TECHNICAL DATA MP-5 Flat Surfaced GAS SENSOR

MP-5 model with advanced planar construction is comprised of heater and metal oxide semiconductor material of subminiature Al2O3 ceramic plate, fetch out electrode down-lead, encapsulation in metal base and cap. When the target gas exist , The sensor's conductivity is more higher along with the gas concentration rising. Please use simple electrocircuit, Convert change of conductivity to correspond output signal of gas concentration.

Feature

* High selectivity
* High sensitivity to CH_4 and C_3H_8
* Small size for appearance
* 5V voltage, low power consumption
* Fast response and resume character
* Excellent Stable and long life

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:

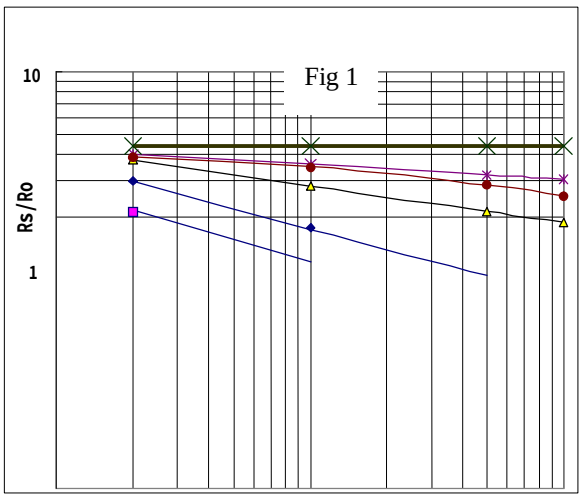


Fig.1 is the typical curve for sensor sensitivity characteristics. The horizontal ordinate is gas concentration,the vertical is gas resistance ratio.(Rs/Ro)

Ro: sensor resistance at 1000ppm of CH4 in the clean air.

Rs:sensor resistance at various concentrations of gases.

TEMPERATURE/HUMIDITY Character

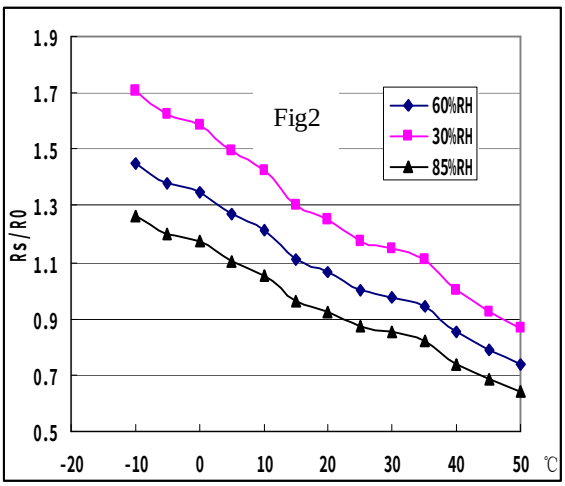


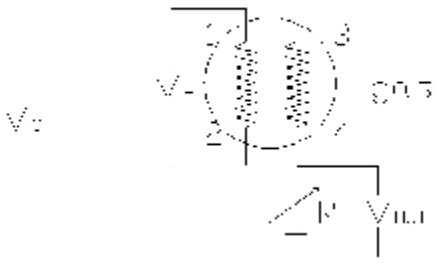
Fig.2 shows the typical dependence of the MP-4 on temperature and humidity. The horizontal ordinate is test tempetature, the vertical is gas resistance ratio. (Rs/Ro).

Rs: sensor resistance at 1000ppm of CH4 in air at different temperatures and humidities

Ro: sensor resistance at 1000ppm of CH4.at 20℃/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_H) and circuit voltage(Vc). V_H is used for suppling a certain temperature and Vc is used for testing the voltage(V_{RL}) of load resistance(R_L) that connect to the sensor in series. Due to the tight polarity of sensor, Vc should be used in DC. Also,Vc and V_H 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_L is very important.

SPECIFICATIONS：

A. Standard work condition

Symbol	Parameter name	Technical condition	Remarks
Vc	Circuit voltage	≤24V	DC
V_H	Heating voltage	5.0V±0.2V	AC or DC
R_L	Load resistance	adjustable	
R_H	Heater resistance	80Ω±10Ω	Room Tem.
P_H	Heating consumption	≤300mW	

B. Environment condition

Symbol	Parameter name	Technical condition	Remark
Tao	Using Temperature	-10℃－＋50℃	
Tas	Storage Temperature	-20℃－＋70℃	
R_H	Related humidity	less than 95%Rh	
O_2	Oxygen concentration	21%(standard condition)Oxygen concentration can affect sensitivity	minimum value >2%

C. Sensitivity characteristic

Symbol	Parameter name	Technical parameter	Ramark
Rs	Sensing Resistance	2KΩ-20KΩ (5000ppm CH_4)	Detecting concentration scope：300-10000ppm CH_4 , natural gas
α($R_{5000ppm}$/ $R_{3000ppm}$ CH_4)	Concentration slope rate	≤0.6	
Standard working condition	Vc:5.0V±0.2V V_H: 5.0V±0.2V Temp： 20℃±2℃ Humidity： 65%±5%		
Preheat time	Over 48 hour		

Formula of sensitivity power consumption： $Ps=Vc^2\times Rs/(Rs+R_L)^2$

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

D. Structure and configuration

Structure and configuration of MP-5 gas sensor is shown as Fig. 4, sensor composed by micro AL2O3 ceramic tube, Tin Dioxide (SnO2), sensitive layer, measuring electrode and heater are fixed into a crust made by metal net. The heater provides necessary work conditions for sensitive components. Enveloped MP-4 have 4pins, 2 of them（3#、4#）are used to fetch signals, other 2 （1#、2#）are used for providing heating