

# LED Color Organ



## Introduction

This board can either accept audio through either a microphone or a 2.5mm audio jack, and displays bass, mid, and treble levels.

## Preparation

- Before beginning:
  - Put on safety glasses
  - Turn on the fume extractor
  - Gather tools
  - Set up work area
- Prepare soldering iron:
  - Turn the soldering station on
  - Lift the handle and wait for the beep
  - Clean tip in brass sponge
  - Apply a blob of solder to the tip (in the tip)
  - Return the iron to the holder

## Component list

Component	Quantity
9V battery	1
9V Battery Connector	1
0.1uF capacitor	2
4.7uF capacitor	2
4.7nF capacitor	2
0.01uF capacitor	2
2200pF capacitor	2
2.2uF capacitor	3
22uF capacitor	1
1uF capacitor	1
1N4002 diode	3
LEDs	12
Audio jack	2
Microphone	1
2N3904 NPN transistor	3
TL074 op amp	1
LF356 op amp	1
100k $\Omega$ resistor	5
47k $\Omega$ resistor	1
1M $\Omega$ resistor	1
1k $\Omega$ resistor	9
680 $\Omega$ resistor	3
560k $\Omega$ resistor	3
39k $\Omega$ resistor	4
Switch	1

## **Procedure**

You should generally start with the smallest components. This gives you more room to work when you need it.

However, to give you a sense of why we would be soldering some large components first, begin by soldering the audio jacks, switch, and microphone.

Move on to solder the resistors and capacitors. Make sure to match the values as written on the board,

Now you can solder the diodes, make sure to align the line on the diode to the line on the board.

Solder the rheostat or potentiometer on the board.

Now you can move to solder the transistors, make sure the flat side matches with the flat side on the board.

Solder the 9V batter connector, and make sure you put the red and black wires correctly.

Finally, you can move to the LEDs, probably the part most of you were looking forward to. Make sure the short leads go into the square pad. You are welcome to make any combinations with the available LED colors.

## **After Soldering**

Check with a 9V battery if it works. If it does not then make sure you have made the connections properly.

Make sure you clean your workspace, as this does not take time from the next students who will be using the space.

Also, make sure you leave solder on the tip of the iron when done soldering to help prevent oxidation on the tips.

## **Before exiting the room**

Make sure you have taken your LED Color Organ board and 9V battery with you. You can take your Do Nothing board 1 if you plan to take Intermediate Training.