

TYPE APPROVAL CERTIFICATE

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

with type designation(s)

TE-MR1G, TE-MK1G, TE-K1G

Issued to

Müller Industrie-Elektronik GmbH**Neustadt am Rübenberge, Niedersachsen, Germany**

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.****Location classes:**

Temperature	B
Humidity	B
Vibration	B
EMC	B
Enclosure	B

Issued at **Hamburg** on **2019-11-14**for **DNV GL**This Certificate is valid until **2024-11-13**.DNV GL local station: **Essen**Approval Engineer: **Dariusz Lesniewski**

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

Thermocouple temperature sensor

Sensing element: 1x or 2x J(Fe-CuNi) or K(NiCr-Ni)

Measuring accuracy: class 1 DIN EN 60584-2

Tube: stainless steel 1.4571 or 2.4816 (Inconel 600)

Tube length: max. 200mm

Electrical connection:

- terminal head: cable gland M20x1.5, material aluminium, IP54 - TE-MR1G

- cable (flying leads) max. 6m, TE-Connector (optional), IP65 (max. 250°C) - TE-MK1G/-K1G

Mechanical connection: without, thread or compression fitting

Thermowell x wall [mm]:

TE-MR1G: Ø3x0,4 / Ø4x0,5 / Ø5x0,5 / Ø6x0,5 / Ø6x1 / Ø7x0,5
Ø7x1 / Ø8x1 / Ø9x1 / Ø10x1 / Ø11x2 / Ø15x2

TE-MK1G: Ø3x0,25 / Ø4,5x0,36 / Ø6x0,51

TE-K1G: Ø4x0,3 / Ø4x0,5 / Ø5x0,4 / Ø5x0,5 / Ø6x0,4 / Ø6x0,5 / Ø6x1

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

Test Report: Müller I-E No. 562.03/09

Test Report: Paconsult No. 09-2482

Data sheets (version 43-691): TE-MR1G, TE-MK1G, TE-K1G

Cable data sheets; MIE cable reference list (*.xls)

Type approval assessment report issued at Magdeburg on 2019-07-11

Tests carried out

Applicable tests according to class guideline DNVGL-CG-0339, November 2016.

Marking of product

The products to be marked with:

- manufacturer name
- model name
- serial number
- power supply ratings

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.



Job Id: **262.1-031211-1**
Certificate No: **TAA00002H3**

END OF CERTIFICATE