

TECHNO MODULE

MODULAR
ELSTEEL
ENCLOSURES



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 be 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 stylized, handwritten signature in blue ink.

Fang Logstrup
Managing Director





TECHNO MODULE

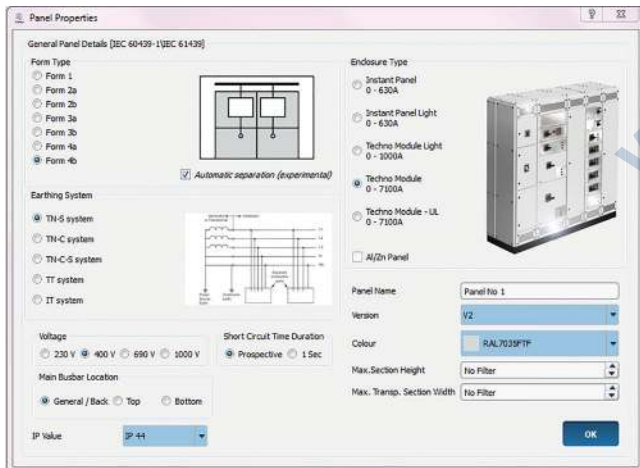
Techno Module is a patented 200mm grid modular system for the switchboard manufacturing industry, successfully tested to IEC 61439-1.

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

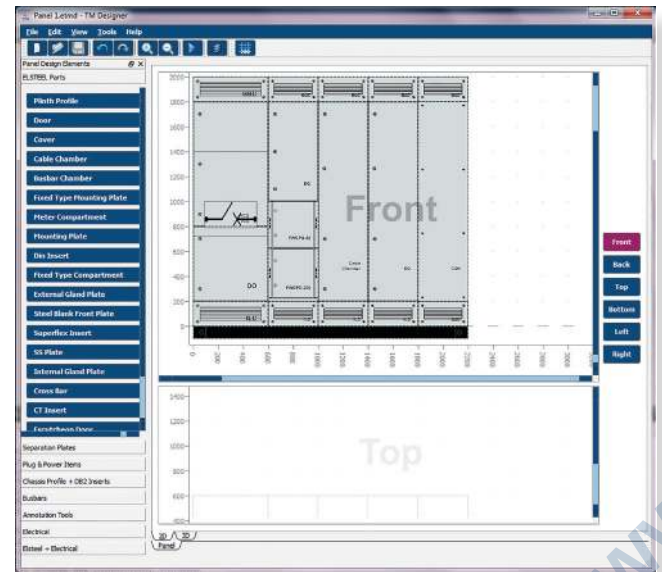
Techno Module is an open system that can accommodate all major brands of breakers, contactors, relays etc.

THE TECHNO MODULE DESIGNER

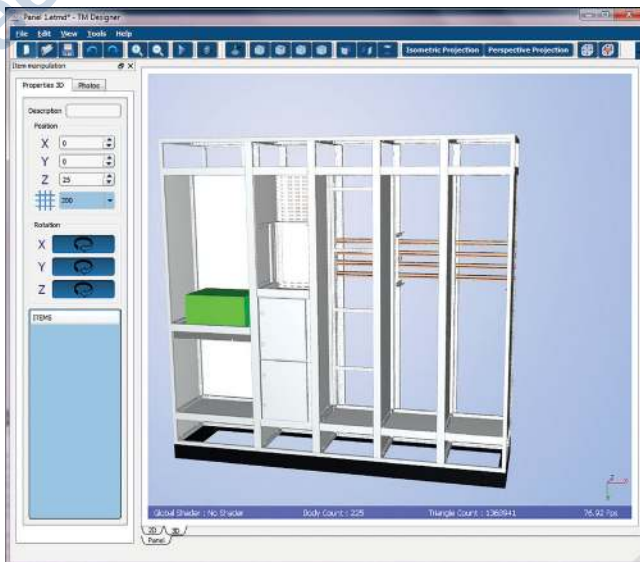
Panel properties



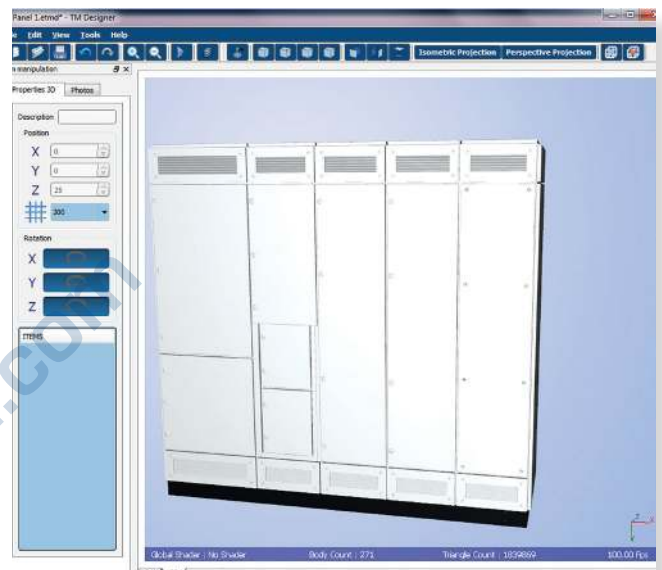
2D view



3D view



3D view



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

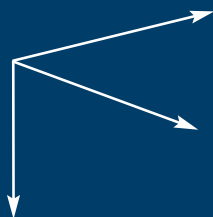
Panel builders spend a lot of time quoting projects with a success rate as little as 5-10%. So In order to save engineers precious time and allow them to spend more time with the customers, we have created a unique tool. Within 15 minutes you can draw a panel board and get a BOM including copper and 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 2mm electro galvanised powder coated steel profile.

It forms a 25mm 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 Amp 100 kA/ 1sec, 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.



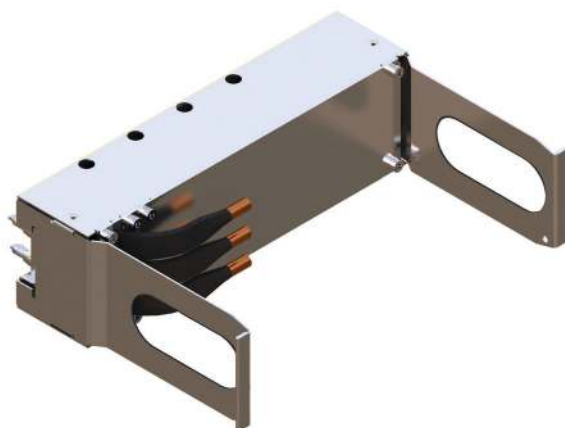
Patented

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 80kA/ 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 80kA/ 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.

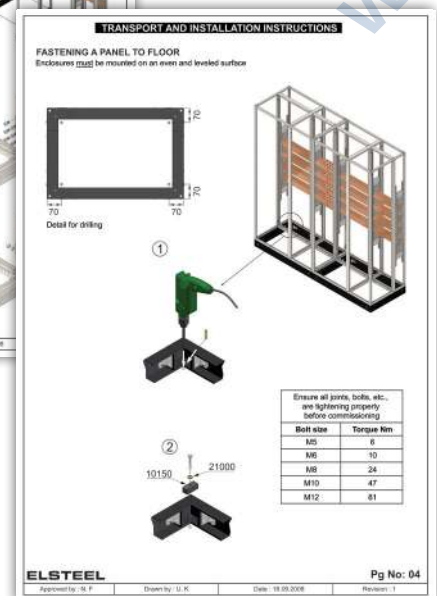
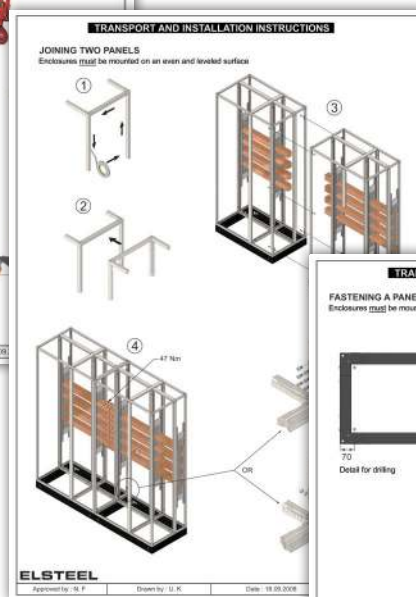
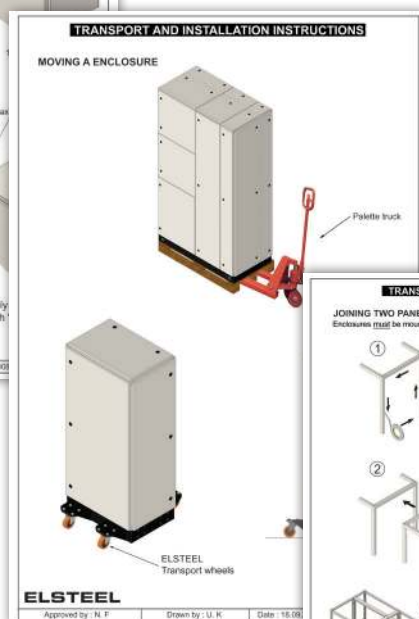
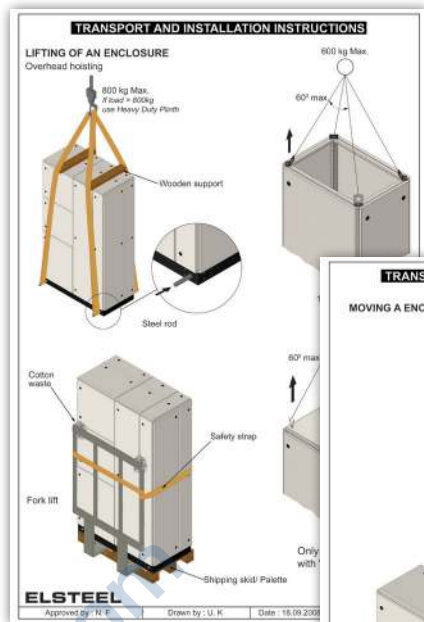
The surface of the panel is powder coated in RAL 7035 fine textured finish. It's easy to maintain and will look 'as new' for many years.

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.



INSTALLATION COMMISSIONING



Every ELSTEEL enclosure is tested in accordance with IEC 61439-1, not only at the test station but also by the panel builder.
Instructions are delivered with each panel explaining in detail how to safely transport and install the panel.

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, Motor control centres, PLC & DCS panel boards
Installation	Indoor
Mounting possibilities	Floor standing / Wall mounting
Panelling standard colour	RAL7035 Fine texture (Inquire for non standard colours)
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
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 - 2200 Height - 2400 (can be extended) Depth - 2200
Material & paint specifications	See page 25, 26

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 (See CM9 page 6:04 for more information)
Rated current (In) for TM Light panels	Up to 1000A (See CM9 page 6:04 for more information)
Rated short time current (Icw)	Up to 100kA / 1s & 80kA / 3s (See CM9 page 6:04 for more information)
Pollution degree	3
Material group	IIIa
Min. clearance	See CM9 page 6:06
Earthing systems	TN-C, TN-S, TN-C-S, TT, IT (See CM9 page 6:18)

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

MATERIAL SPECIFICATION

Base Frame	2mm 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 2mm powder coated in Light grey (RAL 7035) Fine tex.
	Stainless steel 1.5mm (AISI 304, AISI 316) Wet grinding (180)
Doors / Covers	Mild steel 1.5mm powder coated in Light grey (RAL 7035) Fine tex.
Doors with window	Mild steel 1.5mm powder coated in Light grey (RAL 7035) Fine tex. &
	4mm 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 1.5mm powder coated in Light grey (RAL 7035) Fine tex.
Mounting Plate	Mild steel 2mm powder coated white (RAL 9010) / 2mm 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 1.5mm painted in Light grey (RAL 7035) Fine tex.
Panel Assembly Kit	Mild steel 3mm zinc plated
Cable Holder	Mild steel 1.5mm painted white (RAL 9010) for up to 600mm and Mild steel 2mm
	painted white (RAL 9010) for 600mm & above
Lifting Eyes (14380)	Mild steel 3mm powder coated in black (RAL 9005)
Lifting Eyes (14390)	Mild steel 3mm zinc plated
Wall Mounting Brackets	Mild steel 3mm powder coated in Light grey (RAL 7035) Fine tex.
Transport Wheel Holder	Mild steel 3mm powder coated in black (RAL 9005)
Busbar Holder	
Fish Plate	Self extinguishing fibre material / reinforced PC
H to V connectors	Copper 10mm
Busbar tap off - 21000	Copper 10mm
- 21010 & 21020	Dia 10mm zinc plated
- 21030	Copper 5mm
Bracket for earth conductor	Mild steel 3mm zinc plated
Copper Spacer	Mild steel 3mm zinc plated
	Copper Dia 30
Instant Panel - Casing	
- Doors	Mild steel 1.5mm powder coated in Light grey (RAL 7035) Fine tex.
- Mounting Plate	Mild steel 1.5mm powder coated in Light grey (RAL 7035) Fine tex.
	Mild steel 2mm powder coated in white (RAL 9010) / Alu-zinc 2mm

PAINT SPECIFICATION

Type	Epoxy polyester powder
Gloss Level	Semi gloss/ Smooth finish (50%-70%)
Coating Thickness	60-80µm.
Heated to	180°C
To repaint	Slightly sanding the surface to be painted and apply required colour layer. Please inform paint supplier above information.
Type	Epoxy polyester powder
Gloss Level	High gloss/ Texture finish (60%-90%)
Coating Thickness	70-120µm.
Heated to	180°C
To repaint	Slightly sanding the surface to be painted and apply required colour layer. Please inform paint supplier above information.
COPPER SPECIFICATIONS	
Electrolytic Copper high conductivity OC-ETP 99.98 % JIS H3140 C 1100 Tempered upto half hard.	

*Powder Coating System : Electrostatic Powder Coating System (ITW Gema – Switzerland)
 *Pretreatment System : Five stage, Phosphate free Conversion Coating system (Henkel Germany)

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

REFERENCES

Customer	Product	Country
Olympic Stadium	Main Distribution Panel	Australia
British Aerospace	Main Distribution Panel	Australia
Colt Telecom	Techno Module	Belgium
NATO Headquarters	Techno Module MCC	Belgium
Ministry of Defence	Motor Control Center	Dubai
Giga Gold Refinery	2500A LV Panels	Dubai
Jebel Ali Air Port	Main Distribution	Dubai
Nordbahnhof Berlin	NSHV and GHV	Germany
Alcatel Stuttgart	NSHV and GHV	Germany
National Hospital	4000A Switchboard	Iceland
Eskifjord Ltd	2500A Switchboard	Iceland
Hyundai Motor India Ltd	Techno Module	India
Nokia Mobile Phone Facility Project	Techno Module	India
Toyota Kirloskar Motor Pvt Ltd	PCC Panels - Techno Module	India
Radisson Hotel	Techno Module/ Form 4	Jordan
Amman East Station	Form 4 Motor Control Center D/O	Jordan
Central Bank of Kenya	Main Board/ Sub Boards	Kenya
Commercial Bank of Africa	Main Board/ Sub Boards	Kenya
Multilinx Factory	Distribution Boards	Maldives
SAVANNAH Sugar Estate	Techno Module and MCC	Mauritius
Ulvesund Elektro AS	1600A Main Panels	Norway
Power Plant Mar Kraftverk	Motor Control Center	Norway
Qatar International Stadium	Distribution Panel	Qatar
West Bay Cooling System - Phase 1	Form 4 Panel 7000A	Qatar
SAB Miller Beer Factory	Motor Control Center WWT Plant	Romana
Hydro Tech Engineering	Motor Control Center WWT Plant	Romana
Esso Deepwater Ltd	Generator Control Panel	Singapore
Shang Ri La Hotel	Techno Module	Singapore
Greenpoint Stadium (2010 World Cup)	Techno Module	South Africa
Coca Cola Dar Es Salaam	Techno Module	South Africa
Barcelona Air Port	Form 4 Motor Control Center	Spain
Jerez Air Port	Form 4 Motor Control Center	Spain
Manchester Air Port	Form 4 Motor Control Center	UK
Nokia	Main Switchboard	UK
International Air Port Doha	Techno Module MCC	UAE
Fujairah	Techno Module MCC	UAE
Brodosplit Shipyard	Marine Panel 6300A	Croatia

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

EUROPE

Cebco Limited - Czech Republic
Tel: +420 604 645 648
Mail: info@cebco.cz
Mail: cebco@seznam.cz

Culic Elektro Centar - Croatia
Tel: +38 5 2120 4333
Fax: +38 5 2120 4343
Mail: veleprodaja@culic.net

EFA Elektro AS - Norway
Tel: +47 6 681 2400
Mail: post@efa.no

Elektra-Bree-Bordenbouw nv - Belgium
Tel: +32 8941 0041
Fax: +32 8941 0049
Mail: kg@ebbnv.be

Elsteel IRL - Republic of Ireland
Tel: +353 1 456 8566
Fax: +353 1 450 6104
Mail: debbie@elsteel.ie

Elsteel NI - Northern Ireland
Tel: +44 289 077 4041
Fax: +44 289 078 3197
Mail: ghavlin@parkelect.co.uk

Elsteel Ltd. - Poland
Tel: +48 77 465 4666
Fax: +48 77 465 4674
Mail: elsteel@elsteel.pl

Elsteel UK Ltd. - United Kingdom
Tel: +44 197 885 5909
Fax: +44 197 885 5824
Mail: sales@elsteel.co.uk

Montakon - Netherlands
Tel: +31 73 599 6000
Fax: +31 73 599 6060
Mail: info@montakon.nl

N. N. Control Panels Ltd. - Cyprus
Tel: +357 25 71 4816
Fax: +357 25 71 4415
Mail: info@nncontrolpanels.com

Rafmidlun hf - Iceland
Tel: +354 540 3500
Fax: +354 540 3501
Mail: kolbeinn@rafmidlun.is

EUROPE Contd.

RS Components Ltd. - England
Tel: +44 1536 20 1234
Fax: +44 1536 20 1501
Web: www.rswwww.com

UAB Electric Box - Lithuania
Tel: +370 68 697 304
Fax: +370 45 580 242
Mail: saulius@electricbox.lt

CANADA

Westshore Controls - Canada
Tel: +1 604 817 0987
Fax: +1 604 943 1661
Mail: westshorecontrols@gmail.com

AUSTRALIA

IPD Group Ltd. - Australia & New Zealand
Tel: +61 2 9645 0777
Fax: +61 2 9645 1608
Mail: brian.rodricks@ipdgroup.com.au

MIDDLE EAST

Base Control Tech (FZC) - UAE
Tel: +971 6 557 9958
Fax: +971 6 557 9959
Mail: vijayababu@basecontroltech.com

Jaidah Electrical - Qatar
Tel: ++974 4463 8777
Fax: ++974 4460 4286
Mail: sadek@jaidah.com.qa

National Electrical Industries Co. LLC. - Oman
Tel: +968 2 445 4951
Fax: +968 2 445 3721
Mail: tusharchavan@neioman.com

PAC International - Qatar
Tel: +974 4450 6084
Fax: +974 4683 021
Mail: mazen.harb@harbelectric.com

Pacific Ocean Elect. Switchgear Ind. - Sharjah
Tel: +971 653 45334
Fax: +971 653 47212
Mail: henry@pacificocean.ae

Power & Control Fzco - Dubai
Tel: +971 4 883 0391
Fax: +971 4 883 0392
Mail: khalil@pnc-ae.com

Schneider Electrical Engineering Ltd - Israel
Tel: +972 4 609 4433
Fax: +972 4 649 2216
Mail: sagi@sche.co.il

ASIA

Elsteel Ltd. - Sri Lanka
Tel: +94 11 225 2485
Fax: +94 11 225 2698
Mail: elsteel@elsteel.com

Elsteel Modular Products (Pvt) Ltd. - India
Tel: +91 832 661 1111
Fax: +91 832 661 1112
Mail: elsteel@elsteel.in

Elsteel Techno - Singapore & Malaysia
Tel: +65 645 546 98
Fax: +65 645 591 31
Mail: elsteel@singnet.com.sg

Fudo Automation Systems - Hyderabad, India
Tel: +91 40 2004 0814
Fax: +91 40 2754 4075
Mail: fudo@rediffmail.com

Neptune Systems (Pvt) Ltd. - India
Tel: +91 12 0420 5900
Fax: +91 12 0306 9042
Mail: dk@neptuneindia.com

Prakticheskaya Electrotehnika - Kazakhstan
Tel: +7 727 3783 294
Fax: +7 727 3783 487
Mail: pealmaty@mail.ru

Venora Lanka Power Panels (Pvt) Ltd. - Sri Lanka
Tel: +94 11 248 9580
Fax: +94 11 248 9582
Mail: venoralanka@venoragroup.com

AFRICA

ATI Systems - South Africa
Tel: +27 11 383 8300
Fax: +27 11 824 1353
Mail: sales@atisystems.co.za

M & E Commercial Engineers Ltd.- Mauritius
Tel: +230 677 9838
Fax: +230 677 7200
Mail: mec.eng@intnet.mu

Specialised Power Systems Ltd. - Kenya
Tel: +254 20 207 7219
Fax: +254 20 353 2986
Mail: info@spsafrica.com

CIS

JSC Electronmash - Russia
Tel: +781 2 702 1262, Int 8000
Fax: +781 2 702 1262
Mail: sales@ru.elsteel.com



ELSTEEL Denmark Møllevej 9 C · 2990 Nivå
Tel +45 49 22 33 44 · Fax +45 49 22 33 45
elsteel@elsteel.dk · www.elsteel.com

