ECE1008 (SENSORS & CONTROL SYSTEMS) EXPERIMENT – 5

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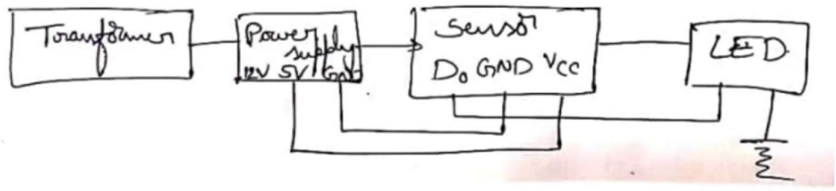
Aim –
Vibration sensor experiment

Materials Required –
Bread board, connecting wires, relay, vibration sensor, transformer, LED.

What is the Vibration Sensor ?
The vibration sensor is also called as piezoelectric sensor. These sensors are flexible devices which are used for measuring various processes. This sensor uses the piezoelectric effects while measuring the changes within acceleration, pressure, temperature force otherwise strains by changing to an electrical charge. This sensor is also used for deciding fragrances within the air by immediately measuring capacitance as well as quality.

Circuit diagram –



Procedure –

Without Relay:

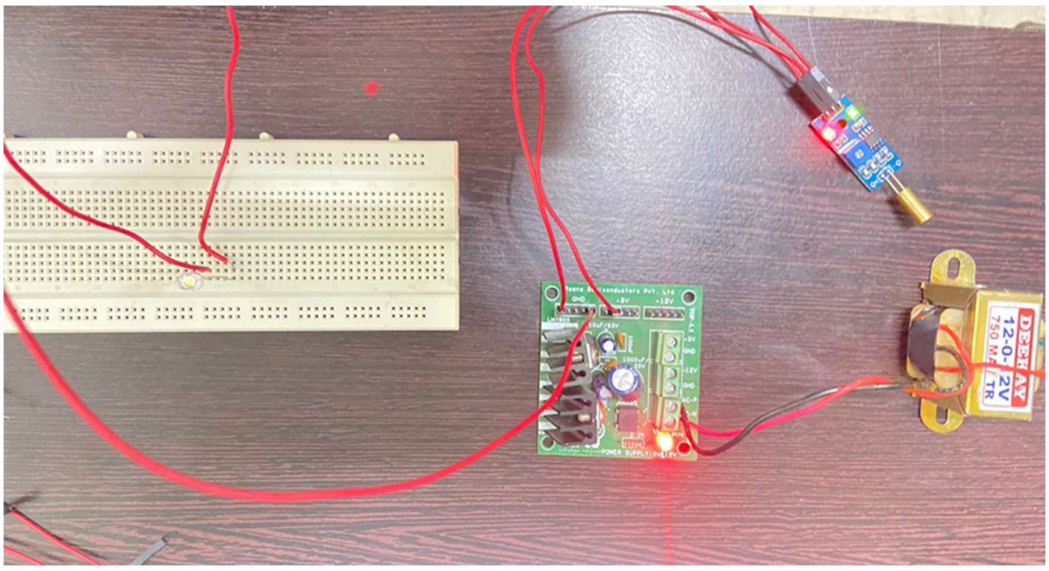
1. Connect the V_{cc} pin of sensor to 5V power supply of transformer and ground of sensor to power supply ground.
2. Connect D_0 of sensor to LED.
3. Connect negative of LED to ground.
4. Switch on the power supply.
5. Give some movement to sensor, so that LED glows, which means it detected the vibration in sensor.

With Relay:

1. Connect the V_{cc} of sensor to 5V power supply and positive of relay.
2. Connect the ground of sensor, negative of relay and COM of relay to ground of power supply.
3. Connect D_0 of sensor to S of relay.
4. LED positive terminal is connected to ground of relay and negative terminal to ground.
5. Switch on the power supply.
6. Give some movement to the sensor, so that LED glows, which means that it detected

Working Principle –

The working principle of vibration sensor is a sensor which operates based on different optical otherwise mechanical principles for detecting observed system vibrations. The sensitivity of these sensors normally ranges from 10mV/g to 100mV/g, and there are lower and higher sensitivities are also accessible.



Applications –

The applications of the vibration sensor include different industries for measuring the vibration. The exclusive industrial characteristics will decide sensor characteristics.
The industries which use the vibration sensor mainly include food and beverage, mining, metal working, gas and oil, paper, wind power, power generation, etc. Thus, this is all about vibration sensor.

Conclusion –

Whenever we give any movement to sensor, LED gives signal and glows.