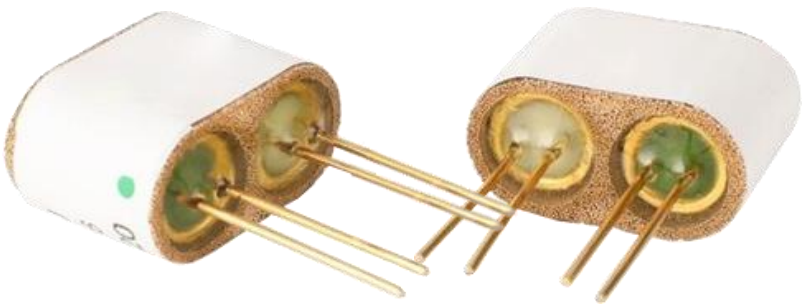
SENSSET
SENSOR SEQUENCE

SSN-GCL-C4

Catalytic sensors of combustible gases



PRODUCT OVERVIEW

The detection element and the compensation element are paired, and the two elements are the two elements are a catalyst and a platinum wire coil wrapped in inert material. The combustible gas will undergo catalytic combustion reaction on the catalyst of the working element, which will cause the resistance of the detection element to increase, thus changing the output voltage of the bridge, which is linearly related to the concentration of combustible gas.

PRODUCT FEATURES

- Linear bridge output voltage
- Fast response time
- Good repeatability and selectivity
- Stable and reliable operation of components
- Excellent resistance to H2S and silicone poisoning

1. Technical parameters

Table 1.Characteristics

Parameters	Condition
Detection principle	Catalytic combustible type
Detect gas	Combustible gas
Operating voltage	2.8 V (±0.1V)
Operating current	100mA (±10mA)
Detection range	0-100%LEL
Sensitivity	20-40mV/1 CHL
Zero voltage	±30mV
Resolution	1% LEL
Response time	T_{90}=30s
Recovery time	T_{10}=30s
Operating temperature/Humidity range	-20~+60°C/ less than 95%RH
Storage temperature/Humidity range	-20~+60°C/ less than 95%RH
Zero drift	≤±5%F.S./month
Sensitivity drift	≤±5%F.S./month
Service life	2 years
Explosion-proof Certification	ExdIb Ⅰ T6

2. Mechanical dimensions

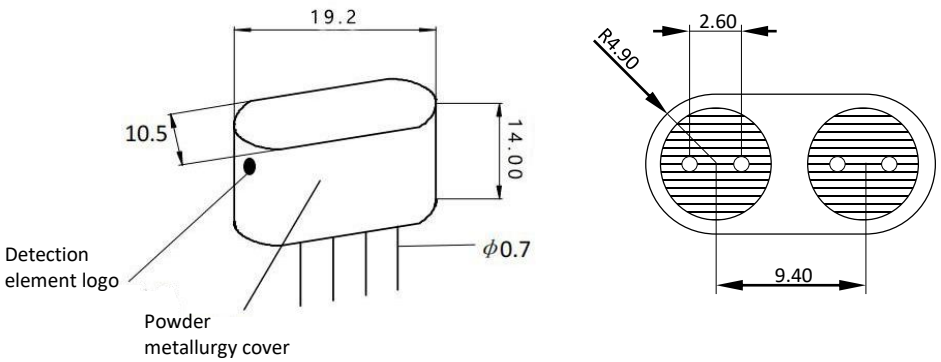


Figure 2.1. Sensor size drawing (in mm)

3. Basic circuit

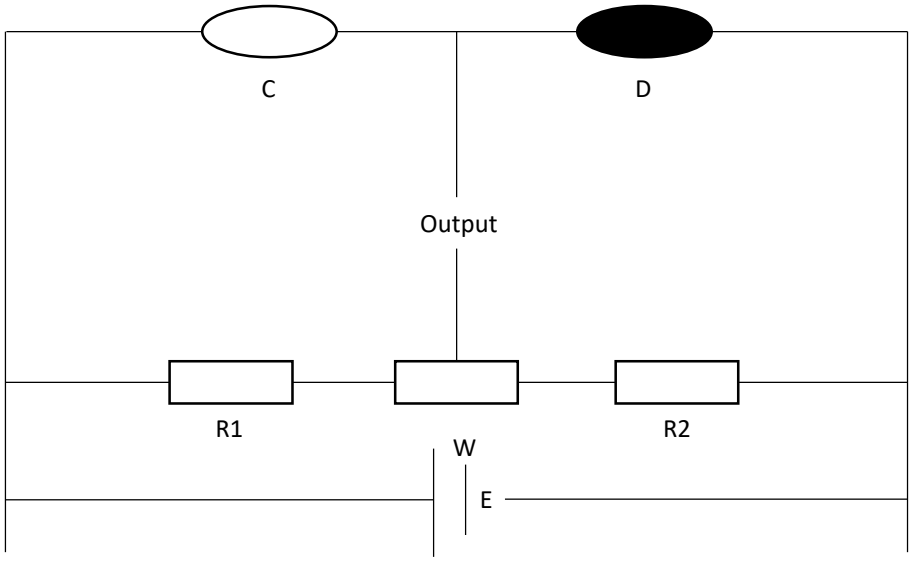


Figure 3.1. Basic test circuit for sensors: D – detection element (black element); C – compensation element (white element); R1=R2=1kΩ bridge resistance; E – working power supply; W – adjustable potentiometer

4. Description of the sensor characteristics

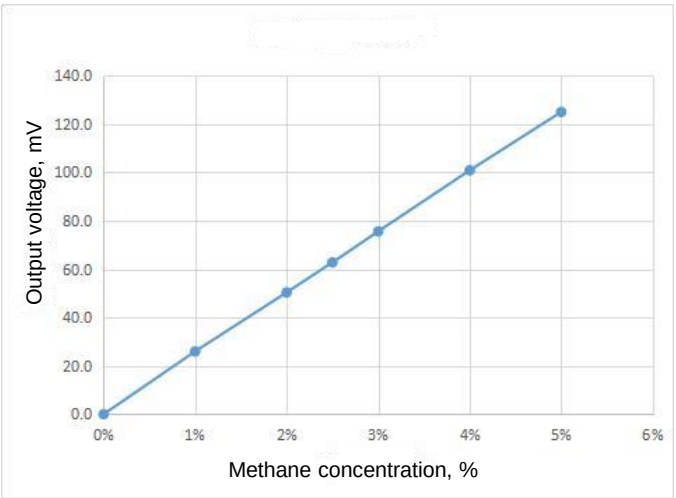


Figure 4.1. Sensor response curve to methane

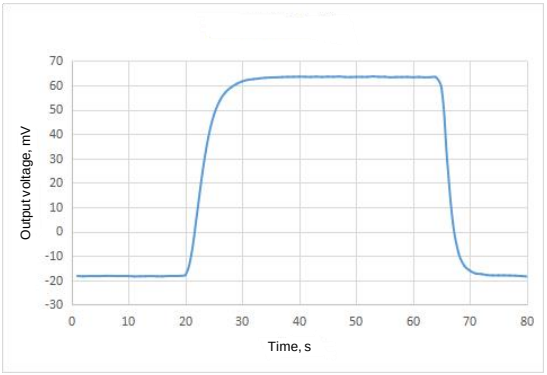


Figure 4.2. Sensor response recovery curve (2.5% methane)

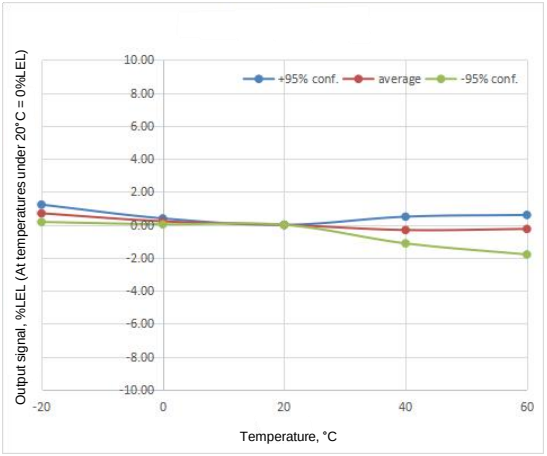


Figure 4.3. Zero output – temperature effect

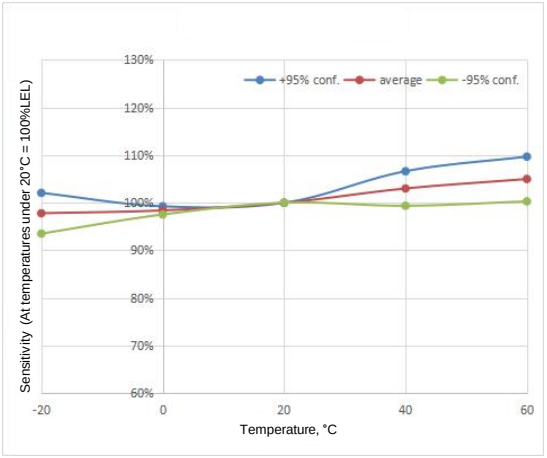


Figure 4.4. Sensor temperature characteristic curve

5. Cross-sensitivity

The SSN-GCL-C4 sensor responds to a wide range of combustible gases, and the data in the table shows the relative sensitivity of some typical combustible gases at their corresponding concentrations of 100% LEL.

Table 2.

Gases	Molecular Formula	100% LEL Corresponding concentration (vol%)	100% LEL Relative sensitivity
Methane	CH_4	5.0%	100
Propane	C_3H_8	2.1%	58
Hydrogen	H_2	4.0%	45

6. Attention

1. Some compounds can cause a decrease in sensor sensitivity, including the following categories:
    - Silicone vapor, various gaseous substances containing elemental silicon, including silanes, silicones and other volatile silicones. Such substances generate silica inclusions on the catalyst surface of the detection element, and very low concentrations of silicone can cause an irreversible decrease in sensor sensitivity. The very low concentration of silicone can cause an irreversible decrease in sensor sensitivity.
    - Gases such as hydrogen sulfide, sulfur oxide, chlorine, and hydrogen chloride. These substances can block the active site by binding to the catalytic active site on the catalyst surface of the detection element, resulting in a decrease in sensor sensitivity.
    - Condensation or icing on the sensor housing surface. This type of substance can block the housing vents and cause a decrease in sensor sensitivity.
2. Gases above the measurement range reduce the stability of the sensor. The stability of the sensor is irreversibly reduced when the sensor is exposed to high concentrations of combustible gases (e.g., pure hydrogen, methane at concentrations above 5%, and other combustible gases above their lower explosive limits) in operating condition.
3. Abnormal operating voltage. When the voltage is lower than the normal operating voltage of 2.8V, the sensor sensitivity will be lower than the normal value range; when the voltage is higher than 2.8V, the sensor is prone to wiring or structural damage, which will cause the sensor sensitivity to decrease.
4. Incorrect pin wiring can cause the sensor signal to not be output properly.

SENSSET
SENSOR SEQUENCE

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Development, production and supply of high-tech sensors