
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

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-fxas21002c
```

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

```
sudo pip3 install adafruit-circuitpython-fxas21002c
```

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-fxas21002c
```


CHAPTER 3

Usage Example

```
import time
import board
import busio
import adafruit_fxas21002c

i2c = busio.I2C(board.SCL, board.SDA)
sensor = adafruit_fxas21002c.FXAS21002C(i2c)

while True:
    gyro_x, gyro_y, gyro_z = sensor.gyroscope
    print('Gyroscope (radians/s): ({0:0.3f}, {1:0.3f}, {2:0.3f})'.format(gyro_x, ↵
    ↵gyro_y, gyro_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](#).

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6.1 Simple test

Ensure your device works with this simple test.

Listing 1: examples/fxas21002c_simpletest.py

```
1  # SPDX-FileCopyrightText: 2021 ladyada for Adafruit Industries
2  # SPDX-License-Identifier: MIT
3
4  # Simple demo of the FXAS21002C gyroscope.
5  # Will print the gyroscope values every second.
6  import time
7
8  import board
9  import busio
10
11 import adafruit_fxas21002c
12
13
14 # Initialize I2C bus and device.
15 i2c = busio.I2C(board.SCL, board.SDA)
16 sensor = adafruit_fxas21002c.FXAS21002C(i2c)
17 # Optionally create the sensor with a different gyroscope range (the
18 # default is 250 DPS, but you can use 500, 1000, or 2000 DPS values):
19 # sensor = adafruit_fxas21002c.FXAS21002C(i2c, gyro_range=adafruit_fxas21002c.GYRO_
    ↳ RANGE_500DPS)
20 # sensor = adafruit_fxas21002c.FXAS21002C(i2c, gyro_range=adafruit_fxas21002c.GYRO_
    ↳ RANGE_1000DPS)
21 # sensor = adafruit_fxas21002c.FXAS21002C(i2c, gyro_range=adafruit_fxas21002c.GYRO_
    ↳ RANGE_2000DPS)
22
23 # Main loop will read the gyroscope values every second and print them out.
24 while True:
```

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```
25     # Read gyroscope.
26     gyro_x, gyro_y, gyro_z = sensor.gyroscope
27     # Print values.
28     print(
29         "Gyroscope (radians/s): ({0:0.3f}, {1:0.3f}, {2:0.3f})".format(
30             gyro_x, gyro_y, gyro_z
31         )
32     )
33     # Delay for a second.
34     time.sleep(1.0)
```

6.2 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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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_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 7

Indices and tables

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