

Triton® DO9 Trace DO₂ Sensor



ELECTRO-CHEMICAL DEVICES

Features

- **Large Measurement Range**
- **3 Electrode Potentiostatic Measurement**
- **Long maintenance intervals**
- **Easy Calibration**
- **Digital Signal**

Benefits

- **0.001 to 20.00 mg/L for Maximum Accuracy**
- **Long term stability**
- **Drift < 1% per Month**
- **Air Calibration Only, No Zero Calibration Needed**
- **Noise Free signal, Calibration Stored in the Sensor**



*Model Triton® DO9
ppb Dissolved Oxygen*

Description

The Triton®DO9 is designed for the continuous measurement of trace levels of dissolved oxygen in aqueous systems. The primary application of the Triton®DO9 is in the monitoring of boiler feedwater. Oxygen should only be present in trace quantities, excessive concentrations of oxygen can result in corrosion damage to the components of the Steam Cycle. Boiler feed water is thermally and chemically degassed to achieve oxygen-free water. This state must be maintained throughout the Steam Cycle.

Using periodic grab samples to measure the ppb oxygen concentration introduces the risk of significant sampling errors. The Triton®DO9 will continuously measure the ppb level of dissolved oxygen directly in the process eliminating grab sampling errors and providing highly reliable information.

The Triton®DO9 is a three electrode amperometric sensor, a gold cathode, a current-less silver-silver bromide reference electrode and a current carrying counter electrode. Oxygen molecules diffuse through the membrane and are reduced to hydroxide ions (OH-) at the cathode. Silver is oxidized to silver ions (Ag+) at the anode. A current flows due to the electron release at the cathode and the electron reception at the anode. Under constant conditions, this current is proportional to the oxygen content of the medium.

The sensor's electronics include a closed control loop that adjusts the oxygen specific working potential at the gold

cathode. The potential of the working electrode versus the reference electrode is continuously optimized depending on the measured current value. This function calculates an optimum polarization voltage from the instantaneous sensor current and controls it. This leads to an effective minimization of the oxygen independent zero current. The advantages are a better signal resolution and a linearity of the calibration function even with very low oxygen concentrations.

The Triton®DO9 is a digital sensor, like the Triton®DO8, all of the signal conditioning, calibration and diagnostic functions are performed inside the sensor. The Triton DO8 Analyzer is compatible with both the Triton®DO8 and DO9 sensor.

The Triton® DO9 flow assembly has been specially designed for use with the Triton®DO9 trace oxygen sensor. It is particularly suitable for processes where there is a minimal dissolved oxygen concentration, e.g., monitoring boiler feed water in power plants.

Installation of the flow cell is easy, using the clip style holder. Simply screw the holder into the wall or onto a panel and connect input and output sample lines to the 6mm tube fittings. This design allows easy removal of the Triton®DO9 sensor from the flow cell for air calibration. The orientation of the inlet and outlet sample lines automatically purges air from the flow cell when the sensor is returned to service. The measurement chamber is optimized for fast response and all wetted parts are 316L stainless steel.

Triton[®] DO9 Trace DO₂ Sensor

Specifications

Measuring principle:

Potentiostatic Amperometric three-electrode sensor

Measured Parameter:

Oxygen partial pressure-proportional current signal

Measuring Range:

0.001 ... 20.000 mg/l or 0.0 ... 200.0 % SAT or
0 ... 400 hPa

Process Temperature Range:

-5 ... 50°C

Process pressure range:

10 bar (145 psi) maximum overpressure
Vacuum operation is not permitted

Slope:

approx. 8000 nA at 20 °C and 1013 hPa

Temperature Compensation:

NTC temperature sensor 30 kΩ, 0 ... 50 °C

Response time:

t90: 30 sec / t99: 90 sec

Polarization time:

< 60 minutes

Minimum Flow Rate:

(200 ml/min with PN 1000400-1 flow cell

Drift:

With continuous polarization: < 1% / month

Zero current:

No Zero-current

Materials of Construction:

Sensor body: stainless steel AISI 316 Ti

Membrane cap: POM

Cathode: Gold

Counter electrode: Silver/Silver bromide

Reference electrode: Silver/Silver bromide

Process Connection:

G 1 Thread

Electrical connection (transmitter side)

Shielded 7-wire special measuring cable

Membrane:

25 µm thickness (approx.)

Maximum Total Cable Length:

100 m cable extension

Shipping Weight:

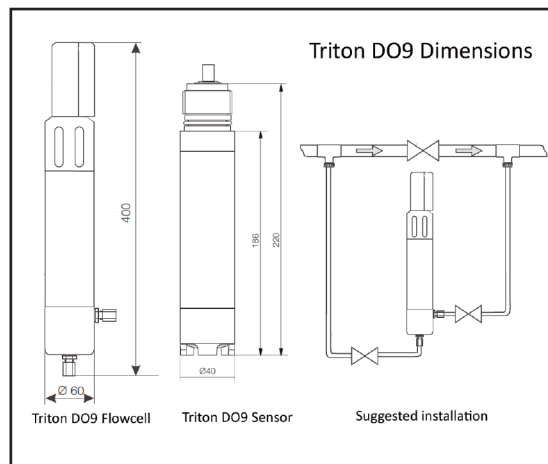
DO9 with 7 m cable length, 0.7 kg

DO9 with 15 m cable length, 1.1 kg

DO9 Flow cell, 2.0 kg

Part No.	Model and Product Description
1390400-1	Triton DO9 ppb Dissolved Oxygen Sensor, 7 meter cable, Accessory Kit (PN 1000259-1)
1390400-3	Triton DO9 ppb Dissolved Oxygen Sensor, 15 meter cable, Accessory Kit (PN 1000259-1)

Part No.	Spare Parts and Accessories Description
1000400-1	Triton DO9 Flow cell, 6mm process connection
1000259-1	Spare Parts Kit, contains 1000402-1,403-1,404-1,405-1
1000402-1	Electrolyte, 10 Ampoules of alkaline fill solution
1000403-1	Membrane Cartridge, 2 per package
1000404-1	O-ring replacement kit
1000405-1	Gold Cathode Polishing sheets, 6 sheets per package
16F01221.F000	C22 Single Channel Analyzer/Controller, (1) 4-20 mA output, (2) Form C SPDT relays
16FF2421.FF00	C22 Dual Channel Analyzer/Controller, (2) 4-20 mA output, (4) Form C SPDT relays



Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices

1681 Kettering

Irvine, California, USA 92614

Phone: +1-949-336-6060

+1-800-729-1333

Fax: +1-949-336-6064

email: sales@ecdi.com

web: www.ecdi.com



Triton DO9 H0510