

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 03ATEX1561 X** Issue Number: **6**

(4) Product: **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**

(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/ExTR06.0005/06.

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

**EN IEC 60079-0 : 2018
EN 60079-31 : 2014**

EN 60079-11 : 2012

EN 60079-26 : 2015

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...T₂ Ga/Gb
II 1 D Ex ia IIIC T₂₀₀ 70 °C Da
II 1/2 D Ex ia IIIC T₂₀₀ 100 °C... 150 °C Da/Db
II 1/2 D Ex ta/tb IIIC T₂₀₀ 100 °C... 125 °C Da/Db
II 1/3 D Ex ta/tc IIIC T₂₀₀ 100 °C... 125 °C Da/Dc**

Date of certification: 23 June 2021

DEKRA Certification B.V.

R. Schuller
Certification Manager



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(13) **SCHEDULE**

(14) **to EU-Type Examination Certificate KEMA 03ATEX1561**

Issue No. 6

(15) **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.

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 Annex 1 to Report No. NL/KEM/ExTR06.0005/06.

Installation instructions

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

(16) **Report Number**

No. NL/KEM/ExTR06.0005/06.

(17) **Specific conditions of use**

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.

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

Covered by the standards listed at item (9).

(19) **Test documentation**

As listed in Report No. NL/KEM/ExTR06.0005/06.

(13) **SCHEDULE**

(14) **to EU-Type Examination Certificate KEMA 03ATEX1561**

Issue No. 6

(20) **Certificate history**

Issue 1 -	202787200	initial certificate
Issue 2 -	210773200	constructional changes
Issue 3 -	211500500	constructional changes and standards
Issue 4 -	215686600	constructional changes and standards upgrade
Issue 5 -	219596300	constructional changes and standards upgrade
Issue 6 -	225472600	constructional changes and standards upgrade

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 $-50^{\circ}\text{C} \leq T_a \leq 40^{\circ}\text{C} / 70^{\circ}\text{C}$

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

Ex ia IIIC T₂₀₀ 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	Process temperature range T_p	Ambient temperature range
			EPL Da		
CERABAR-S	PMP71	4..20 mA	T70°C	$-40^{\circ}\text{C} \leq T_p \leq 40^{\circ}\text{C}$	$-40^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C}$
	PMP75 PMC71	PA/FF		$-40^{\circ}\text{C} \leq T_p \leq 34^{\circ}\text{C}$	$-40^{\circ}\text{C} \leq T_a \leq +34^{\circ}\text{C}$
DELTABAR-S	PMD75	4..20 mA	T70°C	$-40^{\circ}\text{C} \leq T_p \leq 40^{\circ}\text{C}$	$-40^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C}$
	FMD77 FMD78	PA/FF		$-40^{\circ}\text{C} \leq T_p \leq 34^{\circ}\text{C}$	$-40^{\circ}\text{C} \leq T_a \leq +34^{\circ}\text{C}$
DELTAPILOT-S	FMB70	4..20 mA	T70°C	$-10^{\circ}\text{C} \leq T_p \leq 40^{\circ}\text{C}$	$-40^{\circ}\text{C} \leq T_a \leq +40^{\circ}\text{C}$
		PA/FF		$-10^{\circ}\text{C} \leq T_p \leq 34^{\circ}\text{C}$	$-40^{\circ}\text{C} \leq T_a \leq +34^{\circ}\text{C}$

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 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-S	PMP71	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 T₂₀₀ xxx°C Da/Db

Ex ta/tc IIIC T₂₀₀ 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	Process temperature range Tp	Ambient temperature range
			EPL Da and EPL Db part		
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:

$U_i = 30 \text{ V}$; $I_i = 300 \text{ mA}$; $P_i = 1 \text{ W}$; $L_i = 225 \mu\text{H}$; $C_i = 11.8 \text{ nF}$ (output options A, B and C);

$U_i = 30 \text{ V}$; $I_i = 300 \text{ mA}$; $P_i = 1 \text{ W}$; $L_i = \text{negligible}$; $C_i = 11.8 \text{ nF}$ (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:

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

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:

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

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):

$U \leq 45 \text{ Vdc}$

Transmitters with electronics insert Profibus PA or Foundation Fieldbus

Supply and output circuit (Terminals 1 and 2):

$U \leq 32 \text{ Vdc}$