TYPE APPROVAL CERTIFICATE

Certificate no.:
TAE00000J4
Revision No:
4

This is to certify:

that the Motor Starter

with type designation(s)
TSAxx - yyy

issued to
CG Drives & Automation Sweden AB
Helsingborg, **Sweden**

is found to comply with
DNV 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.

Rated voltage (V)	**200 - 690**
Rated current (A)	**16 - 1125**
Frequency (Hz)	**50/60**

Issued at **Høvik** on **2026-01-30**

This Certificate is valid until **2029-10-11**.
DNV local unit: **Sweden CMC**

Approval Engineer: **Qiang William Guo**

for **DNV**

This document has been digitally signed and will therefore not have handwritten signature

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

Soft starters for pumps, fans, compressors, blowers etc.

Technical data

Model	Frame size	P_{mot} 400 V [kW]	P_{mot} 460 V [hp]	I_{nom} [A]	Weight [kg]	Dimension HxWxD [mm]
		Normal operation (**)				
TSAxx – 016	1	7,5	10	16	5,5	246 / 340x126x188
TSAxx – 022		11	15	22		
TSAxx – 030		15	20	30		
TSAxx – 036		18,5	25	36		
TSAxx – 042		22	30	42		
TSAxx – 056		30	40	56		
TSAxx – 070	2	37	50	70	5,7	
TSAxx – 085		45	60	85		
TSAxx – 100		55	75	100		
TSAxx – 140	3	75	100	140	13	28 5 / 380x196x235
TSAxx – 170		90	125	170		
TSAxx – 200		110	150	200		
TSAxx – 240	4	132	200	240	23,5	378 / 514x254x260
TSAxx – 300		160	250	300		
TSAxx – 360		200	300	360		
TSAxx – 450		250	350	450		
TSAxx – 470	5	250	350	470	60	750x550x350
TSAxx – 580		315	500	580		
TSAxx – 730		400	600	730		
TSAxx – 835***	6	500	800	960	90	900x640x360
TSAxx – 960***		630	900	1125		

* xx = 52 or 69

** Normal operation: Start current = 3xI_{nom}, Start time = 15s for frame size 1, 30s for frame size 2-6, 10 starts/hour for frame sizes 1-4, 4 starts/hour for frame size 5 & 6.

*** External bypass contactor

Application/Limitation

Supply voltage range:	3 x 200 – 525 V or 3 x 200V – 690V
Voltage variation:	-15% to +10% steady state
Frequency:	50/60 Hz
Frequency variation:	±10%
Temperature range:	0 – 40 °C (40 – 55 °C when de-rated 2%/°C)
Temperature class:	A
Vibration class:	A
Humidity class:	A
EMC class*:	A

The TSAxx – yyy must be regarded as a component. The actual installation shall be designed according to manufacturer's specifications and according to applicable DNV Rules. Drawings for the actual application are to be submitted for approval in each case. A product certificate is required in accordance with Ships — DNV-RU-SHIP Pt.4 Ch.8. Sec. 1 Table 8, Edition July 2025.

* Soft starters with conducted and radiated emission above the DNV required limits can be installed in "special distribution zone" and "general power distribution zone", in accordance with IEC 60533 provided measures are taken to attenuate these effects on the distribution system, so the safe operation is assured. Planned EMC measures shall be submitted for approval prior to installation on board. The EMC measures should be derived from an EMC analysis and plan in accordance with IEC 60533 Annex B and/or IEC 61800-3 Annex E.

With Uimp = 6 kV the max. rated voltage is 600 V when used in an IT (ship) net. It can be used in applications with directly earthed systems with rated voltage of 400 / 690 V.

Type Approval documentation

"New models to be added to TAE00000J4", info from manufacturer.
Force test report "Test for marine type approval of TSA69-820d" doc no. 122-22663-1 dated 2022-05-10.
DEKRA test report no. 2262990.50 dated 2022-12-15.
DEKRA EMC test report no. 2262990.0501-EMC dated 2022-07-28

As registered in type approval job-ID 262.1-019550-1
Below doc. Had been update for the Rev.4 ,30th Jan 2026

Testing reports title	Report No.	Issued date
Environmental tests of TSA4, TSA3 and TSA2	125-21970-1	2025-11-10
Environmental tests of TSA5	125-20401-1 rev A	2025-09-24
Environmental tests of TSA6	125-20312-1 rev B	2025-10-07
TEST REPORT Electromagnetic Compatibility (EMC)	2296520.0502-EMC, 2296520.0501-EMC, 2296515.0501-EMC, 2296515.0502-EMC & P126800	2025-12-02 2025-12-18
IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME	NL-122364	2025-12-19
TEST REPORT IEC 60947-4-2 Low voltage switchgear and control gear Part 4: Contactors and motor-starters Section 3 – AC semiconductor motor controllers and starters	2296867.50	15-12-2025

Tests carried out

Type tests of safety part in accordance with IEC 60947-4-2: Temperature rise, dielectric properties, thermal stability, overload capability, blocking and commutation capability, performance under short-circuit, verification of mechanical properties of terminals, ingress protection, tripping.
Environmental tests in accordance with DNV-CG-0339 Aug.2021(IACS UR E10 Rev.9) : electrical power supply failure, power supply variation, vibration, dry heat, damp heat, EMC.

Marking of product

Type designation – voltage – current

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type Approval is complied with and that no alterations are made to the product design or choice of materials.

The main elements of the periodical assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routines (RT) checked (if not available tests according to PST and 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 to be performed at 2 and 3.5 year and at Renewal.

END OF CERTIFICATE