

Hydrogen Gas Sensor

(Model: ME4-H₂)

Manual

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Zhengzhou Winsen Electronics Technology Co., Ltd

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ME4-H₂ Hydrogen Gas Sensor

Profile

ME4-H₂ hydrogen sulfide gas sensor is constant potential electrolysis type. Oxidation-reduction reaction with hydrogen and oxygen take place respectively on the working electrode and on the counter electrode. The process releases electric charge and generates current. The current is in direct proportion to the concentration of hydrogen. So the concentration of the target gas could be got by measuring the value of current.



Features

Low power consumption, high precision, high sensitivity, wide linear range, good anti-interference ability, excellent repeatability and stability.

Main applications

It is used for hydrogen detection in industrial occasion and environmental protection field.

Technical Parameters Stable 1.

Detection Gas	hydrogen (H ₂)	
Detection Range	0∼1000ppm	
Max range	2000ppm	
Sensitivity	(0.03±0.01) μA/ppm	
Resolution	1ppm	
Response Time(T ₉₀)	≤30S	
Bias Voltage	0mV	
Load Resistance	10Ω (recommended)	
Repeatability	<2% Output value	
Stability(/month)	<2%	
Output Linearity	Linear	
Zero drift(-20°C∼40°C)	≤10ppm	
Temperature range	-20℃~50℃	
Humidity range	15 % ~90 % RH no condensation	
Pressure range	standard atmospheric pressure±10 %	
Lifespan	2 years	

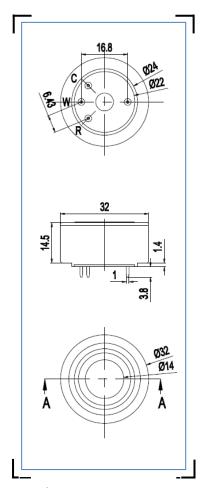


Fig1.Sensor Structure

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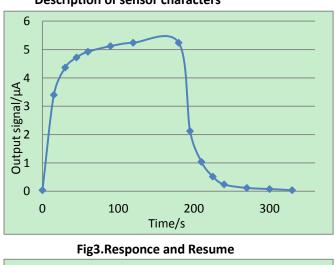
Basic Circuit

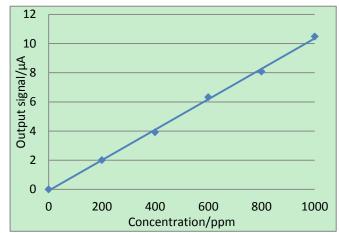
C R R3 20K UIA ME-3 AD8572 R5 20K C7 1.0uF + U1B 0.1uF R7 100K MCP1700 OR HT7330 OR SE5119 Vin Vout VDD GND C+ GND C-

Fig2: ME4-H₂ test circuit

Description of sensor characters

Battery





NC VOUT

C11

⊐10uF

MAX660

180% 150% 120% 90%

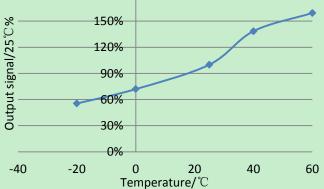


Fig4.Linearity 25 20 Output signal/ppm 15 10 $\begin{array}{cc} 0 & 20 \\ \text{Temperature/}^{\circ}\mathbb{C} \end{array}$ -40 -20 40 60

Fig5.Output of sensor at different temperature

Fig6.Zero output of sensor at different temperature

Cross Interference

ME4-H₂ sensor also can respond to other gases besides target gas H₂. Following data are the response characteristics of the sensor to interferential gases at certain concentration for your reference.

Stable2. Cross interference

Interferential Gas	Concentration	ME4-H ₂
H ₂ S	15ppm	4ppm
H ₂ S	5ppm	0ppm
SO ₂	5ppm	0ppm
C_2H_4	100ppm	0ppm
NO	35ppm	9ppm
NO ₂	5ppm	2ppm
	H_2S H_2S SO_2 C_2H_4 NO	H_2S 15ppm H_2S 5ppm SO_2 5ppm C_2H_4 100ppm NO 35ppm

Cautions!

- Tin soldering is prohibited.
- Before using, power on to aging for more than 48 hours is necessary.
- Pins can't be broke off or bent.
- Don't disassemble the sensor to avoid the damage caused by electrolyte leakage.
- Avoid contacting organic solvent (including Silicone rubber and other adhesive), coatings, medicine, oil and high concentration gases.
- All the electrochemical sensors shall not be encapsulated completely by resin materials, and shall not immerse in pure oxygen environment, otherwise, it will damage the function of sensor
- All electrochemical sensors shall not be applied in corrosive gas environment, or the sensor will be damaged
- Zero calibration should be finished in clean air.
- During test and usage, sensors should avoid the gas inflow vertically
- The side for inflow can't be choked and polluted.
- The laminating film above the sensor surface can't be uncovered and damage.
- Excessive impact or vibration should be avoided
- It takes some time for the sensor to return to normal state after it is applied in high concentration gas

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- Working electrode and reference electrode of the sensor shall be in short circuit when stored
- Prohibit to use the hot cement or sealant of which the curing temperature is higher than 80 °C to make the capsulation for the sensor.
- Prohibit storage and usage for long time in alkaline gases with high concentration.
- Do not use the sensor when the shell is damaged

Zhengzhou Winsen Electronics Technology Co., Ltd

Add.: NO.299 Jin Suo Road, National Hi-Tech Zone,

Zhengzhou, 450001 China

Tel.: 0086-371-67169097 67169670

Fax:0371-60932988

E-mail:sales@winsensor.com

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