

TYPE APPROVAL CERTIFICATE

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

with type designation(s)
CSD

Issued to

Zhenjiang Marine Electrical Appliance Co.,Ltd
ZHENJIANG, JIANGSU, China

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.

Rating (kVA) 100 up to 299
Primary voltage (V) 690 / 450 / 400
Secondary voltage (V) 450 / 400 / 230

Issued at **Hamburg** on **2020-05-25**

This Certificate is valid until **2025-05-24**.

DNV GL local station: **Nanjing**

Approval Engineer: **Harald Amberger**

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

Dry type transformers for distribution and ship supply in marine environments.

Ratings:		
Rated power S_r	kVA	100 up to 299
Primary voltage U_r	V	690 / 450 / 400
Secondary voltage U_r	V	450 / 400 / 230
Rated frequency f_r	Hz	50 / 60
Number of phases		3
Vector group		Dd, Dy, Yd, Yy
Degree of protection		IP23, IP44
Ambient temperature:		45° C
Insulation class		B, F
Cooling		AN, natural cooling
Short-circuit impedance	%	3,5 / 4,0
Further ratings and dimensions acc. manufacturer documentation		

Application/Limitation

End user is responsible for correct IP protection / enclosure wrt. location.

Type Approval documentation

Tests carried out

IEC 60076-11: Temperature rise test, measurement of winding resistance, measuring of voltage ratio and check of phase displacement, measurement of no-load loss and current, measurement of short circuit impedance and load loss induced AC withstand voltage test. IEC 60076-5: Ability to withstand short circuit.

Marking of product

Nameplate acc. IEC 60076-11 subclause 9

Job Id: **262.1-032274-1**
Certificate No: **TAE00003SW**

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