Adafruit FXOS8700 Library Documentation

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Contents

1 Dependencies **3**

2 Installing from PyPI **5**

3 Usage Example **7**

4 Contributing **9**

5 Documentation **11**

6 Table of Contents **13**
- 6.1 Simple test . . . 13
- 6.2 `adafruit_fxos8700` . . . 14
  - 6.2.1 Implementation Notes . . . 14

7 Indices and tables **17**

Python Module Index **19**

Index **21**

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 adafruit_fxos8700

i2c = board.I2C()  # uses board.SCL and 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.

CHAPTER 6

Table of Contents

6.1 Simple test

Ensure your device works with this simple test.

Listing 1: examples/fxos8700_simpletest.py

```
# SPDX-FileCopyrightText: 2021 ladyada for Adafruit Industries
# SPDX-License-Identifier: MIT

# Simple demo of the FXOS8700 accelerometer and magnetometer.
# Will print the acceleration and magnetometer values every second.
import time
import board
import adafruit_fxos8700


# Create sensor object, communicating over the board's default I2C bus
i2c = board.I2C()  # uses board.SCL and board.SDA
sensor = adafruit_fxos8700.FXOS8700(i2c)
# Optionally create the sensor with a different accelerometer range (the
# default is 2G, but you can use 4G or 8G values):
# sensor = adafruit_fxos8700.FXOS8700(i2c, accel_range=adafruit_fxos8700.ACCEL_RANGE_
↪4G)
# sensor = adafruit_fxos8700.FXOS8700(i2c, accel_range=adafruit_fxos8700.ACCEL_RANGE_
↪8G)

# Main loop will read the acceleration and magnetometer values every second
# and print them out.
while True:
    # Read acceleration & magnetometer.
    accel_x, accel_y, accel_z = sensor.accelerometer
    mag_x, mag_y, mag_z = sensor.magnetometer
    # Print values.
```

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```
    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
        )
    )
    # Delay for a second.
    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

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

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6.2.1 Implementation Notes

Hardware:

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

Software and Dependencies:

- Adafruit CircuitPython firmware for the supported boards: https://circuitpython.org/downloads
- Adafruit's Bus Device library: 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.

Parameters

- **i2c** (*I2C*) – The I2C bus the device is connected to
- **address** (*int*) – The I2C device address. Defaults to 0x1F
- **accel_range** (*int*) – Device range. Defaults to 0x00.

Quickstart: Importing and using the device

Here is an example of using the *FXOS8700* class. First you will need to import the libraries to use the sensor

```
import board
import adafruit_fxos8700
```

Once this is done you can define your board.I2C object and define your sensor object

```
i2c = board.I2C()  # uses board.SCL and board.SDA
sensor = adafruit_fxos8700.FXOS8700(i2c)
```

Now you have access to the *accelerometer* and *magnetometer* attributes

```
accel_x, accel_y, accel_z = sensor.accelerometer
mag_x, mag_y, mag_z = sensor.magnetometer
```

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

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

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

Python Module Index

a

adafruit_fxos8700, 14

Index

A

accelerometer (*adafruit_fxos8700.FXOS8700 attribute*), 15
adafruit_fxos8700 (*module*), 14

F

FXOS8700 (*class in adafruit_fxos8700*), 14

M

magnetometer (*adafruit_fxos8700.FXOS8700 attribute*), 15

R

read_raw_accel_mag() (*adafruit_fxos8700.FXOS8700 method*), 15