

Bill of material

The Display...

- 6 Nixie Tubes (decimal 0-9)
- 6 Driver / Converter IC SN 74141 [IC1 – IC6]
- 6 IC Socket 16pin
- 3 IC SN 74273 (Latches) [IC7,8,16]
- 3 IC Socket 20 Pin with integrated capacitor 0.1uF for Latches[C6-C11]
- 4 IC Socket 14 Pin and 4 matching flat band cable connector
- 2 Flat band cable each ~20cm
- 6 Anode resistor (to fine tune the brightness of the Nixie Tubes.
For MY Nixies I had to use 560 R resistors! [R6-R11])

...the Power supply and communication PCB

Compared to the Display driver, the power supply is more complicated.

- 1 Main power Switch (2 lines, 250V)[Min]
- 1 Fuse with 2 sockets (20mm type, 200mA)[Fuse]
- 1 Transformer 230V/2(2*)15V, 5 Watt[TR1]
- 1 DC 5V Regulator, type 7805, 1 Ampere [IC15]
- 2 I/O IC for I2C Bus PCF8574 [IC13+IC14]
- 2 2 IC socket 16 pin with intergraded Capacitor 100nF
- 4(3) Optical coupler CNY74[IC9~IC12(11)] {1}
- 4(3) IC socket 16 pin {1}
- 16(12) serial resistor for Opto's [R20-R36(32)] {1}
- 16(12) Pull up resistor 10K for Opto's[R40-R56(52)] {1}
- 1 discharge Resistor for HV Capacitor, 100K[R1]
- 1 Z-Diode Stabilizer Resistor 8k6, 3Watt [R2]
- 1 Serial resistor in Anode circuit (brightness adjust) 5k6[R3]
- 1 LDR 250V DC auto brightness adjust, Optional [R4]
- 1 560R for delay of Relay R1[R5]
- 5 Diode 4007[D1-D5]
- 2 Z-Diode, 68V, 1Watt in series
- 1 Elko 100uF16V[C4] Power supply
- 1 Elko 330uF/16C[C2] Power supply
- 1 HV Elko 100uF/350V (from. 10uF it's working fine!){*2}
- 1 PCB relay 24Volt[RE1]
- 1 2Pin Jumper [BR1] separator for HV part

- 1 1Jumperfield3*6Jumper (Addr. Selection)
- 1 Cooling plate for DC5V Stabiliser, Screw,Nut M3
- 2 Western Sockets (4pin) with short wire.
- 1 1 telephone cable straight matching to Western Sockets

Add on:

Few meter single wire for PCB jumper,
 25cm thick insulated Wire to connect the HV to top PCB
 The Layout shows Pull up resistor for driver. Actual they are not necessary for this type of driver. If necessary, please install them. Layout is prepared.
 Some connecting sockets / clamps etc.
 Insulating tube, to produce an ancient touch
 Some distance holder with matching screws to mount the PCB.
 Display, Power PCB and an insulated casing.
 One SC12@chip computer to control the Display, any other computer/CPU having I2C Bus on a Western Socket, providing (DC+5V, Data, Clock and Gnd) will do.
 Some Jumper bridges to select the correct addresses of the IO port IC.

Remarks:

{1} When using the Display, as I do it, for time/date only, the fourth Opto/driver IC is not necessary. The assisting serial / Pull up resistor aren't necessary too.

{2} HV Elko's are expensive and not easy to find. I used a spoiled Energy Saving lamp. After dismantling the Socket and separating the electronic from the Bulb, I found 'my' HV Elko to be used in this project. All Energy saving lamps I opened up to now having the same structure – and a HV Elko build in.

Something else?

No, some hours quiet time and afterwards a lot of fun.

Take your time and have your fun
 Udo Sobotta (21.09.2009)