

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Synchronizing Equipment

with type designation(s)
CSQ-3

Issued to
DEIF A/S
SKIVE, Denmark

is found to comply with
DNV GL rules for classification – Ships and offshore units

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2020-08-30**.

Issued at **Høvik** on **2015-12-17**

DNV GL local station: **Aalborg**

Approval Engineer: **Marta Alonso Pontes**

for **DNV GL**

Marit Laumann
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

Multifunction LED Synchronoscope, microprocessor based.

Input range (Un): 100 to 127 VAC; 220 to 240 VAC; 380 to 415 VAC and 440 to 480 VAC
Load: 2 kOhm/V
Frequency range: 40 to 70 Hz
Adjustments: Phase difference: +/- 5 to 20° in 1° step or +/- 10 to 40° in 2° step
Voltage difference: +/- 1 to 10 %
SYNC relay delay: 0 to 0.1 sec
Length of sync pulse: 0 to 1 sec
Dead-bus offset voltage: Off or 4 levels of noise suppression
LED indication for status and failures; Closed contact for relay in operation
Outputs: Closed contact for "Sync. ok"
Closed contact for internal failure
Protection: Front- IP 52, Terminals: IP 20

Application/Limitation

Location classes :

Temperature: B
Humidity: B
Vibration: A
EMC: A

Type Approval documentation

Tests carried out

Regulations for the Performance of Type Tests. Regulations for the Use of Computer and Computer Systems, Requirement Class 3.

Marking of product

DEIF, 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 Routines (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.

Assessment to be performed at least every second year.

END OF CERTIFICATE