



Solid Polymer Electrochemical Gas Sensing Technology

ES1-AG1-10000-01 All Gas Sensor
Datasheet

Easy Gas Sensor









ES1-AG1-10000 All Gas











» Part Number

01-ES1-AG1-10000-01

» Futures

-  High sensitivity
-  Low cost alternative to PID
-  No electrolyte leakage
-  Low cost at large volumes
-  Individually calibrated (including test report)
-  Detect to most VOC gases
-  Strong signal to noise
-  Fast response time

» Typical Applications

-  Consumer Market
-  General Gas Detection
-  VOC Gas Detection
-  Low Power Nose
-  Mobile Phone Nose
-  Indoor Air Quality
-  Outdoor Air Quality
-  Breath Alcohol Detector



» Technical Specifications

Performance

Sensitivity	10 nA/ppm ± 5 nA/ppm
Zero Current	± 100nA
Range	0-10000ppm
Maximum Overload	20000ppm
Resolution (16Bit ADC)	10ppm
Response Time	T ₅₀ < 10s, T ₉₀ < 30s
Repeatability	1%
Lower Detectable Limit (LDL)	≤ 4ppm
Linear Range	10000 ppm

Environment

Operating Temperature Range	-40 to +55°C
Operating Humidity Range	15-95 %RH. Non-condensing
Operating Pressure Range	800 to 1200 hPa
Storage Temperature	0 to 20°C

Operation

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

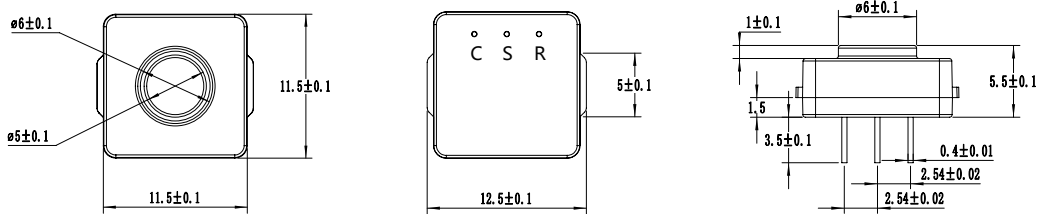
Lifetime

Long-Term Drift	< 1 %/month
Expected Lifetime	> 3 years in air
Zero Drift in Clean Air	< 2 ppm
Storage Life	12 months
Warranty	12 months

Housing

Housing Material	PPO
Weight	< 0.7g

» Dimensions



» Cross Sensitivity

Gas	Formula	Test Concentration	Sensor Reading
Isobutene	C_4H_8	5ppm	5ppm
Formaldehyde	HCHO	5ppm	5.29ppm
Methyl Mercaptan	CH_4S	5ppm	7ppm
Acetaldehyde	C_2H_4O	5ppm	3.84ppm
Ethanol	C_2H_6O	5ppm	1.83ppm
Carbon Disulfide	CS_2	5ppm	1.23ppm
Dimethyl Disulfide	$C_2H_6S_2$	2ppm	6.79ppm
Methanol	CH_4O	5ppm	5.96ppm
Ethyl Mercaptan	C_2H_6S	5ppm	8.97ppm
Styrene	C_8H_8	0.5ppm	7.5ppm
Benzene	C_6H_6	5ppm	1.1ppm
Toluene	C_7H_8	5ppm	0.81ppm
P-xylene	C_8H_{10}	5ppm	0.59ppm
Gasoline Volatilization (Dimensionless)	Aliphatic hydrocarbons, cycloalkanes, aromatic hydrocarbons	/	5.5ppm
Dining Lampblack (Dimensionless)	Unsaturated hydrocarbons	/	4.65ppm
Formic Acid	HCOOH	5ppm	5.37ppm
Acetic Acid	CH_3COOH	5ppm	1.1ppm
Acrylonitrile	C_3H_3N	5ppm	0.4ppm
Acetylene	C_2H_2	5ppm	1.64ppm
Butadiene	C_4H_6	5ppm	8.68ppm
Ethylene	C_2H_4	5ppm	0.59ppm

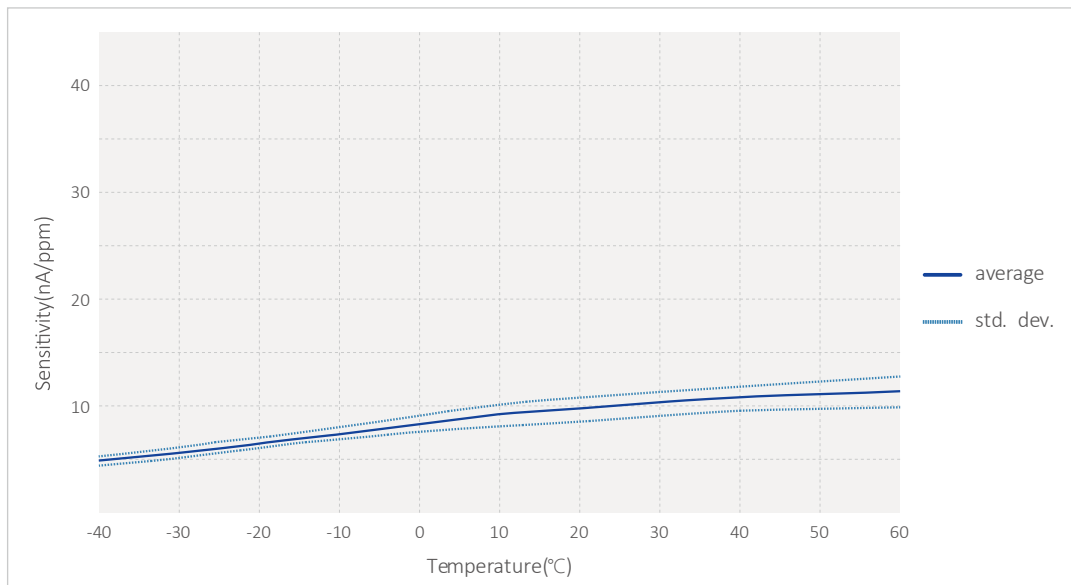
» Cross Sensitivity

Gas	Formula	Test Concentration	Sensor Reading
Carbon Monoxide	CO	5ppm	3.38ppm
Hydrogen Chloride	HCl	5ppm	0.27ppm
Hydrogen Cyanide	HCN	5ppm	0.36ppm
Ammonia	NH ₃	5ppm	1.5ppm
Hydrogen	H ₂	5ppm	1.15ppm
Sulphur Dioxide	SO ₂	5ppm	5ppm
Trimethylamine	C ₃ H ₉ N	5ppm	0.65ppm

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, other gas please contact with us.

» Temperature Curve



Note: 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 is different under different environmental conditions. If you have any questions, please contact us.

Disclaimer

The EC Sense performance data stated above is based on data obtained under test conditions using the EC Sense gas distribution system and AQS test software. In the interest of continuous product improvement, EC Sense reserves the right to change design features and specifications without notice. We are not responsible for any loss, injury or damage caused by this. EC Sense assumes no responsibility for any indirect loss, injury or damage resulting from the use of this document, the information contained therein or any omissions or errors herein. This document does not constitute an offer to sell. The data it contains are for informational purposes only and cannot be considered a guarantee. Any use of the given data must be evaluated and determined by the user to comply with federal, state and local laws and regulations. All specifications outlined are subject to change without notice.

 **Warning**

EC Sense sensors are designed for use in a variety of environmental conditions. However, due to the principles and characteristics of solid polymer electrochemical sensors and to ensure normal use, users must strictly follow this article during storage, assembly and operation of the module. General-purpose PCB circuit board application methods and illegal applications / violation of the application will not be covered by the warranty. Although our products are highly reliable, we recommend checking the module's response to the target gas prior to utilization to ensure on-site use. At the end of the products service life, please do not discard any electronics in the domestic waste, instead follow the local governments electronic waste recycling regulations for disposal.



**Business Centre
Europe and the rest of the world**

EC Sense GmbH
Wangener Weg 3
82069 Hohenschäftlarn, Germany
Tel: +49(0)8178-99992-10 Fax: +49(0)8178-99992-11
Email: office@ecsense.com
www.ecsense.com www.ecnose.de

**Business Centre
Asia**

Ningbo AQSystems Technology Co., Ltd.
F4-17 Building, Zhong Wu Technology Park No.228,
Jin Gu Bei Road, Yinzhou District NingBo,
Zhejiang Province, P.R. China Post Code: 315100
Tel: +86(0)574 88097236, 88096372
Email: info@aqsystems.cn
www.ecsense.cn, www.ecnose.com