



TYPE APPROVAL CERTIFICATE

Certificate No:
TAA00001N5
Revision No:
2

This is to certify:

That the Level Transmitter

with type designation(s)
Liquicap M FMI51/FMI52, Liquicap M FTI51/FTI52

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

is found to comply with
DNV 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.

Location classes:

Type	Temperature	Humidity	Vibration	EMC	Enclosure
Liquicap M FMI51/FMI52	D	B	A	B	B/C**
Liquicap M FTI51/FTI52	D	B	A	B/A*	B/C**

*Class A (EMC): for FTI 51/52 with electronic insert FEI54

**Class C (Enclosure): for housing F27 (order code for hosing = 6)

Issued at **Hamburg** on **2023-01-25**

for **DNV**

This Certificate is valid until **2028-01-24**.

DNV local station: **Augsburg**

Approval Engineer: **Dariusz Lesniewski**

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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 AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") 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.



Product description

Liquicap M FMI51 (rod probe), **FMI52** (rope probe)
 Capacitive level measurement for continuous measurement in liquids

Liquicap M FTI51 (rod probe), **FTI52** (rope probe)
 Level limit switch, universal capacitive limit switch for liquids
 Housing: Aluminium or Stainless steel 316L
 Electrical connection: cable entry (gland, thread, plug)
 Process connection: flange, thread
 Electronic inserts:
 - FMI 51/52: FEI50H (4...20mA/HART)
 - FTI 51/52: FEI52 (3-wire PNP, 10...55V DC)
 FEI54 (relay DPDT, 19...253V AC, 50/60Hz or 19...55V DC)
 FEI55 (8/16mA, 11...36V DC)

Degree of protection: IP66
 Software version: V01.03 (HART)
 Versions Ex-protected: refer to Ex-proof certificates

Liquicap M FMI51

Product structure related to approval drawing 960015901	10 20 30 50 60 70 80 90 100
10 = Approval	Any single letter and/or number
20 = Inactive length (L3)	1, 2, 3, 5, 6
30 = Active probe length (L1); Insulation	A-H, K, M, N, P, R, S
50 = Process connection	Any triple letter and/or number combination; not approves are process connections <1/2" and of synthetic material
60 = Electronics; Output	A, B, V, W
70 = Housing	1, 3, 4, 5, 6
80 = Cable entry	A, B, C, D, E, Y* (*Only allowed modification = standardized cable entries)
90 = Type of probe	1-5
100 = Additional option	Any single letter and/or number (Multiple combination allow)

Liquicap M FMI52

Product structure related to approval drawing 960015902	10 20 30 50 60 70 80 90 100
10 = Approval	Any single letter and/or number
20 = Inactive length (L3)	1, 2, 3, 5, 6
30 = Active probe length (L1); Insulation	A-H, K, M, N, P, R, S
50 = Process connection	Any triple letter and/or number combination; not approves are process connections <1/2" and of synthetic material
60 = Electronics; Output	A, B, V, W
70 = Housing	1, 3, 4, 5, 6, 9* (TSPCR2819)
80 = Cable entry	A, B, C, D, E, Y* (TSPCR2819 (Standardized cable entries)
90 = Type of probe	1-5
100 = Additional option	Any single letter and/or number (Multiple combination allow)

70: 9* = TSPCR2819: Housing 316L, IP68 (50m/24h) with cable connected at E-insert, Housing with 2 eye bolts M6 and threat sleeve G1 -1/2 ISO288

80: Y* = TSPCR2819: Cable (type Li2GYS2Y 6 x 0,2 + 2 x SHI-sw-FEP) with cover and cable entry pressure resistant;

Note: Halogen-free properties of the cable have not been tested. Measures for limitation of the propagation of fire along cable bundles are required (fire stops).

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, 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 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 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 Report: Paconsult No. 07-1622 dated 20.09.2007
Test Report: Paconsult No. 07-1567-Rev.1 dated 28.09.2007
Test Report: Paconsult No. 17-9262D dated 02.08.2017
Test Reports: E+H FES_E_06_004_GL, _023_GL, _025_GL and _026_GL dated 06.08.2007
Test Report: ESW 03491.015.95
Test Report: E+H No. 970008326_AK dated 2021-10-14
Test Report: E+H No. 970008327_AK dated 2021-10-14
Test Report: E+H No. 970008328_AK dated 2021-10-14
Test Report: E+H No. 970008329_AK dated 2021-10-18
Test Report: E+H No. 970008330_AK dated 2021-10-14
TI401F/00/en/13.10, TI417F/00/en/13.10
Ex-proof certificate: BVS 05 ATEX E 103 X
Technical drawings, Software Documentation
Type Approval Assessment Report issued at Augsburg on 2023-11-10.

Tests carried out

Applicable tests according to class guideline DNV-CG-0339, August 2021.

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

END OF CERTIFICATE