WinFrog Device Group:	**INS**
Device Name/Model:	**TSS1 Heave**
Device Manufacturer:	**TSS (UK) LTD HQ** New Mill New Mill Lane, Witney Oxfordshire, UK OX8 5TF Tel: +44 (0)1993 777700; Fax: +44 (0)1993 777701 Email: tssmail@tssuk.co.uk http:// www.tss-realworld.com **USA Branch** 10801 Hammerly Blvd Suite 206 Houston Texas 77043 Tel: +1 713-461-3030**;** Fax: +1 713-461-3099 Email: tssusa@tssusa.com
Device Data String(s) Output to WinFrog:	Heave, Roll, Pitch, and Yaw
WinFrog Data String(s) Output to Device:	Nil
WinFrog .raw Data Record Type(s):	Type 888 HEAVE

DEVICE DESCRIPTION:
TSS Ltd. manufactures various models of heave and attitude sensing devices. TSS's newer products (including the TSS DMS) output sensor data using what is referred to as the "TSS1" format string. Refer to the TSS DMS device documentation for more information on that device.

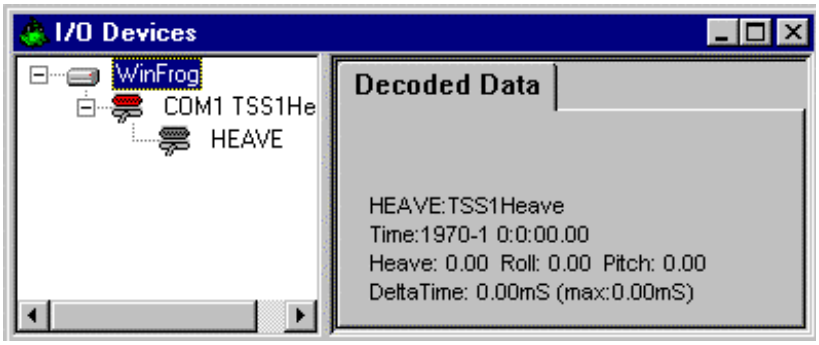
Note that this driver is the same as the TSS Heave 325 device driver except that this driver ignores the status information in the telegram.

Note that the heave data is only recorded for use in post processing, i.e. if an echo sounder is added to WinFrog, recorded depths are not corrected for heave. If real time heave corrected depth data is required, you must use an echo sounder that is capable of interfacing to the TSS and applying the heave data internally.

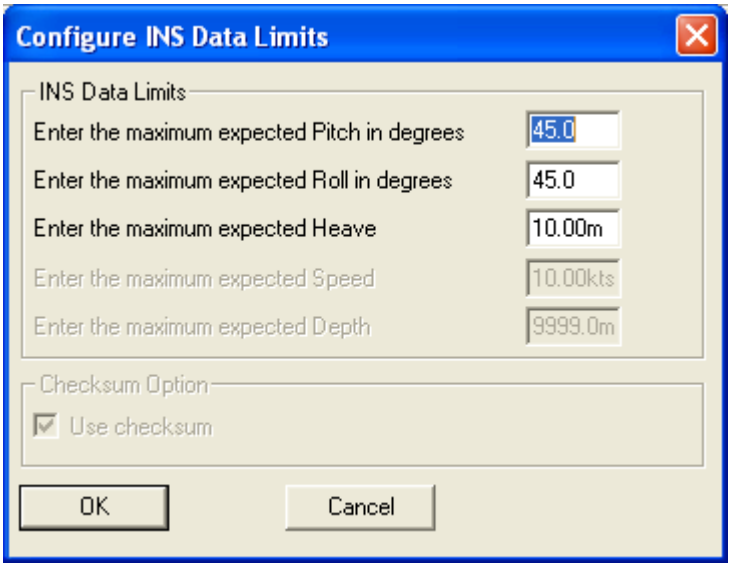
DEVICE CONFIGURATION INSTRUCTIONS (suggested):
Baud Rate: 9600
Data Bits: 8
Stop Bits: 1
Parity : None

WINFROG I/O DEVICES > CONFIG OPTIONS:
The TSS1 Heave device is added to WinFrog from the INS device category. Adding the TSS1 Heave device to WinFrog creates a Heave data item that can be added to a vehicle's device list.

Note that although the I/O Devices window displays Roll and Pitch Attitude data, an Attitude data item is not created, and hence cannot be added to a vehicle's device list. This data is however written to the raw files.



The configuration associated with this device applies to data checking and validation. Accessing the device configuration results in the following dialog.



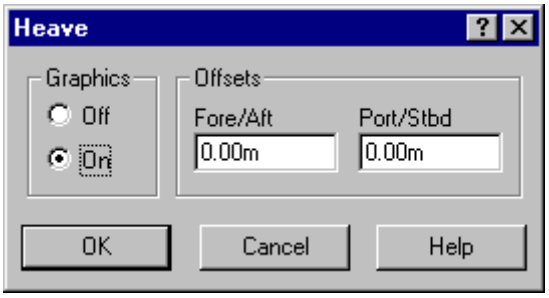
You can enter the maximum expected value for pitch, roll and heave. If the absolute value of the decoded pitch, roll or heave, in a given message is greater than the respective entered maximum expected value, the data is flagged and none of the data in that message is passed to the vehicle. The status is shown in the I/O Device window with an asterisk next to the specific data that failed the test.

Note: The Yaw is not checked against maximum expected limits.

The data is also checked for correct message type, valid characters and input buffer overruns and the status displayed in the I/O Device window.

WINFROG VEHICLE TEXT WINDOW> CONFIGURE VEHICLE DEVICES > DEVICE > EDIT OPTIONS:

Once the TSS1 Heave data item has been added to a vehicle's device list, it must be edited to suit the application. In the vehicle's Configure Vehicle Devices dialog box device list, highlight the appropriate TSS1 Heave data item and click the Edit button. The Heave dialog box appears as seen below.



Graphics:

The Graphics Off/On radio buttons have no application at this time. This is to say that when the graphics is turned on, no display data will appear.

Offsets:

The Fore/Aft and Port/Stbd fields allow you to enter Offsets from the vessel's Common Reference Point (CRP) to the TSS sensor. These offsets are used to reduce heave measurement errors that occur when the TSS1 is located at any position other than the vessel's center of gravity (COG).

WinFrog will apply pitch and roll data to the entered offsets to calculate the heave at the vessel's COG. In order to minimize potential erroneous offset entries, it is advised to place the vehicle's common reference point (CRP) at the vessel's COG.

Pitch and roll are not affected in the same manner as heave when the unit is installed at a location other than the COG. For this reason, offsets are not applied to the Pitch and Roll values.

Note that the heave data is only recorded for use in post processing, i.e. if an echo sounder is added to WinFrog, recorded depths are not corrected for heave. If real time heave corrected depth data is required, you must use an echo sounder that is capable of interfacing to the TSS and applying the heave data internally.

CONFIGURATION DETAILS:
WinFrog records the DMS data to a type 888 raw data record. This record contains Heave, Pitch, Roll, and Yaw data and a time stamp to indicate precisely when the data was recorded. See Appendix B: WinFrog File Formats in the WinFrog User's Guide for details on the Type 888 raw data record.

Refer to the documentation on the TSS DMS device for information on the TSS1 format string. Note that the status flags are not used in the TSS1 Heave WinFrog driver.