

OCEAN SEVEN 310

28Hz VERY-LOW-POWER, SELF-RECORDING and PROFILING MULTIPARAMETER CTD



The **OCEAN SEVEN 310** multiparameter CTD represents a real breakthrough in the concept of miniaturization, integration and performance. Thanks to the adoption of a new generation of electronic devices, the OS310 can interface several analogue and digital sensors and can guarantee sampling rates up to 28Hz. The operator can easily select the OS310 sampling rate from **1Hz to 28Hz** (samples per second), according to the required monitoring or profiling activity. The OS310 CTD can be easily integrated/adapted to third-party systems like floating profilers and/or oceanographic moorings, ROVs and AUVs. IDRONAUT prides itself on the design of its full ocean depth, low maintenance sensors. The OS310 does not require pumps or any other external device to flush the sensors, which minimizes its power consumption. The OS310 is characterized by a **drift free sensors preamplifier**.

FEATURES AND OPTIONS AVAILABLE



CONDUCTIVITY CELL

The high accuracy seven platinum ring quartz conductivity cell (patented) can be cleaned in the field without the need for recalibration. 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.

DATA STORAGE

The OS310 CTD is equipped with a 4Gbyte data memory, which allows the storing of about 250 millions data sets, each one being composed of the reading of all the installed sensors plus the acquisition date and time. The OS310 communicates at a speed up to 115k2 bps, thus keeping data uploading time to a minimum.

TEMPERATURE SENSOR

Features a very fast platinum resistance thermometer (response time: 50 ms). Negligible self-heating effect. Optionally combined C/T sensor featuring a 7ms fast thermistor (20 ms after processing) integrated in the conductivity cell is available upon request.

SELF-RECORDING MODES

- Continuous:** Sampling at configurable rate.
- Pressure:** Data is sampled at pressure intervals.
- Timed:** Data is sampled at configured time interval.
- Conditional:** Data is sampled when a threshold value is reached.
- Burst:** Burst sampling at configured time intervals

PHYSICAL CHARACTERISTICS

Housings	1000 dbar AISI316	2000 dbar POM	7000 dbar TITANIUM	7000 dbar TITANIUM
Diameter	48 mm	75 mm	48 mm	75 mm
Length	632 mm	632 mm	660 mm	630 mm
Weight in air	1.3 Kg	3.3 Kg	2.1 Kg	5.0 Kg
Weight in water	0.7 Kg	1.7 Kg	1.3 Kg	3.8 Kg



SENSORS SPECIFICATIONS

Parameter	Range	Initial Accuracy	Resolution	Response Time
Pressure	0..7000 dbar ⁽³⁾	0.05% FS	0.002% FS	50 ms
Temperature	-5..+50 °C	0.0015 °C	0.0001 °C	50 ms
Conductivity Salt water	0..90 mS/cm	0.0015 mS/cm	0.0001 mS/cm	50 ms ⁽¹⁾
Fresh water	0..7000 µS/cm	5 µS/cm	0.1 µS/cm	50 ms ⁽¹⁾
Brine	0..350 mS/cm ⁽⁵⁾	0.010 mS/cm	0.0001 mS/cm	50 ms
Oxygen Polarographic	0..50 ppm	0.1 ppm	0.01 ppm	3 s ⁽²⁾
	0..500 %sat.	1 %sat.	0.1 %sat.	3 s ⁽²⁾
Oxygen Optical	0..44 mg/l	±0.1 mg/l	0.025 mg/l	3 s ⁽⁶⁾ or 1 s ⁽⁷⁾
	0..500 %sat.	±1 %sat.	0.25 %sat.	3 s ⁽⁶⁾ or 1 s ⁽⁷⁾
pH	1..13 pH	0.01 pH	0.0001 pH	3 s ⁽⁴⁾
Redox	-1000..+1000 mV	1 mV	0.1 mV	3 s

(1) At 1 m/second flow rate. (2) From nitrogen to air. (3) Other standard pressure transducers: 10, 40, 100, 200, 500, 1000, 2000, 4000, 7000, 10000 dbar. (4) Differential pH preamplifier, 10^{13} .. 10^{14} ohm input impedance. (5) Optional extended range, available upon request. (6) Blue label membrane cap for profiling and monitoring. (7) White label membrane cap for fast profiling.

The fundamental properties of seawater like: **Salinity, Water Density, Oxygen ppm** are obtained using the algorithms described in the UNESCO "Technical papers in marine science no. 44". The fresh water properties like: TDS (Total Dissolved Solids), Fresh Water Conductivity corrected at 20°C and 25°C are automatically calculated.

ANALOGUE AND DIGITAL INTERFACES

Parameter	Range	Initial Accuracy	Resolution	Response Time
<i>Idronaut</i> Pressure Highly Accurate	0..7000 dbar ⁽¹⁾	0.01% FS	0.002% FS	50 ms
<i>Seapoint</i> Turbidity Meter	0..>2500 FTU	0.1 FTU	0.025 FTU	3 s ⁽²⁾
<i>Seapoint</i> Chlorophyll Fluorometer	0..150 µg/l	0.02 µg/l	0.01 µg/l	3 s ⁽²⁾
LI-COR LI-192SA / LI-193SA PAR	0..10 µA	0.05 µA	0.01 µA	
TURNER DESIGNS C-FLUOR™ (4)	0..100 µg/l ⁽³⁾	0.03 µg/L	0.01 µg/L	
CHELSEA UNILUX / TRILUX	0..100 µg/l ⁽³⁾			
WATER SAMPLING SYSTEM	ROSETTE: GO 1018, IDRONAUT MISS			

(1) Other standard pressure transducers: 100, 1000, 2000, 4000, 7000 dbar. (2) Provided with auto-range ,25,125,500, >2500 FTU; 5,15,50,150 µg/l. (3) Chlorophyll a, Phycocyanin, Phycoerythrin for algae monitoring; Rhodamine WT or Fluorescein for dye tracing applications; Nephelometer for turbidity monitoring. (4) Alternatively it is possible to interface the Turner Designs CYCLOPS-7F™. Up to 3 Fluorometers can be interfaced through the Turner Designs C3™.

SPECIFICATIONS

Real-time and logging	Up to 28 Hz
Interfaces	Wired: RS232C, RS485; Wireless: WiFi/Bluetooth
Power supply Battery	2.9..5.0 VDC; Running: 90 mA @ 3.6VDC; Standby 10 µA @ 3.6VDC;
Power supply External power	9..32 VDC

SOFTWARE

Idronaut software allow the operator to configure the OS310 data acquisition, logger functions and upload data from the memory. They are:

- **WTERM:** Windows Terminal emulation software to easily communicate with the OS310 using the built-in operator interface and communication protocol. Users are easily able to view real time data, configure the probe for unattended acquisition and upload stored data.
- **REDAS-5:** Windows Data processing and retrieval software, which allows the display and plotting of conductivity, temperature, pressure and derived variables such as salinity, sound speed and water density, according to UNESCO formulas and recommendations.