



SEAGUARD® O₂ Oxygen Recorder

The new Aanderaa 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 mM, the Air Saturation in % and the Temperatur 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 versions

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 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 Aanderaa 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 Aanderaa SeaGuard and are automatically detected and recognized.

The SeaGuard O₂ can be used with Aanderaa Real-Time Collector for Real-Time data.

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):	6.0kg 1.5 kg
Intermediate Water (IW):	12.2kg 7.3 kg
Deep Water (DW):	13.1kg 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 mM ⁽¹⁾ 0 - 150%
Resolution:	< 1 mM 0.4 %
Accuracy:	< 8 mM or 5% ⁽²⁾ < 5 % ⁽³⁾ whichever is greater
Response Time (63%):	4330F (with fast response foil) < 8 sec 4330,4385 (with standard foil) < 25 sec
Oxygen parameters:	O ₂ concentration in mM, the AirSaturation 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.

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 Collector 4715 and license 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.

Aanderaa Real-Time

The data message from the instrument is in XML format. A user application can access the Aanderaa 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 Aanderaa Real-Time Collector, Aanderaa 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).



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