

---

# Adafruitsgp30 Library Documentation

*Release 1.0*

**Ladyada**

**Feb 10, 2021**



---

## Contents

---

<b>1</b>	<b>Installation and Dependencies</b>	<b>3</b>
1.1	Installing from PyPI . . . . .	3
<b>2</b>	<b>Usage Notes</b>	<b>5</b>
2.1	Reading from the Sensor . . . . .	5
<b>3</b>	<b>Contributing</b>	<b>7</b>
<b>4</b>	<b>Documentation</b>	<b>9</b>
<b>5</b>	<b>Table of Contents</b>	<b>11</b>
5.1	Simple test . . . . .	11
5.2	adafruit_sgp30 . . . . .	12
5.2.1	Implementation Notes . . . . .	12
<b>6</b>	<b>Indices and tables</b>	<b>15</b>
	<b>Python Module Index</b>	<b>17</b>
	<b>Index</b>	<b>19</b>



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



---

## 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

---

### Documentation

---

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



## 5.1 Simple test

Ensure your device works with this simple test.

Listing 1: examples/sgp30\_simpletest.py

```
1  # SPDX-FileCopyrightText: 2021 ladyada for Adafruit Industries
2  # SPDX-License-Identifier: MIT
3
4  """ Example for using the SGP30 with CircuitPython and the Adafruit library """
5
6  import time
7  import board
8  import busio
9  import adafruit_sgp30
10
11 i2c = busio.I2C(board.SCL, board.SDA, frequency=100000)
12
13 # Create library object on our I2C port
14 sgp30 = adafruit_sgp30.Adafruit_SGP30(i2c)
15
16 print("SGP30 serial #", [hex(i) for i in sgp30.serial])
17
18 sgp30.iaq_init()
19 sgp30.set_iaq_baseline(0x8973, 0x8AAE)
20
21 elapsed_sec = 0
22
23 while True:
24     print("eCO2 = %d ppm \t TVOC = %d ppb" % (sgp30.eCO2, sgp30.TVOC))
25     time.sleep(1)
26     elapsed_sec += 1
27     if elapsed_sec > 10:
```

(continues on next page)

(continued from previous page)

```
28     elapsed_sec = 0
29     print(
30         "**** Baseline values: eCO2 = 0x%x, TVOC = 0x%x"
31         % (sgp30.baseline_eCO2, sgp30.baseline_TVOC)
32     )
```

## 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](https://github.com/adafruit/Adafruit_CircuitPython_BusDevice)

**class** `adafruit_sgp30.Adafruit_SGP30` (*i2c*, *address=88*)  
A driver for the SGP30 gas sensor.

#### **Ethanol**

Ethanol Raw Signal in ticks

#### **H2**

H2 Raw Signal in ticks

#### **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()**

Retrieve the IAQ algorithm baseline for eCO2 and TVOC

#### **iaq\_init()**

Initialize the IAQ algorithm

#### **iaq\_measure()**

Measure the eCO2 and TVOC

#### **raw\_measure()**

Measure H2 and Ethanol (Raw Signals)



**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`



### a

adafruit\_sgp30, [12](#)



### A

Adafruit\_SGP30 (*class in adafruit\_sgp30*), [12](#)  
adafruit\_sgp30 (*module*), [12](#)

### 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](#)  
Ethanol (*adafruit\_sgp30.Adafruit\_SGP30 attribute*), [12](#)

### G

get\_iaq\_baseline() (*adafruit\_sgp30.Adafruit\_SGP30 method*), [12](#)

### H

H2 (*adafruit\_sgp30.Adafruit\_SGP30 attribute*), [12](#)

### I

iaq\_init() (*adafruit\_sgp30.Adafruit\_SGP30 method*), [12](#)  
iaq\_measure() (*adafruit\_sgp30.Adafruit\_SGP30 method*), [12](#)

### R

raw\_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*), [13](#)

### T

TVOC (*adafruit\_sgp30.Adafruit\_SGP30 attribute*), [12](#)