WQ-FDO Optical Dissolved Oxygen Sensor

Highly Accurate and Stable Optical Dissolved Oxygen Sensor

WQ-FDO shown with stainless steel armor

Description

The WQ-FDO Optical DO Sensor is an instrument designed for measuring DO concentrations in liquids. The optical DO sensors were developed to meet the requirements ranging from surface water monitoring programs to harsh waste water applications. The WQ-FDO has been specifically designed to meet the demanding requirements of the environmental monitoring and scientific research sectors, providing long term, accurate and reliable dissolved oxygen measurement. The sensor has extremely low power requirements and a 4-20 mA output making it ideal for incorporation into remote environmental monitoring installations.

How it works

The WQ-FDO Optical DO Sensor's measuring technology is based on an attenuated fluorescent signal measured in a defined time frame. A fluorescent dye is stimulated in the sensor's membrane by a short wave length light source. By falling back into the passive state, long wave light is emitted, which is recorded as a measurement signal. If oxygen contacts the dye by diffusing through the membrane the period of back scattering light is shortened according to the oxygen concentration of the sample. The optical DO measurement is more or less a highly precision time measurement. In order to process this time measurement as precisely as possible, the sensor optics are calibrated to the speed of light.

Advantages

The WQ-FDO Optical DO Sensor has many advantages over traditional DO sensors. Unlike conventional Galvanic and Polargraphic DO sensors, WQ-FDO sensors have no consumable cathodes or anodes that require replacement, minimizing servicing requirments. Neither do the sensors consume oxygen. Consequently the measurement of DO by the sensor is unaffected by water flow. The WQ-FDO can even be deployed in stagnate groundwater bores. The sensors also have extremely stable electronics – a calibration interval of 1 year is typical.

The measuring and reference path optical components are identically designed inside the sensor. Natural aging processes of the sensor's optical components can therefore be compensated by the reference path and accordingly compensated in the measuring path. As a result, the sensor provides accurate DO measurements over long periods of time without the need for re-calibration. Additionally by stimulating the fluorescent reaction in the membrane with low energetic green-light, the fluorescent dye in the sensor membrane won't be bleached out.

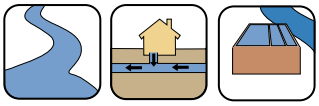
Specifications

Dissolved Oxygen	Partial pressure: 0-400 mbar Accuracy: ± 0.5 % of value Repeatability: 0.01 ppm Response time: 90% in less than 60 seconds Sensor Drift: Less than 1% per year Temperature: Compensated 32 to 122°F (0 to 50°C)
Temperature	Accuracy: ±0.2°F (±0.1°C) Resolution: 0.02°F (0.01°C) Range: 32 to 122°F (0 to 50°C)
Max Pressure	35 PSI (25m/82ft water depth)
Output	Dual 4-20 mA (Partial Pressure and Temperature)
Operating Voltage	10-30 VDC
Current Draw	24 mA plus both sensor outputs
Warm Up Time	6 sec. min, 8 recommended
Operating Temperature	32 to +122°F (0 to +50°C)
Sensor Construction	Acetyl, stainless steel, cast epoxy
Dimensions	0.86 inch dia. x 8 inch long (22mm dia. x 202mm long)
Weight	8 oz (227 g)

Features

- Extremely fast and precise optical DO sensor – outstanding for field and lab applications
- Proven green light technology for long operation life of sensor
- Beveled membrane repells interference that can be caused by air bubbles
- Universal protective armoring available
- Low power consumption and low maintenance
- Simple to integrate and operate
- One year sensor life

Applications



Long and short term monitoring for streams, rivers, lakes, aquaculture, thermocline profiling, industrial outfalls, wastewater, scientific research, homeland security, the food and wine industry, and more.

The WQ-FDO can be used to monitor DO in almost any liquid, including wines, beer, and milk. The sensors are not affected by color of the liquid and with the beveled membrane design, bubbles or aeration do not affect the sensor's measurements either. The sensors can also be mounted in process lines for quality assurance.

Ordering & Options

WQ-FDO Sensors

Order No.	Output Type
WQ-FDO	Includes 25 ft of cable. Does not include armoring.
WQ SC-FDO	Replaceable Membrane
WQEXC	Extra Sensor Cable, per foot (up to 500 ft)

Accessories

Order No.	Description
DD0505	Plastic Armor Housing, 1.89 inch (48 mm) dia.
DD0510	Stainless Steel Armor Housing, 1.89 inch (48 mm) dia.

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