

# 1. 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. UK-Type Examination Certificate No: FM21UKEX0096X

4. Equipment or protective system:  
(Type Reference and Name) Deltabar FMD71, FMD72, Differential Pressure Transmitter

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

6. Address of Applicant Hauptstrasse 1, Maulburg D-79689, 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:

3045873 – RR228296 dated 27<sup>th</sup> August 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:

EN IEC 60079-0:2018, EN 60079-1:2014, EN 60079-11:2012, EN 60079-26:2015,  
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 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.

Certificate issued by:

11 November 2024

Victor Aluko-Oginni  
Certification Manager, FM Approvals Ltd.

Date

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F UKEX 020 (Jul/2024)



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## SCHEDULE

to UK-Type Examination Certificate No. FM21UKEX0096X

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



### FMD71

II 1/2 G Ex ia IIC T6...T3 Ga/Gb  
II 1/2 G Ex db [ia] IIC T6...T3 Ga/Gb

### FMD72

II 1/2 G Ex ia IIC T6...T4 Ga/Gb  
II 1/2 G Ex db [ia] IIC T6...T4 Ga/Gb

## 13. Description of Equipment or Protective System:

**General** - Deltabar FMD71 or FMD72 is an electrical differential pressure transmitter. It consists of one enclosure containing the 4...20mA HART electronic and two pressure sensors connected by cables to the main enclosure. Each sensor measures the pressure at his mounting position (e.g. on the bottom or on top of a vessel) and communicates the digital signal to the main electronics. Here the two pressure signals are computed, the differential pressure is calculated and provided as a 4...20mA HART output signal.

**Construction** – The FMD71 and FMD72 can have aluminium or stainless steel main enclosures with the option to have sensor modules with metal pressure sensors (FMD72) or ceramic pressure sensors (FMD71). Each sensor module is mounted to a sensor module housing which contains an electronic communications board with electrical cable connections to the main enclosure.

### Operating Temperature Ranges:

T6,  $-40^{\circ}\text{C} < T_a < 40^{\circ}\text{C}$  with a process temperature of  $< 80^{\circ}\text{C}$ .

T4,  $-40^{\circ}\text{C} < T_a < 70^{\circ}\text{C}$  with a process temperature of  $< 125^{\circ}\text{C}$ . The FMD71 high temperature version has a process temperature of  $< 135^{\circ}\text{C}$ .

The FMD71 high temperature version (options NB or NC only) has a process temperature of  $< 150^{\circ}\text{C}$  for a T3 temperature code with an ambient temperature of  $-40^{\circ}\text{C} < T_a < 70^{\circ}\text{C}$ .

### Electrical data:

Ex db [ia] version:  $U_i = 45\text{VDC}$ ;  $P_i = 1.05\text{W}$

Ex ia version:  $U_i = 30\text{VDC}$ ;  $I_i = 300\text{mA}$ ;  $P_i = 1\text{W}$ ;  $C_i = 11.8\text{nF}$ ;  $L_i = 0$

### Ingress Protection

IP66, IP68

## 14. Specific Conditions of Use:

1. Consult the manufacturer for dimensional information on the flameproof joints for repair.
2. The Deltabar FMD71, FMD72 sensors can be installed in the boundary wall between an area EPL Ga and the less hazardous area, EPL Gb. In this configuration, the process connection is installed in EPL Ga, while the sensor housing is installed in EPL Gb.
3. Potential Electrostatic discharging Hazard, cleaning of the painted surface should be done with a damp cloth.

## 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.

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**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.

**18. Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
13 September 2021	Original Issue.
8 December 2022	<u>Supplement 1:</u> Report Reference: –RR235094 dated 8 <sup>th</sup> December 2022. Description of the Change: Document updates due to Alternate PCB layout for sensor electronics due to change in component (D100)
11 November 2024	<u>Supplement 2:</u> Report Reference: PR469234 dated 1 November 2024. Description of the Change(s): Document updates

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## ANNEX

### **DELTABAR FMD71-abcdefghijklmnop+qrstuvwxyz Differential Pressure Transmitter**

#### **Description of Equipment:**

#### **Energy Limitation Parameters:**

Protection method	Ui	Ii	Pi	Ci	Li
Ex ia	30Vdc	300mA	1W	11.8nF	0

a = Approval: UA: (Ex ia version), UC: (Ex d [ia] version)

b = Electronic: 2

c = Display, operation; 4, 5, 8

d = Enclosure: A, B, C (not for Ex d), 3

e = Enclosure sensor module: A, B

f = Electrical connection: A (not for Ex d [ia]), B, C, D, Y (for Ex ia only)

g = pressure range sensor 1 (HP): pressure ranges up to 40bar, any dual letter/number combination

h = pressure range sensor 2 (LP): pressure ranges up to 40bar, any dual letter/number combination

i = accuracy: any single letter or number

k = calibration, units: any single letter or number

l = cable length sensor-transmitter: an dual letter representing cable length up to 50m

m = cable length sensor-sensor: any dual letter representing cable length up to 100m

n = process connection sensor 1 (HP): any triple letter/number combinations representing standard industrial process connections

o = process connections sensor 2 (LP): any triple letter/number combinations representing standard industrial process connections

p = seal: any single letter or number

q = language: any dual letter or none

r = calibration: any dual letter/number combination or none

s = service: any dual letter/number combination or none

t = test, protocol: any dual letter/number combination or none

u = accessories, mounted: none, NB-high temp. version, or NA-overvoltage protection, NC-cond. tight version

v = accessories, enclosed: any dual letter/number combination or none

w = alternative cover seal: any dual letter/number combination or none

x = software version: any dual letter/number combination or none

y = customer specific marking: any dual letter/number combination or none

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## **DELTABAR FMD72-abcdefghijklmnpq+rstuvwxyz Differential Pressure Transmitter**

### **Description of Equipment:**

#### **Energy Limitation Parameters:**

Protection method	Ui	Ii	Pi	Ci	Li
Ex ia	30Vdc	300mA	1W	11.8nF	0

Input Ratings (Ex d): Ui = 45Vdc; Pi = 1.05W

a = Approval: UA: (Ex ia version), UC: (Ex d [ia] version)

b = Electronic: 2

c = Display, operation; 4, 5, 8

d = Enclosure: A, B, C (not for Ex d), 3

e = Enclosure sensor module: A, B

f = Electrical connection: A (not for Ex d [ia]), B, C, D, Y (for Ex ia only)

g = pressure range sensor 1 (HP): pressure ranges up to 40bar, any dual letter/number combination

h = pressure range sensor 2 (LP): pressure ranges up to 40bar, any dual letter/number combination

i = accuracy: any single letter or number

k = calibration, units: any single letter or number

l = cable length sensor-transmitter: any dual letter representing cable length up to 50m

m = cable length sensor-sensor: any dual letter representing cable length up to 100m

n = process connection sensor 1 (HP): any triple letter/number combinations representing standard industrial process connections

o = process connections sensor 2 (LP): any triple letter/number combinations representing standard industrial process connections

p = material diaphragm: any single letter or number

q = fill media: any single letter or number

r = Language: any dual letter or none

s = Calibration: any dual letter/number combination or none

t = Service: any dual letter/number combination or none

u = Test, protocol: any dual letter/number combination or none

v = Accessories, mounted: none or NA-overvoltage protection

w = Accessories, enclosed: any dual letter/number combination or none

x = alternative cover seal: any dual letter/number combination or none

y = Software version: any dual letter/number combination or none

z = customer specific marking: any dual letter/number combination or none

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