DNV·GL

Certificate No:
TAE00002ZM

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Low Voltage Switchgear and Control Gear Assemblies

with type designation(s)
TECHNO MODULE

Issued to
ELSTEEL (Pvt.) Ltd.
Katunayake, Sri Lanka

is found to comply with
DNV GL rules for classification – Ships, offshore units, and high speed and light craft

Application :

Type approval regards system design principle.
Drawings for the actual application is to be submitted for approval in each case.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

Rated voltage (V)	**415 - 690 - 1000**
Rated current (A)	**up to 7100**
Rated frequency (Hz)	**50 or 60**
Degree of protection	**up to IP 55**

Issued at **Hamburg** on **2018-07-31**
This Certificate is valid until **2023-06-30**.
DNV GL local station: **Colombo**

Approval Engineer: **Harald Amberger**

for **DNV GL**

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.

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Product description

Elsteel Modular Power Switch Board system consisting of enclosures, busbar components and withdrawable units.

The Type Approval covers the following busbar systems:

Type of busbar system up to max value:

Type:	**Techno Module System**
Rated insulation voltage voltage Ui:	Up to 1000 V AC
Rated operation voltage Ue:	Up to 1000 V AC
Rated impulse voltage:	Up to 12 kV
Rated current at 45 °C ambient:	
Main busbar TM panels:	Up to 7100 A
Main busbar TM light panels:	Up to 1000 A
Rated frequency:	50 - 60 Hz
Enclosure class:	IP 41, 42, 54 & 55
Short-circuit current main bus bar: [1)]	
Peak withstand Ipk:	Up to 220 kA
Withstand 1 sec. Icw:	Up to 100 kA
Short-circuit current vertical bus bar: [1)]	
Peak withstand Ipk:	Up to 220 kA
Withstand 1 sec. Icw:	Up to 100 kA
Internal arc withstand:	Up to 65 kA at 415 V for 100 ms

[1)] See comments to short circuit currents under Application/limitation.

External dimensions: H: 2200 mm
(transport section) W: 2400 mm (can be extended)
D: 2200 mm

The power switchboard to be installed /mounted according to manufacturer's installation instructions.

List of parts: See applicable drawings.

For detailed information regarding different bus-bar configurations see the catalogue.

Application/Limitation

The type approval covers system design principle in accordance with IEC61439-1 / 2, IEC 60439-1 and IEC 61921 sub clauses 7.2.1 to 7.2.7. Equipments as circuit breakers etc. are not covered by this type approval.

This type approval certificate does not replace the requirement for a DNV product certificate. Documents and drawings for the actual application as stated in the Rules Pt.4, Ch.8, Sec. 1, Table 2 except E150, shall be submitted for approval in each caseby the end manufacturer.

Vertical bus bars may be rated on the basis of the reduced short-circuit stress occurring on the load side, may be rated on the basis of the reduced short-circuit stress occurring on the load side of the respective short-circuit productive device as stated in IEC 61439-1 item 8.6.1.but not less than 60 % of the rating for the main bus bar and only for single out- going consumers protected by a fuse or short-circuit limiting breaker without time delay.

The data for rated currents and rated short circuit currents may be depending of the IP degree. See applicable catalogue/ datasheet from the manufacturer.

Type Approval documentation

Tests carried out

Type tests in accordance with IEC61439-1/2 and IEC 60439-1 as short circuit test, protective circuit test, dielectric properties, temperature rise, IP rating tests, vibration test and Seismic vibration test and low voltage power factor correction bank test in accordance with IEC 61921 sub clauses 7.2.1 to 7.2.7 and IEC 61439-1.

Marking of product

Manufacturers name plate with type and key data in accordance with IEC.

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