Adafruit FXOS8700 Library Documentation

Release 1.0

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Contents

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.

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 busio

import adafruit_fxos8700


# Initialize I2C bus and device.
i2c = busio.I2C(board.SCL, 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.
```

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```
    accel_x, accel_y, accel_z = sensor.accelerometer
    mag_x, mag_y, mag_z = sensor.magnetometer
    # Print values.
    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 (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

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^2.

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

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