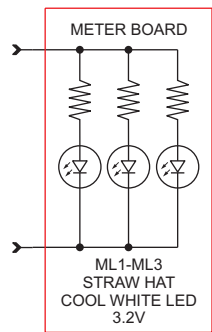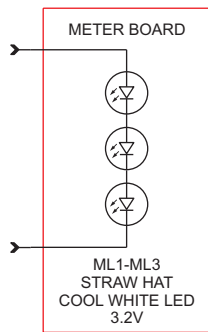V_s = Voltage Source
V_f = Forward Voltage
I = current (0.02 amps)
R_d = Dropping Resistance (ohms)
Voltage Drop (V_d) = V_s - V_f
Formula for resistance: $V_d / I = R_d$
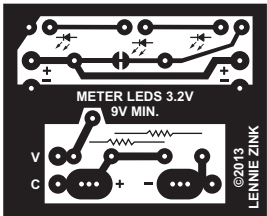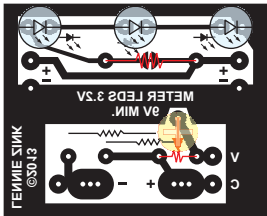
PANEL METER PC BOARDS

20 mA LED METER
LIGHTS: PCB FV=3.2

Voltage Source V_s	Voltage Drop V_d	Dropping Resistor R_d	CLOSE
15	11.8	590	620
12	8.8	440	470
9	5.8	290	300
5	1.8	90	100
3	0	0	0

20 mA LED METER
LIGHTS: PCB FV=9.6

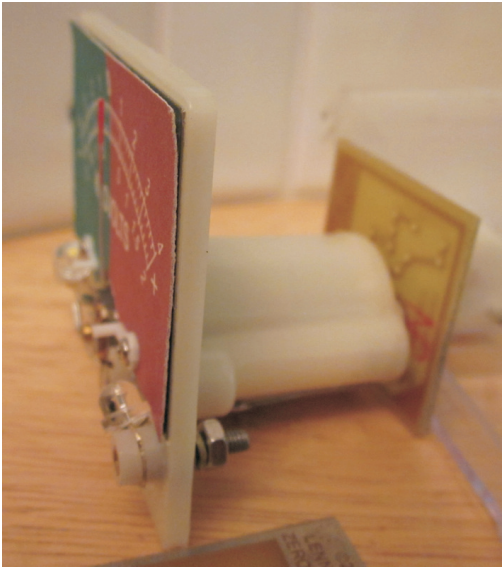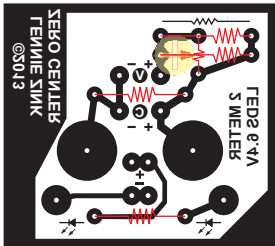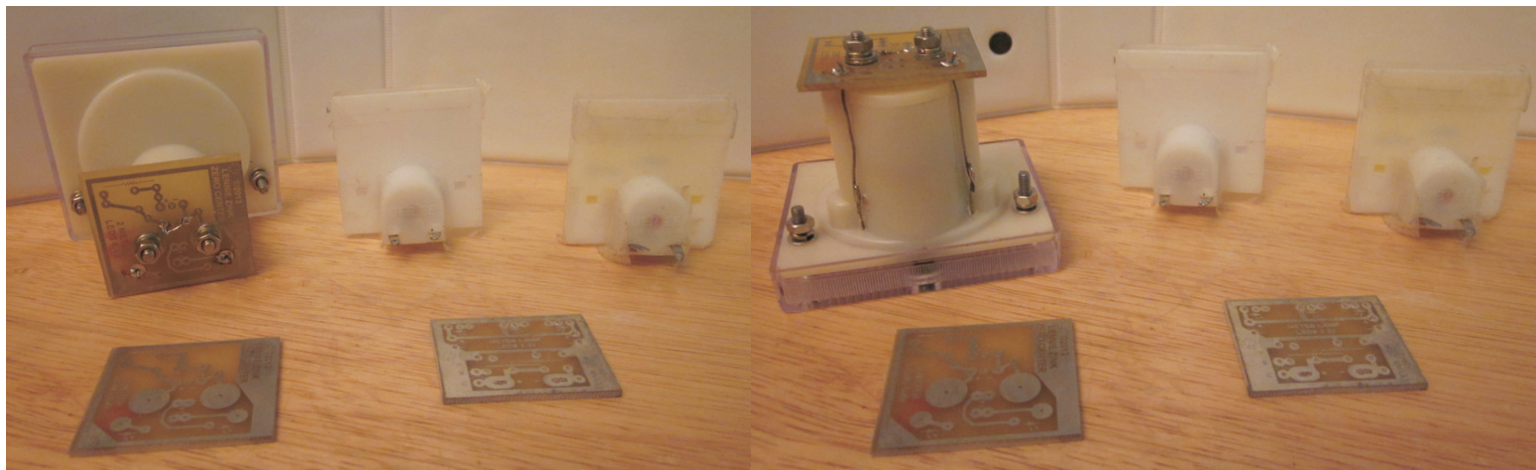| Voltage Source V_s	Voltage Drop V_d	Dropping Resistor R_d	CLOSE
15	5.4	270	270
12	2.4	120	120
9	0	0	0

LEDS IN SERIES
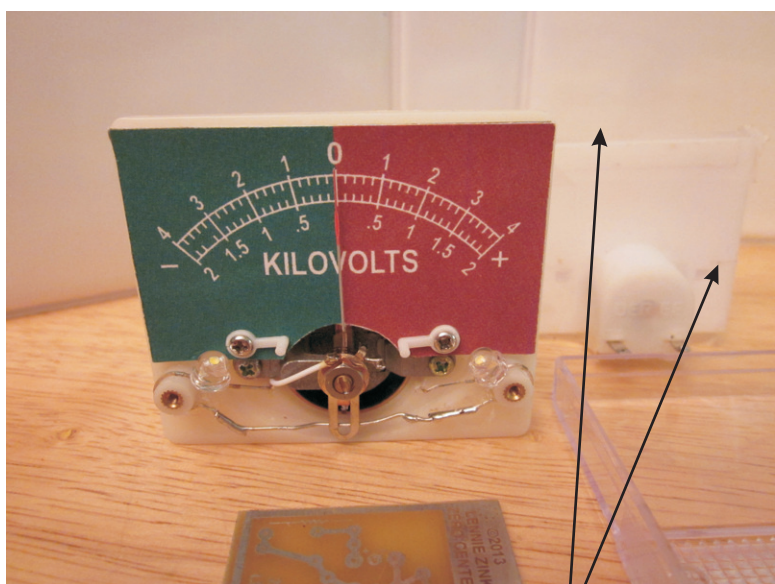

LEDS IN PARALLEL
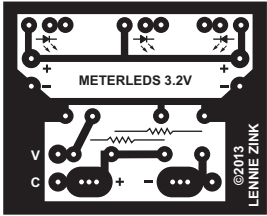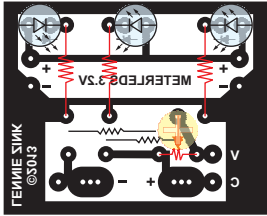
Mount trimmer on
foil side of board
for easy access.

LEDS IN SERIES

See greater detail on meters my "Sferics Detector."

The cap on the tube of glue is a wire nut. I didn't notice that the cap was cracked when I bought it. Broke right through, it did!

This glue is remarkably removable. Peels off pretty well, but it attacks plastics.

Tape is used to protect the plastic.