AANDERAA
a xylem brand

Oxygen Optode 4835

is a compact fully integrated sensor for measuring the O_2-concentration in shallow water.

Advantages:

- Optical measurement principle
- Lifetime-based luminescence quenching principle
- Long time stability
- More than one year without recalibration
- Low maintenance needs
- User friendly
- Use with Aanderaa SmartGuard/SeaGuard
- Automatically detected and recognized
- Use as stand-alone sensor
- Output format: CANbus AiCaP, RS232
- Operating range: 0-300 meters

Since oxygen is involved in most of the biological and chemical processes in aquatic environments, it is one of the most important parameters 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
- Areas of interest for dumping of mine or dredging waste

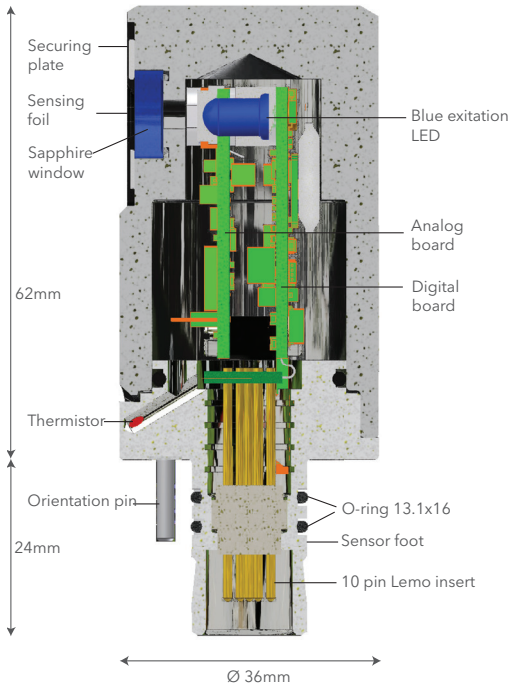
The Aanderaa oxygen optodes are based on the ability of selected substances to act as dynamic fluorescence quenchers. The fluorescent indicator is a special platinum porphyrin complex embedded in a gas permeable foil that is exposed to the surrounding water. A black optical isolation coating protects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

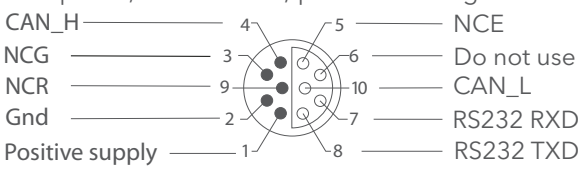
The oxygen optode outputs data in AiCaP CANbus and RS-232. The sensor can present the O_2 concentration in µM, the Air Saturation in % and the Temperature in °C.

The SmartGuard and SeaGuard data logger and the smart sensor are interfaced by means of a reliable CANbus interface (AiCaP), using XML for plug and play capabilities.



PIN CONFIGURATION

Receptacle, exterior view; pin = • bushing = ◦



Operating Principle

The sensing foil is excited by modulated blue light; the sensor measures the phase of the returned red light. For improved stability the optode also performes a reference phase reading by use of a red LED that do not produce fluorescence in the foil. The sensor has an incorporated temperature thermistor which enables linearization and temperature compensation of the phase measurements to provide the absolute O_2-concentration.

Cable from sensor to:	Cable
PC with waterproof CSP, RS-232	4865
Seaguard as sixth sensor on top-end plate	4999
Seaguard with waterproof top end plate connection	4793
User furnished data logger, CSP to free end	4762

Oxygen:	O_2-Concentration Air Saturation
Measurement Range:	0 – 500 µM[1] 0 - 150%
Resolution:	< 1 µM 0.4 %
Accuracy:	<8 µM or 5%[2] <5 %[3] whichever is greater
Response Time (63%):	<25 sec
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%):	<10 sec
Output format:	AiCaP CANbus, RS-232
Output parameters:	O_2-Concentration in µM, 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 +48mA/S where S is sampling interval in seconds
Maximum:	100mA
Quiescent:	0.16mA
Operating depth:	0 – 300m (0 – 984.3ft)
Elec. connection:	10-pin receptacle mating plug CSP
Dimensions (WxDxH):	Ø36 x 86mm (Ø1.4"x 3.4")
Weight:	118g (4.16oz)
Materials:	Titanium, Hostaform (POM)
Accessories:	Standard Foil Service Kit 4733 PSt
(not included):	AiCap extension cable with CSP 4793
	CSP to free end cable 4762
	CSP to PC cable 4865
	Set-up and config Cable 855[5]/ 3855A[5]

(1) O_2 concentration in µM = µmol/l. To obtain mg/l, divide by 31.25
(2) requires salinity compensation for salinity variation > 1mS/cm, and pressure compensation for pressure > 100 meter
(3) within calibrated range 0 - 120%
(4) within calibrated range 0 - 36°C
(5) only for laboratory use

Specifications subject to change without prior notice.

CSP. Cylindrical Sealing Plug

Foil Service Kit 4733/4794. PSt_3

xylem
Let's Solve Water

Visit our Web site for the latest version of this document and more information
www.aanderaa.no

Aanderaa Data Instruments AS
Sanddalsringen 5b, P.O. Box 103 Midtun,
5828 Bergen, Norway
Tel +47 55 60 48 00
Fax +47 55 60 48 01