
Adafruit THERMISTOR Library Documentation

Release 1.0

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Thermistors are resistors that predictably change resistance with temperature. This driver uses an analog reading and math to determine the temperature. They are commonly used as a low cost way to measure temperature.

CHAPTER 1

Dependencies

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

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-thermistor
```

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

```
sudo pip3 install adafruit-circuitpython-thermistor
```

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-thermistor
```


CHAPTER 3

Usage Example

The hardest part of using the driver is its initialization. Here is an example for the thermistor on the Circuit Playground and Circuit Playground Express. Its a 10k series resistor, 10k nominal resistance, 25 celsius nominal temperature and 3950 B coefficient.

CHAPTER 4

Contributing

Contributions are welcome! Please read our [Code of Conduct](#) before contributing to help this project stay welcoming.

CHAPTER 5

Documentation

For information on building library documentation, please check out [this guide](#).

6.1 Simple test

Ensure your device works with this simple test.

Listing 1: examples/thermistor_simpletest.py

```
1 import time
2 import board
3 import adafruit_thermistor
4
5 # these values work with the Adafruit CircuitPlayground Express.
6 # they may work with other thermistors as well, as they're fairly standard,
7 # though the pin will likely need to change (ie board.A1)
8 # pylint: disable=no-member
9 pin = board.TEMPERATURE
10 resistor = 10000
11 resistance = 10000
12 nominal_temp = 25
13 b_coefficient = 3950
14
15 thermistor = adafruit_thermistor.Thermistor(pin, resistor, resistance, nominal_temp,
16 ↪b_coefficient)
17
18 # print the temperature in C and F to the serial console every second
19 while True:
20     celsius = thermistor.temperature
21     fahrenheit = (celsius * 9 / 5) + 32
22     print('== Temperature ==\n{} *C\n{} *F\n'.format(celsius, fahrenheit))
23     time.sleep(1)
```

6.2 adafruit_thermistor

A thermistor is a resistor that varies with temperature. This driver takes the parameters of that resistor and its series resistor to determine the current temperature. To hook one up, connect an analog input pin to the connection between the resistor and the thermistor. Be careful to note if the thermistor is connected on the high side (from analog input up to high logic level/3.3 or 5 volts) or low side (from analog input down to ground). The initializer takes an optional `high_side` boolean that defaults to `True` and indicates if that the thermistor is connected on the high side vs. low side.

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6.2.1 Implementation Notes

Hardware:

- Adafruit 10K Precision Epoxy Thermistor - 3950 NTC (Product ID: 372)
- Adafruit Circuit Playground Express (Product ID: 3333)

Software and Dependencies:

- Adafruit CircuitPython firmware: <https://github.com/adafruit/circuitpython/releases>

Notes:

1. Check the datasheet of your thermistor for the values.

```
class adafruit_thermistor.Thermistor (pin, series_resistor, nominal_resistance, nominal_temperature, b_coefficient, *, high_side=True)
```

Thermistor driver

temperature

The temperature of the thermistor in celsius

CHAPTER 7

Indices and tables

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