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**Adafruit***CircuitPython*<sub>M</sub>*LX90393*LibraryDocume  
**Release 1.0**

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Adafruit CircuitPython driver for the MLX90393 3-axis magnetometer.



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

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### Usage Example

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```
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(),
                          "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

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### Contributing

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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/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()))
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](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

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### Indices and tables

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