DNV·GL

Certificate No:
TAA00002S2

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pressure Transmitter

with type designation(s)
Deltabar S PMD75, FMD78

Issued to
Endress + Hauser SE + Co. KG
Maulburg, Baden-Württemberg, Germany

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Temperature	**B**
Humidity	**B**
Vibration	**B**
EMC	**B**
Enclosure	**C**

Issued at **Hamburg** on **2020-09-21**
This Certificate is valid until **2025-09-20**.
DNV GL local station: **Augsburg**

Approval Engineer: **Heinz Scheffler**

for **DNV GL**

Joannis Papanuskas
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

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Product description

Differential pressure measurement.

Sensor:
- Metallic diaphragm (PMD75 / FMD78)

Pressure range from [bar]:
- -0.010 … +0.010 to -40…+40 (PMD75)
- -0.100 … +0.100 to -40…+40 (FMD78)

Output signal:
- 4…20mA HART, 2-wire,

Power supply:
- 10.5…45VDC (not Ex)
- 4…20mA loop powered

Housing:
- Aluminum, AISI 316L
- Stainless Steel (T17)

HMI:
- Function keys
- LC-Display (optional)

Electrical connection: Cable entry (gland or thread), connector

Software Version: V2.20.xx (HART)

PMD75 Order code, Revision 00 dated 13.08.2020
- 10 = Approval: Any single letter and/or number
- 20 = Output: A, B, C, D, E, F
- 30 = Housing; Cable entry; Protection: A,B,C,D,E,F,J,K,L,M,N,P,R,S,T,U,V,1,2,3,4,5,6,7,8
- 40 = Nominal Range; Cell Material; PN: Any double letter/number combination
- 50 = Calibration; Unit: Any single letter/number
- 60 = Membrane material: E, 1, 2, 3, 5, 6, 8, 9
- 70 = Process Connection: Any single letter/number
- 80 = Seal: Any single letter/number
- 100 = Additional option 1: Any letter and/or number combination
- 110 = Additional option 2: Any letter and/or number combination

FMD78 Order code, Revision 00 dated 13.08.2020
- 10 = Approval: Any single letter and/or number
- 20 = Output: A, B, C, D, E, F
- 30 = Housing: Cover Sealing; Cable Entry; A,B,C,D,E,F,J,K,L,M,N,P,R,S,T,U,V,1,2,3,4,5,6,7,8
- 40 = Nominal Range; Cell Material; PN: Any double letter/number combination
- 50 = Calibration; Unit: Any single letter/number
- 60 = Membrane material: E, 1, 2, 3, 5, 6, 7, 9
- 80 = Process connection: Any single letter/number
- 90 = Transmitter Mounting; Fill Fluid A, B, C, D, E, 1, 2, 3, 4, 5, 9
- 100 = Additional option 1: Any letter and/or number combination
- 110 = Additional option 2: Any letter and/or number combination

Application/Limitation

Process connection manufacturer's specification is to be observed.

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV GL, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV GL rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Ex-certification is not covered by this certificate. Application in hazardous area to be approved in each case according to the Rules and Ex-Certification/ Special Condition for Safe Use listed in valid Ex-certificate issued by a notified/recognized Certification Body

Type Approval documentation

Test reports: 970008001_AK (EMV-F9/10_02/20), 970008002_AK (EMV-F9/10_02/20), ENV No. 0722A-05, dated 10-10-2007; ENV No. 0722A-05 dated 05-05-2005; EMV No.960017767, dated 15-04-2015; EMC No. PTC_E_05_033_GL, dated 24-05-2005; 16-7586d dated 21-03-2016
Documents: Technical Information TI382P/00/EN/31.10; Operating instructions BA00270P/00/EN/20.16 Technical drawings, dated 21-09-2020; Software Architecture Ver. 1.3, dated 26-07-2004; PMD75 Order code, Revision 00, dated 13.08.2020; FMD78 Order code, Revision 00, dated 13.08.2020; Product specification Pressure S-class HART7 (version 01.20 / 03.07.14); Development and test overview report S-class HART 02.20.00-0026 (version 00.90 / 03.09.14); Impactanalysis_QC1400_HART7design, dated 11-09-2014; SW Revision History Version 1.8, dated 11-09-2014

Tests carried out

Applicable tests according to DNV GL CG-0339, December 2019

Marking of product

The products to be marked with:

- Model name
- Manufacturer name
- Serial number

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer’s product type marking and the type approval certificate

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE