

## Security Vari-Light

Published in December 1982 Everyday Electronics



A lot of initial thought went into this project as I researched the principles of EXOR pseudo-random number generation, inspired by the text book *The Art of Electronics*. I wanted something that was predictably random: there was no point having something flashing on and off in a berserk fashion, so it had to look realistic.

I experimented and breadboarded the project, which took a bit of doing with a T-Dec, but I figured out all the logic truth tables myself and eventually I felt I got the timing just right. I added a 555 countdown timer that could power it off after 2-7 hours. I also liked using multi-purpose function switches to save space, and a centre-off toggle switch therefore selected Bypass (= on full time), Security (random) or Off.

I designed two printed circuit boards by hand, a timer and a logic board which both turned out well. They had p.c.b. relays and fuseholder to reduce the interwiring, but I hadn't quite got the hang of p.c.b. screw terminals just yet so solder pins were used. I still didn't have heatshrink sleeving available, so used little bits of PVC sleeving (Maplin).

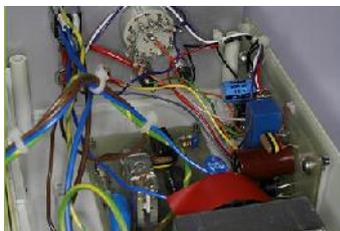
As an enclosure I used a Verobox housing that had a smart anodized aluminium front panel and I recall it being pretty expensive at the time. I was always careful not to scratch the precious panels and to punch and drill accurately by then. I mostly used a hand-crank drill (my Dad's, which had been in the garage workshop for ever, and I still have it) on alu. panels.

A spun aluminium knob enhanced the looks as did some clear l.e.d. lens clips (Maplin) – I thought it would be cool to use clear/ white lenses that turned red when active – and my preference was for panel dress nuts (ElectroValue were great for parts like that) on the C&K toggle switches and push switches. I also came across some coloured plastic covers for the switch toggles.

Maplin were selling various *Warning! Mains Voltage* labels which I used to make the prototype more professional and important-looking. I notice that I used a cable gland to hold the mains cable, and this would become the norm for me. I tried to anticipate problems and a suppressor was wired across the transformer primary and the relay contacts were snubbed to reduce RFI problems, re-triggering or resetting problems.

Overall the Security Vari-light looked the "biz." and it worked very well. However I had a dickens of a job convincing EE that my circuit was effective. They called it 'over elaborate' and then proposed something more purely-random and elaborate themselves! I stuck to my guns as I wasn't going to write off all that time and money. Fred Bennett said it was a pity that it wasn't purely random (!) and he only seemed to accept it reluctantly. I think really that someone in the back-office just didn't like it, but sometimes they just asked too much of me as I was learning all the time and had little formal education in electronics. They sometimes forgot how long it took to design and build something from scratch, then write up an article as well.

Happily I still have the Security Vari-Light prototype and it powered up without a problem after more than 30 years. It looks a bit scruffy as the ABS box hasn't weathered so well but the innards are like the day I made them, back in 1980 or so. I would have been 22 years old or so and as I type this (and all my other project write-ups) I'm in the very same spot where I dreamt up the Security Vari-light all those years ago.



I enjoyed researching and making this project a lot and it was one of my more polished designs at the time. I was disappointed that more wasn't made of it and the project sort of sank without trace, only appearing in print an eternity after submission. Maybe I was doing too good a job in construction, but I was a perfectionist and the assembly and construction were always immensely satisfying.

I followed it up with an Opto Repeater ( Jan. 83), a photo-transistor that detected when the 'main' Security Vari-light powered up, and it would drive a slave lamp.

You can download the original constructional article as a PDF from [www.alanwinstanley.com](http://www.alanwinstanley.com).

ARW October 2013

© Alan Winstanley 2013