

Luminescence-based Optical Series

Optical Oxygen Sensors - LuminOx - LOX-02

Description

Developed by SST, the LuminOx family offers factory-calibrated oxygen sensors using luminescence-based optical technology. Featuring internal temperature and barometric sensors, these sensors accurately calculate and transmit oxygen concentration, partial pressure, temperature, and pressure data.

The optical technology ensures low power consumption and a significantly longer lifespan compared to electrochemical sensors. Internally temperature compensated, they communicate directly via UART without requiring additional signal conditioning circuitry. Being solid-state, lead-free, and 100% RoHS compliant, LuminOx sensors exhibit minimal cross sensitivity, making them reliable even in complex gas mixtures.



Specifications

Technical Specifications	
Supply voltage (Vs)	5V _{DC} (4.5V _{DC} ...5.5V _{DC})
Supply current (Is)	<7.5mA (streaming one sample per second), <20mA Peak
Output type	3.3V TTL level UART (5V tolerant)
Barometric pressure range	500...1200mbar
Temperature	Operating: 0...+45°C
	Storage: -30...+60°C
	Humidity: 0...99% Rh (non-condensing)
Output Values	
Oxygen range	0...25% O ₂
Oxygen pressure range	0...300mbar ppO ₂
Response time	T90 < 30s (typical)
Accuracy ^a	
ppO ₂	< 2% FS
Temperature	Indication only
Pressure	±5mbar
O ₂	Determined by ppO ₂ & pressure accuracy
Resolution	
ppO ₂	0.1mbar
Temperature	0.1°C
Pressure	1mbar
O ₂	0.01%

- Designed for full immersion in the gas sample (See LOX-02-S and LOX-02-F for sealed and flow through versions)
- Virtually no cross-sensitivity to other gases
- RoHS & REACH compliant
- Works in partial vacuum and high oxygen concentrations
- Works directly with a microcontroller including Arduino and Raspberry Pi
- Provides partial pressure O₂, percent O₂, temperature and barometric pressure outputs
- Non-depleting luminescence technology developed in-house

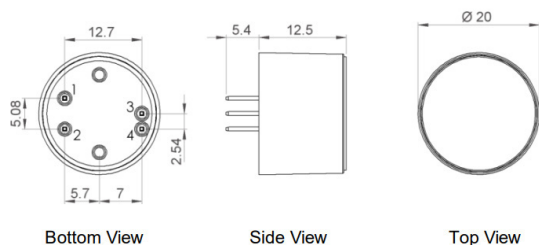
Core Applications

- Clean environments
- Welding
- Incubators
- Inert gas processes
- Transportation
- Controlled atmosphere

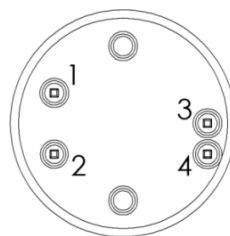
^aAt ambient conditions. All performance measurements are at STP unless otherwise stated. Following extreme temperature fluctuations, re-calibration may be required.

Outline Drawing

All dimensions shown in mm. Tolerances = ± 0.5 mm.



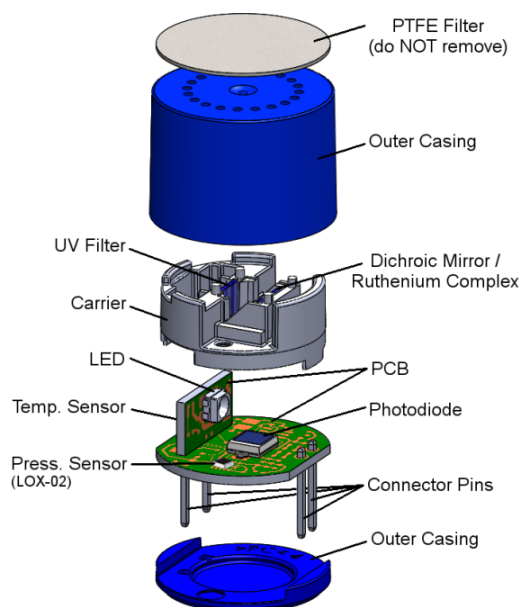
Electrical Interface



Pin	Designation
1	Vs (+5V)
2	GND (0V)
3	3.3V UART* Sensor Transmit
4	3.3V UART* Sensor Receive

*5V tolerant.

Sensor Construction



Connection: Four gold-plated pins (0,64mm²) on a 2,54mm grid for PCB mounting via sockets or hand soldering using no-clean flux.

Note: If hand soldering, recommended iron temperature is 370°C for < 3s per pin.

Note: Do NOT put the sensor through a PCB washing process.

Always apply power to sensor pins 1 and 2 before attempting to communicate on pins 3 and 4.



The sensor should be treated as an electronic component and handled using the correct ESD handling precautions

Order Information

Specify the part number below when ordering. Quantity price breaks apply.

L O X - 0 2

Caution

Do not exceed maximum ratings and ensure sensor(s) are operated in accordance with their requirements.

Carefully follow all wiring instructions. Incorrect wiring can cause permanent damage to the device.

Do NOT use chemical cleaning agents. The sensor housing can be cleaned using a damp cloth. Do NOT immerse the sensor in any cleaning media.

Failure to comply with these instructions may result in product damage.

These products must not be used in safety applications where product failure could cause injury or risk to life.

Information

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

General Note: SST Sensing Ltd. reserves the right to make changes to product specifications without notice or liability. All information is subject to SST Sensing Ltd.'s own data and considered accurate at time of going to print.

For technical assistance or advice, please email: sensors@dwyeromega.com