

Rosemount™ 499ATrDO

Trace Dissolved Oxygen Sensor



A reliable sensor for measuring trace levels of dissolved oxygen

The Rosemount™ 499ATrDO dissolved oxygen sensor is an easy to use amperometric sensor with a rugged construction. This sensor is ideal for measuring trace dissolved oxygen concentrations in steam power plants and in high purity cooling water.

Overview



Ease of Maintenance

- Extend sensor life with simple membrane and electrolyte replacement; no special tools required.
- Automatic temperature correction with integral Pt-100 RTD.
- Easy in-air calibration
- Fast comedown time; an out-of-the-box 499ATrDO sensor is accurate at the 1 ppb level within five hours after being placed in service.
- Variopol (VP6) cable connector option eliminates cable twisting and allows for quick sensor replacement.

High Performance Design

- Measures dissolved oxygen concentrations between 0.1 ppb and 20 ppm.
- Operates in process temperatures up to 122 °F (50 °C).
- High accuracy of ± 1.0 ppb when measuring at concentrations below 20 ppb.
- Internal flexible bladder allows automatic pressure equalization for minimal influence from pressure changes on sensor response.

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Ordering Information



The Rosemount 499ATrDO dissolved oxygen sensor is ideal for measuring trace dissolved oxygen concentrations at the ppb level. The sensor is available with either an integral cable or Variopol (VP6) connector. Variopol cables are sold separately (see Accessories). Sensors come standard with three replacement membrane assemblies, three O-rings, and a 4 oz (125 mL) bottle of electrolyte. Sensors should be used with low flow cell (PN 24091-00).

Table 1. Rosemount 499ATrDO Dissolved Oxygen Sensor ordering information

Model	Sensor Type
499ATrDO	Dissolved Oxygen Sensor
Transmitter Compatibility	
54	For use with Rosemount 1056, 56, 1066, and 5081 transmitters

Table 2. Options

Cable Options	
-	No selection - standard 25 ft cable
60	25 ft optimum EMI/RFI cable
VP	Variopol (VP6) connector ¹
Flow Cell Option	
70	Includes low flow cell (PN 24091-00)
Typical Model Number: 499ATrDO-54-60-70	

1. For use with VP interconnecting cables (see Accessories).

Specifications

Sensor Specifications

Range: 0.1 ppb to 20 ppm

Wetted materials: Noryl¹, Viton², Teflon³ (TFE), and silicone

Cathode: Gold (not normally wetted)

Accuracy: Accuracy depends on the accuracy of the chemical test used to calibrate the sensor.

Linearity: $\pm 5\%$ of reading or ± 3 ppb (whichever is greater) at 77 °F (25 °C)

Repeatability: $\pm 2\%$ of reading at constant temperature

Response time: <20 sec to 90% of final reading at 77 °F (25 °C) (0 to 200 ppb oxygen)

Pressure: 0 to 65 psig (101 to 549 kPa abs)

Temperature: 32 to 122 °F (0 - 50 °C)

Membrane permeability correction: Defined between 41 and 113 °F (5 and 45 °C)

Process connection: 1 in. MNPT

Electrolyte volume: 25 mL (approx.)

Electrolyte life: 4 to 6 months (approx.)

Sensor life: 2 years (approx.)

Cable length (standard integral cable): 25 ft (7.6 m)

Cable length (maximum): 300 ft (91 m)

Accuracy at 77 °F (25 °C) following air calibration:

< 20 ppb	± 1 ppb
> 20 ppb	$\pm 5\%$ of reading

Drift: <4% over 60 days

Sample flow: 1.6-6.3 gph (100-400 mL/min) recommended.

Response changes less than 2% when flow is maintained at recommended range. At 0.8 gph (50 mL/min), sensor response is about 90% of value at 100 mL/min.

Comedown time to 1 ppb:

New sensor <5 hours

Following membrane change: <1 hour

Following air calibration: < 1 hour

Shelf life: 3 months. If the shelf life has been exceeded, the sensor can still be used. The comedown time will be longer.

¹ Noryl is a registered trademark of General Electric.

² Viton is a registered trademark of E.I. duPont de Nemours & Co.

³ Teflon is a registered trademark of E.I. duPont de Nemours & Co.

Weight/shipping weight: 1 lb / 3 lb (0.5 kg / 1.5 kg)

Flow Cell Specifications

Low flow cell: PN 24091-00

Wetted parts: polycarbonate, polyester, 316 stainless steel, and silicone

Process connection: 1/4-inch OD tubing compression fitting or 1/4-inch FNPT

Maximum pressure: 90 psig (722 kPa abs)

Maximum temperature: 158 °F (70 °C)

Weight/shipping weight: 1 lb/2lb (0.5 kg/1.0 kg)

Note: The temperature and pressure specifications for the low flow cell exceed the specifications for the sensor.

Figure 1. Rosemount 499ATrDO with Integral Cable
Sensor dimensions

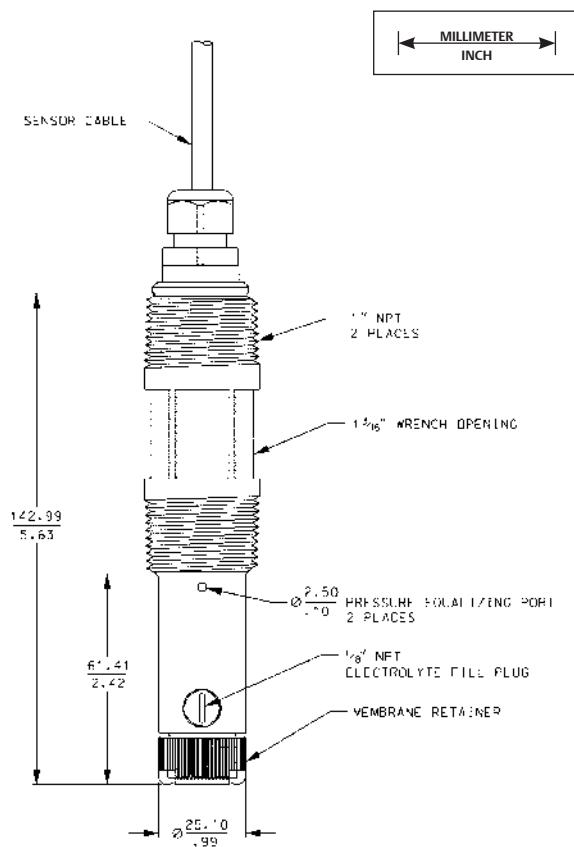
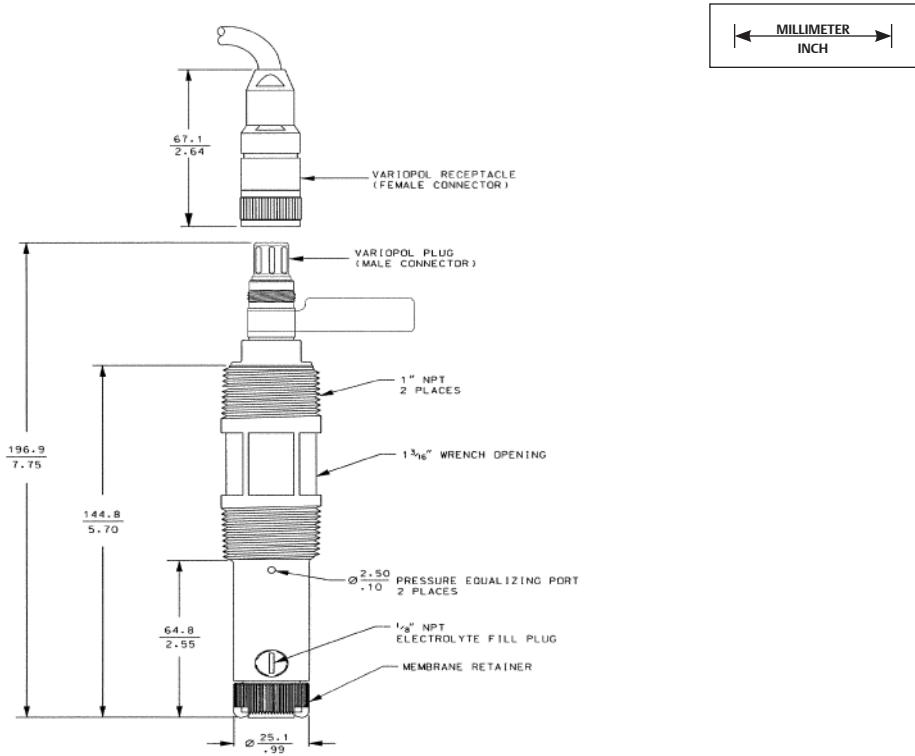
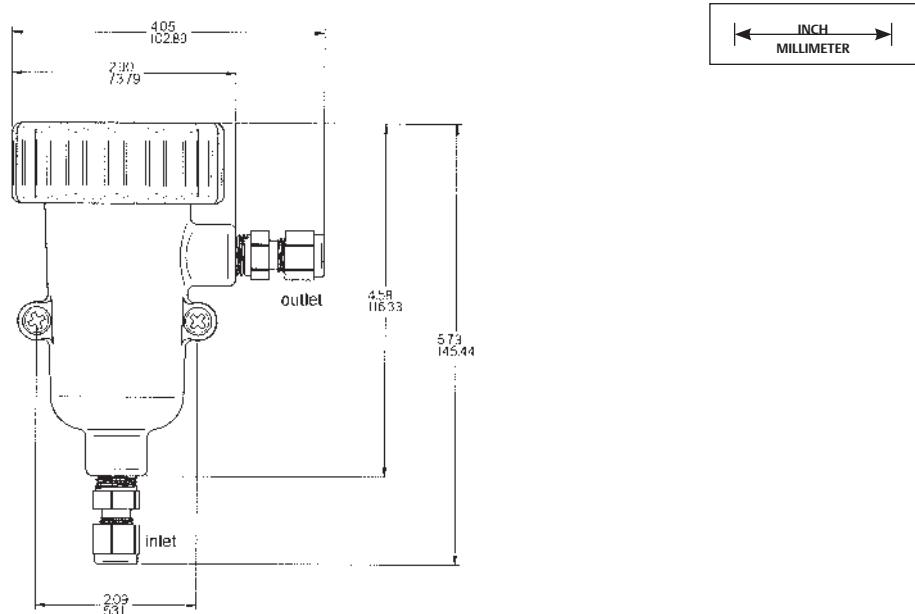


Figure 2. Rosemount 499ATrDO with Variopol Cable Connection Sensor dimensions

Length of assembled sensor is 9.3 in. (236 mm).

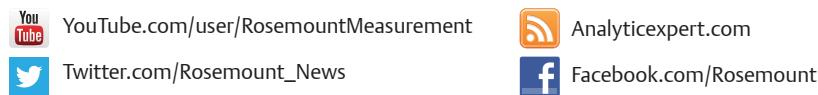
Figure 3 Low flow cell (PN 24091-00)

Accessories

Part #	Description
23747-06	Interconnecting cable, VP 6, 2.5 ft. (0.8 m)
23747-04	Interconnecting cable, VP 6, 4 ft. (1.2m)
23747-02	Interconnecting cable, VP 6, 10 ft. (3.0 m)
23747-07	Interconnecting cable, VP 6, 15 ft. (4.6 m)
23747-08	Interconnecting cable, VP 6, 20 ft. (6.1 m)
23747-09	Interconnecting cable, VP 6, 25 ft. (7.6 m)
23747-10	Interconnecting cable, VP 6, 30 ft. (9.1 m)
23747-03	Interconnecting cable, VP 6, 50 ft. (15.2 m)
23747-11	Interconnecting cable, VP 6, 100 ft. (30.5 m)
24091-00	Low flow cell
9390004	Rotameter: 0.5 - 5.0 gph
22550-00	Junction box without preamplifier
9200266	Extension cable, standard, unprepped
9200275	Extension cable, optimum EMI/RFI, unprepped
23747-00	Extension cable, optimum EMI/RFI cable, prepped
23501-04	Trace dissolved oxygen membrane kit: includes 1 membrane assembly and 1 O-ring.
23502-04	Trace dissolved oxygen membrane kit: includes 3 membrane assemblies and 3 O-rings
9210264	Dissolved oxygen sensor fill solution, 4 oz (125 mL)
33521-02	Membrane retainer
33523-00	Electrolyte fill plug
9390094	O-ring, Viton 2-014

Notes

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