WinFrog Device Group:	**LBL ACOUSTIC**
Device Name/Model:	**APS3**
Device Manufacturer:	Sonardyne International Ltd, Ocean House, Blackbushe Business Park, Yateley, Hampshire, GU46 6GD, UK. Tel: +44 (0)1252 872288 Fax: +44 (0)1252 876100 Email: sales@sonardyne.co.uk
Device Data String(s) Output to WinFrog:	TARGET #, EASTING, NORTHING, DEPTH, RMS, HEADING
WinFrog Data String(s) Output to Device:	
WinFrog Data Item(s) and their RAW record:	POSTITION 303 HEADING 910

DEVICE DESCRIPTION:
The APS3 is a software package that runs on a separate PC. The APS3 computes positions of LBL transponders, usually on ROV's and outputs the position of each beacon along with a heading/CMG of the transponder.

DEVICE CONFIGURATION INSTRUCTIONS

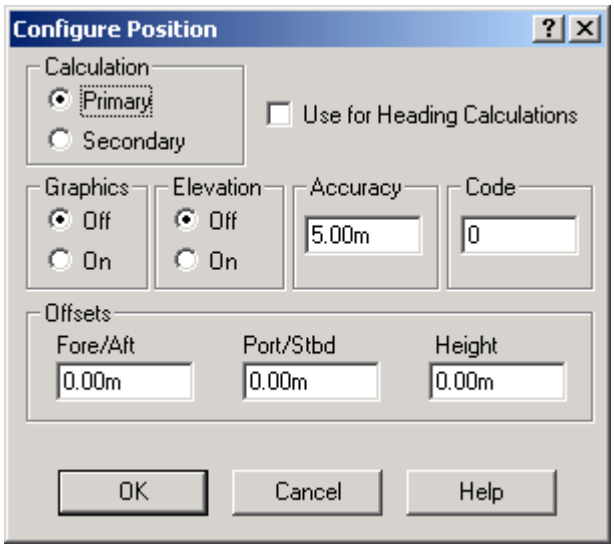
WINFROG I/O DEVICES > EDIT I/O:
Serial
Configurable Parameters

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 APS3 device creates two data items: POSITION and HEADING. Once the data items have been added to the vehicle, they must be edited to suit the application.

Data item: GPS, APS3, POSITION

Highlight the **GPS, APS3, POSITION** data item in the vehicle's device list, then select 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 vehicle's 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.

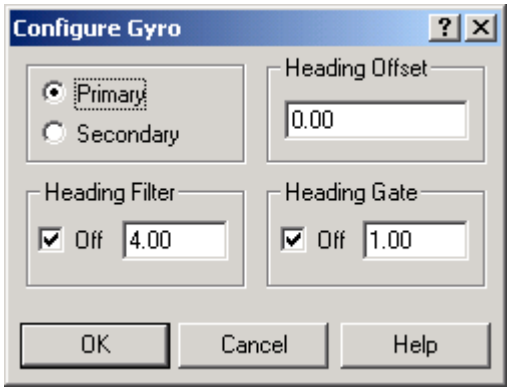
Accuracy:
The Accuracy value entered provides WinFrog with the expected accuracy of the position from this device. This value is used in the weighting of this device compared to other positioning devices that may be added to the vehicle's device list. The smaller the value entered, the more accurate 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:
This field is used when the GPS data is being received by a remote GPS receiver connected via telemetry link. If this is the case, set the Code to coincide with the code parameters associated with the GPS unit being used. For all other applications, the Code entry must be set to 0.

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.

Data item: GPS, APS3, HEADING

The **APS3 Heading data item** must also be edited once it is added to a vehicle's device list. Highlight the **GPS, APS3, HEADING** data item in the vehicle's device list, then select the **Edit** button. The **Configure Gyro** dialog box appears as seen below.



Calculation (Primary/Secondary):
Set the type of calculation to Primary or Secondary by selecting the appropriate radio button. Devices set to Primary are used to provide the vehicle with heading information. However unlike the Position data items, WinFrog does not calculate a weighted mean solution for multiple Heading data items. If more than one Heading data item is set to primary, the vessels heading, in WinFrog, will jump back and forth between the two. Devices set to Secondary are simply monitored, and are not used in the vehicle's calculations.

In the case of Primary device failure, WinFrog will not automatically use the Secondary device(s). You must manually change a Secondary device to Primary status in order for it to be used in the vehicle's calculations.

Heading Offset:
A correction value (as determined from a gyro calibration) can be entered in the Heading Offset field. This value is added to the heading value from the APS3 to provide a corrected heading for the vehicle. Note that positive or negative values can be entered.

Heading Filter/Heading Gate:
The Heading Filter is used to "smooth" heading values used by the vehicle. The value entered for the Heading Filter indicates the number of headings that will be used to predict the next heading value. The larger the value entered, the "heavier" the filter will be – i.e. the slower the vehicle's heading will respond to changes.

The Heading Gate defines a tolerance value to limit the use of anomalies in gyro readings. If the next observed gyro value received falls outside the specified range of predicted values (i.e. plus or minus the entered value), the value will not be used.

TELGRAM SPECIFICATION:

FORMAT

Column	Item
2	target number (1 to 6)
13 to 22	easting
23 to 32	northing
33 to 37	depth
39 to 42	RMS
49 to 53	heading