

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.: **TROXFTC, TROXFTC2, 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 0.01% O ₂	
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 0.01% O ₂	
Resolution	0.01% air saturation at 1% a.s.	0.001 mg/L at 0.1 mg/L
Detection Limit	0.02% 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 time	For self-adhesive sensor spots (-ADH) in liquids limited to max. 1 month
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 (t ₉₀) ‡	Minisensors	TROXFTC/ TROXFTC2	TROXFLOW	TROXROB/ TROXSP5(ADH)
Gas (standard)	<2 sec	<1 sec	<10 sec	<3 sec
Water (standard)	<15 sec	<9 sec		<20 sec
Water (>10mL/min)			<20 sec	
Water (>10mL/min)			<30 sec	
Minimum Lifetime data points	1 mio.	10 mio.	10 mio.	10 mio. / 20 mio.
Flow-Through Cells Tubing Connectors (Luer-Lock)	ID tubing 1.6 or 2.4 mm (item no. TROXFTC) ID tubing 3.2 or 4.0 mm (item no. TROXFTC2) ID tubing 3.2 or 4.8 mm (item no. TROXFLOW)			
Recommended flow rate for liquids	10-100 mL/min (item no. TROXFTC) 20-500 mL/min (item no. TROXFTC2) 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	short-term 70% Ethanol, short-term 70% Isopropanol 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)
Storage	>3 years in darkness at room temperature

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