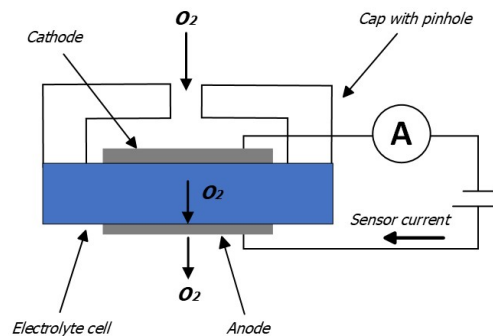


## M16 Thread Oxygen Sensor SO-D0-XXX-AXXXC

- Full scale ranges from 1000 ppm to 96% oxygen
- 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 concentrator

## 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-D0-001-AXXXC	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-D0-010-AXXXC	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-D0-020-AXXXC	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-D0-050-AXXXC	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-D0-250-AXXXC	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-D0-960-AXXXC	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-D0-001-AXXXC	± 20 ppm O <sub>2</sub>	< 10 ppm O <sub>2</sub>
SO-D0-010-AXXXC	± 100 ppm O <sub>2</sub>	< 100 ppm O <sub>2</sub>
SO-D0-020-AXXXC	± 200 ppm O <sub>2</sub>	< 100 ppm O <sub>2</sub>
SO-D0-050-AXXXC	± 500 ppm O <sub>2</sub>	< 250 ppm O <sub>2</sub>
SO-D0-250-AXXXC	± 0.25 % O <sub>2</sub>	< 0.1 % O <sub>2</sub>
SO-D0-960-AXXXC	± 1.00 % O <sub>2</sub>	< 0.2 % O <sub>2</sub>

Sensor voltage / heating voltage / power consumption / heater cold resistance	
Sensor voltage:	0.7 to 1.6 volts
Heating voltage:	4.1 volts (depends on application)
Power consumption:	1.8 watts (depends on application)
Cold resistance:	$R_{(25^{\circ}C)} = 3.25 \Omega \pm 0.25 \Omega$

Warm up time	Response time (t90)
Min. 30 s	< 5 seconds

Maximum permissible operating temperature
200 °C limited by cable assembly

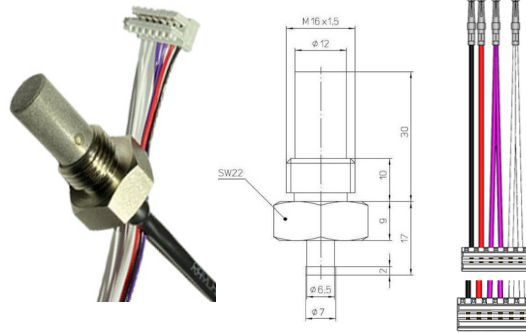
Lifetime (MTTF)
MTTF typical 10 years

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

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

**RAST connector pinouts**

1. Sen-
2. Sen+
3. H+
4. HS+
5. H-
6. HS-



Sensors with connecting leads (teflon isolation with temperature stability up to 250 °C):			
Rast - 2.5 plug keying	Cable Colour	Sensor Pin Connection	Connected to sensor pin No.
1	Black	Sen-	4
2	Red	Sen+	3
3	Violet 1	H+	1
4	Violet 2	HS+	1
5	White 1	H-	2
6	White 2	HS	2

**Housing Types**

Type	Housing	Dimensions
SO-D0-xxx-xxxxx	Screw mountable housing with sintered metal top	M 16 * 1.5 mm L tot.= 49 mm; with connection cable sintered metal top Ø12 mm, L= 20 mm, SW22

**Temperature of the housing during operation**

Type	Housing	Max. temperature
SO-D0-xxx-xxxxx	Screw mountable housing with sintered metal top	70 °C

(Measured at ambient temperature of 25°C)

**Cable Information**

Type	Cable Length (mm)	Operating Temperature degC	Plug Connector
SO-D0-xxx-A100C	100	200 (*)	Rast 2,5
SO-D0-xxx-A300C	300	200 (*)	Rast 2,5

\*Operating temperature of the sensor is limited by the temperature resistance of the cable assembly or by the use of an optional Teflon filter.

**Part number ordering information**

Sensor part number	Measuring range
SO-D0-001-AXXXC	10 ppm O <sub>2</sub> - 1000 ppm O <sub>2</sub>
SO-D0-010-AXXXC	0.01 % O <sub>2</sub> - 1.0 % O <sub>2</sub>
SO-D0-020-AXXXC	0.01 % O <sub>2</sub> - 2.0 % O <sub>2</sub>
SO-D0-050-AXXXC	0.05 % O <sub>2</sub> - 5.0 % O <sub>2</sub>
SO-D0-250-AXXXC	0.10 % O <sub>2</sub> - 25.0 % O <sub>2</sub>
SO-D0-960 -AXXXC	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



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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.  
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