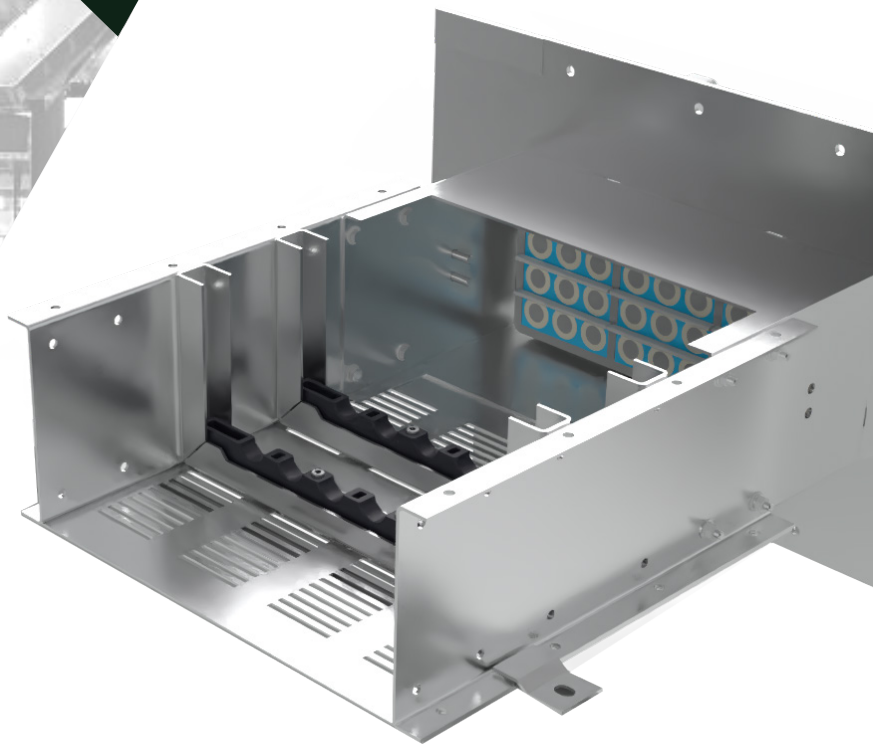
POWELL

CABLE BUS CATALOG



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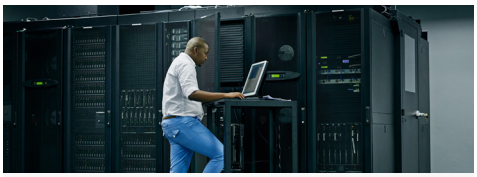
TYPICAL APPLICATIONS

Cable bus is a safe and cost effective way to carry high currents at voltage classes ranging from < 600V to 38kV. The system utilizes cable conductors that are spaced using engineered cable supports to facilitate convective cooling, and thereby maximize system ampacity. Powell's Cable Bus has been designed and tested to withstand forces resultant from short circuit events, ensuring safe and efficient power transmission while protecting personnel and critical assets.



DATA CENTERS

OIL, GAS, & CHEMICAL

COMMERCIAL

ENERGY

ELECTRICAL UTILITIES

RENEWABLE ENERGY

CABLE BUS VS ALTERNATIVES

Competitive Systems

Cable bus is competitive with other cable management systems. Installation is very similar to cable tray products, while offering superior safety features and a lower total system cost.

Ampacity Comparison

Powell's Cable Bus solutions allow for increased current density per conductor by aligning with the free-air ratings as defined within NEC. The example table shows the advantage of Cable Bus for 90°C Temperature applications. Data Center applications at 75°C Temperature will show a similar advantage as compared to tray and conduit.

Made in America/Canada

Ampacity Comparison: Powell Cable Bus vs the Field

System Rating	Conductor Size	Powell Cable Bus Systems[1]	Insulated Three Conductor Copper Cable in Tray[2]	3 Single-Conductor Copper Cable in Conduit in Air[3]
600V	500 kcmil	637	391	391
	750 kcmil	805	487	487
	1000 kcmil	960	560	560
5kV	500 kcmil	695	485	475
	750 kcmil	900	615	600
	1000 kcmil	1075	705	690
15kV	500 kcmil	685	535	480
	750 kcmil	885	670	585
	1000 kcmil	1060	770	675

Table 1: Comparison for copper cable, 90C temperature, 40C ambient .

[1] Per 2020 NEC, Copper Cable, 90°C Temp, 40°C Ambient
[2] Per 2020 NEC Table 310.16 (LV) and Table 311.60(C)(71) MV
[3] Per 2020 NEC Table 310.16 (LV) and Table 311.60(C)(73) MV

Cable bus system is typically a more cost competitive solution as compared to bus bars, and a safer solution than regular cable tray, offering a completely engineered system that is used in multiple industries and markets in need of power distribution. Please contact your Powell representative with any questions on how cable bus fits your specific application.

SYSTEM DESIGN & CONSTRUCTION

Powell's cable bus system is engineered to provide a robust and efficient solution for power distribution. This system is characterized by its unique design, which ensures that the conductors are housed within a single metal enclosure, effectively minimizing electromagnetic interference, maximizing safety, and increasing current carrying capacity of the system.

Safety Features

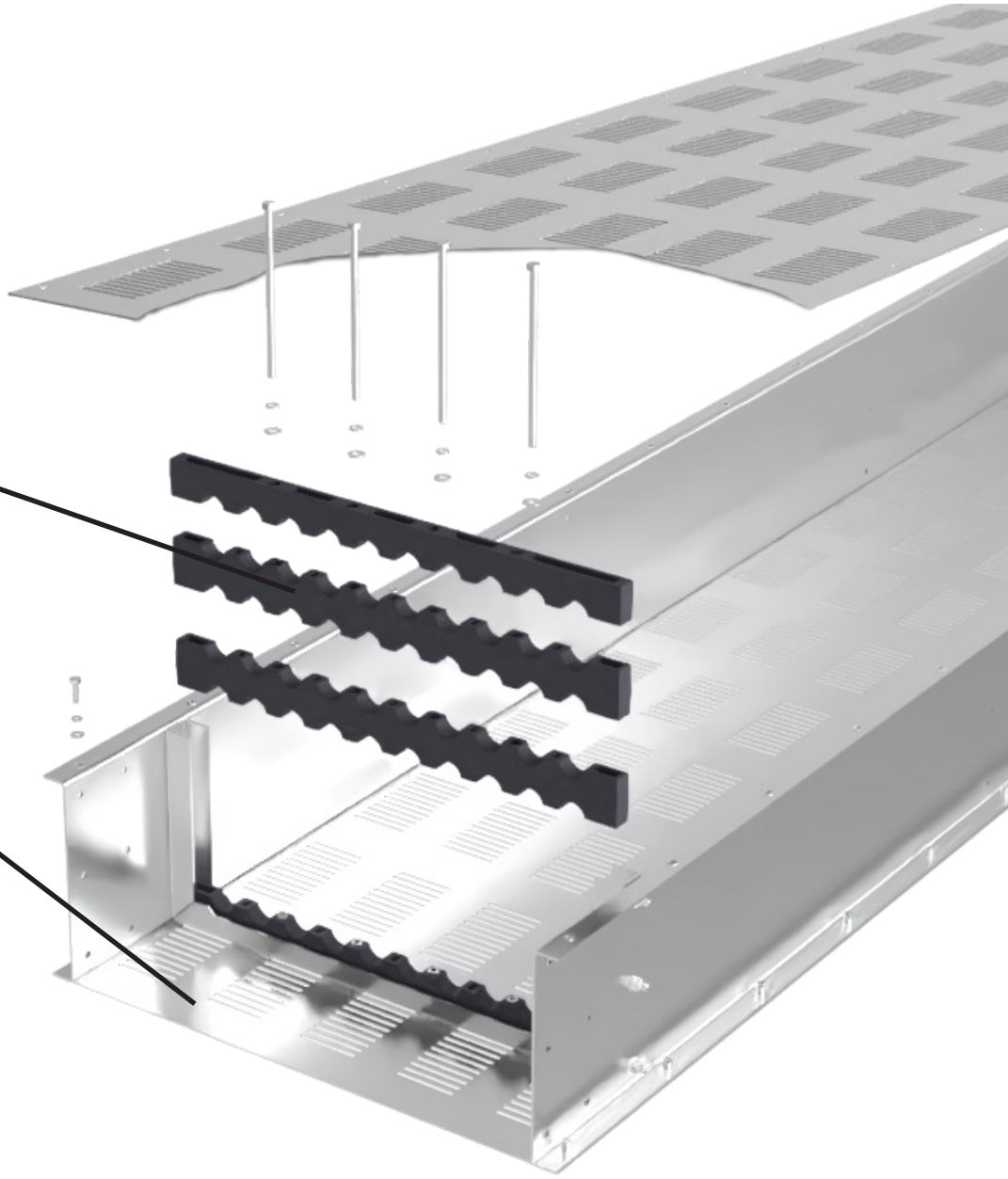
Safety is paramount in the design of all Powell's products, including Powell's cable bus system. The rigid U-frame construction is engineered and tested to withstand the short circuit forces during an electrical fault. The enclosure is designed to withstand environmental challenges, including moisture ingress and external contaminants, thanks to dedicated vapor barriers and fire stop assemblies that protect against hazardous conditions.

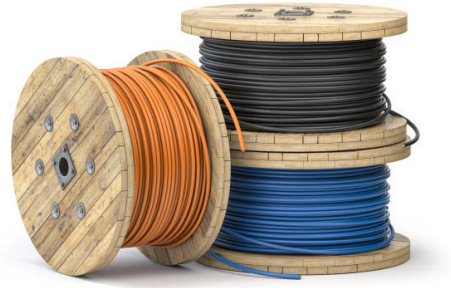
Molded Cable Support

Cables within the bus are supported using polymer supports that are strategically placed to maintain the required spacing between cables, enabling free-air ampacity ratings. The cable supports are engineered to accommodate a full range of cable sizes and constructions, providing a secure fit throughout the entire length of the circuit.

Ventilated Enclosed Covers

The cable bus enclosure is typically constructed from high-strength, non-coated aluminum alloy, which minimizes weight for improved handling and installation. The enclosure includes ventilated top and bottom covers to allow for proper air circulation and to prevent overheating for optimal performance.





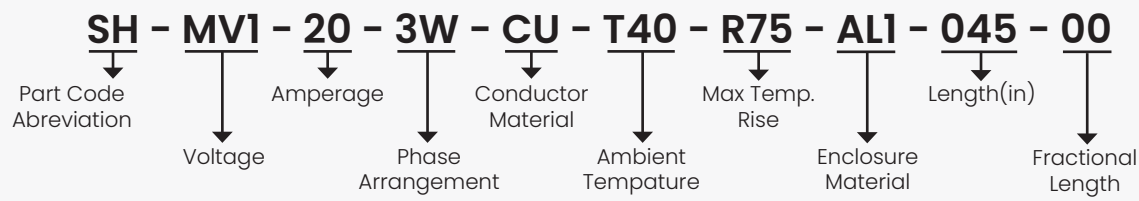
Electrical Terminations

The cable bus system also features specialized terminations that ensure reliable connections to various electrical equipment. These terminations are designed to meet or exceed industry standards, providing a secure and low-resistance connection.

CONFIGURATION & CODE TABLE

This catalog is for metal-enclosed cable bus from 600V through 38kV applications, suitable for indoor or outdoor installations with nominal current ratings operating in ambient temperatures to 40°C. The parts and assembly drawings will form the basis for developing the cable bus arrangements to manufacture and install. Configurations of cable bus include low voltage and medium voltage ratings according to the following tables.

PART NUMBER EXAMPLE



The following is a description of the part numbering system, which includes key information about each cable bus part. The tables provide a definition of each field comprising the part number. Default values are underlined in the charts below. Non-standard values can result in additional engineering time as compared to a standard design.

PART NUMBER CODES

VOLTAGE	
Voltage	**Code**
<1058V	LV1
5/15kV	MV1
27kV	MV2
38kV	MV3

AMPERAGE	
Amps*	**Code**
800	08
1200	12
1200 V2	13
1600	16
1600 V2	17
2000	20
2000 V2	21
2500	25
2500 V2	26
3000	30
3000 V2	31
3500	35
3500 V2	36
4000	40
4000 V2	41
4000 V3	42
5000	50
5000 V2	51
6000	60

* V2 & V3 are options for same current using different diameter cables
Ask your Rep for additional info.

PHASE ARRANGEMENT	
Type	**Code**
3P/3W	3W
3P/4W	4W

CONDUCTOR MATERIAL	
Material	**Code**
Copper	CU
Aluminum	AL

AMBIENT TEMP.	
Type	**Code**
40ºC	**T40**
45ºC	T45
50ºC	T50
55ºC	T55

MAX. TEMP. RISE	
Value	**Code**
75C	R75
90C	R90

MATERIAL	
Hardware	**Code**
304SS	**SS4**
316SS	SS6
GR5 Zinc	GR5
Si-Bronze	BRZ
Enclosure	**Code**
1100AL	**AL1**
5052AL	AL2

ADDITIONAL NUMBER CODES

LUG HW ARRANGEMENT	
Value	**Code**
Std.	**L1**
One Belv.	L2
Two Belv.	L3
TBD	L4

PAINT COATING	
Value	**Code**
Bare	**P0**
ANSI 61	P1
ANSI 70	P2
Anodized	P3

FIRE RATING	
Value	**Code**
1 Hour	F1
2 Hour	F2
3 Hour	F3

WALL THICKNESS	
Value	**Code**
Up to 6"	W06
Up to 12"	W12
Up to 18"	W18
Up to 24"	W24

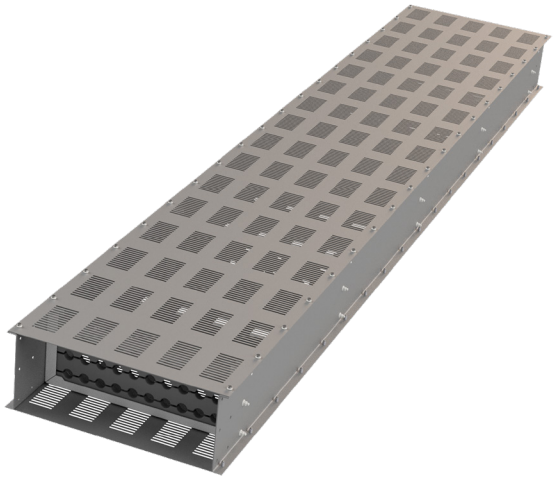
EXPANSION KIT GAP	
Value	**Code**
6"	G06
12"	G12

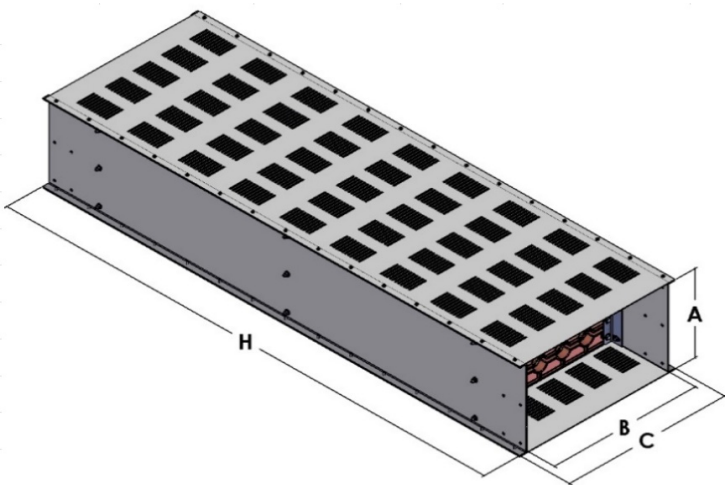
FRACTIONAL LENGTH	
Value	**Code**
0.00"	**0**
0.25"	25
0.50"	50
0.75"	75

OFFSET ANGLES	
Value	**Code**
45	D45
30	D30

75°C HORIZONTAL & VERTICAL
LOW VOLTAGE STRAIGHT SECTIONS (LV1)

HORIZONTAL CODE: (SH)
VERTICAL CODE: (SV)





Straight Sections of Cable Bus include top and bottom covers, fastening hardware, internal cable supports. Splicing kits are excluded, and can be found on Page 13.

- Horizontal Straight Section (HS) with Cable Supports positioned not to exceed 36in spacing.
- Vertical Straight Section (VS) with Cable Supports positioned not to exceed 18in spacing.

The tables below meet the requirement of NEC for conductor ampacities within the 75°C temperature rise in enclosed spaces, such as termination in most UL891 Switchboards. Note that Powell's UL891 switchboard FlexBoard™ accepts terminations at 90°C when using copper conductors in Powell's Cable bus.

75°C Aluminum Conductor, 3P /3W — AL

Ampacities Per NEC(2020) Table 310.15(B)(16) -- 40°C Ambient

Low Voltage Rating	Cables Per Phase	Cable Size	Dimensions (in Inches)				
			A	B	C	H MIN	H MAX
800A	3	500 kcmil	8	18	20.5	18	144
1200A	5	500 kcmil	10	18	20.5		
	4	600 kcmil	10	18	20.5		
1600A	6	500 kcmil	10	18	20.5		
	5	750 kcmil	10	18	20.5		
2000A	7	600 kcmil	10	21	23.5		
	6	750 kcmil	10	18	20.5		
2500A	9	500 kcmil	10	25	27.5		
	8	750 kcmil	10	21	23.5		
3000A	10	600 kcmil	10	25	27.5		
	9	750 kcmil	10	25	27.5		
3500A	10	750 kcmil	10	25	27.5		
	9	1000 kcmil	10	25	27.5		
4000A	13	600 kcmil	12	25	27.5		
	12	750 kcmil	12	25	27.5		
	10	1000 kcmil	10	25	27.5		
5000A	15	750 kcmil	12	32	34.5		
	13	1000 kcmil	12	25	27.5		
6000A	15	1000 kcmil	12	32	34.5		

75°C Copper Conductor, 3P /3W — CU

Ampacities Per NEC(2020) Table 310.15(B)(16) -- 40°C Ambient

Low Voltage Rating	Cables Per Phase	Cable Size	Dimensions (in Inches)				
			A	B	C	H MIN	H MAX
800A	3	500 kcmil	8	18	20.5	18	144
1200A	4	500 kcmil	8	18	20.5		
	3	750 kcmil	8	18	20.5		
1600A	5	500 kcmil	10	18	20.5		
	4	750 kcmil	8	18	20.5		
2000A	6	500 kcmil	10	18	20.5		
	5	750 kcmil	10	18	20.5		
2500A	8	500 kcmil	10	21	23.5		
	7	600 kcmil	10	21	23.5		
3000A	9	500 kcmil	10	25	27.5		
	8	600 kcmil	10	21	23.5		
3500A	10	600 kcmil	10	25	27.5		
	9	750 kcmil	10	25	27.5		
4000A	11	600 kcmil	12	25	27.5		
	10	750 kcmil	10	25	27.5		
	9	1000 kcmil	10	25	27.5		
5000A	12	750 kcmil	12	25	27.5		
	11	1000 kcmil	12	25	27.5		
6000A	14	750 kcmil	12	32	34.5		

STRAIGHT SECTION PART NUMBER EXAMPLE:

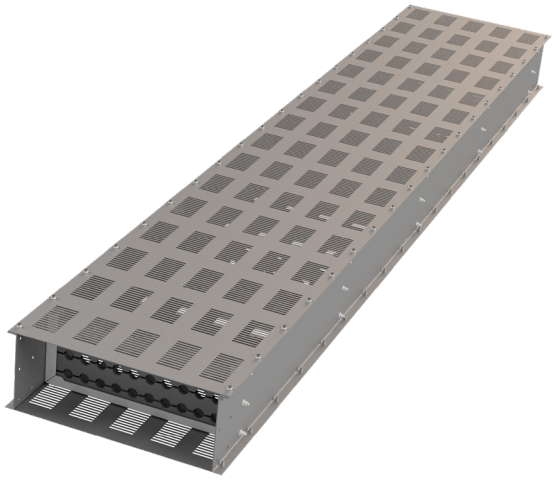
SH - LV1 - 20 - 3W - CU - T40 - R75 - AL1 - 045 - 00

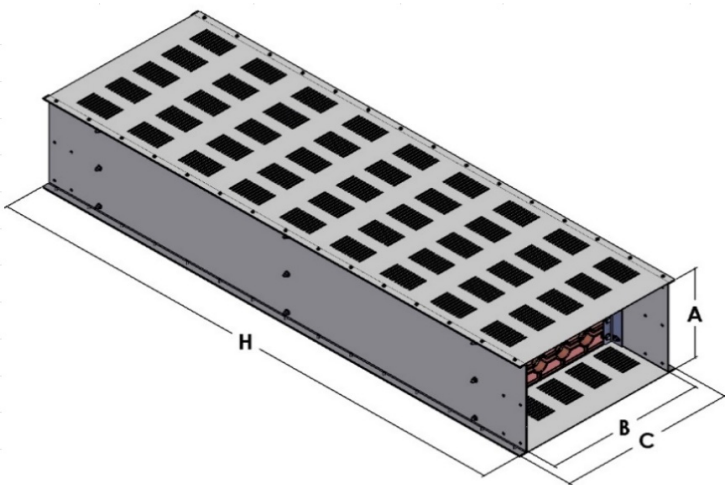
- SH: Straight Horizontal (SH) / Straight Vertical (SV)
- LV1: Voltage
- 20: Amperage
- 3W: Phase Arrangement
- CU: Conductor Material
- T40: Ambient Tempature
- R75: Max Temp. Rise
- AL1: Enclosure Material
- 045: Length (in)
- 00: Fractional Length(in)

* More details available on Page 5

90°C HORIZONTAL & VERTICAL
LOW VOLTAGE STRAIGHT SECTIONS (LV1)

HORIZONTAL CODE: (SH)
VERTICAL CODE: (SV)





Straight Sections of Cable Bus include top and bottom covers, fastening hardware, internal cable supports. Splicing kits are excluded, and can be found on Page 13.

- Horizontal Straight Section (HS) with Cable Supports positioned not to exceed 36in spacing.
- Vertical Straight Section (VS) with Cable Supports positioned not to exceed 18in spacing.

90°C Aluminum Conductor, 3P /3W AL

Ampacities Per NEC(2020) Table 310.15(B)(17) -- 40°C Ambient

Low Voltage Rating	Cables Per Phase	Cable Size	Dimensions (in Inches)				
			A	B	C	H MIN	H MAX
800A	2	500 kcmil	8	12	14.5	18	144
1200A	2	750 kcmil	8	12	14.5		
1600A	3	600 kcmil	8	18	20.5		
2000A	4	600 kcmil	8	18	20.5		
2500A	4	750 kcmil	8	18	20.5		
	5	600 kcmil	10	18	20.5		
3000A	5	750 kcmil	10	18	20.5		
	6	600 kcmil	10	18	20.5		
3500A	6	750 kcmil	10	18	20.5		
	7	600 kcmil	10	21	23.5		
4000A	6	1000 kcmil	10	18	20.5		
	7	750 kcmil	10	21	23.5		
5000A	7	1000 kcmil	10	21	23.5		
	8	750 kcmil	10	21	23.5		
6000A	10	750 kcmil	10	25	27.5		

90°C Copper Conductor, 3P /3W CU

Ampacities Per NEC(2020) Table 310.15(B)(17) -- 40°C Ambient

Low Voltage Rating	Cables Per Phase	Cable Size	Dimensions (in Inches)				
			A	B	C	H MIN	H MAX
800A	1	750 kcmil	6	12	14.5	18	144
1200A	2	500 kcmil	8	12	14.5		
1600A	2	750 kcmil	8	12	14.5		
2000A	4	500 kcmil	8	18	20.5		
	3	750 kcmil	8	18	20.5		
2500A	4	500 kcmil	8	18	20.5		
3000A	4	750 kcmil	8	18	20.5		
	5	600 kcmil	10	18	20.5		
3500A	5	750 kcmil	10	18	20.5		
	5	600 kcmil	10	18	20.5		
4000A	6	750 kcmil	10	18	20.5		
	7	600 kcmil	10	21	23.5		
5000A	8	750 kcmil	10	21	23.5		
	9	600 kcmil	10	25	27.5		
6000A	9	750 kcmil	10	25	27.5		

STRAIGHT SECTION PART NUMBER EXAMPLE:

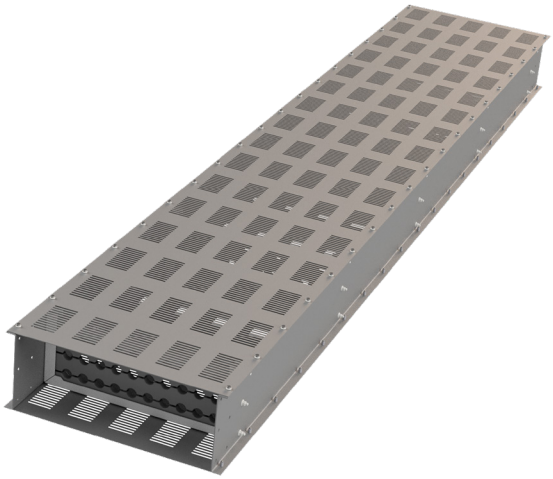
SH - LV1 - 20 - 3W - CU - T40 - R90 - AL1 - 045 - 00

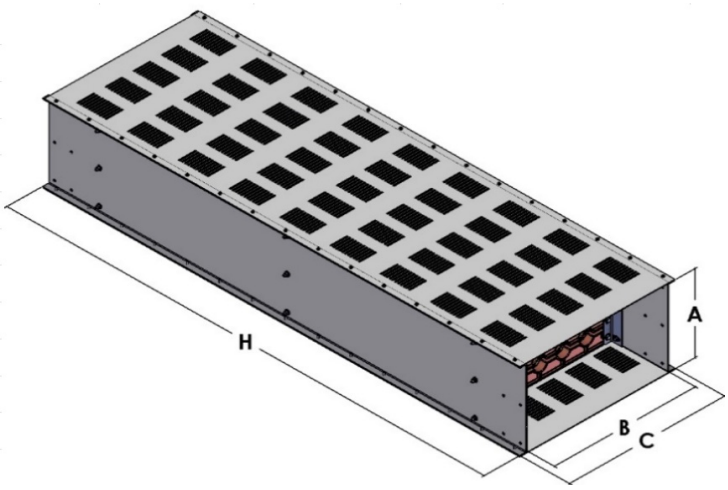
- SH: Straight Horizontal (SH) Straight Vertical (SV)
- LV1: Voltage
- 20: Amperage
- 3W: Phase Arrangement
- CU: Conductor Material
- T40: Ambient Tempature
- R90: Max Temp. Rise
- AL1: Enclosure Material
- 045: Length (in)
- 00: Fractional Length(in)

* More details available on Page 5

90°C HORIZONTAL & VERTICAL
MEDIUM VOLTAGE STRAIGHT SECTIONS (MV1)

HORIZONTAL CODE: (SH)
VERTICAL CODE: (SV)





Straight Sections of Cable Bus include top and bottom covers, fastening hardware, internal cable supports. Splicing kits are excluded, and can be found on Page 13.

- Horizontal Straight Section (HS) with Cable Supports positioned not to exceed 36in spacing.
- Vertical Straight Section (VS) with Cable Supports positioned not to exceed 18in spacing.

Tabled values below are for Voltages up to 15kV (MV1), per NEC. For applications at higher voltage levels (MV2 and MV3), please reach out to your Powell representative.

90°C Copper Conductor, 3P /3W — CU

Ampacities Per NEC(2020) Table 311.60(C)(69) - 40°C Ambient

Medium Voltage Rating	Cables Per Phase	Cable Size	Dimensions (in Inches)								
			A	B	C	H MIN	H MAX	I	J	K	L
800A	1	750 kcmil	8	18	20.5	18	144	9.75	40	22	8.18
1200A	2	500 kcmil	10	18	20.5				40	22	10.18
1600A	2	750 kcmil	10	18	20.5				40	22	10.18
2000A	3	500 kcmil	10	25	27.5				43	22	10.18
2500A	4	500 kcmil	10	25	30.5				44	22	10.18
3000A	4	750 kcmil	10	28	30.5				44	22	10.18
3500A	5	750 kcmil	14	28	30.5				44	24	14.18
4000A	6	750 kcmil	14	28	30.5				44	24	14.18
5000A	7	750 kcmil	18	28	30.5				44	26	18.18
6000A	8	750 kcmil	18	28	30.5				44	26	18.18

STRAIGHT SECTION PART NUMBER EXAMPLE:

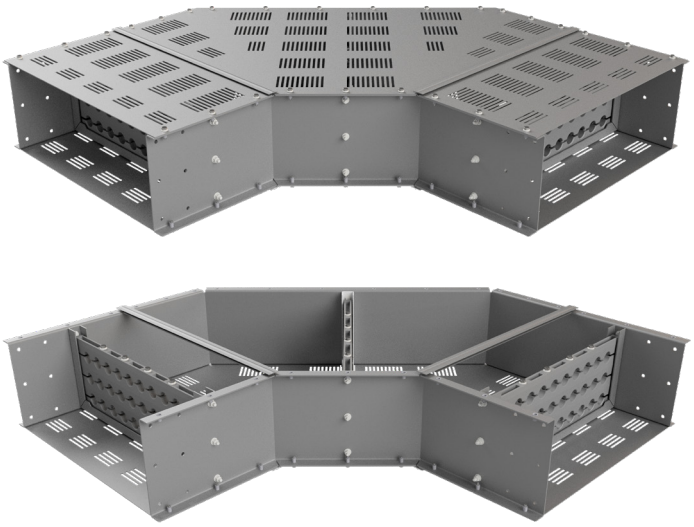
SH - MV1 - 20 - 3W - CU - T40 - R90 - AL1 - 045 - 00

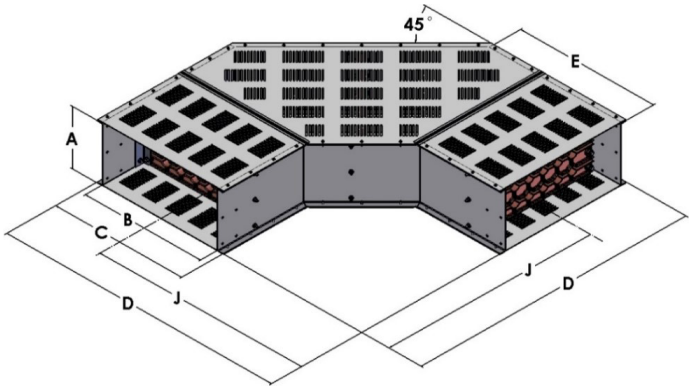
- SH: Straight Horizontal (SH) / Straight Vertical (SV)
- MV1: Voltage
- 20: Amperage
- 3W: Phase Arrangement
- CU: Conductor Material
- T40: Ambient Tempature
- R90: Max Temp. Rise
- AL1: Enclosure Material
- 045: Length (in)
- 00: Fractional Length(in)

* More details available on Page 5

90° ELBOW SECTIONS
HORIZONTAL

PART CODE: (EH)





Elbow Sections of Cable Bus include top and bottom covers, fastening hardware, internal cable supports. Splicing kits are excluded, and can be found on Page 13.

The tabled values below are for Voltages up to 15kV (MV1), per NEC. For applications at higher voltage levels (MV2 and MV3), please reach out to your Powell representative.

LV1 - Horizontal Elbow							
Cable Configuration	Height	Width	Overall Width	Overall Length	Side Length	Centerline Length	Min. Cable Radius
	A	B	C	D	E	J	R
2 X 6	8	18	20.5	42.25	21.82	32	16.50
3 x 6	10	18	20.5	42.25	21.82	32	16.50
3 x 8	10	21	23.5	47.75	24.10	36	17.50
3 x 10	10	25	27.5	51.75	25.76	38	17.40
4 x 10	12	25	27.5	51.75	25.76	38	17.40
4 x 13	12	32	34.5	57.25	28.03	40	17.40
5 x 13	15	32	34.5	57.25	28.03	40	17.40

MV1 - Horizontal Elbow							
Cable Configuration	Height	Width	Overall Width	Overall Length	Side Length	Centerline Length	Min. Cable Radius
	A	B	C	D	E	J	R
1 x 3	8	18	20.5	50.25	25.21	40	25.13
2 x 3	10	18	20.5	50.25	25.21	40	25.13
2 x 5	10	25	27.5	56.75	27.90	43	24.13
2 x 6	10	28	30.5	59.25	28.94	44	24.13
3 x 6	14	28	30.5	59.25	28.94	44	24.13
4 x 6	18	28	30.5	59.25	28.94	44	24.13
5 x 13	15	32	34.5	57.25	28.03	40	17.40

HORIZONTAL 90° ELBOW SECTION PART NUMBER EXAMPLE:

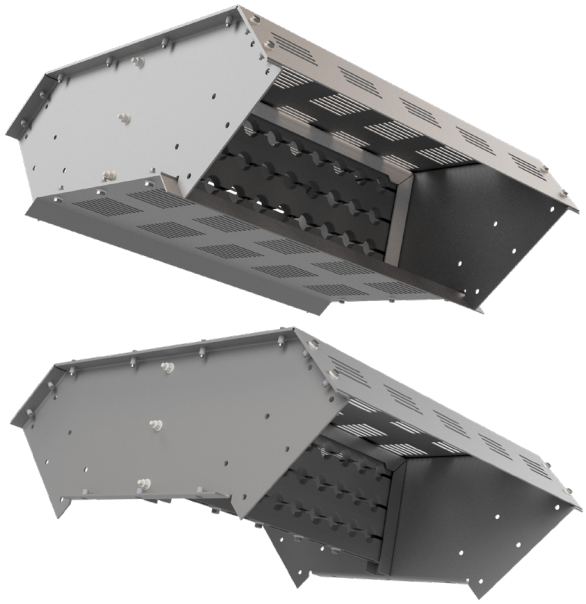
EH - MV1 - 20 - 3W - CU - T40 - R75 - AL1 - 045 - 00

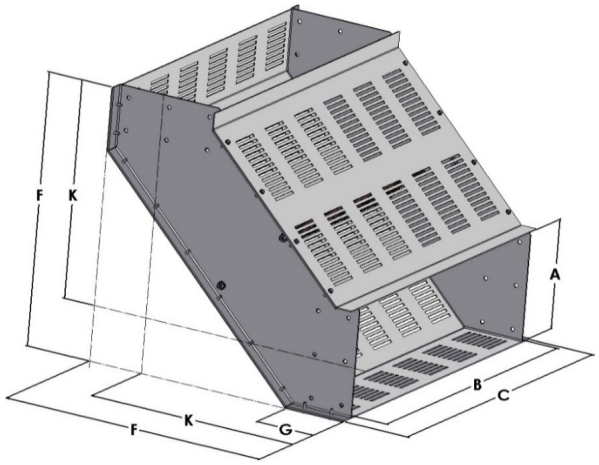
- EH: Elbow Horizontal (EH)
- MV1: Voltage
- 20: Amperage
- 3W: Phase Arrangement
- CU: Conductor Material
- T40: Ambient Tempature
- R75: Max Temp. Rise
- AL1: Enclosure Material
- 045: Length (in)
- 00: Fractional Length(in)

* More details available on Page 5

90° ELBOW SECTIONS
VERTICAL

PART CODE TOP: (ET)
PART CODE BOTTOM: (EB)





Elbow Sections of Cable Bus include top and bottom covers, fastening hardware, internal cable supports. Splicing kits are excluded, and can be found on Page 13.

The tabled values below are for Voltages up to 15kV (MV1), per NEC. For applications at higher voltage levels (MV2 and MV3), please reach out to your Powell representative.

LV1 - Vertical Elbow							
Cable Configuration	Height	Width	Overall Width	Overall Length	Side Length	Centerline Length	Min. Cable Radius
	A	B	C	D	E	J	R
2 X 6	8	18	20.5	20.09	4.77	16	16.50
3 x 6	10	18	20.5	23.09	6.01	18	16.50
3 x 8	10	21	23.5	23.09	6.01	18	17.50
3 x 10	10	25	27.5	23.09	6.01	18	17.40
4 x 10	12	25	27.5	26.09	7.26	20	17.40
4 x 13	12	32	34.5	26.09	7.26	20	17.40
5 x 13	15	32	34.5	29.59	8.71	22	17.40

MV1 - Vertical Elbow							
Cable Configuration	Height	Width	Overall Width	Overall Length	Side Length	Centerline Length	Min. Cable Radius
	A	B	C	D	E	J	R
1 x 3	8	18	20.5	26.09	6.38	22	25.13
2 x 3	10	18	20.5	27.09	6.79	22	25.13
2 x 5	10	25	27.5	27.09	6.79	22	24.13
2 x 6	10	28	30.5	27.09	6.79	22	24.13
3 x 6	14	28	30.5	31.09	8.45	24	24.13
4 x 6	18	28	30.5	35.09	10.10	26	24.13

VERTICAL 90° ELBOW SECTION PART NUMBER EXAMPLE:

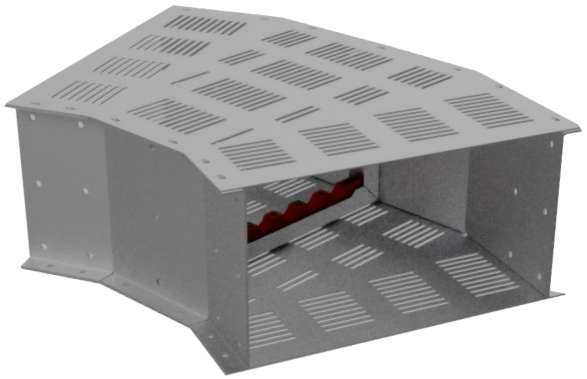
ET - MV1 - 20 - 3W - CU - T40 - R75 - AL1 - 045 - 00

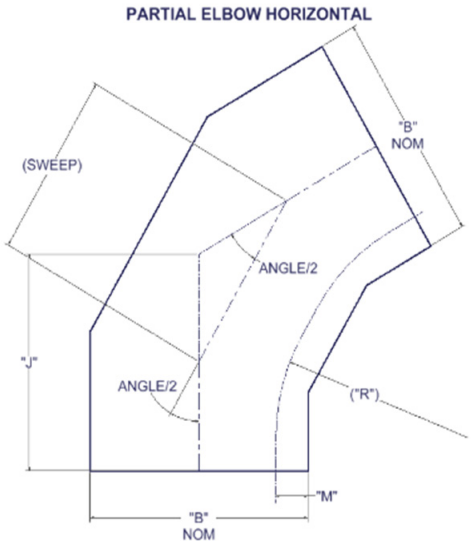
- ET: Elbow Vertical Top (ET) / Elbow Vertical Bottom (EB)
- MV1: Voltage
- 20: Amperage
- 3W: Phase Arrangement
- CU: Conductor Material
- T40: Ambient Tempature
- R75: Max Temp. Rise
- AL1: Enclosure Material
- 045: Length (in)
- 00: Fractional Length(in)

* More details available on Page 5

30°, 45°, 60° ELBOW SECTIONS
HORIZONTAL

PART CODE: (PEH)





Elbow Sections of Cable Bus include top and bottom covers, fastening hardware, internal cable supports. Splicing kits are excluded, and can be found on Page 13.

The tabled values below are for Voltages up to 15kV (MV1), per NEC. For applications at higher voltage levels (MV2 and MV3), please reach out to your Powell representative.

LV1 - Horizontal Partial Elbow

Bend Angle	Width	Centerline Length	Cable To Side Rail	Min. Cable Radius	Centerline Diagonal
	B	J	M	R	Sweep (Horz.)
30	12	10.25	3.875	18.449	8.598342
30	18	11.25	5.188	20.494	9.581009
30	21	11.50	3.063	17.802	9.826676
30	25	12.00	2.938	17.543	10.318010
30	32	13.00	4.375	19.212	11.300678
45	12	13.50	3.875	18.617	11.525206
45	18	13.50	5.188	16.930	11.525206
45	21	15.25	3.063	17.530	13.205966
45	25	16.25	2.938	17.819	14.166400
45	32	17.00	4.375	17.567	14.886725
60	12	17.00	3.875	18.436	14.387150
60	18	17.00	5.188	16.749	14.387150
60	21	19.75	3.063	17.887	16.939709
60	25	20.75	2.938	17.494	17.867912
60	32	22.00	4.375	17.596	19.028166

MV1 - Horizontal Partial Elbow

Bend Angle	Width	Centerline Length	Cable To Side Rail	Min. Cable Radius	Centerline Diagonal
	B	J	M	R	Sweep (Horz.)
30	18	12.75	5.250	25.842	11.055011
30	25	13.50	5.000	24.891	11.792011
30	28	13.75	5.250	24.574	12.037678
45	18	17.00	5.250	25.129	14.886725
45	25	18.25	5.000	24.397	16.087267
45	28	18.75	5.250	24.354	16.567484
60	18	22.00	5.250	25.159	19.028166
60	25	23.75	5.000	24.440	20.652522
60	28	24.50	5.250	24.489	21.348674

HORIZONATAL 15°, 30°, 45° ELBOW SECTIONS PART NUMBER EXAMPLE:

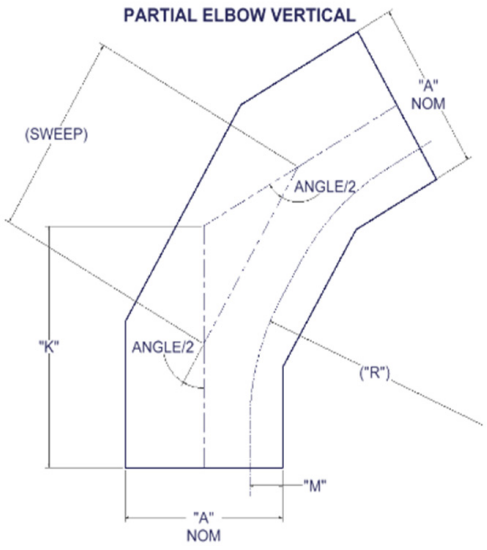
PEH - MV1 - 20 - 3W - CU - T40 - R75 - AL1 - 045 - 00

- PEH: Partial Elbow Horizontal (PEH)
- MV1: Voltage
- 20: Amperage
- 3W: Phase Arrangement
- CU: Conductor Material
- T40: Ambient Tempature
- R75: Max Temp. Rise
- AL1: Enclosure Material
- 045: Length (in)
- 00: Fractional Length(in)

* More details available on Page 5

30°, 45°, 60° ELBOW SECTIONS
VERTICAL

PART CODE TOP: (PET)
PART CODE BOTTOM: (PEB)



Elbow Sections of Cable Bus include top and bottom covers, fastening hardware, internal cable supports. Splicing kits are excluded, and can be found on Page 13.

The tabled values below are for Voltages up to 15kV (MV1), per NEC. For applications at higher voltage levels (MV2 and MV3), please reach out to your Powell representative.

LV1 - Vertical Partial Elbow

Bend Angle	Width	Centerline Length	Cable To Side Rail	Min. Cable Radius	Centerline Diagonal
	A	K	M	R	Sweep (Vert.)
30	6	9.75	2.500	18.896	8.107008
30	8	10.00	2.500	18.829	8.352675
30	10	10.00	2.500	17.829	8.352675
30	12	10.25	2.500	17.762	8.598342
30	15	10.75	2.500	18.128	9.089675
30	18	11.00	2.500	17.561	9.335842
45	6	12.50	2.500	18.515	10.564773
45	8	13.00	2.500	18.722	11.044990
45	10	13.00	2.500	17.722	11.044990
45	12	13.50	2.500	17.93	11.525206
45	15	14.00	2.500	17.637	12.005423
45	18	14.75	2.500	17.947	12.725749
60	6	15.75	2.500	18.584	13.226896
60	8	16.25	2.500	18.45	13.690998
60	10	16.50	2.500	17.883	13.923048
60	12	17.00	2.500	17.749	14.387150
60	15	17.75	2.500	17.548	15.083302
60	18	18.75	2.500	17.78	16.011506

MV1 - Vertical Partial Elbow

Bend Angle	Width	Centerline Length	Cable To Side Rail	Min. Cable Radius	Centerline Diagonal
	A	K	M	R	Sweep (Vert.)
30	8	11.75	2.500	25.36	10.072343
30	10	12.00	2.500	25.293	10.318010
30	14	12.25	2.500	24.226	10.563677
30	18	13.00	2.500	25.025	11.300678
45	8	15.75	2.500	25.362	13.686183
45	10	16.25	2.500	25.569	14.166400
45	14	16.50	2.500	24.172	14.406508
45	18	17.50	2.500	24.586	15.366942
60	8	20.25	2.500	25.378	17.403811
60	10	20.75	2.500	25.244	17.867912
60	14	21.50	2.500	24.543	18.564065
60	18	22.50	2.500	24.275	19.492268

VERTICAL 15°, 30°, 45° ELBOW SECTIONS PART NUMBER EXAMPLE:

PET - MV1 - 20 - 3W - CU - T40 - R75 - AL1 - 045 - 00

- PET: Partial Elbow Top (PET) / Partial Elbow Bottom (PEB)
- MV1: Voltage
- 20: Amperage
- 3W: Phase Arrangement
- CU: Conductor Material
- T40: Ambient Tempature
- R75: Max Temp. Rise
- AL1: Enclosure Material
- 045: Length (in)
- 00: Fractional Length(in)

* More details available on Page 5

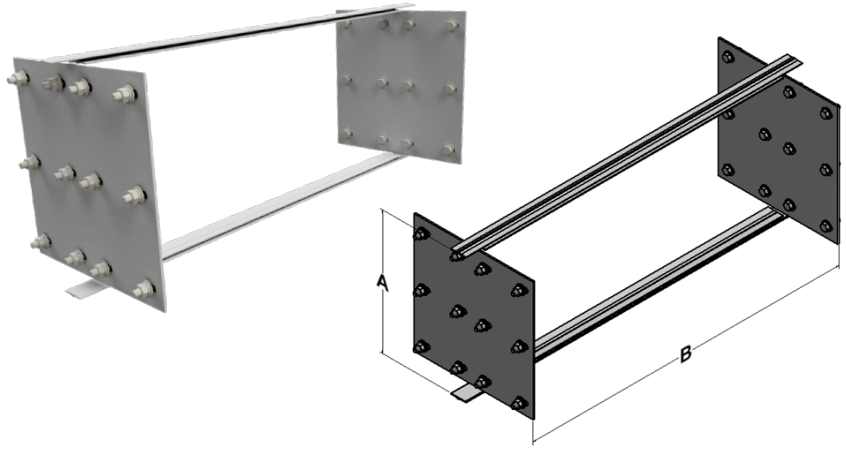
FIELD-ASSEMBLED KITS

SPLICE KIT

PART CODE: (SK)

Splice kits are used to connect bus sections to other sections or throats. These kits contain splice plates, hardware, and joiner strips. The splice kit is chosen based on the desired splice plate material, hardware material, and bus nominal cross section. The quantity of splice kits needed for a run is usually equal to the number of sections plus one.

Splices ensure structural continuity and electrical grounding through bolted connections using stainless steel hardware. Splice joints also accommodate minor field adjustments and linear expansion.



SPLICE KIT		
Configuration	**A (NOM)**	**B (NOM)**
6 X 12	6	12
8 X 12	8	12
8 X 18	8	18
10 X 18	10	18
10 X 21	10	21
10 X 25	10	25
10 X 28	10	28
12 X 21	12	21
12 X 25	12	25
12 X 32	12	32
14 X 28	14	28
15 X 32	15	32
18 X 28	18	28

SPLICE KIT PART NUMBER EXAMPLE:

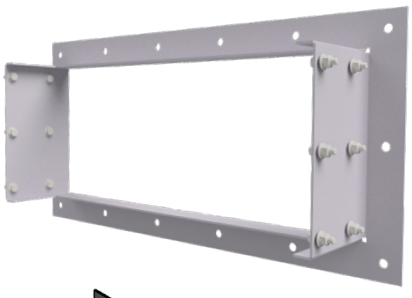
SK - 10 - 25 - AL1 - SS4

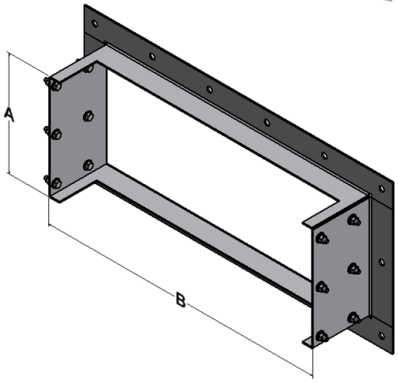
- SK: Splice Kit (SK)
- 10: Nominal Height
- 25: Nominal Width
- AL1: Material (AL Housing)
- SS4: Material (SS Housing)

BUS END FLANGE KIT

PART CODE: (SK)

Bus end flange kits are used to connect bus sections to equipment or plates with matching bolt patterns. These welded flanges extend 2” outward and are made of 1100 or 5052 aluminum. The kit contains a flange weldment and hardware. The bus end flange kit is chosen based on the desired flange material, hardware material, and bus nominal cross section.





BUS END FLANGE PART NUMBER EXAMPLE:

FL - 10 - 25 - AL1 - SS4

- FL: Bus End Flange (FL)
- 10: Nominal Height
- 25: Nominal Width
- AL1: Material (AL Housing)
- SS4: Material (SS Housing)

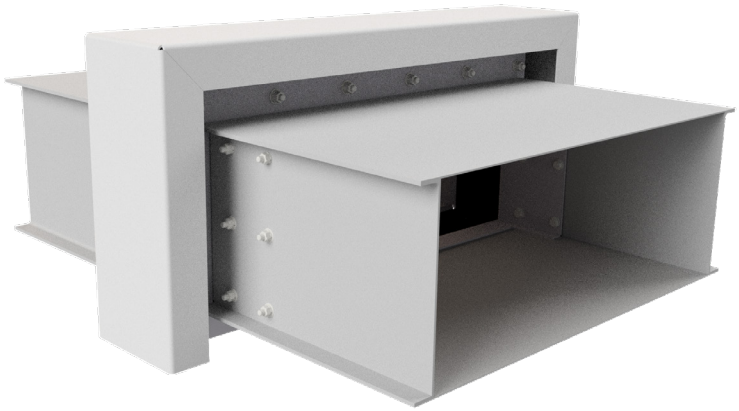
BUS END FLANGE		
Configuration	**A (NOM)**	**B (NOM)**
6 X 12	6	12
8 X 12	8	12
8 X 18	8	18
10 X 18	10	18
10 X 21	10	21
10 X 25	10	25
10 X 28	10	28
12 X 21	12	21
12 X 25	12	25
12 X 32	12	32
14 X 28	14	28
15 X 32	15	32
18 X 28	18	28

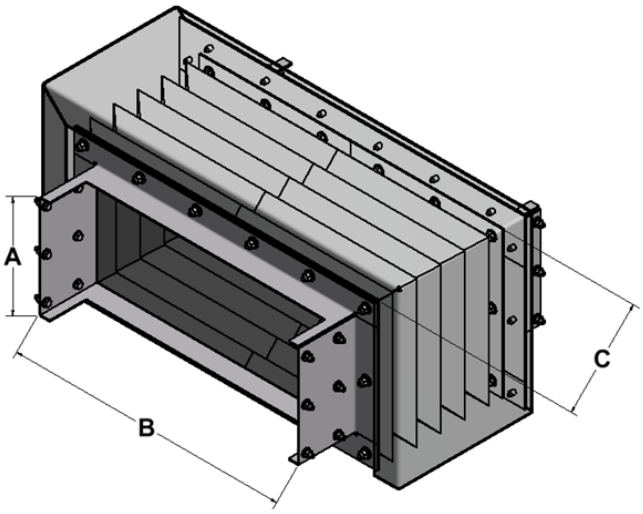
SEISMIC KIT (HORIZONAL) KIT

PART CODE: (HSK)

For installations in seismic zones, Powell's cable bus includes structurally reinforced support points, flexible coupling arrangements, and adjustable splice joints that can absorb movement without stress. These fittings ensure the system remains operational and safe during seismic events.

Seismic kits are used to join bus sections and provide adjustable length to account for seismic activity. The extendable bellows options are 6" or 12" in length and have an aluminum cover. The kit contains flanges, bellows, bellows cover, and hardware. The seismic kits are chosen based on the desired flange material, hardware material, bellows length, and bus nominal cross section.





SEISMIC KIT HORZ. 6"			
Configuration	A (NOM)	B (NOM)	C
6 X 12	6	12	6
8 X 12	8	12	
8 X 18	8	18	
10 X 18	10	18	
10 X 21	10	21	
10 X 25	10	25	
10 X 28	10	28	
12 X 21	12	21	
12 X 25	12	25	
12 X 32	12	32	
14 X 28	14	28	
15 X 32	15	32	
18 X 28	18	28	

SEISMIC KIT HORZ. 12"			
Configuration	A (NOM)	B (NOM)	C
6 X 12	6	12	12
8 X 12	8	12	
8 X 18	8	18	
10 X 18	10	18	
10 X 21	10	21	
10 X 25	10	25	
10 X 28	10	28	
12 X 21	12	21	
12 X 25	12	25	
12 X 32	12	32	
14 X 28	14	28	
15 X 32	15	32	
18 X 28	18	28	

HORIZONTAL SEISMEIC KIT PART NUMBER EXAMPLE:

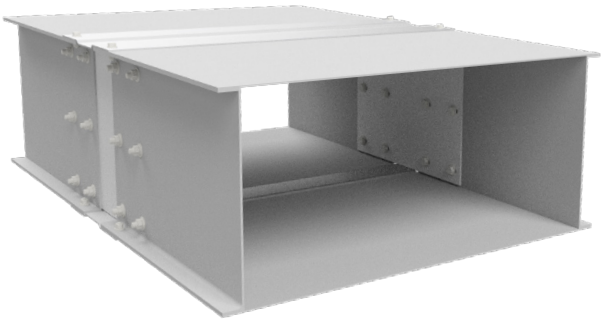
HSK - 10 - 25 - AL1 - SS4 - G12

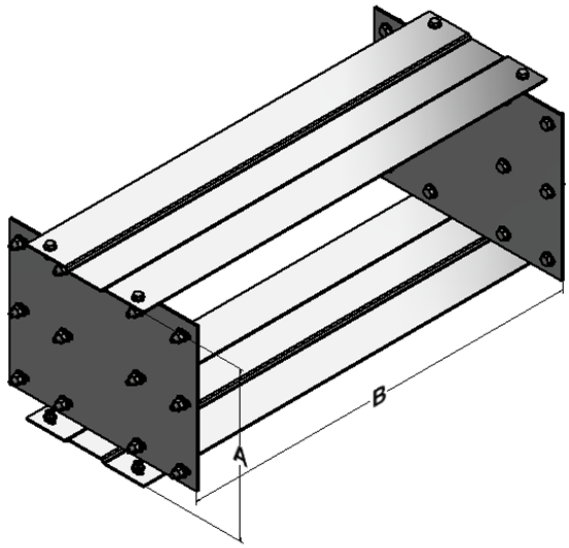
- HSK: Horizontal Seismic Kit (HSK)
- 10: Nominal Height
- 25: Nominal Width
- AL1: Material (AL Housing)
- SS4: Material (SS Housing)
- G12: Expansion Distance

EXPANSION HOUSING KIT

PART CODE: (ESK)

Expansion housing kits are used to add 3” of bus length by extending the splice plate. Holes for cover hardware are field drilled into bus on site. The kit contains an expansion splice cover, splice plates, and hardware. The expansion housing kits are chosen based on the desired splice plate material, hardware material, and bus nominal cross section.





SPLICE KIT		
Configuration	**A (NOM)**	**B (NOM)**
6 X 12	6	12
8 X 12	8	12
8 X 18	8	18
10 X 18	10	18
10 X 21	10	21
10 X 25	10	25
10 X 28	10	28
12 X 21	12	21
12 X 25	12	25
12 X 32	12	32
14 X 28	14	28
15 X 32	15	32
18 X 28	18	28

EXPANSION HOUSING KIT PART NUMBER EXAMPLE:

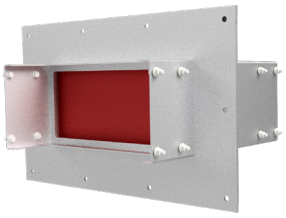
ESK - 10 - 25 - AL1 - SS4

- ESK — Expansion Housing Kit (ESK)
- 10 — Nominal Height
- 25 — Nominal Width
- AL1 — Material (AL Housing)
- SS4 — Material (SS Housing)

FIELD-ASSEMBLED KITS & ACCESSORIES CONTINUED

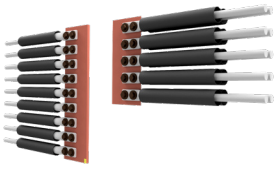
MCT PENETRATIONS

As an alternative to other penetration methods offered by Powell, Multi Cable Transit (MCT) penetration kits are also available for projects that require additional protection from dust, fire, and blast ingress through the cable entry. MCT penetration kits are available for all ratings of Powell cable bus.



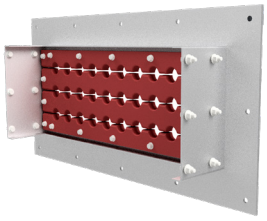
FIRE-RATED PENETRATIONS

Fire stop barriers are used at wall or floor penetrations where fire resistance is required. Powell provides ½, 1, 2, or 3-hour rated assemblies using tested Fire Barrier Mortar and seal plates. These are engineered to maintain fire integrity while allowing cable routing. Horizontal and vertical configurations differ in plate placement and mortar depth.



CABLE TERMINATIONS

Cable terminations to equipment (e.g., switchgear or transformers) include long barrel compression lugs, insulation with EPR and PVC tape, and stress cones for shielded cables. Proper phasing, cable tagging, and lug insulation are mandatory. Shield grounds and mechanical lugs are provided based on voltage class and insulation type.



EQUIPMENT CONNECTIONS SEALS

Powell provides custom vapor and fire barrier seal assemblies at equipment termination points to prevent ingress of moisture or contaminants. These include split seal plates, caulking, and/or urethane (Flexane) compounds for a complete and durable seal.

HOLD DOWN CLIPS

Hold down clips are heavy-duty mechanical fixtures used to secure the cable bus enclosure to its support steel framework. They are essential in maintaining alignment and preventing displacement due to mechanical stress, short circuit forces, or seismic activity. The clips are bolted to the side of the enclosure base and into structural members, with installation guidelines and torque values provided to ensure reliable attachment (please refer to IB for instructions).

BONDING CLAMPS (GROUND WIRE CLAMPS)

Bonding and grounding of the cable shields and enclosure are critical to system safety. Powell's standard ground cable routing is outside the enclosure; however, ground cables may be routed internal to the enclosure in certain configurations. Grounding clamps and pads are provided at termination points, and cable shields are bonded to the housing using mechanical lugs or grounding braids. These ensure that fault currents can safely return to ground. Powell uses mechanical grounding hardware along the length of the cable bus system, that hardware can be UL 467 or 486(A)/(B) listed for all 600VAC class designs, when specified.

QUALITY ASSURANCE

Powell has a strong commitment to protect people, the environment, and company resources while providing our customized and engineered solutions in a sustainable manner. This approach delivers quality for our customers, protects the health of our employees, increases shareholder value and supports the communities we serve.

Powered by Safety is reflected in the attention to quality of all of Powell's product, including cable bus. Our US and Canada based facilities support this product line with domestic manufacturing and supply chain, supporting local communities and economies. Our facilities are certified per ISO 9001 and undergo several audits, to maintain and improve our quality management system.

DESIGN STANDARDS		
Category	**Standard/Code**	**Description/Application**
Design Standards	ANSI/IEEE C37.23	Governs construction, testing, and performance of metal-enclosed bus system.
	NEMA 15000	Covers construction, testing, and performance of metal cable bus systems.
	NEC (NFPA 70), Article 370	U.S. National Electrical Code section for cable bus installations.
	NEC Articles 110 & 310	Used for conductor ampacity calculations in "free-air" installations.
Product Certifications	UL / CSA Listings (for cables)	Phase conductors must be UL or CSA certified
ETL Listed	CSA/ANSI C22.2 NO. 273:19	Covers a Complete Cable Bus System
Test Approvals	ANSI/IEEE C37.23 – Design Test Suite:	Powell may perform or submit test data for:
	– Temperature Rise Test	Verifies thermal performance at rated current
	– Insulation Withstand Test	Tests insulation resistance under high voltage conditions
	– Impulse Test	Assesses equipment's ability to withstand surges
	– Power Frequency Withstand Test	Tests insulation at 60 Hz power frequency
	– Momentary Withstand (Short Circuit) Current Test	Ensures the system can survive short circuit forces without damage
	– Flame Retardance (Insulation Materials)	Ensures compliance with flammability and fire protection standards
Installation-Related Approvals	DC Hi-Pot Testing (Field Acceptance)	Conducted at 75% of factory voltage, per cable manufacturer's guidelines
	AC Hi-Pot Testing (Optional)	Field power frequency withstand test at 75% of factory level
	Fire Barrier Ratings	Optional ½, 1, 2, or 3-hour wall/floor fire barrier assemblies
	Vapor Barrier Testing	Ensures moisture and contaminant isolation at terminations
Additional Compliance	IEEE, NEC, and Cable Manufacturer Instructions	Followed for grounding, phasing, insulation, interleaving, and termination integrity
Grounding and Bonding of Equipment	ANSI/UL 467	Covers the requirements for Grounding and Bonding of Equipment and hold down clamps for ground conductors

RELY ON THE EXPERTS FOR INSTALLATION AND SUPPORT SERVICES

At Powell, we provide engineering services and field services to help you though the process of installation and commissioning. Powell Global Service is available to support the post shipment of cable bus through:

- Installation Training,
- On-site Advisory for Mechanical and Electrical Fit Up,
- Logistics and Schedule Management,
- Pre-Energization,
- Commissioning Testing Procedures (LV and MV),
- Site Condition 3D Scanning

A COMPREHENSIVE PLAN FOR REPLACEMENT

Aging power distribution circuits can be repaired or replaced and upgraded with new cable bus systems that offer enhanced performance and safety. The replacement plan can accommodate complete system replacement or replacement of individual parts. Powell is also able to provide a range of specialty and custom-fit parts to meet the unique needs of each facility.

POWELL

Solving your toughest problems.

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