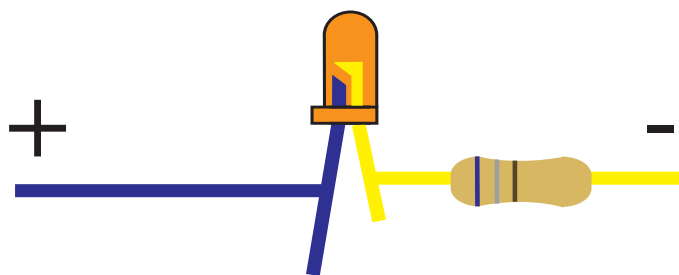


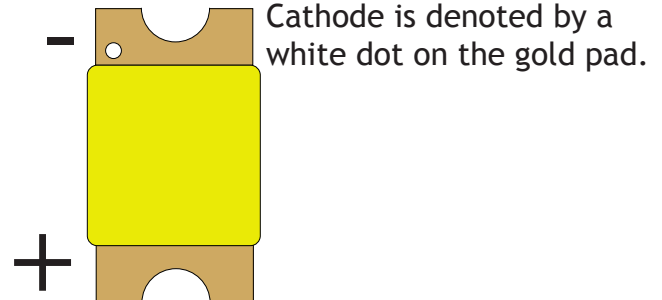
Wiring Lights and Resistors

Resistor Values

Type of Light	Number of Lights	Voltage	Amperage	12v. Track	14v. Track	16v. Track
LED's	One	2v.	20 mA.	470 / 510 Ω	680 Ω	680 / 750 Ω
		3.4v.	20 mA.	390 / 430 Ω	510 / 560 Ω	620 / 680 Ω
	Two	2v.	20 mA.	360 / 430 Ω	470 / 510 Ω	620 Ω
		3.4v.	20 mA.	220 / 270 Ω	330 / 360 Ω	430 / 470 Ω
	Three	2v.	20 mA.	300 / 370 Ω	360 / 430 Ω	470 / 510 Ω
		3.4v.	20 mA.	51 / 56 Ω	160 / 180 Ω	270 / 300 Ω
Bulbs	One	1.5v	15 mA.	680 / 750 Ω	820 / 910 Ω	1K / 1.1K Ω
			30 mA.	330 / 350 Ω	430 Ω	470 / 510 Ω
		12v.	15 mA.	0 Ω	43 / 47 Ω	110 / 120 Ω
			30 mA.	0 Ω	82 / 91 Ω	220 / 240 Ω
	Two	1.5v	15 mA.	560 / 620 Ω	750 Ω	820 / 910 Ω
		12v.	30 mA.	0 Ω	43 / 47 Ω	110 / 120 Ω



LED Wiring Diagram



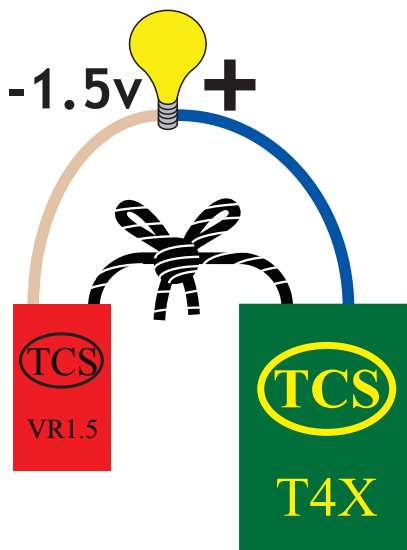
Attaching Lights

Attaching a Light Function:

1st. Find the Voltage and the Amperage of the bulb or LED (on package or in locomotive literature).

2nd. Find your track voltage by setting multimeter to the AC Voltage setting and checking the two sides of the track.

3rd. Solder resistor into series (as shown above) with the negative wire (White, Yellow, Green, Purple, Pink, Brown), and then solder the other side of the resistor to the negative side of an LED or either side of a bulb.



VR 1.5 Wiring Diagram

Finally. Solder the Blue (or tan if using a 1.5v supply) to the opposing side of the bulb or LED.