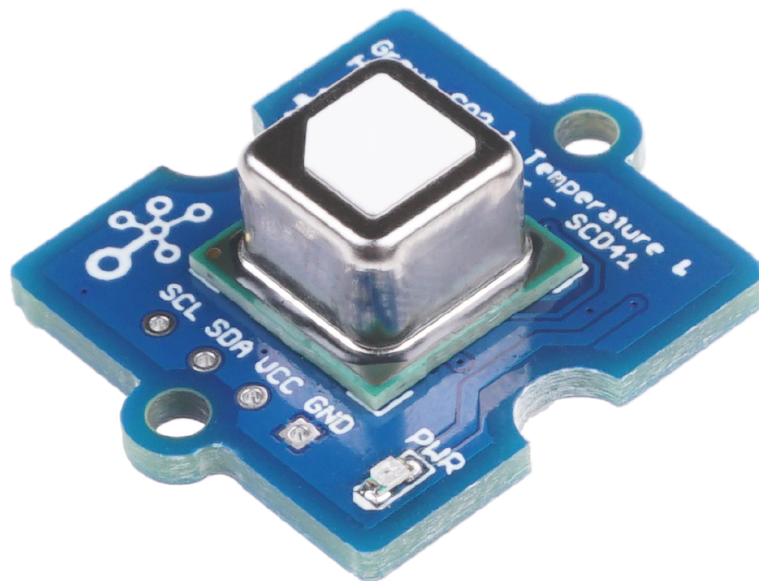


Grove CO2 & Temperature & Humidity Sensor SCD41



The Grove - CO2 & Temperature & Humidity Sensor - SCD41 is a small but powerful module which made by Sensirion. It is a multiple function sensor which can measure temperature, pressure, humidity and CO2 at the same time. It is based on the SCD4 module and you

can use this sensor in your GPS, IoT devices or other device which needs those four parameters.



[<https://www.seeedstudio.com/Grove-CO2-Temperature-Humidity-Sensor-SCD41-p-5025.html>]

Features

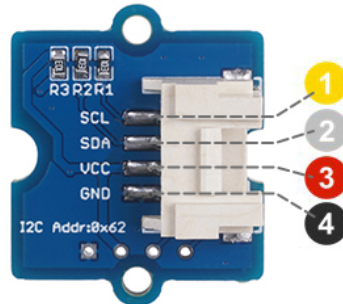
- 3-in-1 for multiple measurement
- low power consumption
- Wide measurement range
- I2C Interface
- Wide power supply range

Specification

Item	Value
Working voltage	2.4V~5V
Operating range	-10~+60°C; 0-100% r.H.; 0-40,000ppm
I2C Address	0x62

Hardware Overview


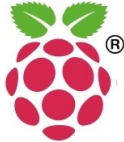
Pin Map



I2C

- ④ GND: connect this module to the system GND
- ③ VCC: you can use 5V or 3.3V for this module
- ② SDA: serial data
- ① SCL: serial clock

Platforms Supported

Arduino	Raspberry Pi		
			



Caution

The platforms mentioned above as supported is/are an indication of the module's software or theoretical compatibility. We only provide software library or code examples for Arduino platform in most cases. It is not possible to provide software library / demo code for all possible MCU platforms. Hence, users have to write their own software library.

Getting Started

Play With Arduino

Hardware

Materials required

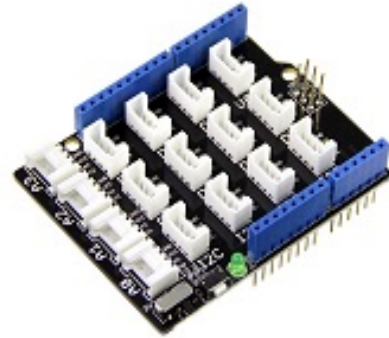
Seeeduino V4.2



[Get One Now](#)

[<https://www.seeedstudio.com/Seeeduino-V4.2-p-2517.html>]

Base Shield



[Get One Now](#)

[<https://www.seeedstudio.com/Base-Shield-V2-p-1378.html>]

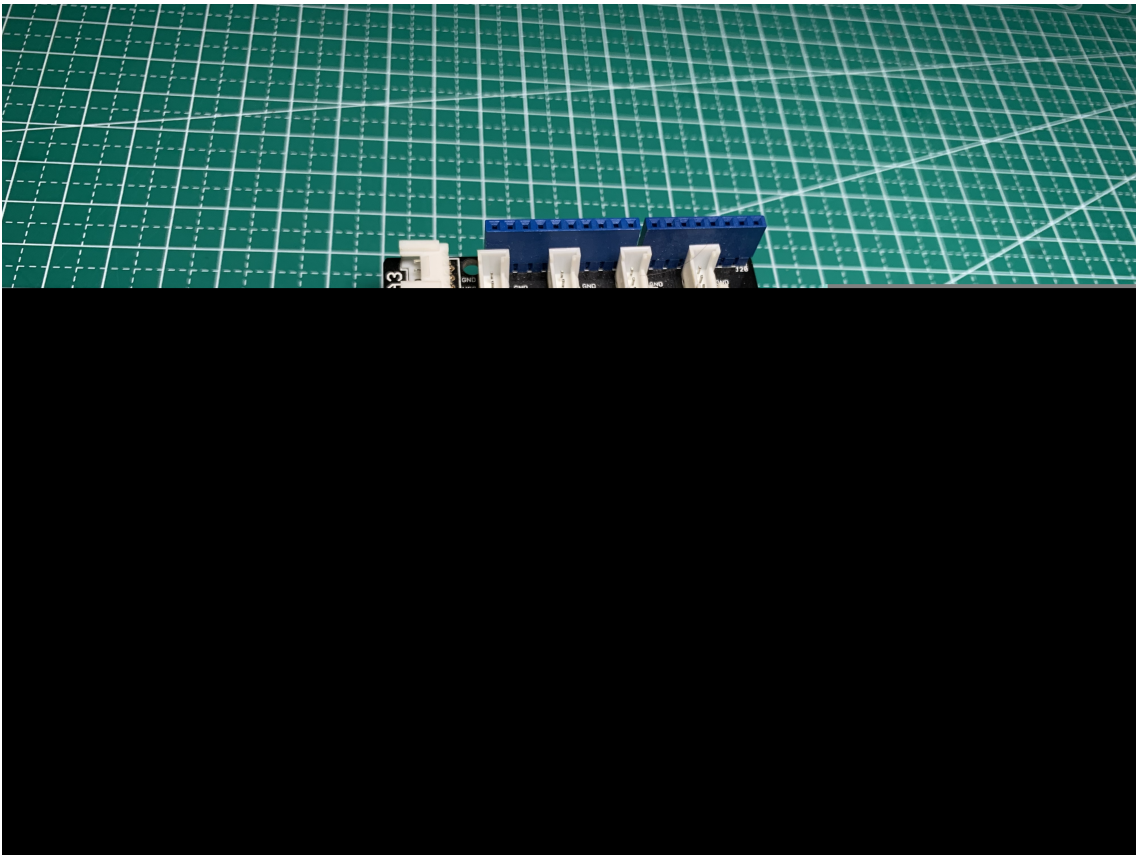


Note

1 Please plug the USB cable gently, otherwise you may damage the port. Please use the USB cable with 4 wires inside, the 2 wires cable can't transfer data. If you are not sure about the wire you have, you can click [here](https://www.seeedstudio.com/Micro-USB-Cable-48cm-p-1475.html) [<https://www.seeedstudio.com/Micro-USB-Cable-48cm-p-1475.html>] to buy

2 Each Grove module comes with a Grove cable when you buy. In case you lose the Grove cable, you can click [here](https://www.seeedstudio.com/Grove-Universal-4-Pin-Buckled-20cm-Cable-%285-PCs-pack%29-p-936.html) [https://www.seeedstudio.com/Grove-Universal-4-Pin-Buckled-20cm-Cable-%285-PCs-pack%29-p-936.html] to buy.

- **Step 1.** Connect the Grove - CO2 & Temperature & Humidity Sensor - SCD41 to port **I²C** of Grove-Base Shield.
- **Step 2.** Plug Grove - Base Shield into Seeeduino.
- **Step 3.** Connect Seeeduino to PC via a USB cable.



Note

If we don't have Grove Base Shield, We also can directly connect this module to Seeeduino as below.

Seeeduino	Grove - CO2 & Temperature & Humidity Sensor - SCD41
5V	Red
GND	Black
SDA	White
SCL	Yellow

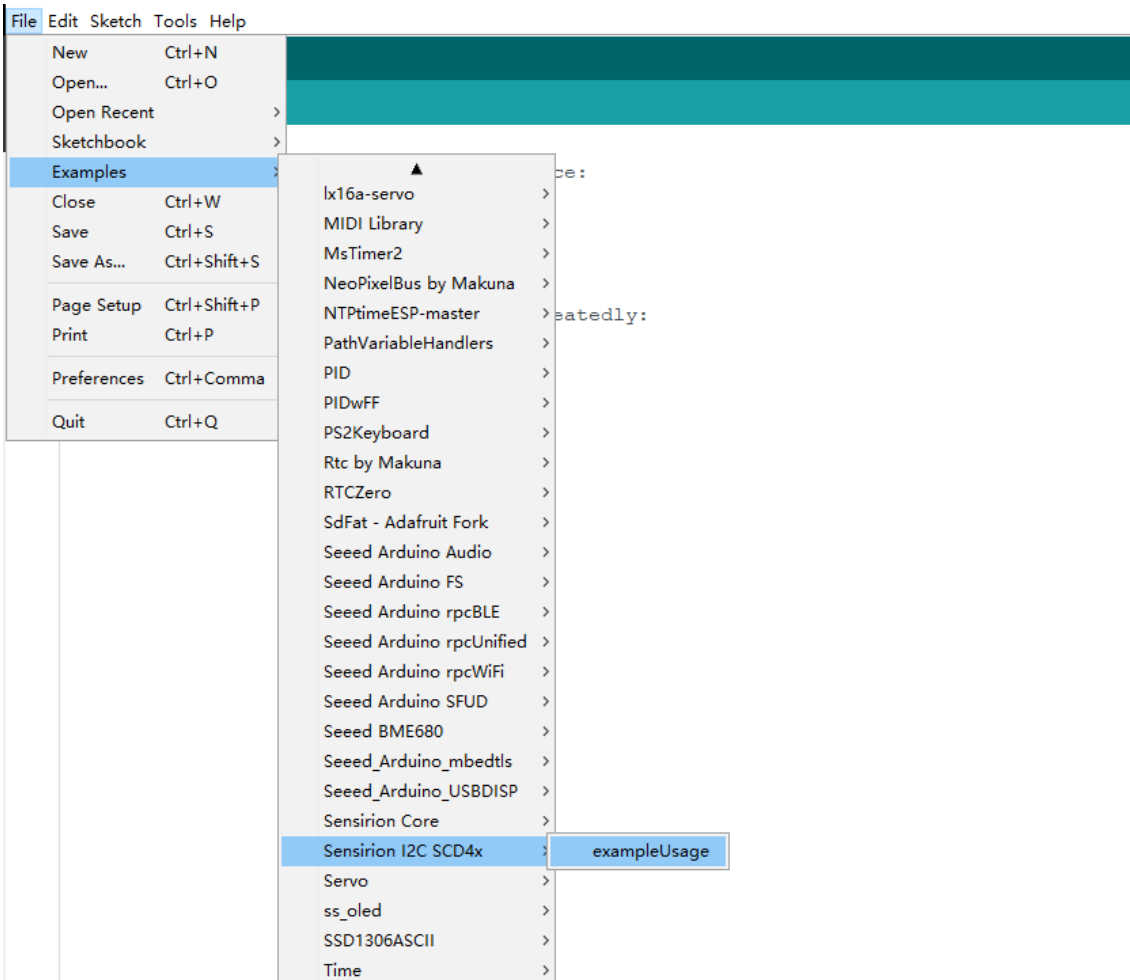
Software



Note

If this is the first time you work with Arduino, we strongly recommend you to see [Getting Started with Arduino](https://wiki.seeedstudio.com/Getting_Started_with_Arduino/) [https://wiki.seeedstudio.com/Getting_Started_with_Arduino/] before the start.

- **Step 1.** Download the [arduino-i2c-scd4x](https://github.com/Sensirion/arduino-i2c-scd4x) [https://github.com/Sensirion/arduino-i2c-scd4x] library and [arduino-core](https://github.com/Sensirion/arduino-core) [https://github.com/Sensirion/arduino-core] dependency from Github.
- **Step 2.** Refer to [How to install library](https://wiki.seeedstudio.com/How_to_install_Arduino_Library) [https://wiki.seeedstudio.com/How_to_install_Arduino_Library] to install library for Arduino.
- **Step 3.** Restart the Arduino IDE. Open **Sensirion I2c SCD4x** example via the path: **File** → **Examples** → **Sensirion I2c SCD4x** → **exampleUsage**.



- **Step 4.** Upload the demo. If you do not know how to upload the code, please check [How to upload code](https://wiki.seeedstudio.com/Upload_Code/) [https://wiki.seeedstudio.com/Upload_Code/].
- **Step 5.** Open the **Serial Monitor** of Arduino IDE by click **Tool->Serial Monitor**. Or tap the `Ctrl + Shift + M` key at the same time. if every thing goes well, you will get the result.

The result should be like:

```

1  Serial: 0x6A565F073B88
2  Waiting for first measurement... (5 sec)
3  Co2:868 Temperature:33.08 Humidity:49.40
4  Co2:845 Temperature:32.72 Humidity:50.13
5  Co2:852 Temperature:32.28 Humidity:51.54
  
```

**Bug**

- To get the stable and accurate value, you need to let the arduino run the code for about 2 hours. The result is much more reliable then.

Play on RaspberryPi

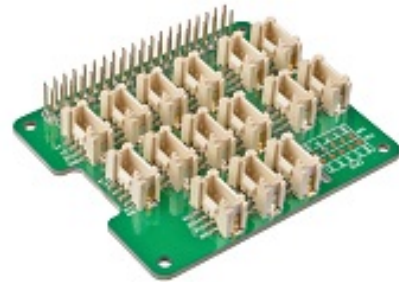
Materials required

Raspberry pi

[Get One Now](https://www.seeedstudio.com/Seeeduino-V4.2-p-2517.html)

[<https://www.seeedstudio.com/Seeeduino-V4.2-p-2517.html>]

Grove Base Hat for Raspberry Pi

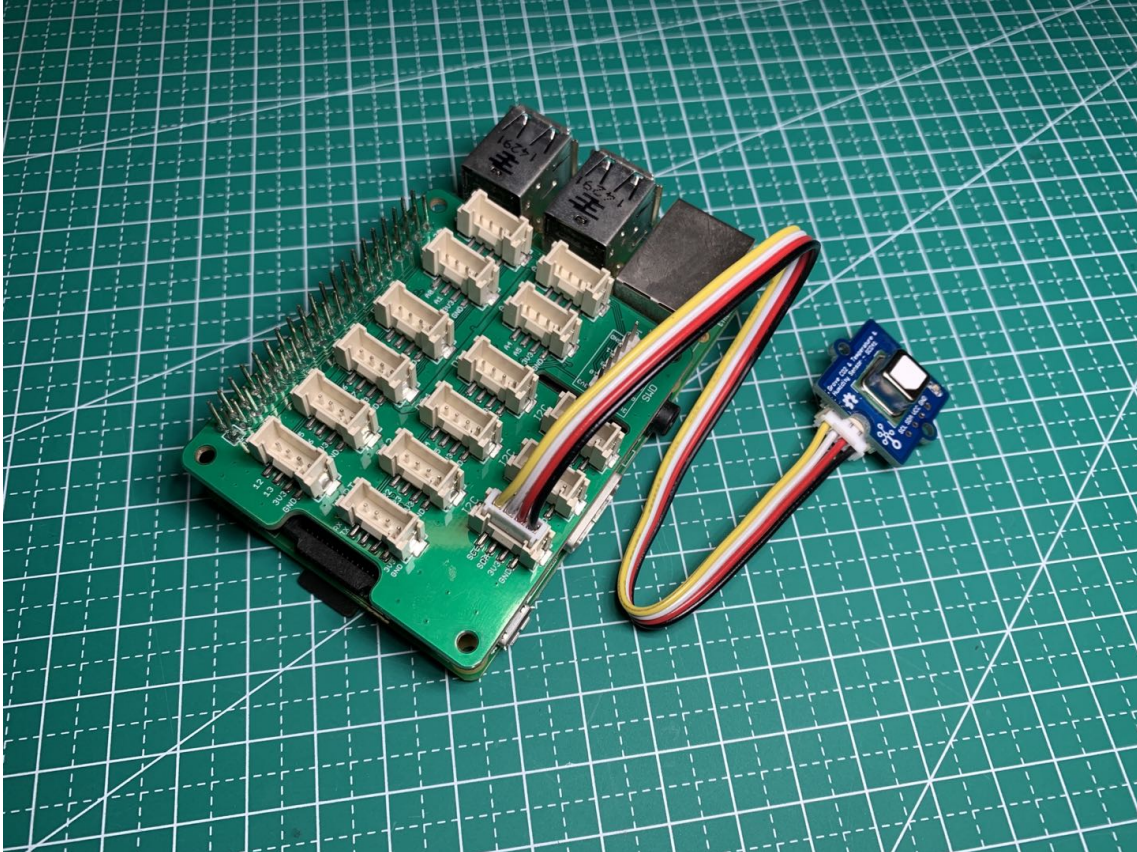
[Get ONE Now](https://www.seeedstudio.com/Grove-Base-Hat-for-Raspberry-Pi.html)

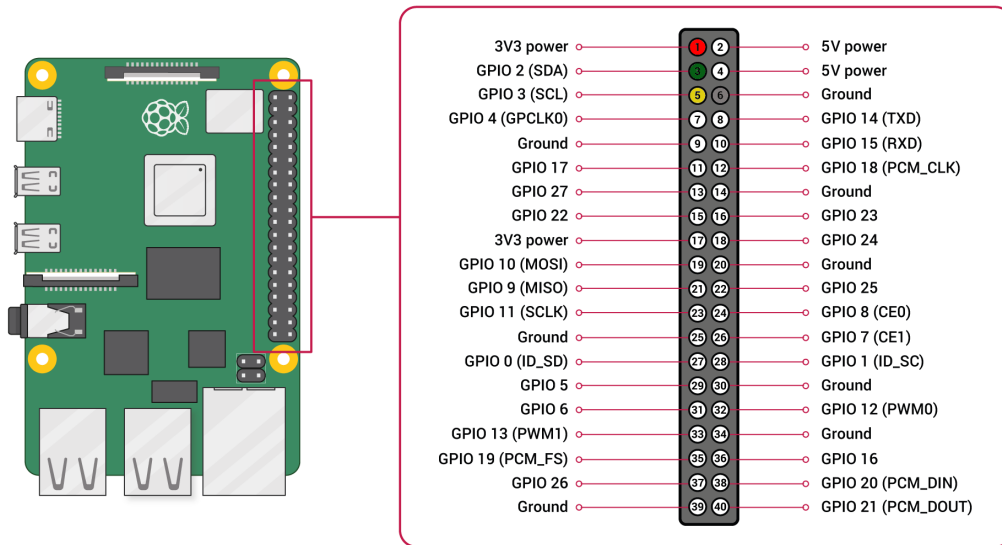
[<https://www.seeedstudio.com/Grove-Base-Hat-for-Raspberry-Pi.html>]

Get ready for RaspberryPi

I2C Connection

- **Step 1.** Plug Grove - CO2 & Temperature & Humidity Sensor - SCD41 to **I2C** port of Grove - Base Hat.
- **Step 2.** Plug Grove - Base Hat into RaspberryPi.
- **Step 3.** Connect RaspberryPi to a PC via Serial or SSH.



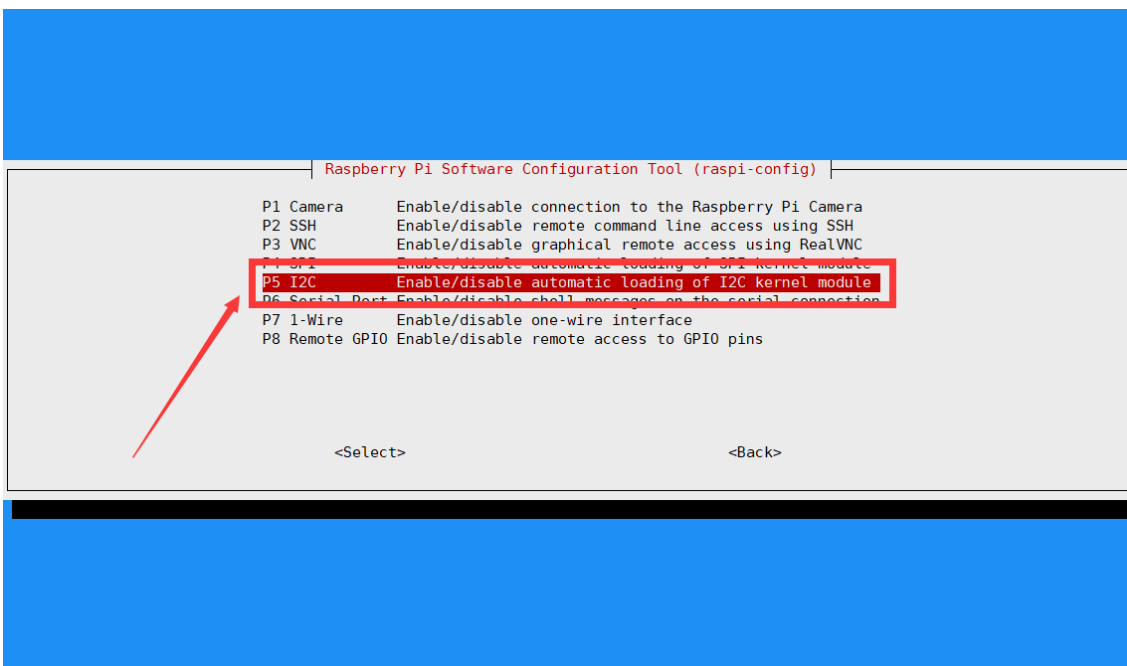
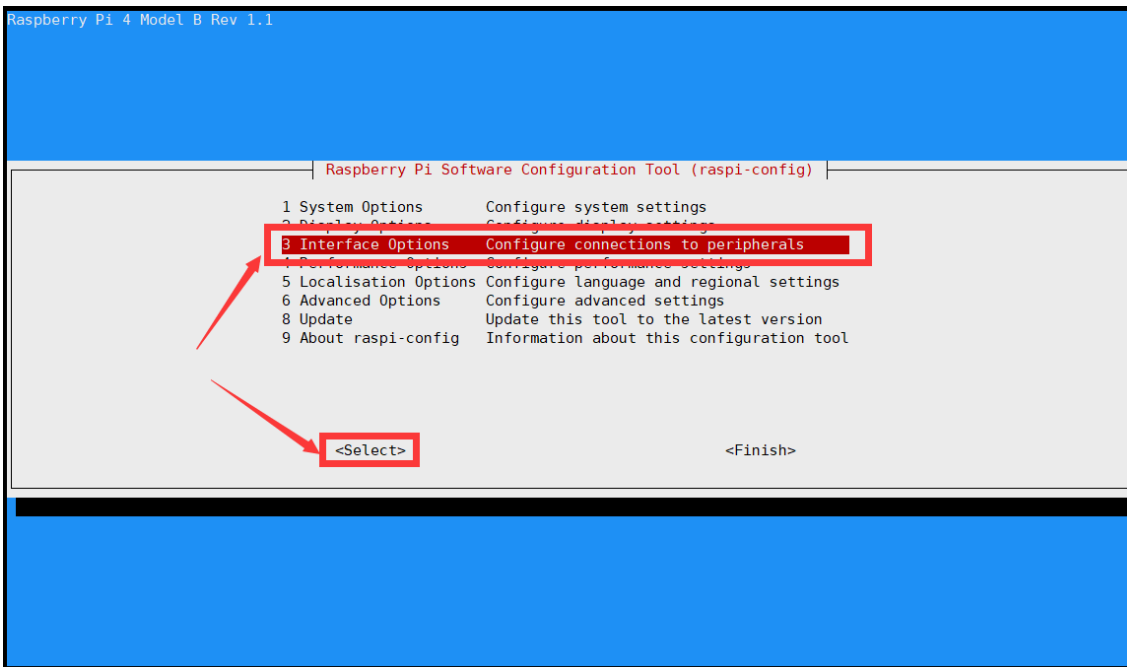


Software

- **Step 1.** Enable I2C on RaspberryPi

```
1 sudo apt-get install -y i2c-tools
2 sudo raspi-config
```

Follow the pictures to enable I2C and SPI on your RaspberryPi.





And then reboot your RaspberryPi

```
sudo reboot
```

- **Step 2.** Install necessary libraries

```
sudo apt-get install wget gcc make unzip -y
```

Install WiringPi Library

If you use WiringPi, you need to update WiringPi to version 2.52. This library may not be updated. Other libraries are recommended

```
1 cd
2 sudo apt-get install wiringpi
3 wget https://project-downloads.drogon.net/wiringpi-latest
4 sudo dpkg -i wiringpi-latest.deb
5 gpio -v
```

Install bcm2835

```
1 cd
2 wget http://www.airspayce.com/mikem/bcm2835/bcm2835-1.60.
3 tar zxvf bcm2835-1.60.tar.gz
4 cd bcm2835-1.60/
5 sudo ./configure
6 sudo make && sudo make check && sudo make install
```

For further information and the newest libraries please refer to website: [bcm2835](http://www.airspayce.com/mikem/bcm2835/) [http://www.airspayce.com/mikem/bcm2835/]

- **Step 3.** Download the driver from the [Sensirion GitHub Page](https://github.com/Sensirion/raspberry-pi-i2c-scd4x/tags) [https://github.com/Sensirion/raspberry-pi-i2c-scd4x/tags] and extract the `.zip` on your Raspberry Pi
- **Step 4.** Compile the driver

1. Open a terminal

2. Navigate to the driver directory. E.g. `cd ~/raspberry-pi-i2c-scd4x`

3. Run the make command to compile the driver

Output:

```
1 rm -f scd4x_i2c_example_usage
2 cc -Os -Wall -fstrict-aliasing -Wstrict-aliasing=1 -Wsign
3 sensirion_i2c_hal.c sensirion_config.h sensirion_comm
```

- **Step 5.** Test your connected sensor

Run `./scd4x_i2c_example_usage` in the same directory you used to compile the driver.

Output:

```
1  serial: 0xbff79f073b51
2  CO2: 799
3  Temperature: 20.92
4  Humidity: 35.95
5  CO2: 900
6  Temperature: 20.92
7  Humidity: 36.47
8  CO2: 926
9  Temperature: 20.81
10 Humidity: 36.85
11 ...
```

For further information, please check [Sensirion/raspberry-pi-i2c-scd4x on GitHub](https://github.com/Sensirion/raspberry-pi-i2c-scd4x) [<https://github.com/Sensirion/raspberry-pi-i2c-scd4x>].

Schematic Online Viewer



Resources

- **[PDF]** [Sensirion CO2 Sensors SCD4x Datasheet](https://files.seeedstudio.com/wiki/Grove-CO2&Temperature&HumiditySensor-SCD4/res/Sensirion_CO2_Sensors_SCD4x_Datasheet.pdf)
[https://files.seeedstudio.com/wiki/Grove-CO2&Temperature&HumiditySensor-SCD4/res/Sensirion_CO2_Sensors_SCD4x_Datasheet.pdf]
- **[STEP]** [STEP of Sensirion CO2 Sensors SCD4x](https://files.seeedstudio.com/wiki/Grove-)
[https://files.seeedstudio.com/wiki/Grove-

CO2&Temperature&HumiditySensor-
SCD41/res/Sensirion_CO2_Sensors_SCD4x_STEP_file.step]

- **[ZIP]** Grove - CO2 & Temperature & Humidity Sensor - SCD41 Board File [<https://files.seeedstudio.com/wiki/Grove-CO2&Temperature&HumiditySensor-SCD41/res/SCH&PCB.zip>]

Tech Support

Please do not hesitate to submit the issue into our [forum](https://forum.seeedstudio.com/) [<https://forum.seeedstudio.com/>].



[https://www.seeedstudio.com/act-4.html?utm_source=wiki&utm_medium=wikibanner&utm_campaign=newproducts]

