

MULTIPLEX SYSTEM

The IDRONAUT OCEAN SEVEN 3xx CTD multi-parameter probes, while deployed in water, acquire and send real-time acquired data to a remote PC. The “Multiplex System” allows the deployment of up to 9 OCEAN SEVEN 3xx CTDs contemporarily.



The “Multiplex System” is composed by a dedicated hardware: “Multiplex Deck Unit”; by a special data acquisition software running under the Windows Microsoft operating system “Multiplex Program”.

The OCEAN SEVEN 3xx CTDs are connected to the Multiplex deck unit by means of a special multi-conductor polyurethane submersible cable. Through the multi-conductor deployment cable the OCEAN SEVEN 3xx CTDs receive the power needed to operate directly from the Multiplex Deck Unit internal AC/DC power supply. The multi-conductor cable can be up to 200m long.

The Multiplex Deck Unit is connected to the Windows Personal Computer running the Multiplex program by means of a Ethernet (TCP/IP protocol) interface and cable. Therefore the Ethernet cable make it possible to control all the OCEAN SEVEN 3xx CTDs connected to the Multiplex Deck Unit from a single Personal Computer.

Multiplex Deck Unit

The Multiplex Deck Unit powers and interfaces the OCEAN SEVEN 3xx CTDs by means of a “Serial Server” and a dedicated AC/DC power supply. The serial server guarantee simultaneous full-duplex communication in real-time between the OCEAN SEVEN 3xx CTDs and the Deck Unit. The Deck Unit is housed in a plastic watertight box and is designed for on-board operations (see below characteristics).

Deck Unit characteristics

- ☞ Watertight, crushproof, and dust proof (IP67), O-ring seal container
- ☞ Easy-open, double-step latches, automatic pressure equalization valve.
- ☞ Comfortable, rubber over-molded handle.
- ☞ 9x IP-67 connectors dedicated to the OCEAN SEVEN 3xx CTDs
- ☞ 1x IP-67 connector dedicated to the connection of an external GPS device.
- ☞ 1x IP-67 connector dedicated to the AC power input.
- ☞ 1x RJ45 IP-67 connector dedicated to the LAN/Ethernet connection.
- ☞ Deck Unit AC mains On/Off switch provided with red lamp.
- ☞ CTD power supply On/Off switch provided with green lamp.
- ☞ The Deck Unit operates at: 115/220 VAC +/-10%, 50-60 Hz +/- 5%.
- ☞ The OCEAN SEVEN 3xx CTD power supply is: +15VDC @ 5Ah. The Dimensions are: 430x300x200, and weight is: 3 Kg.



Cable characteristics

8.30mm 6 conductor polyurethane cable: 1x2x19 AWG twisted pair; 2x2x24 AWG: twisted pair; Completed with aramidic yarn braid. Weight in air: 96 kg/km; weight in sea water: 36 kg/km; Breaking strength : > 250 kg.

Multiplex program

Aim of multiplex program is to provide the simultaneous real time data acquisition from all the OCEAN SEVEN 3xx CTD connected to the Multiplex Deck Unit. The Multiplex program show, acquires and stores acquired data in binary files which can be later-on easily imported in the REDAS5 program to carry out the data post-processing, extraction, plotting and export in text files.

Through Multiplex only a sub-set of acquired data can be shown in real time. Purpose of Multiplex is the data collection from a number of OCEAN SEVEN 3xx CTDs and not the data presentation in real time. All data received at the CTDs maximum sampling rate is stored in binary files (see below) even if only few dataset are shown in real time for each CTD.

The screenshot displays the Multiplex software interface, which is a multi-window application. On the left, there is a 'Multi probe application' control panel with a 'File Run View Help' menu and a 'General settings' section. Below this, there are ten 'Data source' entries, each with a 'Add' and 'Delete' button. The main area of the screen is filled with ten overlapping data source windows, each displaying real-time data for a specific CTD. Each window has a title bar indicating the data source number and port (e.g., 'Data source 10 - Port: COM1 - Ship on board'). The data is presented in a table format with columns for Time [hh:mm:ss], Press [dbar], Temp [°C], Cond [mS/cm], Sal [PSU], SigmaT [kg/dm3], and SoundV [m/s]. The data is updated in real-time, showing values for various parameters like pressure, temperature, conductivity, salinity, and sound velocity. The interface also includes a taskbar at the bottom with icons for 'start', 'Release Multiplex', 'LPR Manager 4-3-0.0', '11 Multiplex', and a system clock showing '14:07'.



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