

Power Controller

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During the 1980's I'd also been experimenting with a design for a simple motor controller, and I had devised something that could maybe be commercially viable (until, that is, I learned about product liability insurance and all the surrounding rules and regulations that plague manufacturers today).



As part of that exercise I'd sourced a handy phase-control device that took all the donkey-work out of wiring up triacs and diacs. It also fitted directly under the shaft of a suitable panel-mounting potentiometer. Furthermore I'd found a flush-mounting mains socket at last.

A lot of experimentation had gone into this design in order to make it safe and reliable, so it was quite a robust project. In fact I must have built a dozen of my own 'commercial' prototypes for various

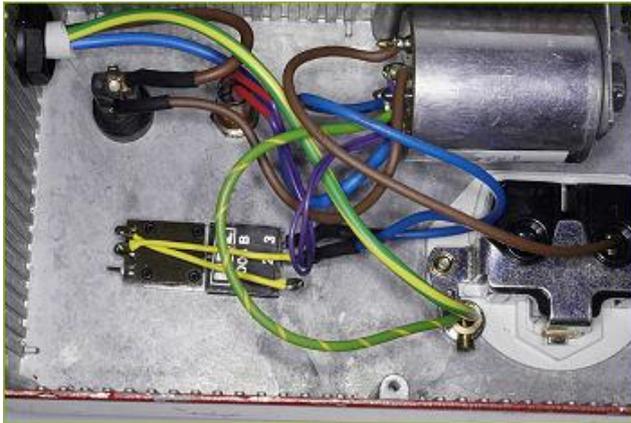
uses so this EE design was a larger, heavier duty version of my own compact design. I had a good supply of the necessary bits so I decided to recycle some of them in this project.

There were several key aspects to the prototype, starting with the mains socket. For reasons I never understood, the RS Components flush mounting mains socket required a 49mm cutout, which seemed a funny number to me. Maybe it was deliberate to allow for some clearance. Anyway, I got a 50mm Q-Max chassis cutter specially, which needed another chassis punch to make the pilot hole.

British mains sockets and switches also puzzled me as I couldn't match the threads of the mounting screws. Eventually I found that they are metric M3.5 thread, heaven knows why, but I sourced a bag of raised countersunk screws specially for these sockets.

The potentiometer was quite critical as it secured the mains SCR device underneath. I'd found an all-plastic pot. from Verospeed, who also supplied the SCR module. A big delta-cap suppressor was also needed. I chose a Roxburgh one. I conservatively rated the project for 1.2kW as the suppressor was only good for 5 amps.

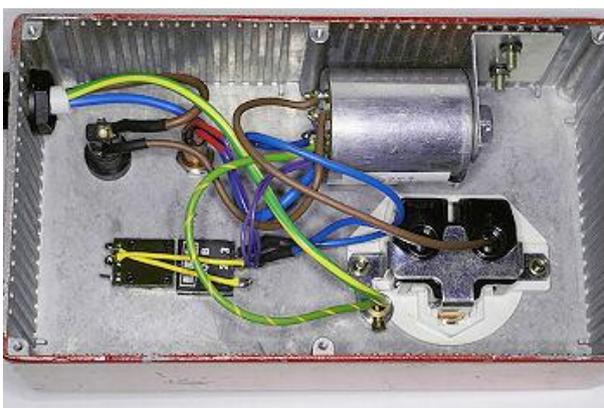
The all-plastic collet knob mystified me to begin with, but it came from West Hyde Developments, with a yellow cap (which I had in stock for my own controller). I chose a large diecast BIMBOX box which was primed and sprayed red after all the metalwork had been done. A bracket was made for the suppressor, and I used a large cable gland on the mains inlet. Something else had appeared by this time, as I could afford an RS heat gun! So I heatshrunk some mains terminals.



I had already had plenty of practice assembling my own more compact design so this version had plenty more space to work with and assembly was straightforward, though there was a bit of metal bashing to do. Inevitably the 49mm mains socket was mounted slightly eccentrically in its 50mm hole and it showed, but never mind. Everything had to be rigidly mounted, well earthed and properly insulated where possible and the project was very solid in that respect.

The prototype, as big and bulky as I remembered it, looked slightly tatty as the paint had chipped off, so I could always refurbish it easily. I recall using it to dim our electric fire in the lounge at one time! Although there is no feedback in this design, it's fine for dimming, simple motor control or heating element control.

As I explained in my potted history (Part 5), this Power Controller would be my last for a while. I was maxed out with other work pressures, I had done quite a lot of power control units myself and my interest in developing electronics projects had diminished: it was hit and miss and the publishing delays were very long, typically 18 months which made the job unrewarding. A few other ideas would materialize in due course though, as I would go on to develop a burst-firing power controller that appeared six years later, in November 1994 Everyday with Practical electronics (as it became known).



You can download the original constructional article as a PDF from www.alanwinstanley.com.

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