

# TYPE APPROVAL CERTIFICATE

**This is to certify:**

**That the Temperature Sensor**

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

Issued to  
**Danfoss A/S**  
**NORDBORG, Denmark**

is found to comply with  
**DNV GL rules for classification – Ships and offshore units**

**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>

This Certificate is valid until **2020-12-31**.

Issued at **Høvik** on **2015-11-02**

DNV GL local station: **Fredericia**

Approval Engineer: **Nils Jarem**



for **DNV GL**  
Digitally Signed By: Sneen, Ståle  
Location: DNV GL Høvik, Norway  
Signing Date: 2015-11-04, 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.

### **Product description**

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

### **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.

### **Type Approval documentation**

MBT 5116: Drawing MBT 5116  
Datasheet for MBT5116 No.: IC.PD.P30.H4.02/ 520B4943 dated 2013-11  
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 periodical assessment report for A-14114, DNV GL Fredericia, dated 2015-10-22

### **Tests carried out**

Applicable tests according to Standard for Certification No. 2.4, April 2006.

### **Marking of product**

The products to be marked with:  
- manufacturer name  
- model name  
- serial number

### **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