

WinFrog Device Group:	ROV
Device Name/Model:	Tritech Free Run
Device Manufacturer:	Tritech International Limited, Peregrine Road, Westhill Business Park, Aberdeen, AB32 6JL Tel ++44 (0)1224 744111 Fax ++44 (0)1224 741771 support@triteck.co.uk
Device Data String(s) Output to WinFrog:	See Telegram Specification section below.
WinFrog Data String(s) Output to Device:	NONE
WinFrog Data Item(s) and their RAW record:	ROVDATA 496 BOTTOMDEPTH 411

DEVICE DESCRIPTION:

This is a driver designed to read the below-mentioned data from the SeaKing 704. It can store a pressure VS density profile to use for determining subsequent depths from pressures.

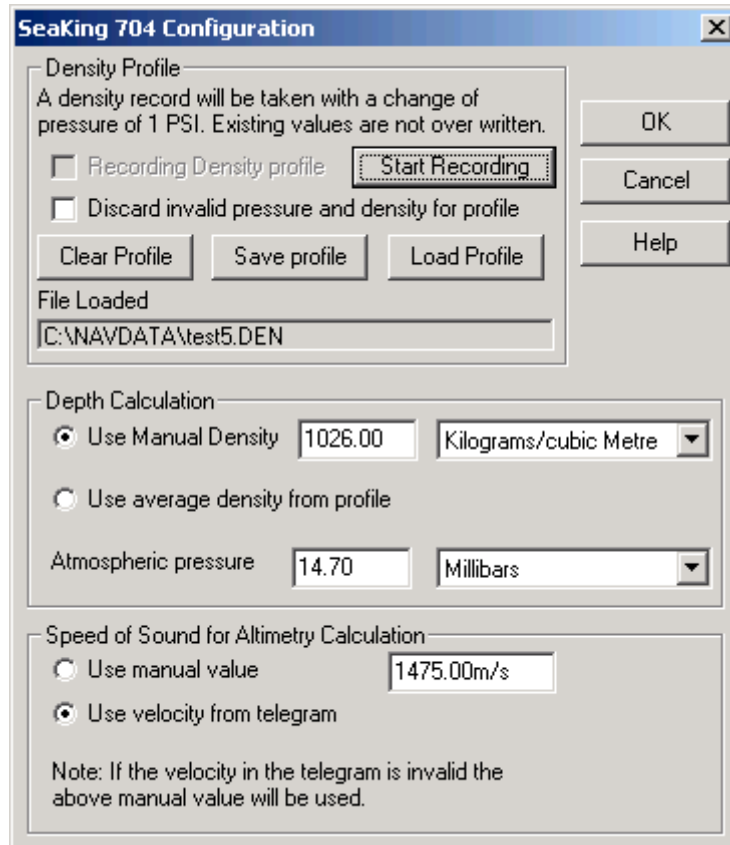
DEVICE CONFIGURATION INSTRUCTIONS

WINFROG I/O DEVICES > EDIT I/O:

Serial
Configurable Parameters

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 SeaKing 704 Configuration dialog box appears, as seen below.



Density Profile

To use the SeaKing's density to convert pressure to depth a pressure-density profile is required.

To record a density profile, click the Start Recording button. All the settings will be read and the profile recording started. During recording a record is created with a change of pressure of about 1 PSI (pound per square inch) equivalent to about 70cm. If WinFrog does not receive a value within 1.5 PSI it will interpolate one or more as required. If the current pressure is much greater than the highest pressure in the profile when the button is clicked, many records may be created. To stop, click the button again. Note: the caption on the button and the checkbox beside the button indicates the current state of recording. When stopping, all the other settings are also read.

If enabled, WinFrog uses the profile to compute an average density to convert pressure into depth. The average density is computed by summing all the density values from the top record to the record whose pressure matches the pressure where the depth is to be calculated, then dividing by the number of points.

Recording Density Profile

Indicates the current state of recording.

Discard invalid pressure and density for profile

By enabling this option WinFrog will reject records that have either (or both) an invalid Digiquartz value or invalid Density calculation. See the bottom of the decoded data display in the I/O device window for the current QC settings.

Clear Profile

This clears all the values in memory. There is no second chance.

Save Profile

Only enabled if recording is off. You will be prompted for a file of type *.DEN. The file is ASCII and the format is described in the file and in the device document. Do not alter the first two lines as WinFrog uses these to determine if this file is valid. You may create your own file if desired. **NOTE: You must save the profile manually. WinFrog will not save the file automatically when shut down or when this device driver is closed.**

Load Profile

Only enabled if recording is off. You will be prompted for a file of type *.DEN.

File Loaded

If the current data was loaded from a file or saved to a file then its name will appear here. If a file name is present when WinFrog was shut down, the file here will be loaded next time WinFrog is loaded. If the file was moved or renamed when WinFrog was loaded, no profile data will be loaded.

Depth calculation

Density is required to convert pressure to depth. Select to use either a manual value or the value from the profile.

Use Manual Density

If manual density is to be used, select this radio button and enter the density to use and the units of the value you enter.

Use average density from profile

If this option is selected and a profile is not available, a standard value for seawater of 1025.1 kg/m³ will be used. If the pressure is greater than the highest pressure in the profile, the density will be calculated using only the data available.

Atmospheric Pressure

Enter the atmospheric pressure to be subtracted from the observed pressure before computing depth and the value's units. If the instrumentation is already compensating for atmospheric pressure, enter 0.

Speed of Sound for Altimetry Calculations

This is used to convert the altimetry travel time to distance. **NOTE: If the velocity is invalid according to the telegram's QC indicator, the manual value will be used to compute the altimetry.**

Use manual value

Select this option and enter the value to use in the specified units. These units are selected as the distance units on the general tab of the Configure Units dialog. (Configure>Units from the main menu.)

Use velocity from telegram

Select this option to use the velocity in the telegram in which the altimetry travel time was found.

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

Adding the Tritech Free Run device creates two data items: ROVDATA and BOTTOMDEPTH. Once the data items have been added to the vehicle, they must be edited to suit the application.

Data item: ROV, Tritech FreeRun, ROVDATA

Configure ROV

Altitude Calculation
 Primary
 Secondary

Burial Depth Calculation
 Primary
 Secondary

Depth Sensor
Use sensor for ROV depth?
 Yes No

Graphics
 On Off

Odometer Based Positioning
Odometer (m)

Depth and Altimeter Sensor Configuration
 Use altitude and depth as corrected by the device
Correct attitude and depth.
 The default attitude data is from this device. If another attitude source is active, it will be used.
 Use offsets from the Device configuration.
 Use following offsets.

Altimeter Sensor
Fore / Aft Port / Starboard Up / Down

Depth Sensor
Fore / Aft Port / Starboard Up / Down

OK Cancel

Altitude Calculation:

Primary will result in this vehicle's altitude being determined from the observed altitude value found in the string from this device minus the altitude offset also found on this dialog. This value can be displayed in the Vehicle Text window as ROV Alt.

Secondary will result in no calculation or assignment of the vehicle's altitude from this device. The raw data is still always recorded.

Burial Depth Calculation:

Primary will result in the burial depth (if applicable) being determined from the observed burial depth value found in the string from this device. This value will be assigned to the vehicle.

Secondary will result in no calculation or assignment of the burial depth from this device. The raw data is still always recorded.

Graphics:

Select the On radio button to display the device name and a square at the location of the hydrophone, within the Graphics and Bird's Eye windows.

Use sensor for ROV depth:

Selecting the Yes radio button will cause the depth of this vehicle's CRP to be determined from the observed depth value found in the string from this device plus the depth offset below. This vehicle's elevation will be the negative of this value. This value will be used to calculate the bottom depth.

The bottom depth will be determined as:

Observed depth + Depth Offset + observed altimeter - altitude Offset

The offsets (see below) are not corrected for pitch and roll when determining the water depth.

Selecting the No radio button will result in this device obtaining the depth of the CRP from the vehicle itself, as opposed to assigning it to the vehicle as above. You must assign another device to determine the depth of the vehicle (e.g. USBL and assigning it as the source for depth).

Note: The observed altimeter value is always used for depth determination regardless of the prime/secondary altimeter setting.

Odometer Based Positioning:

This is only used by the ROV device Sonsub Innovator3.

Depth and Altimeter Sensor Configuration:

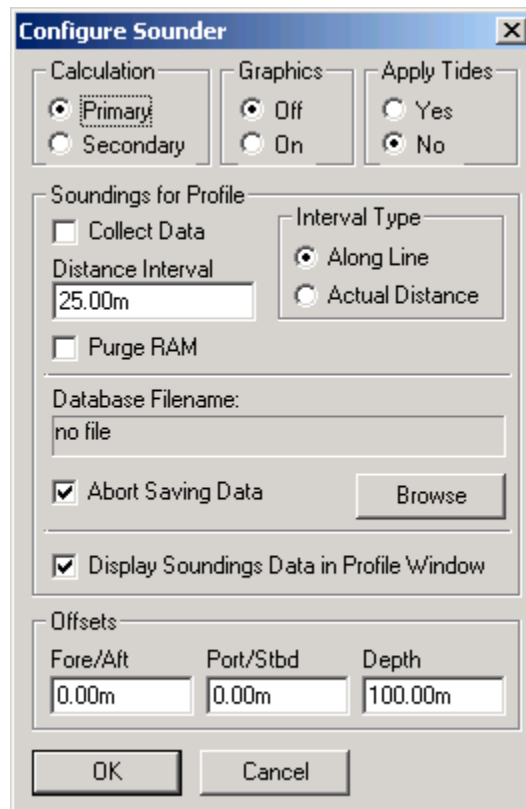
For all ROV devices except Deep Blue ROV, the radio button settings cannot be changed. See the Deep Blue ROV device documentation for information on setting these radio buttons.

Vertical offsets of the altitude and depth sensors, relative to the CRP, can be entered here. The Altitude Offset is the vertical distance (positive up) from the ROV's CRP to the acoustic beacon tracking the seafloor. The Depth Offset is the vertical distance (positive up) from the ROV's CRP to the sensor that provides depth information of the ROV.

The offset position will be corrected for pitch and roll then the vertical offsets will be applied to determine the depth of the ROV and height of the ROV above the bottom.

Data item: ROV, Tritech FreeRun, BOTTOMDEPTH

This data item will combine the altimetry and ROV depth to provide the water depth. Highlight the BOTTOMDEPTH data item in the vehicle's device list and click the Edit button to open the Configure Sounder dialog box as seen below.



Calculation:

Set the type of calculation to Primary or Secondary using the appropriate radio button. WinFrog will only utilize (i.e. display and record) 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), but rather alternate between the devices. Data from a Secondary status sounder will simply be monitored.

Graphics:

Select the On radio button to display a labeled square representing the location of the sounder 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.

Soundings for Profile:

This section of the Configure Sounder dialog 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 utilize 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 checked.

Display Soundings Data in Profile Window

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

Offsets

This section of the dialog 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 position is to be recorded correctly, 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 sum of the ROV depth, altimeter value and their offsets as entered in the Configure ROV dialog.

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:

From the manual SeaKing 700 Range of Bathymetric & oceanographic Sensors, Free Run RS232 Bathy Operators manual.

%D005704273B,,DQP,DQT,DQ Raw PC,DQ Raw TC, Osc, Con,PT,Sal,VOS,Alt,QC,LD,T<CR><LF>

Where:

- %D Header
- 57 Number of bytes in the string, all inclusive (hex)
- 04 Slot Number
- 27 generic device type
- 3 Comma delimited data
- B Free run format **Note this device requires this and the previous values (3B) to be present in this location in the telegram.**
- N/a Internal temperature (null)
- DQP Digiquartz pressure * 100000 PSI
- DQT Digiquartz temperature*100 Celsius
- DQ Raw PC Digiquartz raw pressure count
- DQ Raw TC Digiquartz raw temperature count
- Osc oscillator calibration coefficient
- Con Conductivity μ Seimens/cm
- PT Probe temperature*100 Celsius
- Sal Salinity PPM
- VOS Velocity of sound*10 m/s
- Alt Altimeter reading (in clicks of 200nsec) two way travel
- QC Bathy devices:
 - Bit 0 Digiquartz valid
 - Bit 1 Conductivity Valid
 - Bit 2 Altimeter Valid
 - Bit 3 Internal temperature valid
 - Bit 4 Velocity of sound calculation valid
 - Bit 5 Salinity calculation valid
 - Bit 6 Density calculation valid
- LD Density*100 grams/litre
- T Time