Optical Dissolved Oxygen System

OptoDOSys: RDO pro

Features:

- ❖Luminescence phase shift principle
- ❖Optional Air clean system
- ❖Versatile mounting options
- ❖0-20ppm range
- ❖Rugged Waterproof construction
- ❖Corrosion resistant materials
- ❖Connects direct to PLC or to AV38 interface/display or Aquapro multi input controller
- ❖Internal sensor diagnostics

Benefits:

- ❖High precision & accuracy with fast & stable response
- ❖No conditioning necessary prior to use— fast start up
- ❖Retains calibration in head
- ❖No membranes— only annual field replaceable caps
- ❖Resists photo-bleaching and abrasive process media
- ❖No “poisoning” by sulfides
- ❖Three year sensor guarantee
- ❖Minimal maintenance

Applications:

- ❖Municipal/industrial wastewater
- ❖Final effluent monitoring
- ❖Process monitoring
- ❖River monitoring stations

This second generation rugged dissolved oxygen (DO) sensor employs the ‘dynamic luminescence quenching’ principle. The RDO Pro sensor provides an extremely stable, accurate, low-maintenance DO measuring system. Sensor optics include a lens, blue LED and filter, red LED and filter, and a photodetector or photodiode (see Figure 1).

When the blue LED emits light, it causes the lumiphore molecules embedded in the gas-permeable sensing foil to emit red photons.

The RDO Pro sensor measures the ‘phase’ (or delay) of the returned signal compared to the excitation signal, which makes it based on the ‘lifetime’ rather than the ‘intensity’ of the luminescence. The presence of oxygen in the foil quenches the luminescence and causes a phase shift in returned signal detected by the photodiode. The phase difference between the blue excitation light and the return red light is measured, and the result is used to quantify the dissolved oxygen present.

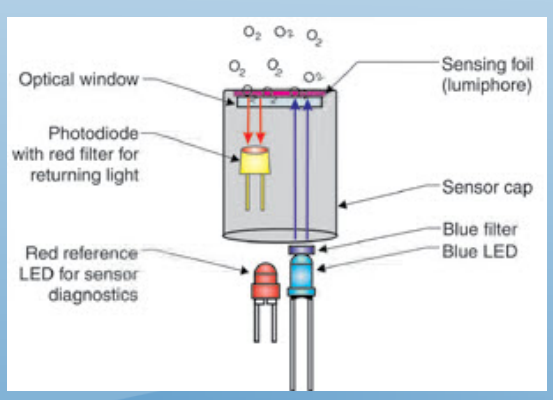


Figure 1: RDO Pro Sensor Design. Solid-state Optics.

System Specification

Measurement System Performance

Range: 0 to 20 ppm, 0 to 200% saturation
Resolution: Below 10 ppm; 0.01 ppm, 0.1% sat Above 10 ppm; 0.1 ppm, 0.1% sat
Accuracy: ± 0.1 ppm up to 8 ppm ± 0.2 ppm from 8 to 20 ppm
Step Response Time: 90% in 30 seconds (at 25 °C) 95% in 37 seconds

Operational Environment

Temperature Range: 0°C to 50 °C
Maximum Pressure: 300psig @ 50 °C
Minimum Flow Rate: no flow required

Power Requirements

Voltage Range: 8 to 36 VDC

Construction

Sensor Head Material:	Delrin® & Polystyrene
Weight:	0.93 lbs (without cable)
Dimensions:	8 inches long (203.2 mm) 1.85 inch diameter (47 mm)
Mounting :	1.25 inch NPT (internal thread on back of sensor for adapting to immersion hardware and floats)

Units of Measure

DO:	ppm, % Sat
Temperature:	°C, °F

Calibration

Air:	Automatically adjusts for set pressure
Sample:	1 or 2 point
Zero:	1 point
Temperature:	1 point

Measurement Modes

Dissolved Oxygen: ppm, %
Temperature: Automatic from –5 °C to 50 °C

Other Configuration Options

Sensor Filter:	0 to 100 seconds
Temperature Filter:	0 to 100 seconds

Approvals and Ratings

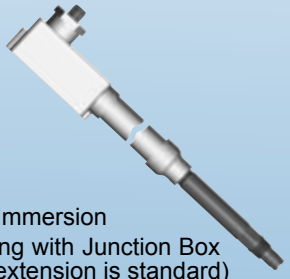
CE, FCC, RoHS

Warranty

Sensor: 3 years
Sensor Cap: 2 years

Sensor Mounting Accessories Include:

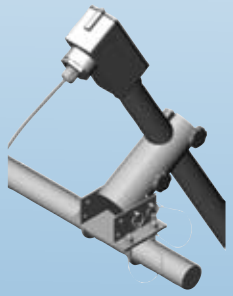
- Optional handrail mounting hardware assembly.
- Submersion extension pipe is available to install submersion style sensors.



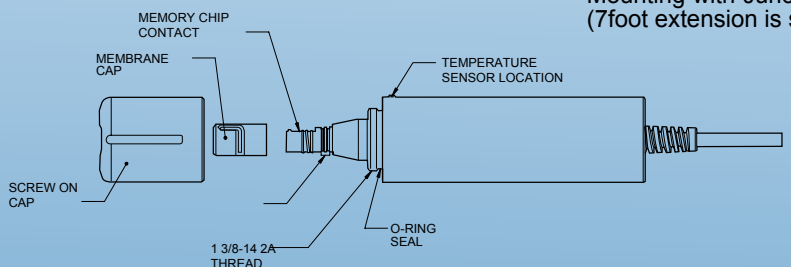
1 Inch Immersion Mounting with Junction Box (7foot extension is standard)

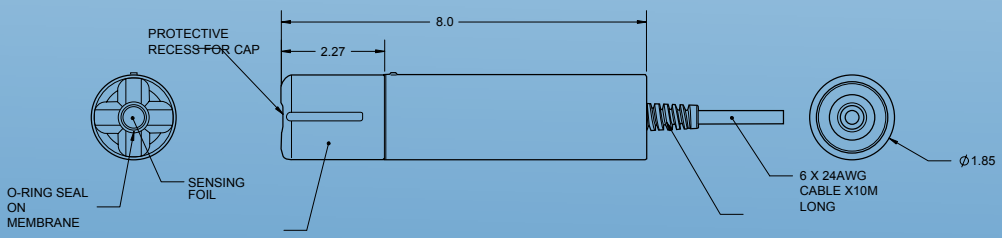
Ball Float assembly

Hand Rail Mounting Assembly



Sensor Schematic





AquaPro controller

AV38 controller

AV38 Local Display/Controller

interfaces AquaSensors DataStick sensors & 2 RDO Pro sensors for local display and control. Digital host communication options are also available in this device.

See separate sheets for details of above controllers

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