



USB LED LAMP DESIGN KIT v2

DESCRIPTION

This kit includes all the electronic components needed for a student to complete a USB powered LED Lamp. There is a large amount of designing in this project as it is aimed to teach students basic design process skills. Student designs could be simplified by using the templates that are found on the website.

You can find addition resources at edumieducation.com.au/product/usb-lamp-design-kit/ or alternatively scan the QR code in the bottom right corner.



CONSTRUCTION

Before starting construction, we would advise you to build a kit yourself. This will allow you to become familiar with the processes and product to aid in demonstrating this to your students. All of the components will be inserted into the holes on the side of the PCB containing the writing. You will need to solder these components in. You can do this by flipping the PCB on its other side where the tracks and silver pads are visible. You will find it easiest to start with the small components and work up to the taller larger ones.

1 RESISTORS

Start with soldering the eight resistors on the board. The text printed on the PCB shows where the eight resistors **R1, R2, R3, R4, R5, R6, R7, R8**, and **R8** should be soldered. Make sure that you place the resistors in the right place.

R1, R2, R3, R4, R5, R6, R7, and **R8** is a 47 Ohm (yellow, violet, black and gold coloured bands)

3 POWER SUPPLY

The USB power lead needs to be connected. The red wire of the USB power cable is soldered to the power connector labeled '+' and the black wire of the USB power cable is soldered to the power connector labeled '-'.

2 LED'S

LED's need to be inserted the correct way around. The LED won't work if it doesn't go in the right way around. If you look carefully one leg of the LED is longer than the other. The longer leg needs to be inserted in the assigned hole closest to the resistor. Place the LED's where **LED1, LED2, LED3, LED4, LED5, LED6, LED7** and **LED8** are written on the PCB Board

4 SWITCH

Finally the switch will need to be connected. Two wires will need to be soldered onto the PCB board. The two holes located in the rectangle labeled '**SW**' on the PCB board are the two holes that need to be used. Once soldered the remaining ends of the wires from the PCB board can be soldered to the two terminals of the switch.

If you do not want to use the switch then you can bypass the switch by soldering a wire between the two holes located in the rectangle labeled '**SW**' on the PCB board.

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

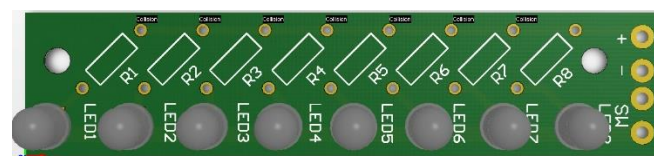
Check the bottom of the board to ensure that:

- All 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 is closest to the edge of the board.
- The red wire on the USB power cable is connected to the power connector labelled '+' and the black wire on the USB power cable is connected to the power connector labelled '-'

The circuit diagram for the USB Lamp PCB is shown to the below.



PART ID	PART NAME
SW	Rocker Switch
+ -	1 Metre USB Cable
R1 - R8	47K Resistors
LED1 - LED8	Ultra-Bright White LED

