IDRONAUT OCEAN SEVEN 308 CTD LOGGER

VERY LOW POWER, SELF-RECORDING, UV-ANTIFOULING, ARCTIC, ANTARCTICA, BRINE, MOORINGs, ROVs, AUVs

The OCEAN SEVEN 308 CTD combines very high-quality electronics with exceptional sensors accuracy fulfilling the demand for a self-recording high performance CTD probe with very compact dimension and very low power consumption. This 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, pump-free, low-maintenance sensor, central to which is the high accuracy seven-platinum-ring quartz conductivity cell. The self-flushing sensors makes this CTD ideal for deployment in ***Arctic*** *and* ***Antarctica****. The OS308 CTD standard interface is RS232C; other optional interfaces are: TTL, RS485 and wireless. The OS308 housing can be manufactured with either a 316 grade L stainless steel or titanium allowing deployment to depths of 1000 or 7000/10.000 dbar respectively.*

Features:
- ◊ 2 to 22Hz configurable sampling rate
- ◊ Very low power consumption
- ◊ Large memory (4Gbytes) 250 M data sets
- ◊ High-speed data uploading

AUV INTEGRATION

Automatic, real-time data transmission compatible with: Bluefin and OEX AUVs are available, together with a proprietary data transmission format. To further reduce weight and size a shorter housing is available upon request.

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.

CONDUCTIVITY CELL

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 minimal fouling during long-term deployment even in biologically active waters. Furthermore, optionally two UV-LED (Ultraviolet, 280 nm @500µW, Light-Emitting Diode) can be integrated into the conductivity cell, sterilizing the sample under measurement, thus avoiding the early growth of biofouling inside the quartz measuring cell.

TECHNOLOGY IN SEARCH OF NEW DEPTHS

SAMPLING MODES

Continuous: Sampling at configurable rate: 0.1 Hz to 22 Hz.
Multiple acquisition cycles can be obtained by switching the CTD on/off.

Pressure: Data is sampled at pressure intervals. Multiple profiles are obtained by switching the CTD on/off.

Sound Velocity Profiler:
Data is sampled at regular pressure intervals. Starting, ending depth are configured. Multiple profiles can be obtained by switching the probe ON and OFF.

Timed: CTD collects a series of samples and then sleeps for the configured time interval. Time intervals are between 20s up to1 day.

Conditional: Data acquisition is started and continues while the reading from a selected sensor is above a threshold value at configurable sampling rate 0.1 Hz up to 22 Hz.
Monitoring of the selected sensor threshold value can be configured to occur at intervals between 20s up to 1 day.

Burst: Burst sampling carried out at configured time intervals: between 20s up to 1 day.

Real-time: Data is sent to the control system in real time at sampling rate 2 Hz up to 22Hz.

DATA STORAGE AND BATTERY ENDURANCE

The OS308 CTD is equipped with a 4-Gbyte internal non-volatile SD memory which allows the storing of about 250 M data sets each one being composed of the reading of installed sensors plus the acquisition date and time. Different types of battery can be installed in the CTD housing.
The standard battery pack are:

➢ 3 x size "AA"	Alkaline 1.5V battery assembled in a single pack.	4;5V
➢ 1 x size "AA"	Lithium non-rechargeable battery	3.6V, 2.4Ah

Whenever the OS308 operates in Timed, Burst and Conditional modes, the battery endurance is considerably extended because the OS308 enters a deep sleep mode between acquisitions and drains only 4µAh from the battery. ***For instance, by monitoring every hour, the OS308 (CTD only) can run for about 9 years on a single Lithium size*** **"C" cell.**

SENSOR SPECIFICATIONS

Sensor	Range	Initial Accuracy	Resolution	Response Time
Pressure	0.. 1000 dbar (1)	0.05 % full scale	0.002 % full scale	50 ms
Temperature	-3..+50 °C	0.0015 °C	0.0001 °C	50 ms
Conductivity	0..90 mS/cm	0.0015 mS/cm	0.0001 mS/cm	50 ms (2)
(fresh water)	0..7000 µS/cm	5 µS/cm	0.1 µS/cm	50 ms (2)
(brine)	0..350 mS/cm(3)	0.01 mS/cm	0.0001 mS/cm	50 ms (2)

(1) Standard pressure transducers, immediately available, have 10, 40, 100, 200, 500, 2000, 4000, 6000, 10000 dbar F.S.
(2) At 1 m/second flow rate. **(3)** need a special optional calibration.
The fundamental properties of seawater, like: **Salinity, Sound Speed, Water Density** are obtained using the algorithms described in the UNESCO technical papers in marine science no. 44.
The freshwater properties like: **TDS, Conductivity** corrected at 20°C and 25°C are automatically calculated.

OPTIONAL SENSOR SPECIFICATIONS

Sensor	Range	Initial Accuracy	Resolution	Response Time
Pressure (High precision)	0..1000 dbar(1)	0.01 %F.S.	0.002 %F.S.	50 ms

(1) High precision pressure transducer immediately available have: 100,2000,4000,7000,10000 dbar F.S.

ELECTRONIC SPECIFICATIONS

Real-time and logging:		up to 22Hz.
Interfaces:		RS232C, TTL (0 to 3.3VDC), RS485, wireless.
Communication speed:		115k2 bps, up to 921k6 bps.
Data memory:		4 GByte
Supply voltage:	Battery:	3 x size "AA" Alkaline 1.5V battery assembled in a single pack, 4.5V, or 1 x size "AA" Lithium non-rechargeable battery, 3.6V, 2.4Ah.
	External:	9.0 to 30VDC, 22 mA @ 12VDC.
Supply current:	Running:	2.9 to 5.0VDC, 72 mA @ 3.6VDC.
	Sleep:	4 µA @ 3.6VDC.

SOFTWARE

Idronaut programmes allow the operator to configure the OS308 data acquisition, logger functions and upload data from the memory. They are:

WTERM: *Windows.* Terminal emulation programmes to easily communicate with the OS308 using the built-in operator interface and communication protocol.

REDAS-5: *Windows.* Data processing and retrieval programme, 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.

PHYSICAL CHARACTERISTICS

Housing	1000 dbar(1) AISI 316L&POM	1000 dbar Titanium&POM	7000 dbar Titanium
Dimensions Diameter	43 mm (upper cap 48mm)	48 mm	48 mm
Total length	535 mm	540 mm	535 mm
Weight in air	1.1 Kg	1.5 Kg	1.8 Kg
In water	0.65 Kg	0.9 Kg	1.1 Kg

(1) AUV version shorter housing is available upon request.

IDRONAUT

Via Monte Amiata,10
20861 Brugherio (MB) – ITALY
Tel. +39039 879656 – Fax +39 039 883382
e-mail: idronaut@idronaut.it http://www.idronaut.it

For immediate product information call:

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