HS-131 Nature gas sensor specification

1. Characteristics

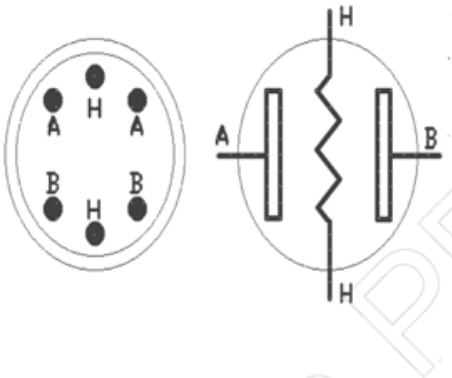
1. 1 High sensitive and good selectivity to fume and alcohol.
1. 2 Long life and reliable stability.

2. Application

2.1 Gas leakage detecting in family and industry
2.2 Suitable for detecting of methane、equipments、isobutane、propane.

3. Structure of components.

3.1 Structure of HS-131 shown as Fig. 1.



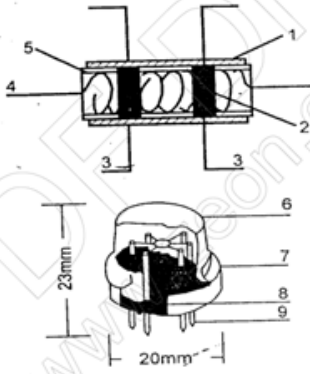


Fig.1

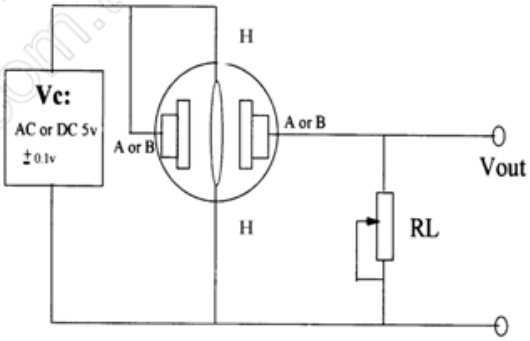


Fig:2

Items	Descriptions	Materials
1	gas sensing layer	SnO2
2	measurement electrode	Au
3	measurement electrode ignited line	Pt
4	heater	Ni-Cr alloy
5	tubular ceramic basic body	Al2 O3
6	anti-explosion network	100 dual layer stainless steel
7	clamp ring	Ni plated
8	basic seat	Bakelite
9	tube foot	Ni plated

3.2 HS-131 have 6 pins, 4 of them are used to detect signals, and other 2 are used for providing heating current.
**Measurement circuit is shown as (Fig.2)

4. Property

4.1 Standard operating condition

Symbol	Descriptions	Rated	remarks
Vc	circuit voltage	5V	AC OR DC
VH	Heating voltage	5V	ACOR DC
PL	load resistance	can be adjustable	Ps <25mW
RH	Heater resistance	33Ω ±5%	At 21 ℃
PH	Heating consumption	less than 800mw	

4.2 Environment condition

Symbol	Descriptions	Rated	Remarks
Tao	Using Tem	-20℃-50℃	
Tas	Storage Tem	-20℃-70℃	
RH	Related humidity	less than 95%Rh	
O2	Oxygen concentration	21%(standard condition) Oxygen concentration can affect sensitivity	Minimum value is over 2%

4.3 Sensitivity characteristic

Symbol	Descriptions	Rated	Remark 1	Remark 2
Rs	sensing body resistance	2kΩ-20kΩ (5000ppm methane)		Detecting concentration scope
α (5000/1000) isobutane	concentration slope rate	≤0.6		1000ppm-20000ppm methane
standard detecting condition	Temp: 20℃±2℃ Vc:5V±0.1 Humidity: 65%±5% Vh: 5V±0.1			
preheat time	over 24 hour			

4.4 Mechanical characteristic

Project	Condition	property
Vibration	frequency 100cpm	should be conformed to given sensitivity characteristic
	vertical vibrating amplitude	
	time 1 hour	
Punch	acceleration 100G	
	punch times 5	

5. Sensitivity curve of HS-131

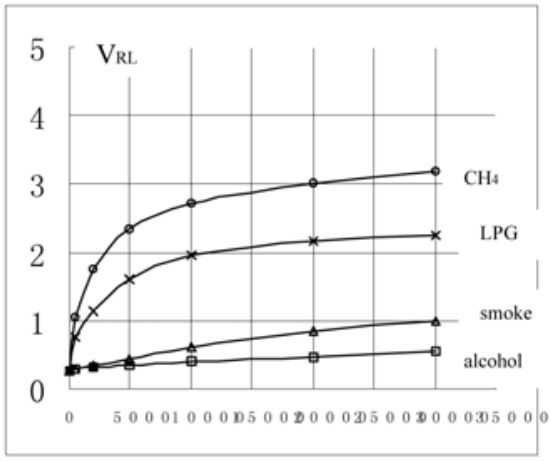


Fig. 3

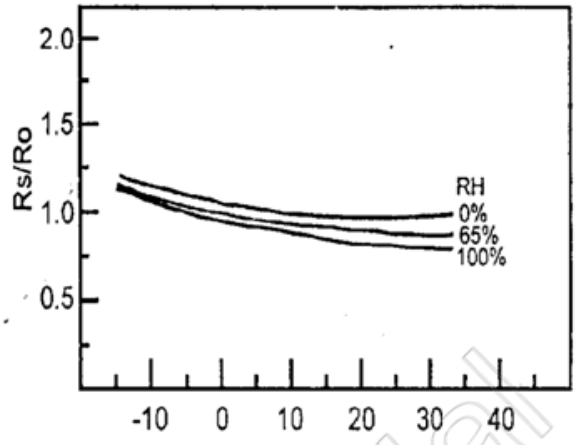


Fig. 4

Fig 3. is relation curve of V_{RL} and gas concentration.
At Temperature: 20℃、 Humidity: 65%、 O_2 concentration: 21%, RL =5kΩ

Fig 4. is relation between surface resistance of HS-131 and environment related humidity.
Test environment : R_o is resistance value at 20℃,0%RH and in the 5000ppm CH4, Rs is resistance value of components in other Temperature and humidity.

6. Sensitivity adjustment

HS-131 resistance value will be cha C ıg with different spices and gas concentrations. Before operating the components, sensitivity adjustment is necessary.
We suggest use 3000-10000ppm methane(CH4) or 300ppm-1000ppm isobutane<i-C_4H_{10} > is standard gas concentration.

Adjustment process:

a. Put HS131 components to application circuits.

b. If use the sensor is Long time storage, suggest the preheating time must over than 24 hours in order to guarantee components property can reach stability completely.

c. In the standard gas concentration, adjustive load resistance RL until getting output signal.

d. Due to environment conditions will cause different sensitivity.
So, please check Fig. 4 drawing to modify the sensitivity character.

7. **Application circuit (include temperature compensation function).**