

# Rosemount™ RDO

## Optical Dissolved Oxygen Sensor and Analyzer



### A low maintenance system for easily measuring dissolved oxygen

The Rosemount™ RDO is a complete system consisting of an optical dissolved oxygen sensor and analyzer. The system is ideal for use in wastewater aeration basins and ponds.

## Overview



### Ease of Use and Maintenance

- Easy automatic air calibration.
- Low maintenance sensing cap only requires replacement every two years.
- Rear facing 1-1/4 in. FNPT process connection for easy submersion type installations.
- Accurate readings  $\pm 0.1$  ppm between 0 and 8 ppm.
- Measures dissolved oxygen using the fluorescence quenching method.

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## Ordering Information




The Rosemount RDO system consists of one or two sensors, a transmitter, and mounting hardware. A calibration cup for air calibration is included with the sensor. Sensors are available with a standard 10 m of integral cable or a choice of twist-lock connector cables up to 30 m.

**Table 1. Rosemount RDO Optical Dissolved Oxygen System Ordering Information**

Model	Sensor type
RDO	Optical Dissolved Oxygen Sensor
<b>Analyzer</b>	
94030	RDO Pro Analyzer
<b>Sensor 1</b>	
00	No selection
82490X	RDO Pro-X sensor with twist-lock connector
86460X	RDO Pro-X sensor with 10 m cable
<b>Sensor 2</b>	
00	No selection
82490X	RDO Pro-X sensor with twist-lock connector
86460X	RDO Pro-X sensor with 10 m cable
<b>Cable 1</b>	
00	No selection
CBL10	RDO 10 m (32 ft) twist-lock connector cable
CBL20	RDO 20 m (64 ft) twist-lock connector cable
CBL30	RDO 30 m (96 m) twist-lock connector cable
<b>Cable 2</b>	
00	No selection
CBL10	RDO 10 m twist-lock connector cable
CBL20	RDO 20 m twist-lock connector cable
CBL30	RDO 30 m twist-lock connector cable
<b>Mounting kit</b>	
00	No selection
87560	RDO Pro instrument mounting kit
<b>Instrument tags</b>	
00	No tags
01	1 engraved stainless steel tag
02	2 engraved stainless steel tags
03	3 engraved stainless steel tags
<b>Typical model number: RDO-94030-82490X-00-CBL10-00-87560-01</b>	

## Specifications

**Table 2. Rosemount RDO Optical Dissolved Oxygen Sensor Specifications**

Range	0 to 20 ppm (mg/L) or 0 to 200% saturation
Wetted materials	Delrin <sup>1</sup> , ABS, Viton <sup>2</sup> , titanium, polycarbonate/poly(methyl methacrylate) blend
Accuracy	±0.1 ppm between 0 and 8 ppm; ±0.2 ppm between 8 and 20 ppm
Dimensions	Length: 8.0 in. (203 mm); Diameter: 1.9 in. (47 mm)
Rating	IP-67 with cap off; IP-68 with cap installed
Integral cable length	32 ft (10 m)
Maximum cable length (quick disconnect cable only)	4000 ft (1219 m)
Interferences	Monochloramine, dichloramine, and permanganate
Resolution	0.01 ppm (mg/L)
Temperature	0 to 50 °C (32 to 122 °F)
Pressure	Up to 314 psig (2060 kPa abs)
Digital output	Modbus/RS485
Process connections	1-1/4 in. FNPT
Response time	30 sec to 90% of final value; 37 sec to 95% of final value (at 25 °C [77 °F])
Operating life of sensing cap	2 years from first reading
Safety directive	73/23/EEC
EU directives	2004/108/EC for electromagnetic compatibility (EMC) and 72/23/EEC for safety 
Immunity	EN 61000-6-2, electromagnetic compatibility (EMC) part 6-2
Emissions	Class A requirements of CISPR 11: 2004

<sup>1</sup> Delrin is a registered trademark of DuPont DeNemours, LLC

<sup>2</sup> Viton is a registered trademark of DuPont Dow Elastomers, LLC.

**Table 3. Rosemount RDO Optical Dissolved Oxygen Analyzer Specifications**

Display	Liquid crystal; character height 0.4 in. (6 mm)
Enclosure	Polycarbonate, rated NEMA 4X, IP67
Mounting	Suitable for pipe or wall mounting
Dimensions (W x H x D)	6.3 x 6.3 x 3.6 in. (16 x 16 x 9.0 cm)
Conduit openings	Sic; PG 13.5 (1/2 in.); three gland fittings and five plugs ship with the analyzer
Power	100 to 240 Vac, approximately 0.15 A, 50-60 Hz
Analog outputs	Two fully scalable 4-20 mA outputs, each loop-powered (9-36 Vdc)
Digital output	Modbus/RS485
Relays	Two low voltage relays, < 50 Vac or Vdc, maximum current 2 A (resistive or inductive) two high voltage relays, 264 Vac max, maximum current 5 A (resistive or inductive)
Barometric pressure range	8.86 to 29.53 in Hg (300 to 1000 mbar)
Barometric pressure accuracy	±0.09 in Hg (±3 mbar)
Ambient temperature and humidity	-20 to 70 °C (-4 to 158 °F); 95% relative humidity (non-condensing)
Safety	UL 61010-1 and CAN/CSA C22.2 #61010-1
EU directives	2004/108/EC for electromagnetic compatibility (EMC)
Immunity	EN 61000-6-2, electromagnetic compatibility (EMC) part 6-2
Emissions	EN61000-6-4 electromagnetic compatibility; includes IEC/EN 61000-3-2 and IEC/EN61000-3-3 where applicable

### Dimensional Drawings

Figure 1. Analyzer Dimensions with Lid Closed

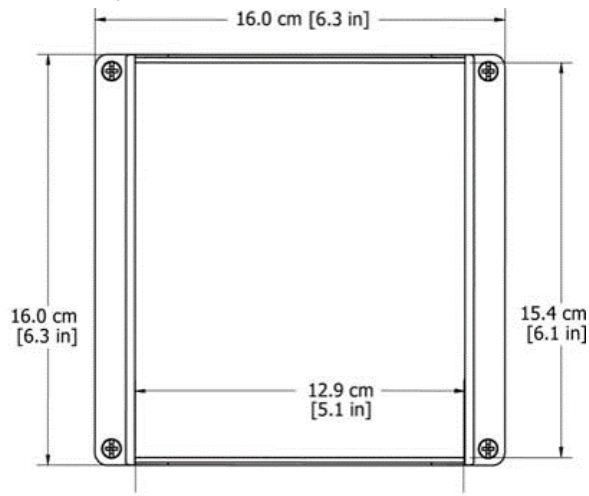


Figure 2. Analyzer Side View

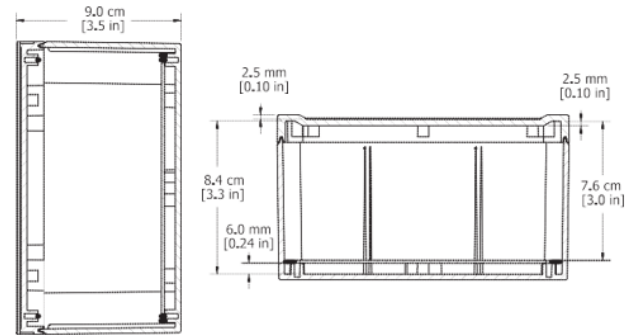
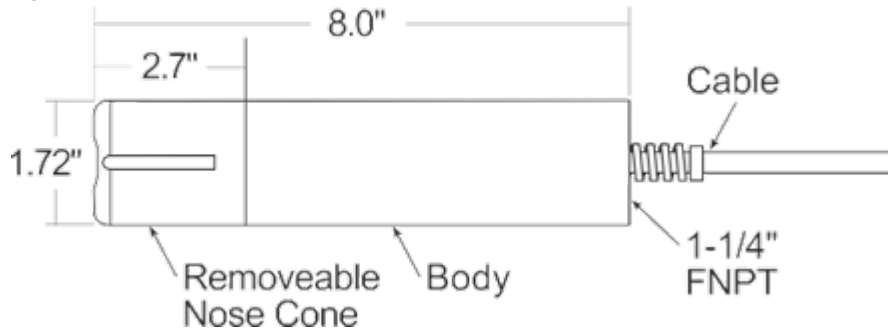


Figure 3. Sensor Side View



## Accessories

Table 4. Rosemount RDO Accessories

Part number	Description
R0094030	RDO Pro analyzer, AC power, no data logging (includes three cable gland fittings and five plugs)
R0086460X	RDO Pro-X sensor with 32 ft (10 m) integral cable
R0082490X	RDO Pro-X sensor with twist lock connector for use with twist-lock connector cable
R0087650	RDO analyzer pipe and wall mounting kit
R00CBL10	Twist-lock connector cable, 32 ft (10 m)
R00CBL20	Twist-lock connector cable, 64 ft (20 m)
R00CBL30	Twist-lock connector cable, 96 ft (30 m)
R0080810	RDO O-ring replacement kit
R0080820	RDO replacement nose cone kit
R0088890	RDO replacement calibration cup
R0087630	Replacement dessicant bag for analyzer
R0084230X	RDO Pro-X sensor cap replacement kit

## Notes

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