

1 EU-TYPE EXAMINATION CERTIFICATE



2 **Equipment or Protective systems intended for use in Potentially
Explosive Atmospheres - Directive 2014/34/EU**

3 **EU-Type Examination Certificate No: FM16ATEX0036X**

4 **Equipment or protective system: Tank Side Monitor NRF80 and NRF81
(Type Reference and Name)**

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

6 **Address of Applicant: Hauptstrasse 1
79689 Maulburg
Germany**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.

8 FM Approvals Europe Ltd, notified body number 2809 in accordance with Article 17 of Directive 2014/34/EU of 26th February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

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

3058798 dated 26th July 2016

9 Compliance with the Essential Health and Safety Requirements, with the exception of those identified in item 15 of the schedule to this certificate, has been assessed by compliance with the following documents:

EN IEC 60079-0:2018, EN 60079-1:2014, EN 60079-11:2012 and
EN 60529:1991+A1:2000+A2:2013

10 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.

11 This EU-Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

12 The marking of the equipment or protective system shall include:



II 2 (1) G Ex db [ia Ga] IIC T6 Gb
Ta = -40 °C to +50 °C, +55 °C, or +60 °C

**Richard Zammitt
Certification Manager, FM Approvals Europe Ltd.**

Issue date: 02nd April 2021

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F ATEX 020 (Dec/2020)



Page 1 of 5

SCHEDULE

to EU-Type Examination Certificate No. FM16ATEX0036X

13 Description of Equipment or Protective System:

General - The Tank Side Monitor NRF80 and NRF81 is a robust gateway used for collecting and integrating tank gauging data in storage and process applications. The NRF80 and NRF81 Tank Side Monitors fulfill the exacting demands of tank inventory management, inventory control, custody transfer, and loss control to be used in conjunction with the Tank Gauging Platform products. The NRF8x Monitors come in two different types of transmitters, the NRF80 and NRF81, which differ only in the allowed options available.

The Tank Side Monitor NRF8x is comprised of certified Tank Gauge Platform Enclosures (FM16ATEX0031U) and certified Tank Gauge Platform Electronic Modules (FM16ATEX0020U). The Enclosures are rated IP66, IP68.

The following enclosures and electronic modules may be used:

Enclosures TRC[03-07-11] and TRC[04-08-12]

- Module TRC[00] FP Front Plane Board
- Module TRC[01] PS_HV Power Supply, High Voltage
- Module TRC[02] PS_LV_AC Power Supply, Low Voltage, AC
- Module TRC[03] PS_LV_DC Power Supply, Low Voltage, DC
- Module TRC[10] MB Main Board,
- Module TRC[20] IOM_A IO Module Analog
- Module TRC[21] IOM_A IO Module Analog
- Module TRC[31] IOM_D IO Module Digital
- Module TRC[32] IOM_Mod_FF IO Module Modbus/FF
- Module TRC[33] IOM_V1_WM550 IO Module V1/WM550

Construction - The Tank Side Monitor NRF8x Series comprises a single compartment flameproof enclosure with a thread-on window cover —housing the display module and electronics assembly. NRF80 and NRF81 both share the same enclosure, display and electronics assembly. The enclosure for NRF80 and NRF81 can be Aluminium or Stainless Steel, with 7 integral M20 sized field wiring entries. Integral threaded inserts allow for optional field wiring entry options including M25, ½ NPT or ¾ NPT.

Ratings - The Tank Side Monitor NRF8x operates at 85-264 Vac (28.8 Volt-Amperes), 52-75Vac (21.6 Volt-Amperes) and 19-64Vdc (13.4 Watts). The transmitters are rated for use in an ambient temperature range of -40 °C to +50 °C, +55 °C, or +60 °C. For further information regarding the Energy Limitation Parameters and Temperature Codes refer to drawing XA01531G.

Tank Side Monitor NRF80-abcddffgghiii + (options)

aa	Approval: BA - ATEX II 2 (1) G Ex db [ia Ga] IIC T6
b	Terminal Type: 1 - Spring Terminals 2 - Screw Terminals 9 - Special version, TSP (not relevant for safety)
c	Power Supply: B - 85-264VAC, LCD + operation D - 52-75VAC, LCD + operation

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SCHEDULE

to EU-Type Examination Certificate No. FM16ATEX0036X

	E - 19-64VDC, LCD + operation
dd	Primary Output: E1 - 4-20mA HART Exd
ee	Secondary I/O Analog: No options for the NRF80
ff	Secondary I/O Digital Ex d: No options for the NRF80
gg	Housing: AA - Transmitter Housing Aluminum coated. BA - Transmitter Housing 316/316L Y9 - Transmitter Housing 316/316L special coating for e.g. marine applications
h	Electrical Connection: A - Thread M20 B - Thread M25 E - Thread NPT1/2" F - Thread NPT3/4"
iii	Accuracy, Weight + Measure Approval: Any 3 characters combinations (not relevant for safety)
(options)	Options: not relevant for safety

Tank Side Monitor NRF81-aabcddeeffgghiii + (options)

aa	Approval: BA - ATEX II 2 (1) G Ex db [ia Ga] IIC T6
b	Terminal Type: 1 - Spring Terminals 2 - Screw Terminals 9 - Special version, TSP (not relevant for safety)
c	Power Supply: B - 85-264VAC, LCD + operation D - 52-75VAC, LCD + operation E - 19-64VDC, LCD + operation
dd	Primary Output: A1 - Modbus – RS485 B1 - V1 C1 - WM550 E1 - 4-20mA HART Exd H1 - 4-20mA HART Ex i Y9 - Special Version (not relevant for safety)
ee	Secondary I/O Analog: A1 - Ex d/XP – 1 x 4-20mA HART; 1 x RTD Input A2 - Ex d/XP – 2 x 4-20mA HART; 2 x RTD Input B1 - Ex i/AIS – 1 x 4-20mA HART; 1 x RTD Input B2 - Ex i/AIS – 2 x 4-20mA HART; 2 x RTD Input C2 - Ex i/AIS – 1 x 4-20mA HART; 2 x RTD Input + 1 x Ex d 4-20mA HART X0 - Prepared for I/O Analog RTD input Y9 - Special Version (not relevant for safety)
ff	Secondary I/O Digital Ex d: A1 - 2 x relay + 2 x module discrete A2 - 4 x relay + 4 x module discrete A3 - 6 x relay + 6 x module discrete

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SCHEDULE

to EU-Type Examination Certificate No. FM16ATEX0036X

	B1 - Modusbus RS485 B2 - Modusbus RS485 + 2 x relay + 2 x module discrete B3 - Modusbus RS485 + 4 x relay + 4 x module discrete C1 - V1 C2 - V1+2 x relay + 2 x module discrete C3 - V1+4 x relay + 4 x module discrete E1 - W550 E2 - W550 + 2 x relay + 2 x module discrete E2 - W550 + 4 x relay + 4 x module discrete X0 - Prepared for I/O digital Ex d Y9 - Special Version (not relevant for safety)
gg	Housing: AA - Transmitter Housing Aluminum coated. BA - Transmitter Housing 316/316L Y9 - Transmitter Housing 316/316L special coating for e.g. marine applications
h	Electrical Connection: A - Thread M20 B - Thread M25 E - Thread NPT1/2" F - Thread NPT3/4"
iii	Accuracy, Weight + Measure Approval: Any 3 characters combinations (not relevant for safety)
(options)	Options: not relevant for safety

14 Specific Conditions of Use:

1. Flamepath joints are not for repair. Contact the manufacturer.
2. Use heat resisting cables rated $\geq 85\text{ }^{\circ}\text{C}$ for $T_a > 50\text{ }^{\circ}\text{C}$.
3. Precautions shall be taken to minimize the risk from electrostatic discharge of non-metallic labels, varnishes/coatings on the stainless steel 316L, and isolated metal tags applied to the enclosure.
4. To maintain the ingress protection ratings (IP66/68), Teflon tape or pipe dope is required for blanking plugs.
5. Ex d certified seals are required within 50 mm (2") on all used housing entries.

15 Essential Health and Safety Requirements:

The relevant EHSRs that have not been addressed by the standards listed in this certificate have been identified and assessed in the confidential report identified in item 8.

16 Test and Assessment Procedure and Conditions:

This EU-Type Examination Certificate is the result of testing of a sample of the product submitted, in accordance with the provisions of the relevant specific standard(s), and assessment of supporting documentation. It does not imply an assessment of the whole production.

Whilst this certificate may be used in support of a manufacturer's claim for CE Marking, FM Approvals Europe Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

This Certificate has been issued in accordance with FM Approvals Europe Ltd's ATEX Certification Scheme.

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SCHEDULE

to EU-Type Examination Certificate No. FM16ATEX0036X

17 Schedule Drawings

A list of the significant parts of the technical documentation is annexed to this certificate and a copy has been kept by the Notified Body.

18 Certificate History

Details of the supplements to this certificate are described below:

Date	Description
27 th July 2016	Original Issue.
05 th September 2016	<u>Supplement 1:</u> Report Reference: RR206266 dated 25 th August 2016. Description of Change: Corrected typographical errors in the “Specific Conditions of Use” and option coding.
13 th September 2018	<u>Supplement 2:</u> Report Reference: PR450757 dated 11 th September 2018. Description of Change: Addition of Stainless Steel Enclosure option.
21 st March 2019	<u>Supplement 3:</u> Description of the Change: Certificate transferred from FM Approvals Ltd., notified body no. 1725, to FM Approvals Europe Ltd., notified body no. 2809.
06 th February 2020	<u>Supplement 4:</u> Report Reference: –RR220881 dated 04 th February 2020. Description of the Change: Updated Label material and Coating material. Updated EN 60529 with amendment +A2:2013. Updated Section 14.
17 th September 2020	<u>Supplement 5:</u> Report Reference: –PR457796 dated 16 th September 2020. Description of the Change: <ol style="list-style-type: none"> 1) EN IEC 60079-0 updated to latest edition (2018) 2) Model code amendments due to Tank Gauge Platform electronic module updates and enclosure updates to add special coating for marine applications 3) Specific Condition of Use 3) revised due to updated enclosure option
02 nd April 2021	<u>Supplement 6:</u> Report Reference: RR227004 dated 02 nd April 2021 Description of the Change: Document updates due to addition of UKEx Certificate.

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Endress+Hauser SE+Co KG (1000001123)

Class No 3615

Original Project I.D. 3058798

Certificate I.D. FM16ATEX0036X

<u>Drawing No.</u>	<u>Revision Let</u>	<u>Drawing Title</u>	<u>Last Report</u>
960017490	--	NRF8x Tankside Monitor Assembly	3058798
960017763	-	Overview NRF81 and NMS80/81/83	3058798
960017852	C	Technical Description Tankside Monitor NRF8x IECEx / ATEX	RR227004
960018037	D	Overview approved laser printed adhesive nameplate materials and coatings for aluminum enclosures	RR220881
960018110	-	Display with device configuration label	3058798
960018123	A	Terminal compartment label	PR457796
960018392	-	Device configuration label "spare part" list	3058798
960018396	B	Nameplate NRF8x IECEx / ATEX	PR457796
960018397	A	Tankside Monitor NRF8x device configuration	PR457796
960018398	B	Tankside Monitor NRF8x uses Tank Gauging Platform (TGP) modules	PR457796
XA01531G	C	Safety advice Tankside Monitor NRF8x IECEx/ATEX	PR457796