



Tai Sin®

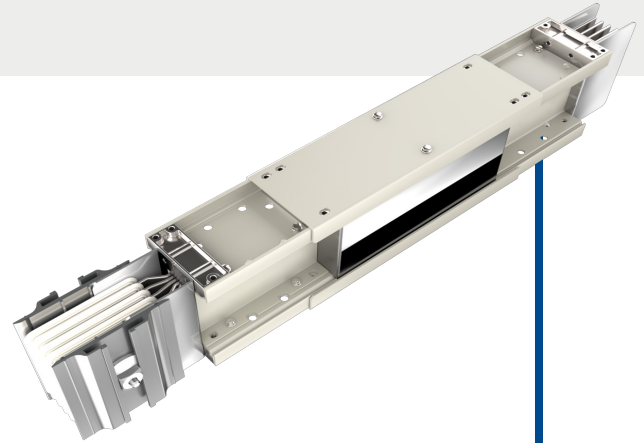
LT Line I Busbar Trunking System

**Our products are certified
for your peace of mind**

Tai Sin LT Line I series Busbar Trunking System conforms to IEC 61439-6, certified by KEMA KEUR. 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
Test and Assembly Line in Singapore**

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



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Latest LT Line I Busbar Trunking System Catalog

<https://www.taisn.com.sg/our-products/busbar-trunking-system/lt-line-i/>

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.

In 2020, after 40 years of cable manufacturing success, Tai Sin launches its new range of low voltage Busbar Trunking System.

LT Line I Busbar Trunking System offers a full line of Busbar Trunking System to meet the world market: 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.

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.



SINGAPORE



SINGAPORE



MALAYSIA



VIETNAM

International Certification

Our products are certified for your peace of mind

Tai Sin LT Line I series Busbar Trunking System conforms to IEC 61439-6*, certified by KEMA KEUR.



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

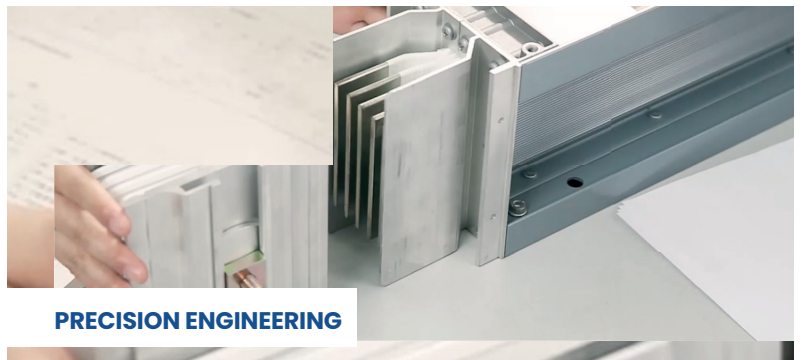
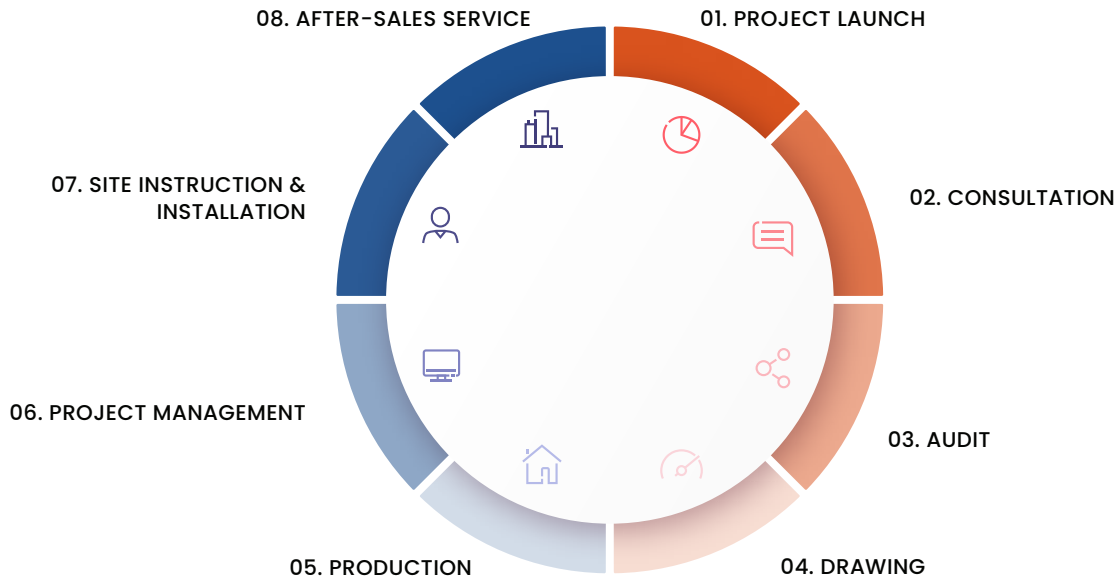
Clause no.	Clause description
10.2.2	Resistance to corrosion
10.2.3	Properties of insulating materials
10.2.7	Marking
10.2.101.1	Test procedure for a straight busbar trunking unit
10.2.101.2	Test procedure for a joint
10.2.101.3	Resistance of the enclosure to crushing
10.3	Degree of protection of assembly
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

We ensure the project go smoothly throughout the project

Powering up Singapore since 1980



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

While being mindful of the technological developments 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

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 assess your sites, help identify the safety and efficiency 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. Since we evolved from being a supplier to manufacturer, we are confident in our offerings and our position as a responsive provider of solution and service.

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 up-to-date products 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

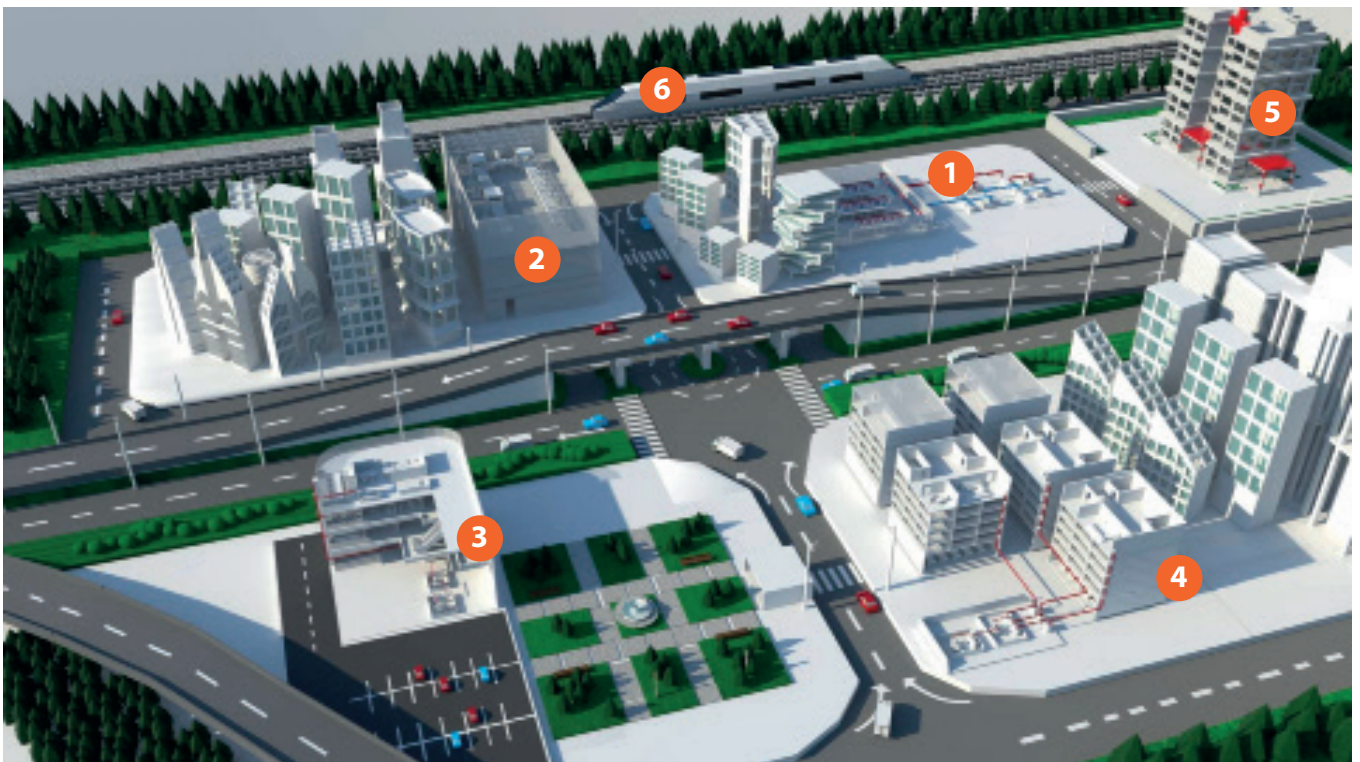
Busbar Trunking System were first introduced in 1932 as a solution for the automation industry's needs for flexible power distribution systems.

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-ampere 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

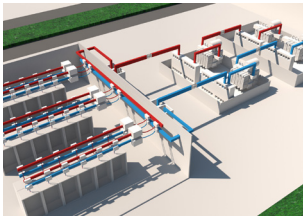
Key considerations

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



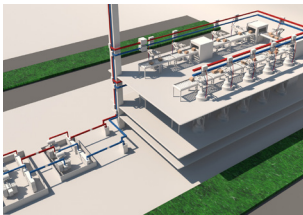
- Service Continuity
- Halogen-free
- Flexibility To Evolve/Expand
- Customizable Colour

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



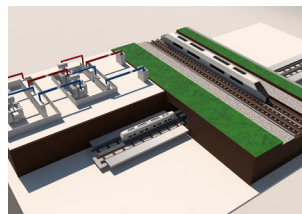
- Service Continuity
- Low EMF Emission
- Halogen-free
- Low Voltage Drop

Commercial Areas



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

Infrastructure

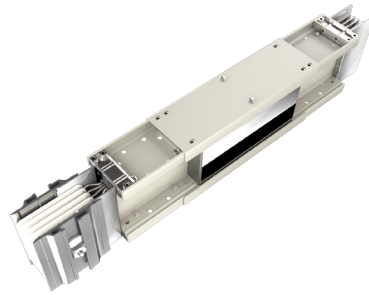


- Service Continuity
- Model Availability
- Halogen-free
- Low Voltage Drop
- Low Maintenance Frequency
- Low EMF Emission

TAI SIN POWER DISTRIBUTION

System Overview

Designed & Tested in Singapore



Tai Sin LT 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, LT 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

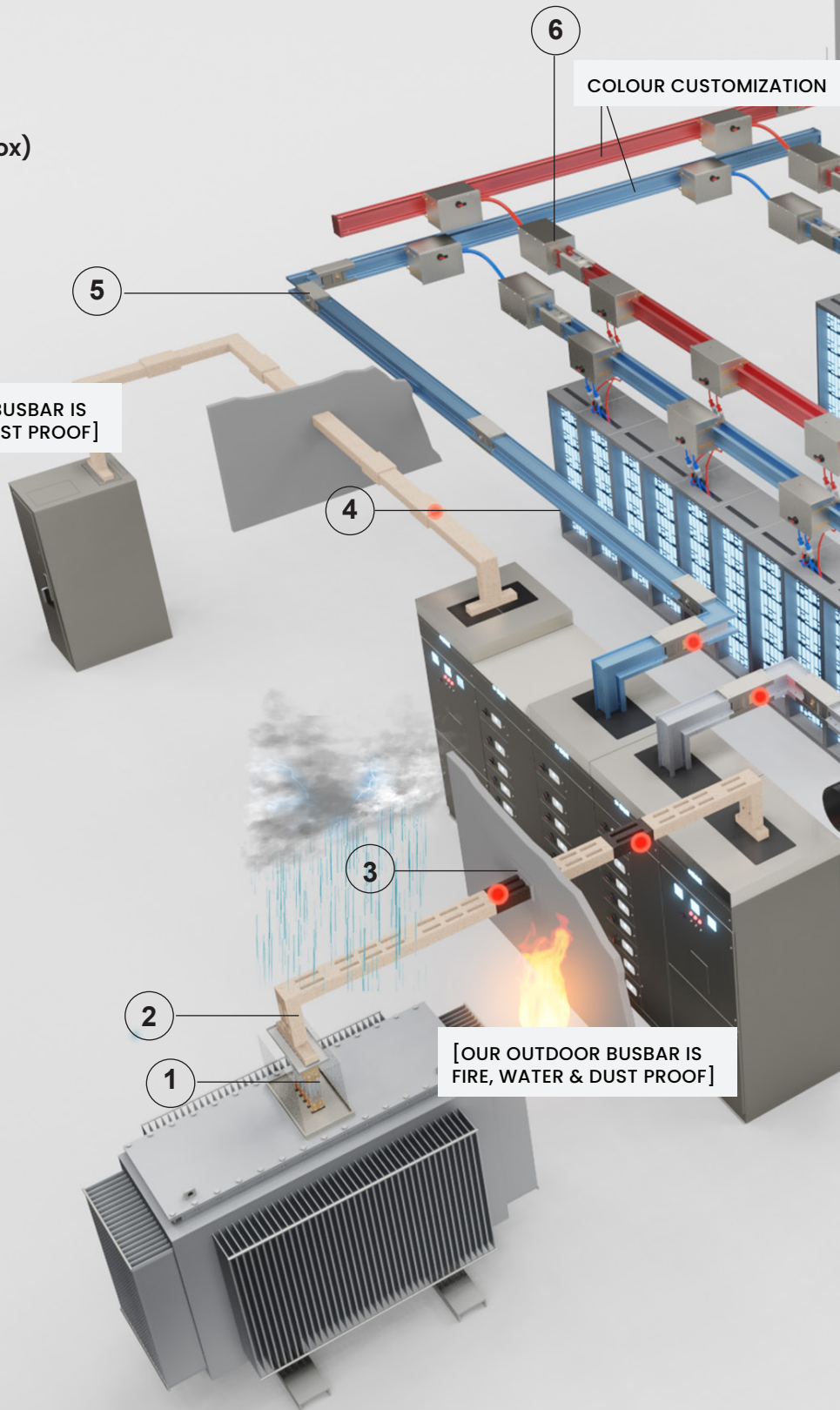
Description	Specifications & Standards
Model	LT Line I
Type	Sandwich
Compliance Standard	IEC 61439-6 Kema Keur
Current Rating	CU: 400A-5000A Al: 250A-4000A
Rated Insulation Voltage (Ui)	690V/1000V
Rated Frequency (Fn)	50Hz/60Hz
Conductor Material	Copper/ Aluminium
TOU Rating	Copper: 16A-630A plug-in type 800A-1250A bolt-on type Aluminum: 16A-400A plug-in type 630A-800A bolt-on type
Operation temperate	Avg: 35deg C, Max: 55deg C
System Configuration	3P3W 3P3W+50%E 3P4W 3P4W+50%E 3P4W+100%E 3P4W(200%N) 3P4W(200%N)+50%E 3P4W(50%N) 3P4W(50%N)+50%E 3P5W + 50%E
IP Rating	Up to IP54 / IP66
Insulation Material	2 layers of mylar (Polyester Film) (Non Fire Rated Busbar Trunking System) 1 layer of mylar + 1 layer of mica (Fire Rated Busbar Trunking System)
Housing	2 pieces of housing (Aluminium Housing)
Insulation class	I30deg C - Class B

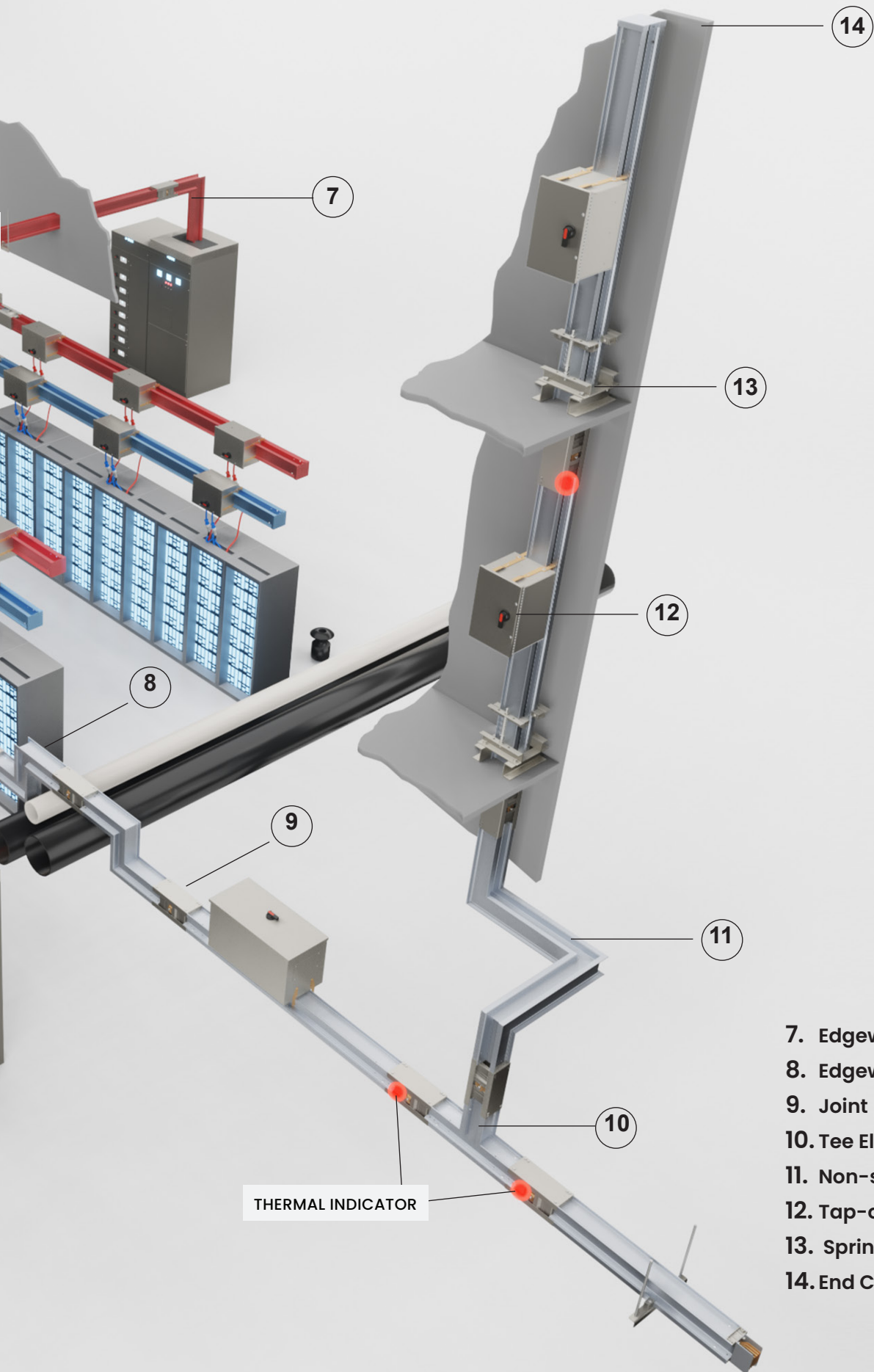
1. Flexible Link
2. Flanged End
3. Wall Flange
4. Straight Length
5. Flatwise Elbow
6. End Tap Box (Cable Tap Box)

[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

Safety & efficiency at every level

Predictive Temperature Rise Indicator

- Joint insulator with a convex-concave groove edge provides an increased creepage distance.
- Color-coded-temperature indicator applied at busbar joint to give an early warning when high temperature occurs at the joint.

Superior & Reliable Insulation

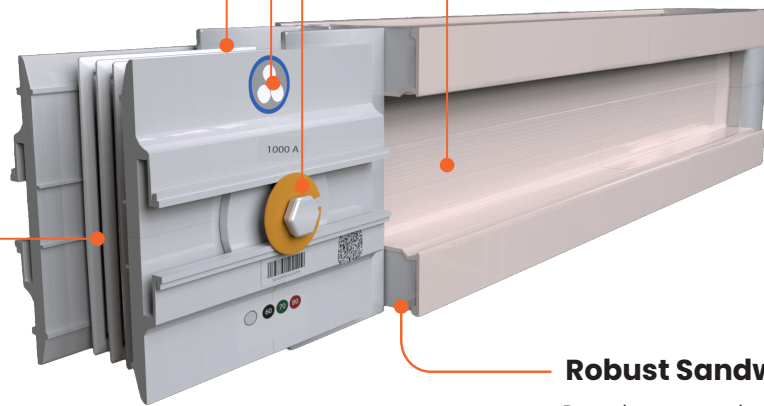
- Both polyester film insulation and epoxy insulation (Class B) are available with exceptional electrical performance and superior mechanical strength.
- Materials are environmentally friendly and certified by a reputable international laboratory. The busbar trunking system is halogen-free with no toxicity emission in the case of fire.

Unique Joint Design

- Single bolt joint design to shorten the time of connection by 50% compared to the traditional design.
- Double-headed "break off" joint bolt is applied to tighten the busbar with just a common 16mm socket wrench. Belleville spring washers are adopted to ensure pressure evenly applied across the joint. The tightening and re-tightening torque value for the double-headed joint bolt is 70-80N.

Unique Structure Design

- The unique "serrated surface" design of extruded >3mm thickness aluminum housing greatly improves the heat dissipation for the whole busbar trunking system.
- By the design of two-piece housing, Tai Sin Low Voltage Busbar Trunking System provides more reliable IP protection for the field application than traditional design, including IP54, IP65, IP66.



99.9% Purity Copper Conductor or Aluminium Conductor* (option - copper contact)

High-speed sawing for a high sawing accuracy and smooth cut to reduce temperature rise at the busbar joint.

Robust Sandwich Structure

Densely arranged conductors in the housing to achieve superior heat dissipation, lower temperature rise and eliminate the "chimney effect".



*Aluminium Conductor (option - copper contact)

OTHER FEATURES:

- Novel Conductor Structure
- Compact Design
- Unique error-proof device (Bridge Type Joint)
- Plug outlet and busbar plug

For more details: <https://www.taisn.com.sg/our-products/busbar-trunking-system/>

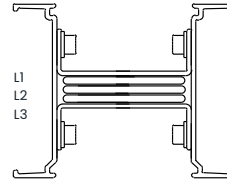
Product Features

Safety & efficiency at every level

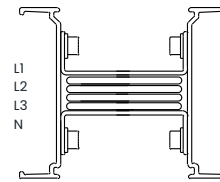
SYSTEM CONFIGURATION & PHASE SEQUENCE

The compact sandwich design of Tai Sin Busbar Trunking System can be configured to 3-phase 3-wire (3P3W), 3-phase 4-wire (3P4W) or 3-phase 5-wire (3P5W with integral earth bar).

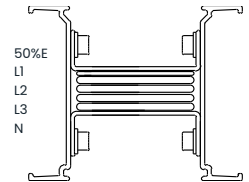
Due to the existence of non-linear loads in today's modern buildings, high harmonic neutral current overheats the neutral conductor, and deteriorates the performance and life span of equipment.



3P3W



3P4W



3P5W
(INTEGRAL EARTH BAR)

INGRESS PROTECTION RATING (IP RATING)

Our Busbar Trunking System is designed and constructed to meet the requirements for indoor and outdoor installation. The degree of protection of LT Line I Busbar Trunking System is verified and tested to meet the requirement of IP54, IP65, IP66 in accordance to IEC 60529 by independent testing authority.

LT LINE I BUSBAR TRUNKING SYSTEM IN A VARIETY OF HOUSING CONSTRUCTIONS TO MEET YOUR APPLICATION AND NEEDS.

Rating Example: **IP65**
INGRESS PROTECTION

IP Rating	Busbar type
IP54	Indoor feeder & plug-in/riser busbar "5" indicates protection against dust; "4" indicates protection against water splashing.
IP65	Outdoor feeder busbar "6" indicates dust-tight protection; "5" indicates protection against water jets.
IP66	Outdoor feeder busbar "6" indicates dust-tight protection, "6" indicates protection against powerful water jets.

Note: For further information about Ingress Protection Ratings (IP Ratings), please refer to page 39.

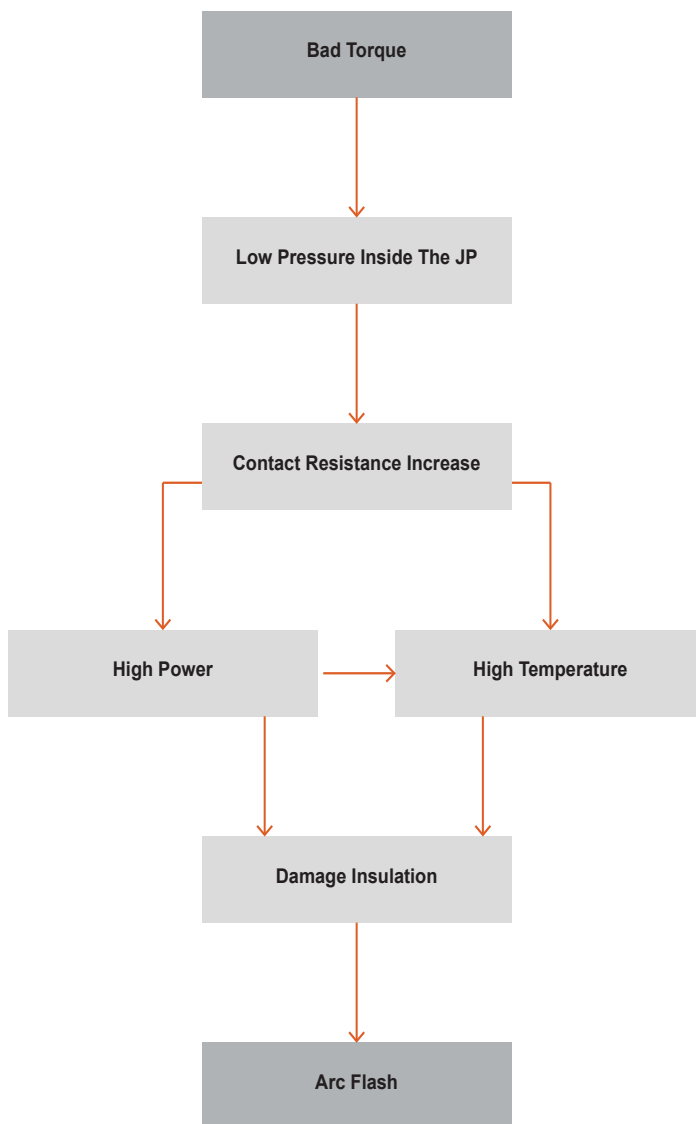
Add-On Feature (Optional)

Busbar Trunking System – Remote conditional monitoring

For an electrical system, one of the typical concerns is its electrical connection and abnormal heating that 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 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).

Ways to protect Busbar Trunking Systems

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



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

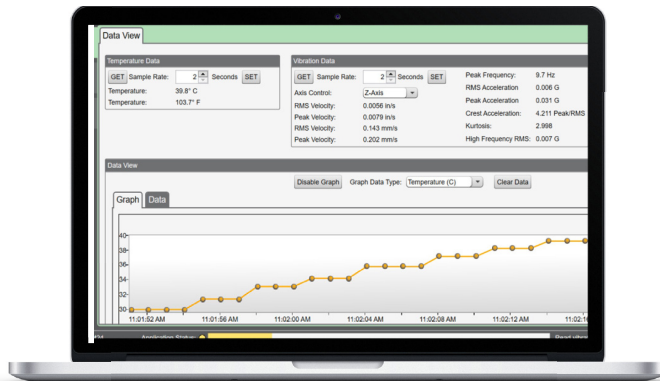
- We provide a temperature sensor that is not affected by electromagnetic noise.
- By quickly detecting overheating and pinpointing the location of a hotspot remotely, our thermal sensor ensures that any problem can be responded to immediately, before it leads to a costly and expensive plant shutdown.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

Your Benefits

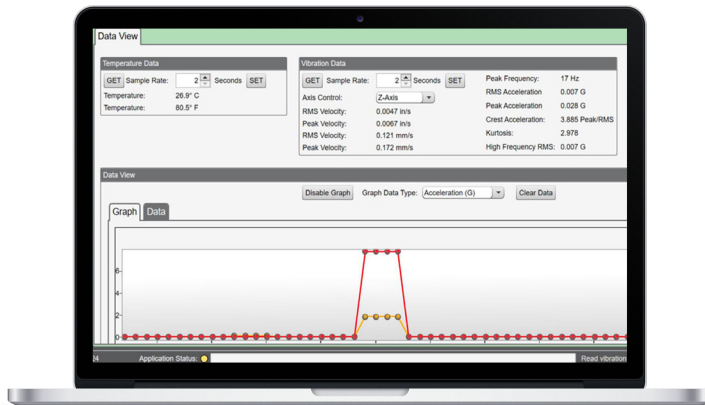
Provide the temperature report quickly and accurately of any joints at any time.

- 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 Specification

Resistance, Reactance, Impedance and Voltage Drop

COPPER CONDUCTOR: FREQUENCY-50HZ

Current Rating (A)	Resistance R_{20} (m Ω /m)	Resistance $R_{Full\ Load}$ (m Ω /m)	Resistance X (m Ω /m)	Voltage Drop per meter at Full Load Condition (v/m)				
				Power Factor $\cos\phi$				
				0.6	0.7	0.8	0.9	1
400	0.102	0.126	0.041	0.075	0.081	0.087	0.091	0.087
630	0.090	0.112	0.037	0.106	0.114	0.122	0.128	0.122
800	0.066	0.077	0.032	0.099	0.106	0.112	0.115	0.107
1000	0.055	0.071	0.026	0.110	0.118	0.125	0.130	0.123
1250	0.040	0.050	0.019	0.098	0.105	0.111	0.115	0.108
1600	0.029	0.034	0.015	0.090	0.096	0.100	0.103	0.094
2000	0.023	0.028	0.012	0.091	0.098	0.104	0.105	0.097
2500	0.017	0.022	0.011	0.095	0.101	0.105	0.106	0.095
3200	0.015	0.024	0.006	0.106	0.117	0.126	0.134	0.133
4000	0.011	0.015	0.003	0.079	0.088	0.096	0.101	0.104
5000	0.009	0.011	0.002	0.071	0.079	0.087	0.093	0.095

In the table above, the load distribution coefficient $k=1$. In specific project, the k value varies with the branch number of the Busbar Trunking System.

ALUMINIUM CONDUCTOR: FREQUENCY-50HZ

Current Rating (A)	Resistance R_{20} (m Ω /m)	Resistance $R_{Full\ Load}$ (m Ω /m)	Resistance X (m Ω /m)	Voltage Drop per meter at Full Load Condition (v/m)				
				Power Factor $\cos\phi$				
				$\cos\phi$ 0.6	$\cos\phi$ 0.7	$\cos\phi$ 0.8	$\cos\phi$ 0.9	$\cos\phi$ 1
250	0.151	0.185	0.073	0.073	0.079	0.083	0.086	0.080
400	0.121	0.155	0.061	0.098	0.105	0.111	0.115	0.107
630	0.093	0.120	0.052	0.124	0.132	0.139	0.143	0.131
800	0.077	0.105	0.027	0.117	0.129	0.139	0.147	0.145
1000	0.058	0.072	0.046	0.139	0.144	0.148	0.147	0.125
1250	0.044	0.061	0.012	0.100	0.111	0.121	0.130	0.132
1350	0.040	0.055	0.013	0.101	0.112	0.121	0.129	0.129
1600	0.032	0.046	0.015	0.110	0.119	0.127	0.133	0.127
2000	0.029	0.041	0.019	0.138	0.146	0.153	0.157	0.142
2500	0.022	0.029	0.010	0.110	0.119	0.126	0.132	0.126
3200	0.016	0.023	0.007	0.108	0.117	0.125	0.132	0.127
4000	0.013	0.015	0.005	0.090	0.097	0.104	0.109	0.104

In the table above, the load distribution coefficient $k=1$. In specific project, the k value varies with the branch number of the Busbar Trunking System.



Voltage Drop Calculator

<https://www.taisin.com.sg/our-products/busbar-trunking-system/voltage-drop-calculator/>

Electrical Specification

Resistance, Reactance, Impedance and Voltage Drop

COPPER CONDUCTOR: FREQUENCY-60HZ

Current Rating (A)	Resistance R20 (mΩ/m)	Resistance RFull Load (mΩ/m)	Resistance X (mΩ/m)	Voltage Drop per meter at Full Load Condition (V/m)				
				Power Factor cosφ				
				0.6	0.7	0.8	0.9	1
400	0.102	0.126	0.049	0.080	0.085	0.090	0.093	0.087
630	0.090	0.112	0.045	0.112	0.120	0.127	0.131	0.122
800	0.066	0.077	0.039	0.107	0.113	0.117	0.119	0.107
1000	0.055	0.071	0.031	0.117	0.125	0.131	0.134	0.123
1250	0.040	0.050	0.023	0.105	0.111	0.116	0.119	0.108
1600	0.029	0.034	0.018	0.097	0.102	0.105	0.107	0.094
2000	0.023	0.028	0.014	0.098	0.104	0.108	0.109	0.097
2500	0.017	0.022	0.013	0.103	0.108	0.111	0.111	0.095
3200	0.015	0.024	0.007	0.112	0.122	0.130	0.137	0.133
4000	0.010	0.013	0.007	0.093	0.098	0.101	0.102	0.090
5000	0.008	0.010	0.004	0.080	0.085	0.090	0.093	0.087

In the table above, the load distribution coefficient k=1. In specific project, the k value varies with the branch number of the Busbar Trunking System.

ALUMINIUM CONDUCTOR: FREQUENCY-60HZ

Current Rating (A)	Resistance R20 (mΩ/m)	Resistance RFull Load (mΩ/m)	Resistance X (mΩ/m)	Voltage Drop per meter at Full Load Condition (V/m)				
				Power Factor cosφ				
				0.6	0.7	0.8	0.9	1
250	0.151	0.185	0.088	0.079	0.083	0.087	0.089	0.080
400	0.121	0.155	0.073	0.105	0.111	0.116	0.119	0.107
630	0.093	0.120	0.063	0.133	0.140	0.146	0.148	0.131
800	0.077	0.105	0.033	0.123	0.134	0.143	0.151	0.145
1000	0.058	0.072	0.055	0.152	0.156	0.157	0.154	0.125
1250	0.044	0.061	0.014	0.104	0.115	0.124	0.133	0.132
1350	0.040	0.055	0.015	0.105	0.115	0.124	0.131	0.129
1600	0.032	0.046	0.018	0.117	0.125	0.132	0.137	0.127
2000	0.029	0.041	0.023	0.149	0.156	0.161	0.162	0.142
2500	0.022	0.029	0.012	0.117	0.125	0.132	0.136	0.126
3200	0.016	0.023	0.008	0.114	0.123	0.130	0.135	0.127
4000	0.013	0.015	0.006	0.096	0.103	0.108	0.112	0.104

In the table above, the load distribution coefficient k=1. In specific project, the k value varies with the branch number of the Busbar Trunking System.



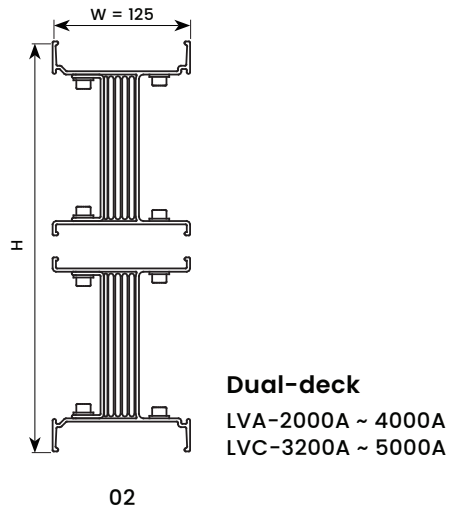
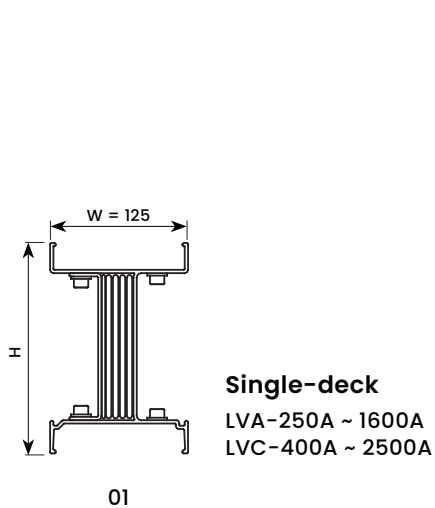
Voltage Drop Calculator

<https://www.taisin.com.sg/our-products/busbar-trunking-system/voltage-drop-calculator/>

Physical Data

STRAIGHT LENGTH

Feeder, the straight length without outlets, can be installed either horizontally or vertically. The standard length is either 3000mm or 4000mm. The minimum length is 460mm.



COPPER CONDUCTOR

Current Rating (A)	Dimension (mm)		Weight per meter (kg/m)		Fig.
	Width (W)	Height (H)	4wire 100%N	5wire 100%N, 50%PE	
400	125	103	11.3	12.4	01
630	125	103	12.5	13.6	
800	125	118	15.4	17.1	
1000	125	128	18.1	19.9	
1250	125	153	22.8	25.4	
1600	125	188	30.7	34.3	
2000	125	223	38.2	42.8	
2500	125	273	52.8	59.4	
3200	125	352	59.5	66.5	02
4000	125	432	76.9	86.3	
5000	125	532	97.3	108.9	

ALUMINIUM CONDUCTOR

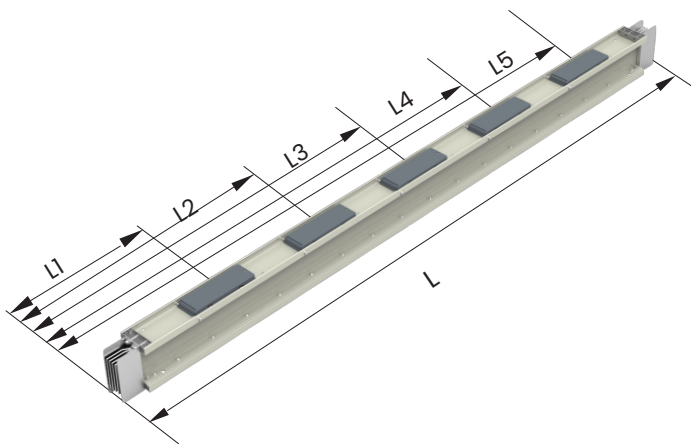
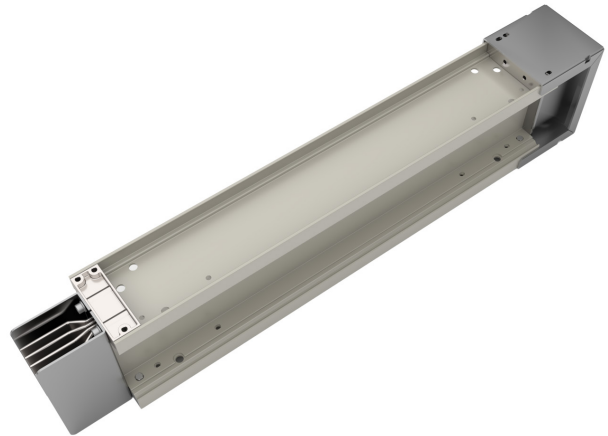
Current Rating (A)	Dimension (mm)		Weight per meter (kg/m)		Fig.
	Width (W)	Height (H)	4wire 100%N	5wire 100%N, 50%PE	
250	125	103	6.8	7.2	01
400	125	113	7.5	7.9	
630	125	128	8.8	9.3	
800	125	143	9.8	10.4	
1000	125	168	11.8	12.7	
1250	125	203	14.6	15.7	
1350	125	203	14.6	15.7	
1600	125	253	18.3	19.8	
2000	125	322	22.6	24.3	
2500	125	392	28.7	31	
3200	125	492	36.2	39.4	02
4000	125	572	44.7	48.9	

STRAIGHT LENGTH COMPONENTS

PLUG-IN STRAIGHT LENGTH

The plug-in busbar has a flexible design with optional plug outlets on both sides. A maximum of 5 outlets can be fixed on each side of 3m standard length. The customer may reserve plug outlets for extension in the future when changes occur in terms of the equipment load or busbar run. Both base plate and socket cover are set for each plug outlet. Base plate helps to prevent fingers from contacting live conductors (IP2X) by accident, on which the phase sequences of conductors are identified. Socket cover prevents the conductive contacting surface from being contaminated. A pad may be used to keep off dust or moisture.

Standard length is 3000mm or 4000mm. The minimum length is 720mm. The minimum length of L1 (distance from the center of plug outlet to standard end) is 360mm. The minimum length of L2 (distance between the centers of two adjacent plug outlets) is 570mm.



L1=0.36
L2=0.93
L3=1.50
L4=2.07
L5=2.64

Standard length:

LVC: L=1~2~3m LVA: L=1~2~3m

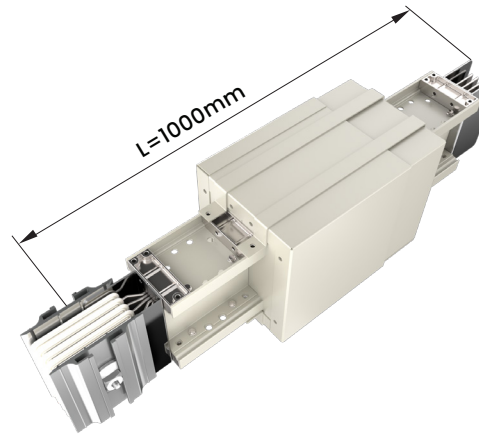
Optional length:

LVC: L=0.72~4m LVA: L=0.72~4m

STRAIGHT LENGTH COMPONENTS

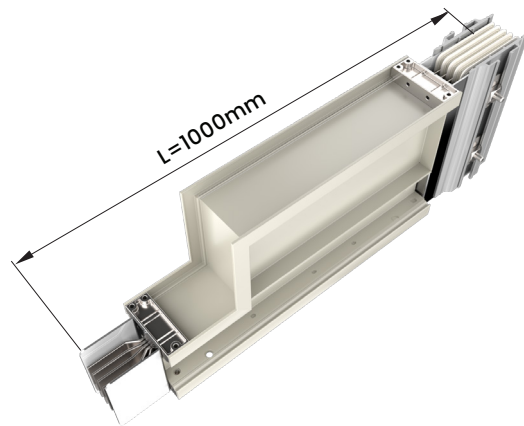
EXPANSION JOINT

Expansion length is the transition section compensating for thermal expansion, one is normally set for each 60m in linear distance.



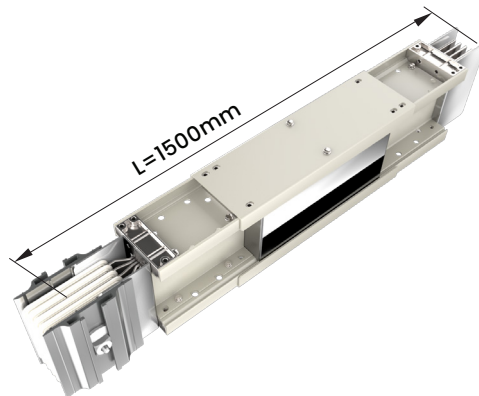
REDUCER

This reducer section is used for reducing busbar size to the final load, it provides users with more economic power transmission and distribution method.



TRANSPOSITION JOINT

Transposition section is the transition parts used for changing phase sequence of the busbar; its minimum size is 1500mm. The phase sequence of both sides can be customized by the customer.



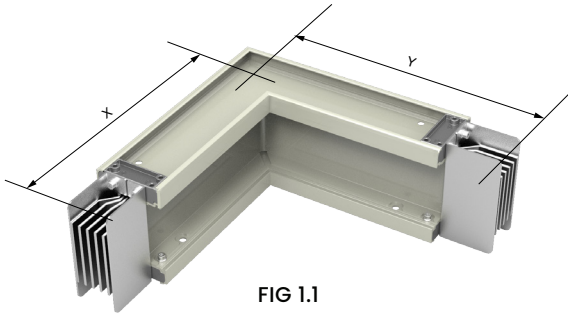
END COVER

The end cover protects and insulates the conductor ends and is fitted to the last section.



ELBOWS

L FLATWISE ELBOW

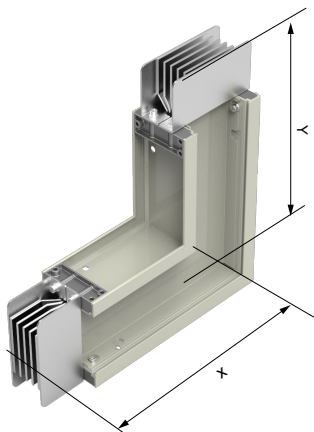


L FLATWISE ELBOW - FIG 1.1

Current Rating (A)	Copper Busbar Size (mm)		Aluminium Busbar Size (mm)	
	X	Y	X	Y
250	-	-	348.5	348.5
400	348.5	348.5	343.5	343.5
630	348.5	348.5	336	336
800	343.5	343.5	328.5	328.5
1000	336	336	316	316
1250	323.5	323.5	398.5	398.5
1350	-	-	398.5	398.5
1600	408.5	408.5	373.5	373.5
2000	388.5	388.5	539	539
2500	363.5	363.5	504	504
3200	524	524	554	554
4000	484	484	514	514
5000	534	534	-	-

Max Length: X≤1000mm, Y≤1000mm

L EDGEWISE ELBOW



L EDGEWISE ELBOW - FIG 1.2

Current Rating (A)	Copper Busbar Size (mm)		Aluminium Busbar Size (mm)	
	X	Y	X	Y
250	-	-	337.5	337.5
400	337.5	337.5	337.5	337.5
630	337.5	337.5	337.5	337.5
800	337.5	337.5	337.5	337.5
1000	337.5	337.5	337.5	337.5
1250	337.5	337.5	337.5	337.5
1350	-	-	337.5	337.5
1600	337.5	337.5	337.5	337.5
2000	337.5	337.5	337.5	337.5
2500	337.5	337.5	337.5	337.5
3200	337.5	337.5	337.5	337.5
4000	337.5	337.5	337.5	337.5
5000	337.5	337.5	-	-

Max Length: X≤1000mm, Y≤1000mm

FLATWISE Z

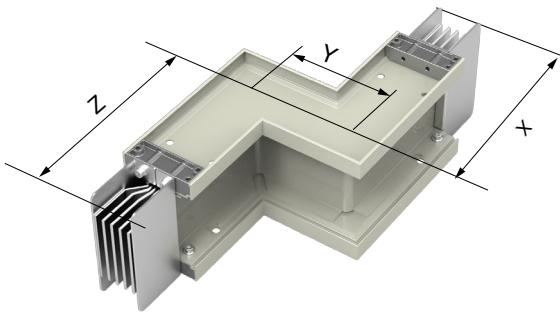


FIG 1.3

FLATWISE Z – FIG 1.3

Current Rating (A)	Copper Busbar Size (mm)			Aluminium Busbar Size (mm)		
	X	Y	Z	X	Y	Z
250	-	-	-	337.5	75~545	337.5
400	337.5	75~545	337.5	337.5	75~545	337.5
630	337.5	75~545	337.5	337.5	75~545	337.5
800	337.5	75~545	337.5	337.5	75~545	337.5
1000	337.5	75~545	337.5	337.5	75~545	337.5
1250	337.5	75~545	337.5	337.5	75~545	337.5
1350	-	-	-	337.5	75~545	337.5
1600	337.5	75~545	337.5	337.5	75~545	337.5
2000	337.5	75~545	337.5	337.5	75~545	337.5
2500	337.5	75~545	337.5	337.5	75~545	337.5
3200	337.5	75~545	337.5	337.5	75~545	337.5
4000	337.5	75~545	337.5	337.5	75~545	337.5
5000	337.5	75~545	337.5	-	-	-

Max length: X,Y,Z ≤2 times minimum size value

EDGEWISE Z

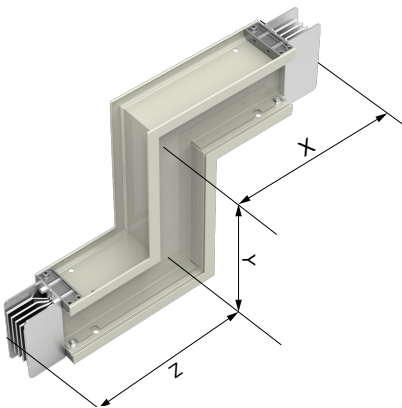


FIG 1.4

EDGEWISE Z – FIG 1.4

Current Rating (A)	Copper Busbar Size (mm)			Aluminium Busbar Size (mm)		
	X	Y	Z	X	Y	Z
250	-	-	-	348.5	87~527	348.5
400	348.5	87~527	348.5	343.5	77~537	343.5
630	348.5	87~527	348.5	336	82~562	336
800	343.5	77~537	343.5	328.5	77~567	328.5
1000	336	82~562	336	316	82~602	316
1250	323.5	77~577	323.5	398.5	77~627	398.5
1350	-	-	-	398.5	77~627	398.5
1600	408.5	77~607	408.5	373.5	77~677	373.5
2000	388.5	77~607	388.5	539	78~748	539
2500	363.5	77~697	363.5	504	78~818	504
3200	524	78~778	524	554	78~918	554
4000	484	78~858	484	514	78~998	514
5000	534	78~958	534	-	-	-

Max length: X,Y,Z ≤2 times minimum size value

FLATWISE TEE

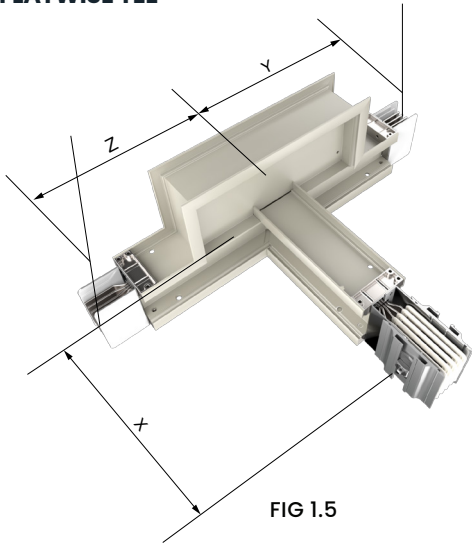


FIG 1.5

FLATWISE TEE - FIG 1.5

Current Rating (A)	Copper Busbar Size (mm)			Aluminium Busbar Size (mm)		
	X	Y	Z	X	Y	Z
250	-	-	-	337.5	500	500
400	337.5	500	500	337.5	500	500
630	337.5	500	500	337.5	500	500
800	337.5	500	500	337.5	500	500
1000	337.5	500	500	337.5	500	500
1250	337.5	500	500	337.5	600	600
1350	-	-	-	337.5	600	600
1600	337.5	cs500	500	337.5	600	600
2000	337.5	600	600	337.5	500	500
2500	337.5	600	600	337.5	600	600
3200	337.5	500	500	337.5	600	600
4000	337.5	600	600	337.5	600	600
5000	337.5	600	600	-	-	-

Max length: X,Y,Z ≤2 times minimum size value

EDGEWISE TEE

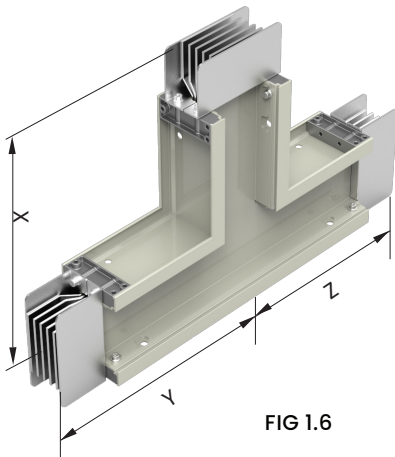


FIG 1.6

EDGEWISE TEE - FIG 1.6

Current Rating (A)	Copper Busbar Size (mm)			Aluminium Busbar Size (mm)		
	X	Y	Z	X	Y	Z
250	-	-	-	394.85	400	400
400	348.5	400	400	394.35	400	400
630	348.5	400	400	393.6	400	400
800	343.5	400	400	328.5	400	400
1000	336	400	400	316	400	400
1250	323.5	400	400	398.5	500	500
1350	-	-	-	398.5	500	500
1600	408.5	500	500	373.5	500	500
2000	388.5	500	500	539	700	700
2500	363.5	500	500	504	700	700
3200	524	700	700	554	800	800
4000	484	700	700	514	800	800
5000	534	800	800	-	-	-

Max length: X,Y,Z ≤2 times minimum size value

COMBINATION ELBOW

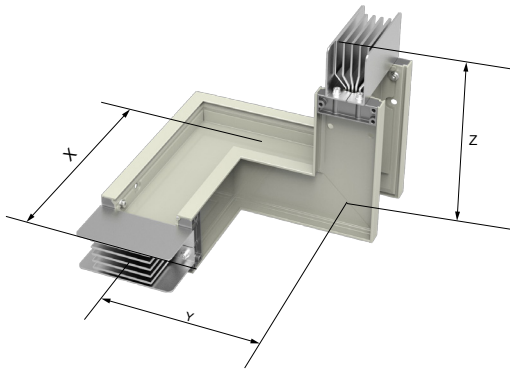


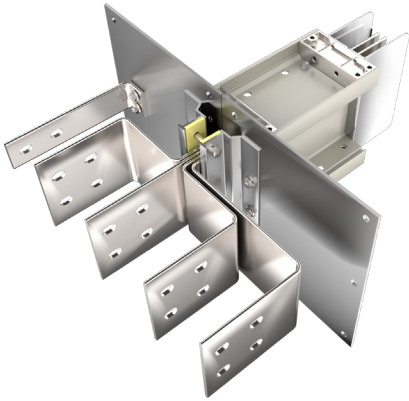
FIG 1.7

COMBINATION ELBOW - FIG 1.7

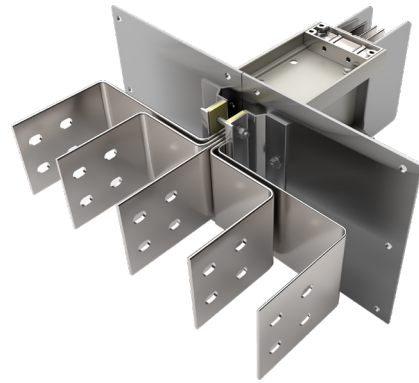
Current Rating (A)	Copper Busbar Size (mm)			Copper Busbar Size (mm)		
	X	Y	Z	X	Y	Z
250	-	-	-	337.5	86~526	348.5
400	337.5	86~526	348.5	337.5	81~531	343.5
630	337.5	86~526	348.5	337.5	73.5~533.5	336
800	337.5	81~531	343.5	337.5	86~546	328.5
1000	337.5	73.5~533.5	336	337.5	83.5~553.5	316
1250	337.5	81~414.5	323.5	337.5	86~576	398.5
1350	-	-	-	337.5	86~576	398.5
1600	337.5	86~566	408.5	337.5	81~601	373.5
2000	337.5	86~586	388.5	337.5	76.5~636.5	539
2500	337.5	81~611	363.5	337.5	81.5~671.5	504
3200	337.5	81.5~651.5	524	337.5	91.5~721.5	554
4000	337.5	81.5~691.5	484	337.5	81.5~761.5	514
5000	337.5	71.5~671.5	534	-	-	-

FLANGED END

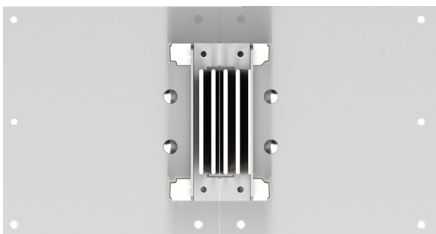
STANDARD LENGTH: L=0.56m
NONSTANDARD LENGTH: L=0.56~2.00m



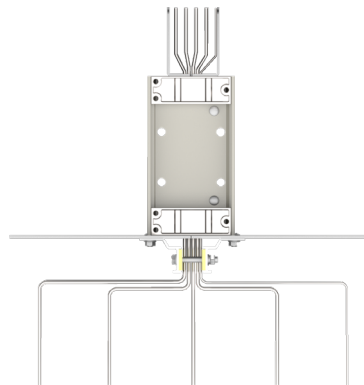
3P+100%N+50% INTEGRAL HOUSING AS PE



3P+100%N+50% INTERNAL BAR AS PE



TOP VIEW



SECTION VIEW



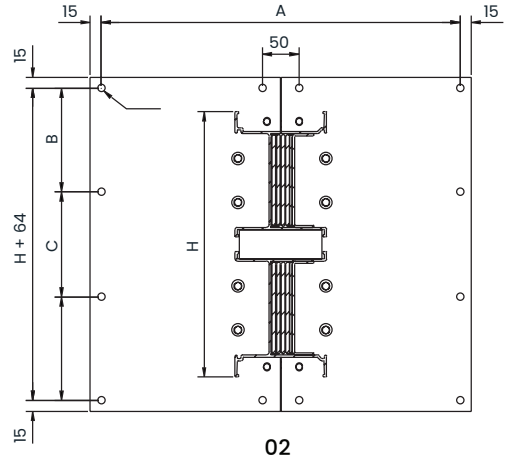
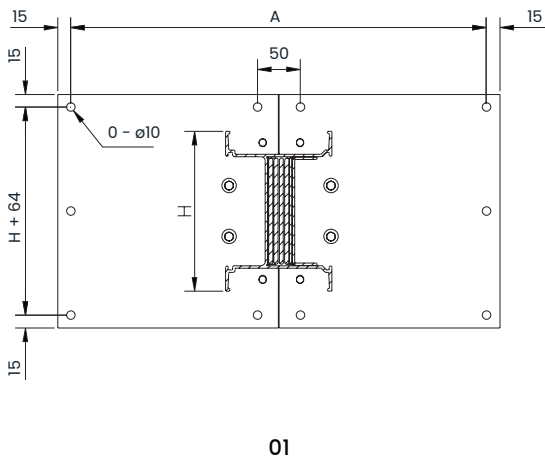
SECTION VIEW

Flanged end and end tap box can be used in connection with any type of switchgear cabinets and transformers. Flanged end busbar spacing can be customized on specific application.

Note:

All the dimensions provided are for standard products.
Please contact our engineers for customized dimensions.

FLANGED END CUT OUT AND DRILLING PATTERN



COPPER CONDUCTOR

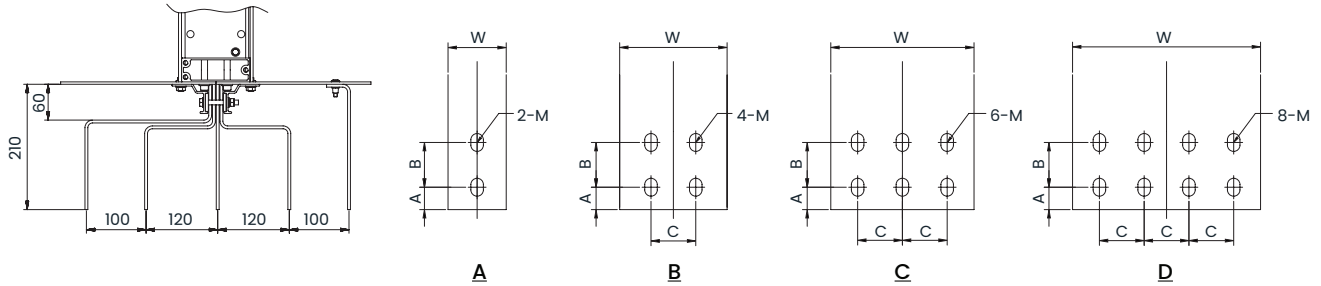
Current Rating (A)	3L+N+PE Size (mm)				3L+N Size (mm)			Fig
	H	A	B	C	A	B	C	
400	103	490	-	-	370	-	-	01
630	103	490	-	-	370	-	-	
800	118	490	-	-	370	-	-	
1000	128	490	-	-	370	-	-	
1250	153	490	-	-	370	-	-	
1350			-	-		-	-	
1600	188	490	-	-	370	-	-	
2000	223	490	-	-	370	-	-	
2500	273	490	-	-	370	-	-	
3200	352	490	140	136	370	140	136	
4000	432	490	165	166	370	165	166	
5000	532	490	200	196	370	200	196	

ALUMINIUM CONDUCTOR

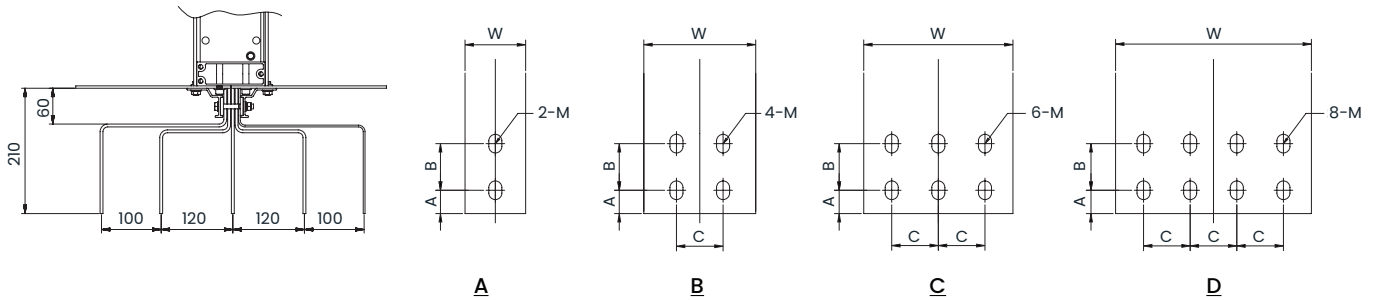
Current Rating (A)	3L+N+PE Size (mm)				3L+N Size (mm)			Fig
	H	A	B	C	A	B	C	
250	103	490	-	-	370	-	-	01
400	113	490	-	-	370	-	-	
630	128	490	-	-	370	-	-	
800	143	490	-	-	370	-	-	
1000	168	490	-	-	370	-	-	
1250	203	490	-	-	370	-	-	
1350	203	490	-	-	370	-	-	
1600	253	490	-	-	370	-	-	
2000	322	490	130	126	370	130	126	
2500	392	490	150	156	370	150	156	
3200	492	490	185	186	370	185	186	02
4000	572	490	210	216	370	210	216	

FLANGED END BAR HOLE PATTERN

Integral Housing Flanged End



Internal Flanged End



COPPER CONDUCTOR

Current Rating (A)	A	B	C	M	W	Type
400	25	50	-	φ12	30	A
630	25	50	-	φ14×20	40	A
800	25	50	-	φ14×20	50	A
1000	25	50	-	φ14×20	65	A
1250	25	50	50	φ14×20	89	B
1350	-	-	-	-	-	-
1600	25	50	50	φ14×20	125	B
2000	25	50	50	φ14×20	159	B
2500	25	50	50	φ14×20	209	C
3200	25	50	50	φ14×20	119	B
4000	25	50	50	φ14×20	159	C
5000	25	50	50	φ14×20	209	D

ALUMINIUM CONDUCTOR

Current Rating (A)	A	B	C	M	W	Type
250	25	50	-	φ14×20	40	A
400	25	50	-	φ14×20	50	A
630	25	50	-	φ14×20	65	A
800	25	50	-	φ14×20	79	A
1000	25	50	50	φ14×20	104	B
1250	25	50	50	φ14×20	139	B
1350	25	50	50	φ14×20	139	B
1600	25	50	50	φ14×20	189	C
2000	25	50	50	φ14×20	104	B
2500	25	50	50	φ14×20	139	B
3200	25	50	50	φ14×20	189	C
4000	25	50	50	φ14×20	229	D

TAP-OFF UNIT (PLUG-IN UNIT)

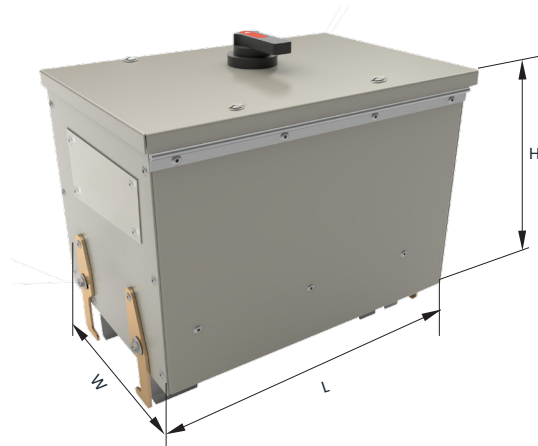
LV tap-off unit is adopted to apply electrical power directly to the load from the Busbar Trunking System. Fully considering customer's requirements, LV tap-off unit offers the options of circuit breaker or fuse.

Tap-off Unit with Circuit Breaker

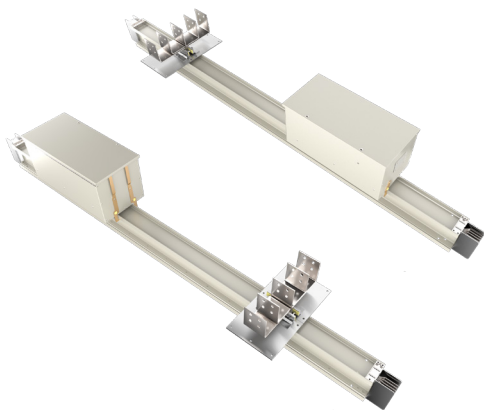
- Circuit breaker protection can be available with a current range from 16A-1000A.
- Load protection in the plug can be 3-Pole or 4-Pole circuit breakers, including accessories of breakers such as rotary handles, shunt release, thermal magnetic release and leakage-current protection module.

Plug with Fuse

- Tap-off unit with fuses can be produced according to customer specifications.
- Unique fail-safe base pins the plug is equipped with a positioning device that prevents incorrect phase installations.
- Plug Pins: All pins are silver-plated to improve the electrical conductivity.



Protection Class up to IP54 with IEC 60529



Tap-off Unit Dimensions (L×W×H)mm

For non-standard dimension, please contact the manufacturer.

Current Rating (A)	Plug-in Box Dimensions		
	L (mm) Length	W (mm) Width	H (mm) Height
32-100	360	250	250
125-160	400	250	250
200-250	500	270	275
320-400	650	310	310
500-630	950	440	360
800	1050	420	360
1000	1200	420	360

The data above is based on the size of common circuit breaker 3P/4P.

END TAP BOX (CABLE TAP BOX)



Tai Sin LT Series Busbar Trunking System tap boxes are used where a run of the busbar is fed by a cable. We supply customised tap box sizes according to the on-site measurement.



Flanged End with End Tap Box Connection

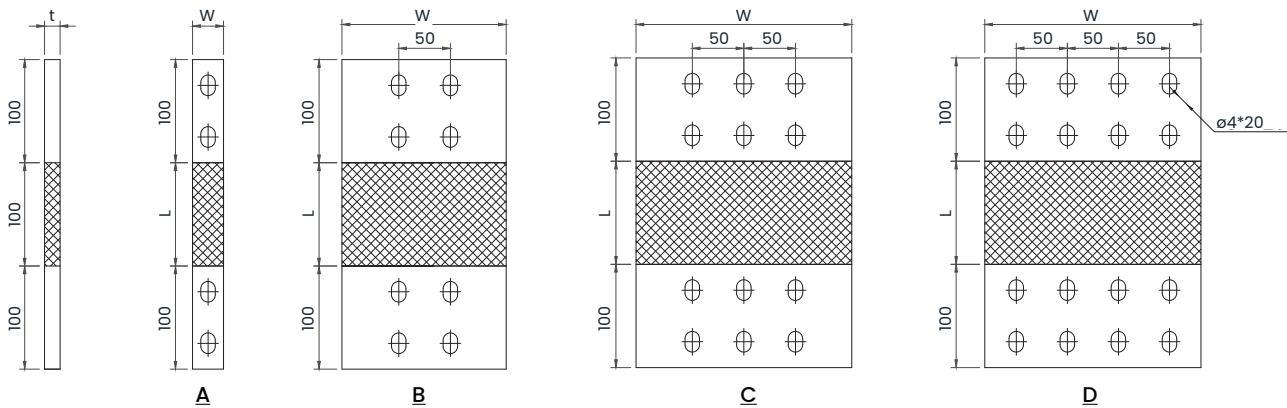
The flange plate can be manufactured according to the size of the end tap box, it can be connected directly with end tap box.

FLEXIBLE LINK

L - 100mm to 500mm.

Note:

All the dimensions provided are for standard products. Please contact our engineers for customized dimensions.



Current Rating (A)	Copper Busbar				Aluminium Busbar			
	Bar Dimensions W (mm)	Thickness t (mm)	No. of Flexible Link per Phase (N, L1, L2 & L3)	Type	Bar Dimensions W (mm)	Thickness t (mm)	No. of Flexible Link per Phase (N, L1, L2 & L3)	Type
250	-	-	-	-	40	5	1	A
400	30	9	1	A	50	7	1	A
630	40	10	1	A	65	7	1	A
800	50	12	1	A	79	9	1	A
1000	65	11	1	A	104	9	1	B
1250	89	11	1	B	139	8	1	B
1350	-	-	-	-	139	8	1	B
1600	125	12	1	B	189	9	1	C
2000	159	12	1	B	104	10	2	B
2500	209	13	1	C	139	9	2	B
3200	119	14	2	B	189	11	2	C
4000	159	13	2	C	229	11	2	D
5000	209	14	2	D	-	-	-	-

*Designs are for reference only, customisation is available to suit onsite requirements

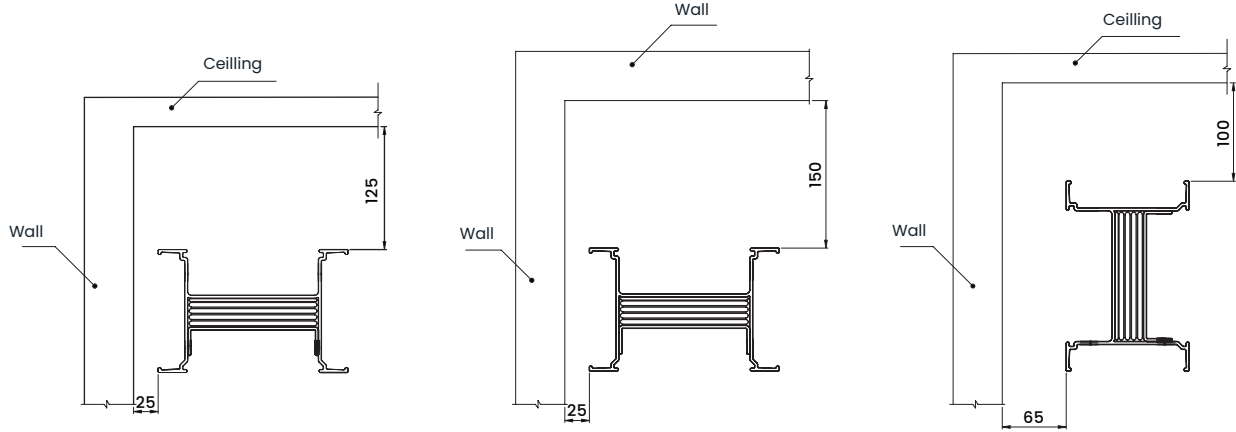


Busbar Trunking System Accessories / Flexible Link

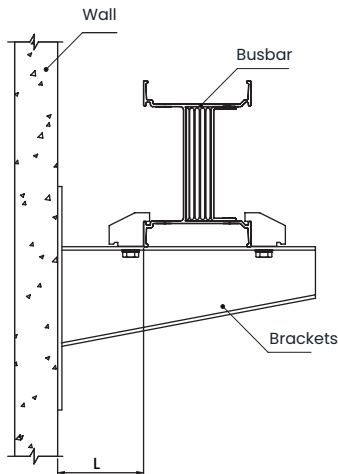
<https://www.taisn.com.sg/our-products/busbar-trunking-system/accessories/>

Installation

MINIMUM CLEARANCE REQUIRED FOR INSTALLATION

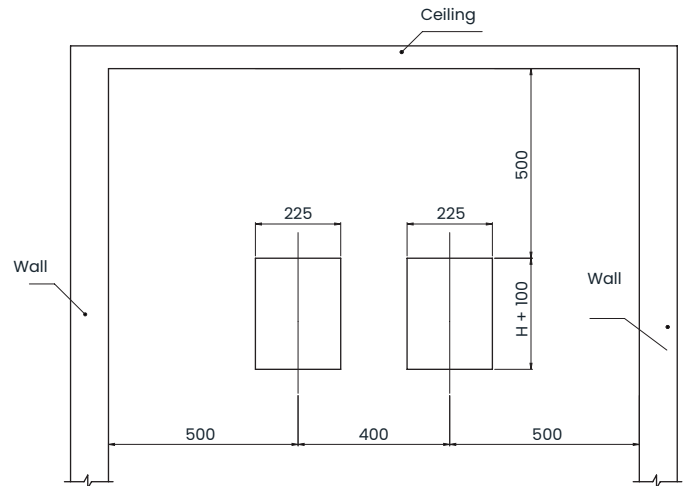


MINIMUM CLEARANCE REQUIRED FOR PLUG-IN BOX INSTALLATION



Current Rating for Tap-off unit (A)	L (mm)
32-100	150
125-160	175
200-250	195
320-400	210
500-630	230
800	260
1000	300

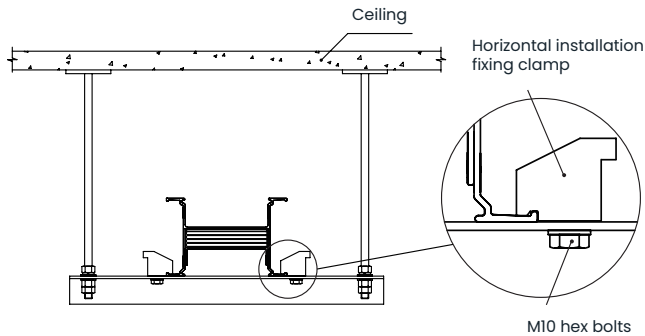
HORIZONTAL WALL-THROUGH INSTALLATION



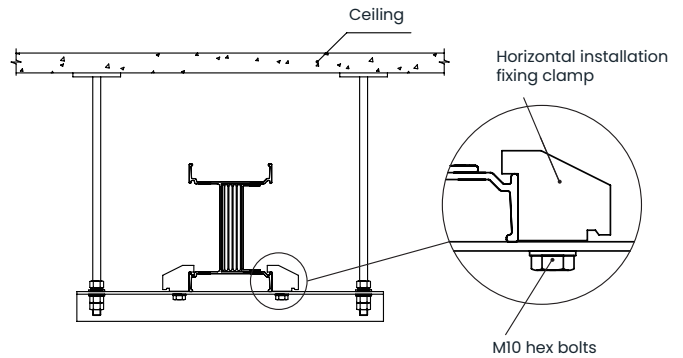
VERTICAL INSTALLATION

HORIZONTAL INSTALLATION-TRAPEZE HANGERS OVERHEAD SUPPORT

Holes should be first drilled in the floor so as to inlay steel expansion bolts (holes may also be drilled on site for flexible installation) or pre-bury steel U-channel for welding with hangers. The distance between two adjacent hangers shall not exceed 2m. Please specify any special requirements when placing your order.

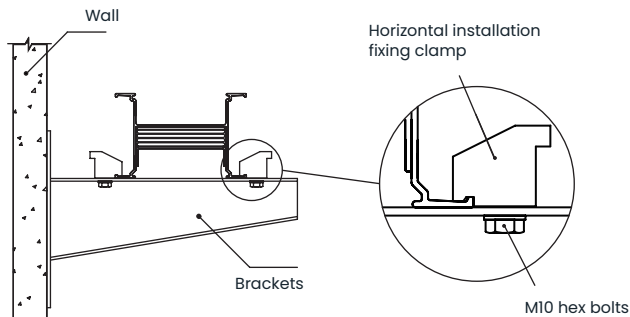


FLATWISE INSTALLATION

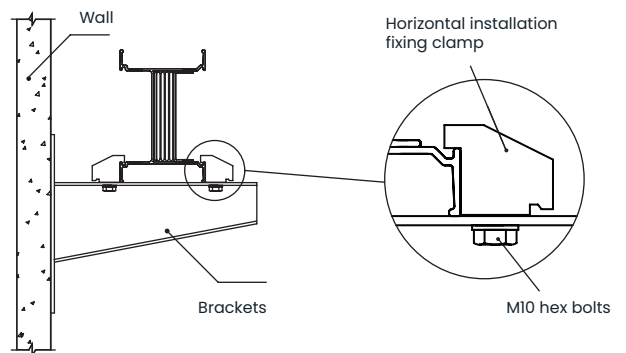


EDGEWISE INSTALLATION

HORIZONTAL INSTALLATION-WALL SUPPORT



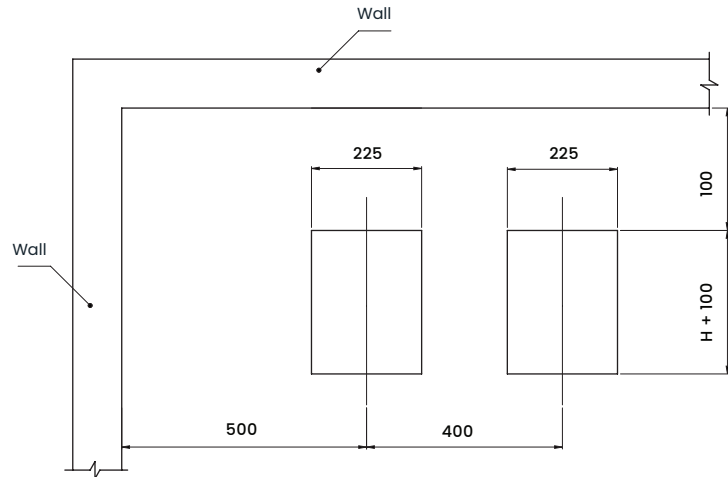
FLATWISE INSTALLATION



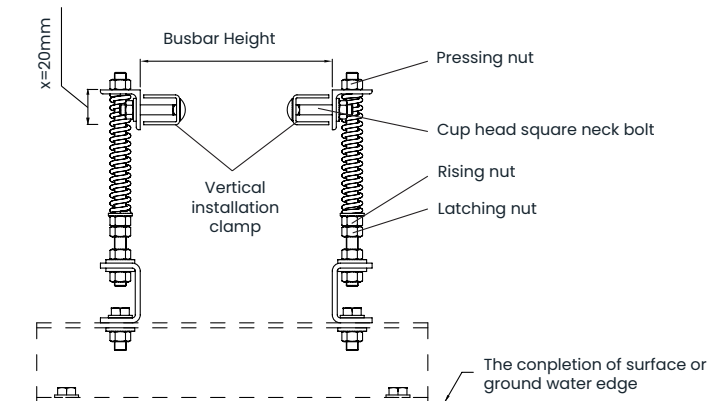
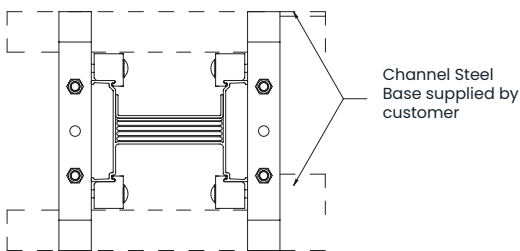
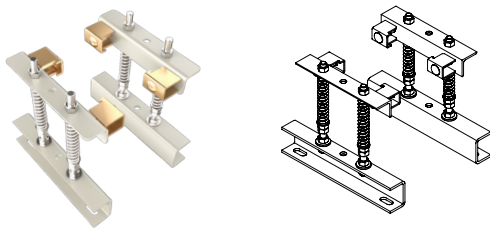
EDGEWISE INSTALLATION

VERTICAL INSTALLATION

When installing a vertical bus run, please refer to the figure for the dimension of the access holes. Please ensure that the spacing between every two runs of busbar exceeds 350mm, especially if there are two or more vertical runs of busbar installed in the same riser. Please refer to the figure below:

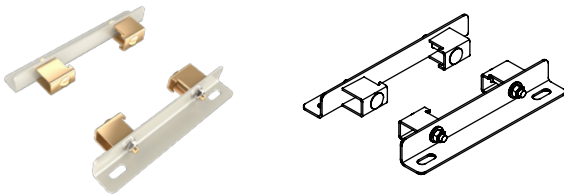


INSTALLATION FOR VERTICAL SPRING HANGER

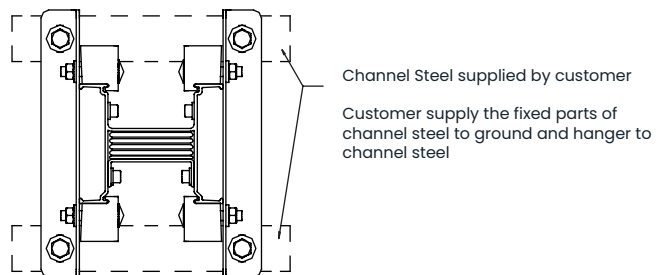
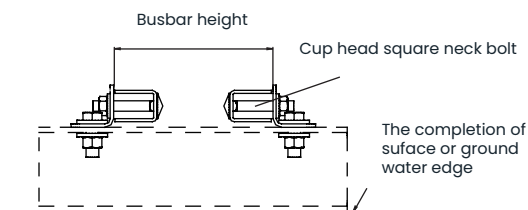


INSTALLATION SCHEMATIC DIAGRAM

INSTALLATION FOR VERTICAL FIXED HANGER



VERTICAL FIXED HANGER



INSTALLATION SCHEMATIC DIAGRAM

Reference for Busbar Trunking System Specifications

1. General

- 1.1 The Busbar Trunking System (250A and above), both feeder and plug-in, shall be sandwich construction. All busbar trunking products and fittings (straight length, elbow, tees, flanged ends, cable tap box and circuit breaker, etc.) shall be in accordance with IEC 61439:2012 and from the same manufacturer as the Busbar Trunking System. The degree of protection of the Busbar Trunking System should be minimum IP54 in accordance to IEC 60529 for indoor application & minimum IP68 for outdoor application.
- 1.2 For outdoor application, in addition it shall be tested & comply to IEC 61439-6 Clause 10.2.4 – Resistance to ultra-violet (UV) radiation.
- 1.3 Rated operation voltage of the busbar trunking is 690V, 3 – Phase, full neutral with 50% capacity continual internal earth busbar. The neutral conductor should have the same cross-sectional area as the phase conductor. The earth busbar must be one continuous piece without bolting on housing.

2. Certificate and Quality Assurance

- 2.1 The manufacturer shall be ISO 9001, ISO 14001 and OHSAS 18001 certified by an international certification organization.
- 2.2 The busbar of full range should pass full type tests specified in IEC 61439:2012 or UL857, and achieve KEMA KEUR or ASTA Diamond or UL CLASSIFIED certificate. The production line of plant shall be periodically inspected by the above mentioned testing authorities in order to guarantee final product quality and certification shall be traceable for validity.
- 2.3 A product safety mark (e.g. KEMA-KEUR, ASTA DIAMOND, UL CLASSIFIED) should be on the product offering a visible assurance to all of full product safety testing, factory inspection, and ongoing surveillance under an independent authority to ensure the ongoing safety of product.
- 2.4 The Busbar Trunking System should be fully recyclable.
- 2.5 Apart from the standard Factory Routine Test, additional Factory Acceptance Test shall be perform in Singapore prior to delivery to site so to ensure integrity of the busbar & accessories are not affected during shipment.

3. Short Circuit Ratings and Dielectric Test

- 3.1 The whole Busbar Trunking System shall be capable of withstanding the short circuit of the electrical installation without damaging the electrical, mechanical, and thermal stress under fault condition at a service voltage of 690V 50Hz. The minimum rated insulation voltage shall be 1000V.
- 3.2 Each piece of busbar shall be tested dielectric performance in the factory & Singapore test facility under 3.5KV AC for 1 second as per IEC or 7.5KV DC for 10 second before dispatch.

4. Housing

- 4.1 The busbar trunking housing should be constructed of serrated surface design of extruded aluminium housing of >2mm thickness to improve heat dissipation & reduce hysteresis & eddy current loss and the radiated magnetic field around busbar. The electromagnetic radiation should be less than 500 μ T for long time exposure and 100 μ T for short time exposure respectively.
- 4.2 The busbar trunking housing shall be totally enclosed non-ventilated for protection against mechanical damage and dust accumulation. The mechanical withstand external impact ability should reach IK10.
- 4.3 The busbar trunking housing should be provided with a suitable protective finish & pass at least 500 hours salt spray test to ensure the anticorrosion ability.
- 4.4 The housing shall be of not more than two-piece housing construction.

5. Busbars and Insulation

- 5.1 Conductors shall be 99.9% high purity copper with silver/ tinned plated for all contact surface. The conductivity shall be not less than 98% IACS.
- 5.2 There shall be no bolts passing through the busbars of the Busbar Trunking System.
- 5.3 Busbar shall be insulated with Class B Insulation rated at 130deg C(Class B). Insulation shall be of hygroscopicity of <1% with test report & in addition it shall be self-extinguishing in accordance to IEC 61439-6.

6. Joint

- 6.1 The busbar trunking joint shall be of the one-bolt type which utilizes a high strength steel bolt(s) and Belleville washers to maintain proper pressure over a large contact surface area.
- 6.2 The bolt shall be a two-headed design to indicate when proper torque has been applied and require only a standard long handle wrench to be properly activated.
- 6.3 It shall be possible to remove any joint connection assembly to allow electrical isolation or physical removal of a busbar trunking length without disturbing adjacent busbar trunking lengths.
- 6.4 It shall have double contact surface for phase and neutral conductors inside joint pack to enlarge the contact area by 50%, ensure lower resistance, low temperature rise, and higher safety application.
- 6.5 Each busbar joint shall allow for a length adjustment of +/- 6mm.
- 6.6 Each joint shall come with colour-coded temperature indicator to give an early warning when high temperature occurs at the joint. In addition, the adhesiveness of the indicator shall be tested to ASTM D 1000.

7. Voltage Drop and Temperature Rise

- 7.1 The voltage drop (input voltage minus output voltage) specified shall be based on the busbar operating at full rated current and at stabilized operating temperature.
- 7.2 The three-phase line-to-line voltage drop shall not exceed 4% at full connected load.
- 7.3 The temperature rise at any point of the busbar trunking enclosure shall not exceed 55deg C rise above ambient temperature (35deg C) when operation at rated current.
- 7.4 The Busbar Trunking System shall be designed for horizontal edge, horizontal flat, and vertical mounting without de-rating of the current carrying capacity.

8. Fire Resistance

- 8.1 The busbar shall be fire resistant as per IEC 61439-6 in the event of fire.
 - 8.1.1 The busbar should resist the smoke to spread and prevent further penetration of fire as per IEC61439-6 clause 10.102.
 - 8.1.2 The Busbar Trunking System shall be resistant to flame propagation as per IEC61439-6 clause 10.101.
 - 8.1.3 All plastic materials of busbar shall not burn or cause burning when affected by abnormal heat or by fire, it should be self-extinguish materials as per IEC61439-6 clause 10.2.3.2.
- 8.2 The Busbar Trunking System shall be zero halogen, not generate any toxic emission, and ensure very low smoke in the event of fire.
- 8.3 For essential /emergency life safety circuits, which supply power to firefighting equipment, the circuit integrity shall be maintained in the event of fire. The fire rated Busbar Trunking System shall be verified & tested to BS6387:2013 in Singapore.

9. Plug-in Opening

- 9.1 The connecting jaw of the plug-in unit shall plug directly onto the full thickness of the busbar and have full contact with busbar itself.
- 9.2 All contact on joint and plug-in opening should be silver/tinned plated copper.
- 9.3 It shall be possible to inspect the plug-in opening and busbars prior to the installation of the plug-in units.
- 9.4 Plug-in Opening shall be of hot plug design (up to 600A rated) that allows plug-in Units to be installed & removed during "LIVE" condition & shut down is not required to ensure continuity of supply is not disrupted.

10. Plug-in Units

- 10.1 Complete plug-in units with MCCB should be tested separately as per IEC61439-6 and achieve the certificate issued by an international independent testing authority (e.g. ASTA, KEMA or UL). The brand and type of MCCB shall be indicated on the certificate and be supplied by the same manufacturer of busbar.
- 10.2 The earthing contact of the plug-in unit shall always be made before that of the live conductors and the last to break during removal, and must connect to the earth bar of busbar to ensure safety. The earth connecting bar of plug-in units shall be silver/tinned-plated.
- 10.3 All plug-in units should be compatible for full range of busbar trunking system and the same plug-in opening. All plug-in units shall be interchangeable without alteration or modification of plug-in duct.
- 10.4 Covers of all plug-in units must have interlocks to prevent the cover from being opened when the switch is in the ON position.
- 10.5 The plug-in units shall be equipped with internal barriers to prevent accidental contact of fish tape and conductors with live parts on the line side of the protective device during time of wire pulling.
- 10.6 The measurement and communication of plug-in unit should be provided as standard functions.

11. Site Acceptance Test

- 11.1 The contractor shall be trained & certified by manufacturer to provide the listed site test against the submitted check list or factory test report.
The site acceptance test shall include the following;
Visual & Test inspection
 - I) Trunking alignment
 - II) Support spaced as recommended by manufacturer
 - III) Tap-off unit & component check
 - IV) Joint alignment & tightening torque
 - V) Phase check
 - VI) Continuity test
 - VII) Insulation resistance test

FAQs

1/ What is the typical warranty coverage of a Busbar Trunking System?

Typical warranty coverage is 12 months, coverage on manufacturer defects

2/ What is the typical Life Span of a Busbar Trunking System?

20 years

3/ What is the maintenance frequency of a 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 Systems be installed underground?

No, due to maintenance requirements

6/ What is typical leadtime of Busbar Trunking System?

10-12 weeks upon approval & confirmation of shop drawings, and 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, leadtime is 5 to 14 working days (Excluding freight logistics lead time)

8/ Is Tai Sin Busbar able to integrate with other Busbar Trunking Systems?

No, Tai Sin Busbar Trunking Systems are a proprietary design system, hence integration will have to be of the same make & model in order to be compatible

9/ Is the certification validity & range traceable?

Cerification is only traceable for full type test under Kema with Kema Keur, Asta with Asta Diamond or UL with UL Classified

10/ 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)





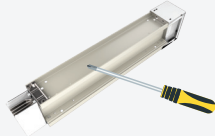



Updated Busbar FAQs

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

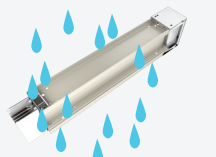

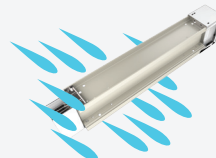
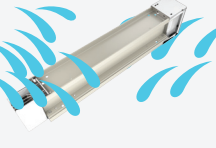


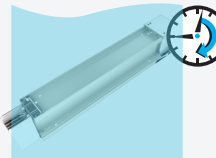

Technical Guide

INGRESS PROTECTION (IP) RATING GUIDE

PROTECTION AGAINST SOLIDS

 <p>1</p>	<p>Protection against a solid object greater than 50mm such as a hand.</p>
 <p>2</p>	<p>Protection against a solid object greater than 12.5mm such as a finger.</p>
 <p>3</p>	<p>Protection against a solid object greater than 2.5mm such as a screwdriver.</p>
 <p>4</p>	<p>Protection against a solid object greater than 1 mm such as a wire.</p>
 <p>5</p>	<p>Dust Protected. Limited ingress of dust permitted. Will not interfere with operation of the equipment. Two to eight hours.</p>
 <p>6</p>	<p>Dust tight. No ingress of dust. Two to eight hours.</p>

PROTECTION AGAINST LIQUIDS

 <p>1</p>	<p>Protection against vertically falling drops of water. Limited ingress permitted.</p>
 <p>2</p>	<p>Protection against vertically falling drops of water with enclosure tilted up to 15 degrees from the vertical. Limited ingress permitted.</p>
 <p>3</p>	<p>Protection against sprays of water up to 60 degrees from the vertical. Limited ingress permitted for three minutes.</p>
 <p>4</p>	<p>Protection against splashed from all directions. Limited ingress permitted.</p>
 <p>5</p>	<p>Protection against jets of water. Limited ingress permitted.</p>
 <p>6</p>	<p>Water from heavy seas or water projected in powerful jets shall not enter the enclosure in harmful quantities.</p>
 <p>7</p>	<p>Protection against the effects of immersion in water between 15cm and 1m for 30 minutes.</p>
 <p>8</p>	<p>Protection against the effects of immersion in water under pressure for long periods.</p>

Rating Example:



CATALOGUE SERIAL NUMBER: TSPD_LTLINEI_V01-052023

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.

(Updated as at May 2023)



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