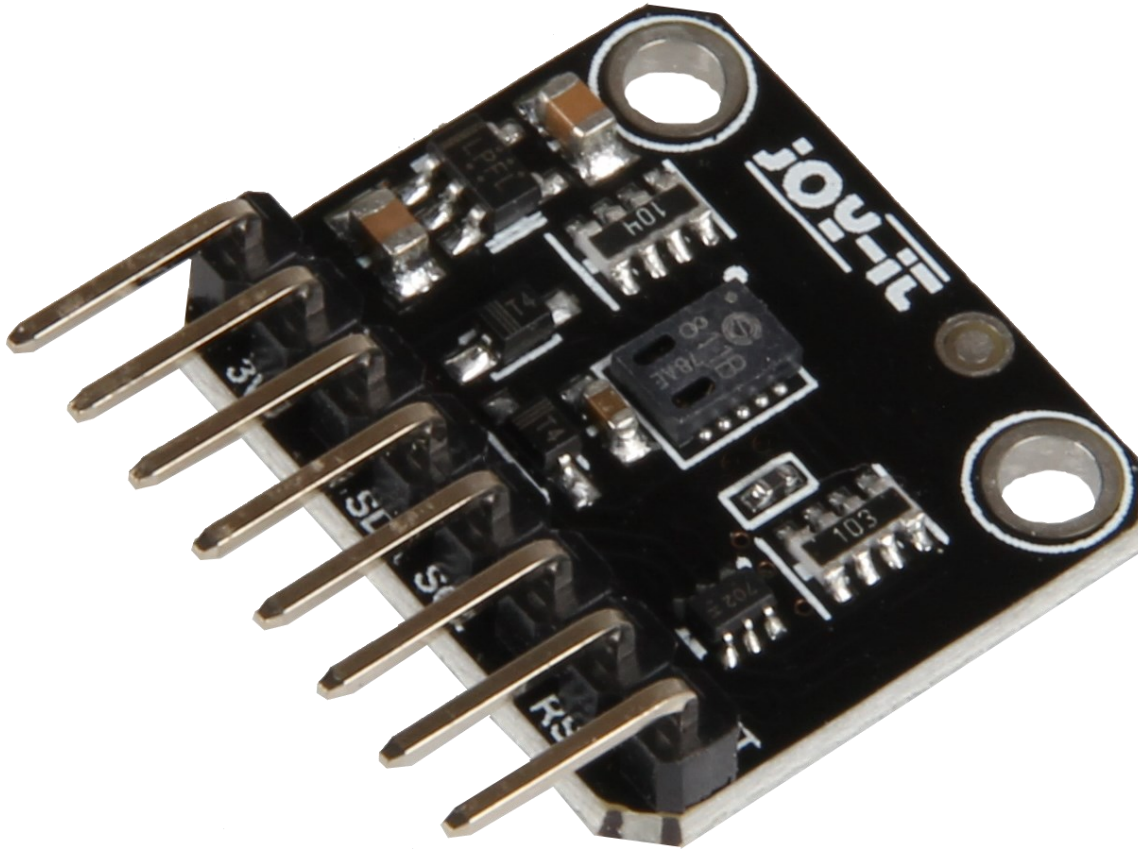


# AIR QUALITY SENSOR

SEN-CCS811V1



## 1. GENERAL INFORMATION

Dear customer,

Thank you for purchasing our product. In the following, we will show you which things should be observed during the use.

Should you encounter any unexpected problems, do not hesitate to contact us.

## 2. INSTRUCTIONS FOR USE

When using this module, please note that you must perform a so-called Burn-In. This means that for the first 48 hours you will take measurements with the sensor in the mode of your choice. This is because the resistances and sensitivity changes within these first 48 hours, which makes the measurement results inaccurate within this time.

There is also the so-called Run-In. This means that within the first 20 minutes after the sensor has been idle for a long time or after changing modes, the sensor must stabilize before it can generate accurate data.

The so-called modes, which this sensor has, designate the time intervals in which measurements are performed. The CCS811 has these modes:

Mode 0	Idle (no measurements are performed)
Mode 1	IAQ measurement every second
Mode 2	IAQ measurement every 10 seconds
Mode 3	IAQ measurement every 60 seconds
Mode 4	IAQ measurement every 10 ms (eCO <sub>2</sub> and TVOC are not calculated)

In modes 1, 2 and 3, eCO<sub>2</sub> and TVOC are calculated each time. Mode 1 reacts fastest to a change, but has a higher operating current. Mode 3 reacts more slowly, but has the lowest operating current on average.

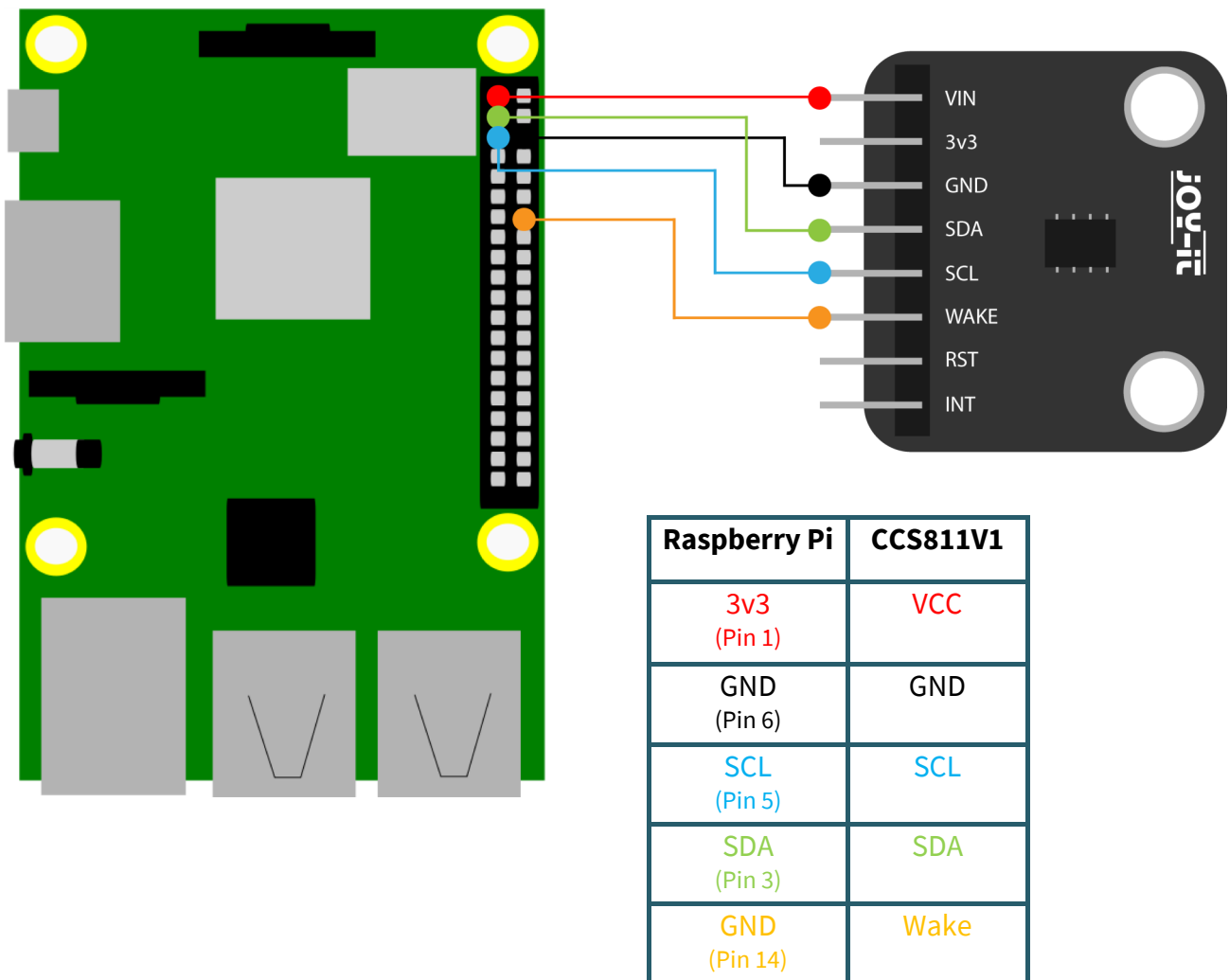
If you change the mode to a slower measuring rate, you should switch to mode 0 (idle) for at least 10 minutes. This happens, for example, when you switch from Mode 1 to Mode 3. If you switch to a higher measuring rate, you do not need to pay any further attention.

Mode 4 is used with an external system. The system receives the raw data of the sensor to work with it. This allows the measurement rate of one measurement every 250 ms.

**Note:** Mode timings are subject to typical 2% tolerance due to accuracy of internal clock.

### 3. USAGE WITH THE RASPBERRY PI

#### 1. Connection



#### 2. Code example

To execute the code example, first download the edited code from us [here](#) or type the following command into the console:

```
wget https://joy-it.net/files/files/Produkte/SEN-CCS811V1/CCS811V1-Python.zip
```

You can use the following command to extract the file and delete the .zip file. Please note that your directory may differ.

```
unzip /home/pi/CCS811V1-Python.zip && rm /home/pi/CCS811V1-Python.zip
```

The files now contained in the folder were originally published [here](#) by [sparkfun](#) under the [MIT license](#).

Before you can now execute the code, you must first open the configuration:

```
sudo raspi-config
```

Go to **Interface Options** → and activate **I2C**.

Now open the config.txt to reduce the I2C baudrate.

```
sudo nano /boot/config.txt
```

Add the following line there:

```
dtoverlay=i2c_baudrate=10000
```

Save with CTRL + O and exit the editor with CTRL + X. Now restart the Raspberry Pi:

```
sudo reboot
```

Now execute the following command:

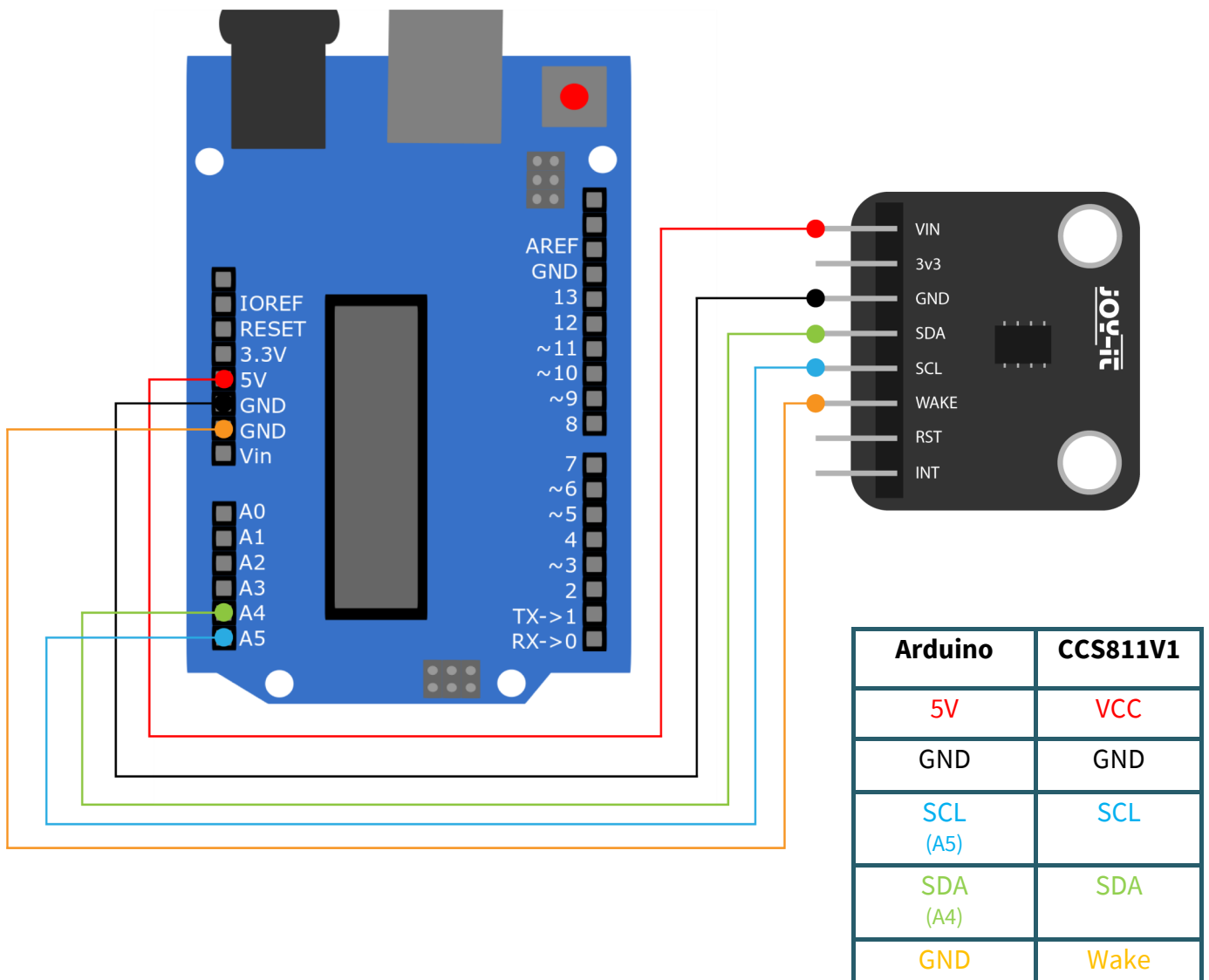
```
sudo pigpiod
```

You can now enter the following command to start the code example. In the code example you will see the eCO<sub>2</sub> and TVOC output every second and the sensor is in mode 1 by default.

```
python3 /home/pi/CCS811V1-Python/ccs811.py
```

## 4. USAGE WITH THE ARDUINO

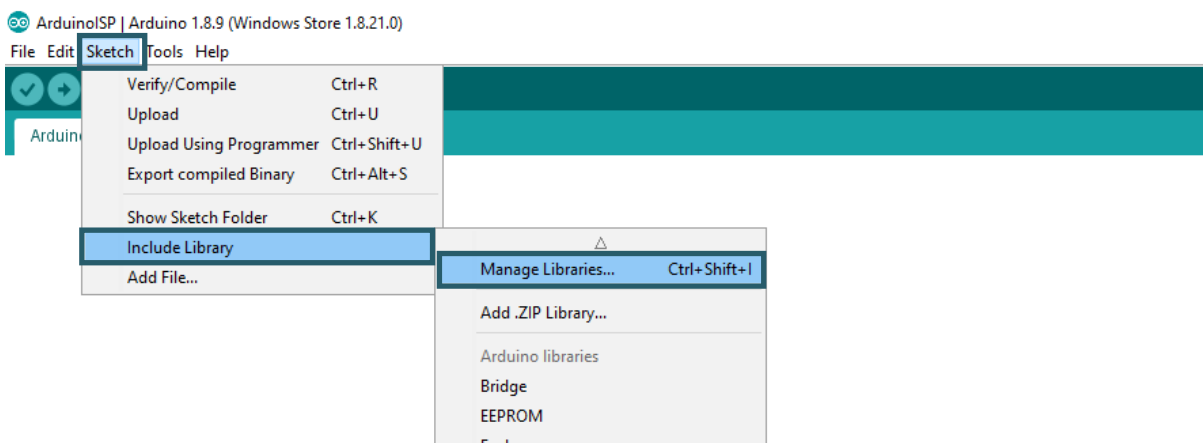
### 1. Connection



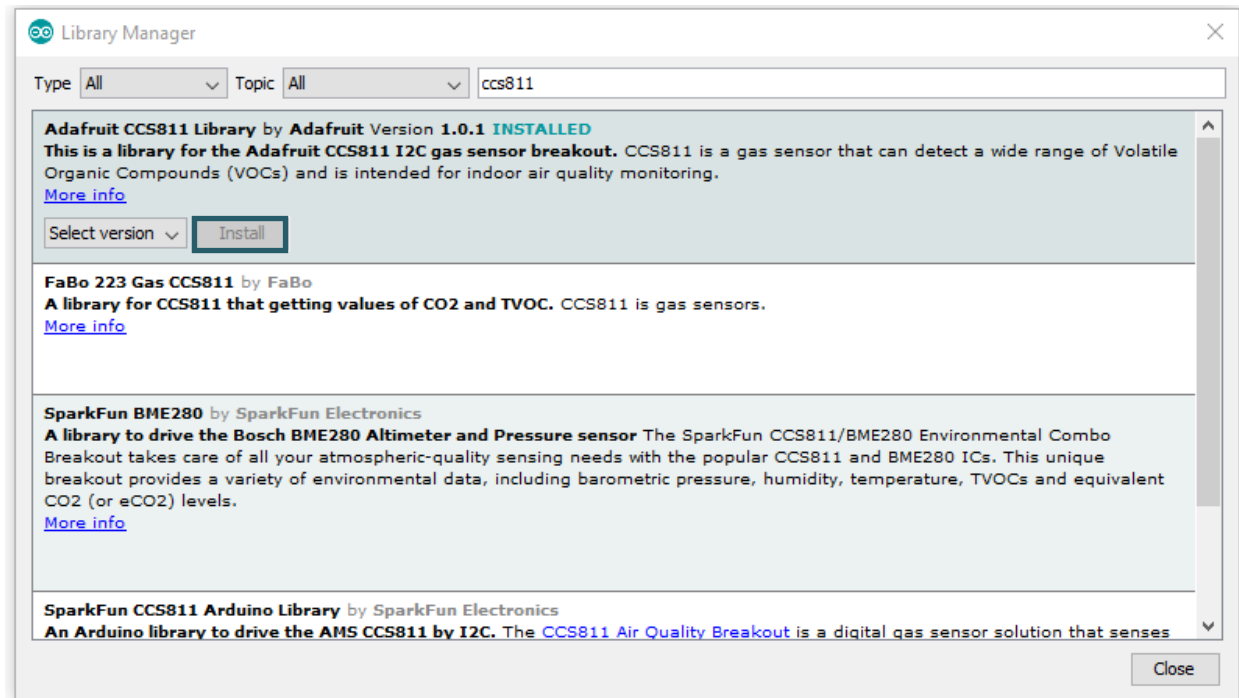
### 2. Installation

You have to install the following library to use the sensor.

Click on **Sketch** → **Include Library** → **Manage Libraries...**



Search for *CCS811* and install the **Adafruit CCS811 Library by Adafruit**.



### 3. Code example

Now copy the following code example into your IDE and click on Upload. Also open the serial monitor and set the baudrate to 9600 so you can see the output.

```
/*
This is a library for the CCS811 air
This sketch reads the sensor
Designed specifically to work with the Adafruit CCS811 breakout
----> http://www.adafruit.com/products/3566
These sensors use I2C to communicate. The device's I2C address is 0x5A
Adafruit invests time and resources providing this open source code,
please support Adafruit and open-source hardware by purchasing products
from Adafruit!
Written by Dean Miller for Adafruit Industries.
BSD license, all text above must be included in any redistribution
*/
#include "Adafruit_CCS811.h"

Adafruit_CCS811 ccs;

void setup() {
  ccs.setDriveMode(1);
  Serial.begin(9600);
  Serial.println("CCS811 test");
}
```

```
if(!ccs.begin()){
  Serial.println("Failed to start sensor! Please check your wiring.");
  while(1);
}

//calibrate temperature sensor
while(!ccs.available());
float temp = ccs.calculateTemperature();
ccs.setTempOffset(temp - 25.0);
}

void loop() {
  if(ccs.available()){
    float temp = ccs.calculateTemperature();
    if(!ccs.readData()){
      Serial.print("CO2: ");
      Serial.print(ccs.geteCO2());
      Serial.print("ppm, TVOC: ");
      Serial.print(ccs.getTVOC());
      Serial.print("ppb Temp:");
      Serial.println(temp);
    }
    else{
      Serial.println("ERROR!");
      while(1);
    }
  }
  delay(500);
}
```

## 5. OTHER INFORMATION

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 fulfils 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 e-mail at [Service@joy-it.net](mailto: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.



## 6. SUPPORT

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.

E-Mail: [service@joy-it.net](mailto:service@joy-it.net)

Ticket system: <http://support.joy-it.net>

Telephone: +49 (0)2845 98469-66 (10-17 o'clock)

For further information please visit our website:

[www.joy-it.net](http://www.joy-it.net)