Adafruit FXAS21002C Library Documentation

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CircuitPython module for the NXP FXAS21002C gyroscope.

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

Usage Example

See examples/simpletest.py for an example of the usage.

CHAPTER 3

Contributing

Contributions are welcome! Please read our Code of Conduct before contributing to help this project stay welcoming.

CHAPTER 4

Building locally

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-fxac21002c --
↪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.

CHAPTER 5

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5.1 Simple test

Ensure your device works with this simple test.

Listing 1: examples/fxas21002c_simpletest.py

```
# Simple demo of the FXAS21002C gyroscope.
# Will print the gyroscope values every second.
import time

import board
import busio

import adafruit_fxas21002c


# Initialize I2C bus and device.
i2c = busio.I2C(board.SCL, board.SDA)
sensor = adafruit_fxas21002c.FXAS21002C(i2c)
# Optionally create the sensor with a different gyroscope range (the
# default is 250 DPS, but you can use 500, 1000, or 2000 DPS values):
#sensor = adafruit_fxas21002c.FXAS21002C(i2c, gyro_range=adafruit_fxas21002c.GYRO_
↪RANGE_500DPS)
#sensor = adafruit_fxas21002c.FXAS21002C(i2c, gyro_range=adafruit_fxas21002c.GYRO_
↪RANGE_1000DPS)
#sensor = adafruit_fxas21002c.FXAS21002C(i2c, gyro_range=adafruit_fxas21002c.GYRO_
↪RANGE_2000DPS)

# Main loop will read the gyroscope values every second and print them out.
while True:
    # Read gyroscope.
    gyro_x, gyro_y, gyro_z = sensor.gyroscope
    # Print values.
```

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```
    print('Gyroscope (radians/s): ({0:0.3f}, {1:0.3f}, {2:0.3f})'.format(gyro_x, gyro_y, gyro_z))
    # Delay for a second.
    time.sleep(1.0)
```

5.2 adafruit_fxas21002c

CircuitPython module for the NXP FXAS21002C gyroscope. Based on the driver from: https://github.com/adafruit/Adafruit_FXAS21002C

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

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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

class adafruit_fxas21002c.**FXAS21002C**(*i2c*, *address=33*, *gyro_range=250*)

Driver for the NXP FXAS21002C gyroscope.

gyroscope

Read the gyroscope value and return its X, Y, Z axis values as a 3-tuple in radians/second.

read_raw()

Read the raw gyroscope readings. Returns a 3-tuple of X, Y, Z axis 16-bit signed values. If you want the gyroscope values in friendly units consider using the gyroscope property!

CHAPTER 6

Indices and tables

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