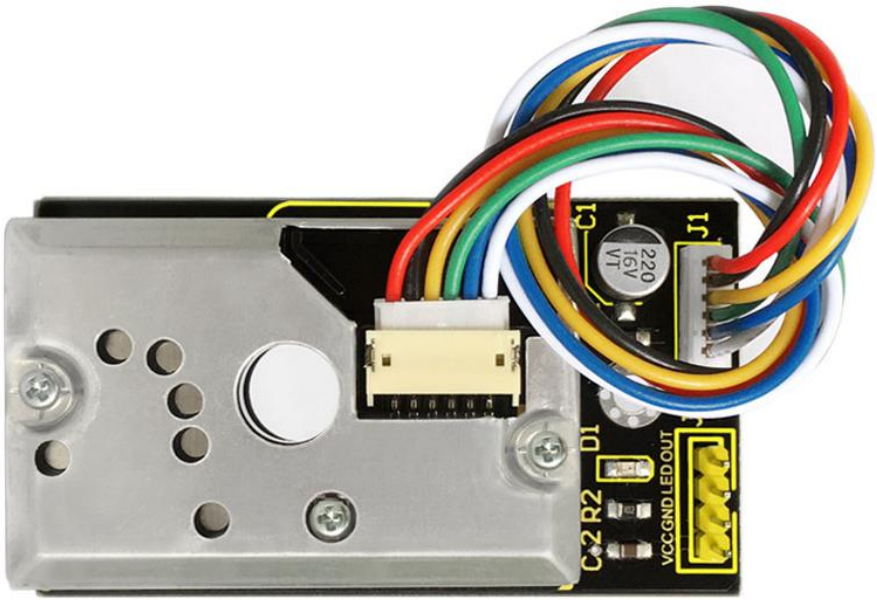
keyestudio GP2Y1014AU PM2.5 Dust Sensor Module



Introduction:

Keyestudio Dust sensor with Sharp GP2Y1014AU onboard works well in detecting very fine particle larger than 0.8μm in diameter, even like the cigarette smoke.

It also has an IR LED and photoeletric transistor. Arranging them with across corners can detect the reflected light of dust in the air.

Ultra-low power consumption(max at 20mA, typical at 11mA), analog voltage output is liner with dust density. It can be equipped with sensors up to 7V DC.

Specification Parameters:

- Power Voltage: 5-7V
- Operating Temperature: -10℃ to 65℃
- Operating Current: 20mA (max)

- Detecting Value of Minimum Particle: 0.8μm
- Sensitivity: 0.5V/(0.1mg/m3)
- Voltage of Cleaning Air: 0.9V(typical)
- Storage Temperature: -20℃~80℃
- Life time: 5 years
- Dimension: 62mm×36mm×20mm

Applications:

- Air Purifier
- Air Conditioner
- Air Monitor
- PM2.5 Detector

Shipping List:

- Dust Sensor x 1
- ZH1.5MM 6-pin wire x 1

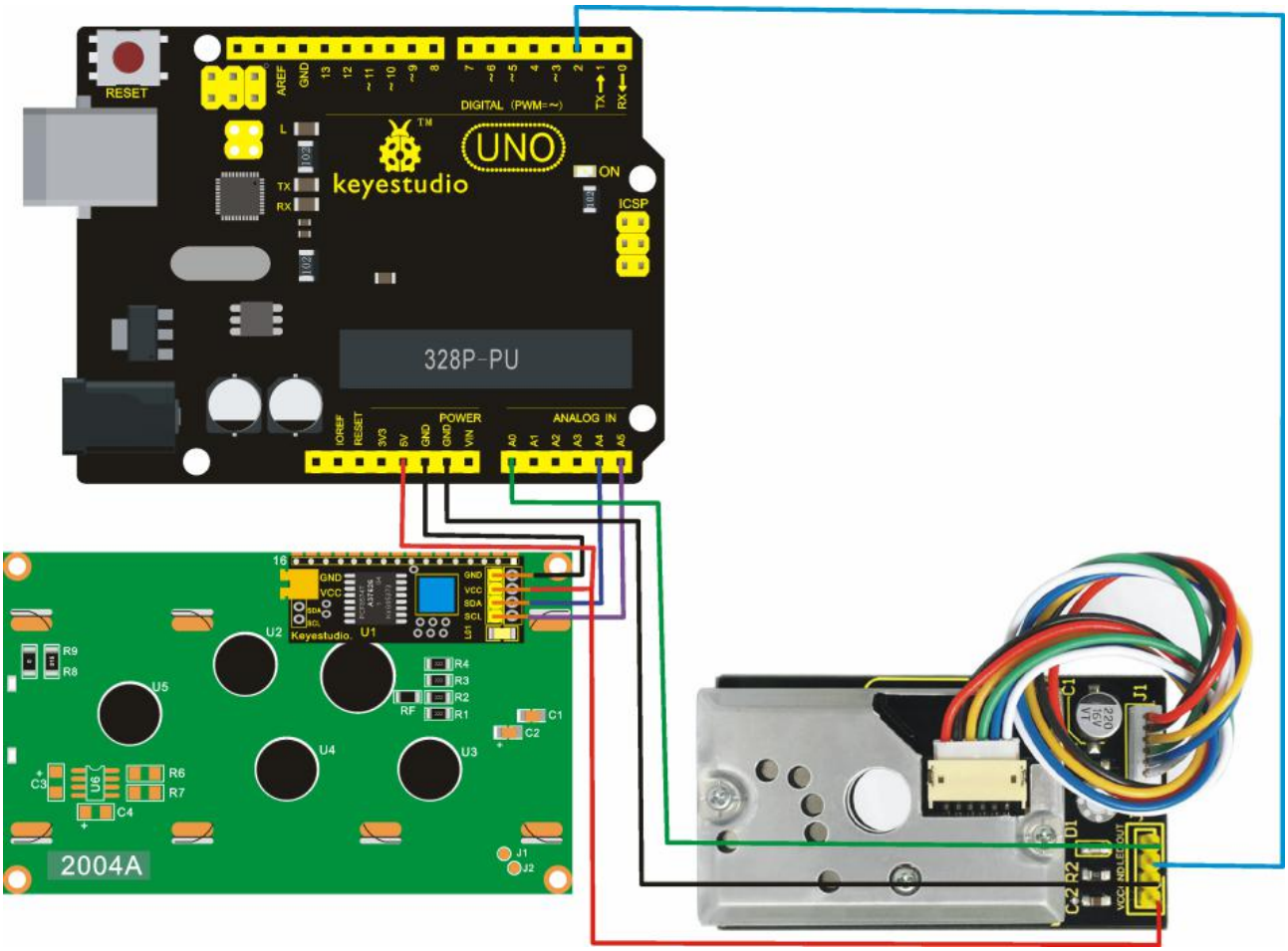
How to Use:

In case of working with a MCU:

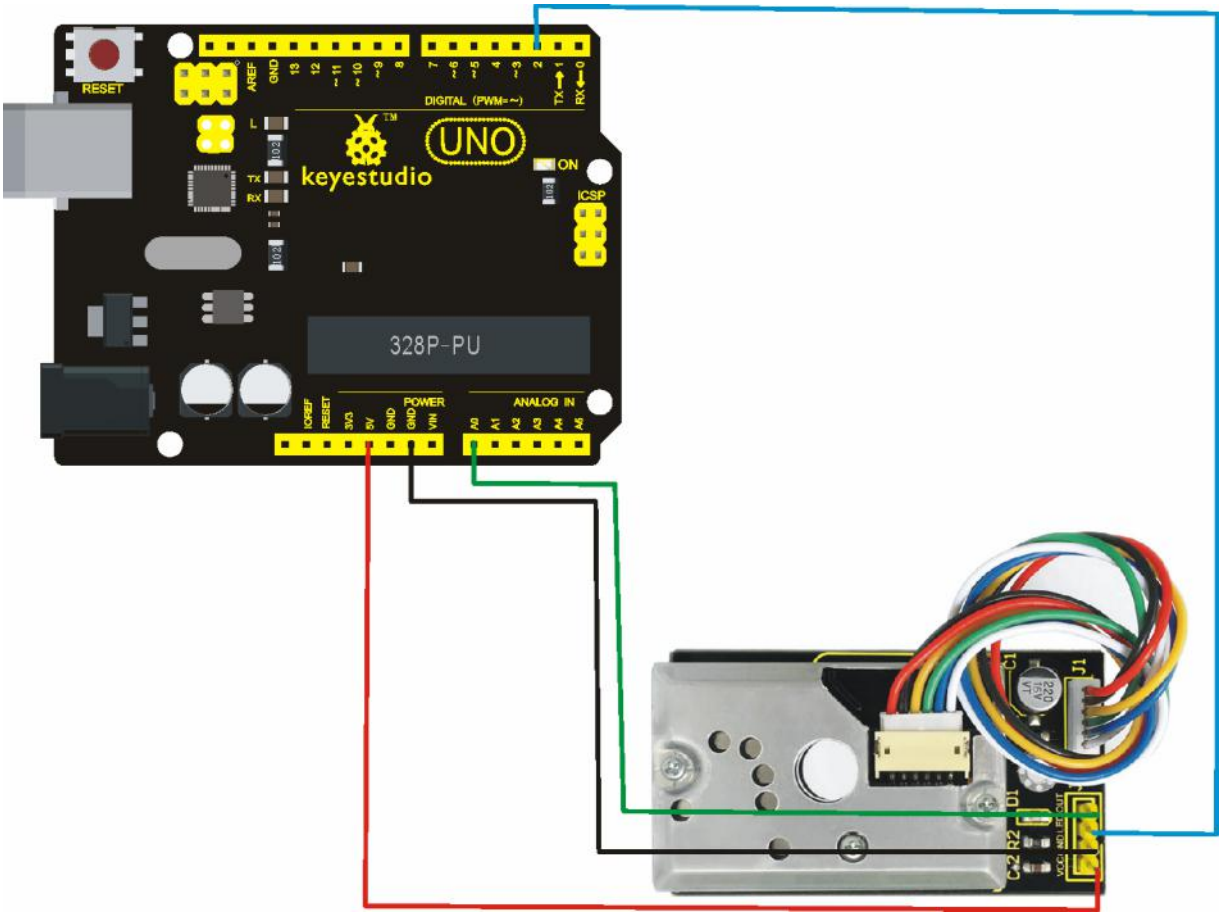
- VCC --------- 3V-5V
- GND --------- GND
- LED --------- MCU IO (module driving pin)
- OUT --------- MCU IO (analog output)

Connection Diagram

- Project 1:



- Project 2:



Test Code:

Click here to download the libraries;

Click here to download the code or directly copy the code below.

Copy and paste the code below on Arduino IDE.

Code for Project 1:

```
**********************************************************************
#include <Wire.h>
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd(0x27,20,4);  // set the LCD address to 0x27 for a 16 chars and 2 line display
```

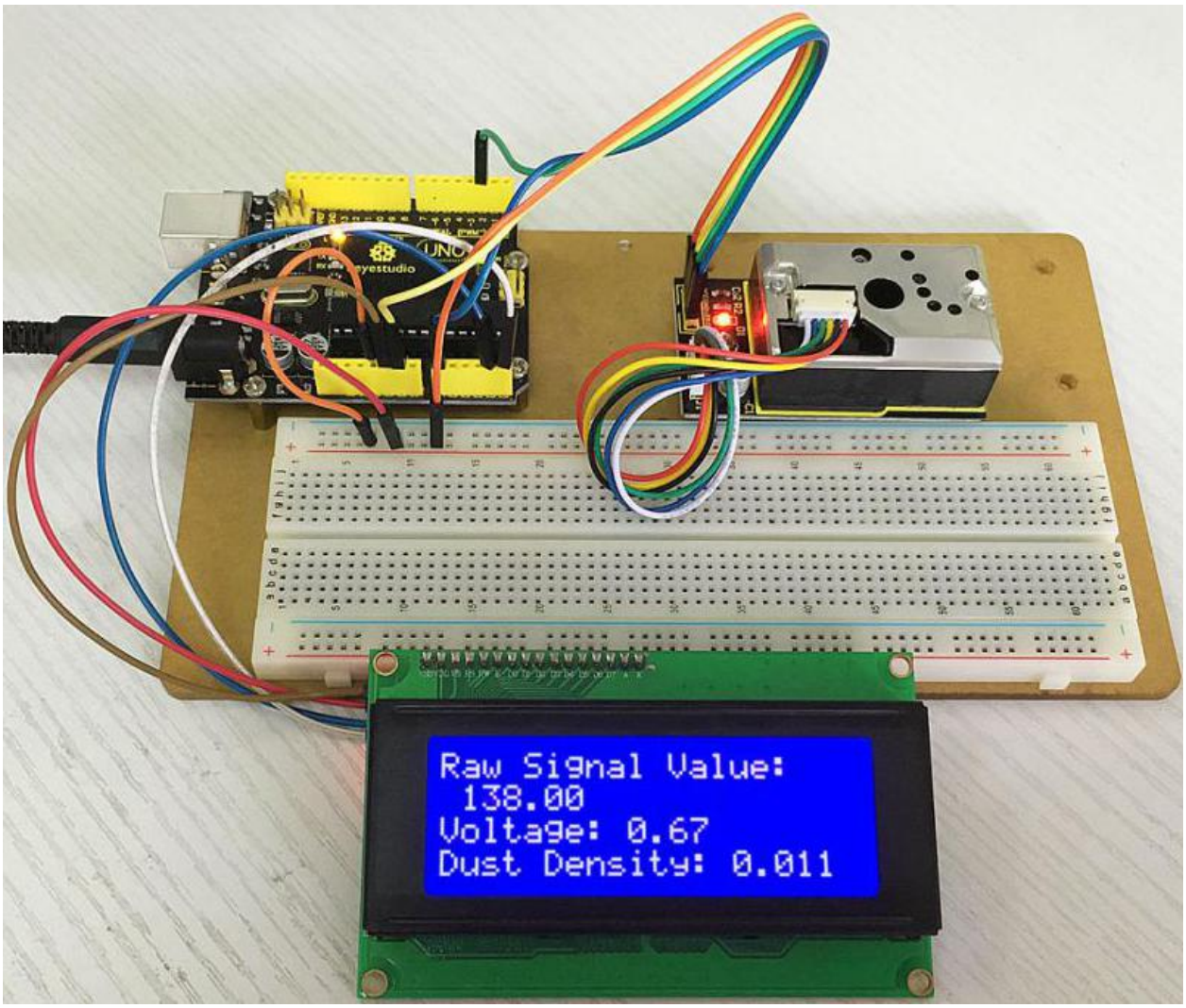
```
int measurePin = 0; //Connect dust sensor to Arduino A0 pin
int ledPower = 2;   //Connect 3 led driver pins of dust sensor to Arduino D2
int samplingTime = 280;
int deltaTime = 40;
int sleepTime = 9680;
float voMeasured = 0;
float calcVoltage = 0;
float dustDensity = 0;
void setup(){
  lcd.init();                      // initialize the lcd
  lcd.init();
  // Print a message to the LCD.
  lcd.backlight();
  lcd.setCursor(0,0);
  lcd.print("Raw Signal Value: ");
  lcd.setCursor(0,2);
  lcd.print("Voltage:");
  lcd.setCursor(0,3);
  lcd.print("Dust Density:");
  pinMode(ledPower,OUTPUT);
}
void loop(){
  digitalWrite(ledPower,LOW); // power on the LED
  delayMicroseconds(samplingTime);
  voMeasured = analogRead(measurePin); // read the dust value
  delayMicroseconds(deltaTime);
  digitalWrite(ledPower,HIGH); // turn the LED off
  delayMicroseconds(sleepTime);
  // 0 - 5V mapped to 0 - 1023 integer values
  // recover voltage
  calcVoltage = voMeasured * (5.0 / 1024.0);
  // linear eqaution taken from http://www.howmuchsnow.com/arduino/airquality/
  // Chris Nafis (c) 2012
  dustDensity = 0.17 * calcVoltage - 0.1;
  lcd.setCursor(1,1);
  lcd.print(voMeasured);
  lcd.setCursor(9,2);
  lcd.print(calcVoltage);
  lcd.setCursor(14,3);
  lcd.print(dustDensity);
  delay(1000);
}
*********************************************************************************
```

Code for Project 2:

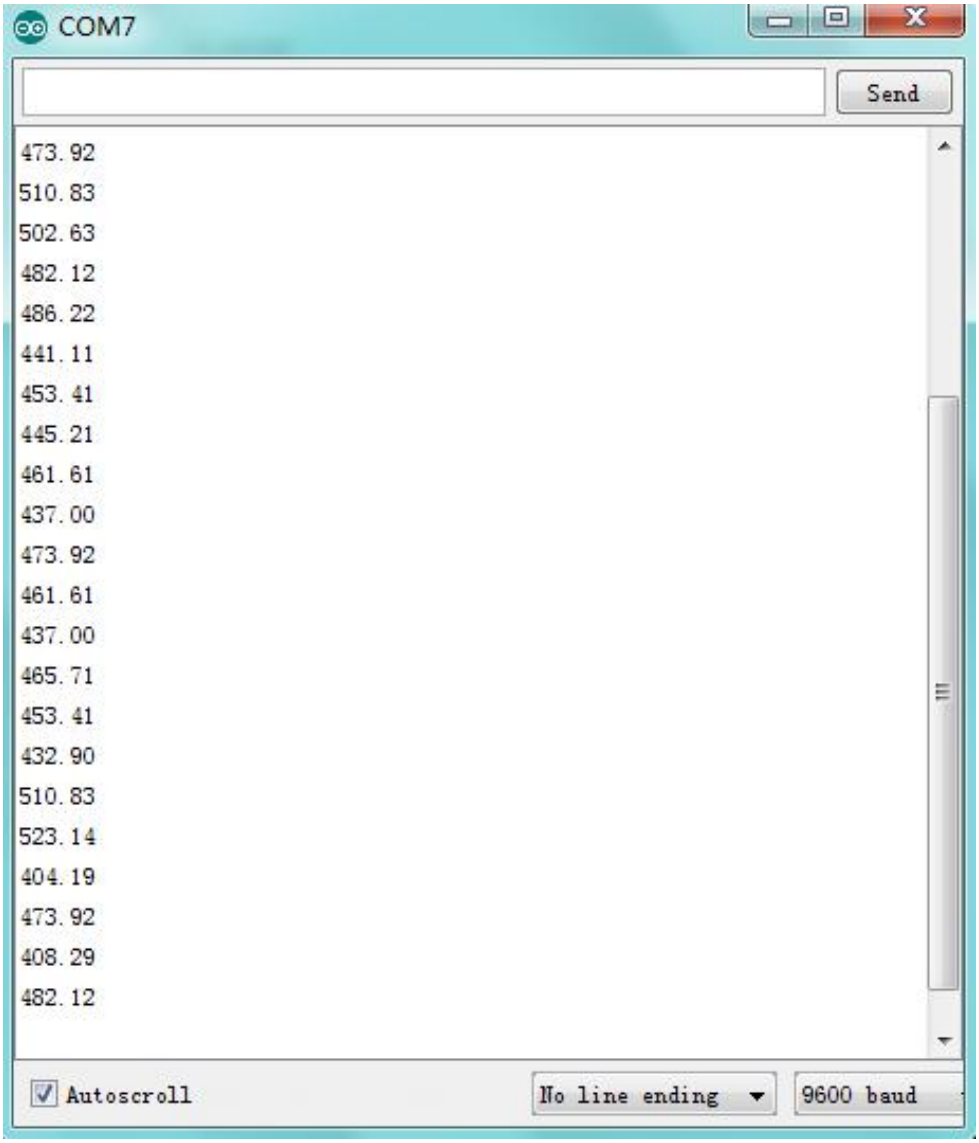
```
**********************************************************************************
int dustPin=0;
float dustVal=0;
int ledPower=2;
int delayTime=280;
int delayTime2=40;
float offTime=9680;

void setup(){
Serial.begin(9600);
pinMode(ledPower,OUTPUT);
pinMode(dustPin, INPUT);
}

void loop(){
// ledPower is any digital pin on the arduino connected to Pin 2 on the sensor
digitalWrite(ledPower,LOW);
delayMicroseconds(delayTime);
dustVal=analogRead(dustPin);
delayMicroseconds(delayTime2);
digitalWrite(ledPower,HIGH);
delayMicroseconds(offTime);

delay(1000);
if (dustVal>36.455)
Serial.println((float(dustVal/1024)-0.0356)*120000*0.035);
}
**********************************************************************************
```

Test Result:

- Result for Project 1:



- Result for Project 2: open serial monitor to get the value shown below.



Data compared to air quality:

3000 + = Very Bad

1050-3000 = Bad

300-1050 = Ordinary

150-300 = Good

75-150 = Very Good

0-75 = Tiptop