

# Sencera Co. Ltd. Data Sheet

Tel:02-27046595 Fax:886-2-27041279 Email:justinel@ms14.hinet.ne

## HS-131 Nature gas sensor specification

### 1. Characteristics

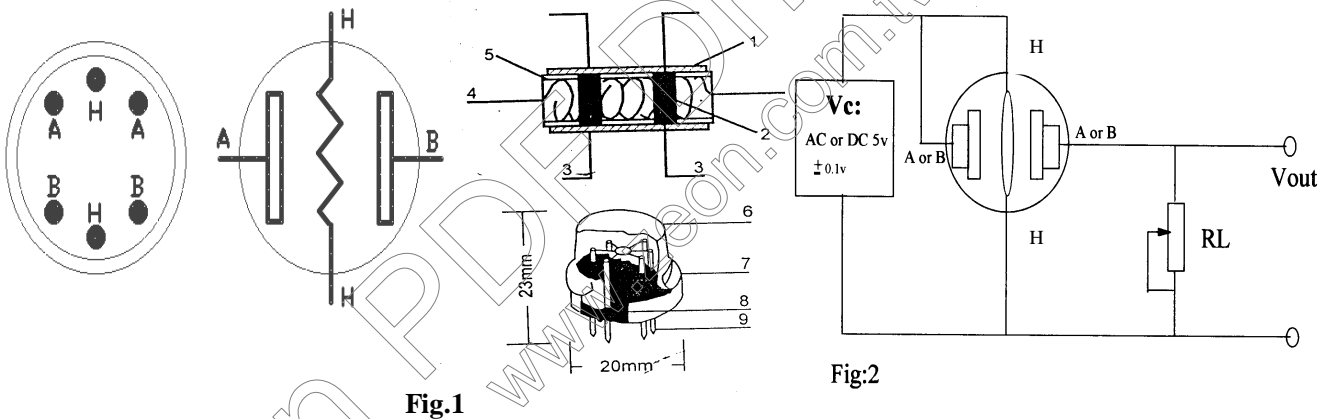
- 1.1 High sensitive and good selectivity to fume and alcohol.
- 1.2 Long life and reliable stability.

### 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.



Items	Descriptions	Materials
1	gas sensing layer	SnO <sub>2</sub>
2	measurement electrode	Au
3	measurement electrode ignited line	Pt
4	heater	Ni-Cr alloy
5	tubular ceramic basic body	Al <sub>2</sub> O <sub>3</sub>
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	33 Ω ±5%	At 21 °C
PH	Heating consumption	less than 800mw	

##### 4.2 Environment condition

Symbol	Descriptions	Rated	Remarks
Tao	Using Tem	-20°C-50°C	
Tas	Storage Tem	-20°C-70°C	
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	2k Ω -20k Ω (5000ppm methane)		Detecting concentration scope
α (5000/1000) isobutane	concentration slope rate	≤ 0.6		1000ppm-20000ppm methane
standard detecting condition	Temp: 20°C ±2°C Humidity: 65%±5%	Vc:5V±0.1 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

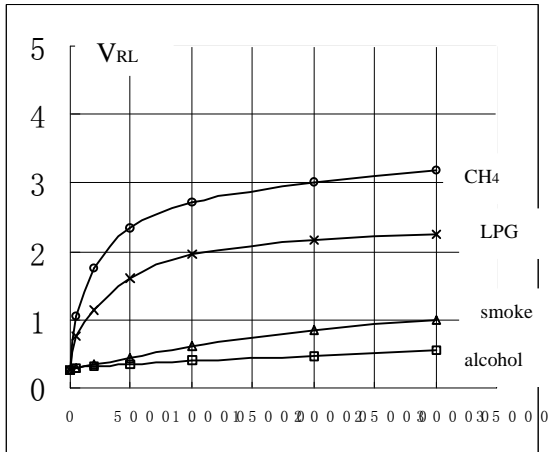


Fig. 3

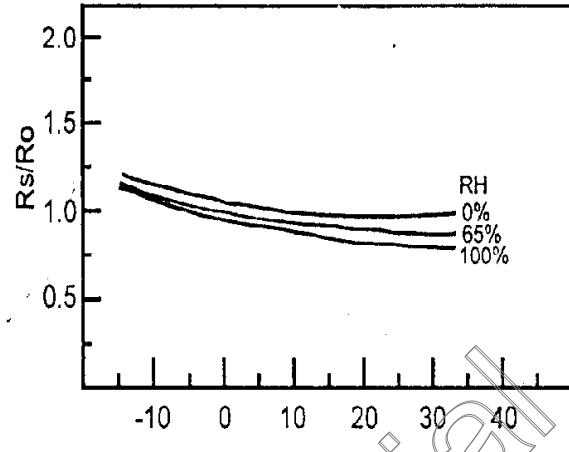


Fig. 4

Fig 3. is relation curve of  $V_{RL}$  and gas concentration.

At Temperature: 20°C、 Humidity: 65%、  $O_2$  concentration: 21%,  $R_L = 5k\Omega$

Fig 4. is relation between surface resistance of HS-131 and environment related humidity.

Test environment :  $R_o$  is resistance value at 20°C, 0%RH and in the 5000ppm  $CH_4$ ,  $R_s$  is resistance value of components in other Temperature and humidity.

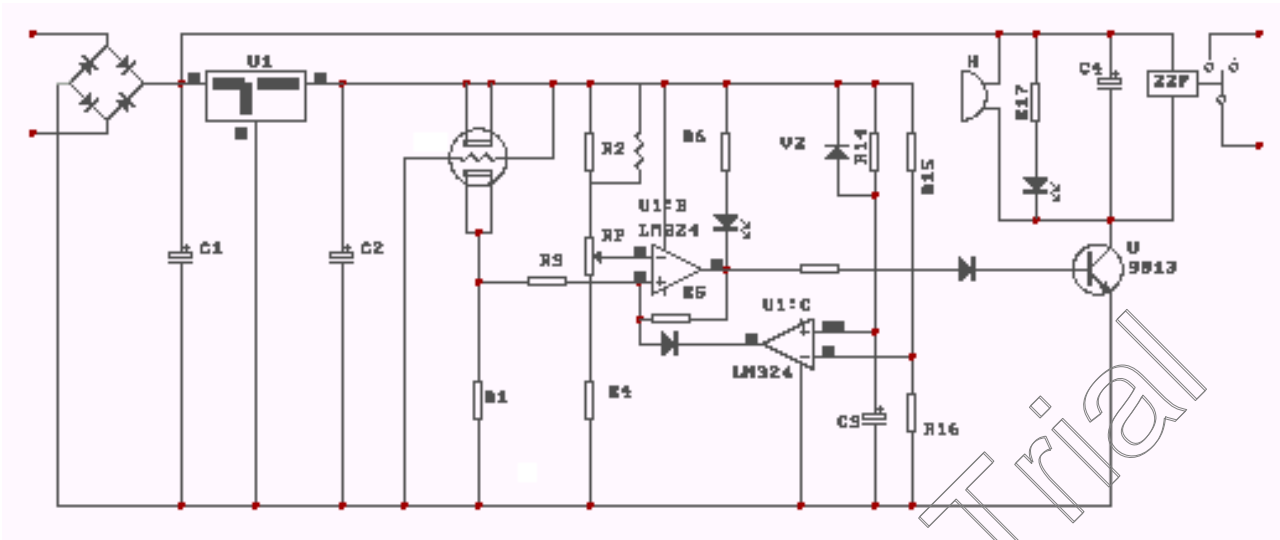
## 6. Sensitivity adjustment

HS-131 resistance value will be change with different spices and gas concentrations. Before operating the components, sensitivity adjustment is necessary. We suggest use 3000-10000ppm methane( $CH_4$ ) or 300ppm-1000ppm isobutane( $i-C_4H_{10}$ ) is standard gas concentration.

Adjustment process:

- Put HS131 components to application circuits.
- 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.
- In the standard gas concentration, adjustive load resistance  $R_L$  until getting output signal.
- 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).



Any questions, please contact:

Sencera Co. Ltd.

Attn:Mr. Justine Lee

Fax:886-2-27041279

Tel:886-2-27046595

<http://welcome.to/sencera>

[justinel@ms14.hinet.net](mailto:justinel@ms14.hinet.net)

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