Certificate no.:
TAA00003GS

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Temperature Transmitter

with type designation(s)
MKTS-GL, MKTS-GLEx

issued to
Müller Industrie-Elektronik GmbH
Neustadt am Rübenberge, Germany

is found to comply with
DNV 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.

Location classes:

Temperature	**D**
Humidity	**B**
Vibration	**A**
EMC	**B**
Enclosure	**B**

Issued at **Hamburg** on **2024-12-17**
This Certificate is valid until **2029-12-16**.
DNV local unit: **Essen**

for **DNV**

Approval Engineer: **Dariusz Lesniewski**

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 AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") 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 USD 300 000.

Product description

Programmable compact thermometer (transmitter)
Measuring sensor: 1x Pt100/Pt1000 or 2x Pt100/Pt1000[1)] (2-, 3- or 4-wire), accuracy class A (DIN EN 60751)
Measuring range: -50 up to +200°C
Accuracy: max. 0.1% FS (see data sheet)
Power supply: rated 24V DC (12...30V DC)[2)] (type approved power supply required)
Output signal: analogue 4...20mA, 2-wire or 0…10V / 0.5…10,5V / 2…10V DC, 3-wire
Housing material: stainless steel
Max. length of thermo-well: 300mm
Process connection: G1/4" to G1", NPT1/4" to NPT1" or M14x1,5
Electrical connection: M12 plug-in connector, EN 175301-803 type A connector 4-pole, MIL 6 pole or cable (2m)
Degree of protection: IP65
Firmware version: 1.80

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, 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 rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Ex-certification is not covered by this certificate. Application in hazardous area to be approved in each case according to DNV Rules and Ex-Certification / Special Condition for Safe Use listed in valid Ex-certificate issued by a notified/recognized Certification Body.

Application/Limitation

Note[1)] Sensors only, no transmitter electronics
Note[2)] Only with type approved power supply

Type Approval documentation

Tests carried out

Applicable tests according to class guideline DNV-CG-0339, August 2021.

Marking of product

The products to be marked with:
- manufacturer name
- serial number
- type designation: GNxxxx-x-xxxx or MKxxxx-x-xxxx
- 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.

END OF CERTIFICATE