



Centre for Electronic Design and Technology
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USER MANUAL **Electronic Electroscope**

A Project in Analog Electronics

Date: October 2023

Requirements

Components required other than PCB

- A lithium Polymer battery (typical range 3.5 to 4.1V)
- A PVC pipe of length $\geq 35\text{cm}$.
- A glass rod or hollow Acrylic rod of length $\geq 35\text{cm}$.
- A piece of cloth of type silk or fusion .

Detailed Photo

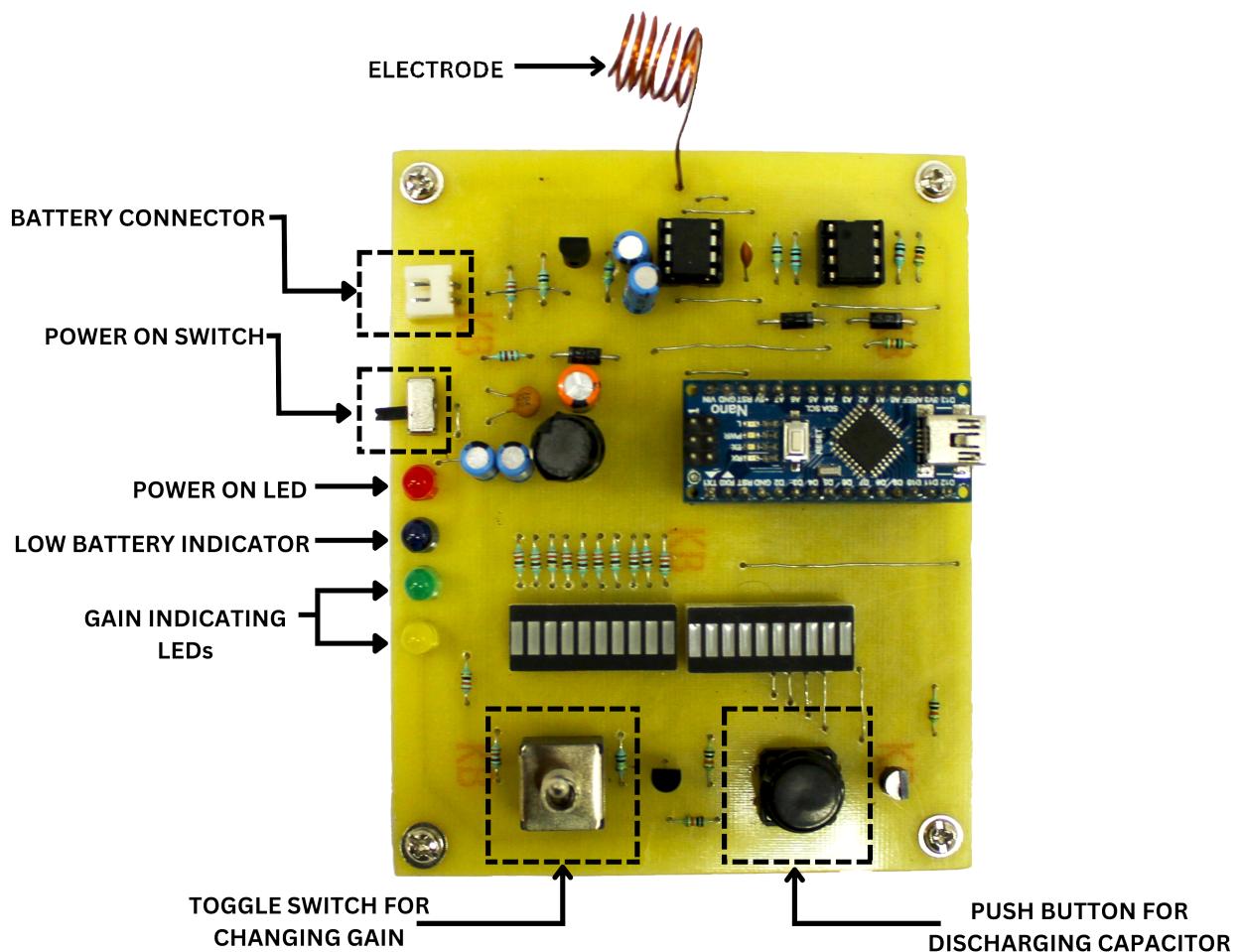


Figure 1: Labelled photo, indicating the functions of all necessary components.

LEDs indicating Gain

Green LED is for indicating a Gain of 2.

Yellow LED is for indicating a Gain of 11.

How to Use:

- **For detecting Positive charge**

To charge the Electroscope with positive charge , you have to rub "Glass rod or Acrylic rod with silk cloth " after which take the glass/Acrylic rod closer to the copper Electrode of the Electroscope.

Observation

You will see "green" bar graph LEDs blinking on the Electroscope.

- **For detecting Negative charge**

To charge the Electroscope with negative charge , you have to rub "PVC pipe with fusion cloth " after which take the glass rod closer to the copper Electrode of the Electroscope.

Observation

You will see "red" bar graph LEDs blinking on the Electroscope.

Potential Problems & their Solutions

- **If the circuit is not getting ON**

Check the battery Voltage (it should be greater than 3.5V).

- **If the electroscope is not able to detect charge**

Check whether the electrode is oxidised or not if it is oxidised then remove the oxidised layer from the electrode with the help of sand paper

- **If all LEDs are not blinking**

If LEDs are not blinking properly then check voltage and connectivity of copper tracks at their legs.

Also , check whether the LED is fused or not.

- **If you are not able to produce static charge**

Try to use proper combinations mentioned above to produce desired charge.

- **If bar graph LEDs are blinking abruptly**

Try to discharge the capacitor by simply pressing the push button present on the electroscope.