



RDOX Optical Dissolved Oxygen Probe

THE RUGGED DISSOLVED OXYGEN (RDO) RDOX PROBE USES OPTICAL TECHNOLOGY FOR MEASURING DISSOLVED OXYGEN (DO) IN DEMANDING WASTEWATER PROCESS ENVIRONMENTS



The RDOX Probe allows NPDES permit holders to monitor influent, effluent and treatment processes, responding quickly to oxygen and temperature changes for more accurate results

LOW-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).
- No membranes or filling solutions needed

INTEGRATED DESIGN

- Automates setup and reduces errors. Calibration coefficients are loaded into sensor cap
- Flexible communications: Standard 4-20 mA, Modbus/RS485, direct or using 7300w Monitor with local display
- Direct connection option eliminates the need for a transmitter or controller, and requires only 8 to 36 VDC power

COST EFFECTIVE

- Used to run aerators efficiently reducing energy use
- Twist-lock cable connection and quick-connect mount allow for interchangeability with all In-Situ probes
- Easily view and filter data using In-Situ telemetry systems and HydroVu data services

ROBUST CONSTRUCTION

- Resists abrasion and photobleaching effects
- Withstands wastewater 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

CHEMSCAN RDOX 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. T85: <60 sec. @ 25° C (77° F)
RANGE, TEMP.	0° to 50° C (32° to 122° F)
ACCURACY, TEMP.	±0.1° C (±1.8° F) typical
RESOLUTION, TEMP.	0.01° C (0.18° F)
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 (32° to 122° F); 300 psi @ 25° C (77° F)
DEPTH	210 m (689 ft) @ 25° C (77° F)
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

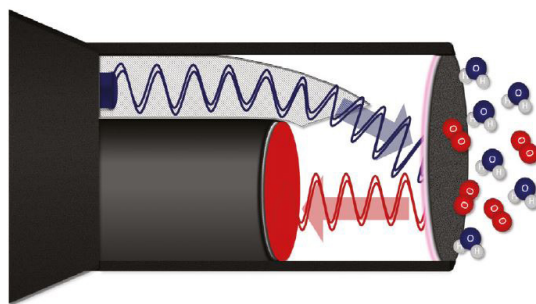
COMMUNICATION OUTPUT	Modbus/RS485, SDI-12, 4-20 mA
POWER REQUIREMENTS	8 to 36 VDC
POWER CONSUMPTION	Maximum: 50 mA at 12 VDC
CABLE LENGTHS	Modbus and 4-20 mA: Up to 1,219 m (4,000 ft) SDI-12: Up to 61 m (200 ft)
INT. MOUNTING	Quick-connect fitting
WARRANTY	Probe: 3 years from date of shipment Cap: 2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

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 RDOX Cap is pre-loaded with factory calibration coefficients, serial number, and manufacture date. RDOX can use Classic, Fast, or RDOX Cap. Ships with RDOX Cap
- **Sensor health diagnostics**—internal indicators provide notification of excessive wear and regular maintenance reminders
- **Fast response**—with patented signal processing, the probe responds quickly and maintains stability, even in dynamically changing conditions

TECHNOLOGY

The low-maintenance RDOX 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 7300w Monitor, SCADA/PLC Systems, or telemetry systems and HydroVu data services. The probe maintains calibration and operates with no drift over long-term deployments, delivering consistent, reproducible results.
- **Compliance certified**—CE, FCC Class B heavy industrial immunity and emissions certifications.
- **Twist-lock cable options**—10m (32.8 ft) or custom lengths.

Specifications are subject to change without notice.

