

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Indicator

with type designation(s)

Pqs 1-sealed, Pq 1-sealed -250, Pqs 144, Pq 144-250, Pf 2S5, Pf 144x72, Aqs 144, Aqs 1-sealed, Fq 144, , LM96, LM96-250, LF96

Issued to

Gilgen, Müller & Weigert (GMW) GmbH & Co. KG
Cadolzburg, 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.

Temperature	B
Humidity	B
Vibration	A
EMC	B
Enclosure	B

Issued at **Hamburg** on **2018-09-10**

This Certificate is valid until **2023-09-09**.

DNV GL local station: **Augsburg**

for **DNV GL**

Approval Engineer: **Marco Rinkel**

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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

Analogue Panel Meters

Class: 1.5

Degree of protection: IP 52 (front), option: IP 54 (front)

Casing: Polycarbonate UL 94 V0

Moving coil instruments, class 1.5, type:

Pqs 1 sealed, ranges: 250 μ A to 4 A or 250 mV to 600 V DC or sep. shunt

Pq 1 sealed-250, ranges: 250 μ A to 4 A or 250 mV to 600 V DC or sep. shunt

Pqs 144, ranges: 250 μ A to 60 A or 250 mV to 600 V DC or sep. shunt

Pq 144-250, ranges: 250 μ A to 40 A or 250 mV to 600 V DC or sep. shunt

AC-ranges: 250 μ A to 4 A or 2,5 V to 600 V or CT or PT

Pf 144x72, ranges: 1 mA or 20 mA or 4 - 20 mA or 1,5 V to 600 V DC

Pf 2S5, ranges: 250 μ A to 60 A or 250 mV to 600 V DC or sep. shunt

LM 96: power meter, for 2 to 4 conductor system, CT .../1 A or .../5A

LM 96-250: power meter, for 2 to 4 conductor system, CT .../1 A or .../5A

LF 96: power factor meter, cap.0.5 - 1 - 0.5 ind., CT .../1 A or .../5A

Moving iron instrument, class 1.5, type:

Aqs 144, ranges: 100 mA to 60 A or 6 V to 600 V AC or CT or PT

Aqs 1 sealed, ranges: 1 A to 15 A or 6 V to 600 V AC or CT or PT

Reed frequency meter, class 0.5, type:

Fq 144: 13 reeds or 17 reeds or 21 reeds, 50 Hz or 60 Hz

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 Rules for Ships Pt.4 Ch.9 Control and Monitoring Systems.

Type Approval documentation

Test report : E11/Götz (01/88 to 08/88) dated 07.03.1988

Data sheet: E1/1, E1/3, E1/5, E1/8, E1/10, E1/13, E1/25, E3/1, E3/2, E3/3, E3/9

Test report : BER-GL 00.DOC to GL 13.DOC; Ber_GL_FM Version 02, 18.05.00

Catalogue 2000 Analog Panel Meters Standard program / Universal program, Data sheet E1/26; Circ. diagram:D1B, D1W, E1B, E1W, D2B, D2W, V1B, V1W, V3B, V3W, BN2.239.391, 2-583-569-5

Tests carried out

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

Marking of product

The products to be marked with:

- model name
- manufacturer name
- serial number

Job Id: **262.1-029090-1**
Certificate No: **TAA00001Y7**

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