EUROPEAN UNION RECOGNISED ORGANISATION (EU RO) MUTUAL RECOGNITION TYPE APPROVAL CERTIFICATE

Certificate No:
MRA0000052

In accordance with Article 10.1 of EU Regulation 391/2009

This Certificate is issued to

Müller Industrie-Elektronik GmbH

Neustadt am Rübenberge, **Germany**

for
Temperature Gauges/Sensors/Transmitters

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

The product is found to comply with
EU RO Mutual Recognition Technical Requirements for Temperature Gauges and Transmitters
EU RO Mutual Recognition Technical Requirements for Sensors

Intended service
The temperature transmitters are intended for use in control and monitoring systems subject to classification

Temperature [°C]:	**-25°C to +70°C**
Vibration:	**13.2 to 100 Hz / 0.7 g**
EMC:	**All locations including bridge and open deck**
IP Code:	**65**

This is to certify:

that the Product referred to herein has been inspected for the Manufacturer, pursuant to the relevant requirements of the European Union Recognised Organisation Mutual Recognition procedure, required by Article 10.1 of EU Regulation 391/2009, and has been found in accordance with those requirements.

This Certificate is valid until **2028-12-16**.

Issued at **Hamburg** on **2024-12-17**

DNV local unit: **Hamburg – CMC North/East** 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 300,000 USD.

Product description

MKTS-GL, MKTS-GLEx
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

Manufactured by

Müller Industrie-Elektronik GmbH
Justus-von-Liebig-Straße 24
31535 Neustadt am Rübenberge
GERMANY

Application/Limitation

The Type Approval covers hardware and firmware listed under product description.

Applicable for a ship as defined in Mutual Recognition provisions Article 10 Regulation on Common Rules and Standards for Ship Inspection and Survey Organizations.

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

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

Type Approval documentation

Marking of product

manufacturer name
- serial number
- type designation: GNxxxx-x-xxxx or MKxxxx-x-xxxx
- power supply ratings

Other Conditions

The temperature transmitters have been verified for compliance with EU Mutual Recognition Technical Requirements for TEMPERATURE GAUGES AND TRANSMITTERS version 0.3, dated 2023-01-01, including the Technical Requirements for SENSORS version 0.5, dated 2023-02-01.

Environmental test parameters:		DNV location classes:
Temperature:	-25°C and +70°C	D
Vibration:	13- to 100Hz / 0.7 g	A
EMC:	All locations including bridge and open deck	B
Enclosure:	IP65 (IP ratings according to IEC 60529)	B

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 annually and at renewal of this certificate.

END OF CERTIFICATE

Generic Statement for EU RO MR Type Approval Certificate

When a product is presented with this EU RO MR Type Approval Certificate for given application, its acceptability with regards to the limitations stated in the certificate conditions defined in 1b, 1c and 1d of the applied Technical Requirement will be evaluated by the EU RO in charge of classing the ship or being in charge of the unit/system certification.

In accordance with Article 10 of Regulation (EC) No 391/2009 of the European Parliament and of the Council of 23 April 2009 "on common rules and standards for ship inspection and survey organizations", the following organizations, recognized by the EU on this date, have agreed on the technical and procedural conditions under which they will mutually recognize this certificate:

- American Bureau of Shipping (ABS);
- Bureau Veritas (BV);
- China Classification Society (CCS);
- Croatian Register of Shipping (CRS);
- DNV;
- Indian Register of Shipping (IRS);
- Korean Register (KR);
- Lloyd's Register Group Ltd. (LR);
- Nippon Kaiji Kyokai General Incorporated Foundation (ClassNK);
- Polish Register of Shipping (PRS);
- RINA Services S.p.A. (RINA);

The scheme for the mutual recognition of class certificates for materials, equipment and components laid down by Article 10(1) of Regulation (EC) No 391/2009 is only enforceable within the Union in respect of ships flying the flag of a Member State. As far as foreign vessels are concerned, the acceptance of relevant certificates remains at the discretion of relevant non-EU flag States in the exercise of their exclusive jurisdiction, notably under the United Nations Convention on the Law of the Sea (UNCLOS). (In accordance with COMMISSION IMPLEMENTING REGULATION (EU) No 1355/2014 amending Regulation (EC) No 391/2009 - recital (25)).