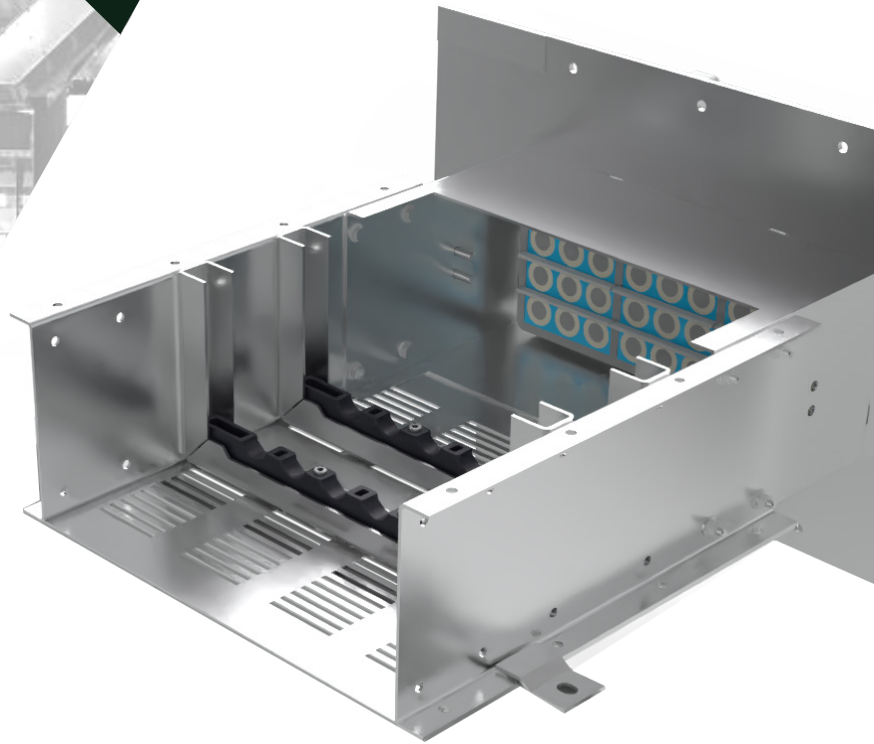




# POWELL

## CABLE BUS OVERVIEW

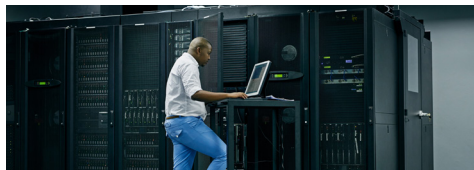


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# TYPICAL APPLICATIONS

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.



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**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 <sup>1</sup>	Insulated Three Conductor Copper Cable in Tray <sup>2</sup>	3 Single-Conductor Copper Cable in Conduit in Air <sup>3</sup>
<b>600V</b>	500 kcmil	<b>637</b>	391	391
	750 kcmil	<b>805</b>	487	487
	1000 kcmil	<b>960</b>	560	560
<b>5kV</b>	500 kcmil	<b>695</b>	485	475
	750 kcmil	<b>900</b>	615	600
	1000 kcmil	<b>1075</b>	705	690
<b>15kV</b>	500 kcmil	<b>685</b>	535	480
	750 kcmil	<b>885</b>	670	585
	1000 kcmil	<b>1060</b>	770	675

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

<sup>1</sup> Per 2020 NEC, Copper Cable, 90°C Temp, 40°C Ambient

<sup>2</sup> Per 2020 NEC Table 310.16 (LV) and Table 311.60(C)(71) MV

<sup>3</sup> 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

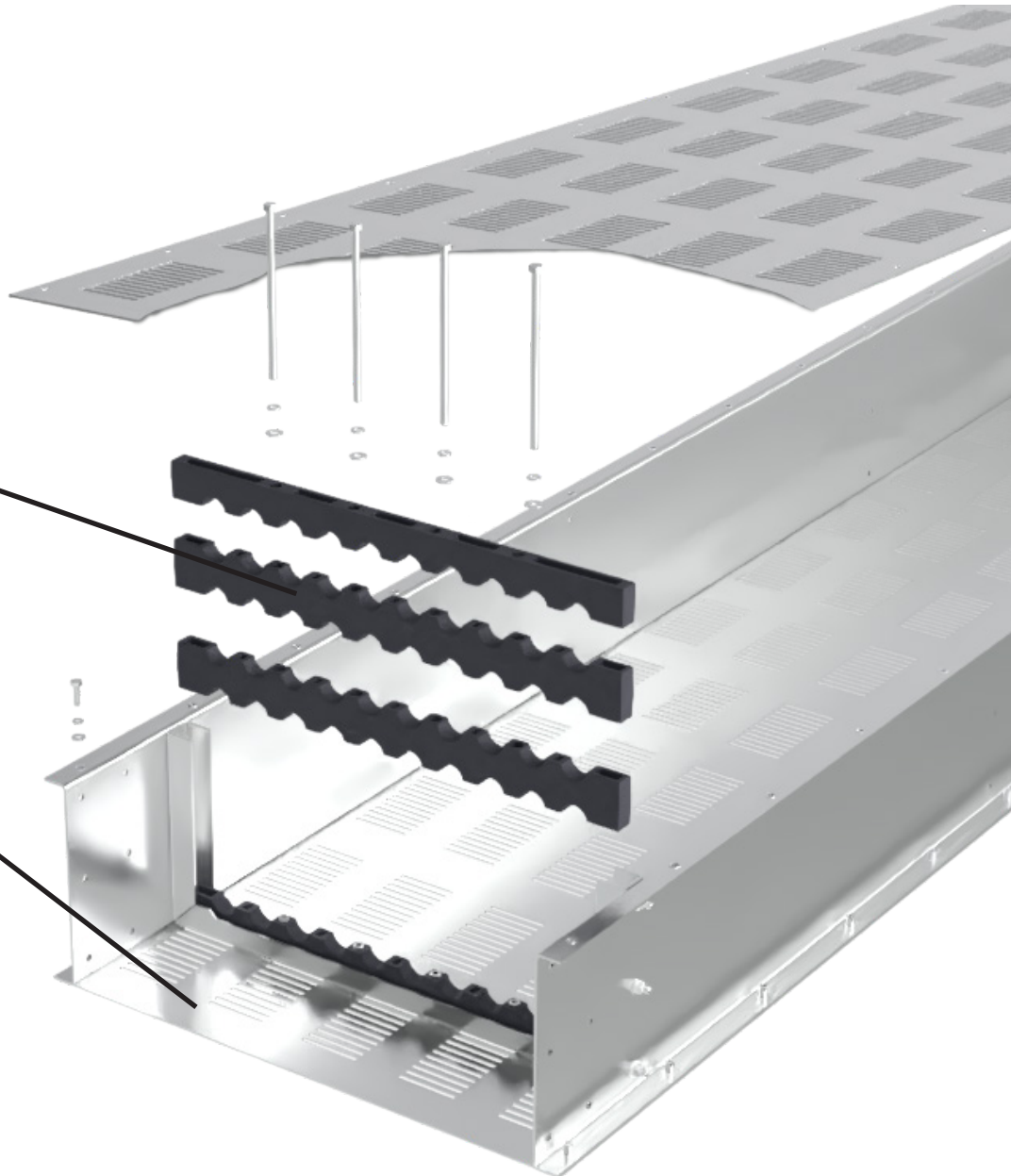
Safety is paramount in the design of all Powell's products, including Powell's cable bus system. The rigid U-frame construction is engineered and tested to withstand the short circuit forces during an electrical fault. The enclosure is designed to withstand environmental challenges, including moisture 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																		
<b>SH</b>	-	<b>MV1</b>	-	<b>20</b>	-	<b>3W</b>	-	<b>CU</b>	-	<b>T40</b>	-	<b>R75</b>	-	<b>AL1</b>	-	<b>045</b>	-	<b>00</b>
Part Code Abbreviation		Voltage		Amperage		Phase Arrangement		Conductor Material		Ambient Temperature		Max Temp. Rise		Enclosure Material		Length(in)		Fractional Length

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
40°C	<u>T40</u>
45°C	T45
50°C	T50
55°C	T55

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

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

## ADDITIONAL NUMBER CODES

LUG HW ARRANGEMENT	
Value	Code
<u>Std.</u>	<u>L1</u>
One Belv.	L2
Two Belv.	L3
TBD	L4

PAINT COATING	
Value	Code
<u>Bare</u>	<u>P0</u>
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
<u>0.00"</u>	<u>0</u>
0.25"	25
0.50"	50
0.75"	75

OFFSET ANGLES	
Value	Code
45	D45
30	D30





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Powell Corporate Headquarters  
8550 Mosley Road  
Houston, Texas 77075

Email: [info@powellind.com](mailto:info@powellind.com)  
Phone: 713.944.6900  
Fax: 713.947.4453

[www.powellind.com](http://www.powellind.com)