
AdafruitMLX90640 Library Documentation

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Driver for the MLX90640 thermal camera

CHAPTER 1

Dependencies

This driver depends on:

- [Adafruit CircuitPython](#)
- [Bus Device](#)
- [Register](#)

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-mlx90640
```

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

```
sudo pip3 install adafruit-circuitpython-mlx90640
```

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-mlx90640
```


CHAPTER 3

Usage Example

```
import time
import board
import busio
import adafruit_mlx90640

i2c = busio.I2C(board.SCL, board.SDA, frequency=800000)

mlx = adafruit_mlx90640.MLX90640(i2c)
print("MLX addr detected on I2C", [hex(i) for i in mlx.serial_number])

mlx.refresh_rate = adafruit_mlx90640.RefreshRate.REFRESH_2_HZ

frame = [0] * 768
while True:
    try:
        mlx.getFrame(frame)
    except ValueError:
        # these happen, no biggie - retry
        continue

    for h in range(24):
        for w in range(32):
            t = frame[h*32 + w]
            print("%0.1f, " % t, end="")
        print()
    print()
```


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](#).

6.1 Simple test

Ensure your device works with this simple test.

Listing 1: examples/mlx90640_simpletest.py

```
1  # SPDX-FileCopyrightText: 2021 ladyada for Adafruit Industries
2  # SPDX-License-Identifier: MIT
3
4  import time
5  import board
6  import busio
7  import adafruit_mlx90640
8
9  PRINT_TEMPERATURES = False
10 PRINT_ASCIIART = True
11
12 i2c = busio.I2C(board.SCL, board.SDA, frequency=800000)
13
14 mlx = adafruit_mlx90640.MLX90640(i2c)
15 print("MLX addr detected on I2C")
16 print([hex(i) for i in mlx.serial_number])
17
18 mlx.refresh_rate = adafruit_mlx90640.RefreshRate.REFRESH_2_HZ
19
20 frame = [0] * 768
21 while True:
22     stamp = time.monotonic()
23     try:
24         mlx.getFrame(frame)
25     except ValueError:
26         # these happen, no biggie - retry
27         continue
```

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```

28 print("Read 2 frames in %0.2f s" % (time.monotonic() - stamp))
29 for h in range(24):
30     for w in range(32):
31         t = frame[h * 32 + w]
32         if PRINT_TEMPERATURES:
33             print("%0.1f, " % t, end="")
34         if PRINT_ASCIIART:
35             c = "&"
36             # pylint: disable=multiple-statements
37             if t < 20:
38                 c = " "
39             elif t < 23:
40                 c = "."
41             elif t < 25:
42                 c = "-"
43             elif t < 27:
44                 c = "*"
45             elif t < 29:
46                 c = "+"
47             elif t < 31:
48                 c = "x"
49             elif t < 33:
50                 c = "%"
51             elif t < 35:
52                 c = "#"
53             elif t < 37:
54                 c = "X"
55             # pylint: enable=multiple-statements
56             print(c, end="")
57     print()
58 print()

```

6.2 adafruit_mlx90640

Driver for the MLX90640 thermal camera

- Author(s): ladyada

6.2.1 Implementation Notes

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
- Adafruit's Register library: https://github.com/adafruit/Adafruit_CircuitPython_Register

class `adafruit_mlx90640.MLX90640` (*i2c_bus*, *address=51*)

Interface to the MLX90640 temperature sensor.

getFrame (*framebuf*)

Request both 'halves' of a frame from the sensor, merge them and calculate the temperature in C for each of 32x24 pixels. Placed into the 768-element array passed in!

refresh_rate

How fast the MLX90640 will spit out data. Start at lowest speed in RefreshRate and then slowly increase I2C clock rate and rate until you max out. The sensor does not like it if the I2C host cannot 'keep up'!

serial_number

3-item tuple of hex values that are unique to each MLX90640

class adafruit_mlx90640.**RefreshRate**

Enum-like class for MLX90640's refresh rate

CHAPTER 7

Indices and tables

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