VERTIV.

Vertiv™ PowerBar HPB

Overview

The busbar is housed in an aluminium casing which acts as an earth. Ingress protection ratings are available from IP55. The busbar is painted in grey (RAL 7035). Other colours can be accommodated on request.

Features:

- Copper conductor or tinned aluminium conductor options available
- Joint pack construction with double headed shear nuts for quick installation
- Up to 5 tap off points per 3m length
- All tap offs have mechanical/ electrical interlocks with an 'earth first, break last' safety feature
- Pressed out tags for tap off connections

Vertiv's High Powerbar (HPB) is a 1000 Volt totally encased, non-ventilated, low impedance busbar. The range is available from 800A - 6600A with multiple bar configurations to suit project requirements.

Standards

The Vertiv™ HPB range is fully ASTA Tested Certified and is CE approved. It is manufactured in a certified management system environment where Quality ISO 9001, ISO 45001 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

10.2.2	Resistance to Corrosion
10.2.3.2	Resistance to Abnormal Heat and Fire Due to Internal Electric Effects
10.2.4	Resistance to Ultraviolet (UV) Radiation
10.2.5	Lifting
10.2.6	Mechanical Impact Test
10.2.7	Marking
10.2.101	Ability to Withstand Heavy Mechanical Loads
10.2.102	Thermal Cycling Test
10.3	Degree of Protection of Enclosures
10.4	Clearances and Creepage Distances
10.5.2	Effective Continuity Between the Exposed Conductive Parts of the BTS and Protective Circuit
10.5.3	Effectiveness of the Assembly for External Faults
10.9.2	Power Frequency Withstand Voltage
10.9.3	Impulse Withstand Voltage
10.10	Temperature Rise Limits (Indoor Horizontal & Vertical Installation Type Tested)
10.11	Short Circuit Withstand Strength
10.13	Mechanical Operation
10.101	Resistance to Flame Propagation
10.102	Fire Resistance in Building Penetration

ASTA Certificates

Vertiv has completed extensive testing at ASTA and KEMA accredited laboratories to ensure the products supplied meet the international requirements.

ASTA Diamond Licence No. 1191

The ASTA Diamond Mark is a symbol of electrical safety. It provides evidence for customers and authorities that Intertek has independently tested and certified the product's compliance to applicable safety standards.

Seismic Compliance

The Vertiv HPB Product range (800A-6600A) has a qualification level - high (Zone-4&5) in accordance to IEEE standard 693-2005.60068-2-3 (Damp Heat Cyclic).

All certificates available on request

ISO 45001

bsi. ISO 9001:2015 Quality Management

ISO 9001:2015
FM 12680

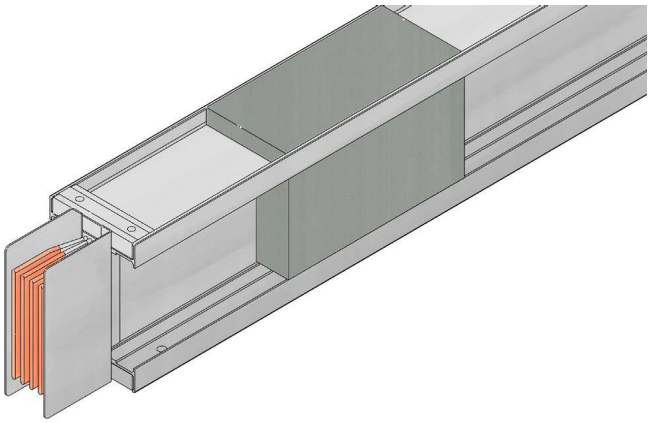
bsi. ISO 14001:2015 Environmental Management

ISO 14001:2015
No: EMS 566536

Corrosion Resistance

IEC 60068-2-3 (Damp Heat Cyclic).

Technical Features



- Vertiv™ Powerbar HPB is constructed from high density 99.97% conductivity copper or 55% conductivity aluminium.
- The conductors are insulated with a Class B or Class F epoxy insulation applied uniformly using an electrostatic coating process. The epoxy coating is non-hygroscopic and chemical resistant with outstanding heat transfer characteristics.
- The low impedance sandwich design:
  - Improves heat dissipation.
  - Improves short circuit rating.
  - Reduces voltage drop/ impedance.
  - Removes potential pathways for flame, smoke and gas.
- Vertiv's patented process of pressed out tabs to connect tap off units protects the integrity of the conductor.
- Vertiv™ HPB is constructed with an all-aluminium housing. Aluminium is an extremely light metal and is cheaper and easier to install than steel. Aluminium is much less reactive than steel so it is more durable and easier to maintain.
- Vertiv HPB offers a 50% or 100% fully isolated earth for systems where earth isolation is required.
- Vertiv HPB offers a fully certified fire wallpenetration barrier for either a four hour or two hour rating.

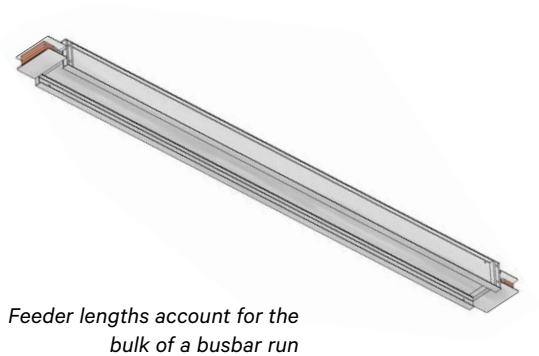
Configuration	Phases	Neutral	Earth
TP	100%	0%	Case
TP/N	100%	100%	Case
TP/E	100%	0%	100% or 50%
TP/NE	100%	100%	100% or 50%
TP/DN	100%	200%	Case

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

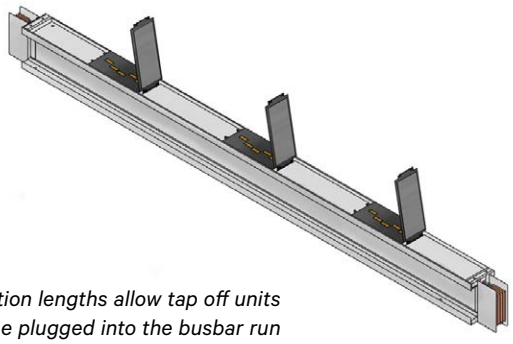
Straight Lengths

Straight Lengths

- Straight lengths can be supplied at any length from 600mm - 4000mm.
- The tap off slot outlet and cover are made from a durable, high strength, insulation material.
- The tap off slot cover prevents access to the contacts behind the cover and protects it from the entry of dirt, dust or moisture.
- Tap off units are IP55 as standard.



Feeder lengths account for the bulk of a busbar run



Distribution lengths allow tap off units to be plugged into the busbar run

The different types of build arrangement depending on rating of the required busbar

Copper

Busbar Rating (Amps)	Construction Type	Busbar Size (mm)	
		Height	Width
1000A	Single	130mm	145mm
1250A	Single	130mm	145mm
1350A	Single	130mm	145mm
1600A	Single	150mm	145mm
2000A	Single	185mm	145mm
2500A	Single	220mm	145mm
3200A	Single	290mm	145mm
4000A	Double	393mm	145mm
5000A	Double	463mm	145mm
6600A	Double	603mm	145mm

Aluminium

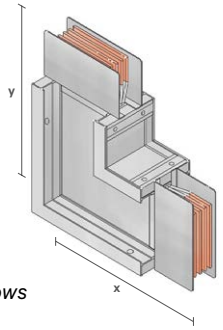
Busbar Rating (Amps)	Construction Type	Busbar Size (mm)	
		Height	Width
800A	Single	128mm	145mm
1000A	Single	138mm	145mm
1250A	Single	168mm	145mm
1400A	Single	183mm	145mm
1600A	Single	203mm	145mm
2000A	Single	258mm	145mm
2500A	Double	361mm	145mm
3200A	Double	431mm	145mm
4000A	Double	541mm	145mm
5000A	Triple	704mm	145mm

Note: *The maximum and minimum sizes recommended are not the limits of what can be produced, but a guideline to help you choose the correct product. Dimensions are taken from the centre of the joint.*

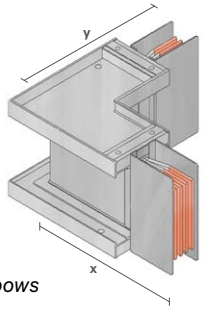
Elbows

Flatwise and Edgewise Elbows

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



Flatwise Elbows



Edgewise Elbows

Flatwise Elbow (Up or Down)

Copper

Ratings (Amps)	Minimum Leg Size		Standard Leg Size		Maximum Leg Size	
	X	Y	X	Y	X	Y
1000A	248mm	248mm	350mm	350mm	750mm	750mm
1250A	248mm	248mm	350mm	350mm	750mm	750mm
1350A	248mm	248mm	350mm	350mm	750mm	750mm
1600A	258mm	258mm	350mm	350mm	750mm	750mm
2000A	275mm	275mm	350mm	350mm	750mm	750mm
2500A	293mm	293mm	350mm	350mm	750mm	750mm
3200A	328mm	328mm	350mm	350mm	750mm	750mm
4000A	379mm	379mm	500mm	500mm	750mm	750mm
5000A	414mm	414mm	500mm	500mm	750mm	750mm
6600A	484mm	484mm	500mm	500mm	750mm	750mm

Aluminium

Ratings (Amps)	Minimum Leg Size		Standard Leg Size		Maximum Leg Size	
	X	Y	X	Y	X	Y
800A	248mm	248mm	350mm	350mm	750mm	750mm
1000A	253mm	253mm	350mm	350mm	750mm	750mm
1250A	268mm	268mm	350mm	350mm	750mm	750mm
1400A	275mm	275mm	350mm	350mm	750mm	750mm
1600A	285mm	285mm	350mm	350mm	750mm	750mm
2000A	313mm	313mm	350mm	350mm	750mm	750mm
2500A	364mm	364mm	500mm	500mm	750mm	750mm
3200A	399mm	399mm	500mm	500mm	750mm	750mm
4000A	454mm	454mm	500mm	500mm	750mm	750mm
5000A	536mm	536mm	600mm	600mm	750mm	750mm

Edgewise Elbow (Left or Right)

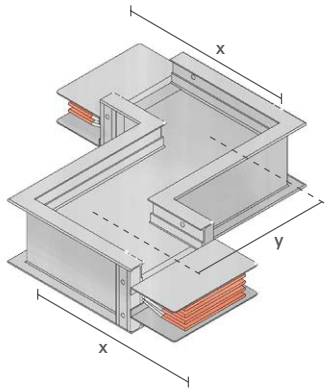
Copper

Ratings (Amps)	Minimum Leg Size		Standard Leg Size		Maximum Leg Size	
	X	Y	X	Y	X	Y
1000A - 6600A	257mm	257mm	350mm	350mm	600mm	600mm

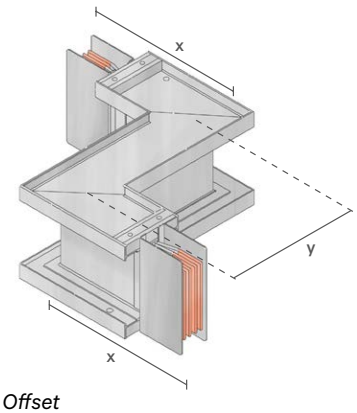
Aluminium

Ratings (Amps)	Minimum Leg Size		Standard Leg Size		Maximum Leg Size	
	X	Y	X	Y	X	Y
800A - 5000A	257mm	257mm	350mm	350mm	600mm	600mm

Offsets



Flatwise Offset



Edgewise Offset

Offset Sections

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

Flatwise Offset (Up or Down)

Copper

Ratings (Amps)	Minimum Leg Size		Maximum Leg Size	
	X	Y	X	Y
1000A	248mm	50mm	650mm	496mm
1250A	248mm	50mm	650mm	496mm
1350A	248mm	50mm	650mm	496mm
1600A	258mm	50mm	650mm	516mm
2000A	275mm	50mm	650mm	550mm
2500A	293mm	50mm	650mm	586mm
3200A	328mm	50mm	650mm	656mm
4000A	379mm	50mm	650mm	758mm
5000A	414mm	50mm	650mm	828mm
6600A	484mm	50mm	650mm	968mm

Aluminium

Ratings (Amps)	Minimum Leg Size		Maximum Leg Size	
	X	Y	X	Y
800A	248mm	50mm	650mm	496mm
1000A	253mm	50mm	650mm	506mm
1250A	268mm	50mm	650mm	536mm
1400A	275mm	50mm	650mm	550mm
1600A	285mm	50mm	650mm	570mm
2000A	313mm	50mm	650mm	626mm
2500A	364mm	50mm	650mm	728mm
3200A	399mm	50mm	650mm	798mm
4000A	454mm	50mm	650mm	908mm
5000A	536mm	50mm	650mm	1072mm

Edgewise Offset (Left or Right)

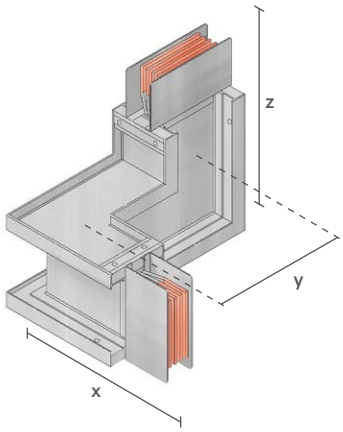
Copper

Ratings (Amps)	Minimum Leg Size		Maximum Leg Size	
	X	Y	X	Y
1000A - 6600A	255mm	80mm	510mm	600mm

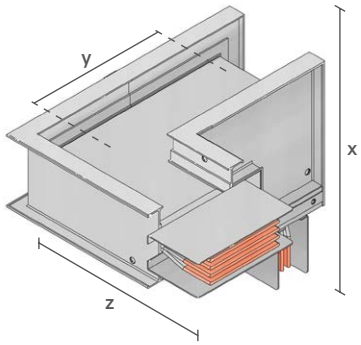
Aluminium

Ratings (Amps)	Minimum Leg Size		Maximum Leg Size	
	X	Y	X	Y
800A - 5000A	257mm	80mm	600mm	513mm

Combinations



Edge Right
Flatwise Up



Flatwise Up
Edgewise Right

Combination Elbows

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

Copper — **Minimum Leg Size**

Ratings (Amps)	X (Edgewise side)	Y	Z (Flatwise side)
1000A	255mm	188mm	248mm
1250A	255mm	188mm	248mm
1350A	255mm	188mm	248mm
1600A	255mm	198mm	258mm
2000A	255mm	215mm	275mm
2500A	255mm	233mm	293mm
3200A	255mm	268mm	328mm
4000A	255mm	319mm	379mm
5000A	255mm	354mm	414mm
6600A	255mm	424mm	484mm

Aluminium — **Minimum Leg Size**

Ratings (Amps)	X (Edgewise side)	Y	Z (Flatwise side)
800A	255mm	188mm	248mm
1000A	257mm	193mm	253mm
1250A	257mm	208mm	268mm
1400A	257mm	215mm	275mm
1600A	257mm	225mm	285mm
2000A	257mm	253mm	313mm
2500A	257mm	304mm	364mm
3200A	257mm	339mm	399mm
4000A	257mm	394mm	454mm
5000A	257mm	476mm	536mm

Copper — **Minimum Leg Size**

Ratings (Amps)	X (Edgewise side)	Y	Z (Flatwise side)
1000A	600mm	502mm	750mm
1250A	600mm	502mm	750mm
1350A	600mm	502mm	750mm
1600A	600mm	512mm	750mm
2000A	600mm	529mm	750mm
2500A	600mm	547mm	750mm
3200A	600mm	582mm	750mm
4000A	600mm	633mm	750mm
5000A	600mm	668mm	750mm
6600A	600mm	738mm	750mm

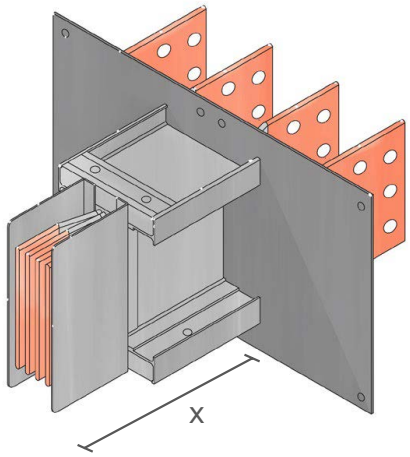
Aluminium — **Minimum Leg Size**

Ratings (Amps)	X (Edgewise side)	Y	Z (Flatwise side)
800A	600mm	503mm	750mm
1000A	600mm	508mm	750mm
1250A	600mm	523mm	750mm
1400A	600mm	530mm	750mm
1600A	600mm	540mm	750mm
2000A	600mm	568mm	750mm
2500A	600mm	619mm	750mm
3200A	600mm	654mm	750mm
4000A	600mm	709mm	750mm
5000A	600mm	791mm	750mm

Flanges

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.



Panel Flange

Panel Flange

Copper

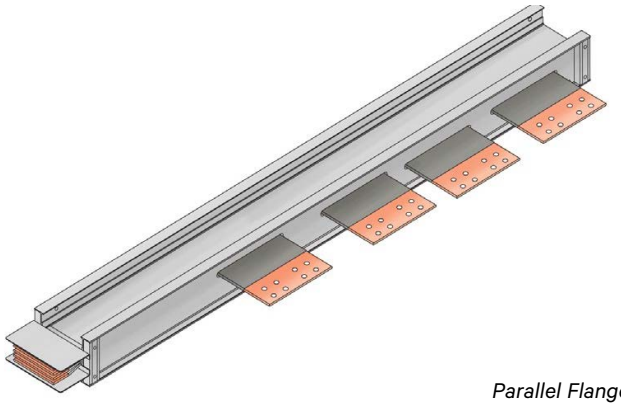
Ratings (Amps)	Minimum Leg Size	
	X	Y
1000A - 6600A	220mm	840mm

Aluminium

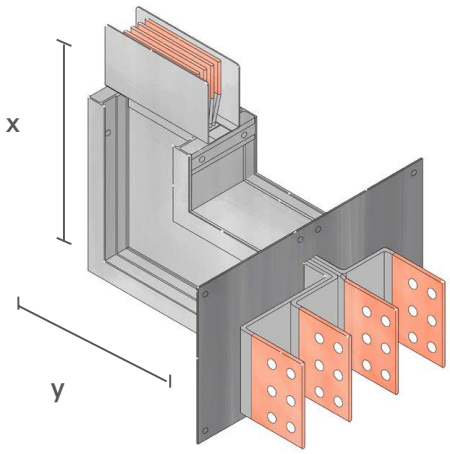
Ratings (Amps)	Minimum Leg Size	
	X	Y
800A - 5000A	220mm	840mm

Combination Flange

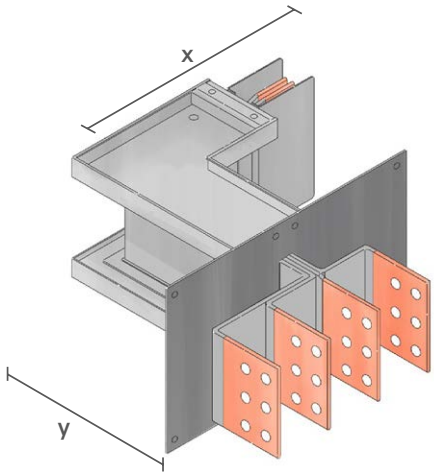
A combination flange is used when the minimum leg lengths for either the standard elbow or the standard flange cannot be met.



Parallel Flange



Flange Flatwise Elbow



Flange Edgewise Elbow

Flange/Elbows (Flatwise)

Copper

Ratings (Amps)	Minimum Leg Size		Maximum Leg Size	
	X	Y	X	Y
1000A	248mm	115mm	750mm	488mm
1250A	248mm	115mm	750mm	488mm
1350A	248mm	115mm	750mm	488mm
1600A	258mm	125mm	750mm	498mm
2000A	275mm	143mm	750mm	515mm
2500A	293mm	160mm	750mm	533mm
3200A	328mm	195mm	750mm	568mm
4000A	379mm	247mm	750mm	619mm
5000A	414mm	282mm	750mm	654mm
6600A	484mm	352mm	750mm	724mm

Aluminium

Ratings (Amps)	Minimum Leg Size		Maximum Leg Size	
	X	Y	X	Y
800A	248mm	115mm	750mm	488mm
1000A	253mm	120mm	750mm	493mm
1250A	268mm	135mm	750mm	508mm
1400A	275mm	143mm	750mm	515mm
1600A	285mm	153mm	750mm	525mm
2000A	313mm	180mm	750mm	553mm
2500A	364mm	232mm	750mm	604mm
3200A	399mm	267mm	750mm	639mm
4000A	454mm	322mm	750mm	694mm
5000A	536mm	403mm	750mm	776mm

Flange/Elbows (Edgewise)

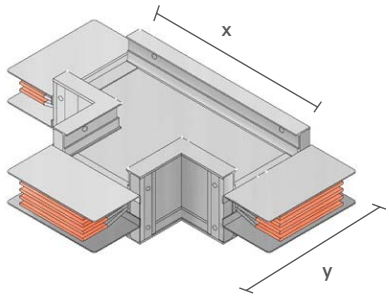
Copper

Ratings (Amps)	Minimum Leg Size		Maximum Leg Size	
	X	Y	X	Y
1000A - 6600A	255mm	123mm	600mm	495mm

Aluminium

Ratings (Amps)	Minimum Leg Size		Maximum Leg Size	
	X	Y	X	Y
800A - 5000A	257mm	124mm	600mm	495mm

Specials



Flatwise Tee

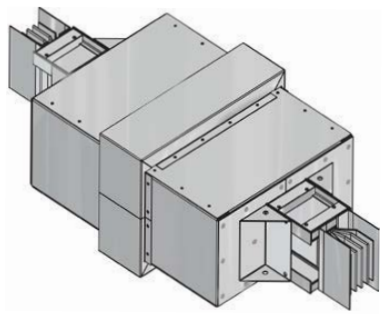
Flatwise tees are used to split one busbar run into two runs going in different directions.

Copper

Ratings (Amps)	Minimum Leg Size		Standard Leg Size		Maximum Leg Size	
	X	Y	X	Y	X	Y
1000A	496mm	248mm	700mm	350mm	1500mm	650mm
1250A	496mm	248mm	700mm	350mm	1500mm	650mm
1350A	496mm	248mm	700mm	350mm	1500mm	650mm
1600A	516mm	258mm	700mm	350mm	1500mm	650mm
2000A	550mm	275mm	700mm	350mm	1500mm	650mm
2500A	586mm	293mm	700mm	350mm	1500mm	650mm
3200A	656mm	328mm	700mm	350mm	1500mm	650mm
4000A	758mm	379mm	1000mm	500mm	1500mm	650mm
5000A	828mm	414mm	1000mm	500mm	1500mm	650mm
6600A	968mm	484mm	1000mm	500mm	1500mm	650mm

Aluminium

Ratings (Amps)	Minimum Leg Size		Standard Leg Size		Maximum Leg Size	
	X	Y	X	Y	X	Y
800A	496mm	248mm	700mm	350mm	1500mm	650mm
1000A	506mm	253mm	700mm	350mm	1500mm	650mm
1250A	536mm	268mm	700mm	350mm	1500mm	650mm
1400A	550mm	275mm	700mm	350mm	1500mm	650mm
1600A	570mm	285mm	700mm	350mm	1500mm	650mm
2000A	626mm	313mm	700mm	350mm	1500mm	650mm
2500A	728mm	364mm	1000mm	500mm	1500mm	650mm
3200A	798mm	399mm	1000mm	500mm	1500mm	650mm
4000A	908mm	454mm	1000mm	500mm	1500mm	650mm
5000A	1072mm	536mm	1200mm	600mm	1500mm	650mm



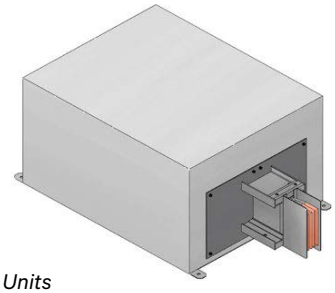
Expansion Units

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 40mm movement along the length of the busbar. Expansion units are recommended when a straight busbar run exceeds 40m.

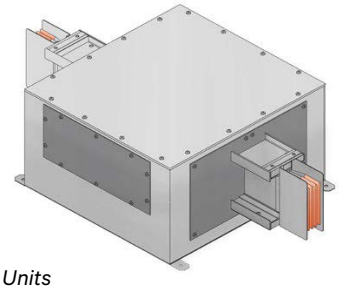
Feed Units & Caps

Cable Feed Units

- End feed units are used on the ends of busbar risers which are cable fed. Centre feed units are used in the middle of busbar risers which are cable fed.
- The size of cable feed required depends on a number of factors:
  - Rating of busbar
  - Size of cable
  - Number of cables
  - Use of a protective device or isolator



End Feed Units

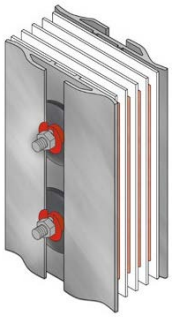


Centre Feed Units

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.

Joint Packs



Joint Packs

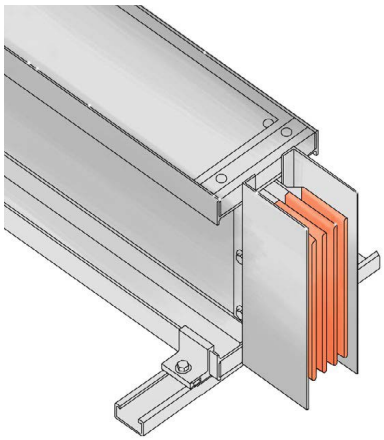
Joint Packs

The joint pack is a compression joint design utilising a specially designed Belleville washer to distribute the pressure evenly over the joint pack. The joint pack is supplied in specific sizes depending on the rating of busbar required.

Installation

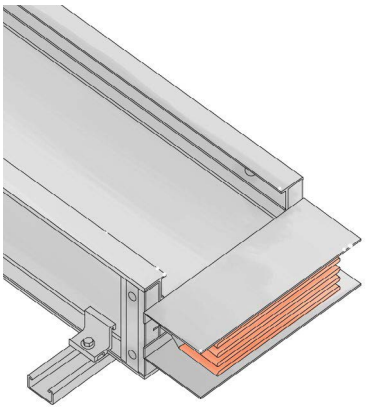
The modular design of Vertiv™ HPB allows it to be installed flat or on its edge. The installation is determined by:

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



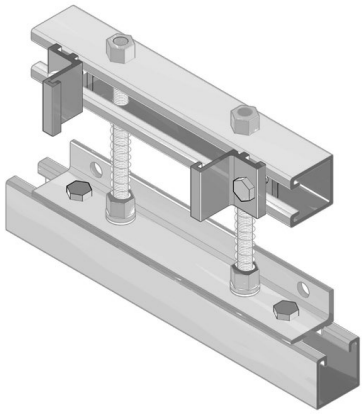
Edge Installation

Edge installation is the preferred method of installation for a smaller rated busbar system.



Flat Installation

Flat installation is the preferred method of installation for a higher rated, multistack busbar system. When installed on its flat all busbar rating has a height of 145mm.



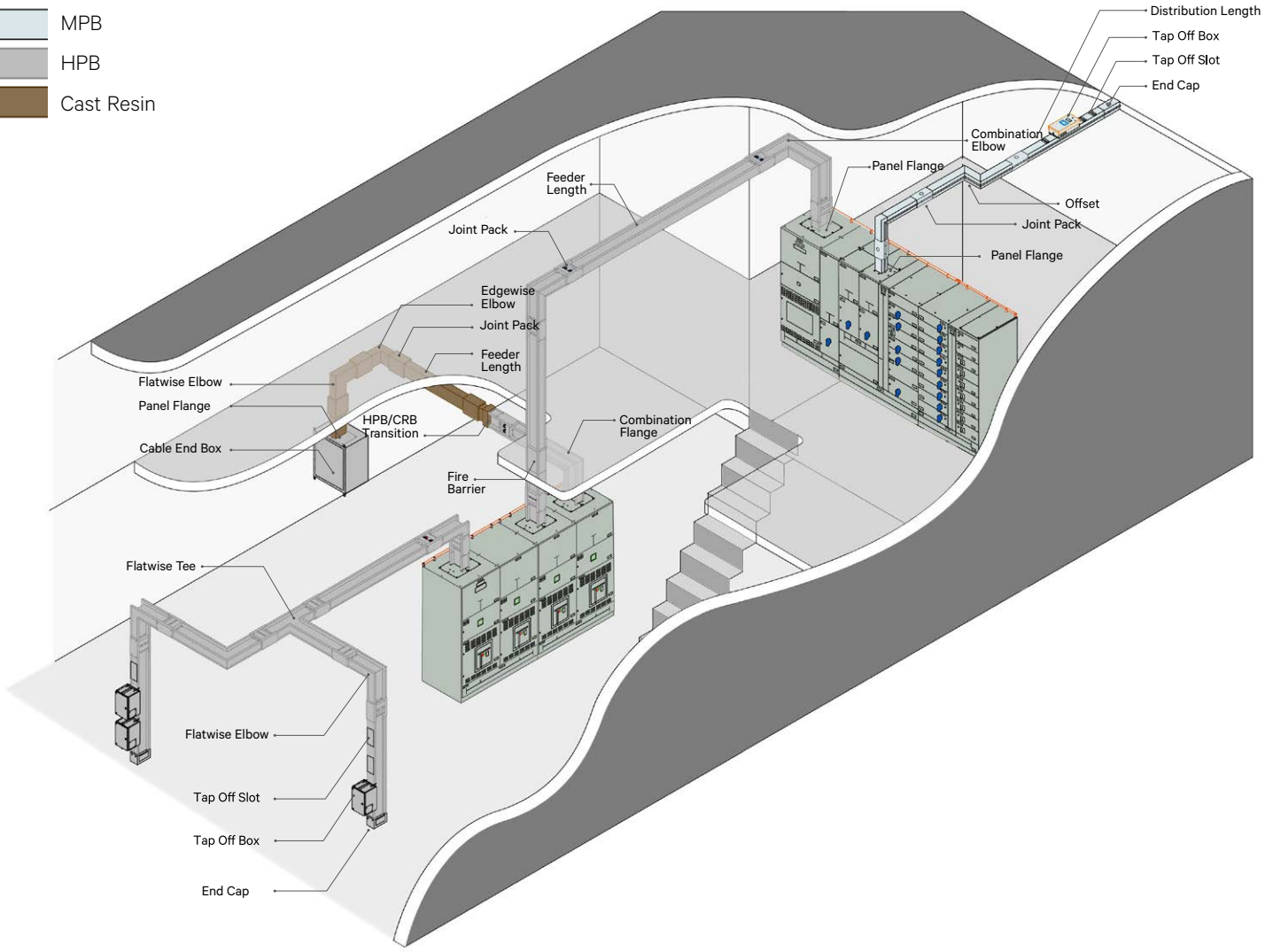
Spring Hanger

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

Typical Installation

Key

MPB
HPB
Cast Resin



Vertiv provides a complete power distribution solution.

The Powerbar range includes the following products:

Vertiv™ MPB - Medium Powerbar

Air insulated range covering 160 - 800 Amps

Vertiv™ HPB - High Powerbar

Sandwich construction range covering 800 - 6600 Amps

Vertiv™ Cast Resin Powerbar

IP68 rate polymer concrete product for use in extreme conditions covering 800 - 6300 Amps. CRPB can be directly connected to Vertiv HPB through a special jointing system. All products are available with both copper and aluminium conductors.

Technical Data

Copper

Rated Current (A)	1000	1250	1350	1600	2000	2500	3200	4000	5000	6600
Rated Operational Voltage (V)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated Insulation Voltage (V)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Short Circuit										
1 Second (kA rms)	50	50	50	65	80	80	80	100	100	100
Peak Value (kA)	110	110	110	176	176	176	176	220	220	220
Phase Conductor										
Cross Sectional Area (mm²)	412	412	412	532	742	952	1372	1484	1904	2744
Neutral Conductor										
Cross Sectional Area (mm²)	412	412	412	532	742	952	1372	1484	1904	2744
Isolated Earth Conductor										
100% Earth Cross Sectional Area (mm²)	412	412	412	532	742	952	1372	1484	1904	2744
50% Earth Cross Sectional Area (mm²)	208	208	208	268	373	478	688	746	956	1376
Housing Earth Path										
Cross Sectional Area (mm²)	1444	1444	1444	1564	1774	1984	2404	2464	2884	3724
Overall Dimensions										
Height x Width of 4 Bar System (mm)	130x145	130x145	130x145	150x145	185x145	220x145	290x145	393x145	463x145	603x145
Weight										
Weight of 4 Bar System (kg/m)	19.9	19.9	19.9	24.5	32.6	40.7	56.8	65.2	81.4	113.7
Resistance										
Resistance (mΩ/m) at 20°C	0.042	0.042	0.042	0.033	0.023	0.018	0.013	0.012	0.009	0.006
Resistance (mΩ/m) at 80°C	0.053	0.053	0.053	0.041	0.030	0.226	0.016	0.014	0.011	0.008
Reactance										
Reactance (mΩ/m) at 50Hz	0.017	0.016	0.016	0.013	0.010	0.008	0.006	0.005	0.004	0.003
Impedance										
Impedance (mΩ/m) at 80°C	0.066	0.055	0.055	0.043	0.031	0.024	0.017	0.015	0.012	0.0083
Voltage Drop at Full Load 50Hz										
Power Factor = 0.7 (V/m) at 80°C	0.099	0.105	0.118	0.105	0.095	0.093	0.083	0.095	0.093	0.086
Power Factor = 0.8 (V/m) at 80°C	0.106	0.113	0.126	0.112	0.101	0.099	0.088	0.101	0.099	0.091
Power Factor = 0.9 (V/m) at 80°C	0.113	0.118	0.132	0.118	0.106	0.103	0.092	0.105	0.103	0.094
Power Factor = 1.0 (V/m) at 80°C	0.111	0.114	0.128	0.113	0.101	0.098	0.087	0.100	0.097	0.089
Voltage Drop Full Load 60Hz										
Power Factor = 0.7 (V/m) at 80°C	0.103	0.111	0.124	0.111	0.100	0.099	0.088	0.100	0.098	0.091
Power Factor = 0.8 (V/m) at 80°C	0.111	0.117	0.131	0.117	0.106	0.103	0.093	0.105	0.103	0.096
Power Factor = 0.9 (V/m) at 80°C	0.116	0.122	0.136	0.121	0.109	0.107	0.095	0.108	0.106	0.098
Power Factor = 1.0 (V/m) at 80°C	0.112	0.115	0.128	0.113	0.101	0.098	0.087	0.100	0.098	0.090

Aluminium

Rated Current (A)	800	1000	1250	1400	1600	2000	2500	3200	4000	5000
Rated Operational Voltage (V)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated Insulation Voltage (V)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Short Circuit										
1 Second (kA rms)	25	50	65	65	65	80	80	100	120	120
Peak Value (kA)	55	105	143	143	143	176	176	220	264	264
Phase Conductor										
Cross Sectional Area (mm²)	420	480	660	750	870	1200	1320	1740	2400	2880
Neutral Conductor										
Cross Sectional Area (mm²)	328	480	660	750	870	1200	1320	1740	2400	2880
Isolated Earth Conductor										
100% Earth Cross Sectional Area (mm2)	328	480	660	750	870	1200	1320	1740	2400	2880
50% Earth Cross Sectional Area (mm²)	210	240	330	375	435	600	660	870	1200	1440
Housing Earth Path										
Cross Sectional Area (mm²)	1924	1984	2164	2254	2374	2704	4328	4748	5408	7392
Overall Dimensions										
Height x Width of 4 Bar System (mm)	130x145	140x145	170x145	185x145	205x145	260x145	363x145	433x145	543x145	706x145
Weight										
Weight of 4 Bar System (kg/m)	8.7	10.4	12.8	14	15.6	20.1	25.7	31.3	40.1	50.6
Resistance										
Resistance (mΩ/m) at 20°C	0.0753	0.0659	0.0504	0.0444	0.0382	0.0277	0.0254	0.0191	0.0139	0.0111
Resistance (mΩ/m) at 80°C	0.0946	0.0829	0.0633	0.0557	0.0481	0.0348	0.0319	0.024	0.0174	0.0138
Reactance										
Reactance (mΩ/m) at 50Hz	0.0157	0.0141	0.0111	0.0099	0.0087	0.0066	0.0055	0.0044	0.0033	0.0025
Impedance										
Impedance (mΩ/m) at 80°C	0.077	0.0675	0.0515	0.0458	0.0392	0.0284	0.026	0.0196	0.0142	0.0113
Voltage Drop at Full Load 50Hz										
Power Factor = 0.7 (V/m) at 80°C	0.107	0.118	0.113	0.112	0.111	0.101	0.098	0.111	0.101	0.085
Power Factor = 0.8 (V/m) at 80°C	0.118	0.129	0.124	0.123	0.121	0.110	0.111	0.121	0.110	0.097
Power Factor = 0.9 (V/m) at 80°C	0.128	0.140	0.134	0.132	0.130	0.119	0.125	0.130	0.119	0.108
Power Factor = 1.0 (V/m) at 80°C	0.131	0.144	0.137	0.135	0.133	0.121	0.138	0.133	0.121	0.120
Voltage Drop Full Load 60Hz										
Power Factor = 0.7 (V/m) at 80°C	0.111	0.122	0.117	0.115	0.114	0.104	0.099	0.114	0.104	0.086
Power Factor = 0.8 (V/m) at 80°C	0.121	0.133	0.127	0.126	0.124	0.113	0.112	0.124	0.113	0.097
Power Factor = 0.9 (V/m) at 80°C	0.130	0.142	0.136	0.134	0.133	0.121	0.125	0.133	0.121	0.109
Power Factor = 1.0 (V/m) at 80°C	0.131	0.144	0.137	0.135	0.133	0.121	0.138	0.133	0.121	0.120

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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/ other busbar.
- Allow adequate space for tap off units to be installed easily and safely.
- Busbar lengths are available from 600mm - 4000mm.
- Distribution busbar lengths are available from 900mm - 4000mm.
- Edgewise elbow sections are available with leg lengths from 257mm - 600mm.
- Flatwise elbow sections are available with a maximum leg length of 750mm. The minimum leg length varies depending on the busbar.

Operating Conditions

- Ambient temperature from -5°C to 40°C.
- Relative humidity of 95% or below.
- This product designed for indoor use and can be installed horizontally or vertically.

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.
- Horizontal busbar must be installed with the neutral phase to the top. Please indicate the phase orientation for vertically installed busbar.

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