

OVERVIEW

When plugged into the userport of a supported computer, this will provide 8 controllable LEDs that can be used for testing or status display etc.

A POKE is first used to enable output, then the LEDs can be controlled by another POKE to set the value displayed from 0 to 255.

The following models are supported, the pinouts of their userports are somewhat different, but the pins required for the 8 bit output port and ground connections are the common.

- PET / CBM / Mini PET
- VIC 20 / Mini VIC
- C64 / C128

Note the plus/4 uses the same connector for the userport, but the pinout is different, so this board cannot be used with those machines.

PARTS LIST

RESISTOR ARRAY

8 x 1K Ω (or value to suit LEDs)

SEMICONDUCTORS

8 x 5mm LEDs (colour of your choice)

CONNECTORS / JUMPERS

1 x 24 way 0.156" (3.96mm) edge connector, with pins or solder tabs

CONSTRUCTION

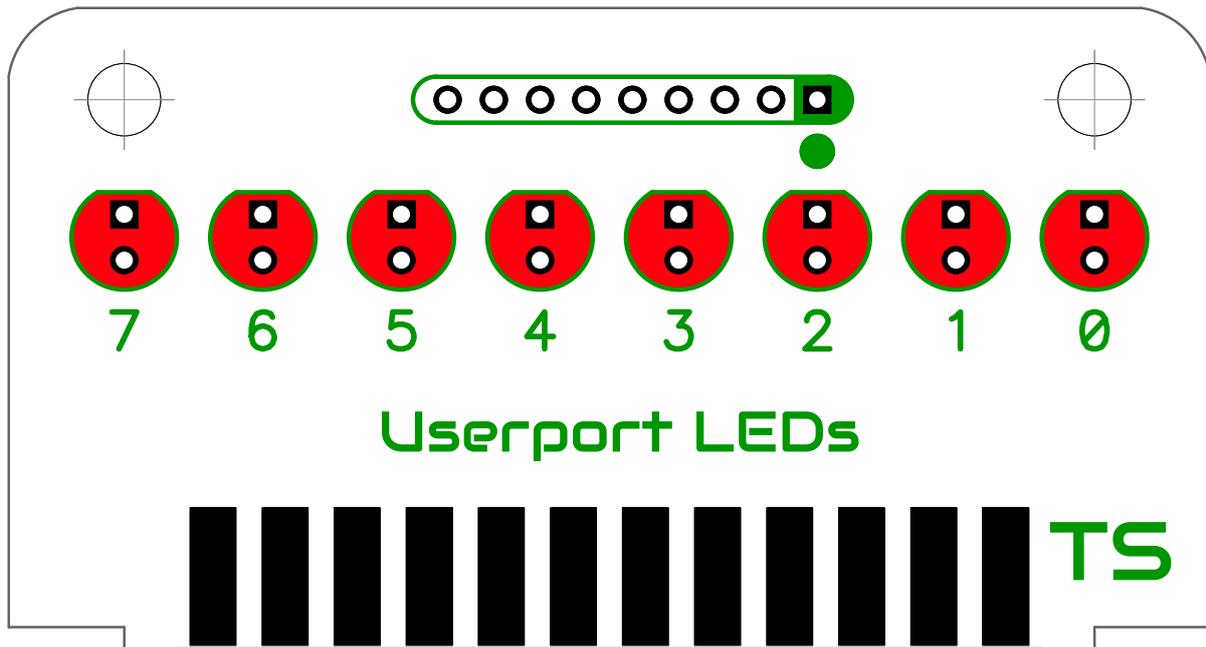
Construction should be fairly straightforward. Start with the LEDs, trying to keep them in a neat row. The cathode side, indicated by the flat on the body and the shorter lead, should be towards the resistor array.

Note the dot on the resistor array should be at the same end as the dot on the PCB.

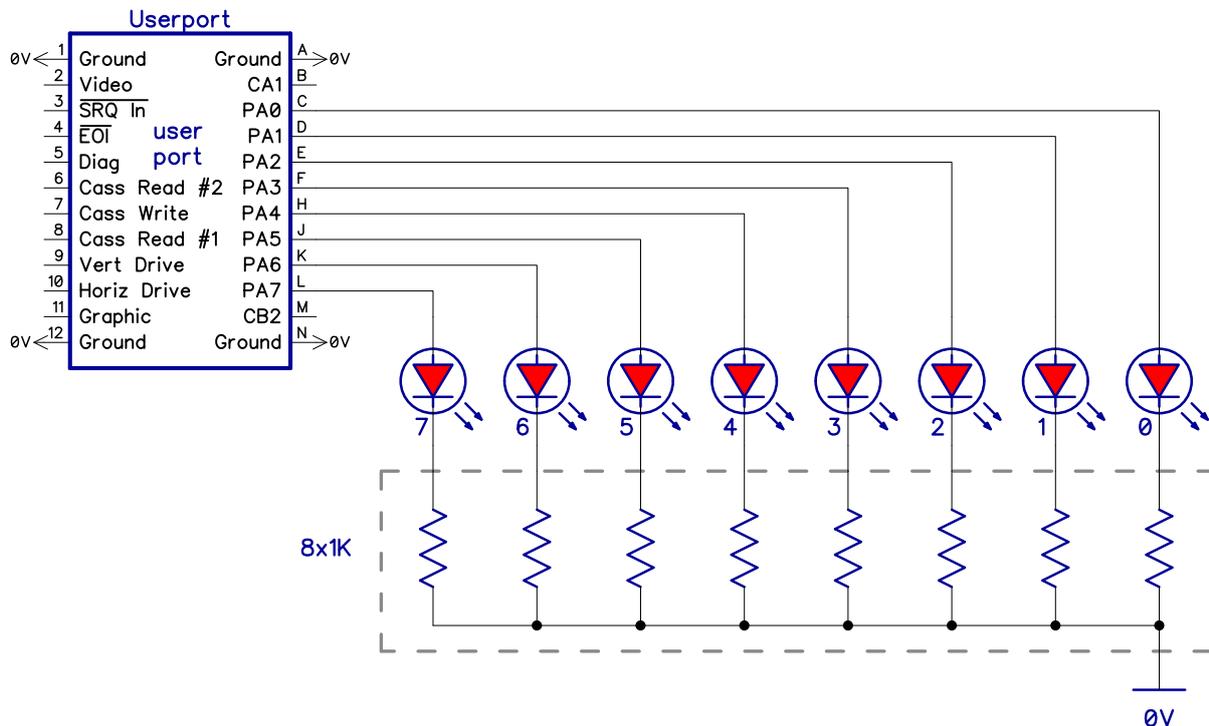
The edge connector is last, you may need to bend the legs inwards to make the PCB sit evenly between the two rows of contacts. Add a good amount of solder to each pin as this is the mechanical support for the board. Screw holes are provided for standoffs if you wish to add additional support.

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COMPONENT PLACEMENT



SCHEMATIC



The LEDs are wired from the userport output to 0V via one of the resistors in the resistor array. 1K Ω is normally fine for most modern LEDs with an approximate forward voltage of 2V. The best case output voltage from the userport is 5V, which gives approximately 3V to drop across the resistor. Using ohms law, the current is approximately 3mA.

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PROGRAMMING

The ports on the VIA and CIA chips will be set as inputs after reset. The LEDs will illuminate dimly when set as inputs due to internal pullups.

To get full brightness and control the LEDs, they need to be set as outputs.

This requires a single POKE command, but it is different for each system.

PET

POKE 59459,255

VIC

POKE 37138,255

C64

POKE 56579,255

Once the port is set as an output, the LEDs can be controlled via another poke command, where n is a number from 0 to 255.

PET

POKE 59457, n

VIC

POKE 37136, n

C64

POKE 56577, n

The number is displayed as a binary number, with the most significant digit to the left when facing the computer.

So, for example, 0 would be ● ● ● ● ● ● ● ●

255 would be ● ● ● ● ● ● ● ●

42 (\$2A in hex) would be ● ● ● ● ● ● ● ●

and so on.

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TEST PROGRAMS

This is a simple test program which counts up from 0 to 255 repeatedly.

PET

```
10 POKE 59459,255
20 FOR N=0 TO 255
30 POKE 59457,N
40 FOR X=0 TO 100 : NEXT X
50 NEXT N
60 GOTO 20
```

VIC

```
10 POKE 37138,255
20 FOR N=0 TO 255
30 POKE 37136,N
40 FOR X=0 TO 100 : NEXT X
50 NEXT N
60 GOTO 20
```

C64

```
10 POKE 56579,255
20 FOR N=0 TO 255
30 POKE 56577,N
40 FOR X=0 TO 100 : NEXT X
50 NEXT N
60 GOTO 20
```

EXTERNAL LINKS

For more info, see this blog post:

<http://blog.tynemouthsoftware.co.uk/2025/11/userport-led-tester-for-pet-vic-c64.html>