



High-Lites

Emergency Lighting Products

Wire Selection Chart

In the design of an emergency lighting system, it is important to select the proper wire size. When remote lighting fixtures and/or exit signs are connected to emergency lighting equipment, circuit runs must be of sufficient size to maintain a proper operating voltage to all lamps. The National Electrical Code limits voltage drop to a maximum of 5% of nominal.

Wiring Distance In Feet (Maximum 5% Voltage Drop)														
Total Watts On Wire Run	6 Volt Wire Size				12 Volt Wire Size					24 Volt Wire Size				
	#12	#10	#8	#6	#12	#10	#8	#6	#4	#12	#10	#8	#6	#4
6	89	141	225	357	356	566	900	1,431	--	1,425	--	--	--	--
8	66	106	168	268	267	424	675	1,073	1,707	1,068	1,698	--	--	--
9	59	94	150	238	237	377	600	954	1,517	959	1,509	--	--	--
10	53	84	135	214	213	339	540	859	1,366	854	1,358	--	--	--
12	44	70	112	178	178	283	450	715	1,138	712	1,132	1,801	--	--
16	33	53	84	134	133	212	337	536	853	534	849	1,350	--	--
18	29	47	75	119	118	188	300	477	758	474	754	1,200	1,909	--
24	22	35	56	89	89	141	225	357	569	356	566	900	1,431	--
25	21	33	54	85	85	135	216	343	546	341	543	864	1,374	--
27	19	31	50	79	79	125	200	318	505	316	503	800	1,272	--
30	17	28	45	71	71	113	180	286	455	284	452	720	1,145	1,821
36	14	23	37	59	59	94	150	238	379	237	377	600	954	1,517
42	12	20	32	51	50	80	128	204	325	203	323	514	818	1,300
45	11	18	30	47	47	75	120	190	303	189	301	480	763	1,214
48	11	17	28	44	44	70	112	178	284	178	283	450	715	1,138
50	10	16	27	42	42	67	108	171	273	170	271	432	687	1,092
75	7	11	18	28	28	45	72	114	182	113	181	288	458	728
100	5	8	13	21	21	33	54	85	136	85	135	216	343	546
150	--	5	9	14	14	22	36	57	91	56	90	144	229	364
200	--	--	6	10	10	16	27	42	68	42	67	108	171	273
250	--	--	5	8	8	13	21	34	54	34	54	86	137	218
300	--	--	--	7	7	11	18	25	45	25	45	72	114	182
400	--	--	--	5	5	8	13	21	34	21	33	54	85	136
500	--	--	--	--	--	6	10	17	27	17	27	43	68	109
Constant	534	849	1,350	2,148	2,137	3,397	5,403	8,590	13,660	8,548	13,588	21,613	34,363	54,641

To Determine The Maximum Length Of A Wire Run Not Listed

Divide the value of the load in watts in to the constant listed at the bottom of each row.

EXAMPLE: The maximum wire run for #10 wire on a 12 volt system, with a 50 watt load, is $3,399 \div 50 = 67$ feet.

Note: Smallest permissible wire size for systems under 50 volts is #12 for emergency lighting equipment under Article 720-4 of the National Electrical Code.

To Determine The Maximum Load On A Run Of Known Length

Divide the length into the constant listed at the bottom of each row.

EXAMPLE: a 40 foot run #12 wire on a 6 volt system can be loaded as, $534 \div 40 = 13$ watts.

Code limits voltage drop to a maximum of 5% of nominal.