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MQ4 Methane Gas Sensor

Introduction

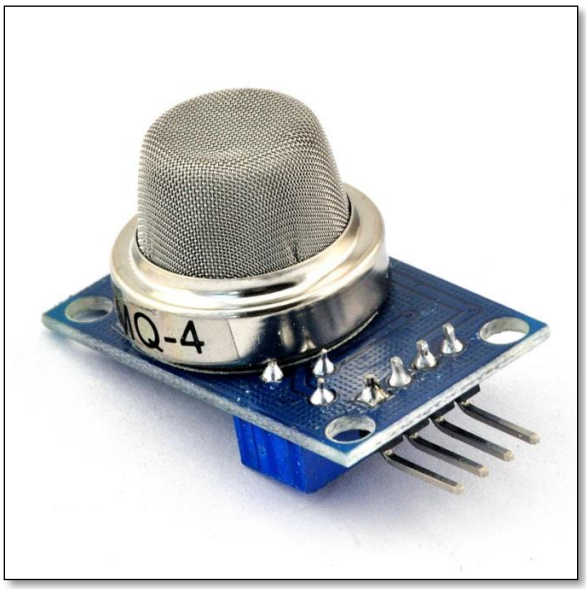
Sensitive material of MQ-4 gas sensor is SnO2, which with lower conductivity in clean air. When the target flammable gas exist, the sensor's conductivity gets higher along with the gas concentration rising. Users can convert the change of conductivity to correspond output signal of gas concentration through a simple circuit. MQ-4 gas sensor has high sensitivity to methane, also has anti-interference to alcohol and other gases.

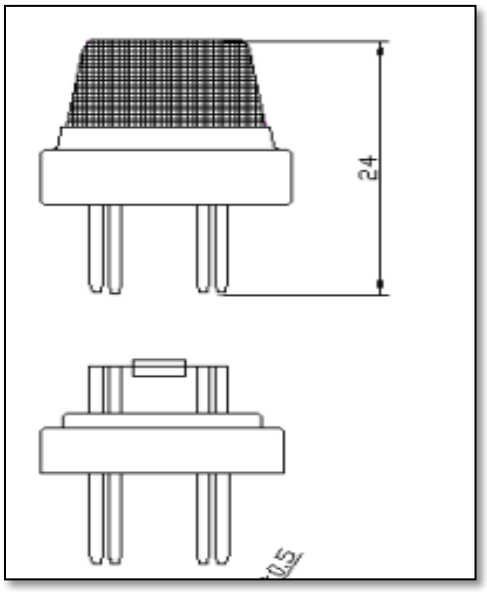
This methane gas sensor detects the concentration of methane gas in the air and ouputs its reading as an analog voltage. The concentration sensing range of 300 ppm to 10,000 ppm is suitable for leak detection. For example, the sensor could detect if someone left a gas stove on but not lit. The sensor can operate at temperatures from -10 to 50°C and consumes less than 150 mA at 5 V.

Specification

- Good sensitivity to combustible gas in wide range
- High sensitivity to Natural gas
- Long life and low cost
- Simple drive circuit
- Size: 40x20mm
- Fast response
- Power supply 5V

IMAGES





Packing List

- MQ4 Methane Gas Sensor

Requirements

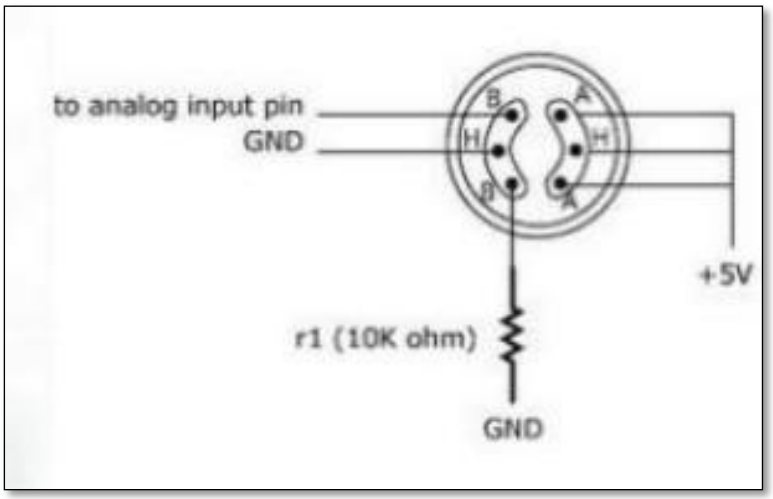
It can be interface with any microcontroller such as PIC, SK40C, SK28A, SKds40A, Arduino series.

Necessary hardware to follow this guide:

- Arduino Uno
- MQ4 Methane Gas Sensor module
- Male-Female/Female-Female jumper wire
- LED

Pin Assignment

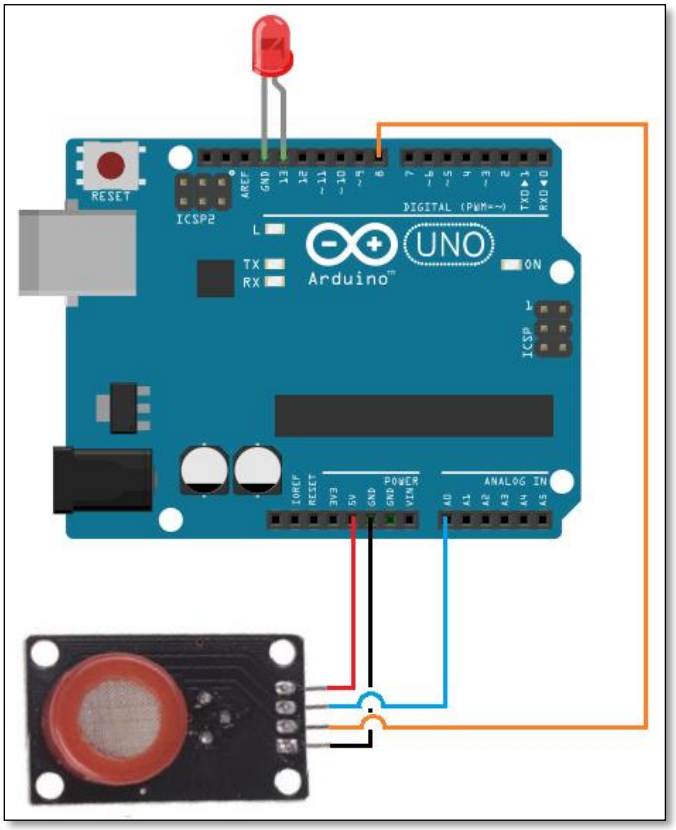
There are 6 pins used to interface MQ4 Methane Gas Sensor to Arduino.



Hardware Interface/Setup

To connect the sensor, there are 4 leads. 2 of them are for power. The +5V terminal of the sensor connects into the 5V terminal of the arduino board. The GND terminal of the sensor connects into the GND terminal of the arduino. This establishes power for the sensor.

The other 2 connections are the analog and digital output of the sensor. These connect to analog pin A0 and digital pin D8, respectively.



MQ4	**Arduino**
VCC	5V
GND	GND
DOUT	8
AOUT	A0

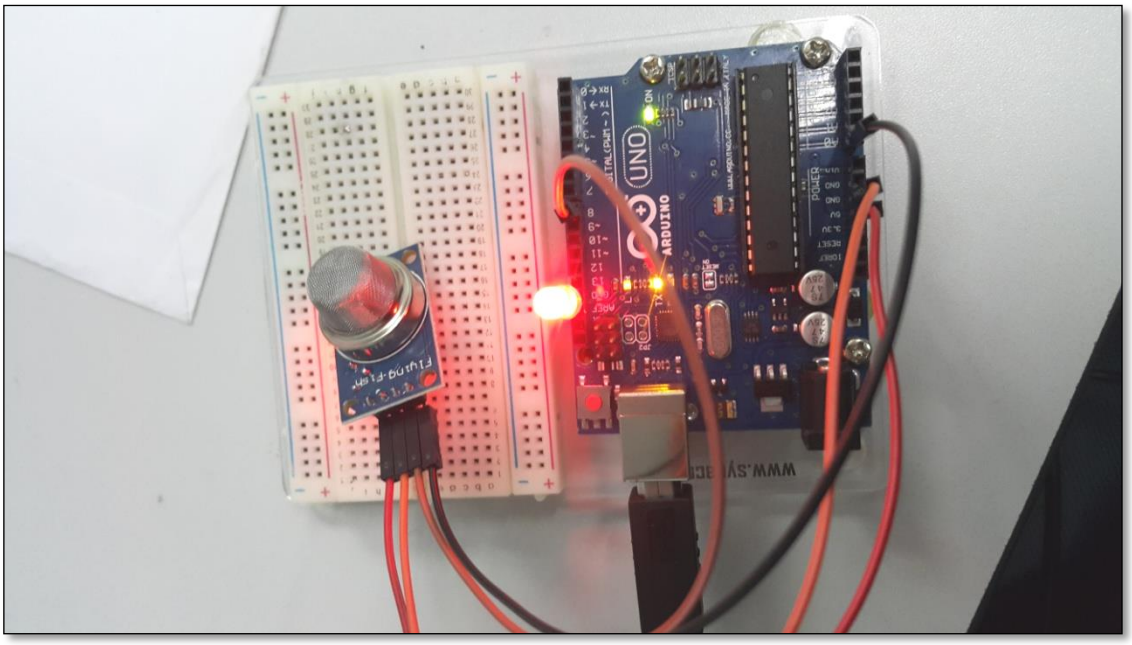
LED	GND,13

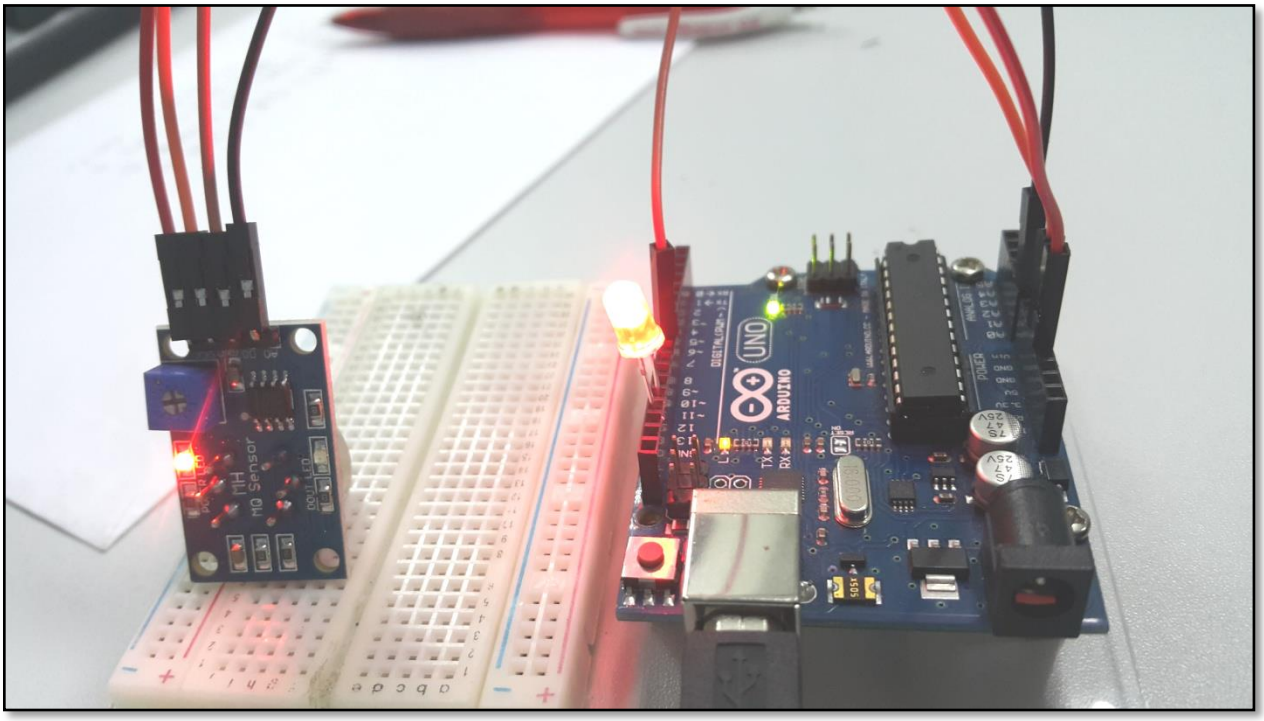
Example Code

This is example code for this module. The full code can be download at http://www.learningaboutelectronics.com/Articles/MQ-4-methane-sensor-circuit-with-arduino.php

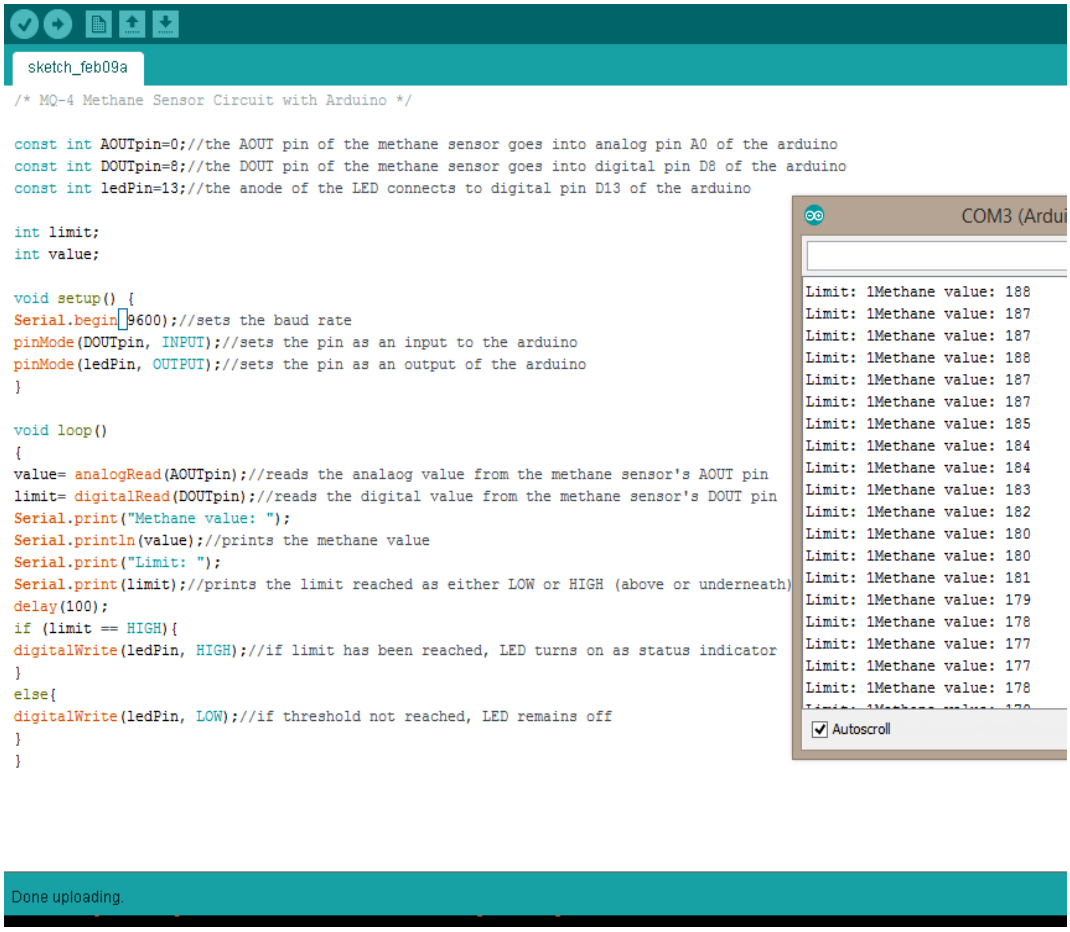
```
/* MQ-4 Methane Sensor Circuit with Arduino */

const int AOUTpin=0;//the AOUT pin of the methane sensor goes into analog pin A0 of the arduino
const int DOUTpin=8;//the DOUT pin of the methane sensor goes into digital pin D8 of the arduino
const int ledPin=13;//the anode of the LED connects to digital pin D13 of the arduino

int limit;
int value;

void setup() {
Serial.begin(115200);//sets the baud rate
pinMode(DOUTpin, INPUT);//sets the pin as an input to the arduino
pinMode(ledPin, OUTPUT);//sets the pin as an output of the arduino
}

void loop()
{
value= analogRead(AOUTpin);//reads the analaog value from the methane sensor's AOUT pin
limit= digitalRead(DOUTpin);//reads the digital value from the methane sensor's DOUT pin
Serial.print("Methane value: ");
Serial.println(value);//prints the methane value
Serial.print("Limit: ");
Serial.print(limit);//prints the limit reached as either LOW or HIGH (above or underneath)
delay(100);
if (limit == HIGH){
digitalWrite(ledPin, HIGH);//if limit has been reached, LED turns on as status indicator
}
else{
digitalWrite(ledPin, LOW);//if threshold not reached, LED remains off
}
}
```

Connections





RESULTS



Applications

- Domestic gas leakage detector
- Industrial Combustible gas detector
- Portable gas detector