Grove - Gas Sensor (O2)

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Version : 1.0

Wiki: http://www.seeedstudio.com/wiki/Grove_-_Gas_Sensor(O2)

### Document Revision History

<table>
<thead>
<tr>
<th>Revision</th>
<th>Date</th>
<th>Author</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Victor.He</td>
<td>Create file</td>
</tr>
</tbody>
</table>
Contents

Document Revision History

1. Introduction ................................................................. 2
2. Features ........................................................................ 3
3. Specifications ................................................................. 4
4. Usage ............................................................................. 5
5. Resources ....................................................................... 8
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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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

Grove-Gas Sensor (O₂) is a kind of sensor to test the oxygen concentration in air, which is based on the principle of the electrochemical cell to the original work. You can know clearly the current oxygen concentration when you output voltage values proportional to the concentration of oxygen and refer to the oxygen concentration linear characteristic graph. It’s very suitable for detecting oxygen concentration in the environment protection. Grove - Gas Sensor(O₂) is an organic reaction module, it can provide a little current while putting it in the air, we don't need to provide an external power to it, and output voltage will change as time current changes.
2. Features

- High-precision
- High sensitivity
- Wide linearity range
- Strong anti-interference ability
- Extraordinary reliability
### 3. Specifications

<table>
<thead>
<tr>
<th>Items</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement Range</td>
<td>0-25%vol</td>
</tr>
<tr>
<td>Detect Life</td>
<td>two years</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>0.05 ~ 0.15 mA (in air)</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>-20°C ~ 50°C</td>
</tr>
<tr>
<td>Pressure range</td>
<td>QNE±10 %</td>
</tr>
<tr>
<td>Response Time</td>
<td>≤155</td>
</tr>
<tr>
<td>Humidity range</td>
<td>0 ~ 99 % RH Non-condensing</td>
</tr>
<tr>
<td>Stability</td>
<td>&lt;2%</td>
</tr>
</tbody>
</table>
4. Usage

That requires us to use the analog port of Arduino to take the readings. We have converted the read value to the corresponding concentration of O2. It’s more convenient for you to get a value of O2 directly without watching the figure.

Notice: Please power the Gas Sensor(O2) more than 48 hrs before you get data from it.

Here is an example of concentration control Buzzer. When Oxygen concentration gets lower than the minimum safe concentration, the Buzzer will sound.

1. Connect the module to the Analog port 0 of Grove - Basic Shield using the 4-pin grove cable and connect Buzzer to Pin 3.
   2. Plug the Grove - Basic Shield into Arduino. And connect Arduino to PC by using a USB cable.
   3. Copy and paste the code below to a new Arduino sketch. Please click here if you do not know how to upload.

```c
#include <math.h>
const int buzzerPin=3; //Connect the Buzzer Grove module to Pin3, Digital 3
float WarningValue = 19.5; //The minimum sate concentration of O2 in air
void setup()
{
    Serial.begin(9600); //Start the Serial connection
}
void loop()
{
    long unsigned a;
    float sensorValue;
    float sensorVoltage;
    float Value_O2;
    sensorValue = analogRead(A0);
    sensorVoltage = (sensorValue/1024)*5.0;
    sensorVoltage = sensorVoltage/201*10000;
    Value_O2 = sensorVoltage/7.43;
    Serial.print("Concentration of O2 is ");
    Serial.print(Value_O2,1);
    Serial.println("%");
    if(Value_O2<=WarningValue)
    {
        digitalWrite(3,HIGH);
    }
}
```


4. When the sensor is in air, the buzzer will not sound. You can blow toward the sensor, at this time, if
Oxygen concentration is lower than threshold we set, the Buzzer will sound. You can check the output
voltage (amplify 201) after opening the Serial Monitor.

We tested it in an office, so the concentration of O2 is about 20.5%.

Notice: We have adjusted the figure in a clear air, and we have updated it in the program, please refer to
the program instead of datasheet.
5. Resources

Grove - Gas Sensor(O2) Eagle File

Schematic in PDF

File:ME2-O2.pdf -- Sorry, It's written in Chinese but it's better than none.
Mouser Electronics

Authorized Distributor

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