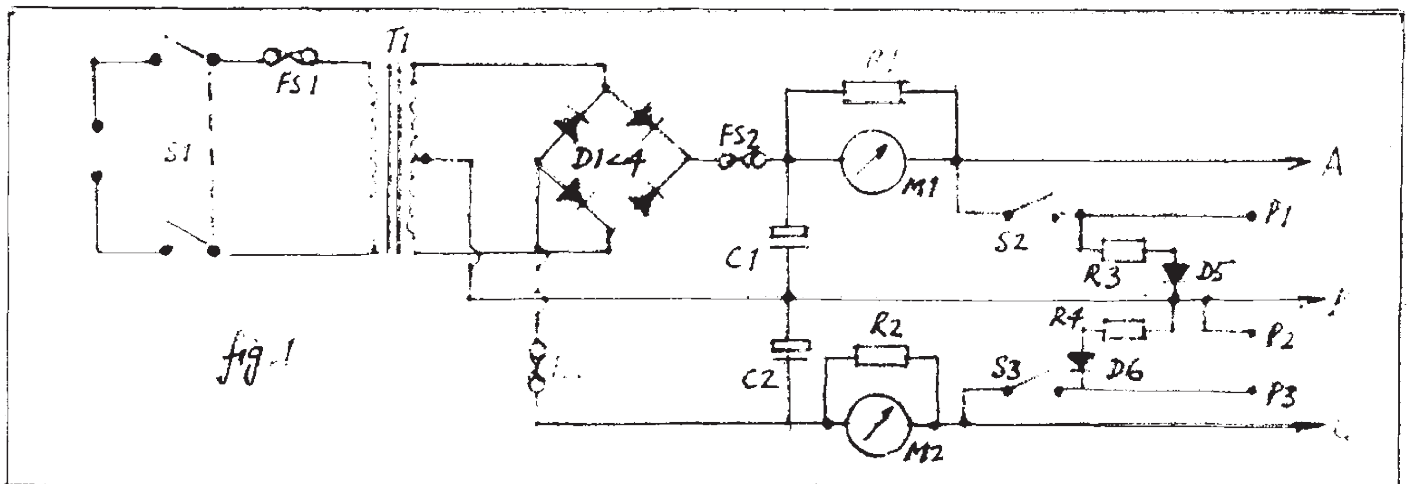
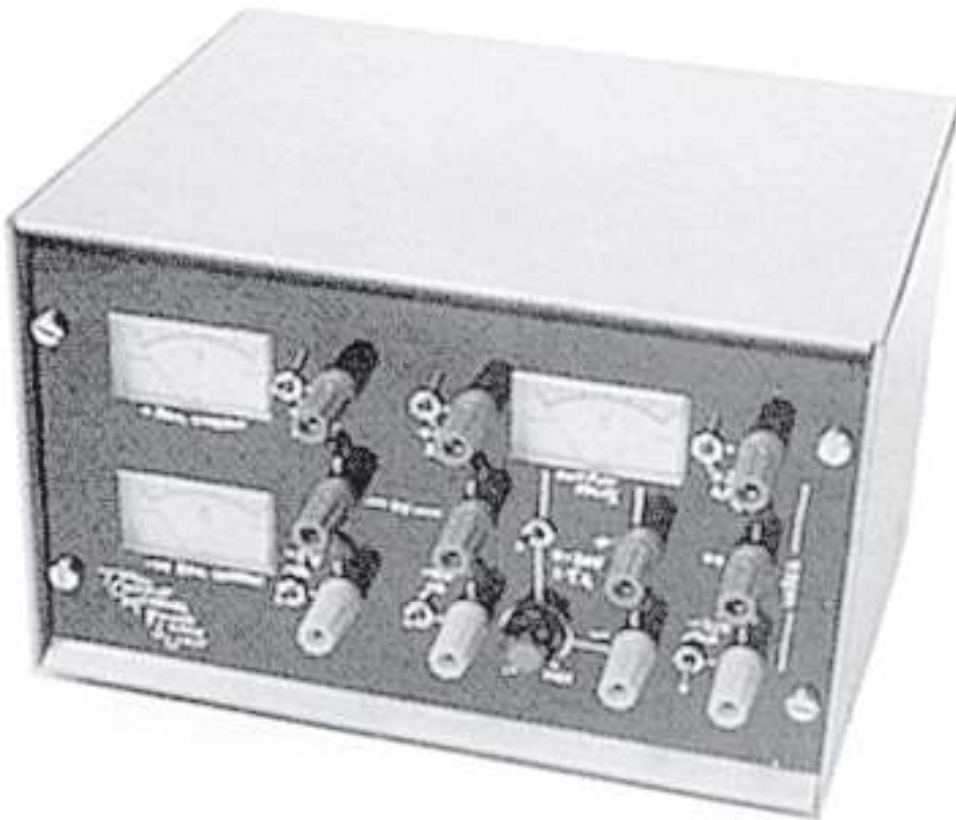


THE TOM P.S.U. Ken Ruiz G4SGF

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The TOM (Total Output Metering) PSU is a simple to construct and useful piece of equipment for virtually any constructor's shack providing one variable and several fixed voltage outputs. Its construction was inspired by various projects within the ARRL handbook. T0220 regulators are used throughout making it simple to construct, reliable, rugged and requires no setting up. Unusually for one of my projects, it worked first time! The usual warnings apply when dealing with mains - lid off only when not plugged in and capacitors discharged, and the case must be earthed.

After SPRAT 68 and 69 it might come as no surprise to learn the Tom is my younger son's name! Relax - I've NO more children or wives.



The circuit diagram shows no fancy tricks are used. An IEC mains connector on the back panel included a mains switch and fuse holder. If like me you use a toroidal transformer use a slow-blow fuse here as the inrush current, though short lived, can be considerable. My transformer was a 0-15, 0-15V 120VA from Electrovalue. The rectifier was assembled on its own PCB with two fuses.

According to the formulas in the ARRL Handbook the smoothing capacitors in this circuit should be $2 \times 3831\mu\text{F}$. I used $2 \times 4700\mu\text{F}$ taken from an obsolete piece of equipment I'd been given. Remember - if thou's owt for nowt keep it for thissen, as we say in Yorkshire. The meters (scrap purchase, £1 each) measure the total current flowing in rails A and c, hence the name.

Each regulator board is fused. Superfluous I know, but it makes me feel better. The 12-0-12 and 5-0-5 boards are identical in everything but the regulators used, and can be altered to provide whatever voltage output is required merely by change of regulator. if you choose higher voltages you'll need a higher voltage transformer also. Use heatsinks on the regulators. The variable voltage board includes a series diode as the off-load voltage from the transformer is just outside the quoted spec of the LM317 regulator. The voltage drop across the diode brings it to just the upper limit. I'm sure it would have been fine anyway, but there you are.

All the outputs are switched, and all have LEDs to indicate their state. Dropper resistors have been calculated for 20mA in the LEDs. The variable voltage output also has a voltmeter connected permanently across it.

I used red terminal posts for the +ve outputs, green OV, yellow for --ve with re and yellow LEDs as indicators. The +5 and +rails can supply 2A each, the -5 and -12 A each. The variable output (0-30V) can deliver 1.5A. The unregulated supply can give whatever the transformer is capable of. Incidentally, no part of the circuitry was connected to chassis.

