

7.2 DC AND AC RESISTANCE OF COPPER CONDUCTORS

Table 7.2—DC and AC Resistance of Copper Conductors, Nominal ohms Per 1,000 ft.

Size	20°C Conductor Temperature	60°C Conductor Temperature			75°C Conductor Temperature			90°C Conductor Temperature		
	DC	DC	60 Hz AC		DC	60 Hz AC		DC	60 Hz AC	
(AWG/ kcmil)			*Single Cond.	†Multi- Cond.		*Single Cond.	†Multi- Cond.		*Single Cond.	†Multi- Cond.
40	1,080.0	1,250.0	—	—	1,314.0	—	—	1,378.0	—	—
38	648.6	750.7	—	—	789.1	—	—	827.3	—	—
36	414.8	480.1	—	—	504.6	—	—	529.1	—	—
34	260.9	302.0	—	—	317.4	—	—	332.8	—	—
32	164.1	189.9	—	—	199.6	—	—	209.3	—	—
30	103.2	119.4	—	—	125.5	—	—	131.6	—	—
28	64.9	75.1	—	—	79.0	—	—	82.8	—	—
26	40.8	47.2	—	—	49.7	—	—	52.1	—	—
24	26.1	30.2	—	—	31.8	—	—	33.3	—	—
22	16.4	19.0	—	—	20.0	—	—	20.9	—	—
20	10.3	11.9	—	—	12.5	—	—	13.1	—	—
18	6.54	7.57	—	—	7.96	—	—	8.34	—	—
16	4.1	4.75	—	—	4.99	—	—	5.23	—	—
14	2.57	2.98	2.98	2.98	3.14	3.14	3.14	3.29	3.29	3.29
12	1.62	1.88	1.88	1.88	1.97	1.97	1.97	2.07	2.07	2.07
10	1.17	1.18	1.18	1.18	1.24	1.24	1.24	1.31	1.31	1.31
8	0.638	0.744	0.744	0.744	0.783	0.783	0.783	0.822	0.822	0.822
6	0.403	0.466	0.466	0.466	0.491	0.491	0.491	0.515	0.515	0.515
4	0.253	0.295	0.295	0.295	0.310	0.310	0.31	0.325	0.325	0.325
2	0.159	0.184	0.184	0.185	0.195	0.194	0.196	0.203	0.203	0.205
1	0.126	0.147	0.147	0.148	0.154	0.154	0.155	0.162	0.162	0.163
1/0	0.1	0.116	0.116	0.118	0.122	0.122	0.124	0.128	0.128	0.13
2/0	0.0794	0.0923	0.0923	0.0950	0.0971	0.0971	0.1	0.102	0.102	0.105
3/0	0.0629	0.073	0.073	0.0759	0.0769	0.0769	0.0799	0.0807	0.0807	0.0839
4/0	0.05	0.0579	0.0579	0.0608	0.061	0.061	0.064	0.0639	0.0639	0.0671

Note: 40 AWG through 26 AWG values are for solid conductors, all others are for ASTM Class B stranded conductors.

*One single conductor in air, buried or in nonmetallic conduit.

†Multiconductor cable or two or three single conductors in one metallic conduit.

Continued >>

7. Electrical Characteristics

Table 7.2—DC and AC Resistance of Copper Conductors, Nominal ohms Per 1,000 ft. (Continued)

Size	20°C Conductor Temperature	60°C Conductor Temperature			75°C Conductor Temperature			90°C Conductor Temperature		
	DC	DC	60 Hz AC		DC	60 Hz AC		DC	60 Hz AC	
(AWG/ kcmil)			*Single Cond.	†Multi- Cond.		*Single Cond.	†Multi- Cond.		*Single Cond.	†Multi- Cond.
250	0.0423	0.049	0.0492	0.0519	0.0516	0.0518	0.0547	0.0541	0.0543	0.0573
300	0.0353	0.0409	0.0411	0.0437	0.0431	0.0433	0.0461	0.0452	0.0454	0.0483
350	0.0302	0.035	0.0353	0.0378	0.0369	0.0372	0.0398	0.0387	0.0390	0.0418
400	0.0264	0.0307	0.031	0.0338	0.0323	0.0326	0.0355	0.0339	0.0342	0.0373
500	0.0212	0.0246	0.025	0.0278	0.0258	0.0262	0.0291	0.0271	0.0275	0.0306
600	0.0177	0.0205	0.021	0.0238	0.0215	0.022	0.0249	0.0226	0.0231	0.0262
700	0.0151	0.0175	0.0181	0.0208	0.0184	0.019	0.0219	0.0193	0.0199	0.0229
750	0.0141	0.0164	0.0170	0.0198	0.0172	0.0178	0.0208	0.0181	0.0188	0.0219
1,000	0.0106	0.0123	0.0131	0.016	0.0129	0.0137	0.0167	0.0135	0.0144	0.0175
1,250	0.00847	0.00982	0.0108	0.0138	0.0103	0.0113	0.0145	0.0108	0.0119	0.0152
1,500	0.00705	0.00818	0.00934	0.0125	0.00861	0.00983	0.0132	0.00904	0.01030	0.0138
1,750	0.00604	0.00701	0.0083	0.0117	0.00738	0.00874	0.0123	0.00774	0.00917	0.0129
2,000	0.00529	0.00613	0.00755	0.0111	0.00645	0.00795	0.0117	0.00677	0.00835	0.0123
2,500	0.00428	0.00496	—	—	0.00521	—	—	0.00546	—	—
3,000	0.00356	0.00412	—	—	0.00433	—	—	0.00454	—	—
5,000	0.00218	0.00252	—	—	0.00265	—	—	0.00278	—	—

Note: 40 AWG through 26 AWG values are for solid conductors, all others are for ASTM Class B stranded conductors.

*One single conductor in air, buried or in nonmetallic conduit.

†Multiconductor cable or two or three single conductors in one metallic conduit.

Table 7.3—Temperature Correction Factors for Copper DC Resistance

Temperature (°C)	Multiplying Factors for Correction To:	
	20°C	25°C
60	0.864	0.881
75	0.822	0.838
90	0.784	0.800

Example: The DC resistance of a 500 kcmil copper conductor at 60°C is 0.0246 ohms per 1,000 ft. The resistance at 25°C would be $0.0246 \times 0.881 = 0.0217$ ohms per 1,000 ft.