Need a Porch Lamp?

(or other really small LED light)

By Gary Butts

After returning from the Temecula Meet, I received an email from Gary Robinson (San Diego Division) asking how I made the front porch light on my "Grandma's House" cottage model in the contest. If it weren't for the extremely small size of the components, this light would be a cinch. Unfortunately, in HO, the size is the issue.

After emailing the details to Gary I thought that maybe others could use a similar type light in their modeling so here is what I wrote explaining how I made it.

The LED that I used is an Ngineering #N1013-5 Micro LED - yellow. I got it from Arnie's @ $3.50 for a 5 pack. These things are really small but nice and bright. I used a 1K ohm series resistor to limit the current to about 10 mA on 12 volts DC (They are rated for up to 20 mA) to get the brightness I wanted. If you have a different voltage you can figure the current by subtracting the 2V diode drop off of your supply voltage then divide the remainder by .010 to calculate the series resistance.

You will need some type of magnification to see what you are doing, a sharp tip soldering iron and a way to hold the LED while you solder to it. Basically, I put a right angle on the end of a pair of 30-32 Gage coated wires I had and soldered them to the ends of the LED such that the standing portion (feeders) trailed back away from the front face of the LED and the short bent part of the ends of the wires trailed away from each other at the opposite ends of the LED. I then cut the top wire off short to simulate a lamp cap and the bottom part a little longer to look like some older lamps I have seen.

The trick is holding the LED while you solder the first wire to it. This is not easy as an alligator clip may damage the device. As I recall I did use my two handed (alligator clipped) holding fixture to clamp, very carefully, on one end of the LED on it's solder

pad. I then positioned the first wire with the second clip on the fixture. I first spread a clean paper towel under the whole set-up to catch the little LED when I fumbled it (which I did several times-- It is a good thing that they come in a 5 pack!). Using a totally clean and tinned sharp pencil solder tip and my x7 magnifier head set looking through my x4 bench magnifier lamp, I soldered the first wire in place. It takes just a second to flow the solder and dwelling too long on the LED can damage it, however the alligator clip on the opposite end does act as a heat sink. Using the first wire as the holder for the second, I soldered the second wire to the opposite end. A little solder clean-up and careful painting with Grimy Black and it was done.

I had color coded coated wire which helped to keep the polarity straight. It is important that you don't apply any voltage directly to the LED without a current limiting resistor in series with the feeders and that you don't apply excessive reversed voltage to the LED even with the limiting resistor. You can check for the correct polarity after soldering the wires and resistor in place using a normal multimeter set for continuity or diode check. Lacking a meter, you can use a 3or 4 Volt DC power source, if you have one, to look for the correct polarity. I would not advise using more than 4-5 volts in the reverse direction on the LED to avoid damaging it. *-gb*