

WinFrog Device Group:	ROV
Device Name/Model:	Phoenix
Device Manufacturer:	
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 ATTITUDE 413 HEADING 409 ELEVATION 372 BOTTOMDEPTH 911

DEVICE DESCRIPTION:

This is a driver designed to read ROV type data from the Phoenix ROV.

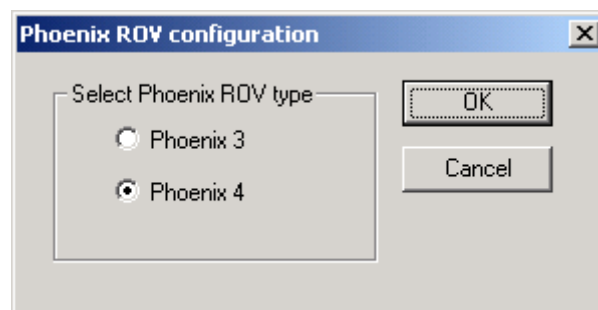
DEVICE CONFIGURATION INSTRUCTIONS

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 Phoenix ROV configuration dialog box appears, as seen below.



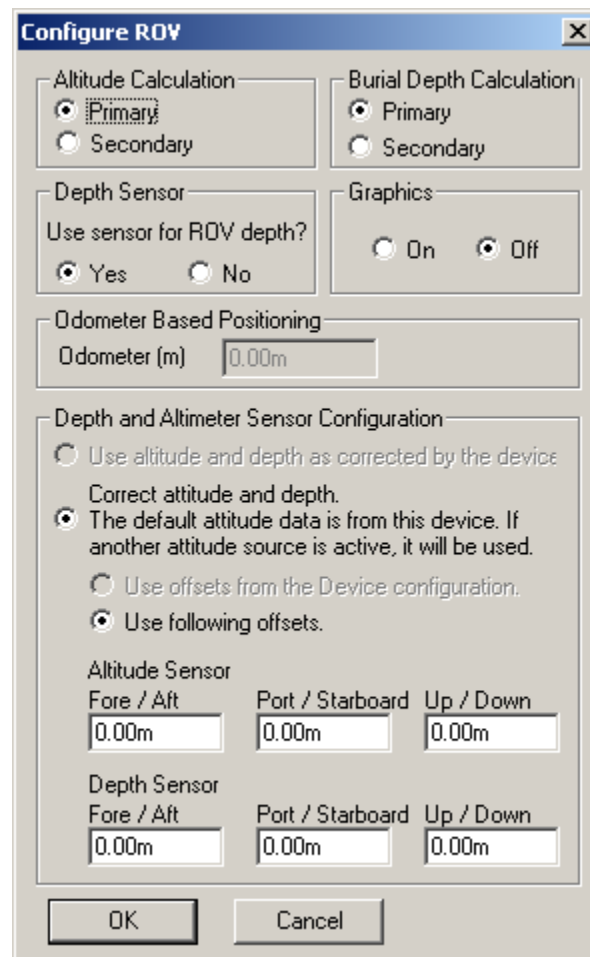
Select which model of Phoenix ROV is currently being used.

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

Adding the Phoenix device creates five data items: ROVDATA, ATTITUDE, HEADING, ELEVATION and BOTTOMDEPTH. Once the data items have been added to the vehicle, they must be edited to suit the application.

Data item: ROV, Phoenix, ROVDATA

This data item is designed to read specific ROV type data from this device. Highlight this data item in the vehicle's device list and click the Edit button to open the Configure ROV dialog box as seen below.



The 'Configure ROV' dialog box contains the following sections and controls:

- Altitude Calculation:** Radio buttons for ☒ Primary and ☐ Secondary.
- Burial Depth Calculation:** Radio buttons for ☒ Primary and ☐ Secondary.
- Depth Sensor:** A label 'Use sensor for ROV depth?' followed by radio buttons for ☒ Yes and ☐ No.
- Graphics:** Radio buttons for ☐ On and ☒ Off.
- Odometer Based Positioning:** A text field for 'Odometer (m)' with the value '0.00m'.
- 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.
- Altitude Sensor offsets:** Three text fields for 'Fore / Aft', 'Port / Starboard', and 'Up / Down', each containing '0.00m'.
- Depth Sensor offsets:** Three text fields for 'Fore / Aft', 'Port / Starboard', and 'Up / Down', each containing '0.00m'.
- Buttons:** 'OK' and 'Cancel' at the bottom.

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 tracked offset, 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:

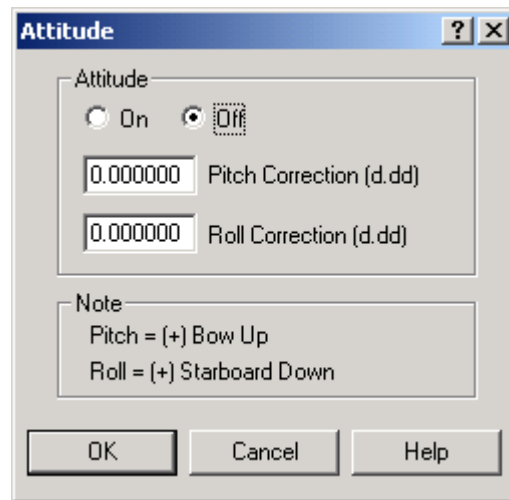
For all ROV devices except Deep Blue ROV, the radio button settings cannot be changed. See the Deep Blue ROV device documentation for information on setting these radio buttons.

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, Phoenix, ATTITUDE

Highlight this data item in the vehicle's device list and click the Edit button to open the Attitude dialog box as seen below.



Attitude

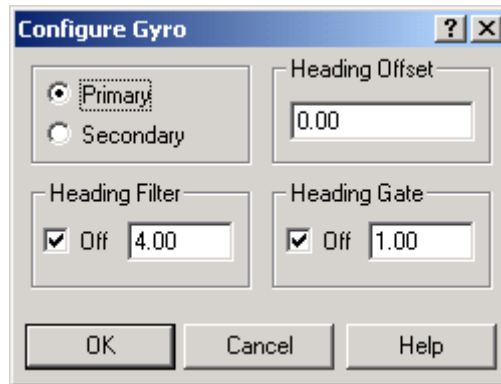
By default, the sensor mode is off, meaning that data from the Attitude device will not be used in the vehicle's calculations. Select 'On' to turn the sensor on and begin using the inclination corrections in the position output.

Correction values can also be added in this section of the dialog. The correction values (entered in units of degrees-decimal degrees) are added to the raw pitch and roll values received from the Attitude device before the data is applied to the vehicle's calculations.

Ensure that entered values adhere to the sign convention used by WinFrog. You can verify that the corrections are entered properly by viewing the pitch and roll values in the I/O Device window and the Vehicle Text window.

Data item: ROV, Phoenix, HEADING

Highlight this data item in the vehicle's device list and click the Edit button to open the Configure Gyro dialog box 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). You 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:

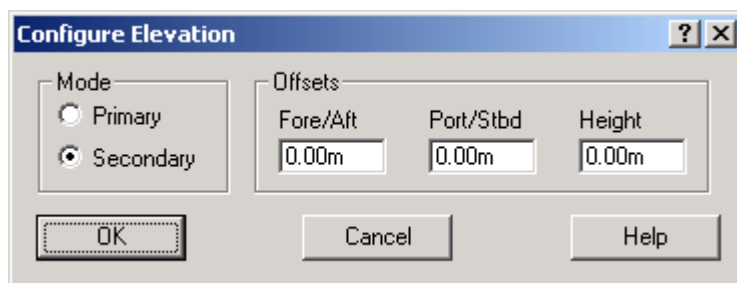
The Heading Filter is used to "smooth" heading values used by the vehicle. The value entered in the Heading Filter indicates the number of headings that will be used to predict the next heading value. The larger the value entered, the "heavier" the filter will be – i.e. the slower the vehicle's heading 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.

Data item: ROV, Phoenix, ELEVATION

Add the ELEVATION data item to a vehicle to record and/or assign the vehicle's height or depth.

Highlight this data item in the vehicle's device list and click the Edit button to open the Configure Elevation dialog box as seen below.



Assign the vehicle's height or depth by selecting the Primary or Secondary radio button on the dialog. In the Vehicle Text window, a vehicle's elevation (ELEV) will have the opposite sign of its depth (ROV D). The Height offset will be subtracted from the observed value. All the offsets are used for pitch and roll corrections.

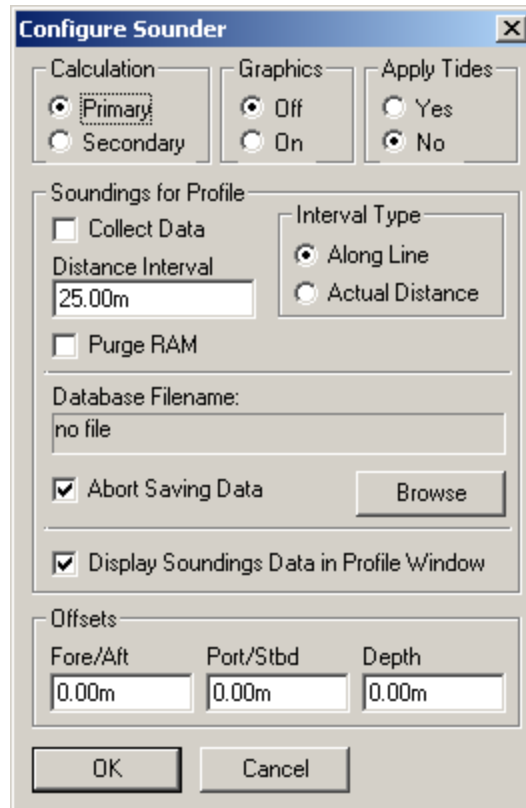
Raw record

372, name, time, elevation, status, center elevation, raw data, temperature, relative humidity *where:*

- 372 is the raw data record identifier for an ELEVATION data item
- *name* is the operator-assigned device name
- *time* is the computer time for the data
- *elevation* is the elevation in meters
- *status* is the status flag for the data, 1 = OK, 0 = Bad
- *center elevation* is the elevation reduced to the CRP
- *raw data* is the raw elevation data (specifically for Elevation group devices)
- *temperature* is the temperature in Celsius
- *relative humidity* is the relative humidity in units of 0-1.0 (i.e. = % / 100)

Data item: ROV, Phoenix, BOTTOMDEPTH

Highlight this 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 depth sensor device. If there is more than one Primary depth sensor 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 depth sensor will simply be monitored.

Graphics:

Select the On radio button to display a labeled square representing the location of the depth sensor 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 911 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 window.

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: A depth sensor is not a positioning device, and hence its horizontal offsets have no application. If the depth sensor'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 received depth sensor 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 911 raw data records will remain truly raw and will not reflect the depth offset correction.

TELGRAM SPECIFICATION:

The data telegram is in comma-delimited format and contains the following data;

Field	Data
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1	heading
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2	pitch
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3	roll
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4	depth
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5	altimeter
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