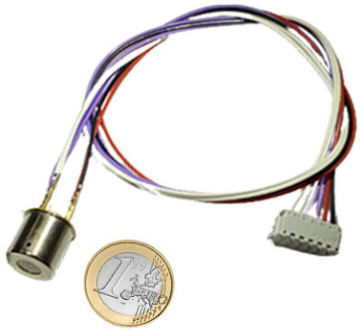
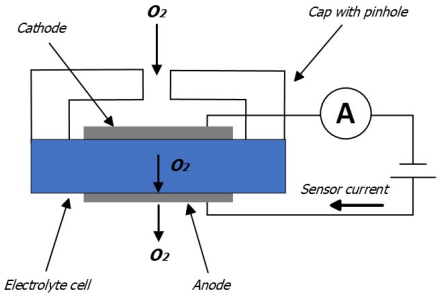
Mini Oxygen Sensor Cable Mount
SO-E2-XXX-D040C



- Full scale ranges from 1% 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 (ZrO2) 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_2 content
- Air conditioning and ventilation

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
Oxygen O2 concentration	Limiting current zirconium dioxide sensor

Measuring ranges

Sensor part number	Measuring range	Output current	At gas composition	Sensor bias voltage
SO-E2-010-D040C	0.01 % O_2 – 1.0 % O_2	150 µA – 250 µA	1.0 % O_2 , balance N_2	0.75 volt
SO-E2-020-D040C	0.01 % O_2 – 2.0 % O_2	150 µA – 250 µA	2.0 % O_2 , balance N_2	0.75 volt
SO-E2-050-D040C	0.05 % O_2 – 5.0 % O_2	150 µA – 250 µA	5.0 % O2 , balance N_2	0.80 volt
SO-E2-250-D040C	0.10 % O_2 – 25.0 % O_2	100 µA – 200 µA	20.9 % O_2 , balance N_2 (air)	0.85 volt
SO-E2-960-D040C	1.00 % O_2 – 96.0 % O_2	15 µA – 30 µA	20.9 % O_2 , balance N_2 (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-E2-010-D040C	± 100 ppm O_2	< 100 ppm O_2
SO-E2-020-D040C	± 200 ppm O_2	< 100 ppm O_2
SO-E2-050-D040C	± 500 ppm O_2	< 250 ppm O_2
SO-E2-250-D040C	± 0.25 % O_2	< 0.1 % O_2
SO-E2-960-D040C	± 1.00 % O_2	< 0.2 % O_2

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:	$R(_{25°C})$ = 3.25 Ω ± 0.25 Ω

Warm up time	Response time (t90)
Min. 30 s	< 12seconds

Maximum permissible operating temperature

200degC limited by cable 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

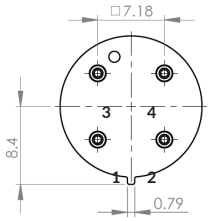
$$Is(O_2) = -k \cdot \ln\left(1 - \frac{[O_2]}{100}\right)$$

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

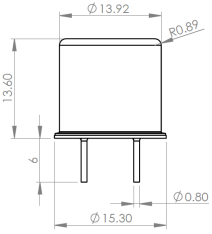
Pin Connection Standard Housing

RAST connector pinouts

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



Pin-side view



Sensors with connecting leads (teflon isolation with temperature stability up to 250 °C):

Rast - 2.5 plug keyring	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-E2-xxx	TO8	Ø 15,3 mm; H= 13.7 mm; pin distance 7,18 mm

Temperature of the housing during operation

Type	Housing	Max. temperature
SO-E2-xxx	TO8	70 °C
(Measured at ambient temperature of 25°C)		

Cable Information

Type	Cable Length (mm)	Operating Temperature degC	Plug Connector
SO-xx-xxx-D040C	40	125 (*)	Rast 2,5
Other cables and connector options available			
*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-E2-010-D040C	0.01 % O_2 – 1.0 % O_2
SO-E2-020-D040C	0.01 % O_2 – 2.0 % O_2
SO-E2-050-D040C	0.05 % O_2 – 5.0 % O_2
SO-E2-250-D040C	0.10 % O_2 – 25.0 % O_2
SO-E2-960-D040C	1.00 % O_2 – 96.0 % O_2
*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.
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