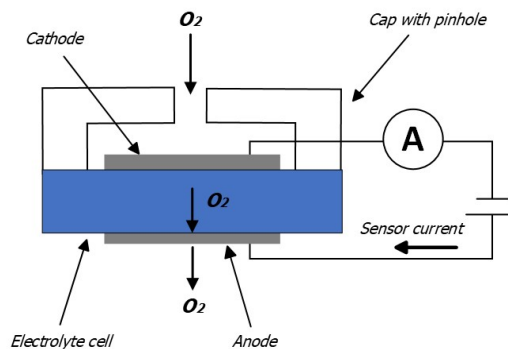


## Mini Oxygen Sensor Hose Connection SO-E3-xxx

- Full scale ranges from 1% to 96% Oxygen
- High accuracy
- Stable Sensor characteristics across range
- Sensor signal not affected by temperature
- Minimal interference with other gases
- Long service life
- Single point lifetime calibration
- Zirconium Dioxide (ZrO<sub>2</sub>) technology
- Surface temperature <70degC in operation
- Optional electronics control board with industry standard outputs
- Negligible pressure influence at atmospheric pressure



### 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<sub>2</sub> content
- Air conditioning and ventilation

#### Security technology/Monitoring

- Fire protection (increased N<sub>2</sub> 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<sub>2</sub> atmosphere (oxidation prevention)
- Drying units
- Nitrogen concentrators

## Characteristic Data

Measuring Gas	Measuring Principle
Oxygen O <sub>2</sub> concentration	Limiting current zirconium dioxide sensor

Measuring ranges				
Sensor part number	Measuring range	Output current	At gas composition	Sensor bias voltage
SO-E3-010	0.01 % O <sub>2</sub> – 1.0 % O <sub>2</sub>	150 µA – 250 µA	1.0 % O <sub>2</sub> , balance N <sub>2</sub>	0.75 volt
SO-E3-020	0.01 % O <sub>2</sub> – 2.0 % O <sub>2</sub>	150 µA – 250 µA	2.0 % O <sub>2</sub> , balance N <sub>2</sub>	0.75 volt
SO-E3-050	0.05 % O <sub>2</sub> – 5.0 % O <sub>2</sub>	150 µA – 250 µA	5.0 % O <sub>2</sub> , balance N <sub>2</sub>	0.80 volt
SO-E3-250	0.10 % O <sub>2</sub> – 25.0 % O <sub>2</sub>	100 µA – 200 µA	20.9 % O <sub>2</sub> , balance N <sub>2</sub> (air)	0.85 volt
SO-E3-960	1.00 % O <sub>2</sub> – 96.0 % O <sub>2</sub>	15 µA – 30 µA	20.9 % O <sub>2</sub> , balance N <sub>2</sub> (air)	*1-1.6 volt
Operation outside the specified measuring range can cause a permanent damage of the electrode				
*Depending on application				

Accuracy, reproducibility		
Sensor part number	Accuracy	Reproducibility
SO-E3-010	± 100 ppm O <sub>2</sub>	< 100 ppm O <sub>2</sub>
SO-E3-020	± 200 ppm O <sub>2</sub>	< 100 ppm O <sub>2</sub>
SO-E3-050	± 500 ppm O <sub>2</sub>	< 250 ppm O <sub>2</sub>
SO-E3-250	± 0.25 % O <sub>2</sub>	< 0.1 % O <sub>2</sub>
SO-E3-960	± 1.00 % O <sub>2</sub>	< 0.2 % O <sub>2</sub>

Sensor voltage / heating voltage / power consumption / heater cold resistance	
Bias voltage:	0.7 to 1.6 volts
Heater voltage:	3.6 volts (depends on application)
Power consumption:	1.5 watts (depends on application)
Cold resistance:	R <sub>(25°C)</sub> = 3.25 Ω ± 0.25 Ω

Warm up time	Response time (t <sub>90</sub> )
Min. 30 s	< 5 seconds

Maximum permissible operating temperature
350 °C (Depending on assembly)

Lifetime (MTTF)
MTTF typical 10 years

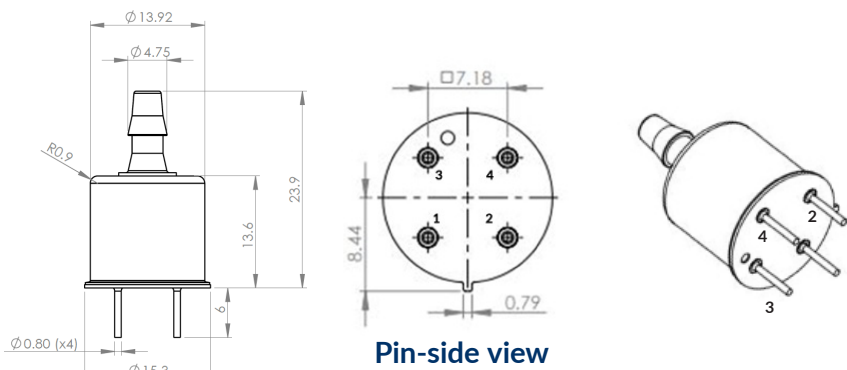
Vibration resistance
Sensors meet the European Norm EN60068-2-6 (Sinusoidal vibration tests).

Output characteristic	
$I_s(O_2) = -k \cdot \ln\left(1 - \frac{[O_2]}{100}\right)$	<p>I<sub>s</sub> (O<sub>2</sub>)    Sensor current in µA</p> <p>[O<sub>2</sub>]        Oxygen concentration in %</p> <p>k             specific constant of sensor</p>

## Pin Connection Standard Housing

Standard housing TO8 (Type SO-E3-xxx)

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



### Housing Types

Type	Housing	Dimensions
SO-E3-xxx	TO8 with hose connection	Ø 15,3 mm; H= 23,9 mm; pin distance 7,18 mm; hose connection Ø 4,8 mm

### Temperature of the housing during operation

Type	Housing	Max. temperature
SO-E3-xxx	TO8 with hose connection	70 °C

### Part number ordering information

Sensor part number	Measuring range
SO-E3-010	0.01 % O <sub>2</sub> – 1.0 % O <sub>2</sub>
SO-E3-020	0.01 % O <sub>2</sub> – 2.0 % O <sub>2</sub>
SO-E3-050	0.05 % O <sub>2</sub> – 5.0 % O <sub>2</sub>
SO-E3-250	0.10 % O <sub>2</sub> – 25.0 % O <sub>2</sub>
SO-E3-960	1.00 % O <sub>2</sub> – 96.0 % O <sub>2</sub>

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

### 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. Nominal 12VDC 0.5A. 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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