

WinFrog Device Group:	GPS
Device Name/Model:	SUBSEA TELEMETRY
Device Manufacturer:	
Device Data String(s) Output to WinFrog:	
WinFrog Data String(s) Output to Device:	
WinFrog Data Item(s) and their RAW record:	POSITION 303 HEADING 910 TX-TARGET NONE DATA OUTPUT 450

DEVICE DESCRIPTION:

The Subsea Telemetry device is used to facilitate telemetry interfaces between barges and anchor handling vessels. This device is used to transmit the position and heading of the barge and receive the position and heading of the Tugs. This device can also transmit the anchor target positions from the barge to the tugs deploying the anchors.

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 SUBSEA TELEMETRY device creates four data items: POSITION, HEADING, TX-TARGET and DATA OUTPUT. Once the data items have been added to the vehicle, they must be edited to suit the application.

Data item: GPS, SUBSEA TELEMETRY, POSITION

The GPS, SUBSEA TELEMETRY, POSITION data item is used to assign the tug position received by the barge (and vice versa) to the barge/tug vehicles in WinFrog. This data item is added to the barge/tug vehicles in WinFrog.

Highlight this data item in the vehicle's device list and click the Edit button to open the Configure Position dialog box as seen below.

The screenshot shows the 'Configure Position' dialog box. The 'Calculation' section has 'Primary' selected. The 'Graphics' section has 'Off' selected. The 'Elevation' section has 'Off' selected. The 'Accuracy' field is set to '5.00m'. The 'Code' field is set to '0'. The 'Multiple Position Source Options' section has 'Disable Auto Switching of Primary' selected, with an 'Age of prime data when switch is to occur' of '20sec'. The 'Offsets' section has 'Fore/Aft', 'Port/Stbd', and 'Height' all set to '0.00m'. The 'Use for Heading Calculations' checkbox is unchecked. The 'OK' and 'Cancel' buttons are at the bottom.

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 data from a secondary device in the final solution of the vehicle's position.

If auto switching is enabled (see below) a secondary may automatically become a primary should all the primaries fail.

Use For Heading Calculations:

This option is not used by this data item.

Graphics:

Select the On radio button to display a labeled square showing 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 the GPS to be used as the elevation of the vessel's CRP, referencing the GPS (WGS84) Ellipsoid. The height of the antenna above (below) the CRP must be entered. 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 code entry must match the Identifier Code entry as entered in the DATA OUTPUT data item discussed below.

Multiple Position Source Options:

This group box allows you to enable automatic switching of a secondary to primary should the data from all POSITION and PSEUDORANGE data items set to primary timeout. The **Age** entered is the length of time that the secondary will wait in the absence of data from all primaries, before taking over as primary. This age is only entered for the secondary.

For example, if the POSITION or PSEUDORANGE data items associated with two GPS receivers were set to primary and the POSITION or PSEUDORANGE data item of a third GPS receiver was set to secondary, both primary GPS receivers must time out before the secondary will become the primary. Upon the recovery of either of the original primary data items, the original primary will be reset to primary and the original secondary will be reset to secondary.

Note for the auto switching feature to work, there must be at least one primary and one secondary enabled. For example, given two data items, one set to primary with the auto switching disabled and the other set to secondary with the auto switching

enabled, if the primary fails the secondary is not set to primary and the vehicle positioning stops until the primary data item recovers.

Disable Auto Switching of Primary:

If this data item is not to be involved in the auto switching process, check this box. As stated above, this data item is then not involved in the auto switching process in any way.

Enable Auto Switching of Primary:

If this data item is to be involved in the auto switching process, either as a primary or a secondary, check this box. If set to secondary, enter the Age of data the primary data items must reach before this secondary is switched to act as the primary.

In order for this option to be effective you must have at least one primary and one secondary. If there are multiple secondary data items that are enabled for switching, the first one to receive data will become primary.

Note: This option is not enabled unless WinFrog determines that there is more than one POSITION and/or PSEUDORANGE data item associated with the respective vehicle. The exception to this is the case of a WinFrog with the Remote module operating as a Controlled Remote being configured remotely from the Controller. In this case, the option is always enabled even though it may not be applicable. The operator must be aware of what is available on the Remote and configure the data item accordingly.

Note: This option is not available in the WinFrog Remote package.

Note: This option is not available for USBL based POSITION data items.

Offsets:

Offsets may be 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.

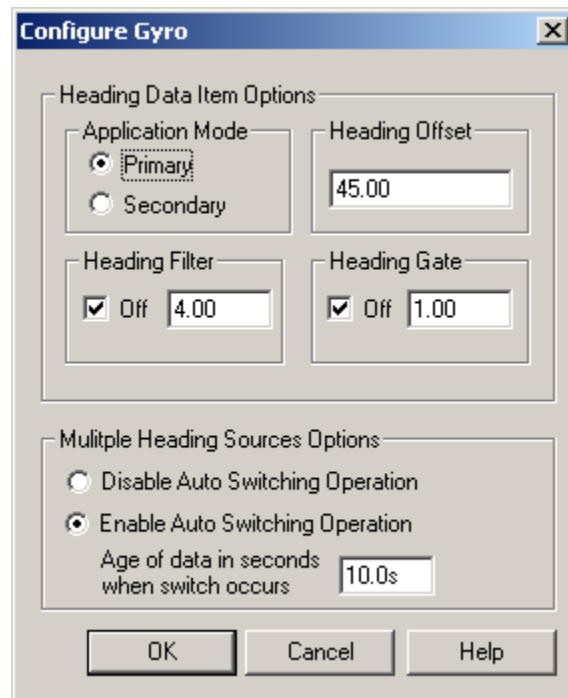
Port Offsets are entered as negative values.

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

Data item: GPS, SUBSEA TELEMETRY, HEADING

The GPS, SUBSEA TELEMETRY, HEADING data item is used to assign the tug heading received by the barge (and vice versa) to the barge/tug vehicles in WinFrog. This data item is added to the barge/tug vehicles in WinFrog.

Highlight this data item in the vehicle's device list and click the Edit button to open the Configure Gyro dialog box as seen below.



Heading Data Item Options:

Application Mode(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 heading information. Devices set to Secondary are simply monitored, and are not used in the vehicle's calculations.

Note that WinFrog supports automatic switching from a designated Primary to a Secondary in the event that data from the Primary fails (see Multiple Heading Sources Options).

Heading Offset:

A correction value (as determined from a gyro calibration) can be input in the Heading Offset box. This value is added to the heading value from the NMEA Gyro 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 in 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.

Multiple Heading Sources Options:

WinFrog supports automatic switching from a designated Primary source to an alternate Secondary source in the event that the Primary fails. The first Secondary source to receive data after the Primary has failed becomes the alternate Primary providing the heading for the vehicle. When the designated Primary is detected as active again, the alternate Primary source reverts to Secondary and the designated Primary provides the heading data to the vehicle.

If an alternate Secondary fails and there are additional Secondary sources, it in turn is detected by the first of the remaining operational Secondary sources to receive data after the failure, at which time this Secondary becomes the alternate Primary.

Note that this option is only available if more than one HEADING source is associated with the respective vehicle. Changes made to the Auto Switching options for any one of the HEADING data items are automatically assigned to the others upon exiting this dialog with OK. If the Auto Switching option is enabled and the respective HEADING source has been set to Primary, all others are automatically set to Secondary. The exception to this is when configuring a WinFrog Controlled Remote (WinFrog with a Remote module) from a Controller. In this case, changes made to one HEADING source are not automatically made to other HEADING sources. The operator must explicitly make them for each HEADING source.

This option is not available in the WinFrog Remote package.

Disable/Enable Auto Switching Operation:

Select the mode you wish to operate WinFrog.

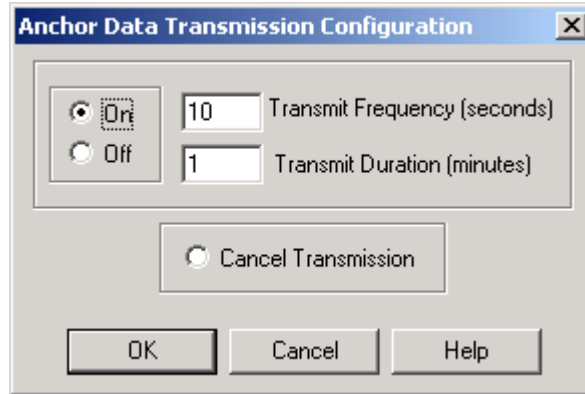
Age of data in seconds when switch occurs:

Enter the age of data that is permitted before the source is considered to have failed.

Data item: GPS, SUBSEA TELEMETRY, TX-TARGET

The GPS, SUBSEA TELEMETRY, TX-TARGET data item is used, in conjunction with the Tx button in the Anchor Handling window, to transmit the Anchor Target positions to the tug. Refer to the Anchor Handling Window section in chapter 8 of the WinFrog User’s Guide for details on how to set-up and use the Anchor Handling window.

Highlight the GPS, SUBSEA TELEMETRY, TX-TARGET data item in the vehicle's device list and click the Edit button to open the Anchor Data Transmission Configuration dialog box as seen below.

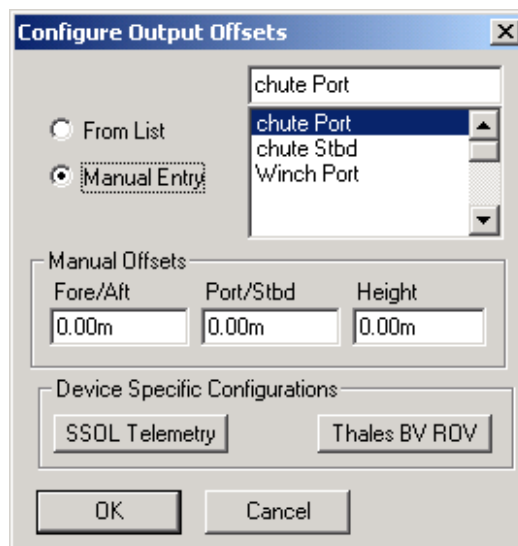


The options in this dialog allow you to configure how the anchor target data will be transmitted when it is executed from the Anchor Handling window. The transmission can be turned On or Off or it can be cancelled in mid-transmission. The Transmit Frequency and Transmit Duration options are used to specify how often it will transmit and for how long will it transmit at this interval.

Data item: GPS, SUBSEA TELEMETRY, DATA OUTPUT

The GPS, SUBSEA TELEMETRY, DATA OUTPUT data item is used to output the vehicle's position for transmission on the telemetry network. It is added to any vehicle whose position is to be output.

Highlight the GPS, SUBSEA TELEMETRY, DATA OUTPUT in the vehicle's device list and click the Edit button to open the Configure Output Offsets dialog box as seen below.

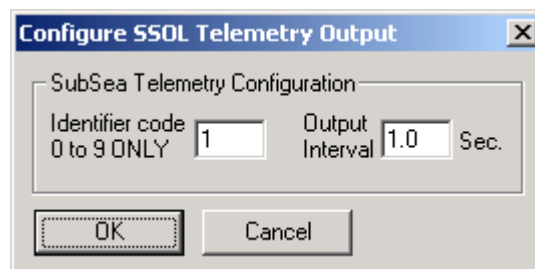


Configure Output Offsets:

Normally, the position that is to be output will be the position of the CRP of vehicle. However, if another position is required, the offset to be applied to the output position for the DATA OUTPUT data item can either be taken from the list of vessel offsets or a manual offset entry can be input. Select the appropriate radio button (From List or Manual Entry). The offset can now be highlighted from the list, or if Manual Entry is selected, the offset values can be input. The position data output will now be referenced to the offset location chosen.

Device Specific Configurations:

Click the SSOL Telemetry button to open the Configure SSOL Telemetry Output dialog box as seen below.



Enter an Identifier code using only the integers from 0 to 9. This Identifier code is the same number that must be entered in the Code section of the POSITION data item attached to the vehicle that is to receive this positional data. For example, if this data item is added to the tug vehicle in the WinFrog system on the tug to transmit the tug position to the barge, then the number entered in the Identifier code here would have to be the same number entered in the Code field of the POSITION data item added to the tug vehicle in the WinFrog system on the barge.

Also enter the time interval, in seconds, for the positional data to be output.

The Thales BV ROV button is not used for this device.