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UNITED KINGDOM CONFORMITY ASSESSMENT

# UK-TYPE EXAMINATION CERTIFICATE



2 Equipment or Protective systems intended for use in Potentially Explosive Atmospheres –  
UKSI 2016:1107 (as amended) – Schedule 3A, Part 1

3 Type Examination Certificate No: FM21UKEX0002X

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 Ltd, Approved Body number 1725, in accordance with Regulation 42 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Schedule 1 of the Regulations.

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

3058798 – RR227004 dated 2<sup>nd</sup> April 2021

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:

BS EN IEC 60079-0:2018, BS EN 60079-1:2014, BS EN 60079-11:2012 and  
BS EN 60529:1992+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 UK-Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance with the Regulations. Further requirements of the Regulations apply to the manufacturing process and supply of this product. 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

**Victor Aluko-Oginni**  
Certification Manager, FM Approvals Ltd.

Issue date: 06<sup>th</sup> April 2021

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F UKEX 020 (Jan/21)



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## 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 fulfil 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 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 XA02423G.

### **Tank Side Monitor NRF80-aabcdffgghiii + (options)**

<b>aa</b>	<b>Approval:</b> UA - UKEX II 2 (1) G Ex db [ia Ga] IIC T6
<b>b</b>	<b>Terminal Type:</b> 1 - Spring Terminals 2 - Screw Terminals 9 - Special version, TSP (not relevant for safety)
<b>c</b>	<b>Power Supply:</b> B - 85-264VAC, LCD + operation D - 52-75VAC, LCD + operation E - 19-64VDC, LCD + operation
<b>dd</b>	<b>Primary Output:</b> E1 - 4-20mA HART Exd
<b>ee</b>	<b>Secondary I/O Analog:</b> No options for the NRF80
<b>ff</b>	<b>Secondary I/O Digital Ex d:</b>

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	No options for the NRF80
<b>gg</b>	<b>Housing:</b> AA - Transmitter Housing Aluminum coated. BA - Transmitter Housing 316/316L Y9 - Transmitter Housing 316/316L special coating for e.g. marine applications
<b>h</b>	<b>Electrical Connection:</b> A - Thread M20 B - Thread M25 E - Thread NPT1/2" F - Thread NPT3/4"
<b>iii</b>	<b>Accuracy, Weight + Measure Approval:</b> Any 3 characters combinations (not relevant for safety)
<b>(options)</b>	<b>Options:</b> not relevant for safety

**Tank Side Monitor NRF81-abcdeeffghiii + (options)**

<b>aa</b>	<b>Approval:</b> UA - UKEX II 2 (1) G Ex db [ia Ga] IIC T6
<b>b</b>	<b>Terminal Type:</b> 1 - Spring Terminals 2 - Screw Terminals 9 - Special version, TSP (not relevant for safety)
<b>c</b>	<b>Power Supply:</b> B - 85-264VAC, LCD + operation D - 52-75VAC, LCD + operation E - 19-64VDC, LCD + operation
<b>dd</b>	<b>Primary Output:</b> 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)
<b>ee</b>	<b>Secondary I/O Analog:</b> 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)
<b>ff</b>	<b>Secondary I/O Digital Ex d:</b> A1 - 2 x relay + 2 x module discrete A2 - 4 x relay + 4 x module discrete A3 - 6 x relay + 6 x module discrete B1 - Modbus RS485 B2 - Modbus RS485 + 2 x relay + 2 x module discrete B3 - Modbus 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

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	E2 - W550 + 4 x relay + 4 x module discrete X0 - Prepared for I/O digital Ex d Y9 - Special Version (not relevant for safety)
<b>gg</b>	<b>Housing:</b> AA - Transmitter Housing Aluminum coated. BA - Transmitter Housing 316/316L Y9 - Transmitter Housing 316/316L special coating for e.g. marine applications
<b>h</b>	<b>Electrical Connection:</b> A - Thread M20 B - Thread M25 E - Thread NPT1/2" F - Thread NPT3/4"
<b>iii</b>	<b>Accuracy, Weight + Measure Approval:</b> Any 3 characters combinations (not relevant for safety)
<b>(options)</b>	<b>Options:</b> 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  $\geq 85$  °C for  $T_a > 50$  °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:

In addition to the Essential Health and Safety Requirements covered by the standards listed at item 9, all other requirements are demonstrated in the confidential report identified in item 8.

## 16 Test and Assessment Procedure and Conditions:

This UK-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 UKCA Marking, FM Approvals Ltd accepts no responsibility for the compliance of the equipment against all applicable Regulations in all applications.

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

## 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 Approved Body.

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## 18 **Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
6 <sup>th</sup> April 2021	Original Issue.



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## ***Endress+Hauser SE+Co KG (1000001123)***

**Class No 3615**

**Original Project I.D. 3058798**

**Certificate I.D. FM21UKEX0002X**

<u>Drawing No.</u>	<u>Revision Level</u>	<u>Drawing Title</u>	<u>Last Report</u>	<u>Electronic Drawing</u>
960017490	--	NRF8x Tankside Monitor Assembly	3058798	Yes (pdf)
960017763	-	Overview NRF81 and NMS80/81/83	3058798	Yes (pdf)
960018037	D	Overview approved laser printed adhesive nameplate materials and coatings for aluminum enclosures	RR220881	Yes (pdf)
960018110	-	Display with device configuration label	3058798	Yes (pdf)
960018123	A	Terminal compartment label	PR457796	Yes (pdf)
960018392	-	Device configuration label "spare part" list	3058798	Yes (pdf)
960018396	B	Nameplate NRF8x IECEx / ATEX	PR457796	Yes (pdf)
960018397	A	Tankside Monitor NRF8x device configuration	PR457796	Yes (pdf)
960018398	B	Tankside Monitor NRF8x uses Tank Gauging Platform (TGP) modules	PR457796	Yes (pdf)
961004999	A	Nameplate lettering, TGP TSM NRF8x UK Ex	RR227004	Yes (pdf)
XA0243G	A	Safety Instructions Tankside Monitor NRF81	RR227004	Yes (pdf)