

WinFrog Device Group:	ROV
Device Name/Model:	SCARAB
Device Manufacturer:	
Device Data String(s) Output to WinFrog:	See Telegram specification section below.
WinFrog Data String(s) Output to Device:	See Telegram specification section below.
WinFrog Data Item(s) and their RAW record:	ROVDATA 496 HEADING 409

DEVICE DESCRIPTION:

This is a driver designed to read ROV type data from the SCARAB ROV and in turn output position and heading data to the SCARAB system.

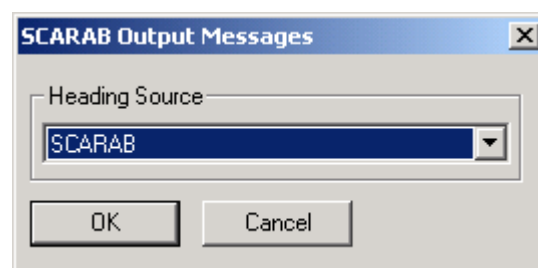
DEVICE CONFIGURATION INSTRUCTIONS

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 SCARAB Output Messages dialog box appears, as seen below.



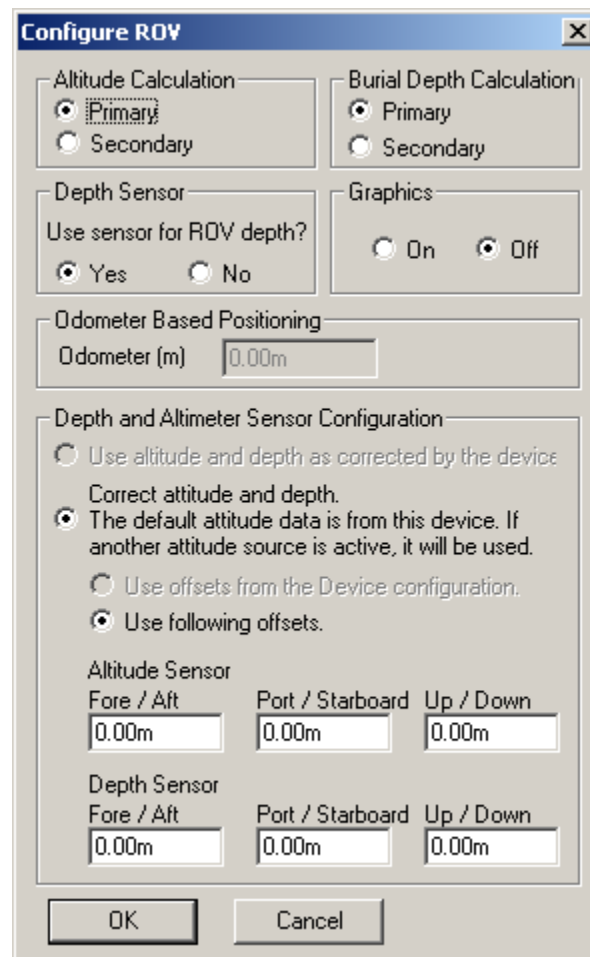
From the dropdown menu select the heading data source to be included in the SCARAB's output string.

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

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

Data item: ROV, SCARAB, 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' buttons 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:

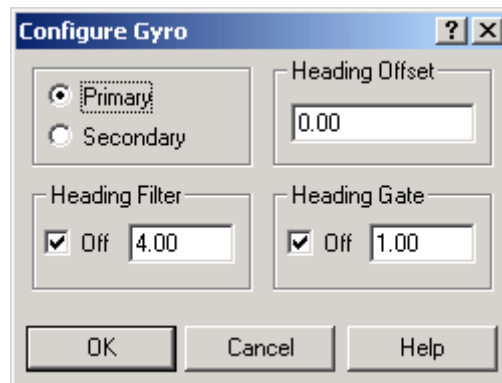
For all ROV devices except Deep Blue ROV, the radio button settings cannot be changed. See the Deep Blue ROV device documentation for information on setting these radio buttons.

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, SCARAB, 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.

TELEGRAM SPECIFICATION:

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

Field	Data
1	\$SC2
2	depth
3	heading
4	pitch
5	roll
6	altimeter1
7	altimeter2
8	burialDepth
9	cableDirection
10	lateralOffset
11	verticalOffset
12	diveNum

NMEA GGA and HDT messages are output by this device. The GGA message is output at 1 Hz and the HDT message is output at the same rate as the input source.