

TYPE APPROVAL CERTIFICATE**This is to certify:****That the Temperature Sensor**

with type designation(s)

MBT

Issued to

**Danfoss A/S
NORDBORG, Denmark**

is found to comply with

DNV GL rules for classification – Ships and offshore units**Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.****Location classes:**

Temperature	D
Humidity	B
Vibration	B
EMC	N/A
Enclosure	Required protection according to the rules shall be provided upon installation on board

This Certificate is valid until **2020-12-31**.Issued at **Høvik** on **2015-11-05**DNV GL local station: **Fredericia**Approval Engineer: **Nils Jarem**for **DNV GL**

Digitally Signed By: Sneen, Ståle

Location: DNV GL Høvik, Norway

Signing Date: 2015-11-05, on behalf of

**Odd Magne Nesvåg
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.

Certificate No: **TAA000006F**
File No: **891.20**
Job Id: **262.1-001912-5**

Product description

Series MBT consisting of the following sensors:

Sensor	Spare parts
MBT 5250	MBT 150
MBT 5252	MBT 152
MBT 5253	MBT 153
MBT 5260	Fixed

Application/Limitation

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.

Thermo wells to be used when measuring temperatures in fluids, steam or gases under pressure

Type Approval documentation

Sensor	Data sheet
MBT 5250 MBT 5252 MBT 5260	IC.PD.P30.I3.02 / 520B6263 dated 2014-02
MBT 5253	IC.PD.P30.A3.02 / 520B4923 dated 2013-11

Test Programme	T:PROJEKT\MBT5250\SKIBSGOD\002.doc	
Test reports	Performance Test	dtd. 96.08.21
	High Voltage Test	dtd. 96.08.22
	Cold Test	dtd. 96.08.20
	Dry Heat Test	dtd. 96.08.22
	Vibration Test	dtd. 96.08.20
	Humidity Test, Cyclic	dtd. 96.08.21
	Shock Test	dtd. 96.08.21
	Enclosure Test	dtd. 96.08.21
	Vibration Test 20042382E	dtd. 04.12.02
	Vibration Test 2006-2299	dtd. 06.06.20

DNV GL Type approval assessment report for A-14115 dated 2015-10-22

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 at least every second year and at renewal of this certificate.

END OF CERTIFICATE