# 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
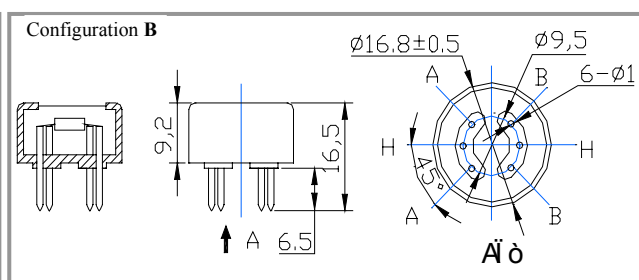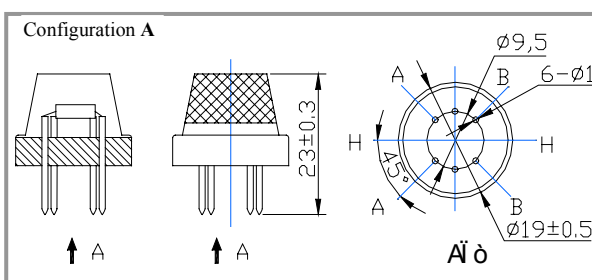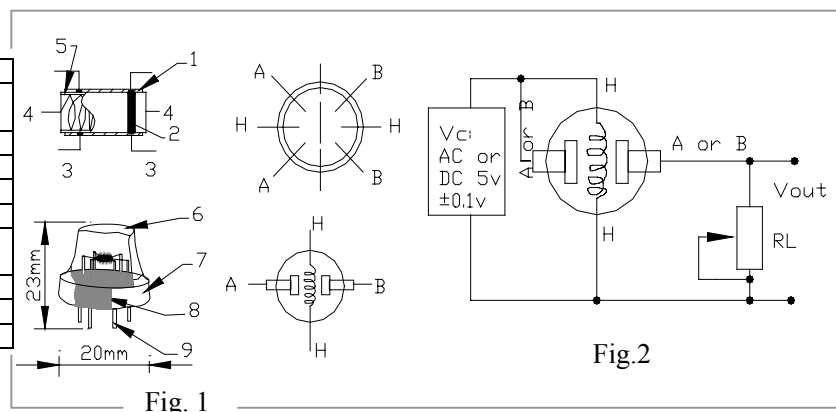


Configuration B

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
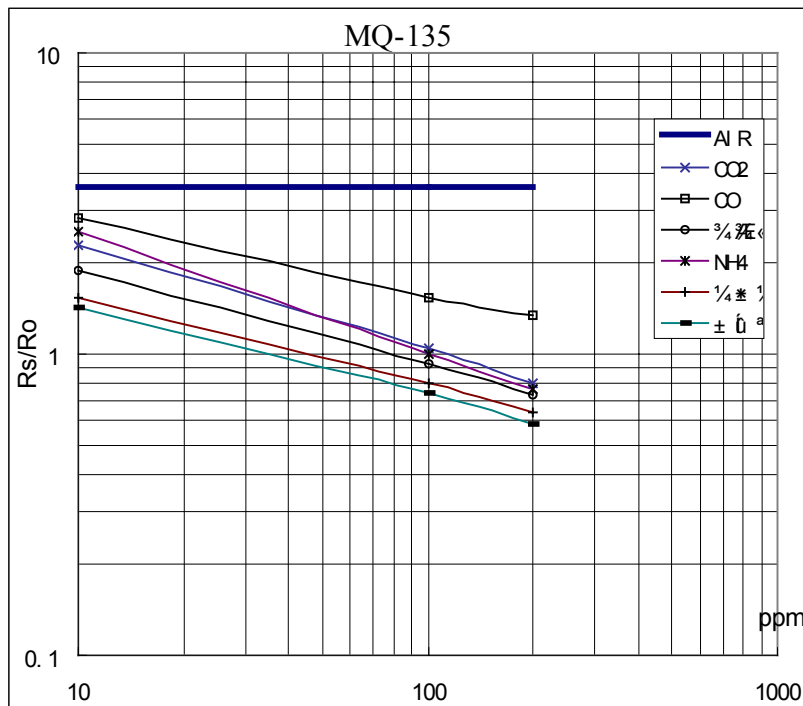
Fig.2 sensitivity characteristics of the MQ-135



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.
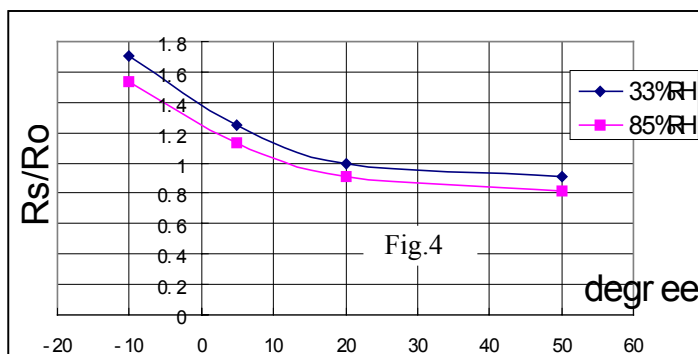


Fig.4 is shows the typical dependence of the MQ-135 on temperature and humidity.
Ro: sensor resistance at 100ppm of $NH_3$ in air at 33%RH and 20 degree.
Rs: sensor resistance at 100ppm of $NH_3$ at different temperatures and humidities.

## 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.