

Build a big LED array

When you just need a big LED array that runs from 5 volts, this is the kit for you.

This PCB allows you to make a LED array easily and neatly. It consists of a high grade, double-sided fibreglass PCB with white solder mask for good reflectivity. It holds up to 144 LEDs of any size, from 1.8mm through to 10mm.

Rather than 144 individual resistors, the LEDs are driven from 9-pin, 8-resistor resistor networks, with each network driving eight LEDs, so there are just 18 resistor networks to fit. This speeds up assembly (and helps save your sanity). The suitable resistor networks are available on the LEDsales website (you want the 9-pin, 8 resistor networks for this PCB!). We recommend the 220 ohm network for lower voltage LEDs like reds, oranges and ambers, and the 180 ohm networks for higher voltage LEDs like blues and whites etc.

We have designed this PCB to run from 5V, keeping each LED as an independent unit, so you can install as many or as few LEDs as you wish. You can install all of them, or just a few in a pattern that you like, make an illuminated logo or shape, or even write (very) short words.

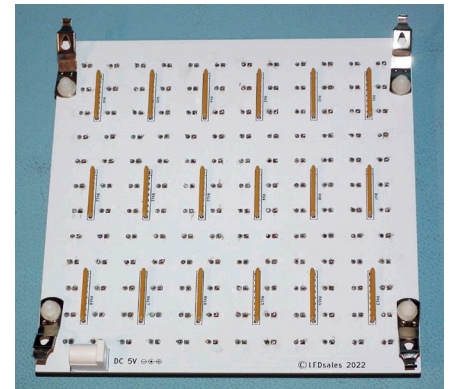
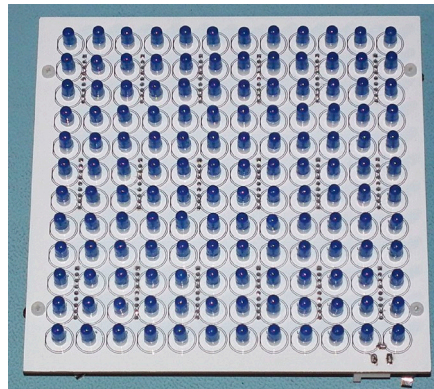
This array allows you to use animating LEDs, such as RGB slow animating LEDs, for a very effective display which will generate complex colours and patterns without the need for any external microcontroller! (We did this, it looks amazing.)

Of course, you could also just fit solid colour LEDs, or any combination of colours and types. Note: we don't recommend you use higher supply voltages as the dissipation in the resistor networks may become excessive.

Power is supplied to the PCB via a standard 5.5 x 2.1mm DC coaxial socket which, along with the resistor networks, is mounted on the rear of the board. You will need a 5V, 1.5A (at least) regulated DC power supply—you may well have a suitable power supply sitting in a drawer somewhere.

Building it

The PCB measures around 150mm x 150mm and is designed to fit into the



A finished PCB on the left (using 5mm blue flashing LEDs) and the rear of the board showing the resistor networks and the power socket.

6" square deep box photo frames from Rinkit.com.au (we have no affiliation with Rinkit, they just sell photo frames that are perfect for this use). There are even four holes in the PCB to allow you to reuse the spring steel retainers from the photo frame by transferring them to the back of the PCB with the nylon hardware provided (see photo below).

You start by soldering the resistor networks onto the back of the board, making sure pin 1 of the networks (there's a dot on the network near pin 1) goes to the top of the board (furthest from the DC connector)—the pin 1 location on the silkscreen is shown fully enclosed in the component outline.

Once the networks are installed, fit the DC socket, also on the back of the PCB.

Now, you just fit whichever LEDs you wish to the front of the board. We suggest

you do them in groups of eight, so that each LED/resistor network group can be tested as you proceed.

If using a Rinkit or similar photo frame as a case, you will want to transfer the metal spring clips from the Rinkit box backing board to the PCB. You can pull the rivets out of the backing board, but do it carefully so as to not damage the clips. We just found it easier to break up the board to release the clips. Discard the rivets.

To fit the clips to the PCB, you just pass the nylon screw through the PCB from the front, then add a 2mm high spacer, the metal clip, a nylon washer, and then the dome nut. Once done, the PCB just drops into the back of frame and you work the clips into place.

Now, plug it in and you're done.



Closeup showing the detail on how to fit the clips from the Rinkit frame to the PCB.