Vibration Shake Sensor

The Vibration Sensor allows you to use an Arduino to detect impacts, shocks or shaking.

When the switch detects a jolt, the output of the module is sent low.

Functional Description

The switch primarily consists of a terminal that forms a center post and a second terminal that is a spring that surrounds the center post.

When a sufficient force is transferred to the switch, the terminal consisting of the spring moves and shorts both terminals together.

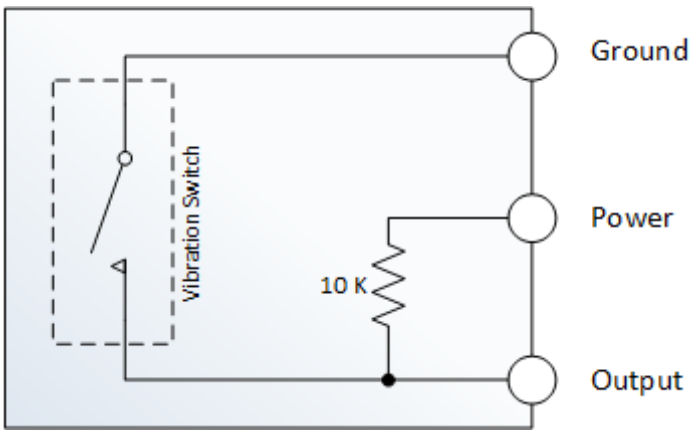
The connection between the terminals is momentary and will require a little thought as you implement it in your Arduino project.

Positioning of the switch is also important. Generally speaking the switch should be physically located as close as possible to the area being monitored. Otherwise, the vibration being detected may be dampened by other structural components in your project.

An exception to this rule may be where you find that the switch is too sensitive for your application. In this case, moving the switch further away from the area of interest may make it less sensitive.

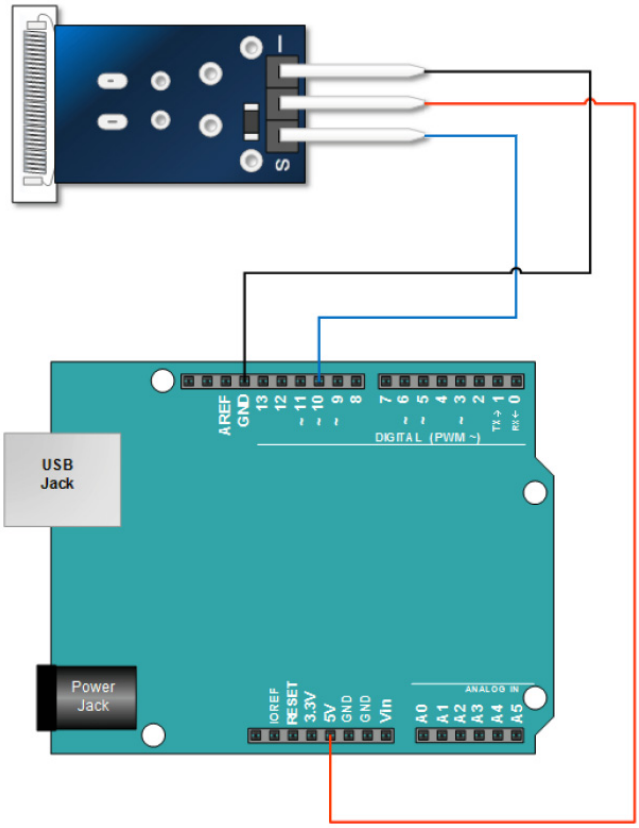
Module Schematic

As the schematic below shows, the module is nothing more than the switch and a pull up resistor. In fact, you could just as easily build your own with the Gaoxin switch alone.



Pinout and Connection to Arduino

Use the diagram below. You will only need three connections. Connect + to 5V, - to Ground and S to pin 10 on Arduino.



Arduino Example Sketch

In the sketch below:

- We read the input from the shock sensor
- If we detect a shock and we record the time the shock was detected. (see *lastShockTime*)
- If we were not already in an alarm state (see *bAlarm*) when a shock is detected, we set an alarm state and indicate that we're in an alarm state by sending an output to the serial monitor
- We exit the alarm state when the following conditions are satisfied
  - There is a high value measured at the sensor output
  - The difference between the high measurement and the last low measurement is greater than 250 mS (set by *shockAlarmTime*)
  - We are in an alarm state (see *bAlarm*)
- When we exit the alarm state, we set *bAlarm* to false and we send an output to the serial monitor

```
int shockPin = 10; // Use Pin 10 as our Input
int shockVal = HIGH; // This is where we record our shock measurement
boolean bAlarm = false;

unsigned long lastShockTime; // Record the time that we measured a shock

int shockAlarmTime = 250; // Number of milli seconds to keep the shock alarm high


void setup ()
{
  Serial.begin(9600);
  pinMode (shockPin, INPUT) ; // input from the sensor
}
void loop ()
{
  shockVal = digitalRead (shockPin) ; // read the value from our sensor

  if (shockVal == LOW) // If we're in an alarm state
  {
    lastShockTime = millis(); // record the time of the shock
    // The following is so you don't scroll on the output screen
    if (!bAlarm){
      Serial.println("Shock Alarm");
      bAlarm = true;
    }
  }
  else
  {
    if( (millis()-lastShockTime) > shockAlarmTime  &&  bAlarm){
      Serial.println("no alarm");
      bAlarm = false;
    }
  }
}
```

Run the Sketch and Verify the Output

After a successful upload, open your Arduino's serial monitor. With the serial monitor open, gently tap on the sensor.

When the Arduino registers a shock, it will be indicated on the serial monitor with a '**Shock Alarm**'.

After a period of time without registering a shock (set by *shockAlarmTime*), the serial monitor will indicate '**no alarm**'.