



# Grove - 3-Axis Digital Gyro User Manual

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Version: 1.0

Wiki: [http://www.seeedstudio.com/wiki/Grove\\_-\\_3-Axis\\_Digital\\_Gyro](http://www.seeedstudio.com/wiki/Grove_-_3-Axis_Digital_Gyro)

Bazaar: [http://www.seeedstudio.com/depot/Grove-3Axis-Digital-Gyro-p-750.html?cPath=25\\_133](http://www.seeedstudio.com/depot/Grove-3Axis-Digital-Gyro-p-750.html?cPath=25_133)

## Document Revision History

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Revision	Date	Author	Description
1.0	Sep 22, 2015	Loovee	Create file

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### *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.*

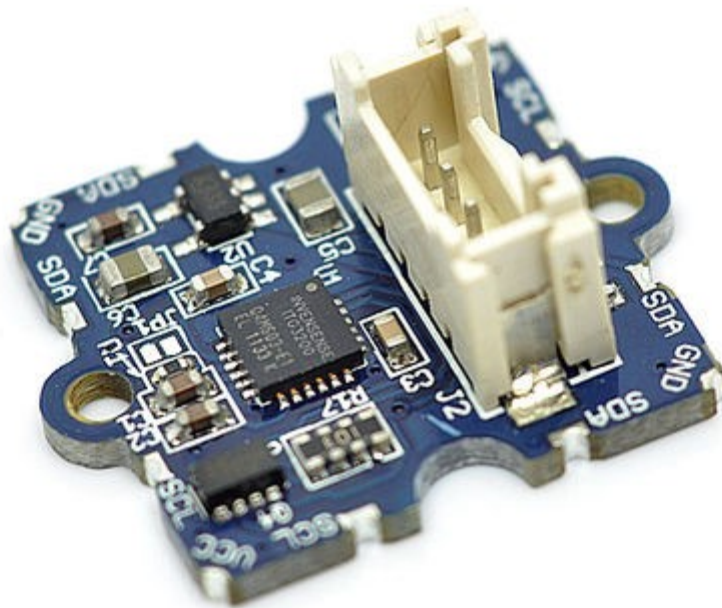
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## 1. Introduction

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Grove - 3-Axis Digital Gyro module based on ITG 3200. It is the world's first single-chip, digital-output, 3-axis MEMS motion processing gyro optimised for gaming, 3D mice, and motion-based remote control applications for Internet connected Digital TVs and Set Top Boxes. The ITG-3200 features three 16-bit analog-to-digital converters (ADCs) for digitising the gyro outputs, a user-selectable internal low-pass filter bandwidth, and a Fast-Mode I2C (400kHz) interface.



## 2. Features

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- Supply Voltage: 3.3V, 5V
- Operation Current: 6.5mA
- Standby current: 5  $\mu$  A
- Sensitivity: 14 LSBs per  $^{\circ}$  /sec
- Full scale range:  $\pm 2000^{\circ}$  /sec
- Acceleration: 10,000g for 0.3ms
- I2C Interface
- $\pm 2000^{\circ}$  /s full scale range and 14.375 LSBs per  $^{\circ}$  /s sensitivity
- Three integrated 16-bit ADCs
- On-chip temperature sensor
- Integrated amplifiers and low-pass filters
- Hermetically sealed for temp and humidity resistance
- RoHS and Green compliant

## 3. Demonstration

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This demo will show you how to get data from this digital gyro, the data is in the unit of rad/s.

Here we need a Grove - 3-Axis Digital Gyro and a Seeeduino V3.0.

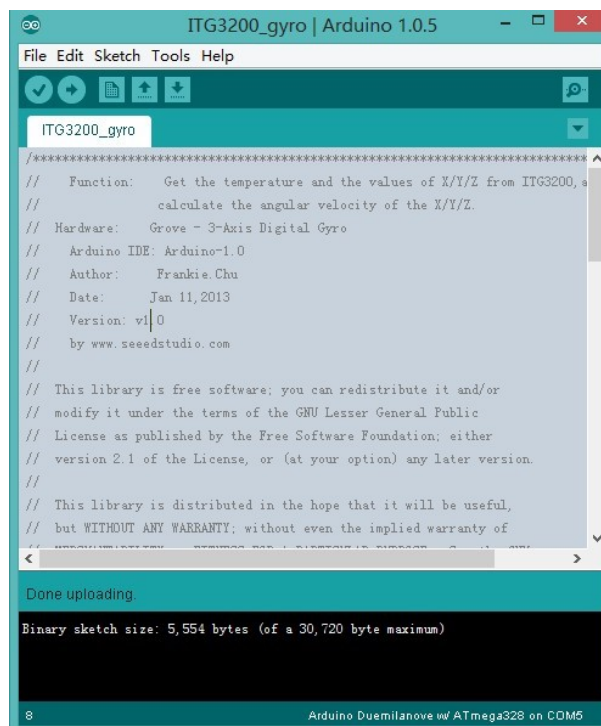
### 3.1 Hardware Installation

Hardware installation is very easy, because there's an I2C Grove in Seeeduino, so what we need to do is connect it to I2C Grove via a Grove cable.

### 3.2 Download Code and Upload

You can download the library in github, click [here](#), then extract it to libraries folder of Arduino.

Then open File -> examples -> Grove\_3\_Digital\_Gyro -> ITG3200\_gyro, you can open the demo code.



```
ITG3200_gyro | Arduino 1.0.5
File Edit Sketch Tools Help
ITG3200_gyro
//*****
// Function:  Get the temperature and the values of X/Y/Z from ITG3200, a
//            calculate the angular velocity of the X/Y/Z.
// Hardware:  Grove - 3-Axis Digital Gyro
// Arduino IDE: Arduino-1.0
// Author:    Frankie.Chu
// Date:      Jan 11,2013
// Version:   v1.0
// by www.seeedstudio.com
//
// This library is free software; you can redistribute it and/or
// modify it under the terms of the GNU Lesser General Public
// License as published by the Free Software Foundation; either
// version 2.1 of the License, or (at your option) any later version.
//
// This library is distributed in the hope that it will be useful,
// but WITHOUT ANY WARRANTY; without even the implied warranty of
// *****
Done uploading.
Binary sketch size: 5,554 bytes (of a 30,720 byte maximum)
8 Arduino Duemilanove w/ ATmega328 on COM5
```

Click Upload to Upload the code, if you have any problem about how to start Arduino, please click [here](#) for some help.

### 3.3 Check The Result

Now, you can open the serial monitor to check the result.

```
COM5
*****
Temperature = 27.86 C
-15  -2  -14
Angular Velocity of X , Y , Z: -1.04 , -0.28 , -1.25 degrees per second
*****
Temperature = 27.74 C
-14  -11  -20
Angular Velocity of X , Y , Z: -1.39 , -0.28 , -1.11 degrees per second
*****
Temperature = 27.86 C
-11  -18  -14
Angular Velocity of X , Y , Z: -1.04 , -0.90 , -0.70 degrees per second
*****
Temperature = 27.86 C
-12  -4  -17
Angular Velocity of X , Y , Z: -1.95 , -0.28 , -1.53 degrees per second
*****
Temperature = 27.91 C
-12  -4  -22
Angular Velocity of X , Y , Z: -1.25 , 0.21 , -0.77 degrees per second
*****
Temperature = 28.03 C
-17  -2  -22
Angular Velocity of X , Y , Z: -0.90 , -0.07 , -1.32 degrees per second
*****
Temperature = 28.09 C
-17  -6  -16
Angular Velocity of X , Y , Z: -0.90 , -0.83 , -1.25 degrees per second
*****
Temperature = 28.03 C
```

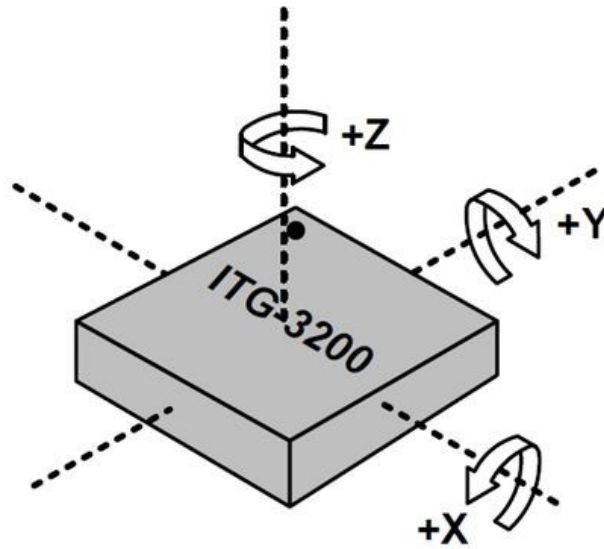
Autoscroll      No line ending      115200 baud



## 4. Reference

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The diagram below shows the orientations of 3 axes. You can use it to understand the physical meanings of the result.



## 5. Resources

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- [Datasheet of ITG-3200.](#)
- [Grove - 3-Axis Digital Gyro Eagle File](#)
- [Digital Gyro Library](#)