Gravity: Analog Sound Level Meter SKU:SEN0232

Introduction

Analog Sound Level Meter SKU:SEN0232

In our environment, there are all kinds of sounds, some of which are noise. With the development of human civilization, the quiet environments are less and less, but more and more noisy environments instead. Staying in the noise for long time will have an impact on hearing, which is bad for health.

Sound level meter (also known as the decibel meter, noise meter) is a basic noise measurement instrument.We have launched a sound level meter, which is compatible with Arduino, plug-and-play . It can accurately measure the sound level of the surrounding environment. This product uses instrument circuit, low noise microphone, which makes it highly precious. It supports 3.3~5.0V wide input voltage, 0.6~2.6V voltage output. The decibel value is linear with the output voltage, which leads to a simple conversion, without complex algorithm.The connector is plug-and-play, without welding, so this product can be easily used in your application.

Sound level meter is widely used in environmental noise detection, such as highway noise **monitoring station, room noise monitoring and so on. It's time for you to DIY a sound level detector** to protect your hearing.

Specification

- Measuring Range: 30dBA ~ 130dBA
- Measurement Error: ±1.5dB
- Frequency Weighted: A Weighted
- Frequency Response: 31.5Hz ~ 8.5KHz
- Time Characteristics: 125ms
- Input Voltage: 3.3 ~ 5.0V
- Input Current: 22mA@3.3V, 14mA@5.0V
- Output Voltage: 0.6 ~ 2.6V
- Module Size: 60mm * 43mm

Board Overview

|	Num	Label	Description
Sound Level Meter	1	A	Analog Signal Output(0.6~2.6V)
	2	+	Power VCC(3.3~5.0V)
	3	-	Power GND(0V)
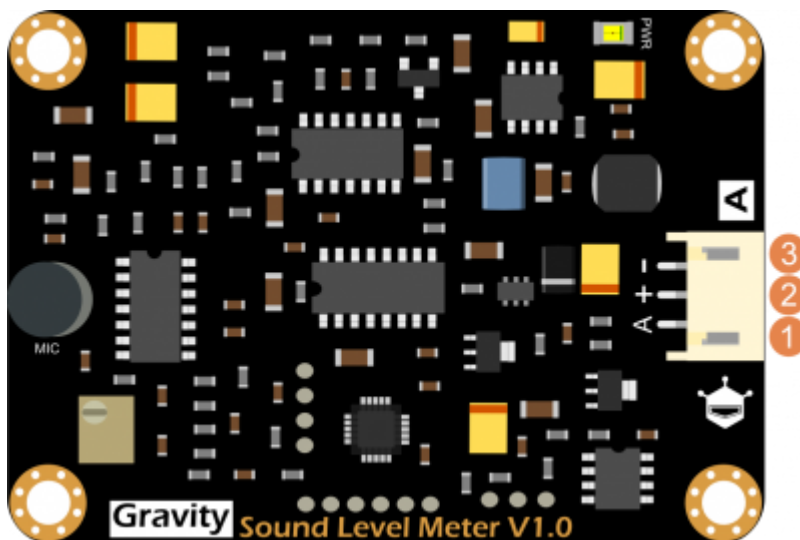
Tutorial

This tutorial will show you how to use this module to measure the decibel value of surrounding environment.

Requirements

- Hardware
  DFRduino UNO (or similar) x 1
  Sound Level Meter x1
  Gravity 3P Cable (or dupont Line) x 1

- Software
  Arduino IDE (Version requirements: V1.0.x or V1.8.x), Click to Download Arduino IDE from Arduino®

Connection Diagram
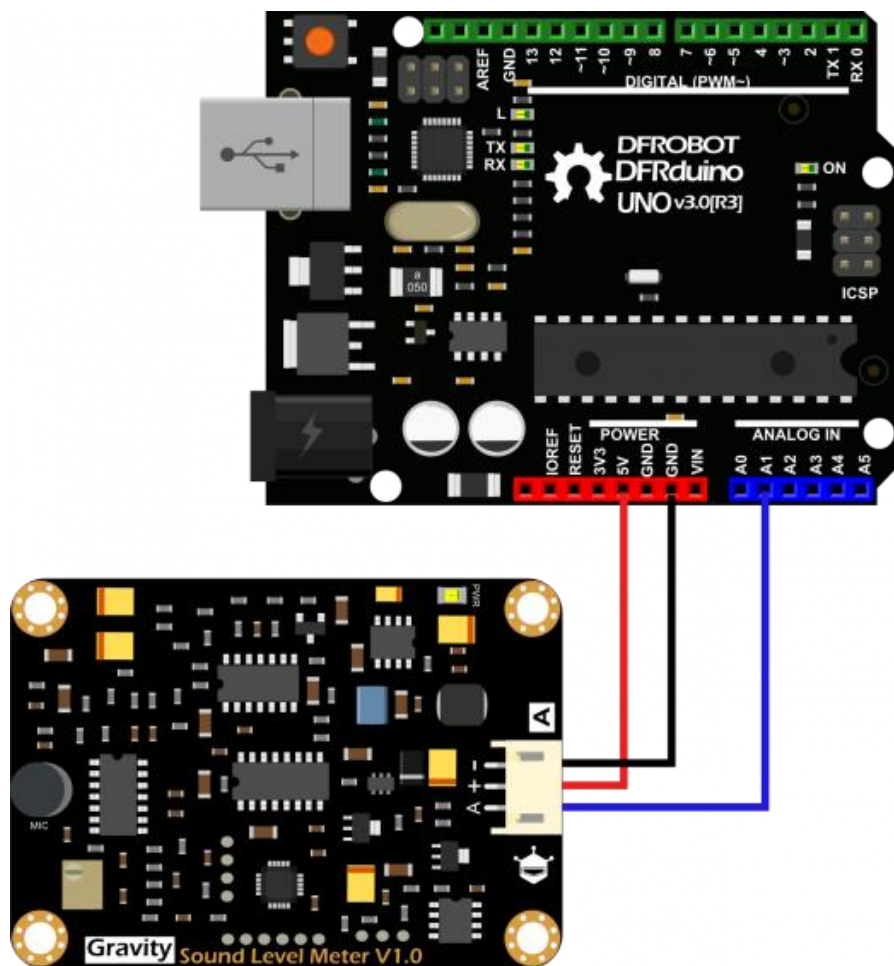
Sample Code

```
/***************************************************

 DFRobot Gravity: Analog Sound Level Meter

 <https://www.dfrobot.com/wiki/index.php/Gravity:_Analog_Sound_Level_Meter_SK
U:SEN0232>


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 This sample code is used to test the analog sound level meter.


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 By Jason <jason.ling@dfrobot.com@dfrobot.com>


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 /***********Notice and Trouble shooting***************

 1. This sample code is tested on Arduino Uno with Arduino IDE 1.0.5 r2.

 2. In order to protect the microphone on the board, you should not touch the
black membrane on the microphone. Also you should keep it clean.

 3. Please do not place this module on the surface of  conductor or semicondu
ctor. Otherwise, this will cause the microphone pin to be shorted.

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#define SoundSensorPin A1  //this pin read the analog voltage from the sound
level meter
#define VREF  5.0  //voltage on AREF pin,default:operating voltage


void setup()
{
    Serial.begin(115200);
}


void loop()
```

```
{
    float voltageValue,dbValue;

    voltageValue = analogRead(SoundSensorPin) / 1024.0 * VREF;

    dbValue = voltageValue * 50.0;   //convert voltage to decibel value

    Serial.print(dbValue,1);

    Serial.println(" dBA");

    delay(125);
}
```

Expected Results

After uploading the sample code, you can open the serial monitor, and get the decibel value. The test environment is the office.The decibel value is shown as below.
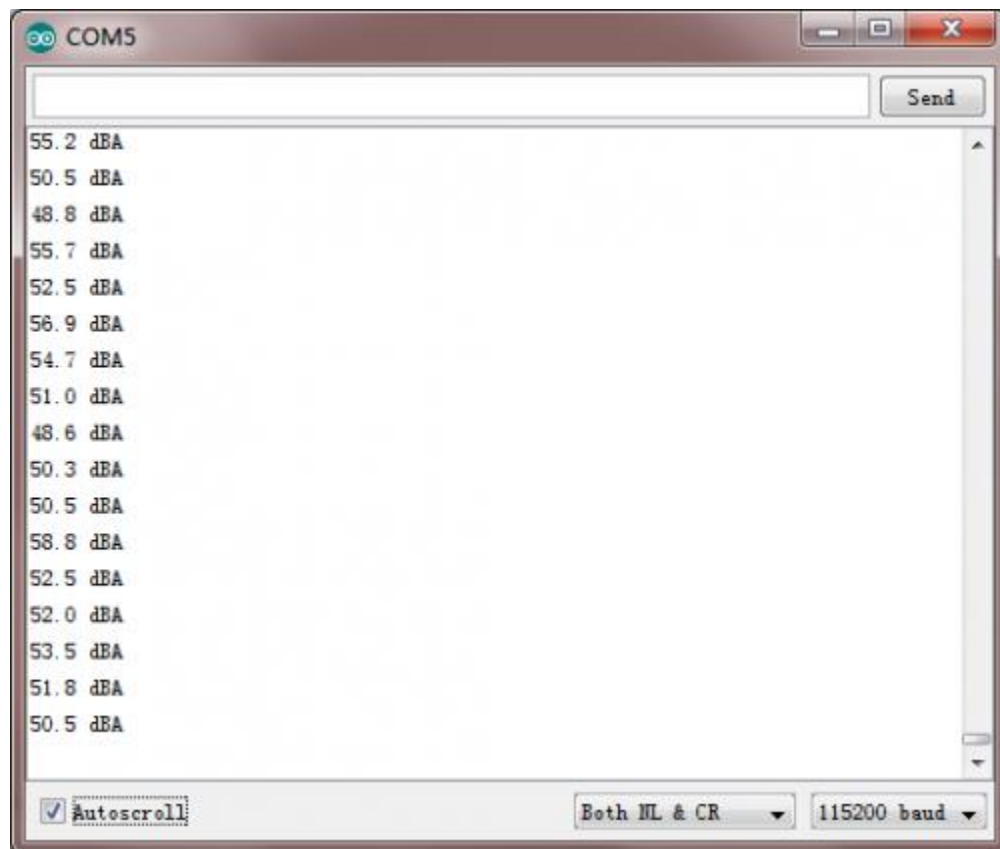
Relation between Decibel Value and Voltage Output

For this product,the decibel value is linear with the output voltage.When the output voltage is 0.6V, the decibel value should be 30dBA. When the output voltage is 2.6V, the decibel value should be 130dBA.
The calibration is done before leaving the factory, so you don't need to calibrate it.
So we can get this relation: Decibel Value(dBA) = Output Voltage(V) × 50, as shown below.

Decibel(dBA)

$y = 50x$

Voltage(V)
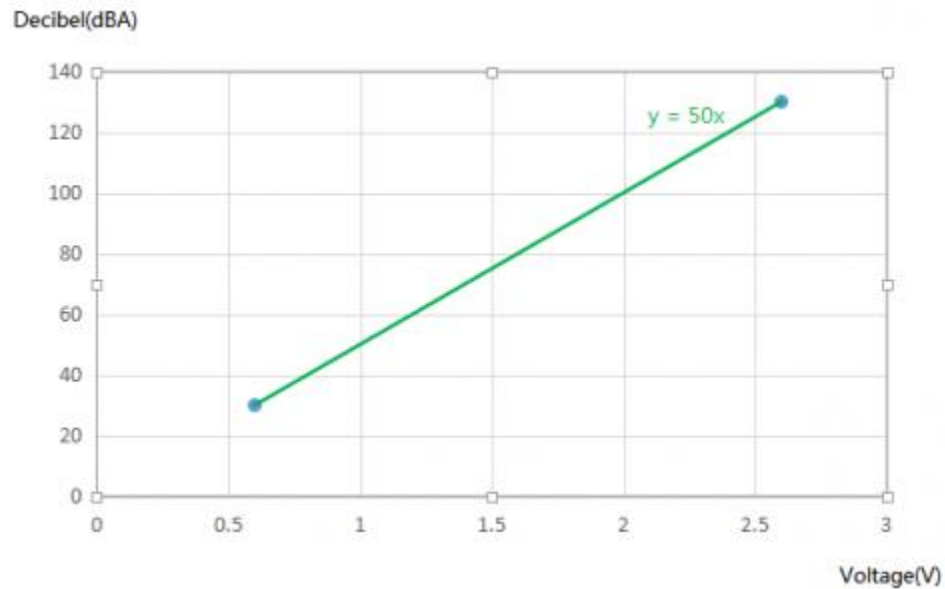
For any questions, advice or cool ideas to share, please visit the DFRobot Forum.

More Documents

- Analog Sound Level Meter Layout