



# IECEX Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.:	<b>IECEX FMG 12.0016X</b>	Page 1 of 5	<u>Certificate history:</u>
Status:	<b>Current</b>	Issue No: 5	Issue 4 (2020-10-26)
Date of Issue:	2022-12-08		Issue 3 (2020-02-04)
Applicant:	<b>Endress+Hauser SE+Co. KG</b> Hauptstrasse 1 79689 Maulburg Germany		Issue 2 (2017-12-18)
Equipment:	<b>Deltabar FMD71, FMD72</b>		Issue 1 (2014-07-10)
Optional accessory:			Issue 0 (2012-06-20)
Type of Protection:	<b>Intrinsic Safety "ia", Flameproof Enclosure "db"</b>		
Marking:	Ex ia IIC T6...T3 Ga/Gb		
	Ex db [ia] IIC T6...T3 Ga/Gb		

Approved for issue on behalf of the IECEx  
Certification Body:

**J. E. Marquedant**

Position:

**VP, Manager - Electrical Systems**

Signature:  
(for printed version)

Date:  
(for printed version)

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**FM Approvals LLC**  
1151 Boston-Providence Turnpike  
Norwood, MA 02062  
United States of America





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Certificate No.: **IECEX FMG 12.0016X**

Page 2 of 5

Date of issue: 2022-12-08

Issue No: 5

Manufacturer: **Endress+Hauser SE+Co. KG**  
Hauptstrasse 1  
79689 Maulburg  
Germany

Manufacturing locations: **Endress+Hauser (USA) Automation Instrumentation Inc.**  
2340 Endress Place  
Greenwood, Indiana 46143  
**United States of America**

**Endress+Hauser (India) Automation Instrumentation Pvt. Ltd.**  
M-192, Waluj MIDC, Aurangabad - 431  
136  
Maharashtra State  
**India**

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

## STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

[IEC 60079-0:2017](#) Explosive atmospheres - Part 0: Equipment - General requirements  
Edition:7.0

[IEC 60079-1:2014-06](#) Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"  
Edition:7.0

[IEC 60079-11:2011](#) Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"  
Edition:6.0

[IEC 60079-26:2014-10](#) Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga  
Edition:3.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

## TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Reports:

[US/FMG/ExTR12.0013/00](#)  
[US/FMG/ExTR12.0013/03](#)

[US/FMG/ExTR12.0013/01](#)  
[US/FMG/ExTR12.0013/04](#)

[US/FMG/ExTR12.0013/02](#)  
[US/FMG/ExTR12.0013/05](#)

Quality Assessment Report:

[DE/TUN/QAR06.0003/10](#)



# IECEX Certificate of Conformity

Certificate No.: **IECEX FMG 12.0016X**

Page 3 of 5

Date of issue: 2022-12-08

Issue No: 5

## **EQUIPMENT:**

Equipment and systems covered by this Certificate are as follows:

Deltabar FMD71, FMD72 Differential Pressure Transmitter

Reference attachment.

## **SPECIFIC CONDITIONS OF USE: YES as shown below:**

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.



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Certificate No.: **IECEX FMG 12.0016X**

Page 4 of 5

Date of issue: 2022-12-08

Issue No: 5

**DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)**

Document updates due to Alternate PCB layout for sensor electronics due to change in component (D100)



# IECEX Certificate of Conformity

Certificate No.: **IECEX FMG 12.0016X**

Page 5 of 5

Date of issue: 2022-12-08

Issue No: 5

**Additional information:**

IECEX product listing

**Annex:**

[IECEX FMG 12-0016-02\\_Attachment-2.pdf](#)

**General product information:**

**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:

The ambient operating temperature range of the Deltabar FMD71 & FMD72 is  $-40^{\circ}\text{C} \leq T_a \leq 40^{\circ}\text{C}$  with a process temperature of  $\leq 80^{\circ}\text{C}$  for a T6 temperature code and  $-40^{\circ}\text{C} \leq T_a \leq 70^{\circ}\text{C}$  with a process temperature of  $\leq 125^{\circ}\text{C}$  for a T4 temperature code. The FMD71 high temperature version has a process temperature of  $\leq 135^{\circ}\text{C}$  for a T4 temperature code and  $\leq 150^{\circ}\text{C}$  for a T3 temperature code.

Electrical data:

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

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

***DELTABAR FMD71-abcdefghijklmno+qrstuvwxy Differential Pressure Transmitter***

Ex db [ia] IICT6...T3 Ga/Gb

Ex ia IICT6...T3 Ga/Gb

T6:  $-40^{\circ}\text{C} < T_a < 40^{\circ}\text{C}$

T4:  $-40^{\circ}\text{C} < T_a < 70^{\circ}\text{C}$

T3  $T_a = -40^{\circ}\text{C} < T_a < +70^{\circ}\text{C}$  (T3 – FMD71 options NB or NC only)

IP66/68

## Entity Parameters:

Protection method	$U_i$	$I_i$	$P_i$	$C_i$	$L_i$	Safety Instructions
Ex d [ia]	45Vdc		1.05W			XA00620P
IS	30Vdc	300m A	1W	11.8nF	0	XA00619P

a = Approval: IA, IB

b = Electronic: 2

c = Display, operation; 4, 5, 8

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

e = enclosure sensormodule: A, B

f = electrical connection: A (not for Ex d), B, C, D, Y (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 = 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, 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

**DEL TABAR FMD72-abcdefghijklmnpq+rstuvwxyz Differential Pressure Transmitter**

Ex db [ia] IICT6...T4 Ga/Gb

Ex ia IICT6...T4 Ga/Gb

T6:  $-40^{\circ}\text{C} < T_a < 40^{\circ}\text{C}$

T4:  $-40^{\circ}\text{C} < T_a < 70^{\circ}\text{C}$

IP66/68

Entity Parameters:

Protection method	Ui	Ii	Pi	Ci	Li	Safety Instructions
Ex d [ia]	45Vdc		1.05W			XA00620P
IS	30Vdc	300m A	1W	11.8nF	0	XA00619P

a = Approval: IA, IB

b = Electronic: 2

c = Display, operation; 4, 5, 8

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

e = Enclosure sensormodule: A, B

f = Electrical connection: A (not for Ex d), B, C, D, Y(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 = Fillmedia: any single letter or number

+ separator symbol: only used when options follow

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