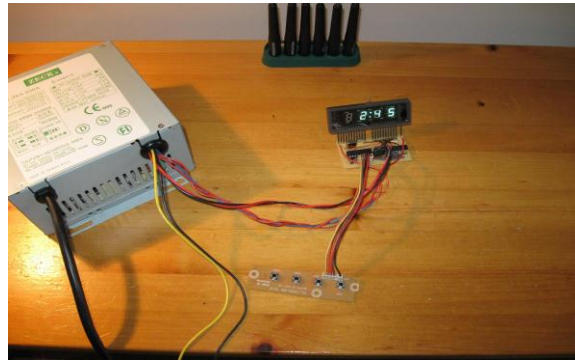


ULTRAVIOLET LED EXPOSURE BOX

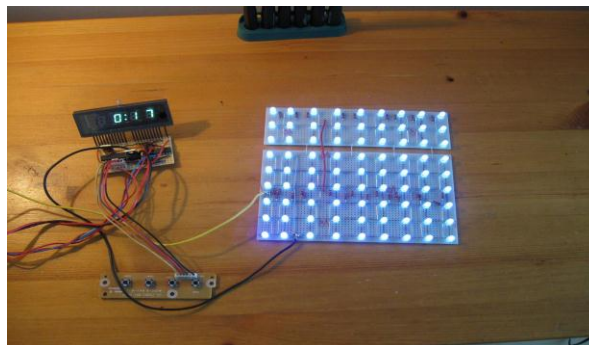
This project was created out of necessity while I was getting into making PCBs. I need a source of UV light to expose photoresist boards, so it was time to get creative. I had seen people use UV tubes, ballasts and the works to make something just like you can buy from a shop, but why? These days UV LEDs are cheap as dirt, and many times more efficient. A quick search on ebay revealed several lots of 100x UV LEDs from Asia (with FREE shipping!) for half the price of one UV tube. If that isn't awesome enough, the UV LEDs will last nearly indefinitely if used properly, and generate nearly no heat. So it's easier to use and eco friendly. While waiting for the LEDs to arrive I figured a timer would be nice so I could do consistent exposures. I still had a VFD from a gutted microwave oven, an old PIC16F84A and a bunch of switches soldered to a PCB from a monitor. What more could I ask for? Some programming later I had a functional timer, which would automatically control the UV LEDs, and remember the exposure time last used. I decided to use a A6810 shift register/VFD driver to free up some I/O pins. I'm glad I did, as the VFD is considerably brighter than the discrete driver I built for my AVR Chronograph.

I also used the original transformer to power the VFD, it's glued in the AT box which is why you can't see it.

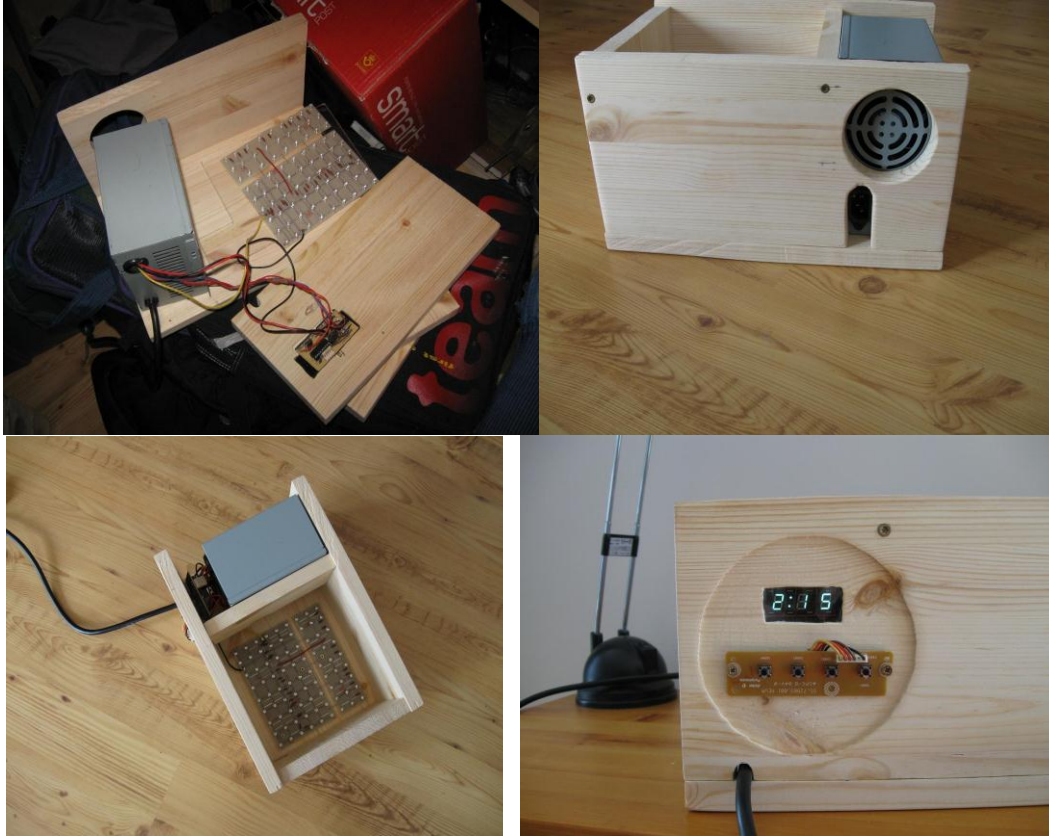
Firmware and schematic can be downloaded here: [UV LED Developer Box.zip](#)



I decided to use 12V for the UV LEDs, as this would work fine with the old AT supply I decided to dedicate to this project. Each LED has a V_{drop} of about 3.5V, which means I'll use 3 in series for 10.5V, so only 1.5V will be wasted in the current limiting resistor. Using an individual resistor for each LED is a waste of power, time and resources. I decided to fill a 16x 16cm matrix with LEDs, so rather large boards could be exposed. It would also make the most use of the 100 LEDs I had. The LEDs were mounted on standard stripboard, with about 2cm spacing.



What next? Wood-working of course! I purchased some new pine sheets for once, which look pretty good IMO. They smell nice too.



Now I bet you're wondering if my 30 EUR UV box can hold a match to the 550 EUR ones you can purchase from a supplier? It sure does, and I've made a small guide on how I make my PCBs in the "Misc" section. The exposure time when using clear transparencies is just around 2 minutes. The PCB can also be exposed through ordinary printer paper, for a whopping 30 minutes or more. Unfortunately this wasn't expected, so the timer only goes up to 9:59. I plan to fix up some new source code so the timer can be adjusted to display just minutes as well as minutes : seconds.

Source: <http://uzzors2k.4hv.org/index.php?page=uvledbox>