

# TYPE APPROVAL CERTIFICATE

**This is to certify:**

**That the Temperature Sensor**

with type designation(s)  
**MBT 5116**

Issued to  
**Danfoss A/S**  
**Nordborg, Syddanmark, Denmark**

is found to comply with  
**DNV GL rules for classification – Ships, offshore units, and high speed and light craft**

**Application :**

**Temperature Sensor For Exhaust Gas Monitoring.**

**Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**

**Location classes:**

|                    |            |
|--------------------|------------|
| <b>Temperature</b> | <b>D</b>   |
| <b>Humidity</b>    | <b>B</b>   |
| <b>Vibration</b>   | <b>B</b>   |
| <b>EMC</b>         | <b>N/A</b> |
| <b>Enclosure</b>   | <b>B</b>   |

Issued at **Høvik** on **2021-02-17**

for **DNV GL**

This Certificate is valid until **2025-12-31**.

DNV GL local station: **Denmark CMC**

Approval Engineer: **Nils Jarem**

.....  
**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.



Job Id: **262.1-003312-7**  
Certificate No: **TAA0000065**  
Revision No: **2**

## Product description

Resistance Thermometers (Pt-100/Pt-1000) for exhaust gas monitoring.  
Type: MBT 5116.

- Up to 600°C media temperatures
- 2 or 3 wire connections
- Solid drilled protection tube for high resistance to shock and vibrations
- Available in 2 versions:
  - o Slim-line for compact installations
  - o B-head for standard installations
- Changeable insert
- 1 or 2 x Pt 100 / Pt 1000

## 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.

## Type Approval documentation

Drawing MBT 5116

Datasheet No.: IC.PD.P30.H6.02 dated 2016-11

AC-TES/SP/jw dated 1998-03-06

Vibration test report No.: 95-0093 dated 1995-06-06

Vibration test report No.: 9800390a dated 1998-03-03

Test report No.: 980009b/c dated 1998-03-02

Test report No.: 907426a dated 1998-03-02

Test report No.: J.no.: 20042382E dated 2004-12-02

Test report No.: J.no.: 980219 dated 1998-06-09

Type approval renewal assessment report for TAA0000065 rev. 1, Denmark CMC 2021-01-12.

## Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, December 2019.

## Marking of product

The products to be marked with:

- manufacturer name
- model name
- serial number

Job Id: **262.1-003312-7**  
Certificate No: **TAA0000065**  
Revision No: **2**

### **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