



Tai Sin®

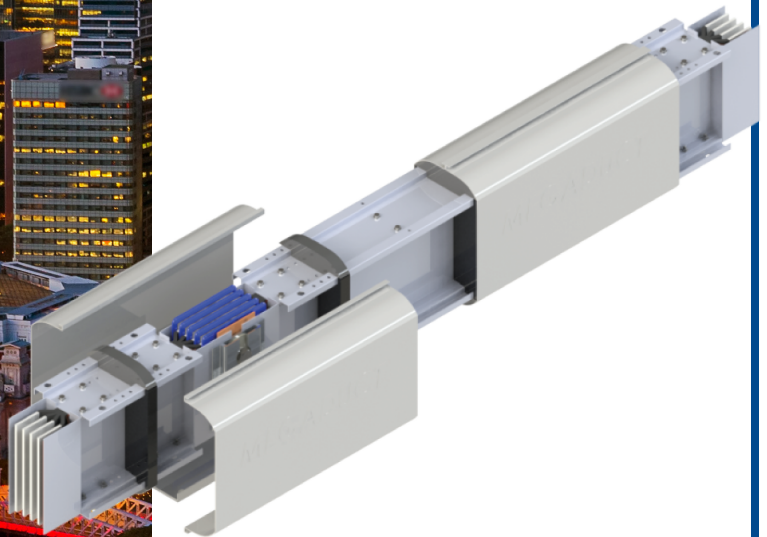
T Line I Busbar Trunking System

Make the most of your energy

Tai Sin T Line I series Busbar Trunking System conforms to IEC 61439-6.
Full type test certification (IEC61439) for each and every ampere rating of busbar.

Current Rating: Al: 250A-4000A / Cu: 400A-5000A

IP Rating: IP54 / IP66



The First & Only Busbar Trunking System Designed & Tested in Singapore



WE'RE MORE THAN CABLES

The First & Only Busbar Trunking System Test and Assembly Line in Singapore





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Company Profile

Powering up Singapore since 1980

Tai Sin Electric Limited was incorporated in 1980, with its main business in the design and manufacturing of Industrial Power Cable & Wire serving a diverse range of industries in all categories of Infrastructure, Industrial, Commercial, Residential, Data Centre, and Telecommunication sectors.

Tai Sin operates three cable manufacturing plants, which are located in Singapore, Malaysia, and Vietnam with Singapore being the Headquarters of the Cable & Wire business. In 1998, the company was listed on the Stock Exchange of Singapore, SESDAQ, and subsequently transferred to the SGX Main Board in 2005.

Our Busbar Trunking System with sandwich construction offers you superior performance. It is safe and robust with high power efficiency, low voltage drop, and high tensile strength. T Line I Busbar Trunking System offers a full line of Busbar Trunking System to meet most requirements.

Offering 3P3W, 3P4W, 3P5W, supply and distribution, with rated current from 800A to 6300A (for copper conductor) & 630A to 6300A (for aluminium conductor), rated operation and insulation voltage up to 1000V, IP degree up to IP66 and the frequency 50~60Hz.

Being the first locally tested Busbar Trunking System supplier, we are committed to helping you obtain a reliable power distribution solution that meets both your budget and project timeline.



International Certification

Our products are certified for your peace of mind

Tai Sin T Line I series Busbar Trunking System conforms to IEC 61439-6. Full type test certification (IEC61439) for each and every ampere rating of Busbar Trunking System.



*FULL TYPE TEST CERTIFICATION (IEC61439) FOR EACH AND EVERY AMPERE RATING OF BUSBAR TRUNKING SYSTEM

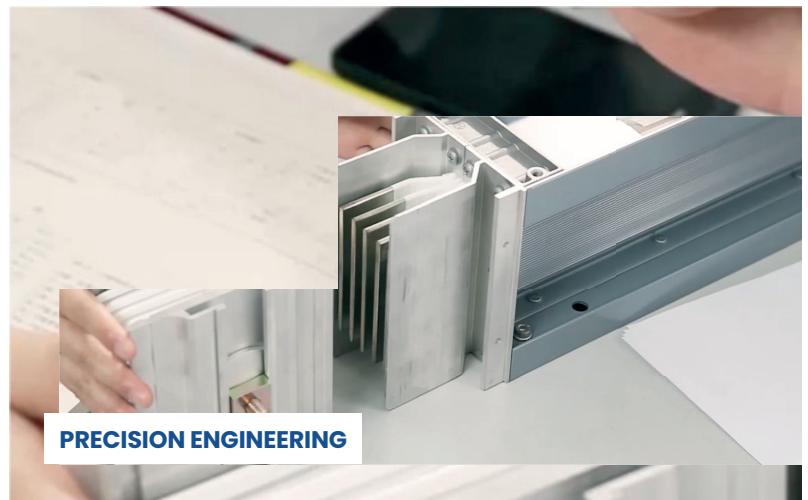
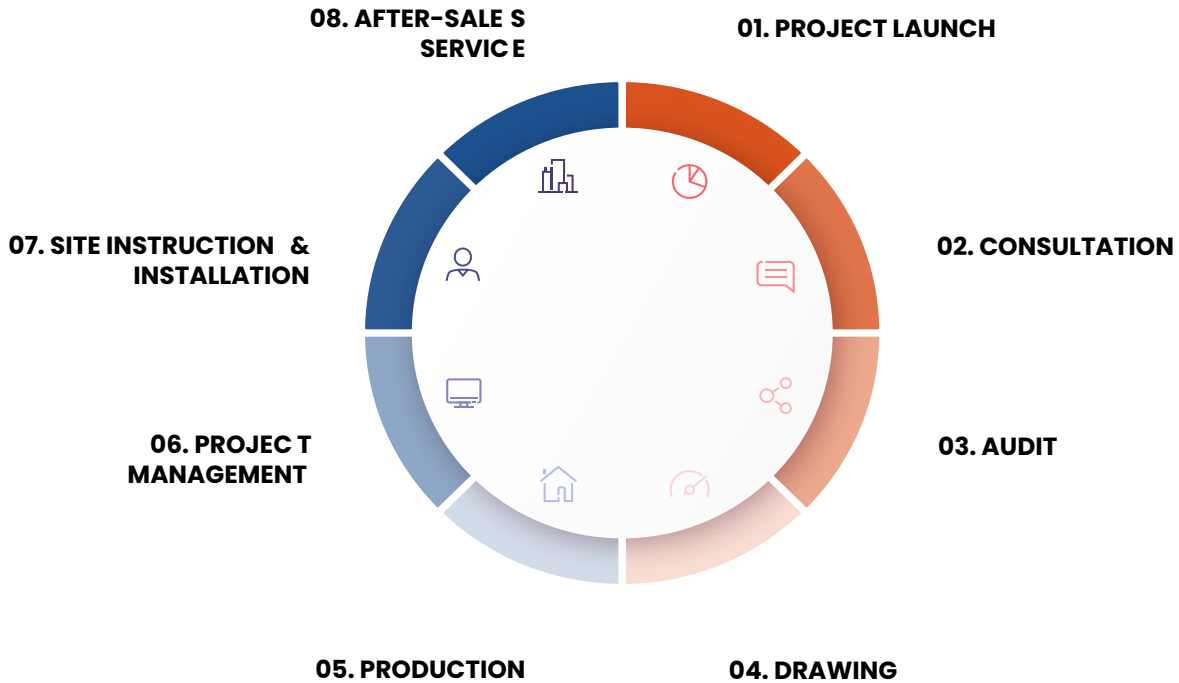
Clause no.	Clause description
10.2.2	Resistance to corrosion
10.2.3	Properties of insulating materials
10.2.7	Marking
10.2.101.1	Test procedure for a straight busbar trunking unit
10.2.101.2	Test procedure for a joint
10.2.101.3	Resistance of the enclosure to crushing
10.3	Degree of protection of assembly
10.4	Clearances and creepage distances
10.5	Protection against electric shock and integrity of protective circuits
10.7	Internal electrical circuits and connections
10.8	Terminals for external conductors
10.9	Dielectric properties
10.1	Verification of temperature rise
10.11	Short-circuit withstand strength
10.12	Electromagnetic compatibility (EMC)
10.101	Resistance to flame propagation
10.102	Fire resistance in building penetration

LT LINE I BUSBAR TRUNKING SYSTEM IS CERTIFIED BY KEMA KEUR

	KEMA KEUR	KEMA
Test	Full Type Test	As specified by manufacturer
Time	Continuous surveillance	One time test
Object	Production line, identical to the original tested one	One sample
Standard	Latest standard	As specified by manufacturer

Project Life Cycle

We ensure the project go smoothly throughout the project



Why are we a suitable partner as a power distribution supplier?

While being mindful of the technological development in the world, we ensure the availability of field experts with extensive knowledge on national construction standards, local provisioning, energy needs and business expectations. Our products are compliant to local as well as international standards. Tai Sin has a competent sales force across Southeast Asia and our local team will provide you with full assistance from project management support to logistics arrangement for a seamless delivery of your project. Our value propositions to you are as follows:

Regional Testing and Assembly Facility in Singapore

We have the capability to verify Busbar Trunking specifications according to IEC standard and other International standards upon request in Singapore. In addition, we are able to conduct Factory Acceptance Tests (FAT) for the final Busbar Trunking System in our Singapore facility.

We are able to support any urgent product customisation requests such as modifications, fault ratification and repair to help you achieve fast project turnaround time.

Southeast Asian (SEA) Expertise

We have achieved essential field experience by our successful participation in various market segments, including Airports, Wafer Fabrication Plants, Hospitals, Hospitalities and Data Centres. We are proficient in providing solutions far beyond Busbar Trunking Systems through our valuable experience in office buildings. We support our projects with a Pan SEA approach based on best practices, to complement the evolving Data Center landscape.

Spare Parts – Get the Right Parts At The Right Time

Don't run the risk of extended electrical downtime and take advantage of our local assembly facility for all your spare part needs.

Audit – Reduce Risk And Improve Reliability

Our engineers help assess your sites, identify safety and efficient issues of your critical installations. We will help reduce risk and improve reliability for your electrical distribution needs and optimize your energy usage while pointing the way to your digital journey.

Maintenance – Ensure Equipment Peak Performance

Helping you keep mission-critical infrastructure operating at maximum efficiency and optimal performance is our main goal. Our support services provide flexibility for all aspects of your electrical distribution needs.

Training – Get Tailored Training Solutions

Our technical training solutions are capable of enhancing the technical competencies of your team in electrical safety and distribution.

Expertise & Skills Guide

We have acquired valuable experience and expertise in designing Busbar Trunking Systems, materials, standards, and technology. We are confident in our offerings and evolving from being a mere product supplier to being a responsive provider of solutions and services.

Tai Sin Group is proficient in providing products and services including the support of a dedicated project team to help in the layout drafting, installation, testing and commissioning as well as provision of competent trainers for any operation and maintenance needs. The group has competent expertise in the power distribution industry across Southeast Asia. As energy is the foundation of our developments, we will continue to evolve and offer products with the latest design complying with the most current standards for our Cables, Branch Cables and Busbar Trunking Systems.

Applications

Designed to make your facility simpler, more efficient and flexible

Busbar Trunking System were first introduced in 1932 as a solution for the automation industry's needs for flexible power distribution systems.

Since then, Busbar Trunking System have evolved from Air Insulated designs to today's compact series "Sandwich design", and incorporating monitoring & control system in load distribution. The versatility of Busbar Trunking System's design not only serves high-amperage application efficiently in terms of energy loss, it also provides high productivity in the implementation on site.

Today, Busbar Trunking Systems are widely used in all segments of development:

- 1 Data Centre
- 2 Industrial
- 3 Commercial
- 4 Residential
- 5 Healthcare
- 6 Infrastructure

Recognizing the need for more efficient & flexible solution, Tai Sin Electric Limited, a renowned Cable & Wire manufacturer & specialist in Electrical & Power distribution system, developed a new range of Low Voltage Busbar Trunking System which is designed and tested in Singapore.



Applications

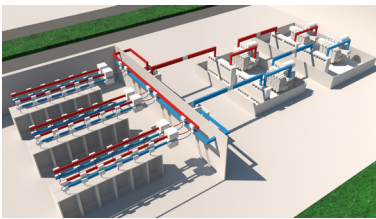
Key considerations

Our Busbar Trunking Systems are designed for further performance enhancement of our cables, as both products are complementary to each other. Busbar Trunking Systems are essential for achieving highly desirable features like compactness, robustness, 90deg bending, fire-resistance, and functional integrity. They promote aestheticism by connecting two installations (e.g transformer and switchgear) via rigid copper bars and eliminating the need for traditional and complex wiring; whereby conductors with several insulation methods can be customized based on the complex requirements in today's context.

Our offers include both Low Voltage Aluminum and Low Voltage Copper Busbar Trunking Systems which gives you the flexibility to choose the most suitable solution for your application.

KEY CONSIDERATION BY APPLICATIONS

DATA CENTRES



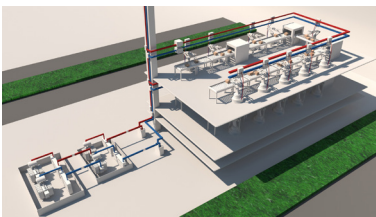
- Service Continuity
- Halogen-free
- Flexibility To Evolve/Expand
- Customizable Colour

RESIDENTIAL AREAS



- Service Continuity
- Halogen-free
- Low Maintenance Frequency

INDUSTRIAL AREAS



- Service Continuity
- Flexibility To Evolve/Expand
- Halogen-free
- Low Voltage Drop
- Low Maintenance Frequency

HEALTHCARE SECTORS



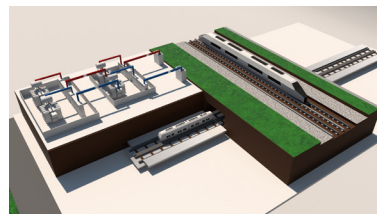
- Service Continuity
- Low EMF Emission
- Halogen-free
- Low Voltage Drop

COMMERCIAL AREAS



- Service Continuity
- Flexibility To Evolve/Expand
- Halogen-free
- Low Voltage Drop
- Low Maintenance Frequency

INFRASTRUCTURE

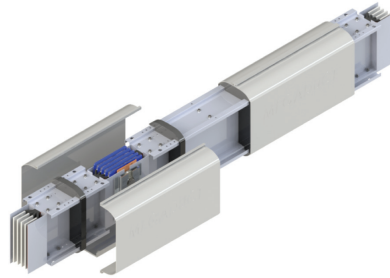


- Service Continuity
- Model Availability
- Halogen-free
- Low Voltage Drop
- Low Maintenance Frequency
- Low EMF Emission

TAI SIN POWER DISTRIBUTION

System Overview

DESIGNED & TESTED IN SINGAPORE



Tai Sin T Line I Busbar Trunking System is a reliable and efficient electrical distribution system with sandwich construction and superior performance. It is a safe and robust power distribution system with high electrical efficiency, low voltage drop, and high mechanical strength.

Constructed with two-pieces of extruded aluminium housing, Tai Sin LT Line I Busbar Trunking Systems break the barrier of weight as one of the lightest systems in the business, and offers maximum flexibility. The full aluminium alloy housing, and low magnetic material, avoids hysteresis loss on the distribution system.

Tai Sin LT Line I Busbar Trunking System provides longer life epoxy insulation as an option to polyester insulation.

Tai Sin Low Voltage Busbar Trunking Systems are an ideal choice for various applications including commercial, industrial electrical distribution, and other verticals.

From every aspect—performance, flexibility, quality, and customer value, T Line I Busbar Trunking System is a superior choice for your next installation.

The system offers a full line of Busbar Trunking System to meet the world market standards suitable for 3P3W, 3P4W, 3P5W, supply and distribution, with rated current from 250A to 4000A (for aluminium conductor) & 400A to 5000A (for copper conductor), rated operation voltage up to 690V (rated insulation voltage up to 1000V), IP degree up to IP66 and the frequency 50-60Hz.

Tai Sin Busbar Trunking System, the optimal solution to meet the challenges ahead

Tai Sin T Line I Busbar Trunking System is lightweight, low impedance, non-ventilated, naturally cooled and totally enclosed within the steel or aluminium housing for protection against mechanical damages and dust accumulation. It consists of copper bars with conductivity 100% (IACS), or aluminium bars with conductivity >61% (IACS).

*IACS: International Annealed Copper Standard

Description	Specifications & Standards
Model	T Line I
Type	Sandwich
Compliance Standard	KEMA BS 6387 IEC61439-6
Current Rating	AL: 630A to 6300A CU: 800A to 6300A
Rated Insulation Voltage (Ui)	1000V
Rated Frequency (Fn)	50Hz/60Hz
Conductor Material	Copper/ Aluminium
Operation temperate	Avg: 35deg C, Max: 55deg C
System Configuration*	3P3W 3P3W+100%E 3P4W 3P4W+100%E 3P4W(200%N) 3P4W(200%N)+100%E 3P4W(100%N) 3P4W(100%N)+100%E
IP Rating	IP40 / IP42 / IP54 / IP55 IP65 / IP66
Fire Retardant Protection	IEC 60331 CNS 14286 BS 6387.
Insulation Material	Type 1: Epoxy - Class H - 180degC Type 2: 2 layers of mylar (Polyester Film) - Class H - 130degC Type 3: 1 layter of Mylar (Polyester Film) & 2 Layers of Mica - Fire Rated - 900degC
Housing	4 pieces of housing (Steel Housing)
Insulation class	180deg C - Class H 130deg C - Class B

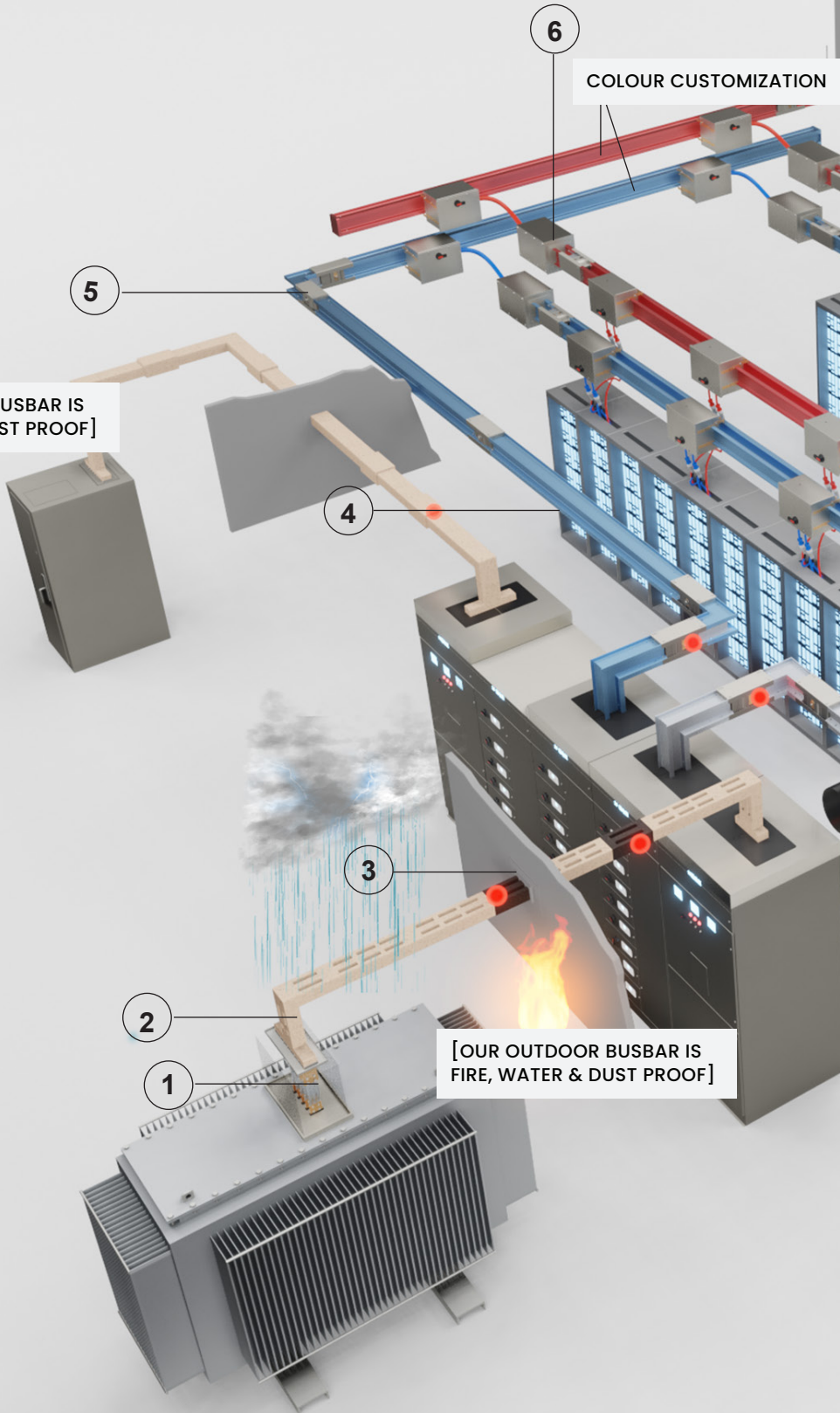
* Other types of configuration can be designed upon special request from customers.

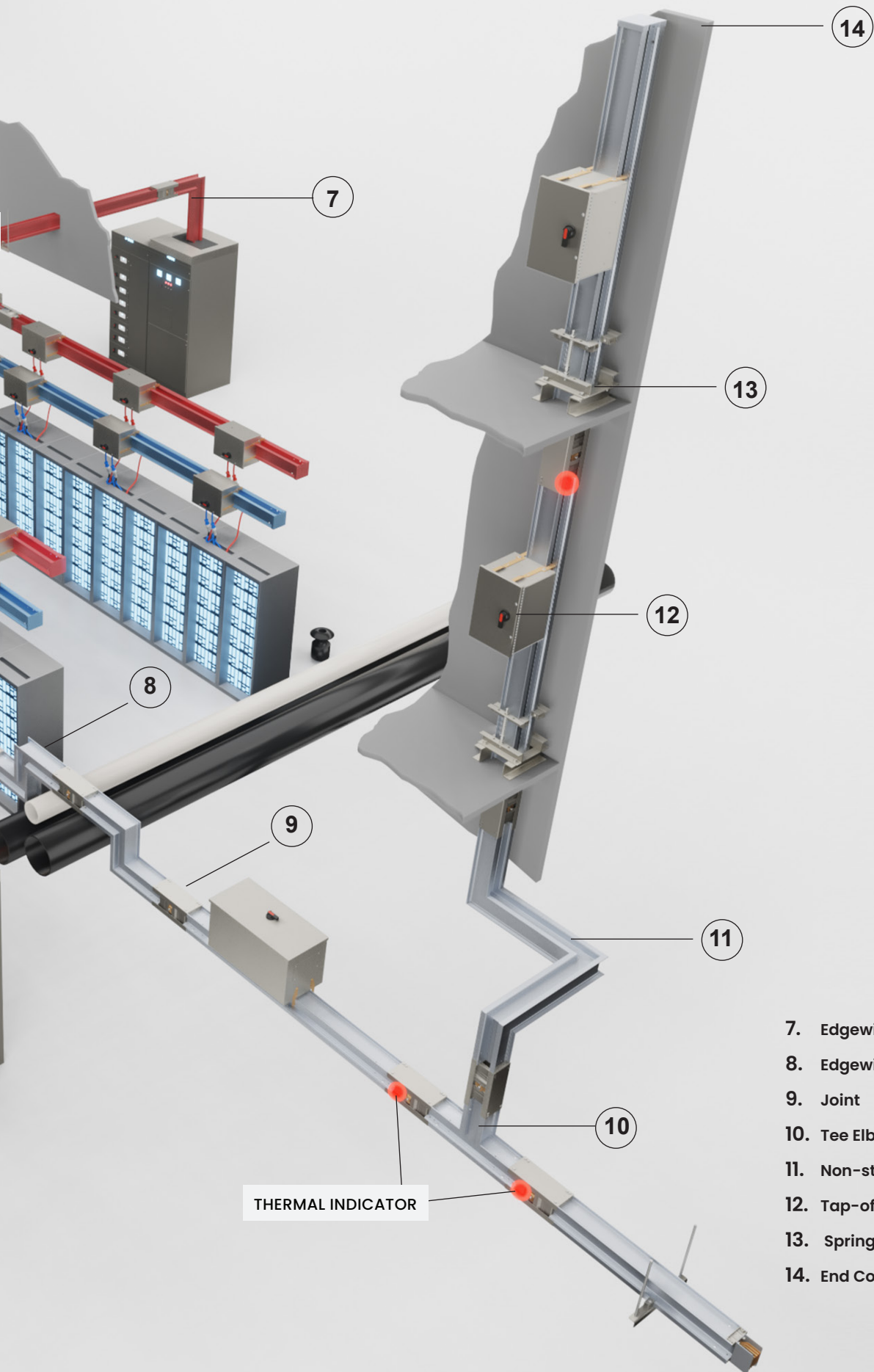
1. Flexible Link
2. Flanged End
3. Wall Flange
4. Straight Length
5. Flatwise Elbow
6. End Tap Box (Cable Tap Box)

[OUR OUTDOOR BUSBAR IS
FIRE, WATER & DUST PROOF]

COLOUR CUSTOMIZATION

[OUR OUTDOOR BUSBAR IS
FIRE, WATER & DUST PROOF]





- 7. Edgewise Elbow
- 8. Edgewise Offset
- 9. Joint
- 10. Tee Elbow
- 11. Non-standard Elbow
- 12. Tap-off Unit (Plug-in Unit)
- 13. Spring Hanger
- 14. End Cover

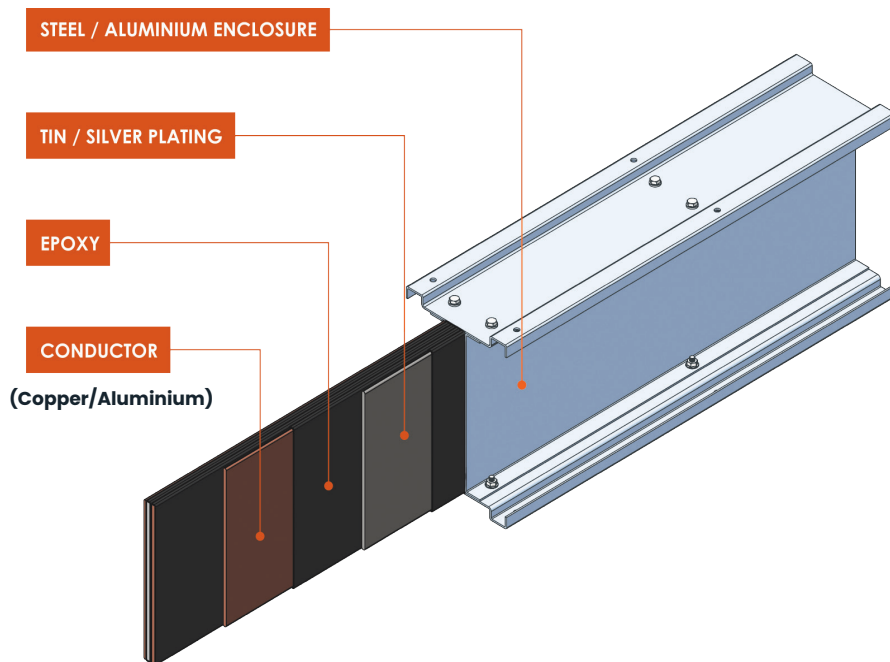
Product Features

CONDUCTORS

All our products are high density and conductivity. Copper conductor has minimum purity of 99.95% with conductivity of >100% IACS while aluminium has minimum purity of 99.7% with conductivity >61% IACS. It is fabricated through a sophisticated thermal compression process which involves application of tremendous heat under high pressure. It can be tinned or silver-plated with epoxy powder coated as insulation giving 100% water and chemical resistance. Optional specifications can be designed and fabricated to customer requirement.

Advantage of using our conductor

- High electrical conductivity
- Low impurity
- Excellent fatigue resistance
- High thermal conductivity
- High mechanical strength
- Outstanding corrosion resistant



EPOXY

Our Epoxy System is the 3rd generation with own formulation. The class H-180°C standard epoxy coating provides 100% waterproofing and high mechanical strength. It has been tested in accordance with IEC 61439-1 and IEC 61439-6.

Advantages of using epoxy coating as insulations

- Designed to withstand glitch and spikes in electrical system
- Designed to cater for expansion and contraction during peak and off-peak hours
- Capable of withstanding heat shock
- High reliability under static conditions
- High mechanical strength against impact
- High thermal conductivity
- Water and chemical resistant

OTHER INSULATION TYPE

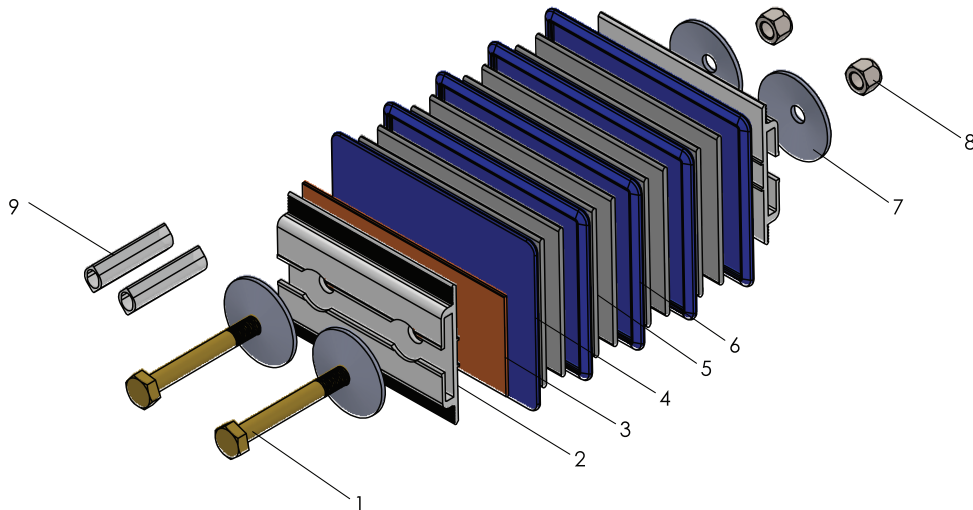
Besides epoxy insulation, we also provide other classes of insulation as below:

- Class B – It consists of two layers of Mylar (Polyester Film) which resists temperature up to 130°C.
- Fire Rated – It consists of 1 layer of Mylar (Polyester Film) and 2 layers of Mica (mineral silicate sheet) which resist temperature up to 900°C.

JOINT SYSTEM

In order to overcome extreme rugged conditions at site, the new Busbar Trunking System joint has been designed precisely and manufactured using the highest quality of materials to minimize all possible problems and enhance system performance. This special design provides outstanding features as follows:

- Incorporates a 5mm thermal expansion and movement at every point.
- Allow $\pm 15\text{mm}$ of lateral adjustment (total 30mm) to correct site measurement inaccuracy.
- Able to tilt an angle of $\pm 5^\circ$ (total 10° along a single axis).
- Bolt and nuts can be stainless steel, galvanized or chromed black high tensile steel.
- Degree of protection of IP40-IP66.
- Easy installation and removal at any joint in a run without disturbing the two adjacent Busbar Trunking System sections.
- Water/chemical resistance BMC insulation plates.



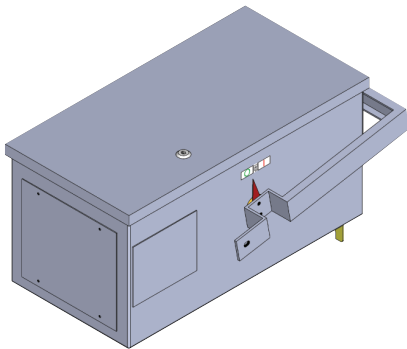
- | | |
|------------------------|--------------------------|
| 1. Joint Bolt | 6. Joint Phase Insulator |
| 2. Joint Backing Plate | 7. Belleville Disc |
| 3. Joint Earth Bar | 8. Nylon Lock Nut |
| 4. Joint End Insulator | 9. Fiber Tube |
| 5. Joint Conductor Bar | |

TAP-OFF UNITS (PLUG-IN UNITS)

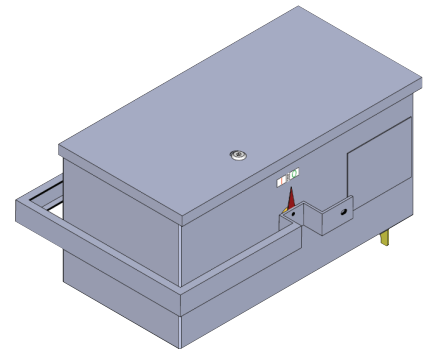
Tap-off unit with moulded case circuit breaker (MCCB) or fused-switch breakers of various current ratings are available to cater for most installations. Maximum 5 tap-off units per side can be installed, total 10 nos per length of 3m busbar subject to the size of MCCBs.

- All tap-off unit are designed with interlocking safety features to prevent removal when tap-off unit in 'On' position.
- When tap-off unit cover is open, automatically, MCCB cannot be turned 'On'.

ON/OFF HANDLE DESIGN

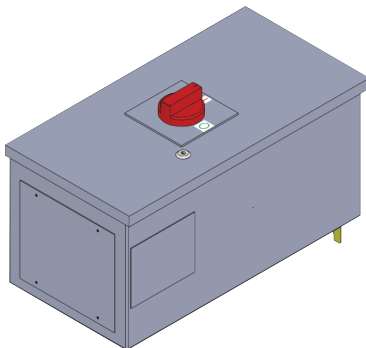


BOTTOM ENTRY CABLE DESIGN

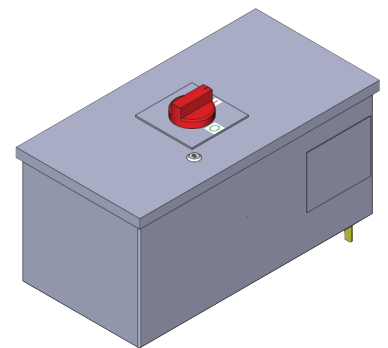


TOP ENTRY CABLE DESIGN

ROTARY HANDLE DESIGN

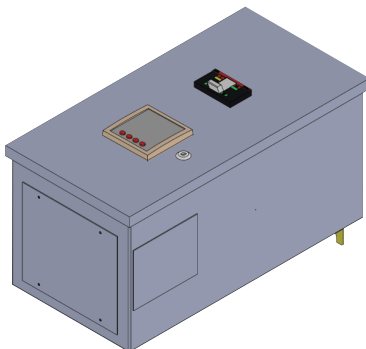


BOTTOM ENTRY CABLE DESIGN

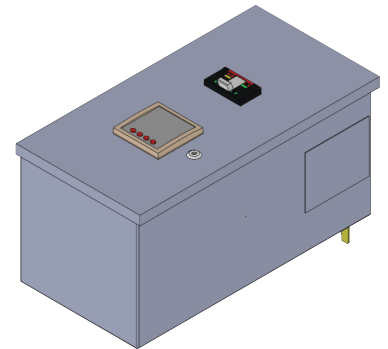


TOP ENTRY CABLE DESIGN

OUTLET DESIGN



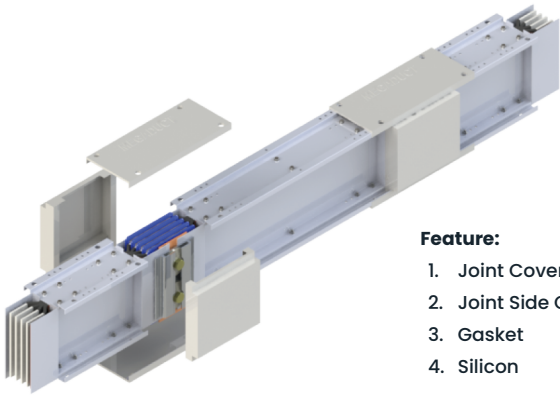
BOTTOM ENTRY CABLE DESIGN



TOP ENTRY CABLE DESIGN

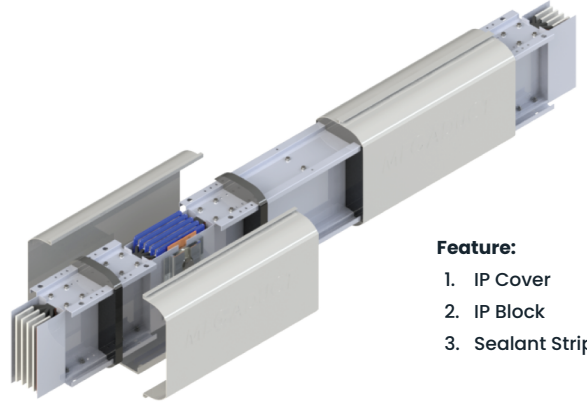
IP Busbar Trunking System

IP54 TO IP66 (INDOOR BUSBAR APPLICATION)



- Feature:**
1. Joint Cover
 2. Joint Side Cover
 3. Gasket
 4. Silicon

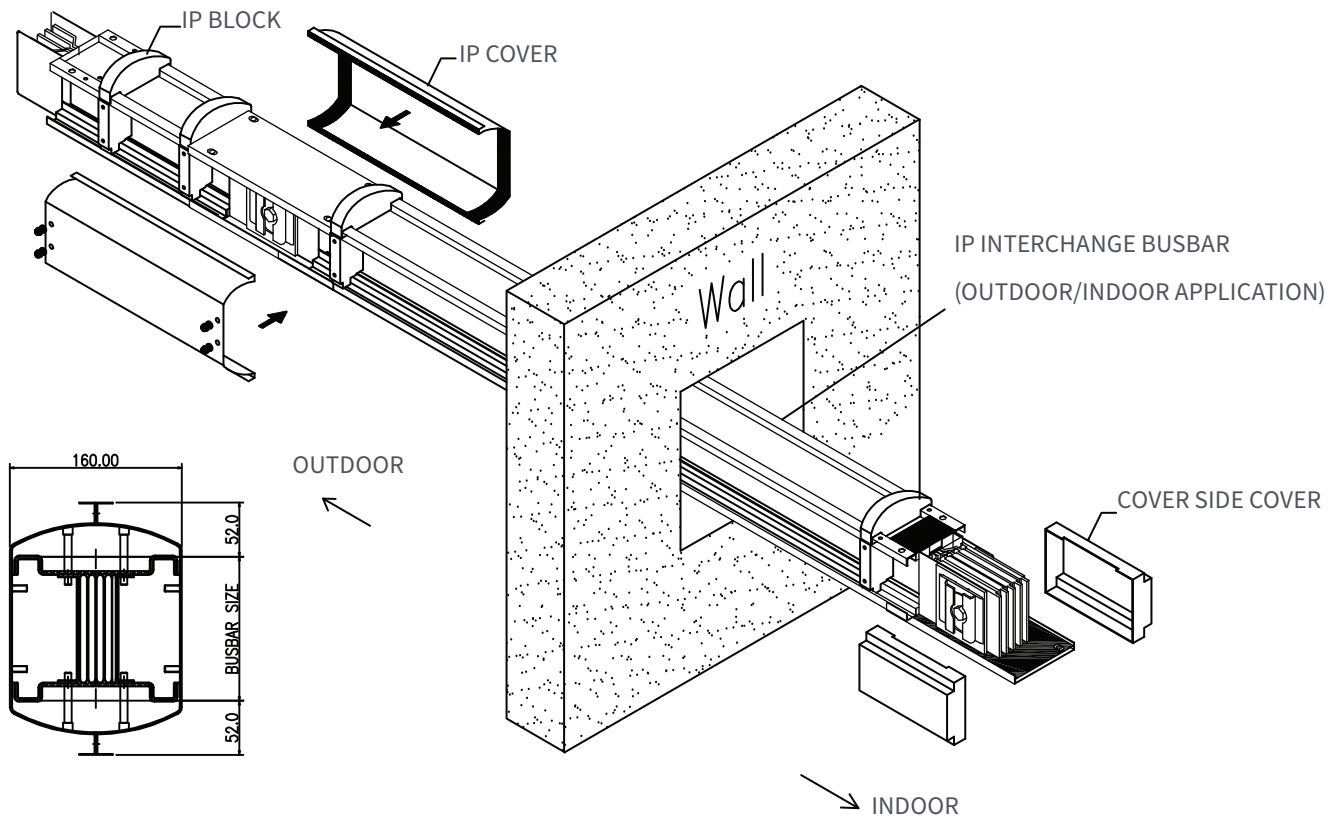
IP66 (OUTDOOR BUSBAR APPLICATION)



- Feature:**
1. IP Cover
 2. IP Block
 3. Sealant Strip

*IP42 DOES NOT HAVE JOINT SIDE COVER

IP INTERCHANGE BUSBAR



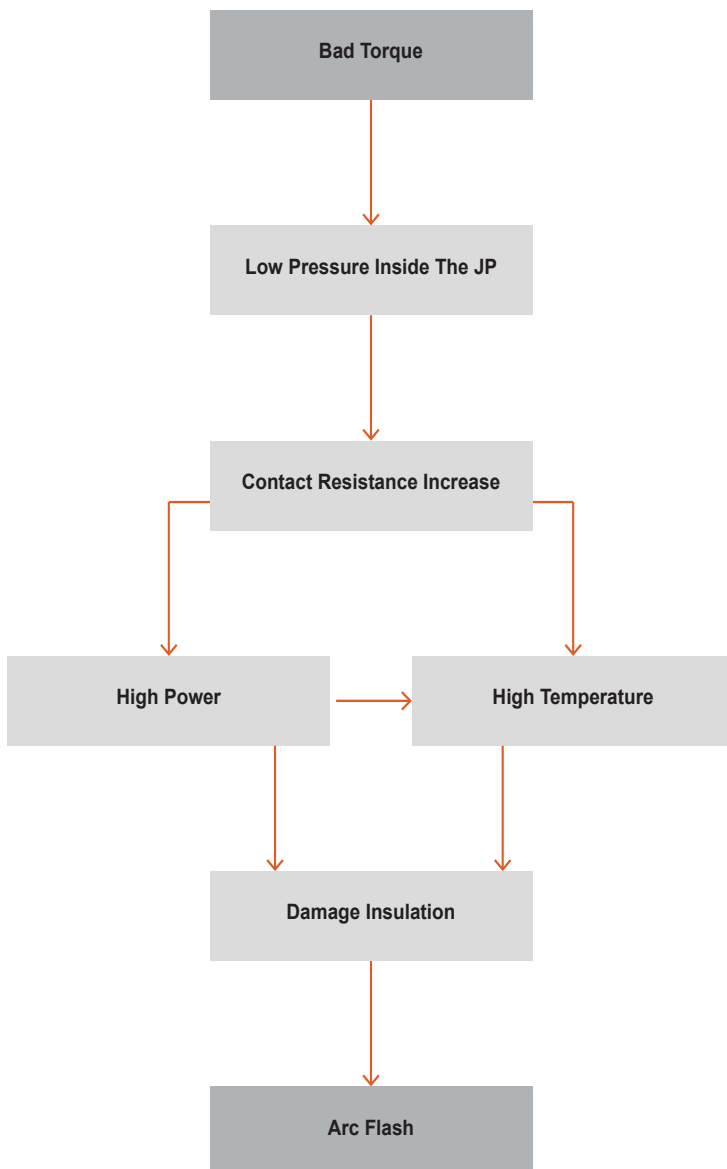
Add-On Feature (Optional)

Busbar Trunking System - Remote Conditional Monitoring

For an electrical system, one of the typical concerns is its electrical connection and abnormal heating may occur at the location of loose or improper connection due to an increase in the electrical resistance. The overheating further increases the electrical resistance and can lead to a burnout or even a fire. The burning out of an electrical system is a threat to plant safety and can lead to an unplanned shutdown of plant operations. To eliminate such risks and avoid the huge costs of lost production, it is vital to quickly detect and immediately respond to any indication of overheating in a power system (a.k.a Predictive Monitoring System).

Continuously monitor busbar health, run time, and detect unexpected busbar failures such as early bearing failure, unbalance, misalignment, etc.

WAYS TO PROTECT BUSBAR TRUNKING SYSTEMS



THERMAL AVALANCHE EFFECT

YOUR CHALLENGES

In order to prevent overheating at any of the electrical connections, the connections should be inspected on a regular basis. However, there are a few obstacles:

- **Visual inspection:** Might not be feasible or accurate because the connections are often covered, and are often in difficult to access locations.
- **Thermal imaging cameras can be difficult due to complicated structure:** In some instances, electrical distribution connections can follow complicated paths through plant structures and buildings which may result in blind spots that might not be readily imaged using thermal imaging cameras.
- **Thermocouple thermometers are not suitable due to electromagnetic noise:** As electrical systems are surrounded by strong electric fields, conventional electric sensors such as thermocouple thermometers are not suitable for this purpose.

Add-On Feature (Optional)

Busbar Trunking System – Remote Conditional Monitoring

OUR SOLUTIONS

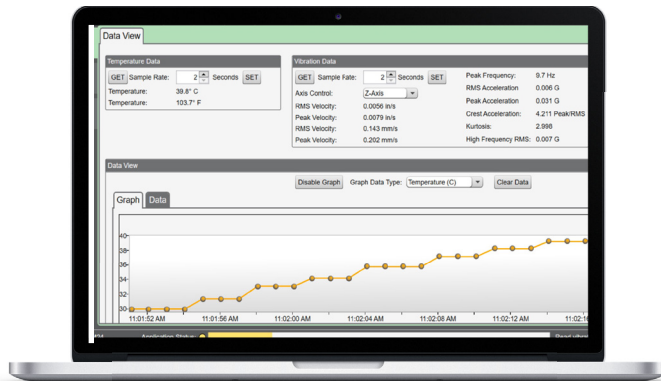
- We provide a temperature sensor that is not affected by electromagnetic noise.
- By quickly detecting overheating and pinpointing the location of a hotspot remotely, our thermal sensor ensures that any problem can be responded to immediately, before it leads to a costly and expensive plant shutdown. Our thermal sensor can be installed directly on a busbar and on the surface of a busbar or cover.

YOUR BENEFITS

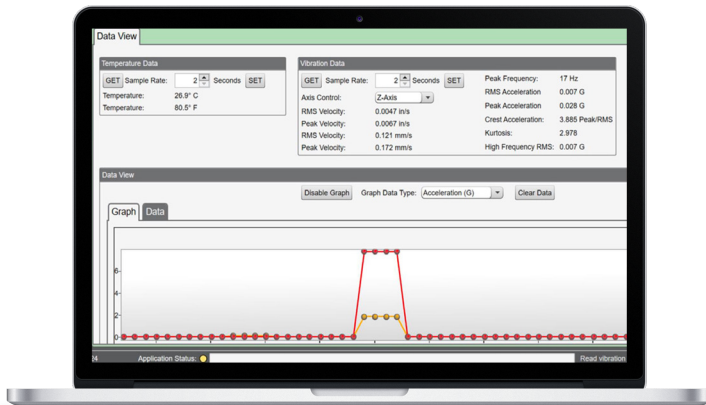
Provide the temperature report quickly and accurately of any joints at any time.

- Monitor busbar and alert maintenance teams when aging and over-used equipment are on the verge of failure resulting in flash over.
- Improve human safety, reliability, quality of service, and ensure that equipment keeps running.
- Pinpoint exact location of the busbar when temperature spikes flag pending components failures.
- Accurate temperature monitoring under a strong electric field.
- Quickly detects precise location of abnormalities to prevent burnout.
- Condition based inspection work by temperature changes.

TEMPERATURE TRENDING



VIBRATION TRENDING



Electrical Specifications

RESISTANCE, REACTANCE, IMPEDANCE AND VOLTAGE DROP

COPPER CONDUCTOR: FREQUENCY-50HZ

Current Rating (A)	Impedance (10mΩ/m)			Line To Line Voltage Drop in (mV/m) at Current Rating & Various Power Factors				
	R	X	Z	0.6	0.7	0.8	0.9	1
800	0.067	0.086	0.075	0.155	0.158	0.158	0.153	0.119
1000	0.045	0.057	0.025	0.094	0.101	0.105	0.108	0.099
1250	0.038	0.049	0.019	0.097	0.104	0.110	0.114	0.106
1600	0.032	0.041	0.015	0.102	0.110	0.116	0.121	0.114
2000	0.022	0.029	0.012	0.094	0.100	0.106	0.109	0.100
2500	0.018	0.023	0.010	0.095	0.102	0.106	0.109	0.100
3200	0.013	0.017	0.008	0.094	0.099	0.103	0.105	0.094
3600	0.012	0.016	0.007	0.096	0.102	0.107	0.109	0.100
4000	0.010	0.012	0.005	0.076	0.081	0.086	0.089	0.083
5000	0.007	0.009	0.004	0.073	0.078	0.082	0.084	0.078
6300	0.007	0.009	0.003	0.084	0.091	0.098	0.102	0.098

ALUMINIUM CONDUCTOR: FREQUENCY-50HZ

Current Rating (A)	Impedance (10mΩ/m)			Line To Line Voltage Drop in (mV/m) at Current Rating & Various Power Factors				
	R	X	Z	0.6	0.7	0.8	0.9	1
630	0.101	0.129	0.062	0.139	0.147	0.153	0.156	0.141
800	0.074	0.094	0.020	0.100	0.111	0.121	0.129	0.130
1000	0.053	0.067	0.016	0.091	0.101	0.109	0.116	0.116
1250	0.042	0.054	0.011	0.090	0.099	0.108	0.116	0.117
1600	0.031	0.039	0.010	0.086	0.095	0.103	0.109	0.108
2000	0.023	0.029	0.008	0.082	0.090	0.097	0.102	0.100
2500	0.021	0.027	0.007	0.094	0.103	0.111	0.118	0.117
3200	0.015	0.020	0.005	0.089	0.097	0.105	0.112	0.111
4000	0.012	0.015	0.002	0.075	0.084	0.093	0.101	0.104
5000	0.008	0.010	0.001	0.061	0.068	0.076	0.083	0.087
6300	0.007	0.009	0.001	0.070	0.079	0.087	0.095	0.098

Electrical Specifications

RESISTANCE, REACTANCE, IMPEDANCE AND VOLTAGE DROP

COPPER CONDUCTOR: FREQUENCY-60HZ

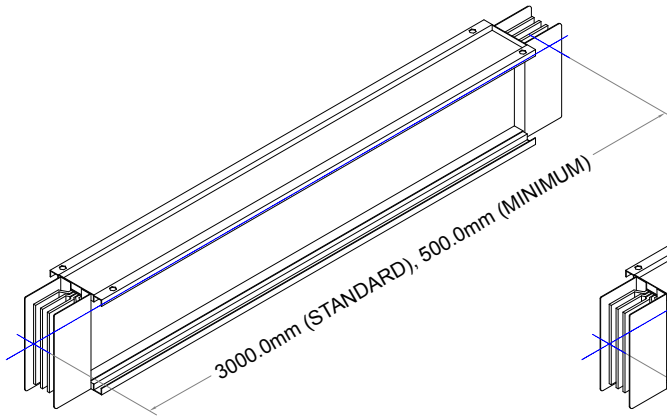
Current Rating (A)	Impedance (10mΩ/m)			Line To Line Voltage Drop in (mV/m) at Current Rating & Various Power Factors				
	R	X	Z	0.6	0.7	0.8	0.9	1
800	0.067	0.086	0.091	0.172	0.173	0.171	0.162	0.119
1000	0.045	0.057	0.031	0.102	0.107	0.111	0.112	0.099
1250	0.038	0.049	0.023	0.104	0.110	0.115	0.118	0.106
1600	0.032	0.041	0.018	0.109	0.116	0.122	0.125	0.114
2000	0.022	0.029	0.015	0.101	0.106	0.111	0.112	0.100
2500	0.018	0.023	0.012	0.103	0.108	0.112	0.113	0.100
3200	0.013	0.017	0.010	0.102	0.106	0.109	0.109	0.094
3600	0.012	0.016	0.009	0.103	0.109	0.112	0.113	0.100
4000	0.010	0.012	0.006	0.081	0.086	0.090	0.092	0.083
5000	0.007	0.009	0.005	0.078	0.083	0.086	0.087	0.078
6300	0.007	0.009	0.004	0.090	0.096	0.102	0.105	0.098

ALUMINIUM CONDUCTOR: FREQUENCY-60HZ

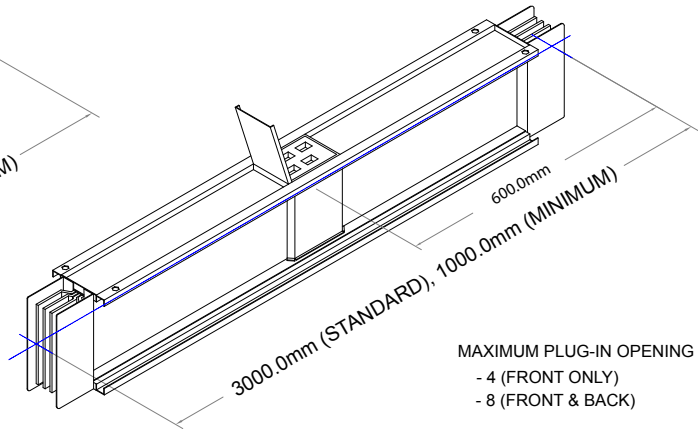
Current Rating (A)	Impedance (10mΩ/m)			Line To Line Voltage Drop in (mV/m) at Current Rating & Various Power Factors				
	R	X	Z	0.6	0.7	0.8	0.9	1
630	0.101	0.129	0.075	0.150	0.157	0.162	0.162	0.141
800	0.074	0.094	0.024	0.105	0.115	0.124	0.132	0.130
1000	0.053	0.067	0.019	0.096	0.105	0.112	0.119	0.116
1250	0.042	0.054	0.014	0.094	0.103	0.111	0.118	0.117
1600	0.031	0.039	0.012	0.091	0.099	0.106	0.111	0.108
2000	0.023	0.029	0.010	0.087	0.094	0.100	0.105	0.100
2500	0.021	0.027	0.008	0.098	0.107	0.115	0.121	0.117
3200	0.015	0.020	0.006	0.093	0.102	0.109	0.114	0.111
4000	0.012	0.015	0.003	0.078	0.087	0.095	0.102	0.104
5000	0.008	0.010	0.001	0.062	0.070	0.077	0.084	0.087
6300	0.007	0.009	0.002	0.073	0.081	0.089	0.096	0.098

Physical Data

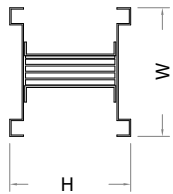
FEEDER BUSBAR



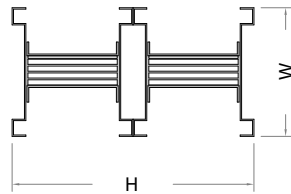
PLUG-IN BUSBAR



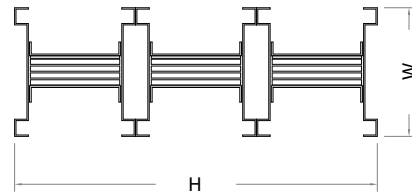
MAXIMUM PLUG-IN OPENING
 - 4 (FRONT ONLY)
 - 8 (FRONT & BACK)
 PLUG-IN OPENING INTERVAL
 - 600mm (STANDARD)



[Fig.L1-1]



[Fig.L1-2]



[Fig.L1-3]

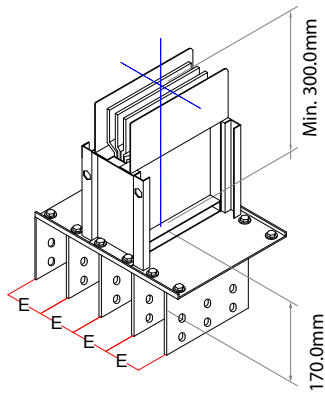
COPPER CONDUCTOR

Current Rating (A)	Dimension (mm)		Weight per meter (kg/m)		Fig.
	Width (W)	Height (H)	3P4W	3P4W + 100%E	
800	150	74	17	18	L1-1
1000	150	94	21.5	23	
1250	150	104	25	27	
1600	150	134	28.5	31	
2000	150	188	42.5	46	L1-2
2500	150	218	51	55	
3200	150	268	67	73	
3600	150	288	71	77	
4000	150	348	84.5	92	
5000	150	468	129	140	
6300	150	582	150	163	L1-3

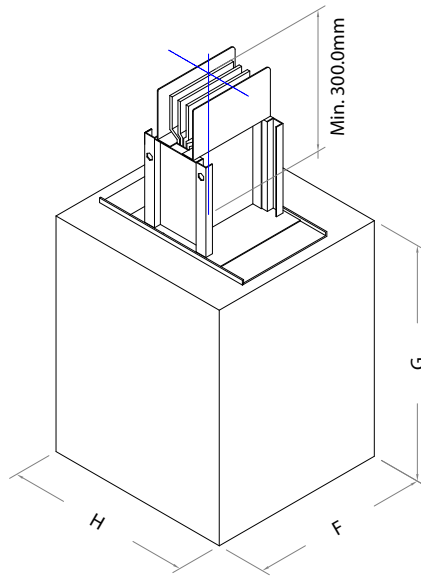
ALUMINIUM CONDUCTOR

Current Rating (A)	Dimension (mm)		Weight per meter (kg/m)		Fig.
	Width (W)	Height (H)	3P4W	3P4W + 100%E	
630	150	74	10.6	11	L1-1
800	150	84	11.5	12	
1000	150	114	14.3	15	
1250	150	144	17	18	
1600	150	184	21.7	23	
2000	150	234	26.3	28	
2500	150	288	24	36	L1-2
3200	150	368	43.5	46	
4000	150	468	52.5	56	
5000	150	582	71	75	L1-3
6300	150	702	80	84	

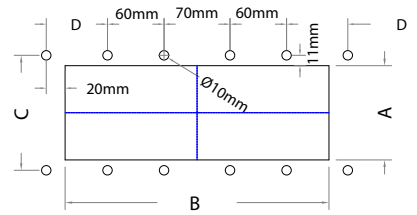
FLANGE END



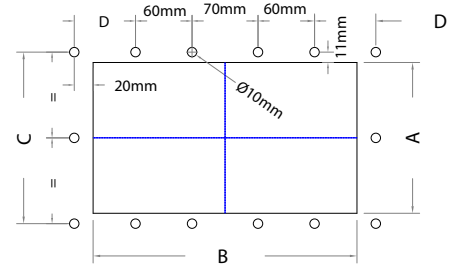
END FEED CABLE BOX



MOUNTING CUT OUT



[Fig.L2-1]

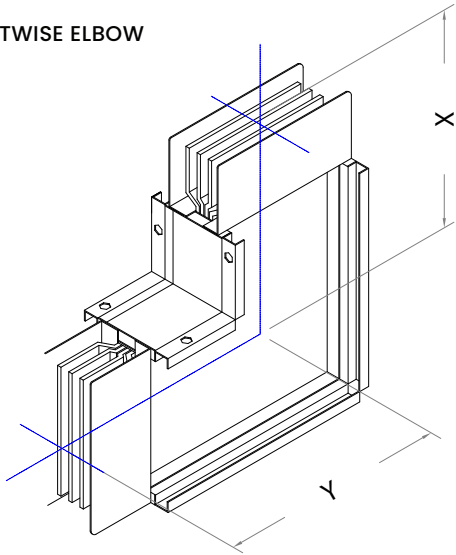


[Fig.L2-2]

Current Rating (A)	Copper									Aluminium										
	Mounting Cut Out (mm)				Interval (mm)	End Feed Box Size (mm)				Fig.	Mounting Cut Out (mm)				Interval (mm)	End Feed Box Size (mm)				Fig.
	A	B	C	D		F	G	H	A		B	C	D	F		G	H			
630	-	-	-	-	-	-	-	-	-	50	-	72	-	-	-	-	-	-	-	
800	50	-	72	-	-	-	-	-	-	60	-	82	-	-	-	-	-	-	-	
1000	70	280	92	65	80	-	-	450	-	90	280	112	65	80	-	-	330	500	450	
1250	80	-	102	-	-	-	-	-	L2-1	120	-	142	-	-	-	-	-	-	-	
1600	110	-	132	-	-	-	-	-	-	160	-	182	-	-	-	-	-	-	-	
2000	164	-	186	-	-	-	-	-	-	210	-	232	-	-	-	-	-	-	-	
2500	194	-	216	-	-	-	-	-	-	264	340	286	-	100	-	-	450	650	550	
3200	244	-	266	-	-	-	-	-	-	344	-	366	-	-	-	-	-	-	-	
3600	264	340	286	95	100	-	-	550	-	-	-	-	-	-	-	-	-	-	-	
4000	324	-	346	-	-	-	-	-	L2-2	444	-	446	-	-	-	-	600	-	-	
5000	444	-	466	-	-	-	-	550	-	558	340	580	95	100	-	700	700	550	L2-2	
6300	558	-	580	-	-	-	-	650	700	678	-	700	-	-	-	800	-	-	-	

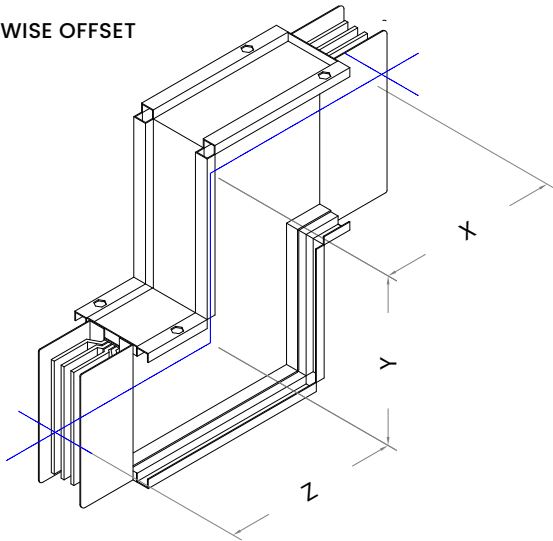
*Interval may vary to connection design, please refer to manufacturer.

FLATWISE ELBOW



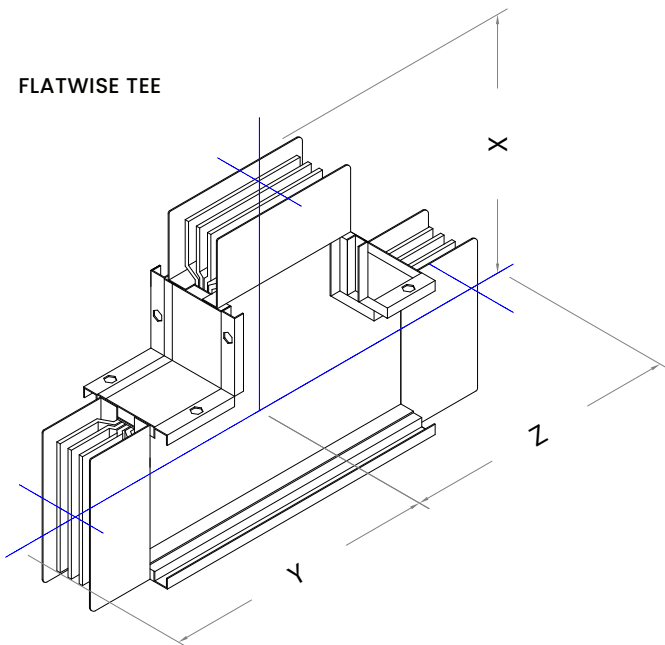
Current Rating (A)	Copper (mm)		Aluminium (mm)	
	X	Y	X	Y
630	-	-	330	330
800	330	330	340	340
1000	340	340	355	355
1250	350	350	370	370
1600	365	365	390	390
2000	390	390	415	415
2500	405	405	440	440
3200	430	430	480	480
3600	440	440	-	-
4000	470	470	530	530
5000	530	530	590	590
6300	590	590	650	650

FLATWISE OFFSET



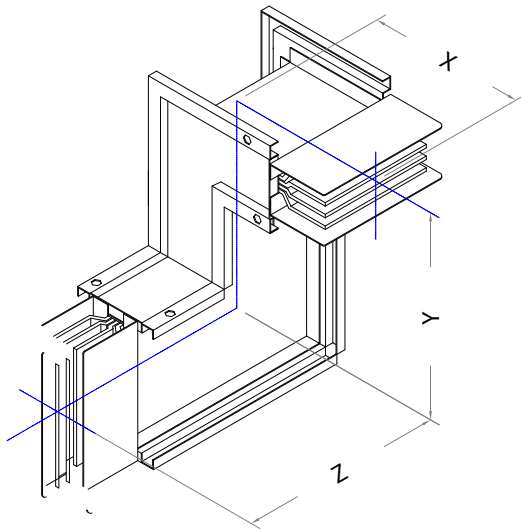
Current Rating (A)	Copper (mm)			Aluminium (mm)		
	X	Y	Z	X	Y	Z
630	-	-	-	330	300	330
800	330	330	330	340	300	340
1000	340	300	340	355	300	355
1250	350	300	350	370	300	370
1600	365	300	365	390	300	390
2000	390	300	390	415	300	415
2500	405	300	405	440	300	440
3200	430	300	430	480	300	480
3600	440	300	440	-	-	-
4000	470	300	470	530	300	530
5000	530	300	530	590	300	590
6300	590	300	590	650	300	650

FLATWISE TEE



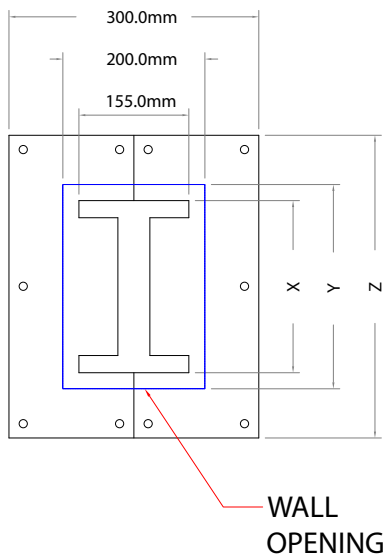
Current Rating (A)	Copper (mm)			Aluminium (mm)		
	X	Y	Z	X	Y	Z
630	-	-	-	330	300	330
800	330	330	330	340	340	340
1000	340	340	340	355	355	355
1250	350	350	350	370	370	370
1600	365	365	365	390	390	390
2000	390	390	390	415	415	415
2500	405	405	405	440	440	440
3200	430	430	430	480	480	480
3600	440	440	440	-	-	-
4000	470	470	470	530	530	530
5000	530	530	530	590	590	590
6300	590	590	590	650	650	650

COMBINATION ELBOW



Current Rating (A)	Copper (mm)			Aluminium (mm)		
	X	Y	Z	X	Y	Z
630	-	-	-	310	300	330
800	310	300	330	310	300	340
1000	310	300	340	310	300	355
1250	310	300	350	310	300	370
1600	310	300	365	310	300	390
2000	310	300	390	310	300	415
2500	310	300	405	310	310	440
3200	310	310	430	310	350	480
3600	310	310	440	-	-	-
4000	310	340	470	310	400	530
5000	310	400	530	310	460	590
6300	310	460	590	310	520	650

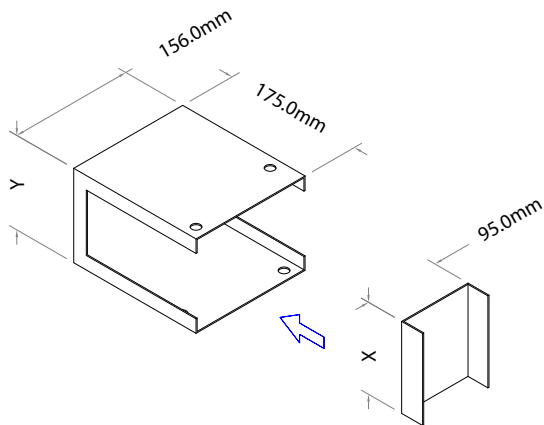
WALL FLANGE



WALL
OPENING

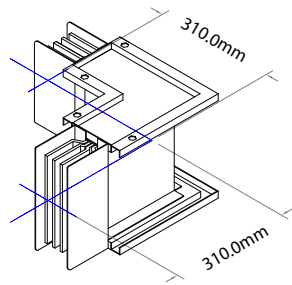
Current Rating (A)	Copper (mm)			Aluminium (mm)		
	X	Y	Z	X	Y	Z
630	-	-	-	85	130	180
800	85	130	170	95	140	190
1000	100	145	185	125	170	220
1250	115	160	200	155	200	250
1600	145	190	240	195	240	290
2000	200	245	285	245	290	340
2500	230	275	315	300	345	395
3200	280	325	375	380	425	475
3600	300	345	385	-	-	-
4000	360	405	445	480	525	575
5000	480	525	565	595	640	690
6300	595	640	690	715	760	810

END COVER

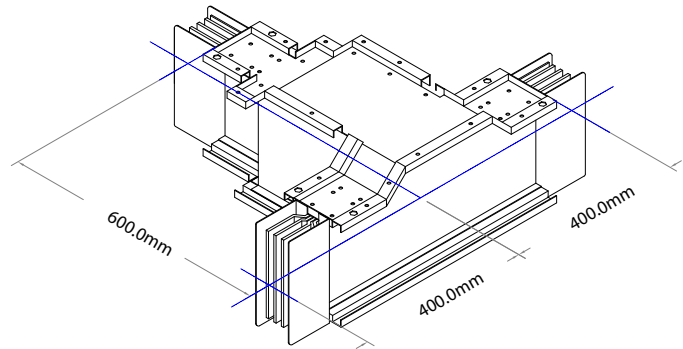


Current Rating (A)	Copper (mm)		Aluminium (mm)	
	X	Y	X	Y
630	-	-	75	80
800	75	80	85	90
1000	90	95	115	120
1250	105	110	145	150
1600	135	140	185	190
2000	190	195	235	240
2500	220	225	290	295
3200	270	275	370	375
3600	290	295	-	-
4000	350	355	470	475
5000	470	475	585	590
6300	585	590	705	710

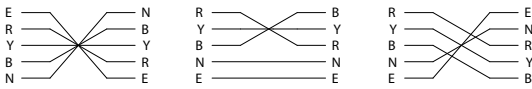
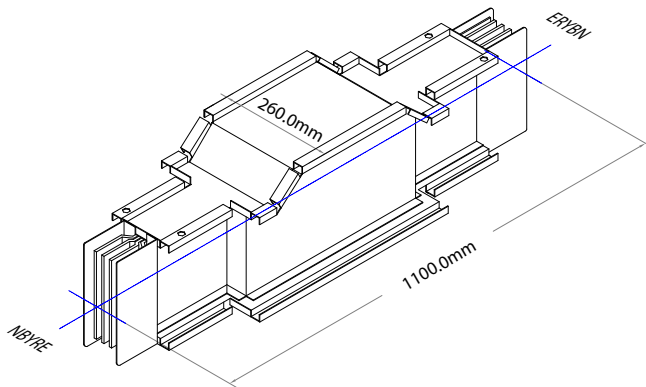
EDGEWISE ELBOW



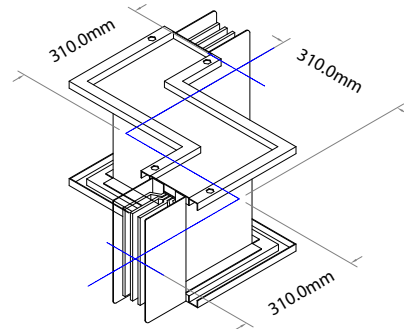
EDGEWISE TEE



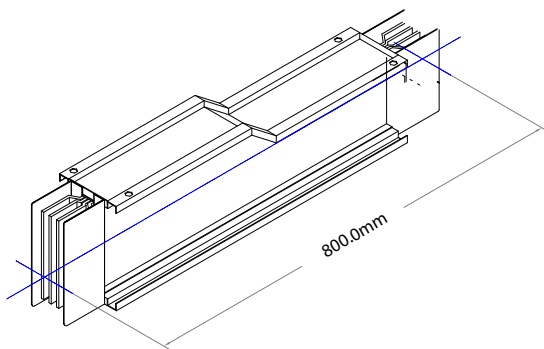
PHASE TRANSPOSITION UNIT



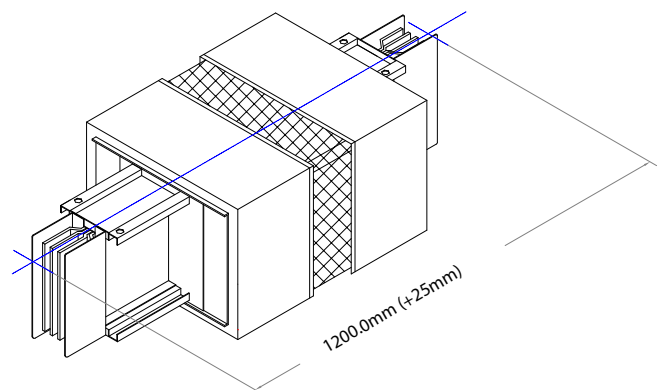
EDGEWISE OFFSET



REDUCER

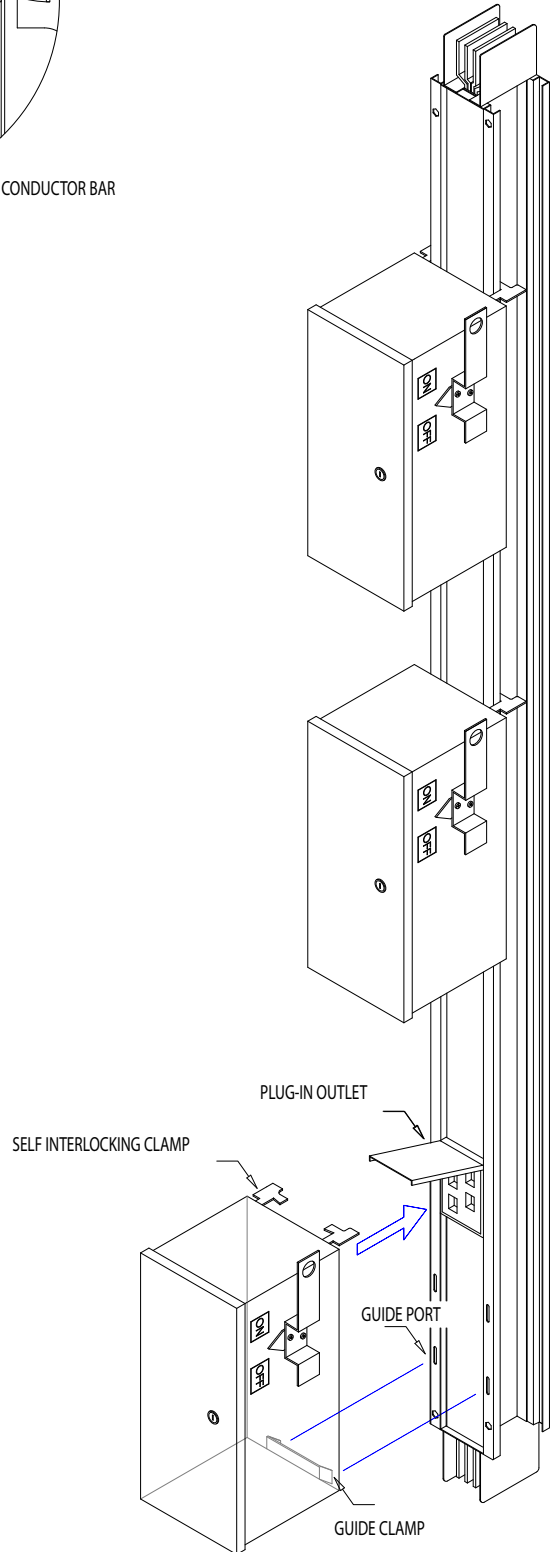
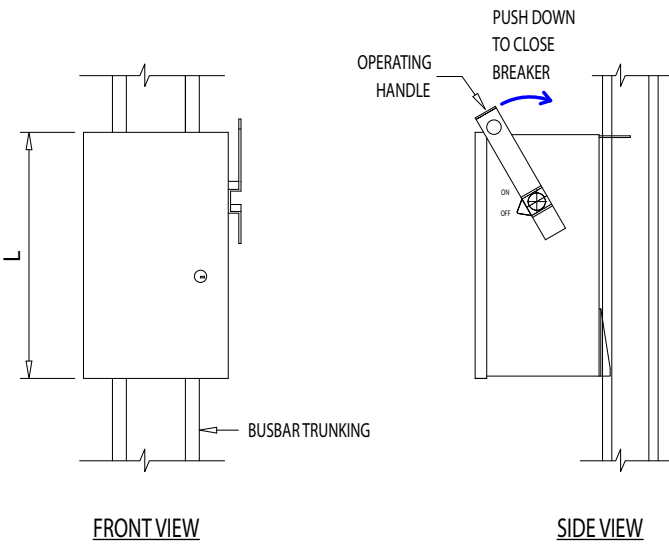
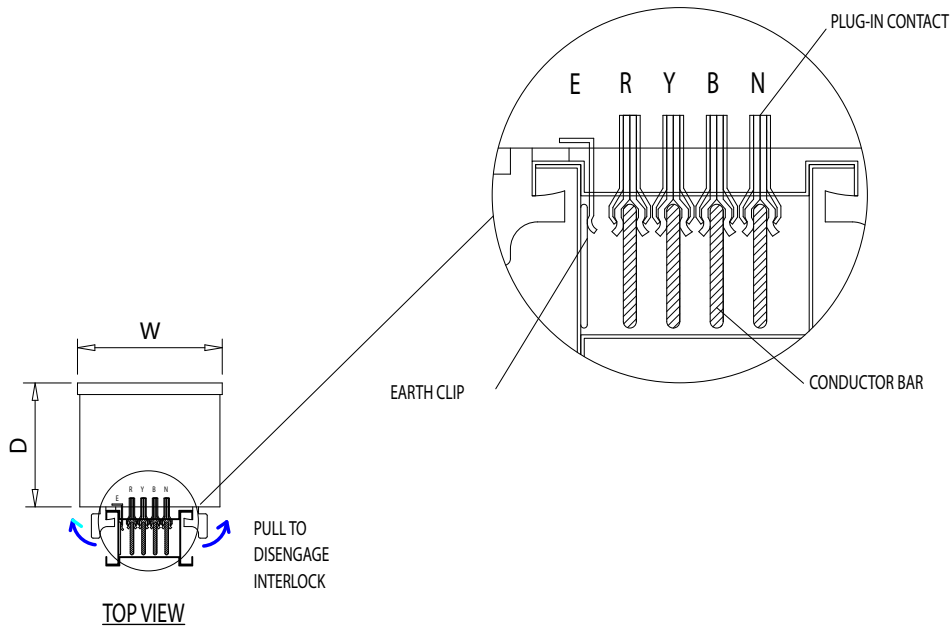


EXPANSION UNIT



- Noted:**
- Edgewise = Horizontal
 - Flatwise = Vertical
 - Refer to manufacturer for SPECIAL degree Elbow

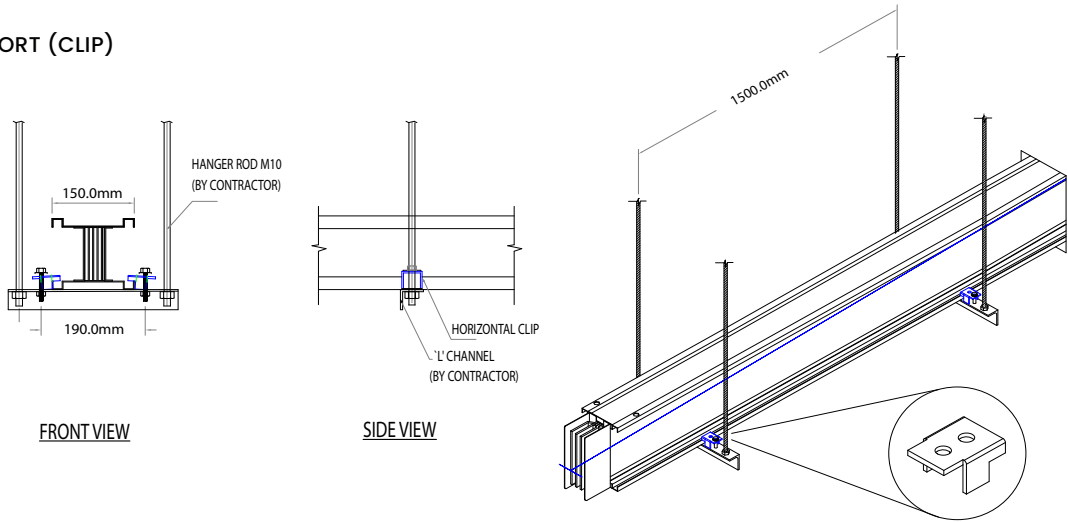
TAP-OFF UNIT



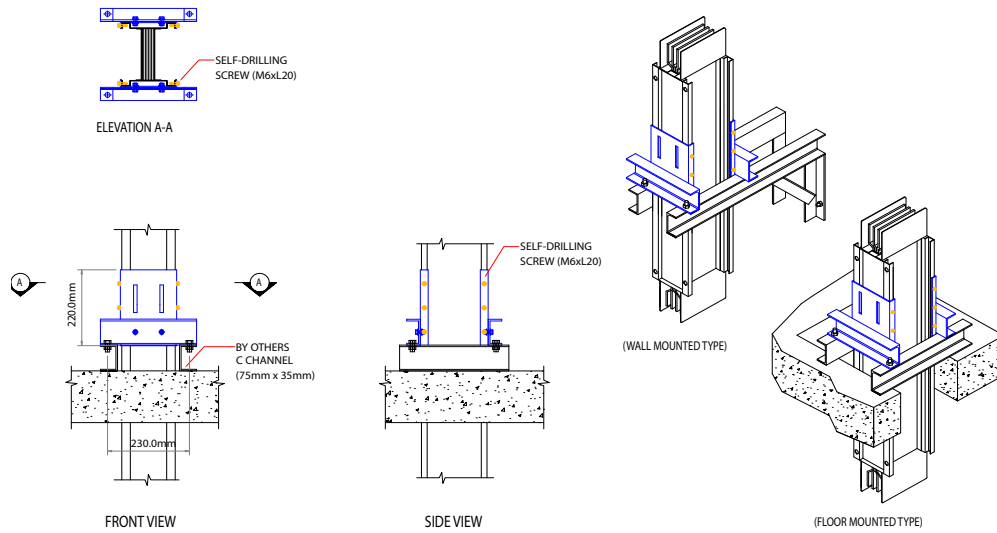
Current Rating (A)	Box Dimensions (mm)		
	D	W	L
15 – 125	220	250	350
150 – 400	250	250	500
500 – 800	300	350	850

- Tap-Off Unit above 400A use double Plug-in outlet
- Refer to manufacturer for Tap-Off above 800A
- Box dimensions may vary to MCCB Model, please refer to manufacturer for details

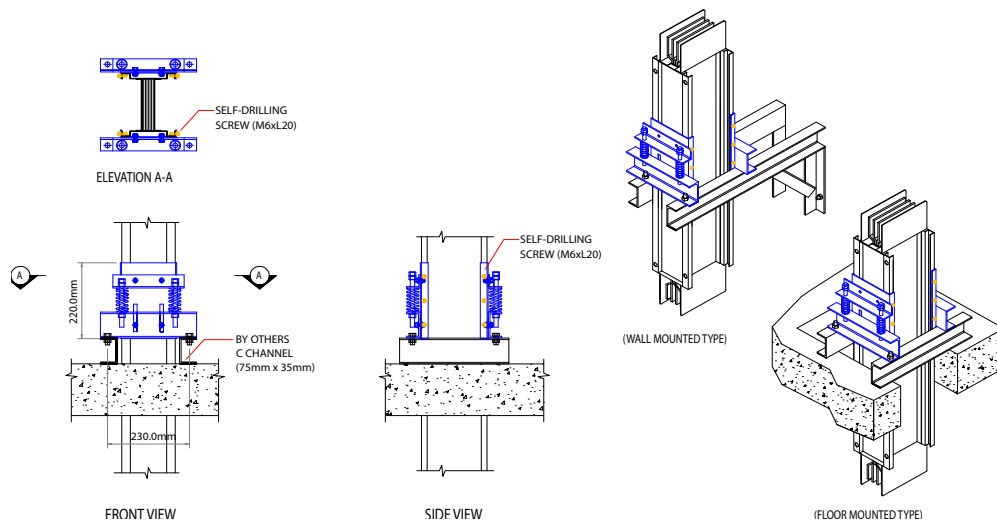
HORIZONTAL SUPPORT (CLIP)



VERTICAL FIXED SUPPORT



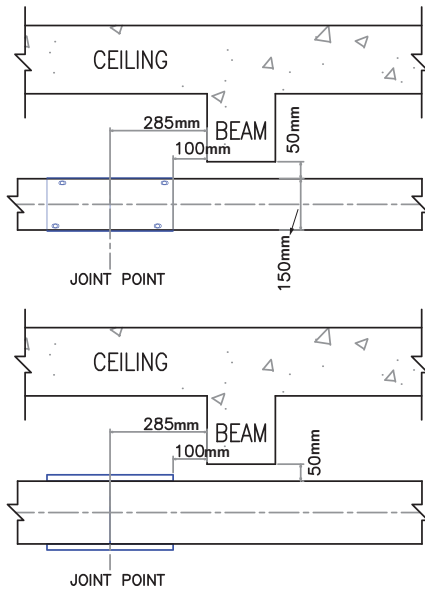
VERTICAL SPRING HANGER



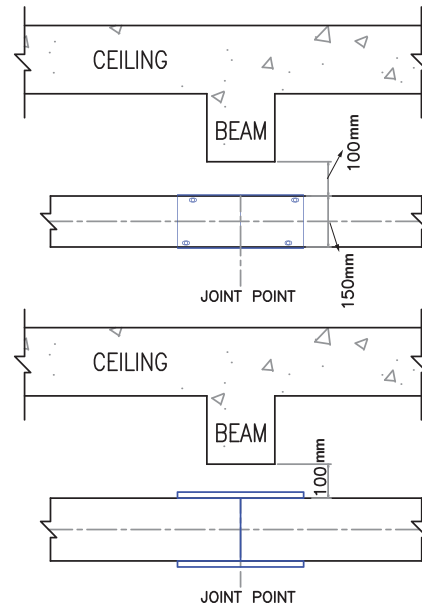
Busbar Trunking System Layout Design Consideration

MINIMUM DISTANCE FROM BEAM

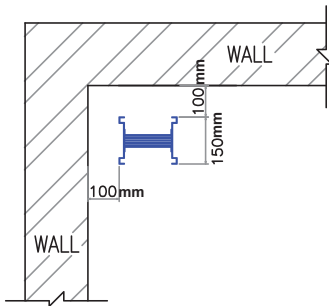
(BUSBAR UNDER BEAM WITHOUT JOINT POINT)



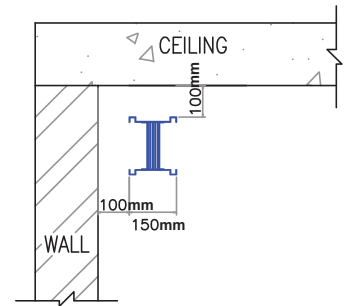
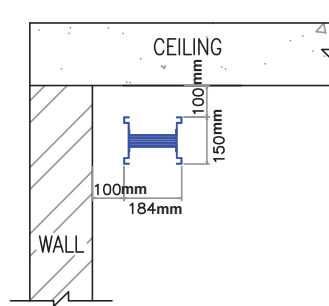
(BUSBAR UNDER BEAM WITH JOINT POINT)



MINIMUM DISTANCE FROM WALL

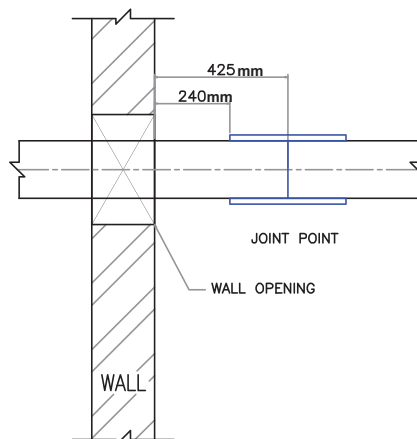
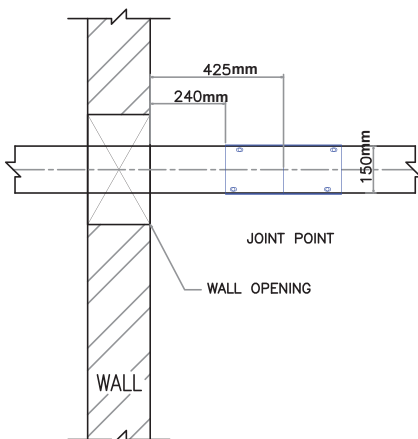


MINIMUM DISTANCE FROM WALL AND CEILING



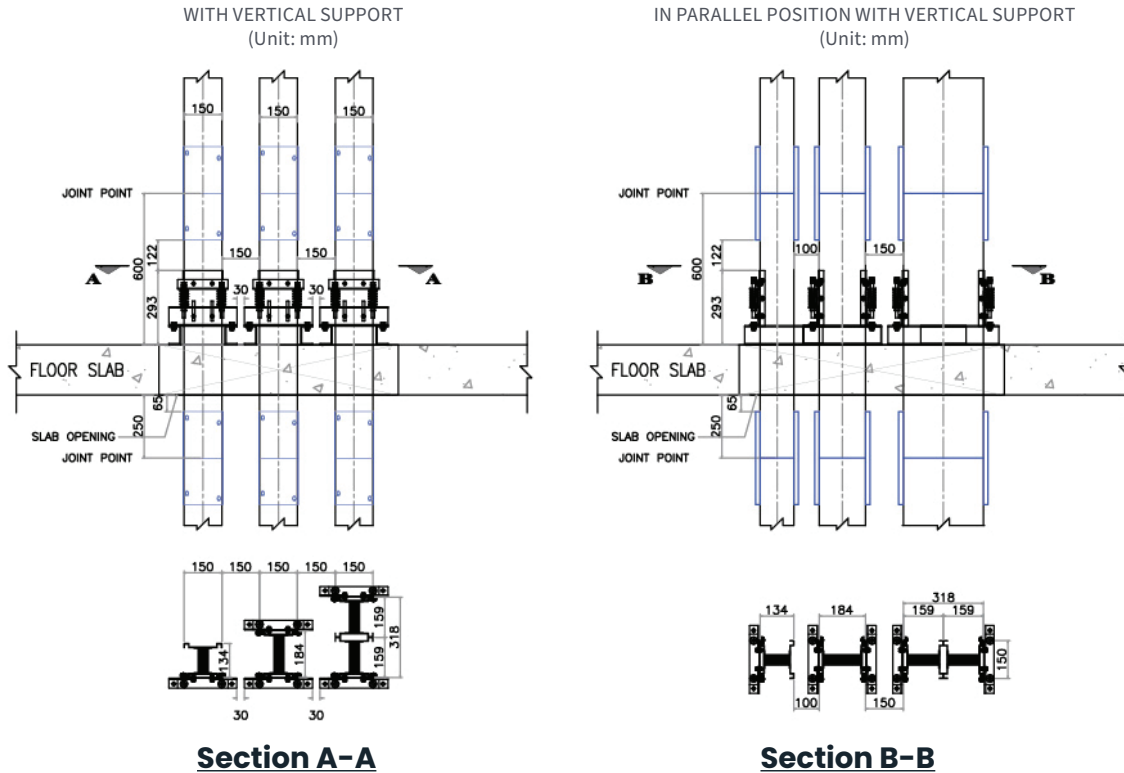
BUSBAR JOINTING POINT THROUGH WALL OPENING INSTALLATION

(JOINTS SHOULD NOT BE INSTALLED INSIDE WALLS)



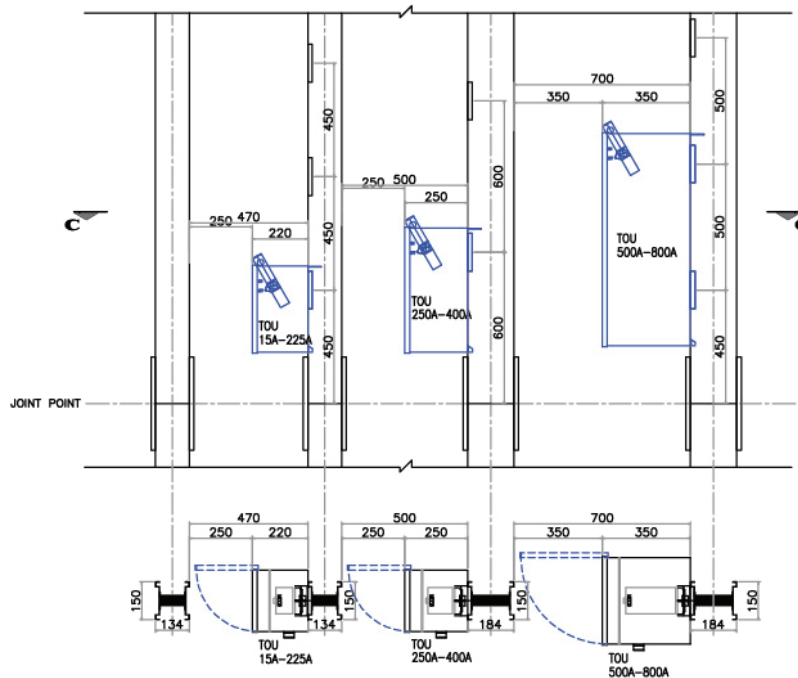
Busbar Trunking System Layout Design Consideration

MINIMUM CLEARANCE OF VERTICAL FEEDER BUSBAR JOINTS SIDE BY SIDE



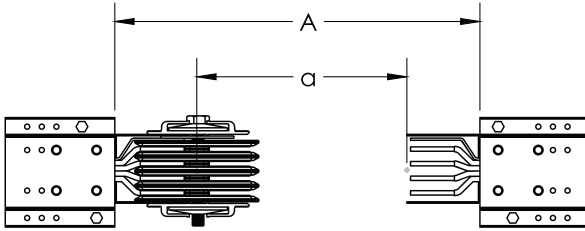
MINIMUM CLEARANCE OF PLUG-IN BUSBAR WITH TAP-OFF UNIT INSTALLED FLAT IN PARALLEL POSITION

(SHALL BE DETERMINED BY TAP-OFF UNIT SIZE)
(Unit: mm)



Measurement Guidelines

FEEDER



$$a = A - 115\text{mm} - 115\text{mm}$$

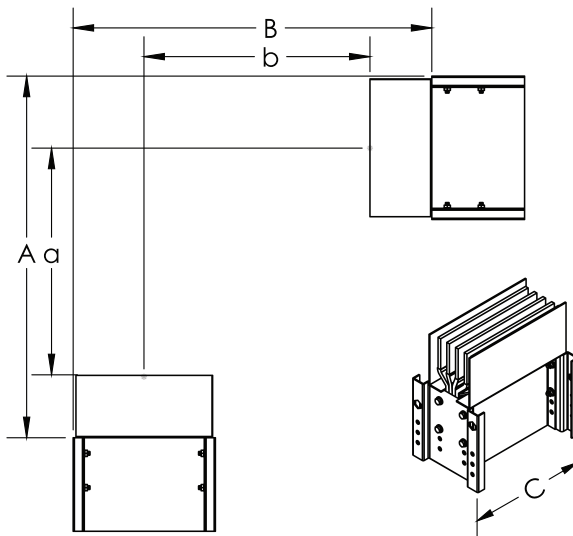
Example:

$$A = 800\text{mm}$$

$$a = 800 - 115 - 115$$

$$a = 570\text{mm}$$

FLATWISE ELBOW



$$a = A - 115\text{mm} - C/2$$

$$b = B - 115\text{mm} - C/2$$

Example:

$$A = 800\text{mm}, B = 1000\text{mm}, C = 180\text{mm}$$

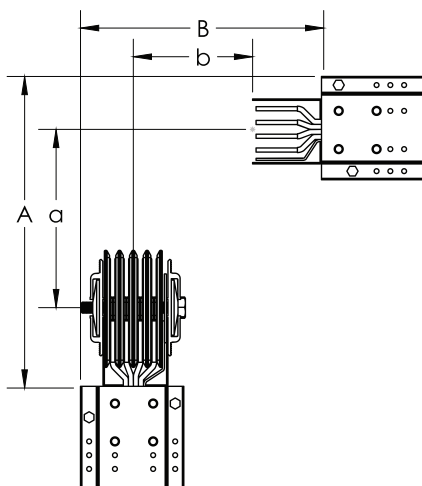
$$a = 800 - 115 - 180/2$$

$$a = 595\text{mm}$$

$$b = 1000 - 115 - 180/2$$

$$b = 795\text{mm}$$

EDGEWISE ELBOW



$$a = A - 115\text{mm} - 75\text{mm}$$

$$b = B - 115\text{mm} - 75\text{mm}$$

Example:

$$a = 800 - 115 - 75$$

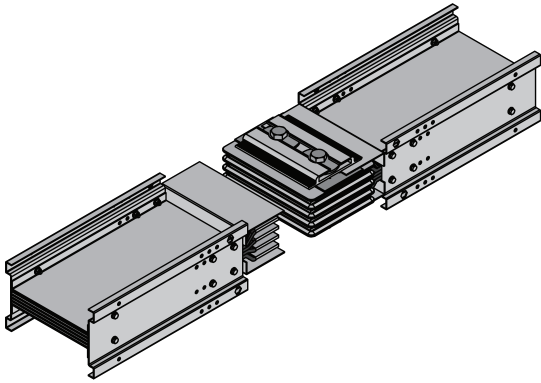
$$a = 610\text{mm}$$

$$b = 1000 - 115 - 75$$

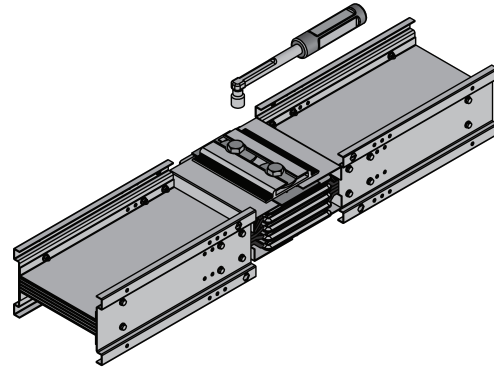
$$b = 810\text{mm}$$

Installation

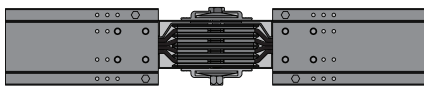
STEP 1



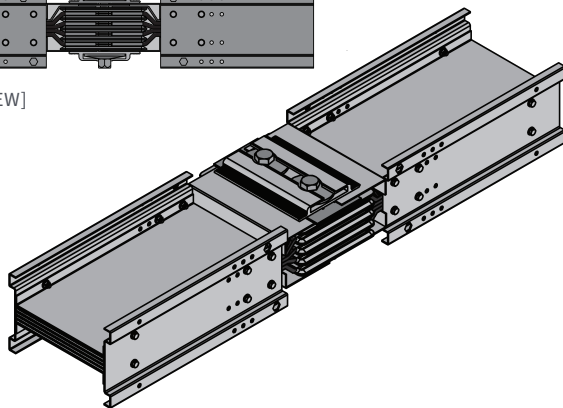
STEP 2



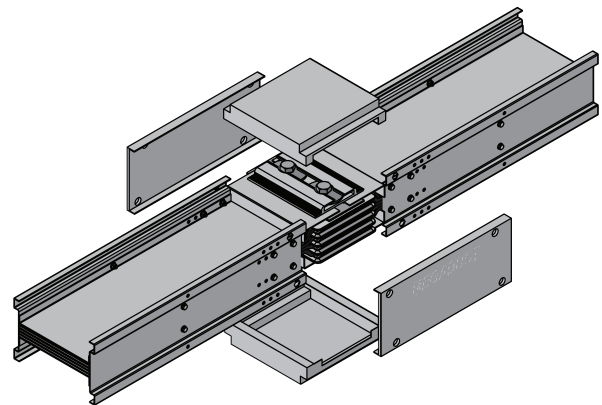
STEP 3



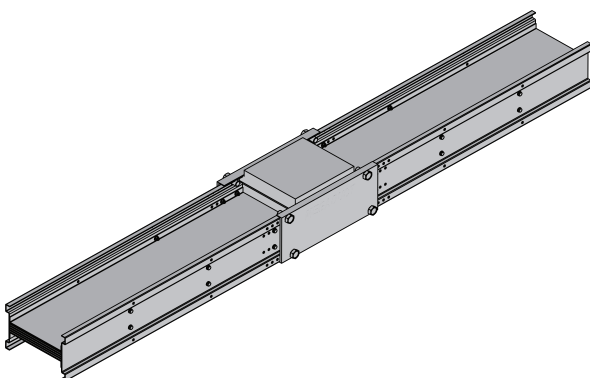
[SIDE VIEW]



STEP 4



STEP 5

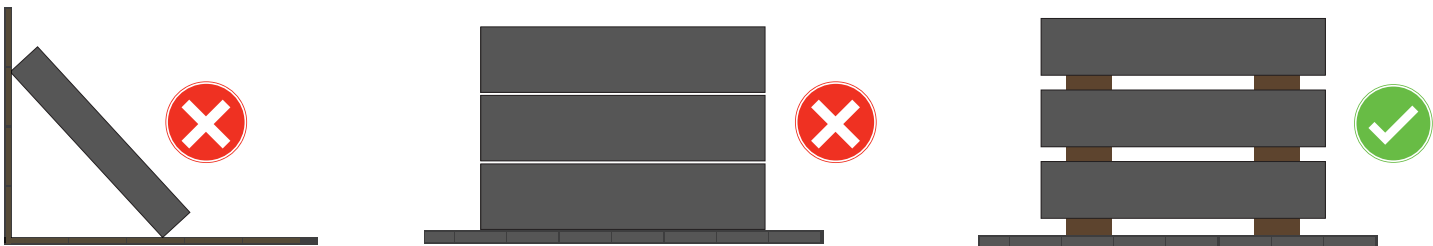


- STEP 1** Align busbar with joint properly. Push busbar into joint.
- STEP 2** Use torque wrench to tighten to 70-75Nm.
- STEP 3** Make sure busbar and joint are aligned properly.
- STEP 4** Insert joint cover and joint side cover on the joint system.
- STEP 5** Insert and fasten joint cover bolt.

GENERAL PRECAUTIONS

STORAGE

- Verify the type and quantity of all part of busbar from delivery order. Inspect whether any damage or scratch during transportation.
- Keep away busbar from wet and moisture place. Cover with waterproof material for extra protection of busbar.
- Place the stack of busbar on top of 2 pieces of wood. Make sure busbar is in horizontal position.
- To prevent the joint of the busbar from being soiled, wrap them with vinyl sheet until immediate installation.



PREPARATION & INSTALLATION

- Ensure equipment are strong enough for lifting and transportation.
- Thoroughly check the laying route of the busbar to ensure it is free from any obstacle, heat source and water leakage.
- The installation usually starts by connecting busbar to the transformer or switchboard.
- Ensure to check the description and identification of each piece before installing.
- Remove dirt and dust at joint area before installing busbar joint.
- Ensure to test insulation resistance by merger test. The test must be performed for every joint connection.

FAQs

1/ WHAT IS THE TYPICAL WARRANTY COVERAGE OF BUSBAR TRUNKING SYSTEM?

Typical warranty coverage is 12 months, coverage on manufacturer defects

2/ WHAT IS THE TYPICAL LIFE SPAN OF BUSBAR TRUNKING SYSTEM?

20 years

3/ WHAT IS THE MAINTENANCE FREQUENCY OF BUSBAR TRUNKING SYSTEM?

Busbar Trunking System is designed to be maintenance-free. As a recommendation, the maintenance frequency will be once a year or after any fault occurrence

4/ WHAT IS THE SOLUTION FOR OUTDOOR BUSBAR TRUNKING SYSTEM INSTALLATION?

Cast resin type Busbar Trunking System with IP68 rating is recommended for Outdoor Application

5/ CAN BUSBAR TRUNKING SYSTEM BE INSTALLED UNDERGROUND?

No, due to maintenance requirement

6/ WHAT IS TYPICAL LEADTIME OF BUSBAR TRUNKING SYSTEM?

10-12 weeks upon approval & confirmation of shop drawings, Factory Routine Test Conducted in Singapore

7/ HOW FAST CAN WE RECEIVE THE ADD ON ITEMS AS THE PROJECT IS CLOSING SOON?

Typical short length or accessories, lead time is 5 to 14 working days
(Exclude freight logistics lead time)

8/ IS TAI SIN BUSBAR ABLE TO INTEGRATE WITH OTHER BUSBAR TRUNKING SYSTEMS?

No, Busbar Trunking System is a proprietary design system, hence integration will have to be of the same make & model in order to be compatible

9/ WHAT IS THE CRITICAL TEST TO ENSURE BUSBAR TRUNKING SYSTEM COMPLIED ?

There are 3 level of test to ensure integrity of the Busbar Trunking System:

- Level 1 - Type Test by accredited test laboratories (One time type test to ensure compliance to guideline standards - IEC 61439-6)
- Level 2 - Factory Acceptance / Routine Test (Factory internal quality routine test)
- Level 3 - Site Acceptance Test (Conducted during installation phase)



Updated Busbar FAQs

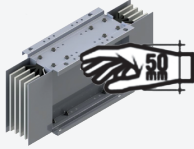
<https://www.taisin.com.sg/our-products/busbar-trunking-system/#busbar-faqs>

Technical Guide

INGRESS PROTECTION (IP) RATING GUIDE

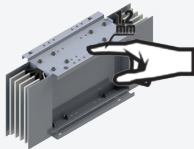
SOLIDS

1



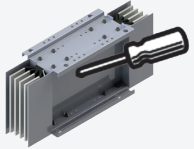
Protection against a solid object greater than 50mm such as a hand.

2



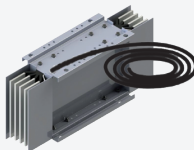
Protection against a solid object greater than 12.5mm such as a finger.

3



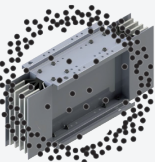
Protection against a solid object greater than 2.5mm such as a screwdriver.

4



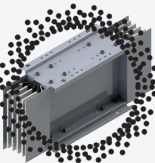
Protection against a solid object greater than 1 mm such as a wire.

5



Dust Protected. Limited ingress of dust permitted. Will not interfere with operation of the equipment. Two to eight hours.

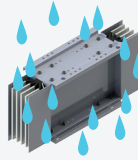
6



Dust tight. No ingress of dust. Two to eight hours.

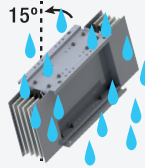
WATER

1



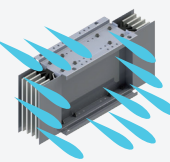
Protection against vertically falling drops of water. Limited ingress permitted.

2



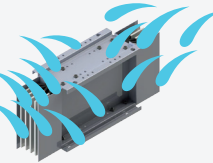
Protection against vertically falling drops of water with enclosure tilted up to 15 degrees from the vertical. Limited ingress permitted.

3



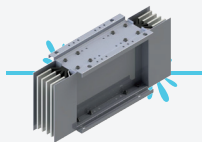
Protection against sprays of water up to 60 degrees from the vertical. Limited ingress permitted for three minutes.

4



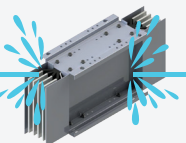
Protection against splashed from all directions. Limited ingress permitted.

5



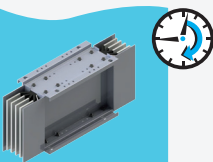
Protection against jets of water. Limited ingress permitted.

6



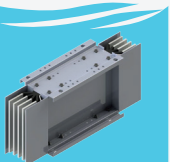
Water from heavy seas or water projected in powerful jets shall not enter the enclosure in harmful quantities.

7



Protection against the effects of immersion in water between 15cm and 1m for 30 minutes.

8



Protection against the effects of immersion in water under pressure for long periods.

Rating Example:

IP 65

INGRESS PROTECTION

Catalogue serial number: TSPDLV_TLINEI_V01-062023

Every possible effort has been made to ensure that the information contained in this publication is correct and current at the time of printing. Tai Sin reserves the right to change the information and/or specifications at an time without notice in light of technical improvement and continued development.

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