

WinFrog Device Group:	ROV
Device Name/Model:	Deep Blue ROV
Device Manufacturer:	
Device Data String(s) Output to WinFrog:	
WinFrog Data String(s) Output to Device:	
WinFrog Data Item(s) and their RAW record:	ROVDATA 496 BOTTOMDEPTH 411 HEADING 409 ATTITUDE 413

DEVICE DESCRIPTION:

This driver is designed to read data from the Deep Blue 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 Configure Deep Blue ROV dialog box appears, as seen below.

Configure Deep Blue ROV

Configure the sensor offsets. This enables attitude corrected depth data for BOTTOMDEPTH data type.

Configure Sensor Offsets

Altimeter Offsets

Fore / Aft	Port / Starboard	Up / Down
0.000	0.000	0.000

Depth Offsets

Fore / Aft	Port / Starboard	Up / Down
0.000	0.000	0.000

Sensor Units

☐ Meters ☒ Feet

OK Cancel

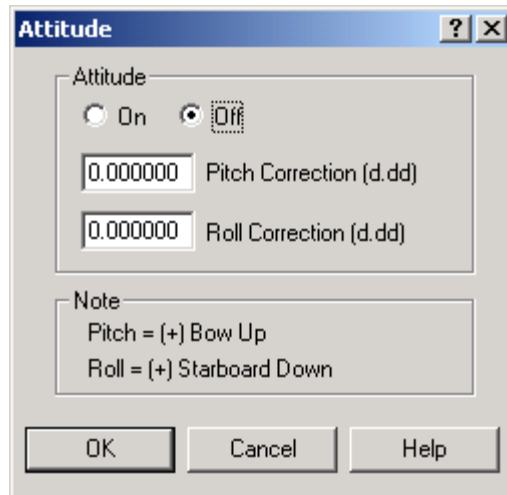
In this dialog box enter the offsets from the CRP of the ROV to the sensor locations. Fore/Aft offsets are entered similar to all devices in WinFrog with Forward/Starboard offsets being positive and Aft/Port offsets being negative. The Up/Down offsets are vertical offsets with Up being positive and Down being negative. The units output by the sensors have to be selected as either meters or feet.

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

Adding the Deep Blue ROV device creates four data items: ATTITUDE, HEADING, ROVDATA and BOTTOMDEPTH. Once the data items have been added to the vehicle, they must be edited to suit the application.

Data item: ROV, Deep Blue ROV, 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

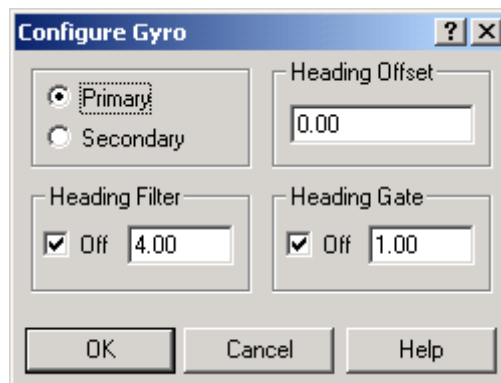
By default, the sensor mode is off, meaning that data from the Attitude device will not be used in the vehicle's calculations. Select 'On' to turn the sensor on and begin using the inclination corrections in the position output.

Correction values can also be added in this section of the window. 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, Deep Blue ROV, 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, Deep Blue ROV, ROVDATA

This data item is designed to read specific ROV type data from this ROV. 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.

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
☒ 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
 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 entered either in this dialog box or in the Configure Deep Blue ROV dialog box discussed above. 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 (if applicable), 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 entered either in this dialog box or in the Configure Deep Blue ROV dialog box discussed above. 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:

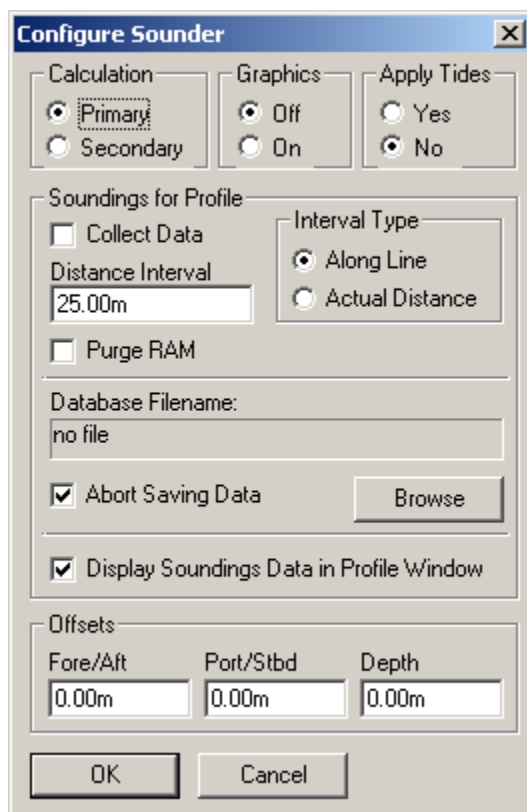
If the altitude and depth data from the Deep Blue ROV is to be used, select the 'Use altitude and depth as corrected by the device' option. If this data is to be obtained from another source, select 'The default attitude data is from this device. If another attitude source is active, it will be used.' option. If this second option is selected, you have the option of either using the offset values entered in the Configure Deep Blue ROV dialog box discussed above, or to enter the offsets in this dialog box keeping in mind that they are measured from the CRP of the ROV to the sensor's location.

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, Deep Blue ROV, 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.



The image shows the 'Configure Sounder' dialog box. It has three main sections: 'Calculation', 'Graphics', and 'Apply Tides'. The 'Calculation' section has two radio buttons: 'Primary' (selected) and 'Secondary'. The 'Graphics' section has two radio buttons: 'Off' (selected) and 'On'. The 'Apply Tides' section has two radio buttons: 'Yes' and 'No' (selected). Below these are 'Soundings for Profile' options: 'Collect Data' (checkbox, unchecked), 'Distance Interval' (text box with '25.00m'), 'Interval Type' (radio buttons: 'Along Line' selected, 'Actual Distance' unselected), and 'Purge RAM' (checkbox, unchecked). There is a 'Database Filename:' text box with 'no file' and a 'Browse' button. Below that are two checked checkboxes: 'Abort Saving Data' and 'Display Soundings Data in Profile Window'. At the bottom is an 'Offsets' section with three text boxes: 'Fore/Aft' (0.00m), 'Port/Stbd' (0.00m), and 'Depth' (0.00m). At the very bottom are 'OK' and 'Cancel' buttons.

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 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 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 411 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
1	\$PPTIROV
2	heading (degrees)
3	depth (meters)
4	altimeter1 (meters)
5	pitch (degrees)
6	roll (degrees)
7	CPprobe1 (kV)
8	CPprobe2 (kV)
9	telemetryState