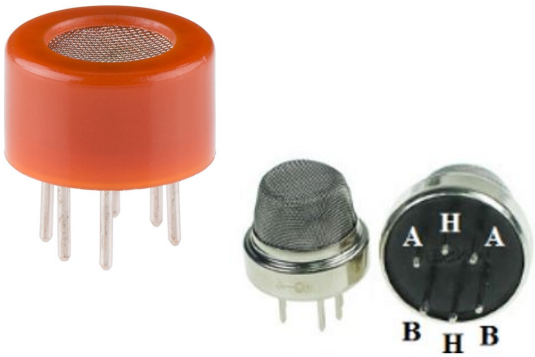
Z2M Part Number:
EDT-00001-A to G

Smoke/Gas Sensor
(Technical Note)

What is a Smoke Sensor?



MQ Series of sensor devices are designed to to detect smoke and different gases using the principle of chemiresistors. These sensors have a sensing chamber, where depending on the concentration of smoke/gases, movement of ions are affected thus changing the resistance on change in concentration of gases. It can detect 200-10000 ppm change in concentration of gases.

The sensor is used by powering the internal heater between pins marked H. The device has a metal mesh to avoid explosion of flammable gas in contact with the heater.

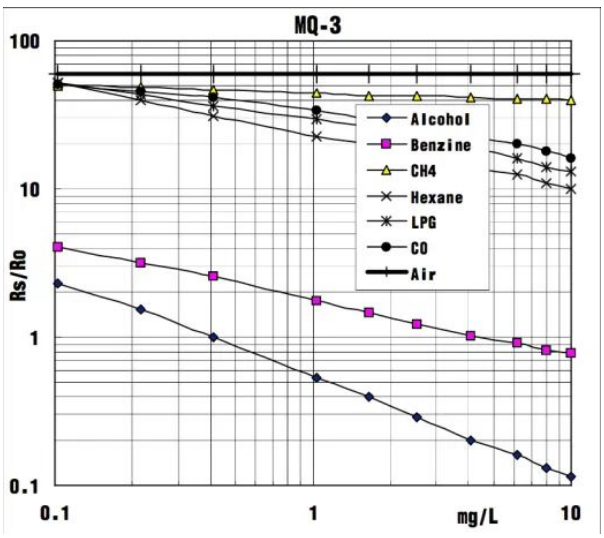
The effective resistance between the pins A and B varies with the concentration of the gas in the chamber. Each of these sensors is tuned to respond to the presence of specific types of gas or smoke.

Applications

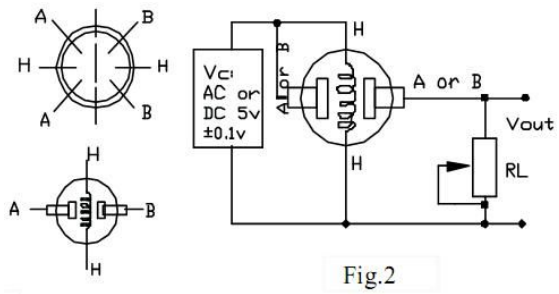
Smoke detectors in household
Gas Sensor
Alcohol breathalyzer
Carbon Monoxide detector
Mine Safety Appliances
LPG Leak detector
Air Quality Meter

MQ Gas Sensor Series

Z2M Part No	Description
EDT-00001-A	MQ-2 Household or factory gas leakage monitoring device, for liquefied gas, butane, propane, methane, alcohol, hydrogen, smoke
EDT-00001-B	MQ-3 Alcohol Detector Ethanol Gas Detection Sensor
EDT-00001-C	MQ-4 Methane and Natural Gas (CNG) Analog Sensor
EDT-00001-D	MQ-5 Natural Gas and LPG Analog Sensor
EDT-00001-E	MQ-6 LPG Natural Gas Propane Methane Butane Sensor
EDT-00001-F	MQ-7 Carbon Monoxide (CO) Gas Sensor -
EDT-00001-G	MQ-135 Ammonia and Nitrous Oxide Analog Sensor



Resistance curve of MQ-3 sensor



Typical schematic for the series

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EDT-00001-A to G

Smoke/Gas Sensor (Technical Note)

Project

To build a model to check if the surrounding smoke or gas level level goes beyond a certain threshold using smoke sensor

Procedure

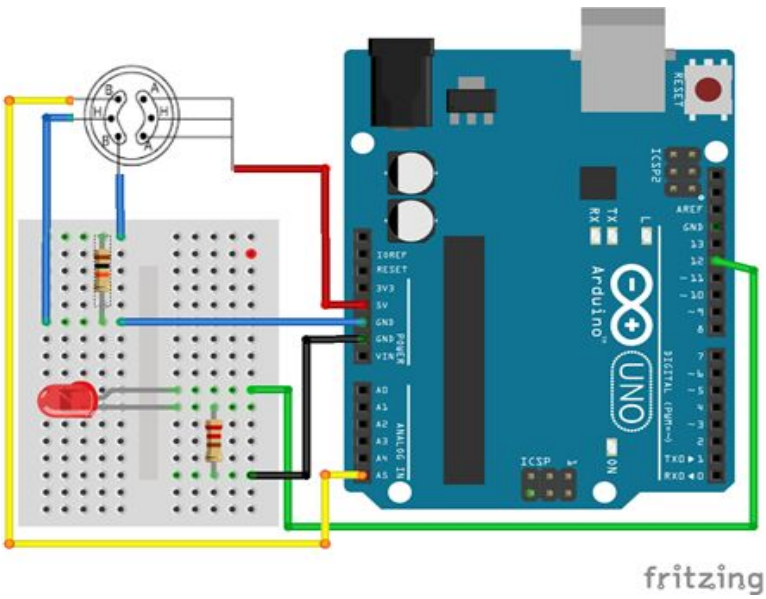
Smoke Sensor Connections:

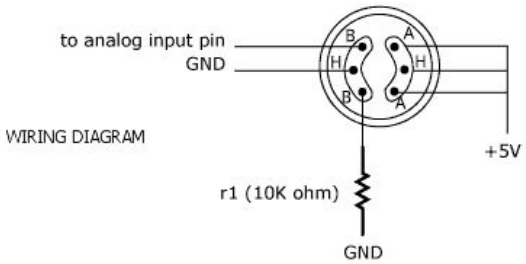
- Pin H of sensor to **5V**
- Second pin H of sensor to a **GND**
- Pin A of sensor to **5V**
- Pin B to 10 Kohm resistor
- Other end of 10K resistor to **GND**

LED Connections:

- **Cathode (shorter leg)** to **GND**
- **Anode (longer leg)** to pin **12** of Arduino.

Schematic





Challenge

1. Design a system for mine workers that can warn them for any hazardous gas leakage.
2. Design a model that can open all outlets of a room in case of fire.

Components Required

Component	Part No.	Qty
Arduino UNO	EMX-00001-A	1
Smoke/Gas Sensor	EDT-00001-A to G	1
10K Ohm Resistor	EDR-00001-10K0	1
220 Ohm Resistor	EDR-00001-220Z	1
LED	EDD-00002-A	1

Code

```
#define led 12/*Connect led to pin 12 of Arduino*/
#define smoke A5/*Connect sensor to A5 of Arduino*/
int threshold = 400;/*Setting threshold limit for situations: Smoke/Smoke-free*/
void setup() {
  pinMode(led, OUTPUT);
/*Setting LED for OUTPUT*/
  pinMode(smoke, INPUT);
/*Setting Smoke for INPUT*/
  Serial.begin(9600);/*Setting the baud rate of communication at 9600*/
}
void loop() {
  int value = analogRead(smoke);
/*Reading sensor input*/
  Serial.println(value);/*print the value*/
  if (value > threshold)
/* Checking for threshold*/
  {
    digitalWrite(led, HIGH);
/*if the detected value is greater than threshold, turns ON the led*/
  }
  else
  {
    digitalWrite(led, LOW);
/*if detected value is less than the threshold, turns OFF the led*/
  }
  delay(1000);
}
```