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 06.0011X**

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Certificate history:

Status: **Current**

Issue No: 6

Issue 5 (2017-02-16)
Issue 4 (2012-09-25)
Issue 3 (2008-04-18)
Issue 2 (2007-11-13)
Issue 1 (2006-06-06)

Date of Issue: 2021-06-23

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

Equipment: **Pressure transmitter CERABAR-S Types PMP71, PMP75 and PMC71 and Deltapilot-S Type FMB70 and Differential pressure transmitter DELTABAR-S Types PMD75, FMD77 and FMD78**

Optional accessory:

Type of Protection: **Ex ia, Ex ta, tb, tc**

Marking: Ex ia IIC T6...T2 Ga/Gb
Ex ia IIIC T_{200} 70 °C Da
Ex ia IIIC T_{200} 100 °C ... 150 °C Da/Db
Ex ta/tb IIIC T_{200} 100 °C ... 125 °C Da/Db
Ex ta/tc IIIC T_{200} 100 °C ... 125 °C Da/Dc

Approved for issue on behalf of the IECEx Certification Body: **R. Schuller**

Position: **Certification Manager**

Signature: (for printed version)

Date: 2021-06-23

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
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Certificate issued by:

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

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Date of issue: 2021-06-23 Issue No: 6

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 Edition:7.0	Explosive atmospheres - Part 0: Equipment - General requirements
IEC 60079-11:2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-26:2014-10 Edition:3.0	Explosive atmospheres – Part 26: Equipment with Equipment Protection Level (EPL) Ga
IEC 60079-31:2013 Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

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/ExTR06.0005/06

Quality Assessment Report:

DE/TUN/QAR06.0003/08

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

Pressure transmitters CERABAR-S Types PMP71, PMP75 and PMC71 and DELTAPILOT-S Type FMB70 and Differential pressure transmitters DELTABAR-S Types PMD75, FMD77 and FMD78 are used in potentially explosive atmospheres for the measurement of level, flow, differential pressure, over- and under pressure.

Depending on the electronics insert the output of the Pressure or Differential Pressure Transmitter is a 4 - 20 mA current output signal with a superimposed HART digital signal, or the transmitter is connected to a Fieldbus system for the supply and the communication.

The several versions of the Pressure Transmitters differ in type of sensor, type of electronics insert, type of enclosure, process connection etc.

Optionally all versions of the Pressure and Differential Pressure Transmitters may be provided with an indicator and/or overvoltage protection.

A certified intrinsically safe device may be connected to the display interface of all versions for service purposes.

Optionally all intrinsically safe versions of the Pressure and Differential Pressure Transmitters may be provided with an extended sensor cable.

For more information regarding Thermal and Electrical data see attached Annex 1 to Report No. NL/KEM/ExTR06.0005/06.

SPECIFIC CONDITIONS OF USE: YES as shown below:
1. For EPL Db surface temperature is measured with dust accumulation T_L, while for EPL Dc surface temperature is measured without dust accumulation.

2. For ambient temperature range and maximum process temperatures see Annex 1 to Report No. NL/ KEM/ExTR06.0005/06 and safety instructions.

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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

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

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

Annex:

225472600-Annex1 to ExTR06.0005.06.pdf

Description

Pressure transmitters CERABAR-S Types PMP71, PMP75 and PMC71 and DELTAPILOT-S Type FMB70 and Differential pressure transmitters DELTABAR-S Types PMD75, FMD77 and FMD78 are used in potentially explosive atmospheres 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…T2 Ga/Gb for -50°C ≤ Ta ≤ 40°C / 70°C

2) **For Ex i type of protection,** protection level Da

   Ex ia IIIC T_{200} 70°C Da

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**	**Electronic**	**Maximum surface temperature** EPL Da	**Process temperature range Tp**	**Ambient temperature range**
CERABAR-S	PMP71 PMP75 PMC71	4..20 mA	T70°C	-40°C ≤ Tp ≤ 40°C	-40°C ≤ Ta ≤ +40°C
		PA/FF		-40°C ≤ Tp ≤ 34°C	-40°C ≤ Ta ≤ +34°C
DELTABAR-S	PMD75 FMD77 FMD78	4..20 mA	T70°C	-40°C ≤ Tp ≤ 40°C	-40°C ≤ Ta ≤ +40°C
		PA/FF		-40°C ≤ Tp ≤ 34°C	-40°C ≤ Ta ≤ +34°C
DELTAPILOT-S	FMB70	4..20 mA	T70°C	-10°C ≤ Tp ≤ 40°C	-40°C ≤ Ta ≤ +40°C
		PA/FF		-10°C ≤ Tp ≤ 34°C	-40°C ≤ Ta ≤ +34°C

Remarks:

- Above defined temperatures are for all types of connections
- the lower ambient and process temperature decreases to -50°C (ordercode option 580 = “JN”)

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

Ex ia IIIC T_{200} 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 EPL Da and EPL Db part	Process temperature range Tp	Ambient temperature range
CERABAR-S	PMP71 PMP75	compact	T125°C	-40°C ≤ Tp ≤ 125°C	-40°C ≤ Ta ≤ +55°C
	PMP75	T decoupled, capillary remote		-40°C ≤ Tp ≤ 400°C	-40°C ≤ Ta ≤ +55°C
CERABAR-S	PMC71	compact	T135°C	-40°C ≤ Tp ≤ 125°C	-40°C ≤ Ta ≤ +55°C
		high temperature	T150°C	-40°C ≤ Tp ≤ 150°C	-40°C ≤ Ta ≤ +55°C
DELTABAR-S	PMD75	compact	T100°C	-40°C ≤ Tp ≤ 100°C	-40°C ≤ Ta ≤ +50°C
	FMD77 FMD78	T decoupled, capillary remote	T100°C	-40°C ≤ Tp ≤ 400°C	-40°C ≤ Ta ≤ +55°C
Deltapilot S	FMB70	compact	T100°C	-10°C ≤ Tp ≤ 100°C	-40°C ≤ Ta ≤ +50°C

Remark:

- the lower ambient and process temperature decreases to -50°C (ordercode option 580 = “JN”)

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

Ex ta/tb IIIC T_{200} xxx°C Da/Db
Ex ta/tc IIIC T_{200} xxx°C Da/Dc

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 EPL Da and EPL Db part	Process temperature range Tp	Ambient temperature range
Cerabar S	PMP71	compact	T125°C	-40°C ≤ Tp ≤ 125°C	-40°C ≤ Ta ≤ +60°C
	PMP75	temperature decoupled, capillary remote		-40°C ≤ Tp ≤ 400°C	-40°C ≤ Ta ≤ +65°C
Deltabar S	PMD75	compact	T100°C	-40°C ≤ Tp ≤ 100°C	-40°C ≤ Ta ≤ +60°C
	FMD77 FMD78	T decoupled, capillary remote	T100°C	-40°C ≤ Tp ≤ 400°C	-40°C ≤ Ta ≤ +65°C
Deltapilot S	FMB70	compact	T100°C	-10°C ≤ Tp ≤ 100°C	-40°C ≤ Ta ≤ +60°C

Remarks:

- the lower ambient and process temperature decreases to -50°C (ordercode option 580 = “JN”)
- for tb only dust accumulation T_L allowed, for tc dust accumulation is not allowed

Electrical data

Equipment in type of protection intrinsic safety “i”

Transmitters with electronics insert 4 - 20 mA HART or 4 - 20 mA HART (SIL version)

Supply and output circuit (Terminals + and – or connector):
in type of protection intrinsic safety Ex ia IIC and Ex ia IIIC, only for connection to a certified intrinsically safe circuit, with the following maximum values:
U_i = 30 V; I_i = 300 mA; P_i = 1 W; L_i = 225 µH; C_i = 11.8 nF (output options A, B and C);
U_i = 30 V; I_i = 300 mA; P_i = 1 W; L_i = negligible; C_i = 11.8 nF (output options D, E and F).

Transmitters with electronics insert Profibus PA or Foundation Fieldbus

Supply and output circuit (terminals 1 and 2):
in type of protection intrinsic safety Ex ia IIC and Ex ia IIIC, only for connection to a certified intrinsically safe Fieldbus system, e.g. according to FISCO, with the following maximum values:
U_i = 17.5 V; I_i = 500 mA; P_i = 5.5 W; L_i = 10 µH; C_i = 5 nF;
or
in type of protection intrinsic safety Ex ia IIC and Ex ia IIIC, only for connection to a certified intrinsically safe circuit, with following maximum values:
U_i = 24 V; I_i = 250 mA; P_i = 1.2 W; L_i = 10 µH; C_i = 5 nF.

Equipment in type of protection dust ignition protection by enclosure “t”

Transmitters with electronics insert 4 - 20 mA HART or 4 - 20 mA HART (SIL version)

Supply and output circuit (Terminals + and – or connector):
U ≤ 45 Vdc

Transmitters with electronics insert Profibus PA or Foundation Fieldbus

Supply and output circuit (Terminals 1 and 2):
U ≤ 32 Vdc