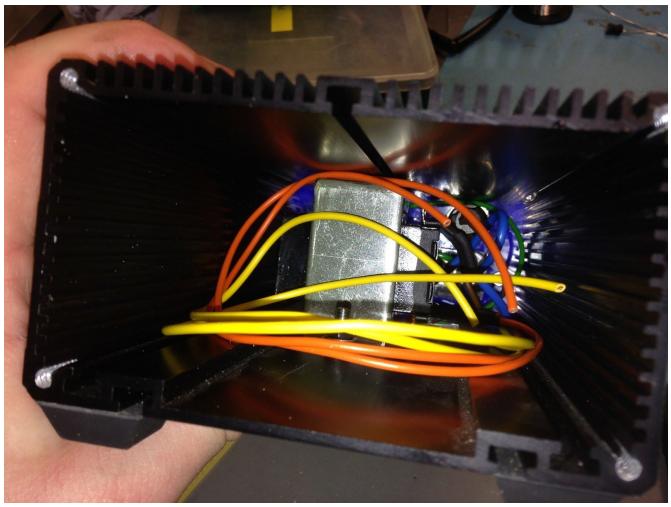
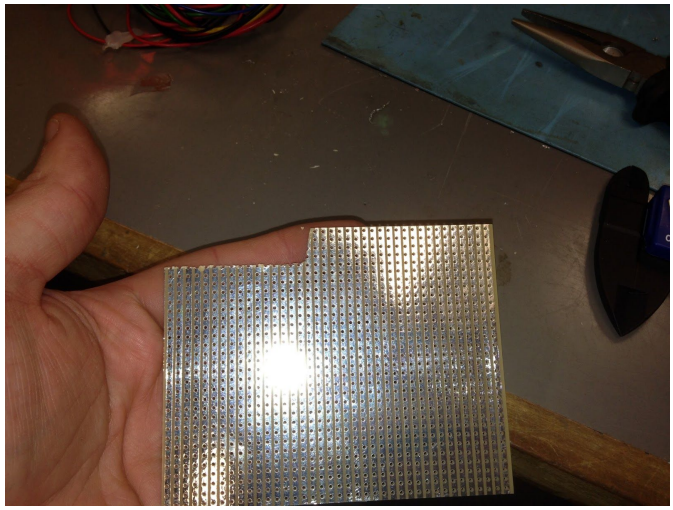
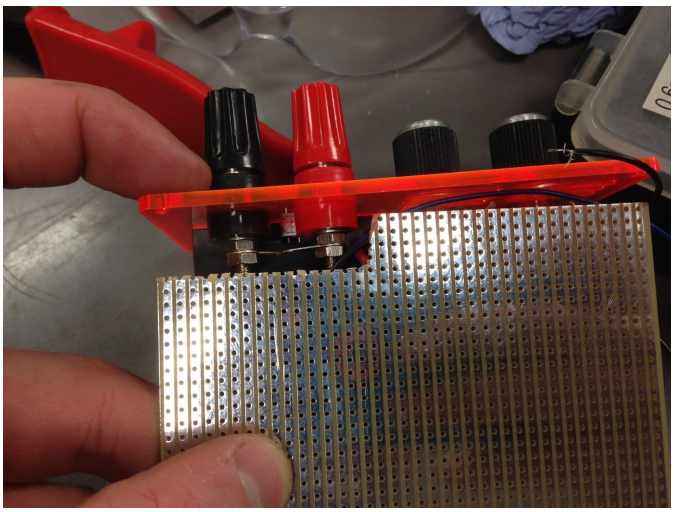
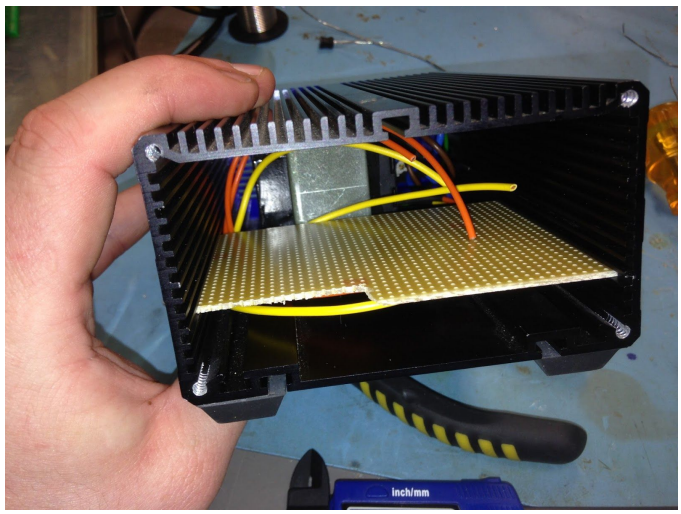
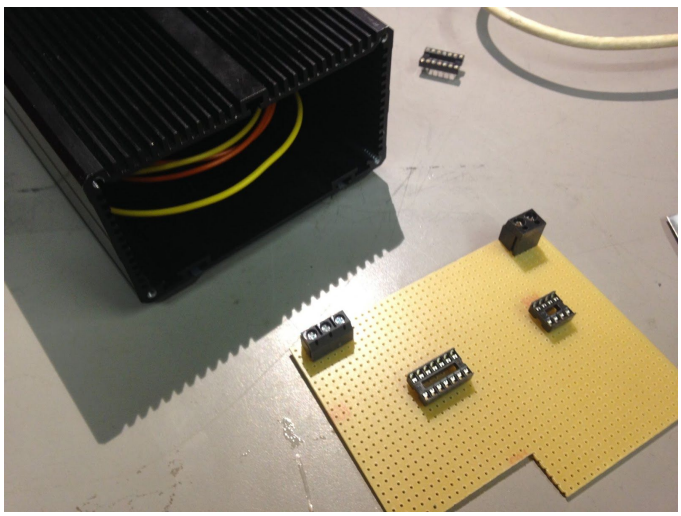
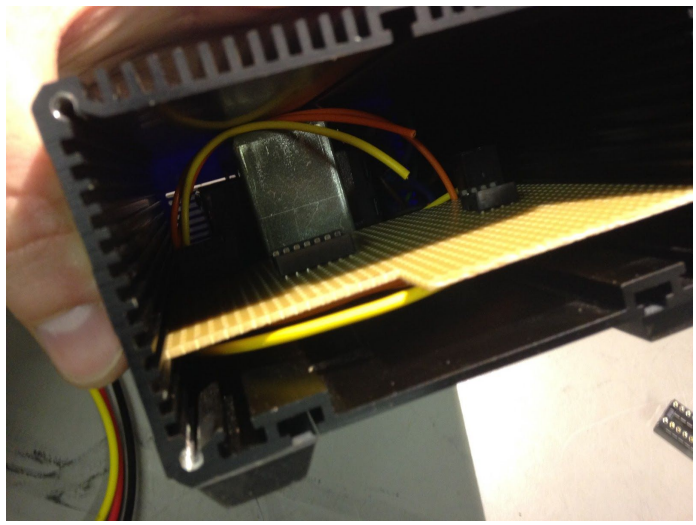



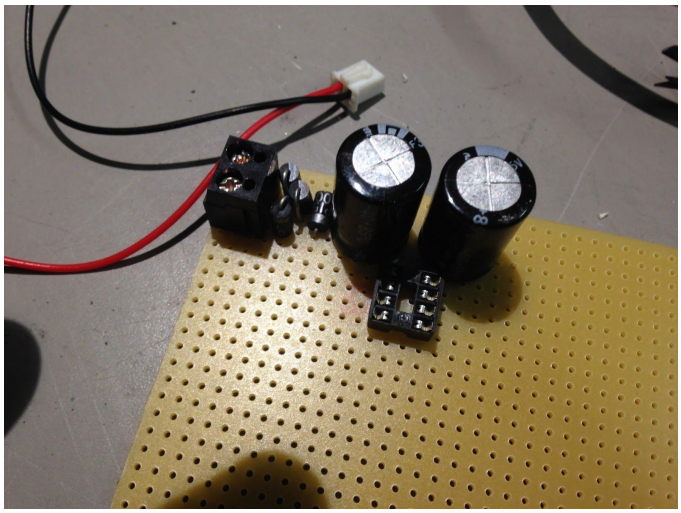
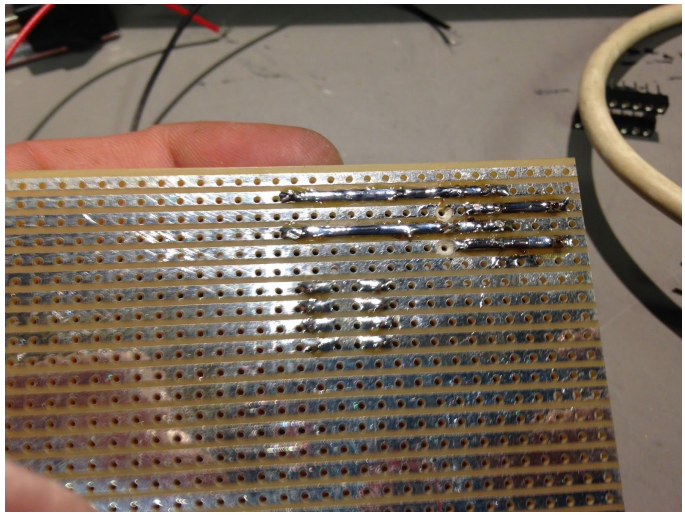
Drilled holes in bottom of case and soldered wires to transformer, fuse holder and IEC inlet, then mounted Transformer into case. Next I cut some strip board to size and cut out a corner to accommodate the connections to the binding posts.

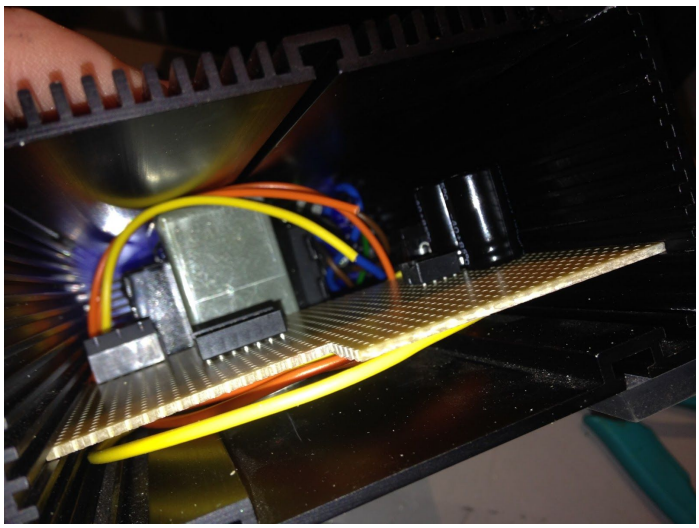
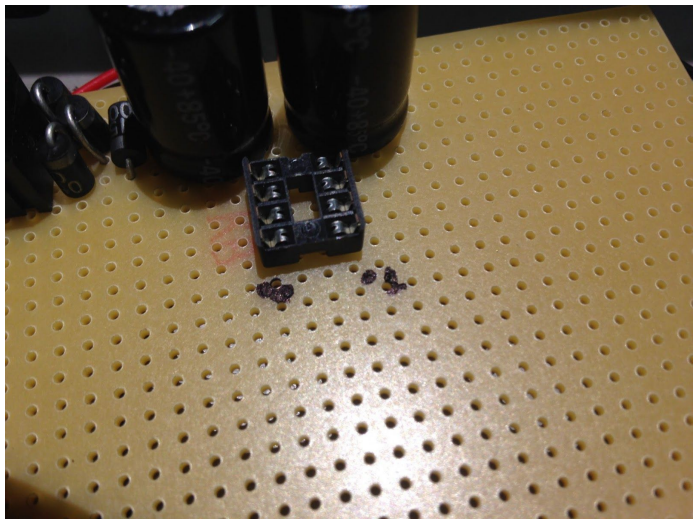
Test fitting the PCB for clearanceof teh binding posts and fitment in the case.

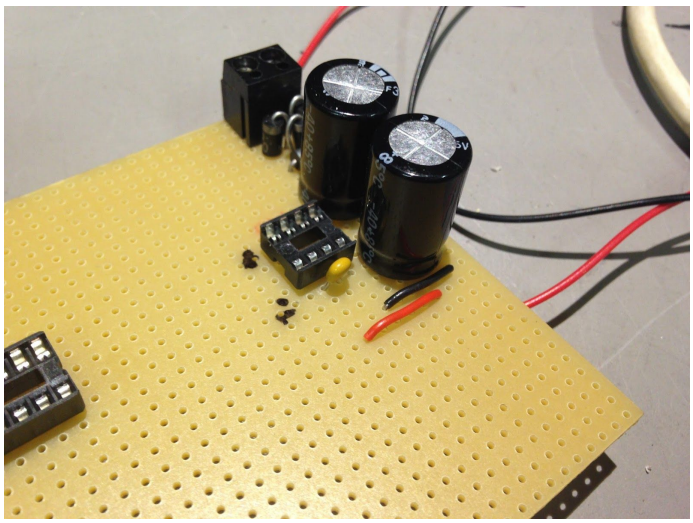
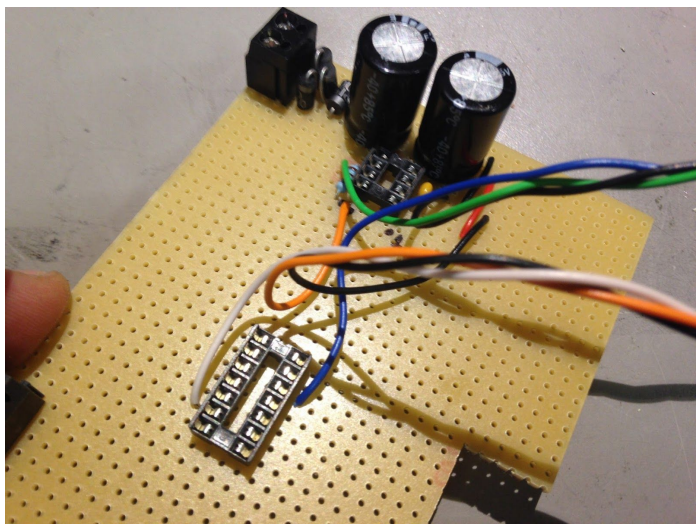
Started mounting connectors and tests fitting before soldering them to the board.

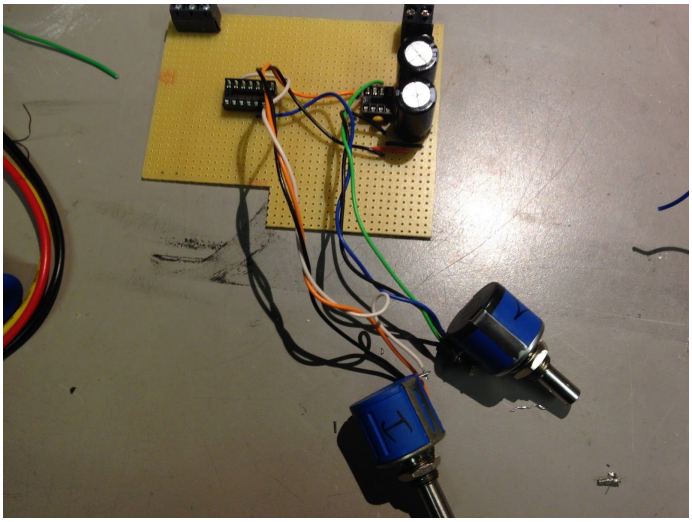
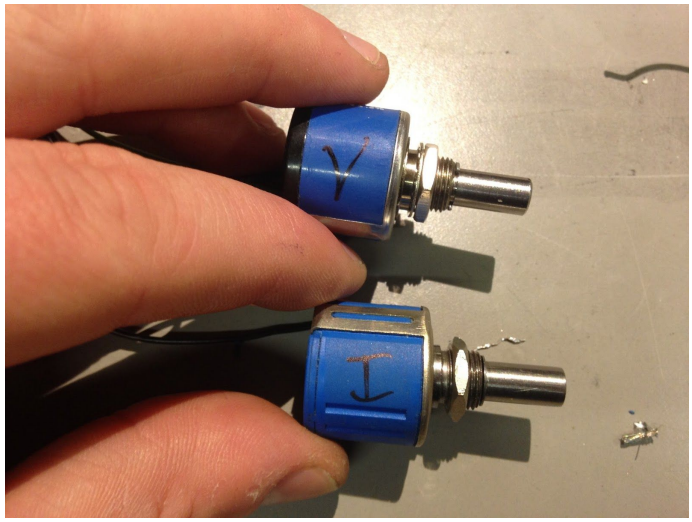
Began soldering parts to board - starting with the input rectifier circuit

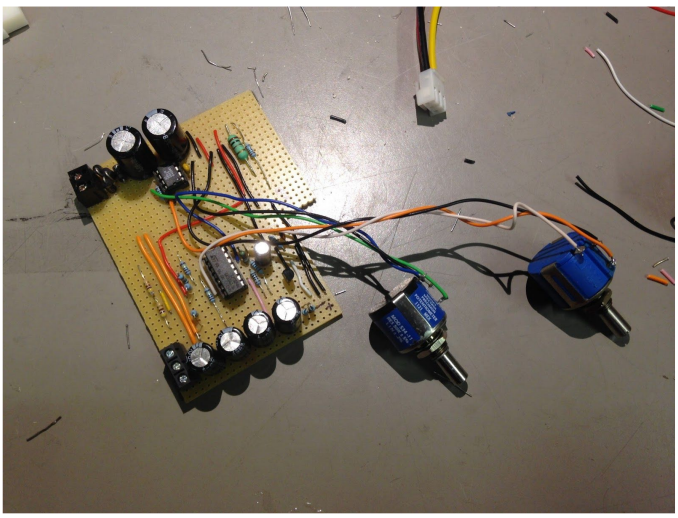
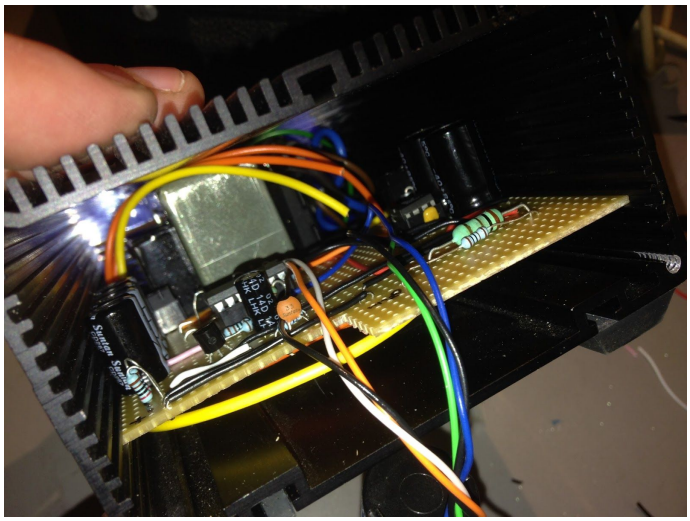
Test fitted to check clearance for components from side of board to case. Also mounted 8-pin socket wrong so marked pin 1.

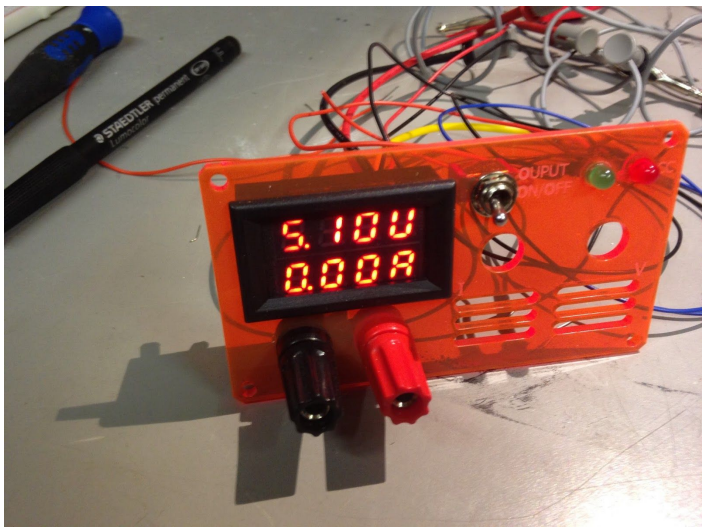
Soldering power to U1 socket and voltage and current pots, VR1 & VR2

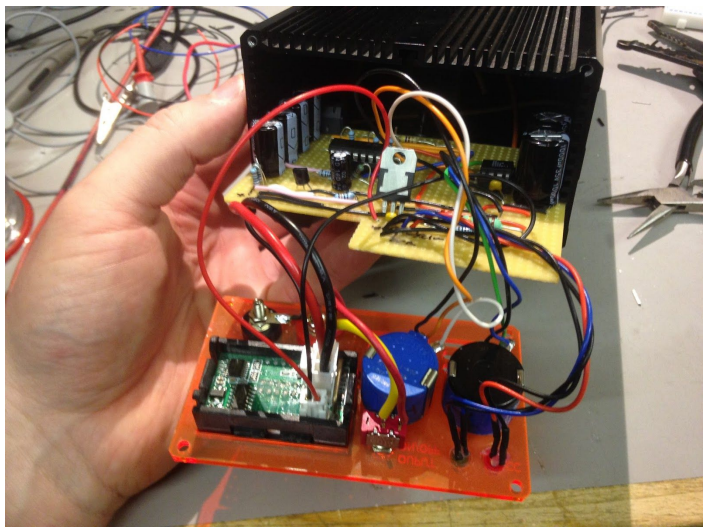



Voltage Pot is VR1 (10 turn 50k) which was all i had that was 10 turn, and VR2 is current pot(5 turn 5K)

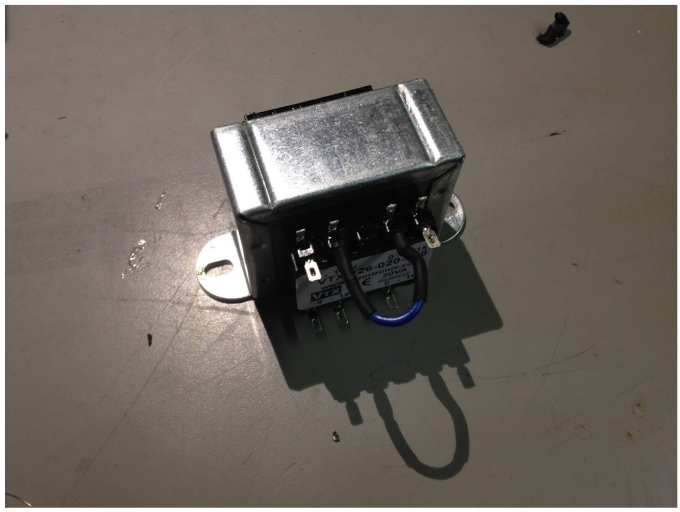



Continued to solder parts into board one by one out of breadboard prototype. Continuously test fitting in the case to make sure nothing fouled the sides or any live tracks touched the case.

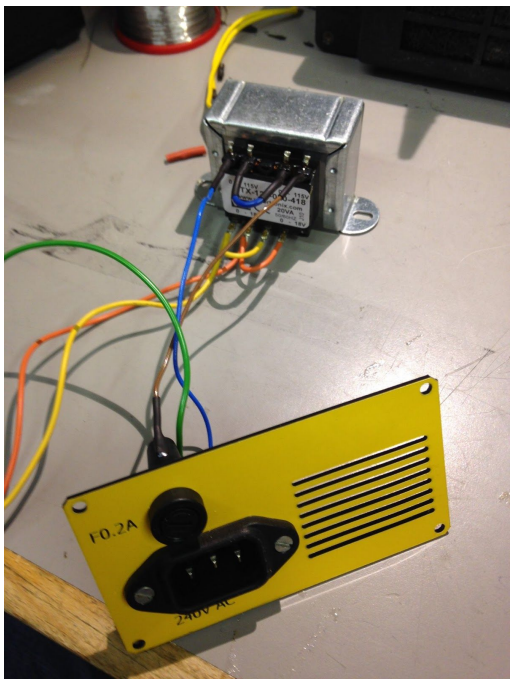


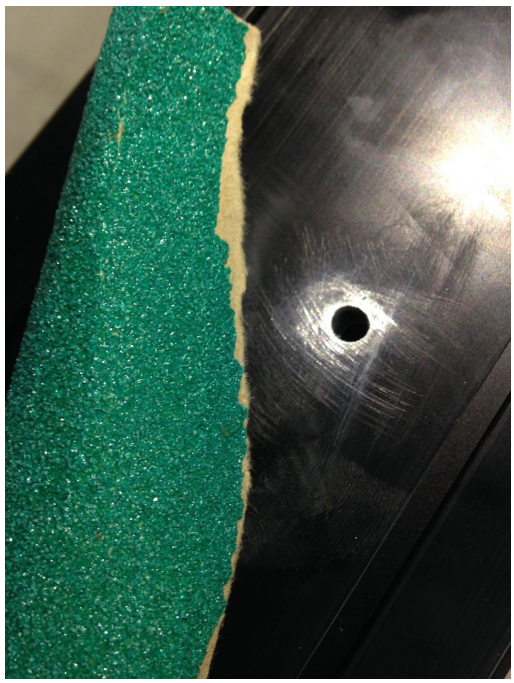


Mounted parts to the front panel and soldered them to connections on the board.LED's held in place with superglue. Gave a quick power test at this point: display died when tried to load output and transformer let out a puff of blue smoke! Tried removing display from front panel, panel cracked in process of removal. Good excuse to re-do front and back panel in a more fancy material!

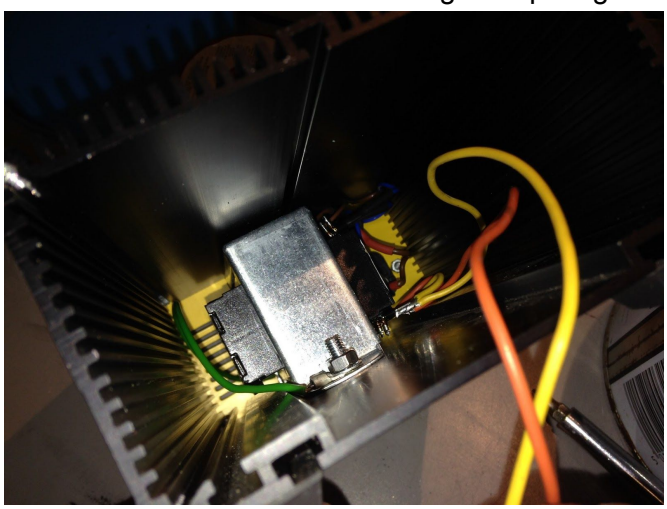


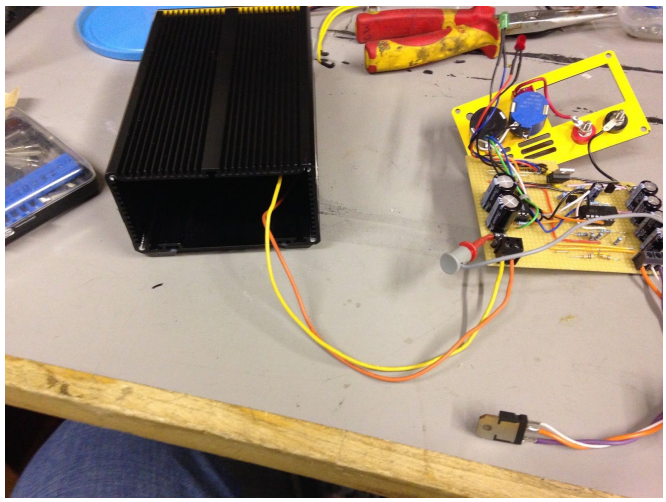
Front panel done in 2 tone engraving plastic and bolted fittings attached. New display ordered. New Transformer Purchased and wired up as required.



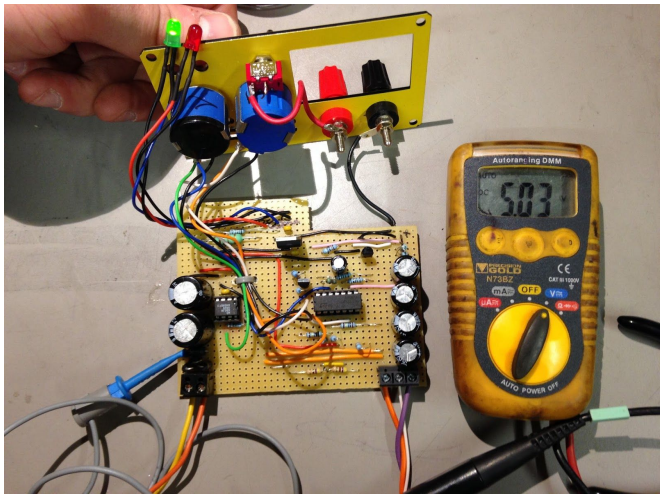


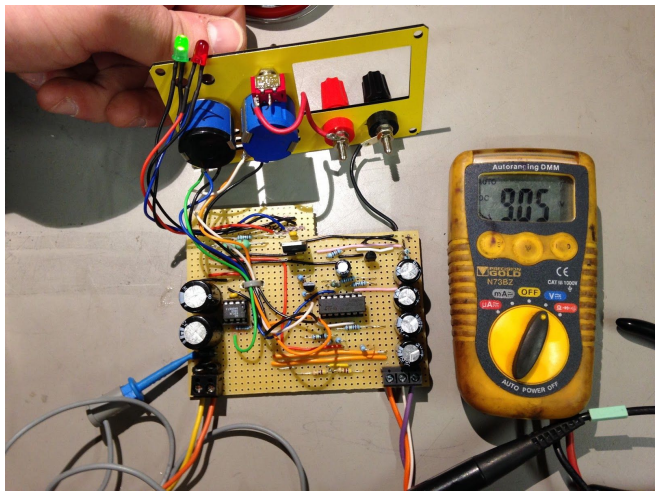
Rear panel fittings attached and wired to transformer, heat shrink where applicable. Mounting hole for transformer roughed up so good earth bond to case can be made.

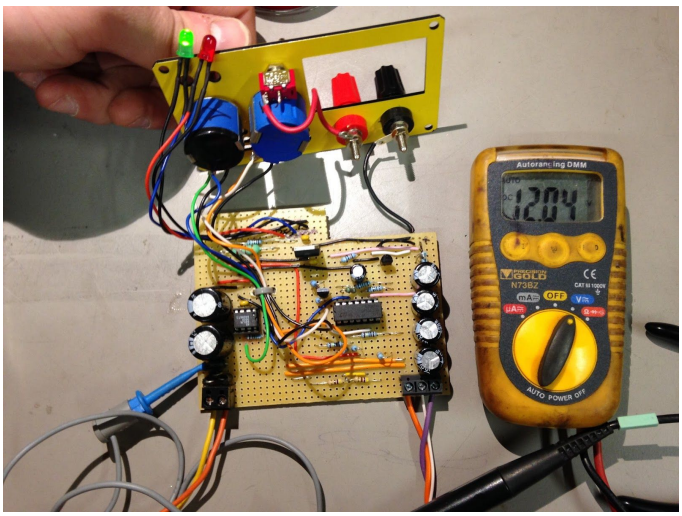


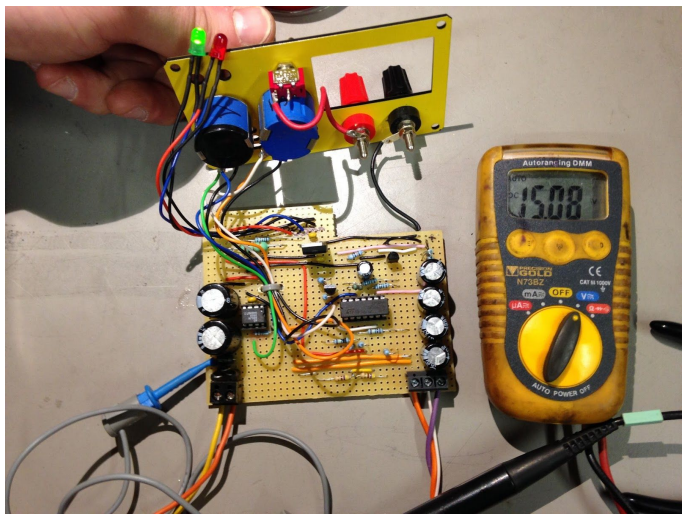


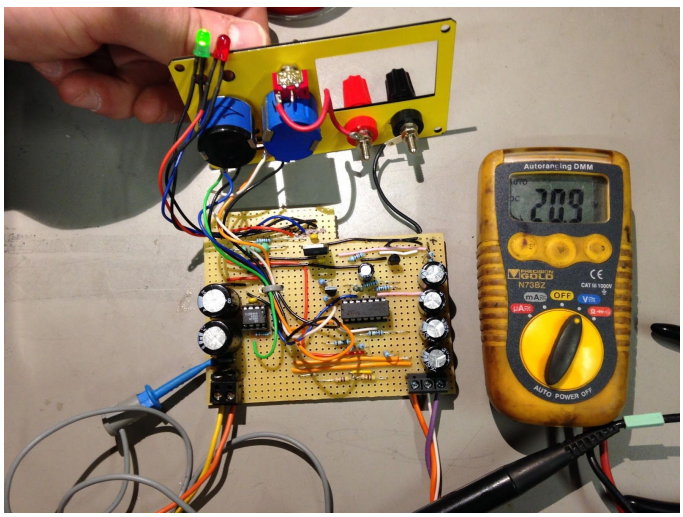
Earth attached to bolt holding transformer in place with a star washer. With limited access to mains on transformer, risk or electrocution reduced, so some basic testing could go ahead.

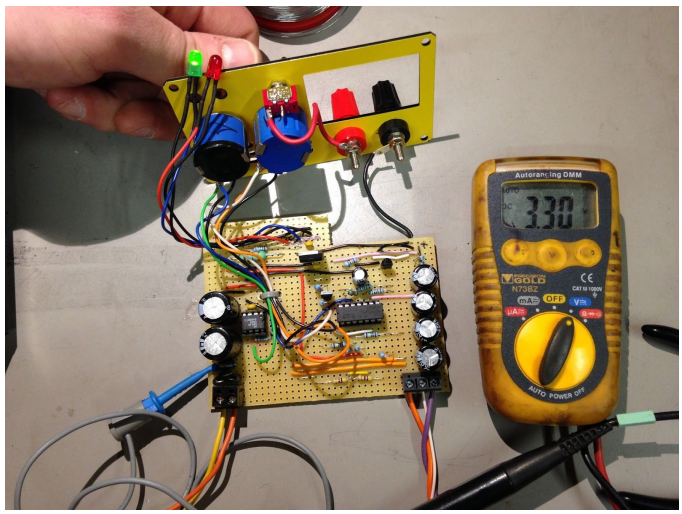




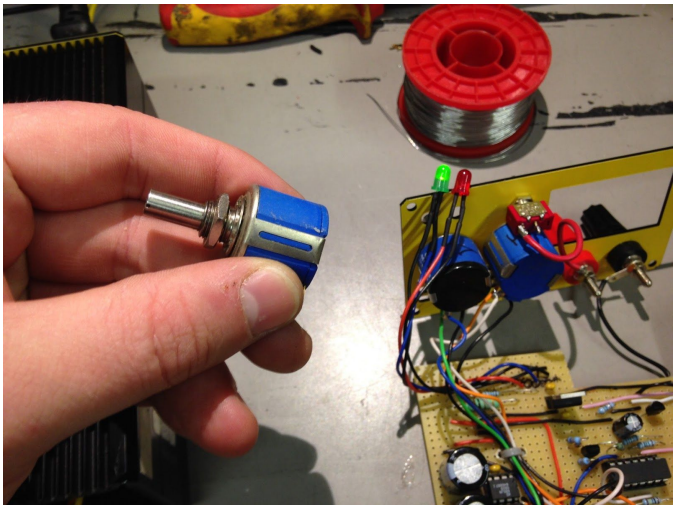
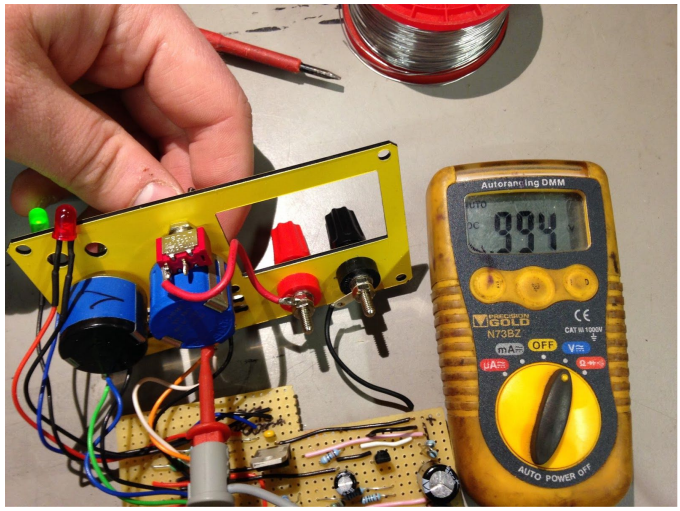


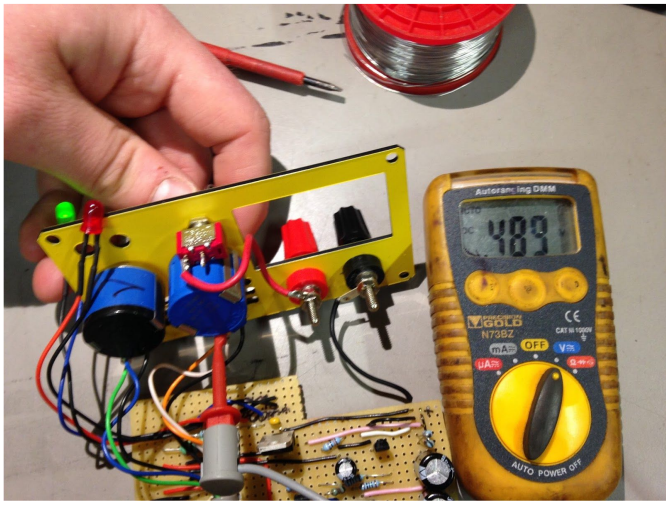
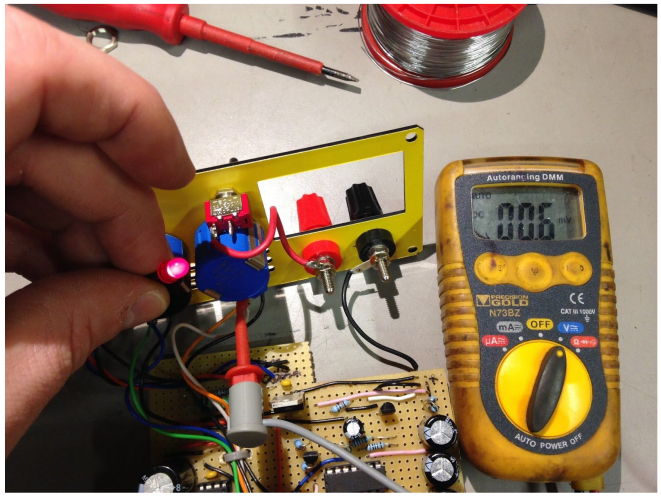






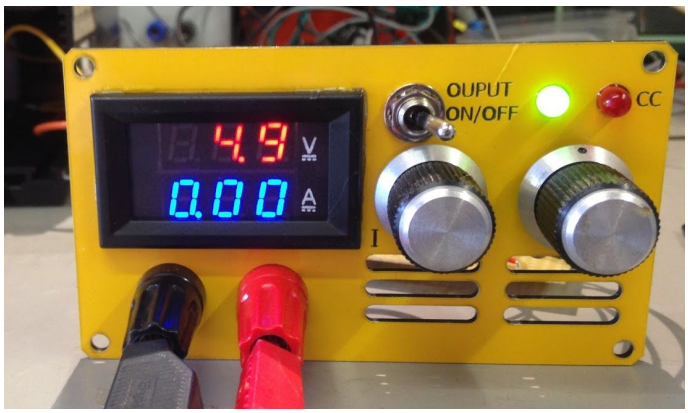
Above:Voltage pot increased and output monitored and set to some common voltage values, then back down to 3.3V and all the way to 0V

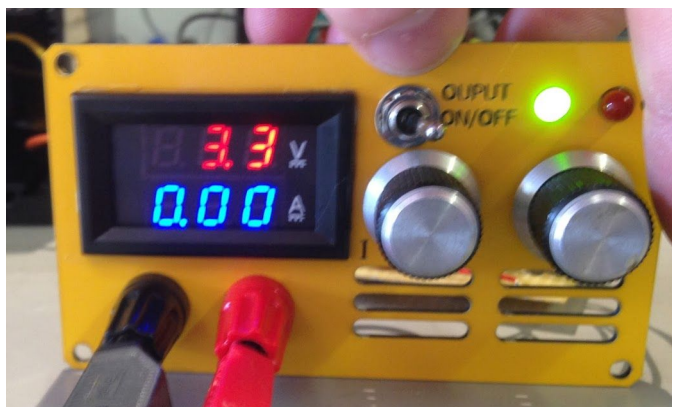



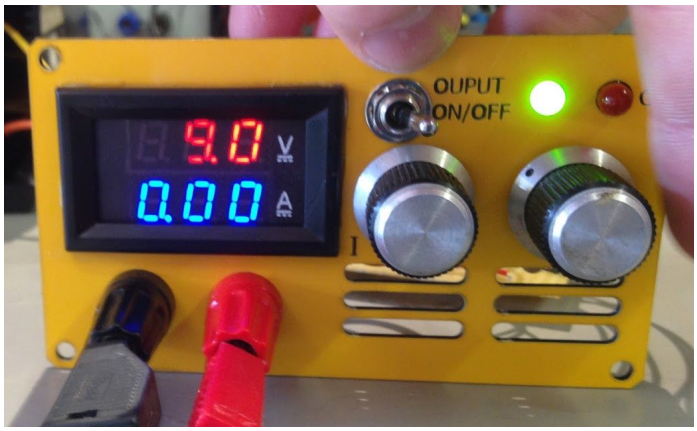



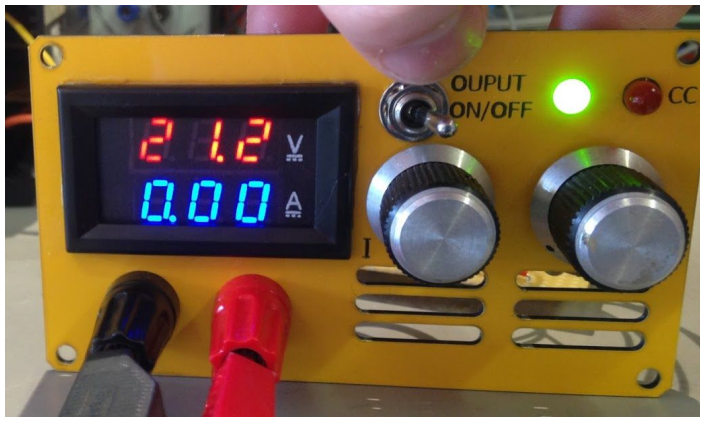
Whilst testing CC limit adjustment, current POT was found to be faulty. It was replaced by an identical pot of better condition. Voltage on wiper of pot was monitored and went from 0V to 1V as designed. At 0V on VR2 pot wiper, CC LED came on as expected

Panel arrived and was fitted. Hole in panel was too wide by only a 1mm but was still enough for it not to fit securely. Araldite was used to hold the display and LED’s in place.

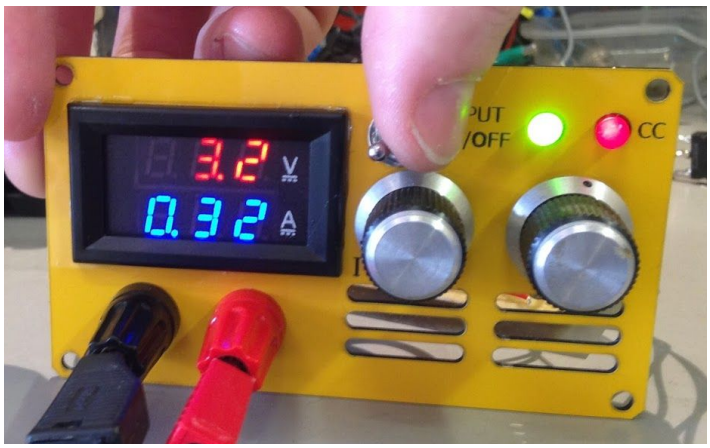


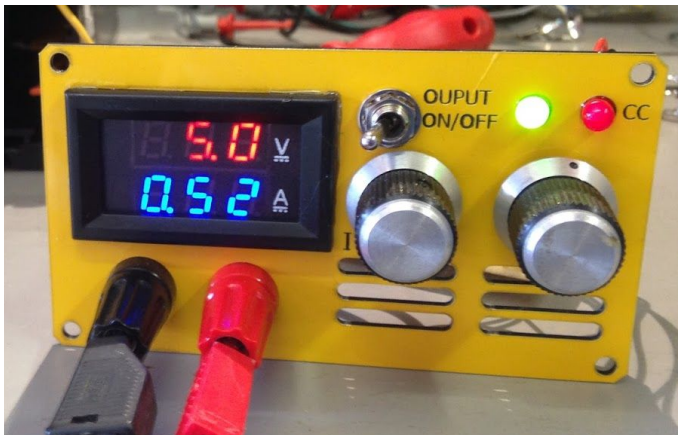




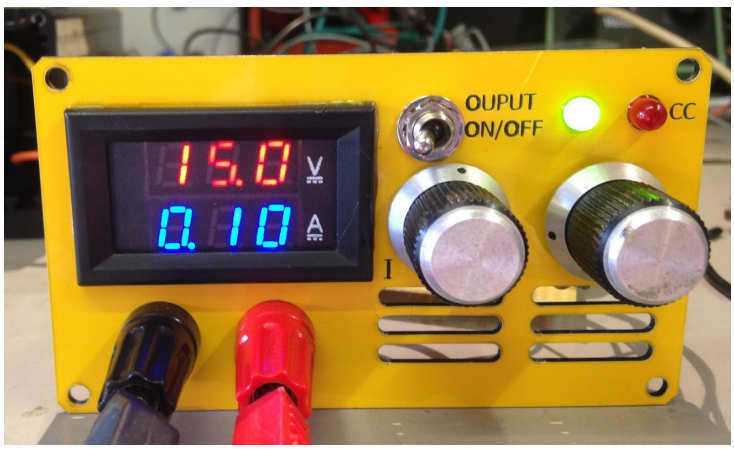


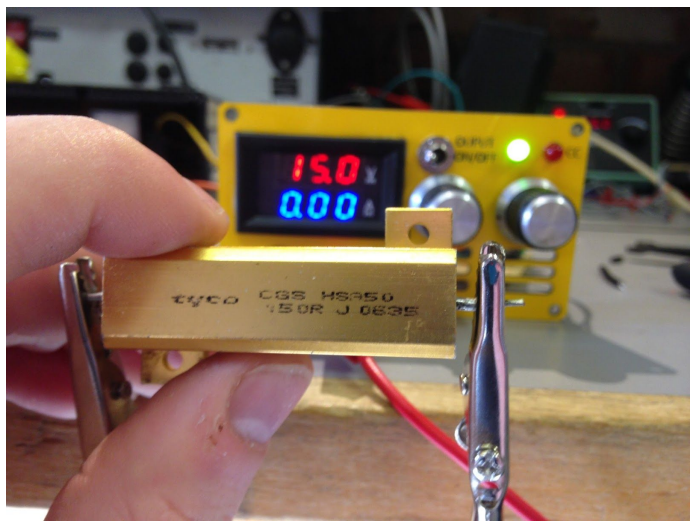
Display was tested to check voltage on output with output off.



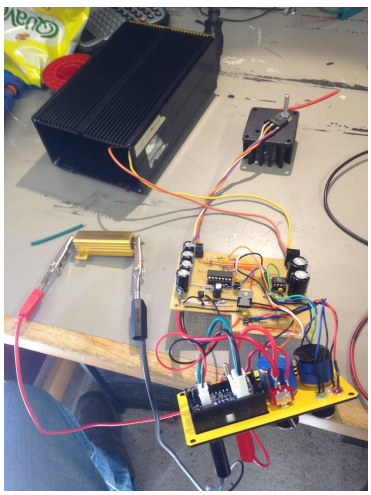
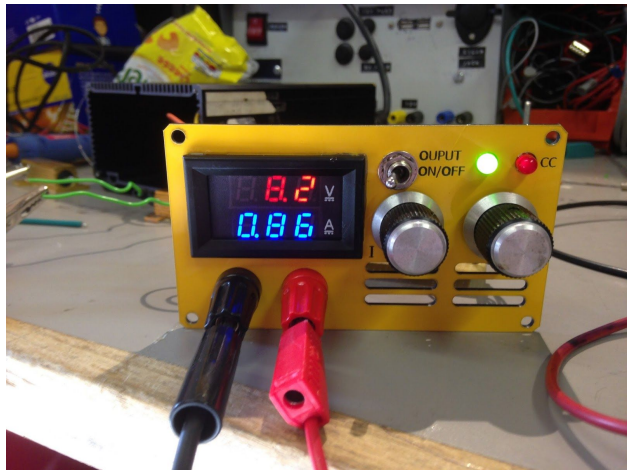


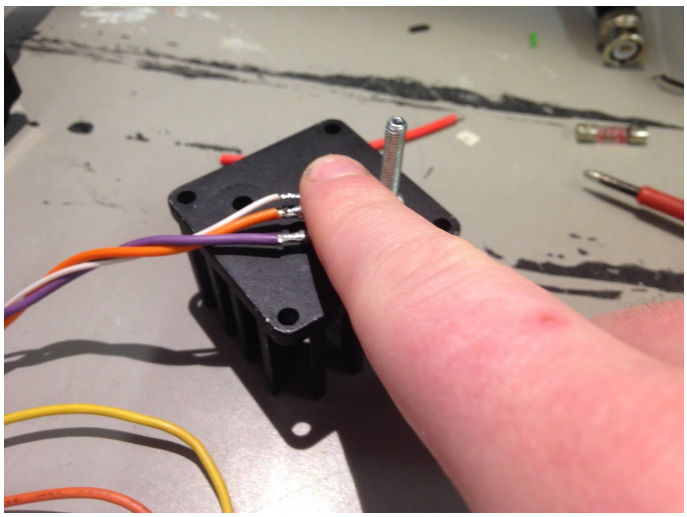
Output was loaded with a 10R resistor and Current pot wound all the way up. Then set to a voltage and current noted, current pot wound down till CC LED came on.

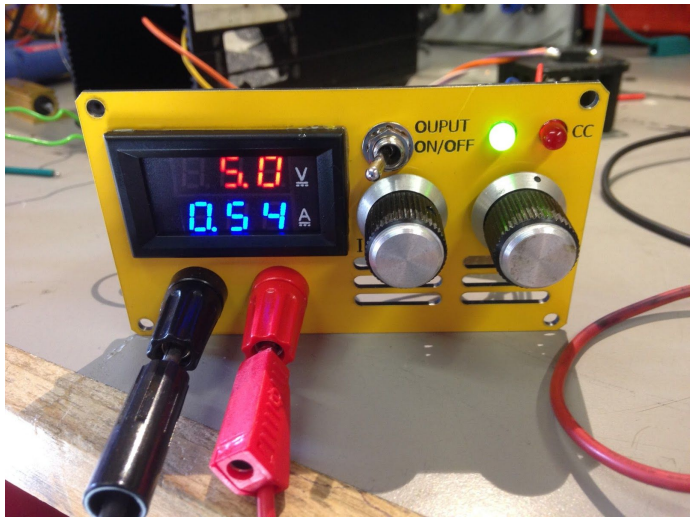




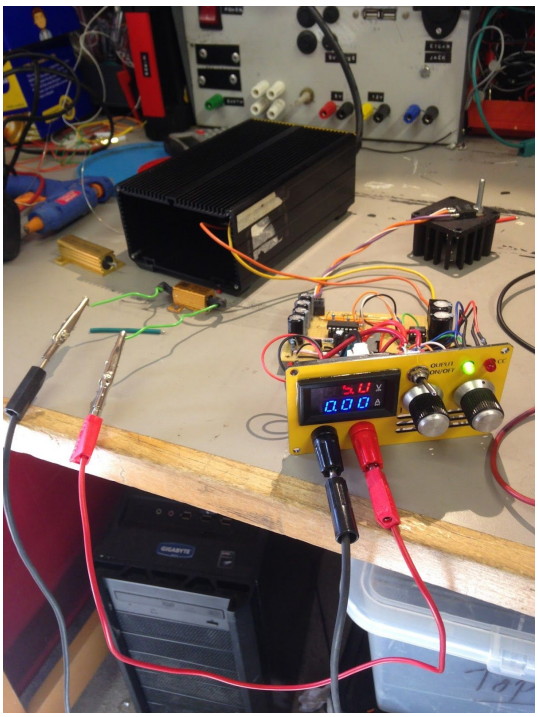
Load test at higher voltage with 150R load.

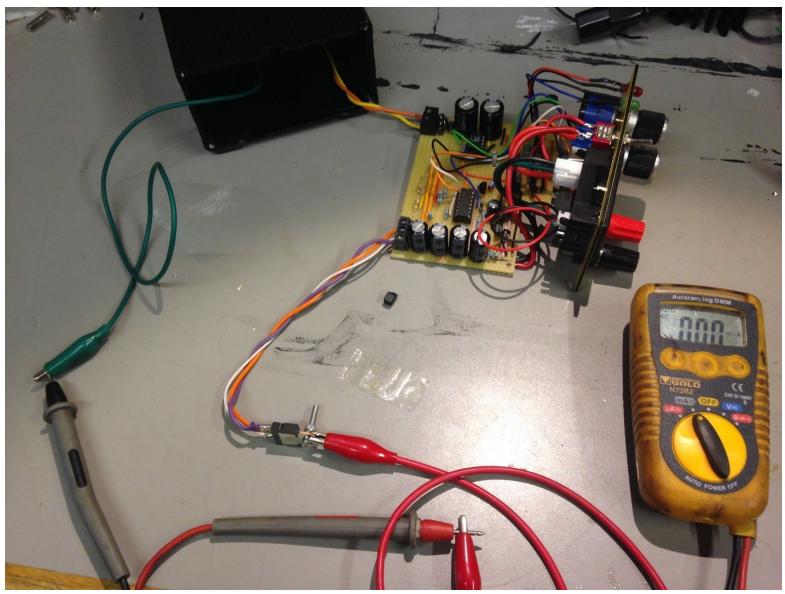





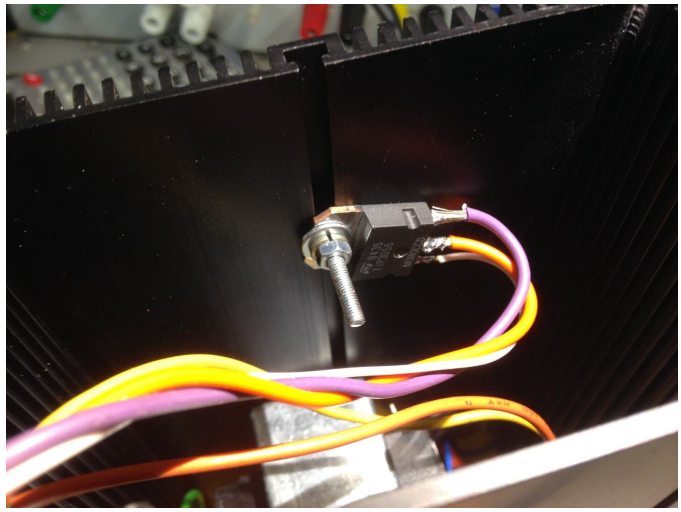


I clamped the transistor to a spare heatsink (without thermal paste) and tested with higher load on the output to see how hot it got. Under nearly full load the transistor got hot, but not so hot it was unbearable to touch which means it was probably under 60C (literally the wet finger test)

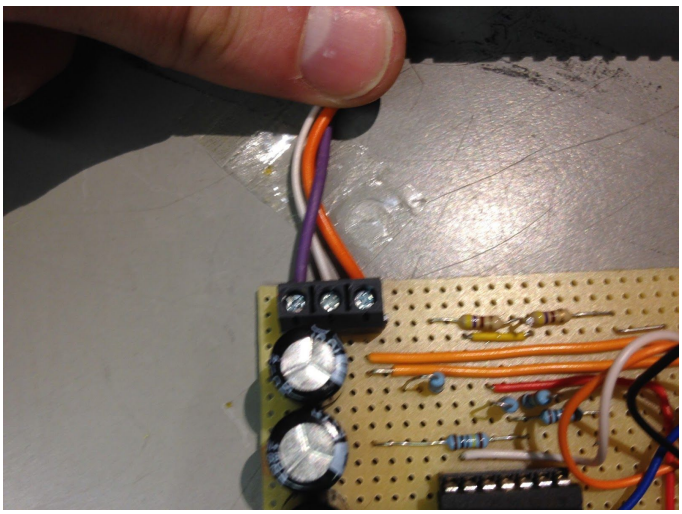
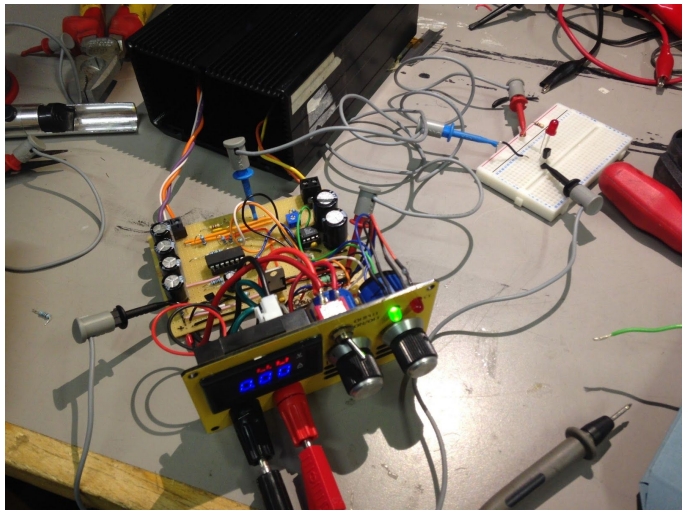




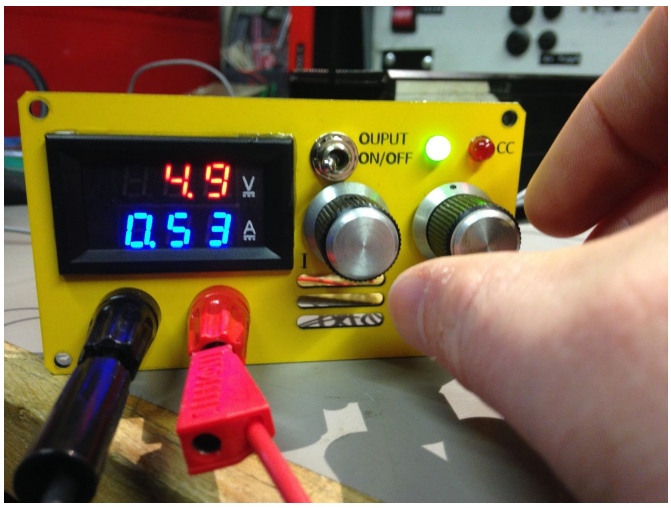
Before bolting the transistor to the case, I had my concerns about attaching a part of the thransistor with voltage on it to an earthed case, so measured the current through the transistor to the bolt with the earth bond on it in both AC and DC. I got a reading of 0.6uA

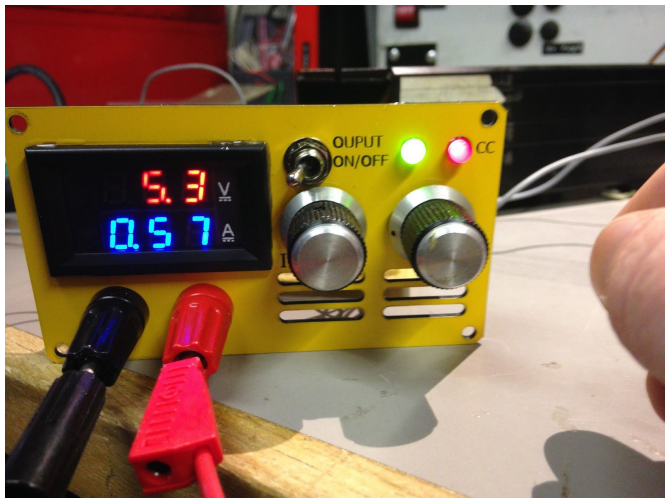



Applied a small amount of thermal paste to transistor and bolted it to slot in case roof with modified M3 bolt (sides of bolt head we're squared off)

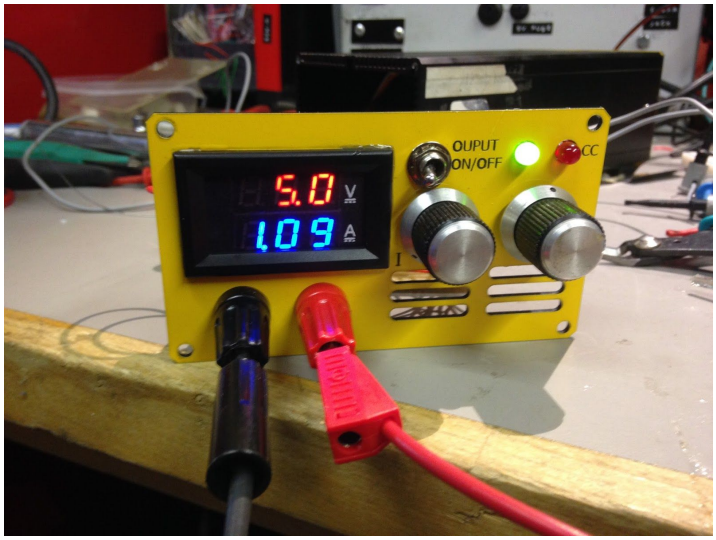



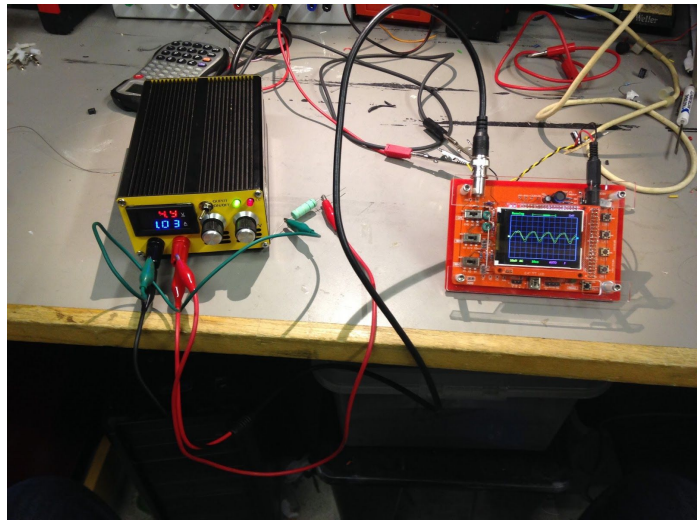
Madea note of how transistor was wired to board. CC LED didn't come on a fast or as bright as I would have liked, so used another transistor to turn on the CC LED from the output of the Current limiting amplifier.



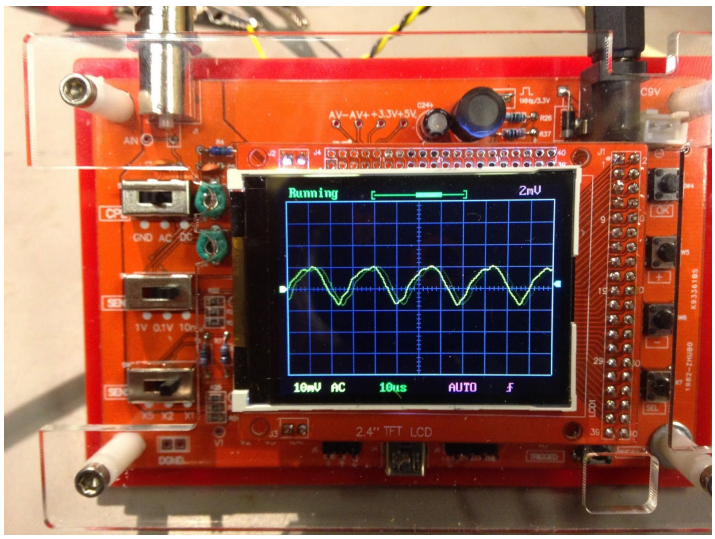


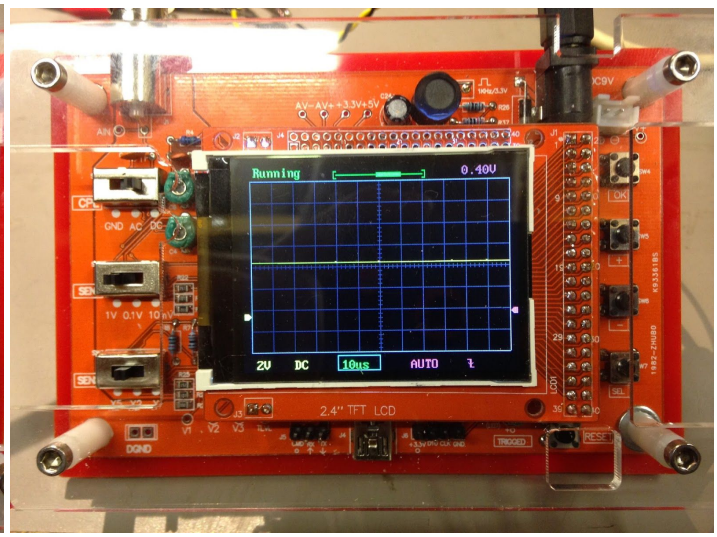
CC limit LED now comes on quicker rather than increasing in brightness



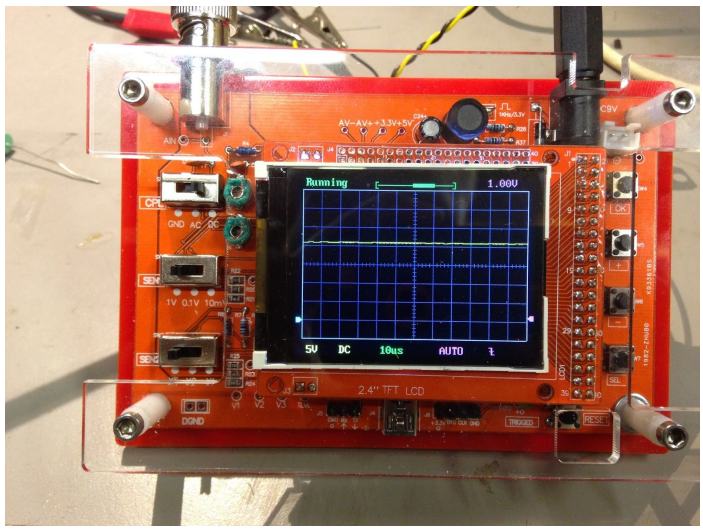


I replaced R13 with a 1k resistor and 10k trim pot to adjust the maximum output current before current limit kicked in. I then did some more load testing: I wanted to see the stability of the output under full load with CC mode engaged. With the cheapo DSO138 in AC coupling and lowest volts/div selected and a 5R load connected to output with a voltage of 5V, I could see that there was about 20mVpkpk ripple on with a period of about 28us at the output.

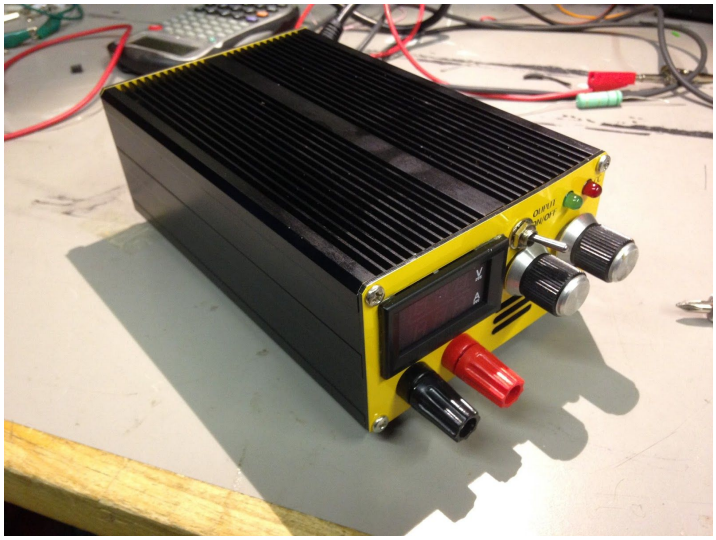




However this was not visible in DC coupling at 2V/div (now measuring 5V). I think it's something I could live with for what I'm doing (powering simple devices where noise on power is not critical to performance)

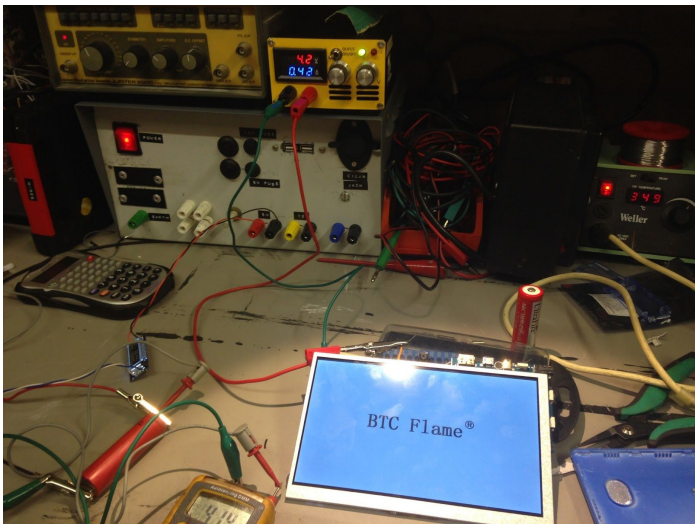


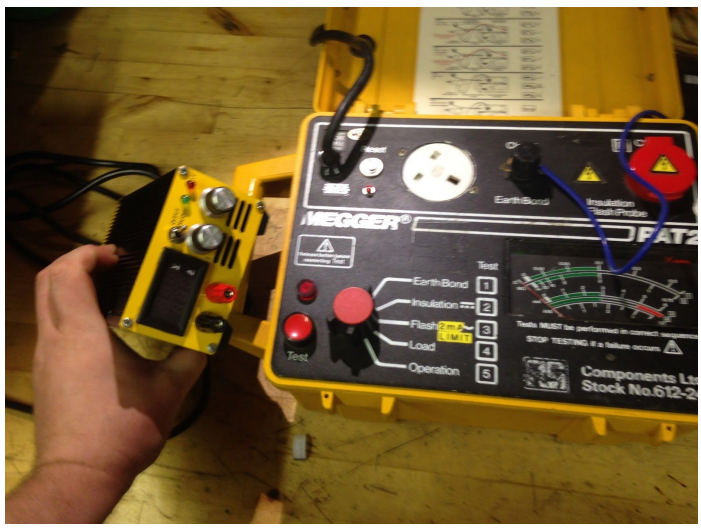
Measuring maximum output on scope



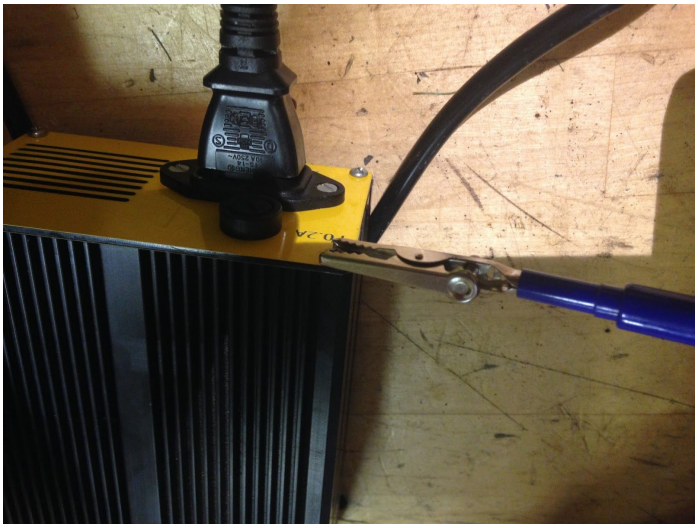
The finished product!

Looks Good!





Being Used in anger! Seems to power this dismantled Tablet just fine. Gave it a PAT inspection too.



Earth bond test position 1 and the result

Earth Bond test position 2 and the result

Insulation test result and Earth bond test position 2. All good! All Safe!