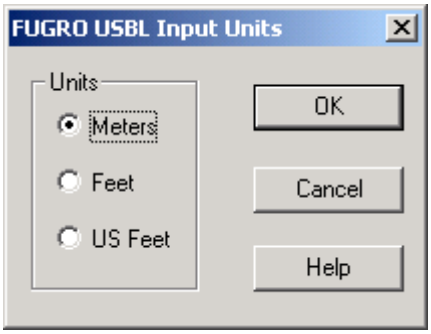
WinFrog Device Group:	**USBL**
Device Name/Model:	**FUGRO**
Device Manufacturer:	FUGRO UDI ltd. Denmore Road Bridge of Don AB23 8JW Aberdeen United Kingdom Tel: +44 1224 257 500 Fax: +44 1224 853 900 Email: :sales@fugro-udi.co.uk
Device Data String(s) Output to WinFrog:	Delimited ASCII string – see Telegram Specification section below
WinFrog Data String(s) Output to Device:	N/A
WinFrog Data Item(s) and their RAW record:	POSITION 303

DEVICE DESCRIPTION:
This system incorporates various sensors and outputs a grid position to WinFrog. It should be noted that since this device deals with grids it is essential that the geodetics in WinFrog be configured to match those that are set up in this device. See chapter 3 of the WinFrog User's Guide for more details on configuring geodetics in WinFrog.

DEVICE CONFIGURATION INSTRUCTIONS

WINFROG I/O DEVICES > EDIT I/O:
Serial
Configurable Parameters

WINFROG I/O DEVICES > CONFIGURE DEVICE:
This device must be configured at the I/O Device window level. In the I/O Devices window, click the device name to select it, then right-click and select Configure Device. The FUGRO USBL Input Units dialog box appears, as seen below.



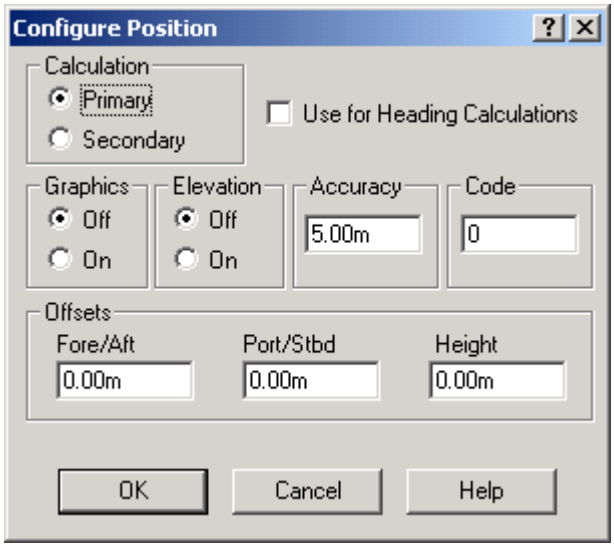
Select the appropriate units to be output from the device.

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

Adding the FUGRO device creates the POSITION data item. Once the data item has been added to the vehicle, it must be edited to suit the application.

Data item: USBL, FUGRO, 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, then click the Edit button. The Configure Position dialog box appears as seen below.



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; 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:
Select this checkbox if the device is to be used in conjunction with another GPS device for determination of the heading of the vessel. The vessel's heading will be derived by the inverse of the GPS antenna coordinates.

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

Elevation:
Setting the Elevation option to On will result in the elevation determined by GPS to be used as the elevation of the vessel referencing the GPS (WGS84) Ellipsoid. The sounder data recorded in WinFrog's .RAW data files will not be affected.
This option is meant only for those applications where there is no fixed vertical reference (i.e. mean sea level), such as on a river. For acceptable results, this option requires the use of high accuracy "RTK" GPS data.

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; changes should be made with caution, however, as they will affect the final filtered position of the vehicle.

Code:
The entry in the Code dialog box must be set to match the idNo found in the data string. This allows for the monitoring of multiple vessels. This data item can be added to each vehicle in WinFrog and the unique code for each would be entered in this dialog box.

Offsets:
Offsets are required to associate the GPS antenna position with the vessel's Common Reference Point (CRP). The offsets are applied *from* CRP (of the vehicle) *to* the GPS antenna 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	Description
0	grid y position of the beacon
1	grid x position of the beacon
2	idNo of the beacon
3	z position of the beacon