

Specifications

OPTICAL OXYGEN 230-MINISENSORS

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 retractable minisensors (item no.: **OXR230**) and bare fiber minisensors (item no.: **OXB230**), including the following options: optical isolation (-OI), high speed (-HS), ultra-high speed (-UHS).

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 Optimum Maximum (not specified) | % O₂ gas 0-50% O ₂ 0-100% O ₂ | hPa 0-500 hPa 0-1000 hPa |
| Accuracy * at 1% O ₂ /10 hPa at 20% O ₂ /200 hPa | ±0.02% O ₂ ±0.2% O ₂ | ±0.2 hPa ±2 hPa |
| Resolution at 1% O ₂ /10 hPa at 20% O ₂ /200 hPa | 0.01% O ₂ 0.05% O ₂ | 0.1 hPa 0.5 hPa |
| Detection Limit | 0.02% O ₂ | 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, $\mu\text{mol/L}$, 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.) 0-250% a.s. 0-500% a.s. | mg/L (ppm) 0-22 mg/L 0-44 mg/L |
| Accuracy * 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. | ± 0.01 mg/L ± 0.1 mg/L |
| Resolution 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 |
| Detection Limit | 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

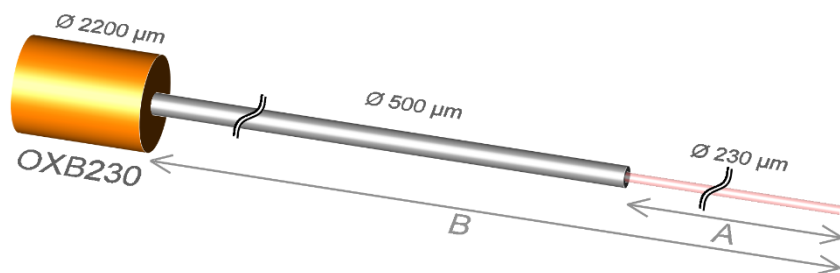
| | |
|---|---|
| Response Time (t90) ‡ Gas (standard / with -OI) Water (standard / with -OI) High Speed (-HS) Ultra-High Speed (-UHS) | <1 sec / <4 sec <2 sec / <10 sec <0.8 sec <0.3 sec |
| Temperature Range | specified: 0°C (32°F) to 50°C (122°F) not specified: -20°C (-4°F) to 70°C (158°F) |
| Minimum Lifetime data points | standard / -OI -HS -UHS 1,000,000 <1,000,000 <<1,000,000 |
| Calibration Modes | 1-point and 2-point calibration; obligatory to calibrate in gas (<i>water</i>) calibration standards for measurements in gas (<i>water</i>) samples |
| Sensor Dimensions: OXR230 Length without cable (ca.) Shaft diameter (ca.) | 230 mm 8 mm |

| | |
|---|--|
| Needle Dimensions: OXR230 Length Diameter | 40 mm 0.5 mm |
| Fiber and Sensor Tip: OXR230 Fiber & tip diameter Sensor tip position (rel. to needle) | 230 μ m ca. -6/0/+6/+12 mm |
| Sensor Dimensions: OXB230 Fiber & tip diameter Tip geometry Stripping lengths | 230 μ m see image and text below A = 20mm, B = 100mm (other stripping lengths optional on request) |
| Cable length | ca. 2 m or ca. 4 m (custom versions up to ca. 20 m) |
| 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. |

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

Tip Geometry: OXB230

True to scale drawings with outer jacket (brown), plastic coating (grey), optical fiber (pink) and oxygen sensitive REDFLASH indicator (green).



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 | | | 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

3 CLEANING, STERILIZATION, STORAGE

| | |
|----------------------|--|
| Cleaning | 3% H ₂ O ₂ , Soap solution, short-term Ethanol |
| Sterilization | short-term 70% Ethanol*, short-term 70% Isopropanol* |
| Storage | >3 years in darkness at room temperature |

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

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