

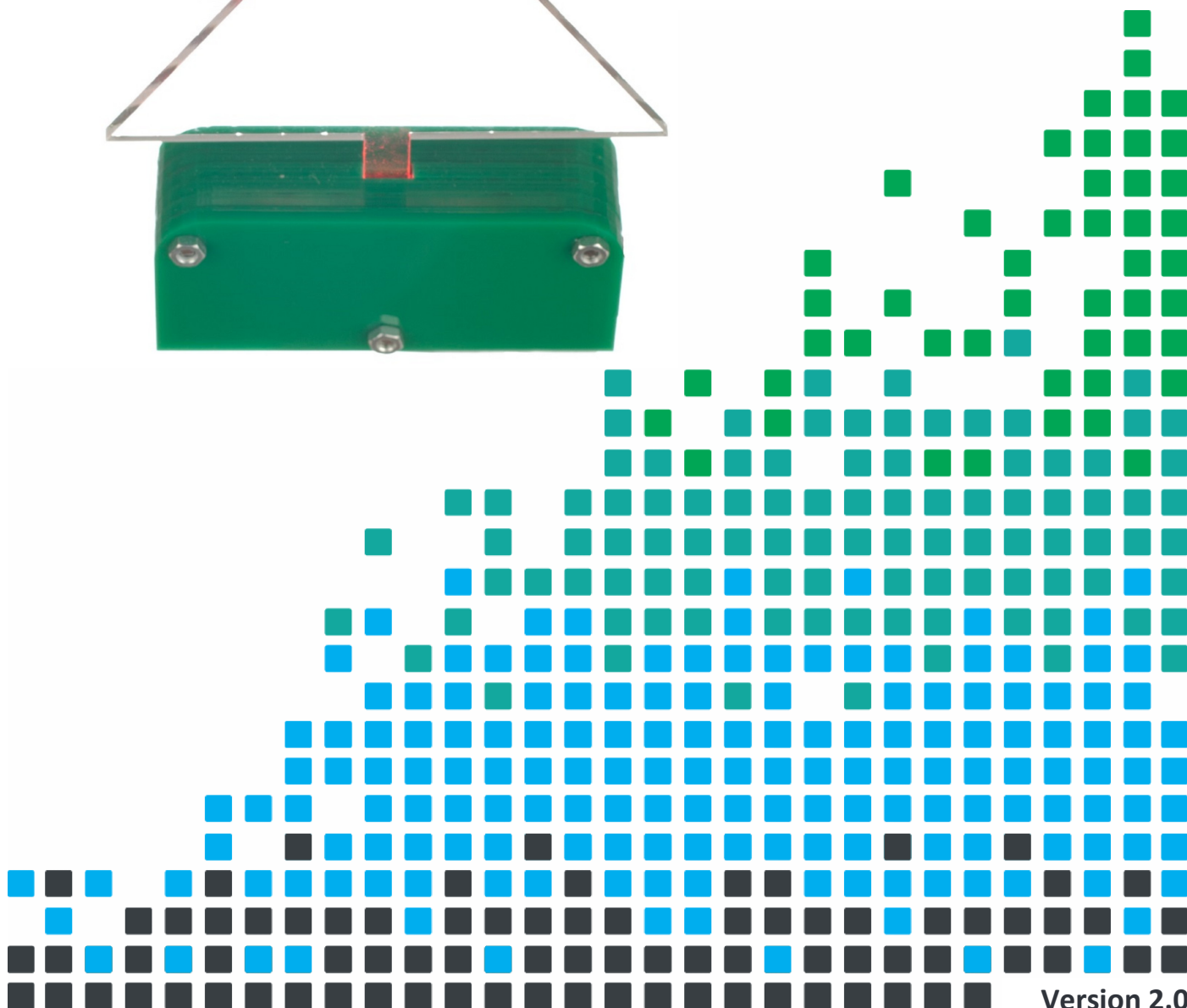


## ESSENTIAL INFORMATION

BUILD INSTRUCTIONS  
CHECKING YOUR PCB & FAULT-FINDING  
MECHANICAL DETAILS  
HOW THE KIT WORKS

BRING SOME LIGHT TO YOUR DECORATION WITH THIS

# LIGHT UP DECORATION KIT



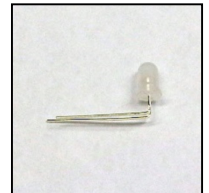
Version 2.0

## Build Instructions

### Step 1 – Connecting the electronics

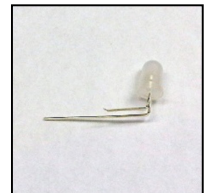
#### 1 Bend the LED

First of all take the LED and put a 90° bend in the legs of the LED about 5mm from the bottom of the LED. This can easily be done with a pair of pliers. The result will look like the LED in the picture shown to the right.



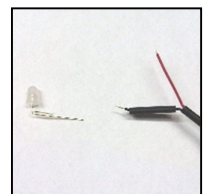
#### 2 Cut the short leg

Now take a pair of cutters and cut the **short leg** of the LED so that about 5mm to 10mm is left after the point of the bend. The result will look like the LED in the picture shown to the right.



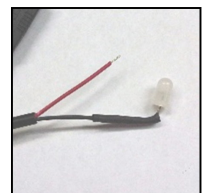
#### 3 Feed the heat shrink

Take 25mm of heat shrink and feed it over the black wire of the USB LED, as shown right.



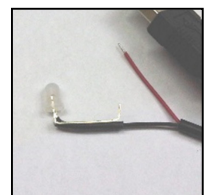
#### 4 Connect the black wire

Solder the black wire to the leg of the LED that was cut down earlier. Once the joint is correctly soldered slide the heat shrink over the leg of the LED. This is so that it can't accidentally touch the other leg and short the power supply. Once the heat shrink is in position, 'shrink' it into place by applying heat to it. This can be done by using a hot air gun.



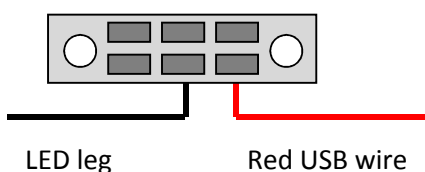
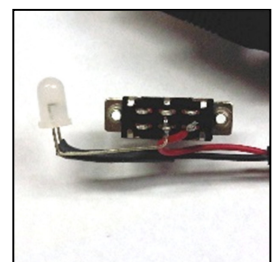
#### 5 Bend the LED leg

The next stage is to attach the switch. To do this, first put another bend in the remaining leg of the LED as shown in the picture on the right.



#### 6 Solder the switch

Now solder the switch into place. The picture below shows how to connect the leg of the LED and the red wire of the USB lead.



## Build Instructions

### Step 2 – Assembling the Decoration

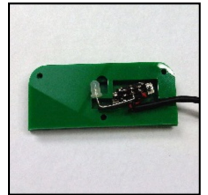
#### 1 Separate the parts

First find the three parts that look like those shown in the picture.



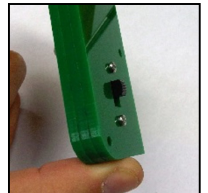
#### 2 Place the electronics

Now lay them together as shown in the picture (in order bottom, middle and top from the picture top right). Then lay the electronics on these pieces as shown.



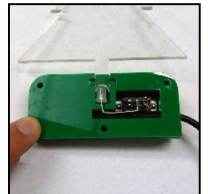
#### 3 Secure the switch

While making sure the electronics stay in place turn the parts over. Now screw the switch in place with the two small M2 screws provided.



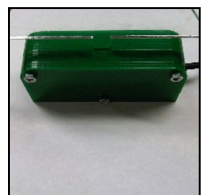
#### 4 Insert the decoration

Turn the parts back over and place the centre piece of the base on top of the stack. Then insert the clear part of the decoration in place as shown in the picture.

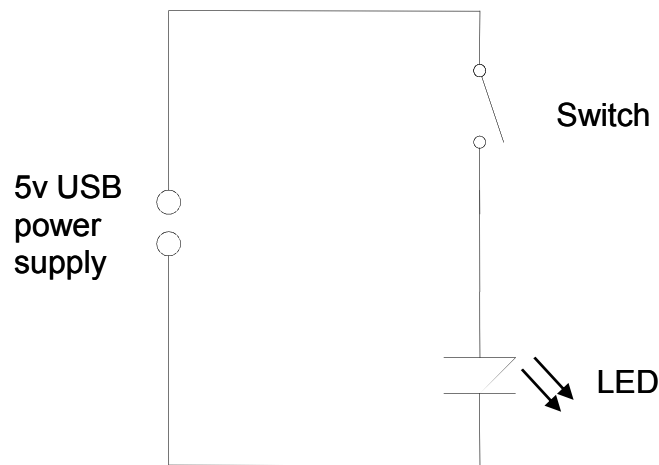


#### 5 Complete the base

The last job is to place the remaining three pieces in place (these will be the reverse of the first three pieces). These are then secured in place with the three long (25mm) bolts and nuts. These should be fine with 3mm acrylic. If you find them too short to fit you may wish to leave out the second from last piece of the base.



## How the light up decoration circuit 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.

LED's can be damaged if the current through them is not limited. Normally you would need a resistor to limit the current (power) that flows into the LED. If you do not do this the LED can become damaged. In the circuit above a resistor hasn't been used. This is because the current limit resistor is built into the LED itself; therefore the LED is simply connected directly to the 5V supply.

Finally the switch allows the circuit to be turned on or off. When the switch is open the LED will be off and when the switch is closed the LED will be on.



## 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/2133](http://www.kitronik.co.uk/2133)



This kit is designed and manufactured in the UK by Kitronik

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