Power Xpert® Busbar
Busbar systems with aluminium and copper conductors

Adaptable busbar systems for virtually any application

- LUX lighting range 25 - 63 A
- Low Power LP range 40 - 125 A
- Medium Power MP range 125 - 800 A
- Low Impedance XP range 800 - 6300 A
Energizing a world that demands more.

Discover today’s Eaton.

Powering business worldwide

As a global diversified power management company, we help customers worldwide manage the power needed for buildings, aircraft, trucks, cars, machinery and businesses.

Eaton’s innovative technologies help customers manage electrical, hydraulic and mechanical power more reliably, efficiently, safely and sustainably.
Power Xpert® Busbar
Al & Cu busbar systems

A complete range of 25 - 6300 A for any installation

Eaton’s busbar Power Xpert® system is the obvious choice when searching for a combination of technical performance and attractive design. Constant development of the range for over 30 years has not only ensured economical and reliable solutions; Power Xpert® Busbar has evolved into an unsurpassed range able to adapt to virtually any installation.

Power Xpert® Busbar is an integral part of the product offering from Eaton. Complementing Eaton’s range of low voltage distribution equipment from packaged substations and MV and LV distribution switchboards to a complete selection of fused switchgear, circuit breaker systems, motor control gear and OEM products.

Power Xpert® Busbar systems are thoroughly tested and comply fully with IEC 60439-2 (LUX, LP, MP Cu) and IEC 61439-6 (MP Alu, XP Cu, XP Alu). The range extends from 25 - 6300 A with lighting, low, medium and low impedance high power versions, together with a wide selection of accessories and tap-off units.

The straightforward and highly styled design makes Power Xpert® Busbar easy to both install and use - truly the system with style!

Working with Power Xpert® Busbars brings you the following advantages

The Eaton range of Power Xpert® Busbar tested to the latest IEC 61439-6 standard makes for the perfect choice where flexibility and reliability are key to a projects success.

We have the ability to produce the busbars that meet the requirement of any indoor installation.

Eaton is a worldwide player in busbar systems. Delivering busbars to many countries globally.

The advantages of Power Xpert® busbars summarized:

- Complete range for Lighting (LUX), Low Power, Medium Power and High Power busbar up to 6300 A
- Verified by testing according to IEC 61439-6
- Complete product range in Copper and Aluminum
- Vertical ("Rising Main") or horizontal ("Distribution") configuration
- Wide range of feed and tap-off units incorporating Eaton devices
- No de-rating in line with current standards
- Our busbars apply to IP55 in any orientation
- Tested Fire barriers kits available
- The Power Xpert® range ensures Ease of installation: we deliver with self-locating joints and any busbars lengths required up to 3 m.
- High degree of flexibility
- Wide range of options and accessories
- Eaton busbars are fit-for-purpose for Eaton switchboards and panelboards
- Eaton has excellent customer service
- Eaton has worldwide references for busbar applications

Power Xpert® Busbar ranges

LUX lighting range
25 - 63 A

Low Power range
40 - 125 A

Medium Power range
Aluminium, 160 - 630 A
Copper, 125 - 800 A

Low impedance XP range
Aluminium, 800 - 4000 A
Copper, 800 - 6300 A
LUX lighting application areas
Most common application areas for LUX lighting range are:
• Commercial Areas
  ▪ Showrooms
  ▪ Department Stores, etc.
• Industrial Areas
  ▪ Factories
  ▪ Distribution Warehouses

LP Low Power application areas
Most common application areas for LP Low Power busbars are:
• Commercial Areas
  ▪ Universities & College Workshops.
  ▪ Computer Suites
• Industrial Areas
  ▪ Batteries Charge area
  ▪ Roller Shutter doors
  ▪ Feeder busbar to LUX lighting range

MP Medium Power application areas
Most common application areas for MP Medium Power busbars are:
• Commercial Areas
  ▪ Rising Mains Offices
  ▪ Shopping Malls
  ▪ Data Centres
  ▪ Hospitals
  ▪ Colleges
  ▪ High Rise Buildings
• Industrial Areas
  ▪ Manufacturing facilities / Factories
  ▪ Distribution Warehouses

XP Low Impedance application areas
Most common application areas for XP busbars are:
• Commercial Areas
  ▪ Rising Mains Offices
  ▪ Shopping Halls
  ▪ Data Centres
  ▪ Hospitals
  ▪ Colleges
  ▪ High Rise Buildings
• Industrial Areas
  ▪ Manufacturing facilities / Factories
  ▪ Switchboard / Transformer interlinks
  ▪ Automotive
Eaton’s LUX lighting range is available in 25, 40 and 63 A versions. Used mainly for overhead installation it is suitable for all types of commercial lighting and is ideal for use in retail stores, offices and hotels due to its flexibility in creating specific lighting designs.

The aluminium-clad trunking is available in 4 pole and 6 pole configurations with tap-off positions every metre along a standard 3 m length. Simple to install, with no requirement for bolting lengths together the range also incorporates a flexible joint to accommodate changes in height or direction. The fused tap-off unit is phase interchangeable on site or at the factory and can be supplied with or without cable fitted.

A straightforward and highly styled answer to all of your lighting needs.

**Features LUX lighting range**

- 25, 40 & 63 A ratings
- Suitable for use at 400 V 3 phase 50 Hz
- Fully certified to IEC 60439-2 and BSEN 60439-2.
  Testing will be updated to IEC 61439-6, before the current product standard IEC 60439-2 is withdrawn.
- 4 pole & 6 pole
- Low weight Aluminium housing
- IP41 or IP55 when joint covers are fitted
- 1 m & 3 m standard lengths
- Single phase interchangeable tap-off
- Choice of end feeds
- Flexible lengths and accessories

Our low power range covers 40, 63, 80, 100 and 125 A ratings. With its attractive appearance and suitability for wall, bench, overhead, or underfloor installation it provides the obvious solution for a wide variety of institutional and commercial applications.

Supplied as standard in 1, 2 and 3 m lengths and complemented with a selection of angles and intersections it allows the layout of an installtion to be arranged as required. The five bar configuration incorporates separate neutral and earth conductors providing the facility for a ‘clean earth’ where required. This, along with tap-off units every third of a metre and a variety of tap-off units, ensures the most efficient and flexible solution available - ideally suited for offices, banks, computer centres and light industrial applications.

**Features Low Power range**

- 40, 63, 80, 100 & 125 A ratings
- Suitable for use at 400 V 3 phase, 4 wire, 50 Hz
- Fully certified to IEC 60439-2 and BSEN 60439-2.
  Testing will be updated to IEC 61439-6, before the current product standard IEC 60439-2 is withdrawn.
- Low weight Aluminium housing
- IP4X ingress protection
- 5 Bar (internal 100% N)
- Standard 1, 2 & 3 m lengths, special lengths also available between 200 mm and 3000 mm
- Tap-offs outlets every 333 mm
- Wide selection of tap-off units fitted with MCBs or fuse links

### Rating chart

<table>
<thead>
<tr>
<th>Current rating</th>
<th>CSA dims WxD</th>
<th>Bar configuration</th>
<th>Ingress protection</th>
<th>Standard lengths</th>
<th>No. of tap-off positions per 3m</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LUX – Lighting</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>25 A</td>
<td>50 x 18 mm</td>
<td>4 &amp; 6</td>
<td>IP41 &amp; IP55</td>
<td>1 &amp; 3 m</td>
<td>3</td>
</tr>
<tr>
<td>40 A</td>
<td>50 x 18 mm</td>
<td>4 &amp; 6</td>
<td>IP41 &amp; IP55</td>
<td>1 &amp; 3 m</td>
<td>3</td>
</tr>
<tr>
<td>63 A</td>
<td>50 x 18 mm</td>
<td>4</td>
<td>IP41 &amp; IP55</td>
<td>1 &amp; 3 m</td>
<td>3</td>
</tr>
<tr>
<td><strong>LP – Low power</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40 A</td>
<td>80 x 31 mm</td>
<td>5</td>
<td>IP4X</td>
<td>1, 2, &amp; 3 m¹</td>
<td>8</td>
</tr>
<tr>
<td>63 A</td>
<td>80 x 31 mm</td>
<td>5</td>
<td>IP4X</td>
<td>1, 2, &amp; 3 m¹</td>
<td>8</td>
</tr>
<tr>
<td>80 A</td>
<td>80 x 31 mm</td>
<td>5</td>
<td>IP4X</td>
<td>1, 2, &amp; 3 m¹</td>
<td>8</td>
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<tr>
<td>100 A</td>
<td>80 x 31 mm</td>
<td>5</td>
<td>IP4X</td>
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<tr>
<td>125 A</td>
<td>80 x 31 mm</td>
<td>5</td>
<td>IP4X</td>
<td>1, 2, &amp; 3 m¹</td>
<td>8</td>
</tr>
</tbody>
</table>

¹ Site specific lengths from 200 mm upto 3000 mm are available.
Eaton’s Power Xpert® Busbar MP system is available in 125, 160, 250, 400, 630 and 800 A ratings. Installed primarily in hotels, department stores, hospitals, offices and industrial installations the MP range is often used for vertical risers or as a supply system for the LP range, in addition to traditional overhead applications.

The Medium power range has options of either Aluminium or Copper conductor versions. The Aluminum conductor range is a new addition to the product family and is tested to the latest IEC 61439-6 and has ratings 160 A up to 630 A and now uses the 1 bolt cassette joint. The current copper range has ratings 125 – 800 A and is tested to IEC60439-2.

- Aluminum range from 160 - 630 A (tested IEC 61439-6)
- Copper range from 125 - 800 A (tested IEC 60439-2)

MP busbar is a 5 bar 3-phase system with a separate full neutral and integral earth conductor thereby removing the necessity to depend on the busbar housing for continuity.

Adaptable to virtually any design, changes in layout can be accommodated very easily - a wide variety of angles and intersections are available, tap-off outlets are provided every third of a metre, and tap-off units are simply plugged into position – a popular and well-proven solution for industries where flexibility and adaptability are essential.

**Features MP-range**

- Copper and Aluminium versions
- Fully certified to IEC 61439-6 (MP Alu) and IEC 60439-2 (MP Cu)
- Short Circuit Icw 25 kA
- No derating for whatever application or direction
- Medium Power protection IP4x & IP54
- Fire barriers available. Tested in accordance with EN 1366-3, DIN 4102-9 & DIN 4102-12
- MP design Aluminium busbar using cassette joint design for ease of installation
- No special mounting tools required
- Fixing brackets can be mounted anywhere on a 3 m length
- Lightweight Aluminium construction
- Complete range of tap-off units with Eaton devices.
- Wide range of options and accessories
- Worldwide references
General characteristics MP range

For 125, 160, 250, 400, 630 A and 800 A applications Eaton’s Power Xpert® Busbar MP system is the natural extension to the LP range. Assembly of the pre-fabricated units is made easy with the housing offering IP4X protection as standard (IP54 and tin plated versions available on request).

The aluminium profile with interlocking, flame retardant moulded covers provide both support and segregation for the five conductors and includes tapping outlets every third of a metre. The fifth bar can be used as a clean earth when specified, in which case the aluminium profile provides a separate protective earth.

A full size neutral is incorporated.

A wide range of metalclad tap-off units including switch disconnectors, fuse units, MCCBs, fuse combination switches and MCBs are available along with a large selection of angles and accessories.

For riser applications it is recommended that a block bar is fitted every 9 metres and it is fitted integral to the straight length. Aluminium ratings 250 A, 400 A and 630 A are supplied as standard with block bar fitted. Copper ratings 630 A and 800 A are supplied as standard with block bar.

Power Xpert® MP construction overview

The aluminium busbar 250 A, 400 A, 630 A and copper 800 A busbar incorporates a single bolt joint connection complete with a torque set spanner, which presets the connection torque on installation. These torque spanners are available for future maintenance as a separate item. The cassette joint pack also allows removal of installed lengths without disturbing the rest of the installation, allowing more flexible installation scheme to be managed.

MP Aluminium range

The MP Aluminium range is tested according to IEC 61439-6, EN 61439-6 and BSEN 61439-6.

MP Copper range

The MP Copper range is tested according to IEC 60439-2, EN 60439-2 and BSEN 60439-2.

Rating chart

<table>
<thead>
<tr>
<th>Current rating</th>
<th>CSA dims WxD</th>
<th>Bar configuration</th>
<th>Ingress protection</th>
<th>Standard lengths</th>
<th>No. of tap-off positions per 3m</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MP – Medium power Copper</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>125 A</td>
<td>142 x 48 mm</td>
<td>5</td>
<td>IP4X &amp; IP54</td>
<td>1, 2, &amp; 3 m¹</td>
<td>8</td>
</tr>
<tr>
<td>160 A</td>
<td>142 x 48 mm</td>
<td>5</td>
<td>IP4X &amp; IP54</td>
<td>1, 2, &amp; 3 m¹</td>
<td>8</td>
</tr>
<tr>
<td>250 A</td>
<td>142 x 48 mm</td>
<td>5</td>
<td>IP4X &amp; IP54</td>
<td>1, 2, &amp; 3 m¹</td>
<td>8</td>
</tr>
<tr>
<td>400 A</td>
<td>142 x 82 mm</td>
<td>5</td>
<td>IP4X &amp; IP54</td>
<td>1, 2, &amp; 3 m¹</td>
<td>8</td>
</tr>
<tr>
<td>630 A</td>
<td>142 x 82 mm</td>
<td>5</td>
<td>IP4X &amp; IP54</td>
<td>1, 2, &amp; 3 m¹</td>
<td>7</td>
</tr>
<tr>
<td>800 A</td>
<td>142 x 82 mm</td>
<td>5</td>
<td>IP4X &amp; IP54</td>
<td>1, 2, &amp; 3 m¹</td>
<td>7</td>
</tr>
<tr>
<td><strong>MP – Medium power Aluminium</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>160 A</td>
<td>142 x 48 mm</td>
<td>5</td>
<td>IP4X &amp; IP54</td>
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<td>250 A</td>
<td>142 x 82 mm</td>
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<td>400 A</td>
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<td>7</td>
</tr>
<tr>
<td>630 A</td>
<td>142 x 82 mm</td>
<td>5</td>
<td>IP4X &amp; IP54</td>
<td>1, 2, &amp; 3 m¹</td>
<td>7</td>
</tr>
</tbody>
</table>

¹Site specific lengths from 200 mm upto 3000 mm are available. ²IP4X standard, IP54 on request.
Power Xpert® XP range  Aluminium and Copper, 800 - 6300 A

The XP system brings the design of low impedance, sandwich construction busbar to a new superior level. The XP System is available in ratings from 800 - 6300 A.

The XP low impedance range has been newly tested to IEC 61439-6 and comes complete with IP55 as standard with short circuit capacities up to 100 kA.

– Aluminum range from 800 - 4000 A (tested to IEC61439-6)
– Copper range from 800 - 6300 A (tested to IEC61439-6)

XP busbar can be supplied in varying bar configurations from 3 bar to 6 bar. The system can be adapted to any building type with the wide variation of accessories available.

An easily assembled cassette type joint is provided for 800 - 6300 A ratings.

Adaptable to virtually any design, changes in layout can be accommodated very easily: a wide variety of angles and intersections are available, tap-off outlets up to three per 3 m length, and tap-off units are simply plugged into position – a popular and well-proven solution for industries where flexibility and adaptability are essential.

Features XP-range

• Copper and Aluminium versions
• Fully certified to IEC 61439-6 (XP Alu & XP Cu)
• Short Circuit Icw 100 kA
• XP Sandwich protection IP55 as standard
• Fire barriers available. Tested in accordance with EN 1366-3, DIN 4102-9 & DIN 4102-12
• XP new design has only 6 joint fixings, 62% less than previous design making installation even faster
• No special mounting tools required
• Fixing brackets can be mounted anywhere on a 3 m length.
• Lightweight Aluminium construction
• Tap-off units with Eaton devices
• Low impedance and heat dissipation makes busbars an environmental friendly product
• Wide range of option and accessories
• Painted RAL7035
• Worldwide references
General characteristics XP range

Complementing the internationally established Power Xpert® Busbar range, the XP system brings the design of low impedance, sandwich construction busbar system to a new, superior level. Eaton’s Power Xpert® Busbar XP system is available in ratings from 800 to 6300 A.

Power Xpert® Busbar XP trunking utilises aluminium-extruded housing bringing significant weight saving advantages whilst ensuring that strength and rigidity is enhanced.

These user-friendly features combine to maximise performance standards and greatly reduce installation times.

Power Xpert® XP construction overview

XP Aluminium range

The XP Aluminium range is tested according to IEC 61439-6, EN 61439-6 and BSEN 61439-6.

XP Copper range

The XP Copper range is tested according to IEC 61439-6, EN 61439-6 and BSEN 61439-6.

Rating chart

<table>
<thead>
<tr>
<th>Current rating</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Low impedance XP Copper</strong></td>
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</tr>
<tr>
<td>800 A</td>
<td>175 x 125 mm</td>
<td>3, 4, 5, 5N² &amp; 6</td>
<td>IP55</td>
<td>1, 2, &amp; 3 m¹</td>
<td>1 to 5</td>
</tr>
<tr>
<td>1000 A</td>
<td>175 x 140 mm</td>
<td>3, 4, 5, 5N² &amp; 6</td>
<td>IP55</td>
<td>1, 2, &amp; 3 m¹</td>
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<td>1250 A</td>
<td>175 x 155 mm</td>
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<td>1, 2, &amp; 3 m¹</td>
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<td>1600 A</td>
<td>175 x 200 mm</td>
<td>3, 4, 5, 5N² &amp; 6</td>
<td>IP55</td>
<td>1, 2, &amp; 3 m¹</td>
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<tr>
<td>2000 A</td>
<td>175 x 235 mm</td>
<td>3, 4, 5, 5N² &amp; 6</td>
<td>IP55</td>
<td>1, 2, &amp; 3 m¹</td>
<td>1 to 5</td>
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<tr>
<td>2500 A</td>
<td>175 x 275 mm</td>
<td>3, 4, 5, 5N² &amp; 6</td>
<td>IP55</td>
<td>1, 2, &amp; 3 m¹</td>
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<tr>
<td>3200 A</td>
<td>175 x 340 mm</td>
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<td>IP55</td>
<td>1, 2, &amp; 3 m¹</td>
<td>1 to 5</td>
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<tr>
<td>4000 A</td>
<td>175 x 410 mm</td>
<td>3, 4, 5, 5N² &amp; 6</td>
<td>IP55</td>
<td>1, 2, &amp; 3 m¹</td>
<td>1 to 5</td>
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<tr>
<td>5000 A</td>
<td>175 x 490 mm</td>
<td>3, 4, 5, 5N² &amp; 6</td>
<td>IP55</td>
<td>1, 2, &amp; 3 m¹</td>
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<td>6300 A</td>
<td>175 x 701 mm</td>
<td>3, 4, 5, 5N² &amp; 6</td>
<td>IP55</td>
<td>1, 2, &amp; 3 m¹</td>
<td>1 to 5</td>
</tr>
</tbody>
</table>

| **Low impedance XP Aluminium** | | | | | |
| 800 A          | 175 x 140 mm | 3, 4, 5, 5N² & 6 | IP55               | 1, 2, & 3 m¹     | 1 to 5                          |
| 1000 A         | 175 x 170 mm | 3, 4, 5, 5N² & 6 | IP55               | 1, 2, & 3 m¹     | 1 to 5                          |
| 1250 A         | 175 x 200 mm | 3, 4, 5, 5N² & 6 | IP55               | 1, 2, & 3 m¹     | 1 to 5                          |
| 1600 A         | 175 x 235 mm | 3, 4, 5, 5N² & 6 | IP55               | 1, 2, & 3 m¹     | 1 to 5                          |
| 2000 A         | 175 x 275 mm | 3, 4, 5, 5N² & 6 | IP55               | 1, 2, & 3 m¹     | 1 to 5                          |
| 2500 A         | 175 x 340 mm | 3, 4, 5, 5N² & 6 | IP55               | 1, 2, & 3 m¹     | 1 to 5                          |
| 3200 A         | 175 x 410 mm | 3, 4, 5, 5N² & 6 | IP55               | 1, 2, & 3 m¹     | 1 to 5                          |
| 4000 A         | 175 x 490 mm | 3, 4, 5, 5N² & 6 | IP55               | 1, 2, & 3 m¹     | 1 to 5                          |

¹Site specific lengths from 200 mm upto 3000 mm are available. ²5Bar 200% Neutral.
In addition to Eaton’s standard busbar features, many other custom made applications can be made possible

Eaton can offer the following services:

- **Site measurement** – upon receipt of an order, an engineer will attend site to survey routes and discuss any technical detail or questions that you may have. This service normally applies to Rising Busbar Systems and complex lateral runs where special lengths or angles maybe necessary to complete the project.

- **Pricing and configuration** – Eaton’s common pricing and configuration tool, “Bid manager”, provides a standardised working practice to provide budget quotations in the face of the customer. Linked closely with the latest autocad based drawing packages, Eaton can prepare full working drawings to make any installation run smoothly.

- **Installation** – we have an experienced site installation team that will provide competitive pricing for your installation works. Alternatively, a full training program can be offered for installation techniques if required.

- **Commissioning** – as part of our site services we can also offer the services for testing and commissioning of installations

Welcome to Busbar Layout Tool

Busbar Layout Tool is Eaton’s configuration software for electrical distribution products. With this tool, you can build complex busbar configurations and visualize them in customized CAD environment. This automation tool makes short work of a manual, labour-intensive process. It’s much faster than working on paper or with any other CAD add-on – you can create alternate versions of your project in a snap!

Busbar Layout Tool is designed to help you move fast, be accurate, and look professional, a valuable resource that gives you a strategic advantage.

The application is based on fully CAD environment. Most of standard CAD features are also implemented in Busbar Layout Tool. Additionally a lot of customizations and assembling algorithms were added to improve a configuration process. All you need to do is to set start and end point of a busbar. Next the tool will provide you with a whole configuration, easy and quickly to give you an impressive visualization and a list of products.

- Supports Eaton’s Power Xpert® busbar system
- Standalone CAD software
- Graphically oriented tool
- All well-known CAD features are supported
- Advanced configuration algorithm
- Three configuration methods
- Product list in a second
Fire Barrier considerations

MP & XP trunking have been 3rd party tested and achieved a 240 min fire integrity rating to clause 8.2.15 of IEC 60439-2:2000, testing against ISO834.

MP Trunking is factory-fitted with internal fire barriers, for when the trunking passes through walls or ceilings where fire integrity needs to be maintained. Eaton’s internal fire barriers are of the intumescent gasket type giving a 4hr rated to BS476 Part 20.

MP trunking is fitted with interlocking Low Smoke Halogen Free covers, flammability grade UL94 V-O, for additional safety in not permitting toxic smoke in the event of fire.

XP trunking due to its sandwich configuration does not need an internal fire barrier.

Fire Barrier & Block Bar Fitted

- Fire Barriers are 4hour rated to BS476 Part 20
- Block Bar is used to prevent slippage of the bars
- Recommendations for fitment every 9 m in a vertical application
- 630 A & 800 A lengths are fitted with Block Bar as standard

Power Xpert® XP and MP – Fire testing

Testing according EN 1366-3 / DIN 4102-9

The EN 1366-3 / DIN 4102-9 is the standard for Fire Safety and Fire spread prevention. Without any means a fire can spread horizontally or vertically from one room or floor to another through the hole that has been created to pass the busbar system through. To prevent this, the Eaton busbar system is fitted with an external fire barrier kit which is passed through a floor or wall and sealed in place to prevent the spread of fire.

Recent 3rd party tests confirmed both “Integrity E120” and “Insulation I120” values by achieving 120 minute ratings. Our Eaton busbar did for both indicators in fact better than the published standard by 10% and were verified at 132 minutes.

BS EN 1366-3 & DIN4102-9 Fire resistance tests for Penetration seals

- Penetration seals used to seal gaps around busbar trunking when passing through walls and ceiling
- Eaton Busbar has passed this test with 2 hour ratings S120 & I120

DIN 4102-12 to determine circuit integrity

- To determine circuit integrity when exposed to a fire as specified in DIN4102-12
- The busbar is fully enclosed in promatect L500 and tested to E120

Technical details

Conformity to standards

Eaton confirms the product ranges listed have been fully tested to the following clauses of the standard.

- Low power trunking = all ratings
- Medium power = all ratings
- XP low impedance (800 - 3200 A) = all clauses
- XP low impedance (4000 - 6300 A) = selected clauses

3rd Party Certification. To IEC 60439-2 2000+A1:2005 clauses:

<table>
<thead>
<tr>
<th>Description</th>
<th>IEC 60439-2</th>
<th>Testing house</th>
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<tbody>
<tr>
<td>Temp rise</td>
<td>8.2.1</td>
<td>KEMA</td>
</tr>
<tr>
<td>Dielectric properties</td>
<td>8.2.2</td>
<td>KEMA</td>
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Advantages of using Busbar in place of cables

- Busbars are a cost effective alternative to cabling. The initial purchase of cable can be less expensive compared to busbar and hence should not be compared purely on purchase price. It must be noted that as current ratings increase the advantages of using busbar increase. As current increases the busbar rating can increase in size however cable sizes are limited and multiple cables may have to be used to carry the equivalent of one busbar.
- Busbar replaces multiple cable runs with associated supporting metal work.
- Busbar require less termination space in switchboards and transformers.
- Busbars have short installation time compared to cables. Cable can be difficult and timely to install requiring in some instance specialist cable pulling teams to pull the cable around a building resulting in high labour costs. Busbars do not need cable trays and have no requirement for multiple cable runs (Installation Cost savings for contractor). Busbar has less fixings per metre run than for cable.
- Busbars have greater mechanical strength than cables, with minimal fixings.
- Busbar systems can be installed by non-specialist installers. The competent person is the one that tests the installation.

- Due to the Low impedance the busbars have a low heat dissipation. This reduces the cost of energy losses and also implies that busbars are a sustainable product.
- Busbar is manufactured to fit the building resulting in minimum wastage. i.e. busbar can be made with 90 degree bends but cable has to be installed to regulation with strict adherence to bending radius rules and hence will use more material and space. Busbar connections are there for compact and take up less space.
- Busbar elements in the systems are certified and type tested products.
- Busbar systems are easily extendible. Busbar can be easily modified and circuits can be added easily by means of plug-in tap-off boxes.
- Busbars have a facility for multiple Tap-off outlets (Flexibility to accommodate power requirement changes).
- Busbars have type tested short circuit fault ratings.
- Voltage drop for busbars is lower than the equivalent cable arrangement.

Busbar vs cable in rising main applications
Current situation

With the continued increase in power and cooling requirements for Data Centers, there has been a shift in facilities design to utilize overhead power distribution in recent years. Why?

- Wiring to the IT enclosures was typically located beneath the raised floor:
  - Not uncommon to remove a floor tile and find hundreds of wires running in various directions
  - Servicing, rerouting, or adding cables can be difficult and expensive
  - Identification and disconnecting can be difficult
  - Air circulation can become restricted due to too many cables
  - Pre-existing under floor cabling may be undersized to handle increased power loads

Benefits of using busbars to distribute power overhead

- Clears the floor of cables and wiring
- Reduces the number of panelboards (RPP’s)
- Instead of having the overcurrent protection at the panelboard for the receptacles that serve the racks, it is located at the overhead drop
- More useable floor space
- Total installed cost is less
- Addition or relocation of cord drops is very fast, easy, and less costly
- Servicing an individual cabinet can be done at the point of use without having to go to a remote panelboard to turn off the circuit or human error of shutting off the wrong circuit
- Re-configurable, easy to re-locate

Power Distribution Moving Overhead

The above approach utilizes XP for Transformer to Main Distribution connection and Main Distribution to Subdistribution connection and MP Busbars with tap-off units c/w CE Sockets for plug-in connection.

Power Xpert® XP – high power Transformer to Switchboard connection and/or Switchboard to Subdistribution connection

- Copper & Aluminium conductors
- Ingress protection IP4X to IP55 for indoor use
- Class B 130º C Mylar wrapped Insulation
- Sandwich Design throughout Feeder and Plug-In Sections
- Standard Phasing from Left to Right E, L1, L2, L3, N1 and N2
- The make-up of the product allows for varying configurations
  - 3 Bar (Case PE)
  - 4 Bar (Case PE)
  - 5 Bar (Internal Earth)
  - 5 Bar + 200% Neutral (Case PE)
  - 6 Bar includes 200%N & Internal Earth
- Complete range from 800 A to 6300 A
- Fully 3rd Party Certified Trunking & Tap-offs
- Tap-offs utilising Eaton’s full range of Circuit Protection devices

Power Xpert® MP – medium power Data Center Server Rack distribution busbar

- Full product offering designed to meet the demanding requirements of data center customers
- Copper & Aluminium conductors
- Standard finish or customer specific on request
- Multiple tapoff units for power monitoring
- Fully 3rd Party Certified busbars & Tap-offs
- Tap-offs utilising Eaton’s full range of Circuit Protection devices
Reference projects

Galvano Techniek (industry), Hengelo (The Netherlands)
Power Xpert® MP (Cu) at 160 A and Power Xpert® XP (Alu) at 2000 A.

Previder (Datacenter), Hengelo (The Netherlands)
Power Xpert® XP (Alu) 1600 A, 3200 A, 4000 A for Transformer to switchboard connection.

Avebe (food industry), Ter Apelkanaal (The Netherlands)
Power Xpert® XP (Alu) at 2500 A, transformer connection.

Eaton Capitole 20 switchboard feeds Power Xpert® XP and Power Xpert® MP busbars.

Power Xpert® XP system before cassette joint has been installed (construction picture).

Type 1 busbar transformer connection and flexible braids.

OTP Airport, Romania
Power Xpert® XP.
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Eaton is dedicated to ensuring that reliable, efficient and safe power is available when it’s needed most. Building on over 100 years of experience in electrical power management, the experts at Eaton deliver customized, integrated solutions to solve your most critical challenges. To learn more visit Eaton.com/Electrical

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PowerChain™ solutions help enterprises achieve sustainable and competitive advantages through proactive management of the power system as a strategic, integrated asset throughout its life cycle, resulting in enhanced safety, greater reliability and energy efficiency. For more information, visit www.eaton.com/electrical.

Eaton low voltage products in the energy chain

1. Capitole 20
2. Power Xpert® CX
3. Capitole 40
4. Busbar systems