EMERGI-LITE®

TYPE:

CATALOG #:

NOTES:

Wiring Size Guide

Wire Calculations for Voltage Drop Protection

To design a proper emergency lighting system, circuit runs must be of sufficient size wire to maintain a proper operating voltage to all lamps.Maximum voltage drop should not exeed 5%. Proper wire size may be determined from the following formula and table:

$$CM = \frac{22 \times W \times L}{.05 \times E2} \quad *$$

CM - Wire size in circular mils
W - Emergency light load in Watts
L - Lenght of circuit in feet
E - Line voltage
22 - Constant
.05- Factor for maximum allowable voltage drop

* For 6 volt units use 1.8 as denominator
For 12 Volt units 7.2 as denominator
For 24 Volt units 28.8 as denominator
For 32 Volt units 51.2 as denominator

Using this formula and having calculated the circular mils required to carry the specified load at the allowable voltage drop, the following table will identify the wire size from the circular mil size listed.

Circular Mil Size	Ampere Capacity	Wire Gauge
6,530	20	12
10,380	25	10
16,510	35	8
26,250	50	6
41,740	70	4

	6 Volts Wire size				12 Volts Wire size					24 Volts Wire size					32 Volts Wire size				
Watts	**#12**	**#10**	**#8**	**#6**	**#12**	**#10**	**#8**	**#6**	**#4**	**#12**	**#10**	**#8**	**#6**	**#4**	**#12**	**#10**	**#8**	**#6**	**#4**
9	68	109	173	270	272	436	692	1080	-	940	1500	-	-	-	-	-	-	-	-
13	41	65	110	165	165	260	415	660	1050	660	1040	-	-	-	1160	-	-	-	-
18	30	47	75	120	110	190	300	475	760	440	760	1200	-	-	840	1340	-	-	-
25	21	32	54	86	85	136	215	340	540	340	544	860	-	-	600	960	1540	-	-
30	18	28	45	71	71	112	180	285	455	284	448	720	1140	-	500	800	1280	-	-
35	15	24	39	62	61	97	154	245	390	244	388	616	980	1560	435	690	1110	1740	-
50	11	17	27	43	42	68	108	170	275	168	272	432	680	1100	300	480	770	1220	-
60	9	14	22	36	35	52	90	140	225	140	208	360	560	900	250	400	640	1020	1620
75	8	11	18	29	29	45	72	114	182	116	180	288	456	728	200	320	510	815	1300
100	6	9	14	22	21	34	54	86	137	84	136	216	344	548	150	240	385	610	970
150	4	6	9	15	14	23	36	57	91	56	92	144	228	364	100	160	255	405	650
200	-	-	7	11	10	17	27	43	68	40	68	108	172	272	75	120	192	305	485
250	-	-	-	9	8	14	21	34	55	32	52	84	136	220	60	96	154	240	390
300	-	-	-	-	-	11	18	28	45	26	44	72	112	180	50	80	128	200	325
400	-	-	-	-	-	-	-	-	-	21	34	54	85	100	42	63	100	163	260