Winsen MC106B Catalytic Flammable Gas Sensor User Manual

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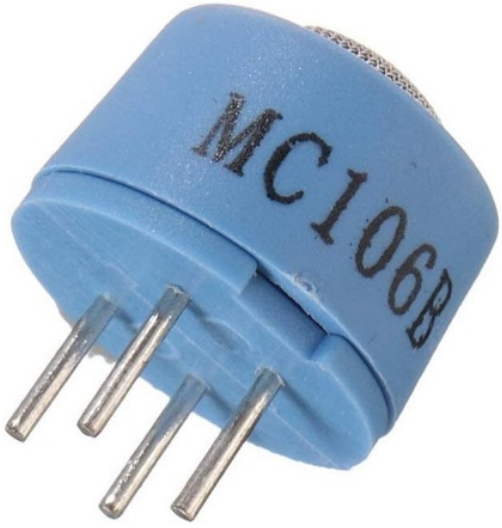

Statement

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The specifics such as color, appearance, sizes …etc please in kind We are devoting ourselves to product development and technical innovation, so we reserve the right to improve the products without notice. Please confirm it is the valid version before using this manual. At the same time, users' comments on the optimized using way are welcome. Please keep the manual properly, to get help if you have questions during the usage in the future.

Product

MC106B adopts the catalytic combustion principle, and its two arms of electric bridge consist of a test element and a compensating element.

The resistance of the test element rises once it meets the combustible gases, at the same time, the output voltage of the bridge changes and the voltage variation rises in direct proportion to the gas concentration. The compensating element, as a conference, has the function of compensating temperature and humidity.

Features

Bridge output voltage in linear Fast response Good repeatability and selectivity Resist H Spoisoning & organosilicon.

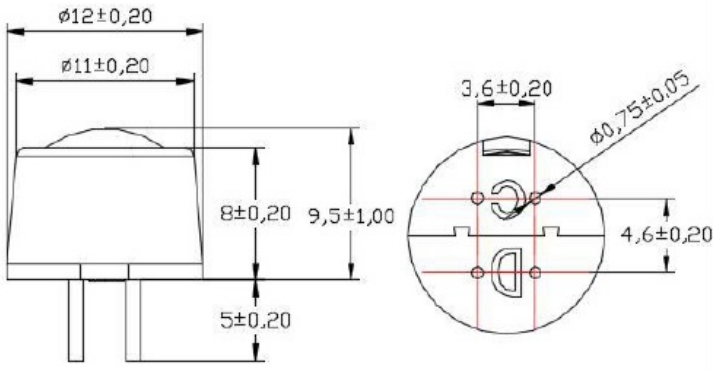

Fig1. Sensor Structure

Main Applications

It is widely used in nonindustrial occasions to detect the concentration of natural gas, LPG, coal gas, and alkanes. It is also used in combustible gas leakage alarm systems, combustible gas detectors gas concentration meters, and so on.

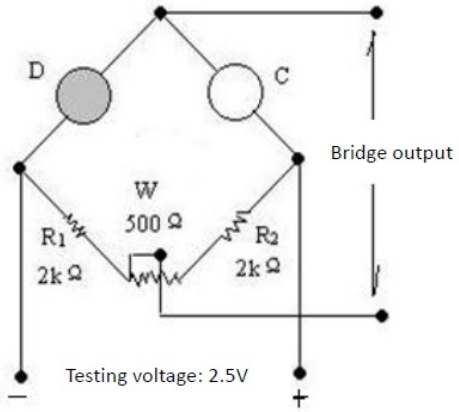

Fig2. Basic Test Circuit

Parameters

Model		MC106B
Sensor Type		Catalytic Type
Standard Encapsulation		Plastic
Working voltage(V)		2.5±0.1
Working current(mA)		150±10
Sensitivity (mV)	1% CH4	15 45
	1% C3H8	25 65
Linearity		≤5%
Measuring range(%LEL)		0 100
Response Time (90%)		≤10s
Recovery Time (90%)		≤30s
Working Environment		-40 +70℃ <95%RH
Storage Environment		-25 +70℃ <95%RH
Lifespan		5 years

- Sensitivity and Response Feature

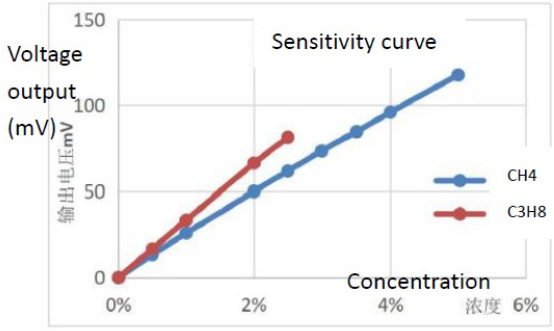

Fig3. Sensitivity Curve

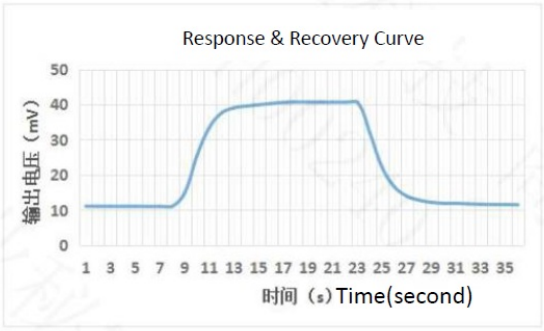

Fig4. Response and recovery

- Changing the output signal at different temperature

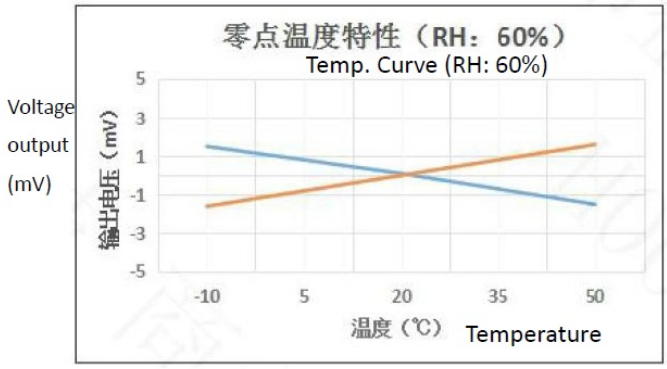

Fig5.Zero point at different temp.

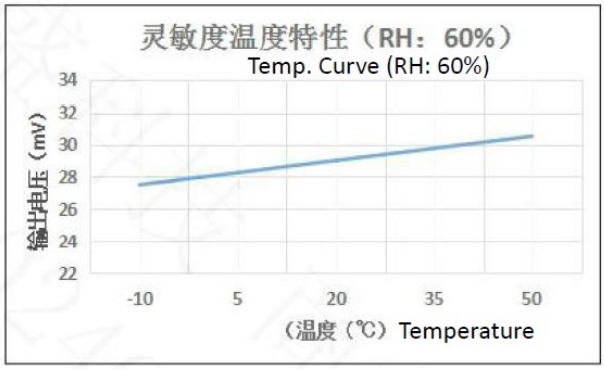

Fig6. Sensitivity at different temp.

- Changing the output signal at different humidity

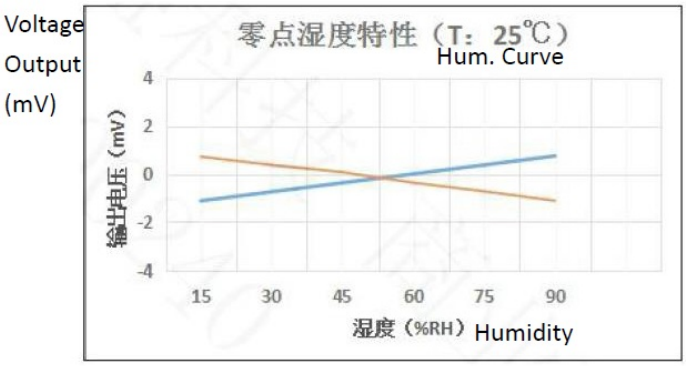

Fig7.Zero point at different humidity

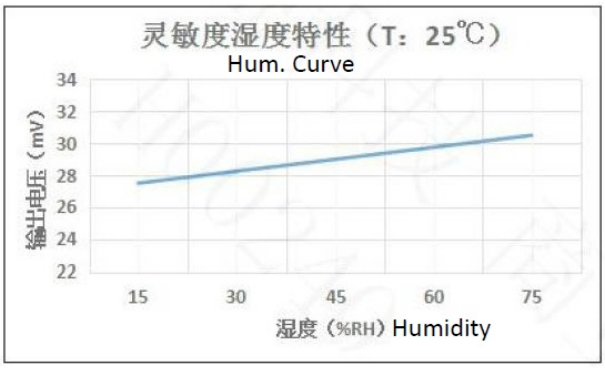

Fig8. Sensitivity at different humidity

- Changing the output signal with different voltage supplying

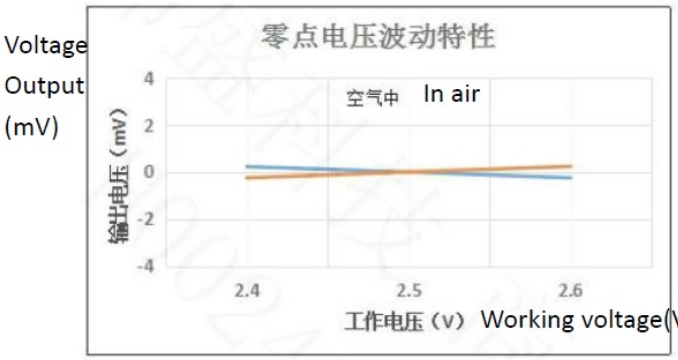

Fig9.Zero Drift with different voltage

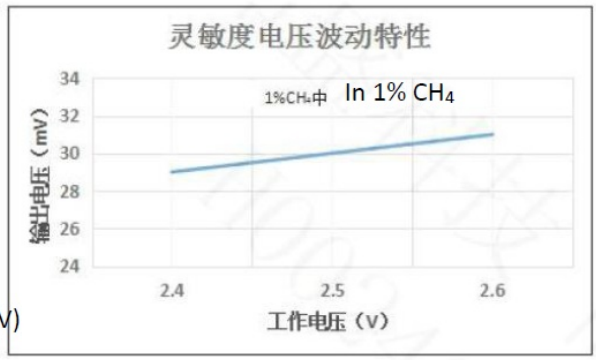

Fig10.Sensitivity with different voltage

Long term Stability

The drift in the air per year is within ±2mV, and in 1%CH 4 is within ±2mV. For a short period of storage (in 2 weeks), the sensor needs to be galvanized continuously for 8 hours to reach stability. For long-period storage (one year), it needs 48 hours.

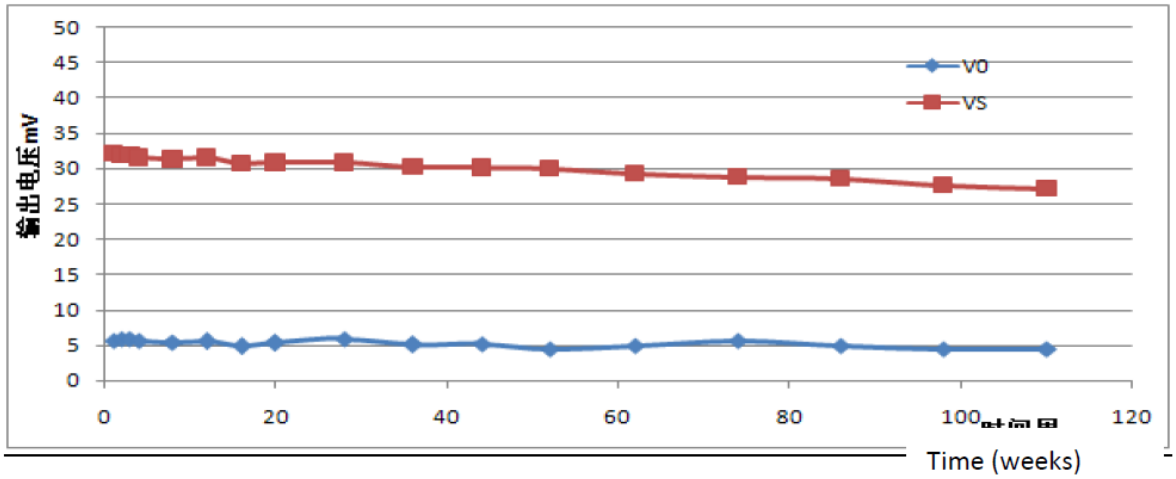

Fig11. Zero and Sensitivity stability curve

Cautions
The following conditions must be prohibited

Exposed to organic silicon steam
Sensing material will lose sensitivity and never recover if the sensor absorbs organic silicon steam. Sensors must avoid exposure to silicon bonds, fixtures, silicon latex, putty, or plastic-containing silicon environments.

High Corrosive gas
If the sensors are exposed to high-concentration corrosive gas (such as H2 S, SO X, Cl 2, HCl, etc.), it will not only result in corrosion of the sensor's structure, but also it cause sincere sensitivity attenuation.

Alkali, Alkali metals salt, halogen pollution
The sensor's performance will be changed badly if sensors are sprayed polluted by alkali metals salt, especially brine, or are exposed to halogen such as fluorine.

Touch water
The sensitivity of the sensors will be reduced when spattered or dipped in water.

Freezing
Do avoid icing on the sensor's surface, otherwise sensing material will be broken and lose sensitivity.

Applied higher voltage

The applied voltage on the sensor should not be higher than the stipulated value, even if the sensor is not physically damaged or broken, it causes downline or heater damage and causes the sensor's sensitivity characteristic to change badly.

Pins connection
When the sensor is connected to the circuit, one of the detection part pins and one of the compensation part pins connect as the signal output. The other pin of the detection part connects to the negative electrode, while the other pin of the compensation part connects to the positive electrode. The part with a D mark on the sensor bottom is the detection one, and the other part with a C mark is the compensation one.

The following conditions must be avoided
Water Condensation Indoor conditions, slight water condensation will influence sensors' performance lightly. However, if water condensation on the sensor surface keeps for a certain period, the sensor's sensitivity will be decreased.

Used in high gas concentration

Whether the sensor is electrified or not, if it is placed in high gas concentration for a long time, sensor characteristics will be affected. If lighter gas sprays the sensor, it will cause extreme damage.

Long time storage

The sensor's resistance will drift reversibly if it's stored for a long time without electricity, this drift is related to storage conditions. Sensors should be stored in airproof bags without volatile silicon compounds. For the sensors with long-term storage but no electricity, they need long galvanic aging time for stability before use. The suggested aging time is 24 hours at least if the storage time is more than half a year.

Long time exposed to adverse environment
Whether the sensors are electrified or not, if exposed to adverse environments for a long time, such as high humidity, high temperature, high pollution, etc., it will influence the sensors' performance badly.

Vibration
Continual vibration will result in sensors down lead response and then break. In transportation or assembling lines, a pneumatic screwdriver/ultrasonic welding machine can lead to this vibration.

Concussion
If sensors meet strong concussion, it may lead its lead wire to disconnect.

Usage Conditions
For sensors, handmade welding is the optimal way. The welding conditions are as follows:

- Soldering flux: Rosin soldering flux contains the least chlorine
- Homothermal soldering iron
- Temperature 3 50
- Ti me less than 5 seconds
- If disobey the above terms, sensor performance will get worse.

Documents / Resources

	Winsen MC106B Catalytic Flammable Gas Sensor [pdf] User Manual MC106B Catalytic Flammable Gas Sensor, MC106B, Catalytic Flammable Gas Sensor, Flammable Gas Sensor, Gas Sensor, Sensor

References

- Winsen Gas Sensor_CO2 Sensor_Air Quality Sensor_Dust Sensor_CO Sensor-Winsen Electronics
- Winsen Gas Sensor_CO2 Sensor_Air Quality Sensor_Dust Sensor_CO Sensor-Winsen Electronics
- User Manual