The Three-Quid Light Box

Recycling a backlit TFT or LCD monitor

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(Destructive) recycling is undoubtedly necessary for future generations to suffer as little as possible from present-day excesses in consumption across the planet. But before destroying and recycling a piece of equipment that has become unusable for its primary purpose, it's sometimes possible to find another useful application for it, at minimal cost, thereby delaying the moment of final recycling.

It all started when I bought a faulty TFT monitor over the 'Net for a 'pocket money' sum, intending to use it for spares to repair another monitor I had with a PSU fault. Unfortunately, the PSU in the model I'd just bought turned out not to be compatible. Disappointed, I decided to recover whatever I could and I started to dismantle the monitor, which was cracked and only displaying half a picture. In the light of what I discovered while I was dismantling it, a little glimmer soon turned into a bright idea (pin intended): *why not re-use the backlight*?

A TFT monitor consists of a TFT (or LCD) panel which produces the image, and behind this panel, another thicker one, made up of a sheet of Perspex® with backlighting around all four sides and a coating that diffuses a very neutral, white light.

So the first operation consists of dismantling the monitor (which, must, of course, at least be in a position to light up), and to keep just the panel with its electronics hidden behind a sheet-metal screen (**Figure 1**). Then carefully dismantle the screening and the TFT or LCD panel, often held in place by a piece of black adhesive tape, which has to be removed so as to remove the screen and disconnect its connector. Take care, it's made of quite thin glass and breaks easily (depending on local regulations, dispose of this in the general waste container, and not in the glass recycling bin).

At this stage, if you plug the monitor back in, you'll be surprised to find you have a superb white luminous panel. But the satisfaction is short-lived, as in the absence of a video signal the screen switches off after about 30 seconds or so. The solution is to find the connection for controlling the high-voltage generators for the backlight tube and to pull this pin up or down to the appropriate logic level via a resistor of a few kΩ so as to make it stay lit up all the time (**Figure 2**).

All that then remains is to remove the control panel, which is not used in this application, possibly to apply a sheet of transparent plastic to protect the diffusing surface, and to mount the whole thing in a housing of your choice. Do take care, however, with the lighting tube HT generators, whose voltage is in the region of 900 V!

Applications for this light-box are left to your imagination: checking PCB negatives (**Figure 3**), as an advertising panel, for customizable ambient lighting, or even a large-scale photo frame for displaying enlarged transparencies.

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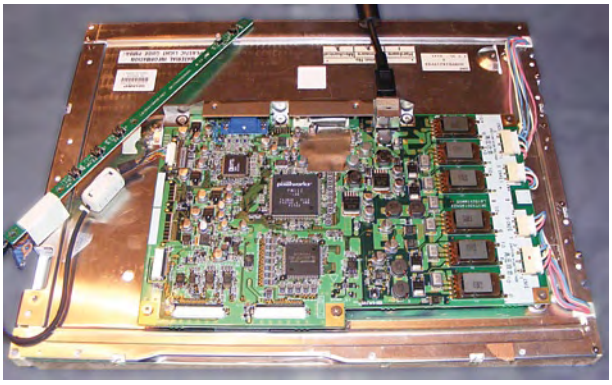

Figure 1.
The panel with its electronics hidden beneath a sheet-metal screen.

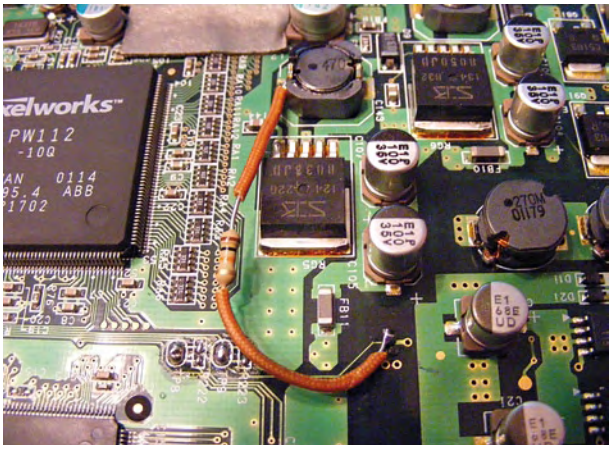

Figure 2.
One resistor makes it possible to keep the backlight lit all the time.

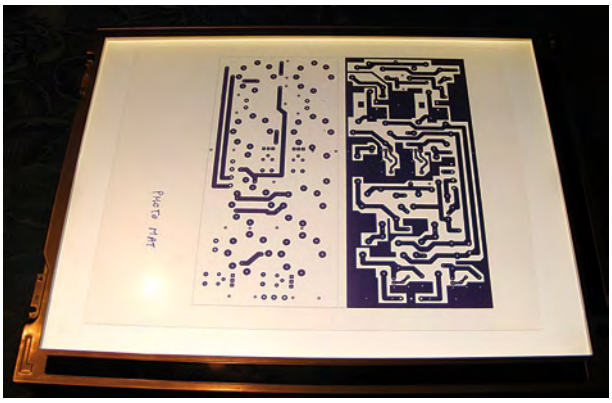

Figure 3.
An ideal unit for checking PCB negatives.