



Marine & Offshore

Certificate number: 34016/C0 BV

File number: AP4425

Product code: 3891H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

ENDRESS + HAUSER SE + Co. KG

Maulburg - GERMANY

for the type of product

PRESSURE TRANSMITTERS / TRANSDUCERS

Hydrostatic Pressure Transmitter

Deltapilot M type: FMB50, FMB52 and FMB53

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships

EC Code: 33

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate is a renewal of certificate N° 34016/B1 BV expiring on 11/06/2023

This certificate will expire on: 11 Jun 2028

For Bureau Veritas Marine & Offshore,

At BV HAMBURG, on 25 Jan 2023,

Dirk Hoepfner

This certificate was created electronically and is valid without signature



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 June 2017

This certificate consists of 3 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

Deltapilot M: FMB50, FMB52, FMB53 series are hydrostatic pressure transmitters for level measurement.

Main characteristics:

Measuring ranges: From -1 up to 10bar
 Power Supply: 24VDC
 Output signal: 4 to 20mA with HART protocol
 Display, Operation: - LCD, push buttons on display electronics or
 - without LCD, pushbutton on electronics
 Process Connection: Flange or thread
 Cable entry: Gland, thread, plug
 Housing: Aluminum or stainless steel
 Degree of protection: IPx6, IPx7
 Software version: V01.00.xx

Variants: (acc. to document TI00437P/00//EN/15.12 No. 71157179)

Type: **FMB50 aa b c d e ff g h iii j k l**

aa = Approval: Ex-approvals, as relevant

b = Output: 2

c = Display, Operation: 1, 2

d = Housing: I, J, Q, R

e = Electrical connection: A, C, D, I, M, P, V

ff = Sensor Range: 1C, 1F, 1H, 1M, 1P

g = Reference accuracy: D, G

h = Calibration, Unit: A, B, C, D, E, F, J, K

iii = Process connection: GGC, GGJ, RGJ, AEJ, AFJ, AGJ, AHJ, CEJ, CFJ, CGJ, CHJ, KEJ, KFJ, KGJ, KHJ, MRJ, MZJ, NDJ, S4J, TXJ, TIJ, TRJ, UNJ, UOJ, UPJ, UQJ, USJ, UTJ, TDJ

j = Material of the process isolating diaphragm : B, L

k = Fill fluid: 2, 3

l = Seal: U

Variants: (acc. to document TI00437P/00//EN/15.12 No. 71157179)

Type: **FMB52 aa b c d e ff g h ii jjj k l m**

aa = Approval: Ex-approvals, as relevant

b = Output: 2

c = Display, Operation: 1, 2

d = Housing: I, J, Q, R

e = Electrical connection: A, C, D, I, M, P, V

ff = Sensor range: 1C, 1F, 1H, 1M, 1P

g = Reference accuracy: D, G

h = Calibration, Unit: A, B, C, D, E, F, J, K

ii = Probe connection: 15, 25, 35, 45

jjj = Process connection: GGC, GGJ, RGJ, AFJ, AGJ, AHJ, CEJ, CFJ, CGJ, CHJ, KEJ, KFJ, KGJ, KHJ

k = Material of the process isolating diaphragm : B, L, N

l = Fill fluid: 2, 3

m = Seal: A, J, L, U

Variants: (acc. to document TI00437P/00//EN/15.12 No. 71157179)

Type: **FMB53 aa b c d e ff g h ii j k l**

aa = Approval: Ex-approvals, as relevant

b = Output: 2

c = Display, Operation: 1, 2

d = Housing: I, J, Q, R

e = Electrical connection: A, C, D, I, M, P, V

ff = Sensor range: 1C, 1F, 1H, 1M, 1P

g = Reference accuracy: D, G

h = Calibration, Unit: A, B, C, D, E, F, J, K

ii = Probe connection: 15, 25, 35, 45

j = Material of the process isolating diaphragm : B, L, N

k = Fill Fluid: 2, 3

l = Seal: A, J, L, U

2. DOCUMENTS AND DRAWINGS :

- Technical Information: - TI00437P/00/EN/15.12 No. 71157179
- For B1 version:
- TI00437P/00/EN/22.21 dated 2021-07-01

3. TEST REPORTS :

- Phoenix Testlab: E100729E1 dated: 24th November 2010; E100729E5 dated: 24th November 2010;
U100729E1 dated: 12 November 2010; U100729E5 dated: 17 November 2010
- Endress + Hauser: 970000883 dated: 02.12.2008; 970000884 dated: 02.12.2008; 970001074 dated: 10.12.2008
- For B1 version:
- Endress+Hauser SE+Co. KG: 970008313_AK dated 2021-09-13; 970008314_AK dated 2021-09-13

4. APPLICATION / LIMITATION :

- 4.1 - Bureau Veritas Rules for the Classification of Steel Ships
- 4.2 - Approval valid for ships intended to be granted with the following additional class notations: **AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.**
- 4.3 - The equipment fulfils the EMC requirements for installation in General Power Distribution Zone and Deck Zone.
- 4.4 - Bureau Veritas Environmental Category, **EC Code: 33**
- 4.5 - BV-Rules Part C, Ch 1, Sec 10 apply for pressurized parts made of aluminium or aluminium alloys if they are used in piping systems for flammable liquids or fire-extinguishing systems.
- 4.6 - The installation shall comply with the Manufacturer's recommendation described in the above-referenced documentation.
- 4.7 - Equipment covered by this Type Approval certificate have been tested according to requirements of IACS UR E10 rev.8.

5. PRODUCTION SURVEY REQUIREMENTS :

- 5.1 - The above mentioned sensors are to be supplied by **Endress + Hauser SE+Co. KG** in compliance with the type described in this certificate.
- 5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.
- 5.3 - **Endress + Hauser SE+Co. KG** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products :

Endress + Hauser SE+Co. KG
Hauptstraße 1
79689 Maulburg
GERMANY

6. MARKING OF PRODUCT :

- Maker's name or trademark
- Equipment type or model identification
- Date of manufacture and/or serial number
- Ex marking, as relevant

7. OTHERS :

- 7.1 - It is the responsibility of **Endress + Hauser SE+Co. KG** to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.
- 7.2 - This certificate supersedes the Type Approval Certificate N° 34016/B1 BV issued on 18 Oct 2021 by the Society.

***** END OF CERTIFICATE *****