CERTIFICATE

(1) EU-Type Examination

(2) **Equipment or protective systems intended for use in potentially explosive atmospheres - Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number: **KEMA 09ATEX0048 X** Issue Number: **6**

(4) Product: **Differential Pressure Transmitters DELTABAR M Model PMD55 and Pressure Transmitters CERABAR M Model PMC51, Model PMP51 and Model PMP55 and DELTAPILOT M Model FMB50, Model FMB51, Model FMB52 and Model FMB53**

(5) Manufacturer: **Endress+Hauser SE+Co. KG**

(6) Address: **Hauptstraße 1, 79689 Maulburg, Germany**

(7) This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) DEKRA Certification B.V., Notified Body number 0344 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, 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 Annex II to the Directive.

The examination and test results are recorded in confidential test report number NL/KEM/ExTR09.0017/05.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0 : 2018 **EN 60079-11 : 2012** **EN 60079-26 : 2015**
EN 60079-31 : 2014

except in respect of those requirements listed at item 18 of the Schedule.

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:

II 1/2 G Ex ia IIC T6…T4 Ga/Gb
II 2 G Ex ia IIC T6…T4 Gb
II 1/2 D Ex ia IIIC T_{200} xx °C Da/Db
II 1/2 D Ex ta/tb IIIC T_{200} xx °C Da/Db

Date of certification: 9 August 2021

DEKRA Certification B.V.

R. Schuller
Certification Manager

PRODUCTS RvA C 001

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(13) # SCHEDULE

(14) **to EU-Type Examination Certificate KEMA 09ATEX0048 X** Issue No. **6**

(15) **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, 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).

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

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

Optionally the Pressure Transmitters that are intended for application in explosive gas atmospheres, may be provided with a sensor with extension cable.

For more information regarding Thermal and Electrical data see Annex 1 to Report No. NL/KEM/ExTR09.0017/05.

Installation instructions

The instructions provided with the product shall be followed in detail to assure safe operation.

(16) **Report Number**

No. NL/KEM/ExTR09.0017/05.

(17) **Specific conditions of use**

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.

(18) **Essential Health and Safety Requirements**

Covered by the standards listed at item (9).

(19) **Test documentation**

As listed in Report No. NL/KEM/ExTR09.0017/05.

(13) # SCHEDULE

(14) **to EU-Type Examination Certificate KEMA 09ATEX0048 X** Issue No. **6**

(20) **Certificate history**

Issue 1	-	212327600	initial certificate
Issue 2	-	213104100	addition of models
Issue 3	-	214052900	addition of high temperature and hygienic/T3 models
Issue 4	-	215876900	constructional changes and standards upgrade
Issue 5	-	219596300	constructional changes and standards upgrade
Issue 6	-	225812700	constructional changes and standards upgrade

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	Tp ⩽ 80° C	-50°C ⩽ Ta ⩽ +40°C
T4	Tp ⩽ 125° C	-50°C ⩽ Ta ⩽ +70°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	Tp ≤ 80°C	-50°C ≤ Ta ≤ +40°C
T4	Tp ≤ 125°C	-50°C ≤ Ta ≤ +70°C

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 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 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 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 V; I_i = 300 mA; P_i = 1 W; L_i = 0 mH; C_i = 10 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 V; I_i = 250 mA; P_i = 1.2 W; L_i = 10 µH; C_i = 5 nF;
or to an intrinsically safe fieldbus in accordance with 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.

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 V; I_o = 39 mA; P_o = 124 mW and
U_i = 8.5 V; I_i = 7 mA; P_i = 10 mW; C_i = 0 nF; L_o = 0 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 V; I_i = 300 mA; P_i = 1 W; L_i = 0 mH; C_i = 10 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 V; I_i = 250 mA; P_i = 1.2 W; L_i = 10 µH; C_i = 5 nF;
or to an intrinsically safe fieldbus in accordance with 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.

Transmitters in type of protection Ex t
U_{max} = 45 V (interface 4 - 20 mA), respectively 32 V (fieldbus interface).