Kitronik

ESSENTIAL INFORMATION

DESIGNING THE ENCLOSURE
MECHANICAL DETAILS
HOW THE KIT WORKS
EXAMPLE ENCLOSURE

MAKE ILLUMINATED SIGNS WITH THIS

Tricolour LED Strip

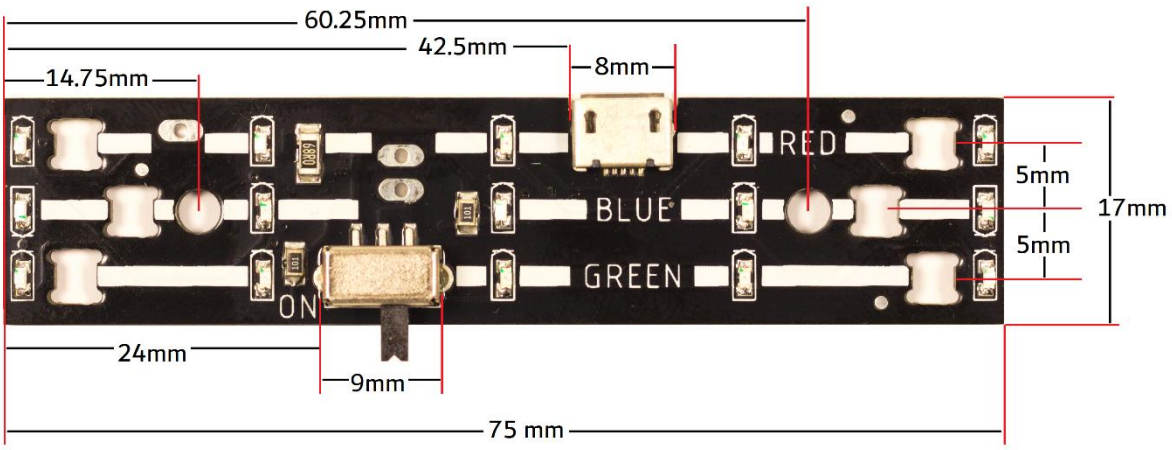
Version 1.0

Designing your light

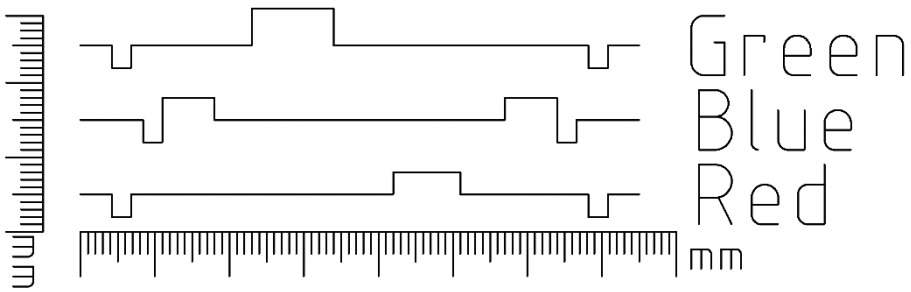
When you design the light, you will need to consider:

- The size of the PCB (below).
- Where the power cable connects.
- where the LEDs are mounted
- where the On/Off switch is mounted
- there are two M3 mounting holes

This dimensioned picture of the assembled PCB should help you to design your light.
The total height of the assembled unit is 7mm.



These are suggested shapes and dimensions for the bottom edge of 3mm acrylic to fit the alignment holes in the PCB and clear the larger components.
This also available as a DXF download from kitronik.co.uk/35164

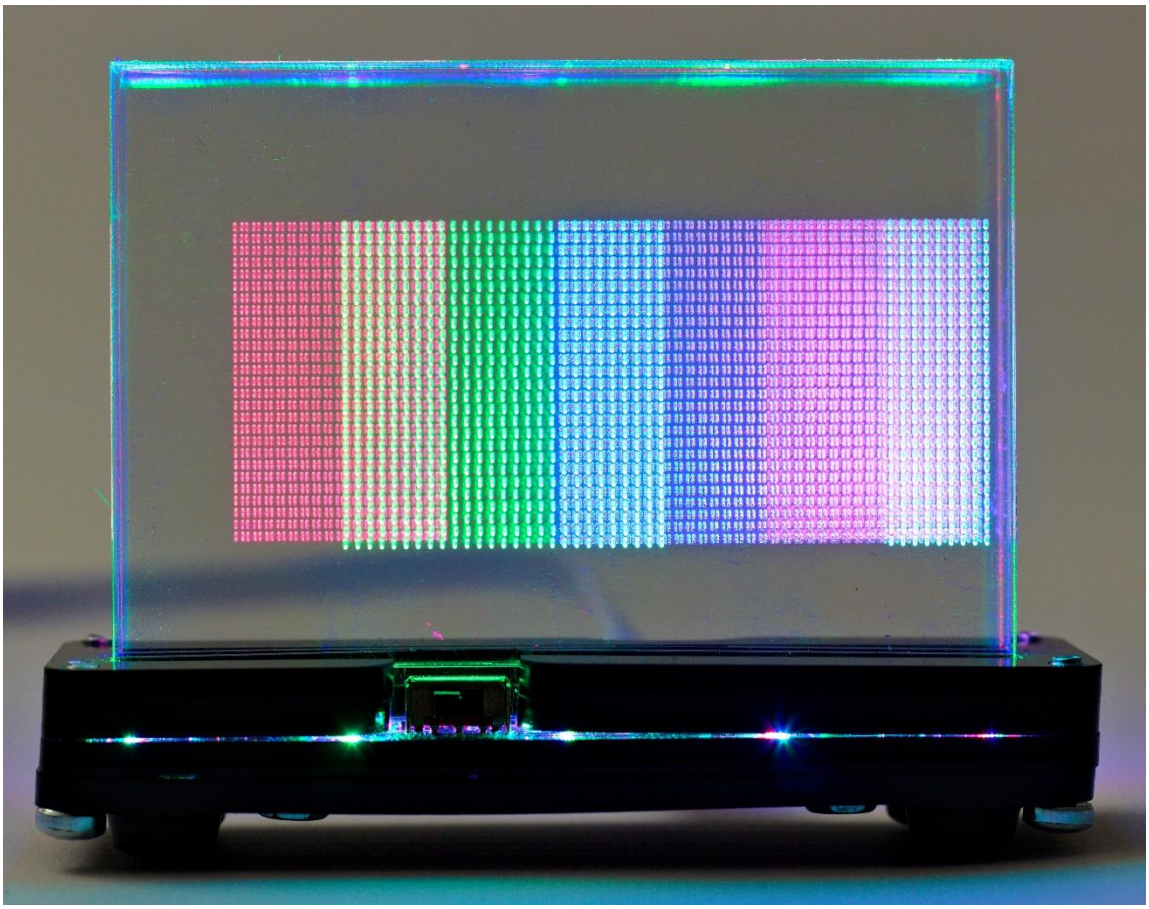


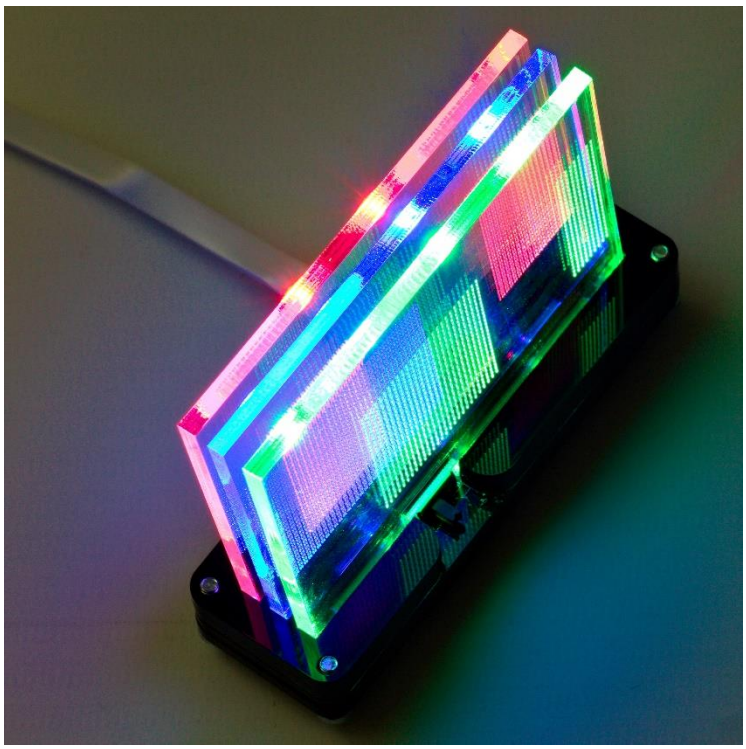
Example Lights

This simple picture is made with 3 layers of acrylic. They are held over the LEDs by a stacked acrylic base.
By separating out the colour channels in the original image the sign appears to be in full colour.
The design files for the base and panels can be found here: www.kitronik.co.uk/35164

Tricolour LED Strip Teaching Resources

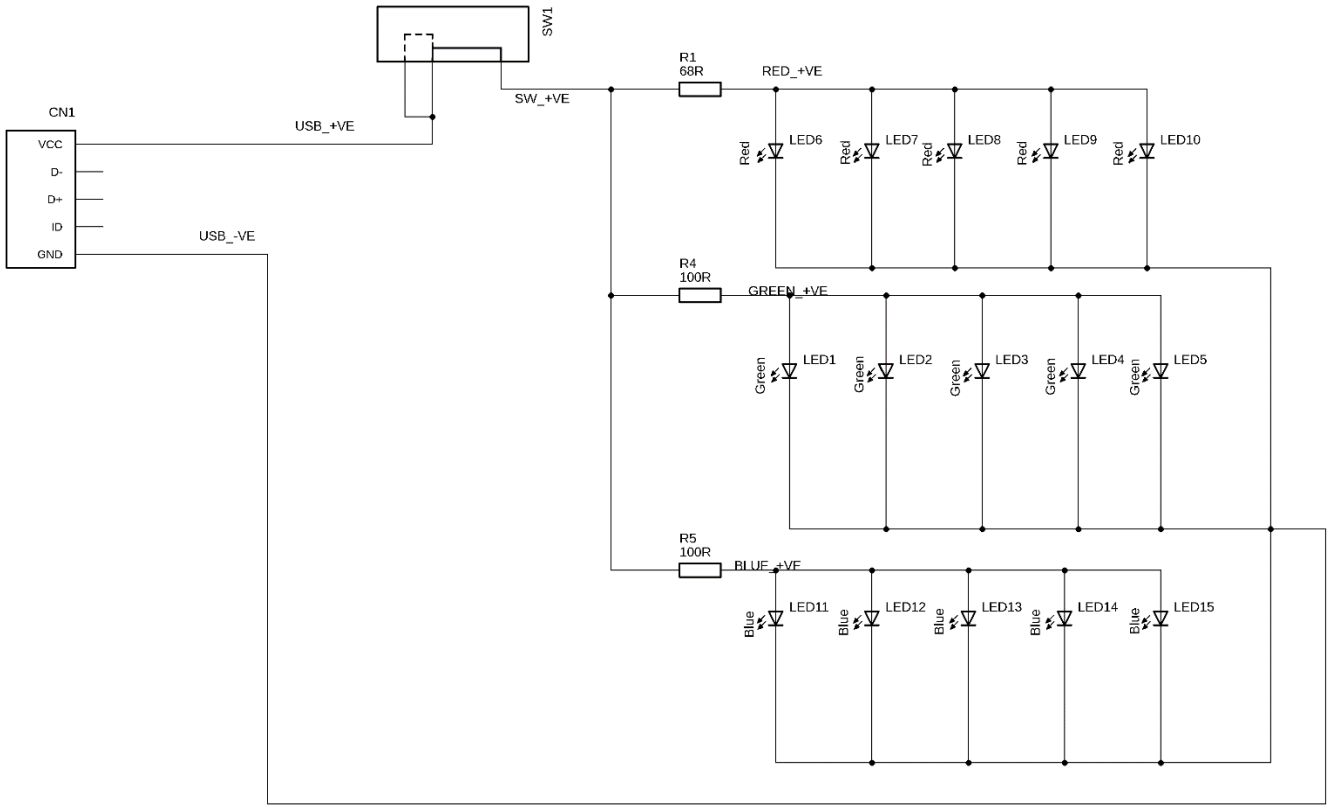
www.kitronik.co.uk/35164





This Rainbow light illustrates the mixing of 3 primary coloured lights to produce other colours. It works by having many ‘pixels’ which the eye sees as a single colour.
It uses the same base as the Rose picture.
The design files for the base and panels can be found here:
www.kitronik.co.uk/35164

How the Tricolour USB LED Strip Works



The circuit diagram for the Tricolour USB powered LED strip is shown above.

The board contains 3 sets of 5 LEDs. Each set shares a current limit resistor. Because the human eye is more sensitive to greens and blues than red the red LEDs have a higher current flowing through them.

The Red LED has a forward voltage of 1.8V, so 3.2V is dropped across the resistor. This gives 4.7mA per LED, or 23.5mA for all 5.

The Green LED has a forward voltage of 2.8V, so 2.2V is dropped across the resistor. This gives 2.2mA per LED, or 11mA for all 5.

The Blue LED also has a forward voltage of 2.8V, so 2.2V is dropped across the resistor. This gives 2.2mA per LED, or 11mA for all 5.

Adding up those give an overall current of 45.5mA for the board, so well within the 100mA maximum design constraint.

Online Information

Two sets of information can be downloaded from the product page where the kit can also be reordered from. The 'Essential Information' contains all of the information that you need to get started with the kit and the 'Teaching Resources' contains more information on soldering, components used in the kit, educational schemes of work and so on and also includes the essentials. Download from:

www.kitronik.co.uk/35164

This kit is designed and manufactured in the UK by Kitronik

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