

# Specifications

## Underwater Oxygen Sensors

---

### 1 OXYGEN SENSOR SPECIFICATIONS

**Only valid in water for 2-point calibrated sensors at 20°C, 1013mbar absolute pressure, using default measuring parameters/modes.**

Specifications are valid for underwater oxygen cap probes (item no.: **OXCAP-SUB**, **OXCAPG-HS-SUB**, **OXCAPG-UHS-SUB**), underwater oxygen sensor spots (item no.: **OXSP5-SUB**) and underwater oxygen robust probes (item no.: **OXROB10-SUB**, **OXROBSC-SUB**).

#### 1.1 Dissolved Oxygen: $\mu\text{mol/L}$ , $\text{mg/L}$ = ppm

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.

| Specifications                                  |                                     |                                       |
|---|-------------------------------------|---------------------------------------|
| <b>Measuring Range</b>                          | <b><math>\mu\text{mol/L}</math></b> | <b><math>\text{mg/L}</math> (ppm)</b> |
| Optimum   | 0-720 $\mu\text{mol/L}$             | 0-23 $\text{mg/L}$                    |
| Maximum (not specified)                         | 0-1.4 $\text{mmol/L}$               | 0-44 $\text{mg/L}$                    |
| <b>Accuracy *</b>                               |                                     |                                       |
| at 13.75 $\mu\text{mol/L}$ / 0.44 $\text{mg/L}$ | $\pm 0.3$ $\mu\text{mol/L}$         | $\pm 0.01$ $\text{mg/L}$              |
| at 275 $\mu\text{mol/L}$ / 8.8 $\text{mg/L}$    | $\pm 3$ $\mu\text{mol/L}$           | $\pm 0.1$ $\text{mg/L}$               |
| <b>Resolution</b>                               |                                     |                                       |
| at 13.75 $\mu\text{mol/L}$ / 0.44 $\text{mg/L}$ | $\pm 0.15$ $\mu\text{mol/L}$        | $\pm 0.005$ $\text{mg/L}$             |
| at 275 $\mu\text{mol/L}$ / 8.8 $\text{mg/L}$    | $\pm 0.8$ $\mu\text{mol/L}$         | $\pm 0.025$ $\text{mg/L}$             |
| <b>Detection Limit</b>                          | 0.3 $\mu\text{mol/L}$               | 0.01 $\text{mg/L}$                    |

\* 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.

## 1.2 General Characteristics

|                                       |  |   |  |                                 |
|---------------------------------------|--|---|--|---------------------------------|
| <b>Response Time (t90) in Water ‡</b> | <b>OXSP5-SUB</b><br>< 10s  | <b>OXCAP-/<br/>OXROB10-/<br/>OXROBSC-SUB</b><br><3s | <b>OXCAPG-HS-SUB</b><br>< 1s                               | <b>OXCAPG-UHS-SUB</b><br>< 0.5s |
| <b>Drift</b>                          | <b>OXCAP-/OXSP5-/<br/>OXROB10/OXROBSC-SUB</b><br>< 1% in 3 months  |   | <b>OXCAPG-HS-/OXCAPG-UHS-SUB</b><br>< 2% in 3 months       |                                 |
| <b>Minimum Lifetime</b>               | <b>OXCAP-/OXSP5-/<br/>OXROB10/OXROBSC-SUB</b><br>2,000,000 data points   |   | <b>OXCAPG-HS-/OXCAPG-UHS-SUB</b><br><1,000,000 data points |                                 |
| <b>Influence of Pressure</b>          | ca. 1%/1000m   |   |  |                                 |
| <b>Temperature Range</b>              | -2°C (28.4°F) to 40°C (104°F)  |   |  |                                 |
| <b>Calibration Modes</b>              | 1-point and 2-point calibration in water   |   |  |                                 |
| <b>Application Areas</b>              | Laboratory, industry, research.<br><b>NOT</b> for medical or any safety-critical application.<br><b>NOT</b> for application in humans.<br><b>NOT</b> for application in food intended for human consumption. |   |  |                                 |

‡ Typical response times for 90% signal. Measured for the transition from air into a stirred solution of 3% Na<sub>2</sub>SO<sub>3</sub>

## 2 APPLICABILITY AND CROSS-SENSITIVITY

|  | Applicability | Cross-Sensitivity | NO Cross-Sensitivity |
|--|---------------|-------------------|----------------------|
| Water/Aqueous solutions                                      | X             |                   |                      |
| Organic solvents*  |               | 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                    |

\* Includes liquid solvents and solvent vapors

## 3 CLEANING & STORAGE

|                 |  |
|-----------------|--|
| <b>Cleaning</b> | 3% H <sub>2</sub> O <sub>2</sub> , Soap solution, short-term Ethanol |
| <b>Storage</b>  | > 3 years in darkness at room temperature                            |

### Contact

**PyroScience GmbH**  
 Hubertusstraße 35  
 52064 Aachen  
 Deutschland

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