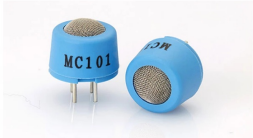



# Winsen MC101B Catalytic Flammable Gas Sensor User Manual



Contents



## Winsen MC101B Catalytic Flammable Gas Sensor

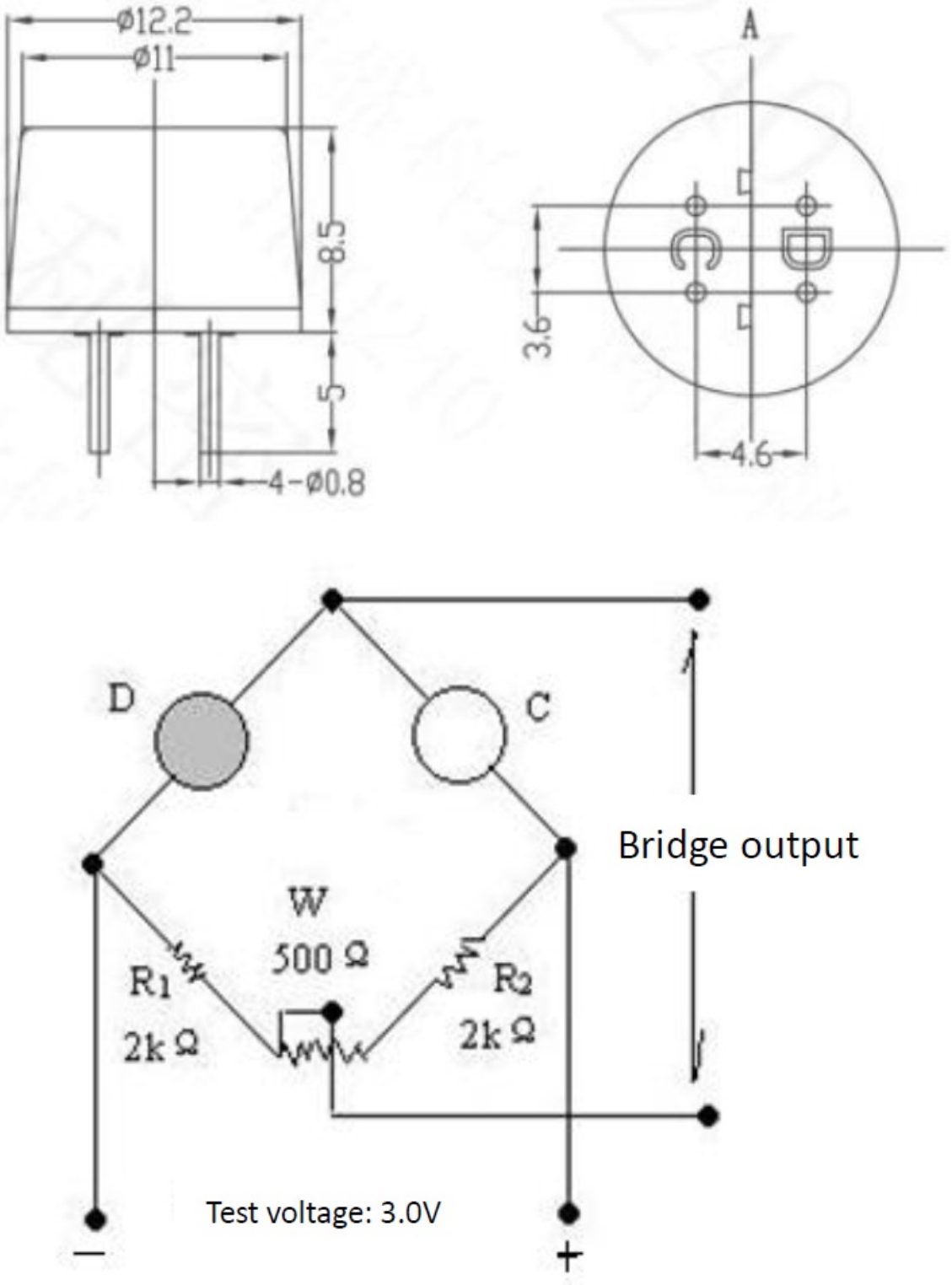

### Statement

 Thanks for purchasing our product. In order to let customers use it better and reduce the faults caused by misuse, please read the manual carefully and operate it correctly in accordance with the instructions. If users disobey the terms or remove, disassemble, change the components inside of the sensor, we shall not be responsible for the loss. The specific such as color, appearance, sizes …etc., please in kind prevail. 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, in order to get help if you have questions during the usage in the future.

## Product


MC101B adopts the catalytic combustion principle, and its two arms of electric bridge consists of a test element and a compensating element. The resistance of the test element rises once it meets the combustible gases, in 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.

**DIMENSION**




**Features**

- Bridge output voltage in linear
- Fast response
- Good repeatability and selectivity
- Resist H2S poisoning & organosilicon.

**Main Applications**

It is used in non-industrial occasion to detect the leakage of concentration of combustible gases such as natural gas, LPG, coal gas and so on.

## Parameters

| | | |
|---|---|---|
| Model | | MC101B |
| Sensor Type | | Catalytic Type |
| Standard Encapsulation | | Plastic |
| Working voltage(V) | | 3.0±0.1 |
| Working current(mA) | | 110±10 |
| Sensitivity (mV) | 1% CH4 | 20 45 |
| | 1% C3H8 | 30 70 |
| Linearity | | ≤5% |
| Measuring range(%LEL) | | 0 100 |
| Response Time (90%) | | ≤10s |
| Recovery Time (90%) | | ≤30s |
| Working Environment | | -40 +70℃ <95%RH |
| Storage Environment | | -20 +70℃ <95%RH |
| Lifespan | | 5 years |

### Sensitivity and Response Feature

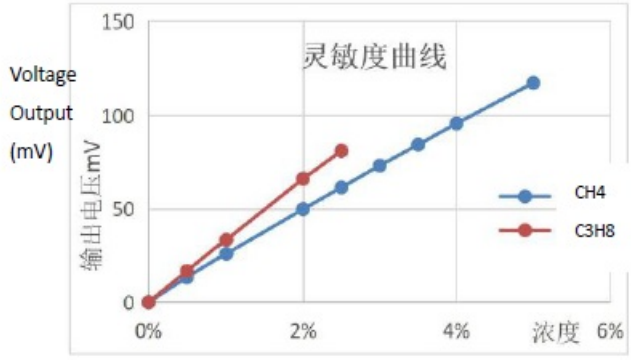



Fig3. Sensitivity Curve

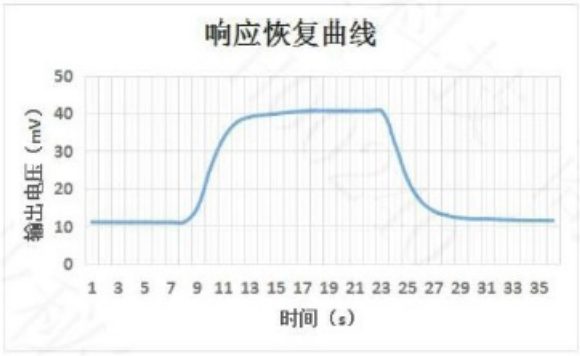



Fig4. Response and recovery curve

### Changing of output signal at different temperature

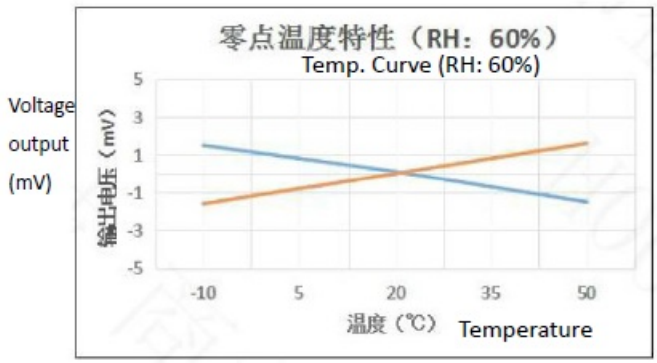



Fig5.Zero point at different temp.

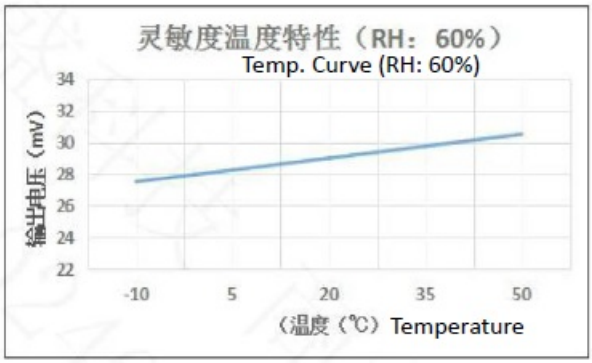



Fig6. Sensitivity at different temp.

**Changing of output signal at different humidity**

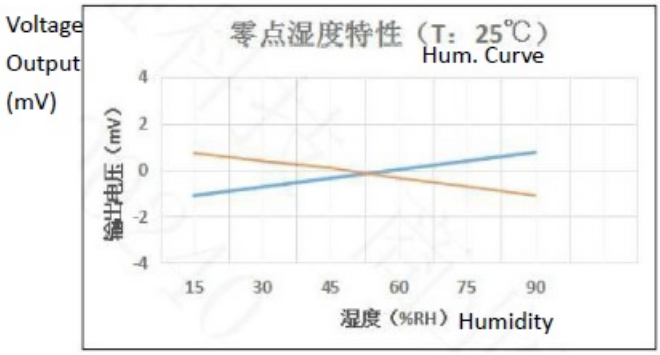



Fig7.Zero point at different humidity

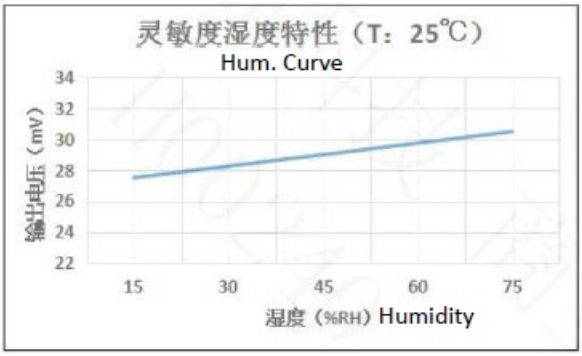



Fig8. Sensitivity at different humidity

**Changing of output signal with different voltage supplying**

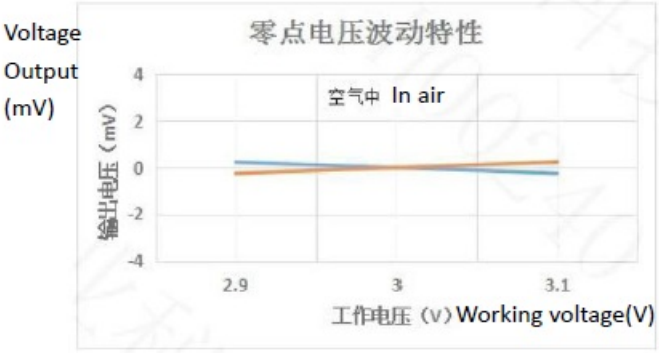



Fig9.Zero Drift with different voltage

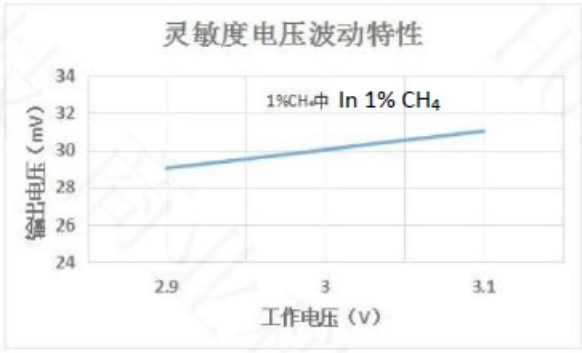
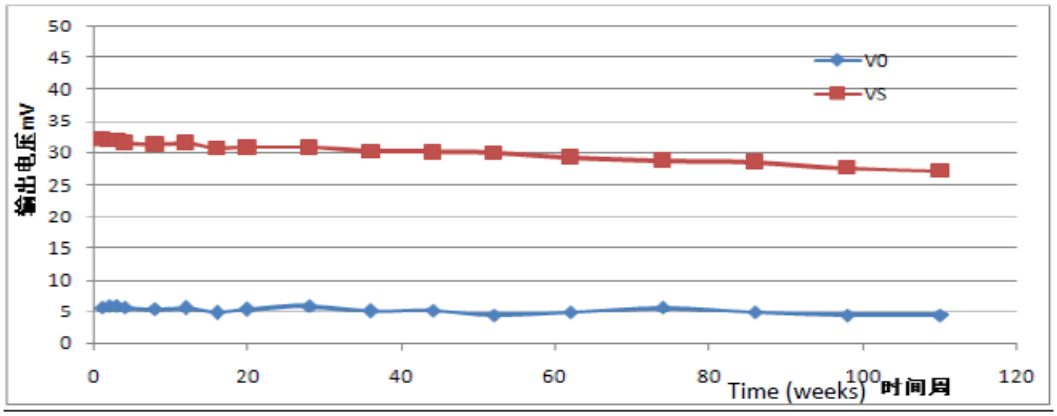



Fig10.Sensitivity with different voltage

## Long-term Stability

The drift in air per year is within ±2mV, in 1%CH4 is within ±2mV. For a short period of storage (in 2 weeks), the sensor need be galvanically continuously for 8 hours to reach stability. For long period of storage (one year), it need 48 hours.




**The following conditions must be prohibited**

1. **Exposed to organic silicon steam**
    1. Sensing material will lose sensitivity and never recover if the sensor absorbs organic silicon steam. Sensors must avoid exposure to silicon bond, fixture, silicon latex, putty or plastic contain silicon environment.
2. **High Corrosive gas**
    1. If the sensors are exposed to high concentration corrosive gas (such as H2S, SOX, Cl2, HCl etc.), it will not only result in corrosion of the sensors structure, also it cause sincere sensitivity attenuation.
3. **Alkali, Alkali metals salt, halogen pollution**
    1. The sensor's performance will be changed badly if sensors be sprayed polluted by alkali metals salt, especially brine, or be exposed to halogen such as fluorine.
4. Touch water Sensitivity of the sensors will be reduced when spattered or dipped in water.
5. **Freezing**
    1. Do avoid icing on the sensor's surface, otherwise sensing material will be broken and lost sensitivity.
6. **Applied higher voltage**
    1. 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 down-line or heater damage, and bring on sensors' sensitivity characteristics to change badly.
7. **Pins connection**
    1. When the sensor is connecting to the circuit, one of the detection part pins and one of the compensation part pins connect as the signal output. The other one of the detection part pins connects the negative electrode, while the other one of the compensation part pins connects the positive electrode. The part with "D" mark is the detection one, the other part with "C" mark is the compensation one showing on the bottom part of the sensor.

**Following conditions must be avoided**

1. Water Condensation
2. Indoor conditions, slight water condensation will influence sensors' performance lightly. However, if water condensation on the sensors' surface and keep a certain period, the sensors' sensitivity will be decreased.
3. Used in high gas concentration No matter the sensor is electrified or not, if it is placed in high gas concentration for a long time, the sensor's characteristics will be affected. If lighter gas sprays the sensor, it will cause extreme damage.

4. Long time storage The sensor's resistance will drift reversibly if it's stored for a long time without electricity, this drift is related with storage conditions. Sensors should be stored in airproof bag without volatile silicon compounds. For the sensors with long time storage but no electrifying, they need long galvanic aging time for stability before using. The suggested aging time is 24 hours at least if the storage time is more than half a year.
5. Long time exposed to adverse environment No matter the sensors are electrified or not, if exposed to an adverse environment for a long time, such as high humidity, high temperature, or high pollution, etc., it will influence the sensors' performance badly.
6. Vibration Continual vibration will result in sensors' down-lead response then break. In transportation or assembling line, a pneumatic screwdriver/ultrasonic welding machine can lead this vibration.
7. Concussion If sensors meet strong concussion, it may lead its lead wire disconnected.
8. Usage Conditions For sensors, handmade welding is the optimal way. The welding conditions as follow: Soldering flux: Rosin soldering flux contains least chlorine Homothermal soldering iron Temperature 350 Timeless than 5 seconds

If disobey the above-using terms, sensors sensitivity will be reduced.


- **Tel:** 86-371-67169097/67169670
- **Fax:** 86-371-60932988
- **Email:** sales@winsensor.com


## Documents / Resources

| | |
|---|---|
|   | Winsen MC101B Catalytic Flammable Gas Sensor [pdf] User Manual<br>MC101B Catalytic Flammable Gas Sensor, MC101B, 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
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