

The Honeywell LBL system is also accessed via the Honeywell 906 USBL. For information on configuring the Honeywell 906 for LBL positioning, see the LBL section of the WinFrog User's Guide.

DEVICE CONFIGURATION INSTRUCTIONS:

Baud Rate: 9600
Data Bits: 8 (only)
Stop Bits: 1 (only)
Parity: Even

Serial communication for use with Winfrog is one way RS-232 communication.

WINFROG I/O DEVICES > CONFIG OPTIONS:

The Honeywell 906 is added to WinFrog from the USBL device category. Adding the Honeywell 906 creates four data items in WinFrog: USBL HYDROPHONE, USBL BEACON, LBL TRANSCIEVER and XPONDER. Only the USBL HYDROPHONE and USBL BEACON data items are required for USBL positioning. (As mentioned above, this document will refer only to setting up WinFrog for USBL positioning tasks).

There is no device configuration available or required for the Honeywell 906 at the "generic" I/O Device window level.

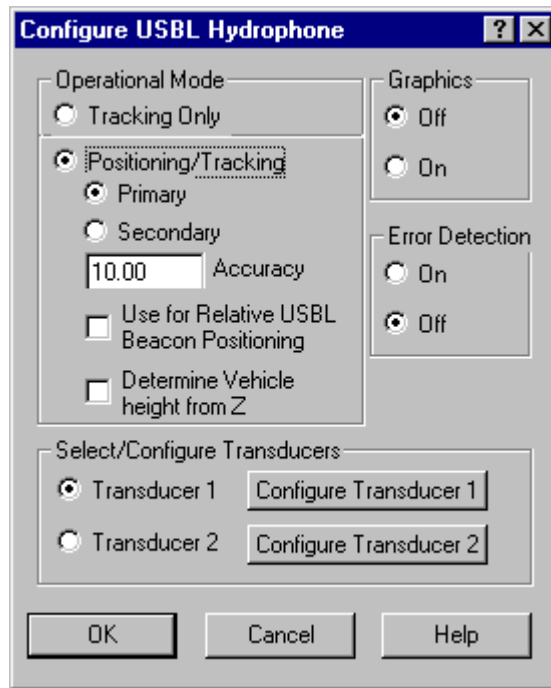
WINFROG VEHICLE TEXT WINDOW > CONFIGURE VEHICLE DEVICES > DEVICE > EDIT OPTION (USBL Use):

For remote subsurface vehicle tracking, the USBL, HONEYWELL 906, USBL HYDROPHONE data item must be added to the device list of the vehicle to which the hydrophone has been physically attached (i.e. the main ship). The USBL, HONEYWELL 906, BEACON data item must be added to the vehicle to which the beacon has been physically attached (i.e. the ROV or towed vehicle).

USBL systems can also be used for positioning of the main vessel. In this type of operation the USBL Beacon must be physically attached to some fixed point on the seabed or subsurface structure. In this type of operation the Hydrophone position (i.e. vehicle position) is derived from measurements made to the fixed beacon. For this type of positioning, you must define a working Xponder File (*.XPT) in WinFrog, and enter the fixed position of the Beacon into that file. The Hydrophone must be added to the ship's device list and configured for "Positioning" mode as opposed to "Tracking" mode.

1. Configuration of the USBL Hydrophone

Once the HONEYWELL 906 HYDROPHONE has been added to the appropriate vehicle's device list, it must be edited to suit the application. In the vehicle's Devices list, highlight the USBL, HONEYWELL 906, USBL HYDROPHONE then click the Edit button. The Configure USBL Hydrophone dialog box appears as seen below.



Operational Mode:

As mentioned above, USBL systems can be used for tracking of remote vehicles or for positioning of the main vehicle to which the hydrophone is attached. Select **Tracking Only** if relative tracking of a structure/vessel is desired.

Select **Positioning/Tracking** and **Primary** if you want to position the Master Vessel relative to a stationary (fixed) beacon. The beacon must be located at a stationary (fixed) point, as defined in a working XPONDER (.XPT) file. If this device is to be used for positioning the vehicle, select Primary positioning. Select the **Secondary** radio button if this device is to be simply monitored as opposed to being used in the vehicle's positioning. Note as well that if you are setting up for a USBL Calibration, the Hydrophone should also be specified as a Secondary positioning device. See chapter 20 of the WinFrog Users Guide for more information on USBL Calibrations.

If **Positioning/Tracking** is selected, you can also specify **Use for Relative USBL Beacon Positioning**. This feature controls the use of the USBL positioning of the hydrophone from a fixed beacon for application to relative USBL Beacon positioning. In this mode, the difference between the hydrophone position as determined directly from observation to fixed beacon is compared to the hydrophone position determined from other positioning sources (e.g. DGPS). This difference is then applied to the position determined for any tracked beacon. The concept is that any inherent errors due to local conditions, both environmental and mechanical, are cancelled out. This is independent of the Primary/Secondary setting.

Determine Vehicle height from Z

Select this checkbox if the USBL system is to be used to determine the height of the vehicle. This is independent of the Primary/Secondary setting.

Graphics:

Select On to have WinFrog display the device name and a square at the location of the hydrophone within the Graphics and Bird's Eye windows.

Error Detection:

Select On to have WinFrog include error detection codes in the Raw Files. If WinFrog detects a significant error code, the data will not be utilized in the vessel's calculations. This option is mainly for post project QC analysis.

Select/Configure Transducers:

Some USBL systems can be configured with two hydrophones. Before configuring a transducer ensure that it is the correct one, and that the values entered refer to that device. Click Configure Transducer 1 or Configure Transducer 2 as required. The Configure USBL Transducer dialog window appears as seen below.

Calibration Corrections		
Range Scale Factor		Head Rotation Correction
<input type="text" value="1.00000"/>		<input type="text" value="000.0"/>
Pitch Correction		Roll Correction
<input type="text" value="0.00"/>		<input type="text" value="0.00"/>

NOTE: Corrections sign conventions are
Roll=(+)Stbd down; Pitch=(+)Stern down

Offsets from the point the data is related to, to the transducer. These values will be subtracted from the USBL output data to get data related to the transducer.		
Fore/Aft	Port/Stbd	Z (down +)
<input type="text" value="0.0m"/>	<input type="text" value="0.0m"/>	<input type="text" value="0.0m"/>

WinFrog Offsets, from CRP to Transducer		
Fore/Aft	Port/Stbd	Depth (down +)
<input type="text" value="-100"/>	<input type="text" value="8"/>	<input type="text" value="12"/>

OK Cancel Help

Calibration Corrections:

WinFrog allows you to enter Range Scale, Heading, Pitch and Roll correction values to correct raw USBL measurements. Note that the Heading, Pitch and Roll values are entered in degrees and decimal degrees. These values can be determined by using WinFrog's USBL calibration utility. See chapter 20 of the WinFrog User's Guide for detailed information on calibration of USBL systems.

USBL System Internal Offsets:

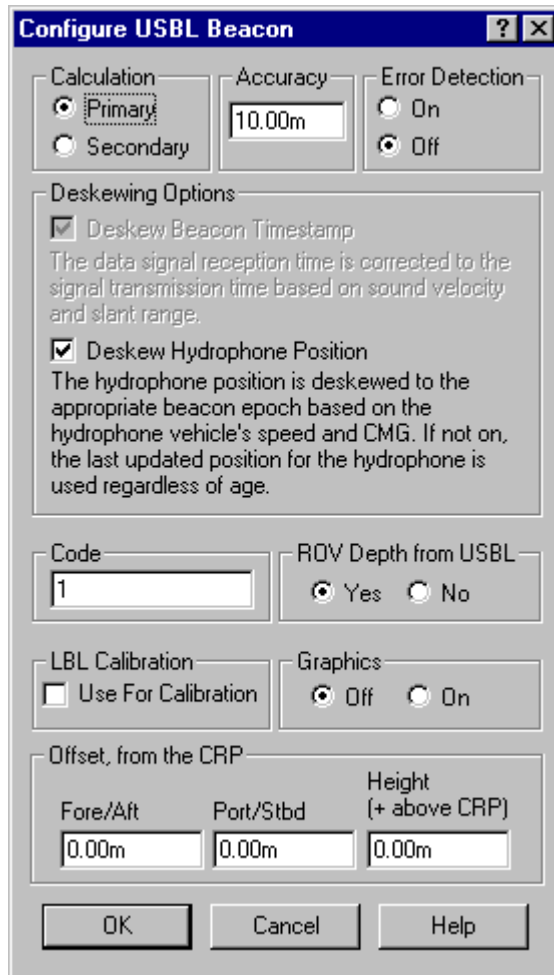
This section of the Configure USBL Transducer dialog box is for the entry of X,Y and Z offsets that will be applied to the raw observations received from the Honeywell 906 console.

The upper fields are used to remove any offsets that have been entered into the Honeywell 906 console. This may come into use specifically when USBL systems are used for vessel positioning, where the ship's DP system needs positional information to relate to the vessel's center of gravity as opposed to just at the USBL hydrophone. WinFrog however requires all XYZ offsets to relate to the USBL hydrophone. These upper fields are then used to enter the same offsets as are entered in the Honeywell 906 console, nullifying the offsets in the Honeywell 906. As these values are subtracted from the received data, ensure that values are entered using the same sign as internal Honeywell 906 offsets.

The lower fields, **Winfrog Offsets, from CRP to Transducer**, are similar to all other positional device offsets entered in Winfrog. These offsets must be entered to relate the hydrophone's position to the vessel's Common Reference Point (CRP). All offsets are entered with signage referring to the distance *from* the CRP *to* the hydrophone.

2. Configuration of the USBL Beacon

As mentioned above, for subsurface vehicle positioning, the USBL beacon must be added to the appropriate vehicle's device list. Once added to the device list, it must be edited to suit the application. Editing the USBL HONEYWELL, BEACON device brings up the Configure USBL Beacon dialog box, as seen below.



Calculation

Set Calculation to **Primary** if the beacon is to be used for positioning the vehicle to which it is attached. Multiple beacons can be added to the same vehicle's device list, each configured as Primary. WinFrog will calculate a weighted mean position using the Accuracy value entered.

Accuracy

This value is used by WinFrog to weight the use of different positioning devices in solving a single vehicle's position. The lower the accuracy value entered, the more accurate it is deemed to be, and hence the more weight that will be applied to it in comparison to the other devices.

Error Detection:

Setting Error Detection to 'On' instructs WinFrog to identify error codes received in the USBL data string and disable the use of bad data. USBL systems include various error codes in the data string when the beacon is not within the optimum "cone of operation" or other operational parameters have been exceeded.

Deskewing Options

Deskew Beacon Timestamp

This option is for future development.

Deskew Hydrophone Position

When positioning the beacon, WinFrog uses the last calculated position for the associated USBL Hydrophone to determine the tracked beacon's position.

Depending on the vehicle's Kalman filter and Dead Reckoning settings, the position of the hydrophone may be up to 1 second old.

It is recommended that this deskewing option be enabled to remove positional inaccuracies associated with this latency.

Code:

Enter a value matching the code of the beacon attached to the vehicle.

ROV Depth from USBL:

If **Yes** is selected, the ROV's depth will be set to the calculated USBL beacon depth.

LBL Calibration:

Select the **Use for Calibration** checkbox if the beacon is to be used in an LBL Calibration.

Graphics:

Select the **On** radio button to have WinFrog plot a square and label to represent the beacon location in the Graphics and Bird's Eye displays.

Offsets:

This portion of the dialog box is used to enter Offsets that relate the beacon's location to the vehicle's Common Reference Point (CRP). These values are set similar to values that would be applied to any device offset within Winfrog, with values entered as measured from the CRP to the device. A heading device must also be added to the vehicle's device list to ensure the correct application of the offsets.

CONFIGURATION DETAILS:

Refer to the Honeywell 906 user's guide for configuring the 906 for USBL operations.