



# TYPE APPROVAL CERTIFICATE

Certificate No:  
**TAA00001ZR**  
Revision No:  
**1**

## This is to certify:

That the Indicator

with type designation(s)  
DQ, VDQ, EQ, 2EQ, 2EVQ, FQ, 2FQ, PFQ, WQ

Issued to

**DEIF A/S**  
**Skive, Midtjylland, Denmark**

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.

Temperature  
Humidity  
Vibration  
EMC  
Enclosure

Issued at **Høvik** on **2024-02-12**

This Certificate is valid until **2029-02-11**.

DNV local unit: **Denmark CMC**

Approval Engineer: **Thomas Hartmann**

for DNV



Digitally Signed By: Schaarmann, Arne  
Location: DNV SE Hamburg, Germany  
Signing Date: 2024-02-12, on behalf of

**Oddvar Deinboll**  
**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: 2022-12

[www.dnv.com](http://www.dnv.com)

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## Product description

Panel-type measuring instruments for the installation in switchboards and cabinets. IP 52 protection on housing (IP54 on request) and IP20 on terminals.

| 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.   |
| FQ   | Quadratic moving coil instruments                          | Frequency meters for AC applications.  |
| PFQ  | Quadratic moving coil instruments w/ electronic transducer | Power factor meter for AC applications.  |
| WQ   | Quadratic moving coil instruments                          | Power meter for AC applications.   |

## Voltmeters and ammeters

### General technical specifications

|                    |  |
|--------------------|--|
| Instrument size:   | DQ, VDQ, EQ, PFQ, WQ and FQ series       |
| Pollution degree:  | 48x48 mm; 72x72 mm; 96x96 mm; 144x144 mm |
| Accuracy:          | 2  |
| Linear scales:     | Class 1,5 (0.5 for FQ and 2FQ)           |
| Non-linear scales: | ±1,5% of full-scale value (FS)           |
| Mounting angle:    | ±1,5% of scale length                    |
|                    | horizontal +/- 5 °                       |

### DQ, VDQ

|                            |   |
|----------------------------|---|
| Scale:                     | DQ- Linear, VDQ- None-linear                          |
| Burdens                    | - Voltmeters: 1 mA; R <sub>i</sub> : 1 kΩ/Volt        |
|                            | - Amperemeters: 60mV...0,6 V                          |
|                            | - Amperemeters: 4...20mA                              |
| Measuring range            | - Voltage: 60 mV...300 V                              |
|                            | - Current: 1 mA...600 mA (DQ 48 only)                 |
|                            | 1 mA...600 mA 5...50 A                                |
| Standard measuring ranges: | 1 – 1,5 – 2,5 – 4 – 6 – 8 and multiples of 10 thereof |
| Safety                     | Cat. III 300 V max.                                   |

### EQ, 2EQ and 2EVQ (double voltage meters)

|                     |                                      |
|---------------------|--------------------------------------|
| Scale:              | None-Linear                          |
| Burdens             | - Voltmeters: Approx. 1,5...4 VA     |
|                     | - Amperemeters: Approx. 0,5...1,2 VA |
| Measuring range, EQ | - Voltage: 40 V...300 V (EQ 48)      |
|                     | 40 V... 800 V                        |



|                           |                     |   |
|---------------------------|---------------------|---|
|                           | - Current, direct:  | 1 A...40 A (EQ 48)<br>1 A...60 A  |
| Standard measuring ranges | - Current, with CT: | 10- 15- 25- 40- 50- 10- 150- 200- 250- 300- 400-<br>500- 600- 800- 1000- 2000<br>For CT: /1 A or /5 A |
|                           | - Voltage:          | 40- 60- 100- 110- 150- 250- 300- 400- 500- 600<br>For VT: /100 V or /110 V                            |
| Measuring range, 2EVQ     |                     | 100 V... 700V (including VT)  |
| Safety                    |                     | Cat. III 600 V max.   |

#### Power factor and power meter

##### PFQ

Standard measuring ranges:

|           |            |
|-----------|------------|
| Measuring | - Voltage: |
|           | - Current: |

Frequency drift:

Safety:

##### Power factor

0.5 cap. ...1... 0.5 ind.,  
 0.7 cap. ...1...0.3 ind.,  
 0...1 cap., 0...1 ind.  
 57.7-440V AC ( $\pm 20\%$ )  
 1 A and 5 A from external current transformer  
 45...65 Hz, max.  $\pm 0.5\%$  (accuracy: class 1.5)  
 300...500 Hz, max.  $\pm 0.5\%$  (accuracy: class 2.0)  
 Cat. III 300 V max.

##### WQ

|                 |             |
|-----------------|-------------|
| Measuring range | -Voltage:   |
|                 | -Current:   |
|                 | -Frequency: |

Safety:

##### Power meter

100 V...480 V  
 Direct or from current transformer 1 A or 5 A.  
 Load  $< 0.5$  VA  
 45-65 Hz  
 Cat. III 300 V max.

#### Single/double frequency meters

##### FQ, 2FQ

Scale:

Safety

|                 |              |
|-----------------|--------------|
| Measuring range | - Frequency: |
|                 | - Voltage    |

Accuracy class:

Linear

Cat. III 300 V max.  
 45-55 Hz,  
 55-65 Hz,  
 45-65 Hz,  
 360-440 Hz  
 100-230V AC,  
 400-440V AC  
 0.5

#### Application/Limitation

Location Classes:

|              |   |
|--------------|---|
| Temperature: | B |
| Humidity:    | B |
| Vibration:   | A |

For the installation in switchboards and cabinets

#### Type Approval documentation

#### Tests carried out





Job Id: 262.1-028667-2  
Certificate No: TAA00001ZR  
Revision No: 1

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

### **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