

# VOLTAGE DROP CALCULATIONS

## INDUCTANCE NEGLIGIBLE

Vd = Voltage Drop

I = Current in conductor (Amperes)

L = One-way Length of Circuit (Ft.)

Cm = Cross Section Area of Conductor (Circular Mils)

K = Resistance in ohms of one circular mil foot of conductor

**K = 12.9 for Copper Conductors @75°C**

**K = 21.2 for Aluminum Conductors @75°C**

NOTE : K value changes with temperature.

See NEC chapter 9, Table 8, Notes

### \* SINGLE PHASE CIRCUITS:

$$Vd = \frac{2K \times L \times I}{Cm} \quad \text{or} \quad Cm = \frac{2K \times L \times I}{Vd}$$

### CONDUCTOR PROPERTIES

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Size AWG/ kcmil	Area Cir. Mils	Conductors				DC Resistance at 75°C(167F)		
		Stranding		Overall		Copper		Aluminum ohm kFT
		Quan- tity	Diam. In.	Diam. In.	Area In <sup>2</sup>	Uncoated ohm/kFT	Coated ohm/kFT	
18	1620	1	----	0.040	0.001	7.77	8.08	12.8
18	1620	7	0.015	0.046	0.002	7.95	8.45	13.1
16	2580	1	----	0.051	0.002	4.89	5.08	8.05
16	2580	7	0.019	0.058	0.003	4.99	5.29	8.21
14	4110	1	----	0.064	0.003	3.07	3.19	5.06
14	4110	7	0.024	0.073	0.004	3.14	3.26	5.17
12	6530	1	----	0.081	0.005	1.93	2.01	3.18
12	6530	7	0.030	0.092	0.006	1.98	2.05	3.25
10	10380	1	----	0.102	0.008	1.21	1.26	2.00
10	10380	7	0.038	0.116	0.011	1.24	1.29	2.04
8	16510	1	----	0.128	0.013	0.764	0.786	1.26
8	16510	7	0.049	0.146	0.017	0.778	0.809	1.28
6	26240	7	0.061	0.184	0.027	0.491	0.510	0.808
4	41740	7	0.077	0.232	0.042	0.308	0.321	0.508
3	52620	7	0.087	0.260	0.053	0.245	0.254	0.403
2	66360	7	0.097	0.292	0.067	0.194	0.201	0.319
1	83690	19	0.066	0.332	0.087	0.154	0.160	0.253
1/0	105600	19	0.074	0.372	0.109	0.122	0.127	0.201