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# **Adafruit MAX31855 Library Documentation**

***Release 1.0***

**Radomir Dopieralski**

**Jan 15, 2019**



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CircuitPython driver for the [MAX31855 Thermocouple Amplifier Breakout](#)



# 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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Of course, you must import the library to use it:

```
import adafruit_max31855
```

You also need to create an SPI interface object, and a pin object for the chip select pin. You can use any pin for the CS, but we use D5 here:

```
from busio import SPI
from digitalio import DigitalInOut
import board

spi = SPI(clock=board.SCK, MISO=board.MISO, MOSI=board.MOSI)
cs = DigitalInOut(board.D5)
```

Next, just create the sensor object:

```
sensor = adafruit_max31855.MAX31855(spi, cs)
```

And you can start making measurements:

```
print(sensor.temperature)
```

The temperature is read in degrees Celsius (°C). You have to convert it to other units yourself, if you need it.



## 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-max31855 --
↳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/max31855\_simpletest.py

```
1 import time
2 import board
3 import busio
4 import digitalio
5 import adafruit_max31855
6
7 spi = busio.SPI(board.SCK, MOSI=board.MOSI, MISO=board.MISO)
8 cs = digitalio.DigitalInOut(board.D5)
9
10 max31855 = adafruit_max31855.MAX31855(spi, cs)
11 while True:
12     tempC = max31855.temperature
13     tempF = tempC * 9 / 5 + 32
14     print('Temperature: {} C {} F '.format(tempC, tempF))
15     time.sleep(2.0)
```

### 5.2 adafruit\_max31855

This is a CircuitPython driver for the Maxim Integrated MAX31855 thermocouple amplifier module.

- Author(s): Radomir Dopieralski

## 5.2.1 Implementation Notes

### Hardware:

- Adafruit [MAX31855 Thermocouple Amplifier Breakout](#) (Product ID: 269)

### 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_max31855.MAX31855` (*spi*, *cs*)

Driver for the MAX31855 thermocouple amplifier.

**reference\_temperature**

Internal reference temperature in degrees Celsius.

**temperature**

Thermocouple temperature in degrees Celsius.



## CHAPTER 6

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### Indices and tables

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