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# **Adafruit BME680 Library Documentation**

***Release 1.0***

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CircuitPython driver for BME680 sensor over I2C



# 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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```
import gc
from busio import I2C
import adafruit_bme680
import time
import board

gc.collect()
print("Free mem:", gc.mem_free())

# Create library object using our Bus I2C port
i2c = I2C(board.SCL, board.SDA)
bme680 = adafruit_bme680.Adafruit_BME680_I2C(i2c)

# change this to match the location's pressure (hPa) at sea level
bme680.sea_level_pressure = 1013.25

while True:
    print("\nTemperature: %0.1f C" % bme680.temperature)
    print("Gas: %d ohm" % bme680.gas)
    print("Humidity: %0.1f %" % bme680.humidity)
    print("Pressure: %0.3f hPa" % bme680.pressure)
    print("Altitude = %0.2f meters" % bme680.altitude)

    time.sleep(2)
```



## 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-bme680 --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/bme680\_simpletest.py

```
1 import time
2 import board
3 from busio import I2C
4 import adafruit_bme680
5
6 # Create library object using our Bus I2C port
7 i2c = I2C(board.SCL, board.SDA)
8 bme680 = adafruit_bme680.Adafruit_BME680_I2C(i2c, debug=False)
9
10 # change this to match the location's pressure (hPa) at sea level
11 bme680.sea_level_pressure = 1013.25
12
13 while True:
14     print("\nTemperature: %0.1f C" % bme680.temperature)
15     print("Gas: %d ohm" % bme680.gas)
16     print("Humidity: %0.1f %" % bme680.humidity)
17     print("Pressure: %0.3f hPa" % bme680.pressure)
18     print("Altitude = %0.2f meters" % bme680.altitude)
19
20     time.sleep(1)
```

## 5.2 adafruit\_bme680 - Adafruit BME680 - Temperature, Humidity, Pressure & Gas Sensor

CircuitPython driver from BME680 air quality sensor

- Author(s): ladyada

**class** adafruit\_bme680.**Adafruit\_BME680** (\*, *refresh\_rate=10*)

Driver from BME680 air quality sensor

**Parameters** **refresh\_rate** (*int*) – Maximum number of readings per second. Faster property reads will be from the previous reading.

**altitude**

The altitude based on current `pressure` vs the sea level pressure (`sea_level_pressure`) - which you must enter ahead of time)

**filter\_size**

The filter size for the built in IIR filter

**gas**

The gas resistance in ohms

**humidity**

The relative humidity in RH %

**humidity\_oversample**

The oversampling for humidity sensor

**pressure**

The barometric pressure in hectoPascals

**pressure\_oversample**

The oversampling for pressure sensor

**sea\_level\_pressure = None**

Pressure in hectoPascals at sea level. Used to calibrate `altitude`.

**temperature**

The compensated temperature in degrees celsius.

**temperature\_oversample**

The oversampling for temperature sensor

**class** adafruit\_bme680.**Adafruit\_BME680\_I2C** (*i2c*, *address=119*, *debug=False*, \*, *refresh\_rate=10*)

Driver for I2C connected BME680.

**Parameters**

- **address** (*int*) – I2C device address
- **debug** (*bool*) – Print debug statements when True.
- **refresh\_rate** (*int*) – Maximum number of readings per second. Faster property reads will be from the previous reading.



## CHAPTER 6

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### Indices and tables

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- `modindex`
- `search`



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