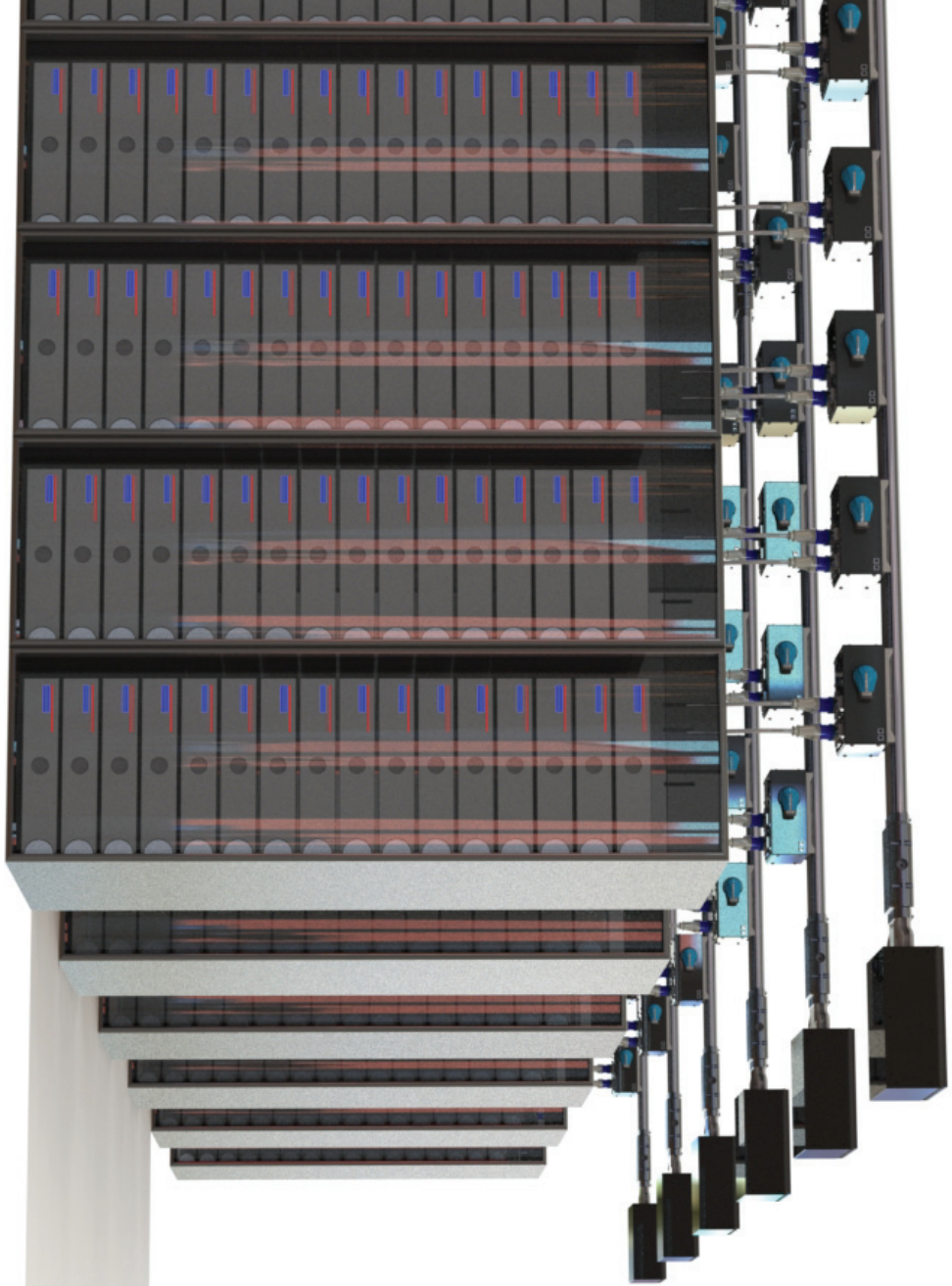


POWERBAR

# INTELLIGENT MEDIUM POWERBAR

# INTRODUCTION

Intelligent Medium Powerbar is a patented range of busbar trunking that is utilized within Data Centers 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, the US market from our facility in Anderson, South Carolina 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 bespoke parts to meet the client's unique demands.

We have three ranges of Powerbar:

**iMPB - Intelligent Medium Powerbar -** The intelligent Medium Powerbar range is a 400 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 4 metre lengths.
- All tap offs have mechanical/electrical interlocks with an earth first, break last safety feature.

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

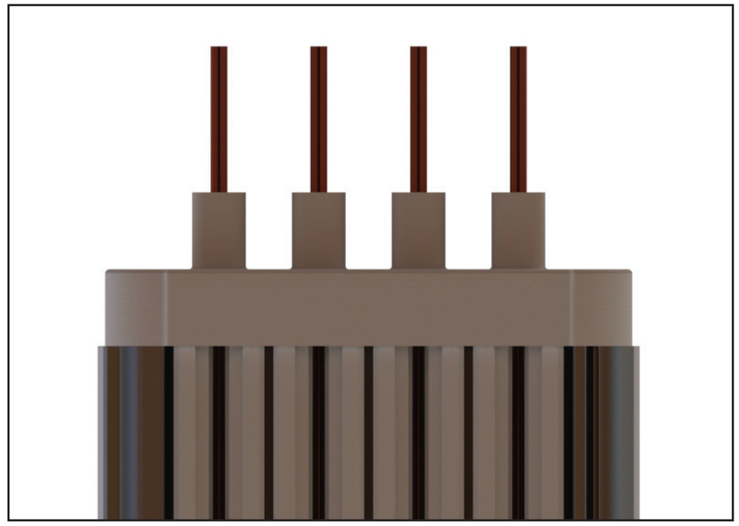
**CRB - Cast Resin Bar.** Our IP68 rated polymer concrete product for use in extreme conditions. This range is available with both copper and aluminium conductors. This range covers 800-6300 Amps.





# TECHNICAL FEATURES

**Conductor/Insulation System**
Intelligent Medium Powerbar is constructed from high density 99.99% conductivity copper. The conductors are insulated with a custom UL & IEC certified thermoplastic material which has outstanding heat transfer characteristics making it ideal for data centre applications. The insulation has excellent dielectric strength and is impact resistant.



**Housing Details**
The iMPB range is constructed with an all-aluminium housing providing a light durable structure which also acts as a ground path.

**Over Rated Neutral**
Powerbar offer an over rated neutral option for busbar systems with non-linear loads. The additional neutral capacity prevents overloading caused by zero sequence harmonic currents.

**Isolated Ground Bar**
Powerbar offer a 100% fully isolated ground 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.

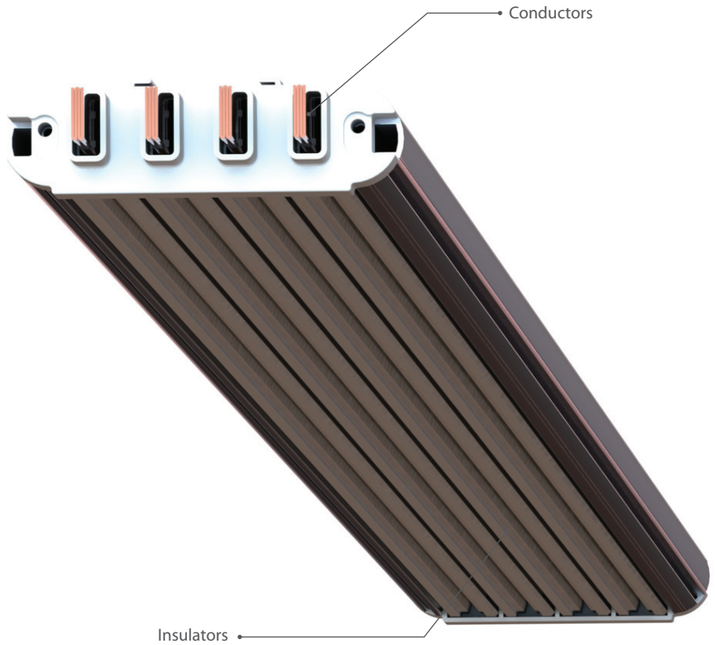
| Busbar Rating (Amps) | Housing Size (mm) | |
|---|---|---|
| | **4 Pole** | **5 Pole** |
| 160A | 175 x 44mm | 210 x 44mm |
| 250A | 175 x 44mm | 210 x 44mm |
| 400A | 175 x 44mm | 210 x 44mm |
| 630A | 180 x 52mm | 215 x 52mm |
| 800A | 180 x 52mm | 215 x 52mm |

**Phase Configurations**

| Configuration | Phases | Neutral | Earth |
|---|---|---|---|
| TP/N | 100% | 100% | Case |
| TP/ON | 100% | 170% | Case |
| TP/NE | 100% | 100% | 100% |
| TP/ONE | 100% | 170% | 100% |

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

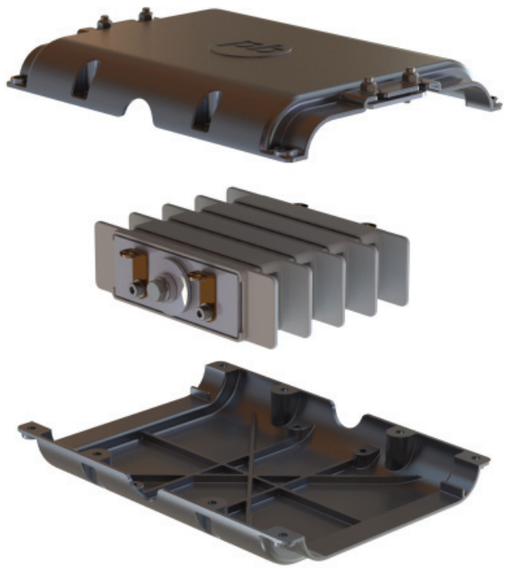
# LENGTHS & JOINT PACK




## Distribution Lengths

Distribution 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. 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 4000mm.



## Busway Joints

The iMPB joint pack securely locks two feeder lengths together with a traditional busbar bolted joint. This is a proven method of busbar assembly which provides easy installation and reliability.

No special tooling is required and joints may be disassembled and reassembled easily.

iMPB uses special thermally and electrically secure joint packs. These special joints have a very small footprint and tap off boxes can be installed very close to the joints, thus providing more usable space on the Busway. Temperature monitoring of joints are available as an option.





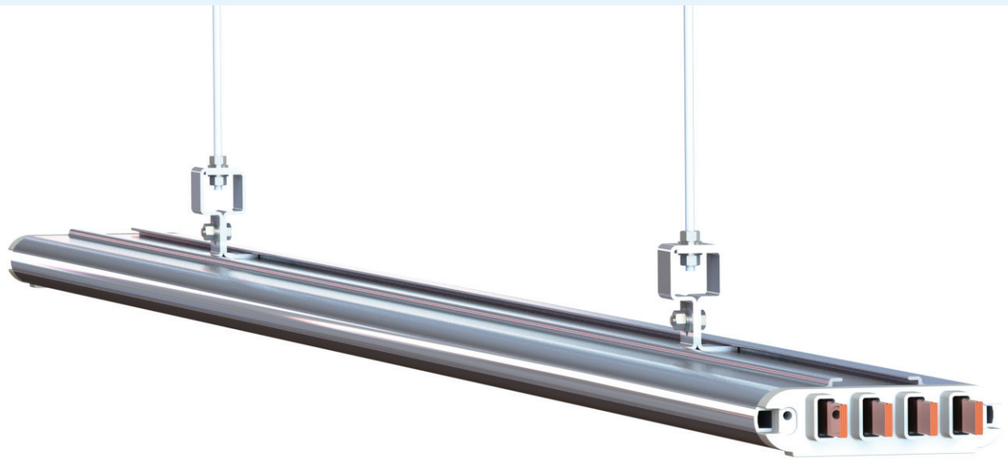
# INSTALLATION

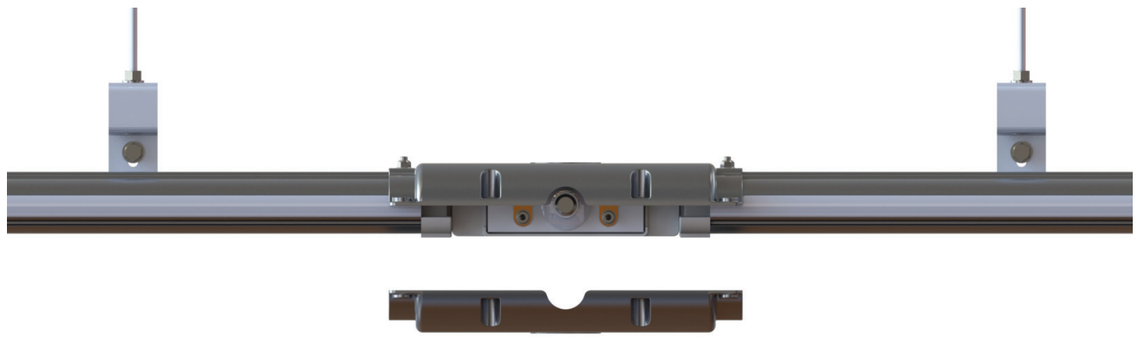
## Installation

iMPB is usually installed on its 'flat' but can also be on its 'edge' depending on the specific project requirements.
Hanger brackets are supplied per length ready to attach to drop rods for a seamless installation process.

They are field adjustable to suit project requirements.

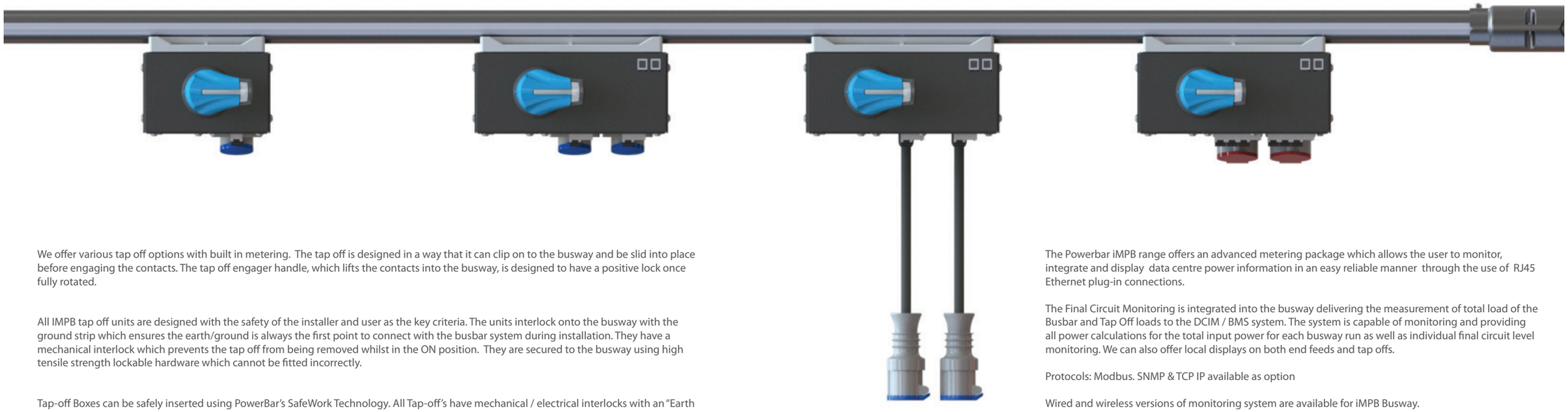
The modular design of the Powerbar Busbar System allows it to easily be installed in either position.





The iMPB joint pack comes with the top cover attached to the internal componants. Each length is offered up to the joint pack and the top cover is secured to the channel on the top of each busway. The base cover is then attached and the joint pack bolt is torqued

# TAP OFF UNITS



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. The tap off engager handle, which lifts the contacts into the busway, is designed to have a positive lock once fully rotated.

All IMPB tap off units are designed with the safety of the installer and user as the key criteria. The units interlock onto the busway with the ground strip which ensures the earth/ground is always the first point to connect with the busbar system during installation. They have a mechanical interlock which prevents the tap off from being removed whilst in the ON position.  They are secured to the busway using high tensile strength lockable hardware which cannot be fitted incorrectly.

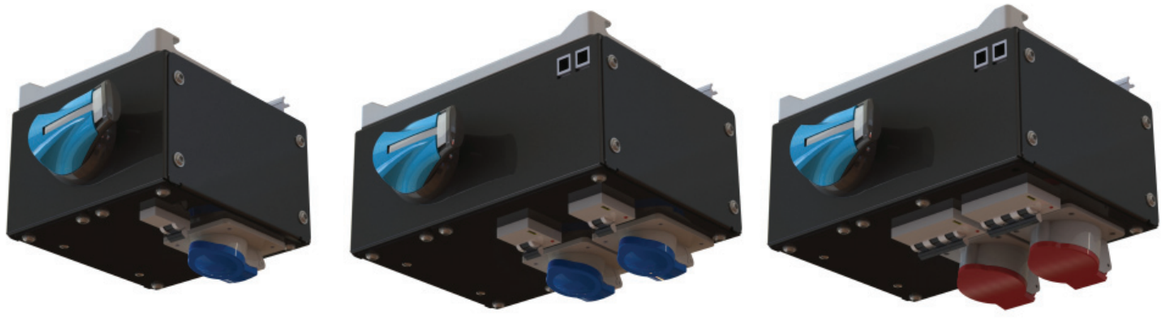
Tap-off Boxes can be safely inserted using PowerBar's SafeWork Technology. All Tap-off's have mechanical / electrical interlocks with an "Earth First, Break Last" safety feature.
Special mechanical features are built in within the tap off ensure that polarities are always matched to the busway system. Tap-offs are designed to slide through the Busway (if required) before energisation. The tap-off's can have IEC 309 receptacles, NEMA receptacles or whip cords as required.  Circuit breakers provided generally with Tap-off boxes are Schneider (Square D) or ABB.

Each Tap-off Box is capable of handling up to 125 Amps per phase.

***Contact our sales team for more information on the available options.***

**Key Features:**

- Worksafe technology.
- Each tap off can be rated up to 125 Amps.
- Smart metering built in (Optional).
- Interlock feature ensuring polarities don't mismatch.







# METERING

The Powerbar iMPB range offers an advanced metering package which allows the user to monitor, integrate and display  data centre power information in an easy reliable manner  through the use of  RJ45 Ethernet plug-in connections.

The Final Circuit Monitoring is integrated into the busway delivering the measurement of total load of the Busbar and Tap Off loads to the DCIM / BMS system. The system is capable of monitoring and providing all power calculations for the total input power for each busway run as well as individual final circuit level monitoring. We can also offer local displays on both end feeds and tap offs.

Protocols: Modbus. SNMP & TCP IP available as option

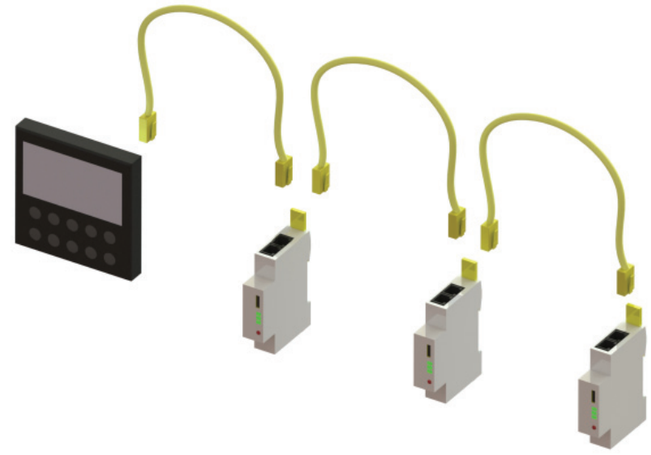
Wired and wireless versions of monitoring system are available for iMPB Busway.

Monitoring - Plus
- Voltage for all three phases
- Current – Phase, Ground and Neutral
- kW, kVA, kVAR, Power Factor, kWH

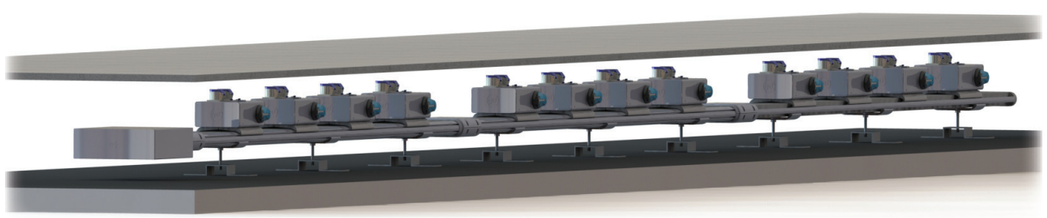
Monitoring - Advanced
In addition to monitoring plus, for advanced, the following parameters can also be measured:
- Voltage Total Harmonic Distortion
- Overvoltage/Undervoltage Alarm Threshold
- Minimum & Maximum Current
- Demand and Percent Load Current
- Crest Factor
- Warning and Alarm Threshold

Monitoring - Status
In addition to Power Monitoring, we can monitor closed & trip status for each MCB. The status signals are fed back to the End Feed, using the integrated Ethernet cabining.

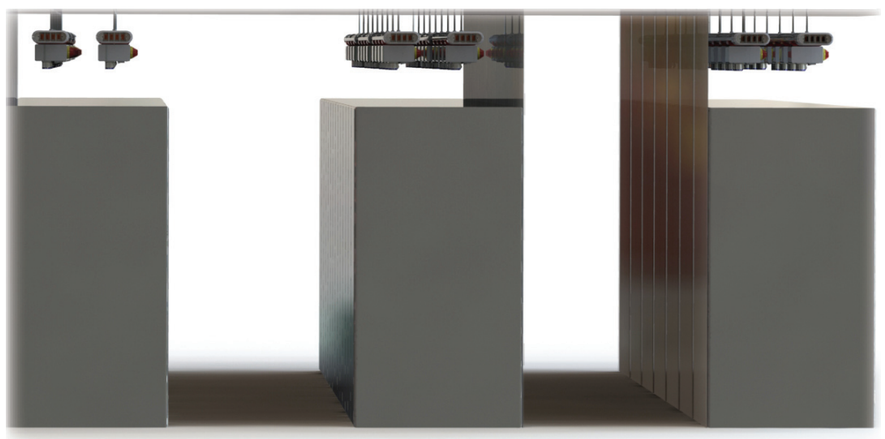
The modules run in a daisy chain from meter to meter utilizing the side channel in the housing for cabling.



# TYPICAL INSTALLATION



Typical Underfloor Arrangement

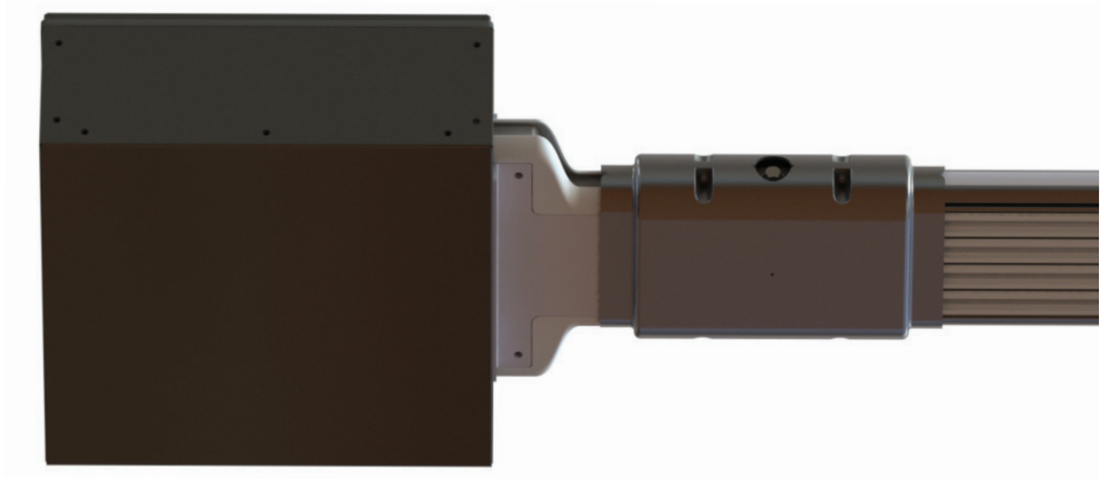


'Hot aisle Cold aisle' Arrangement

# END FEEDS

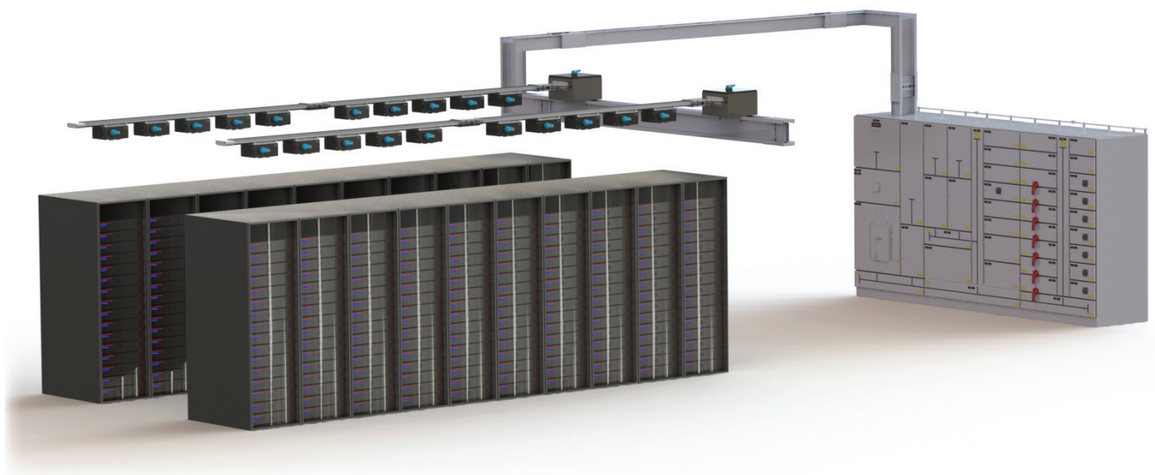
## Cable End Feed

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 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.







# TECH 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** | | | | | |
| Short Circuit Current Rating (rms symmetrical 1 second) KA | 25 | 25 | 30 | 35 | 35 |
| Peak Value (kA) | 52.5 | 52.5 | 65 | 77 | 77 |
| Short Circuit Conditional Rating (KAIC) | 50 | 50 | 50 | 50 | 50 |
| **Phase Conductor** | | | | | |
| Cross Sectional Area ($mm^2$) | 122 | 122 | 210 | 255 | 320 |
| **Neutral Conductor** | | | | | |
| Cross Sectional Area ($mm^2$) | 122 | 122 | 210 | 255 | 320 |
| **Isolated Earth Conductor** | | | | | |
| 100% Earth Cross Sectional Area ($mm^2$) | 122 | 122 | 210 | 255 | 320 |
| **Housing Earth Path** | | | | | |
| Cross Sectional Area ($mm^2$) | 1412 | 1412 | 1412 | 2030 | 2030 |
| **Overall Dimensions** | | | | | |
| Height x Width of 4 Bar System (mm) | 44 x 175 | 44 x 175 | 44 x 175 | 60 x 200 | 60 x 200 |
| **Weight** | | | | | |
| Weight of 4 Bar System (kg/m) | 9.45 | 9.45 | 14.2 | 19.4 | 23.2 |

## 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:**

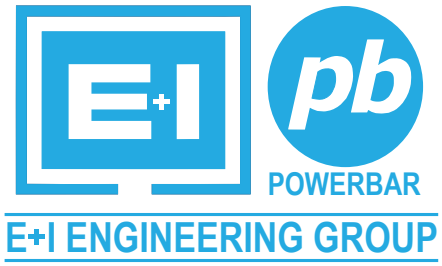
- Minimum length - 600mm
- Maximum length - 4000mm

## 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.
- Horizontal distribution busbar positioned on its 'edge' must always be oriented with the Neutral phase to the top.

**Operating Conditions:**

- Ambient Temp : 0°C to +40°C
- Relative Humidity: 95% or below.
- Product designed for indoor use.

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