

CERTIFICATE OF CONFORMITY



1. **HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
2. **Certificate No:** FM16US0361X
3. **Equipment:** Model Cerabar-S PMP71, PMP75, PMC71 and Model
(Type Reference and Name) Deltabar-S PMD75, FMD77, FMD78
Pressure Transmitters
4. **Name of Listing Company:** Endress+Hauser GmbH+Co KG
5. **Address of Listing Company:** Hauptstrasse 1
Postfach 1261
Maulburg
D79689
Germany
6. The examination and test results are recorded in confidential report number:

3017836 dated 26th March 2004
7. FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

FM Class 3600:2011, FM Class 3610:2015, FM Class 3611:2004, FM Class 3615:2006, FM Class 3616:2011, FM Class 3810:2005, ANSI/ISA 61010-1:2012, ANSI/NEMA 250:2003, ANSI/ISA 12.27.01:2011:2004
8. If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
9. This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.

Certificate issued by:

J. E. Marquedant
Manager, Electrical Systems

25 January 2017

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

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FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
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10. Equipment Ratings:

Explosionproof for Class I, Division 1, Groups A, B, C, and D hazardous (classified) locations, Flameproof for Class I, Zone 1, Group IIC hazardous (classified) locations; Dust-Ignitionproof for Class II, III Division 1, Groups E, F, and G hazardous (classified) locations; Nonincendive for Class I, Division 2, Groups A, B, C, D, hazardous (classified) locations; Intrinsically Safe for Class I, Division 1, Groups A, B, C, D, hazardous (classified) locations. Indoor and Outdoor Type 4X and Type 6P. A temperature Class of T6 with an ambient temperature of +40°C and T4 with an ambient temperature of +70°C (Intrinsic Safety), T6 with an ambient temperature of +75°C (Explosionproof, Flameproof, and Dust Ignitionproof), T6 with an ambient temperature of +75°C (Nonincendive). Single Seal per ANSI/ISA 12.27.01.

11. The marking of the equipment shall include:

Cerabar-S PMP71, PMP75

IS CLI, DIV 1, GP A, B, C, D; T6 Ta= -50°C to +40°C, T4 Ta= -50°C to +70°C per control drawing 960006670 or 960006753; Type 4X, 6P

CLI, DIV 1, GP A, B, C, D; T6 Ta = -50°C to +75°C; Type 4X, 6P

CLI, Zn1, GP IIC; T6 Ta = -50°C to +75°C; Type 4X, 6P

CLII, DIV 1, GP E, F, G; CLIII DIV 1; T6 Ta = -50°C to +75°C; Type 4X, 6P

NI CLI, DIV 2, GP A, B, C, D; T6 Ta = -50°C to +75°C; per control drawing XA01070P-B; Type 4X, 6P
Single Seal device acc. ANSI / ISA 12.27.01 up to MWP = 400 bar

Cerabar-S PMC71

CLI, DIV 1, GP A, B, C, D; T6 Ta = -50°C to +75°C; Type 4X, 6P

CLI, Zn1, GP IIC; T6 Ta = -50°C to +75°C; Type 4X, 6P

CLII, DIV 1, GP E, F, G; CLIII DIV 1; T6 Ta = -50°C to +75°C; Type 4X, 6P

NI CLI, DIV 2, GP A, B, C, D; T6 Ta = -50°C to +75°C; per control drawing XA01071P-B; Type 4X, 6P
Single Seal device acc. ANSI / ISA 12.27.01 up to MWP = 40 bar

Deltabar-S PMD75, FMD77, FMD78

IS CLI, DIV 1, GP A, B, C, D; T6 Ta= -50°C to +40°C, T4 Ta= -50°C to +70°C per control drawing 960006404 or 960006753; Type 4X, 6P

CLI, DIV 1, GP A, B, C, D; T6 Ta = -50°C to +75°C; Type 4X, 6P

CLI, Zn1, GP IIC; T6 Ta = -50°C to +75°C; Type 4X, 6P

CLII, DIV 1, GP E, F, G; CLIII DIV 1; T6 Ta = -50°C to +75°C; Type 4X, 6P

NI CLI, DIV 2, GP A, B, C, D; T6 Ta = -50°C to +75°C; per control drawing XA01070P-B; Type 4X, 6P
Single Seal device acc. ANSI / ISA 12.27.01 up to MWP = 420 bar

12. Description of Equipment:

General - The Cerabar-S and Deltabar-S pressure transmitters consist of various modules which allow the realization of pressure and differential pressure transmitters. The Cerabar-S products are used for pressure measurements while the Deltabar-S products are used for differential pressure measurements. The applied sensor module defines the final transmitter. The sensor modules can be combined with various types of process connections, depending on the specific application requirements for chemical, sanitary, or general application.

Construction - The Cerabar and Deltabar Pressure Transmitters come in Aluminum or stainless steel enclosures and consist of a top works section for field wiring, displays, house the interface circuitry. A number of **THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE**

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different options of sensors are available depending on the required application.

Ratings – see below:

Cerabar-S PMP71, PMP75, PMC71(NIFW only) and Deltabar-S PMD75, FMD77, FMD78

Entity Parameters:

For option b = A, B or C

Terminals	Groups	$V_{Max}(V)$	$I_{Max}(mA)$	$P_i(W)$	$C_i(nF)$	$L_i(\mu H)$
+ and -	A/B	30	200	1	11.8	225

For option b = D, E or F:

Terminals	Groups	$V_{Max}(V)$	$I_{Max}(mA)$	$P_i(W)$	$C_i(nF)$	$L_i(\mu H)$
+ and -	A/B	30	200	1	11.8	0

For option b = M, N, O, P, Q, or R:

Terminals	Groups	$V_{Max}(V)$	$I_{Max}(mA)$	$P_i(W)$	$C_i(nF)$	$L_i(\mu H)$
+ and -	A/B	24	250	1.2	5.0	225

Nonincendive Field Wire Parameters (NIFW):

Terminals	Groups	$V_{Max}(V)$	$P_i(W)$	$C_i(nF)$	$L_i(\mu H)$
+ and -	A-D	45	1	11.8	225

FISCO and FNICO Entity Parameters:

Terminals	Groups	$V_{Max}(V)$	$I_{Max}(mA)$	$P_i(W)$	$C_i(nF)$	$L_i(\mu H)$
+ and -	A/B	17.5	500	5.5	0	10

For installation instructions and the Temperature Class (*), which applies to specific Models, ambient temperature (Ta), and process medium temperature (Tmed), refer to Control Drawings listed in section 11.

Cerabar-S PMP71-abcdefghijklmnpqrstu Pressure Transmitter.

a = C, E, F, T representing approval

b = Electronic/ Communication/ Display A, B, C, D, E, F, M, N, O, P, Q, R

c = C, 3, 8, L enclosure, aluminum or stainless steel housing with different entries

d = pressure sensor, pressure ranges up to 700 bar, any dual letter or number combination

e = calibration, units; any single letter or number

f = material of diaphragm, any single letter or number

g = process connection/ material; any dual letter or number combination representing industrial standard process connections

h = fillmedia, any single letter or number

i = options: E (SIL, not verified by FM), F (NSF approval), M (overvoltage protection), N (HistoROM), S (marine approval) or any single letter or number representing non safety relevant options

k = additional options: E (SIL, not verified by FM), F (NSF approval), M (overvoltage protection), N (HistoROM), S (marine approval) or any single letter or number representing non safety relevant options

+ optional additional ordercode (maybe choosed or not):

l = application package; any dual letter or number (e.g. setup software)

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m = Service; any dual letter or number
n = Test, Certificate; any dual letter or number
o = additional approval; L8: EAC marking (not FM verified) or marine approval (not FM verified) or any dual letter or number representing non safety relevant options
p = accessory, mounted; manifold, any dual letter or number
q = accessory, enclosed; any dual letter or number
r = alternative cover seal, any dual letter or number
s = firmware version; any dual letter or number
t = Marking, Tagging; any dual letter or number
u = Marking, Tagging; any single letter or number

PMP75-abcdefghijkl +lmnopqrstuv. Cerabar-S Pressure Transmitter.

a = C, E, F, T representing approval
b = Electronic/ Communication/ Display A, B, C, D, E, F, M, N, O, P, Q, R
c = C, 3, 8, L enclosure, aluminum or stainless steel housing with different cable entries, with or without display
d = pressure sensor, pressure ranges up to 400 bar, any dual letter or number combination
e = calibration, units; any single letter or number
f = material of diaphragm, any single letter or number
g = process connection/ material; any dual letter or number combination representing industrial standard process connections
h = Transmitter mounting, fillmedia, any single letter or number
i = options: E (SIL, not verified by FM), F (NSF approval), M (overvoltage protection), N (HistoROM), S (marine approval) or any single letter or number representing non safety relevant options
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p = accessory, mounted; manifold, any dual letter or number
q = accessory, enclosed; any dual letter or number
s = flexible capillary armouring; any dual letter or number
r = alternative cover seal, any dual letter or number
t = firmware version; any dual letter or number
u = Marking, Tagging; any dual letter or number
v = Marking, Tagging; any single letter or number

PMC71-abcdefghijkl+lmnopqrstu. Cerabar-S Pressure Transmitter.

a = T representing approval
b = Electronic/ Communication/ Display A, B, C, D, E, F, M, N, O, P, Q, R
c = C, 3, 8, L enclosure, aluminum or stainless steel housing with different entries
d = pressure sensor, pressure ranges up to 40 bar, any dual letter or number combination
e = calibration, units; any single letter or number
f = material of diaphragm, any single letter or number
g = process connection/ material; any dual letter or number combination representing industrial standard process connections
h = gasket material, any single letter or number
i = options: E (SIL, not verified by FM), F (NSF approval), M (overvoltage protection), N (HistoROM), S (marine approval), T (high temp. version) or any single letter or number representing non safety relevant options
k = additional options: E (SIL, not verified by FM), F (NSF approval), M (overvoltage protection), N (HistoROM), S (marine approval), T (high temp. version) or any single letter or number representing non safety relevant options

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p = accessory, mounted, manifold, any dual letter or number
q = accessory, enclosed; any dual letter or number
r = alternative cover seal; any dual letter or number
s = firmware version; any dual letter or number
t = Marking, Tagging; any dual letter or number
u = Marking, Tagging; any single letter or number

PMD75-abcdefghijklmnpqrstu. Deltabar-S Differential Pressure Transmitter.

a = C, E, F, T representing approval
b = Electronic/ Communication/ Display A, B, C, D, E, F, M, N, O, P, Q, R
c = C, 3, 8, L enclosure, aluminum or stainless steel housing with different entries
d = pressure sensor, range up to 420 bar static pressure, any dual letter or number combination
e = calibration, units; any single letter or number
f = material of diaphragm, any single letter or number
g = process connection, material; any single letter or number representing industrial standard process connections
h = material of sealing, any single letter or number
i = Options: E(SIL, not verified by FM), M (overvoltage protection), N (HistoROM), S (marine approval), or any single letter or number representing non safety relevant options.
k = Additional options: E (SIL, not verified by FM), M(overvoltage protection), N (HistoROM), S (marine approval), or any single letter or number representing non safety relevant options.

+ optional additional ordercode (maybe choosed or not):

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m = Service; any dual letter or number
n = Test, Certificate; any dual letter or number
o = additional approval; L8: EAC marking (not FM verified) or marine approvals (not FM verified) or any dual letter or number representing non safety relevant options
p = accessory, mounted; manifold; any dual letter or number
q = accessory, enclosed; any dual letter or number
r = alternative cover seal; any dual letter or number
s = firmware version; any dual letter or number
t = Marking, Tagging; any dual letter or number
u = Marking, Tagging; any single letter or number

FMD77-abcdefghijklmnpqrstuvwxy. Deltabar-S Differential Pressure Transmitter.

a = C, E, F, T representing approval
b = Electronic/ Communication/ Display A, B, C, D, E, F, M, N, O, P, Q, R
c = C, 3, 8, L enclosure, aluminum or stainless steel housing with different entries
d = pressure sensor, range up to 160 bar static pressure, any dual letter or number combination
e = calibration, units; any single letter or number
f = material of diaphragm, any single letter or number
g = process connection/ low pressure side/ material/ seal; any single letter or number representing industrial standard process connections
h = process connection/ high pressure side/ material, any single letter or number representing industrial standard process connections
i = fillmedia, any single letter or number
k = options: E (SIL, not verified by FM), M (overvoltage protection), N (HistoROM), S (marine approval), or any single letter or number representing non safety relevant options

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o = Test, Certificate; any dual letter or number
p = additional approval; L8: EAC marking (not FM verified) or any dual letter or number representing non safety relevant options
q = Design; Temperature isolator; any dual letter or number
r = accessory, mounted; none
s = accessory, enclosed; any dual letter or number
t = Flexible capillary armouring; plastic coating; any dual letter or number
u = alternative process connection LP-side; any dual letter or number representing standard industrial process connections
v = alternative cover seal; any dual letter or number
w = firmware version; any dual letter or number
x = Marking, Tagging; any dual letter or number
y = Marking, Tagging; any single letter or number

FMD78-Tabcdefghik +mnopqrstuvw. Deltabar-S Differential Pressure Transmitter.

a = C, E, F, T representing approval
b = Electronic/ Communication/ Display A, B, C, D, E, F, M, N, O, P, Q, R
c = C, 3, 8, L enclosure, aluminum or stainless steel housing with different entries
d = pressure sensor, range up to 160 bar static pressure, any dual letter or number combination
e = calibration, units; any single letter or number
f = material of diaphragm, any single letter or number
g = process connection/ low and high pressure side/ material/ seal; any dual letter or number combination representing industrial standard process connections
h = fillmedia, length of capillary, any single letter or number
i = options: E (SIL, not verified by FM), M (overvoltage protection), N (HistoROM), S (marine approval), or any single letter or number representing non safety relevant options
k = additional options: E (SIL, not verified by FM), M (overvoltage protection), N (HistoROM), S (marine approval), or any single letter or number representing non safety relevant options

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p = accessory, mounted; none
q = accessory, enclosed; any dual letter or number
r = Flexible capillary armouring; plastic coating; any dual letter or number
s = alternative process connection LP-side; any dual letter or number representing standard industrial process connections
t = alternative cover seal, any dual letter or number
u = firmware version; any dual letter or number
v = Marking, Tagging; any dual letter or number
w = Marking, Tagging; any single letter or number

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13. Specific Conditions of Use:

1. ** The 700bar rated pressure sensor (available with PMP71) has not been evaluated as Single Seal.

14. Test and Assessment Procedure and Conditions:

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

15. Schedule Drawings

A copy of the technical documentation has been kept by FM Approvals.

16. Certificate History

Details of the supplements to this certificate are described below:

Date	Description
26 th March 2004	Original Issue.
7 th December 2016	<u>Supplement 6:</u> Report Reference: – 3060243 dated 7 th December 2016 Description of the Change: Update the model coding options, remove older models, and approving new pressure sensor ASIC and support circuitry.
25 th January 2017	<u>Supplement 7:</u> Report Reference: – RR207930 dated 25 th January 2017 Fixed Typo, Deltabar-S PMP75 should be Deltabar-S PMD75. Corrected other typographical errors.

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