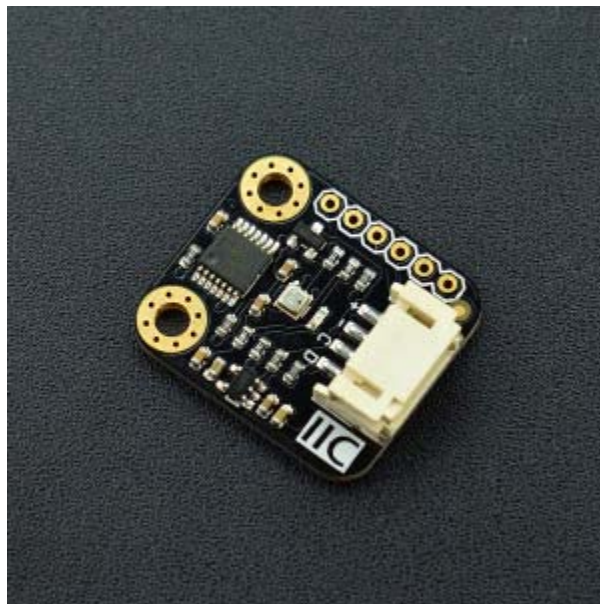




Gravity: I2C BME280 Environmental Sensor (Temperature, Humidity, Barometer) SKU: SEN0236



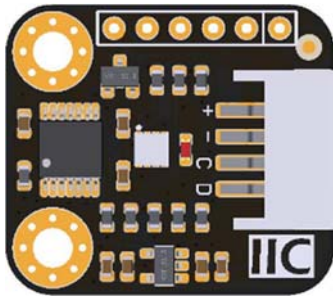
Introduction

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 ± 1.5 Pa/K, equiv. to ± 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 $\pm 0.5^\circ\text{C}$
- Humidity Measuring Range: 0~100%RH, resolution of 0.1%RH, deviation of $\pm 2\%RH$
- 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

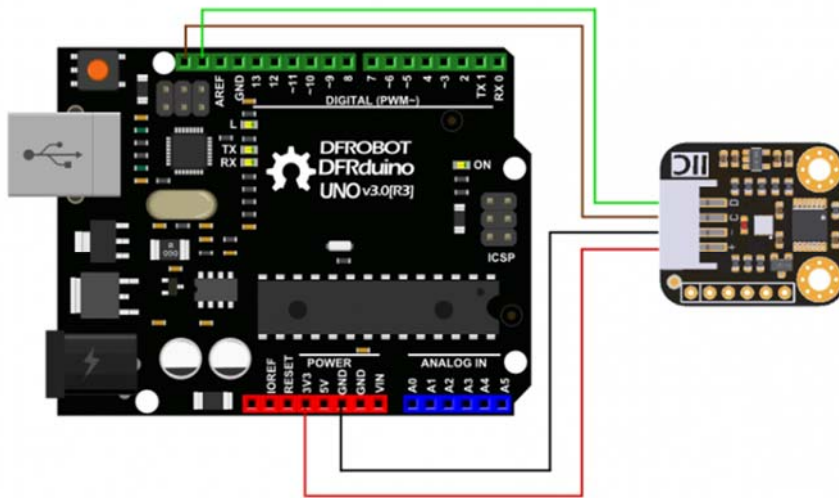
Tutorial

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.begin(Addr)
    if (!bme.begin()) {
        Serial.println("No sensor device found, check line or address!");
        while (1);
    }

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

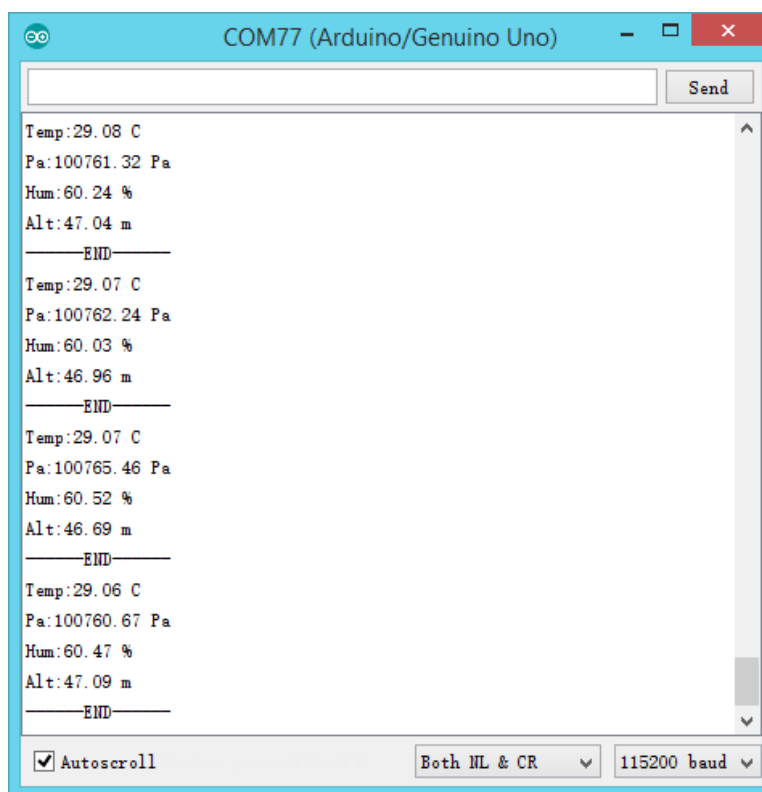
void loop() {
    temp = bme.temperatureValue();
    pa = bme.pressureValue();
    hum = bme.humidityValue();
    alt = bme.altitudeValue(SEA_LEVEL_PRESSURE);

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

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

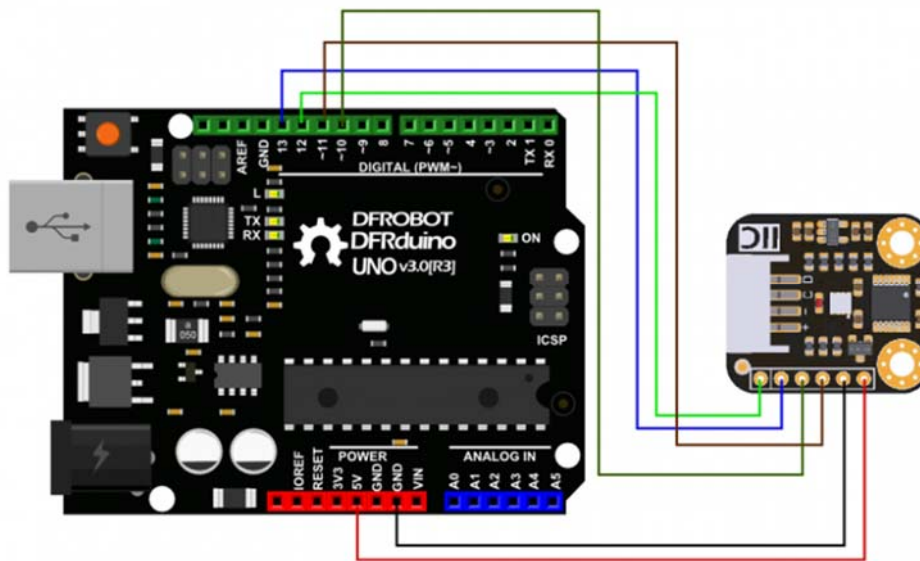
```
Serial.print(pa);  
Serial.println(" Pa");  
  
Serial.print("Hum:");  
Serial.print(hum);  
Serial.println(" %");  
  
Serial.print("Alt:");  
Serial.print(alt);  
Serial.println(" m");  
  
Serial.println("-----END-----");  
  
delay(1000);  
}
```

Expected Results



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);
    }

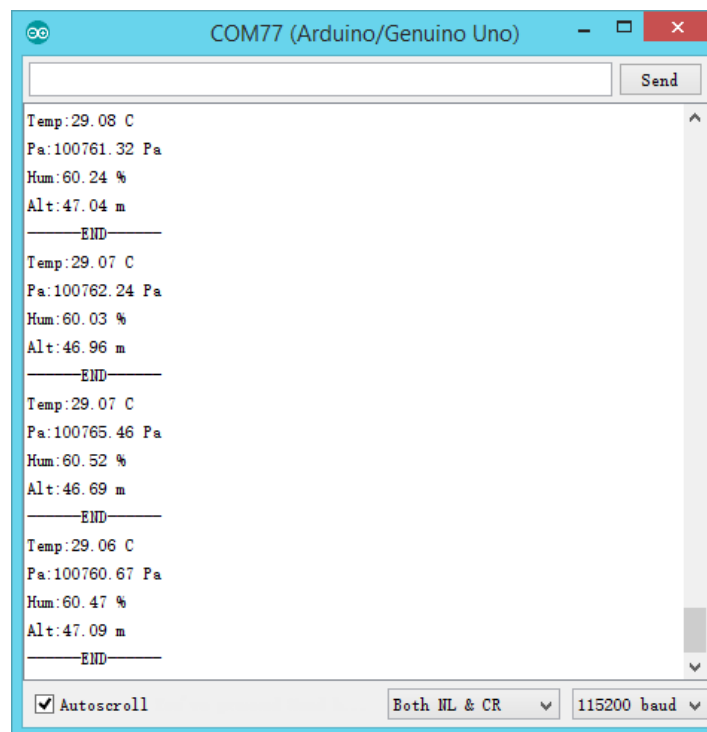
    Serial.println("-- BME280 DEMO --");
}

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



The screenshot shows the serial monitor window for COM77 (Arduino/Genuino Uno). The window displays the output of the code, showing four sets of sensor data separated by "END" markers. The data includes temperature, pressure, humidity, and altitude.

```
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-----
```

At the bottom of the window, the "Autoscroll" checkbox is checked, and the baud rate is set to 115200.