Solid Polymer Sensor
ES1-AG1-1000 - All Gas

Technical Specification

Part Number:

01-ES1-AG1-1000-01

Performance

Sensitivity	55 ± 15 nA / ppm
Zero current	± 100 nA
Response time	
$-T_{50}$	< 10 s
$-T_{90}$	< 30 s
Range	1000 ppm
Repeatability	1 %
Lower Detectable Limit (LDL)	<1 ppm
Resolution (16Bit ADC)	0.1 ppm
Maximum overload	2000 ppm
Linear range	1000 ppm

Environment

Temperature Range	-40 to 50 °C
Humidity Range (non condensing)	10 to 95 % R.H
Pressure Range	800 to 1200 hPa

Operation

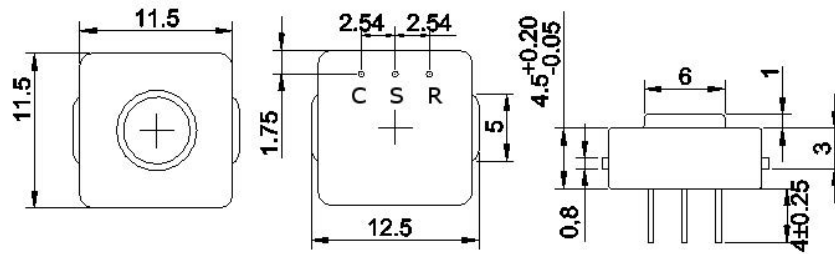| Operating principle	amperometric, 3-electrode
Bias voltage	0 mV
Recommended load resistor	100
Warm up time	< 90 / 60 s

Lifetime

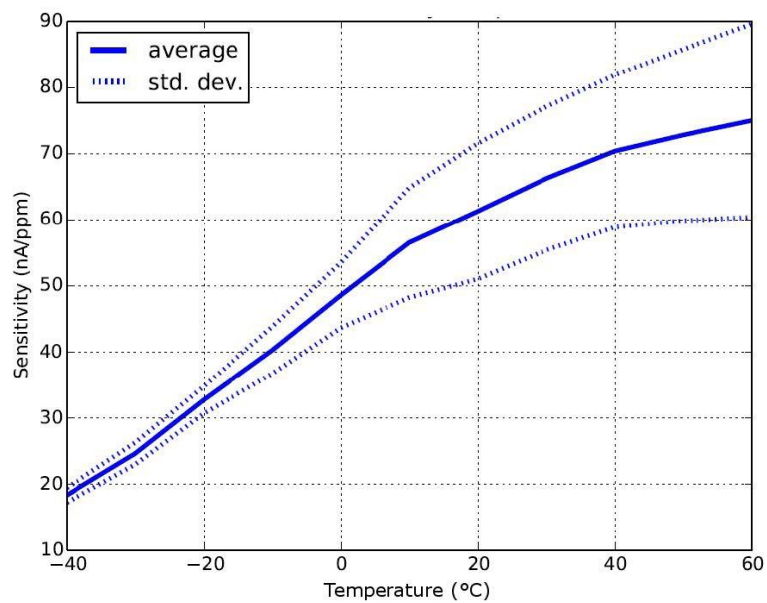| Long Term Sensitivity Drift	< 1 %/month
Zero Drift in clean air	< 2 ppm
Storage conditions	0-20 °C
Storage life	6 month
Expected Life Time	> 3 years
Warranty	24 month

Housing

Housing material	ABS
Weight	< 0.7 g

Features

- 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
- Smallest EC Sensor in the world
- 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

EC-Sense GmbH, Wolfratshauser Str. 53, 82067 Ebenhausen, Germany
Phone: +49 8178 9095130   Fax: +49 8178 9095131
Email: info@ecsense.de   www.ecsense.de

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Dimensions

All dimensions in mm

Temperature curve

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Cross sensitivity

Gas	Formula	Test concentration (ppm)	Sensor reading (ppm)
Ammonia	NH_3	50	0
Carbon Dioxide	CO_2	1000	0
Carbon Monoxide	CO	100	100
Chlorine	Cl_2	1.0	0
Dichlor methane	CH_2Cl_2	30	0
Ethanol	$C_2H_5Cl_2$	104	100
Ethylene oxide	C_2H_5OH	14	<2
Ethylene	C_2H_4		Yes
Hydrogen	H_2	100	20
Hydrogen Sulphide	H_2S	10	400
Hydrogen Cyanide	HCN	10	9
Isopropanol	C_3H_7OH		yes
Methan	CH_4	30000	0
Methanal	HCHO		Yes
Methanol	CH_3OH		Yes
Methylpropene	C_4H_8	15	18
Nitric Oxide	NO	25	n.e.
Nitrogen Dioxide	NO_2	10	-5
Ozone	O_3	0.5	0
Sulphur Dioxide	SO_2		yes
Toluene	C_7H_8		No
Xylene	C_5H_{10}		No
Gasoline			yes
Acetylene	C_2H_2		yes
Methyl Mercaptan	CH_4S		yes
Phosphine	PH_3		yes
Tetrahydrothiophene	THT	10	<1
Vinyl Chloride	C2H3Cl		yes
Formaldehyde	HCHO		yes
Ozone	O_3		yes
Hydrazine	N2H4		yes
Arsine	AsH_3		yes

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Fluorine	F$_2$	yes
Chlorine Dioxide	ClO$_2$	No
Bromine	Br$_2$	No
Hydrogen Chloride	HCl	No
Hydrogen Bromide	HBr$_2$	No
Acrylonitrile	CH2CHCN	No
Acetone	CH3COCH3	No

Above sensor reading in ppm after calibration to CO.

Cross sensitivities indicated withyes showed a signal response under a bump test.

We will continue to do more cross gas testing.

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