CERTIFICATE OF CONFORMITY

FM Approvals

1. **HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
2. **Certificate No:** **FM25US0123X**
3. **Equipment:** **FMR20B/30B Radar Level Device**
   (Type Reference and Name)
4. **Name of Listing Company:** **Endress+Hauser SE+Co. KG**
5. **Address of Listing Company:** **Hauptstrasse 1, Maulburg D-79689, Germany**
6. The examination and test results are recorded in confidential report number:

   PR471167 dated 7 July 2025

7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

   FM 3600:2022, FM 3610:2021, FM 3611:2021, FM 3810:2021, ANSI/UL 50:2015, ANSI/UL 50E:2015,ANSI/UL 60079-0:2020, ANSI/UL 60079-11:2018, ANSI/IEC 60529:2020, ANSI/UL 61010-1:2019,ANSI/UL 121201:2021

8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.
10. Equipment Ratings:

    See Annex

11. The marking of the equipment shall include:

    See Annex

Certificate issued by:

J.E. Marquedant
VP, Manager - Electrical Systems

7 July 2025
Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

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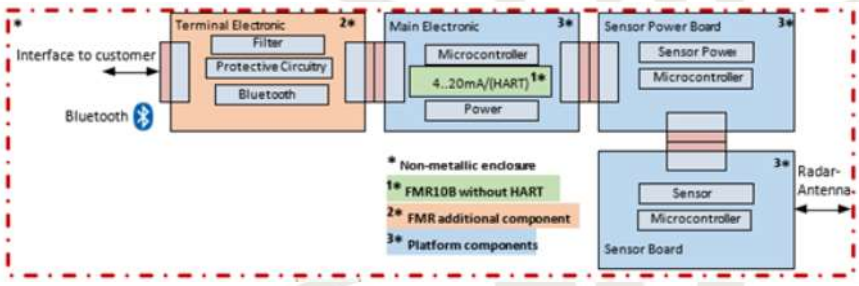
SCC Accredited CB-P/S OCPS Accrédité CCN

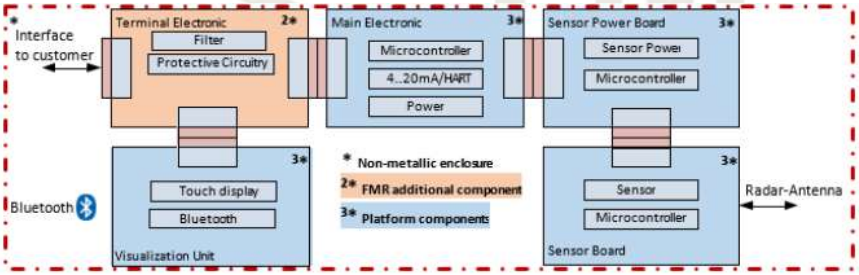
12. **Description of Equipment:**

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 E+H Technical documents:

Component	Component Certificates
Electronic Modules (Main electronic, terminal electronic and Visualization Unit)	FM25US0112U
Radar Sensor Modules (Sensor Power Board and Sensor Board)	CSA24US80191578U

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; Type 4X and 6P
The FMR30B has an Ingress Protection rating of IP66, IP67; Type 4X

Thermal Ratings -

Protection Type	Model Type	Permitted ambient and Process Temperature
Ex ia IIC IS Class I, Division 1, ABCD	FMR20B/30B	-40°C to +70°C
Ex ia IIIB IS Class II, III, Division 1, FG	FMR20B (only Variant 2) FMR30B	-40°C to +55°C
Class I, Division 2, ABCD (NIFW)	FMR20B/30B	-40°C to +70°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 Lcable = 1 µH/m
Cable Capacitance Ccable = 200 pF/m

Designation	4...20mA HART (X100) L+ / L-
Ex ia IIC IS Class I, Division 1, ABCD	$U_i \leq 30V$ $I_i \leq 100mA$ $P_i \leq 700mW$ $C_i = 18nF$ $L_i = 0H$
Ex ia IIIB IS Class II, III, Division 1, FG	$U_i \leq 30V$ $I_i \leq 100mA$ $P_i \leq 650mW$ $C_i = 18nF$ $L_i = 0H$

Class I, Division 2, ABCD (NIFW)	$U_i \leq 30V$ $I_i \leq 100mA$ $P_i \leq 700mW$ $C_i = 18nF$ $L_i = 0H$

See Annex for Model Codes

13. **Specific Conditions of Use:**

    See Annex

14. **Test and Assessment Procedure and Conditions:**

    This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

15. **Schedule Drawings**

    A copy of the technical documentation has been kept by FM Approvals.

16. **Certificate History**

    Details of the supplements to this certificate are described below:

Date	Description
7 July 2025	Original Issue.

ANNEX

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

Equipment Ratings:

Intrinsically Safe for Class I, II, III, Division 1, Groups ABCDFG, T4...T1 when installed in accordance with Control Drawing XA03522F
Intrinsically Safe for Class I, Zone 0, AEx ia IIC T4...T1 Ga when installed in accordance with Control Drawing XA03522F
Intrinsically Safe for Zone 20, AEx ia IIIB T135°C Da when installed in accordance with Control Drawing XA03522F
Nonincendive for Class I, Division 2, Groups ABCD; T4 when installed in accordance with Control Drawing XA03522F

Markings:

Class I, II, III, Division 1, Groups ABCDFG, T4...T1; Entity - XA03522F
Class I, Zone 0, AEx ia IIC T4...T1 Ga; Entity - XA03522F
Zone 20, AEx ia IIIB T135°C Da; Entity - XA03522F
Class I, Division 2, Groups ABCD, T4 (NIFW - XA03522F)

Description of Equipment:

aa	Approval: FC: FM C/US IS Cl.I Div.1 Gr.A-D T4, AEx/Ex ia IIC T4 FD: FM C/US IS Cl.II,III Div.1 Gr.FG, , AEx/Ex ia IIIB T135°C Da FE: FM C/US Cl.I Div.2 Gr.A-D T4 (NIFW)
bb	Output: BA: 2-wire 4-20mA HART
c	Display; Operation: B: LED D:LED + Bluetooth
d	Electrical Connection: T: Pre-installed cable
ee	Antenna: BM: PVDF encapsulated, 40mm / 1-1/2" BN: PVDF encapsulated, 80mm / 3"
fff	Process Connection, cable entry: VCG: Thread ASME MNPT1 WDG: Thread G1 ISO228 XQ0: Without, cable entry lateral

ggg	Process Connection, antenna end: VEE: Thread ASME MNPT1-1/2, PVDF WEE: Thread ISO228 G1-1/2, PVDF XR0: Without, prepared for UNI throw flange > accessories
h	Cable Length: A: 5m/16ft B: 10m/32ft C: 15m/49ft D: 20m/65ft E: 30m/98ft F: 50m/164ft 1:...m 2:...ft.
(options)	Options: Not relevant for safety

Specific Conditions of Use:

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 (≤ 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.
10. For Class II, III, Div. 1, Groups F, G the device corresponds to a low risk of mechanical danger.

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

Equipment Ratings:

Intrinsically Safe for Class I, II, III, Division 1, Groups ABCDFG, T4...T1 when installed in accordance with Control Drawing XA03524F

SCHEDULE

US Certificate of Conformity No: FM25US0123X

Intrinsically Safe for Class I, Zone 0, AEx ia IIC T4...T1 Ga when installed in accordance with Control Drawing XA03524F
Intrinsically Safe for Zone 20, AEx ia IIIB T135°C Da when installed in accordance with Control Drawing XA03524F
Nonincendive for Class I, Division 2, Groups ABCD; T4 when installed in accordance with Control Drawing XA03524F

Markings:

Class I, II, III, Division 1, Groups ABCDFG, T4...T1; Entity - XA03524F
Class I, Zone 0, AEx ia IIC T4...T1 Ga; Entity - XA03524F
Zone 20, AEx ia IIIB T135°C Da; Entity -XA03524F
Class I, Division 2, Groups ABCD, T4 (NIFW - XA03524F)

Description of Equipment:

aa	Approval: FC: FM C/US IS Cl.I Div.1 Gr.A-D T4, AEx/Ex ia IIC T4 FD: FM C/US IS Cl.II,III Div.1 Gr.FG, , AEx/Ex ia IIIB T135°C Da FE: FM C/US Cl.I Div.2 Gr.A-D T4 (NIFW)
bb	Output: BA: 2-wire 4-20mA HART
c	Display; Operation: J: Color Display with Touch Control K:Color Display with Touch Control + Bluetooth
d	Electrical Connection: A: Cable gland M20, plastic, IP66/67; Type 4X H: Thread NPT1/2, IP66/67; Type 4X J: Cable gland M20, plastic blue, IP66/67; Type 4X
ee	Antenna: BM: PVDF encapsulated, 40mm / 1-1/2" BN: PVDF encapsulated, 80mm / 3"
fff	Process Connection, cable entry: XQ0: Without, cable entry on the side
ggg	Process Connection, antenna end: VEE: Thread ASME MNPT1-1/2, PVDF WEE: Thread ISO228 G1-1/2, PVDF XR0: Without, prepared for UNI throw flange > accessories
h	Cable Length: 3: Without, customer side
(options)	Options: Not relevant for safety

Specific Conditions of Use:

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 (≤ 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.
10. For Class II, III, Div. 1, Groups F, G the device corresponds to a low risk of mechanical danger.

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