

Bus Bar Characteristics

In general, a bus bar design consists of one or more flat electrical conductors laminated and electrically insulated by a thin dielectric material which is encapsulated or sealed along the edges. Input and output tabs are placed at convenient points to minimize interconnections.

To determine the proper size of copper conductors, refer to the following table for specific current and cross sectional areas needed to minimize voltage drop.

RELATIONSHIP BETWEEN BUS BAR SIZE AND CURRENT

Wire (AWG) Gauge	Circ. mils	Sq. mils	Rated Current* (amperes)
16	2,583	2,025	5.63
14	4,110	3,230	8.96
12	6,530	5,130	14.24
10	10,380	8,155	22.65
8	16,510	12,970	36.02
6	26,240	20,610	57.27
4	41,740	32,780	91.06
2	66,360	52,120	144.80
0	105,600	82,910	230.17
00	133,100	104,500	290.38
000	167,800	131,800	366.08
0000	211,600	166,200	461.64

*Approximate values

INSULATION MATERIALS

Material	Continuous Use Temperature (°C)	Dielectric Breakdown ASTM D149	Dielectric Constant ASTM D150	Flammability Rating	Thermal Conductivity (W/mK)	General Characteristics
Epoxy Powder Coating	130	10.0 KVAC (10 mil)	4.00	UL 94 V-0	.60 @ 50°C	Flame resistant Moisture resistant Approved by UL for UL 746A applications
Kapton	400	13.8 KVAC (3 mil)	3.70	UL 94 VTM-0	.16 @ 75°C	High temperature rating Maintains superior mechanical and electrical characteristics throughout temperature range
Mylar (PET)	105	10.0 KVAC (3 mil)	3.30	UL 94 VTM-0	.37 @ 75°C	Moisture, chemical, and solvent resistant Excellent tear resistance Cost effective
Nomex	220	1.6 KVAC (3 mil)	1.60	UL 94 V-0	.11 @ 150°C	Flame resistant Excellent durability
Tedlar (PVF)	107	4.2 KVAC (2 mil)	11.0	UL 94 HB	.35 @ 60°C	Outstanding mechanical properties Chemical and solvent resistant