Adafruit MAX31855 Library Documentation

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CircuitPython driver for the MAX31855 Thermocouple Amplifier Breakout

CHAPTER 1

Dependencies

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

Usage Example

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

Contributing

Contributions are welcome! Please read our Code of Conduct before contributing to help this project stay welcoming.

CHAPTER 4

Building locally

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.

CHAPTER 5

Table of Contents

5.1 Simple test

Ensure your device works with this simple test.

Listing 1: examples/max31855_simpletest.py

```
import time
import board
import busio
import digitalio
import adafruit_max31855

spi = busio.SPI(board.SCK, MOSI=board.MOSI, MISO=board.MISO)
cs = digitalio.DigitalInOut(board.D5)

max31855 = adafruit_max31855.MAX31855(spi, cs)
while True:
    tempC = max31855.temperature
    tempF = tempC * 9 / 5 + 32
    print('Temperature: {} C {} F '.format(tempC, tempF))
    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

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.

temperature_NIST

Thermocouple temperature in degrees Celsius, computed using raw voltages and NIST approximation for Type K, see: https://srdata.nist.gov/its90/download/type_k.tab

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