

Using fixed power supplies – Part 3 – Variable PSU

Components

I published a construction article in the May 2024 edition of Practical Wireless Magazine.

Electronic viewing of the magazine, as part of a subscription, is here: <https://pocketmags.com/eu/practical-wireless-magazine>

Here is some guidance on the components I used. I have lots of components left over from projects but as they mostly come from Radionics or Mouser I can identify the part number used by RS or Mouser to give you guidance. Beware that I do make mistakes so please check everything to your own satisfaction before buying or making anything. Prices are as at January 2024.

Please buy original parts

I have bought components off EBay and lived to regret the decision. I have spent hours struggling only to discover that the components are not what they seem to be or do not match the specification sheets. Some that come to mind are J310 transistors, 78XX voltage regulators and fixed inductors. No doubt there are others that have worked in my circuits but do not match the specification sheets.

Brass tubing

Came from Amazon: <https://www.amazon.co.uk/gp/product/B09VD67NQT/>

Called - VictorsHome Brass Round Tube, 5mm OD 0.5mm Wall Thickness 300mm Length Metal Seamless Straight Tubing for DIY Crafts Model 3pcs.

Threaded Rod

Came from Amazon: <https://www.amazon.co.uk/gp/product/B0C94XNXHS/>

Called - HiPicco M4 x 200mm/8-Inch Fully Threaded Rod & Studs, 304 Stainless Steel Right Hand Threads Rods, M4-0.7 Thread Pitch for Beaded Garden Stake Rods 6 Pack 【with Nuts】

You only get six M4 nuts so you will need additional as each heatsink mounting needs eight nuts. I bought 8 inch lengths but you can also get 10, 12, 14 and 16 inch lengths.

I cut the brass tubing and threaded rods with a junior hacksaw – I have the Eclipse model 14JND. I do file the ends down after cutting to get rid of burrs and to make sure the nuts have a clean thread to start with.

The enclosure

I used Model G751A made by Multicomp Pro and sold by Farnell for €13.30 - <https://ie.farnell.com/multicomp/g751a/case-abs-alu-panel-245x175x70mm/dp/1526705>

These desktop instrument case are made of ABS (acrylonitrile butadiene styrene) and have aluminium front and back panels. The panels are 2mm thick and work easily with basic hand tools.

Fuse

The resettable fuse is made by Bourns with part number MF-R160. I got mine from Mouser on part number 652-MFR160 and they cost €0.353 each.

Power connectors

H1 is a fixed terminal block with a 5mm pin spacing – I have a large bag full. TE Connectivity part number 284093-3 sold by Mouser under 571-284093-3 for €0.791 each seem to be the right ones. I like to use these connectors when I am playing around as I can connect and disconnect to my heart's content. You can of course just solder the wires straight into the PCB and do away with the connectors.

Wire

To connect the PSU to the fixed power supply via banana plugs I use 2-core mains cable ($2 \times 0.5 \text{ mm}^2$). I buy it in 5m lengths from TME under part number OP-YTLY1-2000 for €3.20. <https://www.tme.eu/ie/en/details/op-dc-2x0.50-wh/power-cords/espe/op-ytly1-2000/> .

Voltmeter / Ammeter

Came from Amazon: <https://www.amazon.co.uk/VooGenzek-Voltmeter-Detector-Multimeter-Amperage/dp/B09NDN78FD/>

Called - VooGenzek 2 PCS 0.28" LED Voltmeter Ammeter, Red and Blue Detector Voltage Current Meter Panel Amp Volt Gauge, DC 0-100V 10A for 12V / 24V Multimeter Amperage Meter Volt Amp Gauge Panel

About the Thermostat

You do not really need a thermostat as you could just have the fan running all the time.

Other

Schematic	Part	Manufacture / part number	Source
R13, R4	10K Pot, 0.75T	Bourns PDB8181-E415K-103B	Mouser 652-PDB181-E415K103B
TH1	Thermostat	Sensata 874-67F040	Mouser 874-67F040
	Yellow knobs	RS Pro CR-MS-2-T18	RS 467-5872
	Green Knobs	RS Pro CR-MS-4C5-T18	RS 467-5894
	Female Banana socket (Red)	RS Pro 515-7-128-4	RS 208-0287
	Female Banana socket (Black)	RS Pro 515-7-128-3	RS 208-0286
FAN1	DC axial fan, 60 mm	CUI Devices CFM-6015CF-245-332	Mouser 179-CFM6015CF245332
HS-Q2-A	Vertical TO-220 Heatsink	Ohmite WA-T220-101E	Mouser 588-WA-T220-101E
HS-Q1	Horizontal TO-220 Heatsink	Ohmite VM2-038-1AE	Mouser 588-VM2-038-1AE
	Black PVC Cable Grommet	RS Pro	RS 543-282

I have no personal connection with or financial interests in RS, Mouser, Amazon or Farnell.

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