

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Indicator**

with type designation(s)
DQ, VDQ, EQ

Issued to

DEIF A/S
Skive, Midtjylland, Denmark

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.

Issued at **Hamburg** on **2018-10-25**

This Certificate is valid until **2023-10-24**.

DNV GL local station: **Aalborg**

Approval Engineer: **Thomas Hartmann**

for **DNV GL**

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Arne Schaarmann
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

Panel-type voltmeter and Amperemter for the installation in switchboards and cabinets

Type	Measuring moving system	Application
DQ	Quadratic moving coil instruments	Measurement of DC currents and DC voltages
VDQ	Quadratic moving coil instruments with rectifier	Application: Measurement of AC currents and AC voltages. Measures average value, calibrated to R.M.S. value at sinusoidal current/voltage
EQ	Quadratic moving iron instruments	Measurement of AC currents and AC voltages, adjusted for frequency range 16...65 Hz.

General technical specifications

Instrument size:	48x48 mm; 72x72 mm; 96x96 mm; 144x144 mm
Degree of protection :	Housing IP52 (with gasket IP54); Terminals IP20
Pollution degree:	2
Accuracy:	Class 1,5
Linear scales:	±1,5% of full scale value (FS)
Non-linear scales:	±1,5% of scale length
Mounting angle:	horizontal +/- 5 °

DQ, VDQ

Scale:	DQ- Linear, VDQ- None-linear
Burdens	- Voltmeters: 1 mA; R _i : 1 kΩ/Volt - Amperemeters: 60mV...0,6 V - Amperemeters: 4..20mA
Safety	Cat. III 300 V max.
Measuring range	- Voltage: 60 mV.. 300 V - Current: 1 mA - 600 mA (DQ 48 only) 1 mA - 5 - 10 - 15 - 40 A
Standard measuring ranges:	1 – 1,5 – 2,5 - 4 - 6 and multiples of 10 thereof

EQ

Scale:		None-Linear
Burdens	- Voltmeters:	Approx. 1,5...4 VA
	- Amperemeters:	Approx. 0,5...1,2 VA
Safety		Cat. III 600 V max.
Measuring range	- Voltage:	40 V...300 V (EQ 48) 40 V... 800 V
	- Current:	1 A – 40 A (EQ 48) 1 A – 60 A
Standard measuring ranges	- Current:	1- 1,5- 2,5- 4- 6- 10- 15- 25- 40- 60 For CT: /1 A or /5 A
	- Voltage:	40- 60- 100- 150- 250- 300- 400- 500- 600 For VT: /100 V or /110 V

Application/Limitation

Location Classes:

Temperature:	B
Humidity:	B
Vibration:	A

For the installation in switchboards and cabinets

Type Approval documentation

Tests carried out

GL VI-7-2 Guidelines for the Performance of Type Approvals (2012)

Marking of product

Manufacturer - type designation

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine Tests (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and 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