DNV·GL

Certificate No:
TAA00002NM

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Temperature Transmitter

with type designation(s)
MBT 5560

Issued to
Danfoss A/S
Kolding, Syddanmark, Denmark

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	**B**
Humidity	**B**
Vibration	**B**
EMC	**B**
Enclosure	**B / IP65**

Issued at **Høvik** on **2020-04-24**
This Certificate is valid until **2025-04-07**.
DNV GL local station: **Denmark CMC**

Approval Engineer: **Nils Jarem**

for **DNV GL**

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

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Job Id: **262.1-033549-1**
Certificate No: **TAA00002NM**

Product description

MBT 5560 Temperature sensor with integrated transmitter

Sensing element:	1 x Pt1000
Measuring range:	-50°C to +200°C
Output signal:	4 to 20mA, ratiometric 10-90%
power supply:	10 to 32V DC (24V DC rated) or ratiometric, power supply: 4.75 to 8V DC (5V DC rated)
Insertion length:	50mm to 250mm
Process connection:	G1¼ A standard (other on request, see data sheet)
Electrical connection:	plug, EN 175301/803, Pg 9 standard (others see data sheet)
Response time:	water (0.2 m/s) t0.5 = 10 s, t0.9 = 35 s air (1 m/s) t0.5 = 95 s, t0.9 = 310 s

Place of production

Danfoss (Tianjin) Ltd.
Wuqing Development Area
9 Quanhui Road
301700 Tianjin
CHINA

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

EMC in the range 2 GHz to 6 GHz according to DNVGL-CG-0339, December 2019 has not been documented. EMC up to 6 GHz must additionally be documented for installation on ships contracted for construction on or after 2022-01-01.

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

END OF CERTIFICATE