Adafruit MLX90393 Library Documentation

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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 occured, 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.

CHAPTER 4

Documentation

For information on building library documentation, please check out this guide.

CHAPTER 5

Table of Contents

5.1 Simple test

Ensure your device works with this simple test.

Listing 1: examples/mlx90393_simpletest.py

```
# SPDX-FileCopyrightText: 2021 ladyada for Adafruit Industries
# SPDX-License-Identifier: MIT

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 occured, etc.
    if SENSOR.last_status > adafruit_mlx90393.STATUS_OK:
        SENSOR.display_status()
    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*, *resolution=0*, *filt=7*, *oversampling=3*, *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-readble format.

filter

The filter level.

gain

The gain setting for the device.

last_status

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.

oversampling

The oversampling level.

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.

resolution_x

The X axis resolution.

resolution_y

The Y axis resolution.

resolution_z

The Z axis resolution.

write_reg(*reg*, *value*)
Writes the 16-bit value to the supplied register.

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