Certificate No:
TAE00004AR

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Electric Motor

with type designation(s)
U313F30.00011

Issued to
Phase Motion Control S.p.A.
Genova, GE, Italy

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.

Degree of protection	**54**
Insulation class	**H**
Temp. class (°C)	**n/a**
Voltage (V)	**594**
Power (kW)	**73**
Frequency (Hz)	**variable (Frequency converter driven)**
Speed (RPM)	**2000**

Issued at **Hamburg** on **2021-06-25**
This Certificate is valid until **2026-06-24**.
DNV local station: **Italy/Malta CMC**

Approval Engineer: **Thomas Hartmann**

for **DNV**

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.

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.

Product description

3-phase synchronous motor type U313F30.00011 with permanent-magnet excitation controlled by frequency converter:

General Data	
Duty type:	S1
IP Rating:	54
Ambient air temperature:	45 °C
Insulation class:	H
Cooling method:	IC416A, TEFV
Rated power P_N:	73 kW
Rated voltage U_N:	594 V
Rated current I_N:	80 A
Rated speed n_N:	2000 1/min

Application/Limitation

Product respectively type approval certification as per DNV rules Pt.4 Ch.8 Sec.1, Table 3.
Excess torque- and over current capabilities as RU-SHIP Pt.4 Ch.8 Sec.5 [1.2.4]. Motor characteristics and load requirements to be coordinated in the project application.

Type Approval documentation

Tests carried out

Visual inspection, IP degree, Overspeed, Resistance measurements of windings, Withstand voltage test, Measurement of winding resistance, Insulation resistance, Overload test, Temperature rise test.

Marking of product

Type designation - technical data including rated voltage - RPM, rated power - ambient temperature - rated current - rated frequency - insulation class - IP class, cooling method.

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