Fuel cell type alcohol electrochemical sensor

Model: MQ-E2-C2H5OH-13×13

Version: V1.2

Date: Feb.1st, 2023

Taiyuan Tengxing sensor technology Co., Ltd

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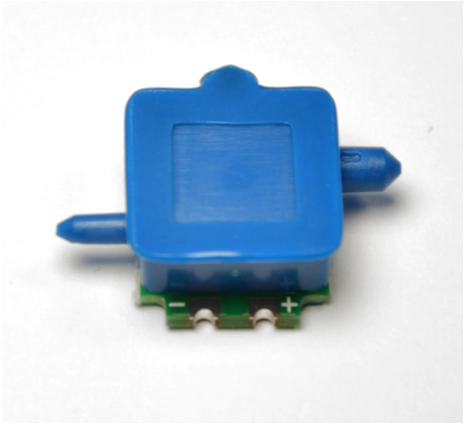
1.**Product Description**:



MQ-E2-C2H5OH-13x13 is a fuel cell type alcohol electrochemical sensor. Alcohol and oxygen undergo corresponding redox reactions on the working electrode and the counter electrode and release charges to form current. The generated current is proportional to the alcohol concentration and follows Faraday's law. The alcohol concentration can be determined by testing the current.

2.**Sensor Features**:

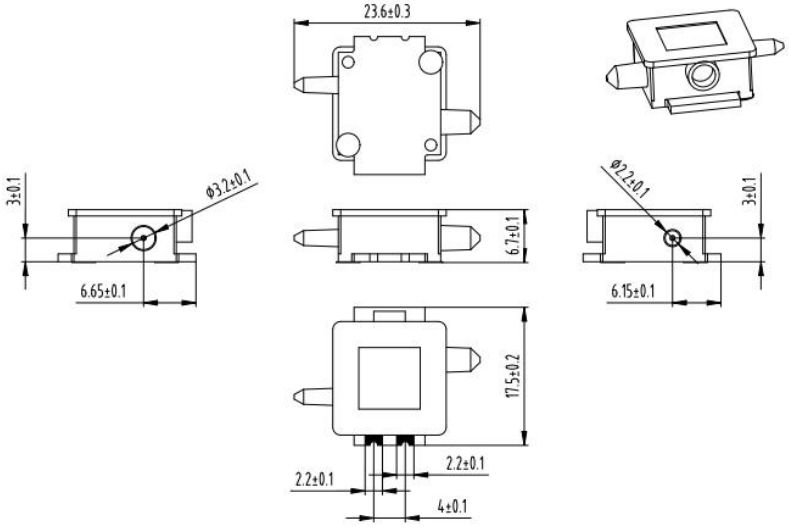
Low power consumption, high precision, high sensitivity, wide linear range, strong anti-interference ability, excellent repeatability and stability.

3.**Main Applications**

It is widely used in alcohol detection in traffic safety, environmental protection, automotive consumer goods and other occasions.

4.Technical specifications

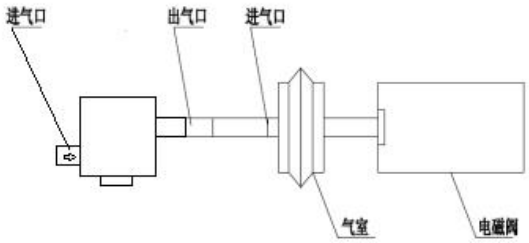
Product model	MQ-E2-C2H5OH-13*13
Detection gas	C2H5OH
Range	(0~1)mg/L
Max Range	2.0mg/L
Sensitivity	(15~125)μA/(mg/L)
Response time(T90)	≤20S
Load resistance(recommend)	10Ω
Repeatability	±0.006mg/L
Stability(/month)	＜2%
Output linearity	linear
Zero drift(-20℃~40℃)	-0.01mV~0.01mV
Storage temperature(℃)	0℃~20℃
Temperature range	0℃~40℃
Humidity range	15%~90% RH No condensation
Pressure range	Standard atmospheric pressure ±10%
Life	3 years(in air)



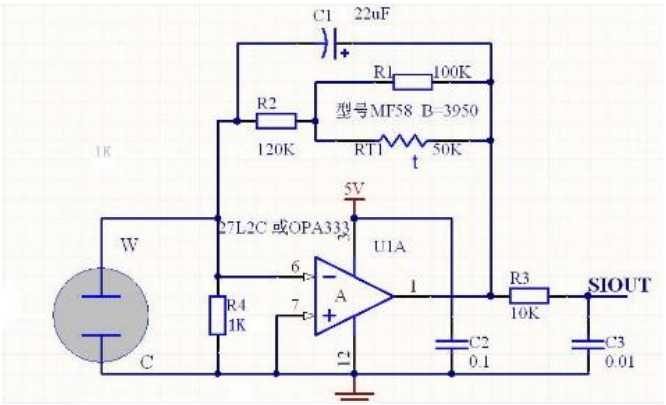
5.Instructions

Quantitative air intake control: When using a sensor, use a plastic tube to connect the sensor outlet to the air chamber inlet. When the solenoid valve is working, the air chamber in front of the solenoid valve will suck in a quantitative volume of gas by controlling the

working stroke, and the corresponding sensor will also suck in a certain amount of gas to achieve the purpose of quantitative air intake. The following figure is a connection diagram of the sensor and the electromagnetic pump (composed of the air chamber and the electromagnetic valve).



6.Basic Circuit



7.Sensor Characterization

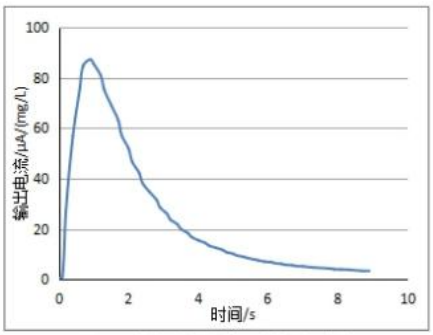


图 4：传感器的灵敏度、响应恢复曲线

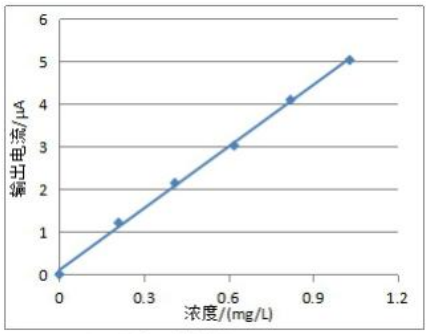


图 5：传感器线性曲线

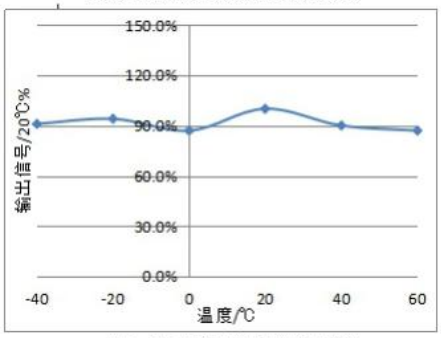


图 6：不同温度下传感器的输出情况

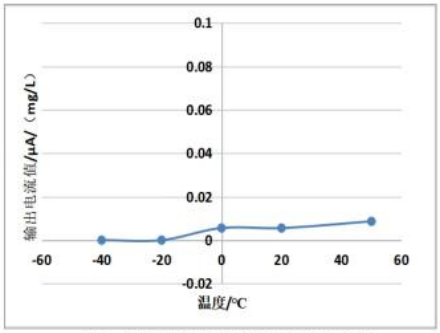


图 7：传感器在不同温度条件下的零点输出

8.Precautions

Aging time before use should be no less than 48 hours;

PCB should not be broken or bent;

Pump air in, accurately and quantitatively inhale air;

Recommended storage temperature 0-20℃;

Electrolyte leakage will cause damage, please do not disassemble or damage the sensor at will;

Avoid contact between the sensor and organic solvents (including silicone rubber and other adhesives), paints, medicines, oils and high-concentration gases;

The sensor should not be immersed in an oxygen-free environment for a long time, otherwise the performance of the sensor will be damaged;

The sensor should not be used in an environment containing corrosive gases, which will damage the sensor;

When measuring the zero point of gas, it must be done in a clean atmosphere;

When testing and applying the sensor, vertical air intake from the front should be avoided;

The air inlet of the sensor should not be blocked or contaminated;

The sensor should not be subjected to excessive impact or vibration;

Do not use the sensor if the shell is damaged or deformed;

After long-term use in a high-concentration gas environment, the sensor will recover slowly to its initial state;

When storing the sensor, the working electrode and the counter electrode should be in a short-circuit state;

It is forbidden to use hot melt adhesive or sealant with a curing temperature higher than 80℃ to seal the sensor;

It is forbidden to store and use it in high-concentration alkaline gas for a long time.