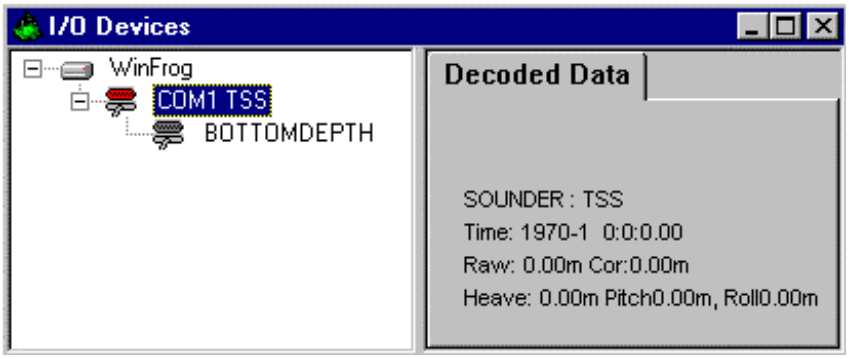
WinFrog Device Group:	**Sounder**
Device Name/Model:	**TSS**
Device Manufacturer:	**TSS (UK) LTD HQ** New Mill New Mill Lane, Witney Oxfordshire, UK OX8 5TF Tel: +44 (0)1993 777700 Fax: +44 (0)1993 777701 Email: tssmail@tssuk.co.uk http:// www.tss-realworld.com
Device Data String(s) Output to WinFrog:	Uncorrected depth, corrected depth, heave, quality identifier, roll, pitch (see Configuration Details below)
WinFrog Data String(s) Output to Device:	N/A
WinFrog .raw Data Record Type(s):	Depth: Type 411: depth, status & dtime are repeated 15 times

DEVICE DESCRIPTION:
WinFrog's TSS sounder driver is intended for use with TSS 320B/325 and 320B/321 heave sensor/echosounder units. These devices are the only known TSS products that have the ability to output raw and corrected depths in the required format.

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

These TSS devices can output data in either analogue or digital formats, utilizing either RS232 or RS422 protocol. The communication parameters are user configurable using the TSS device's internal software.

WINFROG I/O DEVICES > CONFIG OPTIONS:
The TSS is added to WinFrog from the SOUNDER device category. There is no configuration required or available at the "generic" I/O Device window level.



WINFROG VEHICLE - DEVICE > EDIT OPTIONS:
Adding the TSS sounder to WinFrog creates a BOTTOMDEPTH data item that must be added to the appropriate vehicle's device list. Once the BOTTOMDEPTH data item has been added to a vehicle's device list, it must be edited to suit the application.

In the vehicle's device list, highlight the SOUNDER, TSS, BOTTOMDEPTH data item and click the Edit button. The standard **Configure Sounder** dialog box appears. See documentation on the NMEA DEPTH Sounder device for more information on configuring this dialog box.

Although the TSS driver reads and displays heave, pitch, roll, and the raw and corrected depth within the I/O Device Window, only the corrected depth is used in calculations and data collection.

CONFIGURATION DETAILS:

The TSS must be configured for “RS-232 record echo-sounder mode” in order for WinFrog to correctly read data from this device. The string contents are as follows:

:EEEEEE UUUUUU CCCCCC ±HHHHX±RRRR ±PPPP <CR><LF>

Where:

FIELD NUMBER	FIELD IDENTIFIER	FIELD DESCRIPTION
1	EEEEEE	**Identifier Number** Six digit number that allows the record to be readily identified and synchronized to external events. This field is followed by a space.
2	UUUUUU	**Uncorrected Depth** Original depth data from echosounder or digitizer. This field is followed by a space.
3	CCCCCC	**Corrected Depth** Depth value after heave is applied. This field is followed by a space.
4	±HHHH	**Heave** A positive or negative value of the measured heave (cm). Positive heave is when the sensor is above datum.
	X	**Quality Control** Single character is a space unless the heave value fails the built in ‘Quality Control’ check; then this field becomes a question mark (?)
5 6	±RRRR ±PPPP	**Roll and Pitch** If the 325 sensor is connected to the instrument, then these fields will contain positive or negative values for the roll and pitch angles in units of 0.01^{o}. If the pitch/roll sensor is not connected than these fields will be filled with zeros. The roll angle is followed by a space. Roll is positive when port is up. Pitch is positive when bow is up.