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With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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SEE AMAZING LIGHTING EFFECTS WITH THIS

COLOUR CHANGING USB LAMP KIT

Version 2.1

USB Lamp Kit Essentials
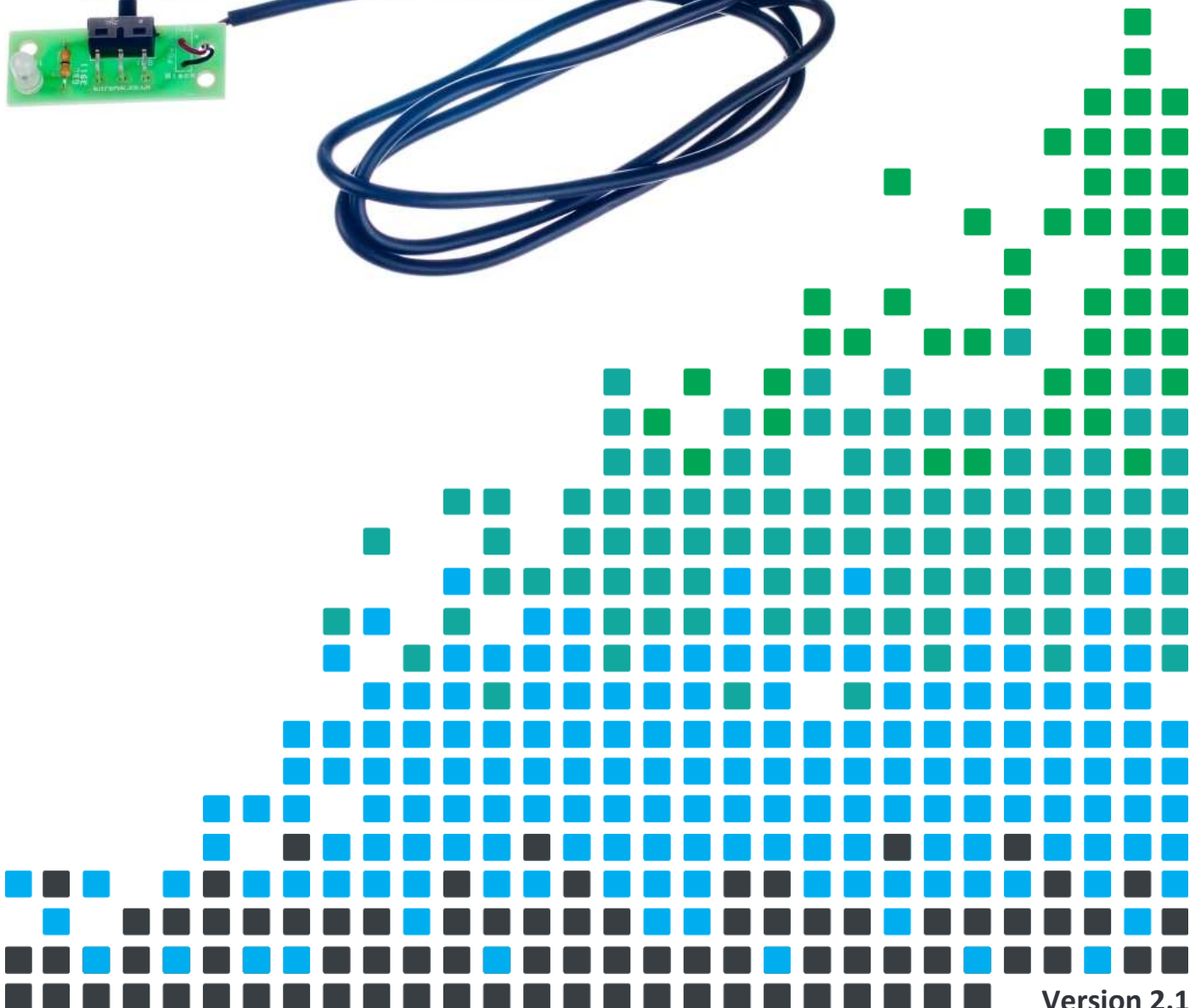
Build Instructions

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 RESISTORS

Start with the resistor R1. The text on the PCB shows where R1 should go. It doesn't matter which way around the resistor goes into the board.

PCB Ref	Value	Colour Bands
R1	0Ω	Black

2 PLACE LED

Place the Light Emitting Diode into LED1. The LED won't work if it doesn't go in the right way around. If you look carefully one side of the LED has a flat edge, which must line up with the flat edge on the outline on the PCB. You can mount this facing up from the board, or if you prefer you can mount it at 90º angle to the PCB. To do this you will need to put a 90º bend into the LED legs, just make sure that you bend it so that the flat edge on the LED is next to the flat edge on the board. Once you are happy, solder it into place.

3 SOLDER THE SWITCH

Solder the PCB Mount Right Angled On / Off Slide Switch into SW1. The row of three pins that exit the back of the switch must be soldered but it will not matter too much if you can't solder the other two pins.

4 CONNECT THE POWER LEAD

Finally, the USB power lead needs to be connected. Feed the red and black wire of the lead through the strain relief hole.

The red wire of the USB power cable is soldered to the power connector labelled 'Red' and the black wire of the USB power cable is soldered to the power connector labelled 'Black'.

Checking Your USB Lamp PCB

**Check the following before you plug your lamp into a USB port.**

Check the bottom of the board to ensure that:
- All holes (except the two large mounting holes) are filled with the lead of a component.
- All these leads are soldered.
- Pins next to each other are not soldered together.

Check the top of the board to ensure that:
- The flat edge on the LED matches the outline on the PCB.
- The red wire on the USB power cable is connected to the power connector labelled 'Red' and the black wire on the USB power cable is connected to the power connector labelled 'Black'.

How the USB Lamp Works
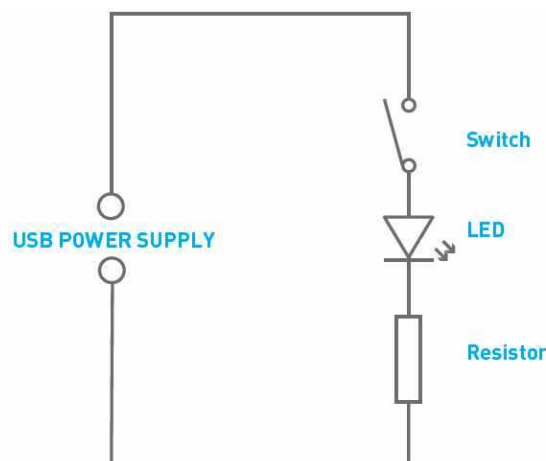
The circuit diagram for the USB lamp is shown above. It is a very simple circuit. The 5V that powers the circuit is supplied from the USB connector.

LEDs can be damaged if the current through them is not limited.

A 0Ω resistor is used with the Colour Changing LED. This is because the required current limit resistor is built into the LED itself, therefore, we simply want to connect this LED directly to the 5V supply.

Finally, the on / off switch allows the circuit to be opened and closed: open the switch to turn the LED off and close the switch to turn the LED on.

Designing the Enclosure

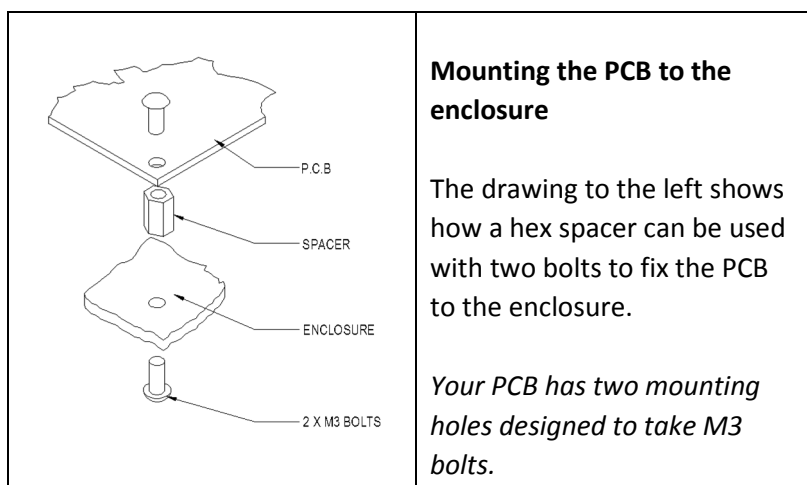When you design the enclosure, you will need to consider:

- The size of the PCB.
- Where the LED is mounted (shown in the top right corner of the PCB).
- Where the on / off switch is mounted.
- There are two 3.3mm holes in the corners of the PCB to secure the PCB in the enclosure.

This technical drawing of the built USB lamp PCB should help you design your enclosure.
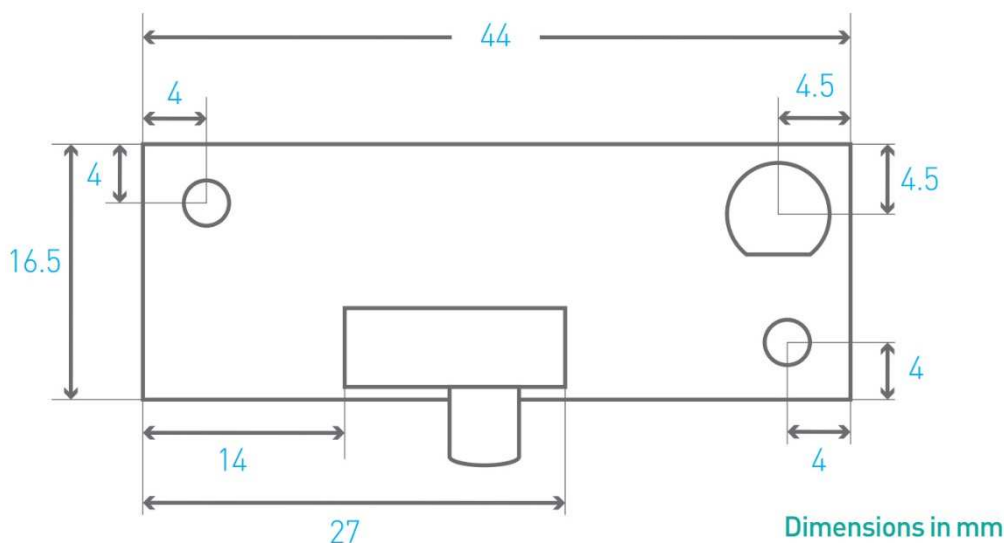
The 2 mounting holes are 3.3mm diameter.
The diameter of the LED is 5mm and the total height of the unit approximately 11mm.

Mounting the PCB to the enclosure

The drawing to the left shows how a hex spacer can be used with two bolts to fix the PCB to the enclosure.

Your PCB has two mounting holes designed to take M3 bolts.

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/2131

🇬🇧 This kit is designed and manufactured in the UK by Kitronik

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