MD61 Thermal Conductor Gas Sensor

（Model： MD61）

User’s Manual

Version: 1.4

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Zhengzhou Winsen Electronics Technology Co., Ltd

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 products 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 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.

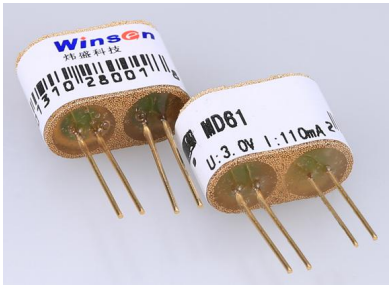
Zhengzhou Winsen Electronics Technology CO., LTD.

MD61 Thermal Conductor Gas Sensor

The MD heat conduction gas sensor is made according to the principle that the total thermal conductivity of the mixed gas changes with the content of the gas to be analyzed. The detection element and the compensation element are paired to form an arm of the bridge. The resistance of the detection element becomes smaller when it encounters a gas with a larger thermal conductivity than air, and when it encounters a gas with a smaller thermal conductivity than air (air background), the output voltage of the bridge changes, and the voltage variable increases with the gas concentration. It increases proportionally, and the compensation element plays a role of reference and temperature compensation.

Features

- Linear output signal
- Good re-peatability and reliable performance
- No catalyst poisoning
- Detecting without Oxygen or short of oxygen

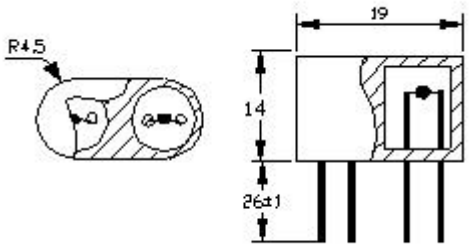


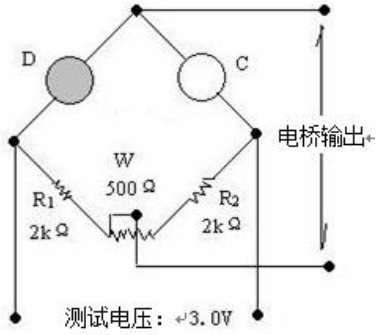
Application

To detect methane, hydrogen, and inert gas etc. on industrial sites.

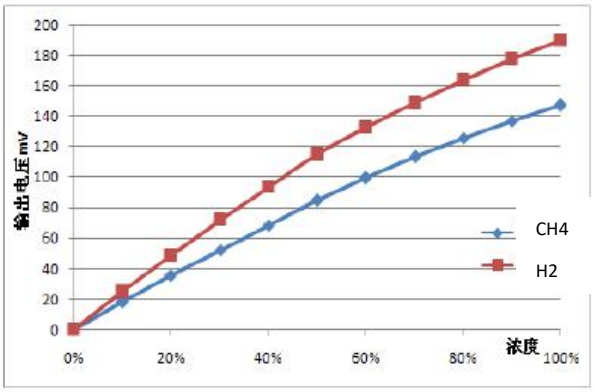
Specification

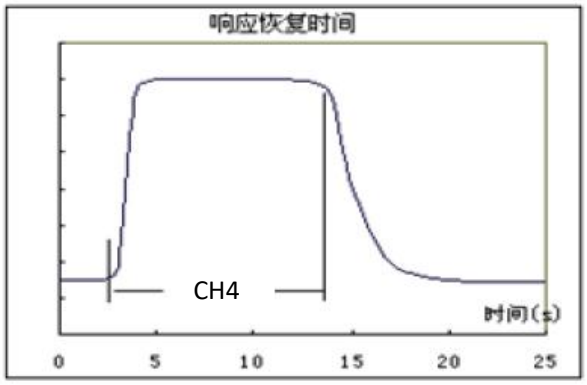
Part no.	MD61
Type	Thermal conduction
Standard package	Metallurgical powder network
Detection Gas	Methane, hydrogen, inert gases
Detection range	0~100%
Working Voltage (V)	3.0±0.1 (DC)
Working current(mA)	≤120 mA
Sensitivity (mV/10%CH4)	≥15
linearity	≤8%
Response time (90%)	≤10 s
Resume time (90%)	≤30 s
Using Environment	-20—+50℃，＜95%RH
Storage Environment	-20—+70℃，＜70%RH
Dimension(mm)	19×9.5×14
Explosion-proof mark	Exdib Ⅰ



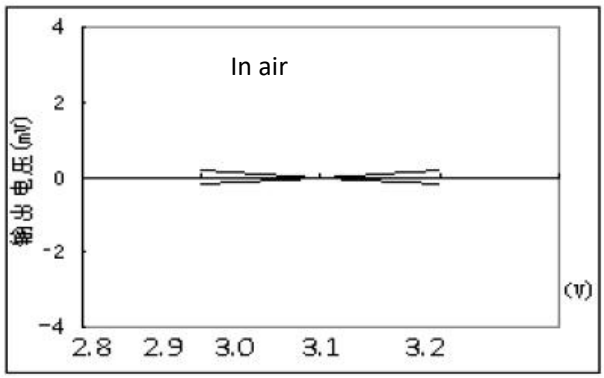


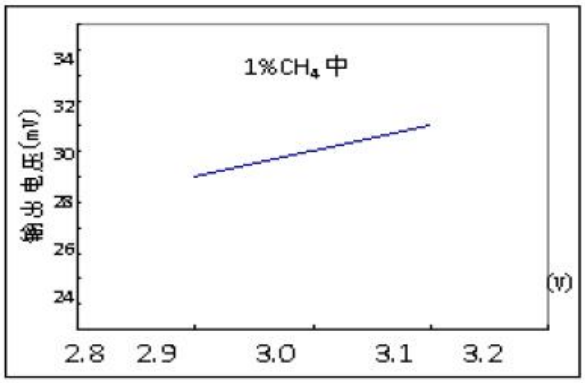
Sensitivity and response characteristic



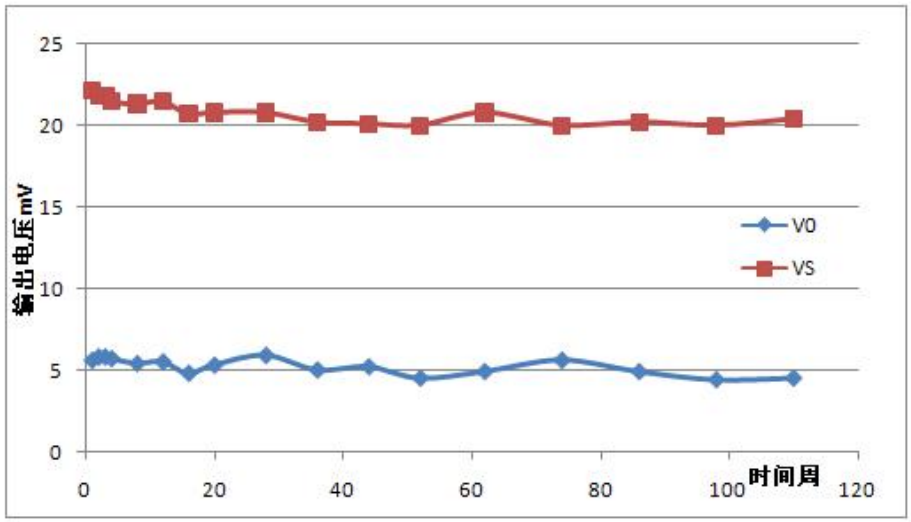


Output signal dependency on working voltage





Long term stability



The absolute value of the drift in air is less than 2 mV per year, in 10%CH4 the absolute value of drift is less than 2mV. For a short period storage (in 2 weeks), the sensor need 8 hours preheating to stabilize, for long-term (more than one year) storage, it need more than 48 hours' preheating.

Cautions

1 .Following conditions must be prohibited

1.1 High Corrosive gas

If the sensors are exposed to high concentration corrosive gas (such as H_2S, SO_X, Cl_2, HCl etc.), it will not only result in corrosion of sensors structure, also it cause sincere sensitivity attenuation.

1.2 Alkali, Alkali metals salt, halogen pollution

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

1.3 Touch water

Sensitivity of the sensors will be reduced when spattered or dipped in water.

1.4 Freezing

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

1.5 Applied higher voltage

Applied voltage on sensor should not be higher than stipulated value, even if the sensor is not physically damaged or broken, it causes down-line or heater damaged, and bring on sensors' sensitivity characteristic changed badly.

1.6 Connection in the circuit

When the sensor is connecting into the circuit, connect the two pins in the middle as signal output, connect the other pin of the D(detector) part to negative electrode while take the other pin of the C(compensator) part to positive electrode.

NOTE: The part marked "■" is detector(D) part while the other part is compensator (C) part.

2 .Following conditions must be avoided

2.1 Water Condensation

Indoor conditions, slight water condensation will influence sensors' performance lightly. However, if water condensation on sensors surface and keep a certain period, sensors' sensitivity will be decreased.

2.2 Used in high gas concentration

No matter the sensor is electrified or not, if it is placed in high gas concentration for long time, sensors characteristic will be affected. If lighter gas sprays the sensor, it will cause extremely damage.

2.3 Long time storage

The sensors resistance will drift reversibly if it's stored for long time without electrify, this drift is related with storage conditions. Sensors should be stored in airproof bag without volatile silicon compound. For the sensors with long time storage but no electrify, they need long galvanical aging time for stability before using. If it is stored for half year or longer, the suggested aging time is one day before using.

2.4 Long time exposed to adverse environment

No matter the sensors electrified or not, if exposed to adverse environment for long time, such as high humidity, high temperature, or high pollution etc., it will influence the sensors' performance badly.

2.5 Vibration

Continual vibration will result in sensors down-lead response then break. In transportation or assembling line, pneumatic screwdriver/ultrasonic welding machine can lead this vibration.

2.6 Concussion

If sensors meet strong concussion, it may lead its lead wire disconnected.

2.7 Usage Conditions

2.7.1 For sensor, handmade welding is optimal way. The welding conditions as follow:

- Soldering flux: Rosin soldering flux contains least chlorine
- homothermal soldering iron
- Temperature: 250℃
- Time: less than 3 seconds

2.7.2 If users choose wave-soldering, the following conditions should be obey:

- Soldering flux: Rosin soldering flux contains least chlorine
- Speed: 1-2 Meter/ Minute
- Warm-up temperature: 100±20℃
- Welding temperature: 250±10℃
- One time pass wave crest welding machine

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

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