
Adafruit*CircuitPython_MLX90393Library*Documen

Release 1.0

Kevin Townsend

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Adafruit CircuitPython driver for the MLX90393 3-axis 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](#).

1.1 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-mlx90939
```

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

```
sudo pip3 install adafruit-circuitpython-mlx90939
```

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-mlx90939
```


CHAPTER 2

Usage Example

```
import time
import busio
import board

import adafruit_mlx90393

I2C_BUS = busio.I2C(board.SCL, board.SDA)
SENSOR = adafruit_mlx90393.MLX90393(I2C_BUS, gain=adafruit_mlx90393.GAIN_1X)

while True:
    MX, MY, MZ = SENSOR.magnetic
    print("[{}]" .format(time.monotonic()))
    print("X: {} uT".format(MX))
    print("Y: {} uT".format(MY))
    print("Z: {} uT".format(MZ))
    # Display the status field if an error occurred, etc.
    if SENSOR.last_status > adafruit_mlx90393.STATUS_OK:
        SENSOR.display_status()
    time.sleep(1.0)
```


CHAPTER 3

Contributing

Contributions are welcome! Please read our [Code of Conduct](#) before contributing to help this project stay welcoming.

4.1 Zip release files

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_mlx90393 --
↳library_location .
```

4.2 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.

5.1 Simple test

Ensure your device works with this simple test.

Listing 1: examples/adafruit_mlx90393_simpletest.py

```
1 import time
2 import busio
3 import board
4
5 import adafruit_mlx90393
6
7 I2C_BUS = busio.I2C(board.SCL, board.SDA)
8 SENSOR = adafruit_mlx90393.MLX90393(I2C_BUS, gain=adafruit_mlx90393.GAIN_1X)
9
10 while True:
11     MX, MY, MZ = SENSOR.magnetic
12     print("{} {}".format(time.monotonic(), MX))
13     print("X: {} uT".format(MX))
14     print("Y: {} uT".format(MY))
15     print("Z: {} uT".format(MZ))
16     # Display the status field if an error occurred, etc.
17     if SENSOR.last_status > adafruit_mlx90393.STATUS_OK:
18         SENSOR.display_status()
19     time.sleep(1.0)
```

5.2 adafruit_mlx90393

This is a breakout for the Adafruit MLX90393 magnetometer sensor breakout.

- Author(s): ktown

5.2.1 Implementation Notes

Hardware:

- Adafruit [MLX90393 Magnetometer Sensor Breakout Board](#) (Product ID: 4022)

Software and Dependencies:

- Adafruit CircuitPython firmware for the supported boards: <https://github.com/adafruit/circuitpython/releases>
- Adafruit's Bus Device library: https://github.com/adafruit/Adafruit_CircuitPython_BusDevice

class adafruit_mlx90393.**MLX90393** (*i2c_bus*, *address=12*, *gain=7*, *debug=False*)

Driver for the MLX90393 magnetometer. :param i2c_bus: The `busio.I2C` object to use. This is the only required parameter. :param int address: (optional) The I2C address of the device. :param int gain: (optional) The gain level to apply. :param bool debug: (optional) Enable debug output.

display_status ()

Prints out the content of the last status byte in a human-readable format.

gain

Gets the current gain setting for the device.

last_status

Returns the last status byte received from the sensor.

magnetic

The processed magnetometer sensor values. A 3-tuple of X, Y, Z axis values in microteslas that are signed floats.

read_data

Reads a single X/Y/Z sample from the magnetometer.

read_reg (*reg*)

Gets the current value of the specified register.

reset ()

Performs a software reset of the sensor.

CHAPTER 6

Indices and tables

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`reset()` (*adafruit_mlx90393.MLX90393 method*), [12](#)