

A NEW ADDITION TO THE COMPACT SERIES LINE UP!

## COMPACT-OPTODE

Alec Electronics has added a new instrument to the popular COMPACT series line-up. The COMPACT-OPTODE is a small dissolved oxygen data recorder that features the OPTODE Dissolved Oxygen sensor recently developed by Aanderaa Instruments Inc, Norway. The OPTODE sensor utilizes the latest optical measurement technology to measure dissolved oxygen in both ocean and fresh water. This optical measurement technology has various advantages when compared to conventional sensors and is expected to set new standards in dissolved oxygen measurements.



### Sensor Principle

The OPTODE measures water using the principle of dynamic fluorescence quenching. In dynamic fluorescence quenching, a special platinum porphyrine complex is embedded in a gas-permeable foil and acts as a fluorescence indicator. The foil is exposed to the surrounding water via an optical window. A black optical isolation coating protects the platinum porphyrine complex from both sunlight and fluorescent particles in the water. The fluorescence of the foil is excited by modulated blue light and the phase of the returned red light is measured (see Fig. 1).

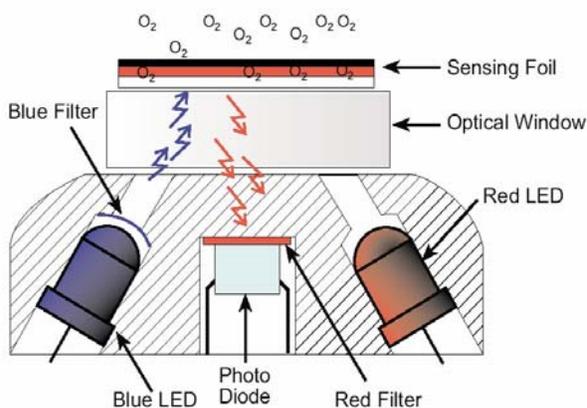


Fig. 1

The phase measurements are temperature compensated using the built in temperature sensor of the COMPACT-OPTODE, are linearized and then the  $O_2$  concentration is calculated. Oxygen is not consumed at the sensing surface and additional stirring of the water surrounding the surface is not required.

## Hardware & Specifications

The Compact-Optode has a titanium pressure case which features the same smart, compact design of the COMPACT series of instruments. The sapphire sensing window of the COMPACT- OPTODE has a 6000 m depth rating. The unit weighs 1000 g in air and 600 g in water. The small size (54 mm diameter, 272 mm overall length) makes it easy to integrate the instrument into a variety of measurement platforms such as CTD rosettes or deep sea ROVs. A more economic instrument with a 300 m depth rating is also available for coastal or shallow water applications.

### SENSOR SPECIFICATIONS: COMPACT-OPTODE 3830

#### Output Settings

	O <sub>2</sub> Concentration	Air Saturation
<b>Measuring Range:</b>	0-500 $\mu\text{M}$ <sup>1)</sup>	0 - 120%
<b>Resolution:</b>	< 1 $\mu\text{M}$	< 0.4%
<b>Accuracy:</b>	< 8 $\mu\text{M}$ or 5% <sup>2)</sup> whichever is greater	< 5% <sup>2)</sup>
<b>Settling Time (63%):</b>	< 20 seconds	
<b>Operating Temperature:</b>	0 – 40 °C (32 - 104°F)	
<b>Operating Depth:</b>	0 – 6000 m (19,690 ft)	
<b>Output Formats:</b>	RS-232C	
<b>Sampling Interval:</b>	1, 2, 5, 10, 15, 20, 30 seconds	
<b>Current Consumption:</b>	110mA/S +0.3mA where S is the recording interval in seconds	
<b>Supply Voltage:</b>	+5 to +14Vdc	
<b>Electrical Connection:</b>	10-pin receptacle mating plug 3216A	
<b>Dimensions:</b>	Ø36 x 86 mm (Ø1.42 x 3.386 in)	
<b>Weight:</b>	0.230 kg (8.113 oz)	
<b>Materials:</b>	Titanium	

<sup>1)</sup> O<sub>2</sub> concentration in micro Molar =  $\mu\text{molar/l}$ , To obtain mg/l divide by 31.25.

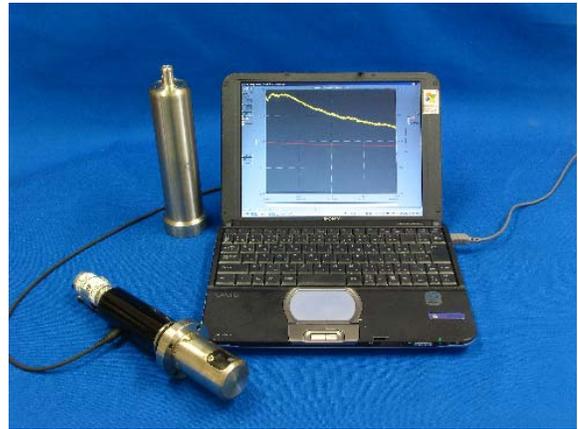
<sup>2)</sup> Valid for 0 to 2000 m (6562 ft) depth, salinity 33 – 37 ppt.

Specifications Subject to change without prior notice.



## Data Logger Unit

The COMPACT- OPTODE features a CPU controlled data logger with RS232-C output. This makes it possible to use the COMPACT- OPTODE with other digital output sensors. The data recording, data transmission and instrument set-up are handled by the same electronics and software of the trusted COMPACT series.



## Maintenance

Accurate and stable conventional DO instruments usually require frequent maintenance and calibration of the sensor. The COMPACT- OPTODE makes frequent maintenance and calibration of the sensor almost unnecessary. If bio-fouling affects the oxygen concentration around the sensor, simply wash the sensing window gently with a wet cloth or swab. Calcium deposits can be removed by bathing the sensor overnight in a 5% hydrochloric acid solution. In the case where more than 30% of the black protection coating is missing, a new foil with new calibration coefficients can be easily installed.

## Summary

The COMPACT-OPTODE is a small, lightweight, robust, deep water rated, easy-to-maintain and accurate dissolved oxygen data logger that can be utilized for long term deployments.

For more information, please contact:



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