SEN-BME680
Temperature, air pressure, humidity and air quality sensor

JOY-IT

1. GENERAL INFORMATION

Dear customer,
thank you very much for choosing our product.
In the following, we will introduce you to what to observe while starting up and using this product. Should you encounter any unexpected problems during use, please do not hesitate to contact us.

The BME680 from Bosch Sensortec is the new, compact environmental sensor with integrated sensor technology for humidity, pressure, temperature and air quality. The digital interfaces I2C and SPI also enable easy and fast readout of the measured values.
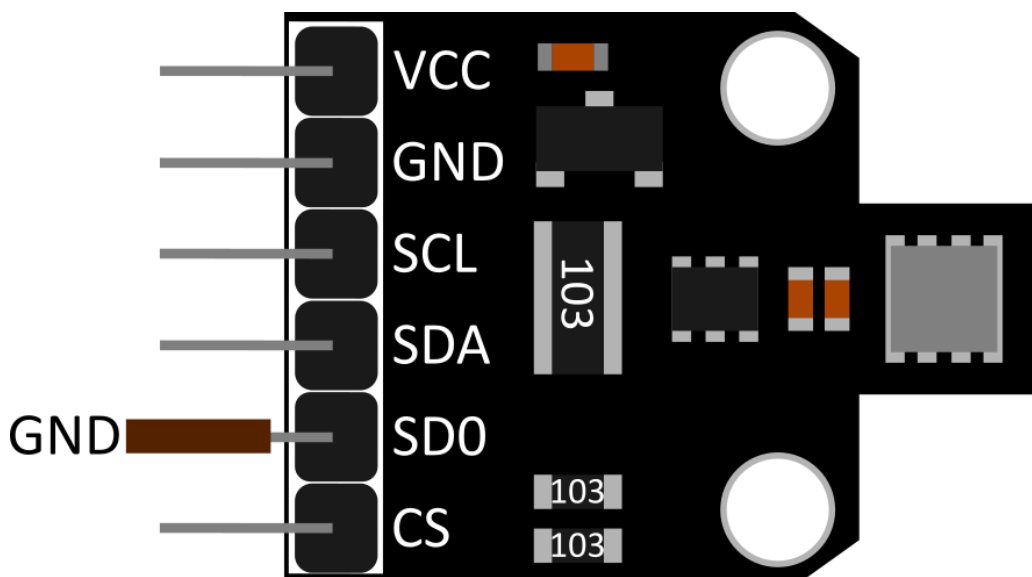
2. I2C ADDRESS CHANGE OF THE SENSOR

For this sensor the I2C address is 0x77 by default but can be changed to 0x76 if the SD0 pin of the sensor is connected to GND.
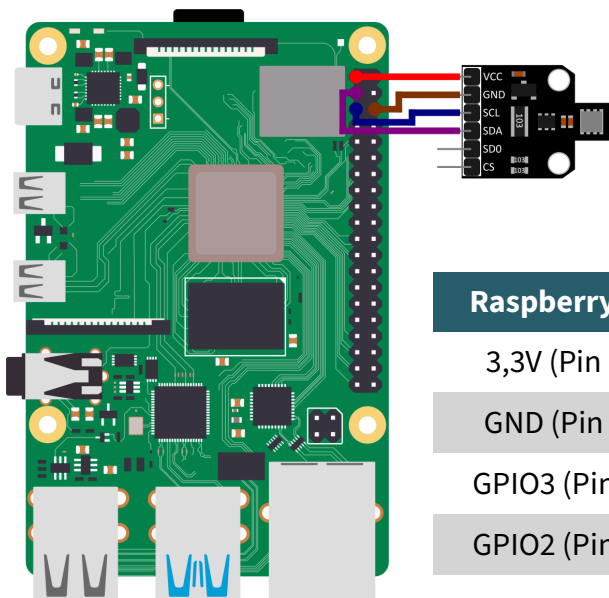
I2C address: 0x77
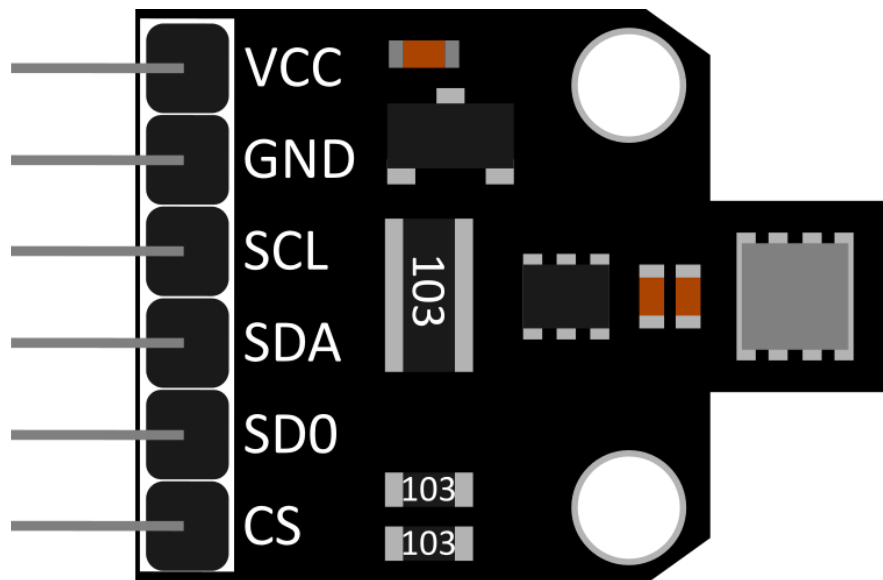
I2C address: 0x76

> **i** These instructions were written under Raspberry Pi OS Bookworm for the Raspberry Pi 4 and 5. It has not been checked with newer operating systems or hardware.

Raspberry Pi	BME680
3,3V (Pin 1)	VCC
GND (Pin 6)	GND
GPIO3 (Pin 5)	SCL
GPIO2 (Pin 3)	SDA

3.1 Setting up the Raspberry Pi

Before you can start using the sensor, you must first run the required commands to update your Raspberry Pi. These commands will update your Raspberry Pi and make you download pip3, which will be needed later on.
Please run the commands below.

```
sudo apt-get update && sudo apt-get upgrade
```

```
sudo apt-get install python3-pip
```

After you have executed these commands, you only need to enable I2C. To do this, execute the following command:

```
sudo raspi-config
```

Now enable the I2C Interface at **3 Interface Options** → **I4 I2C.**

Now create the necessary virtual environment for the project with the following commands:

```
mkdir your_project && cd your_project
```

```
python -m venv --system-site-packages env
```

```
source env/bin/activate
```

3.2 Use on the Raspberry Pi

After you have set up your Raspberry Pi, you can now download the library. We use the **Adafruit_CircuitPython_BME680** library from **Adafruit**, which is released under the **MIT license**, to drive the BME680. To install the library, run the following command:

```
pip3 install adafruit-circuitpython-bme680
```

Now, after installing the library, create a new file

```
nano bme680.py
```

You can then copy the following code sample into this file or you can alternatively download the code example **here**.

```python
import time
import board
import adafruit_bme680

# Creating a sensor object that communicates via the board's standard I2C bus
I2C = board.I2C()  # uses board.SCL and board.SDA
bme680 = adafruit_bme680.Adafruit_BME680_I2C(I2C, debug=False)

# Change the value so that it corresponds to the air pressure (hPa) at sea level.
bme680.sea_level_pressure = 1013.25

# Normally you need to add an offset to account for the temperature of the sensor.
# This value is usually about 5 degrees, but varies depending on use.
# Use a separate temperature sensor to calibrate this sensor.
temperature_offset = -5

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

    time.sleep(1)
```
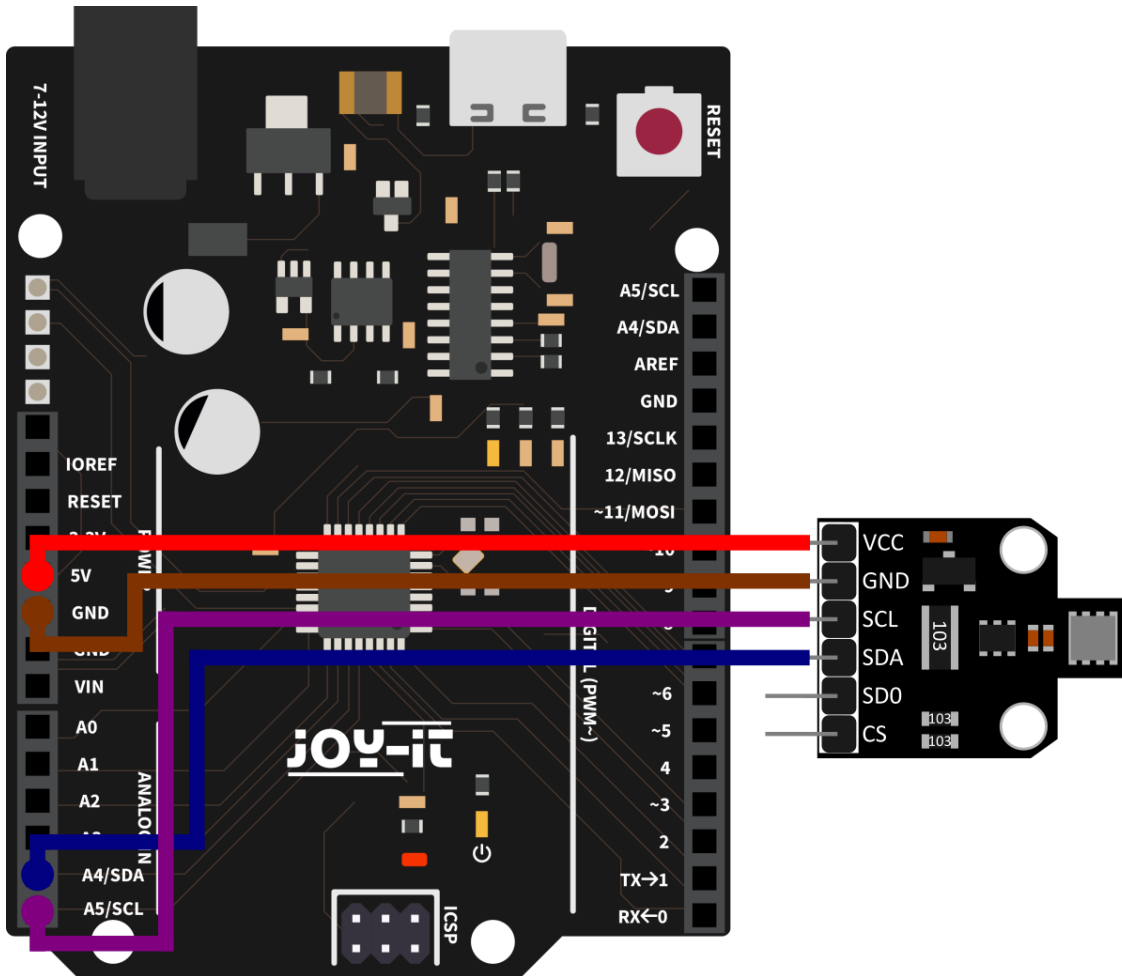
After you have copied the code sample, you can save the file with **CTRL+O** and then close it with **CTRL+X**.

After that you can try out the code sample directly and start it with

```
python3 bme680.py
```

You can then close the code sample again with **CTRL+C**.

Arduino	BME680
5V	VCC
GND	GND
SDA (A4)	SDA
SCL (A5)	SCL

4.1 Installation of the Library

We use the library **Adafruit_BME680** from **Adafruit**, which is released under the BSD License. You can install the library in the Arduino IDE under **Tools → Manage Libraries...** by searching for **bme680** and then selecting the library from Adafruit to install.

4.2 Use on the Arduino

You can execute sample codes under **File → Examples → Adafruit BME680 Library**. With the code example **bme680test** you can easily test your sensor. Make sure that you have selected the correct board and port under Tools. Alternatively, you can download the code example **here**.

Our information and take-back obligations according to the Electrical and Electronic Equipment Act (ElektroG)

Symbol on electrical and electronic equipment:

This crossed-out dustbin means that electrical and electronic appliances do not belong in the household waste. You must return the old appliances to a collection point.

Before handing over waste batteries and accumulators that are not enclosed by waste equipment must be separated from it.

Return options:

As an end user, you can return your old device (which essentially fulfills the same function as the new device purchased from us) free of charge for disposal when you purchase a new device.

Small appliances with no external dimensions greater than 25 cm can be disposed of in normal household quantities independently of the purchase of a new appliance.

Possibility of return at our company location during opening hours:

SIMAC Electronics GmbH, Pascalstr. 8, D-47506 Neukirchen-Vluyn, Germany

Possibility of return in your area:

We will send you a parcel stamp with which you can return the device to us free of charge. Please contact us by email at Service@joy-it.net or by telephone.

Information on packaging:

If you do not have suitable packaging material or do not wish to use your own, please contact us and we will send you suitable packaging.

If there are still any issues pending or problems arising after your purchase, we will support you by e-mail, telephone and with our ticket support system.

Email: **service@joy-it.net**
Ticket system: **https://support.joy-it.net**
Telephone: +49 (0)2845 9360-50 (Mon - Thur: 09:00 - 17:00 o'clock,

Fri: 09:00 - 14:30 o'clock)

For further information please visit our website:
www.joy-it.net

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