

WinFrog Device Group:	Sounder
Device Name/Model:	Innerspace 456
Device Manufacturer:	Innerspace Technology Inc. 36 Industrial Park Waldwick, NJ 07463 USA Tel: (201) 447-0398 Fax: (201) 447-1919 E-mail: info@innerspacetechnology.com
Device Data String(s) Output to WinFrog:	Proprietary NMEA or IT message
WinFrog Data String(s) Output to Device:	Event data
WinFrog Data Item(s) and their RAW record:	Depth: Type 411 and/or 911 For 411: depth, status & dtime are repeated 15 times

DEVICE DESCRIPTION:

This is a dual frequency sounder. The proprietary NMEA message will contain each frequency's depths, however, the IT message contains only one of the frequency's depths, thus it requires two messages to get both depths.

Note: At the time of writing of this driver, it was conveyed by Innerspace that there was an error in the status byte of the IT message. Essentially bit three, the times 1 or 10 (X1 or X10) scale factor was not implemented. Thus the maximum range of the data is 999.9, which may be in error. For this reason it is recommended that the IT telegram not be used (see IT Message description below for mode details). Use the proprietary NMEA telegrams instead.

DEVICE CONFIGURATION INSTRUCTIONS:

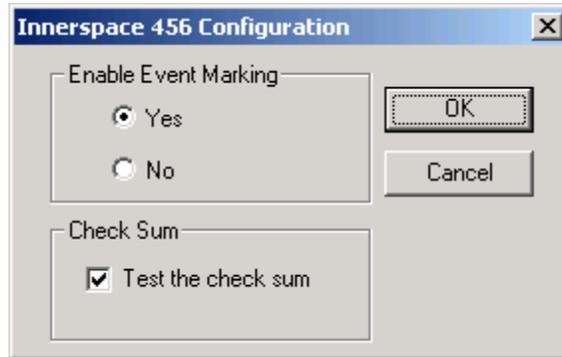
WINFROG I/O DEVICES > EDIT I/O:

Refer to the Innerspace manual for to setup the sounder. The proprietary NMEA telegram (\$PIST) is preferred over the older IT telegram. WinFrog's serial communications parameters are configurable.

If enabled, WinFrog will send the event number to the sounder; when the sounder receives the event number it will mark and annotate the record. Be sure to connect the computer's TX pin to the sounder's RX pin if annotation is desired. According to RS-232 convention, transmitted data is always transmitted on pin 3 of a DB9 connector, and pin 2 of a DB25 connector. You must also connect the ground pin (pin 5 on a DB9 connector, and pin 7 on a DB25 connector).

WINFROG I/O DEVICES > CONFIGURE DEVICE:

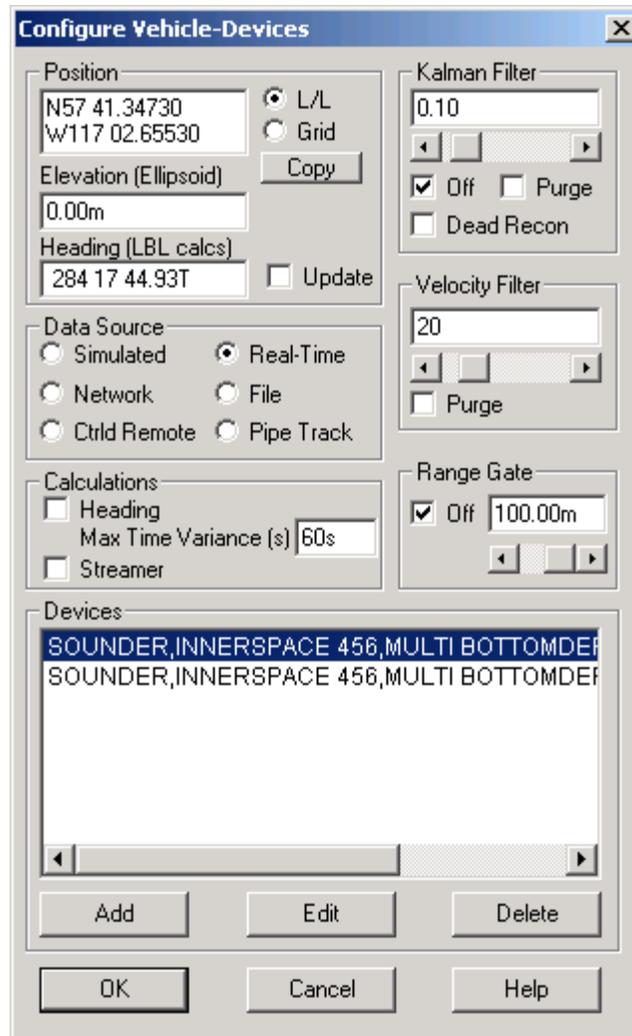
The Innerspace 456 is added to WinFrog from the **SOUNDER** device category. The device driver must be configured at this level to enable event marking and whether or not to test the checksum. The checksum only applies the proprietary NMEA telegrams.



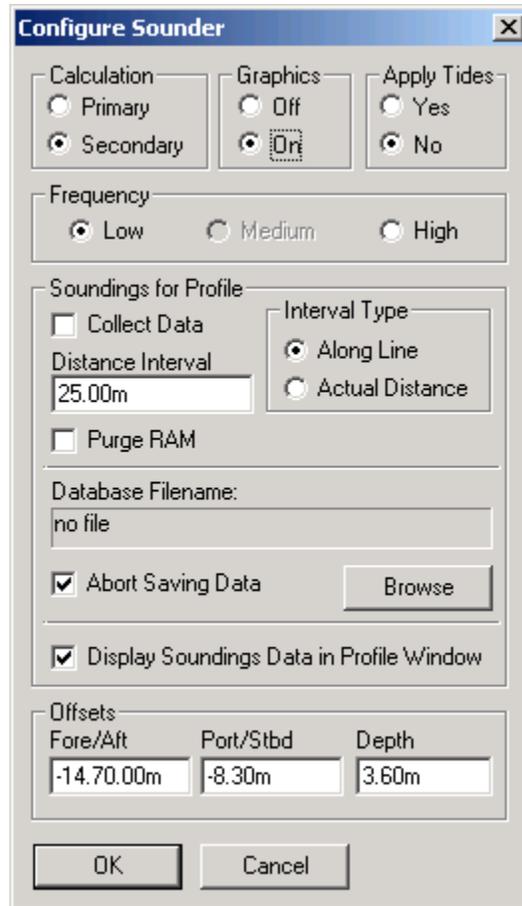
The Innerspace 456 device has only one data item, **MULTIBOTTOMDEPTH**.

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

You need to add the MULTIBOTTOMDEPTH data item for each frequency you wish to record to the raw data file. So if you wish to log both high and low frequency you need to add the data item twice as shown below.



Once the data item(s) are added to the vehicle's device list, you must configure them to suit the application. Highlight each SOUNDER, INNERSPACE 456, MULTIBOTTOMDEPTH data item in turn and click the Edit button. The standard Configure Sounder dialog box appears as seen below.



This Configure Sounder dialog box is the same as for single frequency sounders except for the addition of three Frequency buttons: **Low**, **Medium**, and **High**.

Note that you must also define the interval at which annotation information will be output to the sounder. This is established in the Setup Data Events > Event Configuration > Eventing dialog box. Enter the desired annotation interval value in the Secondary entry window. Entering a 5, for example, tells WinFrog to output the ASCII annotation data only every 5th event.

Calculation:

Set the type of calculation to **Primary** or **Secondary** using the appropriate radio button. WinFrog will only assign (i.e. for display in the Vehicle Text window and inclusion in the event files) data from a Primary sounder device. If there is more than one Primary sounder attached to a vehicle's device list, WinFrog will not mean the data (as is done with positional devices), rather it arbitrarily assigns one or the other. If recording both frequencies, set one data item to primary and set the other to secondary. The depth's one you assign as primary will be assigned to the vehicle and will be used in the LOG, DAT, and type 351 record in the raw files, as well as displayed in the Vehicle Text window.

Graphics:

If the On radio button is selected, a labeled square representing the location of the sounder will be displayed in the Graphics and/or Bird's Eye windows.

Apply Tides:

If the Yes radio button is selected, WinFrog will apply tidal corrections to the observed water depths. Depths displayed in the Vehicle Text window and recorded in automatic event (i.e. .DAT, .SRC, and .RCV) and type 351 raw files will refer to the datum corrected depths. Note that type 411 raw data records will remain truly raw and will not reflect the tide correction.

The tide information can be supplied by a real time telemetry system or by predicted tide files. Either way, the tide "device" must also be attached to the same vehicle's device list. For more information, refer to documentation on Tide devices.

Frequency:

The Innerspace 456 is a dual frequency sounder, capable of using low and high frequency acoustic pulses. This option controls which value will be assigned to this data item. To record both frequencies, the **INNERSPACE 456**

MULTIBOTTOMDEPTH data items must be added to a vehicle's device list twice.

The two **MULTIBOTTOMDEPTH** data items must then be edited to reflect the different frequency choices, with one configured for low frequency and the other high frequency; it doesn't matter which is which. WinFrog identifies the low and high frequency data from the telegram.

Note: The Medium frequency radio button has no application as this sounder employs only two frequencies.

Soundings for Profile:

This section of the Configure Sounder dialog box permits the collection of sounding data to an .MDB database file for display in WinFrog's Profile window. This collection is completely separate from automatic event or raw data collection.

Collect Data

Select this checkbox to enable the collection of data to an .MDB database file.

Interval Type

Select to use either Along Line or Actual Distance (i.e. between successive position updates) calculations for data collection intervals. Selecting Along Line requires that you also enable survey line tracking.

Distance Interval

Specify the distance interval at which the data will be collected.

Purge RAM

Sounding data is stored in the RAM memory of the computer. Any data collected which will not be required at later time can be deleted by selecting the Purge RAM checkbox, then clicking the OK button to exit the dialog box.

Database filename

Click the Browse button to define where and to what filename the .MDB file will be written. The file name and location is displayed in this field.

Abort Saving Data

Select this checkbox to abort saving data to the .MDB file. In other words, to save data to the .MDB file, ensure that this box is NOT selected.

Display Soundings Data in Profile Window

Select this checkbox to enable the display of this data in WinFrog's Profile Window.

Offsets

This section allows for entry of Offset values as measured from the vessel's Common Reference Point (CRP). Note that the Fore/Aft and Port/Stbd offsets are used for "cosmetic" visual purposes only; an echo sounder is not a positioning device, and hence its horizontal offsets have no application. If the echo sounder's depth is to match its position as recorded in the .DAT or .LOG files, you must create and enable a vehicle Tracking Offset for that specific location. The offsets entered here can simply be used as a means of graphically confirming that the Tracking Offset values have been entered correctly. The Depth Offset is applied; the entered value will be added to the received sounder data. Depths displayed in the Vehicle Text window and recorded in automatic event (i.e. .DAT, .SRC, and .RCV) and type 351 raw files will refer to the corrected depths. Note that type 411 raw data records will remain truly raw and will not reflect the depth offset correction.

TELGRAM SPECIFICATION:

The Innerspace can output two telegrams: 1) a proprietary NMEA and 2) the IT message also used by the 449DF.

Proprietary NMEA

The sentence begins with the start character '\$' followed by the talker identifier 'P' for proprietary, then sentence format code 'IST', followed by the data, each value separated by a comma.

`$PIST,DBT,F1,aa,f,bb,M,F2 aa,f,bb,M*hh<CR><LF>`

Where:

- DBT = depth below transducer
- F1 = frequency 1, highest
- aa = F1 depth in feet
- f = indicates preceding value is feet
- bb = F1 depth in metres

M = indicates preceding value is metres
 F2 = frequency 2, lowest
 aa = F2 depth in feet
 f = indicates preceding value is feet
 bb = F2 depth in metres
 M = indicates preceding value is metres
 * = delimiter
 hh = check sum

Note: If the sounder is displaying feet then only feet will be present in the telegram. If the sounder is displaying metres then only metres will be present in the telegram. WinFrog will calculate the unit not present and display both in the decoded data window.

E.g.
 \$PIST,DBT,F1,,f,67.8,M,F2,,f,67.9,M*62

IT Message

The sentence begins with the start character 02h (hex 2 also called STX) followed by four bytes of ASCII data followed by a status character termed the Bad Data character.

STX	100's	10's	1's	0.1'	Status	CR
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The message format is the same for both low and high frequency. The status or bad data character is used to determine the frequency. Refer to the Innerspace manual for details on the bad data character coding.

Note: As mentioned above, bit 3 is not implemented. Thus if this telegram is used, the maximum depth that can be read is 999.9. WinFrog uses bit 2 to determine the scale of the number: if bit 2 is set the number in the telegram is divided by 100. If bit 2 is not set the number is divided by 10. Then if bit 4 is set the number is considered feet otherwise it is considered metres.

Because of the possibility that the depth from the IT message may be scaled incorrectly it is not recommended for use.