

ORBISPHERE A1100

O₂



Simply accurate

Features

- Sensor refurbishment in 3 minutes with pre-filled recharge cartridge* (*patent-pending)
- Unique design allows for extended period between recharges
- Unrivalled accuracy and response time for fast detection of process change
- Robust stainless steel design for use in the most demanding applications including resistance to CIP and pressures up to 100 bar
- 100% retrofit to existing ORBISPHERE sampling devices
- Plug and play for process operator with Smart chip storing calibration parameters in the sensor

The ORBISPHERE A1100 oxygen sensor is the latest development of the well-known and proven ORBISPHERE Electro-Chemical (EC) sensors.

This sensor is designed for process monitoring as well as laboratory analysis in the liquid or gas phases across a wide range of applications from beer or soft-drinks production to rinsing of semiconductor wafers in chip-manufacturing plants, reactor coolant systems in nuclear power plants, or any place where oxygen measurement is critical.

A negligibly small residual signal and an unrivalled accuracy (± 0.1 ppb) are made possible by the exclusive ORBISPHERE design. The very fast response time (down to $t_{90} = 7.2$ s) is achieved through a unique membrane installation, and is improved through the use of an auxiliary guard ring electrode to shield against the influence of other gases and improve stability. All these features provide a reliable and accurate sensor with fast reaction to sample changes for highly effective process monitoring.

Sensor cleaning and preparation require no technical skills. The new sensor head design allows for very quick cleaning with no other chemical than tap water. With the pre-mounted membrane cartridge including electrolyte the sensor is ready to use in 3 minutes without the risk of incorrect membrane mounting.

Each sensor includes a Smart chip that stores the sensor serial number and the calibration parameters. Sensors can be serviced and calibrated in the lab and made available as "Plug and Play" devices for process operators, thus limiting potential manipulation errors and improving the availability and reliability of the oxygen measurement.

The same sensor can be installed directly in-line with an appropriate access device, in a flow chamber for on-line analysis or in a portable system for laboratory use or spot check measurements.

Specifications of ORBISPHERE A1100 EC Sensors

ORBISPHERE A1100 oxygen sensors are 100% compatible with ORBISPHERE 36XX series and 410/510 series instruments and 100% retrofit to all ORBISPHERE sampling devices. Different pre-mounted membrane kits are available to fulfill any particular process requirements.

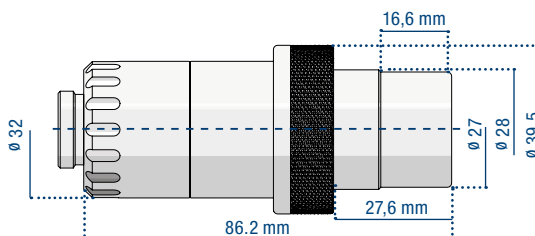
Application dependent membrane / Sensor specification

Cartridge Model	2935A-A	2952A-A	2956A-A	2958A-A	29521A-A	29552A-A	2995A-A
Recommended applications	Saturated to super saturated levels	Corrosion control; in-line beverage; deaerated water			In-line hot wort (maximum 70°C / 158 °F)	In-line wort; air/O ₂ injection; sewage treatment	Saturated to super saturated levels
Material	Halar®	Tefzel®	PFA	Tefzel®	Tefzel®	PTFE	Tedlar®
Thickness	25 µm	25 µm	25 µm	12.5 µm	125 µm	50 µm	12.5 µm
Integrated radiation dose limit	N/A	10 ⁸ rads	2 x 10 ⁴ rads	10 ⁸ rads	10 ⁸ rads	N/A	10 ⁸ rads
Current in air at 25 °C / 77 °F	1 µA	5 µA	25 µA	8 µA	0.75 µA	5 µA	0.2 µA
Dissolved O₂ measurement range	10 ppb-400 ppm	1 ppb-80 ppm	0.1 ppb-20 ppm	1 ppb-40 ppm	10 ppb-400 ppm	2 ppb-80 ppm	50 ppb-2000 ppm
Gaseous O₂ measurement range	20 Pa-1000 kPa	5 Pa-200 kPa	0.25 Pa-50 kPa	2 Pa-100 kPa	20 Pa-1000 kPa	5 Pa-200 kPa	100 Pa-5000 kPa
Accuracy (Assuming correct calibration)	± 1% of reading, or ± lower range, whichever is greater						
Optimised temperature compensated range	-5 °C to 60 °C 23 °F to 140 °F	-5 °C to 60 °C 23 °F to 140 °F	-5 °C to 60 °C 23 °F to 140 °F	-5 °C to 60 °C 23 °F to 140 °F	-5 °C to 60 °C 23 °F to 140 °F	-5 °C to 60 °C 23 °F to 140 °F	-5 °C to 60 °C 23 °F to 140 °F
Response time (t ₉₀ from air)	2.5 min.	38 sec.	7.2 sec.	9.5 sec.	18 min.	90 sec.	80 sec.
Recommended liquid flow rate* , ml per min., in 32001 flow chamber	25	50	180	120	25	50	5
Recommended linear Liquid flow rate* cm/sec	20	30	200	100	60	30	5
Recommended gaseous flow rate	0.1 to 3 l/min.	0.1 to 3 l/min.	0.1 to 3 l/min.	0.1 to 3 l/min.	0.1 to 3 l/min.	0.1 to 3 l/min.	0.1 to 3 l/min.

*Flow rates for Model 32001 flow chamber are valid for sensor configured with no grille on protection cap. Use of a protection cap with grille will require approximately 50% faster flow.

Sensor characteristics

Weight	300 g
Pressure resistance (Mechanical and during measurement)	Up to 100 bar (1450 psia)
Temperature range (during measurement)	-5 °C to 60 °C / 23 °F to 140 °F (without grille) -5 °C to 95 °C / 23 °F to 203 °F (with a grille)
Temperature range (Mechanical)	-15 °C to 110 °C / 5 °F to 230 °F (due to electrolyte, but sensor will not be damaged up to 200 °C / 392 °F)
Water Ingress	Sensor: IP68 Cable connection: IP68
Materials in contact with the sample*	Stainless Steel 1.4404 (AISI 316L), surface finish: N5, Ra < 0.4 µm
*No O-rings are in contact with the sample	Membrane (see specification table)
Smart capability Stored data	Smart Memory chip with RS485 communication up to 500 m Sensor model, serial number Calibration parameters of last 10 calibrations
Accessories and spare parts	Pre-filled recharge cartridges including electrolyte are supplied in 4-cartridges packs and can be ordered for each type of membrane as shown in the specifications table Ask your local ORBISPHERE representative for a complete list of spares and accessories



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