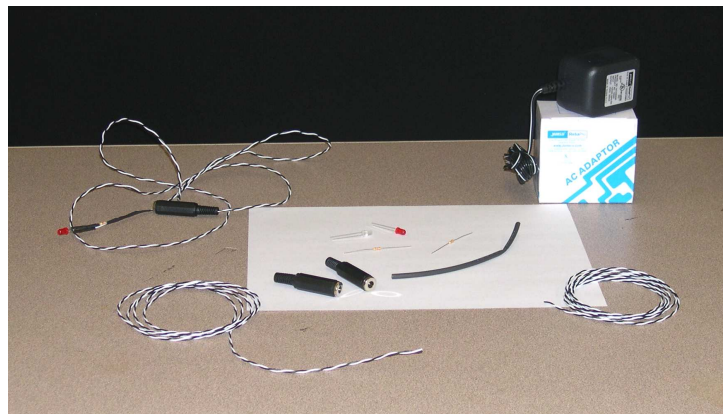


Syracuse University Saturday Morning High School Physics Teacher Workshop
60 Hz Light Emitting Diode Make and Take
Funded with a grant from the John Ben Snow Foundation

Good Morning. Today, you will be constructing two versions of the blinking LED. The power source is an AC/AC wall transformer that outputs 9VAC. Your eyes cannot detect the 60 Hz blink, but you can spatially resolve the blinking by moving the LED in a line or by twirling in circles. You will build one using a red LED and another using a bicolor LED. The bicolor LED emits green light when the current flow is in one direction and red light when the current reverses.

The items, part #s, price and source are listed below. Please take only the quantity listed. This will allow you to make one complete set. Taking extra items may short another teacher.

1 Item	Jameco part #	Price (ea)	Quantity
9 VAC transformer	100061CE	\$3.63	1
Red/Green LED	334182CE	\$0.146	1
Red LED	333489CE	\$0.087	1
330 Ω 1/4 W resistor	30867CE	\$0.01	2
2.1 mm male jack	159610CE	\$1.09	2
Blk/W twisted wire	173163CE	\$0.06	3 m
3 mm heat shrink	184721CE	\$0.025	10 cm



1. Cut your wire in half. You will need 1.5 m of twisted wire for each unit.
2. The long lead of the diode is the anode (the + terminal). Guess what the other lead is? Carefully solder the resistor to this terminal (It really does not matter which terminal you attach the resistor. This is how I made the model). Remember, the metal leads need to melt the solder to make a good connection. Twisting the parts together initially is a good idea too.
3. Cut 4 pieces of heat shrink, one for each side of the resistor (so 2 total for the anode), one for the cathode, and one for the whole assembly. See the model.
4. Place these pieces of HS on the appropriate wires and solder the wire. I followed good electricians convention (black is hot, white is ground) and soldered the black wire to the anode .
5. Slide the jack sleeve up the other end of the wire and solder the wires to the connector. Folding the wires through the solder tabs of the connector is a good idea. So is cutting one wire a bit shorter so you do not have excess wire inside the jack. Fold the strain relief tabs over the wire insulation making sure you do not cut the insulation.
6. Before shrinking the tubing and screwing down the jack cover, plug in your gizmo and make sure it works
7. Congrats! Now build your 2nd one.



Sampere

Left: the soldered connector

Right: the LED, resistor, and heatshrink assembly complete.

