

IMU Breakout - MPU-9250

From Wiki

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Description



The MPU-9250 IMU Breakout features the 9-axis MEMS sensor. Each of these 9DoF breakouts feature an MPU-9250 with a System in Package (SiP) that combines two chips: the MPU-6500, which contains a 3-axis gyroscope as well as a 3-axis accelerometer, and the AK8963, which features a 3-axis magnetometer. This breakout has been designed to be smaller than some of our other offerings to fit in smaller projects. However, if you plan to use a breadboard, or secure the IMU board to a project with something like epoxy, the mounting holes can be easily snapped off.

According to InvenSense, "Gyro noise performance is 3x better, and compass full-scale range is over 4x better than competitive offerings." The MPU-9250 uses 16-bit Analog-to-Digital Converters (ADCs) for digitizing all nine axes, making it a very stable 9 Degrees of Freedom board.

Nice sensor, right? So we made it easy for you to get right into your next project. The surface-mount sensor is soldered onto a PCB and comes with a 3.3V regulator and level shifting so you can use it with a 3V or 5V logic microcontroller without worry.

Features

- Input Voltage: 3.3/5V
- Communication Mode: standard IIC/SPI communication protocol (build-in 16bit AD converter chip, 16-bit data output)
- Size: 15mm*25mm*3mm
- Digital-output X-, Y-, and Z-axis angular rate sensors (gyroscopes) with a user-programmable full-scale range of ± 250 , ± 500 , $\pm 1,000$ and $\pm 2,000^\circ/\text{sec}$ and integrated 16-bit ADCs
- Digital-output triple-axis accelerometer with a programmable full-scale range of $\pm 2g$, $\pm 4g$, $\pm 8g$ and $\pm 16g$ and integrated 16-bit ADCs
- 3-axis silicon monolithic Hall-effect magnetic sensor with magnetic concentrator
- Digitally programmable low-pass Gyroscope filter
- Gyroscope operating current: 3.2mA
- Accelerometer normal operating current: 450 μ A
- Magnetometer normal operating current: 280 μ A at 8Hz repetition rate
- Detachable mounting holes

Package Including

- 1 x MPU9250 Module
- 1 x 10pin Straight Headers

Operations Guide

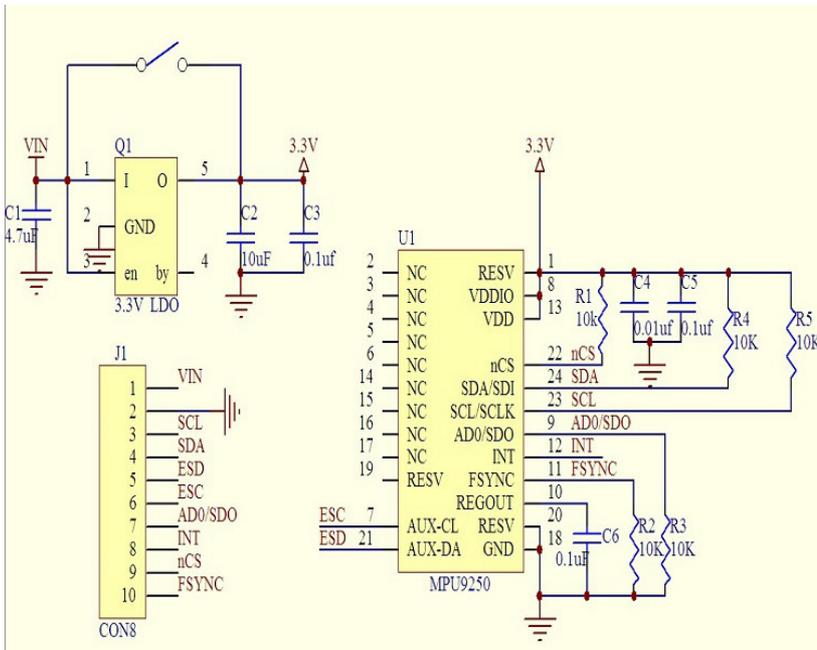
Product List

- Matching Pin Header * 1
- mpu9250

Required Preparation

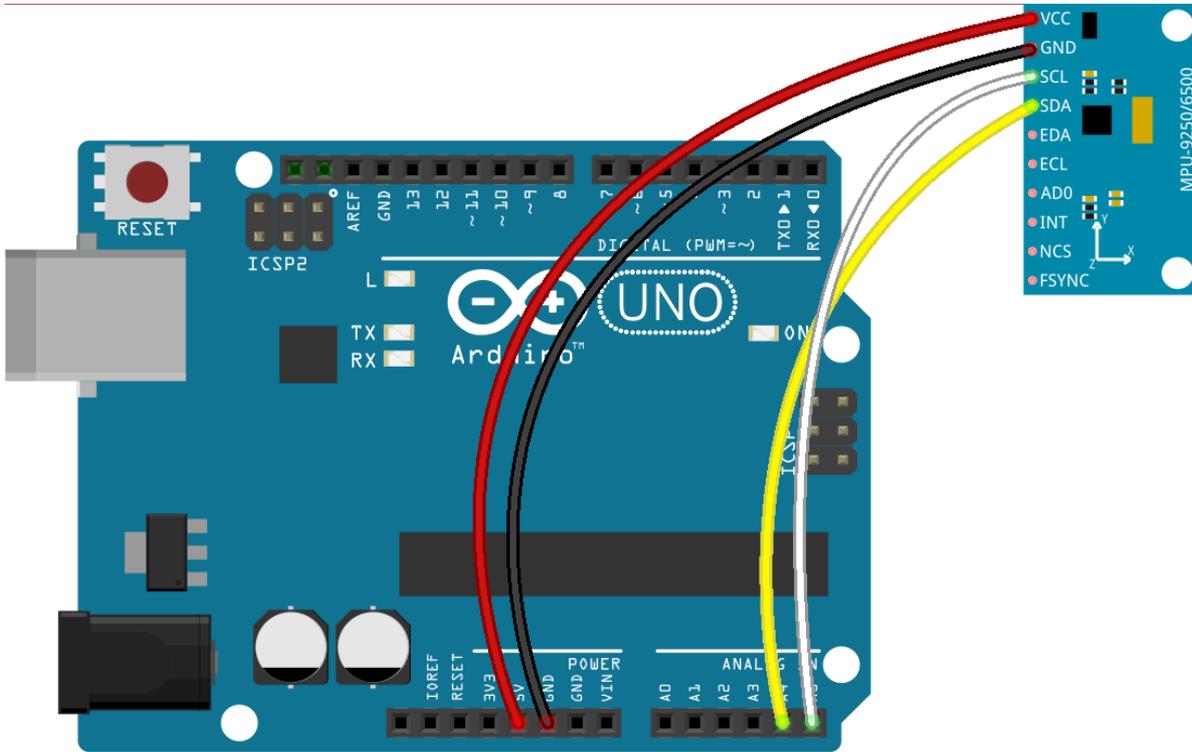
- Arduino Uno
- Data Cable Type-b

schematic diagram



Hardware Operation

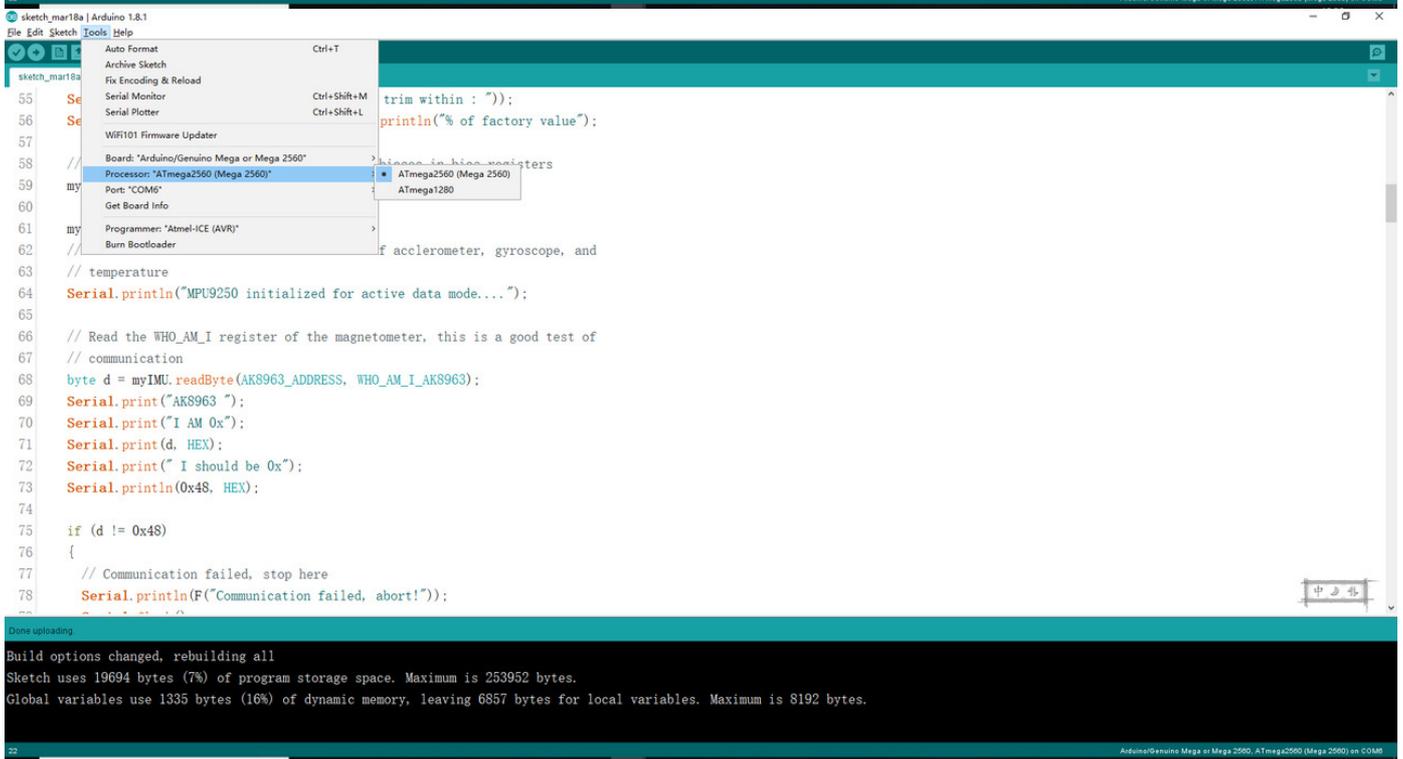
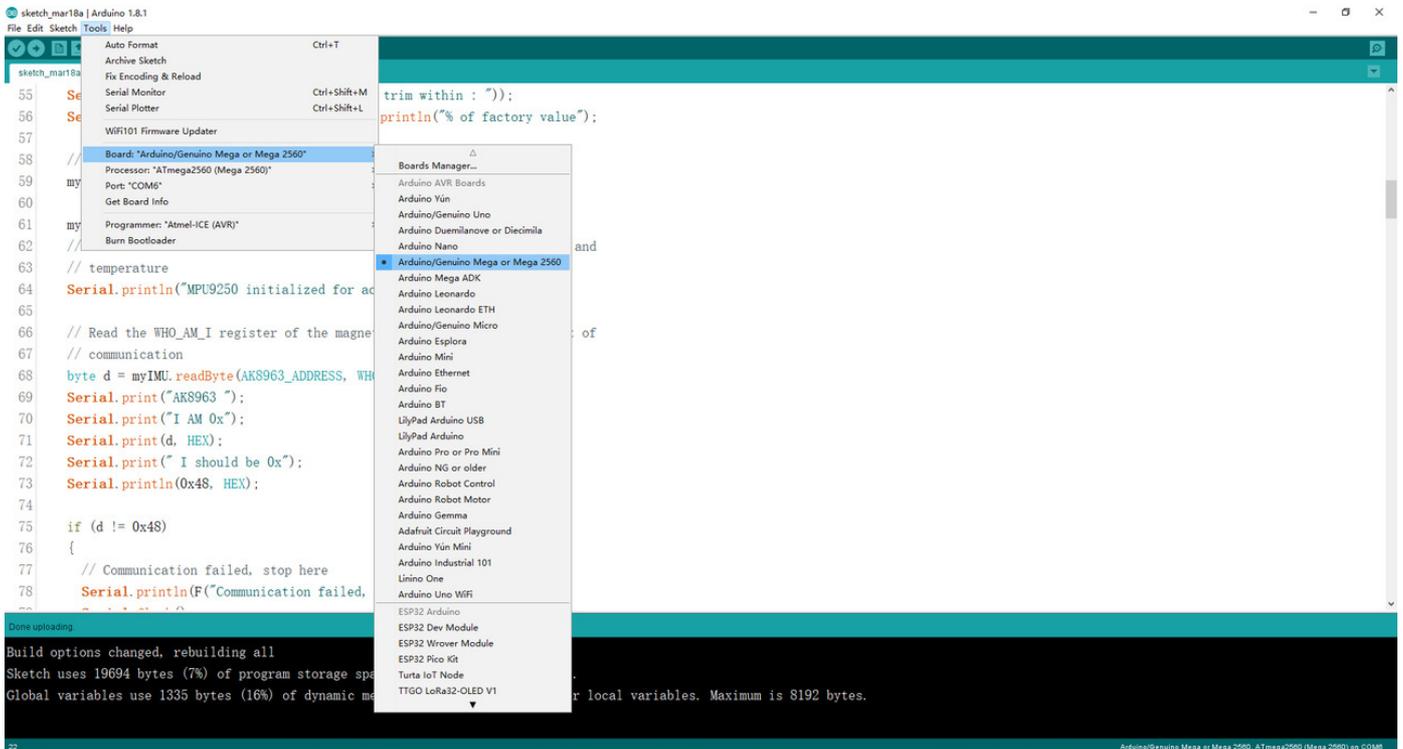
- Start the wiring as follows, Connect the computer and the uno board via USB.

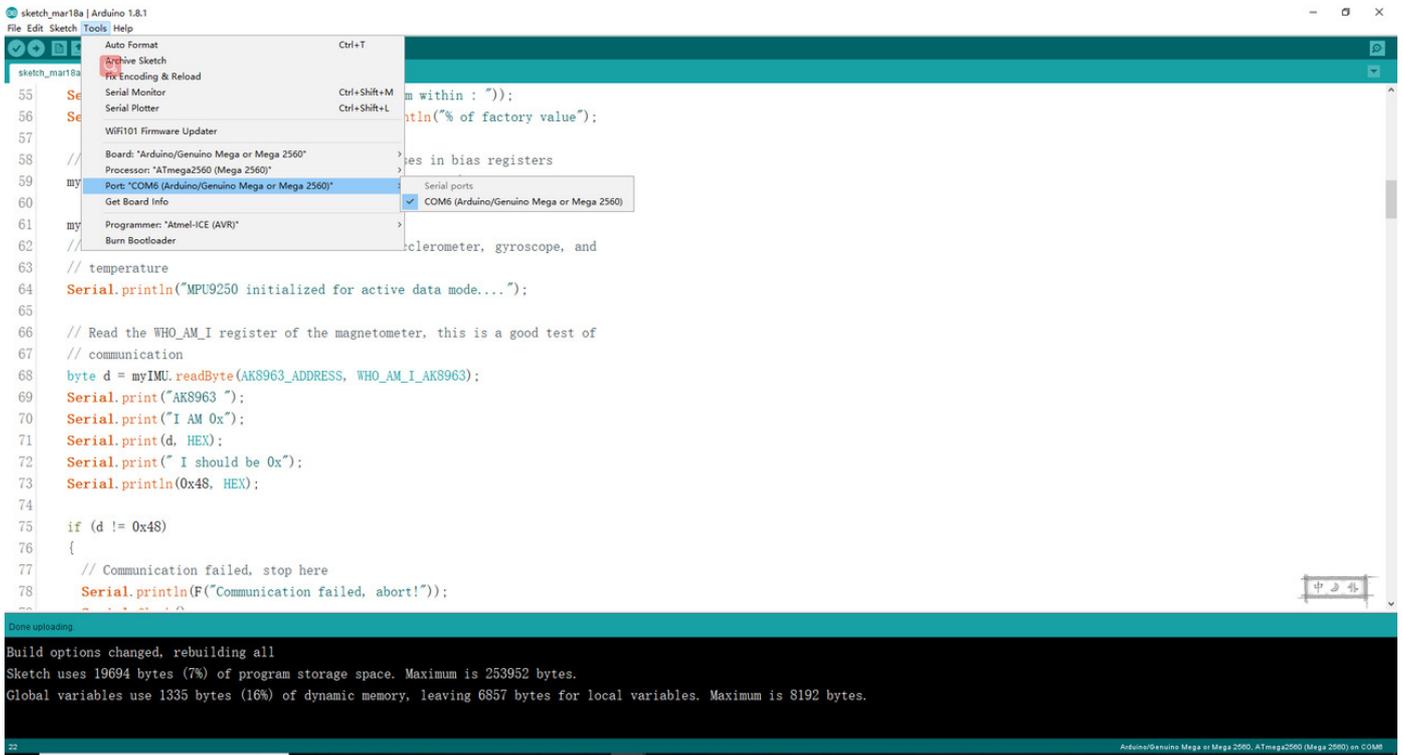


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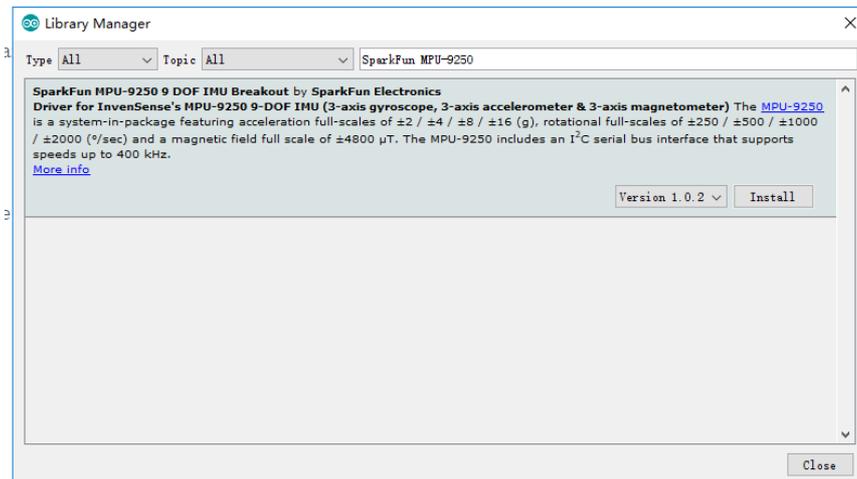
Software Operation

- Select the corresponding mainboard, processor and ports.





- Install the library of mpu9250.



- Run the codes.

