

PowerBar **pb**

INTELLIGENT MEDIUM POWERBAR

INTRODUCTION

Intelligent Medium Powerbar is a patented range of busbar trunking that is utilised within Data Centres and various industrial applications to deliver power to electrical loads.

It is a unique open track system made to the highest specification.

Powerbar Overview

The Powerbar range of products is built with patented processes that make it the most reliable product of its type, providing peace of mind for your installation. This, together with unrivalled product support, means that the Powerbar range of products will provide the optimum solution to your distribution requirements.

Powerbar services the UK and European markets from our manufacturing plant in Donegal Ireland, North American market from our plant in Anderson SC, USA and the Middle East from our plant in Ras Al Khaimah, U.A.E. We pride ourselves on meeting our client's deadlines and ensuring a quick turnaround on final make-up pieces.

From concept to commissioning we provide complete in-house engineering.

- Site surveys
- 3D - CAD Drawings
- Project Management
- Thermal Imaging

Our highly skilled team are experts at providing the client with exactly what they require and are experienced in producing custom parts to meet the client's unique demands.

iMPB

The intelligent Medium Powerbar range is a 600 Volt, encased track busway with copper conductors. The range is available from 160A to 800A available in two bar configurations to suit project requirements.

The bar is housed in an aluminium casing which also acts as an earth and is ingress protection rated- IP2x.

Features

- Tap off anywhere
- Solid joint pack construction
- Up to 6 meter / 20 feet lengths.
- All tap offs have mechanical/electrical interlocks with an earth first, break last safety feature.

STANDARDS

Standards

Our iMPB products are fully UL Certified and CE approved. It is manufactured in a certified management system environment where Quality ISO 9001, Safety OHSAS 18001 and Environmental ISO 14001 standards are applied to all aspects of the manufacturing and installation processes. It is manufactured in accordance with IEC61439-1 and IEC61439-6.

Type Tests

- 10.2 Verification of **Strength of materials and parts**
- 10.3 Verification of **Degree of protection of enclosures**
- 10.4 Verification of **Clearance and Creepage distances**
- 10.5 Verification of **Protection against electric shock and integrity of protective circuits**
- 10.9 Verification of **Dielectric properties**
- 10.10 Verification of **Temperature rise limits**
- 10.11 Verification of **Short-circuit withstand strength**

ASTA Certificates

Powerbar completed extensive testing at ASTA and KEMA accredited laboratories to ensure the product we supply meets the international requirements.

UL Classified

Powerbar completed extensive testing at UL accredited laboratories to ensure the product we supply meets UL requirements.

Seismic Compliance

The product has a qualification level - high in accordance to IEEE standard 693-2005.

All certificates available on request



OHSAS 18001:2007
OHS 533652



ISO 9001:2008
FM 12680

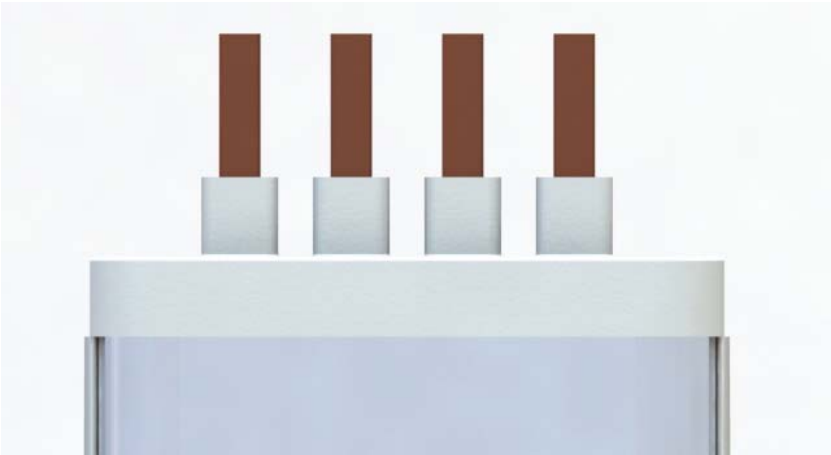


ISO 14001:2004
No: EMS 566536

TECHNICAL FEATURES

Conductor/Insulation System

Intelligent Medium Powerbar is constructed from high density 99.99% conductivity copper. The conductors are insulated with a custom thermoset polymer material which has outstanding heat transfer characteristics making it ideal for data centre applications. The polymer has excellent dielectric strength, is flame retardant and is impact resistant.



Housing Details

The iMPB range is constructed with an all-aluminium housing.

- Aluminium is a very light metal with a specific weight of 2.72g/cm³. This reduces transportation costs and makes the product much easier to install.
- Aluminium is non-magnetic and has a significant reduction in reactance when compared to steel.
- Aluminium naturally produces a protective oxide coating which makes it highly corrosion resistant. This means the product is more durable and requires less maintenance.

Isolated Earth Bar (Optional)

Powerbar offers a100% fully isolated earth for systems where earth isolation is required such as systems with heavy microprocessors, based loads or large computer based installations. The continuity is maintained through the joint pack.

Double Neutral (200% Option)

Powerbar offer a fully rated 200% neutral option for busbar systems with non-linear loads. The additional neutral capacity prevents overloading caused by zero sequence harmonic currents.

FEEDER LENGTHS



Feeder Lengths

Feeder lengths are designed as an open track system where tap off units can be plugged in anywhere. The opening is minimal to prevent access to the conductors and to prevent the entry of dirt, dust or moisture. It is also finger safe meeting an Ingress Protection (IP) rating of IP2x.

Straight lengths can be supplied at any length between a minimum of 600mm and a maximum of 6000mm.

The table below illustrates the different types of build arrangement used depending on the rating of busbar required for the application.

Busbar Rating (Amps)	Housing Size (mm/inches)	
	4 Pole	5 Pole
160A	175 x 44mm (6.89 x 1.73 inches)	210 x 44mm (8.27 x 1.73 inches)
250A	175 x 44mm (6.89 x 1.73 inches)	210 x 44mm (8.27 x 1.73 inches)
400A	175 x 44mm (6.89 x 1.73 inches)	210 x 44mm (8.27 x 1.73 inches)
630A	200 x 60mm (7.87 x 2.36 inches)	240 x 60mm (9.45 x 2.36 inches)
800A	200 x 60mm (7.87 x 2.36 inches)	240 x 60mm (9.45 x 2.36 inches)

Phase Configurations

Configuration	Phases	Neutral	Earth
TP/N	100%	100%	Case
TP/DN	100%	200%	Case
TP/NE	100%	100%	100%
TP/DNE	100%	200%	100%

Note: Case refers to the aluminium casing been used as an earth.

JOINT PACK / DIRECTIONAL ELEMENTS

Joint Packs

The iMPB joint pack securely locks two feeder lengths together with our innovative design.

During installation; the joint pack offers a fast and secure joint, which is thermally, mechanically and electrically secure. PowerBar's tried and tested Joint Pack will ensure reliability and network resilience in your Power Critical Environment.

The joint pack footprint is specially designed to keep it compact; to ensure that more tap offs can be installed in each length of Busway.

Joints may be disassembled and reassembled easily.

No special tooling is required.

Joint pack thermal monitoring feature available on request



Directional Elements

Within our iMPB system we provide 90 degree elbows, t section's and crosses.

INSTALLATION

Installation

iMPB is usually installed on its 'flat' but can also be on its 'edge' depending on the specific project requirements and space constraints.

Hanger brackets are supplied per length which are factory fitted ready to attach to drop rods for a seamless installation process. They are field adjustable to suit project requirements.

The modular design of the Powerbar Busbar System allows it to easily be installed in either position.

Flat Installation



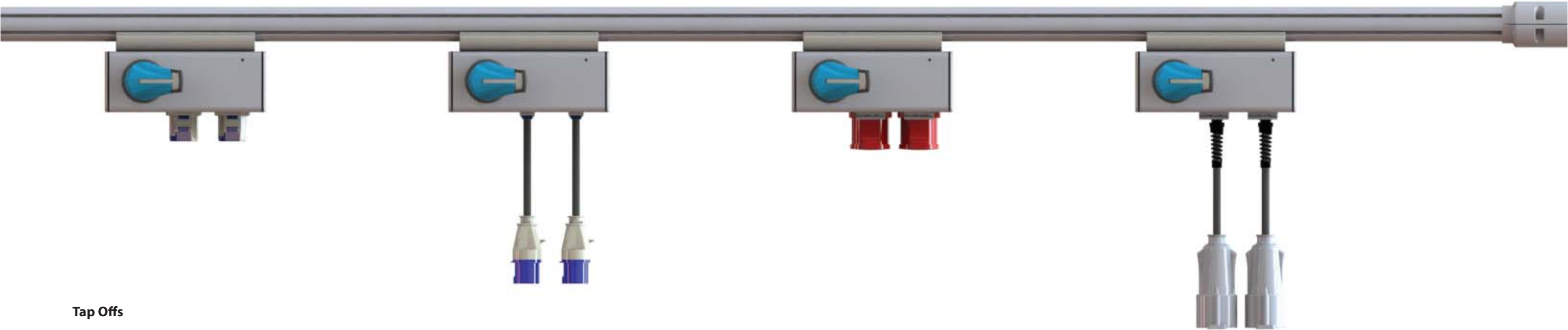
Edge Installation



Double Edge Installation



TAP OFF UNITS



Tap Offs

We offer various tap off options with built in metering. The tap off is designed in a way that it can clip on to the busway and be slid into place before engaging the contacts.

Contact our Engineering Team for more information on the available options.



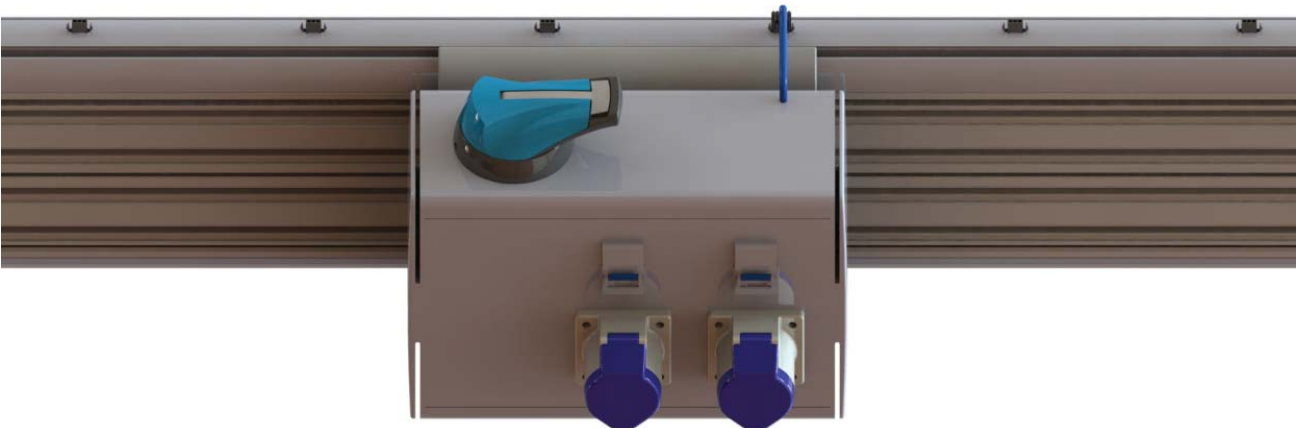
Key Features:

- Worksafe technology.
- Each tap off can be rated up to 160 Amps.
- Smart metering built in (optional)
- Interlock feature ensuring polarities don't mismatch.
- Optional L.E.D. lighting available.

Tap Off Options*
2 Single Phase sockets
2 Single Phase Drop Cord Sockets
2 Three Phase Sockets
2 Three Phase Drop Cord Sockets

* custom per client specification

METERING / CABLE END FEED



Metering

We offer a traditional metering setup through the use of Modbus RS485 plug-in connections.

The Powerbar iMPB range offers an advanced monitoring package allowing the user to monitor, integrate and display power information in your data centre in an easy and reliable manner.

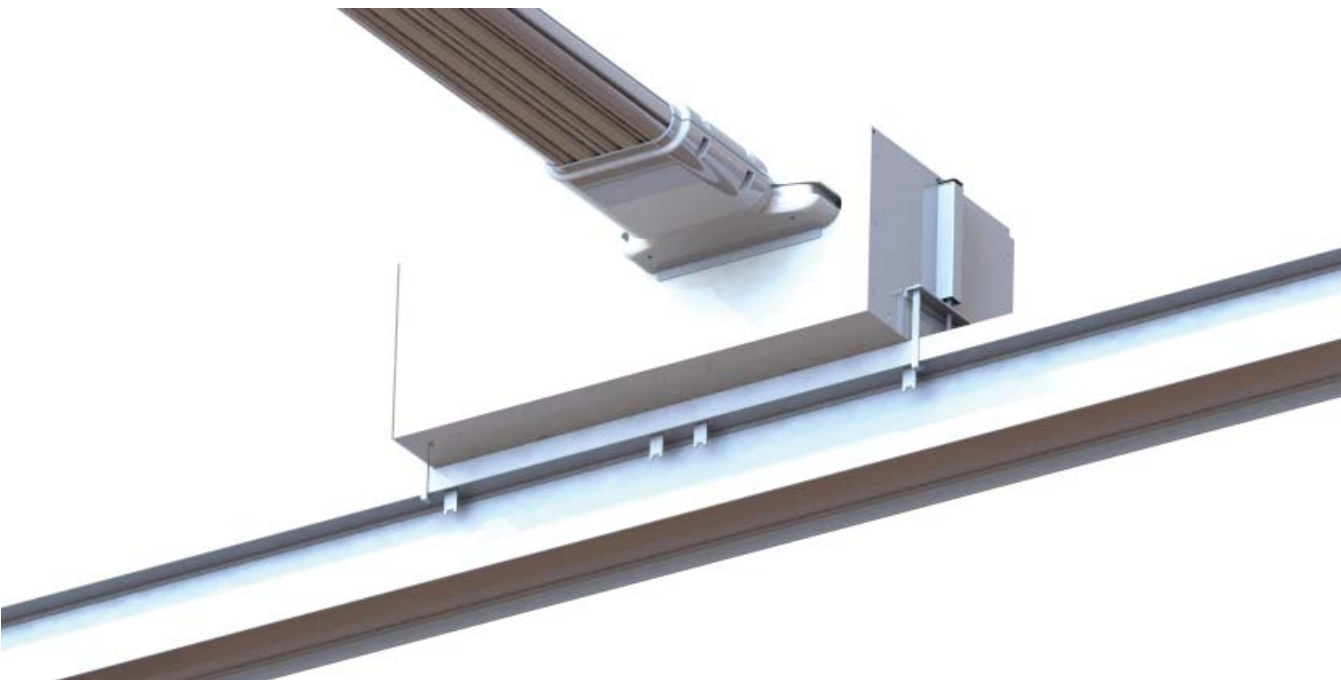
Depending on the specific needs of the customer, Powerbar can provide the following Power Metering options: Current, Minimum I Maximum Current, Neutral Current, Voltage, Active Power, kW, Apparent Power, kVA, Reactive Power, Energy, Kilowatt Hours, Power Factor, Power Min and Max.

Cable End Feed

Powerbar can provide standard cable end boxes with options for cable entry from various points. We also have the ability to provide centre feeds, load bank end feeds and have the capability to design custom end feeds to meet specific project requirements.

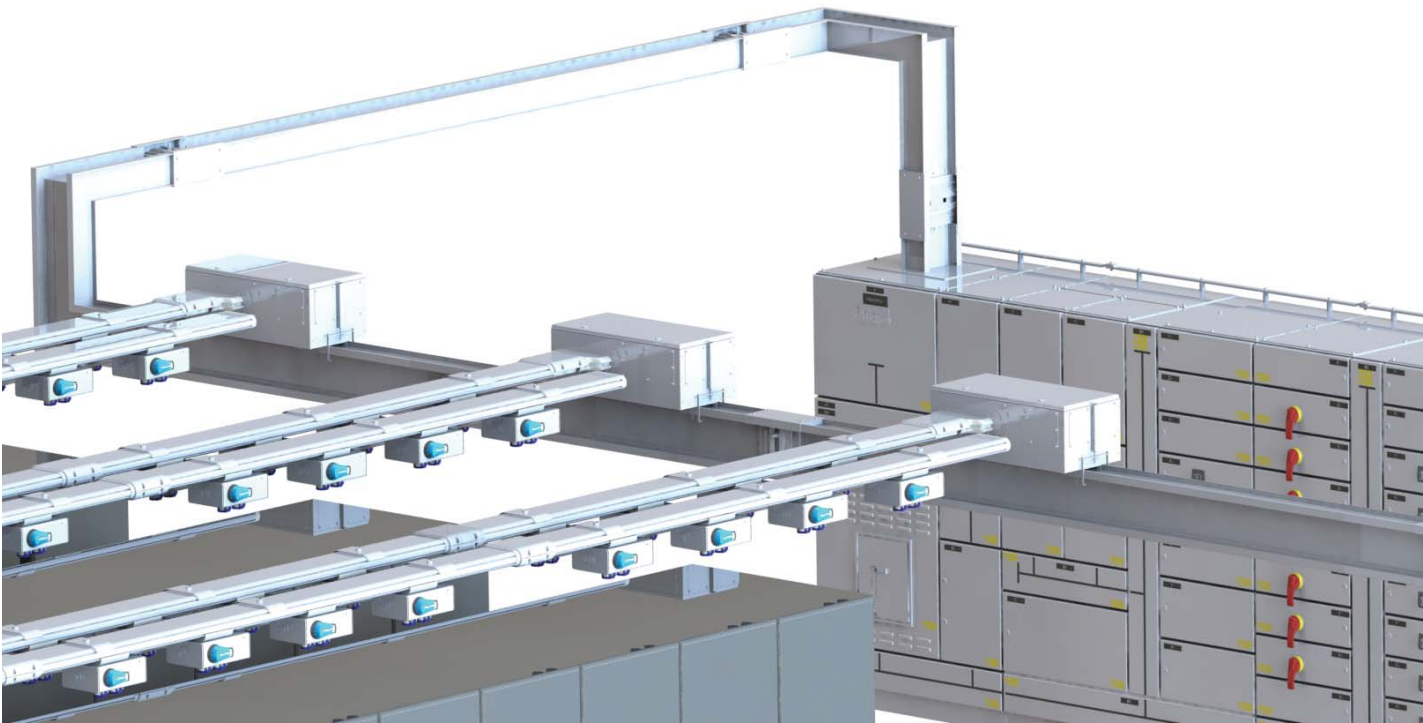


HPB CONNECTION

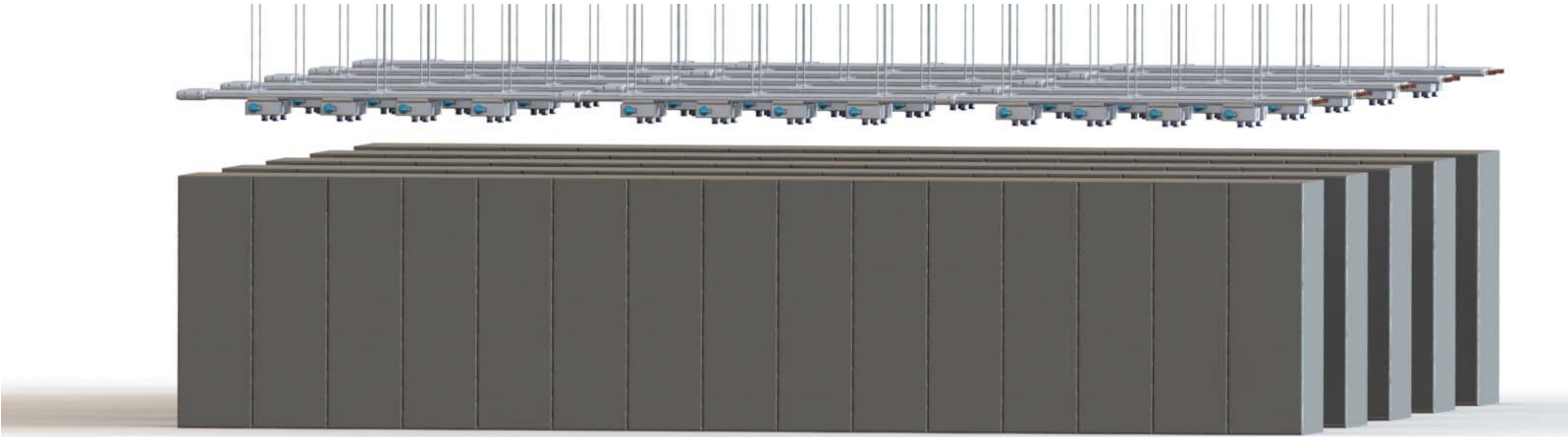


HPB to iMPB Connection

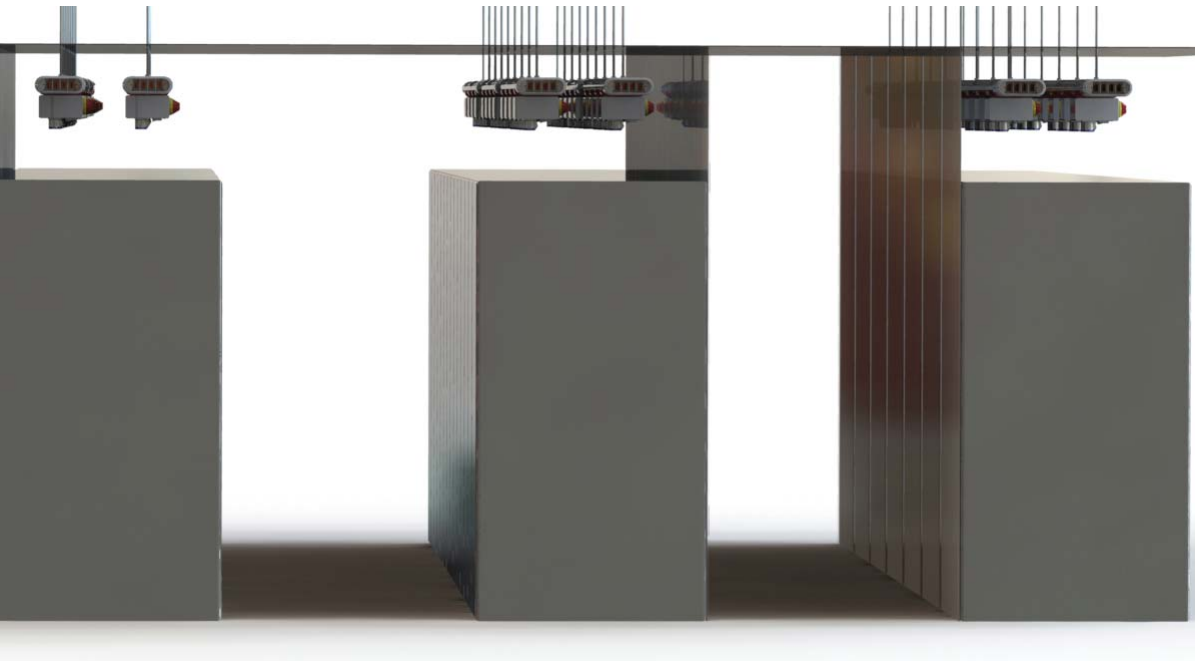
iMPB can be connected directly to a HPB busbar run to provide a full power solution . This results in a more reliable system due to less joints.



TYPICAL INSTALLATION



Due to its shape and small footprint our iMPB is well suited for any data centre application such as 'hot aisle cold aisle' setups.



E&I Engineering provide high voltage and low voltage switchgear and Powerbar provides a range of busbar trunking for power distribution. Together we can provide complete power solutions for your project.

We have four ranges of Powerbar:

iMPB - Intelligent Medium Powerbar. Our polymer insulated range available with copper conductors. This range covers 160-800 Amps

MPB - Medium Powerbar. Our air insulated range available with both copper and aluminium conductors. This range covers 160-800 Amps

HPB - High Powerbar. Our sandwich construction range available with both copper and aluminium conductors. This range covers 800-6600 Amps.

CRB - Cast Resin Bar. Our IP68 rated polymer concrete product for use in extreme conditions. This range is available with both copper and aluminium conductors. This range covers 800-6300 Amps.

Typical Underfloor Arrangement



High Density iMPB Tap Off Arrangement



QUICKREFERENCEGUIDE

Critical Dimensions

Tap Off Clearances:

- Ensure adequate space is given to allow the tap off unit to be operated both easily and safely.

Feeder Busbar Length:

- Minimum length - 600mm / 2 feet
- Maximum length - 6000mm / 20 feet - 160, 250 & 400 Amps
- Maximum length - 4000mm / 12 feet - 630 & 800 Amps

Critical Details

- Busbar drawing must have all relevant dimensions.
- Centre-line dimensions are expected, please highlight any dimensions that are not centre-line dimensions.
- Walls and floors must be located, shown and dimensioned.
- The front of all switchboards must be given and the phasing for any existing boards provided.
- Transformer connections require full details.
- Horizontal distribution busbar positioned on its 'flat' must always be oriented with the Neutral phase to the top.

Operating Conditions:

- Ambient Temp : -5°C (20°F) to +40°C (105°F)
- Relative Humidity: 95% or below.
- Product designed for indoor use.

TECHNICAL DATA

Rated Current (A)	160	250	400	630	800
Rated Operational Voltage (V)	600	600	600	600	600
Rated Insulation Voltage (V)	1000	1000	1000	1000	1000
Short Circuit					
1 Second (kA rms)	25	25	50	50	50
Peak Value (kA)	65	65	105	105	105
Phase Conductor					
Cross Sectional Area (mm²)	122	122	210	255	320
Neutral Conductor					
Cross Sectional Area (mm²)	122	122	210	255	320
Isolated Earth Conductor					
100% Earth Cross Sectional Area (mm²)	122	122	210	255	320
Housing Earth Path					
Cross Sectional Area (mm²)	1412	1412	1412	2030	2030
Overall Dimensions					
Height x Width 4 Bar System (mm/inch)	44 x 175 (1.73 x 6.89)	44 x 175 (1.73 x 6.89)	44 x 175 (1.73 x 6.89)	60 x 200 (2.36 x 7.87)	60 x 200 (2.36 x 7.87)
Weight					
Weight of 4 Bar System (kg/m)	9.45	9.45	14.2	19.4	23.2
Weight of 4 Bar System (lb/ft)	6.35	6.35	9.54	13.04	15.59
Resistance (mΩ/m) at 20°C	0.172	0.172	0.102	0.065	0.048
Reactance					
Reactance (mΩ/m) at 50Hz	0.126	0.126	0.093	0.075	0.056
Impedance					
Impedance (mΩ/m) at 80°C	0.218	0.218	0.138	0.1	0.073
Voltage Drop at Full Load 50Hz					
Power Factor = 0.7 (V/m) at 80°C	0.094	0.094	0.095	0.106	0.099
Power Factor = 0.8 (V/m) at 80°C	0.093	0.093	0.092	0.1	0.093
Power Factor = 0.9 (V/m) at 80°C	0.09	0.09	0.087	0.093	0.087
Power Factor = 1.0 (V/m) at 80°C	0.084	0.084	0.081	0.087	0.081

NOTES

OTHER BROCHURES

Please use the QR codes on this page to gain access to our other brochures.
To read the QR codes you will need a device with a QR code reader.
These brochures can also be accessed through our website.



Product Overview



HPB Copper



HPB Aluminium



HPB IEC Copper



HPB ADDC Copper



MPB Busbar System



Cast Resin Bar



Tap Off Units

From our partners at **E&I Engineering**



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