



Marine & Offshore

Certificate number: 06512/F0 BV

File number: AP 2899

Product code: 3812H

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***DANFOSS A/S**

NORDBORG - DENMARK

*for the type of product***TEMPERATURE SENSORS / PROBES / TRANSDUCERS**

Temperature Sensors

MBT5310, and MBT5410.

Requirements:

BV Rules for the Classification of Steel Ships.

EC code: 43S

*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 will expire on: 01 Mar 2027****For Bureau Veritas Marine & Offshore,**

At BV FREDERICIA, on 01 Mar 2022,

Jesper JENSEN



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.

The electronic version is available at: <http://www.veristarm.com/veristarnb/jsp/viewPublicPdfTypepec.jsp?id=89kqqtqx1e>

BV Mod. Ad.E 530 June 2017

This certificate consists of 3 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

1.1 - Temperature sensor and Temperature Transmitter - Type MBT5410:

For measuring temperature in marine and industrial refrigeration, freezing installations.

Temperature Range: -50°C to +70°C
Resistance Value: Pt 100/PT1000
Connection: 2-wire
Transmitter Output: 4-20mA, Standard
Sensor Tolerance: Class B
Enclosure: IP67

1.2 - Bearing Temperature Sensor - Type MBT5310:

For monitoring of bearing temperatures where there is risk of overheating, such as wind turbines, Engines and Gearboxes

Measuring Range: -50°C to +200°C
Sensing Element: Pt 100/PT1000
Connection: 2-wire / 3 terminals
Sensor Tolerance: Class B
Enclosure: IP65

2. DOCUMENTS AND DRAWINGS :

For E0 version:

Drawings refs. 084X1714, 084Z9040, 084Z9079, 084Z9084, 084Z9101, 084Z9148.
 Engineering sheet ref. 080922-5, dated Sep.2008.
 Engineering sheet ref. 080922-6, dated Sep.2008.
 Product catalogue ref. 520B4963 ref. 23.Dec.2013.

For F0 version:

- Datasheet of Temperature Sensor Type MBT 5310, No. AI201986427607en-000501, dated 2021.02.
- Datasheet of Temperature Sensor Type MBT 5410, No. AI202186432661en-000801, dated 2021.02.
- Drawing MBT 5310, No. ESH084Z2173, dated 2021.04.28.
- Drawing MBT 5310, No. ESH084Z2427, dated 2019/04/26.
- Datasheet of Temperature Transmitter Type MBT 9110, No. AI178086427085en-000601, dated 2021.02

3. TEST REPORTS :

For E0 version:

Delta:

- Tests reports ref. T204302.
- Test report ref. T205006.

For F0 version:

- Force Technology, Test Report No. 121-29917-1, rev.2 dated 2022-02-16.
- Force Technology, Test Report No. 117-34687-2 rev.2, dated 2021-07-15.

4. APPLICATION / LIMITATION :

- 4.1 - BV Rules for the Classification of Steel Ships.
- 4.2 - Approval also valid for ships to be granted with the notations: **AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.**
- 4.3 - BUREAU VERITAS Environmental Category, EC Code: 43S.
- 4.4 - Equipment covered by this Type Approval certificate has been tested according to requirements of IACS UR E10 rev7.

5. PRODUCTION SURVEY REQUIREMENTS :

- 5.1 - The above products are to be supplied by **DANFOSS A/S** 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 - **DANFOSS A/S** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.
- 5.4 - For information, **DANFOSS A/S** has declared to Bureau Veritas the following production site(s):

DANFOSS (Tianjin) Ltd.
No. 9 Quanhui Rd.,
Wuqing Development Area
Tianjin
TIANJIN - CHINA

6. MARKING OF PRODUCT :

6.1 - Trade name

6.2 - Date of manufacture and serial number

6.3 - Equipment type or model identification under which it was type-tested.

7. OTHERS :

7.1 - It is **DANFOSS A/S** responsibility 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 cancels and replaces the Type Approval Certificate N°06512/E1 BV issued on 16 Aug 2017 by the Society.

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