# Grove - Voltage Divider

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

Bazaar: http://www.seeedstudio.com/depot/Grove-Voltage-Divider-p-1472.html

## 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 – Voltage Divider provides an interface for measuring external voltage, eliminating the need to connect a resistance to input interface. Besides, the voltage gain can select by dial switch. They are easy to use.
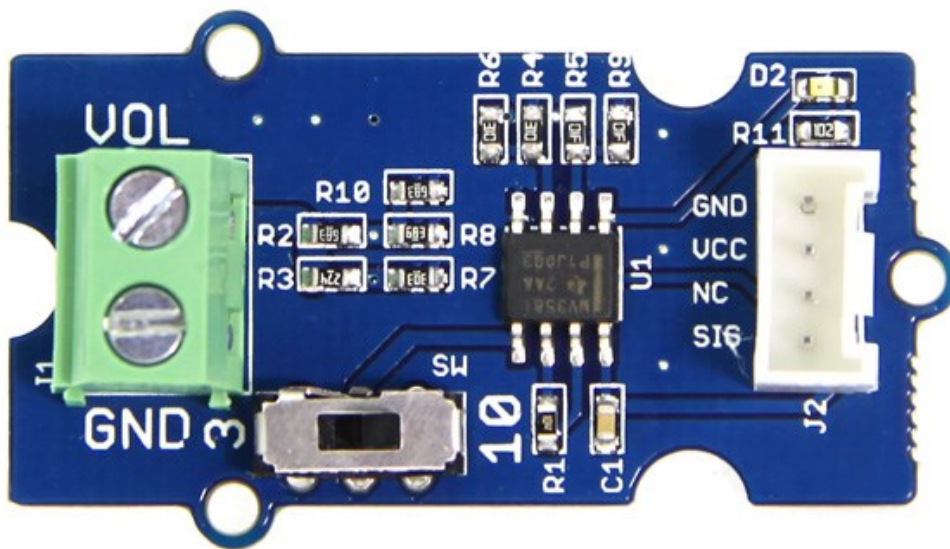
## 2. Features

- Extern Voltage Interface and Grove Interface

- Easy to use

- Can adjust the gain

# 3. Specifications

| Item | | Min | Typical | Max | Unit |
|------|------|------|---------|------|------|
| Working Voltage | | 4.7 | 5.0 | 5.3 | VDC |
| Measurement Accuracy | | <=1 | | | % |
| Extern Voltage Range | select 3 | 0.3 | / | 12.9 | V |
| | Select 10 | 1.0 | / | 43 | |
| Dimension | | 24X20 | | | mm |

# 4. Usage

When measuring the external voltage, connect the external voltage to J1 and then connect the on-board Grove connector to analog port of Arduino/Seeeduino:

- Connect the module to A0 port of Grove - Base Shield with a universal Grove Cable.

- Connect Grove - Base Shield to Arduino/Seeeduino.

In order to test the precision of this module, I tested some voltage inputs and get the following data:

| | Input Voltage (V) | | Outout Voltage (V) | Measurement accuracy | |
|---|---|---|---|---|---|
| Gain 10 | 0 | | 0.05 | | |
| | 0.7 | | 0.08 | 14.20% | NO |
| | 0.8 | | 0.08 | 0 | |
| | 0.9 | | 0.091 | 0.10% | |
| | 1 | | 0.101 | 1% | |
| | 5 | | 0.496 | 0.80% | |
| | 8 | | 0.795 | 0.60% | |
| | 10 | | 0.99 | 1% | |
| | 15 | | 1.495 | 0.33% | OK |
| | 18 | | 1.793 | 0.38% | |
| | 25 | | 2.49 | 0.40% | |
| | 28 | | 2.791 | 0.32% | |
| | 30 | | 2.98 | 0.67% | |
| | 33 | | 3.28 | 0.60% | |
| | | | | | |
| Gain 3 | 0.21 | | 0.081 | | NO |
| | 0.24 | | 0.081 | 1.25% | |
| | 0.27 | | 0.091 | 1% | |
| | 0.3 | | 0.101 | 1% | |
| | 0.8 | | 0.264 | 1% | |
| | 1 | | 0.331 | 0.60% | |
| | 3 | | 0.99 | 1% | |
| | 5 | | 1.664 | 0.16% | OK |
| | 8 | | 2.66 | 0% | |
| | 10 | | 3.33 | 0.00% | |
| | 12 | | 3.99 | 0.25% | |
| | 13 | | 4.321 | 0.28% | |
| | 13.2 | | 4.39 | 0.22% | |
| | 14 | | 4.471 | 4.30% | NO |

- As you can see, when the inputs were in the measuring range, the voltage divider has a high accuracy(<1%, that i marked an "OK"). But as the inputs were not in the range, the accuracy gets low(i marked a "NO") Please see Specification about the specific measurement range.

  And When voltage divider output voltage is higher than VCC (The Grove Operating Voltage and reference of analog read), an indicator will light up to show you the error.

- Using the serial monitor of Arduino, you can measure the input voltage value. Demo code as show below:

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

```
void loop(){
    long  sensorValue=analogRead(A0);
    long  sum=0;
    for(int i=0;i<1000;i++)
    {
        sum=sensorValue+sum;
        sensorValue=analogRead(A0);
        delay(2);
    }
    sum=sum/1000;

    Serial.print("if you set the Gain to 10,the input voltage:");
    Serial.println(10*sum*4980/1023.00);

    Serial.print("if you set the Gain to 3,the input voltage:");
    Serial.println(3*sum*4980/1023.00);

    delay(1000);
}
```

# 5. Resource

Grove - Voltage Divider Eagle File

LMV358ID Datasheet

# 6. Support

If you have questions or other better design ideas, you can go to our [forum](#) or [wish](#) to discuss.