

# CERTIFICATE OF CONFORMITY

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS 1.

**Certificate No:** 2.

FM17US0187X

**Equipment:** 

(Type Reference and Name)

Micropilot FMR60, FMR62, & FMR67 Level Detectors

Name of Listing Company: 4.

Endress+Hauser SE+Co KG

Address of Listing Company:

Haupstrasse 1 Postfach 1261 Maulburg D79689 Germany

6. The examination and test results are recorded in confidential report number:

3062340 dated 14th September 2017

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

FM Class 3600: 2018, FM Class 3610: 2018, FM Class 3611: 2018, FM Class 3615: 2018, FM Class 3616: 2011, FM Class 3810: 2018, ANSI/UL 61010-1: 2012, ANSI/ISA 60079-0:2013, ANSI/ISA 60079-1: 2015, ANSI/ISA 60079-11: 2014, ANSI/ISA 60079-26: 2017, UL 50E: 2015, ANSI/IEC 60529:2017, ANSI/ISA 12.27.01:2011, ANSI/UL 121201:2018

- If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of 8. use specified in the schedule to this certificate.
- 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.

Certificate issued by:

J.**Æ**. Marguedant

VP, Manager - Electrical Systems

11 June 2019

Date

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

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FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmapprovals.com www.fmapprovals.com

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#### 10. Equipment Ratings:

Intrinsically Safe for Class I, II, III Division 1, Groups A, B, C, D, E, F, and G. Intrinsically Safe for Class I, Zone 0, AEx ia IIC. Explosionproof with Intrinsically Safe Probe for Class I, Division 1, Groups A, B, C, and D. Dustignitionproof with Intrinsically Safe Probe for Class II, III, Division 1, Groups E, F, and G. Nonincendive for Class I, Division 2, Groups A, B, C, and D. Associated Intrinsically Safe Outputs for Class I, II, III Division 1, Groups A, B, C, D, E, F, and G. Flameproof and Intrinsically Safe with Intrinsically Safe Outputs for Class I, Zone 0/1, AEx ia/db [ia Ga] IIC T\* Ga/Gb. Indoor and outdoor locations (Type 4X / 6P, IP66/68) with an ambient temperature rating of -40°C to +80°C. Single Seal or Dual Seal per 12.27.01.

11. The marking of the equipment shall include:

IS CL I, DIV 1, GP A-D, T\* Ta = -40°C to +80°C; Entity XA01615F; IS CL I, II, III, DIV 1, GP A-G, T\* Ta = -40°C to +80°C; Entity XA01615F; XP-IS, CL I DIV 1, GP A-D, T\* Ta = -40°C to +80°C; Entity XA01616F; DIP-IS, CL II, III DIV 1, GP E-G, T\* Ta = -40°C to +80°C; Entity XA01616F; AIS CL I, II, III DIV 1, GP A-G, T\* Ta = -40°C to +80°C; Entity XA01615F/XA01616F; DIP CL II, III, DIV 1, GP E-G, T\* Ta = -40°C to +80°C; CL I Zn 0/1 AEx ia/db [ia Ga] IIC T\* Ga/Gb Ta = -40°C to +80°C; Entity XA01616F; NI CL I, DIV 2, GP A-D, T\* Ta = -40°C to +80°C; NIFW XA01615F; Type 4X/6P, IP66/68 Single or Dual Seal per 12.27.01 T\* = Refer to XA01615F/XA01616F for temperature class related information.

#### 12. Description of Equipment:

General - The Models Micropilot FMR60, FMR62, and FMR67 are microwave based level detectors used for contactless continuous measurement of liquid and solid media in explosion hazardous areas. Short microwave pulses are radiated from the antenna, reflected by the medium surface and picked up again by the antenna. The time delay between emission and reception of the microwave radiation is measured and converted into a signal to calculate the level. The microwave units Micropilot consist of various types of housings, electronic modules with optional surge protection adapted to the supply and evaluating circuits, different RF modules with associated antennas. The electronic versions provide different power and output signals (voltage values, voltage forms, protocols). The FMR6x can be installed as Explosion-proof, Intrinsically Safe, or Nonincendive. In all cases the probe is always intrinsically Safe, the FMR6x includes Intrinsically Safe Outputs to be used with an Endress+Hauser service tool.

**Construction** - The Models Micropilot FMR60, FMR62, and FMR67 level detectors come in three different housings: 1) GT19 which is a plastic dual compartment, 2) GT18 stainless steel 316L dual compartment, and 3) GT20 Aluminum coated dual compartment enclosure. The enclosures come with various gland, threaded, and plug type openings.

Ratings - Models Micropilot FMR60, FMR62, and FMR67 ratings are as follows:

| Electrical data | ectrical data                            |            |                                |  |
|-----------------|--|------------|--------------------------------|--|
| I/O Interface   | I/O Interface                            |            |                                |  |
| Approval        | Power supply / Output<br>(I/O Interface) | Protection | Electrical data/maximum values |  |

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| Code<br>(010)    | Code<br>(020) | Mode<br>(functional)                     | Module<br>Transmis-<br>sion Code<br>(TRC) |  | Supply/output<br>(terminals 1 and 2)   | Supply/output<br>(terminals 3 and 4)   |   |  |  |  |  |    |              |   |              |  |  |
|------------------|---------------|--|---|--|--|--|---|--|--|--|--|----|--------------|---|--------------|--|--|
| FA,FF            |               |  |   | Intrinsically safe                                   | Ui = 30 V <sup>4)</sup><br>I <sub>i</sub> = 300 mA<br>P <sub>i</sub> = 1 W<br>L <sub>i</sub> = 0 µH  | non-existent   |   |  |  |  |  |    |              |   |              |  |  |
| FB,FF            | A             | 420mA<br>HART<br>(IO210_3)               | 31 -                                      | Nonincendive   | $C_{i} = 12 \text{ nF}$ $U_{i} = 35 \text{ V}^{8}$ $I_{i} = N/A^{5}$ $P_{i} = N/A$ $L_{i} = 0 \mu H$ $C_{i} = 12 \text{ nF}$               | non-existent   |   |  |  |  |  |    |              |   |              |  |  |
| FA,FF            |               |  |   | Intrinsically safe                                   | U <sub>i</sub> = 30 V <sup>4)</sup><br>I <sub>i</sub> = 300 mA<br>P <sub>i</sub> = 1 W   | not used   |   |  |  |  |  |    |              |   |              |  |  |
| FB               | A             | 420mA<br>HART<br>(IO211/3) <sup>3)</sup> | 0mA                                       | munisically safe                                     | $L_i = 0 \mu H$<br>$C_i = 5 nF$  | not used   |   |  |  |  |  |    |              |   |              |  |  |
| FB,FF            | A             |  |   |  |  |  |   |  |  |  |  | 02 | Nonincendive | $\begin{array}{l} U_{i} = 35 \text{ V}^{4)} \\ I_{i} = N/A^{5)} \\ P_{i} = N/A \\ L_{i} = 0  \mu\text{H} \\ C_{i} = 5  n\text{F} \end{array}$ | not used     |  |  |
| FC,FD            |               | 420mA                                    |   | Explosionproof / Flameproof                          | U <sub>N</sub> = 35 V DC <sup>2)</sup><br>U <sub>m</sub> = 250 V   |  |   |  |  |  |  |    |              |   |              |  |  |
| FD,FE<br>FD      | A             | HART<br>(IO212/3) <sup>3)</sup>          | 03  | Dust-ignitionproof  Nonincendive                     | I <sub>nom</sub> = 4 20 mA<br>I <sub>max</sub> = 22 mA   | not used   |   |  |  |  |  |    |              |   |              |  |  |
| FA,FF FB 8A 1)   | В             | 420mA<br>HART+<br>switch                 | 02  | Intrinsically safe                                   | $P_{nom} = 0.7 \text{ W}$ $U_i = 30 \text{ V}^{-4}$ $I_i = 300 \text{ mA}$ $P_i = 1 \text{ W}$ $L_i = 0  \mu\text{H}$ $C_i = 5 \text{ nF}$ | $\begin{array}{l} U_{i} = 30 \text{ V}^{4)} \\ I_{i} = 300 \text{ mA} \\ P_{i} = 1W \\ L_{i} = 0  \mu\text{H} \\ C_{i} = 6 \text{ nF} \end{array}$ |   |  |  |  |  |    |              |   |              |  |  |
| FB,FF            |               | (IO211/3)                                |   |  |  |  |   |  |  |  |  |    | (IO211/3)    |   | Nonincendive | $\begin{array}{l} U_{i} = 35 \ V^{4)} \\ I_{i} = N/A^{5)} \\ P_{i} = N/A \\ L_{i} = 0 \ \mu H \\ C_{i} = 5 \ nF \end{array}$ | $\begin{array}{l} U_{i} = 35 \text{ V}^{4}) \\ I_{i} = N/A^{5}) \\ P_{i} = 1W \\ L_{i} = 0  \mu\text{H} \\ C_{i} = 6  n\text{F} \end{array}$ |
| FC,FD,8A 1)      |               | 420mA<br>HART+<br>switch<br>(IO212/3)    |   | r" N   | Explosionproof / Flameproof  | U <sub>N</sub> = 35 V DC <sup>2)</sup>   |   |  |  |  |  |    |              |   |              |  |  |
| FD,FE,8A 1)      | В             |  | 03  Dust-ignitionproof  Nonincendive      | U <sub>m</sub> = 250 V<br>I <sub>nom</sub> = 4 20 mA | $U_N = 35 \text{ V DC}^{2}$<br>$U_m = 250 \text{ V}$   |  |   |  |  |  |  |    |              |   |              |  |  |
| FD               |               |  |   | Nonincendive   | I <sub>nom</sub> = 4 20 IIIA<br>I <sub>max</sub> = 22 mA<br>P <sub>nom</sub> = 0,7 W   | P <sub>nom</sub> = 0,7 W   |   |  |  |  |  |    |              |   |              |  |  |
| FA,FF            |               | 420mA                                    | 100                                       | LIPP   | U <sub>i</sub> = 30 V <sup>4)</sup><br>I <sub>i</sub> = 300 mA   | U <sub>i</sub> = 30 V <sup>4)</sup><br>I <sub>i</sub> = 300 mA   |   |  |  |  |  |    |              |   |              |  |  |
| FB               | С             | HART+<br>420mA<br>(IO214_2)              | 420mA                                     | 24   | Intrinsically safe   | P <sub>i</sub> = 1 W<br>L <sub>i</sub> = 0 μH<br>C <sub>i</sub> = 30 nF  | P <sub>i</sub> = 1 W<br>L <sub>i</sub> = 0 μH<br>C <sub>i</sub> = 30 nF |  |  |  |  |    |              |   |              |  |  |
| 8A <sup>1)</sup> |               |  |   |  | •  | •  |   |  |  |  |  |    |              |   |              |  |  |

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| FB,FF       |   |                    |    | Nonincendive                | $ \begin{array}{l} U_i = 30 \ V^{6)} \\ I_i = N/A^{5)} \\ P_i = N/A \\ L_i = 0 \ \mu H \\ C_i = 30 \ nF \end{array} $ | $U_i = 30 \ V^{(6)}$<br>$I_i = N/A^{(5)}$<br>$P_i = N/A$<br>$L_i = 0 \ \mu H$<br>$C_i = 30 \ nF$ |
|-------------|---|--------------------|----|-----------------------------|---|--|
| FC,FD,8A 1) |   | 420mA              |    | Explosionproof / Flameproof | U <sub>N</sub> = 30 V DC <sup>2)</sup>  | U <sub>N</sub> =30 V DC <sup>2)</sup>  |
| FD,FE,8A 1) | С | HART+              | 25 | Dust-ignitionproof          | U <sub>m</sub> = 250 V<br>I <sub>N</sub> = 4 20 mA  | $U_{\rm m} = 250 \text{ V}$<br>$I_{\rm N} = 4 \dots 20 \text{ mA}$                               |
| FD          | , | 420mA<br>(IO215_2) | 25 | Nonincendive                | I <sub>max</sub> = 22 mA<br>P <sub>N</sub> = 0,7 W  | $I_{\text{max}} = 22 \text{ mA}$<br>$P_{\text{N}} = 0.7 \text{ W}$                               |

Notes: 1) Multiple marking; type of protection selected for first installation must be indicated and may not be changed.

2) Specifies maximum value, which includes 10% safety margin for typical power line variations.

3) For application / certificates which need I/O module with galvanic separation <u>and</u> use of 4...20 mA HART in 1-channel Mode (switch terminals closed).

4) For connection to an intrinsically safe circui,t with the following maximum values.

5) Current controlled circuit.

6) For connection to intrinsically safe (energy limited) circuits with the following maximum values.

7) For connection to an intrinsically safe FISCO circuit with the following maximum values.

8) For connection to a NI circuit with the following maximum values.

Micropilot FMR60-aabcdeffgghhhi + (options)

|    | -aabcdeffgghhhi + (options)                      |
|----|--|
| aa | Approval:  |
|    | FA IS CL I DIV 1, GP A-D, T*                     |
|    | FB IS CL I, II, III DIV 1, GP A-G, T*            |
|    | CL I Zn0 AEx/Ex ia IIC T* Ga                     |
|    | NI CL I DIV 2, GP A-D, T*                        |
|    | FC XP-IS CL I DIV 1, GP A-D, T*                  |
|    | AIS CL I DIV 1, GP A-D, T*                       |
|    | FD XP-IS CL I DIV 1, GP A-D, T*                  |
|    | CL I Zn0/1 AEx/Ex ia/db [ia Ga] IIC T* Ga/Gb     |
|    | DIP-IS CL II, III DIV 1, GP E-G, T*              |
|    | NI CL I DIV 2, GP A-D, T*                        |
|    | AIS CL I,II,III DIV 1, GP A-G, T*                |
|    | FE DIP CL II, III DIV 1, GP E-G, T*              |
|    | AIS CL I, II,III DIV 1, GP A-G, T*               |
|    | FF IS CL I DIV 1, GP A-D, T*                     |
|    | CL I Zn0 AEx/Ex ia IIC T* Ga                     |
|    | NI CL I DIV 2, GP A-D, T*                        |
|    | 8A IS CL I, II, III DIV 1, GP A-G, T6-T3         |
|    | XP-IS CL I, DIV 1, GP A-D, T6-T3                 |
|    | DIP-IS CL II, III DIV 1, GP E-G, T6-T3           |
|    | AIS CL I, II, III DIV 1, GP A-G                  |
| b  | Power Supply; Output:                            |
|    | A 2-wire; 4-20mA HART                            |
|    | B 2-wire; 4-20mA HART, switch output             |
|    | C 2-wire; 4-20mA HART, 4-20mA                    |
|    | Y Special Version (not relevant for safety)      |
| С  | Display, Operation:                              |
|    | A W/o LCD, via communication                     |
|    | C LCD SD02, push button + data backup function   |
|    | E LCD SD03, touch control + data backup function |

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|           | L Prepared for display FHX50 + M12 connection                              |  |
|-----------|--|--|
|           | M Prepared for display FHX50 + custom connection                           |  |
|           | N Prepared for display FHX50 + NPT½ thread, custom connection              |  |
|           | Y Special Version (not relevant for safety)                                |  |
| d         | Housing:   |  |
|           | A GT19 dual compartment, Plastics PBT                                      |  |
|           | B GT18 dual compartment, 316L  |  |
|           | C GT20 dual compartment, Alu coated  |  |
|           | Y Special Version (not relevant for safety)                                |  |
| е         | Electrical Connection:   |  |
|           | A Gland M20, IP66/68 Type 4X/6P Encl.                                      |  |
| 8         | C Thread G½, IP66/68 Type 4X/6P Encl.                                      |  |
|           | D Thread NPT½, IP66/68 Type 4X/6P Encl.                                    |  |
|           | I Plug M12, IP66/68 Type 4X/6P Encl.                                       |  |
|           | M Plug 7/8", IP66/68 Type 4X/6P Encl.                                      |  |
|           | Y Special Version (not relevant for safety)                                |  |
| ff        | Antenna:   |  |
|           | GA Drip-off, PTFE DN50   |  |
|           | YY Special Version (not relevant for safety)                               |  |
| gg        | Seal:  |  |
|           | A3 Viton GLT, -4080°C / -40176°F   |  |
|           | A4 Viton GLT, -40130°C / -40266°F  |  |
|           | B4 EPDM, -40150°C / -40302°F   |  |
|           | C1 FFKM, -20150°C / -40302°F   |  |
|           | YY Special Version (not relevant for safety)                               |  |
| hhh       | Process Connection: Any 3 characters combination (not relevant for Safety) |  |
| i         | Air Purge Connection: not available  |  |
| (options) | NF Bluetooth   |  |
| , ,       | (Others) Not relevant for safety   |  |
|           |  |  |

Micropilot FMR62-aabcdeffgghhhi + (options)

| aa | Approval:                                    |
|----|--|
|    | FA IS CL I DIV 1, GP A-D, T*                 |
|    | FB IS CL I, II, III DIV 1, GP A-G, T*        |
|    | CL I Zn0 AEx/Ex ia IIC T* Ga                 |
|    | NI CL I DIV 2, GP A-D, T*                    |
|    | FC XP-IS CL I DIV 1, GP A-D, T*              |
|    | AIS CL I DIV 1, GP A-D, T*                   |
|    | FD XP-IS CL I DIV 1, GP A-D, T*              |
|    | CL I Zn0/1 AEx/Ex ia/db [ia Ga] IIC T* Ga/Gb |
|    | DIP-IS CL II, III DIV 1, GP E-G, T*          |
|    | NI CL I DIV 2, GP A-D, T*                    |
|    | AIS CL I,II,III DIV 1, GP A-G, T*            |
|    | FE DIP CL II, III DIV 1, GP E-G, T*          |
|    | AIS CL I, II,III DIV 1, GP A-G, T*           |
|    | FF IS CL I DIV 1, GP A-D, T*                 |
|    | CL I Zn0 AEx/Ex ia IIC T* Ga                 |
|    | NI CL I DIV 2, GP A-D, T*                    |

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|           | 0A IS CLI II III DIV 4 CD A C TG T2  |  |  |
|-----------|--|--|--|
|           | 8A IS CL I, II, III DIV 1, GP A-G, T6-T3                                   |  |  |
|           | XP-IS CL I, DIV 1, GP A-D, T6-T3   |  |  |
|           | DIP-IS CL II, III DIV 1, GP E-G, T6-T3                                     |  |  |
| L         | AIS CL I, II, III DIV 1, GP A-G  |  |  |
| b         | Power Supply; Output:  |  |  |
|           | A 2-wire; 4-20mA HART  |  |  |
|           | B 2-wire; 4-20mA HART, switch output                                       |  |  |
|           | C 2-wire; 4-20mA HART, 4-20mA  |  |  |
|           | Y Special Version (not relevant for safety)                                |  |  |
| С         | Display, Operation:  |  |  |
|           | A W/o LCD, via communication   |  |  |
|           | C LCD SD02, push button + data backup function                             |  |  |
|           | E LCD SD03, touch control + data backup function                           |  |  |
|           | L Prepared for display FHX50 + M12 connection                              |  |  |
|           | M Prepared for display FHX50 + custom connection                           |  |  |
|           | N Prepared for display FHX50 + NPT½ thread, custom connection              |  |  |
|           | Y Special Version (not relevant for safety)                                |  |  |
| d         | Housing:   |  |  |
|           | A GT19 dual compartment, Plastics PBT                                      |  |  |
|           | B GT18 dual compartment, 316L  |  |  |
|           | C GT20 dual compartment, Alu coated  |  |  |
|           | Y Special Version (not relevant for safety)                                |  |  |
| е         | Electrical Connection:   |  |  |
|           | A Gland M20, IP66/68 Type 4X/6P Encl.                                      |  |  |
|           | C Thread G½, IP66/68 Type 4X/6P Encl.                                      |  |  |
|           | D Thread NPT½, IP66/68 Type 4X/6P Encl.                                    |  |  |
|           | I Plug M12, IP66/68 Type 4X/6P Encl.                                       |  |  |
|           | M Plug 7/8", IP66/68 Type 4X/6P Encl.                                      |  |  |
|           | Y Special Version (not relevant for safety)                                |  |  |
| ff        | Antenna:   |  |  |
|           | GE integrated, PEEK, ¾"  |  |  |
|           | GF integrated, PEEK, 1½"   |  |  |
|           | GM PTFE cladded flush mount DN50   |  |  |
|           | GN PTFE cladded flush mount DN80   |  |  |
|           | YY Special Version (not relevant for safety)                               |  |  |
| 99        | Seal:  |  |  |
| 99        | A5 Vitron GLT, -40150°C / -40302°F   |  |  |
|           | A6 Vitron GLT, -40200°C / -40392°F   |  |  |
|           | C1 FFKM, -20150°C / -4 302°F   |  |  |
|           | C2 FFKM, -20200°C / -4 392°F   |  |  |
|           | F5 PTFE cladded, -40150°C / -40302°F                                       |  |  |
|           | F6 PTFE cladded, -40130°C / -40392°F                                       |  |  |
|           |  |  |  |
| hhh       |  |  |  |
| hhh       | Process Connection: Any 3 characters combination (not relevant for Safety) |  |  |
| 1         | Air Purge Connection: not available  |  |  |
| (options) | NF Bluetooth   |  |  |
|           | (Others) Not relevant for safety   |  |  |

Micropilot FMR67-aabcdeffgghhhi + (options)

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| aa | Approval:   |
|----|---|
|    | FA IS CL I DIV 1, GP A-D, T*  |
|    | FB IS CL I, II, III DIV 1, GP A-G, T*   |
|    | CL I Zn0 AEx/Ex ia IIC T* Ga  |
|    | NI CL I DIV 2, GP A-D, T*   |
|    | FC XP-IS CL I DIV 1, GP A-D, T*   |
|    | AIS CL I DIV 1, GP A-D, T*  |
|    | FD XP-IS CL I DIV 1, GP A-D, T*   |
|    | CL I Zn0/1 AEx/Ex ia/db [ia Ga] IIC T* Ga/Gb                                      |
|    | DIP-IS CL II, III DIV 1, GP E-G, T*   |
|    | NI CL I DIV 2, GP A-D, T*   |
|    | AIS CL I,II,III DIV 1, GP A-G, T*   |
|    | FE DIP CL II, III DIV 1, GP E-G, T*   |
|    | AIS CL I, II,III DIV 1, GP A-G, T*  |
|    | FF IS CL I DIV 1, GP A-D, T*  |
|    | CL I Zn0 AEx/Ex ia IIC T* Ga  |
|    | NI CL I DIV 2, GP A-D, T*   |
|    | 8A IS CL I, II, III DIV 1, GP A-G, T6-T3  |
|    | XP-IS CL I, DIV 1, GP A-D, T6-T3  |
|    | DIP-IS CL II, III DIV 1, GP E-G, T6-T3  |
| b  | AIS CL I, II, III DIV 1, GP A-G   |
| D  | Power Supply; Output:  A 2-wire; 4-20mA HART                                      |
|    | A 2-wire; 4-20mA HART B 2-wire; 4-20mA HART, switch output                        |
|    | C 2-wire; 4-20mA HART, 4-20mA   |
|    | Y Special Version (not relevant for safety)                                       |
| С  | Display, Operation:   |
|    | A W/o LCD, via communication  |
|    | C LCD SD02, push button + data backup function                                    |
|    | E LCD SD03, touch control + data backup function                                  |
|    | L Prepared for display FHX50 + M12 connection                                     |
|    | M Prepared for display FHX50 + custom connection                                  |
|    | N Prepared for display FHX50 + NPT½ thread, custom connection                     |
| _  | Y Special Version (not relevant for safety)                                       |
| d  | Housing:  |
|    | A GT19 dual compartment, Plastics PBT   |
|    | B GT18 dual compartment, 316L   |
|    | C GT20 dual compartment, Alu coated   |
|    | Y Special Version (not relevant for safety)                                       |
| е  | Electrical Connection:  |
|    | A Gland M20, IP66/68 Type 4X/6P Encl.   |
|    | C Thread G½, IP66/68 Type 4X/6P Encl.   |
|    | D Thread NPT½, IP66/68 Type 4X/6P Encl.   |
|    | I Plug M12, IP66/68 Type 4X/6P Encl.  |
|    | M Plug 7/8", IP66/68 Type 4X/6P Encl. Y Special Version (not relevant for safety) |
| ff |   |
| '' | Antenna GA Drip-off, PTFE DN50  |
|    | GP PTFE flush mount DN80  |
|    | YY Special Version (not relevant for safety)                                      |
|    | The openial version (not relevant for safety)                                     |

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| 99        | Seal   |  |  |
|-----------|--|--|--|
|           | A3 Viton GLT, -4080°C / -40176°F   |  |  |
|           | A5 Viton GLT, -40150°C / -40302°F  |  |  |
|           | A6 Viton GLT, -40200°C / -40392°F  |  |  |
|           | YY Special Version (not relevant for safety)                               |  |  |
| hhh       | Process Connection: Any 3 characters combination (not relevant for Safety) |  |  |
| i         | Air Purge Connection:  |  |  |
|           | A W/O  |  |  |
|           | 1 G1/4   |  |  |
|           | 2 NPT1/4   |  |  |
|           | 3 Adapter G1/4   |  |  |
|           | 4 Adapter NPT1/4   |  |  |
| (options) | NF Bluetooth   |  |  |
| ,         | (Others) Not relevant for safety   |  |  |

#### 13. Specific Conditions of Use:

- 1. The flamepaths of the equipment are not intended to be repaired. Consult the manufacturer if repair of the flamepath joints is necessary.
- 2. Refer to the manufacturer's instructions to reduce the potential of an electrostatic charging hazard on the equipment enclosure.
- 3. For enclosures made of Aluminum avoid impacts that can cause sparking. Refer to applicable control drawing for Instructions.
- 4. For Division 2 installations do not disconnect equipment unless power has been switched off.
- 5. Factory Sealed, Explosionproof Seals not required. Refer to applicable control drawing for Instructions.
- 6. Refer to XA01615F or XA01616F for temperature class related information.

#### 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  |
|---------------------------------|--|
| 14 <sup>th</sup> September 2017 | Original Issue.  |
| 9 <sup>th</sup> October 2018    | Supplement 1: Report Reference: – PR450043 dated 9 <sup>th</sup> October 2018 Changes listed below: 1) Seal equipment with B4:EPDM" and C1,C2:FFKM (except protection by |

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|                            | enclosure Class II, III Group E, F, G).  2) Power Supply; Output: E, G, K, L cancelled with Micropilot FMR6x since never used.  3) New HF-E module and coupler version 2, DSP-E module version 2  4) G thread not allowed for XP Ex db housing. Metric thread not allowed for Canada therefore they were removed.  5) Added additional manufacturing locations for the FMR6x.  6) Update the listing to match the labels and certificates. Correct any errors.  7) Standards updated: FM3600:2011, FM3610:2015, FM3611:2016, |  |  |
|----------------------------|--|--|--|
|                            | 7) Standards updated: FM3600:2011, FM3610:2015, FM3611:2016, FM3615:2006, FM3810:2005 and ANSI/ISA12.12.01:2017. ANSI/IEC 60529:2004   |  |  |
|                            | Supplement 2:  |  |  |
| 11 <sup>th</sup> June 2019 | Report Reference: – RR218244 dated 11 <sup>th</sup> June 2019  |  |  |
| 11 Julie 2019              | Description of the Change:   |  |  |
|                            | 1) Add new ProToF Bluetooth module TRC [44]; model code Option NF.   |  |  |

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