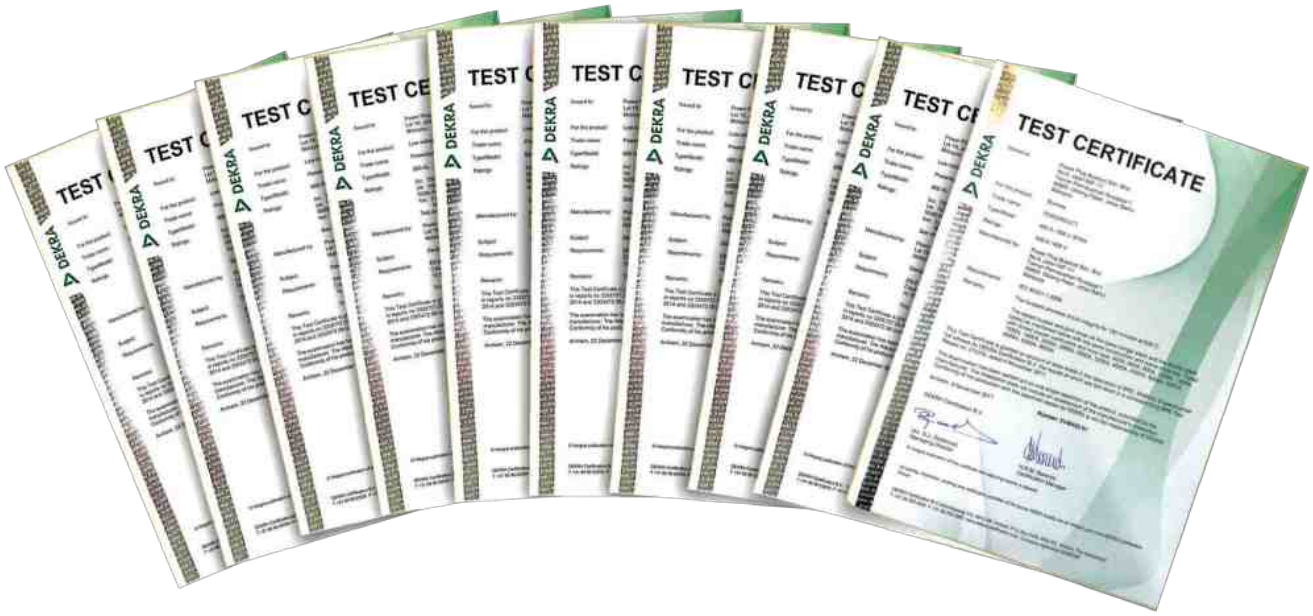
POWERDUCT
PRO SERIES

Extruded Aluminium Housing With Cooling Fin

FULLY TYPE TESTED BUSDUCT TRUNKING SYSTEM

COMPETENCE IS OUR STRENGTH



Achievement

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Housing

Powerduct busway is constructed with **extruded** aluminium and is designed with **cooling fin** on both top and bottom.
(optional Aluminum and metal sheet enclosure with epoxy coating is available upon customer request)
Please consult manufacturer for futher information.

Benefits of such design are as follows:

- Super Compact & Light Weight
- Low Impedance
- Greater heat dissipation
- Better housing as Ground medium
- Dust free
- Corrosion free
- Low Installation Cost
- UV resistance

No doubt, this construction has been tested and has achieved the highest 60-cycle short circuit withstand ratings under the IEC and BSEN publication 61439-6 : 2012 approved by third party certification.

The enclosure has also been tested for ingress protection and achieved the highest **IP68** for **standard feeder** and **IP55** for **plug-in section** (ref. Table 5.2).

Hence, this has proved Powerduct housing construction has mechanically strength and it's reliability to protect the busbar conductor.

Standard

All the Powerduct busway product is designed and manufactured in compliance of the following standards:

- IEC 60529
- IEC 61439-6
- UL 857
- CSA 857
- CSA C22.9 NO. 27-94
- NEMA BUI
- JIS 8364

Plug in outlet

Powerduct plug in outlets being designed to meet IEC 60529 and IEC 61439-6 and BS EN 60529 requirement whereby the opening safety rated for finger safety to IP2X.

Hinged dead designed at the front of each plug in outlet to protect the contact surfaces from rust, dirt and moisture. Pad lock designed on the outlet to lock the outlet for safety purpose. Gasket is used in IP55.

Plug In unit

Available in both moulded case circuit breaker and fusible type;
The following are the features for Powerduct Plug-In Unit:

- **Interlocking door** during in 'ON' position to prevent the door from opening for safety purpose
- **Mechanically interlocking** with busway housing during 'ON' position to prevent being take off during energizing.
- The plug-in unit connection on **earth designed to engage first before phase connections** when installing plug-in unit for the safety purpose.
- All Plug In units have internationally recognized symbols indicating the "ON/OFF" position.

Thermal Indicator (optional):

Most of the busway manufacturer will have inspection covers to permit inspection of the joint periodically. However, Powerduct newly designed so call thermal indicator will provide a more convenient for continual visual inspection whereby the thermal indicator will show a sign when the joint is overheating. This benefit from convenience visual inspection without opening the cover and save time from labor inspection.

Insulation

The **130ºC Class B insulation** is the primary insulation in all PPB conductors. Optional Mylar and epoxy insulation (Hybrid) ,155ºC Class F and 180ºC Class H is available upon customer's request.

The innovated coating process provides high quality and uniform epoxy insulation. This epoxy is non-hygroscopic, self-extinguishing and bonded directly to the bus bar thus eliminating any air gap between the insulation and bus bars.

Advantages of using epoxy insulation are as follows:

- Able to withstand glitch and spikes in electrical system
- Halogen free
- Resistant against water and chemical
- High thermal conductivity
- High mechanical strength against impact and capable with standing heat shock
- Cater for expansion and contraction during peak and off-peak hours
- Long life compare to PVC and Mylar
- Impervious to acids, alkalis, acetones, mechanical oils and lubricants

Joint Stack

Powerduct Joint Stack (bridge type) features a single/ multiple bolt design with the double headed bolt, therefore improving the ease and the cost of the installation.

By using this newly designed joint stack, you will definitely reduce arrangement for installation time. (on-site time as well as cost saving).

The use of the Belleville spring washers on the bolt ensures the original contact pressure is maintained giving a more secure and reliable joint.

Powerduct Bridge type joint Stack features performs;

- Double headed bolts and will shear off when torque exceeds 50lb/ft.
- Single Bolt joint system with the material composition of chrome high tensile steel.
- Ease of removal and installation without removing entire busway section.
- Maintenance Free.

Bus bars

All bus bars copper are manufactured from high electrical grade high conductivity electrolytic coppers which comply with international standard- BS1433/1432. Aluminium bus bars also available.

The copper composition of the bus bar are of 99.9% or conductivity in excess of 99% IACS. The aluminium bus bar are of conductivity in excess of 60% IACS. All the copper and aluminium bus bars are **electroplated** with **tin** on all contact surfaces. Optional **silver plating** is also available. This will improve conductivity more effectively.

All Busway are constructed in sandwich type which means no air gap shall exist between bus bars except at the joint. This can obtain **lower impedance** and **better heat dissipation**. Lower impedance means **lower voltage drop.**

The entire conductor also being insulated with epoxy powder (Hybrid Powder) coated which giving 100% water, rust and chemical resistance. Optional specification can be designed and fabricated to customer's request.
Bus bars are available in various configurations: Refer to next page picture.

1. 3P3W + Integral Ground
2. 3P3W + 50% Internal Ground
3. 3P3W + 100% Neutral + Integral Ground
4. 3P3W + 100% Neutral + 50% Internal Ground
5. 3P3W + 100% Neutral + 100% Internal Ground
6. 3P3W + 200% Neutral + Integral Ground
7. 3P3W + 200% Neutral + 50% Internal Ground
8. 3P3W + 100% Internal Ground

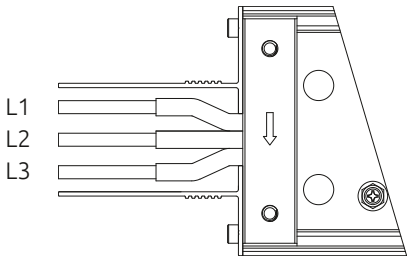
True 200% Neutral Construction

Harmonics occur generated by nonlinear load devices such as electronic ballast lightning, computers, printers, copier machines & etc. The harmonic current generated in neutral conductor can be 173% of phase current. This abnormal high neutral current results in overheating the neutral conductor and leads to deterioration of equipment performance and its life cycle.

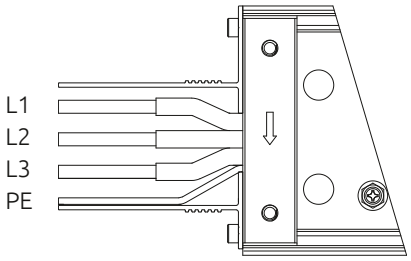
Therefore, we provide two separate 100% neutral bus bars within the same busway housing. This true 200% neutral is doubling the size of phase bus bars to prevent overheating caused by harmonics.

Bus bar Configurations

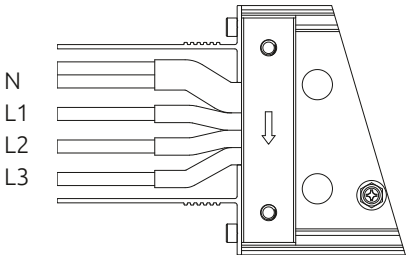
1. 3P3W + Integral Ground



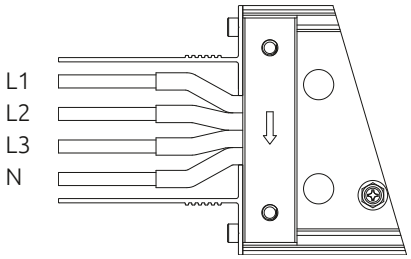
2. 3P3W + 50% Internal Ground



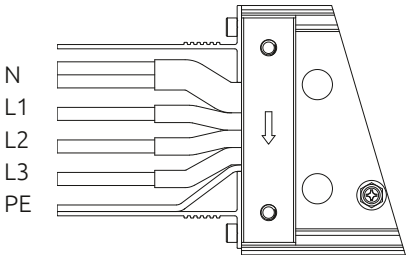
6. 3P3W + 200% Neutral + Integral Ground



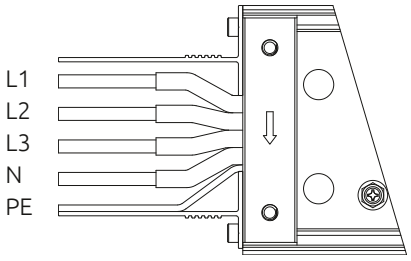
3. 3P3W + 100% Neutral + Integral Ground



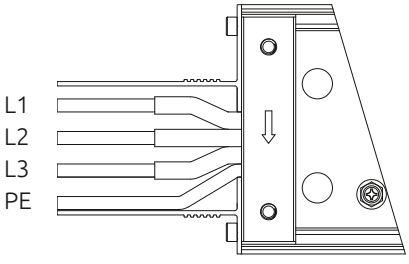
7. 3P3W + 200% Neutral + 50% Internal Ground



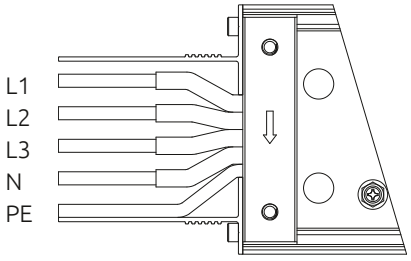
4. 3P3W + 100% Neutral + 50% Internal Ground



8. 3P3W + 100% Internal Ground



5. 3P3W + 100% Neutral + 100% Internal Ground



Powerduct Busway offers you a variety of ground options to meet your specification:

- Integral aluminium housing ground (standard)
- Internal ground bar

The Powerduct aluminium housing provides extremely high ground capacity. The Table 2.1 showing the conductivity and current carrying capacity offered by the housing is at least 2 times greater than the active copper ground bar (sized 50% of the phase bar)

Table 2.1 : Powerduct busway-Ground Capacity

Ampere Rating	Aluminium housing Cross Sectional Area integral ground (mm2)	Copper Sectional Area 50% internal Ground Bar (mm2)	Capacity Ratio (Integral / Internal)
Copper			
400	1250	58	12
600	1290	88	8
800	1325	103	7
1000	1401	148	5
1200	1449	178	5
1350	1497	208	4
1600	2745	266	6
2000	2897	356	5
2500	3105	476	4
3200	3393	656	3
4000	3601	776	3
5000	5089	984	3
6300	5690	1344	2
Aluminium			
400	1352	118	10
600	1352	118	10
800	1401	148	9
1000	1496	208	6
1200	1600	268	5
1350	1772	373	4
1600	1876	433	4
2000	2028	523	3
2500	3297	596	5
3200	3753	866	4
4000	4153	1106	3
5000	5690	1344	4
6000	7053	1794	4

Alu Housing Ground Conductivity	55% IACS
Copper Ground Bar Conductivity	99% IACS
Alu Ground Bar Conductivity	61% IACS

Energy Optimization

Powerduct busway system enable you to optimize the energy usage and reduce unnecessary energy wastage which is a hidden cost. Better heat dissipation will provide cooler busway energizing. At the same time, the busway has lower impedance and lower voltage drop if compared to the other competitors' busway.

These features also include extremely low reactance due to non-magnetic housing and totally intimate contact of bus bars and housing. Please refer to the Table 3.1 & 3.2 below for your further voltage drop information.

Table 3.1 Voltage Drop Line to Line, 35°C (50 Hz)

Current Load	Ohms*10^⁻³/m Line to Line			Voltage drop concentrated loads line to line /m at the rate load, 35°C									
				POWER FACTOR									
	R	X	Z	1.0	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1
COPPER													
400	0.208	0.055	0.215	0.144	0.146	0.138	0.128	0.117	0.105	0.093	0.080	0.066	0.052
600	0.140	0.044	0.147	0.146	0.151	0.144	0.134	0.124	0.112	0.100	0.087	0.074	0.060
800	0.119	0.041	0.126	0.164	0.173	0.166	0.156	0.144	0.131	0.118	0.104	0.089	0.073
1000	0.082	0.032	0.088	0.141	0.152	0.147	0.139	0.130	0.119	0.108	0.096	0.083	0.070
1200	0.070	0.032	0.077	0.145	0.160	0.156	0.149	0.140	0.130	0.119	0.107	0.094	0.080
1350	0.060	0.022	0.064	0.141	0.149	0.144	0.136	0.126	0.115	0.104	0.091	0.079	0.065
1600	0.044	0.018	0.047	0.121	0.131	0.127	0.120	0.113	0.104	0.094	0.084	0.073	0.062
2000	0.033	0.015	0.036	0.115	0.126	0.123	0.118	0.111	0.103	0.094	0.084	0.074	0.064
2500	0.025	0.015	0.029	0.107	0.123	0.123	0.120	0.114	0.108	0.101	0.092	0.083	0.074
3200	0.018	0.010	0.021	0.100	0.115	0.114	0.111	0.106	0.100	0.093	0.085	0.076	0.067
4000	0.016	0.007	0.017	0.109	0.119	0.116	0.111	0.104	0.096	0.088	0.079	0.069	0.059
5000	0.012	0.011	0.016	0.106	0.136	0.141	0.140	0.138	0.133	0.127	0.120	0.112	0.103
6300	0.009	0.006	0.010	0.096	0.113	0.113	0.111	0.106	0.101	0.094	0.087	0.079	0.070
ALUMINIUM													
400	0.142	0.034	0.146	0.098	0.099	0.093	0.085	0.078	0.069	0.061	0.052	0.042	0.033
600	0.160	0.034	0.163	0.166	0.164	0.153	0.141	0.127	0.113	0.098	0.083	0.067	0.051
800	0.136	0.038	0.141	0.188	0.192	0.182	0.169	0.155	0.139	0.123	0.106	0.089	0.071
1000	0.094	0.022	0.096	0.163	0.163	0.153	0.141	0.128	0.114	0.099	0.084	0.069	0.053
1200	0.072	0.019	0.075	0.150	0.153	0.144	0.134	0.122	0.110	0.097	0.083	0.069	0.055
1350	0.051	0.015	0.053	0.119	0.122	0.116	0.108	0.099	0.089	0.079	0.068	0.057	0.046
1600	0.045	0.013	0.047	0.124	0.127	0.121	0.113	0.103	0.093	0.083	0.072	0.060	0.048
2000	0.038	0.011	0.039	0.131	0.134	0.128	0.119	0.109	0.098	0.087	0.075	0.063	0.051
2500	0.033	0.021	0.039	0.143	0.168	0.169	0.165	0.159	0.150	0.141	0.130	0.118	0.105
3200	0.023	0.007	0.024	0.128	0.132	0.126	0.118	0.108	0.098	0.088	0.076	0.065	0.052
4000	0.018	0.007	0.019	0.127	0.134	0.129	0.121	0.112	0.103	0.092	0.081	0.070	0.058
5000	0.015	0.006	0.016	0.129	0.138	0.134	0.126	0.118	0.108	0.098	0.087	0.075	0.063
6000	0.011	0.007	0.014	0.117	0.140	0.141	0.138	0.133	0.126	0.118	0.109	0.100	0.089

Note: Current density (amps/sq.in) rated busway available. Consult Factory Voltage Drop Formula

1. Plug-in distributed loads application, divide voltage drop values by 2
2. To determine voltage drop line to neutral, multiply values from table by 0.577.
3. Actual voltage drop for different length and at loading less than full rated current can be calculated by using the formula : Vd = Vd (table) X Actual load/Rated load x Actual length (m)/100 m
4. Calculate new voltage drop : Vd = Amp loads x √3 x (Rcos ø + Xsi n ø) per 100m, where cos ø = Power Factor

Table 3.2 Voltage Drop Line to Line, 50°C (50 Hz)

Current Load	Ohms*10^⁻³/m Line to Line			Voltage drop concentrated loads line to line /m at the rate load, 50°C									
				POWER FACTOR									
	R	X	Z	1.0	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1
COPPER													
400	0.217	0.055	0.224	0.150	0.152	0.143	0.132	0.121	0.108	0.095	0.082	0.067	0.053
600	0.146	0.044	0.153	0.152	0.157	0.149	0.139	0.128	0.115	0.102	0.089	0.075	0.060
800	0.124	0.041	0.130	0.172	0.179	0.171	0.161	0.148	0.135	0.121	0.106	0.090	0.074
1000	0.085	0.032	0.091	0.148	0.157	0.152	0.143	0.133	0.122	0.110	0.098	0.084	0.070
1200	0.073	0.032	0.080	0.152	0.165	0.161	0.153	0.144	0.133	0.121	0.108	0.095	0.081
1350	0.063	0.022	0.067	0.147	0.155	0.149	0.140	0.129	0.118	0.106	0.093	0.080	0.066
1600	0.046	0.018	0.049	0.127	0.136	0.131	0.124	0.116	0.107	0.096	0.086	0.074	0.062
2000	0.035	0.015	0.038	0.120	0.131	0.127	0.121	0.114	0.105	0.096	0.086	0.075	0.064
2500	0.026	0.015	0.030	0.111	0.128	0.127	0.123	0.117	0.110	0.102	0.094	0.084	0.074
3200	0.019	0.010	0.022	0.104	0.119	0.118	0.114	0.109	0.102	0.095	0.086	0.077	0.068
4000	0.016	0.007	0.018	0.114	0.123	0.120	0.114	0.107	0.099	0.090	0.080	0.070	0.059
5000	0.013	0.011	0.017	0.111	0.140	0.144	0.144	0.141	0.136	0.129	0.122	0.113	0.103
6300	0.009	0.006	0.011	0.100	0.117	0.117	0.114	0.109	0.103	0.096	0.088	0.080	0.071
ALUMINIUM													
400	0.149	0.034	0.153	0.103	0.103	0.097	0.089	0.081	0.072	0.063	0.053	0.043	0.033
600	0.167	0.034	0.170	0.173	0.171	0.160	0.146	0.132	0.117	0.101	0.085	0.069	0.052
800	0.141	0.038	0.146	0.196	0.199	0.188	0.175	0.160	0.143	0.126	0.109	0.091	0.072
1000	0.098	0.022	0.100	0.170	0.169	0.158	0.146	0.132	0.117	0.102	0.087	0.071	0.054
1200	0.076	0.019	0.078	0.157	0.159	0.150	0.138	0.126	0.113	0.099	0.085	0.070	0.055
1350	0.053	0.015	0.055	0.124	0.127	0.120	0.111	0.102	0.092	0.081	0.070	0.058	0.046
1600	0.047	0.013	0.049	0.130	0.132	0.125	0.117	0.107	0.096	0.085	0.073	0.061	0.049
2000	0.039	0.011	0.041	0.137	0.140	0.132	0.123	0.112	0.101	0.089	0.077	0.064	0.051
2500	0.034	0.021	0.040	0.149	0.174	0.174	0.170	0.163	0.154	0.143	0.132	0.119	0.106
3200	0.024	0.007	0.025	0.133	0.137	0.130	0.122	0.112	0.101	0.090	0.078	0.066	0.053
4000	0.019	0.007	0.020	0.132	0.139	0.133	0.125	0.116	0.105	0.094	0.083	0.071	0.058
5000	0.016	0.006	0.017	0.135	0.143	0.138	0.130	0.121	0.111	0.100	0.089	0.076	0.064
6000	0.012	0.007	0.014	0.122	0.144	0.145	0.141	0.136	0.129	0.120	0.111	0.101	0.090

Note: Current density (amps/sq.in) rated busway available. Consult Factory Voltage Drop Formula

1. Plug-in distributed loads application, divide voltage drop values by 2
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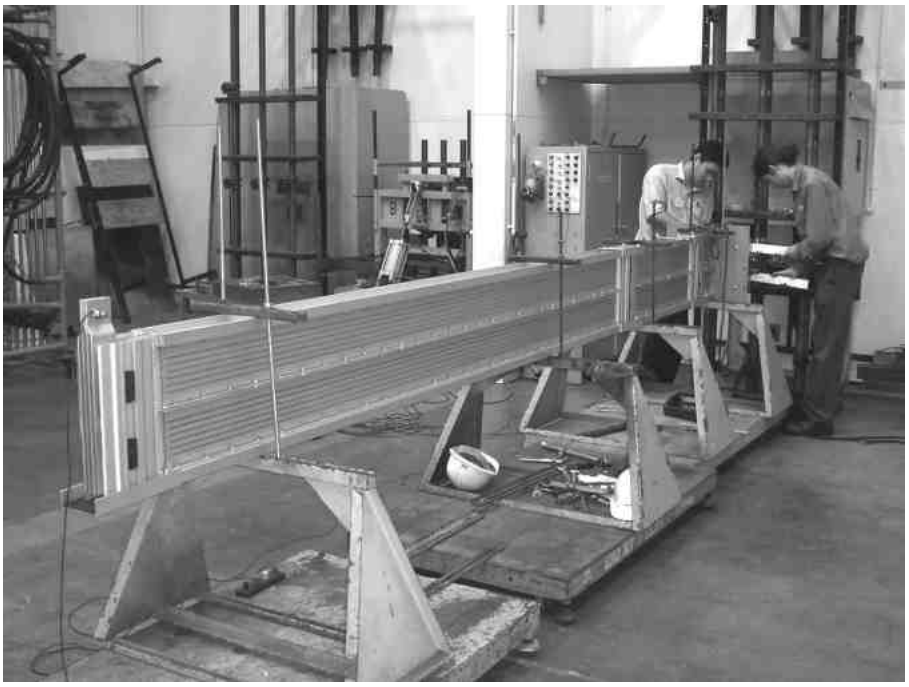
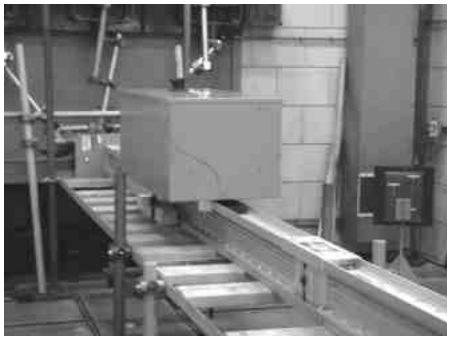
   Vd = Vd (table) X Actual load/Rated load x Actual length (m)/100 m
4. Calculate new voltage drop : Vd = Amp loads x √3 x (Rcos ø + Xsi n ø) per 100m, where cos ø = Power Factor

Short Circuit Protection and Capacity

Powerduct structure is designed to provide a very good short circuit protection. The short circuit has been certified by DEKRA (formerly known as KEMA) in accordance with IEC and BSEN Publication 61439-6.



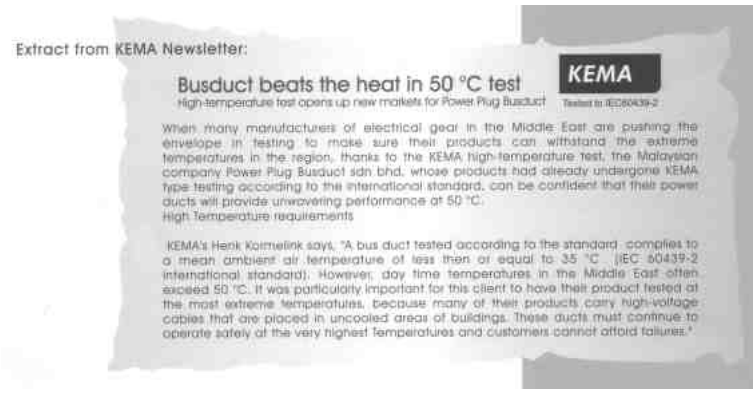


Temperature Rise

Powerduct busway is capable of carrying its full rated current continuously in ambient condition of 95% relative humidity and maximum temperature of 50˚C without exceeding 55˚C temperature rise.

Thermal cycling test

Powerduct tested to ambient 50ºC test



Extract from KEMA Newsletter:

Busduct beats the heat in 50 °C test

KEMA

High-temperature test opens up new markets for Power Plug Busduct

When many manufacturers of electrical gear in the Middle East are pushing the envelope in testing to make sure their products can withstand the extreme temperatures in the region, thanks to the KEMA high-temperature test, the Malaysian company Power Plug Busduct sdn bhd, whose products had already undergone KEMA type testing according to the international standard, can be confident that their power ducts will provide unwavering performance at 50 °C.

High Temperature requirements

KEMA's Henk Kornelink says, "A bus duct tested according to the standard complies to a mean ambient air temperature of less then or equal to 35 °C. (IEC 60439-2 international standard). However, day time temperatures in the Middle East often exceed 50 °C. It was particularly important for this client to have their product tested at the most extreme temperatures, because many of their products carry high-voltage cables that are placed in uncooled areas of buildings. These ducts must continue to operate safely at the very highest temperatures and customers cannot afford failures."

Ingress Protection Level

Water Resistance and Rust Protection : Powerduct busway system has been successfully developed into as high as IP68, whereby the busway is protected against dust and the effects of immersion in water. This fine completion system is in 100% compliance IEC standards and is approved through third party authority certification.

Table 5.1

Busway Type	DEGREE OF PROTECTION						
	IP40	IP54	IP55	IP65	IP66	IP67	IP68
Feeder	X	X	X	X	X	X	X
Plug-in	X	X	X				
Plug-in Units	X	X	X				

Note: All Powerduct plug-in busway is IP 2x rated. (Finger Safe Plug-in outlets)

Table 5.2

Degree of Protection	IEC 529-Level of Protection
	Description
IP2x	Protection against objects greater than 12mm.
IP40	Enclosure protects against objects greater than 1mm. Indoor application Indoor
IP54	Enclosure is dust protected and splashed water. Indoor
IP55	Enclosure is dust protected and splayed water. Indoor
IP65	Enclosure is dust tight and splayed water. Indoor
IP66	Enclosure is dust tight and protects against heavy jets. Indoor/Outdoor
IP67	Enclosure is dust tight and protects against effects of immersion up to 1 meter. Outdoor
IP68	Enclosure is dust tight and protects against effects of immersion beyond 1 meter. Outdoor

Table 6.1 : Busway Dimension & Weight (kg/3 meter)

Ampere Rating	Figure no.	Dimension in mm "A"	Approximate weight (kg/3Meter)					
			TP only	TP w/ground bar	TP & 100%N	TP & 100%N w/ground bar	TP& 200%N	TP & 200%N w/ground bar
COPPER								
400	6.1	89	24	25	27	29	31	33
600	6.1	99	30	33	36	39	41	44
800	6.1	104	33	37	40	43	47	50
1000	6.1	119	43	48	53	58	63	67
1200	6.1	129	50	55	61	67	73	79
1350	6.1	139	56	63	70	77	83	90
1600	6.2	258	80	88	97	106	115	123
2000	6.2	288	99	111	123	134	146	158
2500	6.2	328	125	141	157	172	188	204
3200	6.2	388	164	186	207	229	251	272
4000	6.2	428	190	216	241	267	293	318
5000	6.3	597	246	279	311	344	376	409
6300	6.3	717	324	368	413	458	502	547
ALUMINIUM								
400	6.1	109	20	22	23	24	25	26
600	6.1	109	20	22	23	24	25	26
800	6.1	119	23	24	26	27	29	30
1000	6.1	139	27	29	32	34	36	38
1200	6.1	159	32	35	37	40	43	45
1350	6.1	194	40	44	48	51	55	59
1600	6.1	214	45	49	53	58	62	67
2000	6.1	244	52	57	62	68	73	78
2500	6.2	368	69	75	81	87	93	99
3200	6.2	458	90	98	107	116	124	133
4000	6.2	538	108	119	130	141	153	164
5000	6.3	717	138	151	165	178	192	205
6000	6.3	867	184	197	222	240	259	278

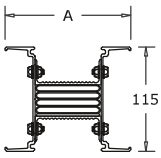


Fig. 6.1

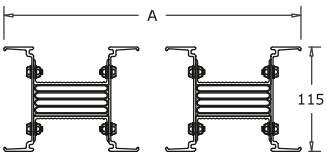


Fig. 6.2

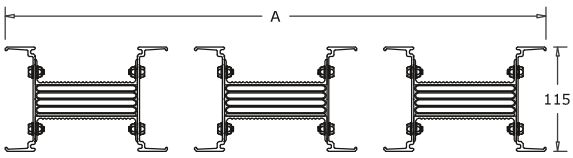


Fig. 6.3

Table 6.2 : Cast Resin Busway Dimension & Weight (kg/3 meter)

Ampere Rating	Figure no.	Dimension in mm "A"	Approximate weight (kg/3Meter)					
			TP only	TP w/ground bar	TP & 100%N	TP & 100%N w/ground bar	TP& 200%N	TP & 200%N w/ground bar
COPPER								
400	6.4	94	29	31	33	35	37	39
600	6.4	104	37	39	42	45	48	51
800	6.4	109	40	44	47	50	54	57
1000	6.4	124	51	56	61	66	71	76
1200	6.4	134	59	64	70	76	82	88
1350	6.4	144	66	73	80	86	93	100
1600	6.5	268	96	105	114	122	131	140
2000	6.5	298	118	130	142	153	165	177
2500	6.5	338	148	163	179	195	210	226
3200	6.5	398	192	213	235	257	278	300
4000	6.5	438	221	247	272	298	324	349
5000	6.6	612	288	320	353	385	418	451
6300	6.6	732	376	420	465	509	554	599
ALUMINIUM								
400	6.4	114	28	29	30	32	33	34
600	6.4	114	28	29	30	32	33	34
800	6.4	124	31	33	34	36	37	39
1000	6.4	144	38	40	42	44	46	48
1200	6.4	164	44	47	49	52	55	57
1350	6.4	199	55	59	62	66	70	74
1600	6.4	219	61	66	70	74	79	83
2000	6.4	249	71	76	81	87	92	97
2500	6.5	378	95	101	107	113	119	125
3200	6.5	468	123	132	141	150	158	167
4000	6.5	548	153	164	175	186	197	208
5000	6.6	732	191	204	218	231	245	258
6000	6.6	882	244	262	280	298	316	334

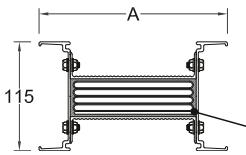


Fig. 6.4

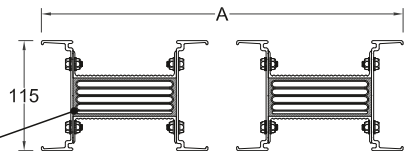


Fig. 6.5

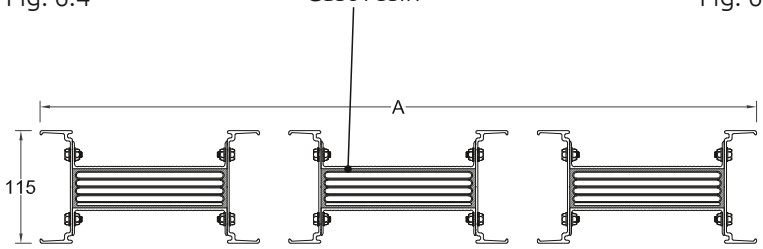


Fig. 6.6

Table 6.3 : Hybrid Housing Busway Dimension & Weight (kg/3 meter)

Ampere Rating	Figure no.	Dimension in mm "A"	Approximate weight (kg/3Meter)					
			TP only	TP w/ground bar	TP & 100%N	TP & 100%N w/ground bar	TP& 200%N	TP & 200%N w/ground bar
COPPER								
400	6.7	89	24	25	27	29	31	33
600	6.7	99	30	33	36	39	41	44
800	6.7	104	33	37	40	43	47	50
1000	6.7	119	43	48	53	58	63	67
1200	6.7	129	50	55	61	67	73	79
1350	6.7	139	56	63	70	77	83	90
1600	6.8	258	80	88	97	106	115	123
2000	6.8	288	99	111	123	134	146	158
2500	6.8	328	125	141	157	172	188	204
3200	6.8	388	164	186	207	229	251	272
4000	6.8	428	190	216	241	267	293	318
5000	6.9	597	246	279	311	344	376	409
6300	6.9	717	324	368	413	458	502	547
ALUMINIUM								
400	6.7	109	20	22	23	24	25	26
600	6.7	109	20	22	23	24	25	26
800	6.7	119	23	24	26	27	29	30
1000	6.7	139	27	29	32	34	36	38
1200	6.7	159	32	35	37	40	43	45
1350	6.7	194	40	44	48	51	55	59
1600	6.7	214	45	49	53	58	62	67
2000	6.7	244	52	57	62	68	73	78
2500	6.8	368	69	75	81	87	93	99
3200	6.8	458	90	98	107	116	124	133
4000	6.8	538	108	119	130	141	153	164
5000	6.9	717	138	151	165	178	192	205
6000	6.9	867	184	197	222	240	259	278

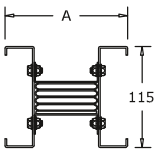


Fig. 6.7

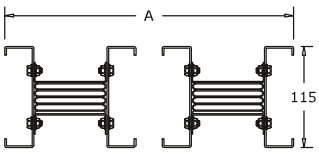


Fig. 6.8

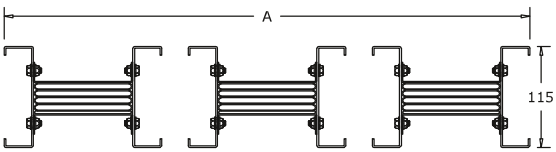
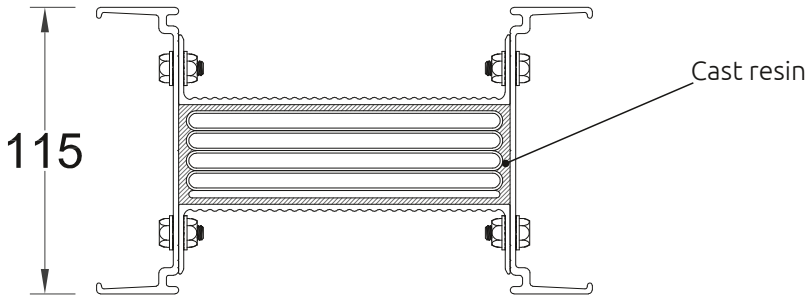
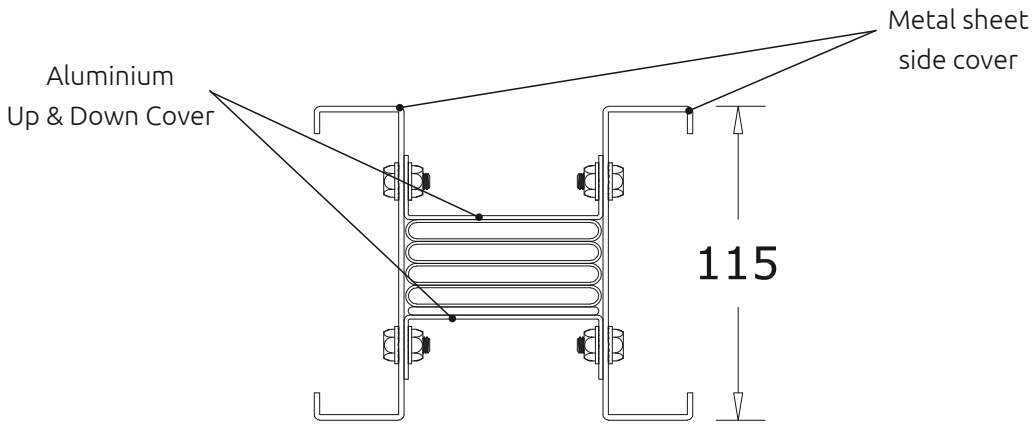


Fig. 6.9

Cast Resin Busway Details



Hybrid Housing Busway Details



7.1 Powerduct Busway Feeder

Feeder Section – is available in standard length of 3050mm and with minimum 610mm. This straight length feeder is used to carry power supply directly to the machine and power station without any plug-in opening on the section. (Concentrated Load application) Refer to the Fig.7.1.1

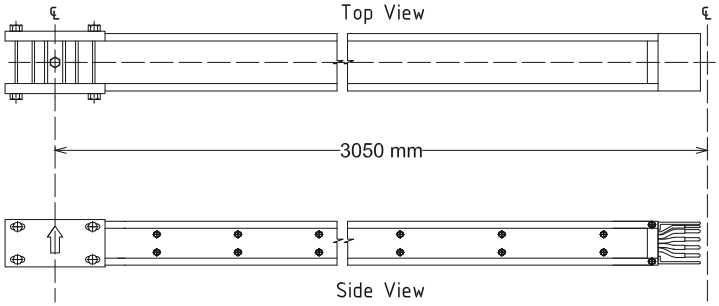


Fig 7.1.1 Standard feeder Section - Top and Side Views

Plug-in section – is designed to provide convenience and to allow the power to be tapped off from the LIVE busway section for a variety power usage based on the customer's requirement. It is complement with the plug-in unit. The maximum current capacity of each opening is 400A. Refer Fig.7.1.2

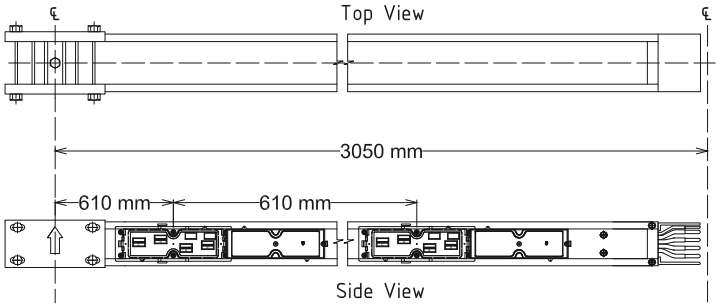


Fig 7.1.2 Standard Plug-in Section - Top and Side Views

7.2 Plug-In Section

Plug-In Section is available in minimum 1220mm and standard 3050mm length rating from 400A to 6300A. Custom length also is available on request.

The quantity of plug-in outlet is classified into:

Standard plug-in busway – whereas the openings outlet available in both sides to optimize the amount of plug-in units in horizontal application . Fig.7.2.1 (Optional 5 holes is available upon request. Please consult factory)

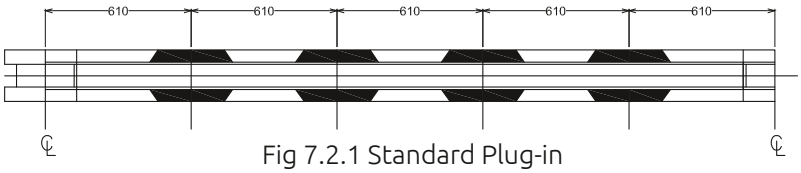


Fig 7.2.1 Standard Plug-in

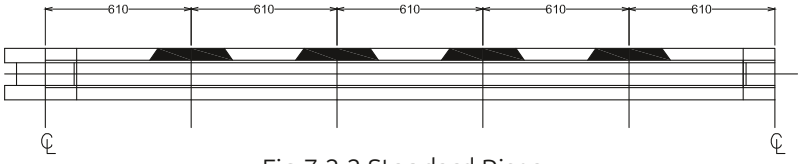


Fig 7.2.2 Standard Riser

Riser – whereas opening outlet available in one side on interval 610mm to fit the vertical runs.
Fig.7.2.2

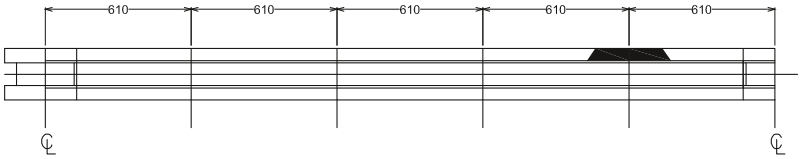
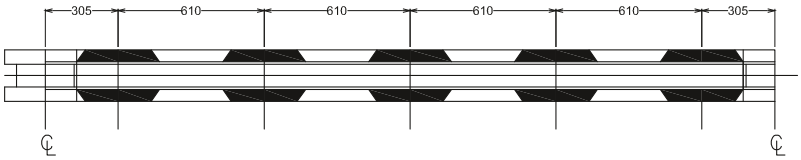


Fig 7.2.3 Limited Access

Limited Access – whereas customized design. Plug-in outlet can be placed upon customer request.
Fig.7.2.3



Optional 5 holes is available upon request (please consult factory).

Standard Plug-in Outlet

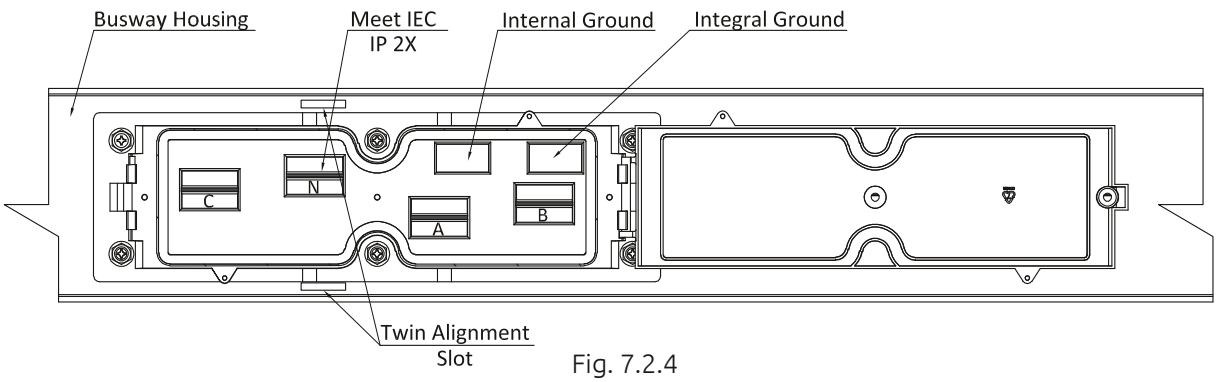
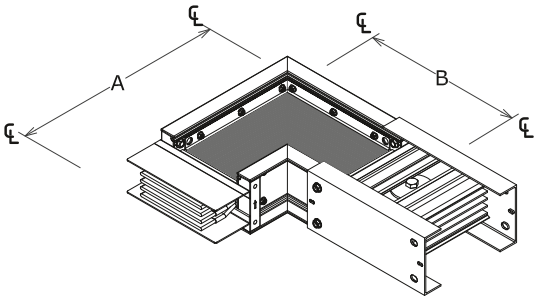


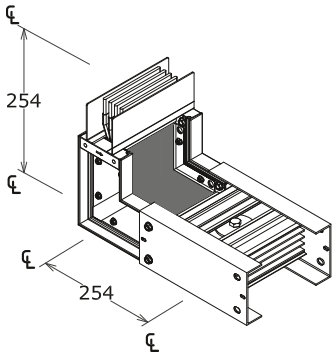
Fig. 7.2.4

7.3 Elbow & Tee

Flatwise Elbow

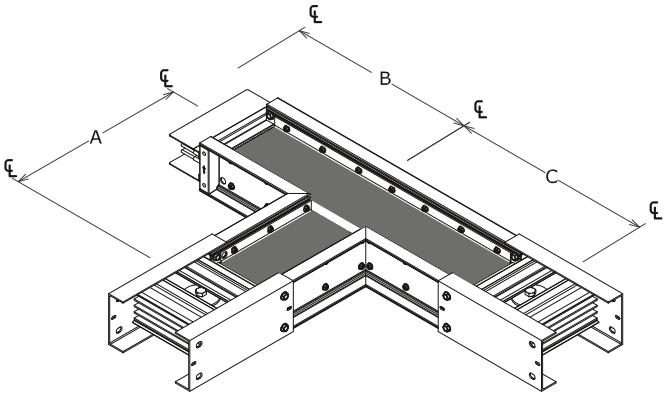


Edgewise Elbow

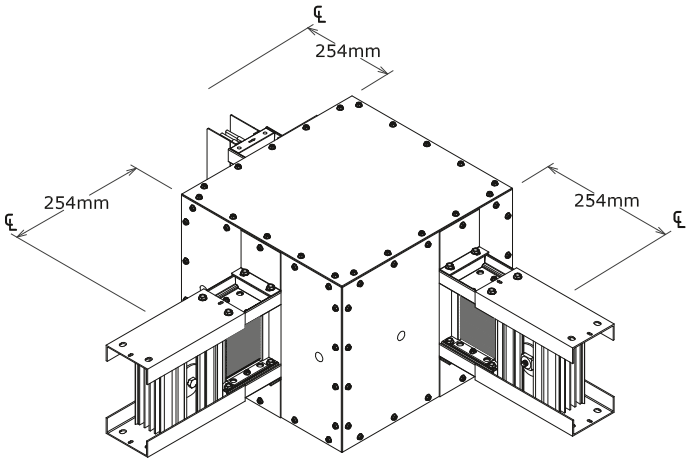


Current Rating (Copper)	Current Rating (Aluminium)	Standard Length (mm)	
		A	B
400 ~ 1350	400 ~ 1200	305	305
1600 ~ 4000	1350 ~ 3200	457	457
5000 ~ 6300	4000 ~ 5000	610	610
	6000	700	700

Flatwise Tees



Edgewise Tees

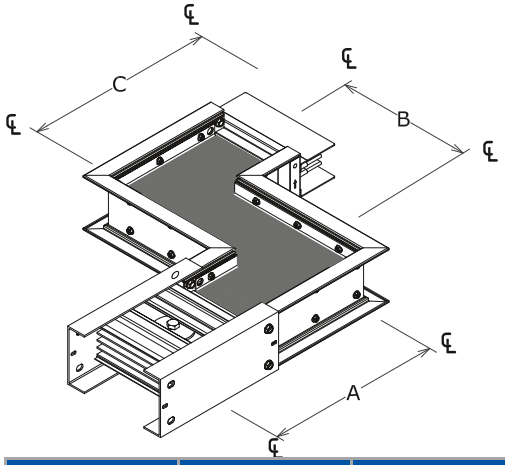


Current Rating (Copper)	Current Rating (Aluminium)	Standard Length (mm)		
		A	B	C
400 ~ 1350	400 ~ 1200	305	305	305
1600 ~ 4000	1350 ~ 3200	457	457	457
5000 ~ 6300	4000 ~ 5000	610	610	610
	6000	700	700	700

* Note:
Please consult factory for the above dimension

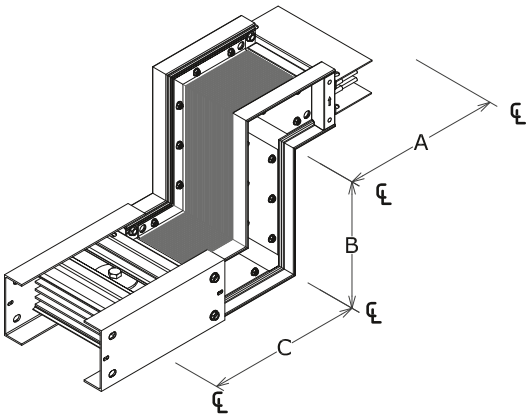
7.4 Offset & Combination Elbow

Flatwise Offset



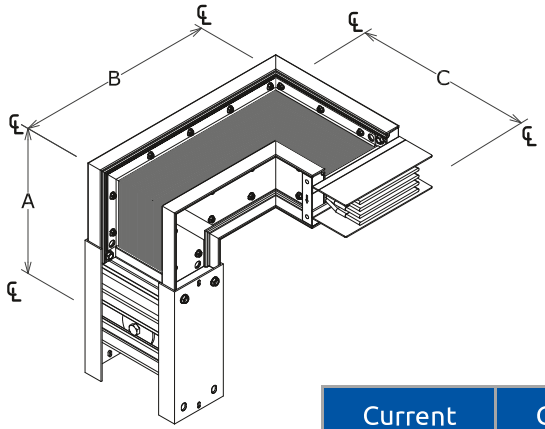
Current Rating (Copper)	Current Rating (Aluminium)	Standard Length (mm)		
		A	B	C
400 ~ 1350	400 ~ 1200	305	305	305
1600 ~ 4000	1350 ~ 3200	457	457	457
5000 ~ 6300	4000 ~ 5000	610	610	610
	6000	700	700	700

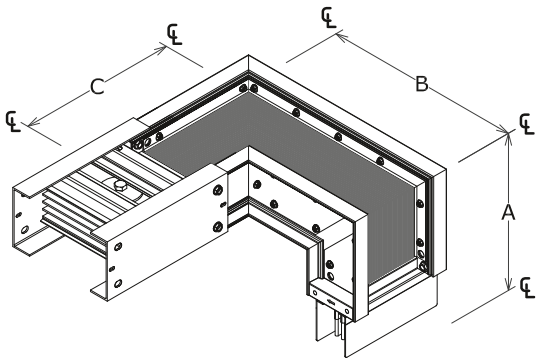
Edgewise Offset



Current Rating (Copper)	Current Rating (Aluminium)	Standard Length (mm)		
		A	B	C
400 ~ 1350	400 ~ 1200	254	254	254
1600 ~ 4000	1350 ~ 3200	254	254	254
5000 ~ 6300	4000 ~ 5000	254	254	254
	6000	254	254	254

Combination Elbow

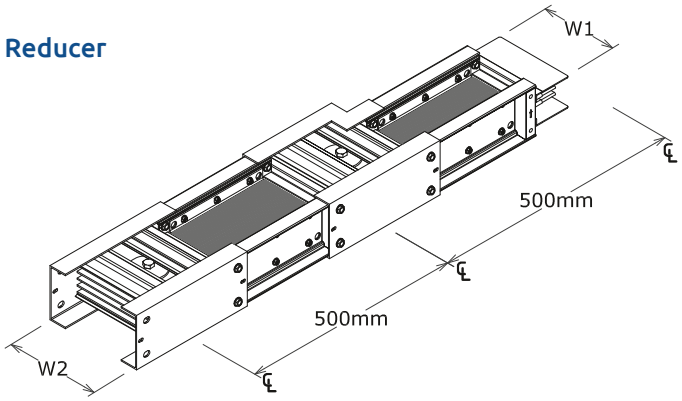




Current Rating (Copper)	Current Rating (Aluminium)	Standard Length (mm)		
		A	B	C
400 ~ 1350	400 ~ 1200	254	305	305
1600 ~ 4000	1350 ~ 3200	254	457	457
5000 ~ 6300	4000 ~ 5000	254	610	610
	6000	254	700	700

7.5 Reducer & Center Tap Box

Reducer



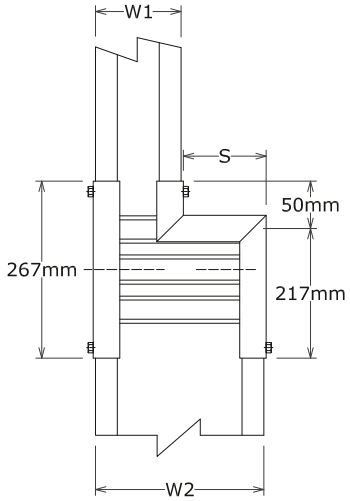


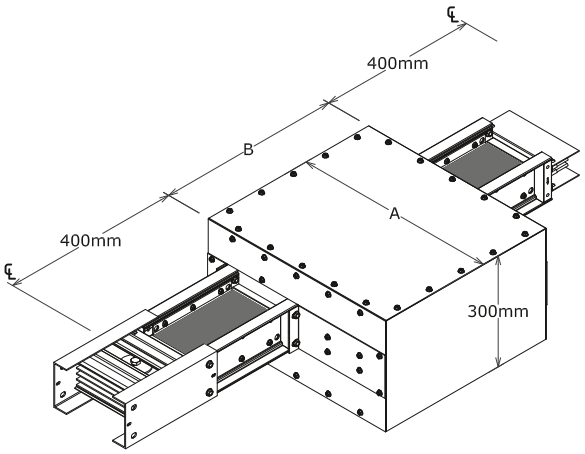
Table 7.5.1

Ampere Rating (Copper)	W1 (mm)	W2 (mm)	S (mm)
600	89	99	10
800	99	104	5
1000	104	119	15
1200	119	129	10
1350	129	139	10
1600	139	258	119
2000	258	288	30
2500	288	328	40
3200	328	388	60
4000	388	428	40
5000	428	597	169
6300	597	717	120

Ampere Rating (Aluminium)	W1 (mm)	W2 (mm)	S (mm)
800	109	119	10
1000	119	139	20
1200	139	159	20
1350	159	194	35
1600	194	214	20
2000	214	244	30
2500	244	368	124
3200	368	458	90
4000	458	538	80
5000	538	717	179
6000	717	867	150

* Optional Reducer with MCCB / Fusible breaker is available. Please consult factory.

Center Tap Box



Center Tap Box is a device that is non-fusible utilized to take off power from the busway run. It is used in the condition when loads served by the busway run do not require over-current protection. Refer the Table 7.5.2 for the dimension in (mm).

Table 7.5.2

Current Rating (Copper)	Current Rating (Aluminium)	'A' in (mm)
400 ~ 1350	400 ~ 1200	405
1600 ~ 2000	1350 ~ 2000	555
2500 ~ 4000	2500 ~ 3200	725
5000	4000	930
6300	5000	1030
	6000	1200

* Optional Center Tap Box with MCCB / Fusible breaker is available. Please consult factory

7.6 End Cable Tap Box

End Tap Box are non-fusible devices used to connect cable and conduit to the end of the busway run or where busway runs connect without the need for over current protection.

Vertical Application

Table 7.6.1 : Vertical End Cable Tap Box Dimension

Current Rating (Copper)	Current Rating (Aluminium)	Standard Length (mm)		
		A	B	C
400 ~ 1350	400 ~ 1200	290	525	285
1600 ~ 2000	1350 ~ 2000	390	625	385
2500 ~ 4000	2500 ~ 3200	570	675	435
5000	4000	780	725	485
6300	5000	880	825	585
	6000	1030	925	685

* Optional End Cable Tap Box with MCCB / Fusible breaker is available. Please consult factory.

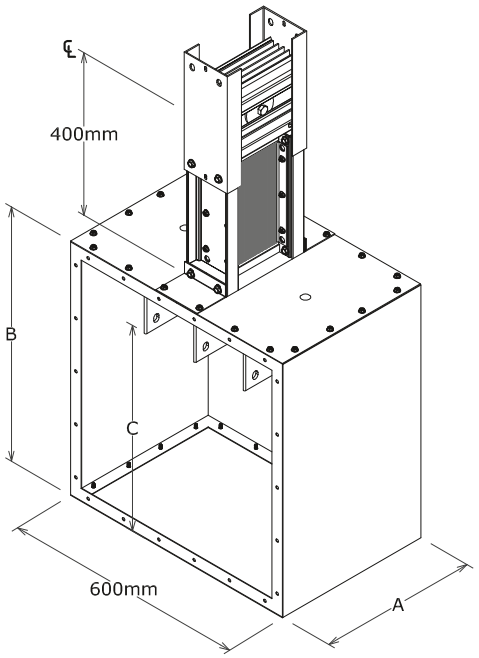


Fig. 7.6.1

Horizontal Application

Table 7.6.2 : Horizontal End Cable Tap Box Dimension

Current Rating (Copper)	Current Rating (Aluminium)	Standard Length (mm)		
		A	B	C
400 ~ 1350	400 ~ 1200	290	379	118
1600 ~ 2000	1350 ~ 2000	390	429	168
2500 ~ 4000	2500 ~ 3200	570	479	218
5000	4000	780	529	268
6300	5000	880	629	368
	6000	1030	729	468

* Optional End Cable Tap Box with MCCB / Fusible breaker is available. Please consult factory.

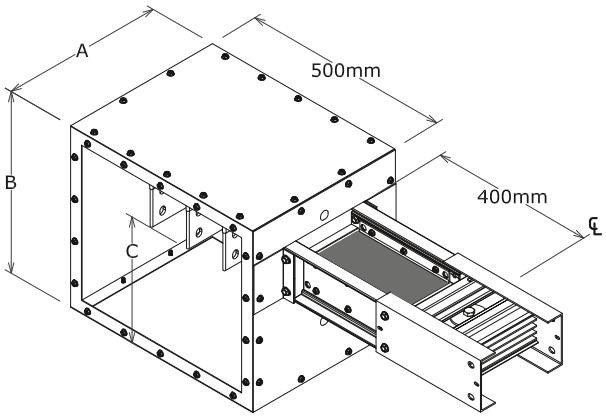


Fig. 7.6.2

7.7 Expansion Fitting

Powerduct Expansion Fitting is design to accommodate the busway thermal expansion in long straight runs which is over 60.8M without offsets or elbows and spring hanger are included and both ends are held fixed, or in a permanent position. In addition, it is also recommended when the busway crosses the building expansion joint.

Inside the Powerduct Expansion Fitting contains a flexible connector which provides + 50mm linear movement along the straight busway system.

Current Rating (Copper)	Current Rating (Aluminium)	Dimension "W" in (mm)
400 ~ 1350	400 ~ 1200	300
1600 ~ 2000	1350 ~ 2000	400
2500 ~ 4000	2500 ~ 3200	600
5000	4000	810
6300	5000	900
	6000	1030

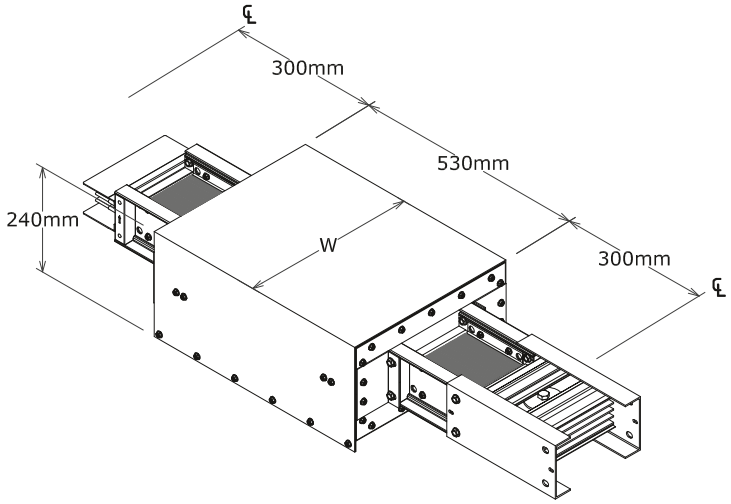
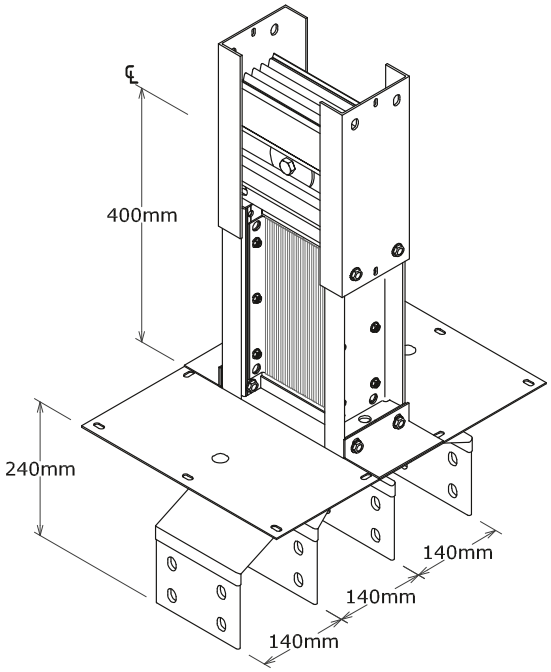


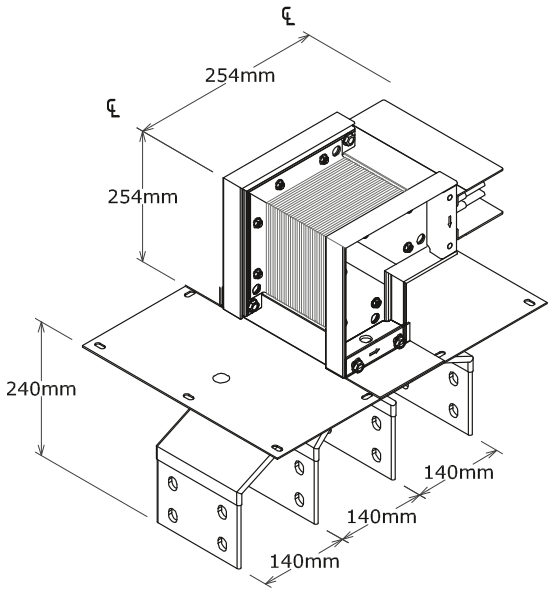
Fig. 7.7.1

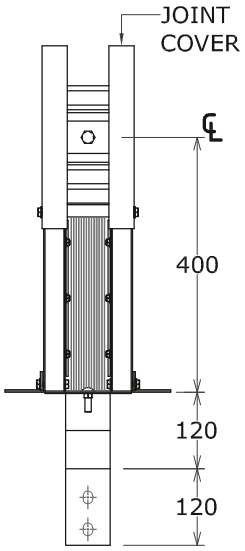
7.8 Flanged End

Flanged End provides the connection between busway and the low voltage switch board, control panel or other distribution system.

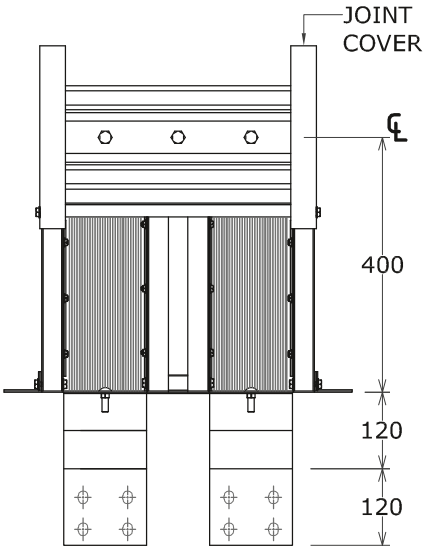


Right Edge Elbow With Flanged End

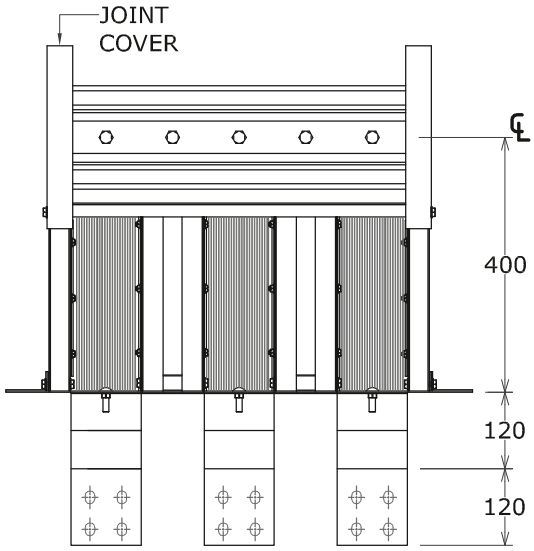




Case and Bars
One Bar Per Phase



Case and Bars
Two Bar Per Phase



Case and Bars
Three Bar Per Phase

7.8 Flanged End

Table 7.8.1 : Flanged End Cut Out and Drilling Pattern

Copper Ampere	Dimensions in mm			Fig. no.
	A	B	C	
400	260	200	114	7.8.1
600	260	200	114	7.8.1
800	260	200	114	7.8.1
1000	260	200	114	7.8.1
1200	260	200	114	7.8.1
1350	260	200	114	7.8.1
1600	354	294	161	7.8.2
2000	476	416	110	7.8.3
2500	476	416	110	7.8.3
3200	476	416	110	7.8.3
4000	546	486	128.5	7.8.3
5000	740	680	118	7.8.4
6300	800	740	128	7.8.4

Aluminium Ampere	Dimensions in mm			Fig. no.
	A	B	C	
400	260	200	114	7.8.1
600	260	200	114	7.8.1
800	260	200	114	7.8.1
1000	260	200	114	7.8.1
1200	260	200	114	7.8.1
1350	354	294	161	7.8.1
1600	354	294	161	7.8.1
2000	354	294	161	7.8.1
2500	476	416	110	7.8.3
3200	546	486	128.5	7.8.3
4000	636	576	151	7.8.3
5000	800	740	128	7.8.4
6000	960	900	115	7.8.5

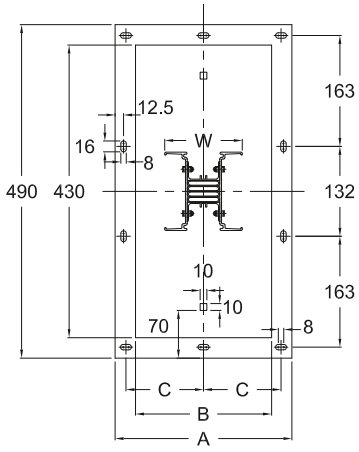


Fig. 7.8.1

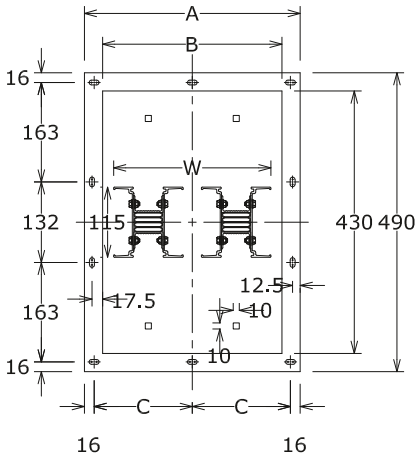


Fig. 7.8.2

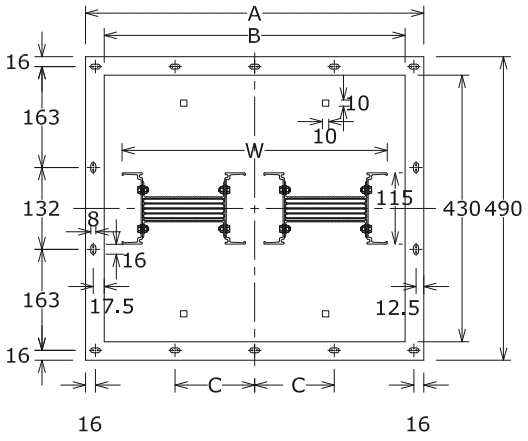


Fig. 7.8.3

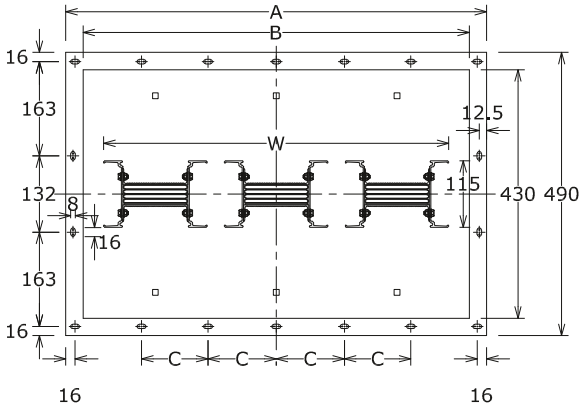


Fig. 7.8.4

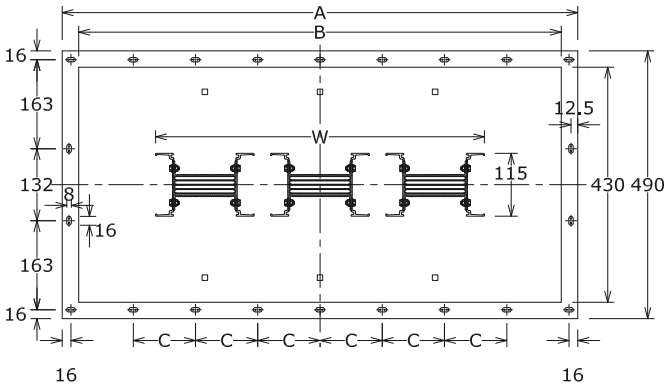


Fig. 7.8.5

7.9 Plug-in Unit

Powerduct plug-in unit is available from rating 15A to 800A with different levels of fault protection. A maximum ten pieces of 400A (max) plug-in unit ≤ can be mounted on a standard 3050mm plug-in busway. The **maximum** amperage carried by **each plug-in opening is 400A**. Therefore, 500A ~ 800A will accommodate two openings.

Safety Features:

Powerduct plug-in unit features mechanical interlock system. This is to prevent the insertion or removal when the plug-in unit is in "ON" position (energizing). (Fig. 7.9.2)

The front operating switch allows padlocking at the "OFF" position. This is to prevent switching to "ON" accidentally during servicing and maintenance. The plug-in earth contact is being designed so that the earth contact is made prior contact to the LIVE busway during installation. Besides, it also features water resistant capability to suit customers' need. The plug-in unit is rated from IP40 as standard but customers can order IP55 as optional.

Refer to the table 7.9.1 for the sizes availability of the unit with ampere rating.

Table 7.9.1 Plug-in dimension

Ampere rating	Dimension mm		
	H	W	D
15 ~100	380	270	240
125 ~ 250	480	270	240
300 ~ 400	580	270	270
500 ~ 630	1060	470	380
700 ~ 800	1060	470	420

*For above 1000A, please consult factory

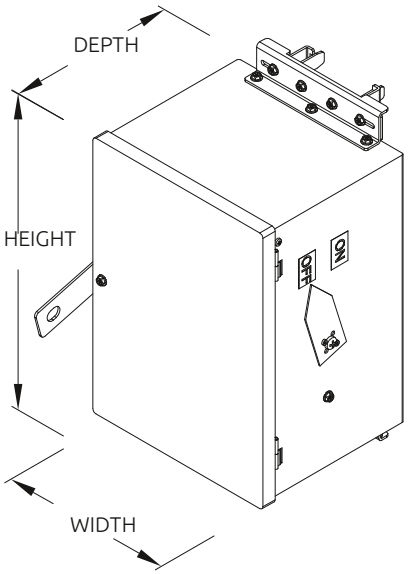


Fig. 7.9.1

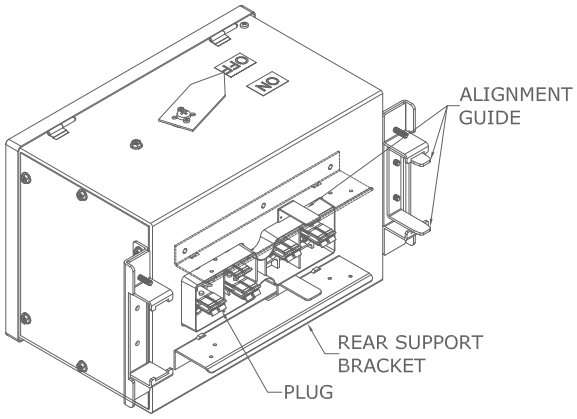


Fig. 7.9.2

7.9 Plug In Unit

Safety Lock-

Door Interlock– plug in door locked soon the operating switch is 'ON' position.

Mechanical Interlock with Busway Housing-The plug in cannot be attached or detached from the busway when the operating switch is 'ON'

Knock-out Hole

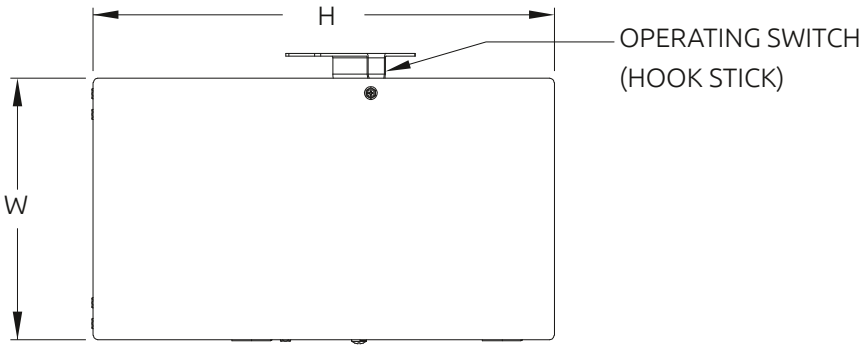
No knock-out hole is provided. Make it at site in conformity with the cable size.

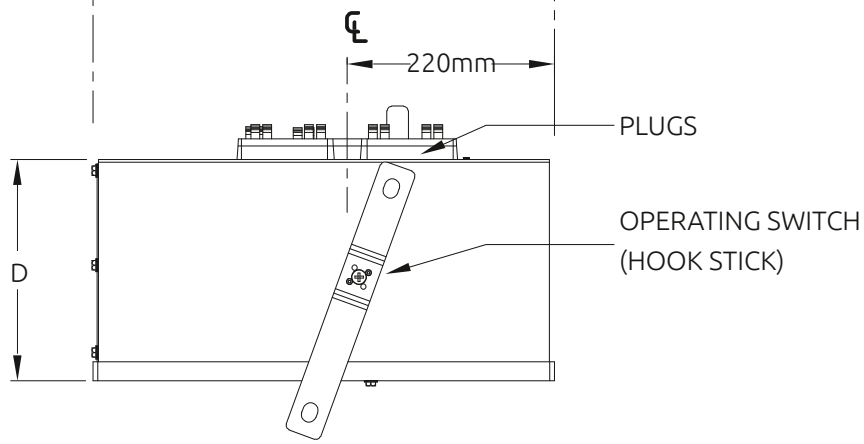
Grounding

Plug in enclosures shall make positive ground connection to the busway housing prior to the bus bar contact.

Plug In unit Dimensions

Front View
(15A ~ 400A)



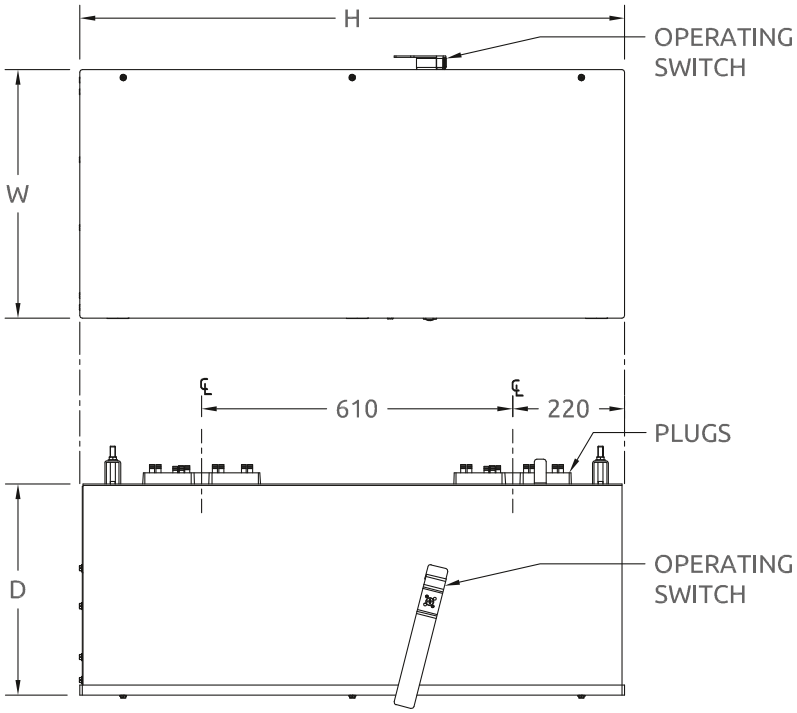


Side View
(15A ~ 400A)

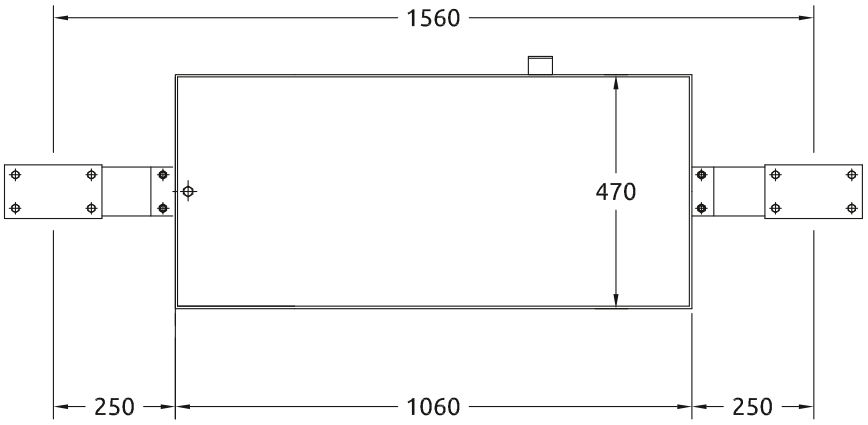
Plug In unit Dimensions

Front View
(500A ~ 800A)

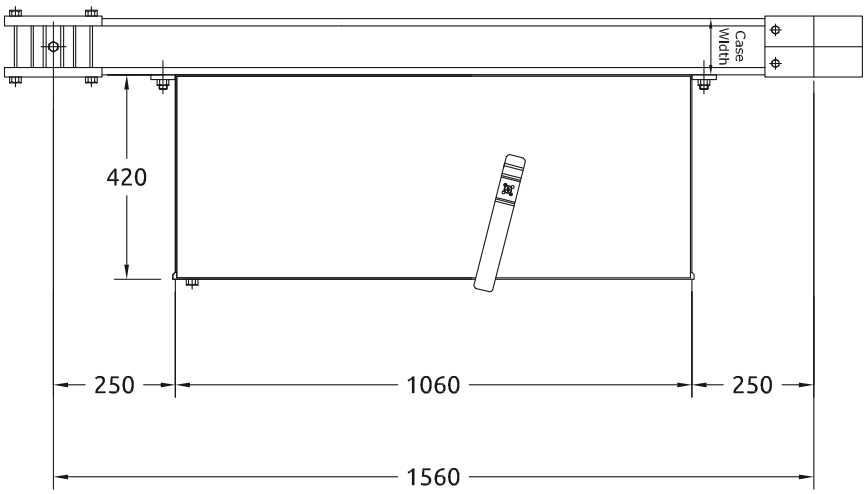
Side View
(500A ~800A)



Front View
(800A & Above)



Side View
800A & Above)



7.10 Horizontal Riser Application

Horizontal Application

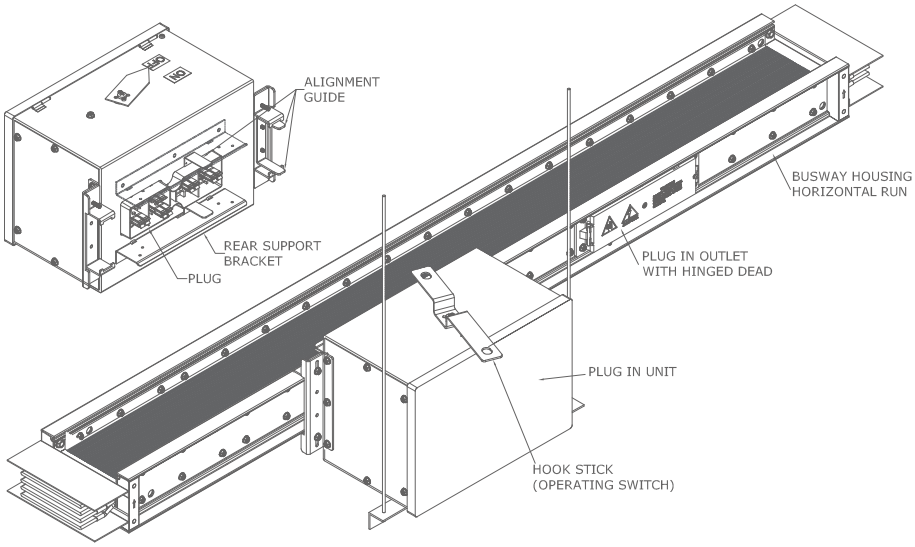


Fig 7.10.1

Riser Application

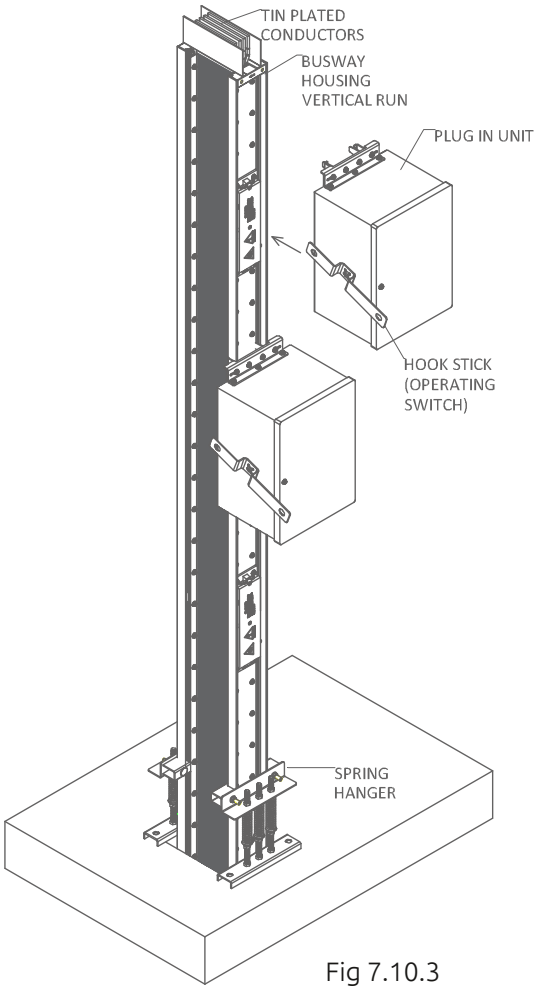


Fig 7.10.3

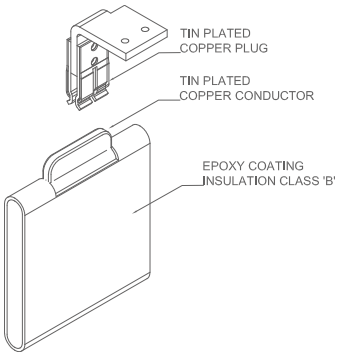


Fig 7.10.2

7.11 Joint Stack

Powerduct joint stack features a single bolt with double headed design. The high strength steel bolts together with the Belleville spring washers provide equal pressure across the complete joint contact area to assure proper electrical contact. Double head bolt will shear off to ensure the proper torque is applied.

It is very important to get the joint installed properly and accurately. Improper tightening of the connection bolts will cause the joint overheating after certain period of time during energizing. Powerduct bolt is maintenance free design.

BEFORE

AFTER

7.12 Joint Detail & Feeder Busway Dimension Spacing

Joint Detail

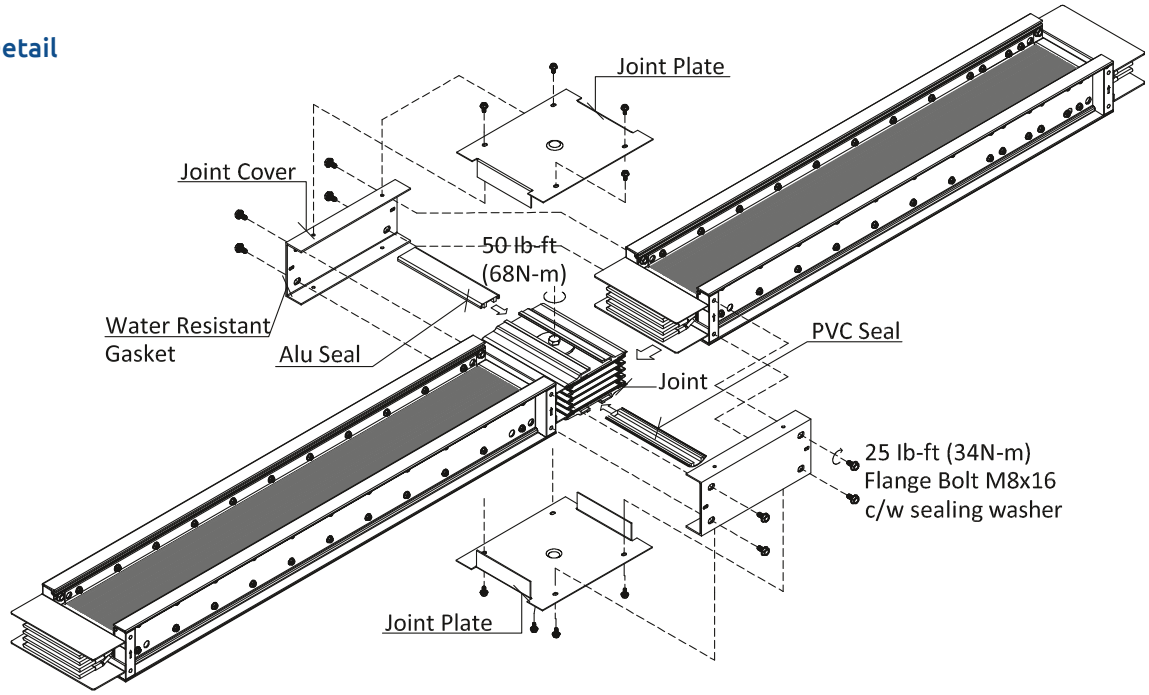
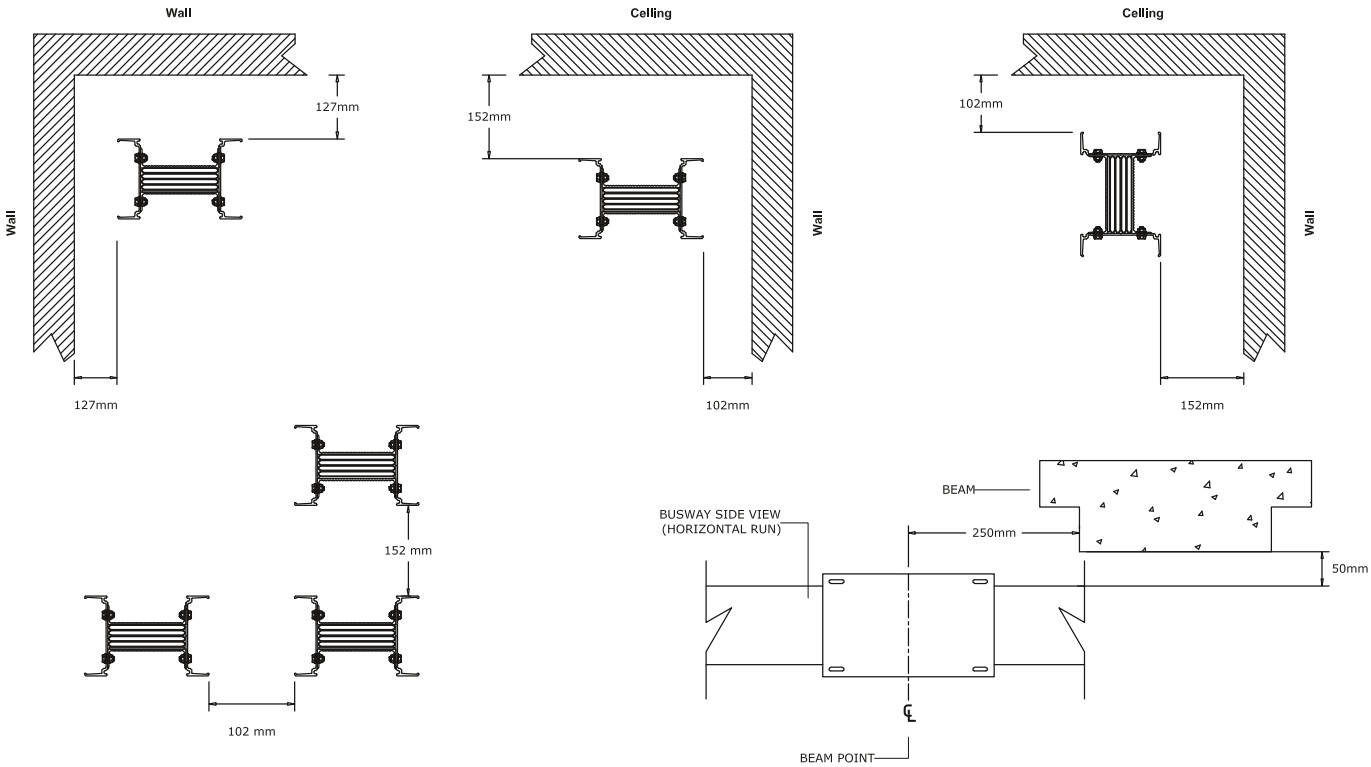


Fig 7.12.1

Feeder Busway Dimension Spacing Between Runs & Minimum Clearance

The minimum clearances for installing between feeder busway with wall, and ceiling are shown as the following picture below.

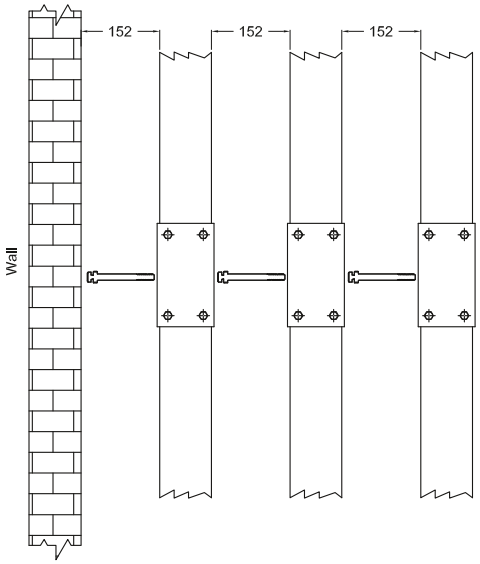
Additional clearance may required for the plug-in devices installation. Refer to the next page.



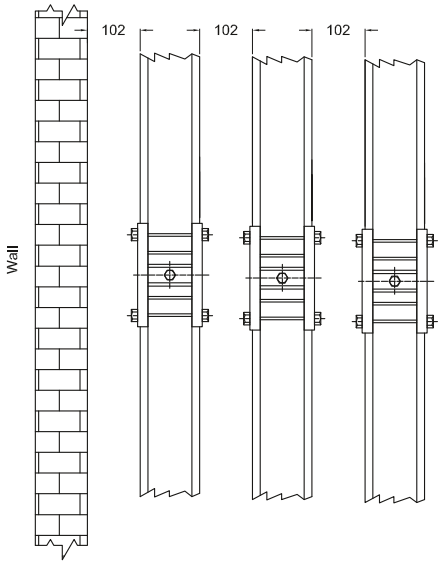
Minimum Distance between parallel-installed busway

Feeder Busway

In case the busway been installed side by side.
(Flatwise Installation)

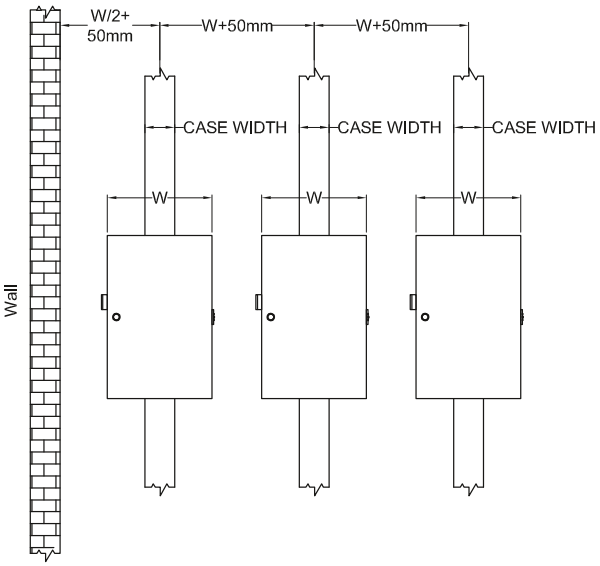


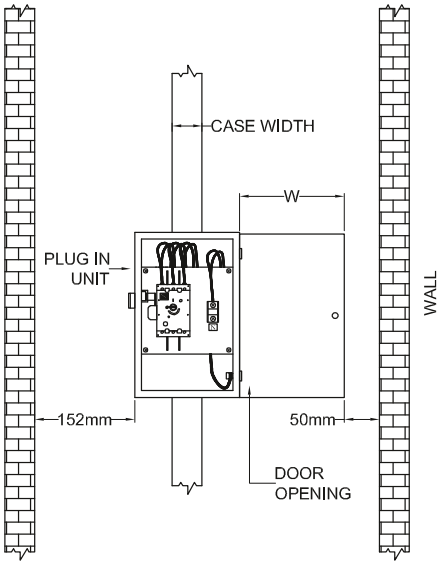
In case the busway been installed side by side.
(Edgewise Installation)



Plug-in type

Minimum clearance of plug-in busway installed in parallel is shown as below. The minimum clearance shall be determined between the plug-in to ensure that 50mm clearance is given. When the busway is to be installed in a tight places, make sure clearance shall be given enough for the plug-in to get opened which is shown as picture below:





Note

* Dimensions 'W' refer to the Table 7.9.1

7.13 Busway Connection Procedure:

1. Align the sections to be joined by matching up the arrow attached to the ends of each section. Use tools provided by manufacturer to ease the installation. Ref. Fig.7.13.1 and 7.13.2
2. Slide the sections together. Ensure that the busbars interweave the insulations.
3. If the joint caps are not already in place, reattach them and hand tighten the mounting screws.
4. Inspect the busway run for straightness in all planes and make any adjustments necessary for good alignment.
5. Tighten the joint bolt to 50 ft-lbs (68N-m) with a 3/4 inch or 19mm socket wretch. When the Belleville washers on both sides are flattened, the bolt is fully tightened. If the double head bolt is used, tighten until the bolt head shear off. (No torque wrench is required) as shown in Fig.7.13.3
6. Tighten all joint cover flange bolt (M8x16) to 25lb-ft (34N-m) with a 13-mm socket wrench.
7. During the installation, occasionally mega test the assembly to check for any improperly made joints. Resistance should not drop below 1 megaohm per 100 feet of busway. (According to NEMA BU 1)
8. Mega test the complete run before energizing.

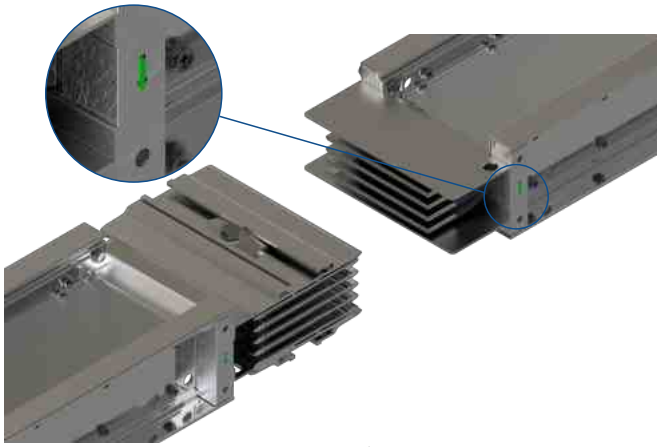


Fig. 7.13.1

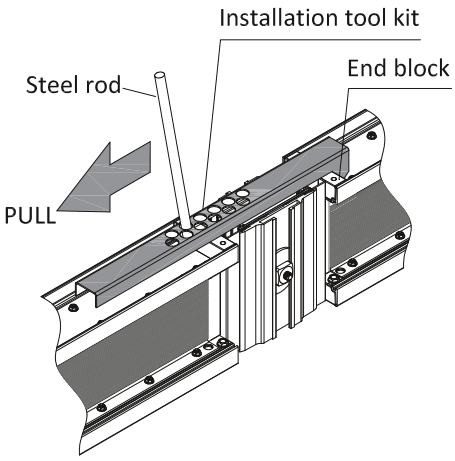


Fig. 7.13.2

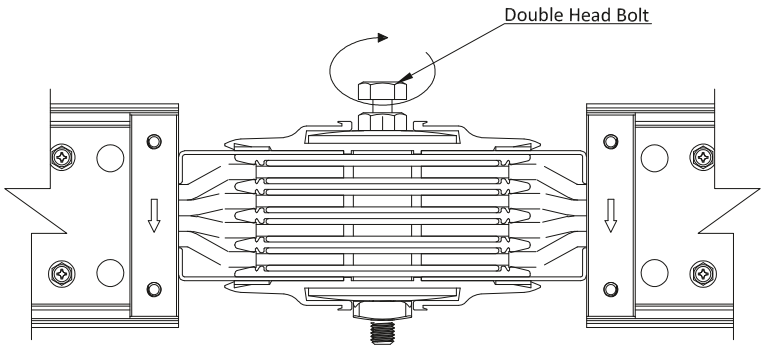


Fig. 7.13.3

7.14 Hangers & Floor Support

Hangers

Application for horizontal Mounting, cleats shall be mounted for installation at 2 meter intervals. The installer just install all these cleats in the angle irons or U channels to mount the busway at horizontal edgewise or flatwise. In addition, 1/2 inch (12mm) drop rods are recommended with a maximum 10 foot (3840mm) spacing. Drop rods and other hardware must be furnished by the installer.

Please check with manufacturer if cleat quantity provided is insufficient.

Important :

- Maintain good alignment of the drop rods along the busway run.
- Do not support busway at the joint.
- After the busway is secured with the hangers, adjust the hangers on the rods for the correct elevation.
- Busway braces (furnished by the installer) may be required to keep the run straight or to prevent rotation.
- Manufacturer strongly recommends each 2 meter busway adjacent must have busway cleat supported.

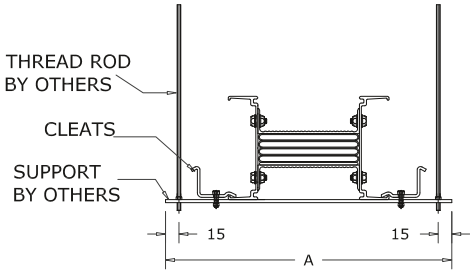


Fig. 7.14.1 Flatwise mounting

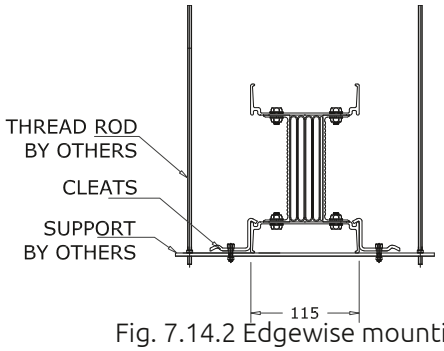


Fig. 7.14.2 Edgewise mounting

Table 7.14.1 dimension for Figure 7.14.1 & 7.14.2

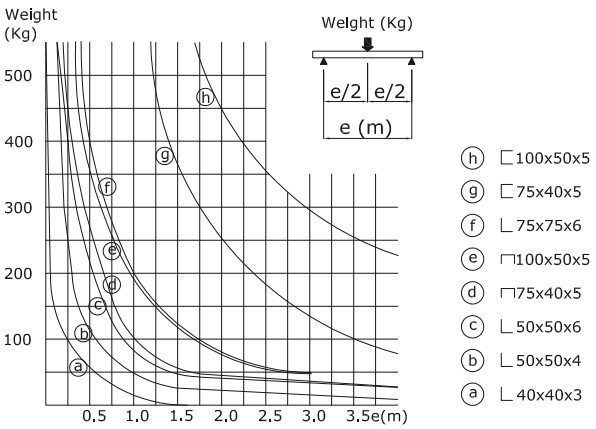
Bars Per Phase	Copper		Dim (mm)
	Ampere Rating	Busway (W)	Hanger (A)
1	400	89	219
	600	99	229
	800	104	234
	1000	119	249
	1200	129	259
	1350	139	269
2	1600	258	388
	2000	288	418
	2500	328	458
	3200	388	518
	4000	428	558
3	5000	597	727
	6300	717	847

Bars Per Phase	Aluminium		Dim (mm)
	Ampere Rating	Busway (W)	Hanger (A)
1	400	109	239
	600	109	239
	800	119	249
	1000	139	269
	1200	159	289
	1350	194	324
	1600	214	344
	2000	244	374
	2500	368	498
2	3200	458	588
	4000	538	668
3	5000	717	847
	6000	867	997

Material use for busway support channel.

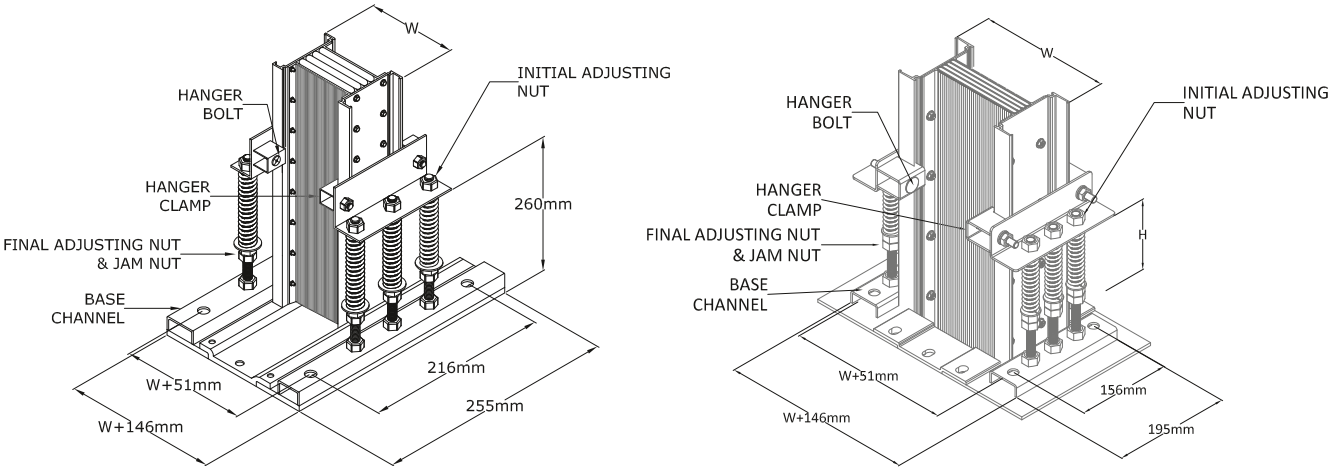
- Suggest to use 12mm or 1/2 inch of steel rod.
- It is recommended to use 40x40x3(mm) support channel for 2000A or below busway model while 50x50x6(mm) for 2500A or above busway.
- Please refer to below data during busway installation

Refer to the Table 6.1



Floor Support

Spring Hanger is purposely design to support busway at each floor regardless the busway total length.
Intermediate support suggests to be use whenever the floor to floor lever is over 4.8M height.
The number of spring provided is based on busway weight.



Type 1 Type 2

Fig. 7.14.3

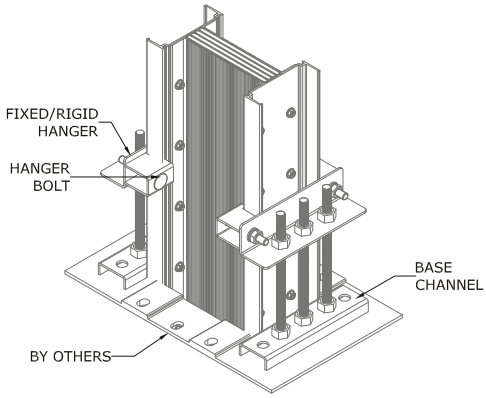


Fig. 7.14.4

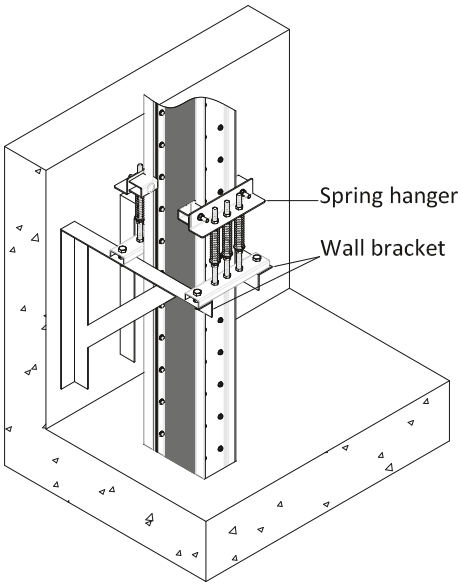


Fig. 7.14.5

Busway and Fitting

PP **C** **3** **100** **G1** **55** **FST** **1921**

Powerduct Series
PP = Powerduct Pro

Busbar Type
C = Copper
A = Aluminium

Configuration

1 =	3P3W + Integral Ground
2 =	3P3W + 50% Internal Ground
3 =	3P3W + 100% Neutral + Integral Ground
4 =	3P3W + 100% Neutral + 50% Internal Ground
5 =	3P3W + 100% Neutral + 100% Internal Ground
6 =	3P3W + 200% Neutral + Integral Ground
7 =	3P3W + 200% Neutral + 50% Internal Ground
8 =	3P3W + 100% Internal Ground
9 =	25% Internal Ground + 3P3W + 100% Neutral + 25% Internal Ground

Ampere Rating

040 =		200 =	
060 =		250 =	
080 =		320 =	
100 =	1000A	400 =	4000A
120 =	1200A	500 =	5000A
135 =	1350A	600 =	6000A
160 =	1600A	630 =	6300A

Ground

G1	=	Integral housing ground
G2	=	50% Internal ground
G3	=	100% Internal ground
G4	=	25% Internal Ground on both side

Protection Degree (IP)

40 =	IP40	65 =	IP65
44 =	IP44	66 =	IP66
54 =	IP54	67 =	IP67
55 =	IP55	68 =	IP68
56 =	IP56		

Components

FST	=	FEEDER
PLG	=	PLUG-IN FEEDER
FLW	=	FLATWISE ELBOW
EDW	=	EDGEWISE ELBOW
FLE	=	FLANGED END
TEE	=	TEE
REDUCER	=	REDUCER
CTB	=	CENTER TAP BOX
ECTB	=	END CABLE TAP BOX
EO	=	EDGEWISE OFFSET
FO	=	FLATWISE OFFSET

* Standard length in mm
* Customize size in mm

Sample 1 :	**PPC3100G155FST1921**
Sample 2 :	**PPC3100G155EDW254-254**

Plug-in unit

PP **3** **2** ___ **G1** **55** **PP3244 - 001**

PP = Powerduct Pro

Configuration

1 = 3P3W + Integral Ground
2 = 3P3W + 50% Internal Ground
3 = 3P3W + 100% Neutral + Integral Ground
4 = 3P3W + 100% Neutral + 50% Internal Ground
5 = 3P3W + 100% Neutral + 100% Internal Ground
6 = 3P3W + 200% Neutral + Integral Ground
7 = 3P3W + 200% Neutral + 50% Internal Ground
8 = 3P3W + 100% Internal Ground
9 = 25% Internal Ground + 3P3W + 100% Neutral + 25% Internal Ground

Voltage

1 = 415Vac
2 = 600Vac
3 = 690Vac
4 = 1000Vac
5 = 660Vac
6 = 380Vac

Ampere Rating

010 = 100A or below
025 = 250A or below
040 = 400A or below
063 = 630A or below
080 = 800A or below
100 = 1000A or below
120 = 1200A
160 = 1600A

Ground

G1 = Integral housing ground
G2 = 50% Internal ground
G3 = 100% Internal ground
G4 = 25% Internal ground on both side

Protection Degree (IP)

40 = IP40
44 = IP44
55 = IP55

Descriptive Identification Of Individual Piece

Sample 1 : **PP 32025G155-PP3244-001**

CERTIFICATE

Power Plug Busduct Sdn. Bhd.
No. 17, Jalan SiLC 1/4,
Kawasan Perindustrian SiLC,
79200 Iskandar Puteri, Johor,
Malaysia.

has implemented and maintains a **Quality Management System.**

Scope:
Design and Manufacturing of Busway Trunking System.

Through an audit, documented in a report, it was verified that the management system fulfils the requirements of the following standard:

ISO 9001 : 2015

Certificate registration no.
Valid from 2021-08-03
Valid until 2024-08-02
2021-07-21

DQS GmbH

Markus Bleher
Managing Director

Accredited Body: DQS GmbH, August-Schanz-Straße 21, 60433 Frankfurt am Main, Germany
Administrative Office: DQS Malaysia, Suite 43-3 Setia Avenue, Jalan Setia Prima S U 13/S,
Setia Alam Seksyen U 13, 40170 Shah Alam, Selangor - Malaysia

SINGAPORE GREEN BUILDING COUNCIL

SINGAPORE GREEN BUILDING PRODUCT CERTIFICATE

AWARDED TO
Power Plug Busduct Sdn Bhd
No 17, Jalan SiLC 1/4,
Kawasan Perindustrian SiLC
Iskandar Puteri,
Johor 79200

FOR THE PRODUCT
Sandwiched - Copper Conductor

PRODUCT BRAND
Powerduct

PRODUCT MODEL
800A (Cu)

THE PRODUCT HAS BEEN ASSESSED ACCORDING TO THE ASSESSMENT CRITERIA OF THE SINGAPORE GREEN BUILDING PRODUCT CERTIFICATION SCHEME IT HAS BEEN AWARDED THE RATING

SINGAPORE GREEN BUILDING PRODUCT SGBC GOOD

Director
SGBC Pte Ltd

Certificate Number | Original Issue Date | Last Revision Date | Valid Till
SGBP 2018-1449 | 28th May 2018 | - | 27th May 2020

The use and reliance on this certificate is subject to the terms and conditions of the Singapore Green Building Product Certification Scheme. Revised certificates may also be issued at the discretion of the Council. The certification status may be verified at the Singapore Green Building Council website (www.sgbc.sg).

SINGAPORE GREEN BUILDING COUNCIL

SINGAPORE GREEN BUILDING PRODUCT CERTIFICATE

AWARDED TO
Power Plug Busduct Sdn Bhd
No 17, Jalan SiLC 1/4,
Kawasan Perindustrian SiLC
Iskandar Puteri,
Johor 79200

FOR THE PRODUCT
Sandwiched - Aluminium Conductor

PRODUCT BRAND
Powerduct

PRODUCT MODEL
400A to 5000A

THE PRODUCT HAS BEEN ASSESSED ACCORDING TO THE ASSESSMENT CRITERIA OF THE SINGAPORE GREEN BUILDING PRODUCT CERTIFICATION SCHEME IT HAS BEEN AWARDED THE RATING

SINGAPORE GREEN BUILDING PRODUCT SGBC GOOD

Director
SGBC Pte Ltd

Certificate Number | Original Issue Date | Last Revision Date | Valid Till
SGBP 2019-1421 | 21st June 2019 | - | 18th June 2020

The use and reliance on this certificate is subject to the terms and conditions of the Singapore Green Building Product Certification Scheme. Revised certificates may also be issued at the discretion of the Council. The certification status may be verified at the Singapore Green Building Council website (www.sgbc.sg).

CERTIFICATE

This is to certify that

Power Plug Busduct Sdn. Bhd.
No. 17, Jalan SiLC 1/4,
Kawasan Perindustrian SiLC,
79200 Iskandar Puteri, Johor,
Malaysia.

has implemented and maintains an **Environmental Management System.**

Scope:
Design and Manufacturing of Busway Trunking System.

Through an audit, documented in a report, it was verified that the management system fulfils the requirements of the following standard:

ISO 14001 : 2015

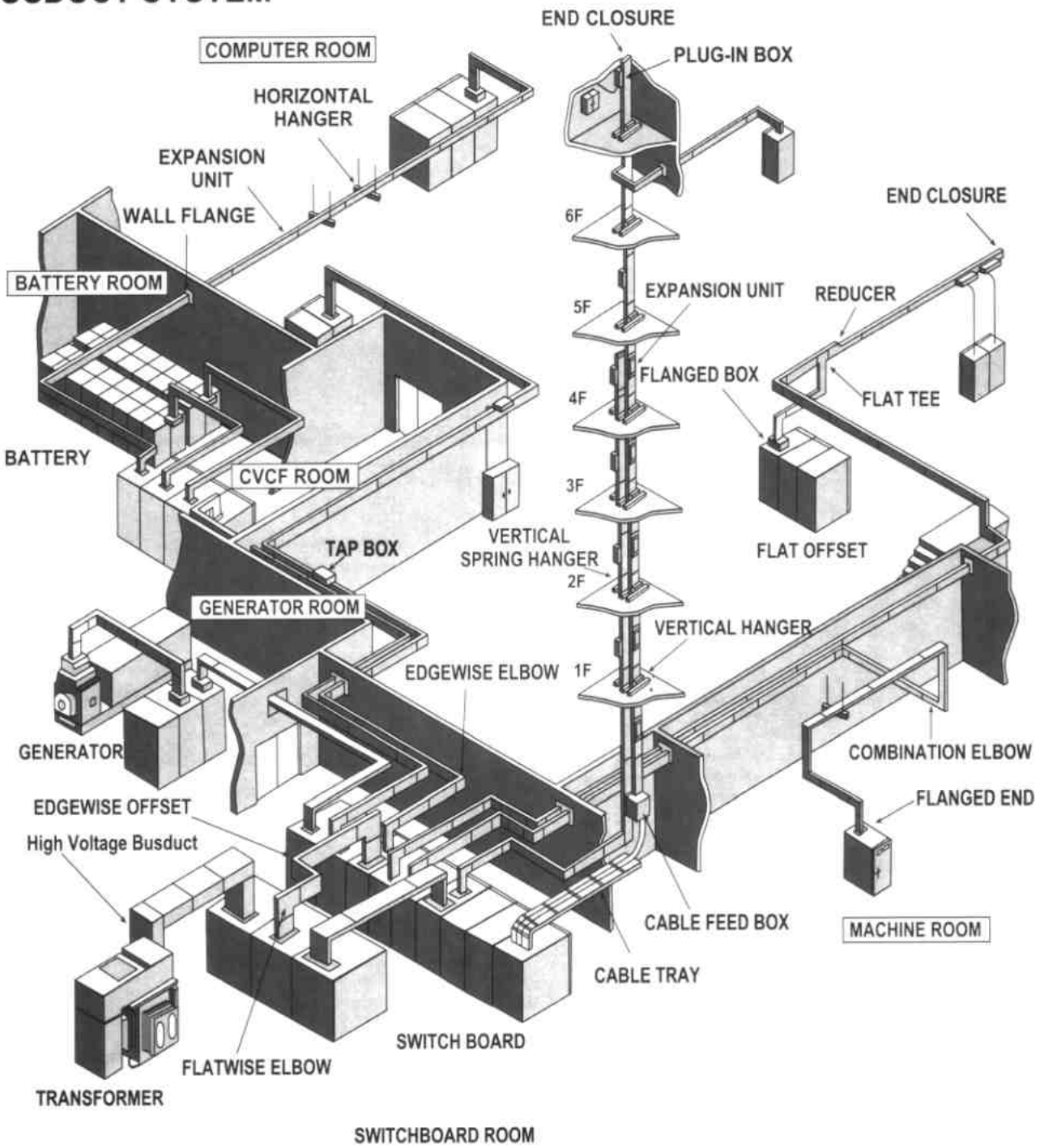
Certificate registration no. 491051 UM15
Valid from 2021-08-03
Valid until 2024-08-02
Date of certification 2021-07-21

DQS GmbH

Markus Bleher
Managing Director

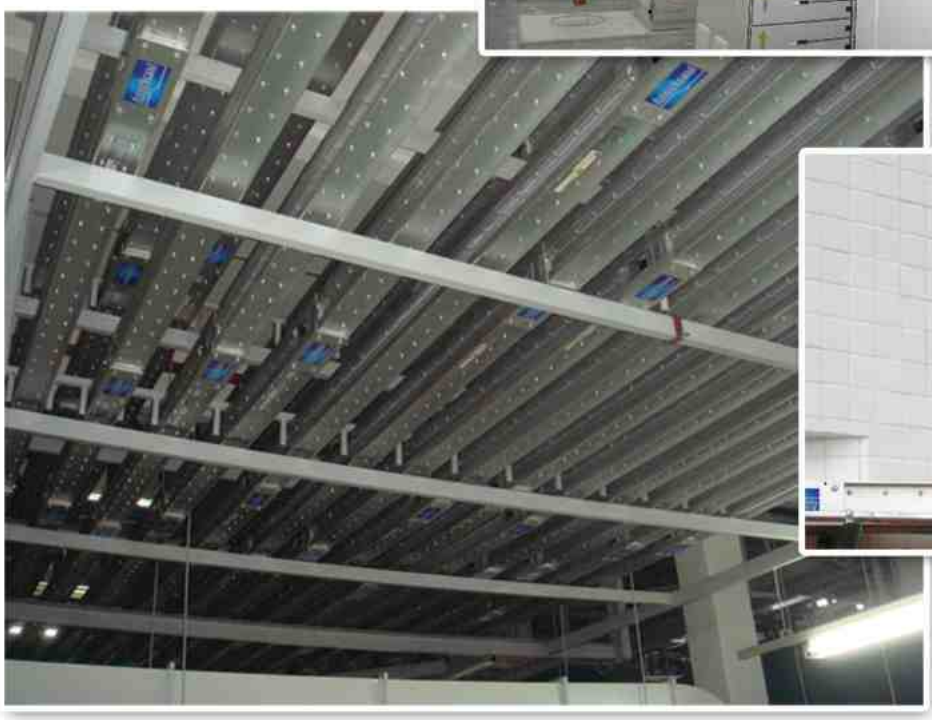
: DQS GmbH, August-Schanz-Straße 21, 60433 Frankfurt am Main, Germany
Administrative Office: DQS Malaysia, Suite 43-3 Setia Avenue, Jalan Setia Prima S U 13/S,
Setia Alam Seksyen U 13, 40170 Shah Alam, Selangor - Malaysia

BUSDUCT SYSTEM



More Than 1000 Jobs has been installed in Worldwide market such as in:

OIL & GAS INDUSTRIES
MEDICAL CENTER
RAILWAY LINE STATION
AIRPORT
FINANCIAL CENTER
COOLING TOWERS
HEAVY INDUSTRIES
HIGH TECH INDUTRIES
SMALL AND MEDIUM INDUSTRIES
EDUCATION BUILDING
POWER STATION
SHIPYARDS
SHIP
HIGH RISE RESIDENTIAL TOWER
TUNNELS
TELECOMMUNICATION TOWER
COMMERCIAL BUILDING AND COMPLEX
DATA CENTER
HOTEL



Fire Rated Powerduct busway system is also available, Fire Rated Powerduct is specially designed upon customer's request where the applications in hazardous environment system. The rating available from 400A to 6300A. The design and construction is completely tested accordance to IEC 60331-1:2009, BS 6387:2013(C,W,Z) / IEC 61034:2005 (measurement of smoke density).

IEC 60331-1:2009

The busbars provide circuit integrity for 120 minutes at 830°C.

BS 6387:2013 / IEC 61034:2005

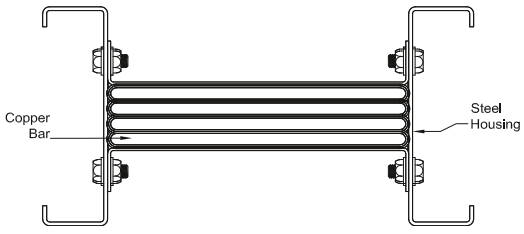
The busbars provide circuit integrity for :

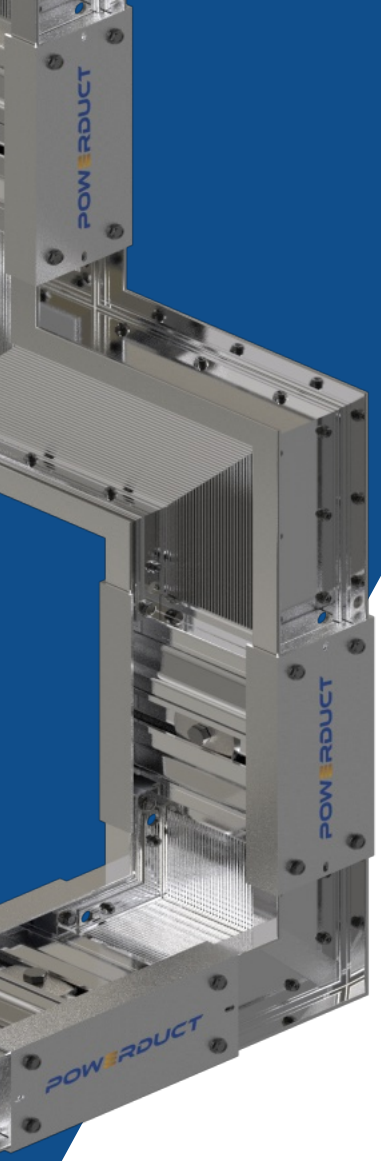
- Protocol C - Resistance to fire alone
- Protocol W - Resistance to fire with water
- Protocol Z - Resistance to fire with mechanical check.

The busbars provide measurement of smoke density.


TEST CERTIFICATE


TEST CERTIFICATE





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** Technical details and dimensions for the products are subject to continuing revision and engineering update without notice.