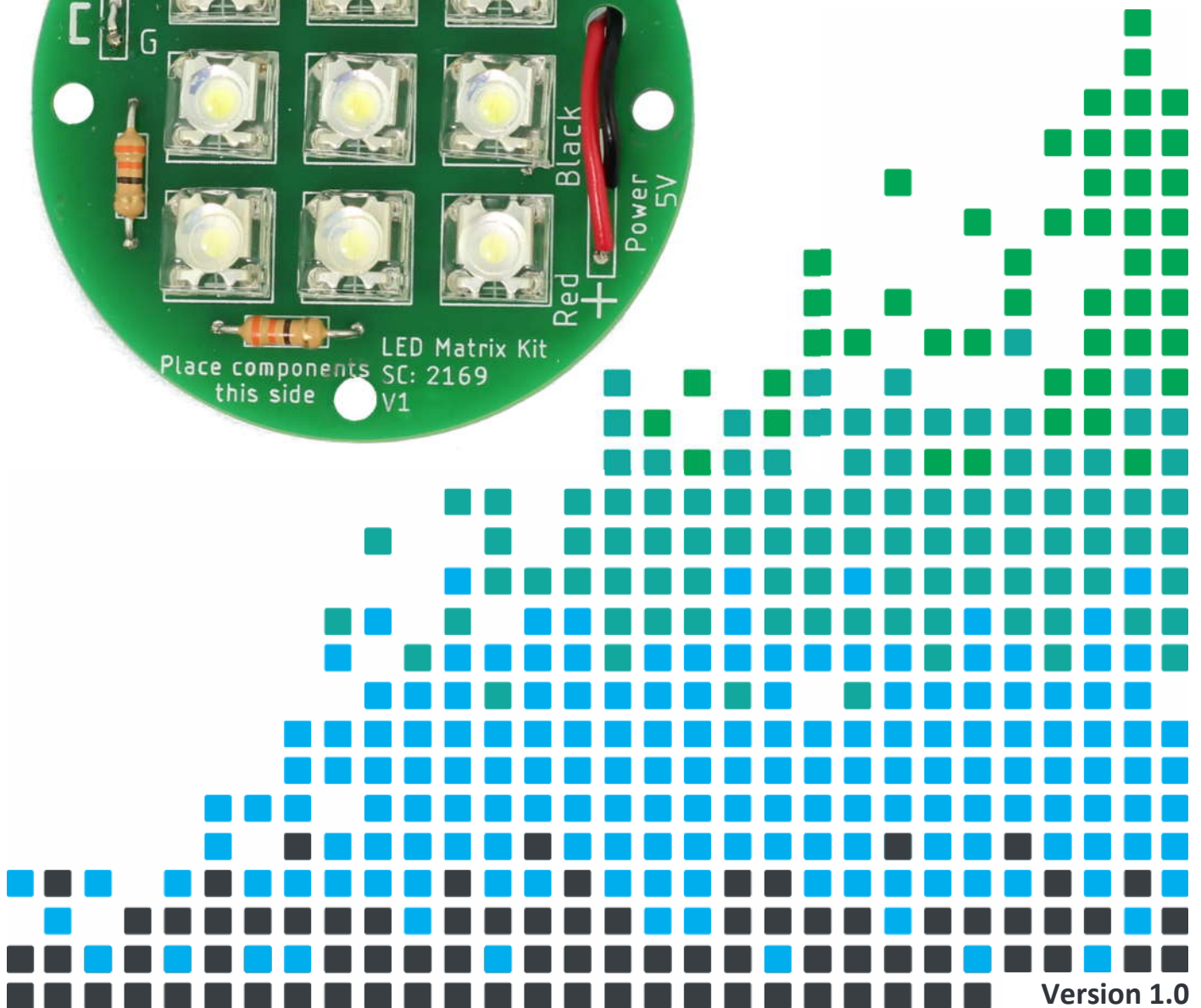
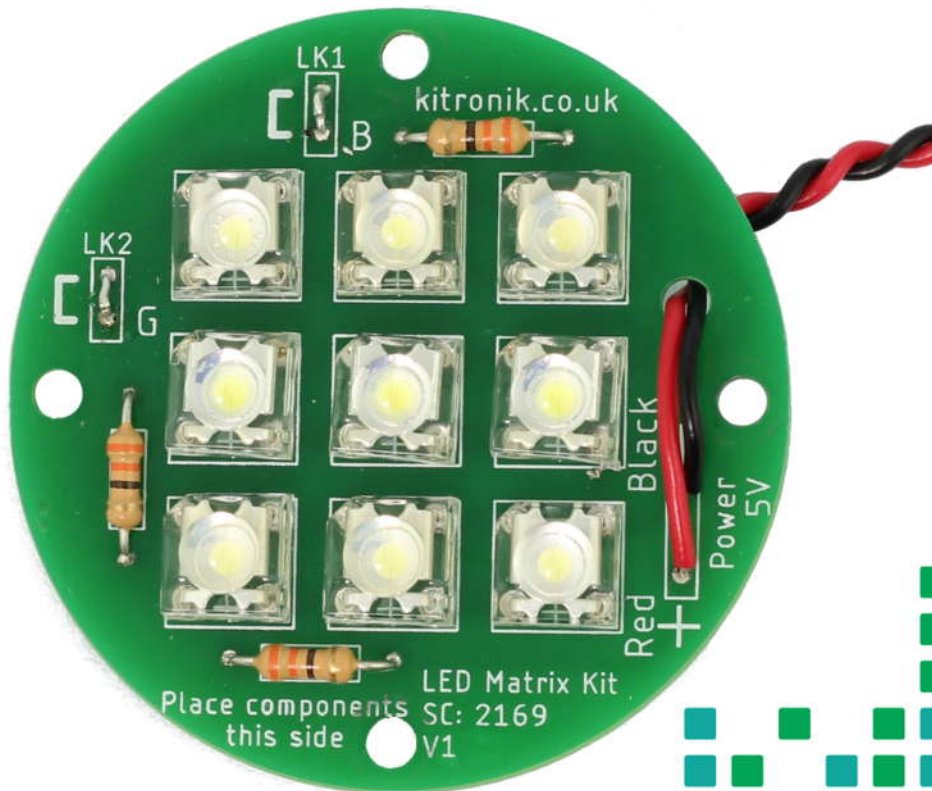


DESIGN A PRACTICAL DESK LAMP WITH THIS

Round 5V LED Desk Lamp Kit



Build Instructions

Before you start, take a look at the Printed Circuit Board (PCB). The components go in the side with the writing on and the solder goes on the side with the tracks and silver pads.

1

PLACE THE RESISTORS

Start with the resistors R1, R2 and R3. All three are the same so it does not matter which one goes where. It also does not matter which way around they go.

Note: Keep the excess leg pieces you have trimmed off.



2

BRIDGE THE SUPPLY LINKS

Take two of the excess resistor leg pieces from step 1 and use these to connect across LK1 and LK2. This will enable the power supply to connect to all the LEDs.

3

PLACE THE LEDs

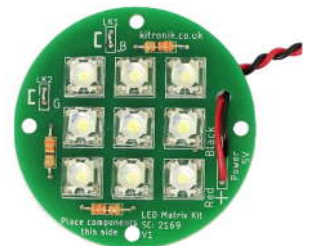
Place the PCB so that the LED component outline has the '-' symbol at the top. The LEDs all have a corner 'missing'. Line up this missing corner so that it is at the top left of the component outline (see picture below). This will ensure that they are the correct way around. All nine of the LEDs are the same and it does not matter which one goes where.



4

ATTACH POWER

Attach your preferred 5V power supply (not included in the kit). Thread both wires through the stress relief hole first then solder the positive wire to the pad labelled 'Red' marked with a '+'. Finally, solder the negative wire to the pad labelled 'black' and marked with a '-'.



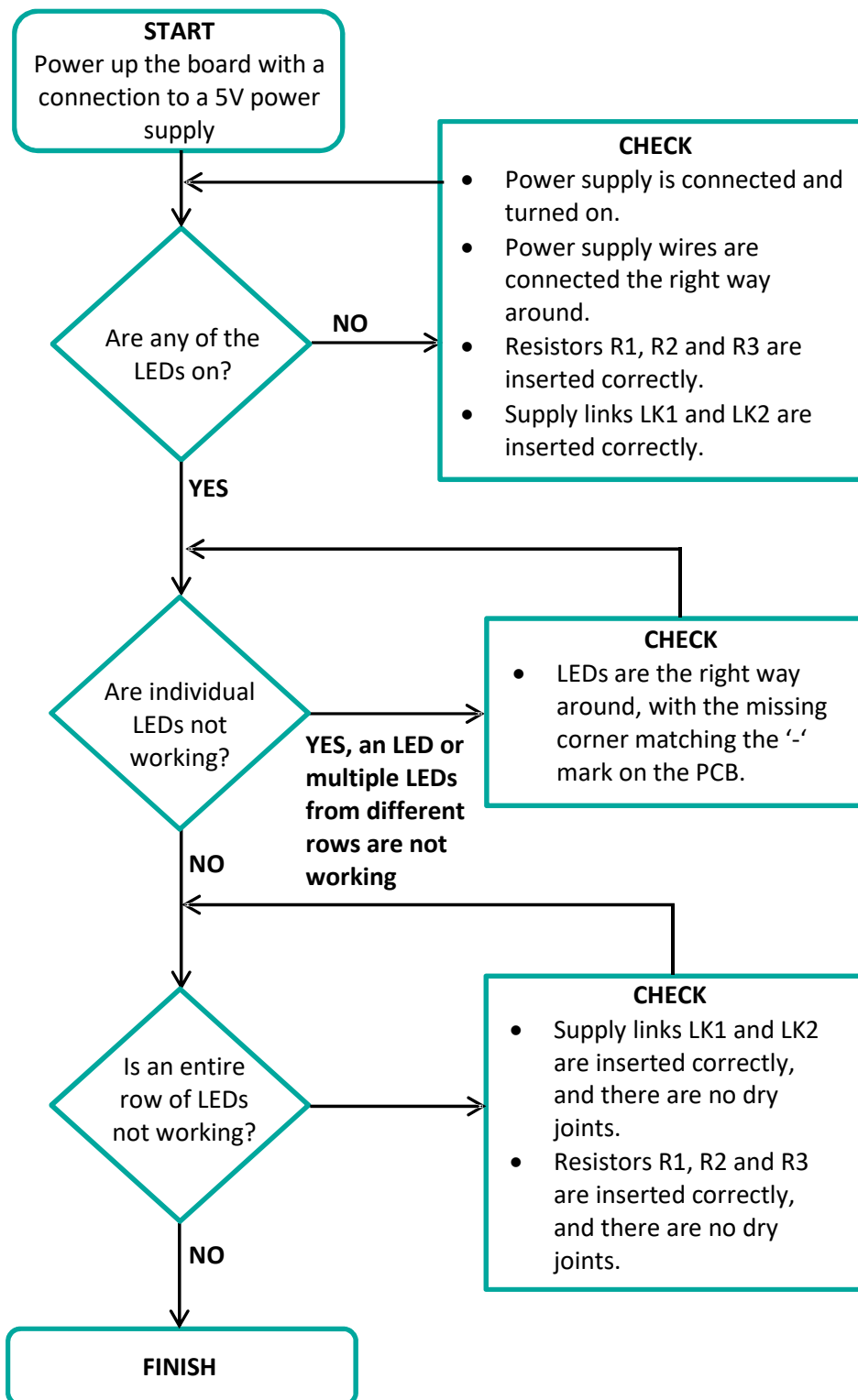
Checking Your 5V LED Desk Lamp PCB

- Is the positive '+' pad on the PCB connected to the positive wire on your 5V power supply?
- Is the negative '-' pad on the PCB wired to the negative wire on your 5V power supply?
- Have you soldered all the components in? There should be no unused component holes. Only the four mounting holes should be empty.
- Is the LED orientation correct? (Does the outline of the LED match the markings on the PCB?)



LED Desk Lamp Essentials

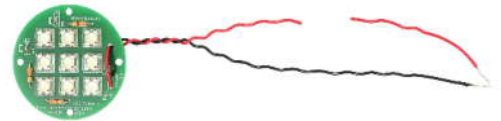
www.kitronik.co.uk/2169



Adding an On / Off Switch

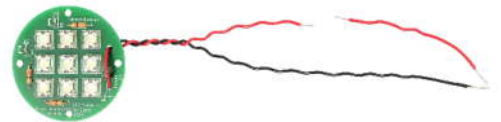
1

If you wish to add a power switch, cut one of the power wires leading to your 5V LED Desk Lamp PCB. Don't cut too close to the PCB or it will be difficult to reach the switch.



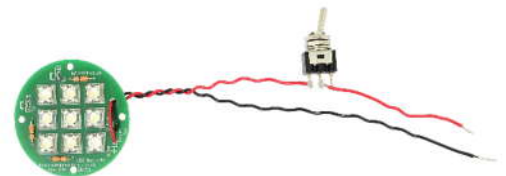
2

Strip the two ends that were made when you cut the wire.



3

Solder the newly stripped wire to the switch. One piece to each terminal.

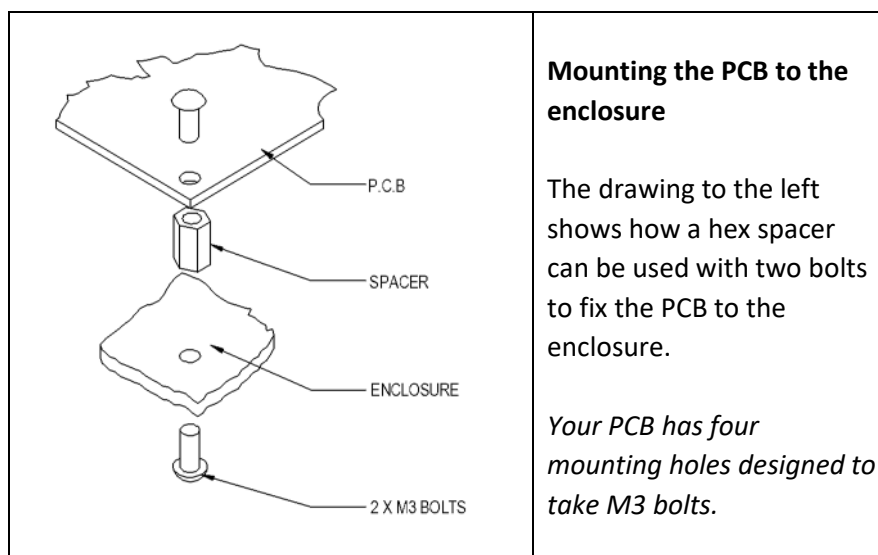
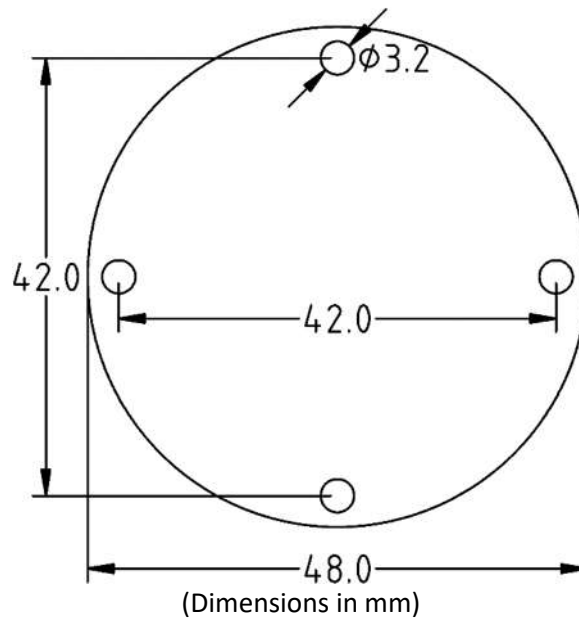


Designing the Enclosure

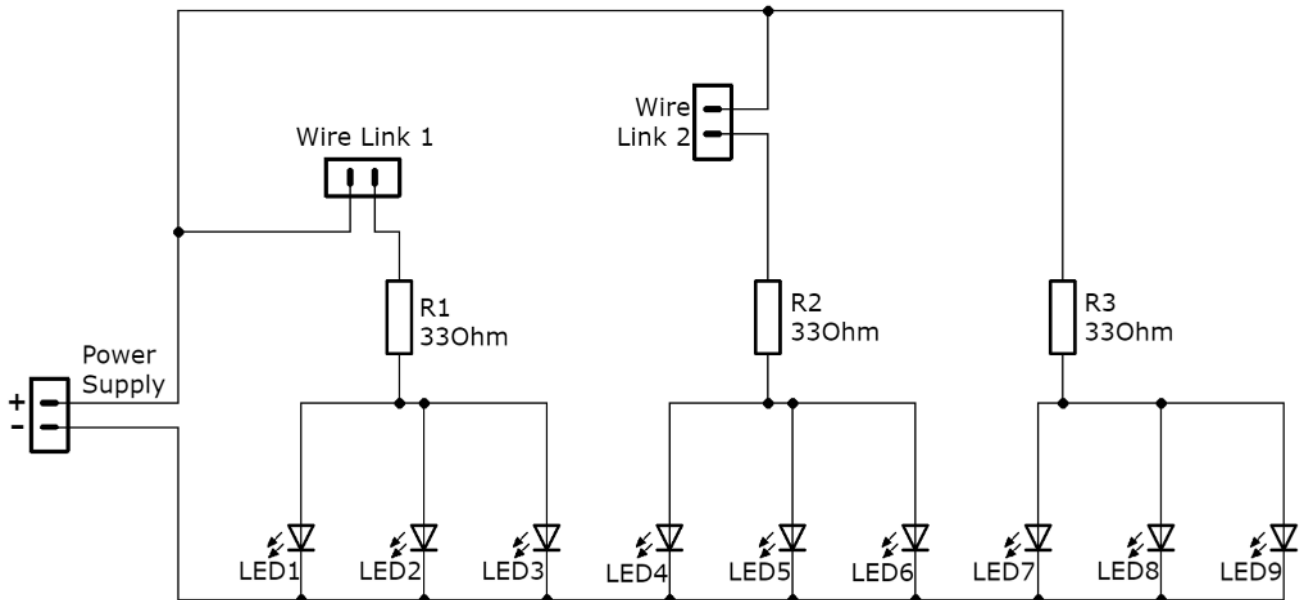
When you design the enclosure, you will need to consider:

- The size of the PCB (below).
- Where the power cable comes out.
- There are four 3.2mm holes in the PCB to secure the PCB in the enclosure.

This technical drawing of the built 5V LED Desk Lamp PCB should help you to design your enclosure. The total height of the assembled unit is 9mm.



How the 5V LED Desk Lamp Works



The circuit diagram for the 5V LED Desk Lamp is shown above. It is a very simple circuit. The board contains nine LEDs, these are grouped in threes, with each group of three sharing a current limit resistor.

LEDs can be damaged if too much current goes through them, so a 33 Ohm resistor is on each 'branch'. This allows around 20mA to each LED, or 60mA per branch.



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/2169

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