Grove - HCHO Sensor

Release date： 9/20/2015

Version： 1.0

Wiki: http://www.seeedstudio.com/wiki/Breakout_-_3-Axis_Analog_Accelerometer_ADXL335

Bazaar: http://www.seeedstudio.com/depot/Grove-3Axis-Analog-Accelerometer-p-1086.html

Document Revision History

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

Contents

Document Revision History 2
1. Introduction 2
2. Features 3
3. Application Ideas 4
4. Usage 5
5. Resources 8
6. Support 9

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.

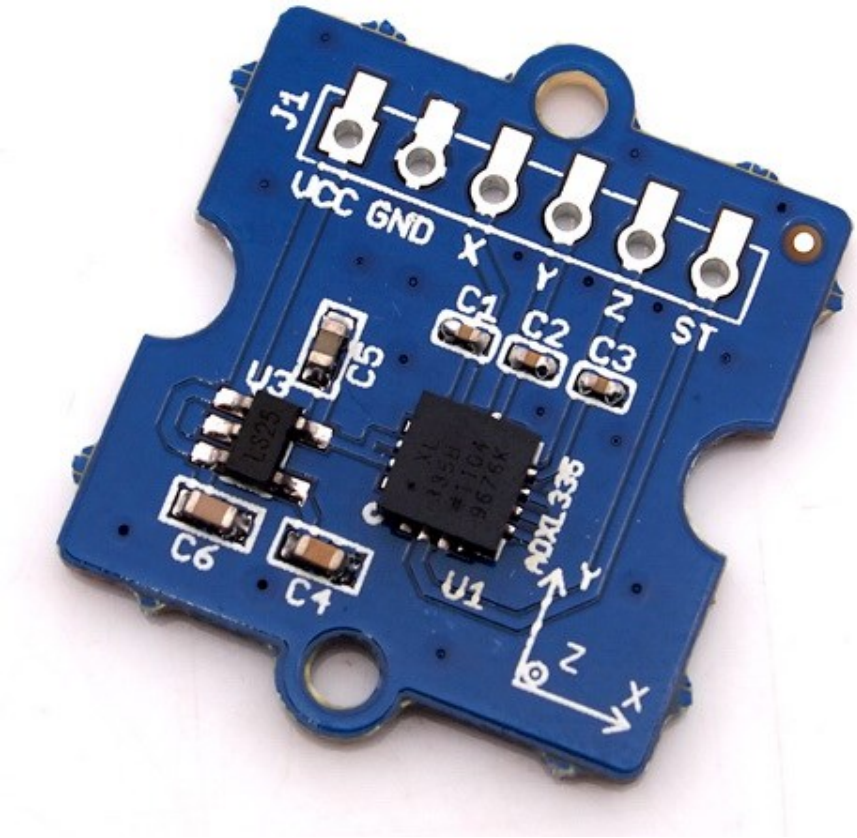
Copyright

The design of this product (including software) and its accessories is under tutelage of laws. Any action to violate relevant right of our product will be penalized through law. Please consciously observe relevant local laws in the use of this product.

1. Introduction

The ADXL335 is a small, thin, low power, complete 3-axis accelerometer with signal conditioned voltage outputs. The product measures acceleration with a minimum full-scale range of ±3 g.

The module was designed as breakout board because ADXL335's signal is analog(more ports requested). But the board outline is grove module that you can fix it conveniently like other groves. The sensor combined 3.3 and 5V power supply, can be used in standard Arduino device and Seeeduino Stalker. The following program code includes first-order filter which can make the output smoothly if the sensor was used in robot or toy car.



2. Features

- Wide power range DC3V to 5V
- Grove outline
- 3 axis sensing
- Small, low-profile package: 4×4×1.45mm LFCSP
- Low power 350μA at 3V (typical)
- High sensitive
- 10,000 g shock survival
- BW adjustment with a single capacitor per axis
- RoHS/WEEE lead-free compliant

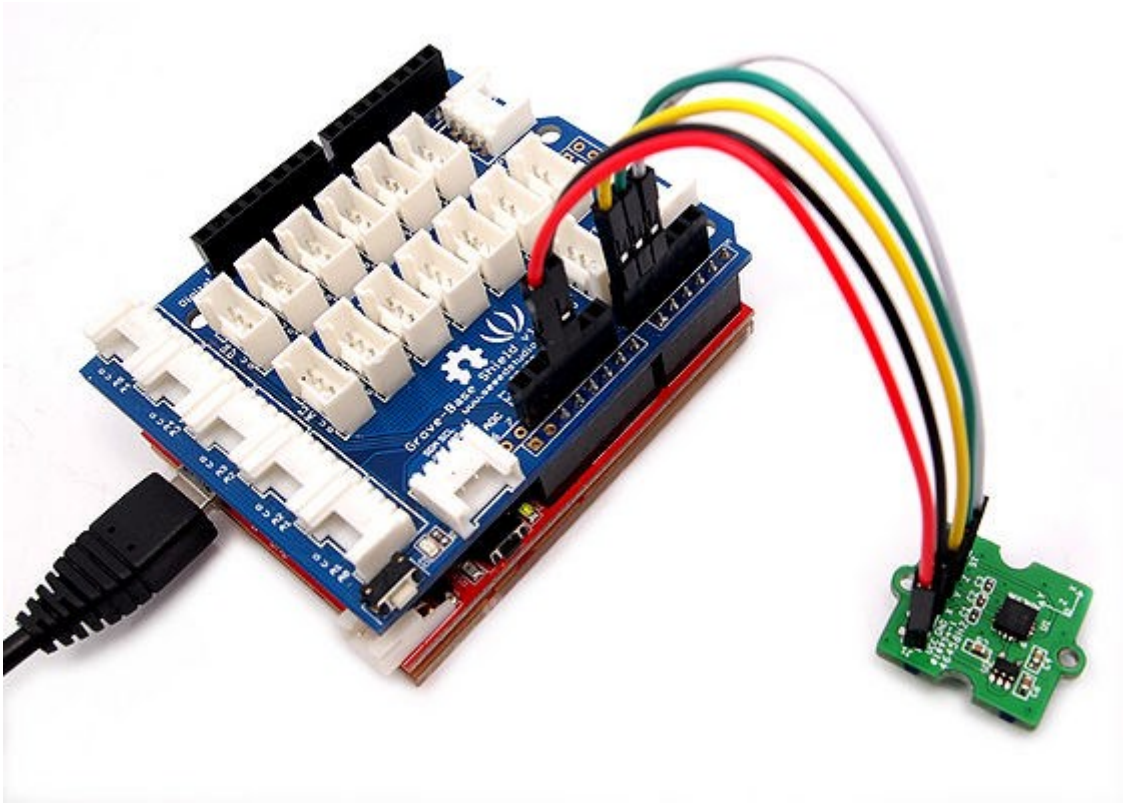
3. Application Ideas

- Motion Sensor
- Shock detector
- Vibration sensor
- Toy car
- Robot

4. Usage

The sensor's outline is breakout board, you can welding wire in the board or use jumper wire to connect the sensor.

- The VCC connect to power source（DC5V or DC3.3V）, GND to ground, X to Arduino analog port A0, Y to A1, Z to A2.

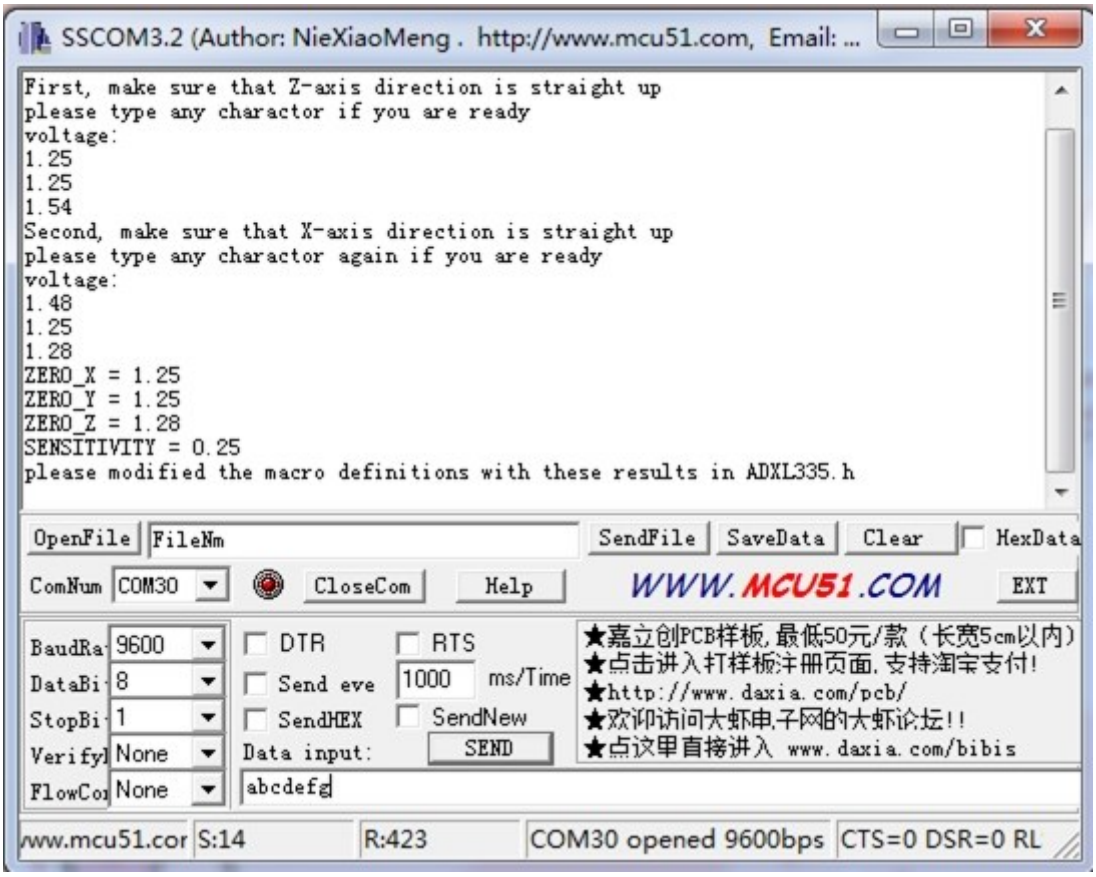


- Download the File: 3-Axis Analog Accelerometer Library and Unzip it into the libraries file of Arduino IDE by the path: ..\arduino-1.0.1\libraries.
- Regulate the sensor

The sensor is analog device, you should regulate the sensor before combining it to you system.

Step 1: Open the Demo: Calibration and upload it to Arduino.Please click here if you do not know how to upload.

Step 2: Open your serial monitor, make sure the sensor is connected. Follow the axis institutions printed on sensor's board. First, make sure that Z-axis direction is straight up, please type any character if you are ready. Change the sensor position, repeat the above operation to obtain X-axis and Y-axis direction are straight up .

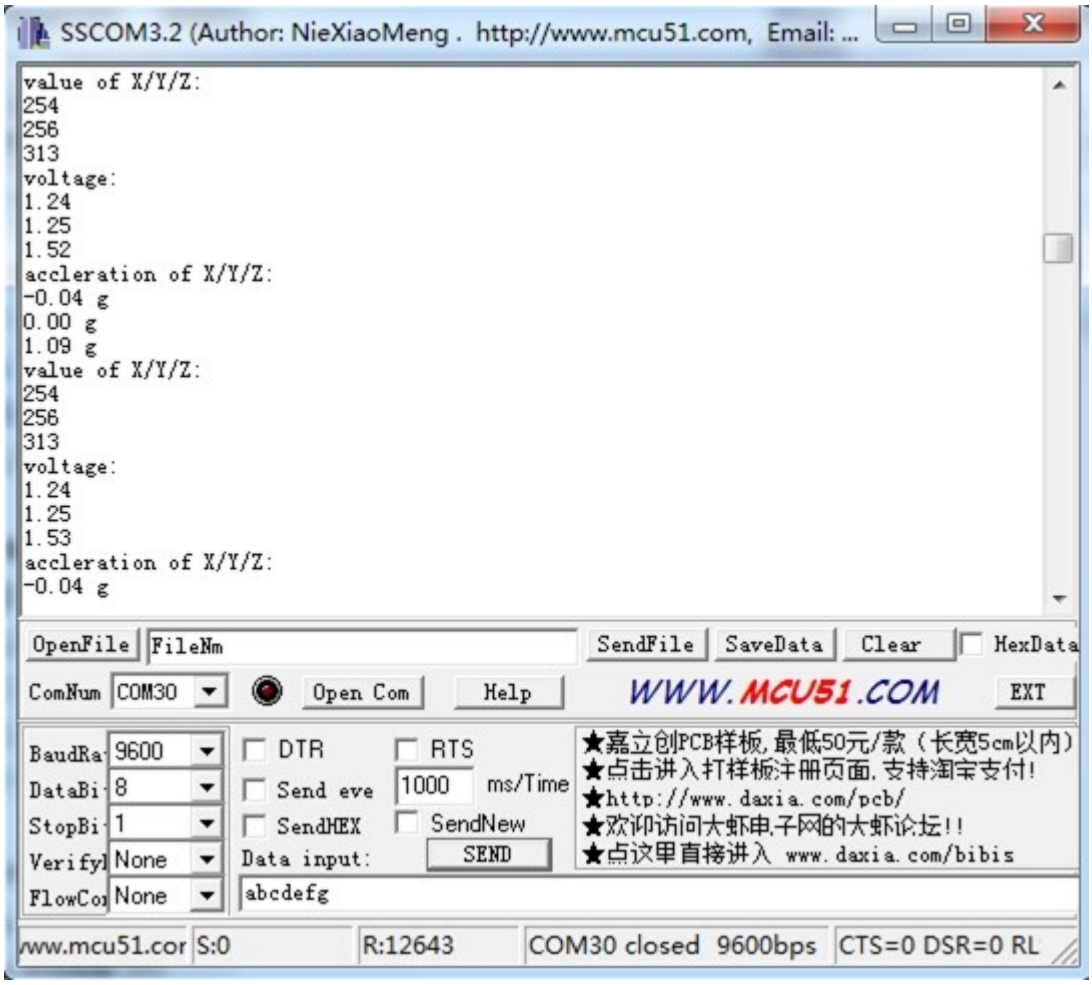


Step 3: You can get these value as show above. Please modified the macro definitions with these results in ADXL335.h

```
#ifndef __ADXL335_H__
#define __ADXL335_H__

#include <Arduino.h>
/*macro definitions of Analog read pins*/
#define X_AXIS_PIN A0
#define Y_AXIS_PIN A1
#define Z_AXIS_PIN A2

#define ADC_AMPLITUDE 1024//amplitude of the 10bit-ADC of Arduino is 1024LSB
#define ADC_REF 5    //ADC reference is 5v
#define ZERO_X  1.22 //acceleration of X-AXIS is 0g, the voltage of X-AXIS is 1.22v
#define ZERO_Y  1.22 //
#define ZERO_Z  1.25 //
#define SENSITIVITY 0.25//sensitivity of X/Y/Z axis is 0.25v/g

class ADXL335
{
private:
    void pinsInit();
    float scale;
public:
    void begin();
    void getXYZ(int16_t *x,int16_t *y,int16_t *z);
    void getAcceleration(float *ax,float *ay,float *az);
};
```

Now the calibration has been completed.

- Downloading the demo code: Measuring Acceleration, then open serial monitor, turn the sensor any angle, you can see the digital angle value sent from the accelerometer to the monitor.


SSCOM3.2 (Author: NieXiaoMeng . http://www.mcu51.com, Email: ...
value of X/Y/Z:
254
256
313
voltage:
1.24
1.25
1.52
accleration of X/Y/Z:
-0.04 g
0.00 g
1.09 g
value of X/Y/Z:
254
256
313
voltage:
1.24
1.25
1.53
accleration of X/Y/Z:
-0.04 g
OpenFile
FileNm
SendFile
SaveData
Clear
HexData
ComNum
COM30
Open Com
Help
WWW.MCU51.COM
EXT
BaudRa
9600
DataBi
8
StopBi
1
Verifyl
None
FlowCo
None
DTR
RTS
Send eve
1000
ms/Time
SendHEX
SendNew
Data input:
SEND
abcdefg
★嘉立创PCB样板,最低50元/款（长宽5cm以内）
★点击进入打样板注册页面,支持淘宝支付!
★http://www.daxia.com/pcb/
★欢迎访问大虾电子网的大虾论坛!!
★点这里直接进入 www.daxia.com/bibis
www.mcu51.cor
S:0
R:12643
COM30 closed 9600bps
CTS=0 DSR=0 RL

5. Resources

Grove - 3-Axis Analog Accelerometer Eagle File

3-Axis Analog Accelerometer Library

github repository for 3-Axis Analog Accelerometer

ADXL335 datasheet.pdf

6. Support

If you have questions or other better design ideas, you can go to our forum or wish to discuss.