Introduction

I've been using a 110v to 220v step-up transformer to power my TC01 and have been looking for a solution to upgrade the internal PSU when I came across this article by Simon Inns, where he explains how to upgrade the PSU of a BBC Master with a modern equivalent. The replacement PSU he chose is the Mean Well PT-65A 3 output switched power supply, which gives 5v, 12v & -5v outputs. Researching this PSU, I found that the Mean Well PT-65B from the same series gives 5v, 12v & -12v outputs making it an ideal replacement for the TC01, with the added advantage that it works with 110v and 220v automatically, plus being a modern power supply, it also provides overload protection, over voltage protection and short-circuit protection.

Parts List
1x Mean Well PT-65B power supply. Mouser part number 709-PT65B
7x TE Connectivity female disconnect wire (spade) connectors. Mouser part number 571-25202642
6x Molex 5194 crimp contact. Mouser part number 538-08-70-1030
4x Molex 2478 crimp contact. Mouser part number 538-08-50-0106
1x Molex 6 pole crimp housing. Mouser part number 538-09-50-1061
1x Molex 5 pole crimp housing. Mouser part number 538-10-01-1054
1x Molex 3 pole crimp housing. Mouser part number 538-09-50-1031
1x Keystone Electronics rubber grommet. Mouser part number 534-739
1x 10 cm green mains cable
1x 16 cm of blue & brown (or white & black) mains cable
1x 38cm of red, yellow, black & blue 18 AWG stranded wire
4x M3 screws

Additionally, suitable crimping tools will be required for the Molex crimp terminals and the disconnect wire connectors. Also access to a 3D printer or printing service is required to print the mounting plate for the power supply. (See below)

Replacement Power Supply Assembly

The original power supply board will first have to be removed from its enclosure.
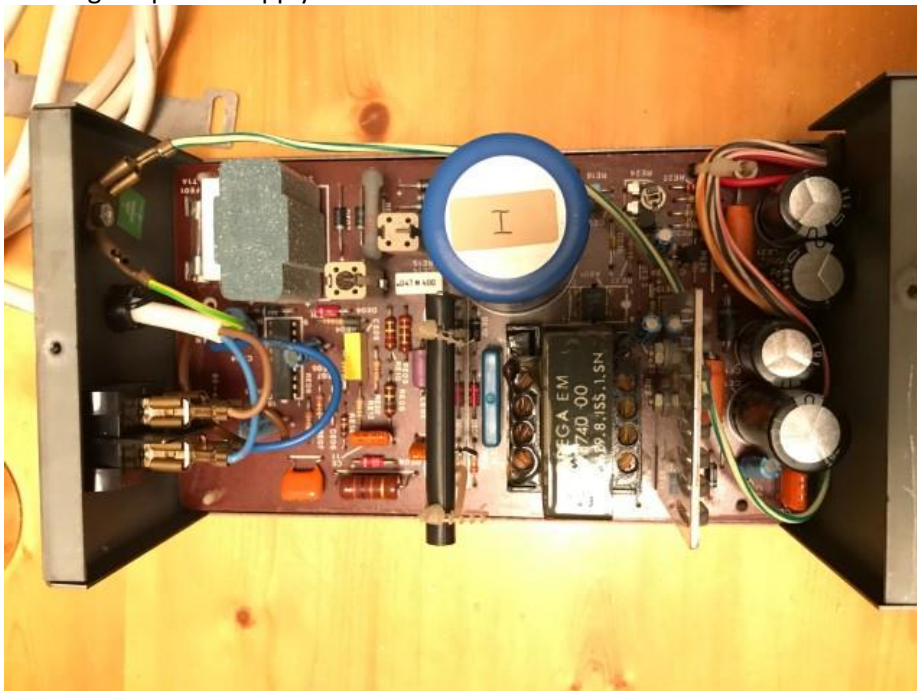
For the mains power connection, you will require one 10 cm length of green mains earth cable with each end terminated with a spade connector. The neutral and live cables are two 16 cm lengths terminated at one end with spade connectors, with the other ends terminated with a Molex 5194 crimp contact.
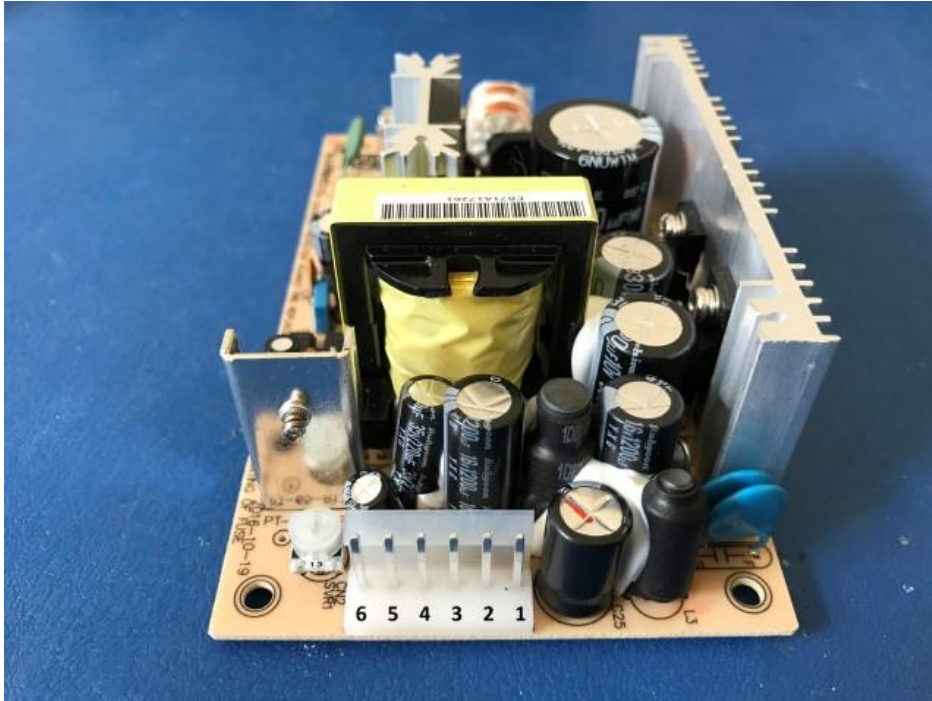
When assembling the Molex 3 pole crimp housing, make sure that the cables are inserted on the correct sides as shown here.
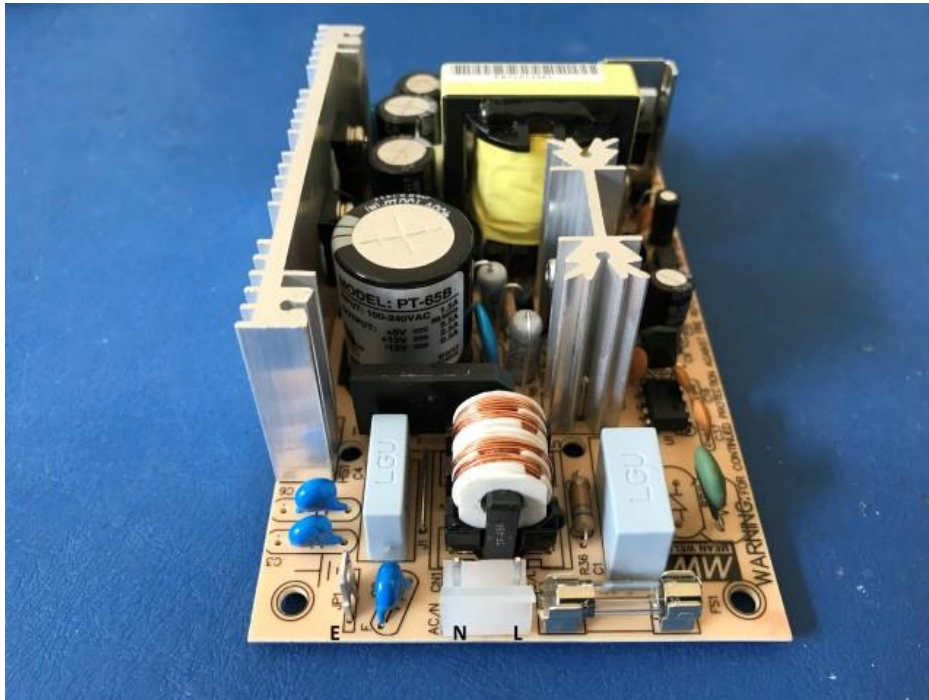
The completed cables should look like this.

For the computer power connection, the PT-65B provides 3 different power outputs and ground as shown in the image below.

Pin 1 – 12v
Pin 2 – 5v
Pin 3 – 5v
Pin 4 – Ground
Pin 5 – Ground
Pin 6 – -12v

As the TC01 cable colour coding is now difficult to find, I decided that I would adopt the same colour coding as the ATX power supply uses, so you will need to cut lengths of 38 cm of the following cables and terminate one end with a Molex 5194 crimp contact. The contacts will then need to be inserted into the Molex 6 pole crimp housing as shown here.

Pin 1 – Yellow cable
Pin 2 – Red Cable
Pin 5 – Black cable
Pin 6 – Blue cable

Then slide the cables inside rubber grommet. Next, the other end of the four cables are then terminated with Molex 2478 crimp contact following the chart here. Pin 1 is the left most pin when viewing the mainboard with the keyboard in front of you.

Pin	Voltage	Old Cable Colour	New Cable Colour
1	+12v	White/Red or Red	Yellow
2	0v	White/Black	Black
3	NC		
4	+5v	White/Orange	Red
5	-12v	White/Pink	Blue

Once terminated, insert them into the Molex 5 pole crimp housing, The finished loom should look like the this.


The new power supply is a lot smaller than the one it replaces, which made mounting it safely in the enclosure very challenging. Using nylon mounting posts similar to the old ones couldn't be used as the holes that had to be drilled would be too close to the ventilation grilles.
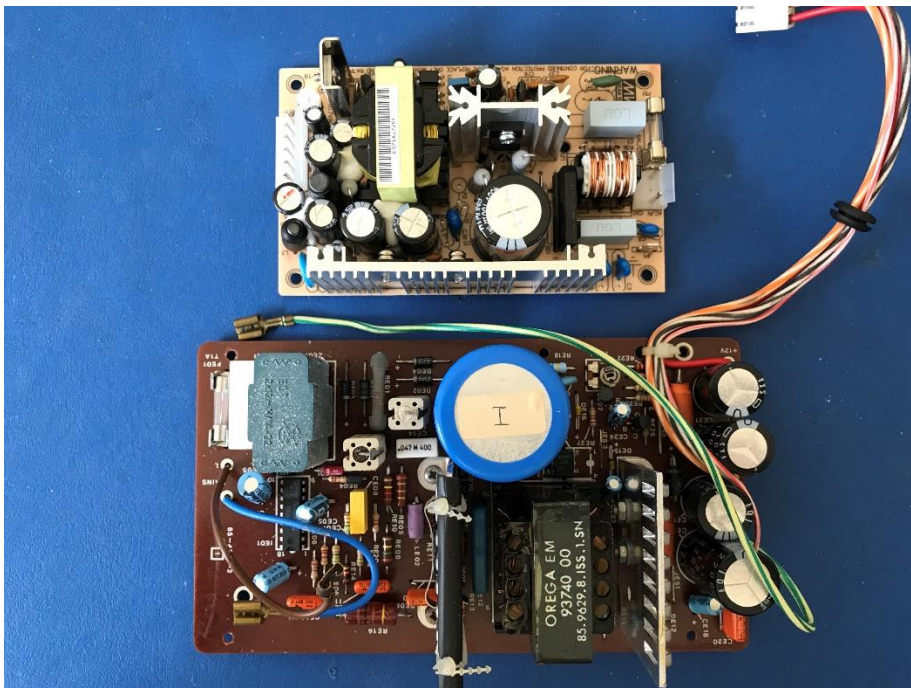
I found online a suitable mounting plate that could be 3D printed here and the files are available to download at the end of this guide. It was designed to fit into the Amiga 500, so if you are experienced in manipulating the design file, it should be possible to increase the overall size of the mounting plate to fit properly into the base of the enclosure.
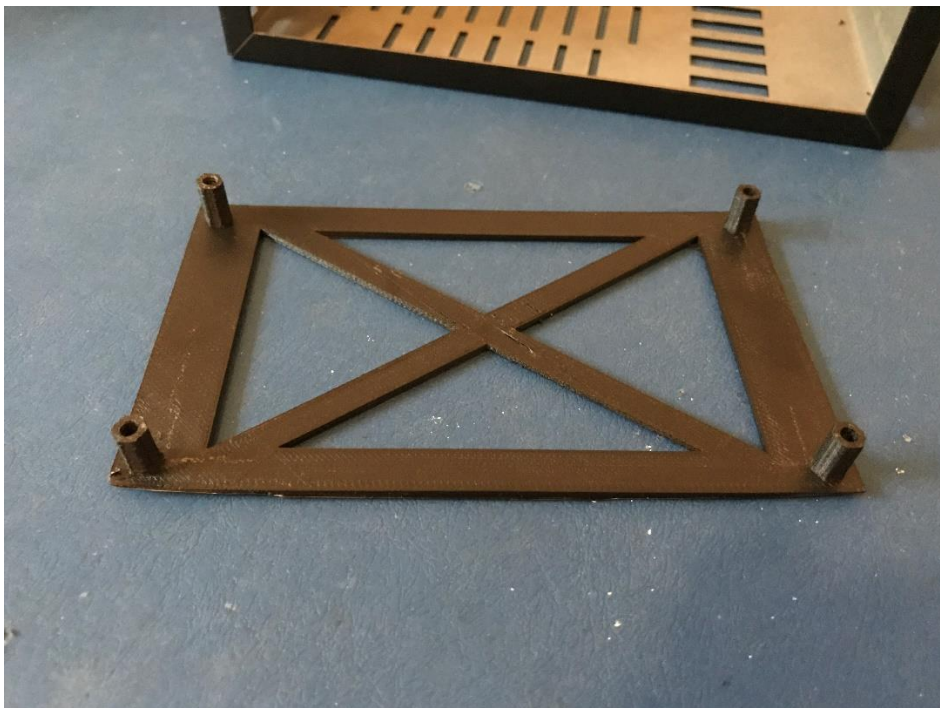
Secure the base of the printed mounting plate to the base of the enclosure using epoxy glue taking care not letting it seep out of the ventilation grilles. Mounting it off centre allows clearance for the mains cable to the switch and the mains power cables from the switch to the power supply.
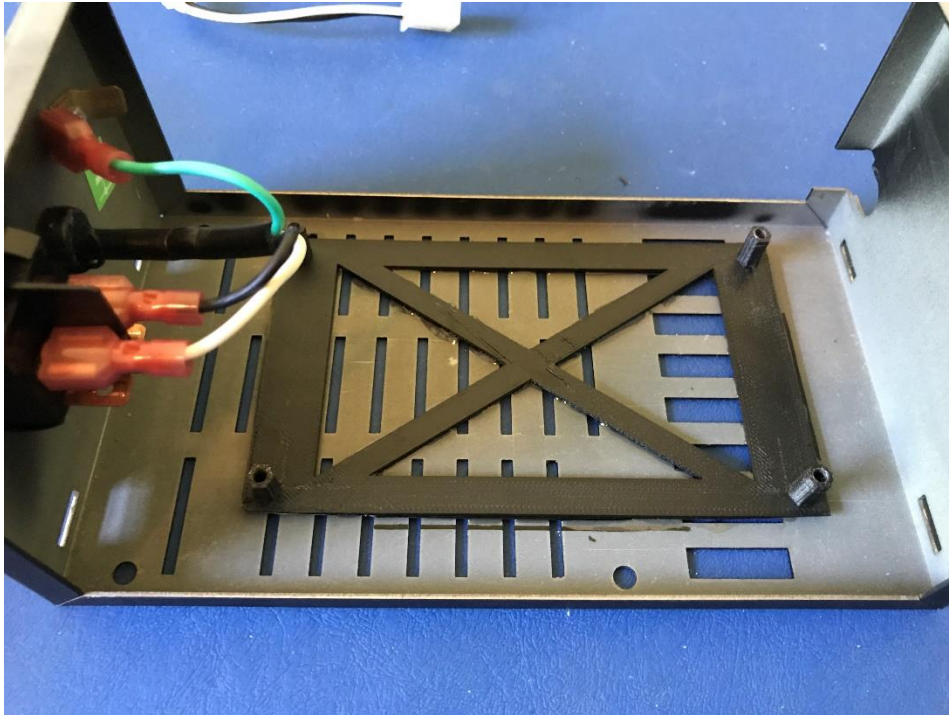
The mounting plate edges were curled slightly, so extra care is needed to make sure that yours doesn't suffer from the same issue. In my case, it didn't affect the mounting of the power supply or its adhesion to the base of the enclosure. The power supply is mounted in place using four M3 screws.
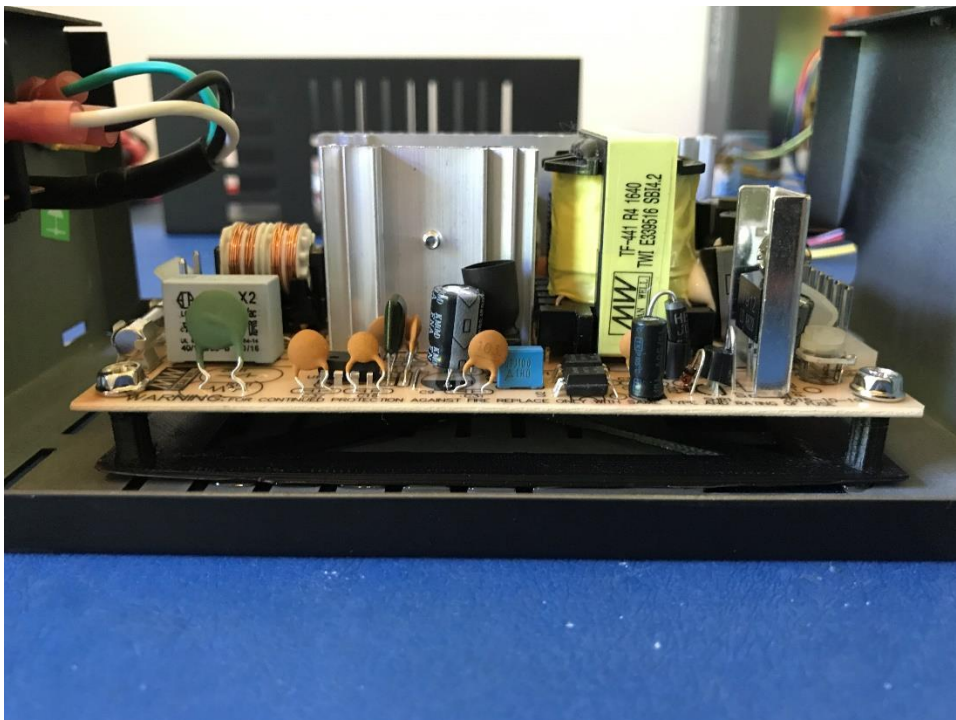
Now the mains power cables can be attached from the switch to the poles on the power supply, with the earth cable connected from the free spade connector on the enclosure to the power supply. Next, connect the Molex 6 pole housing from the computer power loom made above to the output pins. It's worth placing a self-adhesive cable tie mount on the inside of the enclosure so that the
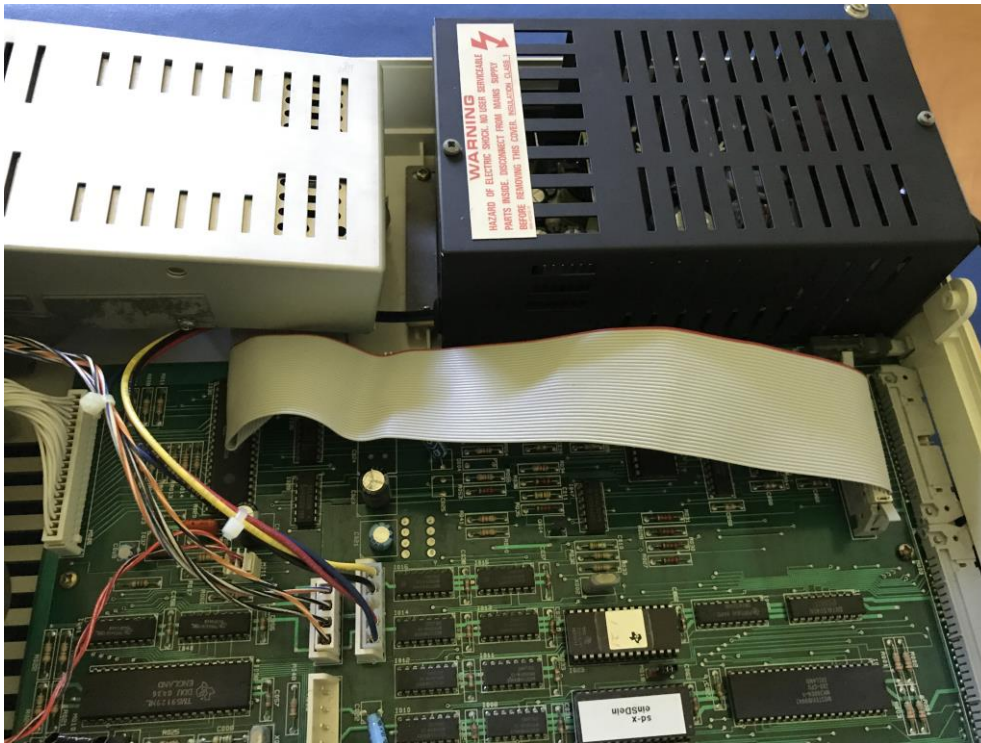
cables can then be kept away from the power supply and to also provide some stress relief. Don't forget to place the rubber grommet in its position on the side of the enclosure.
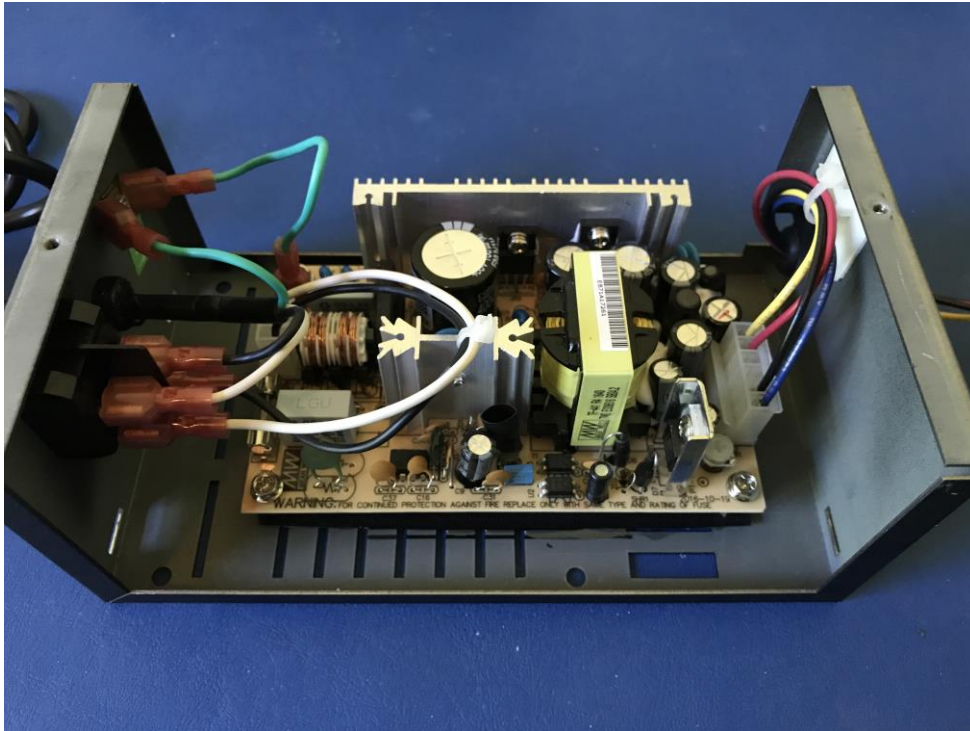
You can then screw the lid of the enclosure back in place and fit the upgraded power supply unit back inside the TC01.

The updated power supply mounted in the TC01.

Up and running – minus the ugly step-up transformer.