



The exclusive advantage

A class all by itself, the new electrification solution offers the key to excellence in saving energy.







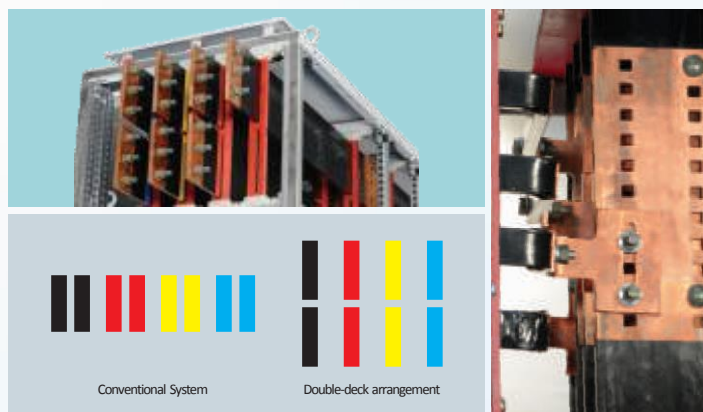
In the infrastructure business, every element of construction, installation and maintenance contributes to a project's long-term profitability. As India's leading switchgear company, we are constantly innovating to help infrastructure developers make the most of their electrification systems. The new Ti range is a product of this quest. It is design verified with copper and aluminium busbars, providing the perfect balance of cost-effectiveness, compactness and safety that infrastructure developers have always looked for.

PT. TAMCO Indonesia/L&T Electrical & Automation is part of the Larsen and Toubro conglomerate. We design, manufacture and market a wide range of low voltage and medium voltage electrical systems, control and automation systems, electrical products and metering and protection systems. The Ti range with its copper and aluminium busbar options is based on the award winning T-Era, and sets yet another benchmark in building electrification solutions.



THE SUPER SAVER

A combination of choice of aluminium or copper busbars, standardised quality and unique energy saving features make Tia a truly profitable investment.



Save with copper busbars: The Ti range is the only range of electrification solutions to offer the option of type-tested aluminium or copper busbar configurations, allowing you to make your installation even more cost-effective, without compromising on safety.

Save up to 40% energy: In any large building, energy costs often constitute as much as 60% of the total operating cost. The Ti has a unique double-deck Busbar arrangement that reduces impedance and heat loss by reducing detrimental factors like proximity and skin effect, thereby saving of almost 40% energy over conventional systems.

Standardisation means savings: The Ti has a compartmentalised design which can be assembled by qualified builders around the world. So, you enjoy the benefits of timely delivery, quick installation and savings – even before you switch the system on.

Save with concealed hinges: All doors are provided with concealed hinge to reduce the downtime during maintenance. Concealment provides better security against unauthorised access to feeders and makes a post maintenance paint touch-up optional.



VERIFIED SAFE

When dealing with electrical systems, there are no second chances. Ti is equipped with a range of safety features to safeguard your system as well as the people who operate it.

Design verified for Safety: Ti is a design verified assembly, in accordance with IEC 61439, assuring you of the highest levels of quality and safety, from design to assembly.

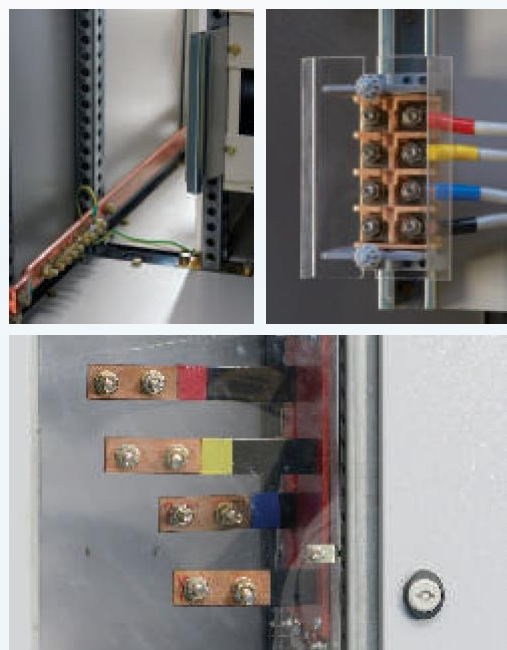
Safer busbars: Busbars in the Ti range have higher clearances than those prescribed by global switchboard standards (25 mm – Ph to Ph and 19 mm - Ph to N/Ph to E), offering a superior level of safety.

Zero 'stray-voltage' doors and panels: The panel doors of Ti are designed to prevent accidental opening. We have also placed earthing contacts on every door and an Earthbar running the length of the switchboard, connected to structural members. This confirms zero stray voltage on panel surface & ensures complete personnel protection.

Best-in class Insulation: The Busbars of the Ti range are equipped with polyester glass supports for insulation. You also have the choice to install heat-shrunk PVC sleeves for extra protection.

Enhanced Ingress Protection: A minimum ingress protection of IP2X is provided even with the doors open to ensure that an operator does not come in contact with live terminals or parts during maintenance.

No Accidental Contact: Front access terminations and rotary knobs ensure that an operator does not come in contact with live terminals or parts during maintenance.





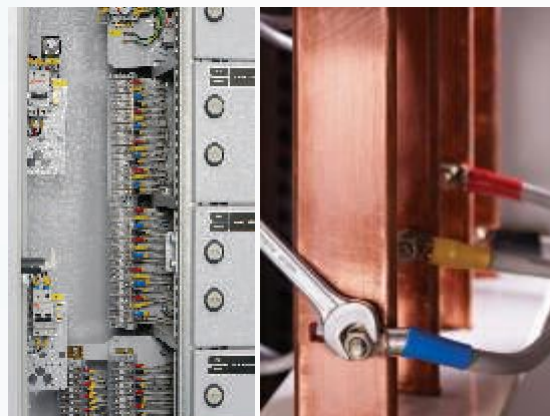
DESIGNED FOR CONVENIENCE

The Ti range incorporates a number of features that help make installation and maintenance easy.

Wide Cable Alleys: The Ti range is equipped with 300 mm wide cable alleys, facilitating easy and quick access at all times. You also have an option to increase the alley width using 300 mm add-on chambers (AOCs)

Quick Release System: The Ti range allows quick maintenance through a system that requires just a single spanner to unbolt connections from droppers.

Easy Access Doors: The Ti is fitted with hinged doors that open up to a wide angle of 95°, improving access during installation or maintenance, and saving time during each operation.



COMPACTNESS SPELLS COST-EFFECTIVENESS

In any urban scenario, space means money. Ti offers flexibility and customization to suit your space requirements, ensuring that you maximize value of the space available to you.

Flexible Busbar & Cable Entry: Ti is available with top or bottom busbar/cable entry options.

Slim Panel Construction: Ti units start at a depth of 484 mm (with doors) and a width of 440 mm, allowing you to use the space saved for more profitable purposes. You can choose from a range of sizes optimized full or half-width modules to achieve compactness without compromising safety and operability.

Double-front Arrangement: One more feature adding to compactness of the assembly, allows to connect more number of electric loads with minimal changes in the dimensions.

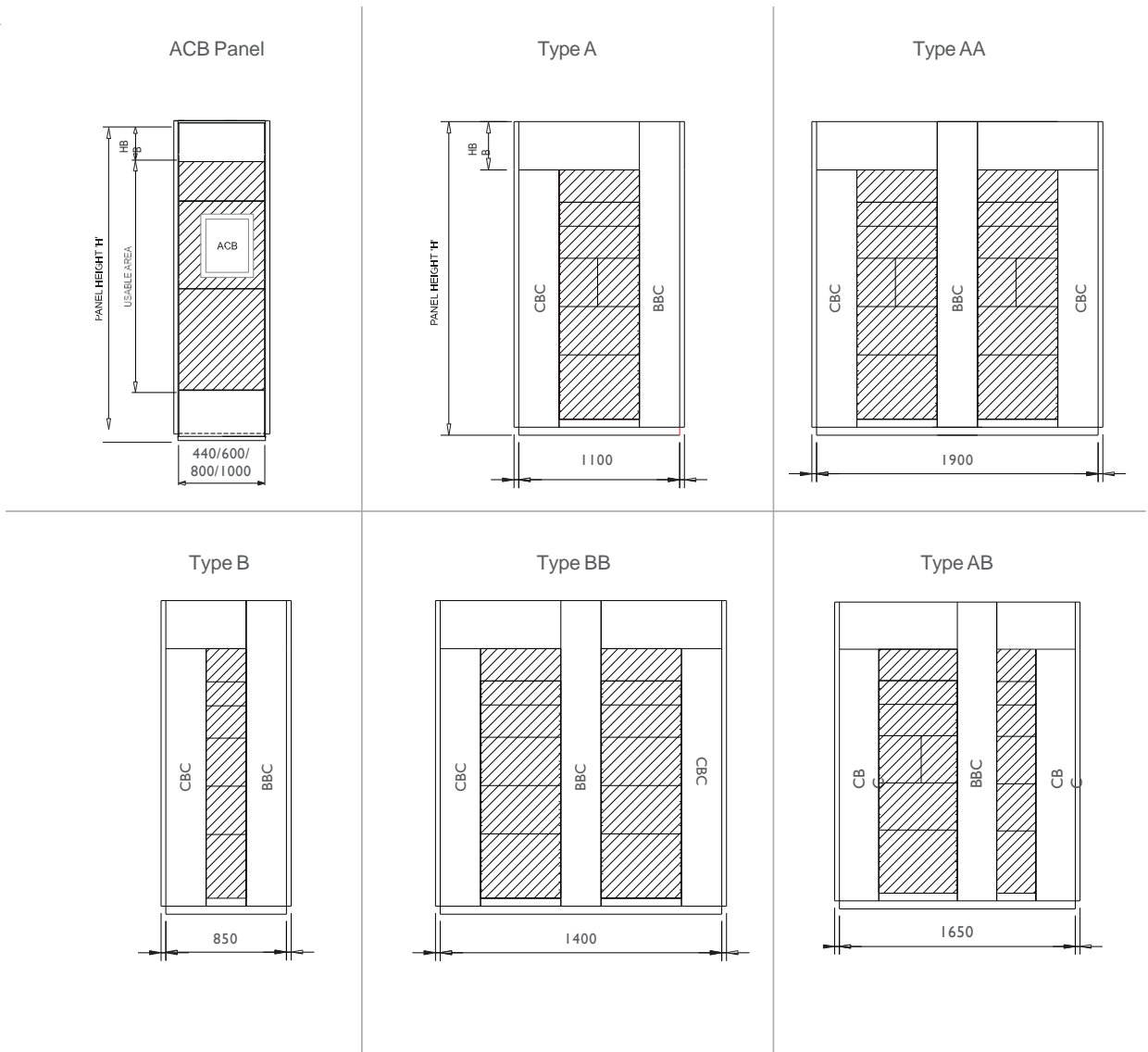
High Ampacity Vertical Busbar: Our innovative design allows large currents to be delivered to adjacent panels with high ampacity vertical busbars. Vertical busbars are easily accessible during maintenance activities.

Flexible Panel Configurations: We offer you choice of feeder modules at a height starting from 200 mm till 600 mm. The panel has variable heights from 1800 mm to 2400 mm wherein width, depth and busbar configuration can be optimized for space.




CONFIGURATIONS

PANEL TYPES



FRONT VIEW

CBC - cable chamber (width = 300 mm), BBC - busbar chamber (width = 300 mm)

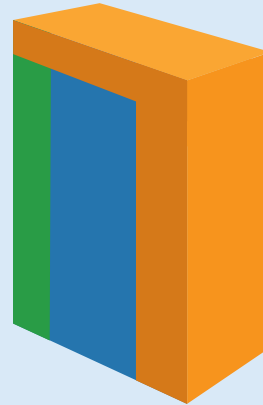
Panel Height 'H'	<div>  Usable Area </div>					
	ACB section			Outgoing section		
	210HBB	310HBB	410HBB	210HBB	310HBB	410HBB
1800	1220	1120	1020	1460	1360	1260
2000	1420	1320	1220	1660	1560	1460
2200	1620	1520	1420	1860	1760	1660
2400	1820	1720	1620	2060	1960	1860

*HBB - Horizontal Bus Bar

TYPICAL ARRANGEMENTS



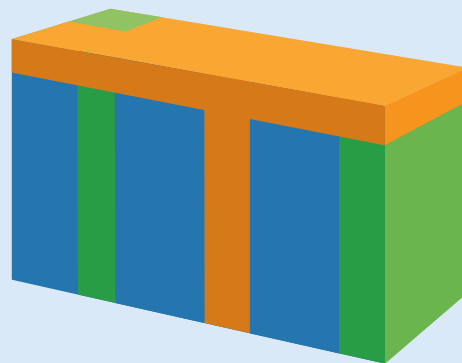
ACB panel






Outgoing section
with front cable entry



Outgoing section
(double front arrangement)

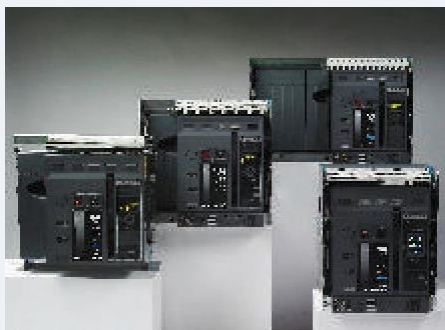


ACB section
coupled with
outgoing section

-  Feeders
-  Cable alley
-  Busbar

SPECIFICATIONS

Standards			IS 8623, IEC 61439
Insulation characteristics	Clearance		> 20 mm
	Creepage distances		> 20 mm
	Overvoltage category		II /III /IV
	Pollution degree		3
	Field condition		Inhomogeneous (non-uniform)
		Rated operational voltage (U_e)	415-690 VAC, 24-220 VDC
	Voltage ratings	Rated insulation voltage (U_i)	690 V
		Rated impulse withstand voltage (U_{imp})	6 /8 kV
		Rated frequency (f_n)	50 /60 Hz
Main Horizontal busbars:			
Electrical characteristics		Rated current (I_{ra})	up to 4000 A
		Rated peak withstand current (I_{pk})	up to 154kA
	Current ratings	Rated short-time withstand current (I_{cw})	up to 70kA, 1s
		Vertical Distribution busbars :	
		Rated current (I_{ra})	1440A
		Rated peak withstand current (I_{pk})	up to 154A
		Rated short-time withstand current (I_{cw})	up to 70kA, 1s
In accordance with IEC 60529:			
	Degree of protection	External	IP 4X/54*
		Internal	IP 2X
	Forms of separation	as per IEC 61439 - 2	Form III/IV*
		Height (mm)	1800, 2000, 2200, 2400
		Width (mm)	440, 600, 800, 1000 (ACB section)
Mechanical Characteristics	Dimensions		850, 1100,1400,1650,1900 (Outgoing section)
		Depth (mm)	440, 600, 900, 1000, 1100 (ACB section)
			440, 600 (Outgoing section)
		Structure	Alu-zinc /powder coated /painted
	Surface Treatment	Internal Components	Alu-zinc /powder coated /painted
		External Components	powder coated /painted
	Resistance to	Damp heat cycling test	IEC 60068-2-30
	Corrosion	Salt mist test	IEC 60068-2-11
	Plastic components	Flame retardant, self-extinguishing, Halogen-free	IEC 60695-2-10, IEC 60695-2-11



ACBs



MCCBs



SDFUs

THE PERFECT MATCH FOR YOUR Ti SYSTEM

PT. TAMCO Indonesia/L&T Electrical & Automation is a leading switchgear manufacturer and offers the widest range of electrical standard products, compliant with Indian and global standards. Our in-house design and testing facilities enable us to create customised solutions which combine type-tested Ti switchboards with a wide range of perfectly-matched L&T switchgear configurations. All, so that you can achieve the highest levels of cost and design optimisation possible with your Ti system.

Type-tested L&T switchgear to match your Ti system.

Air Circuit Breakers	Moulded Case Circuit Breakers	Switch Disconnector Fuse Units
<p>400A to 6300A in three optimized frame sizes</p> <p>Short circuit breaking capacities up to 100 kA</p> <p>50/100/200% Neutrals available</p> <p>Common height and depth across the range</p> <p>Arc chute interlocking</p> <p>No derating at higher ambients</p> <p>Energy saving pole design</p> <p>Independent locking of ON/OFF buttons</p> <p>Tool-less fixing of Voltmetric releases</p> <p>Display of complete accessory information on front fascia</p>	<p>20A to 1250A in 3/4 pole variants</p> <p>Positive isolation</p> <p>Short circuit breaking capacities up to 70 kA</p> <p>Microprocessor, Thermal Magnetic and Magnetic based releases</p> <p>Wide range of snap accessories</p> <p>Ergonomic design</p> <p>User friendly features</p>	<p>32A to 800A</p> <p>DP/TP/TPN versions available</p> <p>Suitable for DIN, BS and Cylindrical type fuses</p> <p>High Short circuit rating of fuses (100kA)</p> <p>Full AC23A utilization category</p> <p>Positive isolation of fuses</p> <p>Separate arcing and current carrying zones</p> <p>Quad break contact system</p> <p>High clearance and creepage distances</p> <p>Built in isolable or add-on switched neutral</p>

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