

Oxygen optode

The Oxygen Optode 4330 is a compact fully integrated sensor for measuring the O_2 concentration and temperature, using standard Pst3 sensing foil. 4330W is equipped with ultra-stable foil FD0701, while 4330F is equipped with fast response sensing foil Pst3 (See Sensing Foil Considerations overleaf).

Oxygen is a key parameter in aquatic environments, involved in most biological and chemical processes and widely used as a tracer in oceanography. Aanderaa revolutionized oxygen monitoring with the introduction of optodes in 2002. Today, our sensors are used globally - from shallow waters to the deepest trenches - with results documented in more than 200 scientific publications.



High accuracy and long-term stability

Optical lifetime-based principle with multipoint calibration and long-term stability



Robust, low-maintenance design

Not stirring sensitive, user-friendly, small and lightweight



Flexible, stand-alone deployment

Stand-alone RS-232 sensor or part of SeaGuard and SmartGuard systems, with depth ranges up to 11,000 m.



Oxygen Optode 4330/4330F/4330W specifications

Oxygen	Concentration	Air Saturation
Measurement range	0–1000 µM ¹ or 0–32 mg/L	0–300%
Calibration method	40-point automatic calibration, 20-point verification, 3 fully Winkler calibrated optodes for referencing	
Sensing foils	Pre-burned PreSens Pst3 foils, matures Xylem FDO701 foils, Fast response Pst3 foil	
Calibration range	0–500 µM ² or 0–16 mg/L	0–150%
Resolution	< 0.1 µM ³ or 0.0032 mg/L	0.05%
Accuracy	< 2 µM or 0.064 mg/L ⁴	< 1.5% ⁵
Response time (63%)	4330 (with standard foil): < 8 sec 4330F (with fast response foil): < 25 sec 4330W (with FDO701 foil): < 30 sec	
Typical field drift	Pst3 foil: < 0.5% per year FDO701 foil: < 0.2% per year, no dry out effects	
Pressure effects	Pst3/Pst3 Fast foils: 3% lower per 1000 m FDO701 foil: 1.5% lower per 1000 m	
Foil lifetime	+10 years, do not change foil unless mechanically damaged	

Temperature

Range	-5 to +40°C (23–104°F)
Resolution	0.01°C (0.018°F)
Accuracy	±0.03°C (0.054°F) ⁶
Typical field drift	< 0.03°C per year
Response time (63%)	< 2 sec

Output format

AiCaP CANbus, RS-232

Output parameters

O₂ concentration in µM and mg/L, Air Saturation in %, temperature in °C, Oxygen raw data and temperature raw data

Sampling interval

2 sec–255 min

Supply voltage

5 to 14VDC

Current drain

Average	0.16 + 48 mA/S where S is sampling interval in seconds
Maximum	100 mA
Quiescent	0.16 mA

Operating depth

Intermediate Water

Deep Water

0–3000m (0–9843ft)	0–6000m (0–19690ft)
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Electrical connection

10-pin receptacle mating plug SP

Dimensions (W x D x H)

Ø36 x 86 mm (Ø1.4" x 3.4")

Weight

175 g (6.17 oz)

Materials

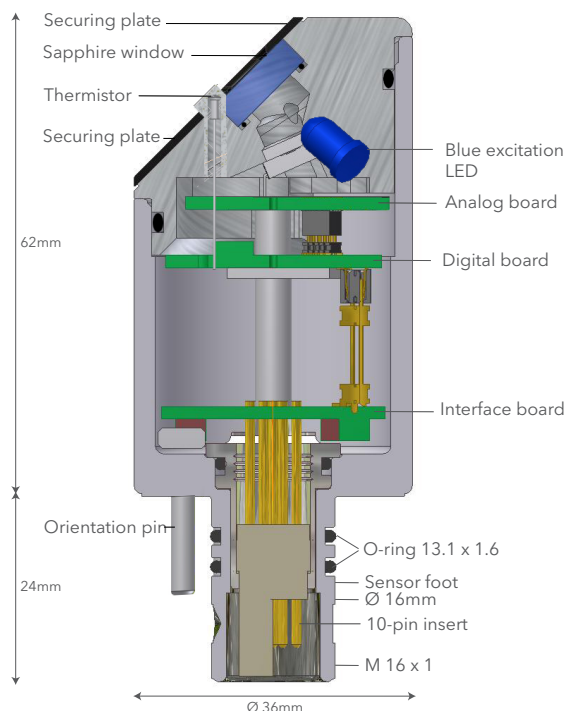
Epoxy coated titanium, PA

Accessories (not included)

Foil Service Kit 4733 (Pst3 standard) / 4794 (Pst3 fast) / 5551(FDO701)

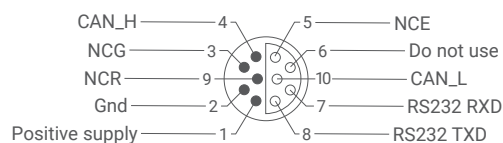
Cable from sensor

PC with waterproof SP (Sealing Plug), RS-232	4865
Seaguard as sixth sensor on top-end plate	4999
Seaguard with waterproof top end plate connection	4793
SmartGuard single sensor with SP	5236
User furnished datalogger, SP to free end	6475
PC, setup and Config Cable / Laboratory use only	3855



PIN CONFIGURATION

Receptacle, exterior view; pin = • bushing = ◯



¹ O₂ concentration in µM = µmol/l. To obtain mg/l, divide by 31.25.

² Other ranges available on request.

³ FDO701 foils have 0.02 µM resolution at low concentrations.

⁴ Requires salinity compensation for salinity variations > 1 mS/cm, and pressure compensation for pressure > 100 meter.

⁵ Within calibrated range 0–120% / 0–30°C.

⁶ Within calibrated range 0–30°C, enhanced calibration 0.003°C accuracy available for additional costs.

Misleading specifications – When Aanderaa states an absolute accuracy of e.g. (±1.5% or ±2 µM) we mean the accuracy of the sensor in the field over the entire range of oxygen concentrations and temperatures, others might refer to accuracy in the laboratory just after the sensor was calibrated. When Aanderaa give response time in water others refer to response time in air which is much faster. For more information read our [Best Practice document](#) on Oxygen Optodes.

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