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# **AdafruitTrellisM4 Library Documentation**

***Release 1.0***

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This high level library provides objects that represent Trellis M4 hardware.



# CHAPTER 1

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## Dependencies

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This driver depends on:

- [Adafruit CircuitPython](#)

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-trellism4
```

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

```
sudo pip3 install adafruit-circuitpython-trellism4
```

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-trellism4
```





## CHAPTER 2

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### Usage Example

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This example prints out the coordinates of a button each time it is pressed and released:

```
import time
import adafruit_trellism4

trellis = adafruit_trellism4.TrellisM4Express()

current_press = set()
while True:
    pressed = set(trellis.pressed_keys)
    for press in pressed - current_press:
        print("Pressed:", press)
    for release in current_press - pressed:
        print("Released:", release)
    time.sleep(0.08)
    current_press = pressed
```



## 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-trellism4 --
↳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/trellism4\_simpletest.py

```
1 import adafruit_trellism4
2
3 trellis = adafruit_trellism4.TrellisM4Express()
4
5 while True:
6     pressed = trellis.pressed_keys
7     if pressed:
8         print("Pressed:", pressed)
```

### 5.2 adafruit\_trellism4

CircuitPython library for the Trellis M4 Express.

- Author(s): Scott Shawcroft, Kattni Rembor

#### 5.2.1 Implementation Notes

**Hardware:**

# Add link to Trellis M4 Express when product is released.

**Software and Dependencies:**

- Adafruit CircuitPython firmware for the supported boards: <https://github.com/adafruit/circuitpython/releases>

**class** adafruit\_trellism4.**TrellisM4Express** (*rotation=0*)

Represents a single Trellis M4 Express. Do not use more than one at a time.

**Parameters** **rotation** – Allows for rotating the Trellis M4 Express in 90 degree increments to different positions and utilising the grid from that position. Supports 0, 90, 180, and 270. 0 degrees is when the USB facing away from you. Default is 0.

```
import time
import adafruit_trellism4

trellis = adafruit_trellism4.TrellisM4Express()

current_press = set()
while True:
    pressed = set(trellis.pressed_keys)
    for press in pressed - current_press:
        print("Pressed:", press)
    for release in current_press - pressed:
        print("Released:", release)
    time.sleep(0.08)
    current_press = pressed
```

**pixels = None**

Sequence like object representing the 32 NeoPixels on the Trellis M4 Express, Provides a two dimensional representation of the NeoPixel grid.

This example lights up the first pixel green:

```
import adafruit_trellism4

trellis = adafruit_trellism4.TrellisM4Express()

trellis.pixels[0, 0] = (0, 255, 0)
```

**Options for pixels:**

`pixels.fill`: Colors all the pixels a given color. Provide an (R, G, B) color tuple (such as (255, 0, 0) for red), or a hex color value (such as 0xff0000 for red).

This example colors all pixels red:

```
import adafruit_trellism4

trellis = adafruit_trellism4.TrellisM4Express()

trellis.pixels.fill((255, 0, 0))
```

`pixels.width` and `pixels.height`: The width and height of the grid. When `rotation` is 0, width is 8 and height is 4.

This example colors all pixels blue:

```
import adafruit_trellism4

trellis = adafruit_trellism4.TrellisM4Express()

for x in range(trellis.pixels.width):
    for y in range(trellis.pixels.height):
        trellis.pixels[x, y] = (0, 0, 255)
```



`pixels.brightness`: The overall brightness of the pixel. Must be a number between 0 and 1, where the number represents a percentage between 0 and 100, i.e. 0.3 is 30%.

This example sets the brightness to 0.3 and turns all the LEDs red:

```
import adafruit_trellism4

trellis = adafruit_trellism4.TrellisM4Express()

trellis.pixels.brightness = 0.3

trellis.pixels.fill((255, 0, 0))
```

### **pressed\_keys**

A list of tuples of currently pressed button coordinates.

```
import time
import adafruit_trellism4

trellis = adafruit_trellism4.TrellisM4Express()

current_press = set()
while True:
    pressed = set(trellis.pressed_keys)
    for press in pressed - current_press:
        print("Pressed:", press)
    for release in current_press - pressed:
        print("Released:", release)
    time.sleep(0.08)
    current_press = pressed
```



## CHAPTER 6

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### Indices and tables

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