

TECHNO MODULE

MODULAR
ELSTEEL
ENCLOSURES



www.elsteel.com

The best technical solution at the best possible price

INTRODUCTION

ELSTEEL is a world leader in the design, development and manufacture of modular panel enclosures.

This is built on a strong foundation of 30+ years of operations supported by continual investment in research and development. Our objective is as simple as our products: To manufacture the world's best enclosures at the best possible price.

ELSTEEL delivers enclosure solutions for every build. Whether it is a small Terminal Box or the largest custom designed distribution panel for an Olympic Size Stadium, ELSTEEL delivers the solution.



You're holding a top of the line quality product in your hands. Made with love and excellence! I hope you will enjoy assembling and using Elsteel products as much as I enjoy manufacturing it for you.

A handwritten signature in black ink, appearing to be 'F. Logstrup'.

Fang Logstrup
Managing Director





TECHNO MODULE

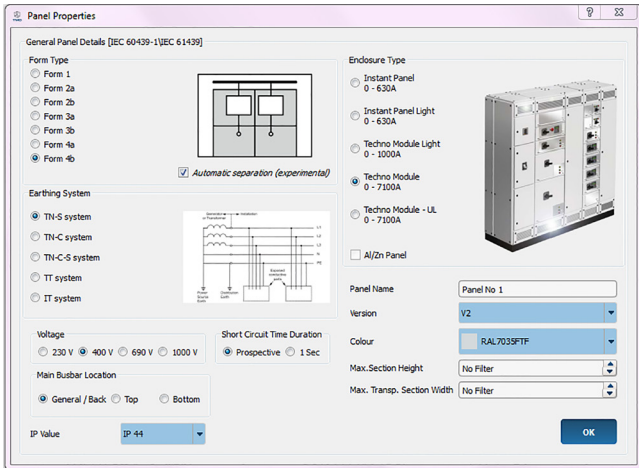
Techno Module is a patented 200 mm grid modular system for the switchboard manufacturing industry, fully type tested in accordance with IEC 61439-2.

It is the result of many years work in research and development and continuous testing at recognised test stations around the world.

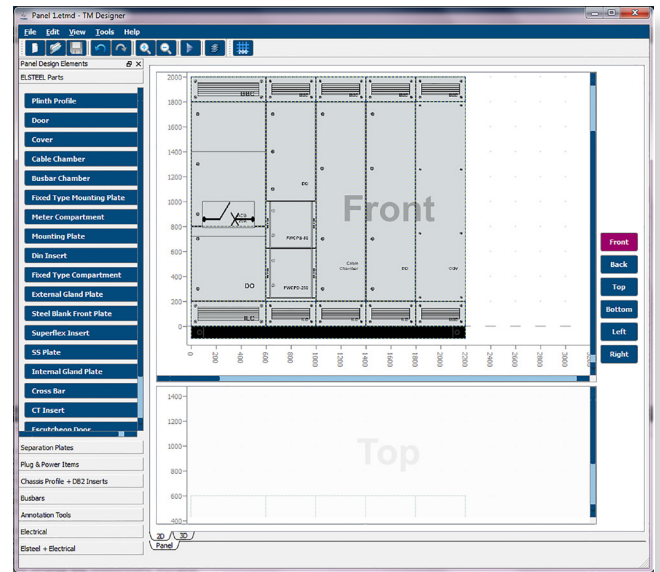
Techno Module is an open system that can accommodate all major brands of breakers, contactors, relays etc.

THE TECHNO MODULE DESIGNER

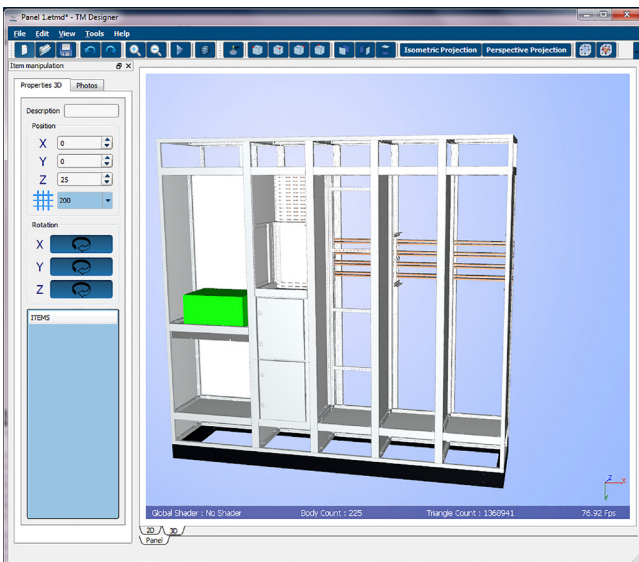
Panel properties



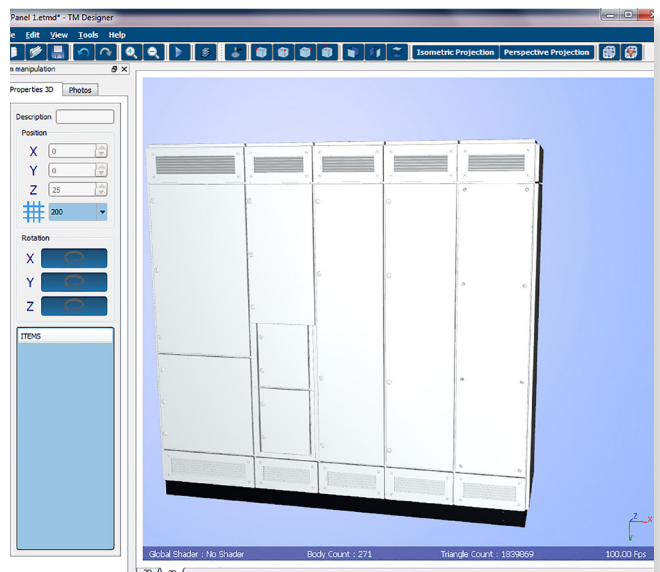
2D view



3D view



3D view



The first step in designing a successful distribution board or motor control centre is planning with Techno Module Designer (TMD).

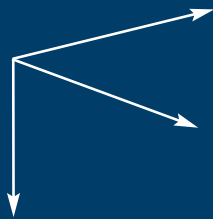
Panel builders spend a lot of time quoting projects with a success rate as little as 5-10%. So In order to save engineers precious time and allow them to spend more time with the customers, we have created a unique tool. Within 15 minutes you can draw a panel board and get a BOM including copper and electrical items. Its fast and its free!

Another great feature is the software creates 3D drawings for each panel. View in TMD or export into other 3D software packages. You can then plan site wide busbar routes for example.

Spend less time calculating and more time selling.

FRAME WORK

The Techno Module system is modular in steps of 200 mm in all three directions.



That means that there is no limit to the possibilities and positions.

The strong framework is made from 2 mm electro galvanised powder coated steel profile.

It forms a 25 mm grid and can be arranged in an unlimited number of ways.

It rests on a modular base frame which incorporates all facilities for dividing and transportation.

Smaller panels up to 1250 Amps can be built in the economical Techno Module Light.



BUSBARS



**Busbar systems use standard
'off the shelf' 10mm flat bars.**

Either copper or aluminium.

The busbar holders are made from specially formulated re-enforced self extinguishing plastic and can be mounted in any position within the framework.

During countless type-testing, up to 7100 A 100 kA / 3 s and 120 kA / 1 s, the busbar systems and holders have been tested rigorously again and again.

Busbar connections are a clamp arrangement, this allows the bars to slide during increase and decrease in temperature. This eliminates the risk of lose connections and of debris in your panel.

PLUG & POWER

Plug & Power is a revolutionary way of making distribution boards and motor control centres.

The panel board can be rearranged indefinitely while still supplying power to your existing equipment.

Both consultants and end-users have to accommodate the rapid development in medical equipment, CNC machines and process plants etc, during new investments in construction.

With Plug & Power, consultants are no longer tied to strict specifications.

Last minute modifications can be made at any point during assembly, installation or operation.

Shut-down and out-of-hour labour costs for modifications are now a thing of the past.



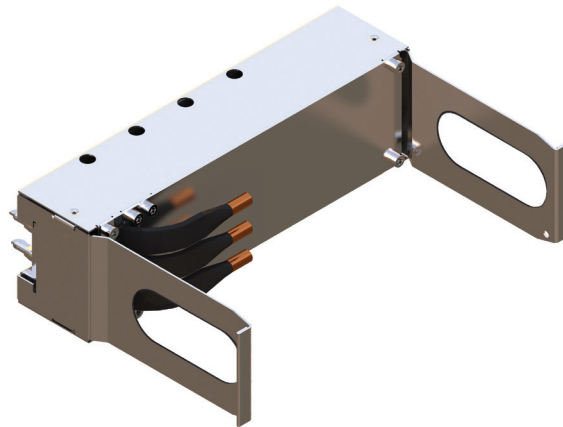
Patented

PLUG & POWER

Removable units - when you need to add or replace a breaker on a live panel!

Incoming connections are plug type.

Outgoing connections are fixed type.



Specifications of Plug-in

Design verified IEC 61439

Arc fault IEC 61641

Any unit size, fitted anywhere in the system

No tools needed for insertion or removal of units

New breakers can be added anywhere in the panel

Fastest way of construction due to pre-assembled units

Locked position without screws

Breakers or starters can be replaced

Outgoing cable termination can be left or right

Fully insulated busbar optional

Dual purpose, breaker or motor starter

Plugs directly to the busbar

Any breaker brand can be used

5 pole incoming

Direct on Line or Star Delta Starter

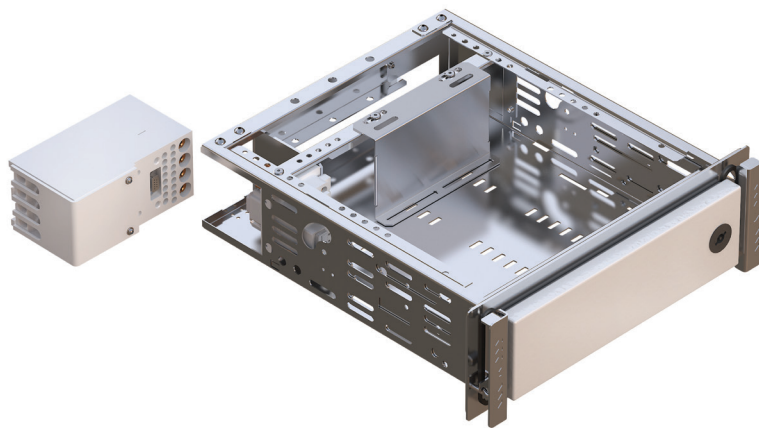
Busbar rating 80 kA / 1 sec.

Delivered as a fully assembled unit

Fully Withdrawable Units - Enables fast replacements in an emergency reducing production downtime to the very minimum possible!

Incoming connections are plug type.

Outgoing connections are plug type.



Specifications of Withdrawables

Design verified IEC 61439

Arc fault IEC 61641

Any unit size, fitted anywhere in the system

All cables are terminated in the side cable compartment

No tools needed for insertion or removal of units

A unit is replaced in seconds!

Heavy duty SS handles and mechanism

Insert, operate, test and release functions, all in one handle.

All electrical components can be 'lifted' out of the units

Plugs directly to the busbar

Safety lock while removing the unit

Optional shutters

Outgoing terminations can be left or right.

Lockable in 'on' and 'service' position

Fully insulated busbar optional

Any breaker brand can be used

5 pole incoming

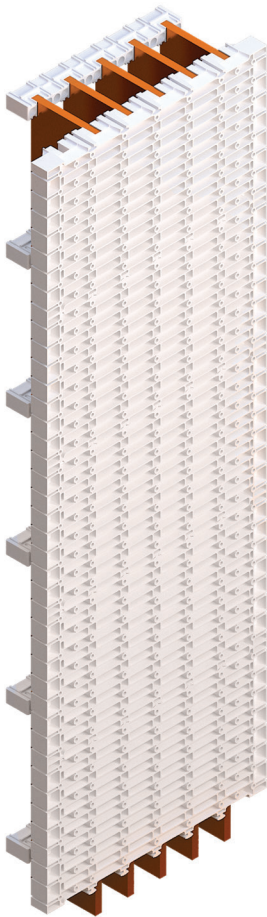
Direct on Line or Star Delta Starter

Busbar rating 80 kA / 1 sec.

MODBUS or PROFIBUS intelligent communication.

Delivered as a fully assembled unit

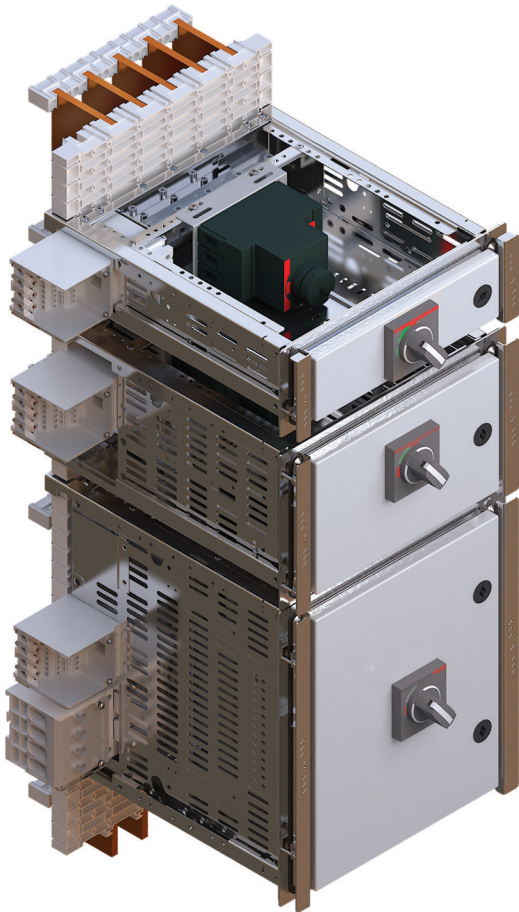
PLUG & POWER



The vertical busbars are mounted in a flat holder which doubles as a form 4 separation plate and plug-in base. We call it the motherboard. These motherboards are mounted from top to bottom in each section, allowing connections with the bus bars wherever you choose to insert the withdrawable or removable units.

Each section can carry 1250 Amps, allowing sufficient space for extra units once the panel is installed.

When designing your future Plug & Power panel, we recommend having at least 30% free space for expansion. For example - that extra scanner at the hospital, the new shop unit at the mall, an additional factory compressor, or an extra pump on the oil platform. With Plug & Power, it's now easy and quick to add these later, without impacting the production!



You have the freedom to **Plug in** and **Power up** anything you need, anywhere you like in the panel, at any given time.

Plug & Power has furthermore been designed for quick and easy assembly, saving not only the panel builder a considerable amount of time in the workshop by simply 'plugging-in', but also the company a huge expense. Outgoing distribution or motor starter units can be conveniently pre-assembled on a worktable.

* Plug & Power is patented and a registered trade name owned by Elsteel.

FORM 3 + 4

Highest forms of personal safety as well as protection of materials and environment.

When built in accordance with this standard, it is possible to work in one section of the panel while the rest of the pane is still live.

Internal separation plates prevent foreign objects or particles from transferring from one section of the panel to another (resulting in a short circuit in a compartment that may be live). This prohibits the whole panel from becoming contaminated and complete panel damage.



ARC FAULTS



Arc Filters have been included in the design of the separation plate. Once you install the standard chimneys your enclosure is arc safe.

With arc filters fitted, flames, gases or solid objects are prevented from escaping from the front or side of the panel, where the operator may be standing.

TESTING + FINISH

Each and every panel is tested by the panel builder/integrator in accordance with specifications from the Constructors Manual, and the routine test specified in IEC 61439-1, before shipment.

The surface of the panel is powder coated in RAL 7035 fine textured finish. It's easy to maintain and will look 'as new' for many years.

Phosphated and chrome-passivated pretreatment makes the panel suitable for tough climates and conditions. Degree of protection up to IP55.

After commissioning, the panel is easily expanded and breakers or motor starters can be removed or fitted while it is live.



CERTIFICATION

Elsteel Techno Module System is certified as per IEC and UL standards by independent certification authorities.



Elsteel Techno Module System is fully type tested as per IEC 61439-1, IEC 61439-2 and IEC TR 61641 with the following brands.



Elsteel Techno Module System is certified for marine applications by



TECHNICAL SPECIFICATION

GENERAL DATA

Applications	Low voltage power switchgear and control gear assembly: Power Distribution Centres, Motor Control Centres, PLC & DCS Switchboards
Installation	Indoor
Mounting possibilities	Floor standing / Wall mounting
Panelling standard colour	RAL 7035 Fine Textured (Non-standard colours by request)
Coating	Epoxy/ Polyester Powder, thickness $\geq 60\mu\text{m}$

MECHANICAL DATA

Field / Tier Arrangement	Front connected / Back to back
Cable entry	Top / Centre / Bottom
Compartment types	Fixed, Removable & Fully withdrawable
Access	Front / Rear
IP rating	IP43, IP44, IP54, IP55 (refer CM page 6:24)
IK rating	IK08, IK10 (refer CM page 6:24)
Form of segregation	1, 2a, 2b, 3a, 3b, 4a, 4b / Form 4 type 1-7
Maximum dimensions of a transport section (Basic module 200×200×200)	Width - 2400 Height - 2400 (can be extended) Depth - 2400
Material & paint specifications	(refer CM page 6:40, 6:41)

ELECTRICAL DATA

Rated operational voltage (Ue)	415V / 690V / 1000V
Rated insulation voltage (Ui)	690V / 1000V
Rated frequency (f)	50Hz
Rated impulse voltage (Uimp)	Up to 12 kV
Rated current (In) for TM panels	Up to 7100A (refer CM page 6:06)
Rated current (In) for TM Light panels	Up to 1000A (refer CM page 6:06)
Rated short time current (Icw)	Up to 120kA / 1s & 100kA / 3s (refer CM page 6:07)
Pollution degree	3
Min. clearance	(refer CM page 6:13)
Earthing system	TN-C, TN-S, TN-C-S, TT, IT (refer CM page 6:28)

BUSBAR HOLDER DATA

Type	Thermal Class (IEC 60085)	CTI (IEC 60112)	Material Group
BAH	Thermal Class B	175	IIIa
SLBH	Thermal Class F	600	I
UBH	Thermal Class B	175	IIIa
OMH	Thermal Class B	175	IIIa
BH	Thermal Class F	600	I
MAB	Thermal Class B	175	IIIa
MABHT	Thermal Class F	600	I
DRHU	Thermal Class F	600	I
INS	Thermal Class B	175	IIIa
NEU	Thermal Class B	175	IIIa
FCSH	Thermal Class B	175	IIIa
MBO	Thermal Class B	175	IIIa
RBH	Thermal Class B	175	IIIa

For more certifications and latest updates please see www.elsteel.com

MATERIAL SPECIFICATION

Base Frame	2 mm mild steel powder coated in black (RAL 9005)
Corners	Aluminium die casted powder coated in Light grey (RAL 7035) Fine tex.
Corner Bar / Cross Bar	Electro galvanized 2 mm powder coated in Light grey (RAL 7035) Fine tex.
	Stainless steel 1.5 mm (AISI 304, AISI 316) Wet grinding (180)
Doors / Covers	Mild steel 1.5 mm powder coated in Light grey (RAL 7035) Fine tex.
Doors with window	Mild steel 1.5 mm powder coated in Light grey (RAL 7035) Fine tex. &
	4 mm Tempered Tinted glass
Door Stabilisor	Mild steel 20×20×1.5 square pipe powder coated in Light grey (RAL 7035) Fine tex.
Door with cable glands	Mild steel 1.5 mm powder coated in Light grey (RAL 7035) Fine tex.
Mounting Plate	Mild steel 2 mm powder coated white (RAL 9010) / 2 mm Alu-zinc
Separation Plates	Mild steel (2×2, 2×4, 2×6, 4×4, 4×6,) 1 mm painted white (RAL 9010)
	All other sizes 1.2 mm
Flat Cover	Mild steel 1.5 mm painted in Light grey (RAL 7035) Fine tex.
Panel Assembly Kit	Mild steel 3 mm zinc plated
Cable Holder	Mild steel 1.5 mm painted white (RAL 9010) for up to 600 mm and Mild steel 2mm
	painted white (RAL 9010) for 600 mm & above
Lifting Eyes (14380)	Mild steel 3 mm powder coated in black (RAL 9005)
Lifting Eyes (14390)	Mild steel 3 mm zinc plated
Wall Mounting Brackets	Mild steel 3 mm powder coated in Light grey (RAL 7035) Fine tex.
Transport Wheel Holder	Mild steel 3 mm powder coated in black (RAL 9005)
Busbar Holder	
Fish Plate	Self extinguishing fibre material / reinforced PC
H to V connectors	Copper 10 mm
Busbar tap off - 21000	Copper 10 mm
- 21010 & 21020	Dia 10 mm zinc plated
- 21030	Copper 5 mm
Bracket for earth conductor	Mild steel 3 mm zinc plated
Copper Spacer	Mild steel 3 mm zinc plated
	Copper Dia 30
Instant Panel - Casing	
- Doors	Mild steel 1.5 mm powder coated in Light grey (RAL 7035) Fine tex.
- Mounting Plate	Mild steel 1.5 mm powder coated in Light grey (RAL 7035) Fine tex.
	Mild steel 2 mm powder coated in white (RAL 9010) / Alu-zinc 2 mm

COPPER SPECIFICATIONS

Electrolytic Copper high conductivity OC-ETP 99.98 % JIS H3140 C 1100 Tempered upto half hard.

For more certifications and latest updates please see www.elsteel.com

PAINT SPECIFICATION

1. Standard Paint

Degreasing and Phosphating

- By the spray method at approx. 47°C
- Cleaning and passivating of the surface
- Coating with phosphate (coat thickness approx. 1 µm)

Textured Powder Coating

- Electrostatic coating
- Raw material: Epoxy Polyester
- Can be readily overpainted
- Can be decontaminated
- High mechanical strength
- Good resistance to chemicals and UV rays coat thickness ≥ 70 µm

Smooth Powder Coating

- Electrostatic coating
- Raw material: Epoxy Polyester
- Can be readily overpainted
- Can be decontaminated
- High mechanical strength
- Good resistance to chemicals and UV rays coat thickness ≥ 60 µm

Corrosion resistance according to IEC 62208 clause 9.13.1 and IEC 61439-2 clause 10.2.2.2

Severity test A

- 6 cycles of 24h each damp heat cycling test according to IEC 60068-2-30 (Test Db) at (40 ± 2) °C and relative humidity of 95%
- 2 cycles of 24h each to salt mist test according to IEC 60068-2-11 (Test Ka: salt mist) at a temperature of (35 ± 2) °C

Summary: No signs of rust, suitable for harsh industrial surrounding (Indoor installation)

2. Resistance

The standard coating is resistant to:

- Mineral oils
- Lubricants
- Machining emulsions
- Solvents (briefly, such as during cleaning processes)

The standard coating is suitable for a continuous temperature of -40°C to +90°C.

The standard coating can withstand a continuous temperature of 45°C to 85% RH.

Please Note

If UV resistant powder coating is required it has to be mentioned as a special requirement. The standard coating is not UV Resistant. IP protection categories do not imply that enclosures are suitable for outdoor applications.

3. Overpainting

After careful cleaning and perhaps slight roughening of the surface, the standard coating can be overpainted with Powder coating.

*Powder Coating System : Electrostatic Powder Coating System (ITW Gema – Switzerland)

*Pretreatment System : Five stage, Phosphate free Conversion Coating system (Henkel Germany)

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