1. DESCRIPTION:

It is a hazardous gas detection apparatus for the family, the environment, suitable for ammonia, aromatic compounds, sulphur, benzene vapour, smoke and other gases harmful gas detection, gas-sensitive element test. Air quality sensor is for detecting a wide range of gases, including NH3, NOx, alcohol, benzene, smoke and CO2. Ideal for use in office or factory with simple drive and monitoring circuit.

2. Reference Source:

/* Testing MQ-135 GAS sensor with serial monitor

Suitable for detecting of Ammonia, Aromatic compounds, Sulphur, Benzene vapour and Smoke*/

```
const int gasPin = A0; //GAS sensor output pin to Arduino analog A0 pin

void setup()
{
    Serial.begin(9600); //Initialize serial port - 9600 bps
}

void loop()
{
    Serial.println(analogRead(gasPin));
    delay(1000); // Print value every 1 sec.
}
```

TECHNICAL DATA   MQ-135 GAS SENSOR

FEATURES

Wide detecting scope   Fast response and High sensitivity

Stable and long life   Simple drive circuit

APPLICATION

They are used in air quality control equipments for buildings/offices, are suitable for detecting of NH3,NOx, alcohol, Benzene, smoke,CO_2 ,etc.

SPECIFICATIONS

A. Standard work condition

Symbol	Parameter name	Technical condition	Remarks
Vc	Circuit voltage	5V±0.1	AC OR DC
V_H	Heating voltage	5V±0.1	ACOR DC
R_L	Load resistance	can adjust	
R_H	Heater resistance	33Ω±5%	Room Tem
P_H	Heating consumption	less than 800mw	

B. Environment condition

Symbol	Parameter name	Technical condition	Remarks
Tao	Using Tem	-10 -45	
Tas	Storage Tem	-20 -70	
R_H	Related humidity	less than 95%Rh	
O_2	Oxygen concentration	21%(standard condition)Oxygen concentration can affect sensitivity	minimum value is over 2%

C. Sensitivity characteristic

Symbol	Parameter name	Technical parameter	Ramark 2
Rs	Sensing Resistance	30KΩ-200KΩ (100ppm NH_3)	Detecting concentration scope 10ppm-300ppm NH_3
α (200/50) NH_3	Concentration Slope rate	≤0.65	10ppm-1000ppm Benzene 10ppm-300ppm Alcohol
Standard Detecting Condition	Temp: 20 ±2 Vc:5V±0.1 Humidity: 65%±5% Vh: 5V±0.1		
Preheat time	Over 24 hour		

D. Structure and configuration, basic measuring circuit

	Parts	Materials
1	Gas sensing layer	SnO_2
2	Electrode	Au
3	Electrode line	Pt
4	Heater coil	Ni-Cr alloy
5	Tubular ceramic	Al_2O_3
6	Anti-explosion network	Stainless steel gauze (SUS316 100-mesh)
7	Clamp ring	Copper plating Ni
8	Resin base	Bakelite
9	Tube Pin	Copper plating Ni

Fig. 1

Fig.2

Configuration A
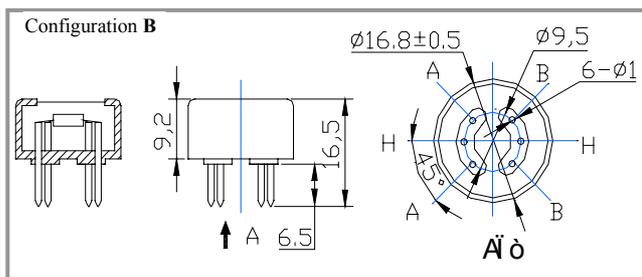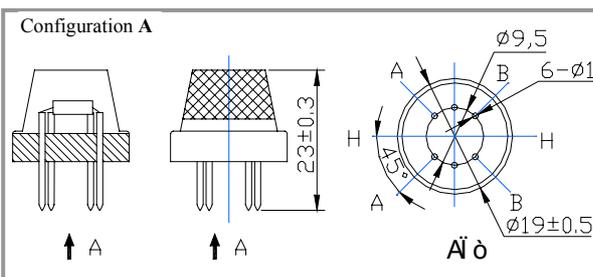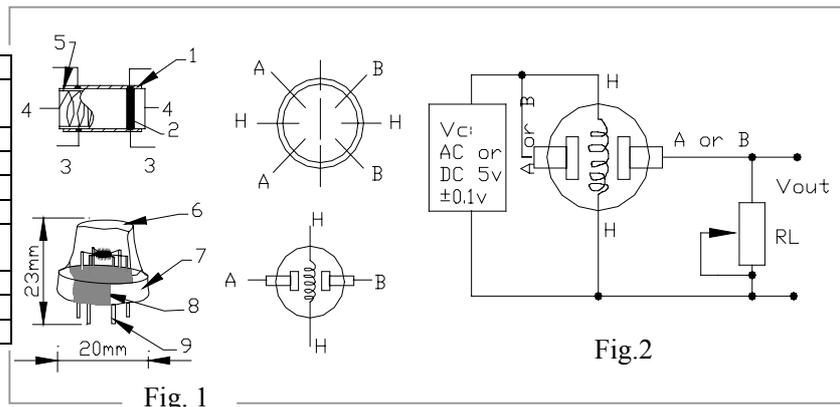
Configuration B

Structure and configuration of MQ-135 gas sensor is shown as Fig. 1 (Configuration **A or B),** sensor composed by micro AL2O3 ceramic tube, Tin Dioxide (SnO2) sensitive layer, measuring electrode and heater are fixed into a crust   made by plastic and stainless steel net. The heater provides necessary work conditions for work of sensitive

components. The enveloped MQ-135 have 6 pin ,4 of them are used to fetch signals, and other 2 are used for providing heating current.

Electric parameter measurement circuit is shown as Fig.2

E. Sensitivity characteristic curve

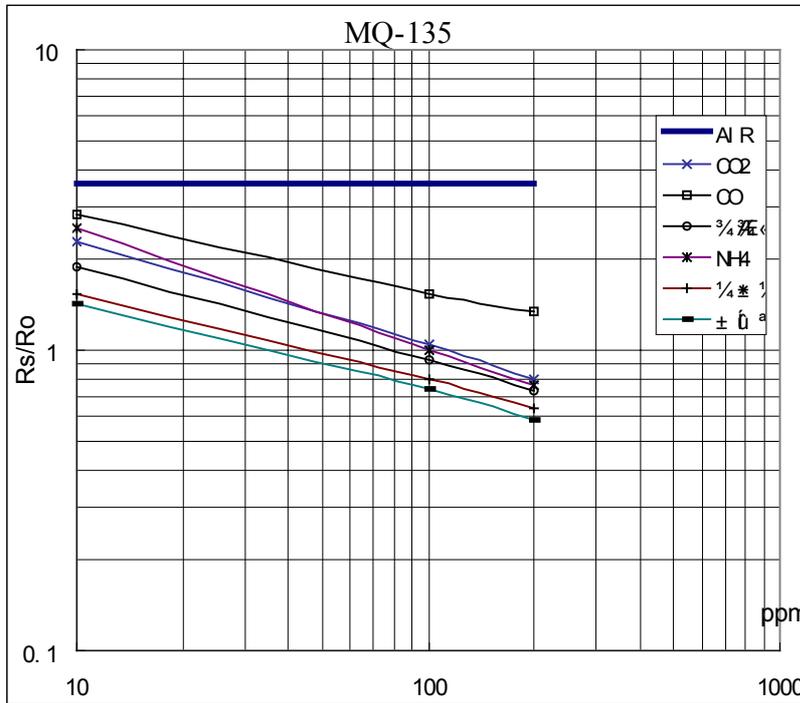Fig.2 sensitivity characteristics of the MQ-135

Fig.3 is shows the typical sensitivity characteristics of the MQ-135 for several gases.
  in their: Temp: 20
  Humidity: 65%
  O_2 concentration 21%
  RL=20kΩ
Ro: sensor resistance at 100ppm of NH_3 in the clean air.
Rs: sensor resistance at various concentrations of gases.
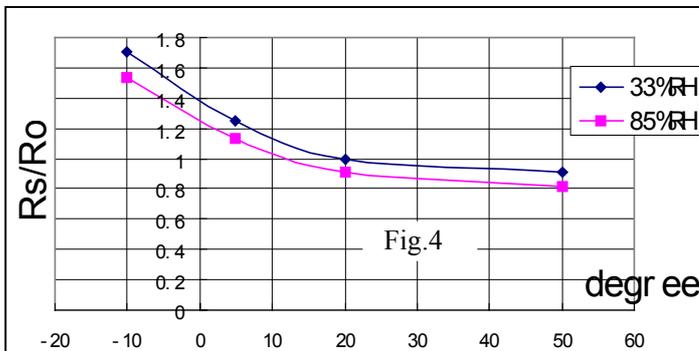

Fig.4 is shows the typical dependence of the MQ-135 on temperature and humidity.
Ro: sensor resistance at 100ppm of NH_3 in air at 33%RH and 20 degree.
Rs: sensor resistance at 100ppm of NH_3 at different temperatures and humidities.

SENSITVITY ADJUSTMENT

Resistance value of MQ-135 is difference to various kinds and various concentration gases. So,When using this components, sensitivity adjustment is very necessary. we recommend that you calibrate the detector for 100ppm NH_3 or 50ppm Alcohol concentration in air and use value of Load resistancethat(R_L) about 20 KΩ(10KΩ to 47 KΩ).

When accurately measuring, the proper alarm point for the gas detector should be determined after considering the temperature and humidity influence.