Grove - Loudness Sensor

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Wiki: http://www.seeedstudio.com/wiki/Grove_-_Loudness_Sensor

Bazaar: http://www.seeedstudio.com/depot/Grove-Loudness-Sensor-p-1382.html?cPath=25_128

Document Revision History

Revision	Date	Author	Description
1.0	Sep 21, 2015	Victor.He	Create file

Document Revision History

Contents

Disclaimer

For physical injuries and possessions loss caused by those reasons which are not related to product quality, such as operating without following manual guide, natural disasters or force majeure, we take no responsibility for that.

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

The Grove - Loudness Sensor is designed to detect the loudness of environmental sound. Based on amplifier LM2904 and a built-in microphone, it amplifies and filters the high frequency signal that received from the microphone, and outputs a positive envelop. This will make for Arduino's signal acquisition. The output value depends on the level of sound input. In order to avoid unnecessary signal disturbances, input signal will go through two times' filtering inside the module. Lastly, there is a screw potentiometer that enables manual adjustments to the output gain.

2. Specifications

Voltage	3.5~10 VDC
Working Frequency	50~2000 Hz
Sensitivity	-48~66 dB
Signal-to-noise Ratio	>58 dB
Output Signal range	Analog Signal (0-1023)

3. Demonstration

3.1 With **Arduino**

This module uses the chip LM2904 to amplify the electronic signal produced by the mini microphone. At last, you will get the analog-to-digital conversion value. Let's try to read the output value.

- As the picture on the below indicates, the Loudness sensor is connected to analog port A0 of the Grove - Basic Shield
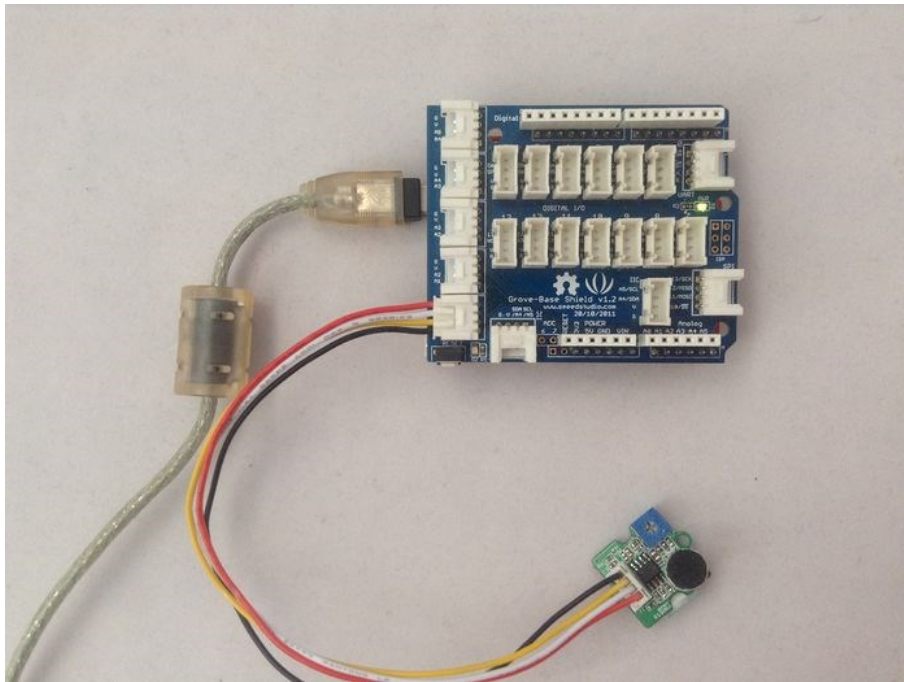
- Connect Arduino/Seeeduino to PC by using a USB cable.

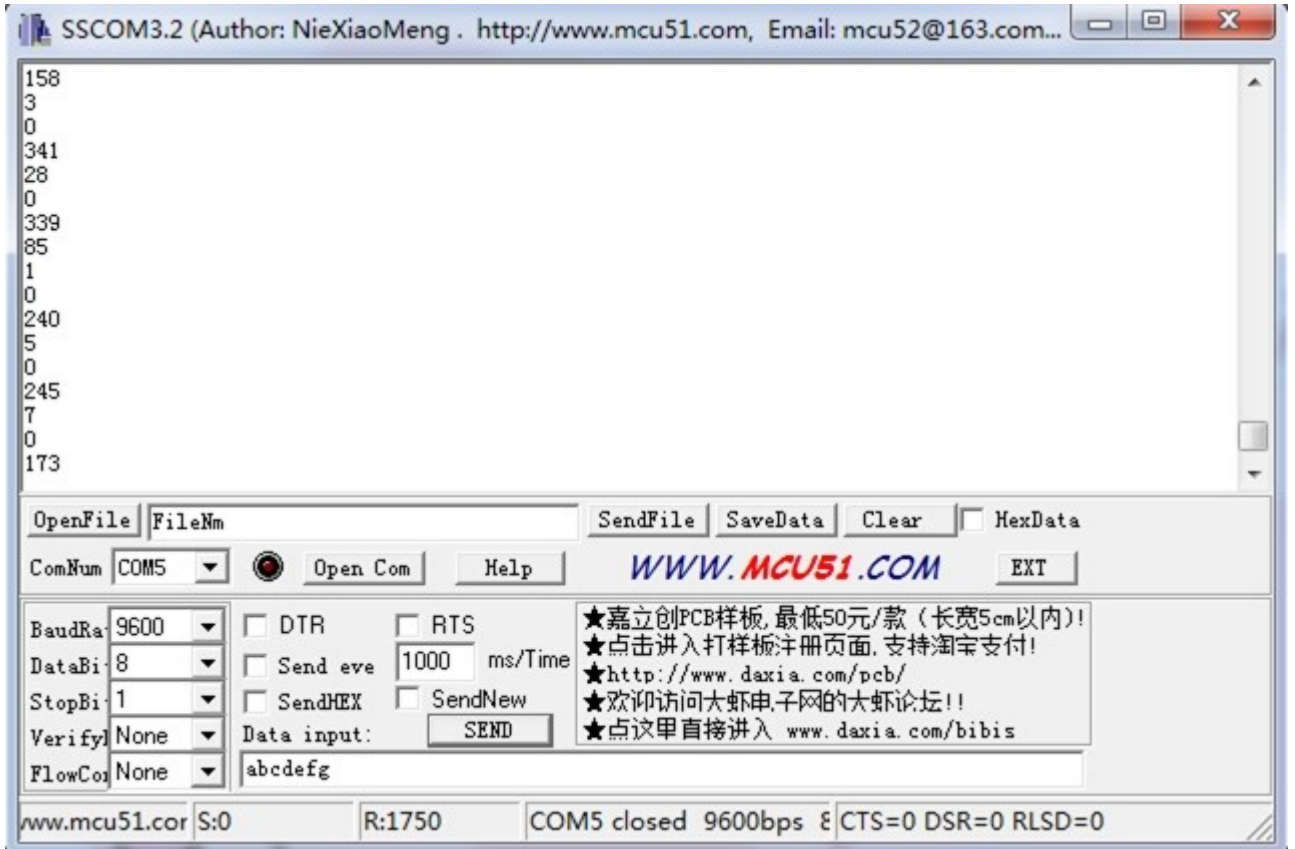- Copy and paste code below to a new Arduino sketch.

```
int val;
void setup()
{
    Serial.begin(9600);
}

void loop()
{
    analogRead(0);
    delay(10);
    val = analogRead(0);
    Serial.println(val);
    delay(200);
```

```
    }
```

- Upload the code.

- Then open the serial monitor to observe the output results. There will be a significant change when blow to the sensor.
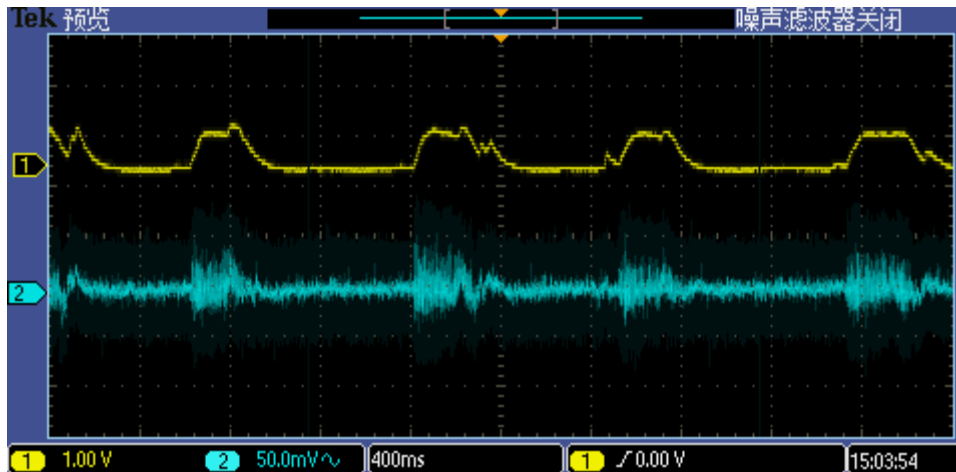
The blue line is the original signal from microphone and the yellow is the sig pin of Loudness Sensor. It is the original signal envelope that the module outputs. Here is the test screenshot from the oscilloscope. Blowing to the sensor:
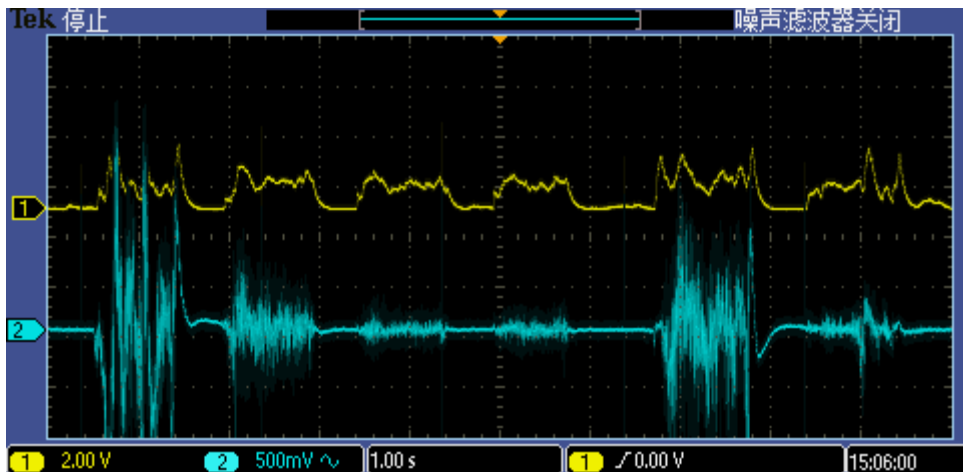
Speak to the sensor：

3.2   With [Raspberry Pi](#)

1.   You should have got a raspberry pi and a grovepi or grovepi+.

2.   You should have completed configuring the development environment, 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_loudness_sensor.py      # "Ctrl+x" to exit #
```

```python
import time
import grovepi

# Connect the Grove Loudness Sensor to analog port A0
# SIG,NC,VCC,GND
loudness_sensor = 0

while True:
    try:
        # Read the sound level
        sensor_value = grovepi.analogRead(loudness_sensor)

        print "sensor_value =", sensor_value
        time.sleep(.5)
```

```
    except IOError:
        print "Error"
```

5. Run the demo.

```
sudo python grove_loudness_sensor.py
```