Grove - HCHO Sensor

Release date： 9/20/2015

Version： 1.0

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

Bazaar: http://www.seeedstudio.com/depot/Grove-HCHO-Sensor-p-1593.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. Specification 3
   2.1 With Arduino 3
   2.2 With Raspberry Pi 6
3. Resources 8
4. Support 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

The Grove - HCHO Sensor is a semiconductor VOC gas sensor. Its design is based on WSP2110 whose conductivity changes with the concentration of VOC gas in air. Through the circuit, the conductivity can be converted to output signal that corresponding to the gas concentration. This sensor has a very high sensitivity and stability, it can detect the gas whose concentration is up to 1ppm. It′ s suitable for detecting formaldehyde, benzene, toluene and other volatile components.

This product can be used to detect harmful gas in the home environment. Therefore, it′ s a good assistant for you to improve indoor environment quality of life.



2. Specification

Operating Voltage: 5.0V ± 0.3V

Target Gases: HCHO, Benzene, Toluene, Alcohol

Concentration Range: 1~50 ppm

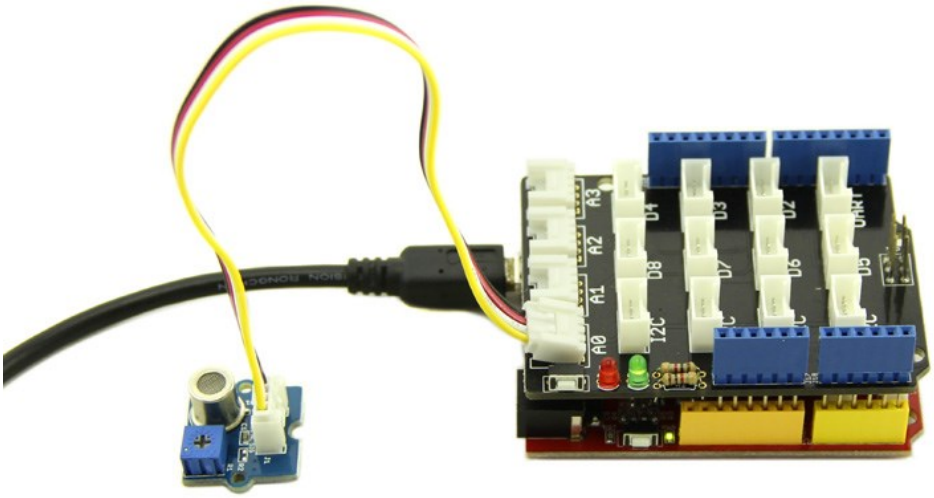
Sensor Resistance Value(Rs): 10KΩ-100KΩ(in 10ppm HCHO)

Sensitivity: Rs(in air)/Rs(10ppm HCHO)≥5

- Demonstration

2.1 With Arduino

The Grove - HCHO Sensor can be used to detect VOCs, such as HCHO, toluene, benzene, alcohol. Here we take alcohol for an example to demonstrate how to use this sensor.



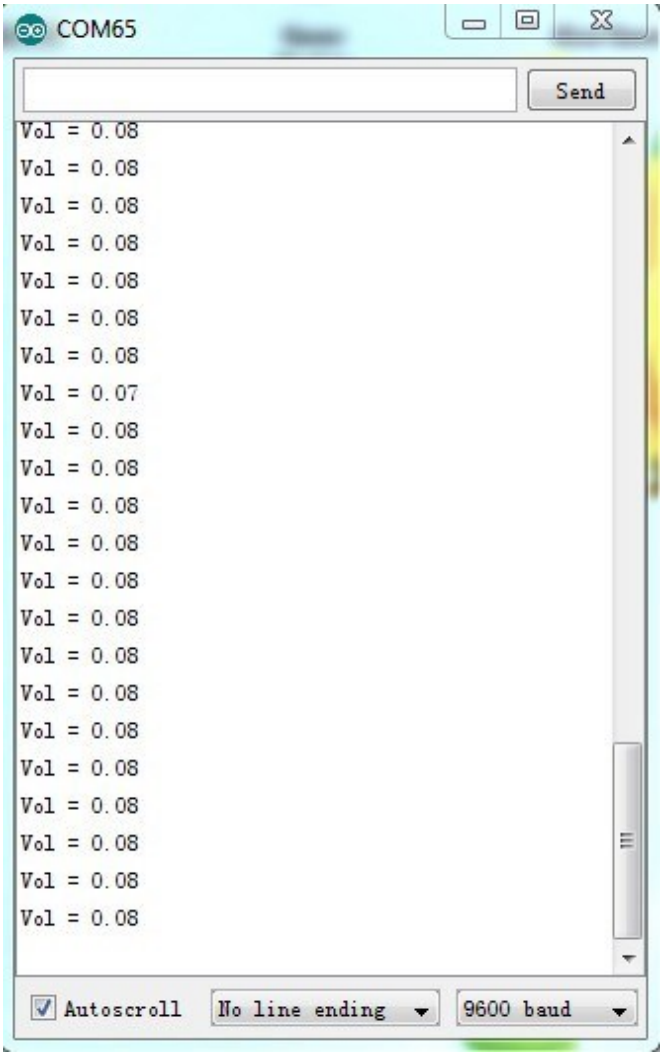
```
// demo of Grove - HCHO Sensor

void setup()
{
    Serial.begin(9600);
```

```
}

void loop()
{
    int sensorValue=analogRead(A0);
    float Vol=sensorValue*4.95/1023;
    Serial.print("Vol = ");
    Serial.println(Vol);
    delay(500);
}
```

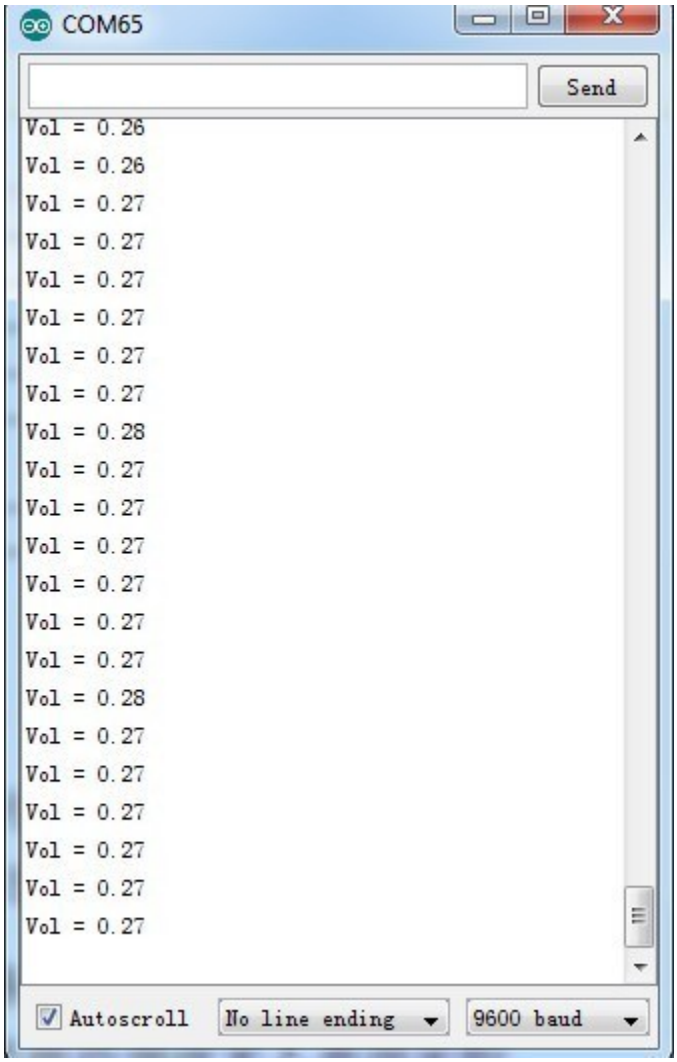
After uploading the code, open the serial monitor to get the voltage(Vol) under normal condition.



Now list out the formula describing the relationship of Vol and R0:

R0=(Vc/Vol-1)×R1 (Vc=4.95V) ①

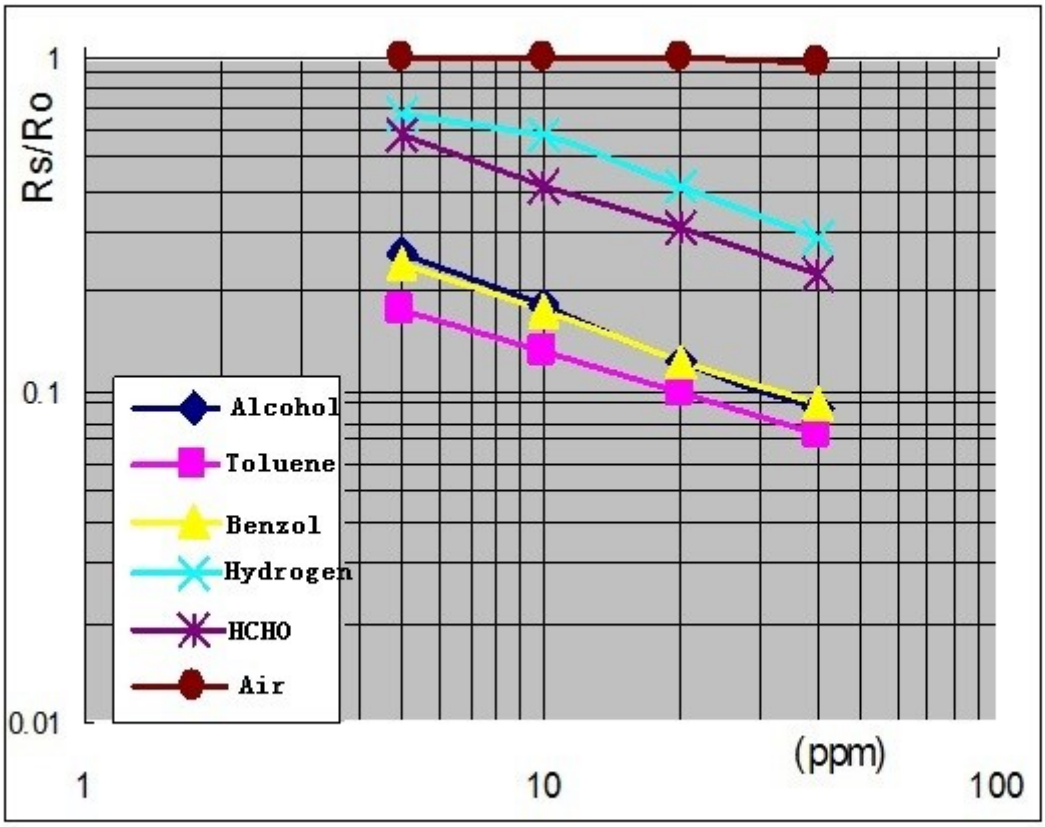
Then put a bottle of alcohol near the sensor, and read again the sensor value:



And we get the Rs:

Rs = (Vc/Vol-1)×R1 (Vc=4.95V) ②

Now calculate Rs/R0. Here we get 0.285. Then refer to the sensitivity characteristic diagram below and find the alcohol concentration is about 5 ppm.



2.2 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 D4 by using a grove cable.
4. Navigate to the demos' directory:

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

To see the code

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

```
import time
import grovepi

# The sensitivity can be adjusted by the onboard potentiometer
```

```
# Connect the Grove HCHO Sensor to analog port A0
# SIG,NC,VCC,GND
hcho_sensor = 0

grovepi.pinMode(hcho_sensor,"INPUT")

# Vcc of the grove interface is normally 5v
grove_vcc = 5

while True:
    try:
        # Get sensor value
        sensor_value = grovepi.analogRead(hcho_sensor)

        # Calculate voltage
        voltage = (float)(sensor_value * grove_vcc / 1024)

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

    except IOError:
        print "Error"
```

5. Run the demo.

```
sudo python grove_hcho_sensor.py
```

3. Resources

Grove - HCHO Sensor Eagle File

WSP2110 datasheet

4. Support

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

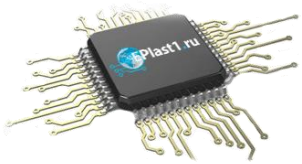
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- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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