ITT

AADI

Oxygen Optodes 3835/4130/4175

Oxygen Sensor 3835
Oxygen/Temperature Sensor 4130
Oxygen Sensor w/analog output 4175

are compact fully integrated sensors for measuring the O_2-concentration. The 3835 model is designed to be mounted directly on the top-end plate of RCM-9 or RDCP as well as for stand alone operation using SR10 or RS-232 interface. The 4130 model can be connected via cable to AADI SR10/VR22 Data logger, and the 4175 model provides analog output to third party data loggers.

Features of Oxygen Optode 3835/4130/4175:

- *Optical measurement principle*
- *Lifetime-based luminescence quenching principle*
- *Long time stability*
- *More than one year without recalibration*
- *Low maintenance needs*
- *User friendly*
- *Smart sensor technology - provides calibrated data directly*
- *Use with AADI Current Meters/ Profiler*
- *Use as stand alone sensor*
- *Output format: SR10, RS232, Analog 0-5V/4-20mA*

Since oxygen is involved in most of the biological and chemical processes in aquatic environments, it is the single most important parameter needing 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 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 window providing optical access for the measuring system from inside a watertight housing.The foil is excited by modulated blue light, and the phase of a returned red light is measured. By linearizing and temperature compensating, with an incorporated temperature sensor, the absolute O_2 concentration can be determined.

The sensor is designed to operate down to 300 meters. 4130 is designed for use with AADI Sensor disk. 4130 can not be used with CSP (Cylindrical Sealing Plug), then use 4130C.

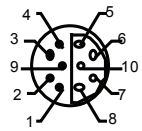
Specifications

PARAMETER	OXYGEN OPTODE 3835		OXYGEN/TEMPERATURE OPTODE 4130/4130C		OXYGEN OPTODE 4175C	
OXYGEN	O_2 -Concentration	Air Saturation	O_2 -Concentration	Air Saturation	O_2 -Concentration	Air Saturation
Measuring Range:	0 - 500µM[1])	0 - 120%[2])	0 - 500µM[1])	0 - 120%[2])	0 - 500µM[1])	0 - 120%[3])
Resolution:	<1µM	0.4%	<1µM	0.4%	<1µM	0.4%
Accuracy:	<8µM or 5 %[4]) whichever is greater	<5%[4])	<8µM or 5 %[4]) whichever is greater	<5%[4])	<8µM or 5 %[4]) whichever is greater	<5%[4])
Settling Time (63%):	<25s		<25s		<25s	
TEMPERATURE						
Calibrated Range:	-0°C to +36°C		-5°C to +40°C		-0°C to +36°C	
Resolution:	0.01°C		0.05°C		0.01°C (0 -5V)	0.02°C (4 - 20mA)
Accuracy:	±0.05°C		±0.1°C		±0.1°C (0 - 5V)	±0.15°C (4-20mA)
Settling Time (63%):	<10s		30s		<10s	
Operating Temperature	-5°C to +40°C (23 - 104°F)		-5°C to +40°C (23 - 104°F)		-5°C to +40°C (23 - 104°F)	
Operating Depth:	0 - 300m (984.3ft)		0 - 300m (984.3ft)		0 - 300m (984.3ft)	
Sampling Rate:	SR10: controlled by AADI datalogger. RS-232: From 1s to 255 minutes		Controlled by AADI datalogger		From 1s to 255 minutes	
Output Formats:	Aanderaa SR10[5])(Only Oxygen) RS-232[6])		Aanderaa SR10[5]) (Oxygen) and VR22[5]) (Temperature)		0 - 5V outputs: ±0.1% of FS[7]) 4-20mA output: ±0.2% of FS[7]) RS-232[6])	
Current Consumption:	SR10: 10mA/T where T is recording interval in minutes RS-232: 80mA/S +0.3mA where S is recording interval in seconds		10mA/T where T is recording interval in minutes		80mA/S +0.3mA +Ia where S is recording interval in seconds and Ia is quiescent: 5 - 45mA when analog adaptor enabled	
Supply Voltage:	SR10: -6 to – 14Vdc RS-232: +5 to +14Vdc		SR10: -6 to –14Vdc		Analog: +7 to +14Vdc RS-232: +5 to +14Vdc	
Dimensions:	Ø36 x 86mm (Ø1.42 x 3.386in)		Ø40 x 168mm(OD1.58x 6.61in)		Ø40 x 175.5mm (Ø1.42 x 6.9in)	
Weight:	120g (4.23oz)		435g (15.34oz)		420g (14.82oz)	
Materials:	Titanium, Hostaform (POM)		Titanium, Hostaform (POM)		Titanium, Hostaform (POM)	
Accessories included:	Tools		Tools		Tools	
Accessories not included:	Sensor Cable 3854 [8]) Sensor Cable 4865 to PC[9]) [10]) Sensor Cable 4762 free end [10]) Foil Service Kit 3853 PSt_3		Sensor Cable 4865 to PC [9]) [10]) Sensor Cable 4762 free end [10]) Foil Service Kit 3853 PSt_3		Sensor Cable 4865 to PC [9]) [10]) Sensor Cable 4762 free end [10]) Foil Service Kit 3853 PSt_3	

[1]) O_2 Concentration in µM =µmol/l. To obtain mg/l, divide by 31.25
[2]) The saturation range covered by SR10 is 0-150%, the temperature range covered by SR10 is -5°C to 40°C.
[3]) The saturation range covered by analog 0-5 V and 4-20 mA is 0-150%, the temperature range covered is -5°C to 40°C.
[4]) requires salinity compensation for salinity variasions > 1mS/cm, and pressure compensations for pressure > 100 meter.
[5]) SR10/VR22 are signal protocols that are used with AADI equipment only.
[6]) 9600 Baud, 8 data bits, 1 stop bit, No Parity, Xon/Xoff Handshake.
[7]) The accuracy of the Analog Adaptor in 0-5V output mode is specified to 0.1% of FS. Note however that at the end of the scale (<0.0-0.07> and <4.93-5.0>) the error may be larger.
[8]) When mounted on RCM 9 or RDCP top-end plate.
[9]) In order to change settings or calibrating the Optode the Sensor has to be connected to a PC. To gain access to the 4130 Optode's RS-232 signals its cylindrical body must be removed, see Operating Manual TD218.
[10]) With Cylindrical Sealing Plug for field use.

Pin Configuration

Receptacle, exterior view;
pin = • , bushing = °



A) Ground for SR10
B) Supply for RS-232
C) Ground for RS-232
D) Supply for SR10

3835	4130/4130C	4175C	When used with Cable 4762	
			Plug	Colour
1: Positive Supply[A), B)]	1: System Ground	1: Positive Supply	8	Green
2: Ground[C)]	2: Not Connected	2: Ground	7	Black
3: -9V[D)]	3: -9V	3: Analogue Output 1	6	White
4: Reserved, DNC	4: Not Connected	4: Return Ground 1	5	Blue
5: Bridge Voltage (BV)	5: Bridge Voltage (BV)	5: Analogue Output 2	4	Violet
6: Reserved, DNC	6: SR10 (Oxygen)	6: Return Ground 2	3	Yellow
7: RXD (RS-232)	7: Not Connected	7: RXD (RS232)	2	Brown
8: TXD (RS-232)	8: Bridge Ground	8: TXD (RS232)	1	Grey
9: Control Voltage	9: Control Voltage	9: Not Connected	10	Red
10: SR10 (Oxygen)	10: VR22 (Temperature)	10: Not Connected	9	Orange

Applications

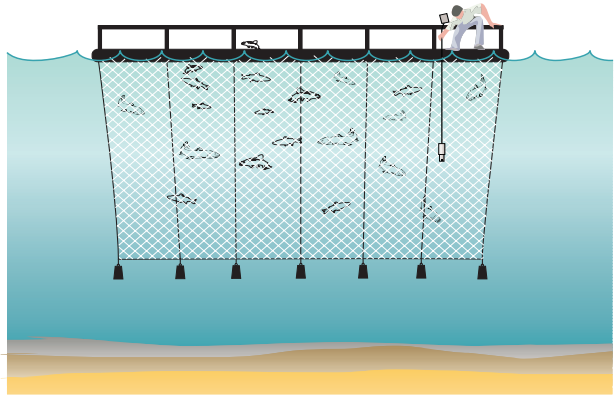
Model	3835	4130/4130C	4175C
Description	Integrally/Direct Mounted or cable	Immersion Body for cable or sensor string	Immersion Body with Analog and Serial Outputs
Output	Dual Channel: RS-232 data string (Oxygen,Temp.) or Single SR10 (Oxygen) channel to RCMs or RDCPs	Dual Channel: SR10 (Oxygen) and VR22 (Temp.)	Dual Channel: 0 - 5V (Oxygen, Temp.) or 4 - 20mA (Oxygen, Temp.) and/or RS-232 (Oxygen, Temp)
Application	Add sensor(s) to Top End-plate of our RCM 9, RDCP 600 or for OEM/Third party use With Cable to PC or Datalogger	4130: For use with AADI sensordisk 4130C: For use with Aanderaa 3634/3660 dataloggers on cable or in fastening fixture with sensor string, added sensors to Weather Stations AWS 2700, Data Buoys 4700 or our self-contained recording instruments	General Purpose use with third party dataloggers, e.g. CTDs, ARGO floats, ROVs; PLCs, process industry controllers, recorders, data acquisition and control systems.
Sample Rate	Set by host. RCM: continuously* – 120 minute RDCP: 1minute – 8 hours. Internal interval setting for input to third party RS-232 interface.	Set by host. 3634/3660: 0.5 minutes - 180 minutes DB 4700: continuously* - 180 minutes AWS 2700: continuously* - 180 minutes	
Multi-sensor Configuration	RCM 9/RDCP 600: Yes, 2nd 3835 via Cable 4944/5089 3634/3660: Max 4/17 sensors, depending on the configuration DB 4700: Max 10 sensors, depending on the configuration	3634/3660: Max 4/17 sensors, depending on the configuration DB 4700: Max 10 sensors, depending on the configuration Sensor attachment: single points on cable use 3913; In-line 3-Sensor Disk 3822, only 4130 RCM/RDCP: via Cable 5088	
Stand-alone Sensor (0–300m)	Use Cable 4865/4762 Output: RS-232 (Oxygen,Temp.). Sampling Rate: 1s to 255 minutes		User furnished datalogger or controller, Analog: use 4762 Cable. RS-232: use 4865/4762 Cable Output: 0 - 5Vdc; 4 - 20mAdc; or RS-232 (Oxygen, Temperature) Sampling Rate: 1s to 255 min.

*) *Note that when the Optode is connected to an instrument like the RCM, CMB, AWS or a datalogger, the sampling rate in a continuous recording mode depends on the number of channels for storage etc.*

EXAMPLES OF APPLICATIONS

To the right: The Oxygen Optode 3835 used with a Recording Current Meter to measure dissolved oxygen and temperature as part of environmental monitoring.

Below: The Oxygen/Temperature Sensor 4130C used with Datalogger 3634 to measure dissolved oxygen and temperature in a fish mare



Accessories

Cable from sensor to:	3835	4130/4130C	4175C
PC with waterproof CSP(Cylindrical Sealing Plug), RS-232	4865	4865[3)]	4865
RCM-9 or RDCP internal connection	3854/4994		
RCM-9 or RDCP with waterproof top end plate connection	4944/5089	5088	
AADI datalogger 2 ch. (Oxygen,Temperature), SR-10		4945[1)]/4943[2)]	
AADI datalogger 1 ch. (Oxygen), SR-10	4946		
User furnished datalogger, CSP to free end	4762	4762	4762

[1)] CSP to 2 x 6-pin plug, split cable
[2)] CSP to 10-pin plug
[3)] Adapter must be removed to gain access to RS-232

CSP. *Cylindrical Sealing Plug*

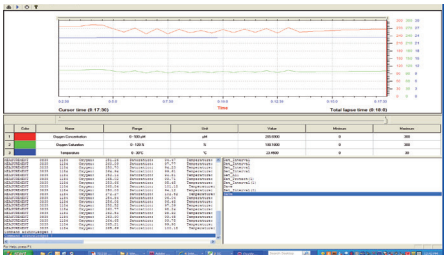
Foil Service Kit 3853. *PSt_3*

Oxyview© Program

Oxyview©, has been designed for use with Oxygen Optode Temperature Sensor 3830/3835. The program allows display of Oxygen Concentration, Oxygen Saturation and Temperature both in tables and graphical forms.

A Calibration Wizard is included in the program. This Wizard helps calibrate the Optode.

Oxyview© can also be used to configuring the Oxygen Optode.



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