



# OCEAN SEVEN 303

## LOW POWER CTD MULTIPARAMETER PROBE WITH DIRECT DIGITAL OUTPUT AND DATA LOGGING CAPABILITY

The OCEAN SEVEN 303 multiparameter CTD probe, is the result of Idronaut's 20 years experience in the design and manufacture of high quality fast response marine instrumentation. It offers a combination of 16 bit high resolution data accuracy, with long term sensor stability, making this probe an ideal choice for both on-line profiling and self recording moored applications. Idronaut prides itself on the design of its pressure balanced full ocean depth, pump free, low maintenance sensors. Central to which, is their well known high accuracy seven-platinum-ring conductivity sensor, which can be cleaned in the field without need of re-calibration. The OS303 Probe does not require a pump or other external device to flush the sensors. The OS303 Probe can be programmed to send continuously the acquired data via: Telemetry, RS232C, RS485, or to acquire and store data in internal memory, according to different measurement methods: time, pressure, etc. Data is transmitted encoded in engineering units. Calibration coefficients and probe configuration are stored in the internal non-volatile memory.

The OS303 CTD probe is able to automatically select the proper Conductivity range: for salt or fresh water, making it a very advanced tool for bore hole measurements.

### SENSOR SPECIFICATIONS

The Ocean Seven 303 probe can be equipped with the following sensors to measure:

<u>Parameter</u>	<u>Range</u>	<u>Accuracy</u>	<u>Resolution</u>	<u>Time Constant</u>
Pressure	0..2000 dbar <sup>(3)</sup>	0.1 %F.S.	0.03 %F.S.	50 ms
Temperature	-1..+50 °C	0.005 °C	0.0015 °C	50 ms
Conductivity				
Salt water	0..64 mS/cm	0.005 mS/cm	0.002 mS/cm	50 ms <sup>(1)</sup>
Fresh water	0..6400 µS/cm	1 µS/cm	0.2 µS/cm	50 ms <sup>(1)</sup>
Oxygen	0..50 ppm	0.1 ppm	0.01 ppm	3 s <sup>(2)</sup>
	0..500 % sat.	1 % sat.	0.1 %sat.	3 s
pH	0..14 pH	0.01 pH	0.001 pH	3 s
Redox	+/-1000 mV	1 mV	0.1 mV	3 s
no. 3 analogue inputs for:				
Ammonia	0..5000 mV		0.1 mV	
Nitrate	0..5000 mV		0.1 mV	
Chloride	0..5000 mV		0.1 mV	

(1) at 1 m/second flow rate.

(2) in air.

(3) Other range available upon request are: 10, 40, 100, 200, 500, 1000, 2000 dbar

The following parameters are calculated from CTD sensor signals:

- **SALINITY** (according to UNESCO 1978 formula);
- **SOUND SPEED** (according to formula developed by Chen and Millero - 1977);
- **FRESH WATER CONDUCTIVITY** corrected at 20 °C and 25 °C;
- **OXYGEN % SATURATION to OXYGEN ppm CONVERSION** (according to UNESCO 1986 formula - Millero);

## **ELECTRONIC SPECIFICATIONS**

<i>Sampling frequency</i>	40 Hz
<i>Direct readout</i>	2 Hz
<i>Communication</i>	Telemetry, RS232C, RS485, Asynchronous TTL (0..5VDC)
<i>Baud Rate</i>	1200, 4800, 9600 bps
<i>Protocol</i>	[ <b>Verbose</b> ] friendly operator interface with built-in help [ <b>Non Verbose</b> ] Binary and/or ASCII data transmission
<i>Program memory</i>	32 Kbyte
<i>Data memory</i>	64 Kbyte non-volatile EEROM
<i>A/D converter</i>	16bit successive approximation, resolution 152 µV/bit, bipolar range 0..5.0 VDC.
<i>Analogue input</i>	12 multiplexed analogue inputs
<i>Supply Voltage</i>	6..60 VDC, nominal 12 VDC
<i>Supply Current</i>	10 mA @ 12 V DC for CTD only, 15 mA for all 9 sensors
<i>Battery</i>	Two 9 V PP3 alkaline batteries
<i>Cable</i>	The OCEAN SEVEN 303 CTD Probe operates with standard Rochester coaxial armoured cables ( $1/10$ , $1/8$ , $1/4$ , $1/2$ inch), and with sea cable having a resistance of up to 250 Ohms.

## **PHYSICAL CHARACTERISTICS**

<i>Housing</i>		<b>AISI 316 for 2000 dbar</b>	<b>TITANIUM for 7000 dbar</b>
<i>Dimensions:</i>	housing diameter	42 mm	50 mm
	Total length	600 mm	600 mm
<i>Weight:</i>	in air	2.0 kg	2.2 kg
	In water	0.8 Kg	1.0 kg