

WinFrog Device Group:	ROV
Device Name/Model:	NORCOM Datalogger
Device Manufacturer:	Perry Slingsby Systems - USA 821 Jupiter Park Drive Jupiter, Florida 33458-8946 Tel: +1.561.743.7000; Fax: +1.561.743.1313 www.perrytritech.com Perry Slingsby Systems - UK Ings Lane, Kirkbymoorside York, England YO62 6EZ Tel: +44 1751 431751; Fax: +44 1751 431388
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:	ROV REF VEH NONE ROV DATA 496 NORCOM DATA 498 HEADING 409 BOTTOMDEPTH 411 ATTITUDE 413

DEVICE DESCRIPTION:

The NORCOM Data Logger is manufactured by Perry Trittech for use on sub sea vehicles such as trenchers, plows and ROVs. It outputs the relevant ship and ROV data to the DATALOGGER and the relevant ROV data to the WinFrog system. See the Telegram Specification section below for more details on WinFrog's data output to the NORCOM DATALOGGER.

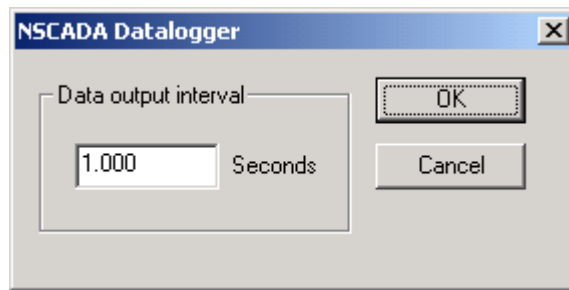
DEVICE CONFIGURATION INSTRUCTIONS

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 NSCADA Datalogger dialog box appears, as seen below.



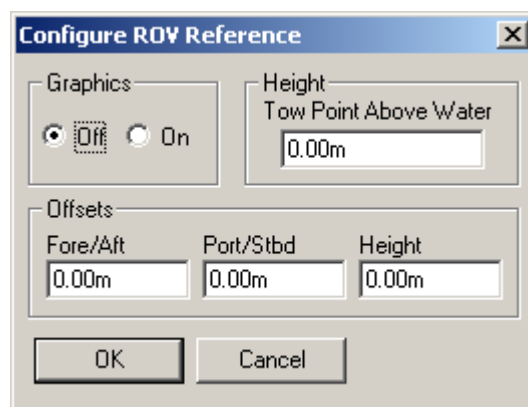
This dialog allows the Data output interval for the NSCADA Datalogger to be changed, from the default value of 1 second to the appropriate interval.

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

Adding the NORCOM Datalogger device creates six data items: ROV REF VEH, ROVDATA, NORCOMDATA, HEADING, BOTTOMDEPTH and ATTITUDE. Once the data items have been added to the vehicle, they must be edited to suit the application.

Data item: ROV, NORCOM Datalogger, ROV REF VEH

This data item is added to the device lists of both the ship and ROV to allow the positions of both vehicles to be transmitted to the NORCOM Datalogger system. Highlight the ROV REF VEH data item in the device lists and click the Edit button to open the Configure ROV Reference dialog box as seen below.



Graphics:

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

Tow Point Height:

This option is not used by this device.

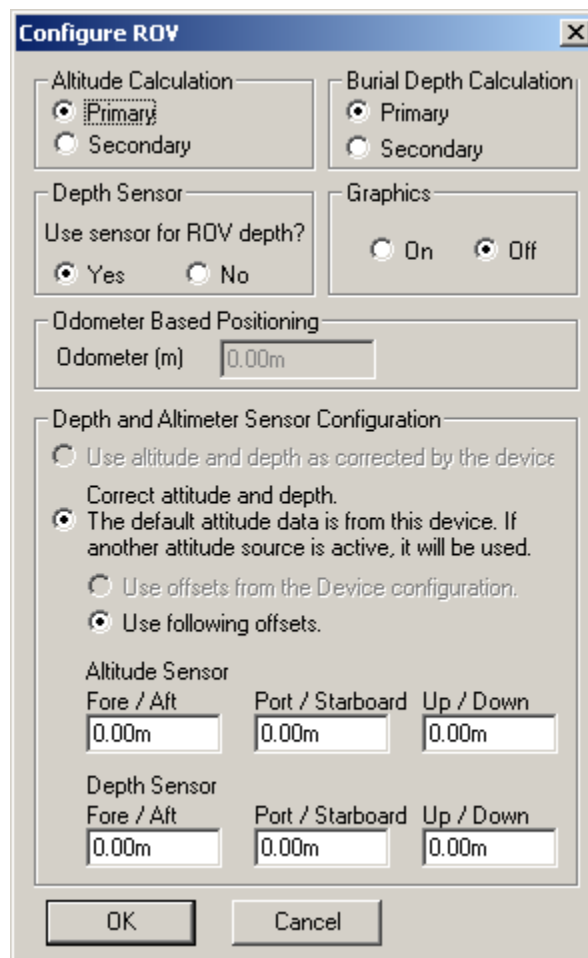
Offsets:

The X,Y,Z Offsets are applied from CRP to the offset position you desire to transmit to the NORCOM Datalogger system. These values are set similar to values that would be applied to any device offset within WinFrog.

Note: It is advised to use the waterline as the vertical CRP reference when sub-sea positioning devices are employed.

Data item: ROV, NORCOM Datalogger, 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 image shows a 'Configure ROV' dialog box with 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 labeled 'Odometer (m)' containing '0.00m'.
- Depth and Altimeter Sensor Configuration:**
 - ☐ Use altitude and depth as corrected by the device.
 - ☒ Correct altitude 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:** Three text fields for 'Fore / Aft' (0.00m), 'Port / Starboard' (0.00m), and 'Up / Down' (0.00m).
- Depth Sensor:** Three text fields for 'Fore / Aft' (0.00m), 'Port / Starboard' (0.00m), and 'Up / Down' (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.

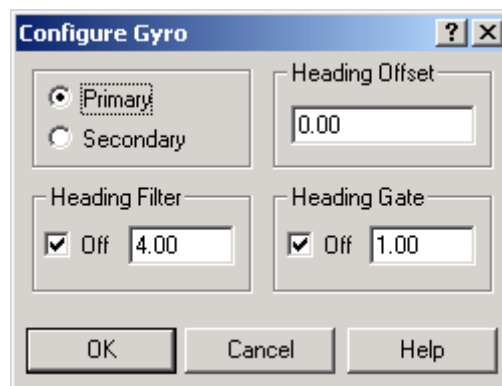
Data item: ROV, NORCOM Datalogger, NORCOMDATA

There are no Edit or configuration options for this data item. However, this data item must be added to either of the vehicle's device lists in to have the data from the NORCOM data telegram recorded in the 498 raw records.

Data item: ROV, NORCOM Datalogger, HEADING

This data item is used to read and record the heading data from the DATALOGGER. This heading data can be used to orient the ROV vehicle by adding it to the ROV's device list.

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:

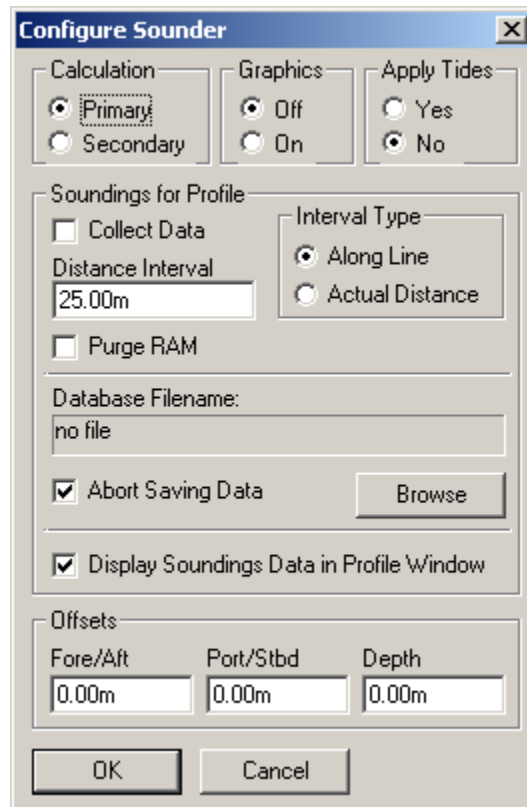
The Heading Filter is used to “smooth” heading values used by the vehicle. The value entered in the Heading Filter indicates the number of headings that will be used to predict the next heading value. The larger the value entered, the “heavier” the filter will be – i.e. the slower the vehicle’s heading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

This data item is used to read and record the water depth data from the DATALOGGER. Adding this data item to the ROV’s device list provides the ROV vehicle with the water depth data.

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 a Windows-style dialog box titled "Configure Sounder". It contains several sections with controls for configuring sounder data collection and display.

- Calculation:** Radio buttons for "Primary" (selected) and "Secondary".
- Graphics:** Radio buttons for "Off" (selected) and "On".
- Apply Tides:** Radio buttons for "Yes" and "No" (selected).
- Soundings for Profile:**
 - ☐ Collect Data
 - Distance Interval: 25.00m
 - ☐ Purge RAM
 - Interval Type: Radio buttons for "Along Line" (selected) and "Actual Distance".
- Database Filename:** Text field containing "no file" and a "Browse" button.
- ☒ Abort Saving Data
- ☒ Display Soundings Data in Profile Window
- Offsets:** Three text fields for "Fore/Aft", "Port/Stbd", and "Depth", all containing "0.00m".

At the 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

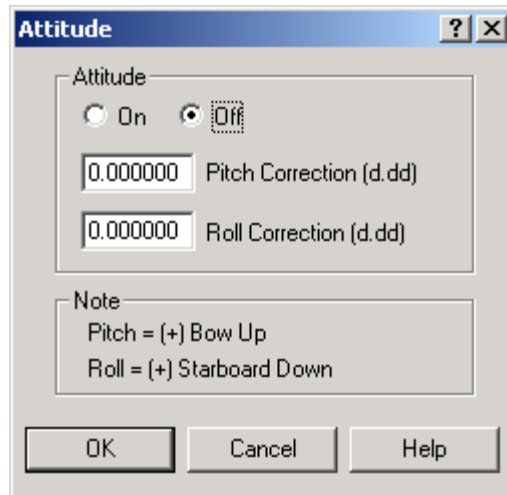
This section of the dialog allows for entry of offset values as measured from the vessel's Common Reference Point (CRP). Note that the Fore/Aft and Port/Stbd offsets are used for "cosmetic" visual purposes only: A depth sensor is not a positioning device, and hence its horizontal offsets have no application. 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.

Data item: ROV, NORCOM Datalogger, 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.

TELEGRAM SPECIFICATION:

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

Field	Data
1	\$PPTIROV
2	dive no.
3	heading
4	depth
5	altimeter1
6	pitch

7	roll
8	FTCMHydraulicPressure
9	FTCMHydraulicTemp
10	ATCMHydraulicPressure
11	ATCMHydraulicTemp
12	PortMotorTemp
13	StbdMotorTemp
14	SeaWaterTemp
15	PortMotorCurrent
16	StbdMotorCurrent
17	JetterDeployPosition
18	JetterDeployLoadPressure
19	PortArmWidthPosition
20	StbdArmWidthPosition
21	PortArmSideLoadPressure
22	StbdArmSideLoadPressure
23	WaterPressure
24	PortNozzleTipPosition
25	StbdNozzleTipPosition
26	GroundSpeed
27	GroundDistance
28	NetTurnsCounter
29	burialDepth
30	LateralDisplacement
31	KVHShipHeading
32	PenetrometerN1Factor
33	PenetrometerN2Factor

34	PenetrometerExtensionPressure
35	PenetrometerCurrentPressure
36	PenetrometerCurrentDepth
37	PenetrometerkPa1
38	PenetrometerkPa2
39	PenetrometerMaxkPa1
40	PenetrometerMaxkPa2
41	PenetrometerPsnAtMaxDepth1
42	PenetrometerPsnAtMaxDepth2
43	ROVTelemetryState

The Output data telegram contains the following data;

Field	Data
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0	\$NORCLOG
1	ship heading
2	ship lat (dd mm.mmmm)
3	ship longitude (dddmm.mmmm)
4	rov lat (ddmm.mmmm)
5	rov longitude (ddd mm.mmmm)
6	rov kp