

Specifications

TRACE Oxygen Sensors

1 TRACE OXYGEN SENSOR SPECIFICATIONS

Only valid in water/gas (typ. air components) for 2-point calibrated sensors at 20°C, 1013mbar absolute pressure, using default measuring parameters/modes!

Specifications are valid for the following trace range sensors: minisensors (item no.: **TROXR430, TROXB430, TROXF1100**), robust probes (item no.: **TROXROB3, TROXROB10**), sensor spots/foils (item no.: **TROXSP5, TROXSP5-ADH, TROXSP5-ADH-STER, TROXFOIL**), and flow-through cells (item no.: **TROXFLOW**).

1.1 Gas Phase: partial pressure pO₂ (hPa), volume percent pV (% O₂ gas)

For a calibrated sensor, the partial oxygen pressure pO₂ in units of hPa (equivalent to mbar) is the fundamental oxygen unit measured by the oxygen meter (in gas and water phase).

Specifications		
Measuring Range	% O₂ gas	hPa
Optimum	0-10% O ₂	0-100 hPa
Maximum (not specified)	0-21% O ₂	0-210 hPa
Accuracy	typically 2% of reading, but not better than 0.005% O ₂	typically 2% of reading, but not better than 0.05 hPa
Resolution	0.002% O ₂ at 0.2% O ₂	0.02 hPa at 2 hPa
Detection Limit	0.005% O ₂	0.05 hPa

1.2 Dissolved Oxygen: % air saturation, $\mu\text{mol/L}$, mg/L = ppm , mL/L

Oxygen dissolved in water can be expressed in % air saturation and in concentration units like $\mu\text{mol/L}$, mg/L (ppm), and mL/L . For details on calculation of dissolved oxygen units from partial pressure readings (interpolation formula based on temperature, atmospheric pressure and salinity), please see the respective sensor/oxygen meter manuals.

Specifications		
Measuring Range Optimum Maximum (not specified)	% air saturation (a.s.) 0-50% a.s. 0-100% a.s	mg/L (ppm) 0-4.5 mg/L 0-9 mg/L
Accuracy	typically 2% of reading, but not better than 0.025% O ₂	typically 2% of reading, but not better than 0.002 mg/L
Resolution	0.01% air saturation at 1% a.s.	0.001 mg/L at 0.1 mg/L
Detection Limit	0.025% air saturation	0.002 mg/L

1.3 General Characteristics

Calibration Modes	0% O ₂ calibration obligatory
Temperature Range	0°C (32°F) to 50°C (122°F)
Application Areas	Laboratory, industry, research. NOT for medical or any safety-critical application. NOT for application in humans. NOT for application in food intended for human consumption.

1.4 Sensor Type Specific Characteristics

Response Time (t90) ‡	Minisensors	TROXFLOW	TROXROB	TROXSP5(ADH)
Gas (standard) Water (standard) Water (>10mL/min) Water (<10mL/min)	<2 sec <15 sec	<10 sec <20 sec <30 sec	<3 sec <20 sec	<3 sec <20 sec
Minimum Lifetime data points	1 mio.	10 mio.	10 mio.	20 mio.
TROXFLOW Tubing Connectors (Luer-Lock)	ID tubing 3.2 or 4.8 mm (item no. TROXFLOW)			
TROXFLOW Materials of FLOW cell (apart from sensing layer)	Polycarbonat and Polyamid (item no. TROXFLOW)			
Recommended flow rate for liquids TROXFLOW	1-500 mL/min (item no. TROXFLOW)			

‡ Typical response times for 90% signal change. For liquids: measured for the transition from air into a stirred solution of 1% Na₂SO₃

2 APPLICABILITY AND CROSS-SENSITIVITY

	Applicability	Cross-Sensitivity	NO Cross-Sensitivity
Water/Aqueous solutions	X		
Gas Phase (typ. air components)	X		
Ethanol ^{1,2}	short-term only		
Methanol ^{1,2}	short-term only		
Isopropanol ^{1,2}	short-term only		
Other organic solvents ³		X	
Chlorine gas (Cl ₂), NO ₂ gas, bleach		X	
pH 1-14 ⁴			X
CO ₂			X
CH ₄			X
H ₂ S			X
Any ionic species			X

¹ Not applicable for sensors with optical isolation (-OI).

² Only diluted and after conditioning- contact info@pyroscience.com for more information.

³ Includes liquid solvents and solvent vapors

⁴ pH 2-9 for **TROXSP5-ADH** & **TROXSP5-ADH-STER**

3 CLEANING, STERILIZATION, STORAGE

Cleaning	3% H ₂ O ₂ , Soap solution, short-term Ethanol
Sterilization	Minisensors & robust probes: short-term 70% ethanol, short-term 70% isopropanol, ethylene oxide (EtO, EO) sterilization (details on request) TROXFLOW: delivered pre-sterilized with 25kGy beta-radiation, short-term 70% Ethanol and 70% Isopropanol treatment is possible TROXSP5 (-ADH): autoclavable few cycles at 121°C for 15 min with special precautions (details on request), ethylene oxide (EtO, EO) sterilization (details on request)
Storage	>3 years in darkness at room temperature

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