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# **sparkfun\_qwiic\_sgp40**

*Release 0.0.4*

**SparkFun Electronics**

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Python module for the [SparkFun Qwiic Air Quality Sensor - SGP40](#)

This python package is a port of the existing [SparkFun SGP40 Arduino Library](#)

This package can be used in conjunction with the overall [SparkFun qwiic Python Package](#)

New to qwiic? Take a look at the entire [SparkFun qwiic ecosystem](#).



## CONTENTS

- *Supported Platforms*
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## SUPPORTED PLATFORMS

The Qwiic SGP40 Python package currently supports the following platforms:

- [Raspberry Pi](#)



## DEPENDENCIES

This driver package depends on the qwiic I2C driver: [Qwiic\\_I2C\\_Py](#)



## DOCUMENTATION

The SparkFun Qwiic Sgp40 module documentation is hosted at [ReadTheDocs](#)



## INSTALLATION

### 5.1 PyPi Installation

This repository is hosted on PyPi as the `sparkfun-qwiic-sgp40` package. On systems that support PyPi installation via pip, this library is installed using the following commands

For all users (note: the user must have sudo privileges):

```
sudo pip install sparkfun-qwiic-sgp40
```

For the current user:

```
pip install sparkfun-qwiic-sgp40
```

To install, make sure the setuptools package is installed on the system.

Direct installation at the command line:

```
python setup.py install
```

To build a package for use with pip:

```
python setup.py sdist
```

A package file is built and placed in a subdirectory called dist. This package file can be installed using pip.

```
cd dist  
pip install sparkfun-qwiic-sgp40-<version>.tar.gz
```





## EXAMPLE USE

See the examples directory for more detailed use examples.

```
from __future__ import print_function
import qwiic_sgp40
import time
import sys

def run_example():

    print("\nSparkFun Qwiic Air Quality Sensor - SGP40, Example 1\n")
    my_sgp40 = qwiic_sgp40.QwiicSGP40()

    if my_sgp40.begin() != 0:
        print("\nThe Qwiic SGP40 isn't connected to the system. Please check your_
↪connection", \
            file=sys.stderr)
        return

    print("\nSGP40 ready!")

    while True:

        print("\nVOC Index is: " + str(my_sgp40.get_VOC_index()))

        time.sleep(1)

if __name__ == '__main__':
    try:
        run_example()
    except (KeyboardInterrupt, SystemExit) as exErr:
        print("\nEnding Example 1")
        sys.exit(0)
```



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### 7.1 API Reference

#### 7.1.1 qwiic\_sgp40

Python module for the SparkFun Air Quality Sensor - SGP40 (Qwiic).

This package is a port of the existing [SparkFun SGP40 Arduino Library]([https://github.com/sparkfun/SparkFun\\_SGP40\\_Arduino\\_Library](https://github.com/sparkfun/SparkFun_SGP40_Arduino_Library)) and is heavily based on the driver written by [DFRobot]([https://github.com/DFRobot/DFRobot\\_SGP40/tree/master/Python/raspberrypi](https://github.com/DFRobot/DFRobot_SGP40/tree/master/Python/raspberrypi)).

This package can be used in conjunction with the overall [SparkFun Qwiic Python Package]([https://github.com/sparkfun/Qwiic\\_Py](https://github.com/sparkfun/Qwiic_Py))

New to qwiic? Take a look at the entire [SparkFun Qwiic Ecosystem](<https://www.sparkfun.com/qwiic>).

**class** qwiic\_sgp40.QwiicSGP40(*address=None, i2c\_driver=None*)

##### Parameters

- **address** – The I2C address to use for the device. If not provided, the default address is used.
- **i2c\_driver** – An existing i2c driver object. If not provided a a driver object is created.

**Returns** The GPIO device object.

**Return type** Object

**begin**(*warm\_up\_time=10*)

Initialize the operation of the Qwiic SGP40 and wait through warm- up time. Run `is_connected()` and `measure_test()`.

**Returns** Returns true if the intialization was successful, false otherwise.

**Return type** bool

**get\_VOC\_index**(*\_QwiicSGP40\_\_relative\_humidity=50, \_QwiicSGP40\_\_temperature\_c=25*)

Get VOC index

##### Parameters

- **\_\_relative\_humidity** – float relative humidity between 0 and 100%.
- **\_\_temperature\_c** – float temperature in celcius between -45 and 130 degrees.

**Returns** VOC index

**Return type** int

**heater\_off()**

Turns the hotplate off and puts sensor in idle mode.

**Return type** void - returns nothing

**is\_connected()**

Determine if a Qwiic SGP40 device is connected to the system.

**Returns** True if the device is connected, false otherwise.

**Return type** bool

**measure\_raw(\_QwiicSGP40\_\_relative\_humidity=50, \_QwiicSGP40\_\_temperature\_c=25)**

Returns the raw data. See the SGP40 datasheet for more info.

**Parameters**

- **SRAW\_ticks** – variable to assign raw measurement to
- **\_\_relative\_humidity** – float relative humidity between 0 and 100%.
- **\_\_temperature\_c** – float temperature in celcius between -45 and 130 degrees.

**Returns** 0 if CRC checks out, -1 otherwise

**Return type** int

**measure\_test()**

Sensor runs chip self test.

**Returns** Returns 0 if the self-test succeeded and 1 if it failed.

**Return type** int

**soft\_reset()**

Sensor reset

**Return type** void - returns nothing

## 7.2 Example One - Get VOC Index

Listing 1: examples/qwiic\_sgp40\_ex1.py

```
1  #!/usr/bin/env python
2  # -----
3  # qwiic_sgp40_ex1.py
4  #
5  # Simple example to get VOC index
6  # -----
7  #
8  # Written by Priyanka Makin @ SparkFun Electronics, June 2021
9  #
10 # This python library supports the SparkFun Electronics qwiic sensor/
11 # board ecosystem on a Raspberry Pi (and compatible) single board
12 # computers.
13 #
14 # More information on qwiic is at https://www.sparkfun.com/qwiic
15 #
16 # Do you like this library? Help support SparkFun by buying a board!
```

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```

17 #
18 # =====
19 # Copyright (c) 2021 SparkFun Electronics
20 #
21 # Permission is hereby granted, free of charge, to any person obtaining
22 # a copy of this software and associated documentation files (the
23 # "Software"), to deal in the Software without restriction, including
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31 #
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34 # MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
35 # IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY
36 # CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT,
37 # TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE
38 # SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
39 #=====
40 # Example 1
41
42 from __future__ import print_function
43 import qwiic_sgp40
44 import time
45 import sys
46
47 def run_example():
48
49     print("\nSparkFun Qwiic Air Quality Sensor - SGP40, Example 1\n")
50     my_sgp40 = qwiic_sgp40.QwiicSGP40()
51
52     if my_sgp40.begin() != 0:
53         print("\nThe Qwiic SGP40 isn't connected to the system. Please check_
↪ your connection", \
54             file=sys.stderr)
55         return
56
57     print("\nSGP40 ready!")
58
59     while True:
60
61         print("\nVOC Index is: " + str(my_sgp40.get_VOC_index()))
62
63         time.sleep(1)
64
65 if __name__ == '__main__':
66     try:
67         run_example()

```

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```
68     except (KeyboardInterrupt, SystemExit) as exErr:
69         print("\nEnding Example 1")
70         sys.exit(0)
```

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