



WIRE SELECTION CHART

In the design of an emergency lighting system, it is important to select the proper wire size. If remote lighting fixtures and/or exit signs are connected to emergency lighting unit 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.

Total watts on wire run	WIRING DISTANCE IN FEET (Maximum voltage drop 5%)													
	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	1431	+	1425	+	+	+	+
8	66	106	168	268	267	424	675	1073	1707	1068	1698	+	+	+
9	59	94	150	238	237	377	600	954	1517	949	1509	+	+	+
10	53	84	135	214	213	339	540	859	1366	854	1358	+	+	+
12	44	70	112	178	178	283	450	715	1138	712	1132	1801	+	+
16	33	53	84	134	133	212	337	536	853	534	849	1350	+	+
18	29	47	75	119	118	188	300	477	758	474	754	1200	1909	+
24	22	35	56	89	89	141	225	357	569	356	566	900	1431	+
25	21	33	84	85	85	135	216	343	546	341	543	864	1374	+
27	19	31	50	79	79	125	200	318	505	316	503	800	1272	+
30	17	28	45	71	71	113	180	286	455	284	452	720	1145	1821
36	14	23	37	59	59	94	150	238	379	237	377	600	954	1517
42	12	20	32	51	50	80	128	204	325	203	323	514	818	1300
45	11	18	30	47	47	75	120	190	303	189	301	480	763	1214
48	11	17	28	44	44	70	112	178	284	178	283	450	715	1138
50	10	16	27	42	42	67	108	171	273	170	271	432	687	1092
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	57	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	1350	2148	2137	3397	5403	8590	13660	8548	13588	21613	34363	54641

TO DETERMINE THE MAXIMUM LENGTH OF A WIRE RUN NOT LISTED HERE

Divide the value of the load in watts into the constant listed at the bottom of each column

EXAMPLE: The maximum wire run for #10 wire on a 12 volt system, with a 50 watt load, is 3397 divided by 50= 67 feet.

Note: The smallest permissible wire size for emergency lighting systems under 50 volts is #12, See article 720-4 of the National

Electrical Code

TO DETERMINE THE MAXIMUM LOAD ON A RUN OF A KNOWN LENGTH

Divide the length of the run into the constant listed at the bottom of each column.

EXAMPLE: A 40 foot run of #12 wire on a 6volt emergency lighting system can be loaded 534 divided by 40 (feet) = 13 watts max wattage