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# **Adafruit INA219 Library Documentation**

***Release 1.0***

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CircuitPython driver for the [INA219](#) current 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 [example](#)



## 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-ina219 --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/ina219\_simpletest.py

```
1 import time
2
3 from board import SCL, SDA
4 import busio
5
6 import adafruit_ina219
7
8 i2c_bus = busio.I2C(SCL, SDA)
9
10 ina219 = adafruit_ina219.INA219(i2c_bus)
11
12 print("ina219 test")
13
14 while True:
15     print("Bus Voltage:   {} V".format(ina219.bus_voltage))
16     print("Shunt Voltage: {} mV".format(ina219.shunt_voltage / 1000))
17     print("Load Voltage:   {} V".format(ina219.bus_voltage + ina219.shunt_voltage))
18     print("Current:       {} mA".format(ina219.current))
19     print("")
20
21     time.sleep(2)
```

## 5.2 adafruit\_ina219

CircuitPython driver for the INA219 current sensor.

- Author(s): Dean Miller

## 5.2.1 Implementation Notes

### Hardware:

- [Adafruit INA219 High Side DC Current Sensor Breakout](#)
- [Adafruit INA219 FeatherWing](#)

### Software and Dependencies:

- Adafruit CircuitPython firmware (2.2.0+) 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_ina219.INA219` (*i2c\_bus*, *addr=64*)

Driver for the INA219 current sensor

#### **bus\_voltage**

The bus voltage (between V- and GND) in Volts

#### **current**

The current through the shunt resistor in milliamps.

#### **set\_calibration\_16V\_400mA** ()

Configures to INA219 to be able to measure up to 16V and 400mA of current. Counter overflow occurs at 1.6A.

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**Note:** These calculations assume a 0.1 ohm shunt resistor is present

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#### **set\_calibration\_32V\_1A** ()

Configures to INA219 to be able to measure up to 32V and 1A of current. Counter overflow occurs at 1.3A.

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**Note:** These calculations assume a 0.1 ohm shunt resistor is present

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#### **set\_calibration\_32V\_2A** ()

Configures to INA219 to be able to measure up to 32V and 2A of current. Counter overflow occurs at 3.2A.

..note :: These calculations assume a 0.1 shunt ohm resistor is present

#### **shunt\_voltage**

The shunt voltage (between V+ and V-) in Volts (so +/-327V)



## CHAPTER 6

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### Indices and tables

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