

# TECHNICAL DATA

# MQ-131 GAS SENSOR

## FEATURES

- Fast response and High sensitivity
- Stable and long life
- Simple drive circuit
- Wide detecting range

## APPLICATION

They are used in air quality control equipments for buildings/offices, are suitable for detecting Of O<sub>3</sub>.

## SPECIFICATIONS

### A. Standard work condition

| Symbol         | Parameter name      | Technical condition | Remarks  |
|----------------|---------------------|---------------------|----------|
| V <sub>c</sub> | Circuit voltage     | 5V±0.1              | AC OR DC |
| V <sub>H</sub> | Heating voltage     | 6V±0.1              | AC OR DC |
| R <sub>L</sub> | Load resistance     | Variable            |          |
| R <sub>H</sub> | Heater resistance   | 31 ± 5%             | Room Tem |
| P <sub>H</sub> | Heating consumption | Less than 1100mw    |          |

### B. Environment condition

| Symbol          | Parameter name   | Technical condition | Remarks |
|-----------------|------------------|---------------------|---------|
| T <sub>ao</sub> | Using Tem        | -10 -50             |         |
| T <sub>as</sub> | Storage Tem      | -20 -70             |         |
| R <sub>H</sub>  | Related humidity | Less than 95%RH     |         |

### C. Sensitivity characteristic

| Symbol                           | Parameter name                    | Technical parameter                               | Remark 2   |
|----------------------------------|-----------------------------------|---|--|
| R <sub>s</sub>                   | Sensing Resistance                | 100K -200K<br>(50ppb O <sub>3</sub> )             | Detecting concentration scope :<br>10ppb-2ppm O <sub>3</sub> |
| O <sub>3</sub><br>(100ppb/50ppb) | Concentration Slope rate          | 0.65  |  |
| Standard Detecting Condition     | Temp: 20 ± 2<br>Humidity: 65%± 5% | V <sub>c</sub> :5V±0.1<br>V <sub>h</sub> : 6V±0.1 |  |
| Preheat time                     | Over 24 hour                      |   |  |

### D. Structure and configuration, basic measuring circuit

|   | Parts                  | Materials                               |
|---|------------------------|---|
| 1 | Gas sensing layer      | SnO <sub>2</sub>                        |
| 2 | Electrode              | Au                                      |
| 3 | Electrode line         | Pt                                      |
| 4 | Heater coil            | Ni-Cr alloy                             |
| 5 | Tubular ceramic        | Al <sub>2</sub> O <sub>3</sub>          |
| 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                       |

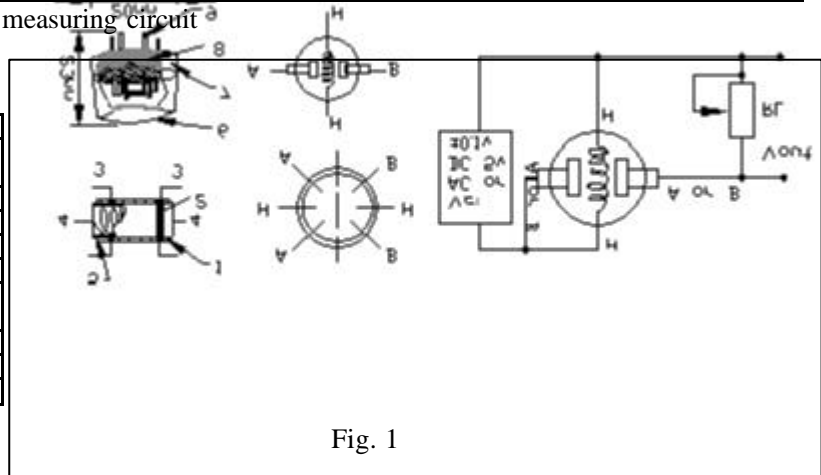
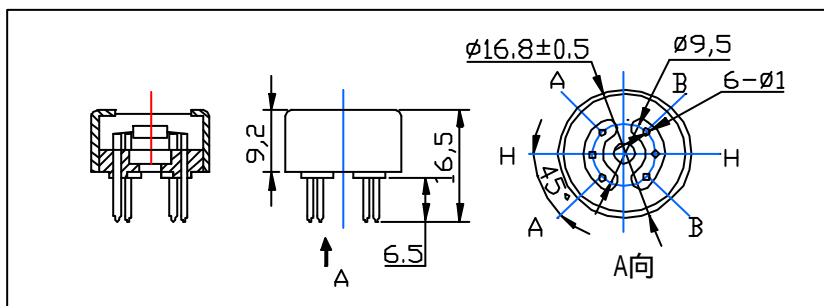


Fig. 1



Structure and configuration of MQ-131 gas sensor is shown as Fig.1, sensor composed by micro  $Al_2O_3$  ceramic tube, Metal-oxide semiconductor sensitive layer, measuring electrode and heater are fixed into a crust made by nylon and stainless steel net. The heater provides necessary work conditions for work of sensitive components. The enveloped MQ-131 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 above Fig.1.

E. Sensitivity characteristic curve

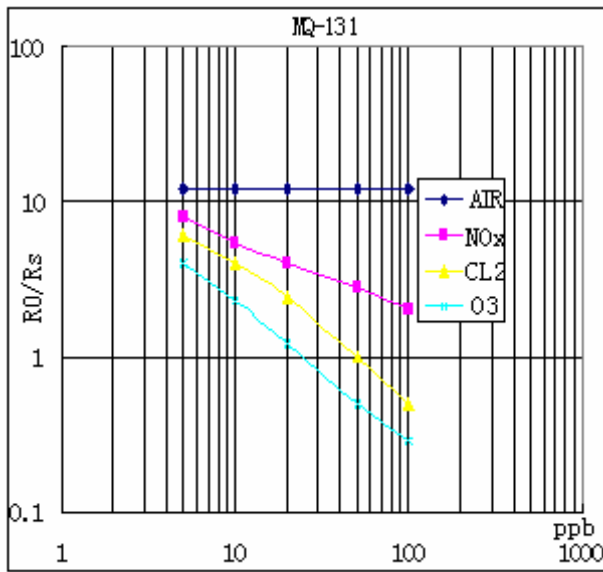


Fig.3 shows the typical sensitivity characteristics of the MQ-131 for several gases.

in their: Temp: 20 °C  
 Humidity: 65%  
 $O_2$  concentration 21%  
 $R_L=20k$

$R_0$ : sensor resistance in the clean air.  
 $R_s$ : sensor resistance at various concentrations of gases.

Fig.3 sensitivity characteristics of the MQ-131

APPLICATION

Concentration gases. When using this components, sensitivity adjustment is very necessary. we recommend that you calibrate the detector for 50ppb  $O_3$  in air and use value of Load resistance that ( $R_L$ ) about 100 K (50K to 200 K ). When accurately measuring, the proper alarm point for the gas detector should be determined after considering the temperature and humidity influence.

Noting: there are a round hole in the up and down side of the sensors, this design enable the sensor inner gas to exchange better with outside air, and the sensor shall has higher sensitivity, quicker response and resume time with a fan .

REFERENCE APPLICATION CIRCUIT:

