

---

# **Adafruit FXOS8700 Library Documentation**

***Release 1.0***

**Tony DiCola**

**Jan 22, 2020**



---

## Contents

---

<b>1</b>	<b>Dependencies</b>	<b>3</b>
<b>2</b>	<b>Installing from PyPI</b>	<b>5</b>
<b>3</b>	<b>Usage Example</b>	<b>7</b>
<b>4</b>	<b>Contributing</b>	<b>9</b>
<b>5</b>	<b>Documentation</b>	<b>11</b>
<b>6</b>	<b>Table of Contents</b>	<b>13</b>
6.1	Simple test . . . . .	13
6.2	adafruit_fxos8700 . . . . .	14
6.2.1	Implementation Notes . . . . .	14
<b>7</b>	<b>Indices and tables</b>	<b>15</b>
	<b>Python Module Index</b>	<b>17</b>
	<b>Index</b>	<b>19</b>



CircuitPython module for the NXP FXOS8700 accelerometer and magnetometer.



# CHAPTER 1

---

## 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](#).





## CHAPTER 2

---

### 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-fxos8700
```

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

```
sudo pip3 install adafruit-circuitpython-fxos8700
```

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-fxos8700
```



## CHAPTER 3

---

### Usage Example

---

```
import time
import board
import busio
import adafruit_fxos8700

i2c = busio.I2C(board.SCL, board.SDA)
sensor = adafruit_fxos8700.FXOS8700(i2c)

while True:
    accel_x, accel_y, accel_z = sensor.accelerometer
    mag_x, mag_y, mag_z = sensor.magnetometer
    print('Acceleration (m/s^2): ({0:0.3f}, {1:0.3f}, {2:0.3f})'.format(accel_x,
↪ accel_y, accel_z))
    print('Magnetometer (uTesla): ({0:0.3f}, {1:0.3f}, {2:0.3f})'.format(mag_x, mag_y,
↪ mag_z))
    time.sleep(1.0)
```



## CHAPTER 4

---

### Contributing

---

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



## CHAPTER 5

---

### Documentation

---

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





## 6.1 Simple test

Ensure your device works with this simple test.

Listing 1: examples/fxos8700\_simpletest.py

```
1  # Simple demo of the FXOS8700 accelerometer and magnetometer.
2  # Will print the acceleration and magnetometer values every second.
3  import time
4
5  import board
6  import busio
7
8  import adafruit_fxos8700
9
10
11 # Initialize I2C bus and device.
12 i2c = busio.I2C(board.SCL, board.SDA)
13 sensor = adafruit_fxos8700.FXOS8700(i2c)
14 # Optionally create the sensor with a different accelerometer range (the
15 # default is 2G, but you can use 4G or 8G values):
16 #sensor = adafruit_fxos8700.FXOS8700(i2c, accel_range=adafruit_fxos8700.ACCEL_RANGE_
17 #    ↳ 4G)
18 #sensor = adafruit_fxos8700.FXOS8700(i2c, accel_range=adafruit_fxos8700.ACCEL_RANGE_
19 #    ↳ 8G)
20
21 # Main loop will read the acceleration and magnetometer values every second
22 # and print them out.
23 while True:
24     # Read acceleration & magnetometer.
25     accel_x, accel_y, accel_z = sensor.accelerometer
26     mag_x, mag_y, mag_z = sensor.magnetometer
27     # Print values.
```

(continues on next page)

(continued from previous page)

```
26     print('Acceleration (m/s^2): ({0:0.3f}, {1:0.3f}, {2:0.3f})'.format(accel_x, ↵
↵ accel_y, accel_z))
27     print('Magnetometer (uTesla): ({0:0.3f}, {1:0.3f}, {2:0.3f})'.format(mag_x, mag_y,
↵ mag_z))
28     # Delay for a second.
29     time.sleep(1.0)
```

## 6.2 adafruit\_fxos8700

CircuitPython module for the NXP FXOS8700 accelerometer and magnetometer. Based on the driver from: [https://github.com/adafruit/Adafruit\\_FXOS8700](https://github.com/adafruit/Adafruit_FXOS8700)

See examples/simpletest.py for a demo of the usage.

- Author(s): Tony DiCola

### 6.2.1 Implementation Notes

#### Hardware:

- Adafruit Precision NXP 9-DOF Breakout Board - FXOS8700 + FXAS21002 (Product ID: 3463)

#### Software and Dependencies:

- Adafruit CircuitPython firmware (2.2.0+) 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](https://github.com/adafruit/Adafruit_CircuitPython_BusDevice)

**class** `adafruit_fxos8700.FXOS8700` (*i2c, address=31, accel\_range=0*)  
Driver for the NXP FXOS8700 accelerometer and magnetometer.

#### **accelerometer**

Read the acceleration from the accelerometer and return its X, Y, Z axis values as a 3-tuple in m/s<sup>2</sup>.

#### **magnetometer**

Read the magnetometer values and return its X, Y, Z axis values as a 3-tuple in uTeslas.

#### **read\_raw\_accel\_mag()**

Read the raw accelerometer and magnetometer readings. Returns a 2-tuple of 3-tuples:

- Accelerometer X, Y, Z axis 14-bit signed raw values
- Magnetometer X, Y, Z axis 16-bit signed raw values

If you want the acceleration or magnetometer values in friendly units consider using the `accelerometer` and `magnetometer` properties!

## CHAPTER 7

---

### Indices and tables

---

- `genindex`
- `modindex`
- `search`



### a

adafruit\_fxos8700, [14](#)



## A

`accelerometer` (*adafruit\_fxos8700.FXOS8700* attribute), [14](#)

`adafruit_fxos8700` (*module*), [14](#)

## F

`FXOS8700` (*class in adafruit\_fxos8700*), [14](#)

## M

`magnetometer` (*adafruit\_fxos8700.FXOS8700* attribute), [14](#)

## R

`read_raw_accel_mag()`  
(*adafruit\_fxos8700.FXOS8700* method), [14](#)