



## Optical RDO<sup>®</sup> PRO-X Dissolved Oxygen Probe



The In-Situ<sup>®</sup> Rugged Dissolved Oxygen (RDO) PRO-X Probe uses optical technology for measuring dissolved oxygen (DO) in demanding process environments. The U.S. Environmental Protection Agency (EPA) has approved In-Situ RDO methods for use in Clean Water Act programs.

NPDES permit holders can use the RDO PRO-X Probe and Con TROLL<sup>®</sup> PRO System for monitoring influent, effluent, and treatment processes. Visit the In-Situ website for details and start using breakthrough technology.

### Simple Design

- Automates setup and reduces user error—Calibration coefficients are loaded into sensor cap.
- Eliminates membranes and filling solutions
- Flexible communications—Standard 4-20 mA, Modbus/RS485, and SDI-12 outputs

### Cost Effective

- Runs aerators efficiently and mitigates risks
- Eliminates the need for a costly transmitter or controller, and requires only 8 to 36 VDC power
- Includes probe with a standard 10-m cable (custom cable lengths available)

### Robust Construction

- Resists abrasion and photobleaching effects
- Withstands high salinity environments—Inert, non-corrosive materials used to construct probe body and sensor
- Insensitive to interferences that plague membrane-based sensors (hydrogen sulfide, chloride, ammonium, and others)

### Accurate Results

- Includes diagnostic tools to help you evaluate sensor health
- Provides  $\pm 0.1$  mg/L accuracy from 0 to 8 mg/L;  $\pm 0.2$  mg/L accuracy from 8 to 20 mg/L; and  $\pm 10\%$  of reading from 20 to 50 mg/L
- Operates with very low drift for long periods of time
- Responds quickly to oxygen and temperature changes
- Delivers consistent, reproducible results ( $< 0.05$  mg/L)

### Applications

- Municipal/industrial water and wastewater treatment
- Food/beverage process control
- Aquaculture settings
- Dam discharge monitoring

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## RDO PRO-X Oxygen Probe

<b>Sensor type</b>	Optical DO probe uses RDO-X Sensor Cap
<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

<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

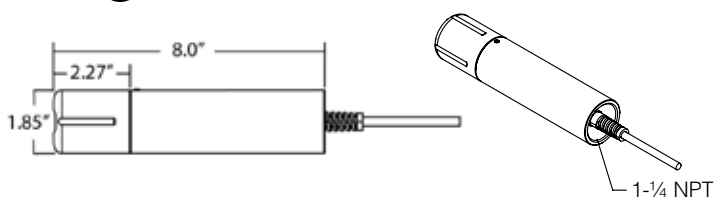
<b>Interferences</b>	Alcohols >5%; hydrogen peroxide > 3%; sodium hypochlorite (commercial bleach) > 3%; gaseous sulfur dioxide; gaseous chlorine
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### General Ratings

<b>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)

**Int. mounting thread** 1-1/4 NPT

<b>Warranty</b>	Probe: 3 years from date of shipment Cap: 2 years in typical applications
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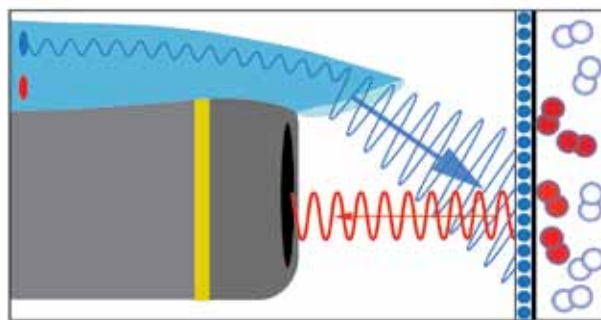
Specifications are subject to change without notice.

## Key Advantages

- **Automatic setup**—To eliminate programming errors, the RDO-X Cap is pre-loaded with factory calibration coefficients, serial number, 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.
- **Sensor health diagnostics**—Advanced sensor diagnostics allow you to evaluate sensor performance and alert you to maintenance intervals.

## Technology

The low-maintenance RDO PRO-X 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 or twist-lock options**—10 m or custom lengths

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

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