

## Burst-firing Power Controller

### EPE Magazine November 1994

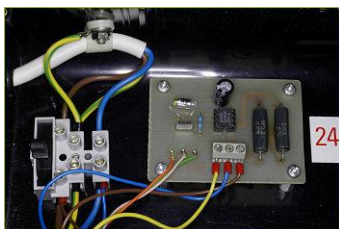


I had done quite a bit with power control of smaller loads, usually a.c. motors and lights, generally using a phase controller device (such as my original Power Controller, EE September 1988) and I had a near production-ready design of my own that I developed in the mid 80s. In fact I still use one of them to this day, to dim lights in photography.

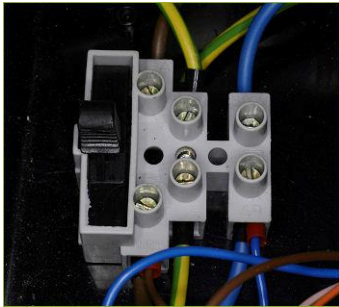
Apart from phase control I was intrigued by the principle of “burst firing”, or sending streams of full cycles to a load like a resistive heating element. Flashing them on and off, as it were, to average out the power. A Plessey chip (the SL443 zero voltage switch) was designed for that very purpose so I decided to give one a go. Unlike a phase controller circuit, this had zero-crossing so the mains interference would be minimal.



The chip made circuit design pretty simple, with no need for large filters, but an isolated tab triac was critical for safety and attention was needed on the wiring, insulation, earthing and connections. There wasn't much to see on the PCB and the rest of the wiring was carried out point-to-point. I was particularly conscious of the peak power ratings (3,000 watts max) so I beefed up the construction accordingly. This was one of my heavier-duty designs! I had also discovered another timesaving component, a combined 16 Amp screw terminal block with built-in fuseholder, so I used one of those on the mains input. A classic grommet and P-clip restrained the mains cable.



I took the photographs on my film camera (a Minolta X700 with 50mm macro and 1200AF macro flash) and they were pretty good, but the magazine repro quality was poor. The Power Controller is seen here for the first time in colour.



*^ 3-way terminal block with built-in fuseholder proved handy*

I contained it in a sloping front ABS box with aluminium panel, onto which the isolated-tab triac was bolted. I had a stock of round flush mounting mains sockets (49mm) so my 50mm Q-max metal punch made a nice job of the front panel. I was still slightly peeved by the 1mm clearance and would have liked a tighter, neater fit. However this socket was standard fare for my hobby projects by now, a leftover from my nearly-commercial SC10 power controller. The parts had to be positioned carefully to allow space within the box to accommodate the rear of the mains socket. Some rub-down lettering and a panel neon finished off the job, followed by a coat of spray-on lacquer as normal.

Due to the low component count, a sturdy design was produced and the prototype seen in the photos is still good to go today. I would probably choose a more robust box though, possibly a diecast one.

*ARW Oct 2014*