Commodore 64 Power Supplies – By Steve Smit (version 3 of this document)

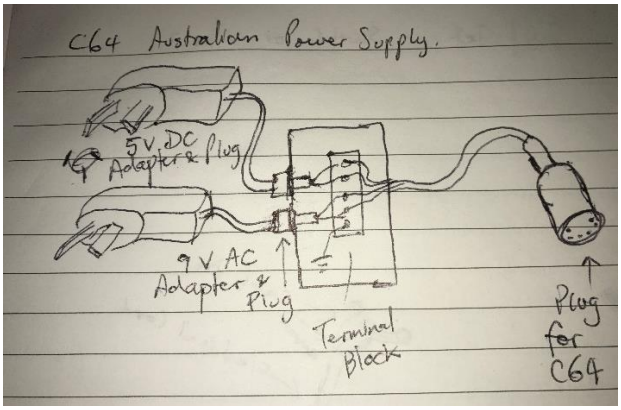
The Commodore 64 needs 2 voltages, 5V DC and 9V AC. The original power supplies are now around 35 years old and are prone to issues due to their age. The main problem is the 5V DC can rise dramatically causing damage to the Commodore 64. While the 9V AC is less prone to having this issue, I decided to look at a new source of power using modern components.

This document has 2 versions of a replacement for a Commodore 64 power supply:

1. For those less ambitious with wiring and soldering, and
2. A re-brick project that requires more confidence with wiring and soldering
   This is shown for 2 styles of 'bricks', the 'foot warmer' and a more classic bos

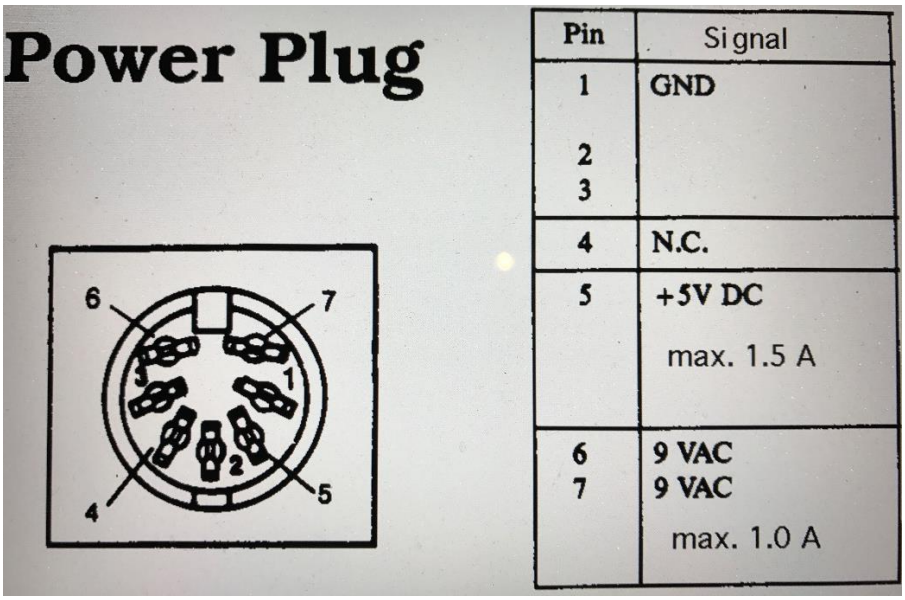
Version 1 – 2 Power Packs through a small terminal block in a junction box

As I live in Australia where we use 240V AC as our power, I bought 2 power packs that convert the 240V AC to the voltages needed by the Commodore 64 (if you live in a country that uses a different voltage, equivalents of these power packs should be readily available from suitable outlets in your country). Here is a drawing of what this version will roughly look like:



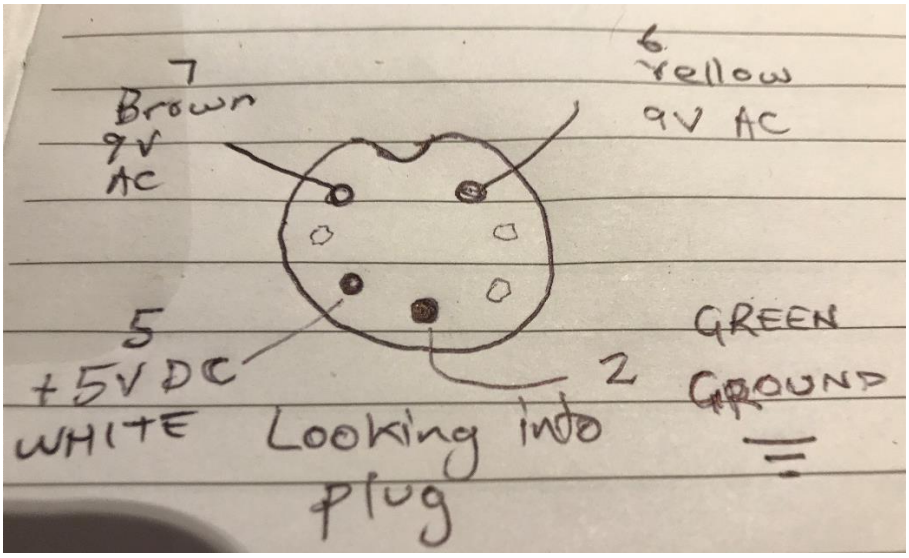
I bought these from JayCar Electronics:

9V AC power pack up to 1A 5V DC power pack up to 3A



This is a pin-out for the power plug as seen from the Commodore 64 (i.e. when the cover is taken off the DIN plug, these are as seen looking in from the back of the plug). These 7 PIN male DIN plugs are also available at JayCar Electronics (or online via https://www.retroleum.co.uk/c64-connectors or eBay https://www.ebay.com/itm/7-pin-din-audio-plug-jack-connector-adapter-w-black-plastic-handle-male-7-way/291396773227?hash=item43d899e56b). In my case, I simply removed the cable from an old power supply.

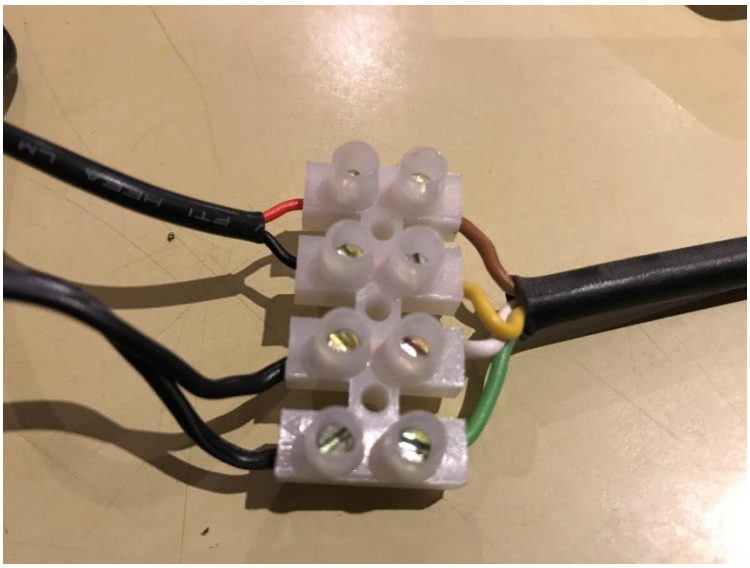
If using a cable from an old power supply I found that the wires were colour coded (Note: I would not trust that this is always the case, so please use a multi-meter to test the pins to wires if unsure)



Pins are looking into the front of the plug (i.e. mirror of the back of the plug or looking at the C64).

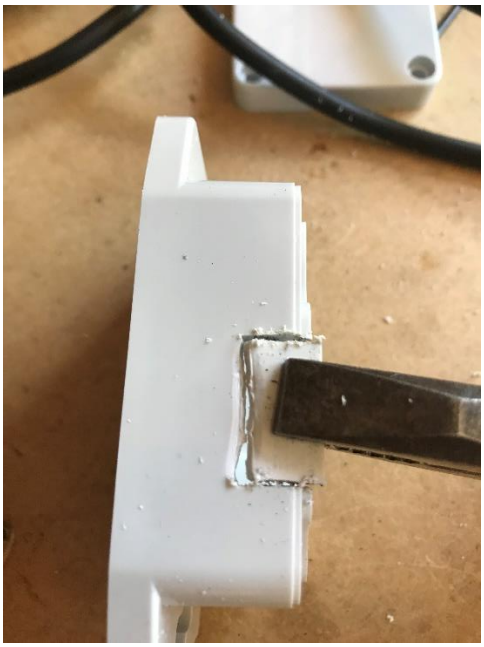
Here I am testing the white wire to confirm it does indeed go to pin 5 using a multi-meter.

The same care needs to be taken when cutting off the plugs that were on the power plugs (BIG NOTE: PLEASE MAKE SURE THESE ARE NOT PLUGGED INTO THE MAINS WHEN CUTTING OFF THE PLUGS)

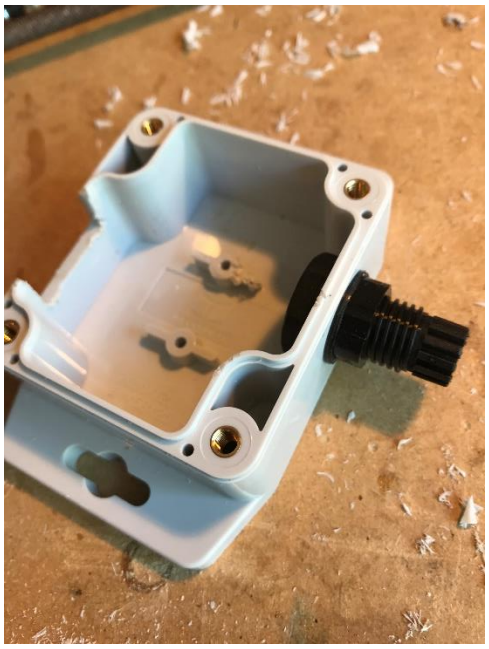


These terminal blocks are also available at JayCar or any similar outlet (or online). The top pair of wires is the 9V AC wires, and the bottom pair is the 5V DC. The top wires can be done either way around (AC voltage has no polarity to worry about), but you do have to make sure the DC is wired the right way around.

Now to tidy up the whole thing, let's put the terminal block into a suitable junction box. In my case this was also from JayCar, but again you can get these from any electronics store or even your local hardware store (in the electrical section).

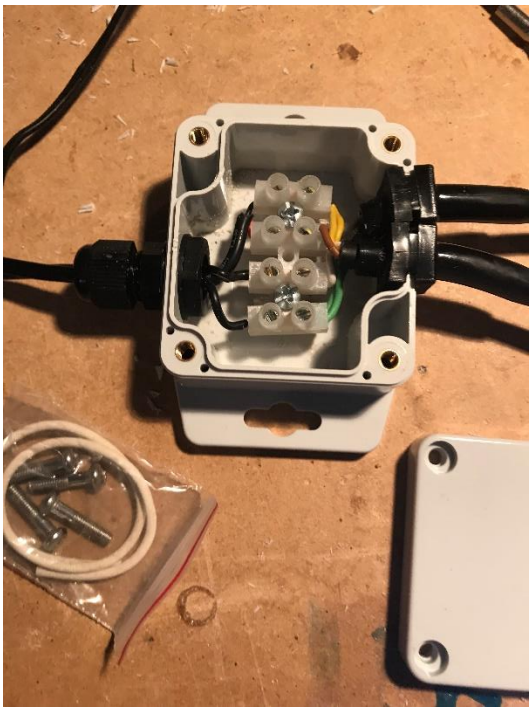


After taking the lid off the junction box, I cut (using a side cutter) slots down one side to create where the power cable (to the C64) will exit the box. Here I am snapping off the section between the two cuts I made.



On the opposite side I drilled a hole large enough to mount a cable gland (again from JayCar), to hold the 2 cables that come from the 2 power packs.

Now to mount the terminal block inside.



You may notice that I wired 2 Commodore 64 power cables on the right side of the terminal block, just so I could either power 2 C64s, or to show the power via a power monitor as you will see in the next picture. The 1501 Power Monitor is available online (eBay) from a fellow Australian maker.

The next project uses the same 2 power packs.

Version 2 – 3 Power Packs broken into and fitted in a hollowed out C64 power brick

Please refer to the previous project for 2 of the power packs used in this project.

For this project I decided to take an old Commodore 64 power supply and 're-brick' it by first emptying it of the current contents (as these are old and the 5V DC can often fail, going high and potentially damaging your Commodore 64), and filling the inside with new modern components as taken from standard power packs.

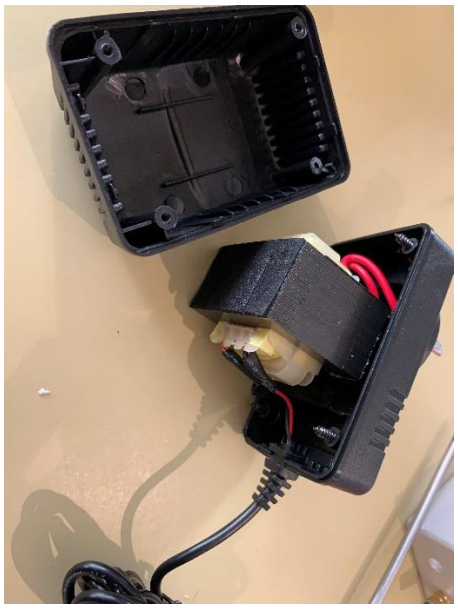
With firm, but careful effort, I was able to use a flat screw driver to prize off the bottom of the old brick.

After cutting away the old wires, I found that with some flexing of the sides and hitting the unit, right side up, down onto my workbench, that the inside started to slide out. Here I am using a pair of plyers to pull the old power supply out leaving an empty shell. Apparently, the old transformers are very reliable and could be re-used, but I couldn't be bothered trying to

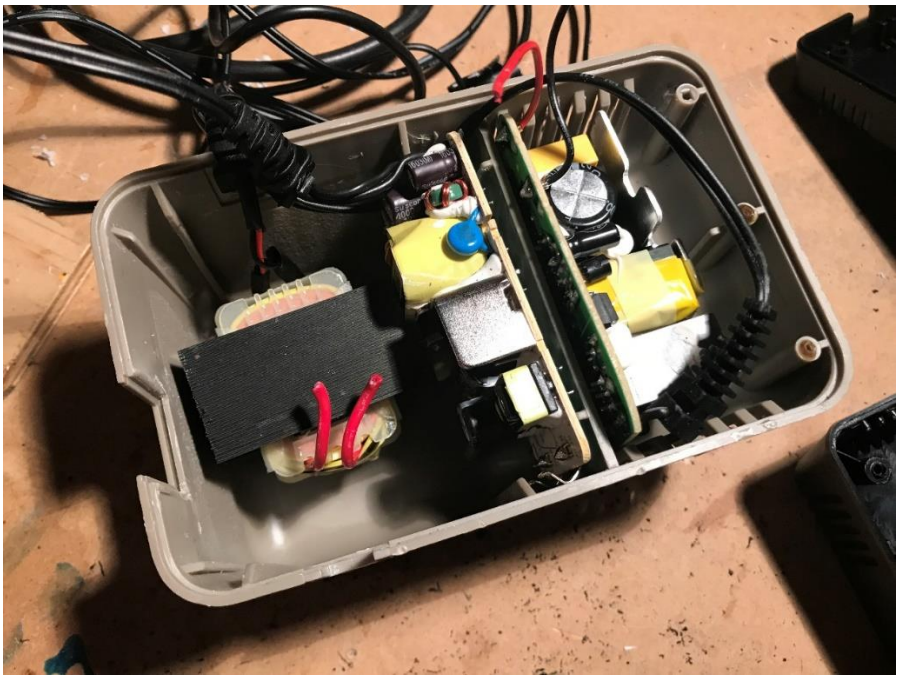
Wow, there is more room in the old brick than I though. This gave me an idea. What if I could fit the contents of 3 power packs into this one brick. I obviously needed the 9V AC and 5V DC, but I found an old router power supply that delivered 12V DC. I've always wanted to see if I could have a small 12V

monitor to use with some of my Commodore 64's, so I decided to see if I could fit all 3 power supplies into the old brick. The Netgear router power adapter delivers up to 2.5A, so plenty for power here!

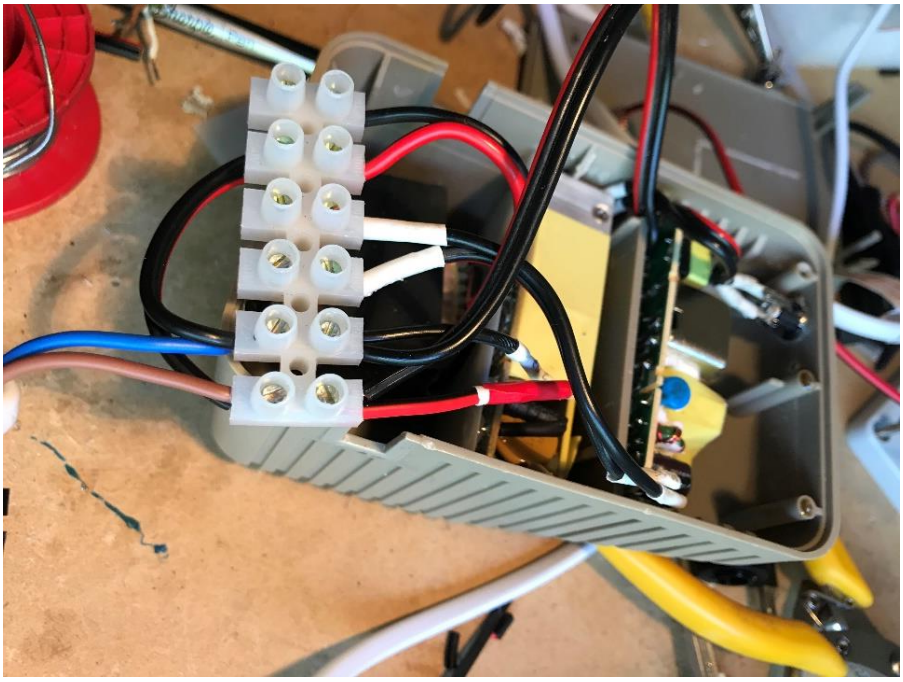
Here is the Netgear power pack that was able to break open (a couple of screws and a bit of firm but careful prizing with a flat blade screwdriver) and get out the 12V DC power supply from within.



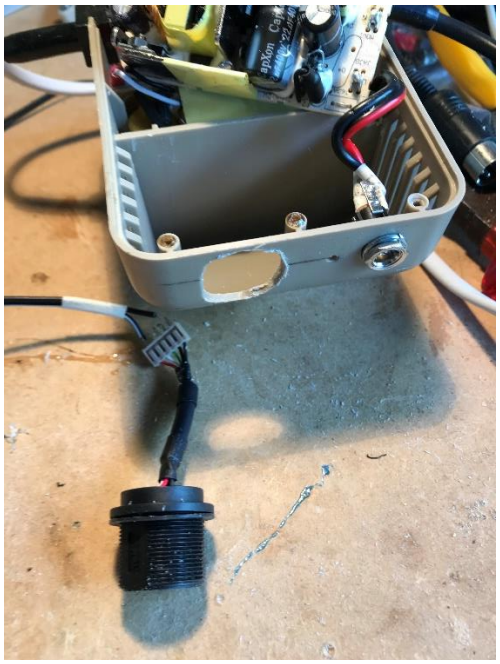
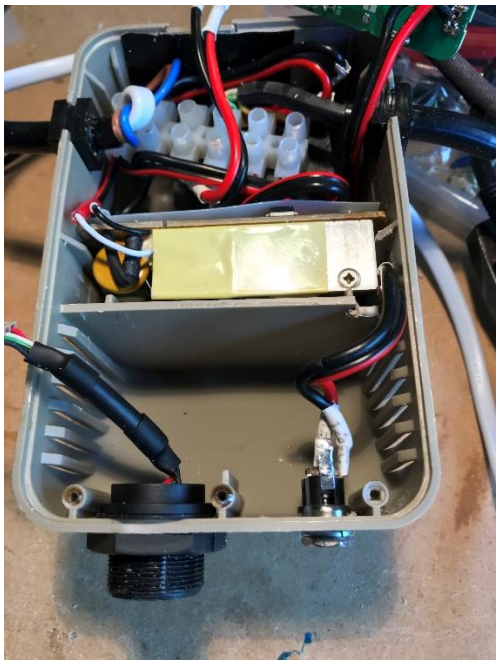
I did the same with the 5V DC power supply and the 9V AC power pack (the 9V AC was the easiest as it just had 4 screws to remove and it opened).



Next, I placed each of the 3 power supplies into the empty brick. The transformer that delivers 9V AC is shown here on the far-left hand side at the bottom (which becomes the top when the brick is turned back over to be the right way up), the middle one is the 12V DC power supply, and one on the right is the 5V DC power supply.



I then soldered new wires as needed to the 3 power supplies and terminated them onto a 6 wide terminal block. This allowed me to have the 240V AC mains power come in (shown on the bottom 2 terminals being the blue and brown wires), then the 5V DC and 9V AC. I wired the 12V directly to a suitable female cabinet mount connector (as shown on the right hand side of the brick case).

I then mounted a Female USB connector that I also wired to the 5V at the terminal block (I decided this would be useful for things like recharging my phone or to power something that needed 5V, like a speaker, as you will see later).


Lastly I added another 5V connector (not sure if the use of a female RCA connector was the wisest choice for this, but it's what I had available). This I intend to use to power something like an SD2IEC device so that I don't have to have something plugged into the cassette or user ports for this. This could be used when the cassette port is already in use, or for an SX64 which doesn't have a cassette port.

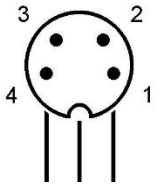
A quick check to ensure the voltages are right on the pins of the Commodore 64 power cable.

I then decided it would be good to have an LED to indicate that the power supply was plugged into power or not.

From Jaycar (and I'm sure these are available from other electronic suppliers) I obtained a Chrome Bezel with 3mm Red LED, and added a 330 ohm resistor to one of the legs. I then soldered 2 wires (red on the + side and green on the – side), and simply ran the wires to the 5V pins in the terminal block shown earlier.

I then realized that not only could this power supply power a C64 and a 12v monitor, it could also power any floppy drives that needs 12v and 5v DC. So, I then obtained the connector used on my 1581 drive.

OUTPUT: PIN 1: +5V DC 1A
PIN 2: GROUND
PIN 3: NC
PIN 4: +12V DC 0.5A



These female cabinet mount plugs (so that the existing power cable on the floppy drives and plug into it) aren't as easy to find. I got mine online from an ebay seller (https://www.ebay.com.au/itm/4Pin-4P-DIN-Female-Jack-Socket-Cable-Connector-Adapter-Plug-Panel-Mount-Solder/111620355035).

I also added decided to add a power switch. This fits in the slot where the fuse used to be very nicely.

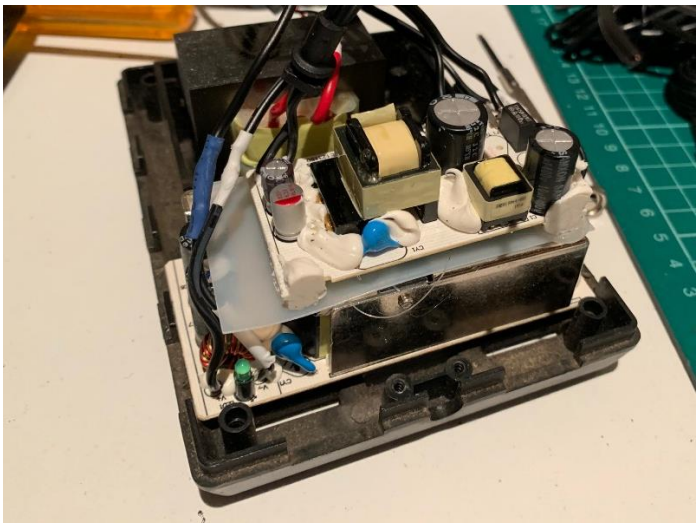
The final project complete, showing how I can indeed power a monitor as well as the C64 and a speaker (hiding behind the monitor), all from one power cord!

Here you can see the back of the power supply showing the power switch and where I have plugged in my 1581 drive.

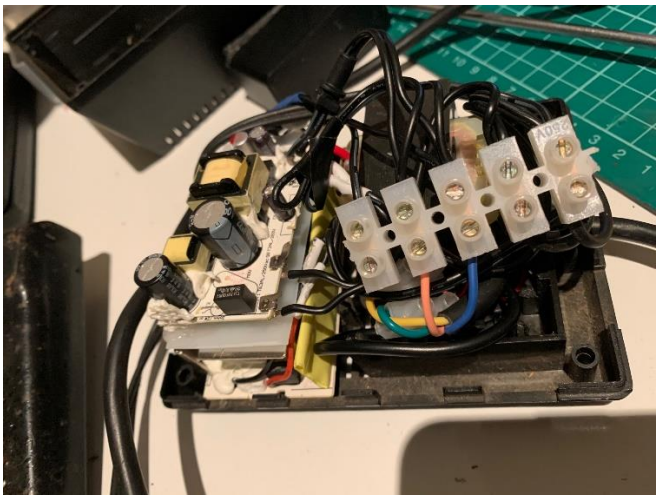
(Note: I was doing some servicing on the 1581 disk drive, and that is why the cover is off the drive. There is no need to remove the drive cover for this project).

The other original power supply I then tried is this classic supply:

These types are much easier to work on, as there are just 4 screws to undo to open the unit and once the old transformer and rectifier are removed above, you can see there is heaps of room to put some supplies rescued from un-used power adapters. Here I've installed the 12v supply from a router I don't use anymore.



Here I decided to just mount the 5v supply (this was another that I also got from a power adapter) right on top of the 12v. I put a layer of plastic (just cut a rectangle out of the side of a milk bottle) as insulation between the 2 supplies.



I then just wired up to the original cable to the C64 from the unit, and added a 12v/5v supply plug to allow devices like a 1581 drive to also be powered from this unit. Here it is all closed up again:

Although the 1541 here is using it's own internal power supply, all the rest of this stack is using the re-bricked supply above: