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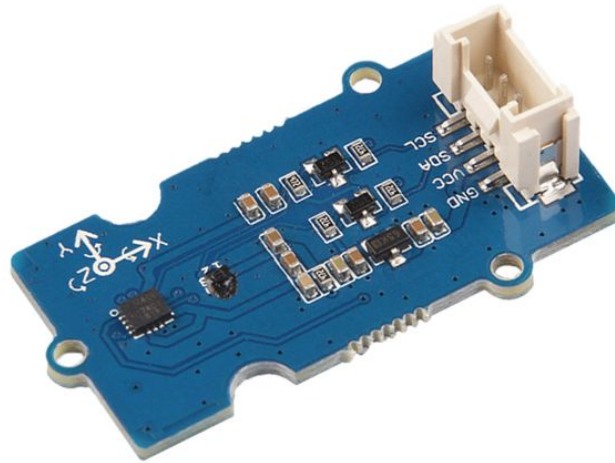
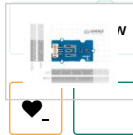
## Grove - IMU 9DOF (ICM20600+AK09918)

(2) Customization (<https://blog.seeedstudio.com/pa/>)

Grove - IMU 9DOF (ICM20600+AK09918)

SKU: 101020585

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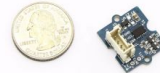
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(<https://www.seeedstudio.com/Grove-3-Axis-Digital-Accelerometer-ADXL345-3-Axis-Digital-Accelerometer-ADXL345-3-Axis-Digital-Accelerometer-ADXL345-p101020585.html>)

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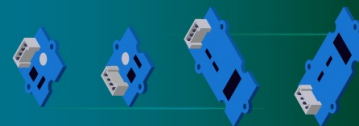
(<https://www.seeedstudio.com/Grove-3-Axis-Digital-Accelerometer-16-Ultra-low-Power-Grove-3-Axis-Digital-Accelerometer-BMA400-p101020585.html>)

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## Grove Kitting Service

Starting from just one kit, get your own tailor-made Grove kit built complete with custom packaging and printed materials.



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([grove-kitting-service.html](https://www.seeedstudio.com/grove-kitting-service.html))

## PRODUCT DETAILS

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The Grove - IMU 9DOF (Icm20600+AK09918) is a 9 Degrees of Freedom IMU (Inertial measurement unit) which combines gyroscope, accelerometer and electronic compass. We use two chips LCM20600+AK09918 to implement those 3 functions.

The **Learn and Documents** MotionTracking device that combines a 3-axis gyroscope, 3-axis accelerometer. Gyroscope is a device used for measuring or maintaining orientation and angular velocity, normally, we use it to measure spin and twist. Accelerometer is a device that measures proper acceleration.

The **ADXL345** is a 3-axis electronic compass IC with high sensitive Hall sensor technology. We use an electronic compass to measure the magnetic force, which can provide us with the direction information.

As its name suggests just use this single small module and you can measure 9 Degrees of Freedom: angular rotation in x/y/z axis, acceleration in x/y/z axis, and magnetic force in x/y/z axis.

What an amazing module! Just use this module to build your own motion and orientation system

### Note



We've Released the [Grove Selection Guide](#)

([https://docs.google.com/spreadsheets/d/123yBkwL2mo8Zt2CCPW4\\_MX4TCSTsj8BVLrSmSZeFYzg/edit#gid=1056399402](https://docs.google.com/spreadsheets/d/123yBkwL2mo8Zt2CCPW4_MX4TCSTsj8BVLrSmSZeFYzg/edit#gid=1056399402)) and hope to help you find the Grove suit you best.

## Features

- 3-Axis Gyroscope with Programmable FSR of  $\pm 250$  dps,  $\pm 500$  dps,  $\pm 1000$  dps, and  $\pm 2000$  dps
- 3-Axis Accelerometer with Programmable FSR of  $\pm 2g$ ,  $\pm 4g$ ,  $\pm 8g$ , and  $\pm 16g$
- 3-Axis Electronic Compass with  $0.15 \mu T/LSB$  (typ.) sensitivity
- User-programmable interrupts
- 16-bit ADC resolution and Programmable Filters for acceleration measurements
- 16-bit ADC resolution for magnetic measurements
- 1 KB FIFO buffer enables the applications processor to read the data in bursts(LCM20600)
- Embedded temperature sensor
- Magnetic sensor overflow monitor function
- Built-in oscillator for internal clock source

## Typical Applications

- Smartphones and Tablets
- Wearable Sensors

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Grove - IMU  
(2)

SKU 1010205:

**\$9.90**  
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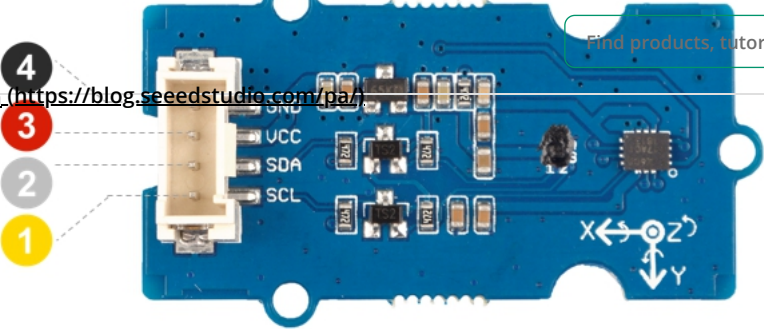
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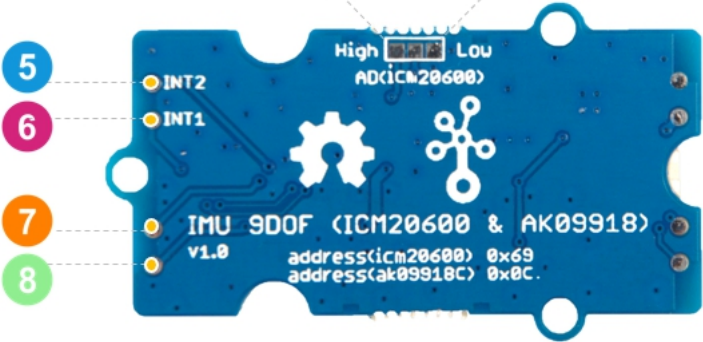


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- 4 GND: connect this module to the system GND
- 3 VCC: you can use 5V or 3.3V for this module
- 2 SDA: I<sup>2</sup>C serial data
- 1 SCL: I<sup>2</sup>C serial clock

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ICM Address



- 5 INT2: Interrupt digital output (totem pole or open-drain)
- 6 INT1: Interrupt digital output (totem pole or open-drain)
- 7 FSYNC: Frame synchronization digital input or No Connect
- 8 VCC\_1.8V: Provide 1.8V for ICM20600 and AK09918

Technical details

Dimensions	40mm x20mm x10mm
Weight	G.W 9g
Battery	Exclude
Operating Voltage	3.3V / 5V
Operating Temperature	-30°C to +85°C
Gyroscope Full-Scale Range	±250 dps, ±500 dps, ±1000 dps, ±2000 dps
Gyroscope Sensitivity Scale Factor	131 LSB/(dps)@±250dps; 65.5 LSB/(dps)@±500dps; 32.8 LSB/(dps)@±1000dps; 16.4 LSB/(dps)@±2000dps

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Accelerometer Full-Scale Range

±2g, ±4g, ±8g, ±16g

Accelerometer Sensitivity

16384 LSB/g@±2g; 8192 LSB/g@±4g; 4096 LSB/g@±8g; 2048 LSB/g@±16g

Scale Factor

LSB/g@±16g

Magnetic sensor measurement range

±4912μT (typical)

Magnetic sensor sensitivity

0.15μT (typical)

Interface

I2C

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10+: \$8.91

20+: \$8.42

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Part List

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Grove Cable		1

ECN/HTS

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HSCODE	9031900090
USHSCODE	9031909195
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[Attachment] Grove - IMU 9DOF (ICM20600+AK09918) Eagle Files (https://github.com/SeeedDocument/Grove-IMU\_9DOF-ICM20600\_AK09918/raw/master/res/Grove%20-%20IMU%209DOF%20(ICM20600%20%26%20AK09918).zip)

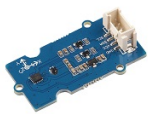
[Attachment] Seeed ICM20600+AK09918 Library (https://github.com/Seeed-Studio/Seeed\_ICM20600\_AK09918/archive/master.zip)

[Attachment] Datasheet of ICM-20600 (https://github.com/SeeedDocument/Grove-IMU\_9DOF-ICM20600\_AK09918/raw/master/res/ICM-20600.pdf)

[Attachment] Datasheet of AK09918 (https://github.com/SeeedDocument/Grove-IMU\_9DOF-ICM20600\_AK09918/raw/master/res/AK09918.pdf)

[Attachment] Datasheet of CJ2102 (https://github.com/SeeedDocument/Grove-IMU\_9DOF-ICM20600\_AK09918/raw/master/res/CJ2102.pdf)

Learn



[Wiki] Grove - IMU 9DOF (ICM20600+AK09918) (http://wiki.seeedstudio.com/Grove-IMU\_9DOF-ICM20600%20AK09918/)

This is the wiki page for this product, which will show you how to use the product, as well as details about the software and hardware.

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