
AdafruitLSM303 Library Documentation

Release 1.0

Dave Astels

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This library has been split into separate libraries for the magnetometer and accelerometer. The accelerometer code will be shared with another version of the LSM303 that uses the same accelerometer but not the magnetometer and this repo will be archived.

This library will no longer be supported. Please use the new libraries

The new, split libraries

https://github.com/adafruit/Adafruit_CircuitPython_LSM303_Accel

https://github.com/adafruit/Adafruit_CircuitPython_LSM303DLH_Mag

The library for the new magnetometer

https://github.com/adafruit/Adafruit_CircuitPython_LSM303AGR_Mag

You can find usage information for the new libraries in the sensor's guide:

<https://learn.adafruit.com/lsm303-accelerometer-slash-compass-breakout/python-circuitpython>

INTRODUCTION

Adafruit CircuitPython module for the LSM303 6-DoF with 3-axis accelerometer and magnetometer

DEPENDENCIES

This driver depends on:

- [Adafruit CircuitPython](#)
- [Bus Device](#)

Please ensure all dependencies are available on the CircuitPython filesystem. This is easily achieved by downloading the [Adafruit library and driver bundle](#).

INSTALLING FROM PYPI

On supported GNU/Linux systems like the Raspberry Pi, you can install the driver locally [from PyPI](#). To install for current user:

```
pip3 install adafruit-circuitpython-lsm303
```

To install system-wide (this may be required in some cases):

```
sudo pip3 install adafruit-circuitpython-lsm303
```

To install in a virtual environment in your current project:

```
mkdir project-name && cd project-name  
python3 -m venv .env  
source .env/bin/activate  
pip3 install adafruit-circuitpython-lsm303
```


USAGE EXAMPLE

```
import time
import board
import busio

import adafruit_lsm303

i2c = busio.I2C(board.SCL, board.SDA)
sensor = adafruit_lsm303.LSM303(i2c)

while True:
    raw_accel_x, raw_accel_y, raw_accel_z = sensor.raw_acceleration
    accel_x, accel_y, accel_z = sensor.acceleration
    raw_mag_x, raw_mag_y, raw_mag_z = sensor.raw_magnetic
    mag_x, mag_y, mag_z = sensor.magnetic

    print('Acceleration raw: ({0:6d}, {1:6d}, {2:6d}), (m/s^2): ({3:10.3f}, {4:10.3f}
    ↪, {5:10.3f})'.format(raw_accel_x, raw_accel_y, raw_accel_z, accel_x, accel_y, accel_z))
    print('Magnetometer raw: ({0:6d}, {1:6d}, {2:6d}), (gauss): ({3:10.3f}, {4:10.3f}
    ↪, {5:10.3f})'.format(raw_mag_x, raw_mag_y, raw_mag_z, mag_x, mag_y, mag_z))
    print('')
    time.sleep(1.0)
```


CONTRIBUTING

Contributions are welcome! Please read our [Code of Conduct](#) before contributing to help this project stay welcoming.

DOCUMENTATION

For information on building library documentation, please check out [this guide](#).

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7.1 Simple tests

Ensure your device works with these simple tests.

Listing 1: examples/lsm303_simpletest.py

```
1  """ Display both accelerometer and magnetometer data once per second """
2
3  import time
4  import board
5  import busio
6  import adafruit_lsm303
7
8  i2c = busio.I2C(board.SCL, board.SDA)
9  sensor = adafruit_lsm303.LSM303(i2c)
10
11 while True:
12     acc_x, acc_y, acc_z = sensor.acceleration
13     mag_x, mag_y, mag_z = sensor.magnetic
14
15     print('Acceleration (m/s^2): ({0:10.3f}, {1:10.3f}, {2:10.3f})'.format(acc_x, acc_y,
↪acc_z))
16     print('Magnetometer (gauss): ({0:10.3f}, {1:10.3f}, {2:10.3f})'.format(mag_x, mag_y,
↪mag_z))
17     print('')
18     time.sleep(1.0)
```

Listing 2: examples/lsm303_fast_accel.py

```
1  """ Read data from the accelerometer and print it out, ASAP! """
2
3  import board
4  import busio
5
6  import adafruit_lsm303
7
8  i2c = busio.I2C(board.SCL, board.SDA)
9  sensor = adafruit_lsm303.LSM303(i2c)
10
11 while True:
```

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```

12 accel_x, accel_y, accel_z = sensor.acceleration
13 print('{0:10.3f} {1:10.3f} {2:10.3f}'.format(accel_x, accel_y, accel_z))

```

Listing 3: examples/lsm303_fast_mag.py

```

1  """ Read data from the magnetometer and print it out, ASAP! """
2
3  import board
4  import busio
5  import adafruit_lsm303
6
7  i2c = busio.I2C(board.SCL, board.SDA)
8  sensor = adafruit_lsm303.LSM303(i2c)
9
10 while True:
11     mag_x, mag_y, mag_z = sensor.magnetic
12     print('{0:10.3f} {1:10.3f} {2:10.3f}'.format(mag_x, mag_y, mag_z))

```

Listing 4: examples/lsm303_raw_and_cooked.py

```

1  """ Display both accelerometer and magnetometer data once per second """
2
3  import time
4  import board
5  import busio
6
7  import adafruit_lsm303
8
9  i2c = busio.I2C(board.SCL, board.SDA)
10 sensor = adafruit_lsm303.LSM303(i2c)
11
12 while True:
13     raw_accel_x, raw_accel_y, raw_accel_z = sensor.raw_acceleration
14     accel_x, accel_y, accel_z = sensor.acceleration
15     raw_mag_x, raw_mag_y, raw_mag_z = sensor.raw_magnetic
16     mag_x, mag_y, mag_z = sensor.magnetic
17
18     print('Acceleration raw: ({0:6d}, {1:6d}, {2:6d}), (m/s^2): ({3:10.3f}, {4:10.3f},
19 ↪ {5:10.3f})'
20         .format(raw_accel_x, raw_accel_y, raw_accel_z, accel_x, accel_y, accel_z))
21     print('Magnetometer raw: ({0:6d}, {1:6d}, {2:6d}), (gauss): ({3:10.3f}, {4:10.3f},
22 ↪ {5:10.3f})'
23         .format(raw_mag_x, raw_mag_y, raw_mag_z, mag_x, mag_y, mag_z))
24     print('')
25     time.sleep(1.0)

```

7.2 adafruit_lsm303

CircuitPython driver for the LSM303 accelerometer + magnetometer.

- Author(s): Dave Astels

7.2.1 Implementation Notes

Hardware:

- Adafruit Triple-axis Accelerometer+Magnetometer (Compass) Board - LSM303 (Product ID: 1120)
- Adafruit FLORA Accelerometer/Compass Sensor - LSM303 - v1.0 (Product ID: 1247)

Software and Dependencies:

- Adafruit CircuitPython firmware for the ESP8622 and M0-based boards: <https://github.com/adafruit/circuitpython/releases>
- Adafruit's Bus Device library: https://github.com/adafruit/Adafruit_CircuitPython_BusDevice

class `adafruit_lsm303.LSM303(i2c)`

Driver for the LSM303 accelerometer/magnetometer.

property `acceleration`

The processed accelerometer sensor values. A 3-tuple of X, Y, Z axis values in meters per second squared that are signed floats.

property `mag_gain`

The magnetometer's gain.

property `mag_rate`

The magnetometer update rate.

property `magnetic`

The processed magnetometer sensor values. A 3-tuple of X, Y, Z axis values in microteslas that are signed floats.

property `raw_acceleration`

The raw accelerometer sensor values. A 3-tuple of X, Y, Z axis values that are 16-bit signed integers.

property `raw_magnetic`

The raw magnetometer sensor values. A 3-tuple of X, Y, Z axis values that are 16-bit signed integers.

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