

# TRITON® DO82 Dissolved Oxygen Sensor

## The ECD 6 Point Advantage



ELECTRO-CHEMICAL DEVICES



- 1 Optical Dissolved Oxygen Sensor** that uses Fluorescence Quenching Method to determine oxygen concentration in water eliminating the need for frequent calibration and membrane replacement
- 2 Intelligent Sensor with Stored Calibration Data**, advanced 2nd generation software algorithms for noise free, stable output
- 3 ULTRA Long Life Membrane Cap** provides years of service, there is no required/recommended annual membrane cap replacement
- 4 Membrane Cap is Easily Replaceable** if physically damaged, there is no need to return the sensor for factory repair or replacement, saving time and money
- 5 Universal Design with Waterproof Fixed or Detachable Cable** assemblies. Available with hand rail mounted immersion assemblies, flow through cells and automatic spray cleaning systems
- 6 Interfaces with T80 Transmitter:** 4-20 mA with MODBUS RTU or HART® on the T80 transmitter, single or dual channel models

## Description

The Triton® DO82 Optical Dissolved Oxygen sensor uses fluorescence quenching to determine the oxygen concentration in water. The use of this optical method by the Triton® DO82 minimizes maintenance, increases reliability and improves the long term accuracy of the measurement. Combine this improved measurement technology with the rugged, easy to install design and the Triton® DO82 provides the best solution for long term measurements in aeration basins, aquaculture and all types of environmental water.

A circular layer of optically active, oxygen sensitive molecules is integrated into an easily replaceable cap. This durable layer is highly permeable to oxygen and rapidly equilibrates to its surroundings. The cap aligns the optically active fluorescence layer above the emitter and detector inside the sensor. The emitter flashes a green light at the layer and the layer fluoresces back a red light. The duration and intensity of the fluorescence are directly dependent on the amount of oxygen in the layer. With little to no oxygen in the layer the response is longer and more intense. Oxygen, however, quenches the fluorescence response so the response decreases to shorter times and lower intensities as the oxygen level increases. Both the time and intensity values are used to

calculate the oxygen level and various diagnostics functions associated with the measurement.

The optical signals are continuously monitored and analyzed to calculate the dissolved oxygen value. The O<sub>2</sub> level and diagnostic values, including the aging of the sensor cap are digitally communicated to the instrument. The digital communication provides a stable, trouble free connection that is immune to the RFI and EMI noise common at waste water treatment plants.

The Triton® DO82 is unaffected by changes in the flow, pH or conductivity of the sample. Unlike many amperometric dissolved oxygen sensors, there are no membranes to replace, electrolytes to refill or anode/cathode assemblies to service or replace. The only serviceable part of the Triton® DO82 sensor is the easily replaceable sensor cap and it should provide greater than two years of service in an aeration basin.

The standard installation method for The Triton® DO82 sensor is immersion into a basin or stream with the sensor mounted at the end of a PVC extension pipe. Rail Mounting Brackets and Wall Mounting Brackets are available. For installations where immersion mounting is not convenient or possible, a flow through assembly is also available.



### Specifications

#### Measurement Range

0 - 20 mg/l (0 - 20 ppm)  
 0 - 200 % Saturation  
 0 - 400 hPa (0 - 6 psi)

#### Pressure Range

Maximum Pressure 10 bar (145 psi)

#### Temperature Range

-5° - 50°C (20° - 120°F) Measuring  
 -20° - 60°C (0° - 140°F) Ambient

#### Response Time

T<sub>90</sub> = 60 sec

#### Accuracy

Max. error < 0.02 ppm below 12 ppm, 0.04 ppm >12 and <20 ppm  
 Temperature Element Class B Pt RTD: ±0.3°C

#### Repeatability

±0.5 % of measured range

#### Resolution

0.01 ppm or 0.01 % Saturation

#### Wetted Materials

316 SS, CPVC, Silicone

#### Sensor Cable

Shielded 4 core cable  
 10 ft (3 m), 20 ft (6.1 m), 30 ft (9.1 m), 40 ft (12.2 m),  
 50 ft (15.25 m) lengths  
 Optional Detachable cable assembly, IP68 rating

#### Process Connection

¾" NPT, rear facing thread or G1 rear facing thread

#### Maximum Cable Length

100 m maximum from T80 transmitter

#### Dimensions

Length 8.0" (200 mm, rear thread to front)  
 Diameter 1.6" (40 mm)

#### Weights

Cable length 10 ft (3 m): 0.7 kg (1.5 lbs)  
 Cable length 50 ft (15.2 m): 1.1 kg (2.4 lbs)

### Part Number Configurator

DO82	TRITON DO82 Optical Dissolved Oxygen Sensor			
Sensor Style	0	(I) Immersion Style Sensor - ¾" MNPT		
	1	(IM) Immersion Style Sensor - G1 thread		
	2	(F) Flow Cell Style Sensor - ¾" FNPT entries		
	3	(FM) Flow Cell Style Sensor - DN25 entries		
	Spray Cleaner	00	No Spray Cleaner	
		01	(SC) Spray Cleaner	
		02	(SC2) Spray Cleaner for Flow Cell Style	
		03	PVC Compression Fitting, DO82 to 1¼" MNPT	
	Cable Style	-0	Fixed Cable	
		-1	(DA) Axially Detachable Cable	
Cable Length	00	No Cable		
	10	10 ft		
	20	20ft (Standard)		
	30	30 ft		
	40	40 ft		
	50	50 ft		
X0	Specify Length			
DO82 -	0	00	-1	20

### Accessories and SpareParts

1000334-XX (X=length in ft), -99 (user supplied 1" pipe)	Immersion assembly, (¾" FNPT to 1" pipe adapter, 1" Cable feed thru, 5 ft x 1" PVC pipe down tube)
1000234-XX (X=length in ft), -99 (user supplied 1" pipe)	Immersion assembly, (G1 to 1" pipe adapter, 1" Cable feed thru, 5 ft x 1" PVC pipe down tube)
1000450-1 (¾" FNPT entries), -2 (G¾ entries)	Flow thru assembly, PVC, ¾" FNPT or G¾ entries with DO82 compression fitting
2500207-1	Replacement Membrane Cap (optically active component)
1000255	O-Rings (2) sealing o-rings for sensor cap

### Engineering Specification

- The dissolved oxygen sensor shall use Fluorescence Quenching as the method for continuously monitoring the dissolved oxygen.
- The sensor should meet an ingress protection rating of IP68.
- The sensor shall be housed in 316 SS and the body shall be constructed of chlorinated polyvinyl chloride, CPVC plastic.
- The optically active surface shall be coated with silicone rubber.
- The operation of the sensor should not be affected by changes in the pH of the solution or changes in the flow or air bubbles at the sensing tip.
- The operation of the sensor should not be affected by H<sub>2</sub>S or other reducing agents in the sample, or chlorine and other oxidizing chemicals in the sample.
- The sensor shall facilitate either immersion (pipe) mounting or flow through designs.
- The sensor shall be 8.0" L x 1.6" diameter with rear facing ¾" MNPT or G1 threaded connection.
- The sensor shall have a threaded, replaceable, optically active cap that does not require annual/yearly replacement.
- The sensor shall be available with a fixed cable or an optional waterproof IP68 detachable cable assembly.
- The analyzer shall be an ECD Triton® Series DO82 dissolved oxygen sensor and T80 transmitter manufactured by Electro-Chemical Devices, Inc.

Specifications subject to change without notice.

### Represented by:

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