



# IDRONAUT OCEAN SEVEN 314 ON-LINE MODULE

CTD – OXYGEN – pH - REDOX – TURBIDITY – FLUOROMETER  
FERRYBOX – THERMOSALINOGRAPH

The OS314 On-Line module is housed in a sealed POM cylinder provided with a transparent acrylic flow cell which is easily removed for sensor cleaning, calibration and maintenance. The sample volume of the measuring chamber is only 420 ml, which ensures a very fast response time. The measurement sensors installed in the On-Line module are manufactured by IDRONAUT. The On-Line module is controlled by an advanced miniaturized and very low power electronics that store measurements in non-volatile memory or transmit them in real-time at sampling rate of up to 28 Hz. The On-Line module can be directly connected to a data logger or personal computer by means of a wired or wireless interface. Optional interfaces allow the connection of external fluorometer and turbidity meter and a remote thermometer.



## FEATURES

### ◇ PRESSURE SENSOR

A pressure sensor inside the measuring chamber accurately monitors the pressure inlet and acts as an accurate flowmeter.

### ◇ TWO ACCURATE TEMPERATURE SENSORS

Each sensor features a very fast Pt100 platinum resistance thermometer with negligible self-heating effect. The main thermometer is located inside the measuring chamber. The optional remote sensor for measurement of the actual sea temperature at the ship's intake can be located up to 50m from the main unit.

### ◇◇ CONDUCTIVITY SENSOR

The high accuracy seven-platinum-ring quartz conductivity cell (patented) can be cleaned in the field without the need for re-calibration. This unique quartz cell employs a large diameter (8mm) and a short length (46mm) to guarantee self-flushing and no clogging after long-term deployment even in biologically active waters. Furthermore, **an optional UV LED (280 nm), integrated into the conductivity cell**, sterilizes the sample under measurement, thus avoiding the early growth of biofouling inside the quartz measuring cell.

### ◇ OPTICAL DISSOLVED OXYGEN SENSOR

Optical dissolved oxygen sensor works according to the principle of dynamic fluorescence and it is based on REDFLASH technology and on a unique oxygen-sensitive REDFLASH dyes. The REDFLASH technology impresses by its almost no drift, low power consumption, low cross-sensitivity and fast response time.

### ◇ pH GLASS SENSOR and SOLID GEL REFERENCE ELECTRODE

High-pressure, low impedance glass membrane pH electrode in conjunction with a unique KCl or NaCl gel double junction reference electrode and a differential pH preamplifier,  $10^{13} \div 10^{14} \Omega$  input impedance.

### ◇ FLUOROMETER INTERFACE (external installation)

The system can interface to a remote Fluorometer installed in an external measuring flow-through cell.

### ◇ TURBIDITY METER INTERFACE (external installation)

The system can interface to a remote Turbidity Meter installed in an external measuring flow-through cell.

### ◇ INTERFACE

The standard RS232C or the optional RS485 serial interface allows the capture of data in real time by any customer data logger.

An optional wireless interface: Wi-Fi, Bluetooth can be installed too.

### ◇ REAL-TIME ACQUISITION SOFTWARE - REDAS5

REDAS5 software, through a simplified and friendly operator interface, allows taking full control of the OS314 On-Line Module acquisitions. REDAS5 shows the acquired data graphically and numerically. If a GPS is connected to the PC running the REDAS5, acquired data is automatically associated with the geographical coordinates acquired from GPS.

### ◇ DATA STORAGE

The OS314 is equipped with a 4-Gbyte SD memory card, which allows storing of about 60,000,000 data sets each one being composed of the reading of all the installed sensors plus the acquisition date and time. The OS314 communicates at a speed up to 115k2 bps, thus keeping data uploading time to a minimum.

## SENSOR SPECIFICATIONS

Parameter	Range	Initial Accuracy	Resolution	Response Time
Pressure	0..1 bar	0.05 % FS	0.0015 % FS	50 ms
Temperature	-5..+50 °C	0.0015 °C	0.0001 °C	3 s
Conductivity salt water	0..90 mS/cm	0.0015 mS/cm	0.0001 mS/cm	50 ms
fresh water	0..7000 µS/cm	5 µS/cm	0.1 µS/cm	50 ms
Oxygen (optical)	0..44 mg/l	±0.1 mg/l	0.025 mg/l	3 s <sup>(2)</sup>
	0..500 %sat.	±1 %sat.	0.25 %sat.	3 s <sup>(2)</sup>
pH	1..13 pH	0.01 pH	0.001 pH	3 s <sup>(1)</sup>
Redox	-1000..+1000 mV	1 mV	0.1 mV	3 s

(1) Differential pH preamplifier,  $10^{13}$ ÷  $10^{14}$  ohm input impedance.

(2) A special FAST membrane, with response time 1s, is available upon request.

Derived parameters such as: **Salinity, Water Density and Oxygen ppm** are obtained using the algorithms described in the UNESCO "Technical papers in marine science no. 44".

## OPTIONAL ANALOGUE AND DIGITAL INTERFACE

The measuring range, resolution, accuracy and response time if not indicated, belong to the interfaced sensor.

Parameter	Range	Initial Accuracy	Resolution	Response Time
Remote temperature	-5..+50 °C	0.05 °C	0.001 °C	3 s
UNILUX (single-channel)	0..100 µg/l			
TRILUX (three-channel)	0..100µg/l <sup>(1)</sup>			
CYCLOPS-7F™ Fluorometers	0..100 µg/l <sup>(2)</sup>			
C-FLUOR™ Fluorometers	0..100 µg/l <sup>(2)</sup>			

(1) Chlorophyll *a*, Phycocyanin, Phycoerythrin for algae monitoring; Rhodamine WT or Fluorescein for dye tracing applications; Nephelometer for turbidity monitoring.

(2) Chlorophyll *a*, Blue green algae, Rhodamine, Fluorescein, Turbidity, CDOM, Crude oil.

## ELECTRICAL & PHYSICAL SPECIFICATIONS

Real-time and logging:	2Hz up to 28 Hz user configurable
Interfaces	RS232C or optional: RS485, WiFi, Bluetooth
Operator interface:	friendly menu driven UI
Communication protocol:	plain ASCII message protocol
Software:	REDAS5 and WTERM
Power supply:	9 to 32 VDC, 90mA @ 12VDC
Fluidics	
Flow cell volume:	420 ml
Fluidic ports:	male connector 1/4" OD x 1/8" MT PVDF for hard tubes
Type of tubes:	Tygon B-44-3 BEV grade tubing
Size of tubes:	1/2" OD and 3/8" ID
Flow rate:	~ 2 litre/minute
Working pressure:	0.02 up to 1 bar
Dimensions:	
sealed container:	POM cylinder Ø 75mm x 400mm (including bulkhead connectors)
Measuring chamber:	Acrylic transparent Ø 100mm x 170mm
Weight:	3.5 Kg
Bulkhead connectors:	wet-pluggable MCBH-6-MP



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11-2023