



CERTIFICATE NUMBER	21-2157806-PDA
EFFECTIVE DATE	18-Oct-2021
EXPIRY DATE	17-Oct-2026
ABS TECHNICAL OFFICE	Hamburg Engineering Department

CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

ENDRESS & HAUSER SE & CO. KG

located at

HAUPTSTR. 1, D-79689 MAULBURG, Germany

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

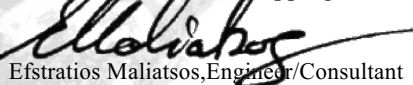
Product: Guided Level-Radar
Model: Guided Level-Radar (Levelflex FMP 5x) - FMP 51, FMP 52, FMP54, FMP 55, FMP 57
Endorsements:
Tier: 2 - PDA Issued

This Product Design Assessment (PDA) Certificate remains valid until 17/Oct/2026 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping


Efstratios Maliatsos, Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

ENDRESS & HAUSER SE & CO. KG

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Product: Guided Level-Radar

Model: Guided Level-Radar (Levelflex FMP 5x) - FMP 51, FMP 52, FMP54, FMP 55, FMP 57

Endorsements:

Intended Service:

Continuous level measurement of liquids and other substances on ACC, ACCU and ABCU classed vessels.

Description:

Measurement by high frequency pulses guided along rod, rope or coax probe for monitoring of distance between sensor and surface of substances. The pulses are reflected by the product surface, received by the electronic evaluation unit and converted into level information (Time Domain Reflectometry).

FMP 51, FMP 52, FMP54 - Level and interface measurement in liquids

FMP 55 - Interface measurement in liquids

FMP 57 - Level measurement in bulk solids

Rating:

Power supply: 24V DC, 2-wire,
90 to 253 VAC, 50/60 Hz or 10.4 to 48 VDC, 4-wire.

Output: 4...20mA HART protocol.

Degree of protection: IP 66/ 68.

Ambient Temperature: -40 to +80 °C, (Local Display -20 to +70 °C).

Housing: Plastic PBT, 316L or aluminum coated.

Certified safe type:

II 1/2 G Ex ia/db [ia Ga] IIC Ga/Gb or II 1/2/3 G Ex ia/ic [ia Ga] IIC T6...T1 Ga/Gb/Gc or Ex ia/nA [ia Ga] IIC T6...T1 Ga/Gb/Gc (KEMA 10ATEX0093 X).

Intrinsically Safe for Class I, Zone 0, AEx ia IIC Haz. Locations per control drawing XA00531F (HART);
Explosionproof and Intrinsically Safe for Class I, Division 1, Groups A, B, C and D Haz. Locations per control drawing XA00531F, XA00532F (HART);

Associated intrinsically Safe for Class I, II, III, Div. 1, Groups A, B, C, D, E, F and G Haz. Locations per control drawing XA00531F, XA00532F (HART);

Nonincendive with Nonincendive Field Wiring for Class I, Division 2, Groups A, B, C and D Haz. Locations per control drawing XA00531F, XA00532F (HART);

Flameproof and Intrinsically Safe with Intrinsically Safe outputs for Class I, Zone 0/1, AEx ia/db [ia Ga] IIC Ga/Gb Haz. Locations per control drawing XA00532F (HART);
(FM18US00211X).

Service Restriction:

1. Unit Certification is not required for this product. If the manufacturer or purchaser's request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.
2. The level sensing devices are to be fitted with valves or arranged such that they may be isolated and removed without emptying tanks or without impairing the integrity of pressurized systems.
3. For passenger vessels, level gauges are not to be installed on flammable oil tanks where they require tank wall penetration below the tank top.

Comments:

1. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product
2. Each particular application and installation is to be specifically approved in conjunction with the relevant system, locations and environmental conditions.
3. Installation in hazardous areas is to be in accordance with any special conditions for safe use detailed in the

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applicable Ex approval certificate.

4. ATEX certified equipment is not to be installed in hazardous areas on U.S. vessels unless it can be proven to have been tested to the applicable IEC 60079 series standards by an independent laboratory accepted by the U.S Coast Guard. USCG MI Notice 01-12 (February 7, 2012).

Notes/Drawing/Documentation:

Drawing No. 17-9052A-BE, Test Report, Vibration, Paconsult, 28/06/2017

Drawing No. U124597E1, Vibration and Envirometal test, Phoenix Testlab, 03/09/2013

Drawing No. U124597E2, Vibration and Envirometal test, Phoenix Testlab, 03/09/2013

Drawing No. U124597E3, Vibration and Envirometal test, Phoenix Testlab, 26/09/2013

Drawing No. U132774E1, Vibration and Envirometal test, Phoenix Tetlab, 02/07/2013

Drawing No. U132774E2, Vibration and Envirometal test, Phoenix Testlab, 03/07/2013

Drawing No. U132774E3, Vibration and Envirometal test, Phoenix Testlab, 20/07/2013

Drawing No. U132774E4, Vibration and Envirometal test, Phoenix Testlab, 03/07/2013

Drawing No. E124597E1, Test Report, EMC, Phoenix Testlab, 27/05/2013

Drawing No. E124597E2, Test Report, EMC, Phoenix Testlab, 27/05/2013

Drawing No. E124597E3, Test Report, EMC, Phoenix Testlab, 27/05/2013

Ex Certificates

Drawing No. KEMA10ATEX0093 X Iss 7, ATEX certificate

Drawing No. FM18US0211XSupp05, FM certificate

----- Rev. 2021-----

Drawing No. TI01001FEN_2620, Technical Information FMP51, FMP52, FMP53, rev. 2020

Drawing No. TI01003FEN_2320, Technical Information FMP55, rev. 2020

Drawing No. TI01004FEN_2320, Technical Information FMP57, rev. 2020

Drawing No. BA01001FEN_2220, Operation Instructions FMP51, FMP52, FMP53, rev. 2020

Drawing No. BA01003FEN_2120, Operation Instructions FMP55, rev. 2020

Drawing No. BA01004FEN_2120, Operation Instructions FMP57, rev. 2020

Drawing No. SD01328FEN_0519, Special Documentation Installation and operating instructions for marine approval FMP51, FMP52, FMP54, FMP55, FMP57

Drawing No. 970008317_AK_mit US, FMP54, EMC Test Report (6GHz), Endress+Hauser Testing Laboratory, 23/07/2021

Drawing No. 970008318_AK_mit US, FMP52, EMC Test Report (6GHz), Endress+Hauser Testing Laboratory, 23/07/2021

Terms of Validity:

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STANDARDS

ABS Rules:

2021 Marine Vessel Rules: 1-1-4/7.7, 1-1-A3, 1-1-A4, 4-6-2/9.11.3, 4-6-4/11.7, 4-6-4/13.5.6(b), 4-6-4/15.3.4(b), 4-8-3/1.7, 4-8-3/1.11, 4-8-3/1.17.1, 4-8-3/13, 4-9-9/13.1, 4-9-9/Table 1

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2021 Mobile Offshore Units Rules: 1-1-4/9.7, 1-1-A2, 1-1- A3, 4-2-3/3.7, 4-2-4/13.7.6, 4-3-1/3.7, 4-3-1/11, 4-3-1/15, 4-3-1/17.1

National:

NA

International:

IACS UR E10 Rev.7

Government:

NA

EUMED:

NA

OTHERS:

NA