
**India**

**Endress+Hauser (Brazil) Instrumentação e  
Automação Ltda.,**

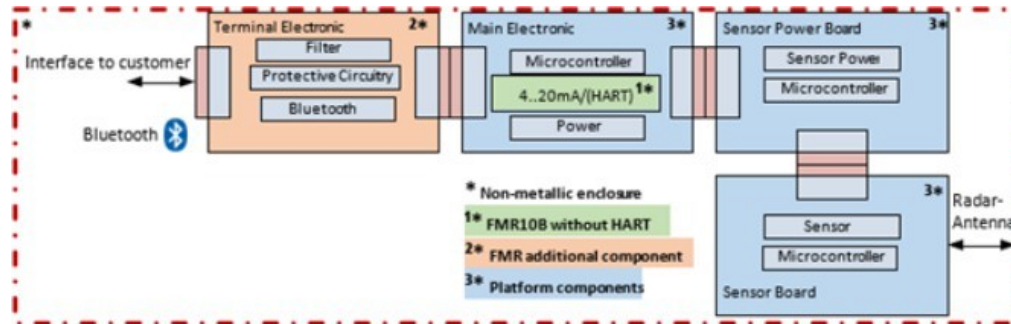
Avenida Antonio Sesti  
Itatiba/SP 600  
**Brazil**

**Annex:**

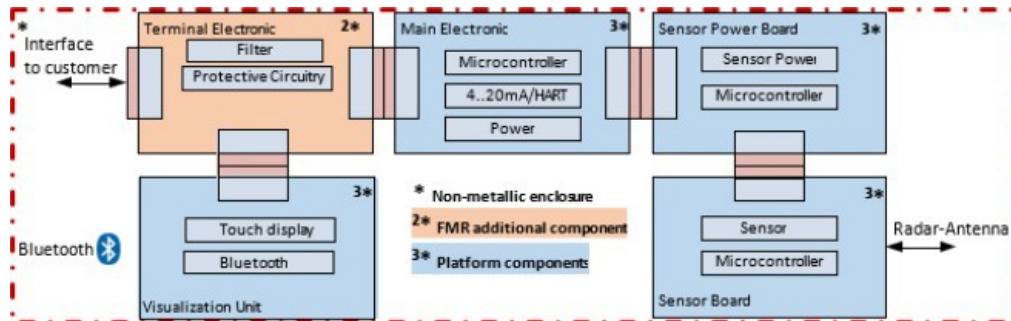
[Annex to IECEx FMG 25.0025X Issue 0\\_1.pdf](#)

**General** - The FMR 20B/30B is a radar level device which converts a time-of-flight wave signal into an electrical output signal. The environment can be a hazardous area with gas or dust atmosphere. The FMR20B/30B has an 80GHz radar sensor, which transmits the wave signal direct into air. The electronic transforms the time difference between the propagated wave and the received wave into an electrical signal which is evaluated and put out as a digital (HART) measurement value.

The Block diagram below describes the FMR20B. The Compact Platform components are shown below in blue color (Main Electronic), in orange color (Terminal Electronic) and Radar Sensor modules (Sensor Power Board and Sensor Board).



The Block diagram below describes the FMR30B. The Compact Platform components are shown in blue color (Main Electronic), in orange color (Terminal Electronic) and Radar Sensor modules (Sensor Power Board and Sensor Board).



For additional information on the electronics see the following:

| Component                                                                           | IEC Certificates   |
|-------------------------------------------------------------------------------------|--------------------|
| Electronic Modules<br>(Main electronic, terminal electronic and Visualization Unit) | IECEx FMG 25.0024U |
| Radar Sensor Modules<br>(Sensor Power Board and Sensor Board)                       | IECEx CSA 24.0044U |

**Construction** - For details on enclosure options for Variant 1, Variant 2 and Variant 3, see document no. 961008308-A. The FMR20B has an Ingress Protection rating of IP66, IP68. The FMR30B has an Ingress Protection rating of IP66, IP67.

#### Thermal Ratings -

| Protection Type | Model Type                        | Permitted ambient and Process Temperature |
|-----------------|-----------------------------------|-------------------------------------------|
| Ex ia IIC       | FMR20B/30B                        | -40°C to +70°C                            |
| Ex ia IIIB      | FMR20B (only Variant 2)<br>FMR30B | -40°C to +55°C                            |

#### Electrical Ratings -

The device is DC supplied.

The following values for cables are only relevant for the FMR30B (all variants), as the cable must be connected by the customer himself. In contrast, the FMR20B (all variants) is supplied with a pre-installed cable (length can be ordered up to a maximum of 300m):

Cable Inductance  $L_{\text{cable}} = 1 \mu\text{H/m}$

Cable Capacitance  $C_{\text{cable}} = 200 \text{ pF/m}$

| Designation | 4...20mA HART (X100) L+ / L-                                                                                            |
|-------------|-------------------------------------------------------------------------------------------------------------------------|
| Ex ia IIC   | $U_i \leq 30\text{V}$<br>$I_i \leq 100\text{mA}$<br>$P_i \leq 700\text{mW}$<br>$C_i = 18\text{nF}$<br>$L_i = 0\text{H}$ |
| Ex ia IIIB  | $U_i \leq 30\text{V}$<br>$I_i \leq 100\text{mA}$<br>$P_i \leq 650\text{mW}$<br>$C_i = 18\text{nF}$<br>$L_i = 0\text{H}$ |

#### Model Codes –

##### FMR20B - aa bb c d ee fff ggg h+(options) Radar Level Device

|    |                                                                                              |
|----|----------------------------------------------------------------------------------------------|
| aa | Approval:<br>BA: ATEX/IEC II 1 G Ex ia IIC T4 Ga<br>BK: ATEX/IEC II 1 D Ex ia IIIB T135°C Da |
| bb | Output:                                                                                      |

|           |                                                                                                                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           | BA: 2-wire 4-20mA HART<br>9Y: Changes not explosion protection relevant                                                                                                                                                |
| c         | Display; Operation:<br>B: LED<br>D: LED + Bluetooth<br>Y: Changes not explosion protection relevant                                                                                                                    |
| d         | Electrical Connection:<br>T: Pre-installed cable<br>Y: Changes not explosion protection relevant                                                                                                                       |
| ee        | Antenna:<br>BM: PVDF encapsulated, 40mm / 1-1/2"<br>BN: PVDF encapsulated, 80mm / 3"<br>99: Changes not explosion protection relevant                                                                                  |
| fff       | Process Connection, cable entry:<br>VCG: Thread ASME MNPT1<br>WDG: Thread G1 ISO228<br>XQ0: Without, cable entry lateral<br>YYY: Changes not explosion protection relevant                                             |
| ggg       | Process Connection, antenna end:<br>VEE: Thread ASME MNPT1-1/2, PVDF<br>WEE: Thread ISO228 G1-1/2, PVDF<br>XR0: Without, prepared for UNI throw flange > accessories<br>9YY: Changes not explosion protection relevant |
| h         | Cable Length:<br>A: 5m/16ft<br>B: 10m/32ft<br>C: 15m/49ft<br>D: 20m/65ft<br>E: 30m/98ft<br>F: 50m/164ft<br>1:...m<br>2:...ft<br>9: Changes not explosion protection relevant                                           |
| (options) | Options:<br>Not relevant for safety                                                                                                                                                                                    |

**FMR30B - aa bb c d ee fff ggg h+(options) Radar Level Device**

|           |                                                                                                                                                                                                                                                  |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| aa        | <p>Approval:</p> <p>BA: ATEX/IEC II 1 G Ex ia IIC T4 Ga</p> <p>BK: ATEX/IEC II 1 D Ex ia IIIB T135°C Da</p>                                                                                                                                      |
| bb        | <p>Output:</p> <p>BA: 2-wire 4-20mA HART</p> <p>9Y: Changes not explosion protection relevant</p>                                                                                                                                                |
| c         | <p>Display; Operation:</p> <p>J: Color Display with Touch Control</p> <p>K: Color Display with Touch Control + Bluetooth</p> <p>Y: Changes not explosion protection relevant</p>                                                                 |
| d         | <p>Electrical Connection:</p> <p>A: Cable gland M20, plastic, IP66/67</p> <p>H: Thread NPT1/2, IP66/67</p> <p>J: Cable gland M20, plastic blue, IP66/67</p> <p>Y: Changes not explosion protection relevant</p>                                  |
| ee        | <p>Antenna:</p> <p>BM: PVDF encapsulated, 40mm / 1-1/2"</p> <p>BN: PVDF encapsulated, 80mm / 3"</p> <p>99: Changes not explosion protection relevant</p>                                                                                         |
| fff       | <p>Process Connection, cable entry:</p> <p>XQ0: Without, cable entry on the side</p> <p>YYY: Changes not explosion protection relevant</p>                                                                                                       |
| ggg       | <p>Process Connection, antenna end:</p> <p>VEE: Thread ASME MNPT1-1/2, PVDF</p> <p>WEE: Thread ISO228 G1-1/2, PVDF</p> <p>XR0: Without, prepared for UNI throw flange &gt; accessories</p> <p>9YY: Changes not explosion protection relevant</p> |
| h         | <p>Cable Length:</p> <p>3: Without, customer side</p>                                                                                                                                                                                            |
| (options) | <p>Options:</p> <p>Not relevant for safety</p>                                                                                                                                                                                                   |