AdafruitMMA8451 Library Documentation

Release 1.0

Tony DiCola

Jan 22, 2021

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_mma8451` 14

7 Indices and tables **17**

Python Module Index **19**

Index **21**

CircuitPython module for the MMA8451 3 axis accelerometer.

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-mma8451
```

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

```
sudo pip3 install adafruit-circuitpython-mma8451
```

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-mma8451
```

CHAPTER 3

Usage Example

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

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/mma8451_simpletest.py

```
# SPDX-FileCopyrightText: 2018 Tony DiCola for Adafruit Industries
# SPDX-License-Identifier: MIT

# Simple demo of reading the MMA8451 orientation every second.

import time

import board
import busio

import adafruit_mma8451


# Initialize I2C bus.
i2c = busio.I2C(board.SCL, board.SDA)

# Initialize MMA8451 module.
sensor = adafruit_mma8451.MMA8451(i2c)
# Optionally change the address if it's not the default:
# sensor = adafruit_mma8451.MMA8451(i2c, address=0x1C)

# Optionally change the range from its default of +/-4G:
# sensor.range = adafruit_mma8451.RANGE_2G  # +/- 2G
# sensor.range = adafruit_mma8451.RANGE_4G  # +/- 4G (default)
# sensor.range = adafruit_mma8451.RANGE_8G  # +/- 8G

# Optionally change the data rate from its default of 800hz:
```

(continues on next page)

(continued from previous page)

```
# sensor.data_rate = adafruit_mma8451.DATARATE_800HZ  #  800Hz (default)
# sensor.data_rate = adafruit_mma8451.DATARATE_400HZ  #  400Hz
# sensor.data_rate = adafruit_mma8451.DATARATE_200HZ  #  200Hz
# sensor.data_rate = adafruit_mma8451.DATARATE_100HZ  #  100Hz
# sensor.data_rate = adafruit_mma8451.DATARATE_50HZ   #   50Hz
# sensor.data_rate = adafruit_mma8451.DATARATE_12_5HZ # 12.5Hz
# sensor.data_rate = adafruit_mma8451.DATARATE_6_25HZ # 6.25Hz
# sensor.data_rate = adafruit_mma8451.DATARATE_1_56HZ # 1.56Hz

# Main loop to print the acceleration and orientation every second.
while True:
    x, y, z = sensor.acceleration
    print(
        "Acceleration: x={0:0.3f}m/s^2 y={1:0.3f}m/s^2 z={2:0.3f}m/s^2".format(x, y, z)
    )
    orientation = sensor.orientation
    # Orientation is one of these values:
    #  - PL_PUF: Portrait, up, front
    #  - PL_PUB: Portrait, up, back
    #  - PL_PDF: Portrait, down, front
    #  - PL_PDB: Portrait, down, back
    #  - PL_LRF: Landscape, right, front
    #  - PL_LRB: Landscape, right, back
    #  - PL_LLF: Landscape, left, front
    #  - PL_LLB: Landscape, left, back
    print("Orientation: ", end="")
    if orientation == adafruit_mma8451.PL_PUF:
        print("Portrait, up, front")
    elif orientation == adafruit_mma8451.PL_PUB:
        print("Portrait, up, back")
    elif orientation == adafruit_mma8451.PL_PDF:
        print("Portrait, down, front")
    elif orientation == adafruit_mma8451.PL_PDB:
        print("Portrait, down, back")
    elif orientation == adafruit_mma8451.PL_LRF:
        print("Landscape, right, front")
    elif orientation == adafruit_mma8451.PL_LRB:
        print("Landscape, right, back")
    elif orientation == adafruit_mma8451.PL_LLF:
        print("Landscape, left, front")
    elif orientation == adafruit_mma8451.PL_LLB:
        print("Landscape, left, back")
    time.sleep(1.0)
```

6.2 adafruit_mma8451

CircuitPython module for the MMA8451 3 axis accelerometer. See examples/simpletest.py for a demo of the usage.

- Author(s): Tony DiCola

class adafruit_mma8451.**MMA8451**(*i2c*, *, *address=29*)

MMA8451 accelerometer. Create an instance by specifying: - i2c: The I2C bus connected to the sensor.

Optionally specify: - address: The I2C address of the sensor if not the default of 0x1D.

acceleration

Get the acceleration measured by the sensor. Will return a 3-tuple of X, Y, Z axis acceleration values in m/s^2.

data_rate

Get and set the data rate of the sensor. Must be a value of: - DATARATE_800HZ: 800Hz (the default) - DATARATE_400HZ: 400Hz - DATARATE_200HZ: 200Hz - DATARATE_100HZ: 100Hz - DATARATE_50HZ: 50Hz - DATARATE_12_5HZ: 12.5Hz - DATARATE_6_25HZ: 6.25Hz - DATARATE_1_56HZ: 1.56Hz

orientation

Get the orientation of the MMA8451. Will return a value of: - PL_PUF: Portrait, up, front - PL_PUB: Portrait, up, back - PL_PDF: Portrait, down, front - PL_PDB: Portrait, down, back - PL_LRF: Landscape, right, front - PL_LRB: Landscape, right, back - PL_LLF: Landscape, left, front - PL_LLB: Landscape, left, back

range

Get and set the range of the sensor. Must be a value of: - RANGE_8G: +/- 8g - RANGE_4G: +/- 4g (the default) - RANGE_2G: +/- 2g

CHAPTER 7

Indices and tables

- genindex
- modindex
- search

Python Module Index

a

adafruit_mma8451, 14

Index

A

`acceleration` (*adafruit_mma8451.MMA8451 attribute*), 14
`adafruit_mma8451` (*module*), 14

D

`data_rate` (*adafruit_mma8451.MMA8451 attribute*), 15

M

`MMA8451` (*class in adafruit_mma8451*), 14

O

`orientation` (*adafruit_mma8451.MMA8451 attribute*), 15

R

`range` (*adafruit_mma8451.MMA8451 attribute*), 15