

Conductor Ampacity and Conduit Tables

Based on 1993 National Electrical Code

Ampacity Based on NEC® Table 310-16 — Allowable Ampacities of Insulated Conductors Rated 0-2000 Volts, Not More Than Three Conductors in Raceway or Cable. Based on 30 °C Ambient Temperature. Trade Size of Conduit or Tubing Based on NEC Chapter 9, Table 1 and Tables 3A, 3B, 3C, 4 and 5B. Refer to Chapter 9 for Maximum Number of Conductors in Trade Sizes of Conduit or Tubing. Dimensions of Insulated Conductors for Conduit Fill Determined from NEC Chapter 9 Tables 5 and 5A.

For information on temperature ratings of terminations to equipment, see NEC Section 110-14c. Underlined conductor insulation types indicates ampacity is for WET locations. See NEC Table 310-13.

Table 8 Conductor Ampacity based on NEC Table 310-16

COPPER CONDUCTORS									ALUMINUM CONDUCTORS								
Wire Size AWG kcmil	75 °C (167 °F) Conductor Insulation ^[1]					90 °C (194 °F) Conductor Insulation ^[1]			Wire Size AWG kcmil	75 °C (167 °F) Conductor Insulation ^[1]					90 °C (194 °F) Conductor Insulation ^[1]		
	Table 310-16 Ampacity Insulated Copper	THHW, THW, RW, USE		THWN, XHHW		Table 310-16 Ampacity Insulated Copper	THHN, XHHW			Table 310-16 Ampacity Insulated Copper	THHW, THW, USE		XHHW		Table 310-16 Ampacity Insulated Copper	THHN, XHHW	
		Conduit 3W	Conduit 4W ^[2]	Conduit 3W	Conduit 4W ^[2]		Conduit 3W	Conduit 4W ^[2]			Conduit 3W	Conduit 4W ^[2]	Conduit 3W	Conduit 4W ^[2]		Conduit 3W	Conduit 4W ^[2]
†14	20	...	...	1/2	1/2	25	1/2	1/2	...	...	...	...	...	...	...	...	...
†12	25	...	...	1/2	1/2	30	1/2	1/2	†12	20	...	...	1/2	1/2	25	1/2	1/2
†10	35	...	...	1/2	1/2	40	1/2	1/2	†10	30	...	...	1/2	1/2	35	1/2	1/2
8	50	3/4	1	1/2 ^[3]	3/4	55	1/2 ^[3]	3/4	8	40	3/4	3/4	1/2	3/4	45	1/2	3/4
6	65	1	1	3/4	3/4 ^[4]	75	3/4	3/4 ^[4]	6	50	3/4	1	3/4	3/4	60	3/4	3/4
4	85	1	1-1/4	1	1	95	1	1	4	65	1	1	3/4	1	75	3/4	1
3	100	1-1/4	1-1/4	1	1-1/4	110	1	1-1/4	3	75	...	...	...	...	85	...	...
2	115	1-1/4	1-1/4	1	1-1/4	130	1	1-1/4	2	90	1	1-1/4	1	1-1/4	100	1	1-1/4
1	130	1-1/4	1-1/2	1-1/4	1-1/2	150	1-1/4	1-1/2	1	100	1-1/4	1-1/2	1-1/4	1-1/2	115	1-1/4	1-1/2
1/0	150	1-1/2	2	1-1/4	1-1/2	170	1-1/4	1-1/2	1/0	120	1-1/4	1-1/2	1-1/4	1-1/2	135	1-1/4	1-1/2
2/0	175	1-1/2	2	1-1/2	2	195	1-1/2	2	2/0	135	1-1/2	2	1-1/4	1-1/2	150	1-1/4	1-1/2
3/0	200	2	2	1-1/2	2	225	1-1/2	2	3/0	155	1-1/2	2	1-1/2	2	175	1-1/2	2
4/0	230	2	2-1/2	2	2	260	2	2	4/0	180	2	2	1-1/2	2	205	1-1/2	2
250	255	2-1/2	2-1/2	2	2-1/2	290	2	2-1/2	250	205	2	2-1/2	2	2	230	2	2
300	285	2-1/2	3	2	2-1/2	320	2	2-1/2	300	230	2	2-1/2	2	2-1/2	255	2	2-1/2
350	310	2-1/2	3	2-1/2	3	350	2-1/2	3	350	250	2-1/2	3	2-1/2	3	280	2-1/2	3
400	335	3	3	2-1/2	3	380	2-1/2	3	400	270	2-1/2	3	2-1/2	2-1/2 ^[5]	305	2-1/2	2-1/2 ^[5]
500	380	3	3-1/2	3	3	430	3	3	500	310	3	3	2-1/2	3	350	2-1/2	3
600	420	3	3-1/2	3	3-1/2	475	3	3-1/2	600	340	3	3-1/2	3	3	385	3	3
700	460	3-1/2	4	3	3-1/2	520	3	3-1/2	700	375	3	3-1/2	3	3-1/2	420	3	3-1/2
750	475	3-1/2	4	3-1/2	4	535	3-1/2	4	750	385	3	3-1/2	3	3-1/2	435	3	3-1/2
800	490	3-1/2	4	3-1/2	4	555	3-1/2	4	800	395	...	...	...	...	450	...	...
900	520	4	5	3-1/2	4	585	3-1/2	4	900	425	...	...	...	...	480	...	...
1000	545	4	5	3-1/2	5	615	3-1/2	5	1000	445	3-1/2	4	3-1/2	4	500	3-1/2	4

[1] Unless otherwise permitted in the Code, the overcurrent protection for conductor types marked with an † shall not exceed 15 A for No. 14, 20 A for No. 12 and 30 A for No. 10 copper, or 15 A for No. 12 and 25 A for No. 10 aluminum after any correction factors for ambient temperature and number of conductors have been applied.

[2] On a 4-wire, 3-phase wye circuit where the major portion of the load consists of nonlinear loads such as electric discharge lighting, electronic computer/data processing, or similar equipment there are harmonic currents present in the neutral conductor and the neutral shall be considered to be a current-carrying conductor.

[3] #8 XHHW copper wire requires 3/4" conduit for 3W.

[4] #6 XHHW copper wire requires 1" conduit for 3Ø4W.

[5] 400 kcmil aluminum wire requires 3" conduit for 3Ø4W.

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Ampacity Correction Factors:

For ambient temperatures other than 30 °C (86 °F), multiply the ampacities listed in Table 8 by the appropriate factor listed in Table 9.

Adjustment Factors:

Where the number of current-carrying conductors in a raceway or cable exceeds three, reduce the allowable ampacities as shown in Table 9.

Table 9 Ampacity Correction Factors

Ambient Temperature (°C)	75 °C (167 °F) Conductors	90 °C (194 °F) Conductors	Ambient Temperature (°F)
21-25	1.05	1.04	70-77
26-30	1.00	1.00	78-86
31-35	.94	.96	87-95
36-40	.88	.91	96-104
41-45	.82	.87	105-113
46-50	.75	.82	114-122
51-55	.67	.76	123-131
56-60	.58	.71	132-140
61-70	.33	.58	141-158
71-80	...	.41	159-176

Table 10 Adjustment Factors

No. of Current-Carrying Inductors	Values in Tables as Adjusted for Ambient Temperature
4-6	80%
7-9	70%
10-20	50%
21-30	45%
31-40	40%
41 and above	35%

For exceptions, see exceptions to Note 8 of NEC® Table 310-16.

Ratings for 120/240 V, 3-Wire, Single-Phase Dwelling Services:

The ratings in Table 11 are permitted ratings for dwelling unit service and feeder conductors which carry the total load of the dwelling. The grounded conductor (neutral) shall be permitted to be not more than 2 AWG sizes smaller than the ungrounded conductors, provided the requirements of 215-2, 220-22 and 230-42 are met.

Table 11 Ratings for 120/240 V, 3-Wire, Single-Phase Dwelling Services – see NEC 310-16 Note 3

Rating (A)	100	110	125	150	175	200	225	250	300	350	400
Copper	4 AWG	3 AWG	2 AWG	1 AWG	1/0 AWG	2/0 AWG	3/0 AWG	4/0 AWG	250 kcmil	350 kcmil	400 kcmil
Aluminum	2 AWG	1 AWG	1/0 AWG	2/0 AWG	3/0 AWG	4/0 AWG	250 kcmil	300 kcmil	350 kcmil	500 kcmil	600 kcmil

NEC 240-3 Protection of Conductors:

Conductors, other than flexible cords and fixture wires, shall be protected against overcurrent in accordance with their ampacities as specified in NEC Section 310-15, unless otherwise permitted in parts (a) through (m).

NEC 220-3 (a) Continuous and Noncontinuous Loads:

The branch circuit rating shall not be less than the noncontinuous load plus 125% of the continuous load (see exception for 100% rated devices).

NEC 220-10 (b) Continuous and Noncontinuous Loads:

Where a feeder supplies continuous loads or any combination of continuous and noncontinuous loads, the rating of the overcurrent device shall not be less than the noncontinuous load plus 125% of the continuous load (see exception for 100% rated devices).

NEC 430-22 (a) Single Motor Circuit Conductors:

Branch circuit conductors supplying a single motor shall have an ampacity not less than 125% of the motor full-load current rating (see exceptions).

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Table 12 AWG and Metric Wire Data

AWG Size	Conductor dia. (mm)	Conductor dia. (in)	Resistance @ 20 °C (68 °F)		AWG Size	Conductor dia. (mm)	Conductor dia. (in)	Resistance @ 20 °C (68 °F)	
			Ohm per ft	Ohm per m				Ohm per ft	Ohm per m
29		.01126	.08180	.2684	13	1.900	.07480	.001853	.006081
	.315	.01240	.06743	.2212		2.000	.07874	.001673	.005488
28		.01264	.06491	.2130	12		.08081	.001588	.005210
	.355	.01398	.05309	.1742		2.120	.08346	.001489	.004884
27		.01420	.05143	.1687		2.240	.08819	.001333	.004375
	.400	.01575	.04182	.1372	11		.09074	.001260	.004132
26		.01594	.04082	.1339		2.360	.09291	.001201	.003941
	.450	.01772	.03304	.1084		2.500	.09843	.001071	.003512
25		.01790	.03237	.1062	10		.1019	.0009988	.003277
	.500	.01969	.02676	.08781		2.650	.1043	.0009528	.003126
24		.02010	.02567	.08781		2.800	.1102	.0008534	.002800
	.560	.02205	.02134	.07000	9		.1144	.0007924	.002500
23		.02257	.02036	.06679		3.000	.1181	.0007434	.002439
	.630	.02480	.01686	.05531		3.150	.1240	.0006743	.002212
22		.02535	.01614	.05531	8		.1285	.0006281	.002061
	.710	.02795	.01280	.04201		3.350	.1319	.0005662	.001956
21		.02846	.01280	.04201		3.550	.1398	.0005309	.001742
	.750	.02953	.01190	.03903	7		.1443	.0004981	.001634
	.800	.03150	.01045	.03430		3.750	.1476	.0004758	.001561
20		.03196	.01015	.03331		4.000	.1575	.0004182	.001372
	.850	.03346	.009261	.05038	6		.1620	.0003952	.001296
	.900	.03543	.008260	.02642		4.250	.1673	.0003704	.001215
19		.03589	.008051	.02642		4.500	.1772	.0003304	.001084
	.950	.03740	.007414	.02432	5		.1819	.0003134	.001028
	1.000	.03937	.006991	.02195		4.750	.1870	.0002966	.0009729
18		.04030	.006386	.02095		5.000	.1968	.0002676	.0008781
	1.060	.04173	.005955	.01954	4		.2043	.0002485	.0008152
	1.120	.04409	.005334	.01750		5.600	.2205	.0002134	.0007000
17		.04526	.005063	.01661	3		.2294	.0001971	.0006466
	1.180	.04646	.004805	.01577		6.300	.2480	.0001686	.0005531
	1.250	.04921	.004282	.01405	2		.2576	.0001563	.0005128
16		.05082	.004016	.01317		7.100	.2795	.0001327	.0004355
	1.320	.05197	.003840	.01260	1		.2893	.0001239	.0004065
	1.400	.05512	.004016	.01317		8.000	.3150	.0001045	.0003430
15		.05707	.003414	.01045	0		.3249	.00009825	.0003223
	1.500	.05906	.002974	.009756		9.000	.3543	.00008260	.0002710
	1.600	.06299	.002526	.008286	2/0		.3648	.00007793	.0002557
14		.06408	.002315	.007596		10.000	.3937	.00006691	.0002195
	1.700	.06693	.002315	.007596	3/0		.4096	.00006182	.0002195
	1.800	.07087	.002065	.006775	4/0		.4600	.00004901	.0001608
13		.07196	.002003	.006571		11.800	.4646	.00004805	.0001577