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# **AdafruitTLC59711 Library Documentation**

*Release 1.0*

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## Contents

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<b>1</b>	<b>Dependencies</b>	<b>3</b>
<b>2</b>	<b>Usage Example</b>	<b>5</b>
<b>3</b>	<b>Contributing</b>	<b>7</b>
<b>4</b>	<b>Building locally</b>	<b>9</b>
4.1	Sphinx documentation . . . . .	9
<b>5</b>	<b>Table of Contents</b>	<b>11</b>
5.1	Simple test . . . . .	11
5.2	adafruit_tlc59711 . . . . .	12
5.2.1	Implementation Notes . . . . .	12
<b>6</b>	<b>Indices and tables</b>	<b>15</b>
	<b>Python Module Index</b>	<b>17</b>
	<b>Index</b>	<b>19</b>



CircuitPython module for the TLC59711 16-bit 12 channel LED PWM driver.



# 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](#).





## CHAPTER 2

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### Usage Example

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See `examples/tlc59711_simpletest.py` for a demo of the usage.



## 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.



# CHAPTER 4

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## Building locally

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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-tlc59711 --
↳library_location .
```

## 4.1 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/tlc59711\_simpletest.py

```
1 # Simple demo of the TLC59711 16-bit 12 channel LED PWM driver.
2 # Shows setting channel values in a few ways.
3 # Author: Tony DiCola
4 import board
5 import busio
6
7 import adafruit_tlc59711
8
9
10 # Define SPI bus connected to chip. You only need the clock and MOSI (output)
11 # line to use this chip.
12 spi = busio.SPI(board.SCK, MOSI=board.MOSI)
13
14 # Define the TLC59711 instance.
15 leds = adafruit_tlc59711.TLC59711(spi)
16 # Optionally you can disable the auto_show behavior that updates the chip
17 # as soon as any channel value is written. The default is True/on but you can
18 # disable and explicitly call show to control when updates happen for better
19 # animation or atomic RGB LED updates.
20 #leds = adafruit_tlc59711.TLC59711(spi, auto_show=False)
21
22 # There are a couple ways to control the channels of the chip.
23 # The first is using an interface like a strip of NeoPixels. Index into the
24 # class for the channel and set or get its R, G, B tuple value. Note the
25 # component values are 16-bit numbers that range from 0-65535 (off to full
26 # brightness). Remember there are only 4 channels available too (0 to 3).
27 # For example set channel 0 (R0, G0, B0) to half brightness:
```

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```

28 leds[0] = (32767, 32767, 32767)
29 # Dont forget to call show if you disabled auto_show above.
30 #leds.show()
31
32 # Or to set channel 1 to full red only (green and blue off).
33 leds[1] = (65535, 0, 0)
34
35 # You can also explicitly control each R0, G0, B0, R1, B1, etc. channel
36 # by getting and setting its 16-bit value directly with properties.
37 # For example set channel 2 to full green (i.e. G2 to maximum):
38 leds.g2 = 65535
39 # Again don't forget to call show if you disabled auto_show above.
40 #leds.show()
41
42 # The chip also supports global brightness channels to change the red, green,
43 # blue colors of all 4 channels at once. These are 7-bit values that range
44 # from 0-127. Get and set them with the red_brightness, green_brightness,
45 # and blue_brightness properties and again be sure to call show if you
46 # disabled auto_show.
47 # For example set the red channel to half brightness globally.
48 leds.red_brightness = 63
49 # Don't forget to call show if you disabled auto_show above.
50 #leds.show()

```

## 5.2 adafruit\_tlc59711

CircuitPython module for the TLC59711 16-bit 12 channel LED PWM driver. See examples/simpletest.py for a demo of the usage.

- Author(s): Tony DiCola

### 5.2.1 Implementation Notes

#### Hardware:

- Adafruit 12-Channel 16-bit PWM LED Driver - SPI Interface - TLC59711 (Product ID: 1455)

#### Software and Dependencies:

- Adafruit CircuitPython firmware for the ESP8622 and M0-based boards: <https://github.com/adafruit/circuitpython/releases>

**class** `adafruit_tlc59711.TLC59711` (*spi*, \*, *auto\_show=True*)

TLC59711 16-bit 12 channel LED PWM driver. This chip is designed to drive 4 RGB LEDs with 16-bit PWM control of each LED. The class has an interface much like that of NeoPixels with attribute access to the 4 RGB channels (note they are 16-bit values). Or you can access each independent channel by name (`r0`, `g0`, `b0`, `r1`, `b1`, etc.) as properties for fine-grained control.

#### Parameters

- **spi** (*SPI*) – An instance of the SPI bus connected to the chip. The clock and MOSI/output must be set, the MISO/input is unused.
- **auto\_show** (*bool*) – This is a boolean that defaults to True and indicates any change to a channel value will instantly be written to the chip. You might wish to set this to false if you



desire to perform your own atomic operations of channel values. In that case call the `show` function after making updates to channel state.

**blue\_brightness**

The blue brightness for all channels (i.e. B0, B1, B2, and B3). This is a 7-bit value from 0-127.

**green\_brightness**

The green brightness for all channels (i.e. G0, G1, G2, and G3). This is a 7-bit value from 0-127.

**red\_brightness**

The red brightness for all channels (i.e. R0, R1, R2, and R3). This is a 7-bit value from 0-127.

**show ()**

Write out the current LED PWM state to the chip. This is only necessary if `auto_show` was set to `false` in the initializer.



## CHAPTER 6

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### Indices and tables

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- `genindex`
- `modindex`
- `search`



**a**

`adafruit_tlc59711`, [12](#)



## A

`adafruit_tlc59711` (*module*), 12

## B

`blue_brightness` (*adafruit\_tlc59711.TLC59711 attribute*), 13

## G

`green_brightness` (*adafruit\_tlc59711.TLC59711 attribute*), 13

## R

`red_brightness` (*adafruit\_tlc59711.TLC59711 attribute*), 13

## S

`show()` (*adafruit\_tlc59711.TLC59711 method*), 13

## T

`TLC59711` (*class in adafruit\_tlc59711*), 12