Seanet Pro

(Survey Data Acquisition and Logging) Software

Operator Manual

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WARRANTY STATEMENT

Tritech International Limited herein after referred to as **TIL**

TIL warrants that at the time of shipment all products shall be free from defects in material and workmanship and suitable for the purpose specified in the product literature.

The unit/system warranty commences immediately from the date of customer acceptance and runs for a period of 365 days. Customer acceptance will always be deemed to have occurred within 72 hours of delivery.

Note: Any customer acceptance testing (if applicable) must be performed at either TIL premises or at one of their approved distributors unless mutually agreed in writing prior to despatch.

Conditions:

These include, but are not limited to, the following:

1   The warranty is only deemed to be valid if the equipment was sold through TIL or one of its approved distributors.

2   The equipment must have been installed and commissioned in strict accordance with approved technical standards and specifications and for the purpose that the system was designed.

3   The warranty is not transferable, except or as applies to Purchaser first then to client.

4   TIL must be notified immediately (in writing) of any suspected defect and if advised by TIL, the equipment subject to the defect shall be returned by the customer to TIL, via a suitable mode of transportation and shall be freight paid.

5   The warranty does not apply to defects that have been caused by failure to follow the recommended installation or maintenance procedures. Or defects resulting from normal wear & tear, incorrect operation, fire, water ingress, lightning damage or fluctuations in vehicles supply voltages, or from any other circumstances that may arise after delivery that is out with the control of TIL.
        (**Note:** The warranty does not apply in the event where a defect has been caused by isolation incompatibilities.)

6   The warranty does not cover the transportation of personnel and per diem allowances relating to any repair or replacement.

7   The warranty does not cover any direct, indirect, punitive, special consequential damages or any damages whatsoever arising out of or connected with misuse of this product.

8   Any equipment or parts returned under warranty provisions will be returned to the customer freight prepaid by TIL

9   The warranty shall become invalid if the customer attempts to repair or modify the equipment without appropriate written authority being first received from TIL.

10   TIL retains the sole right to accept or reject any warranty claim.

11   Each product is carefully examined and checked before it is shipped. It should therefore be visually and operationally checked as soon as it is received. If it is damaged in anyway, a claim should be filed with the courier and TIL notified of the damage.

Note: TIL reserve the right to change specifications at any time without notice and without any obligation to incorporate new features in instruments previously sold.

Note: If the instrument is not covered by warranty, or if it is determined that the fault is caused by misuse, repair will be billed to the customer, and an estimate submitted for customer approval before the commencement of repairs.

F167.1

Safety Statements

<table>
<tr>
<td>⚠️ **Caution!**</td>
<td>*Throughout the manual certain safety or operational related comments and requirements will be highlighted to the operator by indications identified by the adjacent symbol and text.*</td>
</tr>
</table>

Technical Support

Contact your local agent or Tritech International Ltd

✉	**Mail**	*Tritech International Ltd.* Peregrine Road, Westhill Business Park, Westhill, Aberdeen, AB32 6JL, UK
☎	**Telephone**	++44 (0)1224 744111
	Fax	++44 (0)1224 741771
💻	**Email**	support@tritech.co.uk
	Web	www.tritech.co.uk

An out-of-hours emergency number is available by calling the above telephone number

If you have cause to use our Technical Support service, please ensure that you have the following details at hand **prior** to calling:

- System Serial Number (if applicable)
- Fault Description
- Any remedial action implemented

Due to the expansion of equipment capabilities and the fact that new sub-modules are continually being introduced, this manual cannot detail every aspect of the operation.

The name of the organisation which purchased this system is held on record at *Tritech International Ltd*. Details of new software and hardware packages will be announced at regular intervals. Depending on the module, free upgrades will be offered in keeping with our policy of maintaining the highest levels of customer support.

Tritech International Ltd can only undertake to provide software support for systems loaded with Operating System and Tritech Seanet software in accordance with the instructions given in the System Re-installation section of this manual. It is the customers responsibility to ensure the compatibility of any other package that they may choose to load unless with the prior consent of *Tritech*.

1 INTRODUCTION

1.1 GENERAL OVERVIEW

The 'Seanet Pro' data acquisition and logging software was designed on the back of many years of knowledge and experience in the subsea survey industry. Seanet Pro is the latest in a line of similar survey packages from Tritech and follows on from previous 'WINSON' and 'SONV3' surface display applications. Much of the functionality of these earlier packages has been built into Seanet Pro, with the advantage of several new device interfaces designed and built into an easy to use Windows User Interface.

It is possible to transfer sensors such as SeaKing and SeaPrince heads between the earlier 'SONV3' system and 'Seanet Pro'. Transferring heads will usually first require a device re-program which is handled in the Setup application of each system. Ensure that when transferring heads they appear in the Setup node table with Status of "OK" (Seanet) or "Upto date" (SONV3).

> ⚠️ **Caution!**
>
> *Many newer devices such as Sub Bottom Profiler and SeaHub will only operate under Seanet Pro. If in doubt, contact Tritech Technical Support for more details.*

- **Advantages**

  - ➢ **Integration into latest Windows Operating Systems (2000/XP).**

  - ➢ **New and intuitive look and feel.**

  - ➢ **Faster and more powerful program interface.**

  - ➢ **Window resizing and multi-display capablity.**

  - ➢ **LAN interface options for network remote access.**

  - ➢ **On-screen toolbars with quick access buttons for Logging, Printing etc.**

  - ➢ **On-screen "elastic-band" target measurements and markers.**

  - ➢ **Video interfacing.**

  - ➢ **Sonar scan enhancement tools.**

  - ➢ **Sonar true acoustic zoom function.**

  - ➢ **New Parametric Sub-Bottom Profiler application.**

  - ➢ **Improved serial device input and display.**

  - ➢ **Integration and conversion of position data input.**

- **Versatility**

The Seanet Pro software can simultaneously run and display several combinations of Imaging Sonar, Profiling Sonar, Bathymetric & Oceanographic package and Sidescan together.

- **High speed communication**

The Seanet interface uses a very fast ArcNet communications to the subsea devices allowing a standard data rate of 156kBaud (max cable length 1200m) with options for fibre-optic interfaces and other Baud rates available for longer cable lengths.

- **Display resolution**

The Seanet Pro software is able to run on a SVGA monitor at up to 1280 x 1024* screen resolution. The Seanet operating software will run on any number of display colours – this is a marked improvement on the SONV3 revision of software which required a fixed 256-colour display setting.

- *For clarity, a resolution of 800 x 600 is recommended.*

- **Digital recording of data**

The Seanet Pro software has a data logging and playback facility that can be used to record and replay back all data from subsea sensors such as SeaKing DFS Sonar, DFP Profiler, Sidescan and Bathy. As well as sonar data, other data including NMEA 1083 may be recorded.

- **RS-232 Interfaces for survey data**

Data collected from the subsea devices can be made available on one or more surface RS-232 ports for survey integration purposes.

- **Downloading software to subsea sensors**

Facility, using the Seanet Setup application, to download new software and firmware upgrades into the Subsea sensor heads onboard Flash RAM / FPGA module.

2   INSTALLATION & CONFIGURATION

2.1   CONFIGURATION DETAILS

The Seanet Pro software will be supplied on an Installation CD (PC systems) or ZIP Restore Disk (SCU systems). Also provided on these disks will be electronic copies of manuals and required drivers for AIF cards, SeaHub etc.

At regular intervals, updated versions of the Seanet Pro software will be announced by Tritech. Free upgrades will be offered to existing users; this is in keeping with our policy of maintaining the highest levels of customer support. Such updates will be made available for download from the Tritech web-site (www.tritech.co.uk).

2.2   HARDWARE SPECIFICATIONS

The Seanet Pro software should be installed on a system with the following minimum specification;

- ❑   Pentium III 800MHz or equivalent recommended.
- ❑   Windows 2000 / XP.
- ❑   128MB RAM (256MB recommended).
- ❑   800 x 600 Resolution or above, High or True Colour recommended.
- ❑   30MB free Hard Disk space (plus additional for logging).
- ❑   CD Drive for PC installation (ZIP drive on Seanet SCU).
- ❑   Minimum 1 spare PCI bus slot for AIF V4 Card, or spare USB 2.0 Port for SeaHub interface, or 9-pin RS-232 'D' port for SKIM-100 interface.
- ❑   Available Serial Port(s) for optional 3rd party survey/device interfaces.

⚠ **Caution!**   ***The Seanet Pro software was available for installation on the Windows 98 platform up to (and including) Version 1.13 of the product. Due to the discontinuation of Windows 98 and related support issues, current versions of Seanet Pro will no longer install on this platform.***

2.3   SOFTWARE INSTALLATION

The Seanet Pro 'Windows' software can either be installed on Tritech Seanet SCUs installed with the XP$^{®}$ Embedded operating system installed, or alternatively be installed to a PC based surface unit or Laptop computer.

2.3.1   SeaNet SCU Installation

The SeaNet SCU will be pre-installed with Windows XP Embedded operating system and Seanet Pro software. The system software is installed from a bootable Zip Restore disk which is loaded and retained on the SCU Flash Disk. During the restore process, the Flash Disk is wiped and then installed with the factory configured XP Embedded OS and Seanet Pro software.

⚠ **Caution!**   ***Consult the Seanet XPE SCU System manual for more details and guidelines on Installing, Re-installing or Repairing the software build including Windows XPE Operating System and Seanet Pro software.***

2.3.2 PC / Laptop Installation

The PC / Laptop computer should be loaded with a standard version of Windows 2000 / XP. If for any reason it is necessary to reload the Seanet Pro software, this should be done using the Installation CD supplied. Follow the setup dialog during installation.

The Seanet Pro software can be installed or reloaded as follows…

1) Insert the "Seanet Pro" Installation CD into the PC CD-ROM drive. If the CD Autoruns then a menu page will appear prompting to select the installation type.

    If Autorun is disabled on the PC, then manually run the 'Setup.Exe' file to begin the installation.
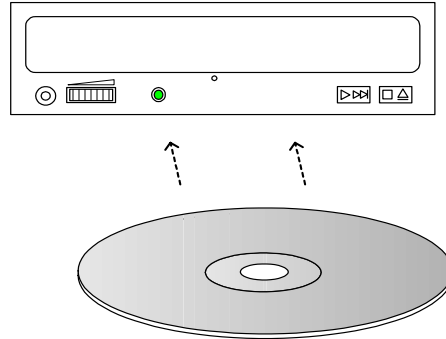
2) There are 2 **Seanet Pro** installation types;

  i. For SeaHub or SKIM-100 interfaces, or direct COM Port connections, Select the "**Serial RS232 Installation**" type.

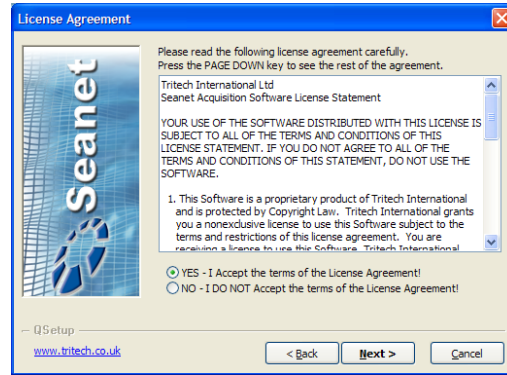 ii. For AIF Card interfaces, select the "**AIF Card Installation**" type.

Important: *To Install the Seanet software, the PC must be logged on with Administrator rights.*

3) When the installation program starts, click "Next" to continue.

4) Read the license agreement, then select the "YES" option, before you can click "Next".
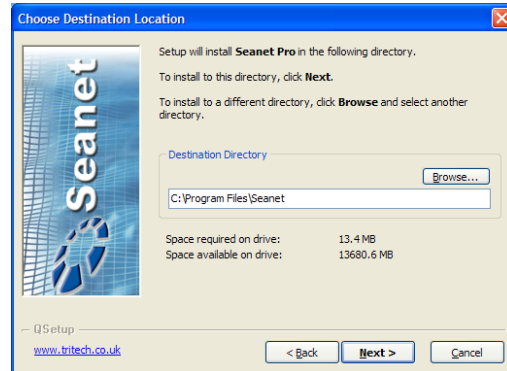
Click "Next" to continue.

5) Choose the installation destination directory. By default this will be "C:\Program Files\Seanet".

Click the browse button if you wish to change this location.

Click "Next" to continue.

6) Installation will proceed to copy program files and drivers onto your computer. Entries will be made in the Windows Registry. This process may take several minutes.

Two desktop icons will be created during the installation;

i. '**Seanet Pro**': This is the main data acquisition and logging application.

ii. '**Seanet Setup**': This application is used to verify device connection, re-configure devices and re-program them with updated software.

7) Once files are copied, you will be prompted to restart the PC. Click "Finish" to reboot immediately. Rebooting may be deferred by selecting "No", then clicking "Finish".

8) The Screen resolution should be set to a maximum 1280x1024 at either 16-bit or 32-bit colours.
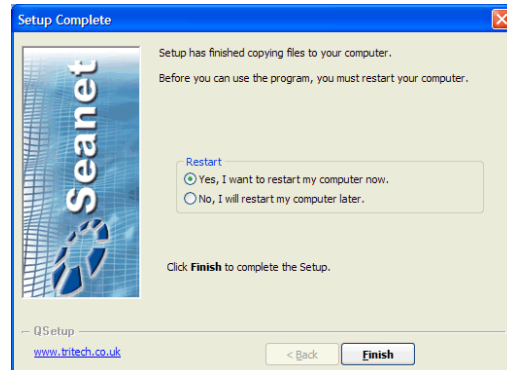
2.3.3 Uninstalling the Software

To Remove the Seanet Pro software…

1) Open the Windows "Control Panel", and select "Add/Remove Programs".

Add or Remove Programs

2) To remove the Seanet software, select "Seanet Pro" from the list, and click the "Remove" button.

3) When prompted click the "Yes" button to confirm un-installation. Un-installation will commence.

4) Click "Close" when complete to finish the task.
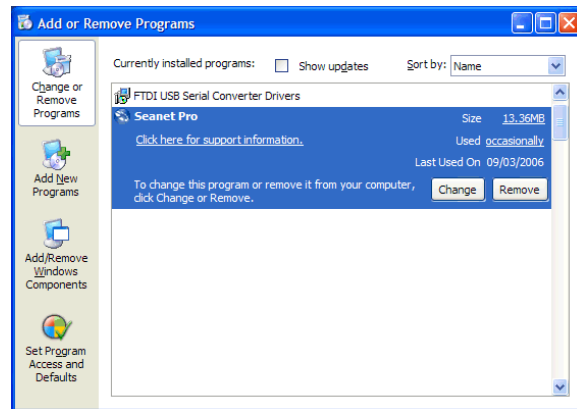
3   OPERATION

3.1   GENERAL INFORMATION & OPERATING DETAILS

Once a system has been installed in conjunction with the relevant sections of this manual, the subsea sensors and optional surface interfaces can be connected and powered. The sensors can be tested in air by powering up and observing that communications is established with the surface Seanet software applications.

When running the Seanet Pro application and with all subsea heads switched on, it may take a few seconds for the heads and other devices such as AIF card, SeaHub, RAT etc to become established and start communicating correctly. Until this time, the Status Bar will display a Timeout ('Timeout Node xx') message for each Node that it is trying to communicate with. These messages will disappear as each subsea element checks out OK.

If the RAT or subsea elements are not powered up, not present, or have a fault somewhere, then error messages (i.e. 'xxx N/A', 'xxx Bad') will be shown in the status bar boxes on the bottom of the display. If error messages appear, check that all the system parts are connected and that all leads/cables are correctly installed. When error messages continue to appear then there is a fault and the Troubleshooting section should be referred to.

The following sections of this manual will describe the general software controls in addition to installation and connection instructions. Further, separate manual sections will describe operation of each of the subsea Sensors and their connection details.

3.2   SEANET SYSTEM DISPLAY

A general description of the screen layout and its controls will now be given. The screen menus and controls can all be accessed with Mouse pointer and keyboard. If the system Remote Access Terminal (RAT) is installed, then subsea device controls such as Gain and Range Scale can be adjusted using the RAT dials and Functions buttons. The RAT Togglestick will provide additional control by providing the Mouse pointer interface.

There are a number of subsea devices that can be connected to the Seanet SCU including Imaging Sonar, Profiler, Bathy and Sidescan. Refer to the Operator's manual section that was supplied with each of these devices for specific details on their screen controls and functions. For the example below, an Imaging Sonar display will be used…

3.2.1 Typical Display

The **Seanet** application can be run from the 'Programs' group in the Windows 'Start' menu or from the desktop by double clicking on the shortcut icon as shown below…

Seanet Pro

The Seanet screen display shown below is an Imaging Sonar application…
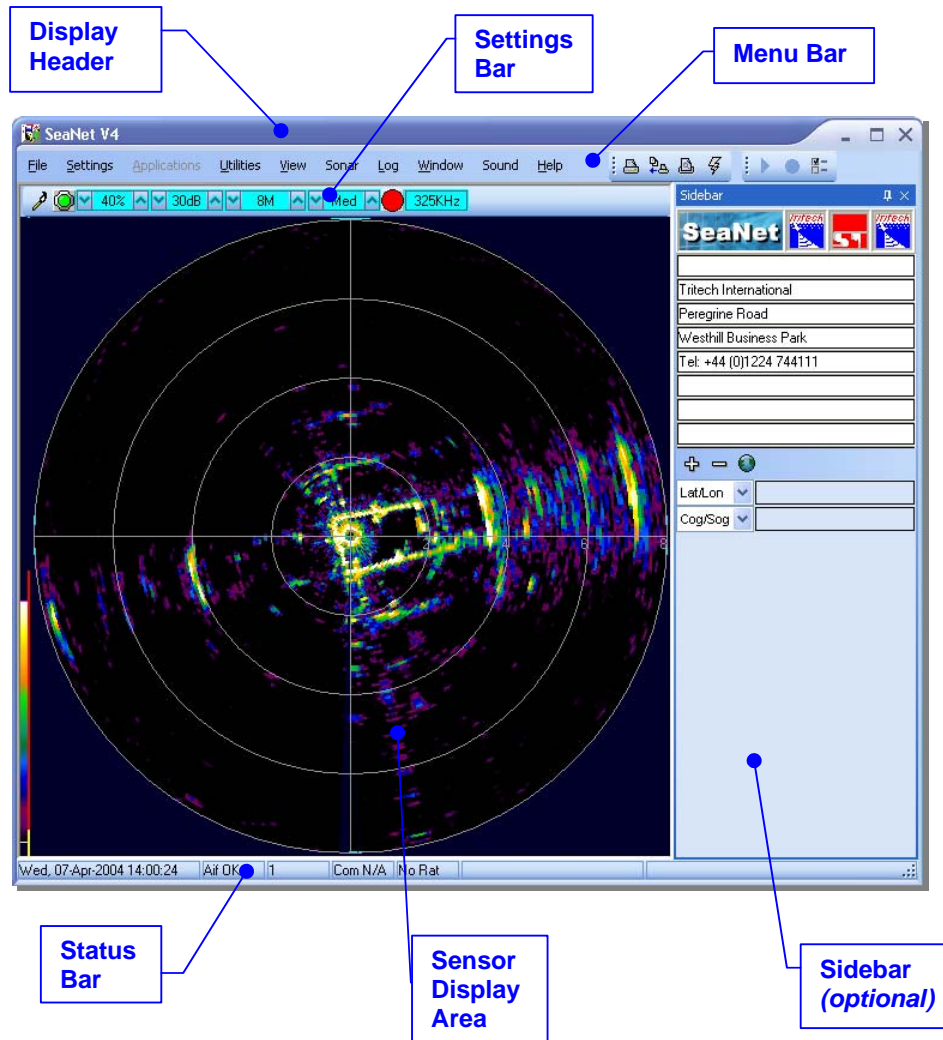
3.2.2 Description of Screen Display and Control Areas

The 6 main areas of the display are…

Display Header
This part of the screen is used for system/software identification.

Menu Bar
This is where system set-up functions can be accessed. Printing, Application selection, Colour Scheme setup and Logging are some of the features that can be accessed in this screen area.

Settings Bar
This is where the Sensor can be controlled and configured. The Settings bar is on top of every display window for each device that is connected to the system. It includes a Tools Setup button, Led indicator (Pause/Go) and RAT dials and buttons

Status Bar
This part of the screen is used to display system status information, typically the AIF card interface status, Logging status/progress and Job specific information.

Sensor Display Area
This part of the screen is where the main Sensor data is displayed. Other pertinent data such as Range Scale, Cursor and status messages pertaining to the Sensor may also be displayed within this area - *Refer to the manual section provided with each Sensor for further details of its display area.*

Sidebar
This is where Serial input data and user text can be displayed. This bar can be placed on the Left or Right hand side with RHS the default setting. The operator can choose to have this bar visible or not and it can also be folded away.

<table>
<tr><td>⚠ <strong style="color:red">Caution!</td><td>Refer to the manual section provided with each Sensor for further details of its specific settings.</td></tr>
</table>

3.2.2.1 Menu Bar Options

The Menu bar provides control over specific sensor features and includes other various menu items including...

<u>F</u>ile

    └→   <u>Exit</u> – Used to exit program.

            <u>Print</u> – Save screen to Bitmap/Tiff or Output to printer *(described later).*

<u>S</u>ettings

    └→   <u>Load/S</u>ave Default – Save and Load the current display and device settings.

            <u>Environment</u> – Used to enter environmental parameters such as system
                              Velocity Of Sound.

            <u>AlwaysOnTop</u> – Main Screen is Always on Top of Windows desktop.

Applications

> This Menu Item will only be present in versions of the Seanet program where more than one display application is available.
>
> Application examples include; 'Single Sonar', 'Sonar Profiler', 'Sonar Bathy Profiler'.

Utilities

> **Compass** – Popup Form to display Compass data received through a COM port.
>
> **Aux Device** – Popup Form to display Aux Device data (i.e. Digiquartz Pressure Sensor or PA/NMEA Altimeter data) received through a COM port.
>
> **Com Setup –** Configure and Enable COM ports for various serial inputs/devices including GPS, Pipetracker and Compass.
>
> **GPS Diag** – Terminal window for viewing received serial data.
>
> **Compass Diag** – Terminal window for viewing received serial data.
>
> **Aux Dev. Diag** – Terminal window for viewing received serial data.

View

> **Sidebar** – Enable/Disable the Sidebar. Note: In certain applications, i.e. 'Sonar Video', the Sidebar will be opened and docked to the blank ¼ window panel filler.
>
> **Toolbars** – There are several Toolbars which can be displayed in the Menu Bar area or even docked to the sides of the Display Area. These Toolbars have 'quick' select buttons for such things as Logging and Printing.

Sonar (this will be renamed for other devices, e.g. "Sidescan", "Profiler", "Bathy")

> **Colours** – Use to select a saved colour scheme.
>
> **Colour Setup** – Use to configure the existing colour scheme or create a new colour scheme.

Log

> **Play** – Use to play back recorded log data *(Follow the on screen display)*.
>
> **Record** – Use to record Sonar data *(Follow the on screen display)*.
>
> **Stop** – Stop recording and/or Auto Logging.
>
> **Setup** – Select file options for recording log files *(Follow the on screen display)*.

Window (only functional in multi-Sensor Applications)

> **Sonar** – Switch focus to Sonar Display window.
>
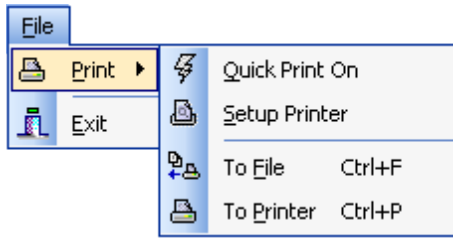> **Other** – This will be replaced with the name of another Sensor when a multi-Sensor application is running.

Help

> **About** – Gives details of program and version number.
>
> **Info** – Gives information of computer resources in use.

3.2.2.2   Print Function

This is accessed via the 'File' – 'Print' menu on the Menu bar…

Quick Print On – This has 2 effects;

When printing 'To File' then a bitmap will be saved to the Log directory with bitmap name having time format.

When printing 'To Printer' then Print Setup dialog box will not appear and default printer and its settings are chosen.

Setup Printer – Select and setup the Windows Printer.

To File – Print screen to a Bitmap or Tiff image file. When 'Quick Print On' = Off, a dialog box will appear where the user can select the file path (Log directory) and bitmap/tiff name.

To Printer – Print to Windows Printer. When 'Quick Print On' = Off, a setup dialog will appear allowing the user to select printer and set it's options before printing.

⚠ Caution!

> *Printing may take a few moments during which sonar updates are suspended. It is therefore not advisable to make printouts during actual underwater operations unless it is safe to do so. Experiment BEFORE going operational!*

3.2.2.3   Environment Setup

This is accessed via the **Settings** -> **Environment** menu on the Menu bar

This is where all the environmental values should be applied for use in various device applications. Only the V.O.S will apply for a Sonar application – the remaining entries are for Bathy calculations.
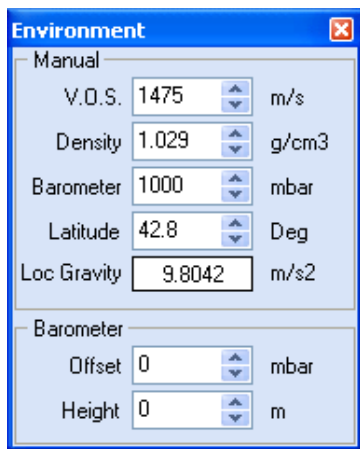
V.O.S. – System value applied to all acoustic devices to correct plotter ranges. Applies to Sonar and Profiler.

Density – Applied to SK701 Bathy (no CT probe) depth calculations

Barometer – Applied to Bathy depth calculations when a Barometer interface is not used. If Barometer interface is installed then **Offset** and **Height** values should be entered.

Latitude – Applied in a **Loc Gravity** calculation which is then applied in Bathy depth calculations.

3.2.2.4 Log Function

This is accessed via the <u>L</u>og menu on the Menu bar…
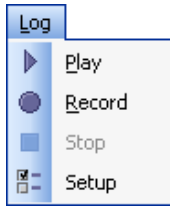
With Logging de-activated, click on **Play** to replay a Log file or click **<u>R</u>ecord** to start recording a new Log file. When a new Log file is opened for recording, the file name will default to a Date and Time format although the User can alter this.
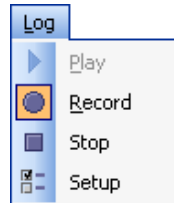
During Recording, the **Play** feature will be locked out and **<u>R</u>ecord** option will be ticked, highlighting a recording is active. During Recording the Status bar (on the bottom of the display) indicates the current Log file size. Clicking on **Stop** and/or Un-ticking <u>R</u>ecord will Stop Recording.
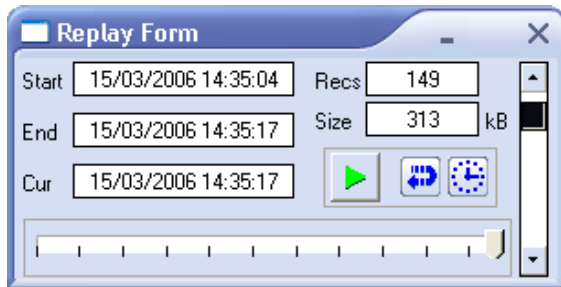
During Log file play back, the file and playback details will be displayed in the 'Replay Form'. The User can **Pause** the replay or select a **Continuous** Loop of the play back. The Slider bar controls the replay speed.
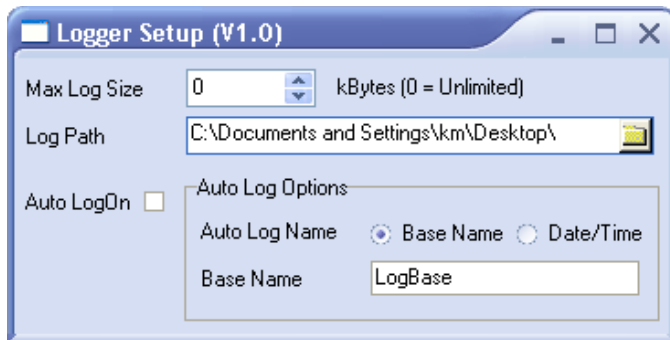
Setup allows the user to define the directory path where log files are to be stored and set a maximum file length.

There is an **Auto LogOn** option to allow auto logging as soon as the system starts. The user can specify a **Base Name** or choose a **Date/Time** format to prefix the automatically generated file names.
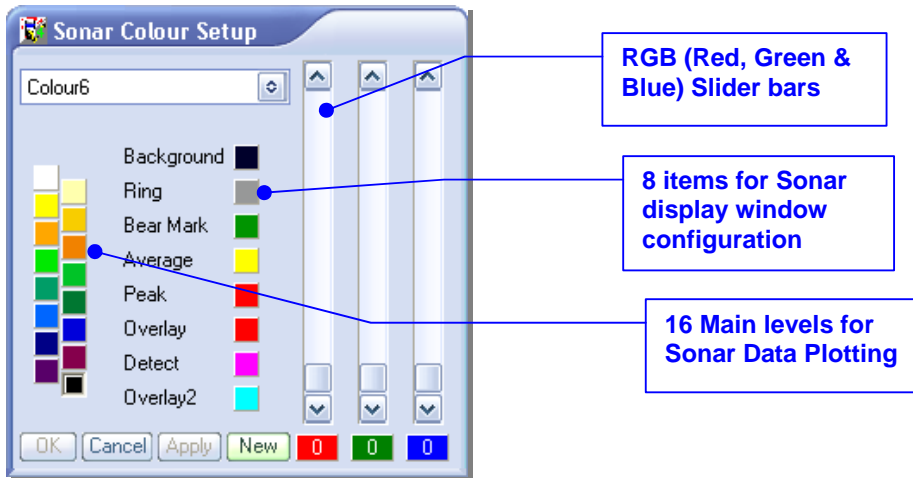
3.2.2.5 Colour Setup

This is accessed via the **<u>S</u>onar** -> **<u>C</u>olour Setup** menu on the Menu bar.

<u>N.B.</u> For other device applications such as Profiler, Bathy or Sidescan, the "Sonar" menu item will be replaced with "Profiler", "Bathy", "Sidescan".

Click on the 'New' button to start a new colour scheme or change the colours of the current scheme (indicated in the drop-down list, 'Default' in this case).
The various colour boxes can be clicked on to configure a new colour for that item. Use the 3 x Slider bars to set the new RGB colour levels for each item and then click on 'Apply' to confirm the changes. Click on 'OK' to accept all changes and exit the 'Sonar Colour Setup' form.

RGB (Red, Green & Blue) Slider bars

8 items for Sonar display window configuration

16 Main levels for Sonar Data Plotting

3.2.2.6   GPS Display

This is accessed via the **Utilities** -> **GPS** menu on the Menu bar.

When enabled, a popup GPS form will be displayed. This will display;

> Top Row (L->R)   :   Latitude/Eastings, Longitude/Northings, Zone.
> Bottom Row (L->R) :   Course Over Ground, Speed Over Ground, Heading.

Also, on the popup GPS form there are 2 buttons;

-   The left 'spanner icon' button is used to select and configure the GPS input port.
-   The right button is for Diagnostics. It flashes green when there is an incoming GPS packet. Clicking on the button will open a terminal window where packets can be viewed.

The GPS Setup menu, accessed by clicking on the 'spanner icon' button, is where the NMEA 0183 message type can be selected…

Click on 'spanner icon' button to open GPS Setup panel.
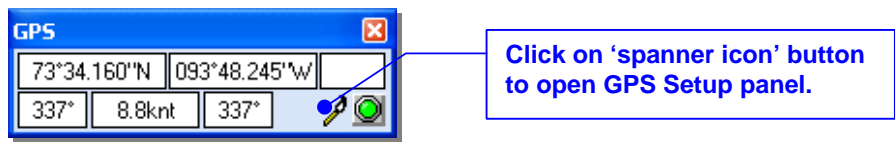
All position data updates displayed in the GPS panel will be recorded when the logging function is used to record device data and GPS data.
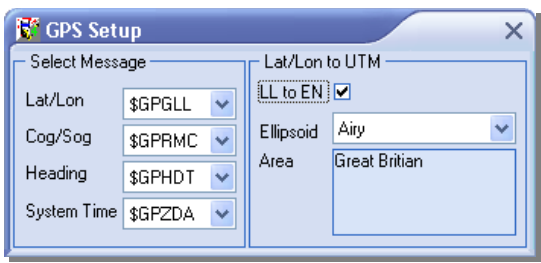

The GPS Setup panel contains 4 drop-down menus for selecting NMEA 0183 message types for Latitude/Longitude, COG/SOG, Heading and setting System Time.

It is possible to set the system time via any of the listed NMEA messages and this will update the clock within the Sensor Device. This is only really beneficial if Log Data containing both Device and GPS position data is to be post-processed.

The right-hand side of the GPS Setup panel includes the option to convert and display the incoming Lat/Lon positions in Eastings/Northings format using a UTM conversion. There is also facility to select the particular Ellipsoid to apply in the UTM conversion equation.
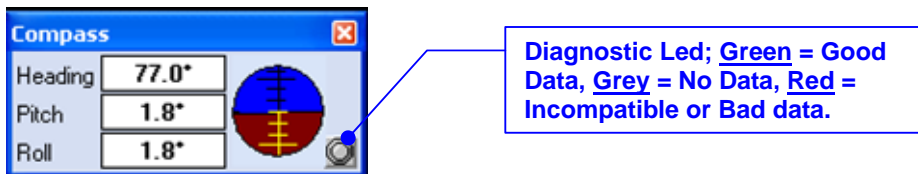
A Terminal window can also be opened to display the incoming GPS data strings. This is opened by clicking on **Utilities** > **GPS Diag**. The terminal window will appear as follows;
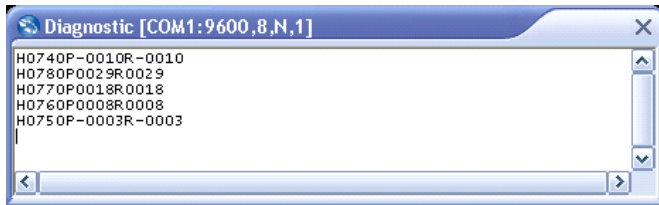
3.2.2.7 Compass Display

This is accessed via the **Utilities** -> **Compass** menu on the Menu bar.

When enabled, a popup Compass form will be displayed. This will display the compass data including 'Heading', 'Pitch', 'Roll' all in degrees.

Diagnostic Led; Green = Good Data, Grey = No Data, Red = Incompatible or Bad data.

All data updates displayed in the Compass panel will be recorded when the logging function is used to record device data.

Also, on the popup Compass form there is a Diagnostic Led/button. It flashes green when there is an incoming GPS packet.

A Terminal window can also be opened to display the incoming Compass data strings. This is opened by clicking on **Utilities** > **Compass Diag**. The Terminal window will appear as follows;
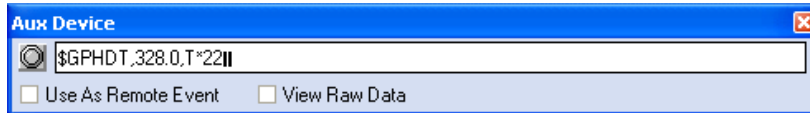
3.2.2.8   Aux Device Display

This is accessed via the **Utilities** > **Aux Device** menu on the Menu bar.

When enabled, a popup Text Box form will be displayed. This can be used to display ASCII character data from a serial 'Aux' device up to a maximum of 100 characters in length and terminated with a <carriage return><life feed>.

The 'Aux Device' form can process and display Altitude data (in metres) from a PA or NMEA Altimeter. Digiquartz pressure data will also be converted to display a Depth in metres. The 'Manual' Density, Barometer and Local Gravity values entered into **Settings** > **Environment** will be applied in the calculation of Depth.

```
Aux Device                                                    ☒
⊙ $GPHDT,328.0,T*22▮▮
☐ Use As Remote Event      ☐ View Raw Data
```
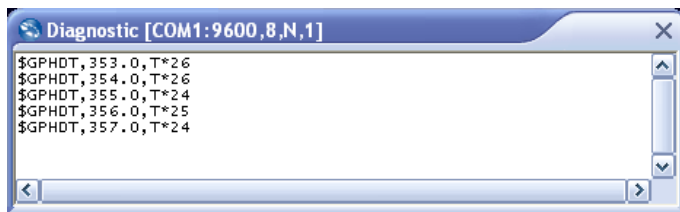
Use As Remote Event - Check to send the 'Aux' device data to the Sidescan Sonar or Sub-Bottom Profiler plotter as a 'Remote Event' for annotation.

View Raw Data – Check to view the raw data string from known devices such as a PA Altimeter or Digiquartz instead of the Seanet processed string.

All data updates displayed in the Aux Device text panel will be recorded when the logging function is used to record device data.
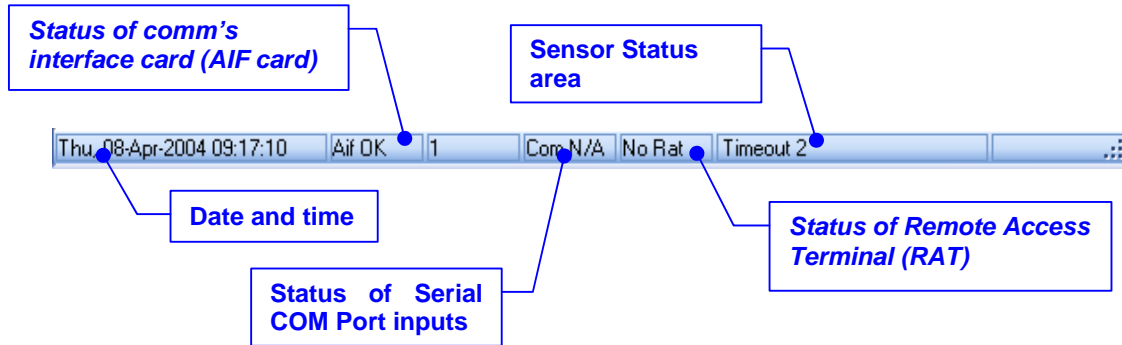
The Diagnostic Led flashes green when there is an incoming Aux packet. The Led's behaviour is the same as for the Compass and GPS Popup forms described above.

Similarly, a Terminal window can also be opened to display the incoming Compass data strings. This is opened by clicking on **Utilities** > **Aux Device Diag**.

```
Diagnostic [COM1:9600,8,N,1]                          ×
$GPHDT,353.0,T*26                                     ▲
$GPHDT,354.0,T*26
$GPHDT,355.0,T*24
$GPHDT,356.0,T*25
$GPHDT,357.0,T*24                                     ▼
◀                                              ▶
```

3.2.2.9   Status bar

Various error codes are reported in the status bar at the bottom of the screen. These help the user determine any faults with equipment or cabling, as a guide to making any corrections or replacements.

Status of comm's interface card (AIF card)

Sensor Status area

Thu, 08-Apr-2004 09:17:10   Aif OK   1   Com N/A   No Rat   Timeout 2

Date and time

Status of Remote Access Terminal (RAT)

Status of Serial COM Port inputs

Status Codes are as follows…

|		
'No Aif'	**:**	The AIF card is not installed or not configured/enabled correctly. This status will also appear when using the SKIM-100 serial port interface instead of the AIF card interface.
'Rat Ok'	**:**	Remote Access Terminal (RAT) is connected and communicating okay.
'Rat N/A'	**:**	RAT is not connected or there is a connection problem.
'No COM'	**:**	Indicates that interface is AIF card and not SKIM-100 serial COM port interface.
'Com OK'	**:**	For SKIM-100 interface; Serial communication between Com Port and SKIM-100 is okay.
'Com Bad' or **'Com AIF Error TMO'**	**:**	For SKIM-100 interface; There is no serial communication between the PC/Laptop COM Port and SKIM-100.
'Timeout 2' /	**:**	There is no communication with head node 2
'Timeout 20' / …etc	**:**	There is no communication with head node 20 / …etc

3.2.2.10 Sidebar

This can be enabled or disabled by toggling 'View' – 'Sidebar' in the Menu Bar. Alternatively the pin button (📌) on the top right of the Sidebar can be toggled to permanently pin or fold away and hide the Sidebar. Additionally, the Sidebar can be picked up by its caption bar and docked to either the Left or Right hand side of the Display Area.
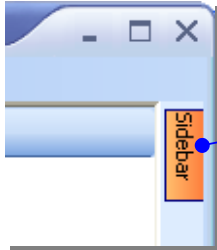
Clicking on the pin button will fold away and hide the Sidebar. Moving the mouse over the orange 'Sidebar' label will roll out the Sidebar. Click on the pin button to permanently pin the Sidebar back in place again.

The Sidebar is the viewing area for Client icons (x3) and User Text boxes (x8). These can be set via a SK REMV4 command (':SB' Set Button Bar) received through the serial COM port – *refer to the V4 Remote Communications section of the manual for more details.*

Also, up to 8 types of pre-determined serial input string may be displayed and these include GPS and Compass data inputs.
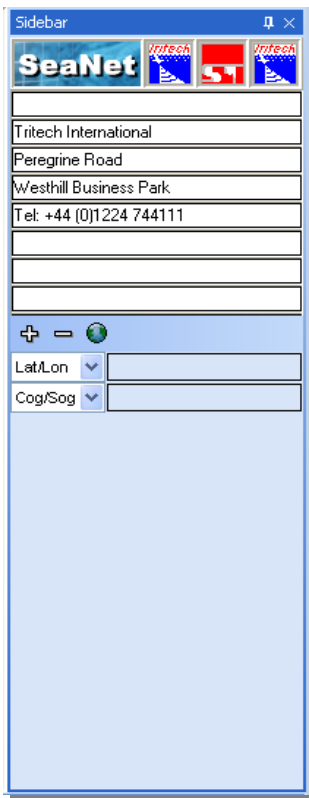
Icons – In addition to the fixed 'Seanet' logo, there are 3 x icons that can be configured by the client. Each icon is 32x32 pixels square and can be loaded by a double-click which will bring up a Load Icon dialog…
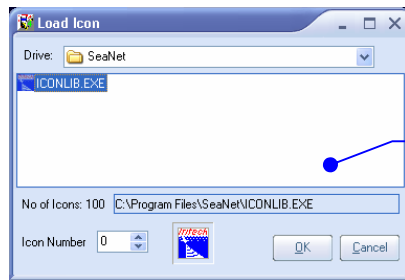
Select Icon Number in an .EXE as shown or select a 32x32 .ICO file to display.

Text Boxes – There are 8 x editable Text boxes which can display job or reminder information. Double-click on each Text box to bring up a Text entry box where text can be entered via keyboard…
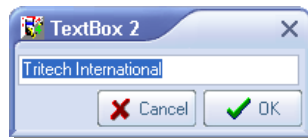
Text can also be passed to these boxes using the ':SB' SK REMV4 serial command which is documented in another manual section.

Serial Input Data – Up to 8 Serial Input display boxes can be selected (+ / -). The drop-down menu in each box will select the particular type of Serial Input to display. 'Lat/Lon' and 'Cog/Sog' from a GPS message are shown, other inputs include Heading from a NMEA "HDT"/"HDM" string, Depth calculated from Digiquartz Pressure Sensor readings and Altitude from a PA or NMEA Altimeter.

Click on the world icon (🌐) to select the GPS message type to display.

To configure a COM Port for Serial Input data, click on 'Utilities' – 'Com Setup' in the Menu Bar. Com Port and GPS Setup is fully covered in another area of this manual.

3.3   CONFIGURING VIDEO INPUT (OPTIONAL)

The Seanet SCU or User PC can be installed with an optional Video Input capture card. This card will receive PAL/NTSC video from a composite source and display the video in a window adjacent to other devices such as Sonar (e.g. select 'Sonar Video' from Applications menu list).
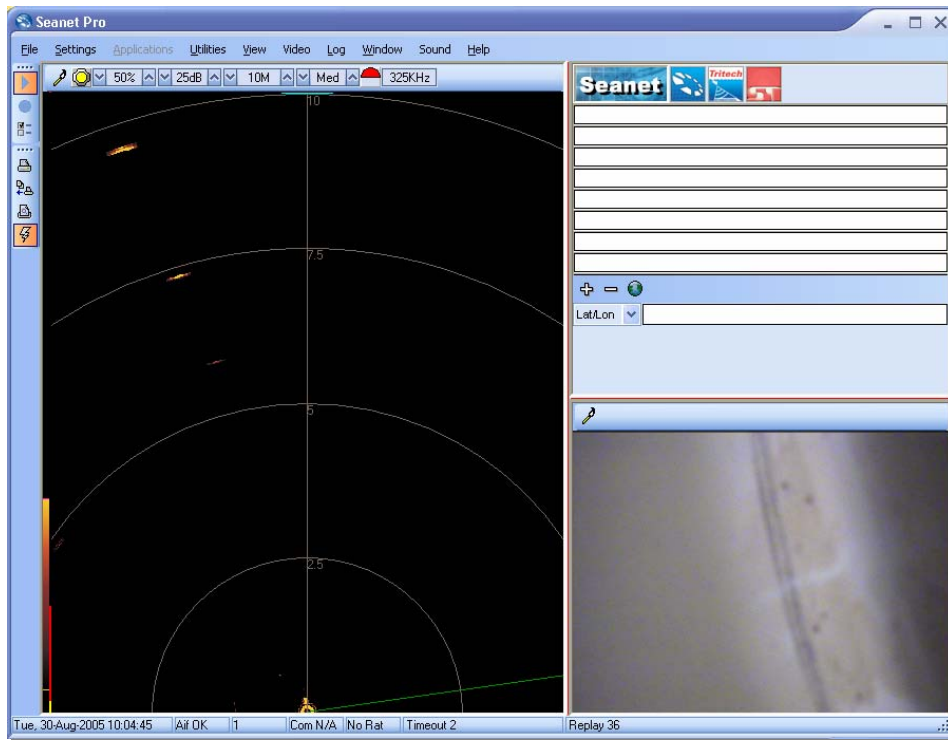

'Sonar Video' Application display screen

The optional capture card (e.g. Hauppauge) will fit into PCI Slot 7 (*see Fig 2.1*). For this, the USB backplane providing 2 of the 4 USB ports (J6.1 / J6.2) must first be removed to make way for the capture card. Once the card is fitted, ensure that the SeaNet SCU is installed from ZIP Restore Disk 5.03 or later. This disk is supplied with the unit and should be located in its flight case. Alternatively, check that the SeaNet SCU is installed with Windows XPE and Seanet Pro V1.12d or later. If an earlier software revision is installed, then the capture card driver will not be included. For further details, contact Tritech support (*see 'Technical Support' contact details at front of this manual*).

3.3.1   Video Application Tools

To configure the video and capture settings, click on the Tools icon on the left of the Video Settings Bar to open the popup menu which includes all the Video Application Tools.

Video Application Tools popup menu
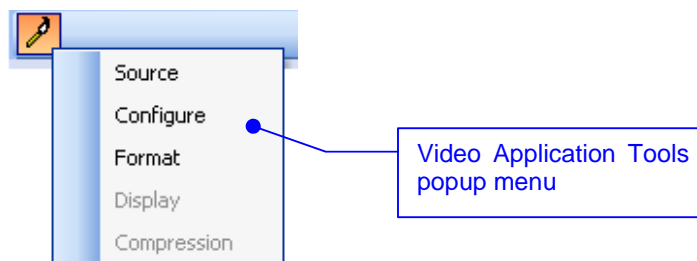
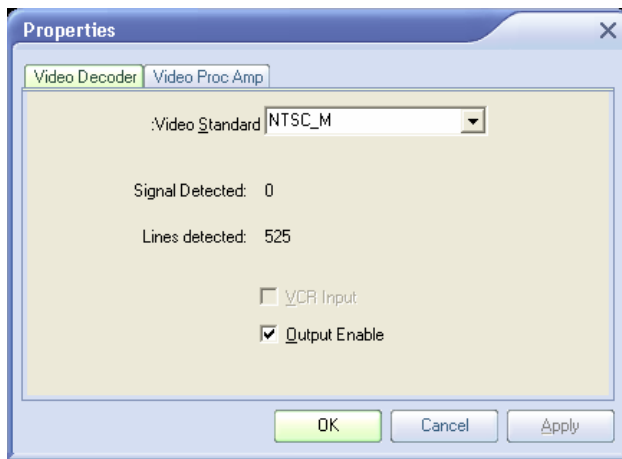**Source** – Select capture device and capture compression.

'Capture Sources' – This selects the Video capture device to which the composite video source is connected. If there is more than one capture device then the user can select from the 'Video' drop down list.

'Compressors' – The SCU will be installed with compressors that are provided with the Microsoft XP Embedded developer kit. Some of these may not be fit for purpose and should be tested before "going live"; video picture distortion and dropped frames may result so test out first.

To enable compression of the captured video, tick the 'Enable' check-box. As default, compression will be disabled (as shown above) and although captured AVI file sizes will be large, this is recommended in most circumstances. Other compressors/codecs can be installed onto the SCU, however if the log files are transferred to another PC for replay ensure this PC also has the codec installed.

Configure – Sets the source video standard and configures video picture.

'Video Decoder' – Select the 'Video Standard' to match the composite video source. The drop-down list contains all the standards that are included with the selected capture device (i.e. from PAL, NTSC, SECAM).

'Video Proc Amp' – These include video picture controls for setting Brightness, Hue and Contrast.

Format – This sets the capture frame rate which is the number of frames per second that is recorded to the AVI capture file. Up to 30 fps is possible although most capture devices will have a limit which may be around 15 fps. A frame rate of 5 fps is recommended as this will give a reasonable motion update and also reduce AVI capture file sizes.

Format

Frame Rate (fps) 5
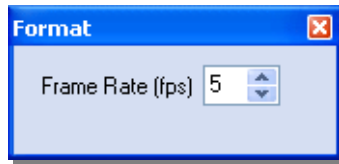
Display – These options are not available for many capture devices which includes the Hauppauge card.

Compression – If a Compressor is enabled (see 'Source' item above) then this menu item will become active if the selected Compressor has available configuration options. Otherwise, the Compression menu item will be greyed out.

3.3.2 Recording the Video

The input video must be recorded alongside other device data such as Sonar. All device data is stored in the Tritech proprietary ".V4Log" log file (see 'Log Function' described earlier). The video is recorded into a separate ".AVI" file which is saved in the same root folder as the ".V4Log" file. The ".AVI" file will be given the same filename as that of the ".V4Log" file.

For example, to start recording, click on 'Log' | 'Record' and set the filename and path for the '.V4Log" file, i.e.

"D:\Logs\Thu_14_Apr_16_07.V4LOG"

… If there is a video input source at the time of recording then video will automatically be recorded with the following ".AVI" file recorded to…

"D:\Logs\Thu_14_Apr_16_07.AVI"

When replaying the data ('Log' | 'Play'), the ".V4LOG" log file is selected and opened. If there is an associated "AVI" file (with same filename) found in the same folder as the ".V4Log" then that ".AVI" file will also be opened and replayed. The playback of both files will be simultaneous and in time synchronisation with each other.

Important: It is not possible to record only Video data and so always ensure that Sonar or other device data is being recorded at the same time. Capturing video data only is possible but not through the Seanet Pro software program; there may be tools supplied with the capture device to provide such options.

4 SEANET SETUP

4.1 CONFIGURATION USING SEANET SETUP

The **Seanet Setup** application can be run to check the status of devices (e.g. AIF Card and Subsea Sensors) currently connected and to perform other changes if directed. COM Port settings are also configured here for input of GPS and other such serial devices where available.

The application program can be run from similar locations as the main Seanet application. The desktop shortcut appears as shown below…

Seanet Setup

When opening the Seanet Setup application, a panel will appear as below...
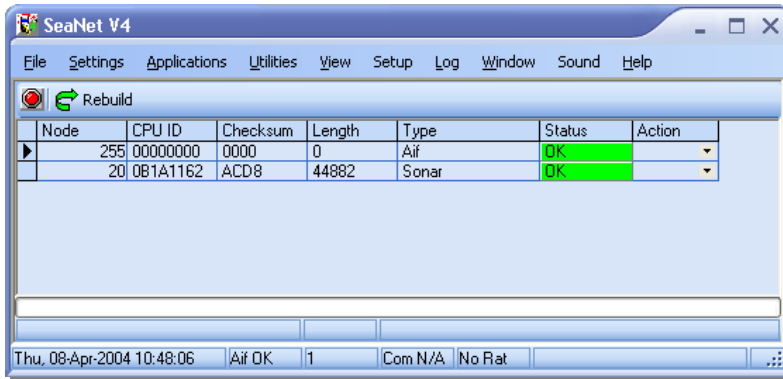
Each head has a node address that allows it to be recognised on the ArcNet LAN communications link. The system is expecting to find a node number of 255 for the AIF card (or 254 for the SKIM-100 module) and then Sensor node number(s); e.g. Node 2 is the Imaging Sonar head, Nodes 20&21 are Master and Slave Profilers, Node 40 is Bathy and Node 10 is Sidescan.

In the Setup table, the **Board Type** and **Action** columns have active drop down menus that should <u>not</u> normally be altered. The CPU PCB inside the Sonar and Bathy devices is modular and these menus allow it to be re-programmed for use in other types of device and other modes.

<u>The user should **not** make any alterations without direct instructions from Tritech International Ltd.</u>

Caution!

The Menu Bar is the same as for the main Seanet program other than a '**Setup**' menu item is added that can be used to view the AIF Card and Bin File Settings.

Setup
    Aif Card
    Bin Files
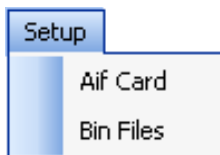
Clicking on 'Aif Card' will open the Aif Setup panel which should have the following default settings…

The AIF Card settings would not need to be changed from default when the card is inserted into the Seanet SCU. The default settings of Io Base = 330, Irq = 10 should always be shown and the 'Enabled' tick-box should always be ticked.

The only circumstances where the settings should be changed are for Aif card insertion into a PC. Also, the Enabled tick-box may be disabled whenever a SKIM-100 serial interface module is used in place of the AIF card.

Also, in the menu is Bin Files. The user should <u>not</u> make any alterations to the Bin Files without direct instructions from Tritech International Ltd.

4.1.1 Re-Programming Nodes

In some cases it may be necessary to update the software program installed within a Sensor or to change its node number. This may be the case particularly when Subsea Sensors are introduced from another system, hired in or taken from a spares pool.

After the Node table is rebuilt in Seanet Setup, the **Status** column of each node should appear as status **OK**. This will confirm that whatever is programmed into that Node is at the same software version as the Seanet program that is loaded onto the PC / Laptop.
However, if the Status box appears with status **Update**, then it means that the Node will need to be re-programmed to match the software version of the current Seanet Program. Even though the Node may operate fully without a re-program, it is always best to update it as will now be described.

To Re-Program a Node…

a) Open the 'Seanet Setup' Program and <u>wait</u> for a few seconds for the Nodes to build.

b) Click on the **Action** column for the Node that has Status of **Update** (Node 2 in this case) and then select **Program**, as shown…
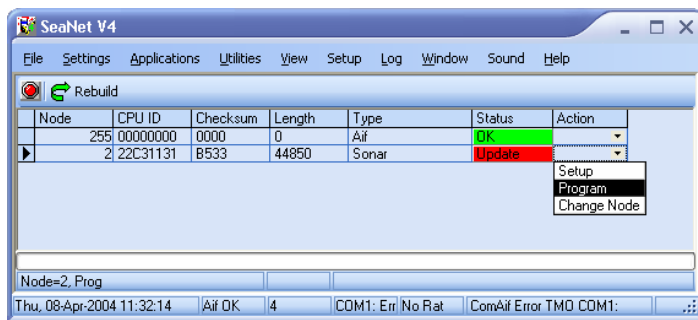

c) Then click on **OK** to confirm the re-Program operation…
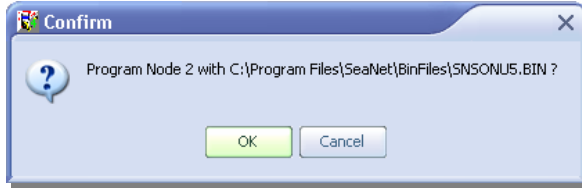
d) The current software program will be downloaded into the Node and this will be displayed on the **Download Status Bar Indicator**.
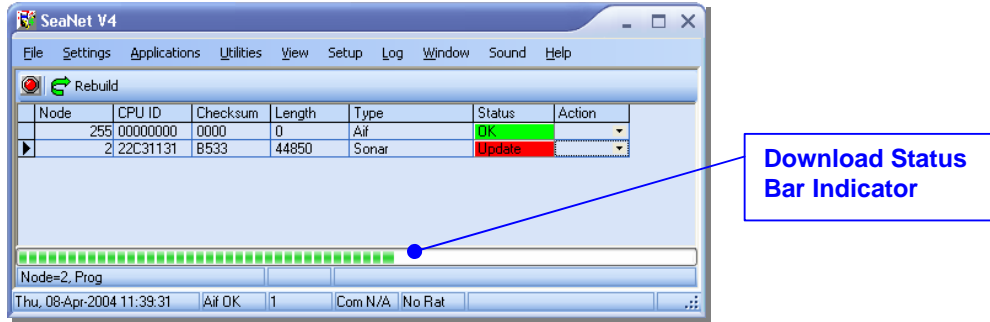
e) Wait until the download has completed and further until the table automatically rebuilds. The Node **Status** should change from Update to **OK** to indicate that the download has been completed.
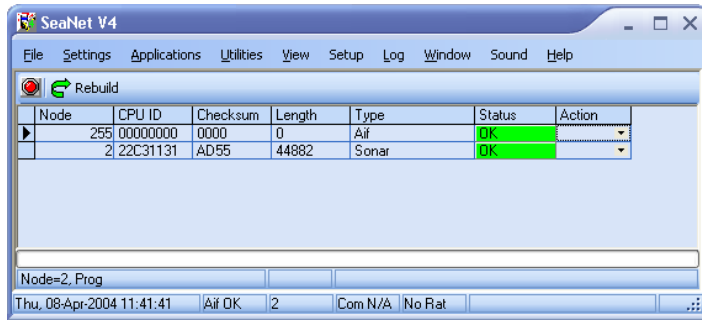
To Change a Devices Node Number…

This should not really be necessary, especially for a single Sonar or Sidescan application, but if a Sensor is ever connected that appears with a different Node number than is required by the Application then it will need node number re-programming.

However, if a multiple Sonar application is running then a situation may arise where 2 Sonars connected have the same node number; i.e. for a Dual Sonar application the Nodes must be 2 and 3. Or, a situation may arise where 2 Profilers are to be operated in a Master and Slave pair (Nodes 20 & 21) but they are both programmed with the same Node number and therefore one Profiler has to have its Node number re-programmed.

- In both of these cases, ONLY connect the Sonar/Profiler that is to be Node number re-programmed and then follow the procedures below to change its Node number.

Caution!

There are different types of SeaKing device that are programmed with different ranges of Node numbers and these devices will not operate with Applications other than their own.
For instance, a Bathy will obviously not operate as a Sonar head if it was re-programmed to Node 2 and operated under a Sonar application.

| Node Ranges:	
SeaKing DFS Sonar	2 – 5
SeaKing DFP Profiler	20 – 23
SeaKing Bathy	40 – 43
SeaKing Sidescan	10 – 11
SeaKing Sub Bottom Profiler	15 – 16

⚠ **Caution!**

> *Only Re-Program to Node numbers that are within the same Node Range.*

a) Open the 'Seanet Setup' Program and <u>wait</u> for a few seconds for the Nodes to build.

b) Click on the **Action** column for the Node that requires its Node Number to be changed (Node 20 in this case) and then select **Change Node**, as shown…
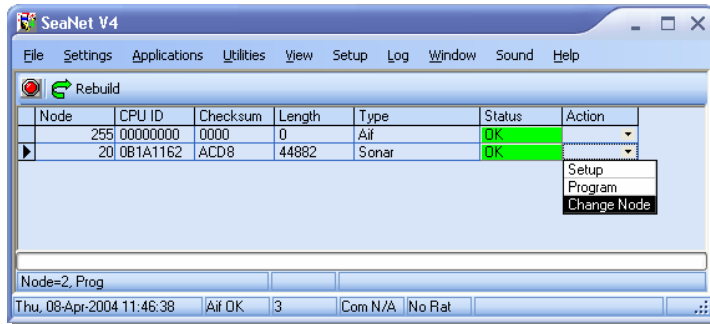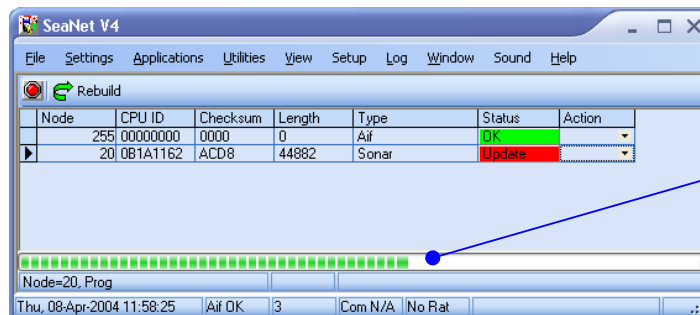
c) Enter the **New Node Number** to be programmed into the device (Node 21 in this case)
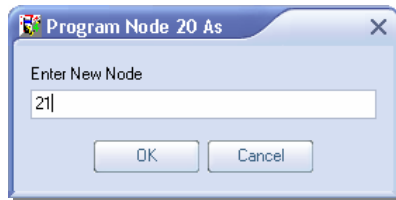
**d)** Then click on **OK** to confirm the re-Program operation.
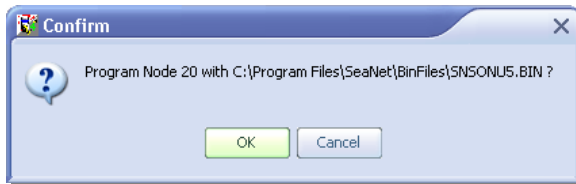
e) The current software program will be downloaded into the Node and this will be displayed on the **Download Status Bar Indicator**.

Download Status Bar Indicator

f) <u>Wait</u> until the download has completed and further until the table automatically rebuilds. The Node **Status** should change from Update to **OK** to indicate that the download has been completed. Press the **Rebuild** display to rebuild the list and confirm that all Nodes are now showing correctly.
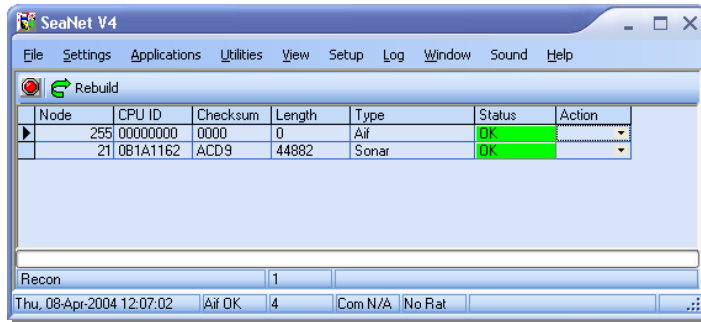

4.2   CHANGING SYSTEM SETTINGS

The system has been factory set and should not need to be altered in most circumstances. However, there may be times when, in particular, Com Ports or Baud rates may need to be changed to satisfy field requirements.

These changes can be made from several locations in the **Seanet Setup** program.

- The **AIF Card** (Node 255) settings can be viewed/changed in the '**Action**' – '**Setup**' drop-down menu item.

- In the **Menu Bar**, there are 2 drop-down lists which each have items for configuring and displaying various system settings…
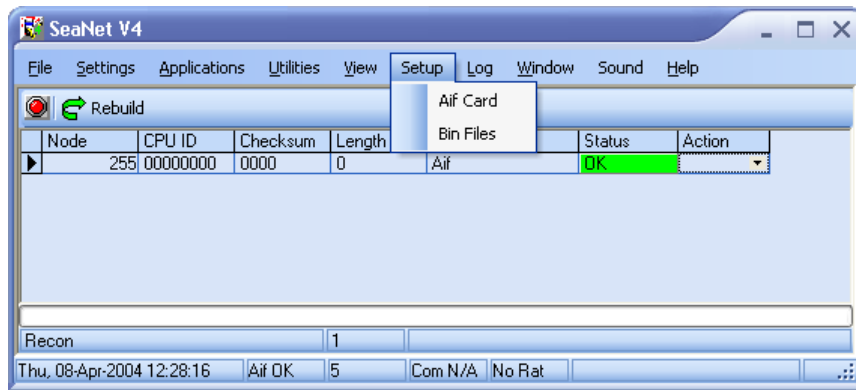
The '**Setup**' drop-down menu has 2 items…

1. '**Aif Card**' – This is used to change the Settings of the Seanet SCU console. In particular, the communications settings for the AIF card (Node 255 as shown above). Default settings should not be altered as stated earlier in this manual.
2. '**Bin Files**' – This is the location and name of all the Device programme files that are used in the system, i.e. the software program that is Programmed into the Sensor heads using Seanet Setup. It will only be necessary to change these if instructed by Tritech International.

The '**Utilities**' drop-down menu includes the following item…

3. '**COM Setup**' – This is where Serial I/O devices, such as GPS and Pipetracker string inputs, can be connected to a COM Port and the Port numbers and Baud rates be configured.

For standard applications, only a few settings will ever need to be changed by the User and these will now be described…
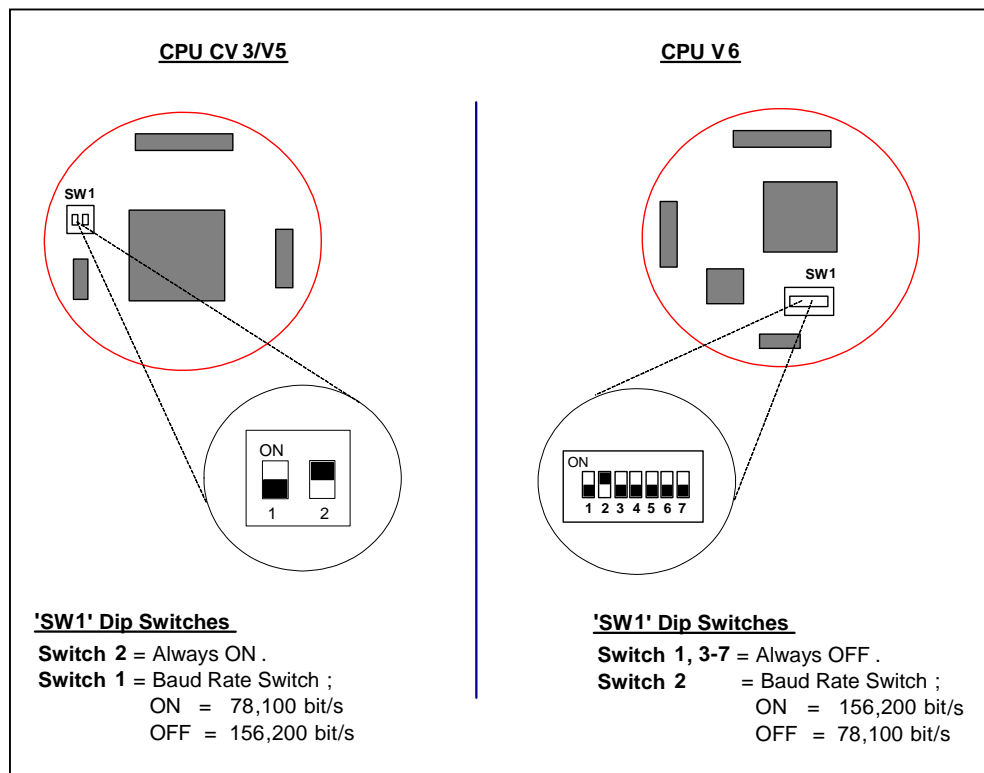
4.2.1 Configuring System Baud Rates

4.2.1.1 Changing ArcNet Baud Rate (i.e. AIF card to Subsea Sensors)

This may be necessary to communicate over cable lengths in excess of around 1.5km. By lowering the ArcNet Baud Rate from the factory default 156kBaud down to 78kBaud (sometimes termed 'Half Baud Rate') the ArcNet will communicate over lengths of twisted pair cabling up to around 2.5km.

The First step is to change the Baud Rate of the Subsea Sensor and this is accomplished through changing the position of a dip switch within the Sensor head…

To change the Sensor Head's ArcNet Baud Rate…

a) The Baud Rate switch is located on the CPU PCB, within the Sensor housing. To access the PCB board-set installed within the Sensor, undo the locking ring situated at the connector end of the Sensor; the locking ring is removed by anti-clockwise rotation. Then remove the connector endcap by pulling on the endcap handle.

b) The CPU PCB is central within the PCB board-set (4 PCBs for Sonar/Profiler, 3 for Bathy)

c) With a small screwdriver, toggle **Baud Rate Switch** of '**SW1**' to the desired position to set the Sensor for ArcNet communications at the new Baud Rate.


CPU CV 3/V5

SW1

CPU V 6

SW1

ON
1 2

ON
1 2 3 4 5 6 7

'SW1' Dip Switches

Switch 2 = Always ON .
Switch 1 = Baud Rate Switch ;
      ON = 78,100 bit/s
      OFF = 156,200 bit/s

'SW1' Dip Switches

Switch 1, 3-7 = Always OFF .
Switch 2   = Baud Rate Switch ;
      ON = 156,200 bit/s
      OFF = 78,100 bit/s

To change the AIF Card ArcNet Baud Rate…

a) Open the 'Seanet Setup' program and ensure that **Node 255** is detected in the table.

b) Click on the **Action** column for Node 255 and then select **Setup**, as shown…
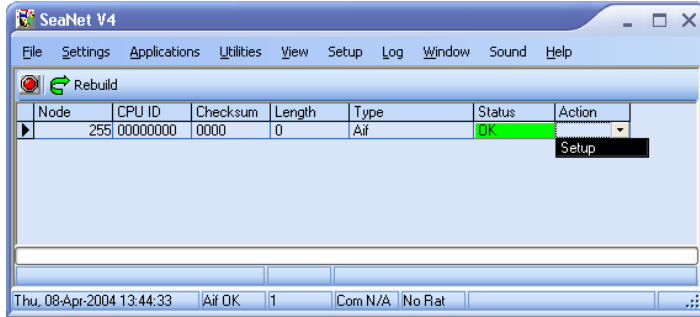
c) The '**Comms Speed**' option buttons select between the Low *('Lo Speed' selected)* and High *('Hi Speed' selected)* ArcNet Speeds. As default, these should be 78 and 156 kBaud respectively which are termed 'Half' and 'Normal' Baud operation. Note: The 'Arcnet Mode' should always be set to Normal Analog unless running through TTL telemetry.
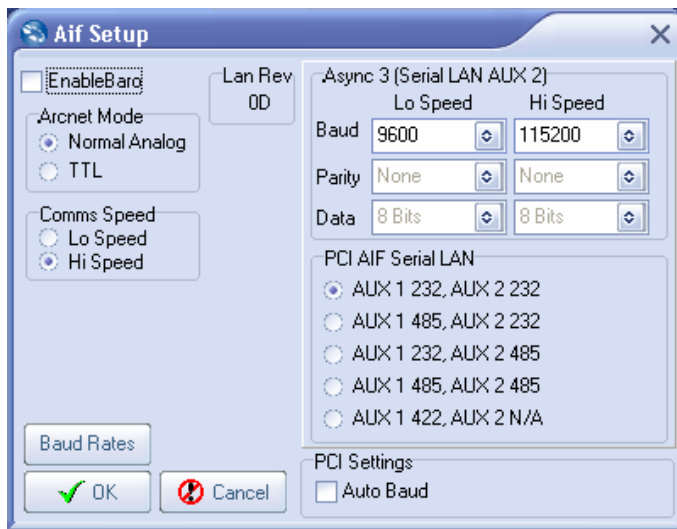
d) Click on the **Baud Rates** button in the next panel to open the **Comms Setup** panel, where you can view the **Lo** and **Hi Speeds** settings…

e) Switching the AIF Card's ArcNet Baud Rate should be performed via the 'Comms Speed' option buttons. Make any changes and select **OK** to exit the **Aif Setup** panel. Changes will then be saved.

f) **Close down** and **re-open** the **Seanet Setup** program to check that the Sensor node(s) are now re-detected in the table at the new Baud Rate.

4.2.2 Configuring a COM Port for 3rd Party Device input

To display (and log) available Serial device data, such as GPS data, along with the Sensor data, a serial COM port must be enabled and configured for this purpose. In the following example, e NMEA 0183 type GPS message is to be received through COM1…

a) Open the Seanet Setup program by clicking on the **Seanet Setup** desktop shortcut.

b) The Menu Bar (described earlier) contains a menu option named **Utilities**. Click on this and then select **Com Setup**…
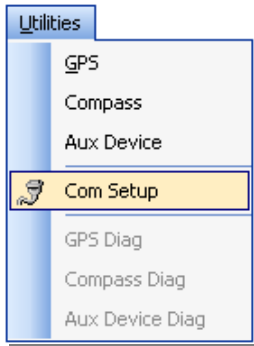
c) The **Channel Setup** panel will be displayed with options to enable and configure COM Ports for available devices. For instance, to setup COM 1 for GPS input, first ensure that the **Enabled** check-box is ticked (as shown below). Set the **Baud Rat**e and ensure that the **Status** displays 'Available' (else select another COM Port).
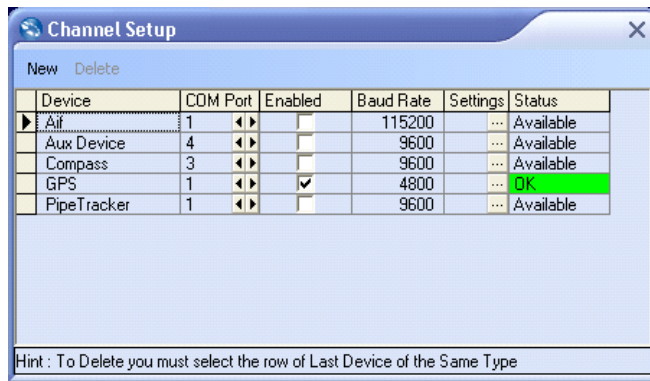
d) Then, click on the **Settings** ellipsis button (…) to open the **Communication Settings** panel to configure the port, i.e. the COM Port number and Baud rate can also be viewed/changed.
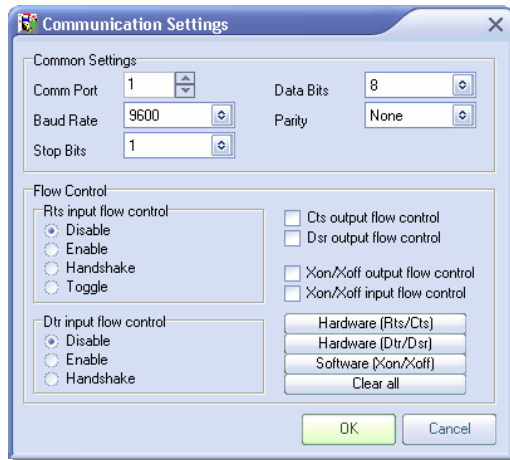
Caution! | *Only Comm Port and Baud Rate should need to be changed*

5   TROUBLESHOOTING

Symptoms:

1.   *Failure to boot-up.*
Check that all internal boards and connectors are correctly in place and firmly secured.
Particularly if the system has been recently moved or subjected to any shock loads.

2.   *Continuous Status "Timeout" messages.*
This indicates that there is no communication with the device flagged.
Check the power and communications links to the Subsea Sensor for continuity and for correct polarity, voltage and ensure that the power supply can provide sufficient current to power all devices. If necessary refer to the service section to check that the head internal fuses have not blown. If this occurs on first installation pay particular attention to cable terminations and check that you are not exceeding the recommended cable length (1200m using the standard Baud rate).

If a cable flood is suspected, then the conductors will need to be insulation tested; the subsea units must be disconnected from the surface interface (i.e. Seanet SCU, AIF, SeaHub, SKIM-100 or PC Port).

⚠️ **Caution!**

> *This is especially critical if a cable insulation tester is used to check resistance between conductors, as serious damage to the Scanning/Profiling heads and SeaNet SCU / PC or interface device will occur if the correct procedure is not followed.*

3.   *Other Status Messages.*
Refer to the STATUS BAR Status Codes.

5.1.1   SeaKing Head Status Codes

Code	Possible Reason or Fault giving Error Code
'Centre'	The transducer is not passing through the Ahead position at the correct sequence point. Physical damage internal to the Boot is the most likely cause of this.
'Ping Sync'	This is pertinent to Dual Profiler operation and usually points to a fault with the dedicated wire link that should be present between Pin 5 on the Master and Slave Profiler heads.