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# **Adafruit TCS34725 Library Documentation**

***Release 1.0***

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CircuitPython module for the TCS34725 color sensor.



# CHAPTER 1

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## Dependencies

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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](#).



## CHAPTER 2

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### Usage Example

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See `examples/tcs34725_simpletest.py` for an example of the module's 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-tcs34725 --
↳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/tcs34725\_simpletest.py

```
1  # Simple demo of the TCS34725 color sensor.
2  # Will detect the color from the sensor and print it out every second.
3  import time
4
5  import board
6  import busio
7
8  import adafruit_tcs34725
9
10
11 # Initialize I2C bus and sensor.
12 i2c = busio.I2C(board.SCL, board.SDA)
13 sensor = adafruit_tcs34725.TCS34725(i2c)
14
15 # Main loop reading color and printing it every second.
16 while True:
17     # Read the color as RGB bytes (0-255 values).
18     r, g, b = sensor.color_rgb_bytes
19     print('Detected color: #{0:02X}{1:02X}{2:02X}'.format(r, g, b))
20     # Read the color temperature and lux of the sensor too.
21     try:
22         temp = sensor.temperature
23         lux = sensor.lux
24         print('Temperature: {0}K Lux: {1}'.format(temp, lux))
25     except ZeroDivisionError:
26         print("No light to measure")
27     # Delay for a second and repeat.
```

(continues on next page)

```
time.sleep(1.0)
```

## 5.2 adafruit\_tcs34725

CircuitPython module for the TCS34725 color sensor. Ported from the micropython-adafruit-tcs34725 module by Radomir Dopieralski: <https://github.com/adafruit/micropython-adafruit-tcs34725>

See examples/tcs34725\_simpletest.py for an example of the usage.

- Author(s): Tony DiCola

### 5.2.1 Implementation Notes

#### Hardware:

- Adafruit RGB Color Sensor with IR filter and White LED - TCS34725 (Product ID: 1334)
- Flora Color Sensor with White Illumination LED - TCS34725 (Product ID: 1356)

#### Software and Dependencies:

- Adafruit CircuitPython firmware for the ESP8622 and M0-based 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_tcs34725.TCS34725` (*i2c*, *address=41*)

Driver for the TCS34725 color sensor.

#### **active**

The active state of the sensor. Boolean value that will enable/activate the sensor with a value of True and disable with a value of False.

#### **color**

Read the RGB color detected by the sensor. Returns an int with 8 bits per channel.

Examples: Red = 16711680 (0xff0000), Green = 65280 (0x00ff00), Blue = 255 (0x0000ff), SlateGray = 7372944 (0x708090)

#### **color\_raw**

Read the raw RGBC color detected by the sensor. Returns a 4-tuple of 16-bit red, green, blue, clear component byte values (0-65535).

#### **color\_rgb\_bytes**

Read the RGB color detected by the sensor. Returns a 3-tuple of red, green, blue component values as bytes (0-255).

#### **cycles**

The persistence cycles of the sensor.

#### **gain**

The gain of the sensor. Should be a value of 1, 4, 16, or 60.

#### **integration\_time**

The integration time of the sensor in milliseconds.

#### **interrupt**

True if the interrupt is set. Can be set to False (and only False) to clear the interrupt.

**lux**

Return the detected light level in lux.

**max\_value**

The minimum threshold value (AIHT register) of the sensor as a 16-bit unsigned value.

**min\_value**

The minimum threshold value (AILT register) of the sensor as a 16-bit unsigned value.

**temperature**

Return the detected color temperature in degrees.



## CHAPTER 6

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### Indices and tables

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