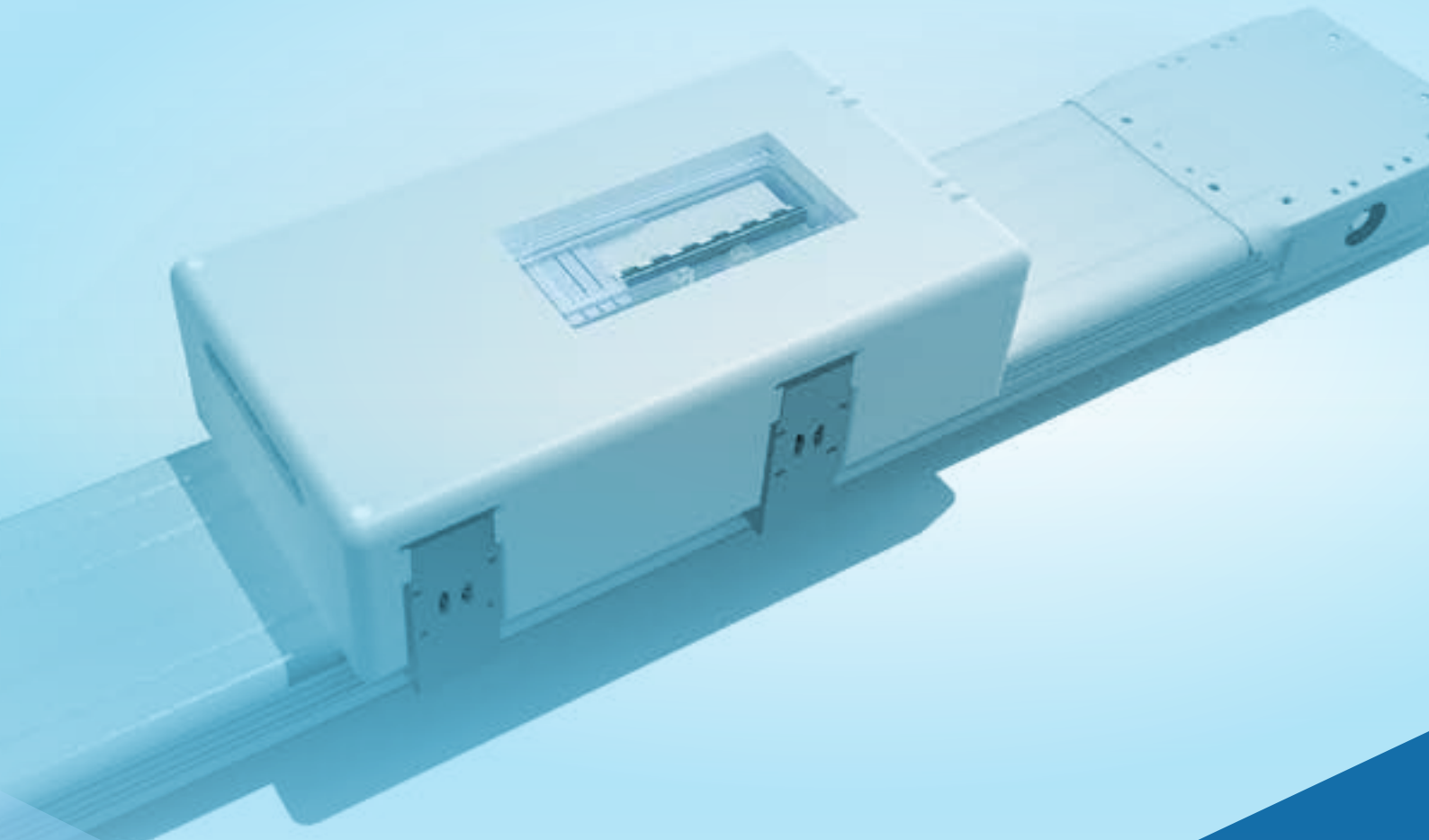
E+I ENGINEERING GROUP

MEDIUM POWERBAR

MPB



PowerBar

MEDIUM POWERBAR

MPB

E+I Engineering's Medium Powerbar is a totally encased, non-ventilated, air insulated busbar designed to deliver the power to medium size loads. The range is available with copper or aluminium conductors with ratings from 160A – 1250A.

Features:

- MPB can be used either as a feeder or distribution application, or as a combination of both.
- MPB is a dual sided system with tap off box slots on both sides of the busbar system. This allows for greater flexibility in installations. Up to 10 tap off points can be fitted per a standard 3m length.
- The modular structure and integration of end feeds allows for further expansion of the system if necessary.
- Powerbar's automated assembly lines ensure complete quality control and reduce production time.
- MPB is a 3 phase 5 wire system

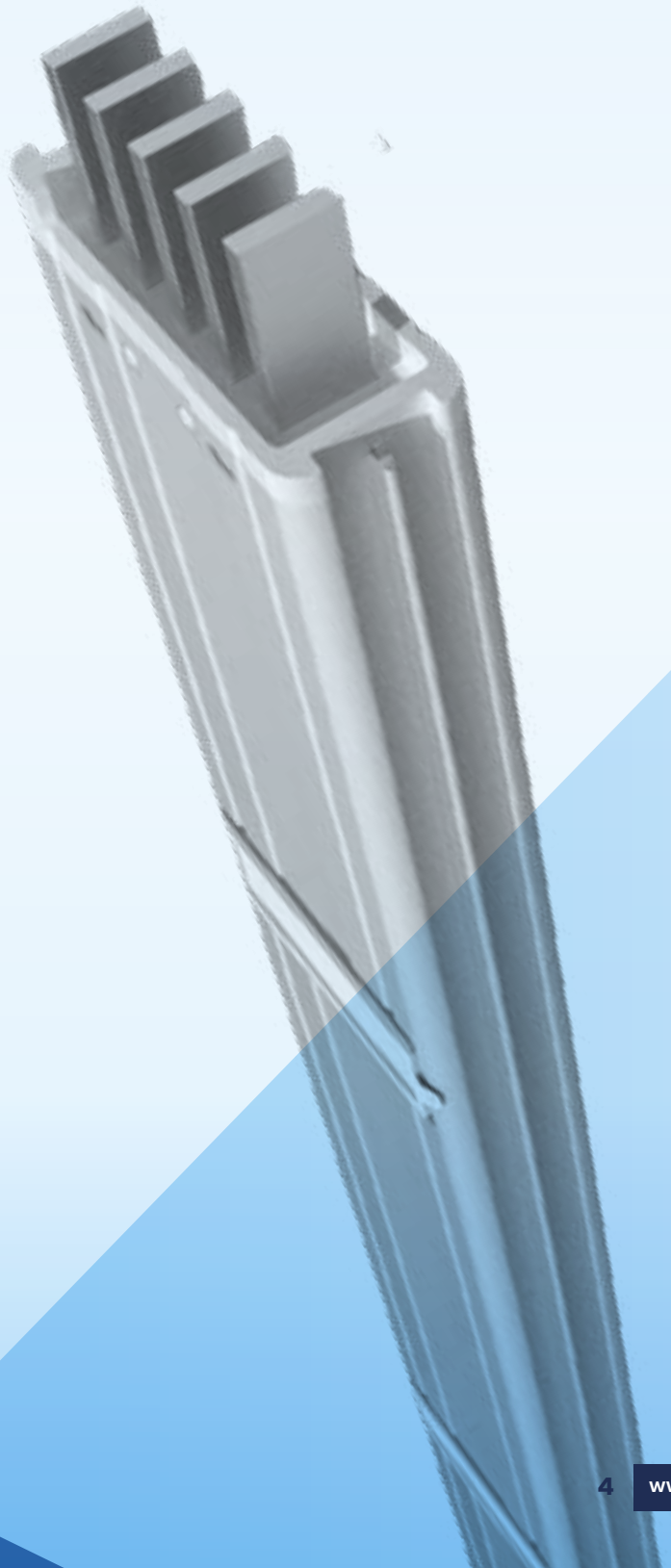
STANDARDS

The MPB range is fully tested in accordance with IEC 61439-1/6 and is CE approved. It is manufactured in a certified management system where Quality ISO 9001, Safety OHSAS 18001 and Environmental ISO 14001 standards are applied to all aspects of the manufacturing and installation processes.

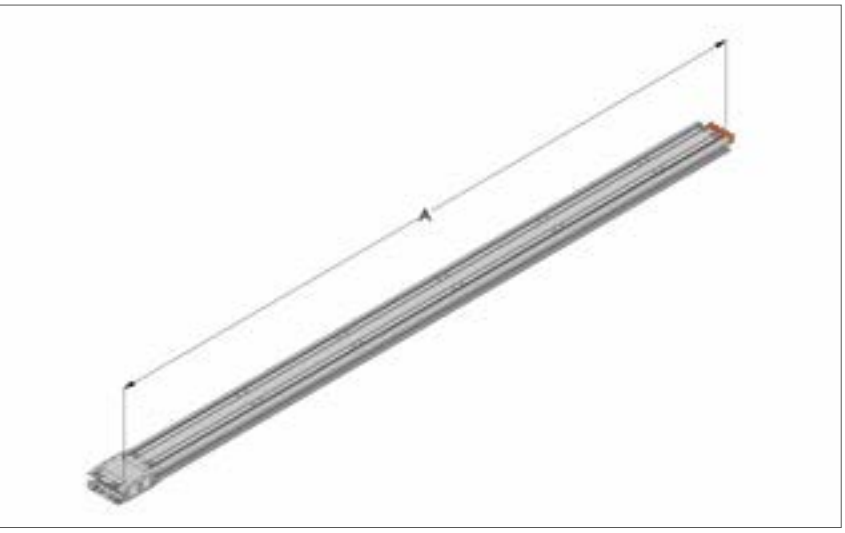
All certificates available on request

TECHNICAL FEATURES

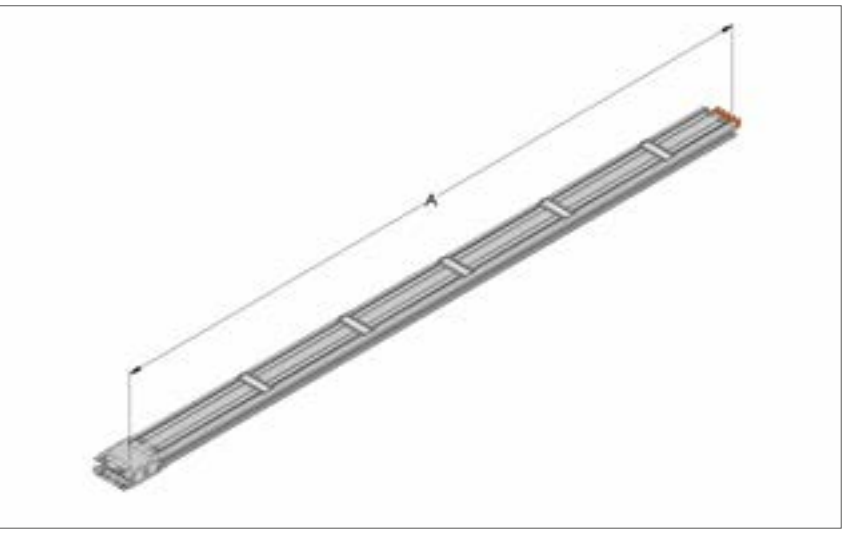
- Medium Powerbar is constructed from either high density 99.99% conductivity copper, or high density 55% conductivity tinned aluminium.
- The conductors are air-insulated. The gap is maintained by mounting the conductors in a durable, high strength mount.
- MPB housing is constructed of a roll formed steel profile with a painted finish. The integrity and strength of the housing ensures that MPB is a safe and durable installation.
- MPB has a standard Ingress Protection rating of IP52. IP55 is available on request.
- MPB has a fully certified fire wall penetration barrier. This fire barrier offers a two hour protection to critical supplies during an emergency e.g. lighting systems, sprinklers. Powerbar also offers a fully certified fire wall penetration barrier with a four hour rating.



STRAIGHT LENGTHS



Feeder Length



Distribution Length

Straight Lengths

Feeder lengths and distribution lengths can be supplied at any length between a minimum of 875mm and a maximum of 3000mm.

TAP OFF UNITS

The tap off slot outlet and cover are made from a durable, high strength, Class B, 130°C insulation material.

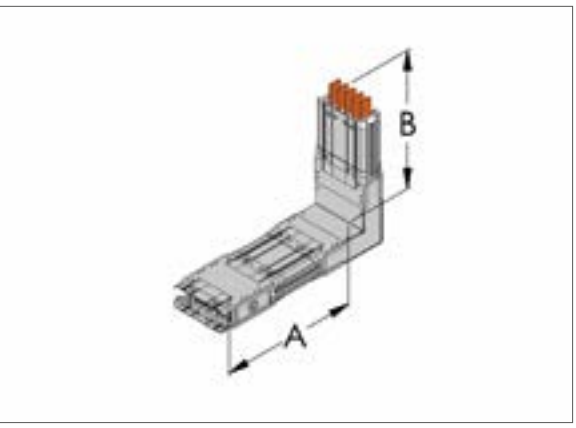
The leading PE contact on a tap off unit provides the positive opening of a plug in slot.

The tap off slot cover prevents access to the contacts behind the cover and protects it from the entry of dirt, dust or moisture. It provides a rating of IP52, IP55 is available on request.

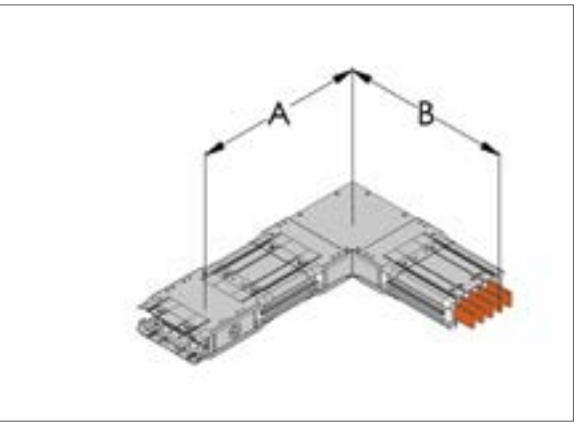
With the cover removed, the tap off slot has a rating of IP3X.

All Powerbar tap off units are designed with the safety of the installer and user as the key criteria. Tap off units are fitted with mechanical/electrical interlocks and an 'earth first, break last' safety feature.

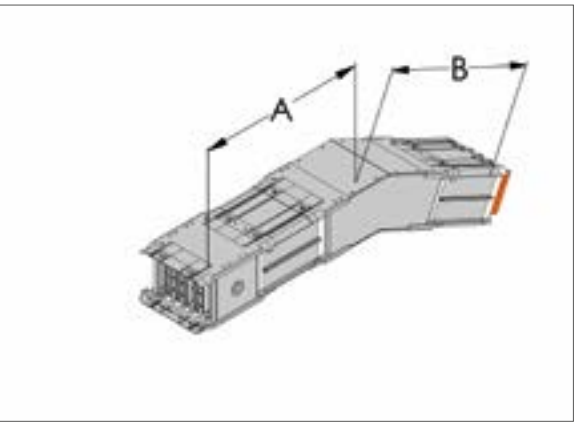
ELBOWS



Flatwise Elbows



Edgewise Elbows



Custom Elbow

Flatwise and edgewise elbows are used to make 90° changes in the direction of the busbar system. Powerbar can also manufacture specially angled elbows for both flatwise and edgewise products.

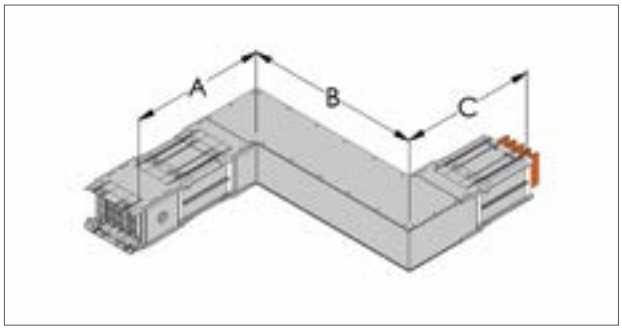
Flatwise Elbow (Up or Down)

Ratings (Amps)	Minimum Leg Size		Standard Leg Size		Maximum Leg Size	
	A	B	A	B	A	B
160A – 1250A	400mm	400mm	400mm	400mm	1000mm	1000mm

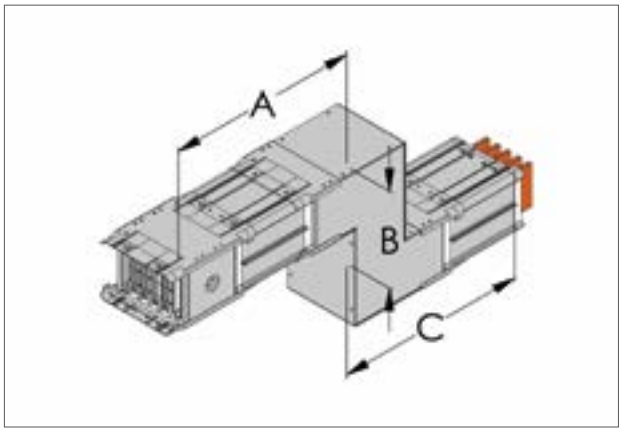
Edgewise Elbow (Left or Right)

Ratings (Amps)	Minimum Leg Size		Standard Leg Size		Maximum Leg Size	
	A	B	A	B	A	B
160A – 1250A	400mm	400mm	400mm	400mm	1000mm	1000mm

OFFSETS



Edgewise Offset



Flatwise Offset

An offset section is used to conform to the structure of the building and to avoid any obstacles e.g. pipes or steel columns.

Combination Possibilities

- Flatwise offset up
- Flatwise offset down
- Edgewise offset left
- Edgewise offset right

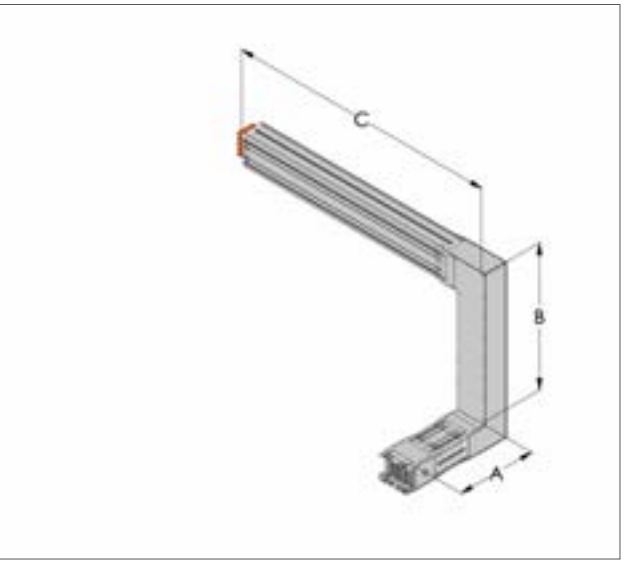
Edgewise Offset (Left or Right)

Ratings (Amps)	Minimum Leg Size			Standard Leg Size			Maximum Leg Size		
	A	B	C	A	B	C	A	B	C
160A – 1250A	400mm	100mm	400mm	400mm	400mm	400mm	1000mm	800mm	1000mm

Flatwise Offset (Up or Down)

Ratings (Amps)	Minimum Leg Size			Standard Leg Size			Maximum Leg Size		
	A	B	C	A	B	C	A	B	C
160A – 1250A	400mm	100mm	400mm	400mm	400mm	400mm	1000mm	800mm	1000mm

COMBINATION ELBOWS



Combo Offset

Combination elbows are used to conform to the building's structure and to change the direction of the busbar within a confined space.

Combination Possibilities

- Edgewise right and flatwise up
- Edgewise right and flatwise down
- Edgewise left and flatwise up
- Edgewise left and flatwise down

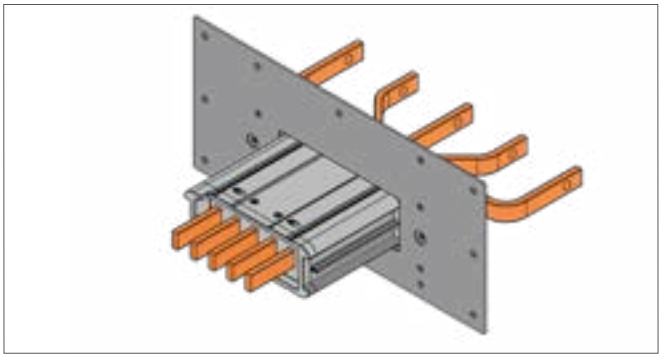
Aluminium

Ratings (Amps)	Minimum Leg Size			Maximum Leg Size		
	A	B	C	A	B	C
160A – 400A	400mm	162mm	400mm	800mm	800mm	800mm
630A – 800A	400mm	191mm	400mm	800mm	800mm	800mm

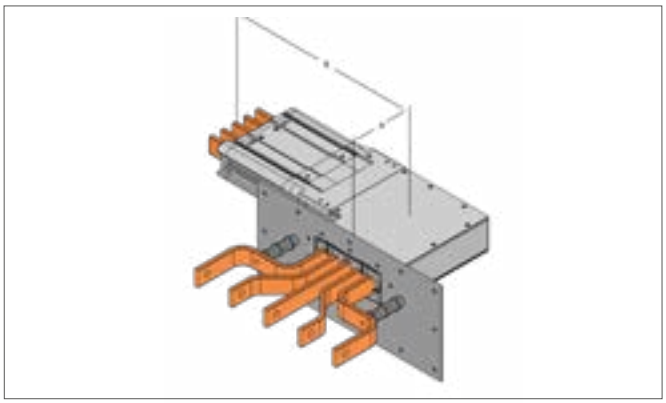
Copper

Ratings (Amps)	Minimum Leg Size			Maximum Leg Size		
	A	B	C	A	B	C
160A – 630A	400mm	162mm	400mm	800mm	800mm	800mm
800A – 1250A	400mm	191mm	400mm	800mm	800mm	800mm

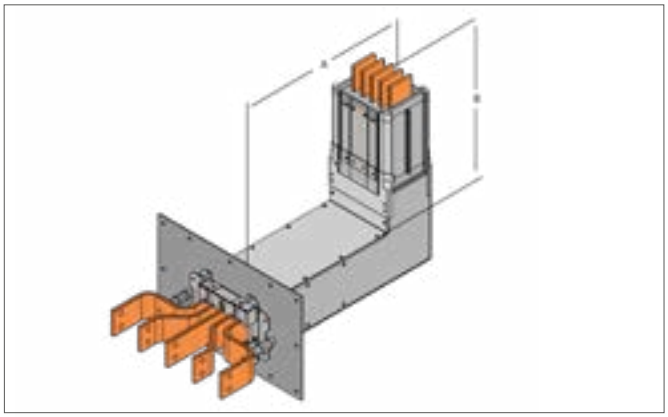
FLANGES



Panel Flange



Edgewise Flange



Flatwise Flange

Flange Connections

Flange connections provide a direct connection to low voltage switchgear, transformer enclosures and other electrical equipment.

Standard flanges can be offset to the left or right of the section as required.

Combination Flanges

A flange combination elbow is used when the minimum leg lengths for either the standard elbow or the standard flange cannot be met.

A typical example would be when there is reduced height above the switchgear.

Combination Possibilities

- Panel flange and edgewise left
- Panel flange and edgewise right
- Panel flange and flatwise up
- Panel flange and flatwise down

Flatwise and Edgewise Elbow Flange

Ratings (Amps)	Minimum Leg Size		Standard Leg Size		Maximum Leg Size	
	A	B	A	B	A	B
160A – 1250A	140mm	400mm	400mm	400mm	591mm	800mm

SPECIAL SECTIONS

Special Sections

Powerbar manufacture a variety of more specialised units and components to meet unique system requirements. These include: edgewise and flatwise tee's, flatwise cross, step up/step down reducers, phase rotation units, in-line disconnect cubicles, in-line tap off units, custom built busbar connection units.

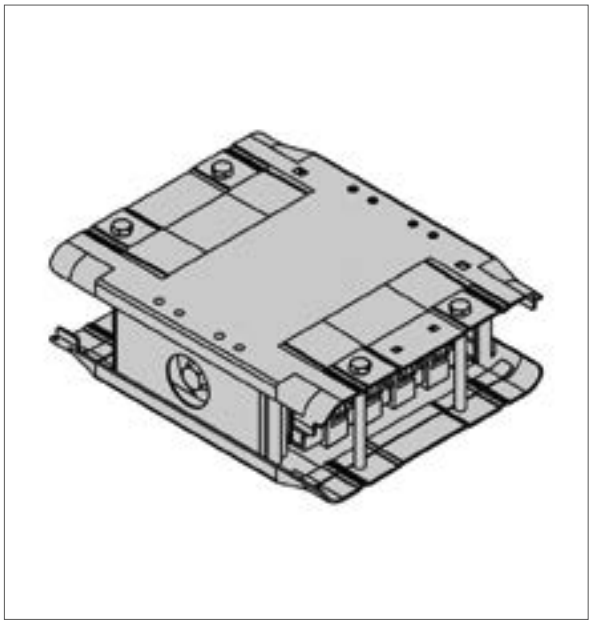
Flatwise and Edgewise Tee

Flatwise and edgewise tee's are used to split one busbar run into two runs going in different directions. This reduces the amount of space needed when supplying two different parts of a building with power.

Expansion Units

Expansion units are used to accommodate the expansion and contraction of a busbar system as well as allow for building movement. They allow for a movement along the length of the busbar. They are installed in the centre of long busbar runs, or at the beginning of riser runs to minimise the stress on the lower section of the busbar run.

JOINT PACKS



Joint Pack

Joint packs are used to connect all the components in a busbar system together.

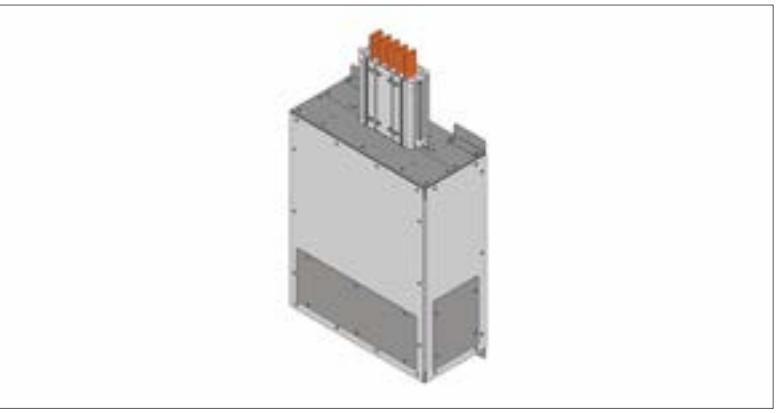
MPB's joint pack is a compression joint design which uses a specially designed Belleville washer to distribute the pressure evenly over the joint.

A joint pack is fitted on one end of each busway section to save time during installation.

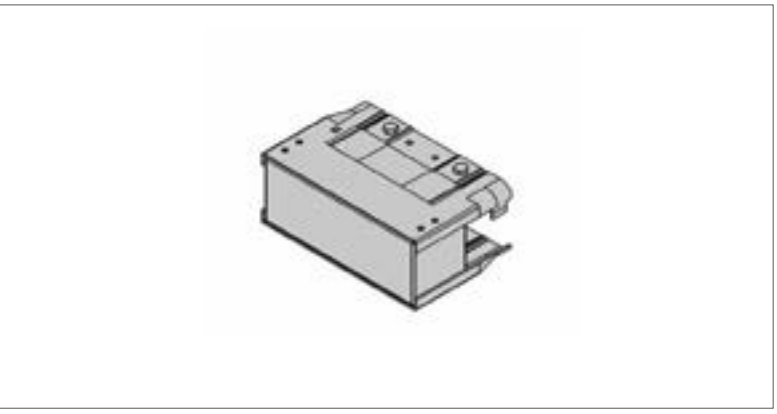
The earth is maintained along the joint by both the the joint pack cover and PE busbar.

The joint pack is supplied in either a small or large size depending on the rating of busbar required.

CABLE FEED UNITS



End Feed Unit



End Cap

Cable Feed Units

End feed units are used on the ends of busbar risers which are cable fed. They can be on the top or the bottom of the busbar.

Centre feed units are used in the middle of busbar risers which are cable fed.

The size of the end feed required depends on a number of factors:

- Rating of the busbar
- Size of the cable
- Number of cables
- Use of a protective device or isolator

End Caps

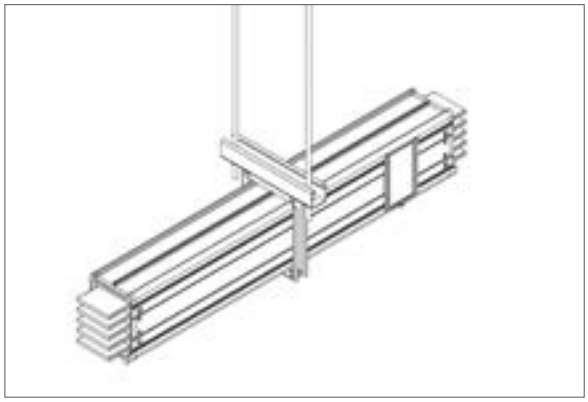
End caps are used to safely cap off the end of a busbar run. The end cap units are factory fitted but can be easily removed to allow for the extension of the system.

INSTALLATION

The modular design of MPB allows it to be installed flat or on its edge. The installation is determined by:

- Busbar route
- Type of installation
- Available space
- Size of busbar

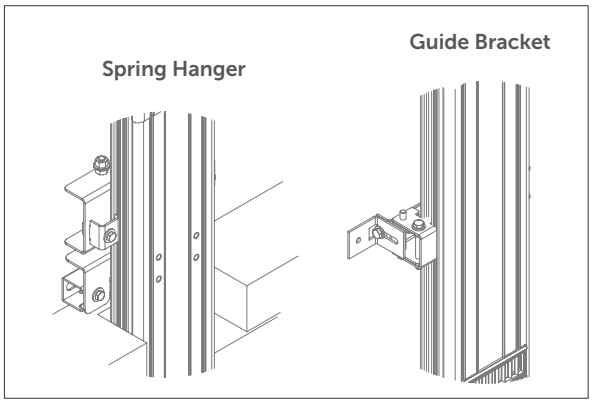
Edge Installation



Flat Installation

Spring Hangers & Guide Bracket

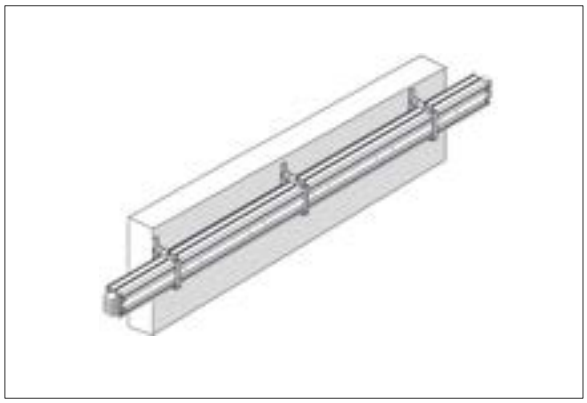
Spring hangers are used to support vertical busbar runs on each floor where required. They compensate for building movement and thermal expansion.



Spring Hanger & Guide Bracket

Adjustable Wall Hanger

Wall hanger brackets can be wall mounted and depth adjusted for uneven surfaces.



Hanger Installation

TECHNICAL DATA

Aluminium Technical Data					
Rated Current (A)	**160**	**250**	**400**	**630**	**800**
Rated Operational Voltage (V)	690	690	690	690	690
Rated Insulation Voltage (V)	1000	1000	1000	1000	1000
Short Circuit					
1 Second (kA)	18	18	22	26	35
Peak Value (kA)	36	36	46.2	54.6	73.5
Phase Conductor					
Cross Sectional Area (mm^2)	160	160	256	480	720
100% Earth CSA (mm^2)	160	160	256	480	720
Overall Dimensions					
Height x Width (mm)	61 x 165	61 x 165	61 x 165	119 x 165	119 x 165
Weight					
Weight of 5 bar system (kg/m)	3.2	3.2	4.4	7.8	11
Resistance					
Resistance (mΩ/m) at 20°C	0.166	0.166	0.104	0.055	0.037
Resistance (mΩ/m) at 80°C	0.206	0.206	0.129	0.069	0.046
Reactance					
Reactance (mΩ/m) at 50Hz	0.116	0.116	0.098	0.071	0.057
Impedance					
Impedance (mΩ/m) at 80°C	0.236	0.236	0.162	0.099	0.073
Voltage drop at full load 50Hz					
Power factor 0.7 (V/m) at 80°C	0.063	0.098	0.111	0.108	0.101
Power factor 0.8 (V/m) at 80°C	0.065	0.101	0.112	0.106	0.098
Power factor 0.9 (V/m) at 80°C	0.065	0.102	0.110	0.101	0.091
Power factor 1.0 (V/m) at 80°C	0.057	0.089	0.089	0.075	0.063

Copper Technical Data						
Rated Current (A)	**250**	**400**	**630**	**800**	**1000**	**1250**
Rated Operational Voltage (V)	690	690	690	690	690	690
Rated Insulation Voltage (V)	1000	1000	1000	1000	1000	1000
Short Circuit						
1 Second (kA)	22	22	25	26	26	35
Peak Value (kA)	36	36	46.2	54.6	54.6	73.5
Phase Conductor						
Cross Sectional Area (mm^2)	160	160	256	480	480	720
100% Earth CSA (mm^2)	160	160	256	480	480	720
Overall Dimensions						
Height x Width (mm)	61 x 165	61 x 165	61 x 165	119 x 165	119 x 165	119 x 165
Weight						
Weight of 5 bar system (kg/m)	8	8	12	22.5	22.5	33
Resistance						
Resistance (mΩ/m) at 20°C	0.166	0.166	0.104	0.055	0.055	0.037
Resistance (mΩ/m) at 80°C	0.206	0.206	0.129	0.069	0.069	0.046
Reactance						
Reactance (mΩ/m) at 50Hz	0.122	0.074	0.064	0.055	0.055	0.055
Impedance						
Impedance (mΩ/m) at 80°C	0.179	0.110	0.077	0.062	0.062	0.073
Voltage drop at full load 50Hz						
Power factor 0.7 (V/m) at 80°C	0.124	0.120	0.105	0.103	0.103	0.127
Power factor 0.8 (V/m) at 80°C	0.123	0.120	0.101	0.097	0.097	0.124
Power factor 0.9 (V/m) at 80°C	0.118	0.115	0.093	0.087	0.087	0.117
Power factor 1.0 (V/m) at 80°C	0.090	0.089	0.060	0.050	0.050	0.084

MEDIUM POWERBAR

MPB

QUICK REFERENCE GUIDE

Critical Dimensions

- The distance from the centre of a joint to the wall, ceiling or floor must be at least 190mm.
- All joints must be accessible for maintenance. Joints should not be located inside a wall, ceiling or floor.
- There must be a minimum distance of 50mm between the busbar and any wall, ceiling or other busbar.
- Allow adequate space for tap off units to be installed easily and safely.
- Busbar lengths are available from 600mm – 3000mm
- Edgewise elbow sections and flatwise elbow sections are available with leg lengths from 400mm x 400mm to 1000mm x 1000mm

Critical Details

- Busbar drawings must include all relevant dimensions. Centre-line dimensions are expected. Please highlight any dimensions that are not centre-line.
- Walls and floors must be indicated and the relevant dimensions provided.
- The phasing and location of all switchboards must be provided.
- Full details are required for any transformer connections.
- Please indicate the phase orientation for vertically and horizontally installed busbar.

Operating Conditions

- Ambient temperature from -5°C to +40°C.
- Relative humidity of 95% or below.
- This product is designed for indoor use.

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