
Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

Manufacturer	Danfoss A/S
Address	Nordborgvej 81, Nordborg, 6430, Denmark
Place of Production	Danfoss (Tianjin) Co. Ltd. No. 9 Quanhui Road, Wuqing Development Area, Tianjin, 301700, China
Type	Pressure Transmitter
Description	MBS 5100 adjustable zero point and span MBS 5103 fixed zero point and span MBS 5150 with integrated pulse snubber and adjustable zero point and span MBS 5153 with integrated pulse snubber and fixed zero point and span
Trade Name	MBS 5100, MBS 5103, MBS 5150, MBS 5153
Application	Marine, offshore and industrial applications for use in environmental categories ENV1, ENV2 and ENV3 as defined in Lloyd's Register's Type Approval System, Test Specification Number 1 – March 2019.
Specified Standard	Manufacturer's Specification IACS E10 Rev. 8 / 2021



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Ratings	Pressure ranges in relative (gauge) or absolute from 0 up to 600 bar Supply voltages: 24 VDC Output signal: 4 – 20 mA
Additional Tests	Shock: Acceleration level 100 g / 6 ms and 500 g / 1 ms Degree of protection: IP65 Salt mist
Other Conditions	Type Approval does not eliminate the need for normal inspection and survey procedures required by the Rules and Regulations. If the specified standards are amended during the validity of this certificate, the product is to be re- approved prior to it being supplied to vessels to which the amended standards apply.

This certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid Certificate.

Previous Version: This certificate supersedes certificate number LR2010635TA issued on 11 August 2020 which is hereby cancelled.

The Design Appraisal Document HTS/ETS 41061-21/MK/TW and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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LLOYD'S REGISTER TYPE APPROVAL – DESIGN APPRAISAL DOCUMENT

Issued by: HAMBURG TECHNICAL SUPPORT OFFICE (HPC1562094)

Issued to: DANFOSS A/S

For: PRESSURE TRANSMITTER, TYPE MBS 5100, MBS 5103, MBS 5150, MBS 5153

The undernoted documents have been reviewed for compliance with the requirements of the Lloyd's Register Type Approval System Procedure TA14 Version 04 (September 2020) and this Design Appraisal Document forms part of the Certificate.

APPROVAL DOCUMENTATION

ETS 56954	Application Checklist – Appendix to Form TA2502TA	22.02.2021
ETS 57056	Request for Marine Services – Type Approval	10.03.2021
ETS 40300-20	Design Appraisal Document of previous certificate no. LR2010635TA	11.08.2020
CPN1800858	Production quality assessment report of Danfoss (Tianjin), China	25.03.2019
CNBJ321595-UK	Certificate ISO 9001:2015 Rev. 01 (Danfoss Tianjin)	12.09.2018
060R9400 Rev. 02	EU Declaration of Conformity reg. EMC Directive 2014/30/EU	21.08.2019
AI369160646499en-000101	Product data sheet Pressure transmitter for marine applications Type MBS 5100 and MBS 5150	02.2021
ESH060N1279 Rev. 0	Engineering sheet Pressure transmitter type MBS 5153	26.01.2021
Unnumbered	Comparison old design vs. new design	undated

TEST REPORTS

120-30437	Test Report (High voltage) for MBS 5100	20.11.2020
120-30437	Test Report (Vibration) for MBS 5100	20.11.2020
120-30437-1	Test Report (Damp heat) for MBS 5100	05.11.2020
120-30437-1	Test Report (Dry heat and cold) for MBS 5100	02.11.2020
E201507E2	Test Report (EMC) for MBS 5100	11.11.2020

DRAWING

060N9000 Rev. 02	Pressure Transmitter MBS 5100, ID172 – Assembly diagram	29.12.2020
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LR031.1.2016.06

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Supplementary Type Approval Terms and Conditions

Type Approval certifies that a representative sample of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein. It does not mean or imply approval for any other use, nor approval of any product(s) designed or manufactured otherwise than in strict conformity with the said representative sample.

Type Approval is based on the understanding that the manufacturer's recommendations and instructions and any relevant requirements of the Rules and Regulations are complied with.

Type Approval does not eliminate the need for normal inspection and survey procedures required by the Rules and Regulations. Lloyd's Register EMEA reserves the right to cancel or withdraw this Type Approval Certificate in accordance with the Lloyd's Register Type Approval System Procedure.