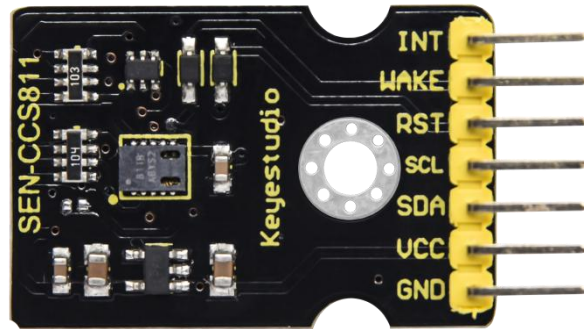# keyestudio CCS811 Carbon Dioxide/Air Quality Sensor

1. Description

Keyestudio CCS811 carbon dioxide/air quality sensor mainly uses the CCS811 chip.

It is an ultra-low-power miniature digital gas sensor that can detect a wide range

of volatile organic compounds (TVOCs), including equivalent carbon dioxide

(eCO2) and metal oxide (MOX) levels. Equivalent carbon dioxide (eCO2) is

measured in the range of 400 to 29206 ppm (parts per million), and various

volatile organic compounds (TVOC) ranges from 0 to 32768ppb(parts per billion).

A 3mm diameter position hole on sensor is used for easier wiring up.

2. Technical Parameters

- Working voltage: DC 5V

- Working current: 30mA

- Maximum power: 60mW

- eCO2 measurement range: 400-29206 ppm

- TVOC measurement range: 0 to 32768ppb

- Interface: 7pin (2.54mm pitch)

- Positioning hole diameter: 3mm

- Dimensions: 30*20mm

- Environmental attributes: ROHS

3. PINOUTS

GND	ground
VCC	Input power（5V）
SDA	I2C data pin
SCL	I2C clock pin
RST	Reset pin: connect to ground, sensor will automatically reset.
WAKE	WAKE pin should connect to ground to communicate with sensor conveniently
INT	This is the interrupt output pin that detects when a new reading is ready or the reading becomes too high or too low.

4. Connection Diagram
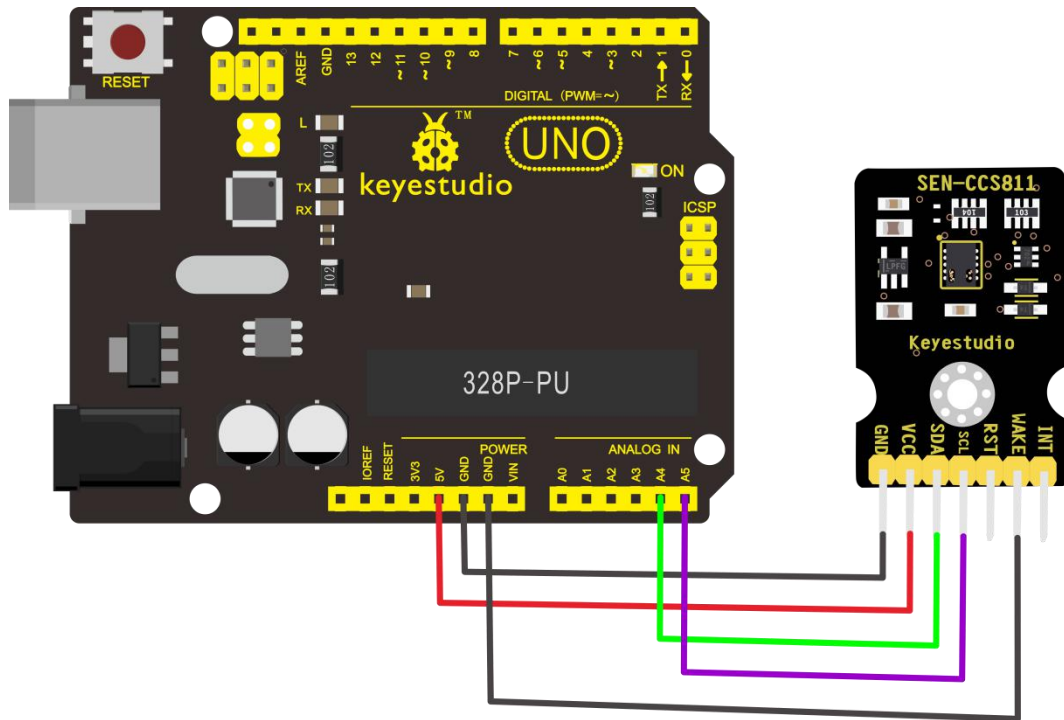
5. Test Code

NOTE:

1. Place the corresponding file in the libraries folder of Arduino IDE before uploading the code.

2. We recommend to use arduino 1.8.7 version , other version may be not compatible.

```
#include <CCS811.h>

//CCS811 sensor(&Wire, /*IIC_ADDRESS=*/0x5A);
CCS811 sensor;

void setup(void)
{
    Serial.begin(115200);
    /*Wait for the chip to be initialized completely, and then exit*/
    while(sensor.begin() != 0){
```

```
            Serial.println("failed to init chip, please check if the chip connection is fine");
            delay(1000);
        }
        /**
         * @brief Set measurement cycle
         * @param cycle:in typedef enum{
         *                  eClosed,       //Idle (Measurements are disabled in this mode)
         *                  eCycle_1s,     //Constant power mode, IAQ measurement every second
         *                  eCycle_10s,    //Pulse heating mode IAQ measurement every 10 seconds
         *                   eCycle_60s,    //Low power pulse heating mode IAQ measurement every 60
seconds
         *                  eCycle_250ms  //Constant power mode, sensor measurement every 250ms
         *                  }eCycle_t;
         */
        sensor.setMeasCycle(sensor.eCycle_250ms);
}
void loop() {
  delay(1000);
    if(sensor.checkDataReady() == true){
        Serial.print("CO2: ");
        Serial.print(sensor.getCO2PPM());
        Serial.print("ppm, TVOC: ");
        Serial.print(sensor.getTVOCPPB());
        Serial.println("ppb");

    } else {
        Serial.println("Data is not ready!");
    }
    /*!
     * @brief Set baseline
     * @param get from getBaseline.ino
     */
    sensor.writeBaseLine(0x847B);
    //delay cannot be less than measurement cycle
    //delay(1000);
}
```
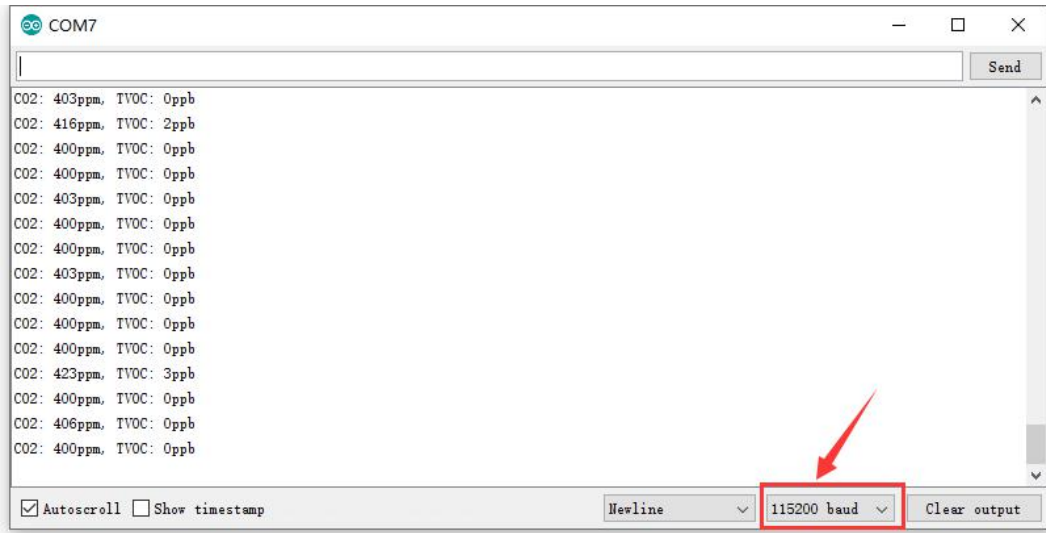
6. Test Result

After uploading the code, open the serial monitor and set the baud rate to 115200. The data will be displayed on serial monitor. It may not be correct at the beginning, just wait for a few minutes(up to 20min)until the data is stable.

When a person exhales to the sensor, the data will change obviously, as shown below:

www.keyestudio.com

7. Resources

https://fs.keyestudio.com/KS0457