

# TYPE APPROVAL CERTIFICATE

**This is to certify:****That the Synchronizing Equipment**with type designation(s)  
**CSQ-3**

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 :****Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.**Issued at **Høvik** on **2020-09-29**for **DNV GL**This Certificate is valid until **2025-08-30**.DNV GL local station: **Denmark CMC**Approval Engineer: **Nicolay Horn**

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**Marta Alonso Pontes**  
**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 GL AS, its parent companies and subsidiaries as well as their officers, directors and employees ("DNV GL") 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.



Job Id: **262.1-021062-2**  
Certificate No: **TAE00000U2**  
Revision No: **1**

## 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

Test reports:

DEIF test reports nos. 4910216501M dated 2020-08-16 and 4910217502N dated 2020-08-07.  
IPG 0117 CSQ-2 of 2000-08-30; Software SW-E-AK3.Doc of 2000-08-30,

Data sheet:

4921240185D and 4921240263A,

User's manual:

4189340263K; 4910216501X (16A); 4910217502G (2B)

## 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 2 and 3.5 year and at renewal.

END OF CERTIFICATE