

SensorsX SX-GH2TSA Series

Electrochemical Hydrogen (H₂) Gas Sensor
Industrial Gas Detection | Electrochemical Sensing



0 – 1000 PPM Detection Range	20±10 nA/PPM Sensitivity	<30 s Response Time
-30 to +50 °C Operating Temperature	15–90 %RH Humidity Range	2 years Service Life

Small Size | Low Power Consumption | Long Service Life | High Accuracy

■ PRODUCT OVERVIEW

The SX-GH2TSA hydrogen gas detection sensor is a potentiostatic electrochemical sensor. Hydrogen and oxygen undergo oxidation-reduction reactions at the working electrode and counter electrode, respectively, generating an electrical current. The generated current is proportional to the hydrogen concentration, allowing the H₂ concentration to be determined by measuring the output current.



■ KEY FEATURES

◆ High Accuracy, long service life	◆ Fast Response, fast return to zero
◆ Low Power Consumption, High sensitivity	◆ Wide Linear Range
◆ Strong Anti-Interference Capability	◆ High Resistance to Interference

■ TYPICAL APPLICATIONS

- Hydrogen detectors and instruments
- Industrial site H₂ gas detection
- Vehicle-mounted H₂ detection
- Smart municipal H₂ detection
- Environmental-protection H₂ detection

■ PERFORMANCE SPECIFICATIONS

Measurement

Model	SX-GH2TSA-2A0
Detection Principle	Electrochemical, 3-electrode
Target Gas	H ₂
Detection Range	0 – 1000 PPM
Maximum Load Concentration	2000 PPM
Accuracy & Stability	
Sensitivity	20 ± 10 nA/PPM
Zero Drift	±5 PPM
Resolution	1 PPM
Repeatability	2 % of output signal
Long-Term Stability	< 2 % signal / month
Linearity	Linear
Response	
Response Time	T90 < 30 s

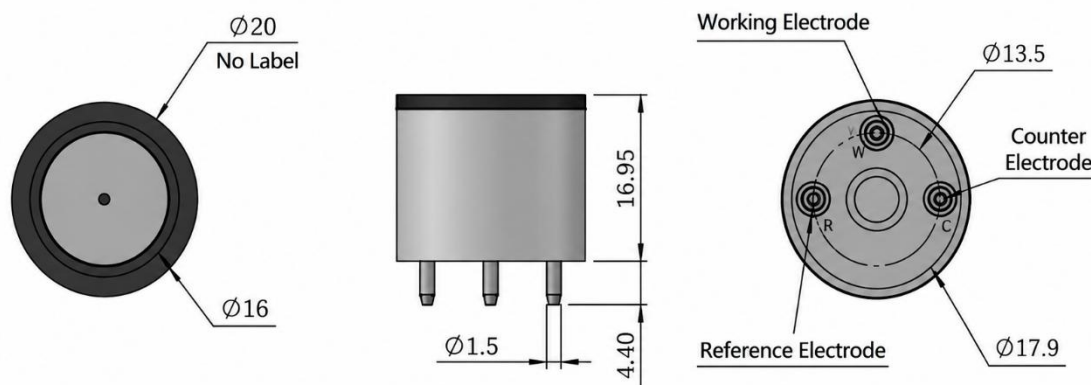
■ ELECTRICAL SPECIFICATIONS

Electrical	
Bias Voltage	0 V
Load Resistance	5 – 30 Ω

■ ENVIRONMENTAL SPECIFICATIONS

Temperature	
Operating Temperature Range	-30 to +50 °C (-22 to +122 °F)
Humidity & Pressure	
Humidity Range	15 – 90 %RH (non-condensing)
Operating Pressure	90 – 110 kPa (13.1 – 16.0 psi)
Service Life	
Shelf Life	12 months after delivery
Service Life	2 years

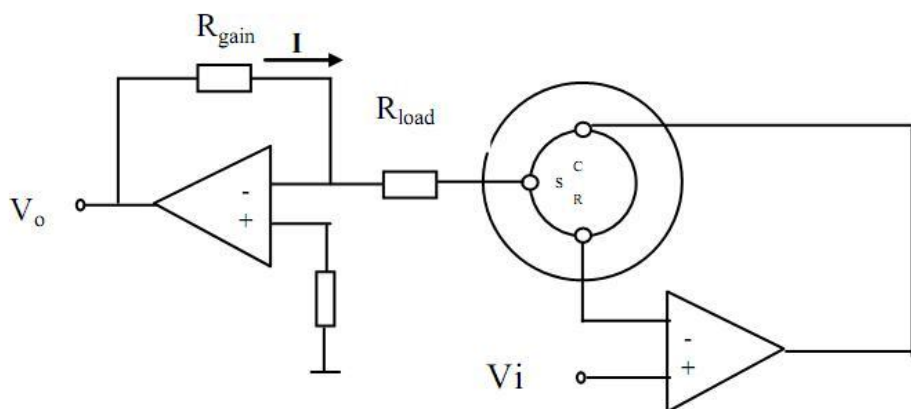
■ MECHANICAL DIMENSIONS



SX-GH2TSA Sensor Dimension Drawing

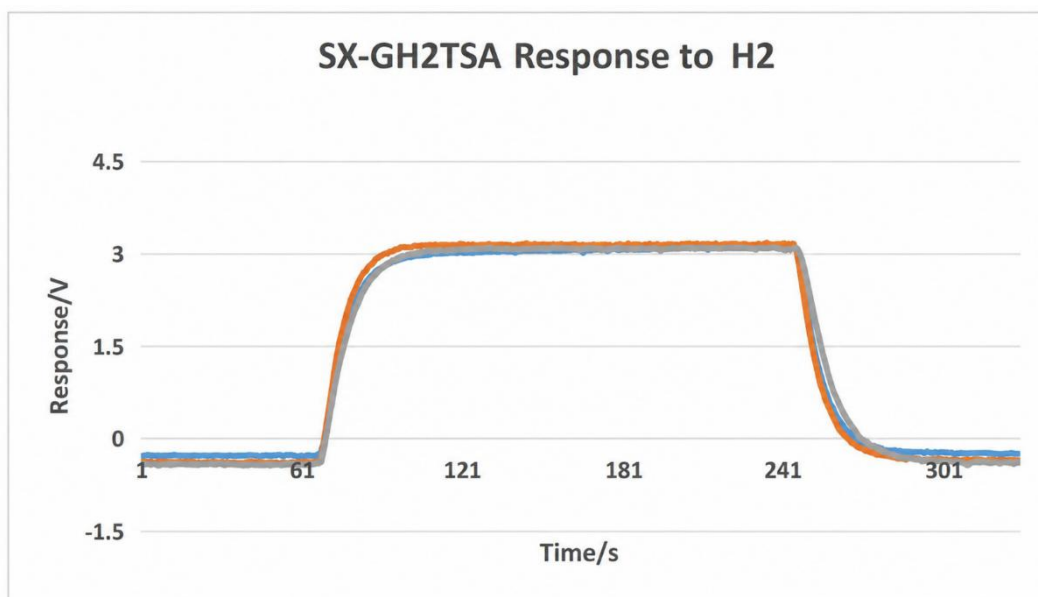
Note: All dimensions in mm, unless otherwise specified. All tolerances are ± 0.20 mm (± 0.008 in).

■ WIRING DIAGRAM

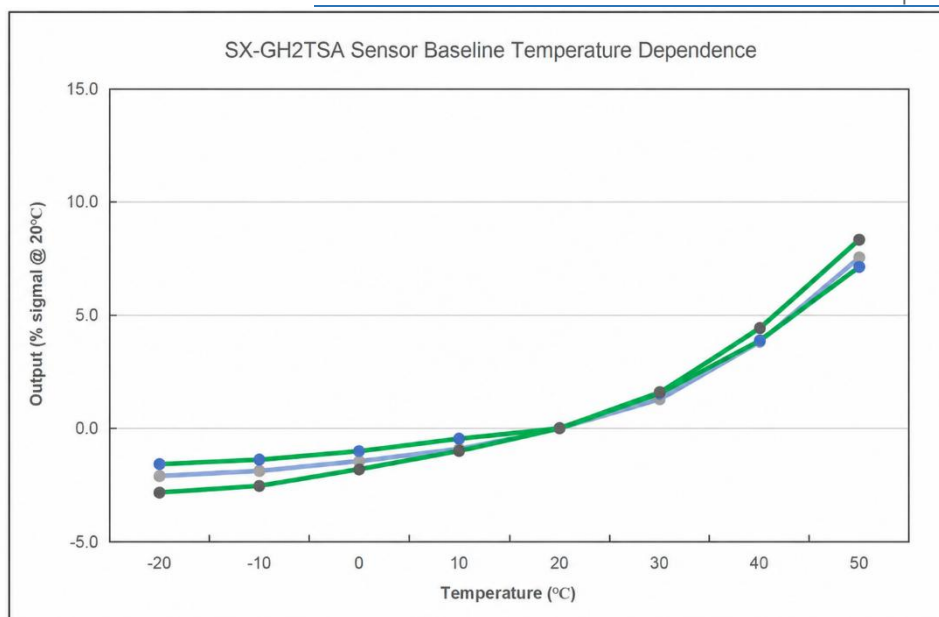


SX-GH2TSA Sensor Basic Test Circuit

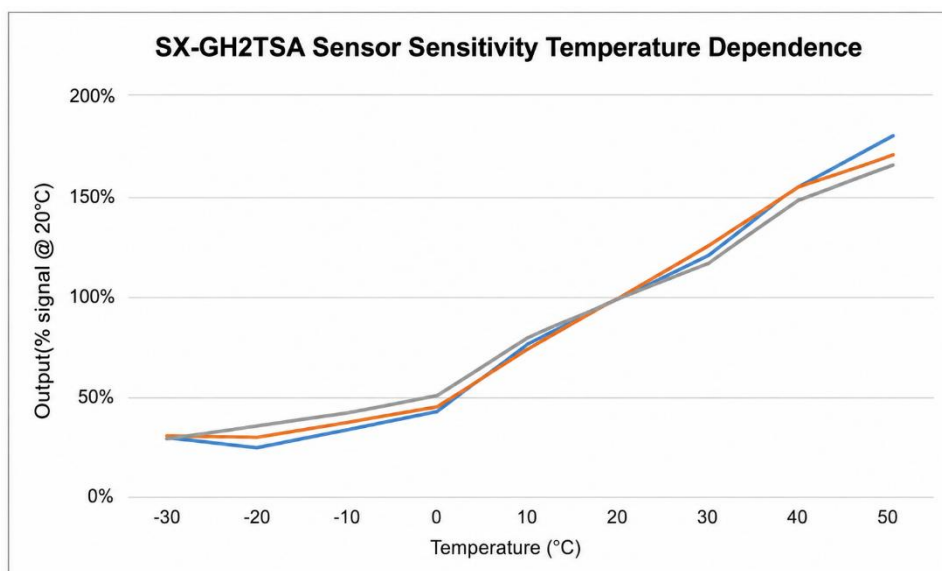
■ SENSOR CHARACTERISTICS



SX-GH2TSA Sensor Response/Recovery Curve



SX-GH2TSA Sensor Baseline Temperature Dependence



SX-GH2TSA Sensor Sensitivity Temperature Dependence

■ CROSS-INTERFERENCE

The SX-GH2TSA sensor also responds to gases other than the target gas. The table below lists the sensor's typical response to several common interfering gases at the given concentrations, for reference.

Interfering Gas	Gas Concentration Used (ppm)	Displayed Value (ppm H ₂)
CO	100	-8
C ₂ H ₄	10	-0.2
H ₂ S	50	9
NO	50	4
NO ₂	10	2

■ PRECAUTIONS

- Sensor pins must be connected via a PCB socket; soldering will damage the sensor. Pins must not be bent.
- During storage, the working electrode and reference electrode should be kept short-circuited.

- The sensor should avoid contact with organic solvents, alcohol, paints, oils, and high-concentration gases, including silicone and other adhesives.
- Electrochemical sensors with positive output current (e.g., CO, H₂S, SO₂, NH₃) require oxygen to participate in the reaction during operation; calibration and testing should use standard gas with air as the background gas, otherwise sensor performance will be degraded.
- The sensor must not be used long-term in environments containing corrosive gases, as corrosive gases will damage the sensor.
- Circuit board malfunctions (e.g., due to circuit design issues, faulty op-amps or other components, short/open circuits, poor pin contact, moisture, corrosion, leakage, power supply noise interference, noise feedback, or electromagnetic interference) may cause the alarm to fail to respond, drift, or display unstable readings, and may even cause the sensor to undergo electrolytic reactions that damage it.
- Calibration or testing should be performed in clean air with a stable, steady gas flow rate to simulate a gas-diffusion condition. Blowing directly and forcefully at the sensor, or using an unstable/fluctuating gas flow, will not produce satisfactory calibration accuracy or repeatability.
- Calibration with the target gas is recommended. Cross-sensitivity may show a variation of up to +30%; calibrating with a cross-sensitive gas does not guarantee calibration or measurement accuracy.
- Non-standard test methods are not recommended, such as placing the sensor directly over concentrated ammonia solution, blowing cigarette smoke at it, bringing a lit lighter near it, breathing on it, or placing it near alcohol — because the localized concentration from evaporating ammonia or alcohol can reach tens of thousands of ppm, and human breath can contain CO₂ concentrations as high as 40,000 ppm, which can damage the sensor; the correct test method is to apply the target gas with air as the background gas.

Violation of the above conditions of use will degrade sensor performance.

■ ORDERING INFORMATION

Complete model number example: SX-GH2TSA-2A0

Gas Range	
H	500 PPM
2	1000 PPM
J	2000 PPM
P	4000 PPM
7	5000 PPM
K	10000 PPM
L	20000 PPM
Q	30000 PPM
R	40000 PPM
Zero Drift	
A	±5 PPM
Sensitivity	
0	20±10 nA/PPM
Customized Information	
D	Customized — specify requirements when ordering