



# IN-SITU

RDO® PRO-X Optical Dissolved Oxygen Probe



## RDO® PRO-X Optical Dissolved Oxygen Probe

**THE IN-SITU® RUGGED DISSOLVED OXYGEN (RDO) PRO-X PROBE USES OPTICAL TECHNOLOGY FOR MEASURING DISSOLVED OXYGEN (DO) IN DEMANDING AQUACULTURE AND PROCESS ENVIRONMENTS. LOW-MAINTENANCE, EASY TO USE AND INTEGRATED DESIGN.**



The RDO PRO-X Probe lets NPDES permit holders monitor influent, effluent and treatment processes, responding quickly to oxygen and temperature changes for more accurate results.

### ELIMINATE MAINTENANCE

- Operates with very low drift for long periods of time.
- Responds quickly and accurately to oxygen and temperature changes across the full range.
- Delivers consistent, reproducible results (<0.05 mg/L).
- Eliminates membranes and filling solutions.

### SIMPLE DESIGN

- Automates setup and reduces user error—calibration coefficients are loaded into sensor cap.
- Flexible communications—Standard 4-20 mA, Modbus/RS485, and SDI-12 outputs.
- Eliminates the need for a costly transmitter or controller, and requires only 8 to 36 VDC power.

### COST EFFECTIVE

- Runs aerators efficiently and mitigates risks.
- Includes complete instrument with a standard 10 m cable or custom lengths up to 4,000 m.
- Easily view and filter data using In-Situ telemetry systems and HydroVu™ Data Services.

### 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).

### Applications:

- MUNICIPAL/INDUSTRIAL WATER AND WASTEWATER TREATMENT
- FOOD/BEVERAGE PROCESS CONTROL
- AQUACULTURE SETTINGS
- DAM DISCHARGE MONITORING

**RDO PRO-X OXYGEN PROBE**

SENSOR TYPE	Optical DO probe uses Classic Sensor Cap.
RANGE, DO	0 to 60 mg/L
ACCURACY, DO	±0.1 mg/L, 0 to 20 mg/L ±2% of reading, 20 to 60 mg/L
RESOLUTION, DO	0.01 mg/L
RESPONSE TIME, CAP	T90: <45 sec. T95: <60 sec. @ 25° C
RANGE, TEMP.	0° to 50° C (32° to 122° F)
ACCURACY, TEMP.	±0.1° C typical
RESOLUTION, TEMP.	0.01° C
SALINITY COMP.	Fixed or real-time capable
BAROMETRIC COMP.	Fixed or real-time capable
METHODS	EPA-approved In-Situ® RDO methods 1002-8-2009, 1003-8-2009, 1004-8-2009 Standard Methods 4500-O

**ENVIRONMENTAL RATINGS**

PRESSURE	150 psi from 0° to 50° C; 300 psi @ 25° C
DEPTH	210 m (689 ft) @ 25° C
OPERATING TEMP.	Probe: 0° to 50° C (32° to 122° F)
STORAGE TEMP.	Sensor cap: 1° to 60° C (33° to 140° F), in factory container Probe: -5° to 60° C (23° to 140° F)
COMPLIANCE	Heavy industrial, IEC 61000-6-2:2005
IP RATING	IP-67 with cap off; IP-68 with cap installed

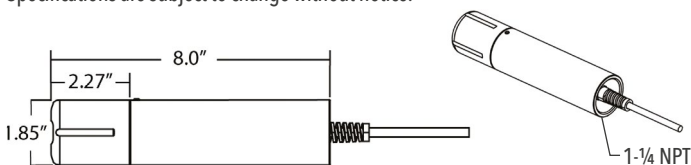
**CHEMICAL RATINGS**

INTERFERENCES	Alcohols >5%; hydrogen peroxide > 3%; sodium hypochlorite (commercial bleach) > 3%; gaseous sulfur dioxide; gaseous chlorine. Do not use in organic solvents (e.g., acetone, chloroform, methylene chloride, etc.), which may swell the sensing element (foil matrix) and destroy it.
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**GENERAL RATINGS**

COMMUNICATION OUTPUT	Modbus/RS485, SDI-12, 4-20 mA
POWER REQUIREMENTS	8 to 36 VDC
POWER CONSUMPTION	Maximum: 50 mA at 12 VDC
CABLE LENGTHS	Modbus and 4-20 mA: Up to 1,219 m (4,000 ft) SDI-12: Up to 61 m (200 ft)
INT. MOUNTING THREAD	1-1/4 NPT
WARRANTY	Probe: 3 years from date of shipment Cap: 2 years in typical applications

Specifications are subject to change without notice.

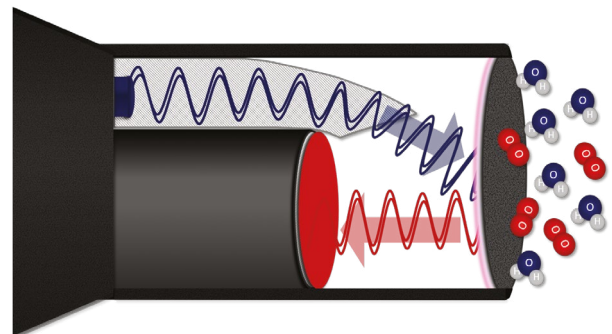


**KEY ADVANTAGES**

- **Long-lasting calibration**—the probe maintains calibration and operates with no drift over long-term deployments, delivering consistent, reproducible results.
- **Automatic setup**—the RDO PRO-X Cap is pre-loaded with factory calibration coefficients, serial number, and manufacture date. RDO PRO-X can use Classic, Fast, or RDO-X Cap. Ships with RDO-X Cap.
- **Sensor health diagnostics**—internal indicators alert you about excessive wear and remind you about regular maintenance intervals.
- **Fast response**—with patented signal processing, the probe responds quickly and maintains stability, even in dynamically changing conditions.

**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, SCADA/PLC Systems, or telemetry systems and HydroVu™ Data Services.
- **Compliance certified**—CE, FCC Class B heavy industrial immunity and emissions certifications.
- **Cable or twist-lock options**—10m fixed or custom lengths.
- **Communication Device Kit**—connect RDO PRO-X to a computer via USB port to manage probe settings and communication setup.
- **Antifouling**—use antifouling guard or airblast adapter to extend deployments and protect your data.