



# LAMPIRAN

## Vibration Sensor



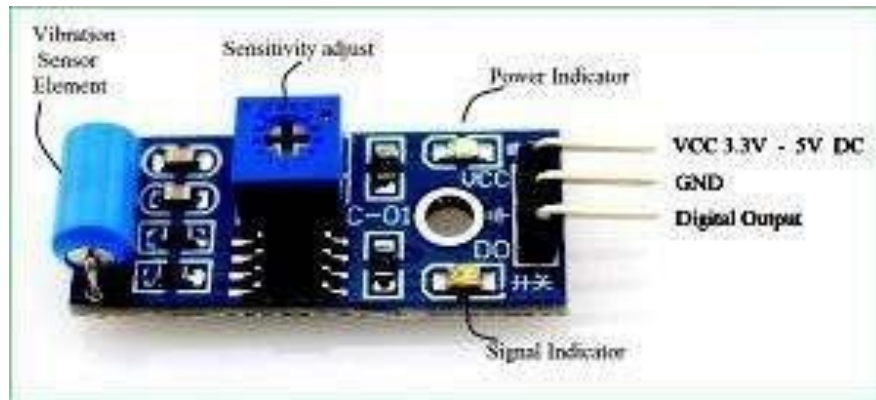
This module features an adjustable potentiometer, a vibration sensor, and a LM393 comparator chip to give an adjustable digital output based on the amount of vibration. The potentiometer can be adjusted to both increase and decrease the sensitivity to the desired amount. The module outputs a logic level high (VCC) when it is triggered and a low (GND) when it isn't. Additionally there is an onboard LED that turns on when the module is triggered.

Features

- The default state of the switch is close
- Digital output Supply voltage:3.3V-5V
- On-board indicator LED to show the results
- On-board LM393 chip
- SW-420 based sensor, normally closed type vibration sensor
- Dimension of the board: 3.2cm x 1.4cm
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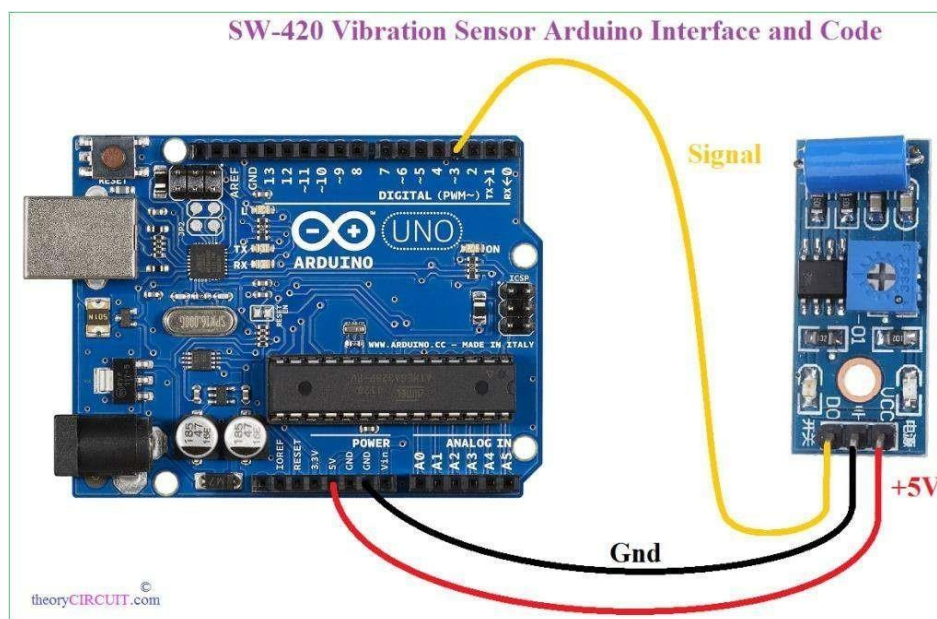
Many Applications can be created by measuring Vibration level, but sensing vibration accurately is a difficult job. This article describes about vibration sensor SW-420 and Arduino interface then it may help you to design effort less vibration measurement.

The vibration sensor SW-420 Comes with breakout board that includes comparator LM 393 and Adjustable on board potentiometer for sensitivity threshold selection, and signal indication LED.



This sensor module produce logic states depends on vibration and external force applied on it. When there is no vibration this module gives logic LOW output. When it feels vibration then output of this module goes to logic HIGH. The working bias of this circuit is between 3.3V to 5V DC.

### Arduino Hookup with SW-420



Connect Vcc pin of sensor board to 5V pin of Arduino board, connect Gnd pin to Gnd pin of Arduino, Connect DO output signal pin of sensor board to Arduino digital pin D3. Do some calibration and adjust the sensitivity threshold, then

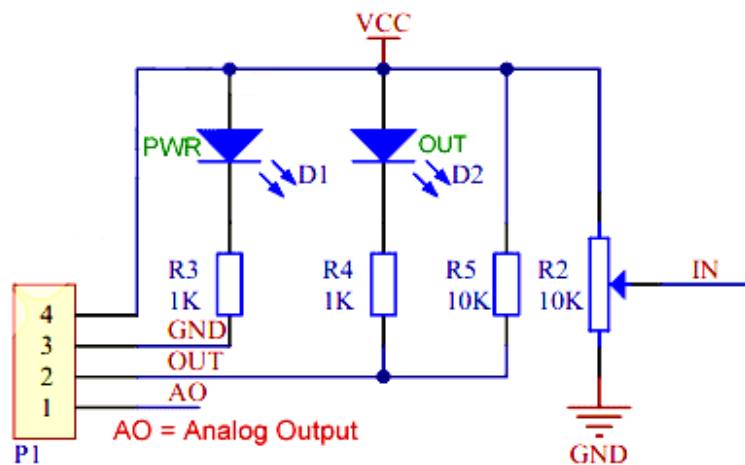
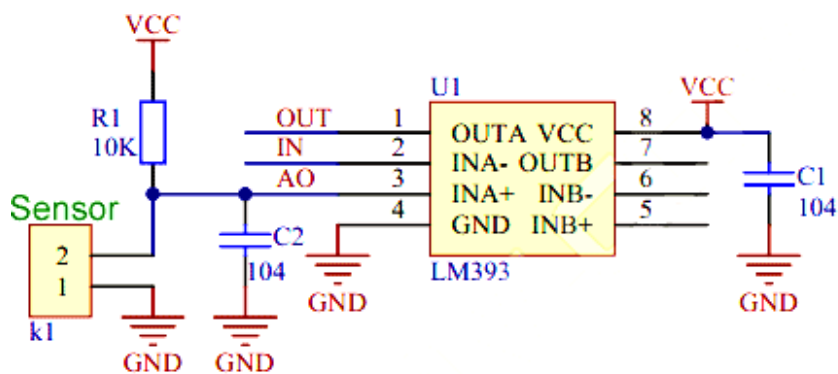
upload the following sketch to Arduino board.

Arduino Code for Logic State Output from sensor module, here onboard LED of Arduino indicates the presence of vibration.

### Application Ideas

- Vibration detecting
- Burglary protection system
- Object Movement detecting
- Triggering effect reported theft alarm
- Smart car
- Earthquake alarm
- Motorcycle alarm

### Board Schematic



## **Use**

- The module does not vibrate, vibrate switch is closed conduction state, the output low, the green indicator light comes ON.
- Vibration state, vibration switch instantly disconnect the output high, the green light is not on;
- The output is directly connected to the microcontroller to detect high and low, thereby detecting the vibration environment, play an alarm role

## **Sensor Details SW-420**

Single-roller type full induction trigger switch. When no vibration or tilt, the product is ON conduction state, and in the steady state, when a vibration or tilt, the switch will be rendered instantly disconnect the conductive resistance increases, generating a current pulse signal, thereby triggering circuit. These products are completely sealed package, waterproof, dustproof.

## **Principle**

Usually at any angle switch is ON state, by the vibration or movement, the rollers of the conduction current in the switch will produce a movement or vibration, causing the current through the disconnect or the rise of the resistance and trigger circuit. The characteristics of this switch is usually general in the conduction state briefly disconnected resistant to vibration, so it's high sensitivity settings by IC, customers according to their sensitivity requirements for adjustments.