

Aqua Oxygen Optode



The Aqua Oxygen Optode 4531 is a compact fully integrated sensor for measuring O₂ concentration and temperature.

Advantages

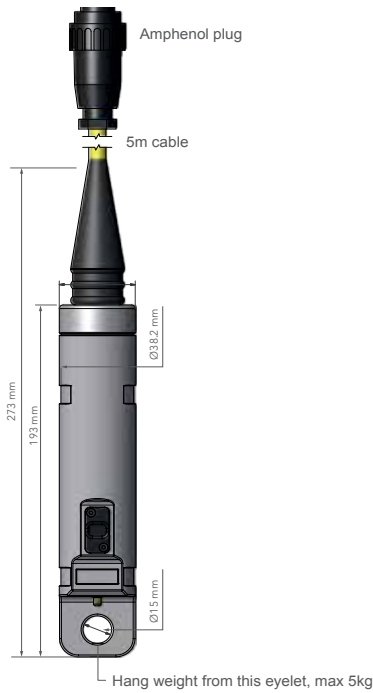
- Optical
- Best in test
- Long time stability
- Stable and rugged foil. No foil change necessary
- Low maintenance needs
- Not stirring sensitive (it consumes no oxygen)
- Presenting calibrated data directly
- Stand-alone sensor
- Output format: 4-20mA/0-5V and RS-232
- Customized cable lengths

Since oxygen is involved in most of the biological and chemical processes in aquatic environments and in the process industry, it is one of the most important parameters to be measured. Aanderaa revolutionized oceanographic oxygen monitoring/research with the introduction of oxygen optodes in 2002. Land-based aquaculture applications include closed, semi-closed and open cages, keeping control of oxygen levels 24/7 in both RAS and flow-through systems for environmental monitoring.

AANDERAA

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Specifications AQUA OXYGEN OPTODE 4531



| Available cables | Cable |
|--|-------|
| Cable from sensor to Amphenol plug | 5440 |
| 8-pin male Subconn plug directly on sensor | 5441 |
| Cable from sensor to free end | 5442 |
| Cable from sensor to 8-pin male Subconn plug | 5443 |
| Cable from sensor to 9-pin Dsub, RS-232 | 5972 |



Foil Service Kit 5551. FDO701

Misleading specifications

When Aanderaa states an absolute accuracy of e.g. ($\pm 5\%$ or $\pm 8 \mu\text{M}$) we mean the accuracy of the sensor in the field over the entire range of oxygen concentrations and temperatures, others might refer to accuracy in the laboratory just after the sensor was calibrated. When Aanderaa give response time in water others refer to response time in air which is much faster. For more information read our [Best Practice document](#) on Oxygen Optodes.

Technical Details

| Oxygen: | O ₂ Concentration | Air Saturation |
|-------------------------------|--|----------------|
| Sensing Foils: | Stable and rugged FDO701 ₁ foil | |
| Operation Range: | 0 - 1000 μM or 0-32 mg/L | 0 - 300% |
| Calibration Method: | 40-point automatic calibration, 20-point verification, 3 fully Winkler calibrated optodes for referencing | |
| Calibration Range: | 0 - 500 μM or 0-16 mg/L | 0 - 120% |
| Resolution: | <0.1 μM or 0.0032 mg/L | 0.05% |
| Accuracy: | <8 μM^2 or 0.256 mg/L | <5% |
| Response Time (63%): | <30 sec | |
| Typical field drift: | <0.5% per year | |
| Foil Lifetime: | +10 years, do not change foil unless mechanically damaged. | |
| Temperature: | | |
| Range: | -5 to +40°C (23-104°F) | |
| Resolution: | 0.01°C (0.054°F) ⁴⁾ | |
| Accuracy: | $\pm 0.03^\circ\text{C}$ (0.054°F) | |
| Response Time (63%): | 2 sec | |
| Typical field drift: | < 0.03 degC per year | |
| Output format: | 4531A: 0 - 5V, RS-232 4531C: 4 - 20mA, RS-232 4531D: RS-232 | |
| Output Parameters: | | |
| RS-232 | O ₂ Concentration in μM and mg/L, Air Saturation in %, Temperature in °C, Oxygen raw data and Temperature raw data | |
| Analog channel 1: | O ₂ Concentration in μM , or Air Saturation in % | |
| Analog channel 2: | Temperature in °C | |
| Sampling interval: | 1 sec - 255 min | |
| Supply voltage: | | |
| RS-232: | 5 to 30Vdc | |
| Analog: | 7 to 30Vdc, 12 to 30Vdc for 0-10V | |
| Current drain: | | |
| RS-232 | | |
| Average: | 0.16 + 48mA/S where S is sampling interval in seconds | |
| Maximum: | 100mA | |
| Quiescent: | 0.16mA | |
| Analog: | 20mA + RS-232 drain | |
| Operating depth: | 0-100 meters (0 - 328ft) | |
| Electrical connection: | Amphenol 16C or Subconn 8M | |
| Dimension (WxDxH): | Ø38.2 x 193/273mm/ (Ø1.50 x 7.60/10.75in) | |
| Weight: | | |
| Sensor: | 160g (5.6oz) | |
| 5 m cable: | 500g (17.6oz) | |
| Materials: | Titanium, PA | |
| Cable: | | |
| Outer diameter: | 9.9 +/- 0.4mm (0.39 +/- 0.016in) | |
| Min. bending radius: | 155mm (6.10in) | |
| Accessories: | Foil Service Kit 5551 | |

⁽¹⁾ O₂ concentration in μM = $\mu\text{mol/l}$. To obtain mg/l, divide by 31.25

⁽²⁾ Requires salinity compensation for salinity variations > 1mS/cm

⁽³⁾ Within calibrated range 0 - 120% / 0 - 30°C

⁽⁴⁾ Within calibrated range 0 - 36°C

Specifications subject to change without prior notice.

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