hf scientific
Water Quality Measurement Solutions

AdvantEdge SERIES™

Optical Dissolved Oxygen RDO® measurement electrode

for process applications

The AdvantEDGE sensor uses the latest technology to measure dissolved oxygen (DO) in demanding environments. The **AdvantEDGE series™ Optical Dissolved Oxygen RDO®** sensor offers several advantages for monitoring DO in process applications:

ROBUST

- Inert construction will not corrode in high salinity samples
- Insensitive to common interferences such as hydrogen sulfide, chloride, chlorine, ammonium, and many others

COST EFFECTIVE OPTIONS

- Choose models for use with the economical LD500 Local Display; providing 4-20 mA outputs and various communications protocols.
- Or, choose models available with integral 4-20 mA, Modbus RS-485, and SDI-12 outputs for direct connection to SCADA or PLC; totally eliminating the need for a separate transmitter/controller.

NO CALIBRATION HASSLES

- When used with the LD500 Local Display, no calibration is required.
- When connected directly to a SCADA or PLC, a one-time calibration is performed that lasts for 12 months.

LOW MAINTENANCE

- No electrolyte or membranes to replace.
- Sensor cap lasts 1 year without the need for recalibrations.
- Simply wipe the sensor cap periodically. Optional air blast accessory available.

ACCURATE

- 0.1 mg/L accuracy from 0 - 8 mg/L DO, and 0.2 mg/L accuracy from 8 to20 mg/L DO
- Fast response to oxygen and temperature changes
- Consistent, reproducible results (<0.05 mg/L reproducibility)

APPLICATIONS

- Municipal water and wastewater treatment
- Industrial water and wastewater
- Aquaculture
- Food/beverage process control
- Dam discharge monitoring

LEAD FREE*

*LEAD FREE: The wetted surface of this product contacted by consumable water contains less than one quarter of one percent (0.25%) of lead by weight.

*SIN PLOMO: La superficie mojada de este producto que entra en contacto con agua para el consumo contiene menos de la cuarta parte de uno por ciento (0,25%) de plomo por peso.

*SANS PLOMB: *Les surfaces de ce produit en contact avec l'eau potable contien-nent moins d'un quart d'un pour cent (0,25%) de plomb par poids.

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AdvantEDGE SERIES™

The AdvantEDGE sensor measures dissolved oxygen (DO) using the principle of "dynamic luminescence quenching." The sensor (Figure 1) uses lifetime-based optical fluorescent technology to provide an extremely stable, accurate, low-maintenance DO sensor.

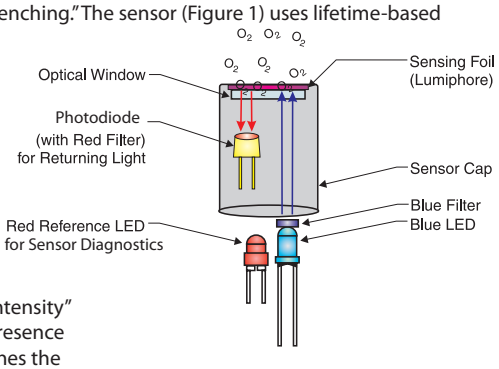
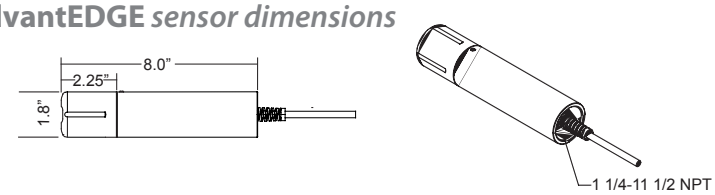


Figure 1: AdvantEDGE sensor design

The sensor measures the "phase" (or delay) of the returned signal compared to the excitation signal, and is thus 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 the 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 DO.

AdvantEDGE *sensor dimensions*



AdvantEDGE *sensor features*

- Flexible power requirements—Use 8 to 36 VDC input or 3 wire 4-20 mA current loop (e.g., 35 mA at 12 VDC or 27 mA at 24 VDC).
- Flexible, integrated open-architecture communication protocol—Includes industry standard Modbus communications over RS485, SDI-12, version 1.3 communication protocol, or 4-20 mA 3-wire current loop. Or, choose option for use with our LD500 Local Display. LD500 is available with 4-20 mA output or a variety of host protocols.
- Compliance certified-CE, FCC Class B heavy industrial immunity and emissions certifications.

AdvantEDGE *sensor specifications*

Sensor Type	Luminescent dissolved oxygen sensor
Transmitter/local display	Optional, not required
Range	0 to 20 mg/L concentration 0 to 200% saturation
Accuracy (DO)	±0.1 mg/L, 0 to 8 mg/L ±0.2 mg/L, 8 to 20 mg/L
Response time, cap	T90: 30 sec T95: 37 sec @ 25°C
Resolution	0.01 mg/L
Usage life of cap	1 year from the first instrument reading
Shelf life of cap	2 years from date of manufacture (install within 1 year from date of manufacture)
Operating temperature	0° to 50° (32° to 122°F)
IP rating	IP-67 with cap off, IP-68 with cap installed
Compliance	Heavy industrial, IEC 61000-6-2:2005
Storage conditions, cap	1° to 60° (33° to 140°F), in factory container
Storage conditions, sensor	-5° to 60° (23° to 140°F)
Salinity range	0 to 42 PSU, fixed or real-time capable
pH range	2-10 pH
Barometric range	507-1115 mbar, fixed or real-time capable
Internal mounting thread	1¼-11½ NPT
Communications options	Modbus RTU (RS485), 4-20mA, SDI-12
Maximum cable length	Up to 4000 ft (Modbus and 4-20 mA) or up to 200 ft (SDI-12)
Warranty	Sensor: 3 years from date of manufacture Cap: 2 years from date of manufacture

The LD500 is a universal display interface for the AdvantEDGE *series*™ sensor systems which includes the Optical DO RDO® system. When needed or desired the LD500 and be connected to the Optical DO RDO® sensor to provide up to two 4-20 mA outputs and two relays (depending on LD500 chosen).

LD500 Local Display Specifications

Functions and Features
- 1/4 DIN enclosure
- Display sensor and temperature data
- Menu functions: Calibration, Configuration and Diagnostics

Mounting Options
- Conduit box, NEMA 4X (standard)
- 1/2 DIN NEMA 4X panel mount (optional)

Interface
- Display: 2 line by 16 character LCD
- Backlight: high contrast green

Environmental Conditions
- Ambient operating temperature range: -20 to 65 °C
- Maximum relative humidity: 95% non-condensing
- Meets CE requirements for heavy industrial use
- NEMA 4X housing, wall mount

4 to 20 mA Current Loop Options
- One isolated current loop (standard)
- Two isolated current loops (optional)
- Assignable parameters
- Loop power provided by LD500

Relays/Optional
- Two 1 amp form C relays with NO and NC contacts
- Assignable parameters
- Configured for Alarm, Control, and Timer functions

Power Supply
- Input: 10 to 30 VDC; 100 to 240 VAC optional
- Power: 2W at 25 C

Warranty
- 1 Year

Ordering information		
OPDO1D3	equals length of cable in feet divided by 10	Sensor with cap, 30 feet of fixed cable (standard), for use with LD500 Local Display.
OPDO1CN	No cable provided. Order separately	Sensor with cap, Rugged Twistlock Titanium Connector, for use with LD500 Local Display.
OPDO2D3	equals length of cable in feet divided by 10	Sensor with cap, 30 feet of fixed cable (standard). For direct connection with SCADA or PLC. No Local Display.
OPDO2CN	No cable provided. Order separately	Sensor with cap, Rugged Twistlock Titanium Connector. For direct connection with SCADA or PLC. No Local Display.

LD500 Local Display/Transmitter for OPDO1D3 and OPDO1CN Sensors	
LDBB0A1	One 4-20mA analog output, 24 VDC
LDBB0A2	One 4-20mA analog output, 100 - 240 VAC
LDCB0C1	Two 4-20mA analog outputs, two alarm/control/wash relays, 24 VDC
LDCB0C2	Two 4-20mA analog outputs, two alarm/control/wash relays, 100 - 240 VAC

*Digital protocol communications options available
*Panel and pipe mount options available

Revision 4-30-14

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