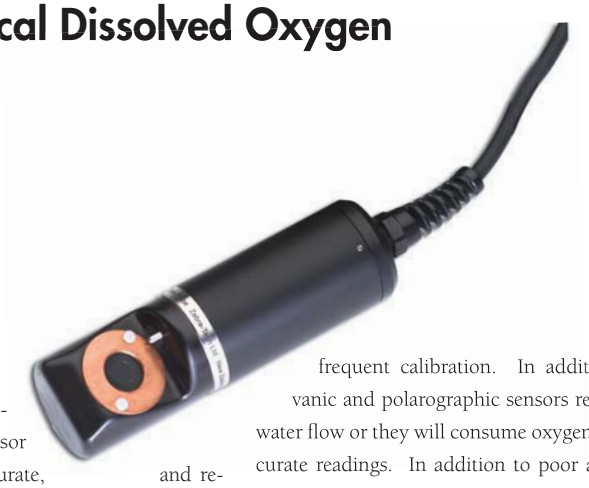
D-Opto Optical Dissolved Oxygen Sensor



Description

Global Water's D-Opto Optical Dissolved Oxygen Sensor provides long term, accurate, and reliable dissolved oxygen (DO) measurements in a variety of liquids. The D-Opto was developed to meet the demanding requirements of the environmental monitoring and scientific research sectors. It has also been used successfully in the wastewater industry for over 10 years. The D-Opto uses field-proven solid state optical sensing technology that is highly stable over long periods of time, even in harsh conditions.

The D-Opto has extremely low power requirements. The standard version outputs data in SDI-12 format, while the D-Opto420 version includes a converter for 4-20 mA output.

How it Works

The D-Opto's sensing element uses fluorescence to measure DO, providing accurate measurements over long periods of time without the need for recalibration. The unit's sensing element consists of a fluorescing compound suspended stably in a robust optical window. A light source briefly pulses the optical window at a controlled wavelength. The light excites the fluorescent material, causing the material to emit a specific wavelength of light. The intensity of this light is determined by the amount of DO in the water that comes in contact with the optical window. A highly stable and accurate optical sensor circuit inside the D-Opto measures the emitted fluorescence.

Issues with Other DO Sensors

Traditional galvanic and polarographic DO sensors have been poorly suited for accurate long-term DO monitoring, especially in surface water applications. These sensors measure DO using chemical electrical signatures that are based on a semi-permeable membrane covering electrodes that are immersed in an electrolyte. The semi-permeable membranes and electrolyte require frequent replacement. The sensor electrodes are also subject to deterioration, requiring frequent calibration. In addition, both galvanic and polarographic sensors require constant water flow or they will consume oxygen, causing inaccurate readings. In addition to poor accuracy, these issues result in high upkeep and labor costs.

Stable Components and Operation

Unlike conventional sensors, the D-Opto does not have consumable components that require replacement, thereby minimizing servicing requirements. In addition, the unit has extremely stable electronics and typically requires calibration only once per year.

The D-Opto also does not consume oxygen, and is therefore not affected by water flow. The unit's general construction, including its copper anti-biofoul ring, makes it resistant to pollutants and poisons and highly resilient to bio fouling. Consequently, no stirring is required, and the unit can be deployed in a variety of conditions, including in stagnate groundwater bores.

Variety of Applications

The D-Opto can be used to monitor DO in almost any liquid, including a variety of water types, and even wines, beer, and milk. The unit's measurements are not affected by color of the liquid, bubbles, aeration, pollutants, or stagnancy.

Capable D-OptoCom Software

The D-Opto includes Window's™-based software, D-OptoCom, which displays current measurements of percent saturation, ppm, and temperature; enables offset and span calibration to be performed quickly and simply; allows data from the D-Opto to be logged directly to the PC; and features a barometric pressure and altitude correction calculator.

Datalogging, Control, and Display

Global Water's GL500 datalogger add recording capabilities to the 4-20 mA D-Opto. Global Water's PC300 Process Controller can use the 4-20 mA D-Opto to control pumps or alarms. The EZ100 Display provides an LCD readout display for both portable use and permanent installation.

Features

- Major breakthrough in DO monitoring
- Accurate with good long term stability
- Low maintenance, long calibration interval
- Flow insensitive technology, completely unaffected by water velocity
- Built-in bio-fouling control
- No consumables— long sensor life
- Low power consumption
- Simple to integrate and operate
- SDI-12 or 4-20 mA versions available

Specifications

Output	SDI-12 or 4-20 mA (with converter)
Accuracy	1% of reading or 0.02 ppm, whichever is greater
Resolution	0.01% saturation, 0.001 ppm
Range	0.00 to 25.0 ppm
Repeatability	0.01 ppm
Response Time	90% in less than 60 seconds
Temperature Compensation	Compensated 0 to 50°C
Sensor Drift	Less than 1% per year
Temperature	Accuracy: ±0.1°C Resolution: 0.01°C Range: 0 to 50°C
Depth Rating	Maximum 30m water depth
Operating Voltage	9 to 15 VDC
Current Draw	10 mA during measurement, 0.5mA standby
Sensor Construction	Acetate, stainless steel, cast epoxy
Cable	4 core, 20 AWG, shielded, EPDM jacket
Size	1.89" dia. x 6.17" long (48mm dia. x 156mm long)
Weight	1 lb (453.5 g)

Ordering & Options

D-Opto Transmitters

Order No.	Output Type
D-Opto	SDI-12, with 25 ft of cable
D-Opto420	4-20 mA (with converter and 25 ft of cable)

Accessories

Order No.	Description
D-OPTO-CBL	Extra Cable, D-Opto

Please call us for calibration standards.