SGX SENSORTECH

An Amphenol Company





PS1-H2-50k

Hydrogen sensor Datasheet

SGX Solid Polymer Electrolyte Gas Sensors

The SGX series of PS1 Electrochemical gas sensors are using a revolutionary 'Solid Polymer Electrolyte' technology that is based on the principle of catalytic reaction. The target gas to be measured generates a very small current, proportional to the gas concentration. Our technology offers a stable, high quality and cost-effective manufacturing process. The SGX solid polymer electrolyte gas sensors are available in a very small size, are highly sensitive, do not use power and have very low cross sensitivity from other gases.

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Technical Specifications



PS1-H2-50k

Performance

Sensitivity	0.2 ± 0.1 nA / ppm
Measurement Range	0 – 50 000 ppm 0 – 5% vol.
Zero Current	± 3 nA
Maximum Overload	>20% vol. (expected)
Response Time	T50 < 35s, T90 < 90s
Repeatability	1.5% (typically)
Linear Range	Linear
Resolution (16Bit ADC)	0.001 % vol.

***Note:** 1. Measured value for zero current depends on potentiostat electronics.
2. Minimum recommended resolution for a 16Bit ADC.

Environmental Details

Temperature Range	-40°C to +55°C
Pressure Range	800 to 1200 hPA
Operating Humidity Range	15-95% RH (non-condensing)
Storage Temperature	0 to 20°C (Optimum temp. 4 °C to 6 °C)

Lifetime Details

Long-Term Drift*	< 5 %/year
Expected Lifetime	> 5 years
Zero Drift in Clean Air	< 0.001% vol
Storage Life	12 months
Warranty	12 months

***Note:** Long-Term Drift may vary depending on storage conditions and usage.

Operation

Operating Principle	Amperometric, 3-electrode
Bias Voltage	0 mV
Recommended Load Resistor	100 Ω
Warm Up Time	< 60 s

Housing

Housing Material	PPO
Weight	< 0.7g

Features

- Small size
- Wide temperature range
- Fast response time
- No electrolyte leakage
- Excellent sensitivity at low temperatures
- Low cost at large volumes
- Strong signal to noise

Key applications

- Hydrogen Leakage
- Environmental Monitoring
- Hydrogen Industrial Plants
- Energy Engineering
- Process Monitoring

Important Notes

- All performance is based on conditions at 20°C, 50% RH and 1 atm, flow rate>150qcm/min, using SGX recommended circuitry.
- Sensor performance is temperature dependant; please contact SGX for temperature performance other than 20°C.
- Do not solder to the connector pins as this may damage the sensor and thereby invalidate the warranty.
- Details on recommended connector pins can be found in the Frequently Asked Questions within the Gas Sensor section of the SGX website.

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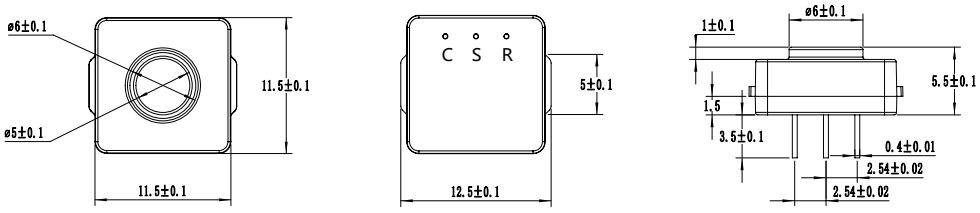
Dimensions



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Cross Sensitivity

The **"Test Concentration"** was used to test the sensor. The **"Sensor Reading"** applies to the amount of the **"Calculated Test Concentration"**.

Gas	Formula	Test Concentration	Calculated Test Concentration	Sensor Reading
Ethanol	C_2H_6O	20 ppm	1 ppm	0 ppm
Ammonia	NH_3	100 ppm	1 ppm	0 ppm
Benzene	C_6H_6	—	1 ppm	0 ppm
Methane	CH_4	300 ppm	1 % vol.	0% vol.
Carbon Dioxide	CO_2	—	10% vol	0% vol.
Carbon Monoxide	CO	100 ppm	100 ppm	100 ppm
Ethylene	C_2H_4	200 ppm	1 ppm	0 ppm
Ethylene Oxide	C_2H_4O	—	1 ppm	0 ppm
Isobuthene	C_4H_8	—	1 ppm	0 ppm
Methyl Mercaptan	CH_4S	10 ppm	1 ppm	0 ppm

Note:

1. The above interference factors may vary due to different sensors and service life, please refer to the actual test results.
2. This table is not complete for all cross gases. Please contact us for other gases.
3. The above parameters are the test results at a temperature of 25°C, a relative humidity of 50%RH and a normal pressure environment. The performance of the sensor varies under different environmental conditions. If you have any questions, please contact us.
4. The above cross interferences are represented by a low concentration of the gas.

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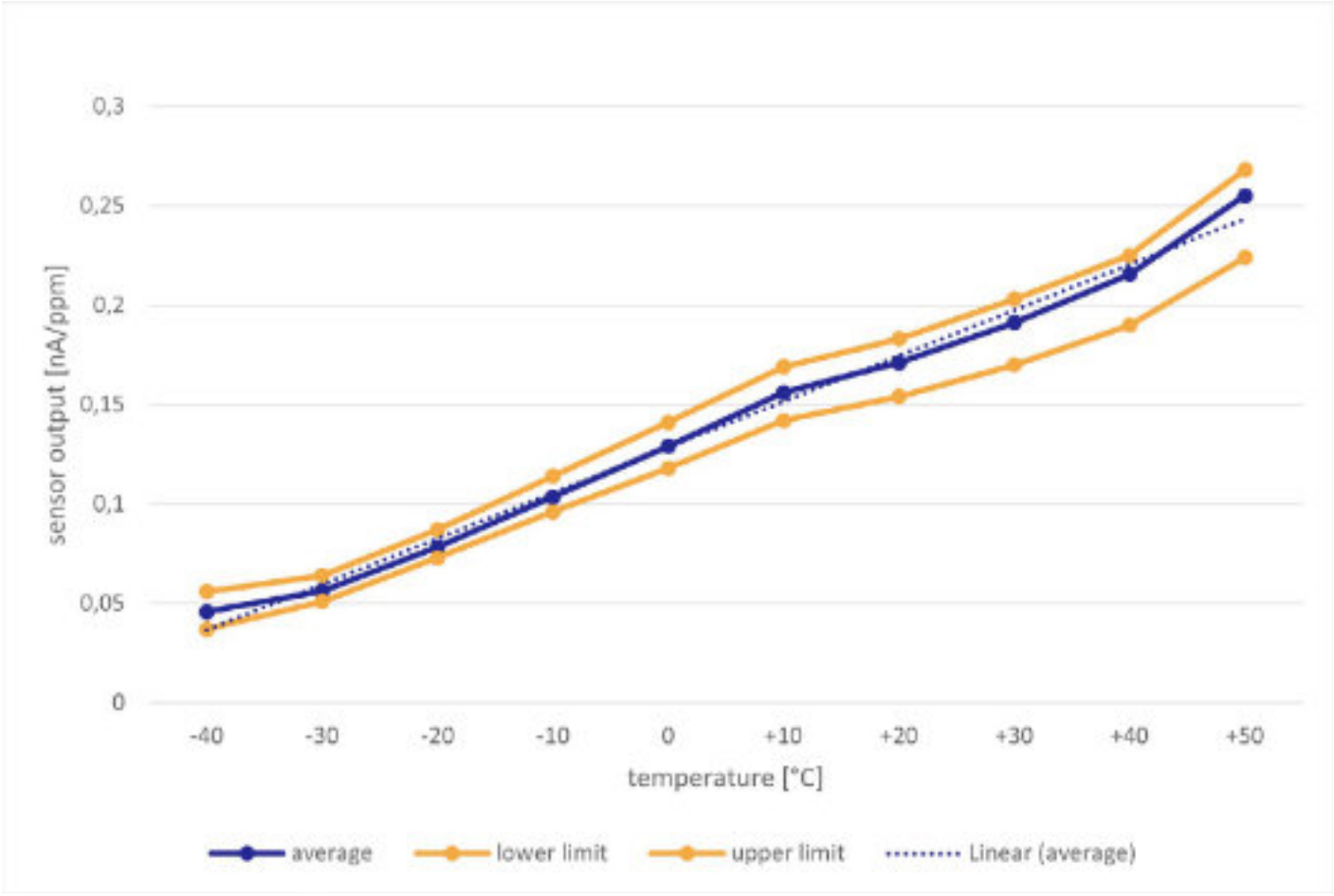
Temperature Curve



DISCLAIMER:
SGX Europe Sp. z o.o. reserves the right to change design features and specifications without prior notification. We do not accept any legal responsibility for customer applications of our sensors. SGX Europe Sp. z o.o. accepts no liability for any consequential losses, injury or damage resulting from the use of this document, the information contained within or from any omissions or errors herein. This document does not constitute an offer for sale and the data contained is for guidance only and may not be taken as warranty. Any use of the given data must be assessed and determined by the user thereof to be in accordance with federal, state and local laws and regulations. All specifications outlined are subject to change without notice.
SGX Europe Sp. z o.o. sensors are designed to operate in a wide range of harsh environments and conditions. However, it is important that exposure to high concentrations of solvent vapours is to be avoided, both during storage, fiĨ ng into instruments and operation. When using sensors on printed circuit boards (PCBs), degreasing agents should be used prior to the sensor being fiJ ed. SGX Europe Sp. z o.o. makes every effort to ensure the reliability of its products. Where life safety is a performance requirement of the product, we recommend that all sensors and instruments using these sensors are checked for response to gas before use.

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