



# TYPE APPROVAL CERTIFICATE

Certificate No:  
**TAE0000J4**  
Revision No:  
**3**

## 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 **2023-06-21**

This Certificate is valid until **2024-10-11**.

DNV local unit: **Sweden CMC**

Approval Engineer: **Nicolay Horn**

for **DNV**

.....  
**Frederik Tore Elter**  
**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

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

### Technical data

Model	Frame size	P <sub>mot</sub> 400 V	P <sub>mot</sub> 460 V	I <sub>nom</sub>	Weight [kg]	Dimension HxWxD [mm]
		[kW]	[hp]	[A]		
Normal operation (**)						
TS <sub>Axx</sub> – 016	1	7,5	10	16	5,5	246 / 340x126x188
TS <sub>Axx</sub> – 022		11	15	22		
TS <sub>Axx</sub> – 030		15	20	30		
TS <sub>Axx</sub> – 036		18,5	25	36		
TS <sub>Axx</sub> – 042		22	30	42		
TS <sub>Axx</sub> – 056		30	40	56		
TS <sub>Axx</sub> – 070	2	37	50	70	5,7	
TS <sub>Axx</sub> – 085		45	60	85		
TS <sub>Axx</sub> – 100		55	75	100		
TS <sub>Axx</sub> – 140	3	75	100	140	13	285 / 380x196x235
TS <sub>Axx</sub> – 170		90	125	170		
TS <sub>Axx</sub> – 200		110	150	200		
TS <sub>Axx</sub> – 240	4	132	200	240	23,5	373 / 512x254x260
TS <sub>Axx</sub> – 300		160	250	300		
TS <sub>Axx</sub> – 360		200	300	360		
TS <sub>Axx</sub> – 450		250	350	450		
TS <sub>Axx</sub> – 470	5	250	350	470	60	750x550x350
TS <sub>Axx</sub> – 580		315	500	580		
TS <sub>Axx</sub> – 730		400	600	730		
TS <sub>Axx</sub> – 820		450	700	820		
TS <sub>Axx</sub> – 835***	6	500	800	960	90	900x640x360
TS <sub>Axx</sub> – 960***		630	900	1125		

\* xx = 52 or 69

\*\* Normal operation: Start current = 3xI<sub>nom</sub>, 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*:	IEC 60947-4-2 (To be used in EMC class A locations)

The TS<sub>Axx</sub> – 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 the applicable DNV Rules.

\* 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 U<sub>imp</sub> = 6 kV the max. rated voltage is 600 V when used in a 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

## Tests carried out

Type tests including EMC 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 and EMC Environmental tests in accordance with DNV-CG-0339: 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