

# TECHNICAL DATA

## FEATURES

- \* High selectivity
- \* High sensitivity to CH<sub>4</sub>
- \* Small size for appearance
- \* 5V voltage, low power consumption
- \* Fast response and resume character
- \* Excellent Stable and long life

# MP-4 Flat Surfaced GAS SENSOR



## APPLICATION

- \* They are used in gas leakage detecting equipments in family, industry and commercial field , fire resistance/ safety detection system.
- \* Flammable gas leakage alarm and detector

## SENSITIVITY CHARACTERISTICS:

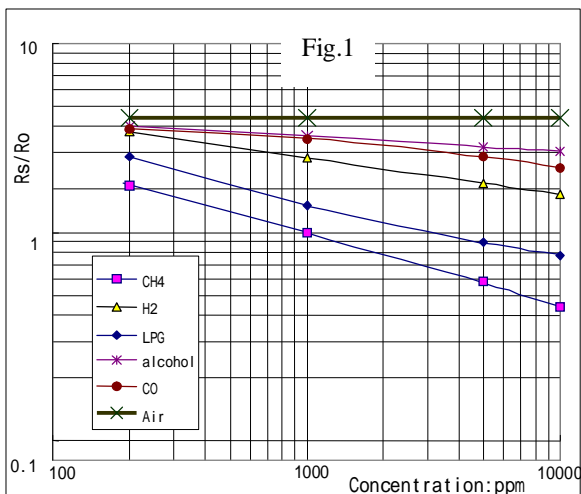


Fig.1 is the typical curve for sensor sensitivity characteristics. The horizontal ordinate is gas concentration, the vertical is gas resistance ratio. (Rs/Ro)

R<sub>o</sub>: sensor resistance at 1000ppm of CH<sub>4</sub> in the clean air.

R<sub>s</sub>: sensor resistance at various concentrations of gases.

## TEMPERATURE/HUMIDITY Character:

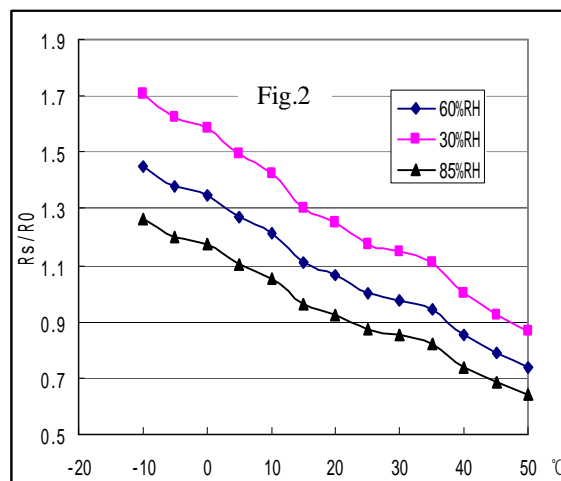


Fig.2 shows the typical dependence of the MP-4 on temperature and humidity. The horizontal ordinate is test temperature, the vertical is gas resistance ratio. (Rs/Ro).

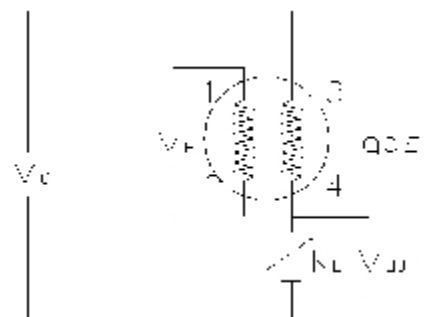
R<sub>s</sub>: sensor resistance at 1000ppm of CH<sub>4</sub> in air at different temperatures and humidities

R<sub>o</sub>: sensor resistance at 1000ppm of CH<sub>4</sub>. at 20°C / 65%RH

## BASIC MEASURING CIRCUIT

Fig.3 shows the basic measuring circuit of sensor. Two voltage should be applied to this sensor, heating voltage (V<sub>H</sub>) and circuit voltage (V<sub>c</sub>). V<sub>H</sub> is used for supplying a certain temperature and V<sub>c</sub> is used for testing the voltage (V<sub>RL</sub>) of load resistance (R<sub>L</sub>) that connect to the sensor in series. Due to the tight polarity of sensor, V<sub>c</sub> should

be used in DC. Also, V<sub>c</sub> and V<sub>H</sub> could share one power supply circuit if it can meet the electronic characteristic of sensor. In order to make better use of sensor, a proper R<sub>L</sub> is very important.



**SPECIFICATIONS:**

**A. Standard work condition**

Symbol	Parameter name	Technical condition	Remarks
V <sub>c</sub>	Circuit voltage	≤24V	DC
V <sub>H</sub>	Heating voltage	5.0V±0.2V	AC or DC
R <sub>L</sub>	Load resistance	adjustable	
R <sub>H</sub>	Heater resistance	80Ω±10Ω	Room Tem.
P <sub>H</sub>	Heating consumption	≤300mW	

**B. Environment condition**

Symbol	Parameter name	Technical condition	Remark
T <sub>ao</sub>	Using Temperature	-10°C – +50°C	
T <sub>as</sub>	Storage Temperature	-20°C – +70°C	
R <sub>H</sub>	Related humidity	less than 95%Rh	
O <sub>2</sub>	Oxygen concentration	21% (standard condition) Oxygen concentration can affect sensitivity	minimum value >2%

**C. Sensitivity characteristic**

Symbol	Parameter name	Technical parameter	Ramark
R <sub>s</sub>	Sensing Resistance	2K Ω -20K Ω (5000ppm CH <sub>4</sub> )	Detecting concentration scope: 300-10000ppm CH <sub>4</sub> , natural gas
α (R <sub>5000ppm</sub> / R <sub>3000ppm</sub> CH <sub>4</sub> )	Concentration slope rate	≤0.6	
Standard working condition	V <sub>c</sub> :5.0V±0.2V    V <sub>H</sub> : 5.0V±0.2V Temp: 20°C±2°C    Humidity: 65%±5%		
Preheat time	Over 48 hour		

Formula of sensitivity power consumption:  $P_s = V_c^2 \times R_s / (R_s + R_L)^2$

Formula of sensor resistance:  $R_s = (V_c / V_{RL} - 1) \times R_L$

**D. Structure and configuration**

Structure and configuration of MP-4 gas sensor is shown as Fig. 4, sensor composed by micro AL<sub>2</sub>O<sub>3</sub> ceramic tube, Tin Dioxide (SnO<sub>2</sub>), sensitive layer, measuring electrode and heater are fixed into a crust made by metal net. The heater provides necessary work conditions for sensitive components. The enveloped MP-4 have 4pins ,2 of them (3#, 4#) are used to fetch signals, and other 2 (1#, 2#) are used for providing heating current.

