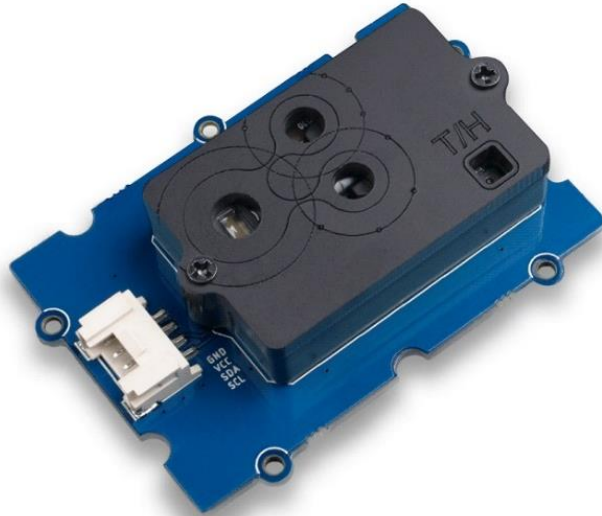




# Grove - CO2 & Temperature & Humidity Sensor (SCD30)



The Grove - CO2 & Temperature & Humidity Sensor (SCD30) is a high precision carbon dioxide sensor, which is based on Sensirion SCD30. The measuring range of this sensor is 0 ppm-40'000 ppm, and the measurement accuracy can reach to  $\pm(30 \text{ ppm} + 3\%)$  between 400ppm to 10'000ppm.

In addition to the Non-Dispersive Infrared(NDIR) measurement technology for CO2 detection, the SCD30 integrates Sensirion humidity and temperature sensors on the same sensor module.

## Tip

We've released the [Seeed Gas Sensor Selection Guide](#), it will help you choose the gas sensor that best suits your needs.

## Application Ideas

- Air Purifier
- Environmental Monitoring
- Plant Environmental Monitoring

## Feature

- NDIR CO2 sensor technology
- Integrated temperature and humidity sensor
- Best performance-to-price ratio
- Dual-channel detection for superior stability
- Digital interface I2C
- Low power consumption
- Ultra-long sensor lifetime (15 years)

## Specification

Parameter	Value
Supply voltage	3.3V / 5V
Operating temperature	0 – 50°C
Storage temperature	- 40°C – 70°C
Humidity operating conditions	0 – 95 %RH
Sensor lifetime	15 years
Interface	I2C
I2C Address	0x61

**Table 1.***General Specification*

Parameter	Conditions	Value
CO2 measurement range		0 – 40'000 ppm
Accuracy	400ppm – 10'000ppm	± (30 ppm + 3%)
Repeatability	400ppm – 10'000ppm	10ppm
Response time	$\tau_{63\%}$	20 s

**Table 2.***CO2 Sensor Specifications*

Parameter	Conditions	Value
Humidity measurement range		0 %RH – 100 %RH
Accuracy	0 – 50°C, 0 – 100%RH	±2 %RH
Repeatability		0.1 %RH
Response time	$\tau_{63\%}$	8 s

**Table 3.***Humidity Sensor Specifications*

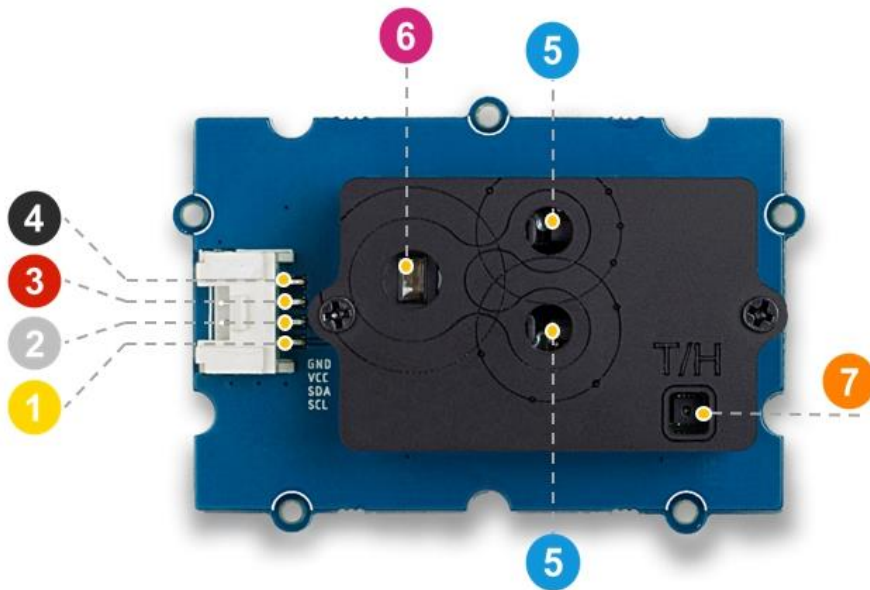
Parameter	Conditions	Value
Temperature measurement range		-40°C – 120°C
Accuracy	0 – 50°C	±0.5°C
Repeatability		0.1°C
Response time	$\tau_{63\%}$	> 2 s

**Table 4.***Temperature Sensor Specifications*

Parameter	Conditions	Value
Average current	Update interval 2 s	19 mA
Max. current	During measurement	75 mA
Energy consumption	1 measurement	120 mJ






**Table 5.***Electrical Specifications*

## Hardware Overview



- 4 GND: connect this module to the system GND
- 3 VCC: you can use 5V or 3.3V for this module
- 2 SDA: I<sup>2</sup>C serial data
- 1 SCL: I<sup>2</sup>C serial clock
- 5 CO<sub>2</sub> Sensor Opening
- 6 Infrared Light Source
- 7 Temperature & Humidity Sensor Opening

## Platforms Supported


Arduino	Raspberry Pi	BeagleBone	Wio	LinkIt ONE
				

## Getting Started

### Play With Arduino

Hardware

## Materials required

Seeeduino V4.2	Base Shield	Grove-CO2 & T&H SCD30
		

In addition, you can consider our new **Seeeduino Lotus M0+**, which is equivalent to the combination of Seeeduino V4.2 and Baseshield.

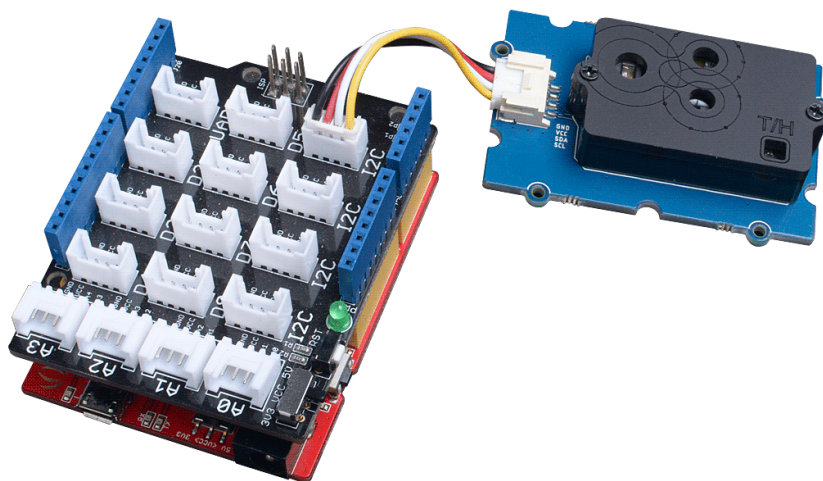
## Note

**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](#) 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](#) to buy.

## Hardware Connection

- **Step 1.** Connect the Grove - CO2 & Temperature & Humidity Sensor (SCD30) to the I<sup>2</sup>C port of the Base Shield.
- **Step 2.** Plug Grove - Base Shield into Seeeduino.
- **Step 3.** Connect Seeeduino to PC via a USB cable.

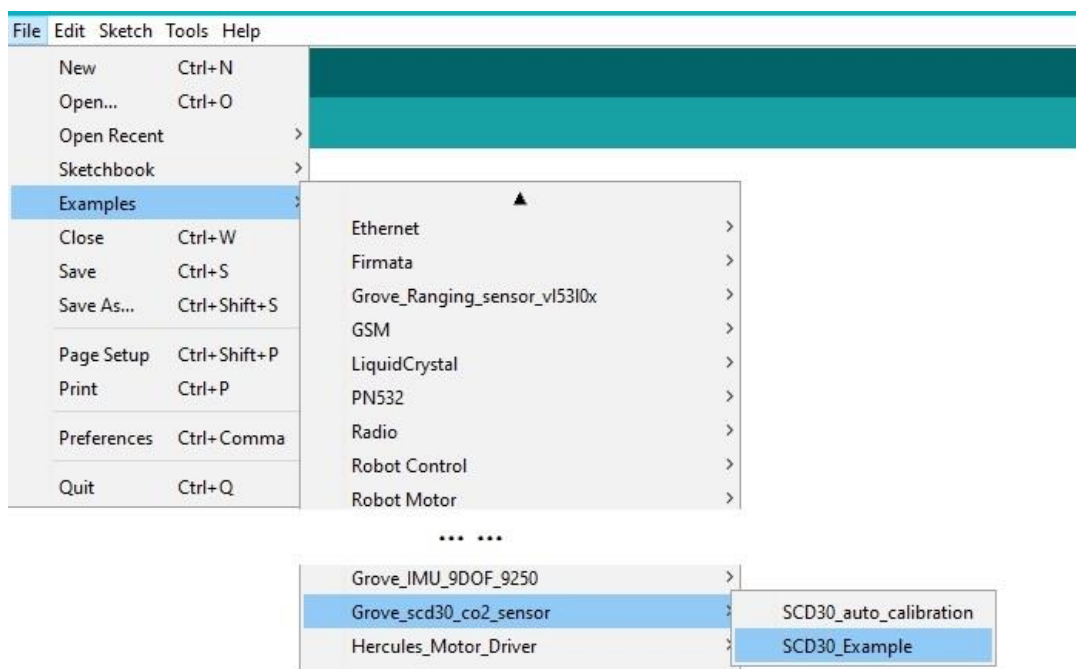


## Software

### Attention


If this is the first time you work with Arduino, we strongly recommend you to see [Getting Started with Arduino](#) before the start.

- **Step 1.** Download the [Grove Multi Switch](#) Library from Github.
- **Step 2.** Refer to [How to install library](#) to install library for Arduino.
- **Step 3.** Restart the Arduino IDE. Open the example, you can open it in the following three ways : a. Open it directly in the Arduino IDE via the path: **File** → **Examples** → **Grove\_scd30\_co2\_sensor** → **SCD30\_Example**.



b. Open it in your computer by click the **SCD30\_Example.ino** which you can find in the folder **XXXX\Arduino\libraries\Seeed\_SCD30-master\examples\SCD30\_Example**, XXXX is the location you installed the Arduino IDE.



c. Or, you can just click the icon  in upper right corner of the code block to copy the following code into a new sketch in the Arduino IDE.