

WinFrog Device Group:	GPS
Device Name/Model:	Thales SVS
Device Manufacturer:	
Device Data String(s) Output to WinFrog:	User Configurable
WinFrog Data String(s) Output to Device:	NONE
WinFrog Data Item(s) and their RAW record:	POSITION 303 HEADING 410

DEVICE DESCRIPTION:

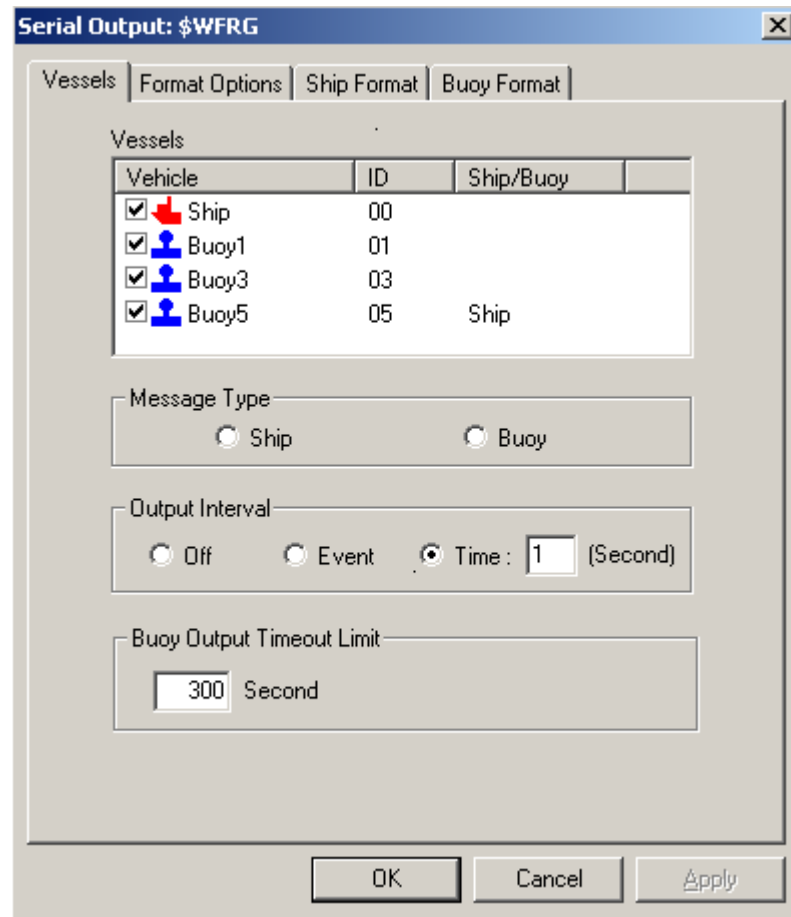
The Thales SVS device is actually a software package that performs GPS Vectoring. It interfaces to GPS receivers, one locally and multiple remotely, accepts pseudorange data and computes vectors from the local GPS antenna and the remote GPS antennas. It is also capable of computing a pseudorange GPS solution for the local GPS antenna that is differentially corrected if RTCM corrections are fed to the system.

The Thales SVS system operates similarly to WinFrog in that in order to output the data, a Serial Output device is added and the associated DATA OUTPUT data item is then added to the device list for any vehicles that data is to be output for. Note that the Serial Output device is not standard to WinFrog and is only available when the Thales SVS software is used.

The Serial Output device allows you to actually configure the output telegrams. The following details the settings for configuring the output for WinFrog.

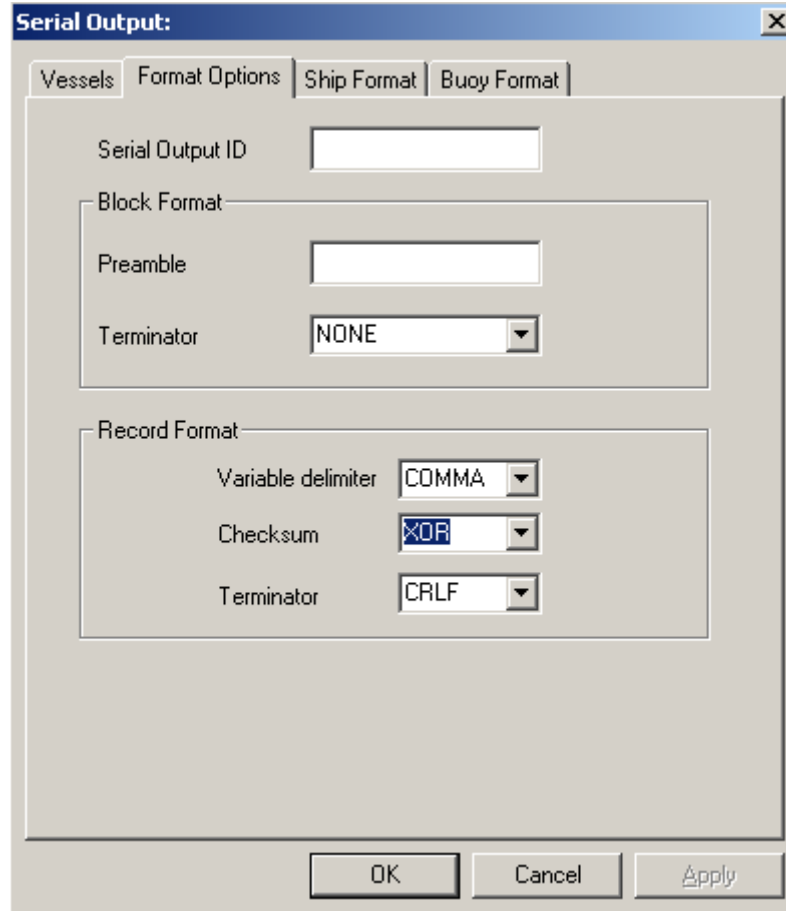
In the device window, highlight the Serial Output device and click the right mouse button, select Configure Device and the Serial Output window opens as seen below. This dialog box consists of four tabs, each of which must be configured as outlined below.

1. Vessels tab



- Click on the vessels to output data for in the list box.
- Select Time as the Output Interval setting, entering 1 second for the rate.
- Leave the remaining options as default.

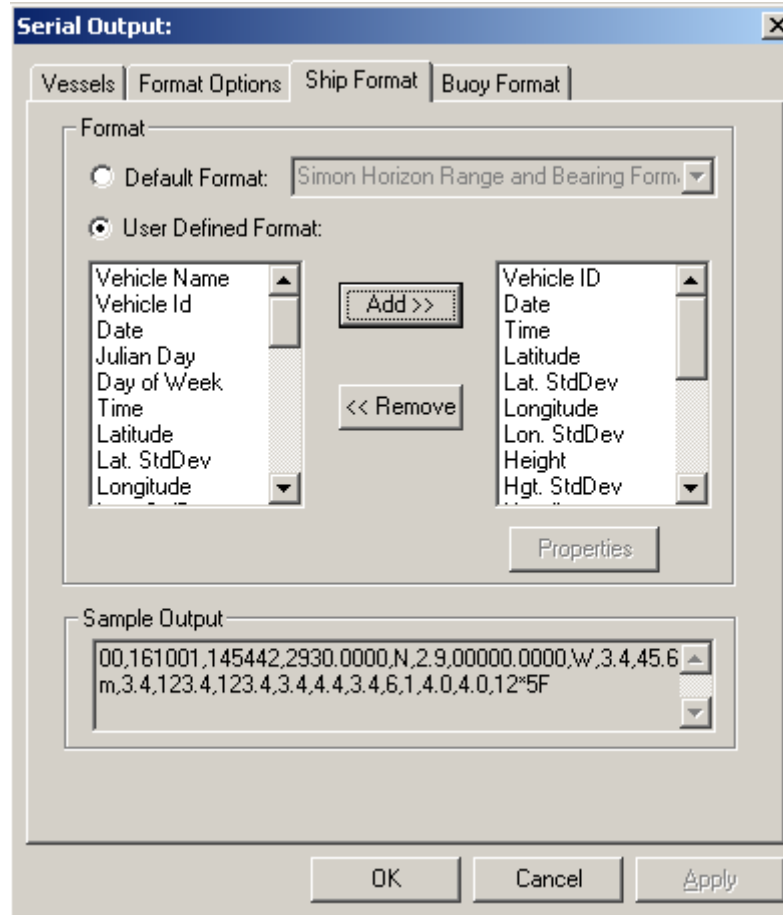
2. Format Options tab



The image shows a Windows-style dialog box titled "Serial Output:". It has four tabs: "Vessels", "Format Options" (which is selected), "Ship Format", and "Buoy Format". The "Format Options" tab contains two main sections: "Block Format" and "Record Format". In the "Block Format" section, there is a text field for "Serial Output ID" which is empty, a text field for "Preamble" which is also empty, and a dropdown menu for "Terminator" set to "NONE". In the "Record Format" section, there are three dropdown menus: "Variable delimiter" set to "COMMA", "Checksum" set to "XOR", and "Terminator" set to "CRLF". At the bottom of the dialog are three buttons: "OK", "Cancel", and "Apply".

- Leave the Serial Output ID blank
- In the Block Format, leave the Preamble blank and select NONE for Terminator.
- In the Record Format, select COMMA as the Variable delimiter (default), Checksum XOR and Terminator CRLF.

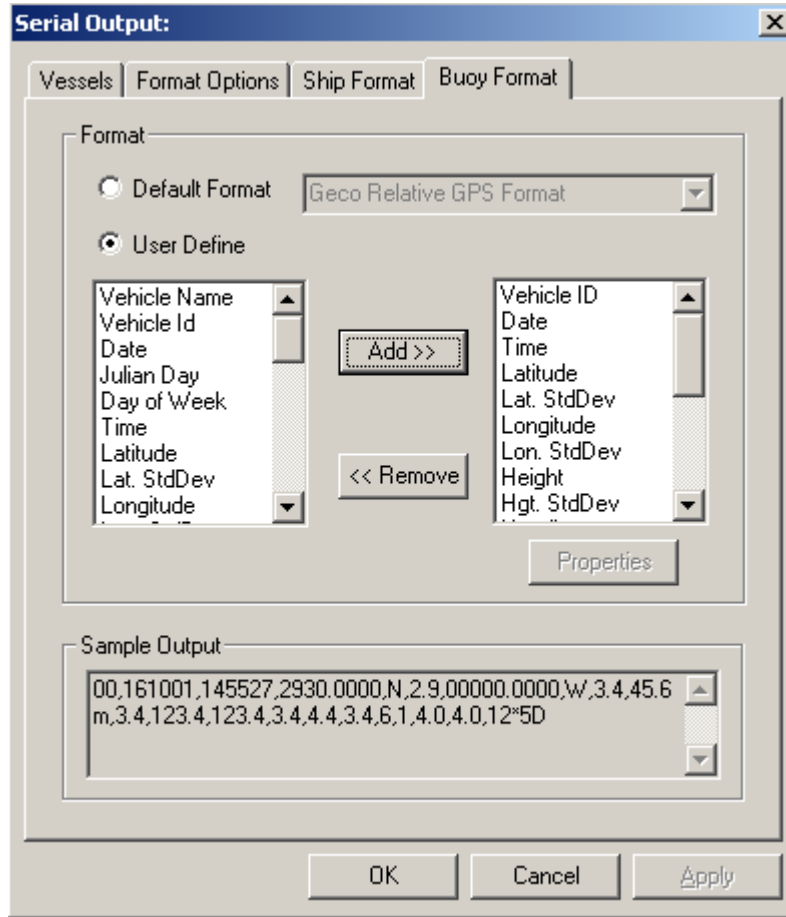
3. Ship Format tab



- Select User Defined Format.
- Add the following items in the order shown here. Note that the properties can be modified to increase the number of decimal places.
 - Vehicle ID
 - Date
 - Time
 - Latitude
 - Lat. StdDev
 - Longitude
 - Lon. StdDev
 - Height
 - Hgt. StdDev
 - Heading
 - CMG
 - GDOP
 - PDOP
 - HDOP
 - SVs Used

- NMEA Quality
- DGPS Age
- Horiz. Speed
- SVs Used List

4. Buoy Format tab



In the Buoy Format tab, repeat the configuration as detailed above for the Ship Format tab.

The output can be monitored from the data side of the Device Window, either in the Decoded Data or Terminal tabs.

DEVICE CONFIGURATION INSTRUCTIONS

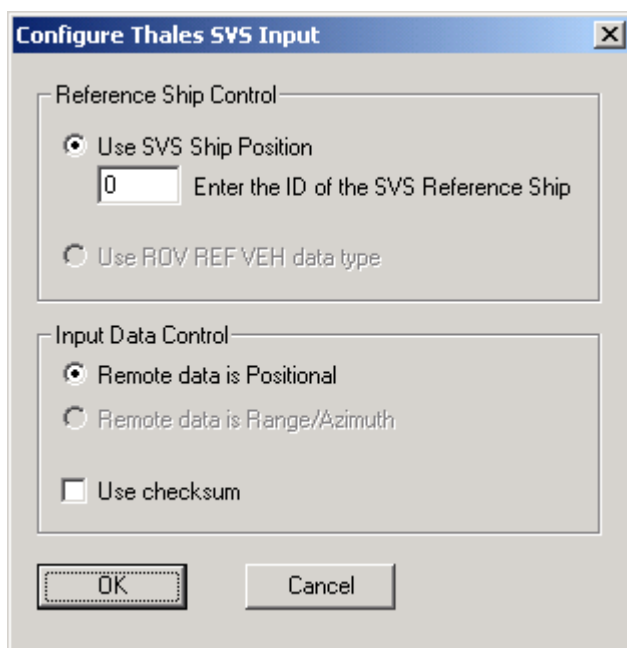
WINFROG I/O DEVICES > EDIT I/O:

Serial
Configurable Parameters

Recommended settings
Baud Rate: 38400
Stop Bits: 1
Parity: none

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 Configure Thales SVS Input dialog box appears, as seen below.



The image shows a Windows-style dialog box titled "Configure Thales SVS Input". It contains two main sections: "Reference Ship Control" and "Input Data Control". In the "Reference Ship Control" section, the "Use SVS Ship Position" radio button is selected, and there is a text box containing the number "0" with the label "Enter the ID of the SVS Reference Ship". The "Use ROV REF VEH data type" radio button is unselected. In the "Input Data Control" section, the "Remote data is Positional" radio button is selected, the "Remote data is Range/Azimuth" radio button is unselected, and the "Use checksum" checkbox is also unselected. At the bottom of the dialog are "OK" and "Cancel" buttons.

In the Reference Ship Control section enter the ID number of the reference ship. The ID is the ID used by the SVS system for the ship. If the data string from the reference ship contains a checksum, enable (check) this option.

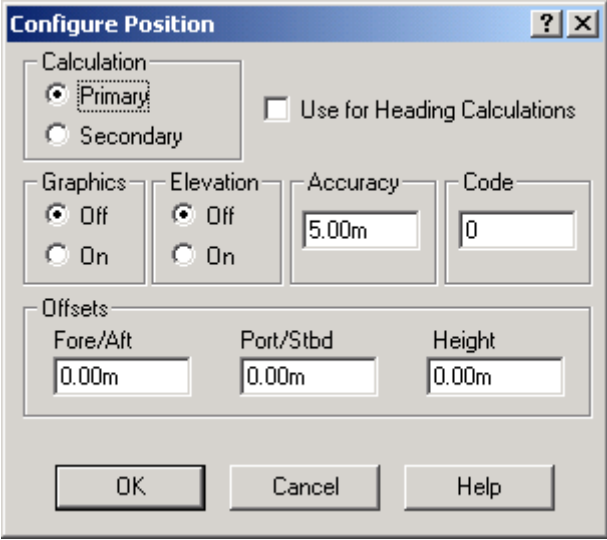
The current implementation of this interface is restricted to receiving position data only from the SVS and therefore the Range/Azimuth option is not functional.

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

Adding the Thales SVS device creates two data items: POSITION and HEADING. It is important to note that these two data items must be added together. Once the data items have been added to the vehicle, they must be edited to suit the application.

Data item: GPS, Thales SVS, 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 image shows a 'Configure Position' dialog box with the following fields and controls:

- Calculation:** Radio buttons for 'Primary' (selected) and 'Secondary'. A checkbox 'Use for Heading Calculations' is to the right.
- Graphics:** Radio buttons for 'Off' (selected) and 'On'.
- Elevation:** Radio buttons for 'Off' (selected) and 'On'.
- Accuracy:** A text box containing '5.00m'.
- Code:** A text box containing '0'.
- Offsets:** Three text boxes: 'Fore/Aft' (0.00m), 'Port/Stbd' (0.00m), and 'Height' (0.00m).
- Buttons:** 'OK', 'Cancel', and 'Help' 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 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 is not used by this device.

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. In the case of the Thales SVS device, the Code entered must match the ID used by the SVS system in order for WinFrog to correctly identify the position and heading data for each vehicle. This also means that the HEADING data item cannot be used independently and must be added to the same vessel/buoy vehicle in WinFrog as the POSITION data item to ensure that the correct heading data is associated with the correct vessel/buoy.

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.

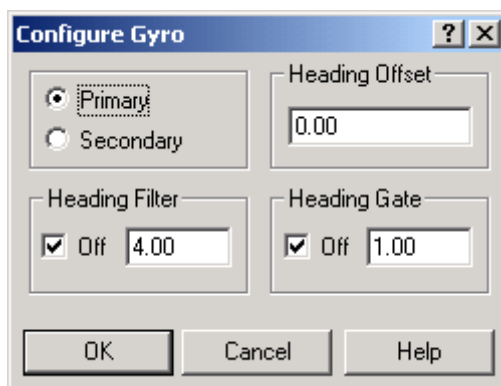
Port Offsets are entered as negative values.

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

Data item: GPS, Thales SVS, HEADING

Note that, as mentioned in the Code section above, this data item must be added to the same vessel/buoy's device list as the POSITION data item. WinFrog uses the Code entry from the POSITION data item to identify the appropriate position and heading data from the SVS system for each vessel/buoy.

The Heading data item may also be edited once it is added to a vehicle's device list. Highlight the HEADING data item in the vehicle's device list and click 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). The user 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 input in the Heading Offset box. This value is added to the heading value from the Device 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.

TELGRAM SPECIFICATION:

Standard POSITION and HEADING data item raw data logging, 303 (GGA), 302 (GSA), 306 (GST) and 900 (VTG) raw records for the POSITION data item and the 410 and 910 records for the HEADING data item.