



Vehicle Hydrogen Gas Leakage detection
module
(Model ZC61)

User's Manual

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Zhengzhou Winsen Electronics Technology Co., Ltd

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Zhengzhou Winsen Electronics Technology CO., LTD

ZC61 vehicle hydrogen leakage detection module

Product description

ZC61 hydrogen leakage sensor is mainly used in the monitoring of hydrogen leakage in the hydrogen fuel cell engine and hydrogen supply pipeline system. The catalytic combustion sensor of the MEMS process is used to detect the hydrogen concentration. This sensor is a high -performance module made by closely combining mature detection technology with high - quality design circuits.



Features

- ◆ MEMS process
- ◆ Intelligent algorithms
- ◆ Anti-electromagnetic interference
- ◆ CAN interface output
- ◆ Excellent repeatability and stability
- ◆ Long service life

Mainly application

Hydrogen energy vehicles, hydrogen energy preparation, hydrogen energy storage, and hydrogen energy transportation.

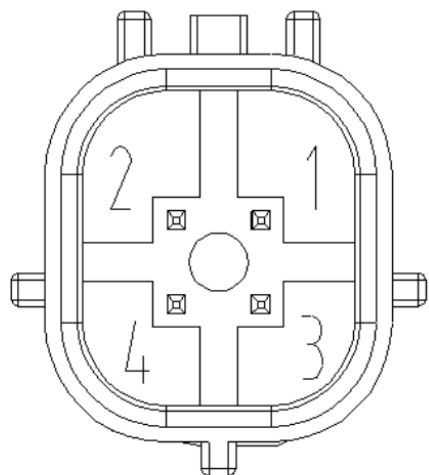
Parameters:

| | |
|----------------------|----------------------------------|
| Model | ZC61 |
| Detection theory | Catalytic combustion |
| Detecting gas | Hydrogen (H ₂) |
| Supply voltage(V) | DC 12V (9~16V) |
| Measuring range | 0-40000ppm |
| Detection accuracy | ±10% above1%H ₂ |
| Output signal | CAN |
| Response Time | ≤3s (T ₈₀) |
| Recovery Time | ≤10s |
| Rated Current | <25mA |
| Power Consumption | <0.5W |
| Working Temperature | -35~+85℃ |
| Working Humidity | ≤95%RH (No condensation) |
| Storage Environment | -40~+125℃ |
| Protection Grade | IP67 |
| Catalytic conditions | Oxygen content not less than 15% |

Product Pin Definition

Adapter model: 6189-1231 (Sumitomo, Japan)

Plug-in definition



| Item | Pin Name | Description |
|------|----------|-------------------------|
| 1 | CAN H | CAN communication H-pin |
| 2 | CAN L | CAN communication L-pin |
| 3 | VIN | Input voltage positive |
| 4 | GND | Input voltage negative |

Figure 1. Connection definition diagram

Combustible gas concentration sensor CAN output technical protocol

| Item | Description |
|------------------------------|--|
| Protocol | The CAN communication protocol is as follows (can be changed according to customer requirements) |
| Baud rate | 250kbps |
| Output time interval | 500ms |
| Amount of data | 8 byte (See table below for detailed definitions) |
| CAN communication ID address | CAN default mailing address 0x19FF0891 (can be changed according to customer requirements) |

| CAN Protocol Instruction Code Technical Definition Details | | | |
|--|----------------------------|------------|--|
| Byte | Data | Data range | Description |
| 0 | Hydrogen gas concentration | 0 to 220 | Concentration (PPM)=(output value -10)*500 |
| 1 | | 255 | Invalid concentration data (when sensor status code is 2) |
| 2 | Address number | 0 to 15 | From 0 to 15, used to identify the channel number |
| 3 | Sensor status code | 0, 1, 2 | 0: Normal detection status 1: The sensor is preheating 2: The sensor is abnormal |
| 4 | Fixed value | 0 | |
| 5 | Fixed value | 0 | |
| 6 | Fixed value | 0 | |
| 7 | Cycle count code | 0 to 255 | Count from 0 to 255 |

Sensor characteristic description

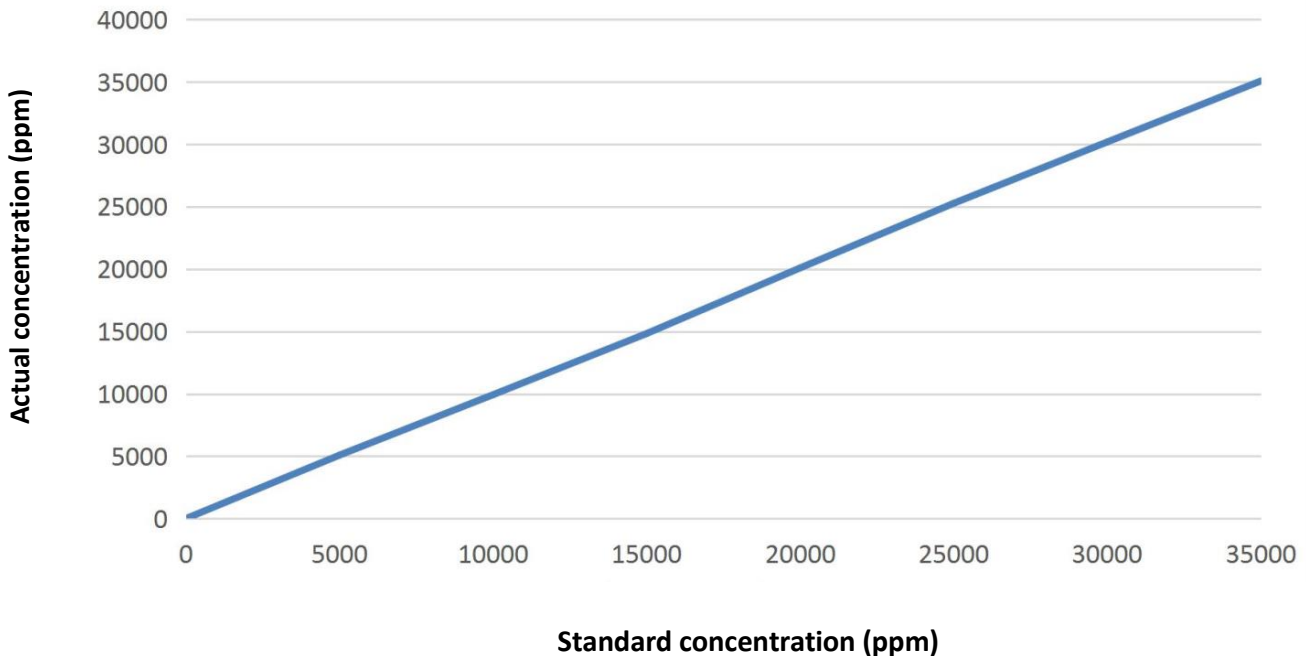


Figure 2. Sensor Linear Curve

Use and care

Conditions that must be prohibited

- ◆ Avoid prolonged exposure to volatile silicide vapor, although the sensor has passed the anti-silane poisoning test under the US SAE-J3089 standard, it should still be avoided for a long time in the presence of silicone binders, silicone rubber, hairspray, putty or other places containing silicone plastic additives.
- ◆ Avoid highly corrosive environment, the sensor is exposed to high concentrations of corrosive gases (such as sulfide, chlorine, fluorine, acid gas, etc.), which will not only cause corrosion and damage to the sensor shell and internal structure, but also cause irreversible changes in the properties of sensitive materials.
- ◆ Alkali, alkali metal salts, halogen contamination sensors contaminated by alkali metal salt spray, or exposed to high concentrations of halogens (such as iodine vapor, freon, etc.), can also cause performance deterioration.
- ◆ If the voltage applied to the sensor is higher than the specified value, it will cause damage to the internal core structure of the sensor, resulting in irreversible damage.

Conditions to avoid as much as possible

- ◆ Avoid working in high concentration gas for a long time as much as possible, such as direct spray of Hydrogen gas to the sensor for a long time, and the combustible gas will have a strong catalytic combustion reaction in the core area of the sensor, which will affect the stability of the sensor.
- ◆ Long term storage of sensors. Stored for a long time without power, should be in a sealed bag with clean air and free of silicone.
- ◆ Avoid long-term exposure to extreme environments as much as possible, regardless of whether the sensor is powered on or not, and the sensor performance will be affected by prolonged exposure to extreme conditions such as high temperature, high humidity or high pollution.
- ◆ Avoid vibration or shock as much as possible, the sensor can pass the vibration and shock test of the automotive level, but frequent and excessive vibration will cause the core structure of the sensor to rupture and cause sensor damage. If the sensor is subjected to a strong impact, or if it is dropped beyond the specified range, it can also cause damage to the sensor.

Sensor maintenance

The sensor senses gas concentration based on gas diffusion and passes through a waterproof breathable film. Please regularly check whether the waterproof breathable film is blocked to prevent gas from entering the sensing head cavity. It is recommended to inspect the sensor air inlet every 3 months to ensure its smoothness. If any damage or blockage is found to the waterproof breathable film, please replace it immediately.

Product External Dimensional Drawing

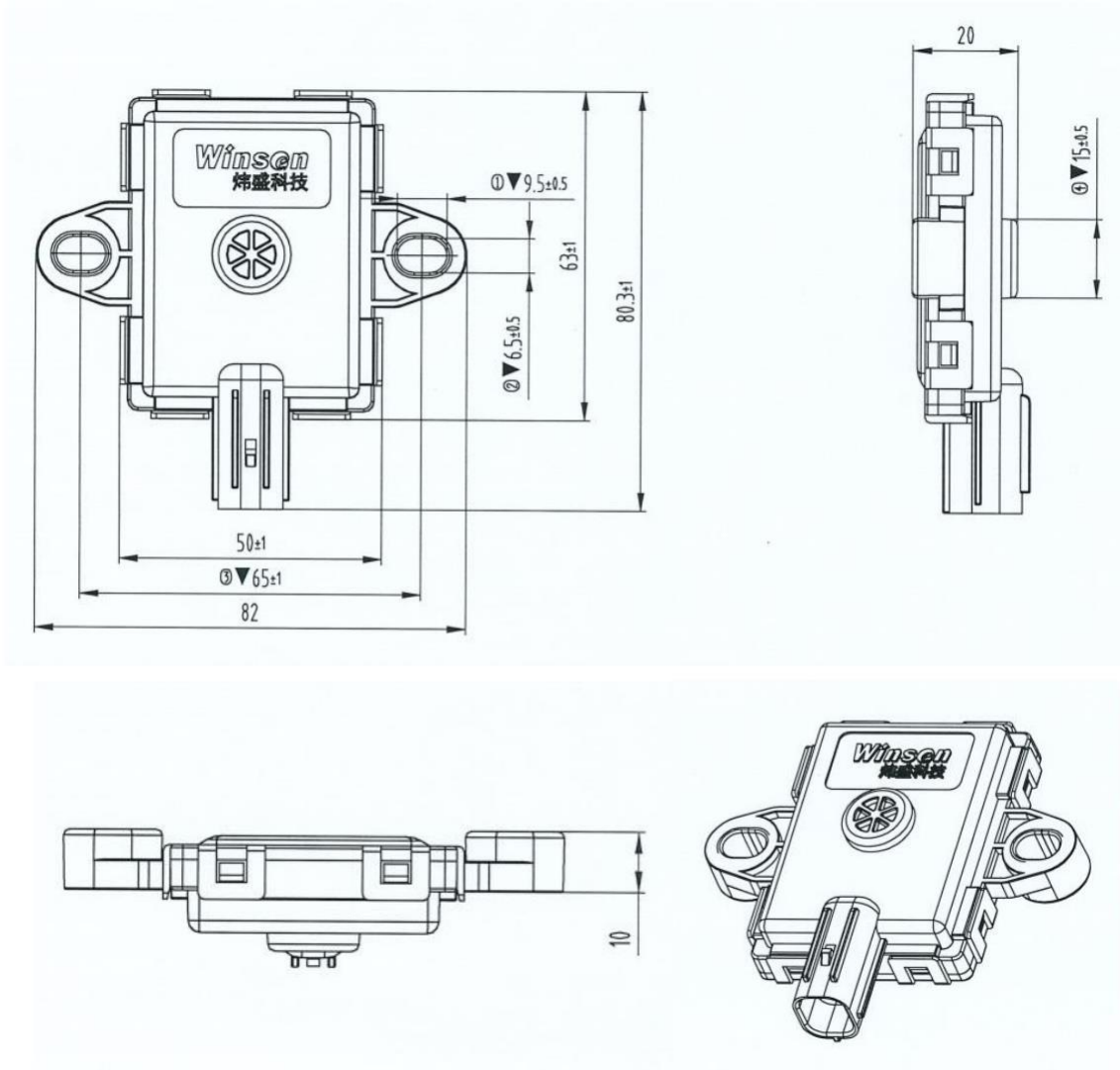


Figure 3. External Dimensional Drawing

Undeclared dimensional tolerance requirements: 6mm~30mm: $\pm 0.5\text{mm}$, 30mm~120mm: $\pm 0.8\text{mm}$

Remarks: Refer to GB/T 1804-C Glass-level Size Extreme deviation Requirements

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