

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Temperature Sensor**

with type designation(s)

MRA, MRS, MRG, MTC, MRC, MTG, MRF, MRV, MTS, MTV

Issued to

TERMOTECH S.r.l.**Vigevano, PV, Italy**

is found to comply with

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

Temperature	D
Humidity	B
Vibration	B
EMC	Not relevant
Enclosure	C

Issued at **Hamburg** on **2018-08-13**This Certificate is valid until **2023-08-12**.for **DNV GL**DNV GL local station: **Milan**Approval Engineer: **Jens Dietrich**

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Joannis Papanuskas
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

Temperature sensors:

MTC, MTG, MTS, MTV Thermocouple
MRA, MRF, MRS, MRV Pt-100, Pt-1000
MRC, MRG Pt-100
Thermowells: TT1/2, TB1/2.

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 Ships Pt.4 Ch.9, Control and Monitoring Systems.

Immersion length/free end with thermowells not to exceed 300 mm without end stay.

Immersion length/free end of 6 mm diam.sensors without thermowells not to exceed 125 mm without end stay.

Immersion length/free end of 10 mm diam.sensors for exhaust gas temp monitoring (MRG, MTG) not to exceed 150 mm without end stay.

Tests carried out

Vibration- and salt mist tests according to DNV GL CG-0339, November 2016.

Marking of product

Maker, type and 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 after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of this certificate.

END OF CERTIFICATE