



TYPE APPROVAL CERTIFICATE

Certificate No:
TAA00000T6
Revision No:
1

This is to certify:

That the Temperature Sensor

with type designation(s)

**Resistance Thermometer GML-R,
Thermocouple GML-T,
Resistance Thermometer GML-RM**

Issued to

**Guenther Polska Sp. z o.o.
Długołęka, Dolnośląskie, Poland**

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:

Type	Temperature	Humidity	Vibration	EMC	Enclosure
Resistance Thermometer GML-R	D	B	B	Not relevant	B
Thermocouple GML-T	D	B	B	Not relevant	B
Resistance Thermometer GML-RM	D	B	B	Not relevant	C

Issued at **Høvik** on **2021-10-25**

for **DNV**

This Certificate is valid until **2026-10-26**.

DNV local station: **Katowice CMC**

Approval Engineer: **Ståle Sneen**

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Trond Sjøvåg
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.

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.



Form code: TA 251

Revision: 2021-03

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Product description

Temperature sensors/transmitters:

GML-R	RESISTANCE THERMOMETER Maximum operating temperature: +550°C Measuring insert: 1x Pt100, 2x Pt100, 1x Pt1000, 2x Pt1000, other resistance type Connection: 2-wire-, 3-wire- or 4-wire connection Measuring tolerance: EN-60751 class A for 3- or 4-wire circuit, class B for 2-, 3-, 4-wire circuit Installation/nominal length: up to 800 mm
GML-T	THERMOCOUPLE Maximum operating temperature: +1150°C Element type: 1x or 2x NiCr-Ni/K, 1x or 2x Fe-CuNi/J, other according to EN-60584-1 Measuring tolerance: EN-60584-1 class 1 Installation/nominal length: up to 800 mm
GML-RM	RESISTANCE THERMOMETER Temperature range: -50°C...+250°C (for construction without a head: -50°C...+400°C) Measuring insert: 1x Pt100, 2x Pt100, 1x Pt1000, 2x Pt1000, other resistance type Connection: 2-wire-, 3-wire- or 4-wire connection Measuring tolerance: EN-60751 class A for 3- or 4-wire circuit, class B for 2-, 3-, 4-wire circuit Installation/nominal length: up to 300 mm

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.

Application/Limitation

The maximum length of the probe series GML-R and GML-T is 300 mm except the probes dedicated for waste incinerator and other similar thermal processes where it is max 800 mm.

Type Approval documentation

	Document	Version	Comment
Data sheets:	CARD GML-R	-	-
	CARD GML-T	-	-
	CARD GML-RM	-	-
Drawings:	GML-R	2016-10-14	Assembly drawing GML-R group
	GML-T	2016-10-14	Assembly drawing GML-T group
	GML-RM	2016-07-20	Assembly drawing GML-RM group
Test reports:	SW-6-104248-00-02	2016-09-12	Vibration Test (10g)
	BL/005/015/16	2016-08-04	Electromagnetic Compatibility Tests
	BL/005/080/16	2016-08-17	High Voltage Test
	Power Supply Variation	2016-05-24	Power Supply Variation
	Power Supply Failure	2016-05-24	Electrical Power Supply Failure
	Visual Inspection	2016-05-24	Visual Inspection (Witnessed)
	SW-16-103987-00-01	2016-07-27	Salt Mist Test
	BL/005/014/16	2016-08-04	Mechanical and Safety Test
	BL/005/012/16	2016-08-04	Environmental Climate Tests
	BL/005/013/16	2016-08-04	Insulation resistance test Performance Test
	Performance Test	2016-05-24	Performance Test (Witnessed)
	Insulation test (I)	2016-05-24	Insulation of resistance test (I) (Witnessed)
	LL/154/2016/A	2016-06-02	Enclosure Test

Type approval initial assessment report, DNV Katowice CMC 2021-10-08.

Tests carried out

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

Exhaust gas temperature sensors with head C01 have been subjected to the extreme vibration strain test (10 g strain from 40 Hz to 2000 Hz at a temperature +600°C) according to class guideline DNV-CG-0339, August 2021.

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.

END OF CERTIFICATE