



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

Certificate No.:	IECEx KEM 09.0016X	Page 1 of 5	<u>Certificate history:</u>
Status:	Current	Issue No: 5	Issue 4 (2017-02-16)
Date of Issue:	2021-08-09		Issue 3 (2013-02-22)
			Issue 2 (2011-04-07)
			Issue 1 (2010-01-21)
			Issue 0 (2009-04-10)
Applicant:	Endress+Hauser SE+Co. KG Hauptstraße 1 79689 Maulburg Germany		
Equipment:	Differential Pressure Transmitters DELTABAR M Model PMD55 and Pressure transmitters CERABAR M Models PMC51, PMP51 and PMP55 and DELTAPILOT M Models FMB50, FMB51, FMB52 and FMB53		
Optional accessory:			
Type of Protection:	Ex ia, ic Ex ta, tb		
Marking:	Ex ia IIC T6...T4 Ga/Gb Ex ia IIC T6...T4 Gb Ex ic IIC T6 ... T4 Gc Ex ia IIIC T ₂₀₀ xx °C Da/Db Ex ta/tb IIIC T ₂₀₀ xx °C Da/Db		

Approved for issue on behalf of the IECEx
Certification Body:

R. Schuller

Position:

Certification Manager

Signature:
(for printed version)

Date:

2021-08-09

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Certificate issued by:

DEKRA Certification B.V.
Meander 1051
6825 MJ Arnhem
Netherlands





IECEX Certificate of Conformity

Certificate No.: **IECEX KEM 09.0016X**

Page 2 of 5

Date of issue: 2021-08-09

Issue No: 5

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

Additional
manufacturing
locations:

See following pages for more locations

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 60079-11:2011 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

IEC 60079-31:2013 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
Edition:2

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 Report:

[NL/KEM/ExTR09.0017/05](#)

Quality Assessment Report:

[DE/TUN/QAR06.0003/08](#)



IECEX Certificate of Conformity

Certificate No.: **IECEX KEM 09.0016X**

Page 3 of 5

Date of issue: 2021-08-09

Issue No: 5

EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

Differential Pressure Transmitters DELTABAR M Model PMD55 and Pressure transmitters CERABAR M Models PMC51, PMP51 and PMP55 and DELTAPILOT M Models FMB50, FMB51, FMB52 and FMB53 are used in potentially explosive atmospheres caused by the presence of flammable gases, liquids, vapours or dusts for the measurement of level, flow, differential pressure, over- and under pressure. The pressure signal at the ceramic or metal sensor is converted into an electrical signal.

The output of the Pressure or Differential Pressure Transmitter is a 4 - 20 mA current output signal with or without a superimposed HART digital signal, or the transmitter is intended to be connected to a fieldbus system (Profibus PA or Foundation Fieldbus).

For more information regarding Thermal and Electrical data see Annex 1 to this report.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. For EPL Db surface temperature is measured with dust accumulation T_L .
2. For maximum surface temperature, ambient temperature range and maximum process temperatures see Annex 1 to Report No. NL/ KEM/ ExTR09.0017/05 and safety instructions.



IECEX Certificate of Conformity

Certificate No.: **IECEX KEM 09.0016X**

Page 4 of 5

Date of issue: 2021-08-09

Issue No: 5

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

1. Assessed per IEC 60079-0 Ed. 7
2. Change of company name: GmbH => SE
3. Some constructional changes



IECEX Certificate of Conformity

Certificate No.: **IECEX KEM 09.0016X**

Page 5 of 5

Date of issue: 2021-08-09

Issue No: 5

Additional manufacturing locations:

**Endress+Hauser (Suzhou) Automation
Instrumentation Co. Ltd.**
China – Singapore Industrial Park (SIP)
Su-Hong-Zhong-Lu, No. 491
Jiangsu Province, 215021 Suzhou
China

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

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

Endress+Hauser Yamanashi Co., Ltd
862-1 Mitsukunugi Sakaigawa-cho
Fuefuki-shi Yamanashi Pref. 406-0846
Japan

**Endress+Hauser (Brasil) Instrumentação e
Automação Ltda.**
Estrada Municipal Antonio Sesti 600
Recreio Costa Verde
Itatiba - SP 13254-085
Brazil

Annex:

[225812700-Annex1 to ExTR09.0017.05.pdf](#)

Description

Differential Pressure Transmitters DELTABAR M Model PMD55 and Pressure transmitters CERABAR M Models PMC51, PMP51 and PMP55 and DELTAPILOT M Models FMB50, FMB51, FMB52 and FMB53 are used in potentially explosive atmospheres caused by the presence of flammable gases, liquids, vapors or dusts for the measurement of level, flow, differential pressure, over- and under pressure.

Thermal data

1) For Ex i type of protection, protection level Ga and Gb

Ex ia IIC T6...T4 Ga/Gb (not for FMB53)

Ex ia IIC T6...T4 Gb

The relation between the temperature class, the ambient temperature and the process temperature is given in the following table, for more detailed tables see safety instructions.

Temperature class	Maximum process temperature	Ambient temperature range
T6	$T_p \leq 80^\circ \text{C}$	$-50^\circ \text{C} \leq T_a \leq +40^\circ \text{C}$
T4	$T_p \leq 125^\circ \text{C}$	$-50^\circ \text{C} \leq T_a \leq +70^\circ \text{C}$

2) For Ex i type of protection, protection level Gc (only for IECEx)

Ex ic IIC T6...T4 Gc

The relation between the temperature class, the ambient temperature and the process temperature is given in the following table, for more detailed tables see safety instructions.

Temperature class	Maximum process temperature	Ambient temperature range
T6	$T_p \leq 80^\circ \text{C}$	$-50^\circ \text{C} \leq T_a \leq +40^\circ \text{C}$
T4	$T_p \leq 125^\circ \text{C}$	$-50^\circ \text{C} \leq T_a \leq +70^\circ \text{C}$

3) For Ex i type of protection, protection level Da and Db

Ex ia IIIC T₂₀₀ xxx°C Da/Db

The relation between the maximum surface temperature, the ambient temperature and the process temperature is given in the following table, for more detailed tables see safety instructions.

Model	Type	Process connection type	Maximum surface temperature	Process temperature range Tp	Ambient temperature range
			EPL Da and EPL Db part		
Cerabar M	PMP51	compact	T125°C ¹⁾	-40°C ≤ Tp ≤ 125°C	-40°C ≤ Ta ≤ +55°C
	PMP55	T decoupled, capillary remote		-40°C ≤ Tp ≤ 400°C	-40°C ≤ Ta ≤ +60°C
Cerabar M	PMC51	compact	T135°C	-40°C ≤ Tp ≤ 125°C	-40°C ≤ Ta ≤ +55°C
Deltapilot M	FMB50	compact	T100°C	-10°C ≤ Tp ≤ 100°C	-40°C ≤ Ta ≤ +50°C
	FMB51	rod	T85°C	-10°C ≤ Tp ≤ 85°C	-40°C ≤ Ta ≤ +40°C
Deltabar M	PMD55	compact	T85°C	-40°C ≤ Tp ≤ 85°C	-40°C ≤ Ta ≤ +50°C

Note 1) T marking is based on the process temperature of the compact designs. Surface temperatures at process side, e.g. at high temperature process connections maybe higher and must be considered by the user as defined in Safety Instructions manual.

Remark:

For EPL Da surface temperature is measured under 200 mm of dust, for EPL Db surface temperature is measured with dust accumulation T_L.

4) For Ex t type of protection, protection level Da and Db

Ex ta/tb IIIC T₂₀₀ xxx°C Da/Db

The relation between the maximum surface temperature, the ambient temperature and the process temperature is given in the following table, for more detailed tables see safety instructions.

Model	Type	Process connection type	Maximum surface temperature	Process temperature range Tp	Ambient temperature range
			EPL Da and EPL Db part		
Cerabar M	PMC51, PMP51	compact	T125°C	-40°C ≤ Tp ≤ 125°C	-40°C ≤ Ta ≤ +60°C
	PMP55	temperature decoupled, capillary remote		-40°C ≤ Tp ≤ 400°C	-40°C ≤ Ta ≤ +65°C
Deltapilot M	FMB50	compact	T100°C	-10°C ≤ Tp ≤ 100°C	-40°C ≤ Ta ≤ +60°C
	FMB51	tube	T85°C	-10°C ≤ Tp ≤ 85°C	-40°C ≤ Ta ≤ +55°C
Deltabar M	PMD55	compact	T85°C	-40°C ≤ Tp ≤ 85°C	-40°C ≤ Ta ≤ +60°C

Note 1) T marking is based on the process temperature of the compact designs. Surface temperatures at process side, e.g. at high temperature process connections maybe higher and must be considered by the user as defined in Safety Instructions manual.

Remark:

For EPL Da surface temperature is measured under 200 mm of dust, for EPL Db surface temperature is measured with dust accumulation T_L.

Electrical data

Transmitters in type of protection intrinsic safety Ex ia

Interface 4 - 20 mA (with or without HART communication):

Supply and output circuit (terminals + and - or connector):

in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:

$U_i = 30 \text{ V}$; $I_i = 300 \text{ mA}$; $P_i = 1 \text{ W}$; $L_i = 0 \text{ mH}$; $C_i = 10 \text{ nF}$.

Interface Profibus PA or Foundation Fieldbus:

Supply and data circuit (terminals + and - or connector):

in type of protection intrinsic safety Ex ia IIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:

$U_i = 24 \text{ V}$; $I_i = 250 \text{ mA}$; $P_i = 1.2 \text{ W}$; $L_i = 10 \text{ }\mu\text{H}$; $C_i = 5 \text{ nF}$;

or to an intrinsically safe fieldbus in accordance with FISCO, with the following maximum values:

$U_i = 17.5 \text{ V}$; $I_i = 500 \text{ mA}$; $P_i = 5.5 \text{ W}$; $L_i = 10 \text{ }\mu\text{H}$; $C_i = 5 \text{ nF}$.

Display connector:

in type of protection intrinsic safety Ex ia IIC, for connection to a certified intrinsically safe circuit, with following maximum values:

$U_o = 8.6 \text{ V}$; $I_o = 39 \text{ mA}$; $P_o = 124 \text{ mW}$ and

$U_i = 8.5 \text{ V}$; $I_i = 7 \text{ mA}$; $P_i = 10 \text{ mW}$; $C_i = 0 \text{ nF}$; $L_o = 0 \text{ mH}$.

Transmitters in type of protection Ex ic

Interface 4 - 20 mA (with or without HART communication):

Supply and output circuit (Terminals + and - or connector):

in type of protection intrinsic safety Ex ic IIC, only for connection to a certified intrinsically safe or energy limited circuit, with the following maximum values:

$U_i = 45 \text{ V}$; $I_i = 300 \text{ mA}$; $P_i = 1 \text{ W}$; $L_i = 0 \text{ mH}$; $C_i = 10 \text{ nF}$.

Interface Profibus PA or Foundation Fieldbus:

Supply and data circuit (terminals + and - or connector):

in type of protection intrinsic safety Ex ic IIC, only for connection to a certified intrinsically safe or energy limited circuit, with the following maximum values:

$U_i = 32 \text{ V}$; $I_i = 250 \text{ mA}$; $P_i = 1.2 \text{ W}$; $L_i = 10 \text{ }\mu\text{H}$; $C_i = 5 \text{ nF}$;

or to an intrinsically safe fieldbus in accordance with FISCO, with the following maximum values:

$U_i = 17.5 \text{ V}$; $I_i = 500 \text{ mA}$; $P_i = 5.5 \text{ W}$; $L_i = 10 \text{ }\mu\text{H}$; $C_i = 5 \text{ nF}$.

Transmitters in type of protection Ex t

$U_{\max} = 45 \text{ V}$ (interface 4 - 20 mA), respectively 32 V (fieldbus interface).