DNV·GL

Certificate No:
TAA00001N2

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pressure Transmitter

with type designation(s)
Deltapilot M FMB50, Deltapilot M FMB52, Deltapilot M FMB53

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.

Location classes:

Temperature	**D**
Humidity	**B**
Vibration	**B**
EMC	**B**
Enclosure	**B**

***in combination with Stainless Steel Housing F15**

Issued at **Hamburg** on **2018-02-12**
This Certificate is valid until **2023-02-11**.
DNV GL local station: **Augsburg**

Approval Engineer: **Dariusz Lesniewski**

for **DNV GL**

Joannis Papanuskas
Head of Section

Product description

Hydrostatic Pressure Transmitter **Deltapilot M**
Pressure measurement for gas or liquids
Sensor: metal diaphragm
Pressure ranges: -1 up to 10bar
Output signal: 4...20mA HART, 2-wire
Housing: Aluminium or 316L
Electrical connection: cable entry (gland or thread), connector
Process connection: flange, thread
Software version: V01.00.xx
Version Ex-protected: refer to Ex-proof certificates

Key/Variants
FMB50- 10 20 30 40 50 70 80 90 110 170 180 190 500 550 570 580 590 600 610 620 850 895
10 = Approval: AA, BA, BB, BD, BE, BG, B1, CA, CC, CD, FA, FC, FD, GA, IA, ID, IE, I1, MA, NA, TA, 8C, 99
20 = Output: 2
30 = Display, Operation: 1, 2
40 = Housing: I, J, Q, R
50 = Electrical Connection: A, C, D, I, M, P, S, V, Y
70 = Sensor Range: 1C, 1F, 1H, 1M, 1P, 99
80 = Reference Accuracy: D, G, Y
90 = Calibration; Unit: A, B, C, D, E, F, J, K, Y
110 = Process Connection: Any triple letter and/or number combination; except for connections made of synthetic materials
170 = Membrane Material: B, L, Y
180 = Fill Fluid:2, 3, 9
190 = Seal: U
500 = Additional Operation Language: AA, AB, AC, AD, AE, AF, AK, AL
550 = Calibration: F1, F2,
570 = Service: HA, HB, HC, HK, IA, IB, I9,
580 = Test, Certificate: JA, JB, JE, JF, KB, KD, KE, KF, KG, K9
590 = Additional Approval: LA, LC, LE, LF, LG, LH, LI, LQ, LR, LS, LW
600 = Separate Housing: none
610 = Accessory Mounted: none
620 = Accessory Enclosed: QJ, QK, QL, QP, QR, QS, QT, QU, Q1, Q2, Q3, Q5, Q6, Q7
850 = Firmware Version: 78
895 = Marking: Z1, Z2

Key / Variants
FMB52- 10 20 30 40 50 70 80 90 100 110 170 180 190 500 550 570 580 590 600 610 620 850 895
10 = Approval: AA, BA, BD, BE, BG, CA, CD, FE, GA, IA, IC, IE, MA, NA, TA, 8C, 99
20 = Output: 2
30 = Display, Operation: 1, 2
40 = Housing: I, J, Q, R
50 = Electrical Connection: A, C, D, I, M, P, V, Y
70 = Sensor Range: 1C, 1F, 1H, 1M, 1P, 99
80 = Reference Accuracy: D, G, Y
90 = Calibration; Unit: A, B, C, D, E, F, J, K, Y
100 = Probe Connection: 15, 25, 35, 45, 99
110 = Process Connection: Any triple letter and/or number combination; except for connections made of synthetic materials
170 = Membrane Material: B, L, N, Y
180 = Fill Fluid: 2, 3, 9
190 = Seal: A, J, L, U
500 = Additional Operation Language: AA, AB, AC, AD, AE, AF, AK, AL
550 = Calibration: F1

570 = Service: HA, HC, IA, IB, I9
580 = Test, Certificate: JA, JB, JE, KD, KG, K9
590 = Additional Approval: LA, LC, LE, LF, LG, LH, LI, LQ, LR, LS
600 = Separate Housing: none
610 = Accessory Mounted: none
620 = Accessory Enclosed: QJ, QK, QL
850 = Firmware Version: 78
895 = Marking: Z1, Z2

Key /Variants
FMB53- 10 20 30 40 50 70 80 90 100 170 180 190 500 550 570 580 590 610 620 850 895
10 = Approval: AA, BD, BE, BG, CA, CD, FE, GA, IC, IE, MA, NA, TA, 8C, 99
20 = Output: 2
30 = Display, Operation: 1, 2
40 = Housing: I, J, Q, R
50 = Electrical Connection: A, C, D, I, M, P, V, Y
70 = Sensor Range: 1C, 1F, 1H, 1M, 1P, 99
80 = Reference Accuracy: D, G, Y
90 = Calibration; Unit: A, B, C, D, E, F, J, K, Y
100 = Probe Connection: 15, 25, 35, 45, 99
170 = Membrane Material: B, L, N, Y
180 = Fill Fluid: 2, 3, 9
190 = Seal: A, J, L, U, Y
500 = Additional Operation Language: AA, AB, AC, AD, AE, AF, AK, AL
550 = Calibration: F1
570 = Service: HA, HC, IA, IB, I9
580 = Test, Certificate: JA, JB, JE, KD, KG, K9
590 = Additional Approval: LA, LE, LF, LG, LH, LI, LQ, LR, LS
610 = Accessory Mounted: none
620 = Accessory Enclosed: none
850 = Firmware Version: 78
895 = Marking: Z1, Z2

The complete order code with optional addional oedering information can be found in the documents no. 960015744, no. 960015745, no. 960015746 (release date 06.11.2012).

Approval conditions
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.

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

Type Approval documentation

Tests carried out
Applicable tests according to class guideline DNVGL-CG-0339, November 2016.

Marking of product
The products to be marked with:
- manufacturer name
- model name

- serial number
- power supply ratings

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 at least every second year and at renewal of this certificate.

END OF CERTIFICATE