



LSM303 Tilt Compensated Compass(SEN0079)



Contents

- [1 Introduction](#)
- [2 Specifications](#)
- [3 Applications](#)
- [4 Connection Diagram](#)
- [5 Download library](#)
- [6 Sample Code\(Read Navigation Angle\)](#)
- [7 Sample Code\(Read Raw Data\)](#)

Introduction

The LSM303DLH is a triple axis accelerometer combined with a triple axis magnetic sensor. This breakout board uses the LSM303DLH to give you the data you need to feed into a microcontroller and calculate tilt-compensated output.

Specifications

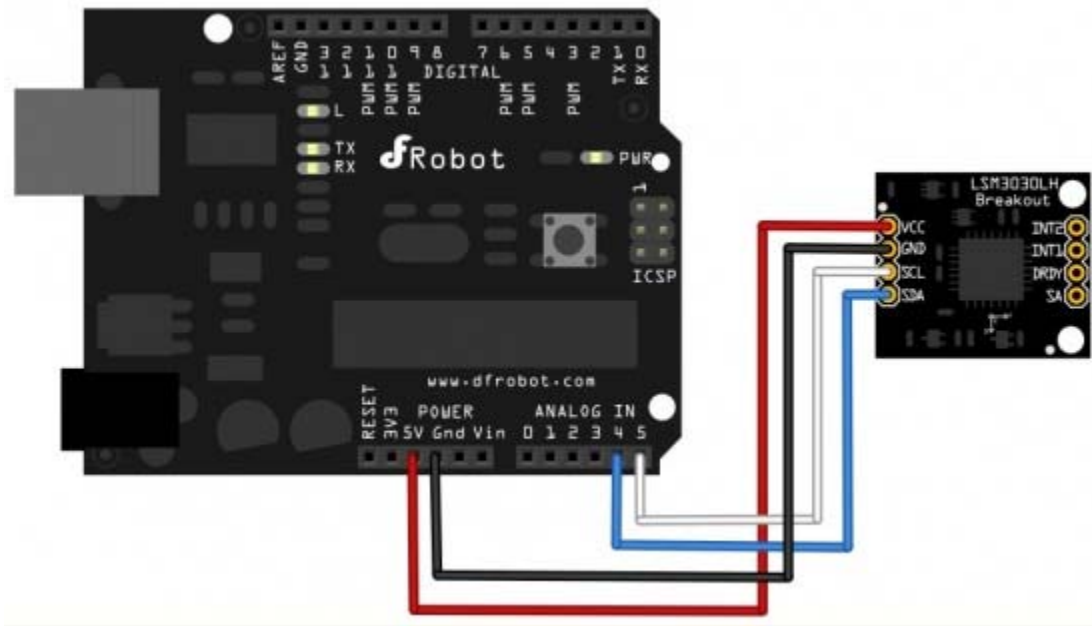
- Power supply: 3.6~8V DC
- Chip: LSM303DLH
- ± 1.3 to $\pm 8,1$ gauss magnetic field full-scale
- ± 2 g/ ± 4 g/ ± 8 g dynamically selectable fullscale
- 16-bit data out
- I2C serial interface
- 2 independent programmable interrupt

- generators for free-fall and motion detection
- Embedded self-test
- Accelerometer sleep-to-wakeup function
- 6D orientation detection
- Dimensions: 20.5mmx20.5mm
- Weight: 1g

Applications

- Compensated compassing
- Map rotation
- Position detection
- Motion-activated functions
- Free-fall detection
- Intelligent power-saving for handheld devices
- Display orientation
- Gaming and virtual reality input devices
- Impact recognition and logging
- Vibration monitoring and compensation

Connection Diagram



SEN0079 connection diagram---IIC

Download library

[Download related Library.](#) [About Library installation.](#)

Sample Code(Read Navigation Angle)

```
/*!
 * @file NavigationAngleRead.ino
 * @brief DFRobot's Manentic Sensor,This program continuously reads the accel
rometer and magnetometer,
 *      communicating the readings over the serial interface. You can displ
ay the readings with the Arduino Serial Monitor.
 * @n [Get the module here](http://www.dfrobot.com.cn/goods-326.html)
 * @n This example get the four lightest positions of the IR sources.
 * @n [Connection and Diagram](http://wiki.dfrobot.com.cn/index.php?title=(SK
U:TOY0035)Gadgeteer_LSM303%E7%94%B5%E5%AD%90%E7%BD%97%E7%9B%98%E4%BC%A0%E6%84
%9F%E5%99%A8)
 *
 * @copyright [DFRobot](http://www.dfrobot.com), 2016
 * @copyright GNU Lesser General Public License
 *
 * @author [carl](carl.xu@dfrobot.com)
 * @version V1.0
 * @date 2016-07-11
 */
#include <MagneticSensorLsm303.h>

MagneticSensorLsm303 compass;

void setup() {
    Serial.begin(9600);
    compass.init();
    compass.enable();
}

void loop() {
    compass.read();
    float heading = compass.getNavigationAngle();
    Serial.print("Navigation Angle: ");
    Serial.println(heading,3);
}
```

```
    delay(500); // delay for serial readability
}
```

Sample Code(Read Raw Data)

```
/*!
 * @file MagneticRawData.ino
 * @brief DFRobot's Manentic Sensor,This program continuously reads the accel
rometer and magnetometer,
 *      communicating the readings over the serial interface. You can displ
ay the readings with the Arduino Serial Monitor.
 * @n [Get the module here](http://www.dfrobot.com.cn/goods-326.html)
 * @n This example get the four lightest positions of the IR sources.
 * @n [Connection and Diagram](http://wiki.dfrobot.com.cn/index.php?title=(SK
U:TOY0035)Gadgeteer_LSM303%E7%94%B5%E5%AD%90%E7%BD%97%E7%9B%98%E4%BC%A0%E6%84
%9F%E5%99%A8)
 *
 * @copyright [DFRobot](http://www.dfrobot.com), 2016
 * @copyright GNU Lesser General Public License
 *
 * @author [carl](carl.xu@dfrobot.com)
 * @version V1.0
 * @date 2016-07-11
 */

#include <MagneticSensorLsm303.h>

MagneticSensorLsm303 compass;

char report[120];

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

```
compass.init();
compass.enable();
}

void loop()
{
    compass.read();
    snprintf(report, sizeof(report), "Acceleration:(X:%6d Y:%6d Z:%6d) Magnetom
eter:(X:%6d Y:%6d Z:%6d)",
    compass.accelerometer.x, compass.accelerometer.y, compass.accelerometer.z,
    compass.magnetometer.x, compass.magnetometer.y, compass.magnetometer.z);
    Serial.println(report);
    delay(500);
}
```