

WinFrog Device Group:	USBL
Device Name/Model:	POSIDONIA
Device Manufacturer:	<p>Oceano Instruments (UK) Ltd 6 West Shore Business Centre Long Craig Rigg West Shore Road Edinburgh EH5 1QT Scotland</p> <p>Telephone: +44 (0)131 552 0303 Fax: +44 (0)131 552 6619 E-mail: sales@oceano.co.uk</p>
Device Data String(s) Output to WinFrog:	See Telegram Specification section below.
WinFrog Data String(s) Output to Device:	NONE
WinFrog Data Item(s) and their RAW record:	POSITION 303

DEVICE DESCRIPTION:

The Posidonia USBL system can be used for deepwater tracking down to 6000m and positioning of multiple underwater vehicles or targets using the combination of techniques (Chirp and FM modulation) and technologies. Wide frequency band and coded signals, pulse compression with correlation, simultaneous measurement of time and phase of arrival on an acoustic array with dimensions well over the wavelength, acoustic and/or cable data transmission from underwater mobiles are some of the techniques which make Posidonia an efficient and reliable positioning system in noisy, reverberating and multipath acoustic environments.

Sea trials have shown a position accuracy better than 30m in 6000m of water and a repeatability of position improved to 10m in 2500m.

- Operating frequency: 8.0 to 14 kHz interrogation, 14-18 kHz reception chirp signal processing for better accuracy and ranging performances
- Range: Up to 8000m in a +/-45° from vertical conical sector, up to 2000m between 45° and 90° from the vertical
- Accuracy: Better than 0.5% of slant range with no significant error from ray bending
- Repeatability: Better than 10 m with use of a reference bottom transponder

- User Interface: PC computer with Windows for USBL configuration, Polar/Grid graphic presentation of targets

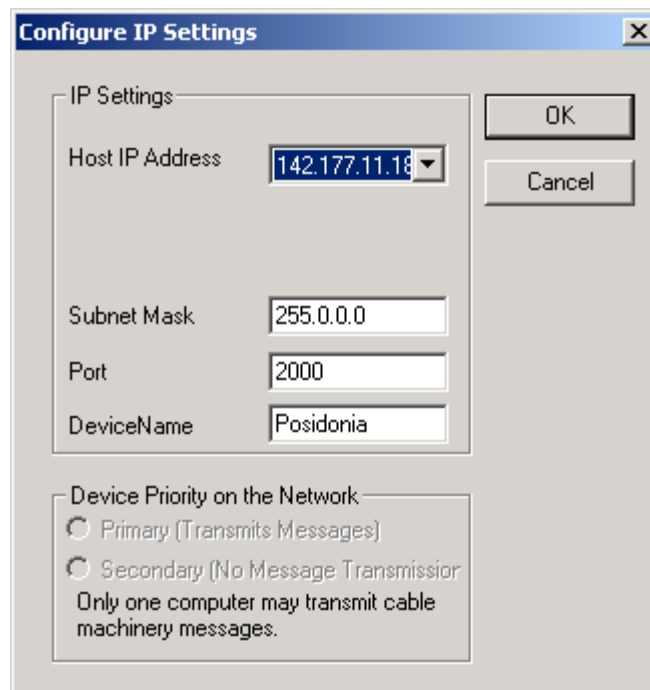
The Posidonia USBL system is interfaced with a separate PC. The Posidonia PC incorporates other positional sensors (GPS, etc), internally calculates beacon positions and outputs these positions, via a network connection, to WinFrog.

DEVICE CONFIGURATION INSTRUCTIONS

WINFROG I/O DEVICES > EDIT I/O:

Data communication for this device is transferred via a network connection to WinFrog. In order for the Posidonia device to communicate with WinFrog, the Posidonia computer must be on the same network workgroup as the WinFrog computer.

When the device is added to WinFrog, the Configure IP Settings dialog box appears, as seen below. (To access this dialog again, in the I/O Devices window, click the device name to select it, then right-click and select Edit I/O.)



Enter the IP address of the Posidonia system, the Subnet Mask of the Workgroup and the port ID being used by the Posidonia system. The device name can also be changed from this dialog.

WINFROG I/O DEVICES > CONFIGURE DEVICE:

No configuration is required at the I/O Device window level.

WINFROG VEHICLE > CONFIGURE VEHICLE DEVICES > DEVICE DATA ITEM > EDIT:

Adding the POSIDONIA device creates the POSITION data item.

Data item: USBL, POSIDONIA, POSITION

The Position data item must be edited once it is added to a vehicle's device list. Highlight the POSITION data item in the vehicle's device list and click the Edit button. The Configure Position dialog box appears as seen below.

The screenshot shows the 'Configure Position' dialog box. It has a title bar with a question mark and a close button. The dialog is divided into several sections: 'Calculation' with radio buttons for 'Primary' (selected) and 'Secondary', and a checkbox 'Use for Heading Calculations'; 'Graphics' with radio buttons for 'Off' (selected) and 'On'; 'Elevation' with radio buttons for 'Off' (selected) and 'On'; 'Accuracy' with a text box containing '5.00m'; 'Code' with a text box containing '0'; 'Offsets' with three text boxes for 'Fore/Aft', 'Port/Stbd', and 'Height', all containing '0.00m'. At the bottom are 'OK', 'Cancel', and 'Help' buttons.

Calculation:

Set the Calculation selection to Primary or Secondary. Devices set to Primary calculation are used to provide a vessel position. Note that more than one Primary positioning device can be added to a vehicle's device list and data from these devices will be combined in a weighted mean solution. (See the paragraph on Accuracy below for more on the weighting of Primary calculation device data). If the Calculation type is set to Secondary, WinFrog will simply monitor the device's data. WinFrog will not use the position data from the device in the final solution of the vehicles' position.

Note: In the case of Primary device failure, WinFrog will not automatically use the Secondary devices for the vessel's position computation. Instead, the vehicle's positioning will go to dead reckoning (if dead reckoning is turned on). You must manually change a Secondary device to Primary in order for the data to be utilized.

Use For Heading Calculations:

This option does not apply to this device.

Graphics:

If On is selected, a labeled square will show the raw (offset but unfiltered) location of the USBL transducer in the Graphics and Bird's Eye windows. This provides a means of comparing raw device and filtered vehicle positions.

Elevation:

This option does not apply to this device.

Accuracy:

The Accuracy value entered provides WinFrog with the expected accuracy of the position from this device. This value is used in the weighting of this device compared to other positioning devices that may be added to the vehicle's device list. The smaller the value entered, the more accurate it is considered to be, and hence the more weight that will be applied to the device's data.

The Accuracy parameter can be changed from the suggested values, however, changes should be made with caution as they will affect the final filtered position of the vehicle.

Code:

You must set the Code to match the code or ID of the beacon being used. This code is included in the USBL data string from the Posidonia system.

Offsets:

Offsets are required to associate the USBL transducer position with the vessel's Common Reference Point (CRP). The offsets are applied *from* CRP (of the vehicle) *to* the transducer location.

Forward Offsets are entered as positive values.

Aft Offsets are entered as negative values.

Starboard Offsets are entered as positive values.

Port Offsets are entered as negative values.

Height Offsets are positive upwards. (It is suggested that the vessel's Height origin should be at the water line).

TELGRAM SPECIFICATION:

Field Data

1	"\$PTSAG"
2	?
3	time
4	day
5	month
6	year
7	code
8	rawLat
9	latDeg
10	rawLon
11	direction
12	position_validity
13	BUC depth
14	depth_validity
15	sensor_depth