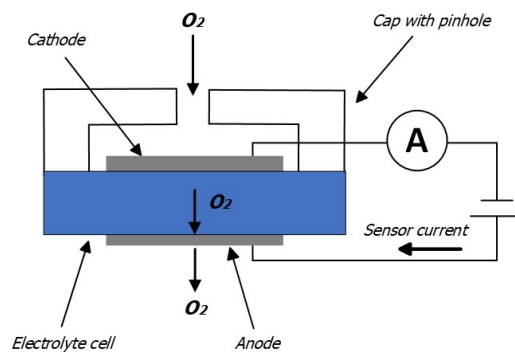


## Mini Oxygen Sensor Flanged SO-B1-xxx

- Measurement ranges from 10ppm to 96% Oxygen (See page 2)
- High accuracy
- Stable Sensor characteristic 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-B1-001                                                                                     | 10 ppm O <sub>2</sub> - 1000 ppm O <sub>2</sub> | 150 µA - 250 µA | 1000 ppm O <sub>2</sub> , balance N <sub>2</sub>     | 0.70 volt           |
| SO-B1-010                                                                                     | 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-B1-020                                                                                     | 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-B1-050                                                                                     | 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-B1-250                                                                                     | 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-B1-960                                                                                     | 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-B1-001                 | ± 20 ppm O <sub>2</sub>  | < 10 ppm O <sub>2</sub>  |
| SO-B1-010                 | ± 100 ppm O <sub>2</sub> | < 100 ppm O <sub>2</sub> |
| SO-B1-020                 | ± 200 ppm O <sub>2</sub> | < 100 ppm O <sub>2</sub> |
| SO-B1-050                 | ± 500 ppm O <sub>2</sub> | < 250 ppm O <sub>2</sub> |
| SO-B1-250                 | ± 0.25 % O <sub>2</sub>  | < 0.1 % O <sub>2</sub>   |
| SO-B1-960                 | ± 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:                                                               | 3.7 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 (t90) |
|--------------|---------------------|
| Min. 30 s    | < 12 sec            |

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

| 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)       |
|-----------------------|
| MTTF typical 10 years |

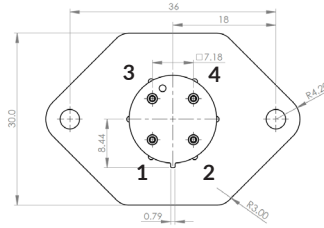
| Vibration resistance                                                     |
|--------------------------------------------------------------------------|
| Sensors meet the European Norm EN60068-2-6 (Sinusoidal vibration tests). |

| Output characteristic                                       |            |                             |
|-------------------------------------------------------------|------------|-----------------------------|
| $I_s(O_2) = -k \cdot \ln\left(1 - \frac{[O_2]}{100}\right)$ | $I_s(O_2)$ | Sensor current in $\mu A$   |
|                                                             | $[O_2]$    | Oxygen concentration in %   |
|                                                             | $k$        | specific constant of sensor |

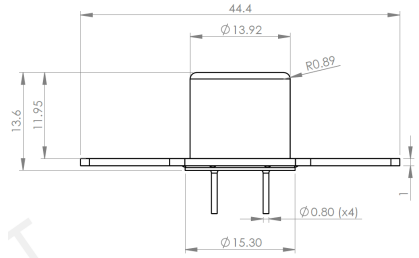
## Pin Connection Standard Housing

Standard housing TO8 (Type SO-B1-xxx)

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



Pin-side view



### Housing Types

| Type      | Housing               | Dimensions                                                                                     |
|-----------|-----------------------|------------------------------------------------------------------------------------------------|
| SO-B1-xxx | TO8 + mounting flange | Ø 15.3 mm; H= 13.7 mm; pin distance 7.18 mm; mounting holes (flange): Ø 3.4 mm, distance 36 mm |

### Temperature of the housing during operation

| Type      | Housing               | Max. temperature |
|-----------|-----------------------|------------------|
| SO-B1-xxx | TO8 + mounting flange | 70°C             |

(Measured at ambient temperature of 25°C)

### Part number ordering information

| Sensor part number | Measuring range                                 |
|--------------------|-------------------------------------------------|
| SO-B1-001          | 10 ppm O <sub>2</sub> - 1000 ppm O <sub>2</sub> |
| SO-B1-010          | 0.01 % O <sub>2</sub> - 1.0 % O <sub>2</sub>    |
| SO-B1-020          | 0.01 % O <sub>2</sub> - 2.0 % O <sub>2</sub>    |
| SO-B1-050          | 0.05 % O <sub>2</sub> - 5.0 % O <sub>2</sub>    |
| SO-B1-250          | 0.10 % O <sub>2</sub> - 25.0 % O <sub>2</sub>   |
| SO-B1-960          | 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 as 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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