

Grove - Piezo Vibration Sensor

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Wiki: http://www.seeedstudio.com/wiki/Grove- Piezo Vibration Sensor

Bazaar: http://www.seeedstudio.com/depot/Grove-Piezo-Vibration-Sensor-p-1411.html



Document Revision History

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Contents

Doo	cument l	Revision History ······ 2)
1.	Introduo	ction 2)
2.	Feature	9s 3	;
3.	Applica	tions······4	ŀ
4.	Usage		;
	4.1	With Arduino 5	;
	4.2	With Raspberry Pi ······7	,
5.	Resour	ce ······ 9)



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Under the supervision of Seeed Technology Inc., this manual has been compiled and published which covered the latest product description and specification. The content of this manual is subject to change without notice.

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1. Introduction

Grove- Piezo Vibration Sensor is suitable for measurements of flexibility, vibration, impact and touch. The module is based on PZT film sensor LDT0-028. When the sensor moves back and forth, a certain voltage will be created by the voltage comparator inside of it. A wide dynamic range (0.001Hz~1000MHz) guarantees an excellent measuring performance. And, you can adjust its sensitivity by adjusting the on-board potentiometer with a screw.







2. Features

- Standard grove socket
- Wide dynamic range: 0.1Hz~180Hz
- Adjustable sensitivity
- High receptivity for strong impact



3. Applications

- Vibration Sensing in Washing Machine
- Low Power Wakeup Switch
- Low Cost Vibration Sensing
- Car Alarms
- Body Movement
- Security Systems



4. Usage

4.1 With Arduino

The Grove - Piezo Vibration Sensor outputs a logic HIHG when vibration was detected. We can use any of Arduino pins to read the data. Here is an example of Piezo Vibration Sensor controlling LED. When the vibration was detected, this sensor outputs a logic high signal (the sensitivity can be changed by adjusting the potentiometer), an LED lights up.

Note: It may output low level even though originally output high level when you increase the threshold voltage by clockwise adjusting the potentiometer.

1. Connect the module to the Analog port 0 of base shield using the 4-pin grove cable and connect LED to Pin 12.

- 2. Plug the Grove Basic Shield into Arduino.
- 3. Connect Arduino to PC by using a USB cable.

4. Copy and paste code below to a new Arduino sketch. Please click <u>here</u> if you do not know how to upload.

```
const int ledPin=12;
void setup() {
   Serial.begin(9600);
   pinMode(ledPin,OUTPUT);
}
void loop() {
   int sensorValue = analogRead(A0);
   Serial.println(sensorValue);
   delay(1000);
   if(sensorValue==1023)
   {
       digitalWrite(ledPin,HIGH);
   }
   else
   {
       digitalWrite(ledPin,LOW);
   }
}
```

5. Touch the piezo sensor to make it vibrate, of course, any way to make it vibrate would be OK too. The LED would be on when vibration detected. You can also Open the serial monitor to see the sensor outputs.



COM5	
	Send
15	
15	
15	
15	
1023	
14	
1023	
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1023	
1023	
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1023	
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1023	
1023	
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1023	
1023	
1023	
15	
16	
15	
15	
15	
Autoscroll	No line ending - 9600 hand -

You can directly use a digital pin, take D5 of base shield as an example, and connect LED to Pin 12.

```
const int ledPin=12;
void setup() {
    Serial.begin(9600);
    pinMode(ledPin,OUTPUT);
}
void loop() {
    int sensorState = digitalRead(5);
    Serial.println(sensorState);
    delay(1000);
    if(sensorState == HIGH)
    {
        digitalWrite(ledPin,HIGH);
    }
```



```
else
{
    digitalWrite(ledPin,LOW);
}
```

4.2 With <u>Raspberry Pi</u>

- 1. You should have got a raspberry pi and a grovepi or grovepi+.
- 2. You should have completed configuring the development enviroment, otherwise follow here.
- 3. Connection
- Plug the sensor to grovepi socket A0 by using a grove cable.

4. Navigate to the demos' directory:

```
cd yourpath/GrovePi/Software/Python/
```

• To see the code

```
nano grove_piezo_vibration_sensor.py # "Ctrl+x" to exit #
```

```
import time
import grovepi
# Connect the Grove Piezo Vibration Sensor to analog port A0
# OUT,NC,VCC,GND
piezo = 0
grovepi.pinMode(piezo,"INPUT")
while True:
    try:
        # When vibration is detected, the sensor outputs a logic high
signal
        print grovepi.analogRead(piezo)
        time.sleep(.5)
except IOError:
        print "Error" print "Error"
```



5. Run the demo.

sudo python grove_piezo_vibration_sensor.py



5. Resource

<u>Grove - Piezo Vibration Sensor Eagle File</u> <u>Grove - Piezo Vibration Sensor PDF File</u> <u>Piezo Vibration Sensor Datasheet</u>





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