

Powering Lights for Microscopy

In the [September 2019](#) edition of *Micscape* I explained why I think we need to be cautious in repurposing for microscopy purposes, the ubiquitous Class II 'wall warts' which make use of switch mode power supplies. In the same article I made reference to the older style 'linear' power supplies which are much safer.

The purpose of this article is to draw attention to two of the linear power supplies which were used with Sinclair computers in the 1980s and can still be found on eBay or on flea market stalls. Even non-functional units are worth looking at as they are often easily repairable.

I have two of these. One gives a nominally 9V unregulated output at up to 1400mA of current and is suitable for powering a small hotplate. Being unregulated the actual voltage can be as high as 14V with low current loads. The other is a Sinclair +3 which has three regulated outputs of +12V at 700mA, -12V at 50mA and +5V at 2000mA, and is suitable for powering small LED arrays or a small hotplate.

The internal layout of the first can be seen by following the first link below. The second link shows a unit similar to the +3 but with a lower power rating of 200mA at +12V. Note in particular that in both half the space is taken up by a bulky transformer which completely isolates the low voltage outputs from the 220V mains. That is what makes them safer.

<https://www.youtube.com/watch?v=qTRiS4isYGk>

<http://markfixesstuff.co.uk/repair/sinclair-spectrum-128k-2a-2b-power-supply-psu-common-fix-and-causes-of-failure/>

You will find references on the WWW to the use of a Cisco Power supply (part number: Cisco 34-0874-01) being used as a replacement for the +3 unit in conjunction with Sinclair Spectrum computers. This is clearly labelled 'For use with information technology equipment' and is equivalent to a Class II unit. Spectrum computers qualify because all the circuitry is enclosed in an insulating plastic case.

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