
Adafruit's CCS811 Library Documentation

Release 1.0

Dean Miller, Scott Shawcroft

Dec 21, 2018

Contents

1	Dependencies	3
2	Usage Notes	5
2.1	Reading Sensor	5
3	Contributing	7
4	Building locally	9
4.1	Sphinx documentation	9
5	Table of Contents	11
5.1	Simple test	11
5.2	CCS811 - Adafruit CCS811 Air Quality Sensor Breakout - VOC and eCO2	11
6	Indices and tables	13
	Python Module Index	15

CircuitPython driver for the [CCS811](#) air quality sensor.

CHAPTER 1

Dependencies

This driver depends on:

- [Adafruit CircuitPython](#)
- [Bus Device](#)
- [Register](#)

Please ensure all dependencies are available on the CircuitPython filesystem. This is easily achieved by downloading the [Adafruit library and driver bundle](#).

See the [guide](#) for wiring and installation instructions.

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

```
import busio
import adafruit_CCS811
```

Next, initialize the I2C bus object.

```
from board import *
i2c_bus = busio.I2C(SCL, SDA)
```

Once you have created the I2C interface object, you can use it to instantiate the CCS811 object

```
ccs = adafruit_ccs811.CCS811(i2c_bus)
```

2.1 Reading Sensor

To read the gas sensor and temperature simply read the attributes:

```
print("CO2: ", ccs.eco2, " TVOC:", ccs.tvoc, " temp:", ccs.temperature)
```


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-ccs811 --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/ccs811_simpletest.py

```
1 import time
2 import board
3 import busio
4 import adafruit_ccs811
5
6 i2c = busio.I2C(board.SCL, board.SDA)
7 ccs811 = adafruit_ccs811.CCS811(i2c)
8
9 # Wait for the sensor to be ready and calibrate the thermistor
10 while not ccs811.data_ready:
11     pass
12 temp = ccs811.temperature
13 ccs811.temp_offset = temp - 25.0
14
15 while True:
16     print("CO2: {} PPM, TVOC: {} PPM, Temp: {} C"
17           .format(ccs811.eco2, ccs811.tvoc, ccs811.temperature))
18     time.sleep(0.5)
```

5.2 CCS811 - Adafruit CCS811 Air Quality Sensor Breakout - VOC and eCO2

This library supports the use of the CCS811 air quality sensor in CircuitPython.

Author(s): Dean Miller for Adafruit Industries

Notes:

#. [Datasheet](#)

class `adafruit_ccs811.CCS811` (*i2c_bus*, *address=90*)
CCS811 gas sensor driver.

Parameters

- **i2c** (*I2C*) – The I2C bus.
- **addr** (*int*) – The I2C address of the CCS811.

data_ready

True when new data has been read.

eco2

Equivalent Carbon Dioxide in parts per million. Clipped to 400 to 8192ppm.

error

True when an error has occurred.

error_code

Error code

reset ()

Initiate a software reset.

set_environmental_data (*humidity*, *temperature*)

Set the temperature and humidity used when computing eCO2 and TVOC values.

Parameters

- **humidity** (*int*) – The current relative humidity in percent.
- **temperature** (*float*) – The current temperature in Celsius.

set_interrupt_thresholds (*low_med*, *med_high*, *hysteresis*)

Set the thresholds used for triggering the interrupt based on eCO2. The interrupt is triggered when the value crossed a boundary value by the minimum hysteresis value.

Parameters

- **low_med** (*int*) – Boundary between low and medium ranges
- **med_high** (*int*) – Boundary between medium and high ranges
- **hysteresis** (*int*) – Minimum difference between reads

temp_offset = 0.0

Temperature offset.

temperature

Temperature based on optional thermistor in Celsius.

tvoc

Total Volatile Organic Compound in parts per billion.

CHAPTER 6

Indices and tables

- `genindex`
- `modindex`
- `search`

a

`adafruit_ccs811`, [11](#)

A

adafruit_ccs811 (module), 11

C

CCS811 (class in adafruit_ccs811), 12

D

data_ready (adafruit_ccs811.CCS811 attribute), 12

E

eco2 (adafruit_ccs811.CCS811 attribute), 12

error (adafruit_ccs811.CCS811 attribute), 12

error_code (adafruit_ccs811.CCS811 attribute), 12

R

reset() (adafruit_ccs811.CCS811 method), 12

S

set_environmental_data() (adafruit_ccs811.CCS811 method), 12

set_interrupt_thresholds() (adafruit_ccs811.CCS811 method), 12

T

temp_offset (adafruit_ccs811.CCS811 attribute), 12

temperature (adafruit_ccs811.CCS811 attribute), 12

tvoc (adafruit_ccs811.CCS811 attribute), 12