

Oxygen Optode 4330W/4330/4330F



The Oxygen Optode 4330 is a compact fully integrated sensor for measuring the O₂ concentration and temperature using standard Pst3 sensing foil. 4330W is equipped with ultra-stable foil FDO701, while 4330F is equipped with fast response sensing foil Pst3 (see sensing foil considerations overleaf).

Advantages

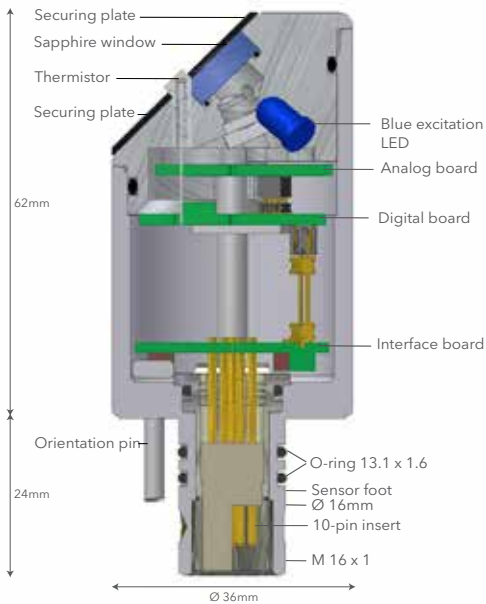
- Optical lifetime-based luminescence quenching measurement principle
- Multipoint calibrated in 40 points
- Long time stability with pre-burned foil and red reference LED
- Low maintenance needs
- Not stirring sensitive (it consumes no oxygen)
- User friendly
- Use with Aanderaa SeaGuard and SmartGuard Platform
- Use with other third-party loggers
- Stand-alone sensor

Since oxygen is involved in most of the biological and chemical processes in aquatic environments, it is a crucial parameter to measure. Oxygen can also be used as a tracer in oceanographic studies. Aanderaa revolutionized oceanographic oxygen monitoring/research with the introduction of oxygen optodes in 2002. Applications range from shallow creeks to the deepest trenches, from tropical to in-ice/in-sediment measurements. More than 200 scientific papers have so far been published using Aanderaa optodes.



a **xylem** brand

Specifications OXYGEN OPTODE 4330W/4330/4330F



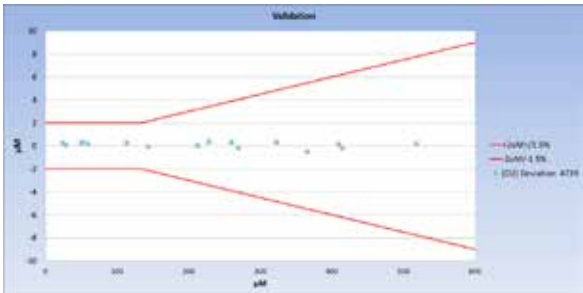
PIN CONFIGURATION

Receptacle, exterior view; pin = • bushing = °	
CAN_H	4
NCG	3
NCR	9
Gnd	2
Positive supply	1
	5
	6
	10
	7
	8
	NCE
	Do not use
	CAN_L
	RS232 RXD
	RS232 TXD

Cable from sensor to:	Cable
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	4762
PC, setup and Config Cable. Laboratory use only	3855

Sensing Foil Considerations

The Pst3 and FDO701 sensing foils are protected by an optical isolation layer which makes the foil extra rugged and insensitive to direct sunlight. The fast response sensing foil is not equipped with this layer; ambient light intensity higher than 15000 lux may cause erroneous readings. To avoid potential bleaching the fast response foil should be protected from ambient light when storing the sensor. We recommend the more rugged and stable FDO701 foil in applications where fast response is not needed.



Typical validation in 20 points after calibration

Aanderaa Data Instruments AS

Sanddalsringen 5b
P.O. Box 103 Midtun
5843 Bergen, Norway

+47 55 60 48 00
aanderaa.info@xyleminc.com
Aanderaa.com

Technical Details

Oxygen:	O ₂ - 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 Pre-burned Xylem FDO701 foils	
Calibration Range:	0 – 500 µM ⁽²⁾ or 0-16 mg/L	0 - 120%
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%):		
4330F	(with fast response foil)	<8 sec
4330	(with standard 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 & Pst3Fast foils	3-4 % lower per 1000 m	
FDO701 foil	1.5-2 % 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 degC per year
Response Time (63%):	<2 sec

Output format:	AiCaP CANbus, RS-232
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Output Parameters:	O ₂ concentration in µM and mg/L, Air Saturation in %, temperature in °C, Oxygen raw data and temperature raw data
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Sampling interval:	1 sec – 255 min
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Supply voltage:	5 to 14 Vdc
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Current drain:	
Average:	0.16 +48mA/S where S is sampling interval in seconds
Maximum:	100 mA
Quiescent:	0.16 mA

Operating depth:	
Intermediate Water (IW) ⁽⁷⁾ :	0–3000m (0–9845ft)
Deep Water (DW) ⁽⁷⁾ :	0–6000m (0–19690ft)
Hadal ⁽⁸⁾ :	0–11000m (0–36089ft)

Electrical connection:	10-pin receptacle mating plug SP
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Dimension (WxDxH):	Ø36 x 86 mm (Ø1.4" x 3.4")
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Weight:	175g (6.17oz)
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Materials:	Epoxy coated titanium, PA
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Accessories, not included:	Foil Service Kit 4733 (Pst3standard)/4794(Pst3fast)/5551(FDO701)
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- (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 > 1mS/cm, and pressure compensation for pressure > 100meter.
- (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.
- (7) Pressure cycled five times to rated depth.
- (8) Product number 5420

Specifications subject to change

The above specifications are for the stand-alone sensor only, not the installation it is utilized with.

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 might refer to response time in air which is much faster. For more information read our [Best Practice document](#) on Oxygen Optodes.

