

Voltage Drop Table

Wire size selection is a critical component in the design of an emergency lighting system where remote fixtures are used. Low voltage DC systems require the proper size wire in order to provide proper illumination. The maximum voltage drop allowed by the NEC is 5%. See Article 720 of the NEC for further information.

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	54	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	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	1350	2148	2137	3397	5403	8590	13660	8548	13588	21613	34363	54641

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 3397 - 50 is 67 feet.

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, 534-40, is 13 watts.