



Marine & Offshore
Division

Certificate number: 06512/E0 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

Type: MBT120 , MBT5310 and MBT5410.

Requirements:

BV Rules for the Classification of Steel Ships.

This certificate is issued to attest that BUREAU VERITAS 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: 20 Mar 2022

For BUREAU VERITAS,

At BV FREDERICIA, on 20 Mar 2017,

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. 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 Division 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 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.veristarnb.com/veristarnb/jsp/viewPublicPdfTypepec.jsp?id=uwfxwjkhnx>

BV Mod. Ad.E 530 October 2014

This certificate consists of 3 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

1.1 - Sensor pocket for MBT 153 - Type MBT120:

For measuring and regulating temperature in piping systems and refrigeration plant on ships.

Temperature Range: -50°C to +200°C

Enclosure: IP67

1.2 - 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

1.3 - Bearing Temperature Sensor - Type MBT5310C:

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 :

Data Sheet of Temperature sensor types MBT153, MBT120 and MBT3260 ref: IC.PD.P30.A2.02-520B2134 dated March 2005.

Data Sheet of Bearing Temperature sensor MBT5310 ref: IC.PD.P30.Q1.02 dated February 2008.

Data Sheet of Temperature sensor and temperature transmitter type MBT5410 ref:IC.PD.P30.J3.02 dated May 2010.

For E0 version:

Drawings refs. 084X1714, 084Z9040, 084Z9079, 084Z9084, 084Z9101, 084Z9148.

Data sheet ref. 520B0536, dated Aug.2000.

Engineering sheet ref. 080922-5, dated Sep.2008.

Engineering sheet ref. 080922-6, dated Sep.2008.

Product catalogue ref. 520B4963 ref. 23.Dec.2013.

3. TEST REPORTS :

For E0 version:

Delta:

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

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.**

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.

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/D0 BV issued on 24.May.2011 by the Society.

*** END OF CERTIFICATE ***