



## Optical RDO® PRO Dissolved Oxygen Probe

The In-Situ® Rugged Dissolved Oxygen (RDO) PRO Probe uses breakthrough technology to measure dissolved oxygen (DO) in demanding environments. The RDO PRO Probe easily integrates into a variety of aquaculture management systems. By continuously monitoring and controlling DO levels, aquaculturists can improve feed conversion ratios, minimize fish stress, and reduce fish disease and mortality.

### Minimizes Risks

- **Reports real-time conditions**—Fast response to oxygen and temperature changes.
- **Provides accurate results**—Remains stable over long-term deployments—not susceptible to drift for up to 12 months.
- **Withstands harsh conditions**—Abrasion-resistant foil resists fouling and damage from turbulent waters. Inert construction will not corrode in high salinity environments.

### Maximizes Efficiency

- **Reduces calibration tasks**—Probe holds its calibration during long-term deployments. Sensor cap is pre-loaded with calibration coefficients, thus eliminating setup errors.
- **Minimizes maintenance**—Eliminates replacement of membranes and electrolyte solution. Insensitive to common interferences that degrade membrane-based sensors.

### Saves Money

- **Reduces energy expenses**—Probe uses minimal power. Allows more efficient operation of aerators or pumps.
- **Reduces labor costs**—Compared to traditional galvanic or polarographic sensors, the RDO PRO Probe requires infrequent calibration and minimal maintenance.
- **Simplifies integration**—Integrates directly into SCADA and PLC systems. Includes integral Modbus/RS485, 4-20 mA, and SDI-12 signal outputs. Requires 8 to 36 VDC. For a local process controller and display, use the In-Situ Con TROLL® PRO System.
- **Eliminates costly equipment**—External transmitters and controllers are not required.

### Applications

- Hatchery operations
- Inland pond production
- Open pen production
- Recirculating systems
- Seawater pond production

# Optical RDO® PRO Dissolved Oxygen Probe Specifications



## RDO PRO Oxygen Probe

<b>Sensor type</b>	Optical dissolved oxygen (DO) probe
<b>Range, DO</b>	0 to 50 mg/L
<b>Accuracy, DO</b>	±0.1 mg/L, 0 to 8 mg/L; ±0.2 mg/L, 8 to 20 mg/L; ±10% of reading, 20 to 50 mg/L
<b>Resolution, DO</b>	0.01 mg/L
<b>Response time, cap</b>	T90: <45 sec. T95: <60 sec. @ 25° C
<b>Range, temp.</b>	0° to 50° C (32° to 122° F)
<b>Accuracy, temp.</b>	±0.1° C typical
<b>Resolution, temp.</b>	0.01° C
<b>Salinity comp.</b>	Fixed or real-time capable
<b>Barometric comp.</b>	Fixed or real-time capable
<b>Methods</b>	EPA-approved In-Situ® RDO methods 1002-8-2009, 1003-8-2009, 1004-8-2009 Standard Methods 4500-O

### Environmental Ratings

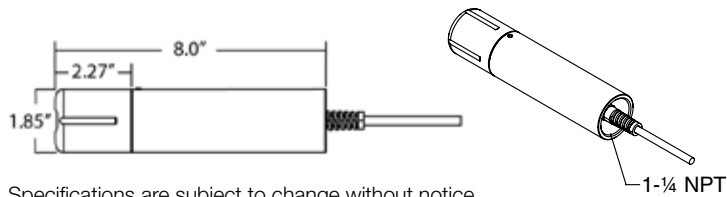
<b>Pressure</b>	150 psi from 0° to 50° C; 300 psi @ 25° C
<b>Depth</b>	689 ft (210 m) @ 25° C
<b>Operating temp.</b>	Probe: 0° to 50° C (32° to 122° F)
<b>Storage temp.</b>	Sensor cap: 1° to 60° C (33° to 140° F), in factory container Probe: -5° to 60° C (23° to 140° F)
<b>Compliance</b>	Heavy industrial, IEC 61000-6-2:2005
<b>IP rating</b>	IP-67 with cap off; IP-68 with cap installed

### Chemical Ratings

<b>Interferences</b>	Alcohols >5%; hydrogen peroxide > 3%; sodium hypochlorite (commercial bleach) > 3%; gaseous sulfur dioxide; gaseous chlorine
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### General Ratings

<b>Usage life of cap</b>	1 year from the first instrument reading
<b>Shelf life of cap</b>	24 months from date of manufacture (install within 12 months of manufacture date)
<b>Comm. output</b>	Modbus/RS485, SDI-12, 4-20 mA
<b>Power requirements</b>	8 to 36 VDC
<b>Power consumption</b>	Maximum: 50 mA at 12 VDC
<b>Cable lengths</b>	Modbus and 4-20 mA: Up to 1219 m (4000 ft) SDI-12: Up to 61 m (200 ft)
<b>Int. mounting thread</b>	1-1/4 NPT
<b>Warranty</b>	Sensor: 3 years from date of shipment



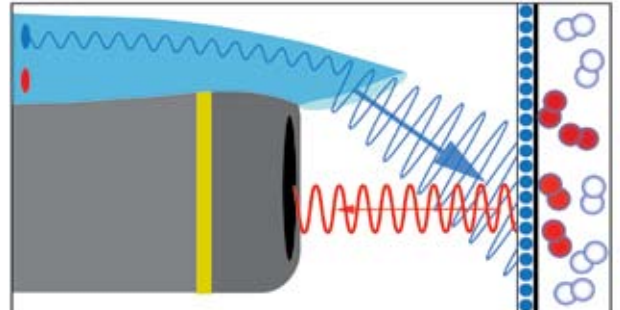
Specifications are subject to change without notice.

## Key Advantages

- **Automatic setup**—To eliminate programming errors, the RDO Cap is pre-loaded with factory calibration coefficients, serial number, expiration clock, and manufacture date.
- **Fast response**—With patented signal processing, the probe responds quickly and maintains stability, even in dynamically changing conditions.
- **Long-lasting calibration**—The probe maintains calibration and operates with no drift over long-term deployments.

## Technology

The low-maintenance RDO PRO Probe measures DO and provides extremely stable, accurate results. When the probe initiates a reading, a blue LED emits blue light, which excites lumiphore molecules in the sensing element. Excited lumiphore molecules emit red light, which is detected by a photodiode. Oxygen molecules quench the excited lumiphore molecules and prevent the emission of red light—a process called “dynamic luminescence quenching.” Determination of DO concentration by luminescence quenching has a linear response over a range of concentrations.



Lumiphore molecules are excited by blue light and then emit red light, which is detected by a photodiode. Optical electronics report DO concentration in mg/L.

## Offerings

- **Simplified integration**—Use in conjunction with the Con TROLL® PRO System or with SCADA/PLC systems
- **Flexible power requirements**—Uses 8 to 36 VDC input
- **Integrated communication protocols**—Industry standard Modbus over RS485, SDI-12, or 4-20 mA 3-wire current loop
- **Compliance certified**—CE, FCC Class B heavy industrial immunity and emissions certifications
- **Cable with twist-lock connectors**—10 m or custom lengths



**Call to purchase—[www.in-situ.com](http://www.in-situ.com)**

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