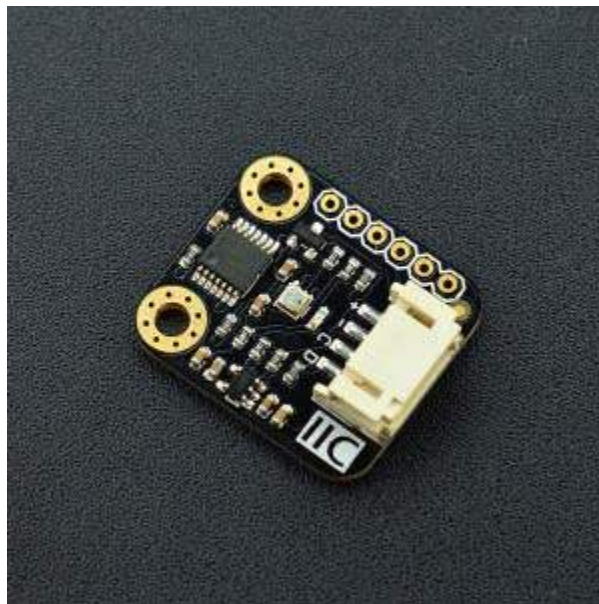




## Gravity: I2C BME280 Environmental Sensor (Temperature, Humidity, Barometer) SKU: SEN0236



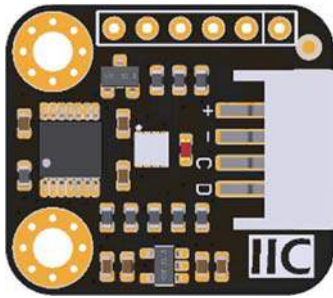
### Introduction

BME280 is an environmental sensor that integrates onboard temperature sensor, humidity sensor and barometer. The sensor is of high precision, multiple functions, and small size etc. It provides both SPI and I2C interfaces, which make it easy to make a fast prototypes. It can be widely used in environmental monitoring, story height measurement and Internet of Things (IoT) control and so on. Gravity I2C BME280 Environmental Sensor has based on BoSCH newest MEMS sensor (Micro-Electro-Mechanical System). It is very stable to compare with other kind of sensors, especially the air pressure measurement, the offset temperature coefficient is  $\pm 1.5$  Pa/K, equiv. to  $\pm 12.6$  cm at 1 °C temperature change. Therefore, the stable and multi-function make BME280 become a good choice in many scenes.

## Specification

- Working Voltage : 3.3V~5.0V
- Working Current : 2mA
- Working Temperature : -40°C~+85°C
- Temperature Measuring Range: -40°C~+85°C, resolution of 0.1°C, deviation of ±0.5°C
- Humidity Measuring Range: 0~100%RH, resolution of 0.1%RH, deviation of ±2%RH
- Pressure Measuring Range: 300~1100hPa
- Humidity Sampling Time: 1s
- Dimension: 22 \* 25 mm/ 0.87 \* 0.98 inches
- Weight: 12g

## Board Overview



Gravity: I2C BME280  
Environmental Sensor  
Layout

Num	Label	Description
1	+	3.3~5V
2	-	GND
3	C	SCL
4	D	SDA

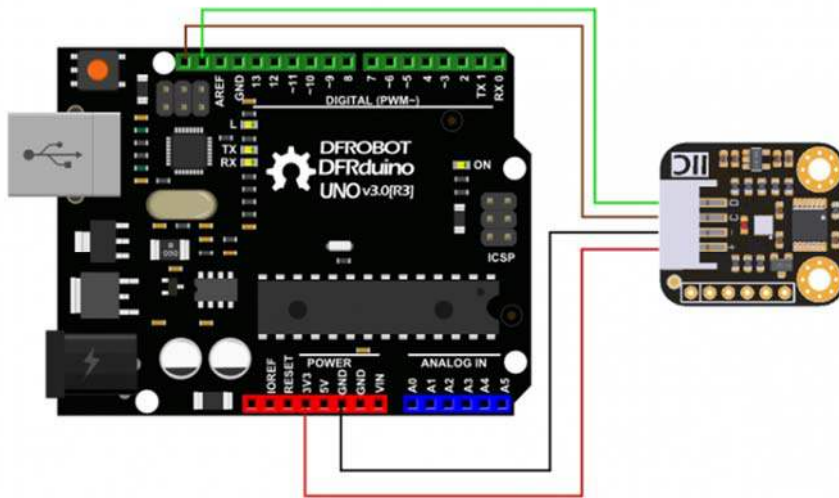
## Tutorial

BME280 Environmental Sensor has two interface: I2C and SPI. In this section, we'll show you two examples about how to use.

### Requirements

- **Hardware**  
DFRduino UNO x 1  
Gravity: I2C BME280 Environmental Sensor x1  
M-M/F-M/F-F Jumper wires
- **Software**  
Arduino IDE (Version requirement: V1.8+), [Click to Download Arduino IDE from Arduino®](#)  
[BME280 Environmental Sensor Arduino Library \(Github\)](#) [How to install Libraries in Arduino IDE](#)

## Arduino I2C Connection Diagram



### Arduino I2C Connection

### Arduino I2C Sample Code

```
/*!  
 * @file basicTestI2C.ino  
 * @brief DFRobot's Temperature, Pressure, Humidity and Approx altitude  
 * @n [Get the module here]  
 * @n This example read the Temperature, Pressure, Humidity and Altitude from  
 BME280, and then print them  
 * @n [Connection and Diagram]  
 *  
 * @copyright [DFRobot] (http://www.dfrobot.com), 2016  
 * @copyright GNU Lesser General Public License  
 *  
 * @author [yangyang]  
 * @version V1.0  
 * @date 2017-7-5  
 */
```

```
#include <DFRobot_BME280.h>

#define SEA_LEVEL_PRESSURE 1013.25f
#define BME_CS 10

DFRobot_BME280 bme; //I2C

float temp, pa, hum, alt;

void setup() {
    Serial.begin(115200);

    // I2c default address is 0x77, if the need to change please modify bme.b
    egin(Addr)
    if (!bme.begin()) {
        Serial.println("No sensor device found, check line or address!");
        while (1);
    }

    Serial.println("-- BME280 DEMO --");
}

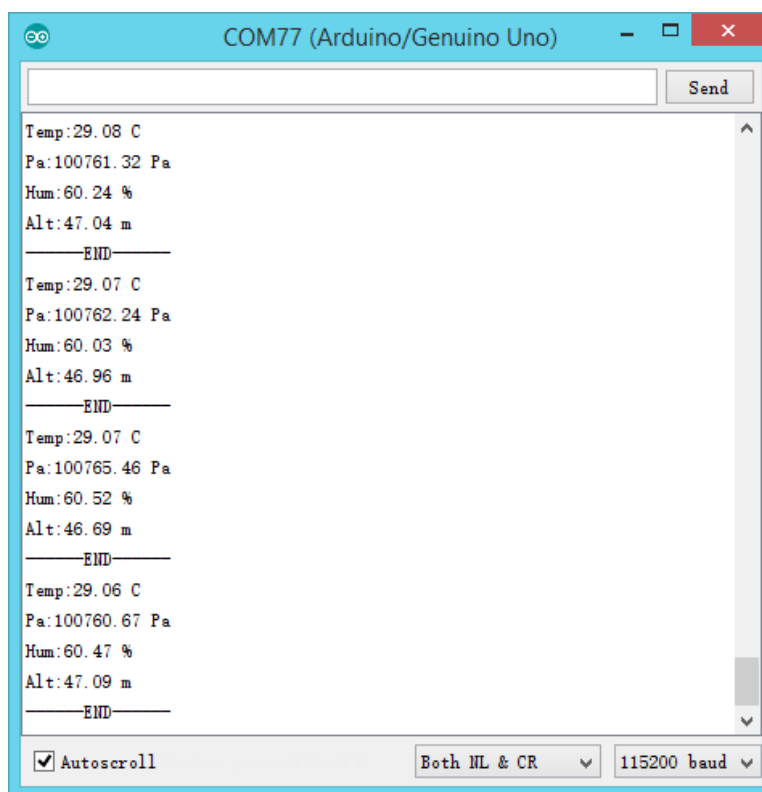
void loop() {
    temp = bme.temperatureValue();
    pa = bme.pressureValue();
    hum = bme.humidityValue();
    alt = bme.altitudeValue(SEA_LEVEL_PRESSURE);

    Serial.print("Temp:");
    Serial.print(temp);
    Serial.println(" C");

    Serial.print("Pa:");
```

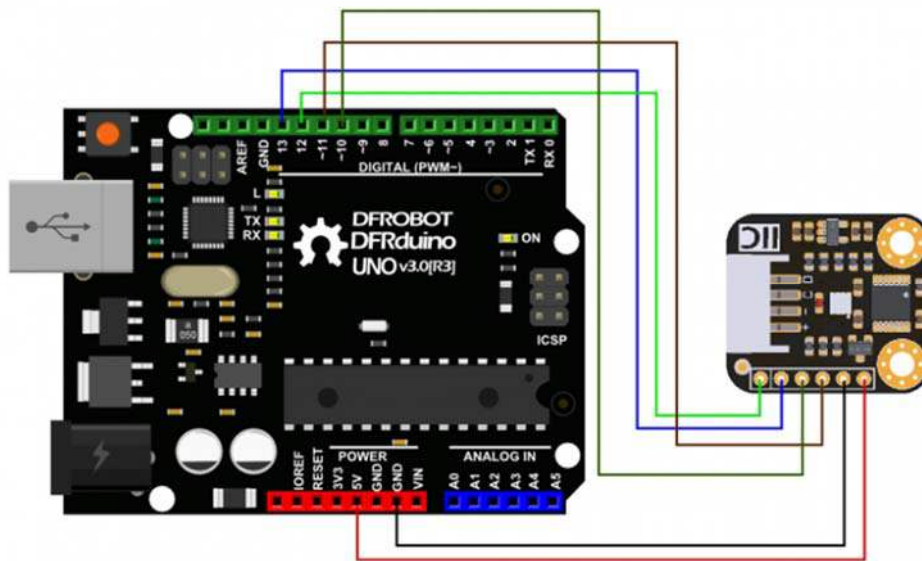
```
Serial.print(pa);  
Serial.println(" Pa");  
  
Serial.print("Hum:");  
Serial.print(hum);  
Serial.println(" %");  
  
Serial.print("Alt:");  
Serial.print(alt);  
Serial.println(" m");  
  
Serial.println("-----END-----");  
  
delay(1000);  
}
```

## Expected Results



Arduino Serial Monitor

## Arduino SPI Connection Diagram



Arduino SPI Connection

## Arduino SPI Sample Code

```
/*!  
 * @file basicTestSPI.ino  
 * @brief DFRobot's Temperature, Pressure, Humidity and Approx altitude  
 * @n [Get the module here]  
 * @n This example read the Temperature, Pressure, Humidity and Altitude from  
BME280, and then print them  
 * @n [Connection and Diagram]  
 *  
 * @copyright [DFRobot] (http://www.dfrobot.com), 2016  
 * @copyright GNU Lesser General Public License  
 *  
 * @author [yangyang]  
 * @version V1.0  
 * @date 2017-7-5
```

```
*/

#include <DFRobot_BME280.h>

#define SEA_LEVEL_PRESSURE    1013.25f
#define BME_CS 10

DFRobot_BME280 bme(BME_CS); //SPI

float temp, pa, hum, alt;

void setup() {
    Serial.begin(115200);

    // I2c default address is 0x77, if the need to change please modify bme.begin(Addr)
    if (!bme.begin()) {
        Serial.println("No sensor device found, check line or address!");
        while (1);
    }

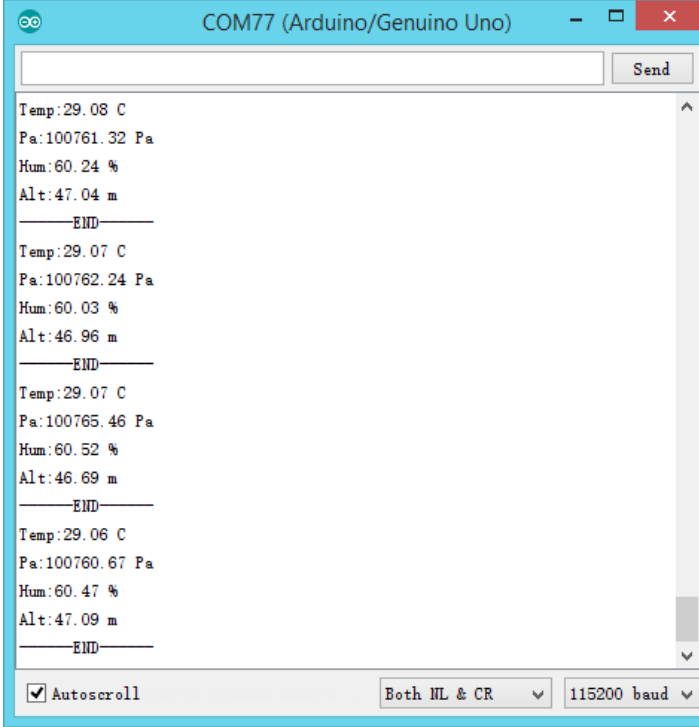
    Serial.println("-- BME280 DEMO --");
}

void loop() {
    temp = bme.temperatureValue();
    pa = bme.pressureValue();
    hum = bme.humidityValue();
    alt = bme.altitudeValue(SEA_LEVEL_PRESSURE);

    Serial.print("Temp:");
    Serial.print(temp);
    Serial.println(" C");
}
```

```
Serial.print("Pa:");  
Serial.print(pa);  
Serial.println(" Pa");  
  
Serial.print("Hum:");  
Serial.print(hum);  
Serial.println(" %");  
  
Serial.print("Alt:");  
Serial.print(alt);  
Serial.println(" m");  
  
Serial.println("-----END-----");  
  
delay(1000);  
}
```

## Expected Results



```
Temp:29.08 C  
Pa:100761.32 Pa  
Hum:60.24 %  
Alt:47.04 m  
-----  
END  
Temp:29.07 C  
Pa:100762.24 Pa  
Hum:60.03 %  
Alt:46.96 m  
-----  
END  
Temp:29.07 C  
Pa:100765.46 Pa  
Hum:60.52 %  
Alt:46.69 m  
-----  
END  
Temp:29.06 C  
Pa:100760.67 Pa  
Hum:60.47 %  
Alt:47.09 m  
-----  
END
```

Autoscroll    Both NL & CR    115200 baud