

The ultimate in O₃ sensors

EC Sensors

O₃

Measures down to 5 ppb to assure residual level accuracy.

Minimal maintenance requirements for cost savings.

Quick and easy calibration in air.

Guard ring electrode design improves speed of response and reduces interferences.

Installs in-line for process control, or in flow chamber for samples drawn off-line.

Rugged construction withstands harsh environments.

Principle of measurement

The sensor is constructed of two metal electrodes, the noble working electrode and a counter electrode, immersed in an electrolytic solution, and separated by a gaspermeable membrane from the sample of interest. An auxiliary guard ring electrode surrounds the working electrode to shield against the influence of other gases and improve stability.



Electrochemical Sensor

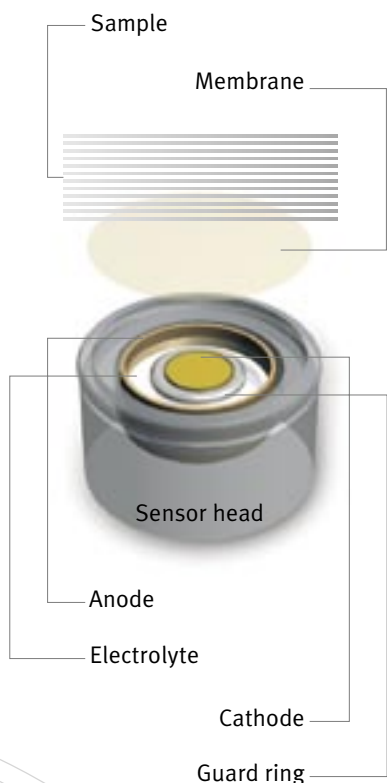
Electrical potential is applied between the electrodes to reduce ozone that is driven through the membrane by a partial pressure gradient. An electrical current results, which is proportional in magnitude to the concentration of interest. This is measured by the indicating instrument, scaled, displayed and converted to analog and digital outputs.

Description

Orbisphere's patented polarographic sensor design is a proven performer wherever knowledge of O₃ content is critical. From potable water treatment to pharmaceutical and semiconductor manufacturing, this sensor provides fast, accurate measurements, in liquid or gaseous samples.

A wide range of temperatures and pressures are made available using Orbisphere's exclusive valve seat sealing, whereby the sensor cathode is mechanically tensioned against a ceramic valve seat to ensure the integrity of the seal. This design produces a vanishingly small residual signal, for improved accuracy.

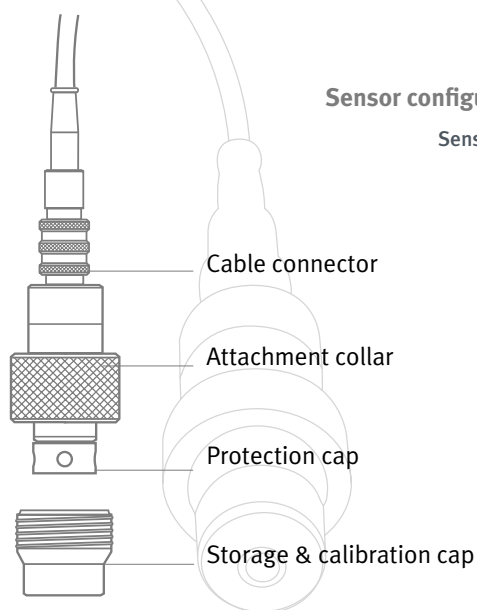
All Orbisphere ozone sensors use the deep-draw membrane mounting method for a uniformly thin layer of electrolyte for faster response and superior stability. Coupled with a screw-on protection cap, the sensor yields in-service intervals of up to a year. Orbisphere sensors typically can be calibrated in air for ease of use, or against a sample of known ozone content.



Application dependent membrane/ Sensor specification

	2956A	29552A
Membrane model	2956A	29552A
Material	PFA	PTFE
Thickness	25 µm	50 µm
Dissolved O ₃ measurement range	5 ppb - 50 ppm	20 ppb - 200 ppm
Gaseous O ₃ measurement range	1 Pa - 10 kPa	4 Pa - 40 kPa
Accuracy	± 1% or ± lower limit (direct calibration) ± 5% or ± lower limit (air calibration)	
Repeatability	± 1% (independent of calibration method)	
Temp. compensated range	-5 to 45 °C -5 to 45 °C	
Response time	30 sec.	6 min.
Recommended liquid flow rate*, ml per min., in 32001 flow chamber	350 ml	100 ml
Recommended linear liquid flow rate* cm/sec.	30	10
Recommended gaseous flow rate	0.01 to 3 l/min.	

* Flow rates for Model 32001 flow chamber are valid for sensor used with a Model 29104 protection cap, without a stainless steel grill. Use of the grill as in protection cap model 29106 will require approximately 50% faster flow.



Sensor configurations

Sensor Model	Standard materials of construction Head** / Body***	Pressure rating (bar)	Weight (grams)	Recommended Indicating instrument
31311	PEEK / Delrin	20	200	Model 26506 (ROS)
31331	Titanium/Stainless steel	100	640	Model 26506 (ROS)
31330	Titanium/Stainless steel	100	640	Series 3600, Series 3660
31330E	Titanium/Stainless steel	100	640	Series 366xEx safe analyzers
31330S	Titanium/Stainless steel	100	640	Multi 3680

** Parts in contact with the sample: O-rings available in Viton or Kalrez.

*** O-rings are in EPDM.



In the interest of continued product development, Hach Ultra Analytics reserves the right to make improvements to this literature and/or the products it describes, without notice or obligation.

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