

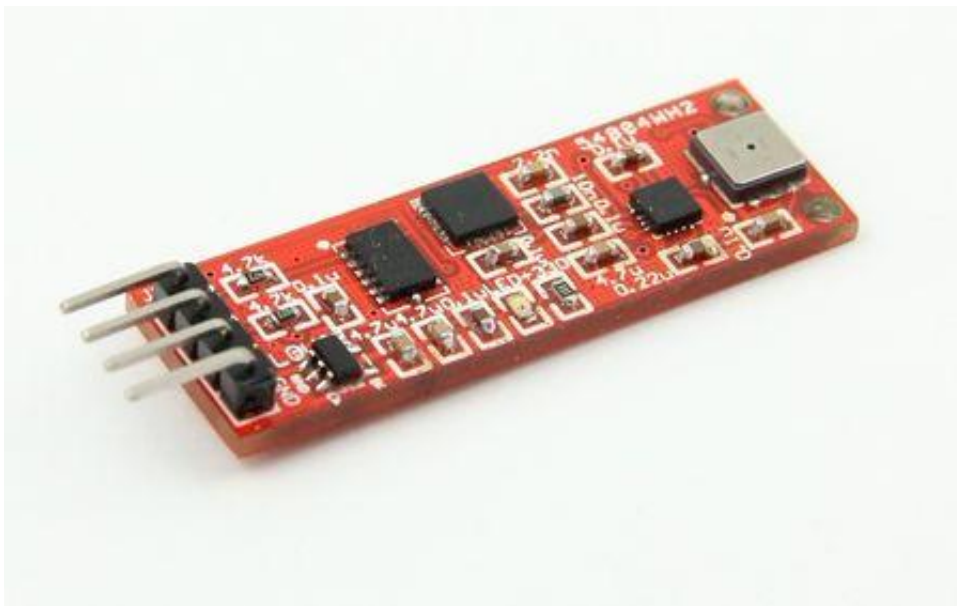
10DOF ITG3200/ADXL345/HMC5883L/BMP085 sensor breakout

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Overview



An IMU (Inertial Measurement Unit) is a system comprised of accelerometer, gyroscope, and other sensors working together to measure the craft's velocity, orientation and gravitational forces. These sensors working in tandem to compensate the pitfalls of each other for giving you a clean orientation using algorithm filtering. It enables the IMU to become a very powerful control mechanism for robots, UAVs, autonomous vehicles and image stabilization systems.

The 10DOF IMU incorporates four sensors – an ADXL345 (triple-axis accelerometer), ITG3205 (triple-axis gyro), and HMC5883 (triple-axis magnetometer) and BMP085 (Barometric Pressure sensor) – to give you 10 degrees of inertial measurement.

Features

- Tiny!
- Two mounting holes
- ADXL345 accelerometer
- ITG-3200 gyro
- HMC5883L magnetometer
- 3.3V input
- I2C interface

Details

The ADXL345 is a small, thin, low power, 3-axis accelerometer with high resolution (13-bit) measurement at up to ± 16 g. Digital output data is formatted as 16-bit twos complement and is accessible through either a SPI (3- or 4-wire) or I2C digital interface. The ADXL345 is well suited to measures the static acceleration of gravity in tilt-sensing applications, as well as dynamic acceleration resulting from motion or shock. Its high resolution (4 mg/LSB) enables measurement of inclination changes less than 1.0 degrees;

The ITG-3205 features three 16-bit analog-to-digital converters (ADCs) for digitizing the gyro outputs, a user-selectable internal low-pass filter bandwidth, and a Fast-Mode I2C (400kHz) interface. Additional features include an embedded temperature sensor and a 2% accurate internal oscillator. InvenSense has driven the ITG-3200 package size down to a revolutionary footprint of 4x4x0.9mm (QFN), while providing the highest performance, lowest noise, and the lowest cost semiconductor packaging required for handheld consumer electronic devices.

The Honeywell HMC5883L is a surface-mount, multi-chip module designed for low-field magnetic sensing with a digital interface for applications such as low-cost compassing and magnetometry. The HMC5883L includes our state-of-the-art, high-resolution HMC118X series magneto-resistive sensors plus an ASIC containing amplification, automatic degaussing strap drivers, offset cancellation, and a 12-bit ADC that enables 1° to 2° compass heading accuracy. The I2C serial bus allows for easy interface. These anisotropic, directional sensors feature precision in-axis sensitivity and linearity. Honeywell's Magnetic Sensors are among the most sensitive and reliable low-field sensors in the industry.

The BMP085 is a high-precision, ultra-low power barometric pressure sensor for use in advanced mobile applications. It offers superior performance with an absolute accuracy of down to 0.03 hPa and using very low power consumption down to 3 μ A. The BMP085 comes in an ultra-thin, robust 8-pin ceramic lead-less chip carrier (LCC) package, designed to be connected directly to a micro-controller of a mobile device via the I2C bus.

Document

ADXL345 Datasheet (<http://www.geeetech.com/Documents/ADXL345%20Datasheet.pdf>)

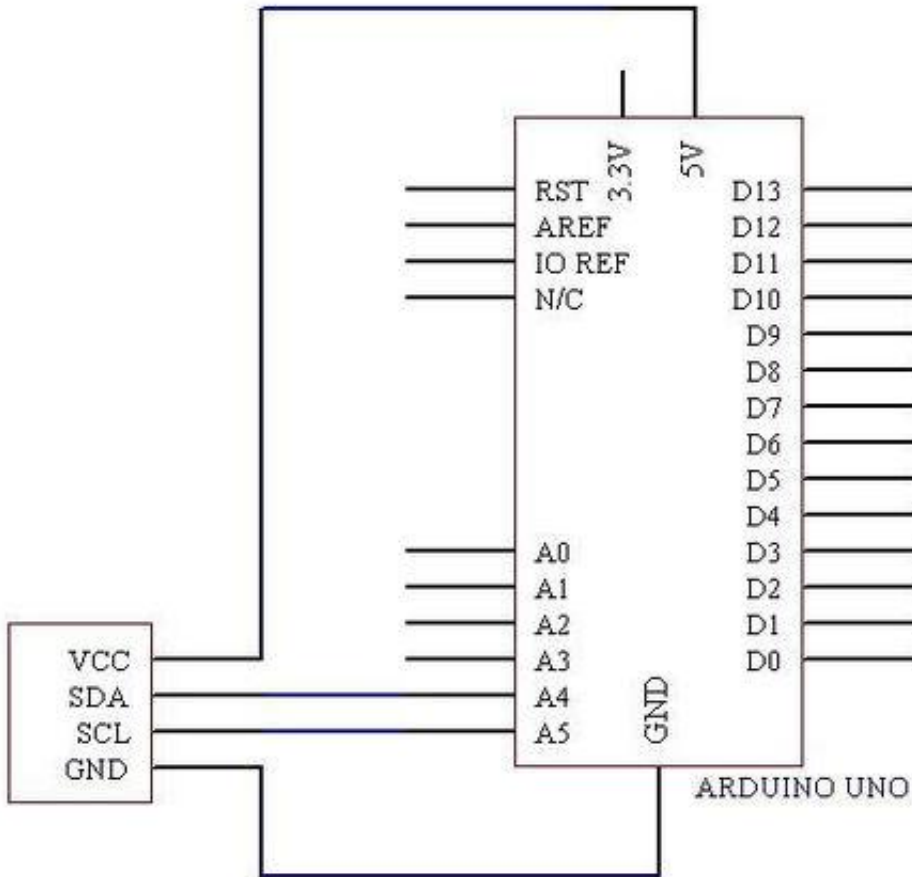
ITG3205 Datasheet (<http://www.geeetech.com/Documents/ITG-3205-00-01.4.pdf>)

HMC5883L Datasheet (<http://www.geeetech.com/Documents/HMC5883L-FDS.pdf>)

BMP085 Datasheet (<http://dlmh9ip6v2uc.cloudfront.net/datasheets/Sensors/Pressure/BST-BMP085-DS000-06.pdf>)

Usage

Here is a guide illustrates how to connect an 10DOF Sensor stick to Arduino. The following is table describe which pins on the Arduino should be connected to the 10DOF sensor stick.



- ADXL345 wiki
(http://www.geeetech.com/wiki/index.php/ADXL345_Triple_Axis_Accelerometer_Breakout)
- HMC5883L wiki
(http://www.geeetech.com/wiki/index.php/HMC5883L_Triple_Axis_Magnetometer_Breakout)
- ITG3205 wiki (http://www.geeetech.com/wiki/index.php/ITG3205_Triple_Axis_Gyroscope_Breakout)
- BMP085 wiki
(http://www.geeetech.com/wiki/index.php/BMP085_Barometric_Pressure_Sensor_Breakout)

I2C address

ADXL345 -> 83

ITG3200 -> 104

BMP085 -> 119

HMC5883 -> 30

How to buy

Click here to buy 10DOF ITG3200/ADXL345/HMC5883L/BMP085 sensor breakout
(<http://www.geeetech.com/10dof-itg3205adx345hmc5883lbmp085-sensor-stick-breakout-p-544.html>)

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