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# **Adafruit FXOS8700 Library Documentation**

***Release 1.0***

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CircuitPython module for the NXP FXOS8700 accelerometer and magnetometer.



# CHAPTER 1

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## Dependencies

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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

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### Usage Example

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



## CHAPTER 3

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### Contributing

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



## CHAPTER 4

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### Building locally

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To build this library locally you'll need to install the `circuitpython-build-tools` package.

```
python3 -m venv .env
source .env/bin/activate
pip install circuitpython-build-tools
```

Once installed, make sure you are in the virtual environment:

```
source .env/bin/activate
```

Then run the build:

```
circuitpython-build-bundles --filename_prefix adafruit-circuitpython-fxos8700 --
↳library_location .
```

### 4.1 Sphinx documentation

Sphinx is used to build the documentation based on rST files and comments in the code. First, install dependencies (feel free to reuse the virtual environment from above):

```
python3 -m venv .env
source .env/bin/activate
pip install Sphinx sphinx-rtd-theme
```

Now, once you have the virtual environment activated:

```
cd docs
sphinx-build -E -W -b html . _build/html
```

This will output the documentation to `docs/_build/html`. Open the `index.html` in your browser to view them. It will also (due to `-W`) error out on any warning like Travis will. This is a good way to locally verify it will pass



## 5.1 Simple test

Ensure your device works with this simple test.

Listing 5.1: 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_
    ↳ 4G)
17 #sensor = adafruit_fxos8700.FXOS8700(i2c, accel_range=adafruit_fxos8700.ACCEL_RANGE_
    ↳ 8G)
18
19 # Main loop will read the acceleration and magnetometer values every second
20 # and print them out.
21 while True:
22     # Read acceleration & magnetometer.
23     accel_x, accel_y, accel_z = sensor.accelerometer
24     mag_x, mag_y, mag_z = sensor.magnetometer
25     # Print values.
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)
```

## 5.2 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

### 5.2.1 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=<sphinx.ext.autodoc.\_MockObject object>*, *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 6

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### Indices and tables

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