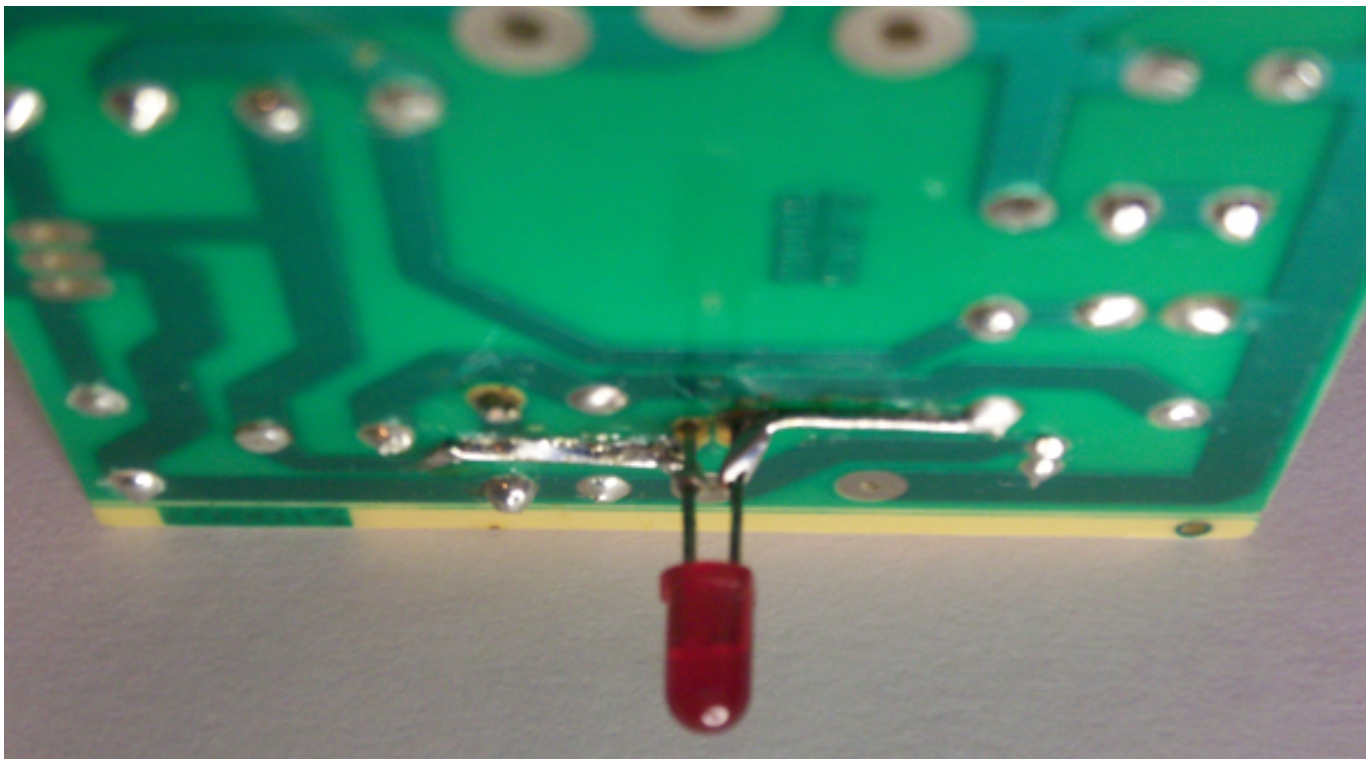
Engineering Power Adventures

M. Simon

First let me say that the design of the XP15K power supply kit by Elenco [1] is a very functional design. It does what it is supposed to do. It is the engineer behind the soldering iron (me) that needs some adjustment.

The kit is very easy to put together. And that was my problem. I looked at the schematic. Gave the parts and instructions a once over and started assembling. I failed to notice that the LED power indicator did not mount on the top of the board as shown on the board silkscreen. The instructions CLEARLY state that the LED mounts on the solder side. One LED gone. No problem. I have some in my supply depot (35 years worth of collected stuff) so I got one of those out and went to it. Unfortunately the leads on the LED (say it fast) were corroded and didn't take solder. Well that cost me the LED pads. No problem. I'm an engineer. I can fix my own mistakes. This time I cleaned up the next LEDs leads with my handy Xacto Knife [2] and with a couple of added wires had the LED mounted. I did in fact test the LED with my Elenco XP 720 [3] power supply (built years ago from a kit), a couple of clip leads, and a 2.2K current limit resistor. You can see the results of my soldering adventure below.



There are a couple of things in final assembly that will make things go better. First open up holes (with pads - be careful) P1 thru P5 with a 1/16th drill. This will make it easier to insert the wires. Plus you can pre-tin the wires. Something impossible with the holes as delivered. The other thing is to cut the power connections a little longer than suggested and strip the wires for about 3/8 of an inch instead of 1/4. This will allow you to do a proper (if somewhat truncated) telegraphers splice [4].

Anyway. I finished the kit and it tested fine. Zero volts was a little high at .08 volts. Nothing unusual for this type of circuit (two diodes for the negative offset to the LM317). On the positive side it went up to 18.24 volts. Higher than marked on the case but not a big problem. It assures that you can get the 15 Volts advertised out of the supply even if the control potentiometer tolerance is on the low side. This supply will be a valuable adjunct to my next design. The boards for that design have been ordered and the folks at Linear Technology [5] were kind enough to send me some sample chips for my experiments. I will report on that as soon as I have some results.

Next up in the very near future will be another Elenco Kit [6] that is sure to be a hit with budding engineers ages 8 and up. No soldering required. And just in time for what ever holiday you intend to celebrate this season.

Thanks to the guys at Elenco for being so generous with their products.

Source URL (retrieved on *03/14/2014 - 3:17pm*):
http://www.ecnmag.com/blogs/2011/12/engineering-power-adventures?qt-most_popular=0

Links:
[1] http://www.elenco.com/product/productdetails/power_supply/variable_voltage_power_supply_kit
[2] http://www.xacto.com/Catalog/Knives/Knives
[3] http://www.elenco.com/product/productdetails/power_supply/same_as_xp720_in_kit_form
[4] http://www.dr-fix-it.com/arc_western_union.html
[5] http://www.linear.com/
[6] http://www.elenco.com/