



# **MQ-E3-HF Electrochemical Sensor**

## **Manual**

**(Model: MQ-E3-HF)**

**V1.2**

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## MQ-E3-HF Gas Sensor

MQ-E3-HF electrochemical sensor detect gas concentration by measuring current based on the electrochemical principle, which utilizes the electrochemical oxidation process of target gas on the working electrode inside the electrolytic cell, the current produced in electrochemical reaction of the target gas are in direct proportion with its concentration while following Faraday law, then concentration of the gas could be get by measuring value of current.

### 1.Features

- \* Low consumption
- \* High precision
- \* High sensitivity
- \* Wide linear range
- \* Good anti-interference ability
- \* Excellent repeatability and stability

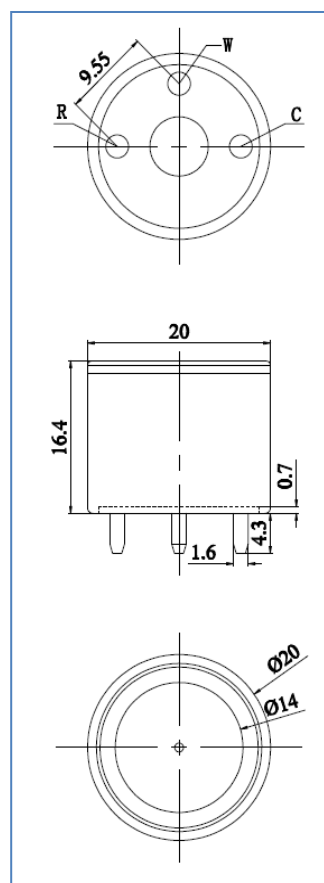
### 2 Application

Widely used in industrial and environmental protection fields

### 3. Technical Parameter

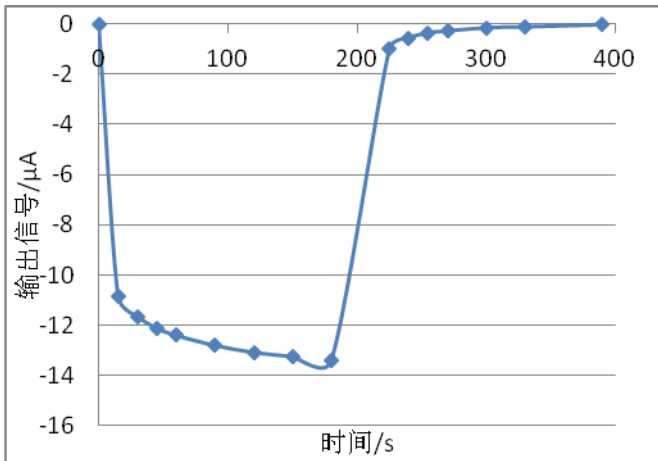
Detection gas	HF
Measurement Range	0~10ppm
Max detecting concentration	100ppm
Sensitivity	$(0.4 \pm 0.15) \mu\text{A/ppm}$
Resolution ratio	0.1ppm
Response time ( $T_{90}$ )	$\leq 90\text{S}$
Bias voltage	0mV
Load resistance (recommend)	10 $\Omega$
Repeatability	<2% output value
Stability (/ month)	<2%
Output Linearity	linear
Zero drift (-20°C~40°C)	$\leq 0.2\text{ppm}$
Storage temperature	-20°C~50°C
Storage Humidity	15%~90% RH
Pressure range	Standard atmospheric pressure $\pm 10\%$
Anticipated using life	2 years (in air)

### 4. External dimension

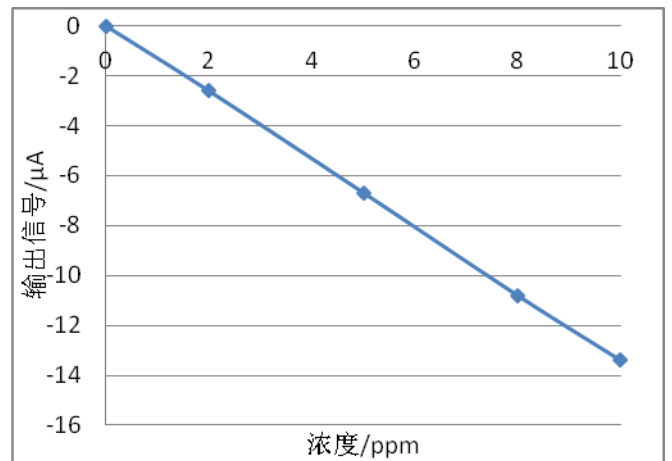


## 5.Characterization

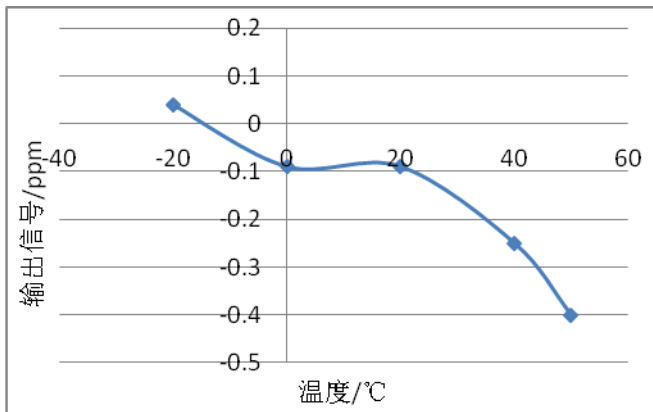
### Features of Sensitivity, response and output signal



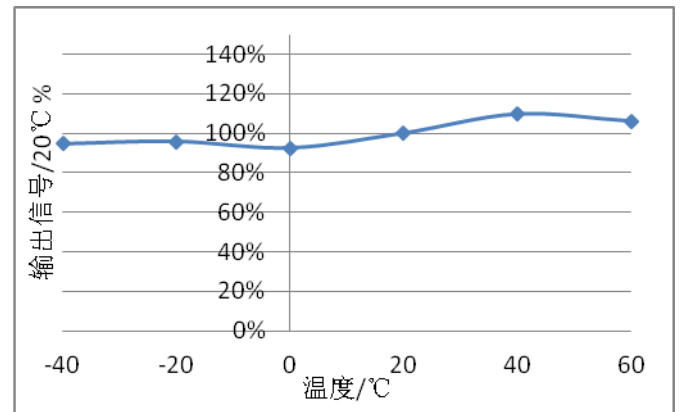
### Data graph of concentration linearity features



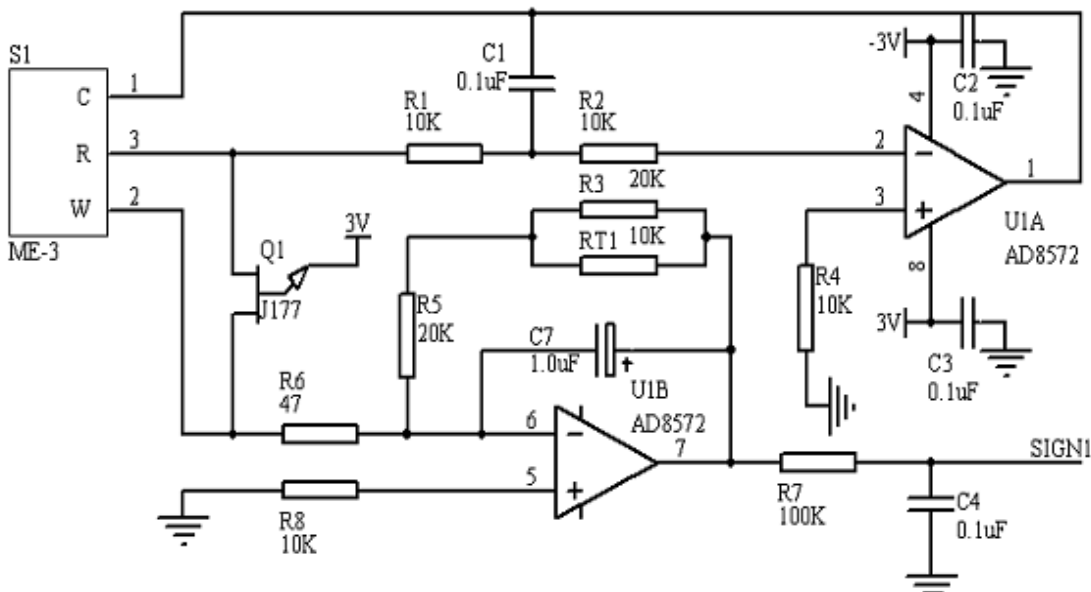
### V0 Change upon Variable Temperature

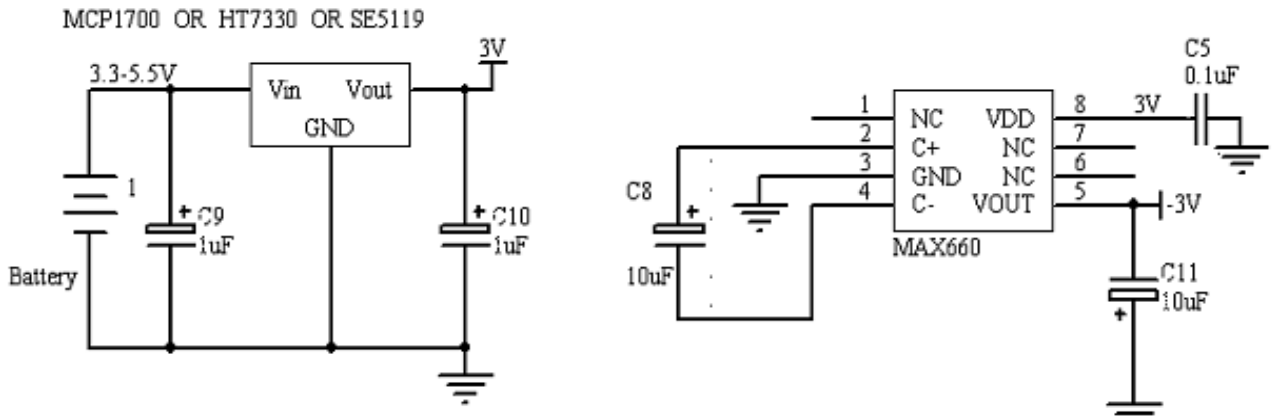


### Sensitivity upon variable temperature



## 6.Basic circuit





### 7. Anti-Interference:

MQ-E3-HF sensor also responds to other gases besides target gas. Below are the response characteristics of interferential gases

Gas	Concentration	MQ-E3-HF
CO	200ppm	0ppm
SO <sub>2</sub>	10ppm	≤1ppm
CL <sub>2</sub>	10ppm	≈5ppm
CH <sub>4</sub>	1000ppm	0ppm
CH <sub>3</sub> COOH	100ppm	100ppm
C <sub>2</sub> H <sub>5</sub> OH	1000ppm	0ppm
HCL	10ppm	6ppm

### 8. Application Notes:

- It is forbidden to use soldering during installation;
- Prohibit breaking and bending of pins;
- The aging time before use is not less than 48 hours;
- Electrolyte leakage will cause damage, please do not disassemble the sensor at will;
- Sensor shall Avoid organic solvent, coatings, medicine, oil and high concentration gases;
- All ME Sensors shall not be encapsulated completely by resin materials, and shall not immerse in oxygen-free environment, otherwise, it will damage the function of sensor;
- All ME sensors shall not be applied in corrosive gas environment, or the sensor will be damaged;
- Please test the sensitivity of gas sensors in clean atmosphere;
- Sensors Shall be avoided to face the gas, which flow directly from front side;

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- The inlet surface of the sensor must not be blocked or polluted;
  - The waterproof and breathable membrane above the sensor is strictly prohibited;
  - Excessive impact or vibration should be avoided;
  - Do not use the sensor when the shell is damaged;
  - It takes some time for the sensor to return to normal state After applied in high concentration gas;
  - Working electrode and reference electrode of the sensor shall be in short circuit when stored;
  - Blowhole of the sensor should not be blocked and polluted, which will cause the sensitivity decrease;
  - It is forbidden to encapsulate the sensor with hot melt adhesive or sealant whose curing temperature is higher than 80°C;
  - Prohibit long-term storage and use in high-concentration alkaline gas.

**Note: To keep continual product development, we reserve right to change design features without prior notice !**

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