

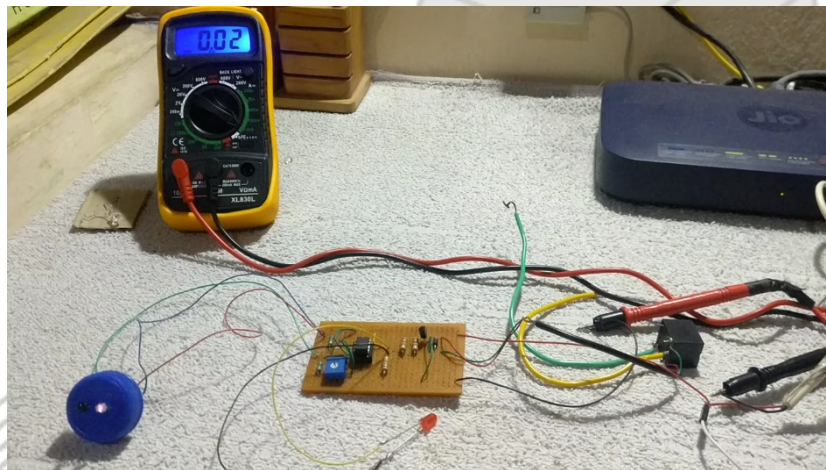
EXPERIMENTAL ANALYSIS AND RESULTS

To make the product quality and durable, we have chosen the resistors according to the power wattages that the branch consumes. We have added an extra diode (1N4007) in reverse bias across the coil of the relay to prevent the sudden spike of voltage and to protect the circuit from it. According to Lenz Law, induced EMF (Electromotive Force) is opposite in the direction to applied EMF. So, the coil in the relay is an inductor and it induces an opposing voltage which can damage the circuit.

Current Consumption:

1. When the device is in idle, no Obstacle (Hand) detected. It consumes an average of **25 mA** of current. So, the power consumption of the device in the idle state is, $P = V \times I$, $P = 5 \times 0.025 = \mathbf{0.125 \text{ Watts}}$

Proof:



2. When the device detects an obstacle (Hand), it consumes an average of **80 mA** of current. So, the power consumption of the device in this state is, $P = V \times I$, $P = 5 \times 0.08 = \mathbf{0.4 \text{ Watts}}$

Proof:

