ARDUINO PM2.5 GP2Y1010AU0F COMPACT OPTICAL DUST SENSOR

Introduction:

Sharp's GP2Y1010AU0F is an optical air quality sensor, or may also known as optical dust sensor, is designed to sense dust particles. An infrared emitting diode and a phototransistor are diagonally arranged into this device, to allow it to detect the reflected light of dust in air. It is especially effective in detecting very fine particles like cigarette smoke, and is commonly used in air purifier systems.

Objective:

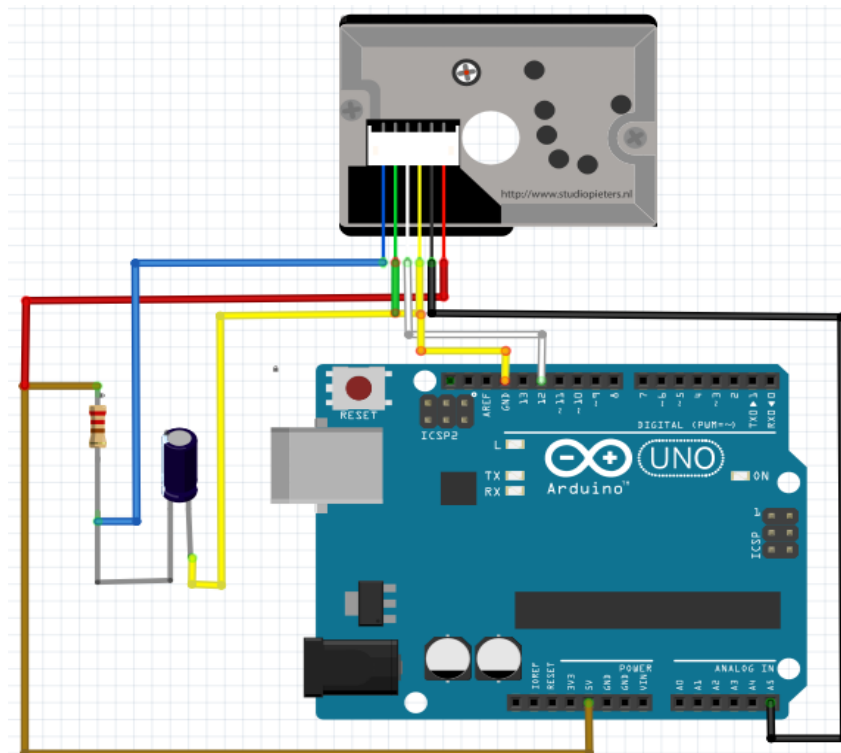Purpose is to detect and measure the air quality of the surrounding.

Components:

- Arduino Uno Board
- Arduino PM2.5 GP2Y1010AU0F Compact Optical Dust Sensor
- 150Ohm Resistor
- 220μF Capacitor
- Usb Cable
- Several Jumper Wires

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Procedures:

Step 1: Build the circuit.

The connection between the Arduino PM2.5 GP2Y1010AU0F Compact Optical Dust Sensor and the Arduino Uno Board:

Arduino PM2.5 GP2Y1010AU0F Compact Optical Dust Sensor	Arduino Uno Board
VCC	5V
VO	PIN A5
S – GND	GND
LED	PIN 12
LED – GND	GND
V – LED	5V • **With 150 Ohm Resistor in Between**

Step 2: Insert the sample programming provided below by copy and paste it into Arduino IDE.

```
int measurePin = A0;
int ledPower = 12;

unsigned int samplingTime = 280;
unsigned int deltaTime = 40;
unsigned int sleepTime = 9680;

float voMeasured = 0;
float calcVoltage = 0;
float dustDensity = 0;

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

void loop(){
 digitalWrite(ledPower,LOW);
 delayMicroseconds(samplingTime);

 voMeasured = analogRead(measurePin);

 delayMicroseconds(deltaTime);
 digitalWrite(ledPower,HIGH);
 delayMicroseconds(sleepTime);

 calcVoltage = voMeasured*(5.0/1024);
 dustDensity = 0.17*calcVoltage-0.1;

 if ( dustDensity < 0)
 {
   dustDensity = 0.00;
 }

 Serial.println("Raw Signal Value (0-1023):");
 Serial.println(voMeasured);
```

```
  Serial.println("Voltage:");
  Serial.println(calcVoltage);

  Serial.println("Dust Density:");
  Serial.println(dustDensity);

  delay(1000);
}
```

Step 3: Open the serial monitor to observe the result as shown below.