pyroscience
sensor technology

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 pO_2 (hPa), volume percent pV (% O_2 gas)

For a calibrated sensor, the partial oxygen pressure pO_2 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 Optimum Maximum (not specified)	**% O2 gas** 0-10% O2 0-21% O2	**hPa** 0-100 hPa 0-210 hPa
Accuracy	typically 2% of reading, but not better than 0.005% O2	typically 2% of reading, but not better than 0.05 hPa
Resolution	0.002% O2 at 0.2% O2	0.02 hPa at 2 hPa
Detection Limit	0.005% O2	0.05 hPa

1.2 Dissolved Oxygen: % air saturation, µmol/L, mg/L = ppm, mL/L

Oxygen dissolved in water can be expressed in % air saturation and in concentration units like µmol/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% O2	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) ‡ Gas (standard) Water (standard) Water (>10mL/min) Water (<10mL/min)	**Minisensors** <2 sec <15 sec	**TROXFLOW** <10 sec <20 sec <30 sec	**TROXROB** <3 sec <20 sec	**TROXSP5(ADH)** <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% Na_2SO_3

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
CO2			X
CH4			X
H2S			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_2O_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), UV treatment: wavelength of 254 nm for 30 minutes, ca. 60 cm from the light source (max. 600 mW*s/cm2)
Storage	>3 years in darkness at room temperature

Contact

PyroScience GmbH
Kackertstraße 11
52072 Aachen

Tel.: +49 (0)241 5183 2210
Fax: +49 (0)241 5183 2299
info@pyroscience.com

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Deutschland www.pyroscience.com