

# Specifications

## OPTICAL OXYGEN ROBUST PROBES

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### 1 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 robust oxygen probes (item no.: **OXROB10, OXROB10-CL4, OXROB10-HS, OXROB3, OXROB3-CL4, OXROBSC, OXROBGSC-CL5, OXROBGSC-CL10, OXROBGSC-CL20**).

#### 1.1 Gas Phase: partial pressure pO<sub>2</sub> (hPa), volume percent pV (% O<sub>2</sub> gas)

For a calibrated sensor, the partial oxygen pressure pO<sub>2</sub> in units of hPa (equivalent to mbar) is the fundamental oxygen unit measured by the oxygen meter (in gas and water phase).

Specifications		
<b>Measuring Range</b> Optimum Maximum (not specified)	<b>% O<sub>2</sub> gas</b> 0-50% O <sub>2</sub> 0-100% O <sub>2</sub>	<b>hPa</b> 0-500 hPa 0-1000 hPa
<b>Accuracy *</b> at 1% O <sub>2</sub> /10 hPa at 20% O <sub>2</sub> /200 hPa	±0.02% O <sub>2</sub> ±0.2% O <sub>2</sub>	±0.2 hPa ±2 hPa
<b>Resolution</b> at 1% O <sub>2</sub> /10 hPa at 20% O <sub>2</sub> /200 hPa	0.01% O <sub>2</sub> 0.05% O <sub>2</sub>	0.1 hPa 0.5 hPa
<b>Detection Limit</b>	0.02% O <sub>2</sub>	0.2 hPa

\* The absolute accuracy of full range sensors depends on the calibration mode. For 1-point calibrated sensors these values increase due to a decreasing accuracy. More details on request.

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

Oxygen dissolved in water can be expressed in % air saturation and in concentration units like  $\mu\text{mol/L}$ ,  $\text{mg/L}$  (ppm), and  $\text{mL/L}$ . 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.

<b>Specifications</b>		
<b>Measuring Range</b> Optimum Maximum (not specified)	<b>% air saturation (a.s.)</b> 0-250% a.s. 0-500% a.s.	<b>mg/L (ppm)</b> 0-22 mg/L 0-44 mg/L
<b>Accuracy *</b> at 5% a.s./0.44 mg/L at 95% a.s./8.8 mg/L	$\pm 0.1\%$ a.s. $\pm 1\%$ a.s.	$\pm 0.01$ mg/L $\pm 0.1$ mg/L
<b>Resolution</b> at 5% a.s./0.44 mg/L at 95% a.s./8.8 mg/L	0.05% a.s. 0.25% a.s.	0.005 mg/L 0.025 mg/L
<b>Detection Limit</b>	0.1% a.s.	0.01 mg/L

\* The absolute accuracy of the full range sensors depends on the calibration mode. For 1-point calibrated sensors these values increase due to a decreasing accuracy. More details on request.

## 1.3 General Characteristics

<b>Response Time (t90)‡</b> Gas (standard) Water (standard)	time for 90% of the total sensor signal change in stirred media <7 sec      <0.5 sec <b>OXROB10-HS</b> <15 sec      <3 sec <b>OXROB10-HS</b>		
<b>Temperature Range</b>	0°C (32°F) to 50°C (122°F) -2°C (28.4°F) to 40°C (104°F) <b>OXROB10-HS</b>		
<b>Minimum Lifetime</b>	10,000,000 data points 2,000,000 data points <b>OXROB10-HS</b>		
<b>Calibration Modes</b>	1-point and 2-point calibration		
<b>Sensor Dimensions</b> Length without cable (ca.) Shaft diameter (ca.) Sensor tip diameter (ca.)	<b>OXROB3</b> (all) 30 mm 3 mm 3 mm	<b>OXROB10</b> (all) 100 mm 3 mm 3 mm	<b>OXROBSC/OXROBGSC</b> 100 mm 3 -4 mm (tapered) 4 mm
<b>Cable length (ca.)</b>	<b>OXROB3/OXROB10</b> 2 m or 4 m	<b>OXROB10-HS/OXROBSC</b> 2 m	<b>OXROBGSC</b> 5, 10 & 20 m
<b>Application Areas</b>	Laboratory, industry, research. <b>NOT</b> for medical or any safety-critical application. <b>NOT</b> for application in humans. <b>NOT</b> for application in food intended for human consumption.		

‡ Typical response times for 90% signal change. For liquids: measured for the transition from air into a stirred solution of 1% Na<sub>2</sub>SO<sub>3</sub>

## 2 APPLICABILITY AND CROSS-SENSITIVITY

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

<sup>1</sup> Only diluted and after conditioning- contact [info@pyroscience.com](mailto:info@pyroscience.com) for more information.

<sup>2</sup> Includes liquid solvents and solvent vapors.

## 3 CLEANING, STERILIZATION, STORAGE

<b>Cleaning</b>	3% H <sub>2</sub> O <sub>2</sub> , soap solution, short-term ethanol
<b>Sterilization</b>	Short-term 70% ethanol, short-term 70% isopropanol, ethylene oxide (EtO, EO) sterilization (details on request)
<b>Storage</b>	>3 years in darkness at room temperature

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