

SEAGUARD® O₂ Oxygen Recorder

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SEAGUARD® Oxygen Recorder

The new AADI SEAGUARD® O₂ is a robust instrument based on the SEAGUARD® Platform. It is a self contained instrument for measuring oxygen concentration. The instrument can be used as a platform for additional measurements (like e.g. CTD, current, turbidity, wave and tide).

Features of the SEAGUARD® O₂:

- High Resolution and low drift
- Low maintenance needs
- Optical measurement principle
- Long time stability
- More than one year without recalibration
- Selectable interval from 2 seconds to 2 hours
- SEAGUARD® Studio visualisation software
- Smart sensor topology based on a reliable CANbus interface (AiCaP)
- Output parameters: O₂ concentration in µM, the Air Saturation in % and the Temperature in °C.
- Real-Time XML Output on RS-422 (optional)
- For use in sea and fresh water
- Windows CE based datalogger with TFT based colour touch panel for configuration
- 300m/2000m/6000m version

Since oxygen is involved in most of the biological and chemical processes in aquatic environments, it is the single most important parameter needed to be measured. Oxygen can also be used as a tracer in oceanographic studies. For environmental reasons it is critical to monitor oxygen in areas where the supply of oxygen is limited compared to demand e.g.

- In shallow coastal areas with significant algae blooms.
- In fjords or other areas with limited exchange of water.
- Around fish farms.
- In areas interesting for dumping of mine or dredging waste.

The AADI Aanderaa Oxygen Optodes are based on the ability of selected substances to act as dynamic fluorescence quenchers. The fluorescent indicator is a special platinum porphyrin complex embedded in a gas permeable foil that is exposed to the surrounding water. A black optical isolation coating protects the complex from sunlight and fluorescent particles in the water.

This sensing foil is attached to a sapphire window providing optical access for the measuring system from inside a watertight housing.

The lifetime-based luminescence quenching principle offers the following advantages over electro-chemical sensors:

- Not stirring sensitive (it consumes no oxygen).
- Less affected by fouling.
- Measures absolute oxygen concentrations without repeated calibrations.
- Better long-term stability.
- Less affected by pressure.
- Pressure behaviour is predictable.
- Faster response time.

The output parameters from the SEAGUARD® O₂ are easily presented in SEAGUARD Studio.

The SEAGUARD® O₂ and the AADI smart sensors are interfaced by means of a reliable CANbus protocol (AiCaP) using XML for plug and play capabilities. The smart sensors can be mounted directly on the top end plate of an AADI SEAGUARD® and are automatically detected and recognized.

The SEAGUARD® O₂ can be used with AADI Real-Time Collector for Real-Time data.

Specifications O₂

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Top-End Plate:	Multiparameter platform
Recording system:	Data Storage on SD card
Storage Capacity:	≤ 4GB
Battery:	2 batteries inside the instrument
Alkaline 3988	9V, 15Ah (nominal 12.5Ah; 20W down to 6V at 4°C)
or Lithium 3908:	7V, 35Ah
Supply voltage:	6 to 14Vdc
Operating temperature:	-5 – +40°C (23 – 104°F)
Deployment depth:	
Shallow Water (SW):	0 - 300m (0 - 984.3ft)
Intermediate Water (IW):	0 - 2000m (0 - 6590ft)
Deep Water (DW):	0 - 6000m (0 - 19690ft)
Platform Dimensions:	
Shallow Water (SW):	H: 356mm OD: 139mm
Intermediate Water (IW):	H: 352mm OD: 140mm
Deep Water (DW):	H: 368mm OD: 143mm
Weight:	In Air In Water
Shallow Water (SW):	6.0 kg 1.5 kg
Intermediate Water (IW):	12.2 kg 7.3 kg
Deep Water (DW):	13.1 kg 8.5 kg
External Materials	
300m version:	PET, Titanium, Stainless Steel 316
2000/6000m version:	Titanium, Stainless steel 316, OSNISIL

OXYGEN:	O₂-Concentration	Air Saturation
Measurement Range:	0 – 500 μM ¹⁾	0 - 150%
Resolution:	< 1 μM	0.4 %
Accuracy:	< 8 μM or 5% ²⁾ whichever is greater	< 5 % ³⁾
Response Time (63%):	4330F (with fast response foil) < 8 sec 4330,4385 (with standard foil) < 25 sec	
Oxygen parameters:	O ₂ concentration in μM, the Air Saturation in %	
TEMPERATURE:		
Range:	-5 to +40°C (23 - 104°F)	
Resolution:	0.01°C (0.018°F)	
Accuracy:	±0.1°C (0.18°F) ⁴⁾	
Response Time (63%):	4330,4330F < 2 sec 4385 < 10 sec	
Temperature parameter:	Temperature in °C.	

Sensing Foil Considerations

The standard sensing foil is 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 standard foil in applications where fast response time is not needed.

Latest version on internet

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ACCESSORIES

included:	SEAGUARD® Studio SD card: 2 GB 1 Alkaline Battery 3988 Documentation on CD Carrying handle 4132
not included:	Electrical terminal w/Subconn 4784 In-line mooring frame 4044, 3824A Bottom mooring frame 3448 Internal Lithium battery 3908 Internal Alkaline battery 3988 Internal battery shell 4513 Maintenance kit 3813 Tools kit 3986A Real-Time license and Collector 4715 Offline configuration software 4811 Conductivity sensor 4319, refer D369 Temperature sensor 4880, refer D391 Turbidity sensor 4112 (analog), refer D377 for Current measurements, refer SEAGUARD® RCM (D368)

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

²⁾ requires salinity compensation for salinity variation < 1 psu

³⁾ within calibrated range 0 - 120%

⁴⁾ within calibrated range 0 - 36°C

Specifications subject to change without prior notice.

AADI Real-Time

The data message from the instrument is in XML format. A user application can access the AADI Real-Time Collector over the Internet or Intranet. Each user application will experience an individual connection to the instrument data due to a queue management system in the collector. One license per SEAGUARD® instrument serves multiple user applications. Including AADI Real-Time Collector, AADI Real-Time Viewer, Style Sheets and example application (refer B163).

Offline Configuration

The Seaguard Offline Configuration is a PC application used to create and modify configuration files for the SEAGUARD®. The configuration files can be imported to one or multiple SEAGUARD® instruments using a compatible memory card (SD card). (refer TD 275).

Representative's Stamp