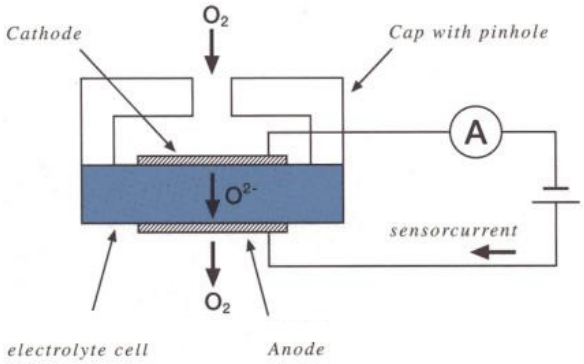
Micro Oxygen Sensor
SO-AO-xxx

- Measuring ranges 0.01% to 96% Oxygen
- High accuracy
- Stable Sensor characteristics across ranges
- Sensor signal not affected by temperature
- Minimal interference with other gases
- Long service life
- Low drift with single point calibration
- Low temperature Zirconium Dioxide (ZrO2) technology
- Optional electronics control board with industry standard outputs



Applications

Medical
- Oxygen concentrators
- Incubators

Laboratory
- Inert gas processing cabinets (glove boxes)
- Incubators (controlled bacterial growth)

Food industry
- Packaging
- Controlled food testing
- Monitoring fruit ripening processing (storage / transport)

Measuring instrumentation
- Oxygen meters (stationary / portable)
- Measurements under controlled O_2 content

Security technology/Monitoring
- Fire protection (increased N_2 atmosphere e.g., server rooms)
- Greenhouses, wine cellar
- Gas storage, refineries
- Diving
- Fermentation units

(Electrical-) industry
- Inert gas processing machines and cabinets
- Inert gas welding monitoring
- Storage with increased N_2 atmosphere (oxidation prevention)
- Drying units
- Nitrogen concentrators

Characteristic Data

Measuring Gas	Measuring Principle
Gaseous Oxygen In Nitrogen	Limiting Current Zirconium Dioxide Sensor

Measuring ranges

Sensor part number	Measuring range	Output current	At gas composition	Sensor bias voltage
SO-AO-010	0.01 % O_2 – 1.0 % O_2	150 µA – 250 µA	1.0 % O_2 , remainder N_2	0.75 volt
SO-AO-020	0.01 % O_2 – 2.0 % O_2	150 µA – 250 µA	2.0 % O_2 , remainder N_2	0.75 volt
SO-AO-050	0.05 % O_2 – 5.0 % O_2	150 µA – 250 µA	5.0 % O2 , remainder N_2	0.80 volt
SO-AO-250	0.10 % O_2 – 25.0 % O_2	100 µA – 200 µA	20.9 % O_2 , remainder N_2 (air)	0.85 volt
SO-AO-960	1.00 % O_2 – 96.0 % O_2	15 µA – 30 µA	20.9 % O_2 , remainder N_2 (air)	1.60 volt

*Operation outside the specified measuring range can cause a permanent damage of the electrode

Accuracy, reproducibility and response time

Sensor part number	Accuracy	Reproducibility
SO-AO-010	± 100 ppm O_2	< 100 ppm O_2
SO-AO-020	± 200 ppm O_2	< 100 ppm O_2
SO-AO-050	± 500 ppm O_2	< 250 ppm O_2
SO-AO-250	± 0.25 % O_2	< 0.1 % O_2
SO-AO-960	± 1.00 % O_2	< 0.2 % O_2

Sensor voltage / heating voltage / power consumption / heater cold resistance

Sensor voltage:	0.7 to 1.6 vol
Heating voltage:	4 volts (current limitation 500mA)
Power consumption:	1.7 to 1.9 watts (depends on application and packaging)
Cold resistance:	$R(_{25°C})$ = 3.25 Ω ± 0.20 Ω

Warm up time	Response time (t90)
Min. 30 s	2 to 25 seconds (depends upon gas exchange and flow)

Maximum permissible operating temperature

350degC

Permissible volumetric flow rate (purging the sensor)

Maximum flow rate depends on the way of purging the sensor (sensor in direct gas flow, gas beam shape, etc.) and the size of the measuring chamber.

Lifetime (MTTF)

~ 20.000 hours
(Depending on measuring medium. Stated lifetime refers to a heated, operated sensor of type SO-AO-250 and SO-AO-960. A failure or reaching the lifetime typically means a slight deviation from the dispatch specifications).

Vibration resistance

Sensors meet the European Norm EN60068-2-6 (Sinusoidal vibration tests).

Output characteristic

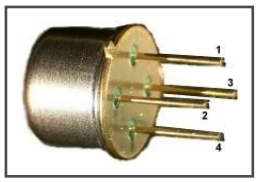
Is (O2)	Sensor current in µA
[O2]	Oxygen concentration in %
k	specific constant of sensor

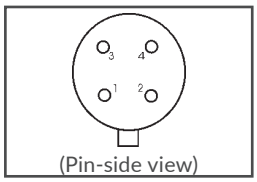
$$Is(O_2) = -k \cdot \ln\left(1 - \frac{[O_2]}{100}\right)$$

Pin Connection Standard Housing

Standard housing TO39 (Type SO-A0-xxx)

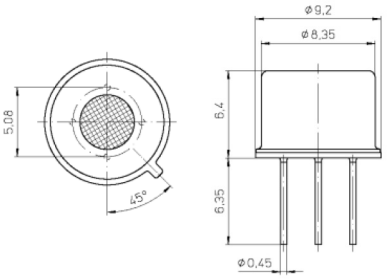
1. H+ (HS+)
2. H- (HS-)
3. Sen+
4. Sen-





Housing Types		
Type	Housing	Dimensions
SO-AO-XXX	TO39	Ø 9.2mm; H=6.4mm; pin distance 3.59mm

Temperature of the housing during operation		
Type	Housing	Max. temperature
SO-AO-XXX	TO39	250 °C
(Measured at ambient temperature of 25°C)		



Part number ordering information

Sensor part number	Measuring range
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SO-AO-020	0.01 % O_2 – 2.0 % O_2
SO-AO-050	0.05 % O_2 – 5.0 % O_2
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For electronics control board option see Datasheet “GSB- Generic Sensor Board”
Generic Sensor Board (GSB) provides a standard connection for board (solder) or cable mount sensors.
Power supply: 6-25VDC. Linear signal outputs: 0-5VDC, 4-20mA and digital RS232 outputs

Optional:
Digital I/O open collector outputs
Custom electronics board

CAUTION

SENSORE Electronic GmbH is part of the Process Sensing Technologies Group (PST).

As customer applications are outside of PST control, the information provided is given without legal responsibility. Customers should test under their own conditions to ensure the equipment is suitable for the intended application(s).

We adopt a continuous development program which sometimes necessitates specification changes without notice.
For technical assistance or enquiries about other options, please contact us here:
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