ES4-AG1-10-01

# ES4-AG1-10 All-Gas / VOC Sensor

EC Sense • VOC / All-Gas • Solid Polymer Electrochemical (3-electrode amperometric)

The EC Sense ES4-AG1-10-01 uses solid-polymer electrochemical technology and is essentially an "All-Gas" sensor — equivalent to VOC/TVOC detection. It responds to a broad spectrum of volatile and toxic gases including carbon monoxide, hydrogen, ammonia, hydrogen sulfide, sulfur dioxide, nitrogen oxides, ozone and phosphine, making it a low-cost electrochemical alternative to VOC sensors and PIDs. Calibrated with CO and Isobutene; 0 – 10 ppm range, 100 ppm maximum overload, T90 response under 30 s and a designed lifetime over 3 years. Standard ABS housing at about 6 g, easy to integrate via pin soldering into conventional gas-detection modules.

## Specifications

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|---|---|
| **Operating Principle** | Amperometric, 3-electrode, 0 mV bias |
| **Range** | 0 – 10 ppm |
| **Maximum Overload** | 100 ppm |
| **Resolution** | 0.01 ppm (16-bit ADC) |
| **Sensitivity** | 40 nA/ppm ±10 (CO); 55 nA/ppm ±15 (Isobutene) |
| **Response Time** | T50 < 10 s, T90 < 30 s |
| **Repeatability** | 1% |
| **Linearity** | Linear |
| **Zero Current** | ±100 nA |
| **Recommended Load** | 100 Ω |
| **Warm-Up Time** | < 60 s |
| **Operating Temp.** | -40 ℃ ~ +55 ℃ |
| **Operating Humidity** | 15–95% RH (non-condensing) |
| **Operating Pressure** | 800 – 1200 hPa |
| **Housing** | ABS |
| **Weight** | < 6 g |
| **Long-Term Drift** | < 5 %/year |
| **Expected Lifetime** | > 3 years |
| **Storage Life** | 12 months |
| **Warranty** | 12 months |

## Key Features

- Highly selective detection of a wide variety of gases
- Long lifetime > 3 years
- No-poisoning

- Typical warm-up time in seconds
- Fast response time
- nA-level power consumption
- Linear output, no zero-line drift
- Wide operating range -40 ℃ to +55 ℃
- Standard ABS package, easy to assemble
- RoHS compliant

## Typical Applications

- Industrial Safety
- Leakage Detection
- Gas Manufacturing Process Monitoring
- Emission Monitoring
- Sewage/Water Treatment Plant
- Biogas
- Garbage Disposal
- Food Industry
- Indoor Air Quality
- Garages
- Medical & Health Care

## Calibration & Cross-Sensitivity

Calibrated with Carbon Monoxide (CO) and Isobutene (C4H8). Cross-sensitivity exists for $H_2$, $NH_3$, $H_2S$, $SO_2$, $NO/NO_2$, $O_3$, $PH_3$ and more — see the cross-sensitivity table in the datasheet.