Adafruitsgp30 Library Documentation

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Ladyada

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Contents

1 Installation and Dependencies **3**
1.1 Installing from PyPI 3

2 Usage Notes **5**
2.1 Reading from the 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 `adafruit_sgp30` 12
5.2.1 Implementation Notes 12

6 Indices and tables **13**

Python Module Index **15**

Index **17**

A CircuitPython driver for the Sensirion SGP30 gas sensor with eCO2 and TVOC output. This sensor uses I2C!

CHAPTER 1

Installation and 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.

1.1 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-sgp30
```

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

```
sudo pip3 install adafruit-circuitpython-sgp30
```

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-sgp30
```

CHAPTER 2

Usage Notes

See the guide for wiring and installation instructions.

First, import the library:

```
import busio
import adafruit_sgp30
```

Next, initialize the I2C bus object:

```
import board
i2c_bus = busio.I2C(board.SCL, board.SDA frequency=100000)
```

Since we have the I2C bus object, we can now use it to instantiate the SGP30 object:

```
sgp30 = adafruit_sgp30.Adafruit_SGP30(i2c_bus)
```

2.1 Reading from the Sensor

To read from the sensor:

```
eCO2, TVOC = sgp30.iaq_measure()
print("eCO2 = %d ppm \t TVOC = %d ppb" % (eCO2, TVOC))
```

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-sgp30 --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/sgp30_simpletest.py

```
""" Example for using the SGP30 with CircuitPython and the Adafruit library"""

import time
import board
import busio
import adafruit_sgp30

i2c = busio.I2C(board.SCL, board.SDA, frequency=100000)

# Create library object on our I2C port
sgp30 = adafruit_sgp30.Adafruit_SGP30(i2c)

print("SGP30 serial #", [hex(i) for i in sgp30.serial])

sgp30.iaq_init()
sgp30.set_iaq_baseline(0x8973, 0x8aae)

elapsed_sec = 0

while True:
    print("eCO2 = %d ppm \t TVOC = %d ppb" % (sgp30.eCO2, sgp30.TVOC))
    time.sleep(1)
    elapsed_sec += 1
    if elapsed_sec > 10:
        elapsed_sec = 0
        print("**** Baseline values: eCO2 = 0x%x, TVOC = 0x%x"
              % (sgp30.baseline_eCO2, sgp30.baseline_TVOC))
```

5.2 adafruit_sgp30

I2C driver for SGP30 Sensirion VoC sensor

- Author(s): ladyada

5.2.1 Implementation Notes

Hardware:

- Adafruit SGP30 Air Quality Sensor Breakout - VOC and eCO2 (Product ID: 3709)

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_sgp30.**Adafruit_SGP30**(*i2c*, *address=88*)

A driver for the SGP30 gas sensor.

TVOC

Total Volatile Organic Compound in parts per billion.

baseline_TVOC

Total Volatile Organic Compound baseline value

baseline_eCO2

Carbon Dioxide Equivalent baseline value

eCO2

Carbon Dioxide Equivalent in parts per million

get_iaq_baseline()

Retreive the IAQ algorithm baseline for eCO2 and TVOC

iaq_init()

Initialize the IAQ algorithm

iaq_measure()

Measure the eCO2 and TVOC

set_iaq_baseline(*eCO2*, *TVOC*)

Set the previously recorded IAQ algorithm baseline for eCO2 and TVOC

set_iaq_humidity(*gramsPM3*)

Set the humidity in g/m3 for eCO2 and TVOC compensation algorithm

CHAPTER 6

Indices and tables

- genindex
- modindex
- search

Python Module Index

a

adafruit_sgp30, 11

Index

A

`Adafruit_SGP30` (*class in adafruit_sgp30*), 12
`adafruit_sgp30` (*module*), 11

B

`baseline_eCO2` (*adafruit_sgp30.Adafruit_SGP30 attribute*), 12
`baseline_TVOC` (*adafruit_sgp30.Adafruit_SGP30 attribute*), 12

E

`eCO2` (*adafruit_sgp30.Adafruit_SGP30 attribute*), 12

G

`get_iaq_baseline()` (*adafruit_sgp30.Adafruit_SGP30 method*), 12

I

`iaq_init()` (*adafruit_sgp30.Adafruit_SGP30 method*), 12
`iaq_measure()` (*adafruit_sgp30.Adafruit_SGP30 method*), 12

S

`set_iaq_baseline()` (*adafruit_sgp30.Adafruit_SGP30 method*), 12
`set_iaq_humidity()` (*adafruit_sgp30.Adafruit_SGP30 method*), 12

T

`TVOC` (*adafruit_sgp30.Adafruit_SGP30 attribute*), 12