

WIRE SIZING GUIDELINE



This wire sizing guide is to be used for selecting the size of the power wiring for a system of lights with or without the use of Shadow-caster SCM-PD and SCM-PD-PLUS power distribution boxes. If the wire gauge is too small there will be excessive voltage drop through the wire and the lights will not function properly or the wire will overheat. For 12 volt systems the intent is that the voltage entering the power distribution box should not be less than 11 volts while the lights are operating in their brightest setting. For 24 volt systems the intent is that the resistance of the wire does not cause it to become excessively hot while the lights are operating in their brightest setting. If your calculations fall in between values on the charts it is best to round up to the greater value.

Step 1: Calculate the total amperage draw for your lighting system by multiplying the number of lights by the amperage draw of those lights for your voltage application from the amperage chart.

Example:

You boat will have 4 of the SCR-16 lights powered at 12 volts. So the total amperage for the system will be 4 x 5 amps = 20 amps total.

SCM Amperage Chart		
Product	Amps @ 12v	Amps @ 24v
SCM-4	1	0.5
SCM-6	2	1
SCM-10	3.5	1.75
SCM-10CC	3.5	1.75

SCR Amperage Chart		
Product	Amps @ 12v	Amps @ 24v
SCR-16	5	2.5
SCR-18CC	6	3
SCR-24	8	4
SCR-24CC	8	4

Step 2: Use the chart below to select the appropriate wire gauge for your application based on the total amperage and wire length.

Example: Your system will draw 20 amps and the wire length from the voltage source to the SCM-PD+ Power Distribution Box will be 30ft. So you should use 6 gauge wire.

12 Volt Systems -Wire gauge required at each amperage and distance						
12 Volt Systems - Distance in Ft						
AMPS	10	20	30	40	50	60
10	12	10	8	6	6	4
20	10	8	6	4	4	
30	8	6	4			
40	6	4				
50	6					
60	4					
70	4					
80	4					

See next page for 24 volt system wire gauge sizing chart

The minimum wire gauge recommended is 14 gauge for compatibility with the terminals inside the power distribution boxes.

24 Volt Systems -Wire gauge required at each amperage and distance						
	24 Volt Systems - Distance in Ft					
AMPS	10	20	30	40	50	60
10	14	14	14	12	10	6
20	14	14	12	10	6	4
30	14	12	10	8	6	4
40	12	10	8	6	6	4
50	10	8	6	4	4	
60	8	6	4			
70	6	4				
80	6					