Tritech International Limited

Please read this manual carefully before setting-up and using your unit

Seanet Software

Sensor Communication

Operator Manual

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Table of Contents

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HANDLING OF ELECTROSTATIC SENSITIVE DEVICES

ATTENTION

Observe Precautions For Handling
Electrostatic Sensitive Devices

Caution: Certain semiconductor devices used in the equipment are liable to damage due to static voltages.

Observe the following precautions when handling these devices in their unterminated state, or sub-units containing these devices:

- Persons removing sub-units from any equipment using electrostatic sensitive devices must be earthed by a wrist strap via a 1MΩ resistor to a suitable discharge reference point within the equipment.

- Soldering irons used during any repairs must be low voltage types with earthed tips and isolated from the Mains voltage by a double insulated transformer. Care should be taken soldering any point that may have a charge stored.

- Outer clothing worn must be unable to generate static charges.

- Printed Circuit Boards (PCBs) fitted with electrostatic sensitive devices must be stored and transported in appropriate anti-static bags/containers.

F110.1

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

Waste Electrical and Electronic Equipment Directive (2002/96/EC - WEEE)

Tritech International Limited is very aware of its responsibilities to the environment and to the sustainability of the resources of our planet. The European Commission has issued the above Directive in an effort to reduce the impact on the environment due to electronic appliances being committed to landfill after they have come to the end of their useful life.

When the appliance referred to in this manual is no longer serviceable, it MUST NOT be discarded by placing in landfill, dumping in the sea or incineration. SEPARATE collection is mandatory.

The owner of the appliance should either return it and its associated leads & accessories, if appropriate, to Tritech International Limited with a certificate of decontamination (we reserve the right to protect our staff from the effects of any contamination) or sent to an appropriate treatment or recycling agency.

Any goods manufactured after 08/2005 that fall within the scope of the WEEE Directive are marked as shown opposite and will have the date of manufacture and the manufacturer's identification marks.	

Safety Statements

NOTE	*Throughout the manual certain potential problems, or further information relating to the installation, maintenance, understanding or use of the apparatus will be highlighted to the operator by indications identified by the adjacent symbol and text.*
CAUTION!	*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.*
DANGER!	*Throughout the manual certain safety or operational related comments and requirements that could lead to injury or loss of life will be highlighted by the adjacent symbol and text.*

Technical Support

<table>
<tr><td colspan="3" align="center">**Contact your local agent or Tritech International Ltd**</td></tr>
<tr><td>✉ **Mail**</td><td></td><td>***Tritech International Ltd.***
Peregrine Road,
Westhill Business Park,
Westhill, Aberdeen,
AB32 6JL, UK</td></tr>
<tr><td rowspan="2">☎</td><td>**Telephone**</td><td>++44 (0)1224 744111</td></tr>
<tr><td>**Fax**</td><td>++44 (0)1224 741771</td></tr>
<tr><td rowspan="2">💻</td><td>**Email**</td><td>support@tritech.co.uk</td></tr>
<tr><td>**Web**</td><td>www.tritech.co.uk</td></tr>
</table>

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*.

SECTION 1

1.1   GENERAL OVERVIEW

SeaKing systems communicate using an ARCNET LAN protocol @ 156.2kbit/s as standard. RS-232 is an available alternative to ARCNET and can be used with <u>SINGLE</u> head sensor systems.

⚠️ **NOTE**	This RS-232 is not multi-drop and therefore cannot be used for SeaKing systems comprising multiple heads.

This document gives step by step instruction to;

1. Configure a system from ARCNET to RS-232.
2. Change the RS-232 baud rates to match a modem system. (AIF Card)
3. Configure a system from RS-232 to ARCNET.
4. Configure a sensor head to run directly from a PC com port.
5. Change the RS232 baud rates to match a modem system. (Com Port)

1.2   SCU AND AIF CONNECTION

If the system is currently configured for ARCNET communications, changes must be made at software and hardware level to enable the RS-232 communications option and vice versa.

There are 2 styles of AIFV4 card, a PCI version and an ISA version. These refer to differences in the bus connections to the SCU or PC motherboard.
The newer PCI card has some extra features over the ISA card. Therefore this manual covers both versions separately.

Software changes are made in the 'SEANET SETUP' utility program to both AIF card (Node 255) and Sensor head. Hardware changes involve jumper re-configuration on the COMxVx pcb fitted in the SeaKing Sensor head, full jumper arrangements are detailed in the Appendices towards the end of this document.

1.3   COM PORT CONNECTION

Generally it is advised that the SeaKing sensor head communicates to the surface PC or SCU using an AIF card, however it is possible to use the PC com port when the use of an AIF card is not possible.

⚠️ **NOTE**	*Tritech is unable to guarantee that all PC com ports will support direct communication to a SeaKing sensor head. It can be noted that the use of Windows 2000 or XP is preferable to Windows 98 operating systems when configured in this manner.*

Details of the setup are covered in Section 2 of this document.

In the case of direct com port system the Com port must be assigned and baud rate set.

1.4   USING THIS MANUAL

This document is general, therefore many of the sections may not be relevant to your system at all.
If you are using a SCU there will be an AIF inside
1. Use Section 2 to determine which AIF card you are using
2 Decide which comms configuration you wish to use
3. Refer to the index to select the relevant section based on 1) and 2) above

SECTION 2

2.1   IDENTIFYING YOUR AIF CARD

There are 2 types of AIF card which can be used by Seanet software.
The older AIFV4 ISA card which uses the ISA bus connection
Latest SCUs utilise the AIFV4 PCI which uses the PCI bus connection.
Because the PCI card contains extra functions it is important to know which card is fitted when making communication changes.

Both cards have the same connectors on the rear but can be visually identified without opening the SCU.
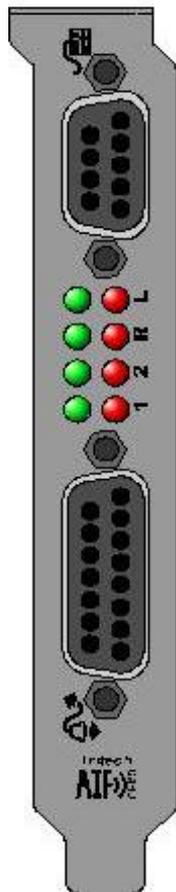
| PCI VERSION | ISA VERSION |

| NOTE | The connector and LED identifying symbols on the PCI card and the D-types are fitted the opposite way round. |
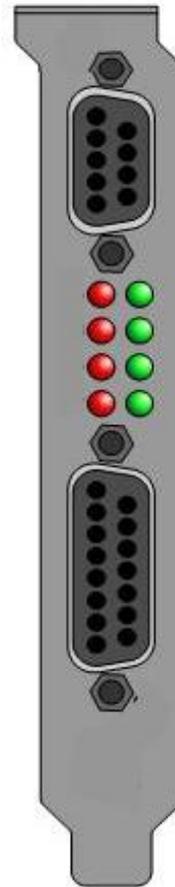
SECTION 3

3.1   CONFIGURING A SCU AND SENSOR HEAD FROM ARCNET TO RS-232 (USING AIFV4 PCI CARD)

The SeaKing Sensor head will use the ASYNC 0 (LAN) serial channel for RS-232 communications.

A short test lead (ARCNET configuration) should be made up to connect between the SeaKing Sensor head and the SCU 15-way 'D' Type connector to enable any head re-programming during the conversion to RS-232. The standard Tritech 6-way connector should be connected to the "MAIN" port on the SeaKing Sensor head. Test lead wiring is as follows;

Tritech 6-pin connector		SCU 15-way "D" type
1		8 [ArcNet LAN A]
2		15 [ArcNet LAN B]
3	24vdc Supply	
4	0v Supply	

⚠️ **CAUTION!**	***IMPORTANT!*** *A termination resistor, of value between 39ohms - 68ohms, must be connected across pins 8 and 15 in the SCU 15-way "D" type connector.*

3.1.1 Configuring the SeaKing Sensor Head and SCU

Start the system. Close the standard program and run the Seanet Setup utility from Windows.

You will see a table showing the different devices connected to the network. **If there are NO entries in the table** then carry out the following checks…

1) Select **Aif Card** from the **Setup** menu option, see below…
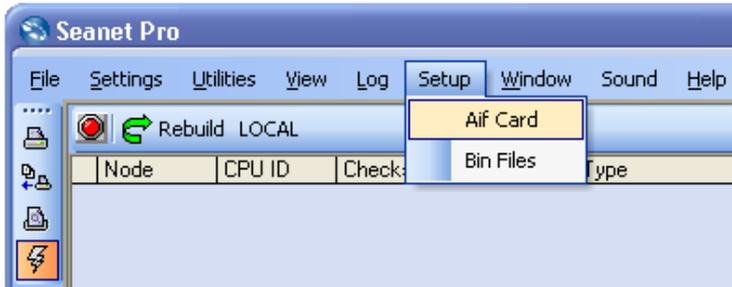
This will open the **Aif Setup** panel…

Ensure that the AIF card has the above check box ticked.
The Irq and Io Base settings are not relevant to the PCI card.

If there are still no nodes in the table then it is likely that the drivers are not installed or there is a conflict. Check Windows Control Panel \ Device manager for any conflicts, re–install the driver if necessary.

When the AIF is detected then the table should look as below…

Node 255:   This represents the surface AIF communications card

SENSOR HEADS

Node 2:	Imaging Sonar head	**Node 40**:	Bathy Sensor
Node 20:	Master Profiler head	**Node 21**:	Slave Profiler head
Node 10:	ROV Sidescan/Towfish	**Node 15**:	Parametric Sub-Bottom profiler head
Node 60:	Pitch/Roll sensor		

The right-most column is labelled **Action** and allows specific setting for that node to be changed.

3.1.2 Programming the Sensor Head(s)

Click on **Action** from the Sensor Head's row and a drop down menu will appear – select the **Setup** menu item to open the **Setup** panel (as shown below).
The Setup panel for the particular head will appear inside which will be a **Baud Rates** button.

Above is an example of a SeaKing Dual Frequency Sonar head pane.

Click on the '**Baud Rates**' button…

In the **Async 0 (Serial LAN)** section, set the Right 'Baud' column to the desired comms rate; 115,200 baud should be default, 38,400 baud or above is necessary if operating an Imaging or Sidescan Sonar as any lower comms rates will slow down the scan update rate (57,600 or above is recommended).

⚠️ **NOTE**	*dip switch bank 'SW1' - on the Sensor Head's CPU pcb - is used to switch between 2 pre-set Baud rates; set in the Left and Right 'Baud' columns:* *It is recommended to retain the left baud setting at 9600 for emergency recovery purposes.*

Press OK twice to exit the panels and the head will automatically be reprogrammed with any changes.

3.1.3 Programming the AIFV4 PCI card.

Unlike the AIFV4 ISA card, the AIFV4 PCI card has 2 Async channels which can be used for sensor communications, AUX1 and AUX 2. This means that the PCI setup panel is slightly different allowing an extra baud rate panel to cater for the second channel.

3.1.3.1 Interface Signal selection for Aux Channels

To configure the Aux channels the AIF baud rate click on **Action** from the AIF's row (Node 255) and a drop down menu will appear. Then select **Setup**…

The **Aif Setup** panel for the AIF card will open, as below

These radio buttons select the interface that the Aux channels will use to communicate. Default is as shown
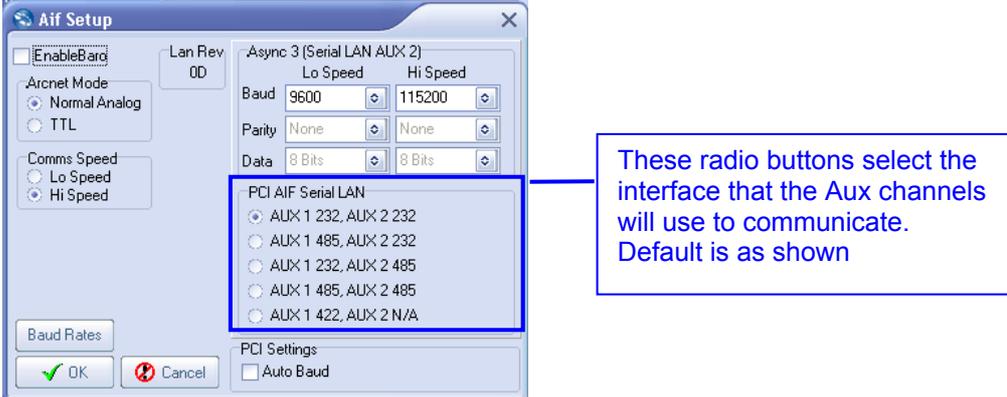
The Aux signal selection allows RS485, RS232 or RS422 interfaces to be made to Tritech sensors.

⚠️ **NOTE**	a) Seaking heads cannot communicate over RS485. b) The RS485 interface is reserved for MiniKing, Micron or SeaPrince heads. c) The RS422 interface utilises both Aux channels and is not compatible with the S1398 subsea RS422 interface card.

3.1.3.2 Baud rate selection for Aux Channels – AUX 1

To configure the Aux 1 channel baud rates click on **Action** from the AIF's row (Node 255) and a drop down menu will appear. Then select **Setup**…

The **Aif Setup** panel for the AIF card will open, as below

Baud Rates button

Click on **Baud Rates** and the standard baud panel will appear.

Async 0 (AUX 1) section

If the **Async 0 (AUX 1)** is to be used, set the Hi Speed 'Baud' column to the desired comms rate; 115,200 baud should be default

3.1.3.3 Baud rate selection for Aux Channels – AUX 2

To configure the Aux 2 channel baud rates click on **Action** from the AIF's row (Node 255) and a drop down menu will appear. Then select **Setup**…

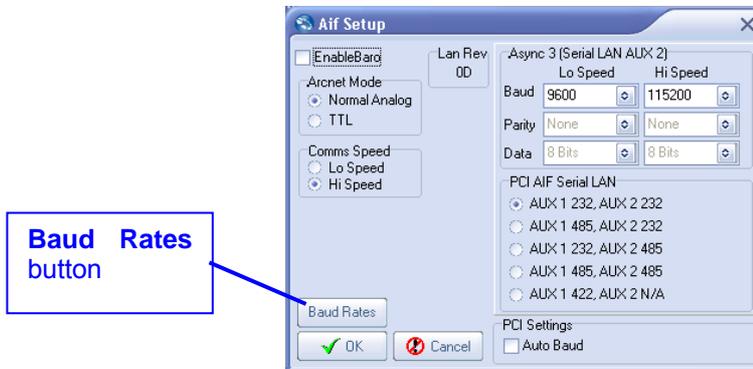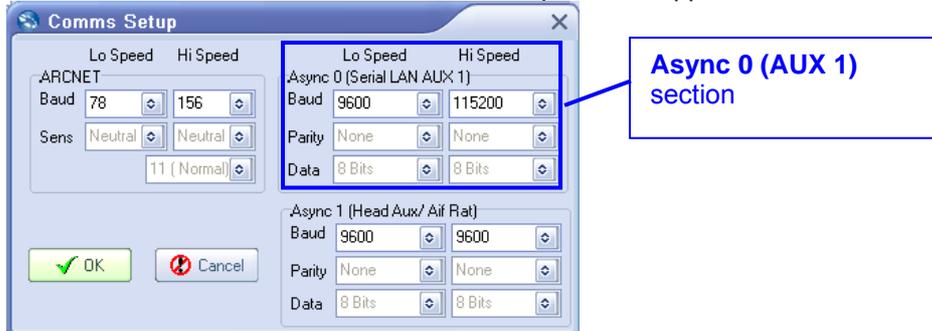The **Aif Setup** panel for the AIF card will open, as below

Async 3 (AUX 2) section
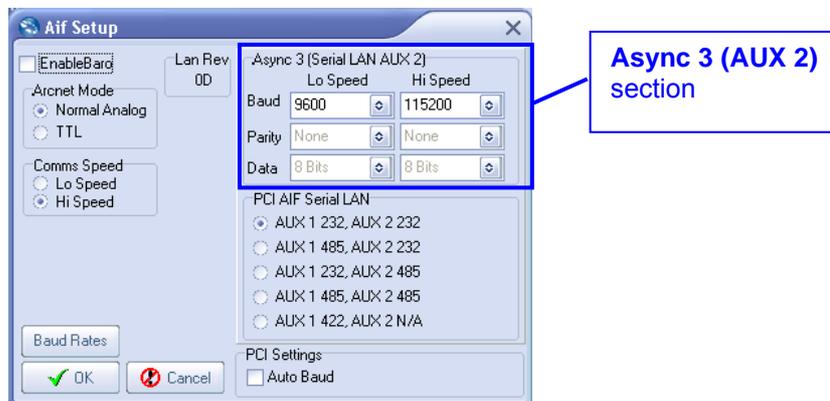
Inside is the Baud Rates for the AUX 2 channel

If **Async 3 (AUX 2)** channel is to be used then the High Speed baud is on the Right side, set this column to the desired comms rate, again 115,200 baud is default

⚠️ **NOTE**	***AIF Note:*** *V4 AIF cards have a radio button in the 'AIF Setup' panel marked "Comms Speed", this performs the same function as dip switch 1 ('SW1') on the Sensor head's CPU pcb (see 'System' manual for more detail)…*
	Set to Hi Speed uses baud rate from the 'Hi Speed' column (user setting)
	Set to Lo Speed uses baud rate from the 'Lo Speed' column (factory setting = 9600)

3.2 SETTING SENSOR HEAD HARDWARE

The AIF card and Sensor head are now ready to communicate as RS-232 but need the correct jumper connections to be made inside the Sensor head.

To access the Sensor head internals, undo the locking ring at the connector end and pull out the electronics block (be careful if Bathy as there is an internal wiring connection). Carefully remove the two nuts and screw pillars securing the board stack and remove the top 3 boards (or 2 for Bathy) leaving the comms board only attached to the endplate (...take care not to lose the spacers!).

Several types of comms board have been used in SeaKing Sonar heads; COMCV3 which can only be used in Imaging Sonar heads (these do not have the pin 5 sync used in the profilers or an RS-485 channel for a bathy altimeter). All other boards can be used in any Sensor head.

- The RS-232 jumper arrangements for **SeaKing** sensor head comm. boards are detailed in **APPENDIX 1** of this manual.

- The RS-232 jumper arrangements for **SeaPrince** sensor heads are detailed in **APPENDIX 3**.

…Refer to these pages now to configure your particular sensor and comms board combination

⚠️ **NOTE**	**After these jumper settings have been made, the system is now ready to operate over RS-232 communications.**

The details connections required to make up a test cable are shown below.

The standard Tritech 6-way connector should be connected to the "**MAIN**" port on the SeaKing Sensor head.

Since there are 2 AUX ports on the AIFV4-PCI card then there are now 2 possible connections that can be made to the card. Be aware that both ports are enabled continuously but they can have different baud rates.

Cable wiring for RS-232 communications to **AUX 1** is as follows;
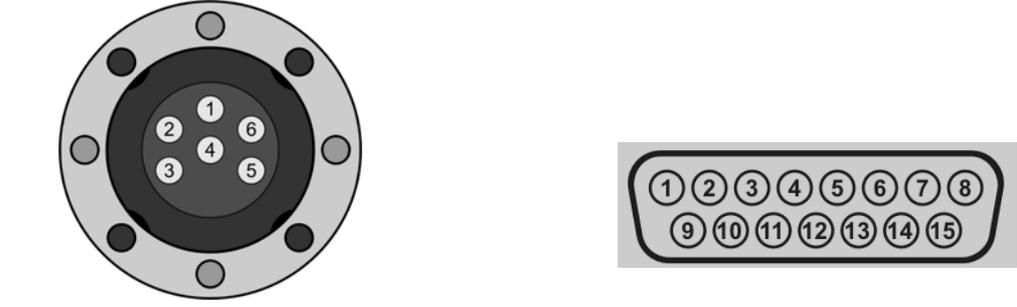
Tritech 6-pin connector			SCU 15-way "D" type
1			13 [RS-232 UP]
2			6 [RS-232 DOWN]
3		24vdc Supply	
4		0v Supply	
5			2 [RS-232 GND]

Cable wiring for RS-232 communications to **AUX 2** is as follows;
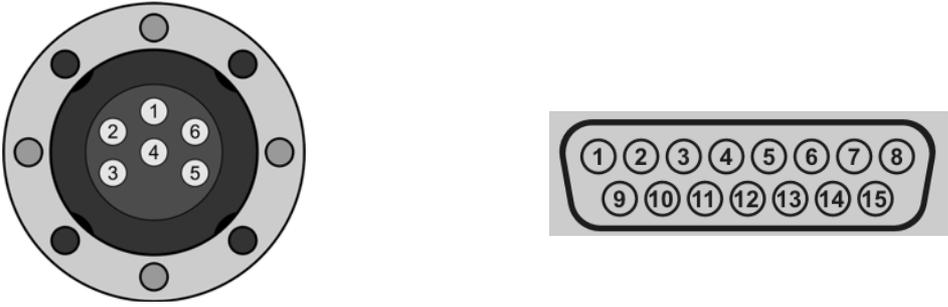
Tritech 6-pin connector			SCU 15-way "D" type
1			5 [RS-232 UP]
2			12 [RS-232 DOWN]
3		24vdc Supply	
4		0v Supply	
5			2 [RS-232 GND]

CAUTION!

Ensure that there is not a yellow waterblock or any internal ARCNET termination resistors fitted to the sensor head before connecting up as RS-232.

SECTION 4

4.1   ALTERING RS-232 TELEMETRY SETTINGS FROM DEFAULT (AIFV4 PCI CARD SYSTEM)

The RS-232 communications rate between SeaKing Sensor Head and Surface Control Unit (i.e. internal AIF card) can be altered if necessary *(factory setting = 115,200)*.

There are options for adjustment between 9,600 and 115,200 bit/s, but it is advisable that only **57,600** or **115,200** bit/s be selected if operating an Imaging or Sidescan Sonar.

⚠️ **NOTE**	*Lower rates than 57,600 will not provide adequate bandwidth for imaging applications. Rates as low as 9,600 bit/s should only be considered for profiling or bathymetry, where transmitted data is considerably less in quantity.*

4.1.1   Changing Sensor Head Baud Rate

There is a hardware switch ("**SW1**") inside the Sensor Head, located on the CPU ("**CPUCV3, CPUV5, CPUV6 or S2CPUD for SeaPrince"**) PCB.

"**SW1**" is used to select between the 2 pre-set communications rates for RS-232.

CPU CV3/V5

CPU V6

'SW1' Dip Switches

    Switch2 = Always ON
    Switch1 = Baud Rate Switch

        ON = Lo Speed
        OFF = Hi Speed

'SW1' Dip Switches

    Switch1, 3-6 = Always OFF
    Switch2 = Baud Rate Switch

        ON = Hi Speed
        OFF = Lo Speed

The baud rate switch should be set to operate on the **Hi Speed** setting.

The RS-232 rate of **115,200** is the factory setting which can be altered if necessary using the **SETUP** program as follows.

    i.   Run Seanet SETUP and locate the row for the **Sensor Node** *(i.e. Sonar = Node 2).*

    ii.   Click on the ACTION column for the node and select SETUP from the list

    iii.   From the Setup panel select Baud Rates

These are the settings for the RS-232 telemetry link to the Surface.
Speed column used by the head is set by SW1 on the CPU pcb. (See above)

It is recommended that the Lo Speed is not changed from 9600. This is intended for emergency recovery use.

    iv.   The **Async 0 (AUX 1)** panel sets the format for the RS-232 telemetry link to the SCU, as shown in the diagram above.

    v.   Change the RIGHT column (Hi Speed) to the required baud rate.

    vi.   After changes have been made, press the **OK** button twice and the node will be reprogrammed automatically.

    vii.   The Sensor head node will disappear from the list and this will confirm that telemetry with the Sensor Node has been lost. Do not worry as this is because both Nodes are operating at different baud rates at this stage.

Now proceed with Step 2 below (4.1.2) and set the surface AIF card (Node 255) telemetry to the same baud rate that has just been set for the Sensor Head.

4.1.2 Changing Baud Rate of AIFV4 PCI card

As aforementioned, there are 2 Aux channels on the AIF card (AUX1 and AUX2).

4.1.2.1   Changing Baud Rate of AIF V4 Card AUX1

On the V4 AIF card the pre-set comm's rates for RS-232 are software switched.

    i.   Run **Seanet Setup** and locate the row for the **AIF Node** *(Node 255)*

    ii.   Click on the **Action** column for the node and select **Setup** from the list

The following panel will appear…

Comms Speed   (RS-232)

Always leave the Hi Speed box checked
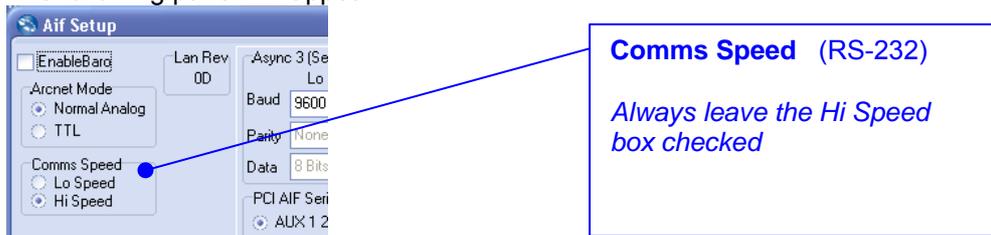
The **Comms Speed** check-box is used to select between the 2 pre-set communications rates for the RS-232.

To configure the **AIF card** AUX1 with the desired RS-232 Baud rate, proceed as follows…

    iii. Click on the '**Baud Rates**' button on the AIF Setup panel.

    iv. The following panel will appear…

These are the settings for the RS-232 telemetry link to the Sensor.

⚠ **NOTE**	***It is recommended that the Lo Speed is not changed from 9600. This is intended for emergency recovery use.***

    v. The **Async 0 (AUX 1)** panel sets the format for the RS-232 telemetry link to the Sensor, as shown in the diagram above.

    vi. Change the <u>Right</u> column (Hi Speed) to the required baud rate.

    vii. After changes have been made, press the **OK** button twice and the card will be reprogrammed automatically.

    viii. If the Setup table's Node list does not update after 10 seconds, press the '**Rebuild**' button. The Sensor Head Node should now re-appear confirming that the surface AIF card (Node 255) is communicating with it over the new telemetry baud rate.

4.1.2.2   Changing Baud Rate of AIFV4 PCI Card AUX2

On the AIF card the pre-set comm's rates for RS-232 are software switched.

    i.   Run **Seanet Setup** and locate the row for the **AIF Node** *(Node 255)*

    ii.   Click on the **Action** column for the node and select **Setup** from the list
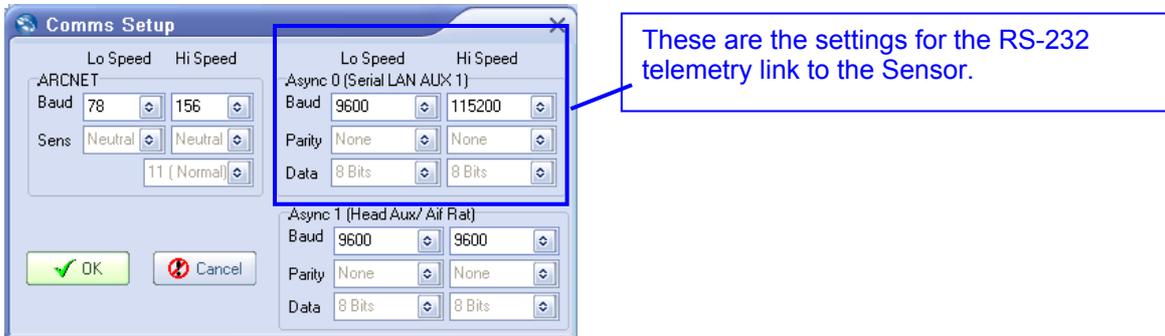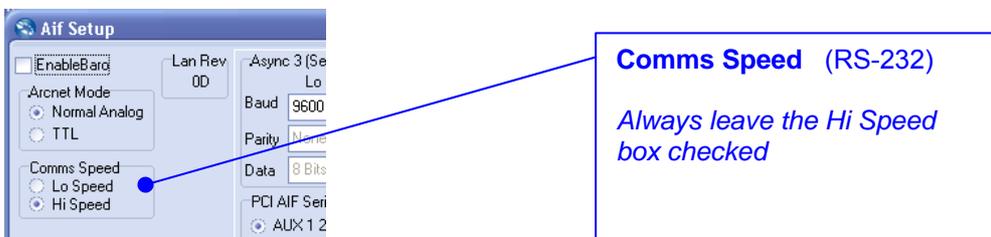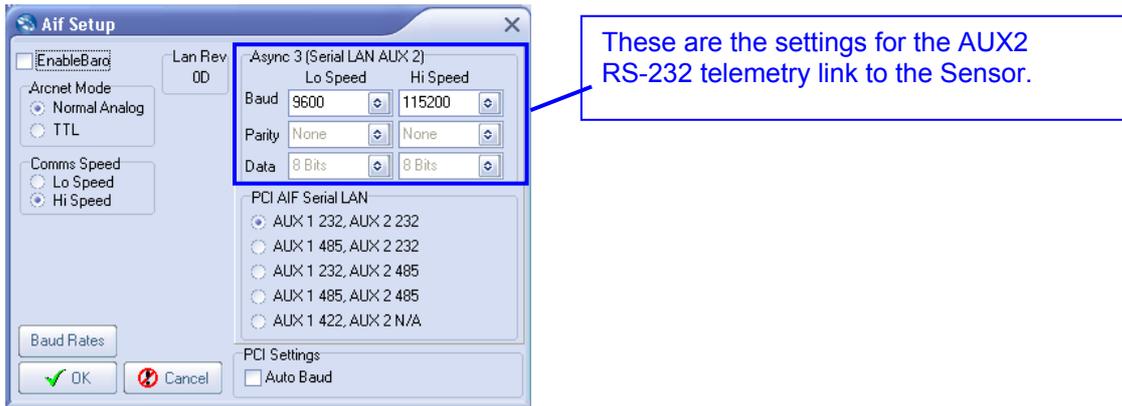
The following panel will appear…

Comms Speed (RS-232)

Always leave the Hi Speed box checked

The **Comms Speed** check-box is used to select between the 2 pre-set communications rates for the RS-232.

To configure the **AIF card** AUX2 with the desired RS-232 Baud rate, proceed as follows…

These are the settings for the AUX2 RS-232 telemetry link to the Sensor.

NOTE	*It is recommended that the Lo Speed is not changed from 9600. This is intended for emergency recovery use.*

iii. The **Async 3 (AUX 2)** panel sets the format for the RS-232 telemetry link to the Sensor, as shown in the diagram above.

iv. Change the <u>Right</u> column (Hi Speed) to the required baud rate.

v. After changes have been made, press the **OK** button twice and the card will be reprogrammed automatically.

vi. If the Setup table's Node list does not update after 10 seconds, press the '**Rebuild**' button. The Sensor Head Node should now re-appear confirming that the surface AIF card (Node 255) is communicating with it over the new telemetry baud rate.

SECTION 5

5.1 CONFIGURING A SCU AND SENSOR HEAD FROM ARCNET TO RS-232 (USING AIFV4 ISA CARD)

The SeaKing Sensor head will use the ASYNC 0 (LAN) serial channel for RS-232 communications.

A short test lead (ARCNET configuration) should be made up to connect between the SeaKing Sensor head and the SCU 15-way 'D' Type connector to enable any head re-programming during the conversion to RS-232. The standard Tritech 6-way connector should be connected to the "MAIN" port on the SeaKing Sensor head. Test lead wiring is as follows;

Tritech 6-pin connector		SCU 15-way "D" type	
1		8	[ArcNet LAN A]
2		15	[ArcNet LAN B]
3	24vdc Supply		
4	0v Supply		

CAUTION!

IMPORTANT! *A termination resistor, of value between 39ohms - 68 ohms, must be connected across pins 8 and 15 in the SCU 15-way "D" type connector.*

5.1.1 Configuring the SeaKing Sensor Head and SCU

Start the system. Close the standard program and run the Seanet Setup utility from Windows.

You will see a table showing the different devices connected to the network. **If there are NO entries in the table** then carry out the following checks…

There are **2** procedures depending which <u>version</u> of Seanet you have, menu option availability will allow the user to determine which procedure to follow;

Select **Aif Card** from the **Setup** menu option, see below…
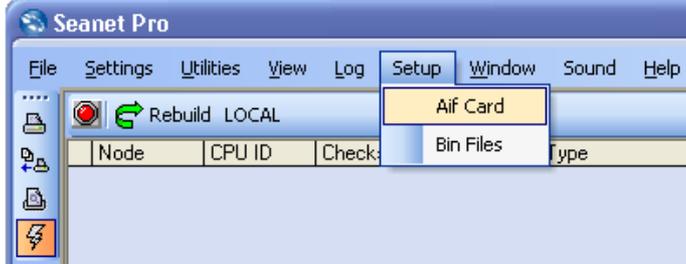
This will open the **Aif Setup** panel…

Ensure that the AIF card is Enabled. Io Base address and IRQ should be set as shown.

If there are still no nodes in the table then it is likely that there is an IRQ or base address clash on the PC or SCU.

1. Check that IRQ 10 is not assigned to Plug and Play in the BIOS.
2. Reserve the IRQ10 and I/O address range 0330 to 034F in the Windows CONTROL PANEL/SYSTEM

When the AIF is detected then the table should look as below…
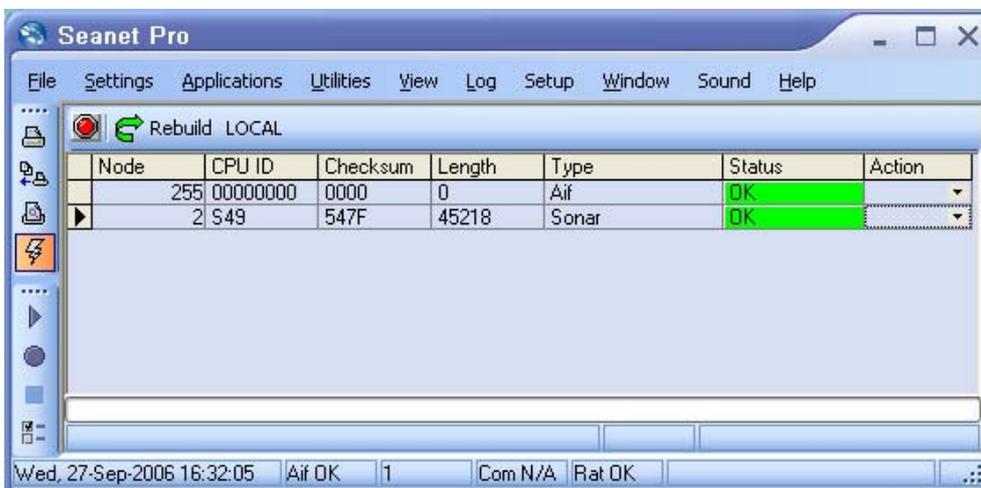
Node 255:   This represents the surface AIF communications card

SENSOR HEADS

Node 2:	Imaging Sonar head	**Node 40**:	Bathy Sensor
Node 20:	Master Profiler head	**Node 21**:	Slave Profiler head
Node 10:	ROV Sidescan/Towfish	**Node 15**:	Parametric Sub-Bottom profiler head
Node 60:	Pitch/Roll sensor		

The right-most column is labelled **Action** and allows specific setting for that node to be changed.

5.1.2 Programming the Sensor Head(s)

Click on **Action** from the Sensor Head's row and a drop down menu will appear – select the **Setup** menu item to open the **Setup** panel (as shown below).

The Setup panel for the particular head will appear inside which will be a **Baud Rates** button.

Below is an example of a SeaKing Dual Frequency Sonar head pane.

Click on the '**Baud Rates**' button…

In the **Async 0 (Serial LAN)** section, set the <u>Right</u> 'Baud' column to the desired comms rate; 115,200 baud should be default, 38,400 baud or above is necessary if operating an Imaging or Sidescan Sonar as any lower comms rates will slow down the scan update rate (57,600 or above is recommended).

⚠️ **NOTE**	*'SW1' - on the Sensor Head's CPU pcb - is used to switch between 2 pre-set Baud rates; set in the Left and Right 'Baud' columns:* *It is recommended to retain the left baud setting at 9600 for emergency recovery purposes.*

Press OK twice to exit the panels and the head will automatically be reprogrammed with any changes.

5.1.3 Programming the AIF V4 ISA card

The ISA version of the V4 card has only one Aux channel and this can only communicate using RS232.

To program the AIF baud rate click on **Action** from the AIF's row (Node 255) and a drop down menu will appear. Then select **Setup**…

The **Aif Setup** panel for the AIFV4 ISA card will open, inside which will be a **Baud Rates** button, as below…
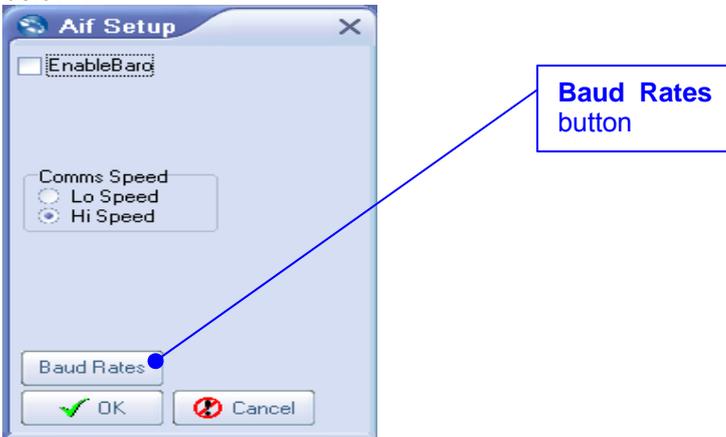
Baud Rates button

Click on **Baud Rates** and the standard baud panel will appear.

Async 0 (Serial LAN) section

In the **Async 0 (Serial LAN)** section, set the <u>Hi Speed</u> 'Baud' column to the desired comms rate; 115,200 baud should be default

⚠️ **NOTE**	*AIF Note: V4 AIF cards have a radio button in the 'AIF Setup' panel marked "Comms Speed", this performs the same function as dip switch 1 ('SW1') on the Sensor head's CPU pcb (see 'System' manual for more detail)…* *Set to Hi Speed uses baud rate from the 'Hi Speed' column (user setting)* *Set to Lo Speed uses baud rate from the 'Lo Speed' column (factory setting = 9600)*

5.2   SETTING SENSOR HEAD HARDWARE

The AIF card and Sensor head are now ready to communicate as RS-232 but need the correct jumper connections to be made inside the Sensor head.
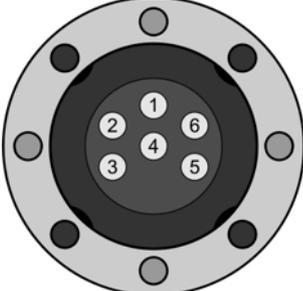
To access the Sensor head internals, undo the locking ring at the connector end and pull out the electronics block (be careful if Bathy as there is an internal wiring connection). Carefully remove the two nuts and screw pillars securing the board stack and remove the top 3 boards (or 2 for Bathy) leaving the comms board only attached to the endplate (...take care not to lose the spacers!).

Several types of comms board have been used in SeaKing Sonar heads; COMCV3 which can only be used in Imaging Sonar heads (these do not have the pin 5 sync used in the profilers or an RS-485 channel for a bathy altimeter). All other boards can be used in any Sensor head.

- The RS-232 jumper arrangements for **SeaKing** sensor head comm. boards are detailed in **APPENDIX 1** of this manual.

- The RS-232 jumper arrangements for **SeaPrince** sensor heads are detailed in **APPENDIX 3**.

…Refer to these pages now to configure your particular sensor and comms board combination

The standard Tritech 6-way connector should be connected to the "**MAIN**" port on the SeaKing Sensor head. Cable wiring for RS-232 communications is as follows;

Tritech 6-pin connector		SCU 15-way "D" type
1		**13** [RS-232 UP]
2		**6** [RS-232 DOWN]
3	24vdc Supply	
4	0v Supply	
5		**2** [RS-232 GND]

⚠️ **CAUTION!**	*IMPORTANT! Ensure that there is not a yellow waterblock or any internal ARCNET termination resistors fitted to the sensor head before connecting up as RS-232.*

⚠️ **NOTE**	**After these jumper settings have been made, the system is now ready to operate over RS-232 communications.**

SECTION 6

6.1 ALTERING RS-232 TELEMETRY SETTINGS FROM DEFAULT AIFV4 ISA CARD SYSTEM

The RS-232 communications rate between SeaKing Sensor Head and Surface Control Unit (i.e. internal AIF card) can be altered if necessary *(factory setting = 115,200)*.
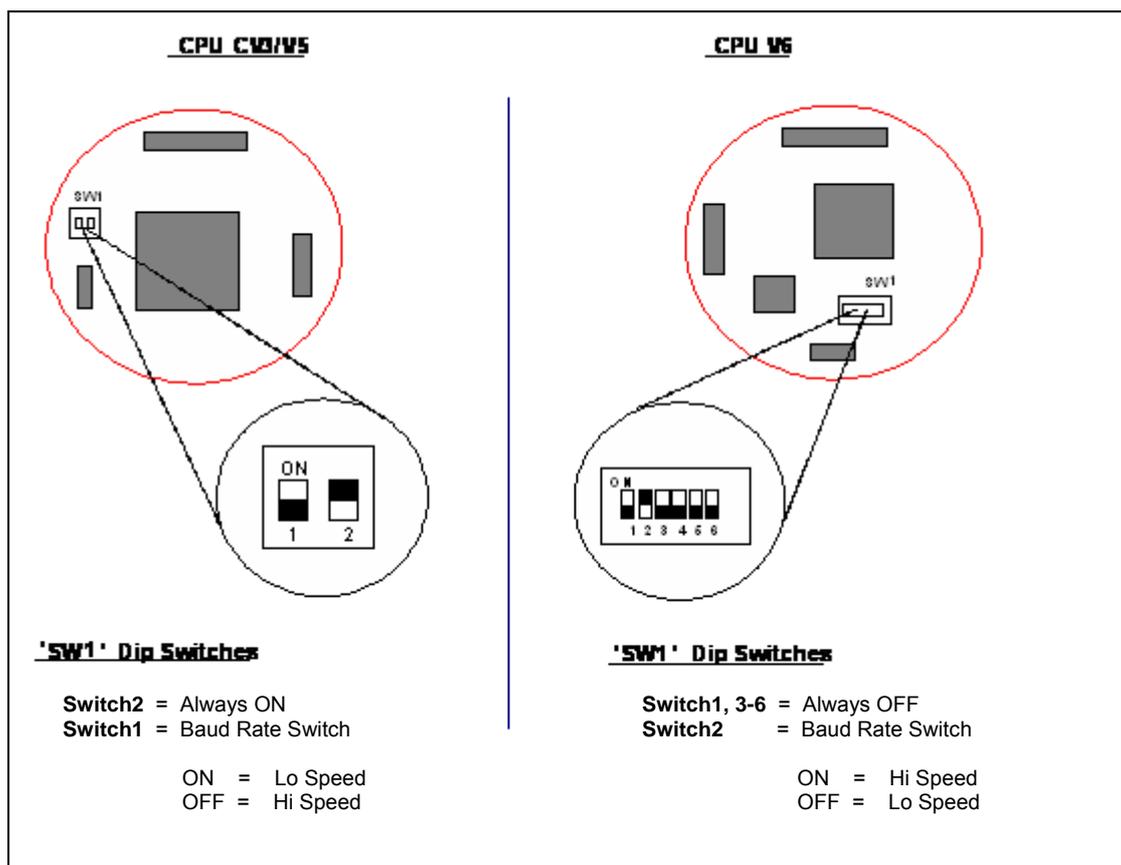
There are options for adjustment between 9,600 and 115,200 bit/s, but it is advisable that only **57,600** or **115,200** bit/s be selected if operating an Imaging or Sidescan Sonar over the direct RS-232 option.

⚠️ **NOTE**	*Lower rates than 57,600 will not provide adequate bandwidth for imaging applications. Rates as low as 9,600 bit/s should only be considered for profiling or bathymetry, where transmitted data is considerably less in quantity.*

6.1.1 Changing Sensor Head Baud Rate

There is a hardware switch ("**SW1**") inside the Sensor Head, located on the CPU ("**CPUCV3, CPUV5, CPUV6 or S2CPUD for SeaPrince**") PCB.

"**SW1**" is used to select between the 2 pre-set communications rates for RS-232.

'SW1' Dip Switches

    Switch2 = Always ON
    Switch1 = Baud Rate Switch

        ON = Lo Speed
        OFF = Hi Speed

'SW1' Dip Switches

    Switch1, 3-6 = Always OFF
    Switch2   = Baud Rate Switch

        ON = Hi Speed
        OFF = Lo Speed

The baud rate switch should be set to operate on the **Hi Speed** setting.

The RS-232 rate of **115,200** is the factory setting which can be altered if necessary using the **SETUP** program as follows.

  i.   Run Seanet SETUP and locate the row for the **Sensor Node** *(i.e. Sonar = Node 2)*.

  ii.   Click on the ACTION column for the node and select SETUP from the list

  iii. From the Setup panel select Baud Rates

These are the settings for the RS-232 telemetry link to the Surface.
Speed column used by the head is set by SW1 on the CPU pcb. (See above)

⚠️ **NOTE**	*It is recommended that the Lo Speed is not changed from 9600. This is intended for emergency recovery use.*

  iv.   The **Async 0 (AUX 1)** panel sets the format for the RS-232 telemetry link to the SCU, as shown in the diagram above.

  v.   Change the RIGHT column (Hi Speed) to the required baud rate.

  vi.   After changes have been made, press the **OK** button twice and the node will be reprogrammed automatically.

  vii. The Sensor head node will disappear from the list and this will confirm that telemetry with the Sensor Node has been lost. Do not worry as this is because both Nodes are operating at different baud rates at this stage.

Now proceed with Step 2 below (6.1.2) and set the surface AIF card (Node 255) telemetry to the same baud rate that has just been set for the Sensor Head.
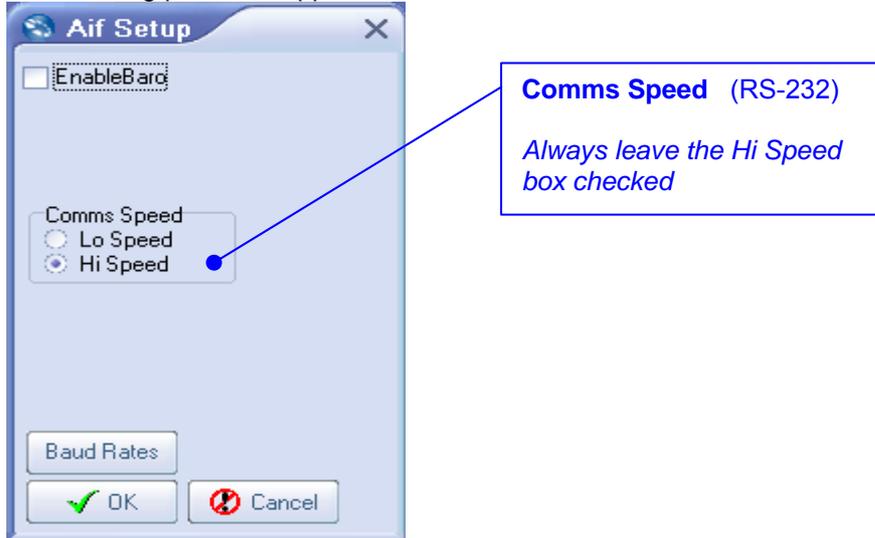
6.1.2 Changing Baud Rate of AIFV4 ISA card

6.1.2.2 Changing Baud Rate of AIFV4 ISA Card

On the V4 AIF card the pre-set comm's rates for RS-232 are software switched.

i.　　　Run **Seanet Setup** and locate the row for the **AIF Node** *(Node 255)*

ii.　　　Click on the **Action** column for the node and select **Setup** from the list
The following panel will appear…

Comms Speed　(RS-232)

Always leave the Hi Speed box checked

The **Comms Speed** radio buttons are used to select between the 2 pre-set communications rates for the RS-232.

To configure the surface **AIF card** with the desired RS-232 Baud rate, proceed as follows…

iii.　　　Click on the '**Baud Rates**' button on the AIF Setup panel.

iv.　　　The following panel will appear…
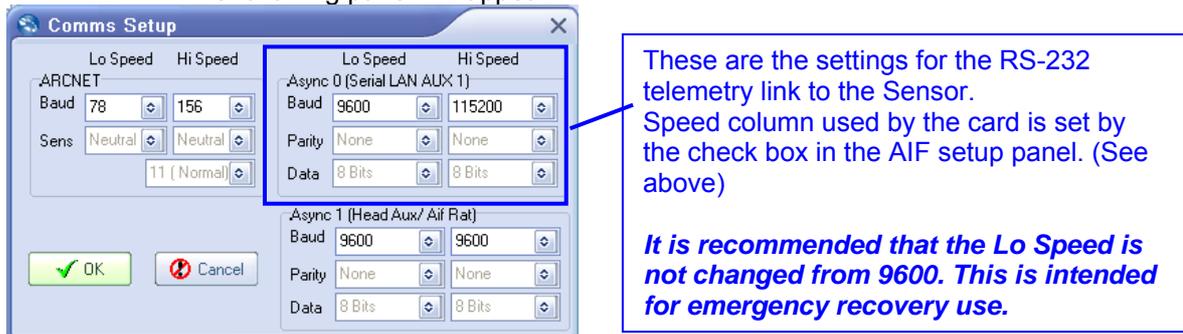
These are the settings for the RS-232 telemetry link to the Sensor.
Speed column used by the card is set by the check box in the AIF setup panel. (See above)

It is recommended that the Lo Speed is not changed from 9600. This is intended for emergency recovery use.

v.　　　The **Async 0 (AUX 1)** panel sets the format for the RS-232 telemetry link to the Sensor, as shown in the diagram above.

vi.　　　Change the Right column (Hi Speed) to the required baud rate.

vii.　　　After changes have been made, press the **OK** button twice and the card will be reprogrammed automatically.

viii.　　　If the Setup table's Node list does not update after 10 seconds, press the '**Rebuild**' button. The Sensor Head Node should now re-appear confirming that the surface AIF card (Node 255) is communicating with it over the new telemetry baud rate.

SECTION 7

7.1   CONFIGURING A SCU AND SENSOR HEAD FROM RS-232 TO ARCNET (USING AIF CARD, EITHER PCI OR ISA VERSION)

The SeaKing Sensor head will use the synchronous ARCNET channel for main ARCNET communications.

If the system is currently set to RS-232 then a short test lead (RS-232 configuration) should be made up to connect between the SeaKing Sensor head and the SCU 15-way 'D' Type connector to enable any head re-programming during a conversion to ARCNET. The standard Tritech 6-way connector should be connected to the "MAIN" port on the SeaKing Sensor head.

⚠️ **CAUTION!**	**Ensure there is no Yellow waterblock fitted to the head.**

Test cable wiring for RS-232 communications is as follows;
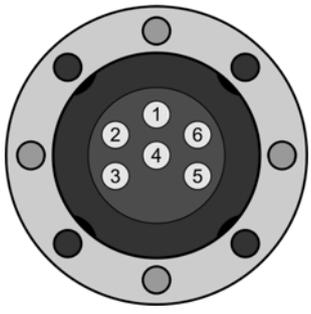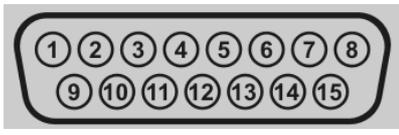
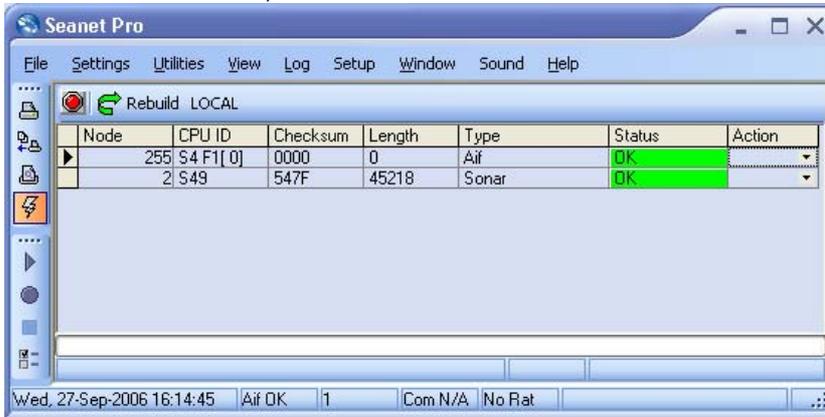| Tritech 6-pin connector		SCU 15-way "D" type
1		**13** [RS-232 UP]
2		**6** [RS-232 DOWN]
3	24vdc Supply	
4	0v Supply	
5		**2** [RS-232 GND]

7.1.1 Configuring the SeaKing Sensor Head and SCU

Start the system. Close the standard program and run the **Seanet Setup** utility from Windows.

You will see a table showing the different devices connected to the network. The first column is the network node number;

Node 255:   This represents the surface AIF communications card

SENSOR HEADS

|			
Node 2:	Imaging Sonar head	**Node 40**:	Bathy Sensor
Node 20:	Master Profiler head	**Node 21**:	Slave Profiler head
Node 10:	ROV Sidescan/Towfish	**Node 15**:	Parametric Sub-Bottom profiler head
Node 60:	Pitch/Roll sensor		

The last column is labelled **Action** and allows specific setting for that node to be changed.
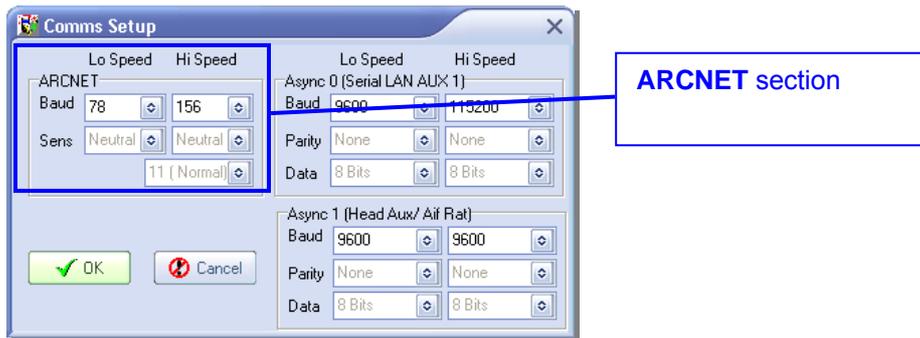
7.1.2 Programming the Sensor Head(s)

Click on **Action** from the Sensor Head's row and a drop down menu will appear – select the **Setup** menu item to open the **Setup** panel (as shown below).

The Setup panel for the particular head will appear inside which will be a **Baud Rates** button.

Below is an example of a SeaKing Dual Frequency Sonar head pane.
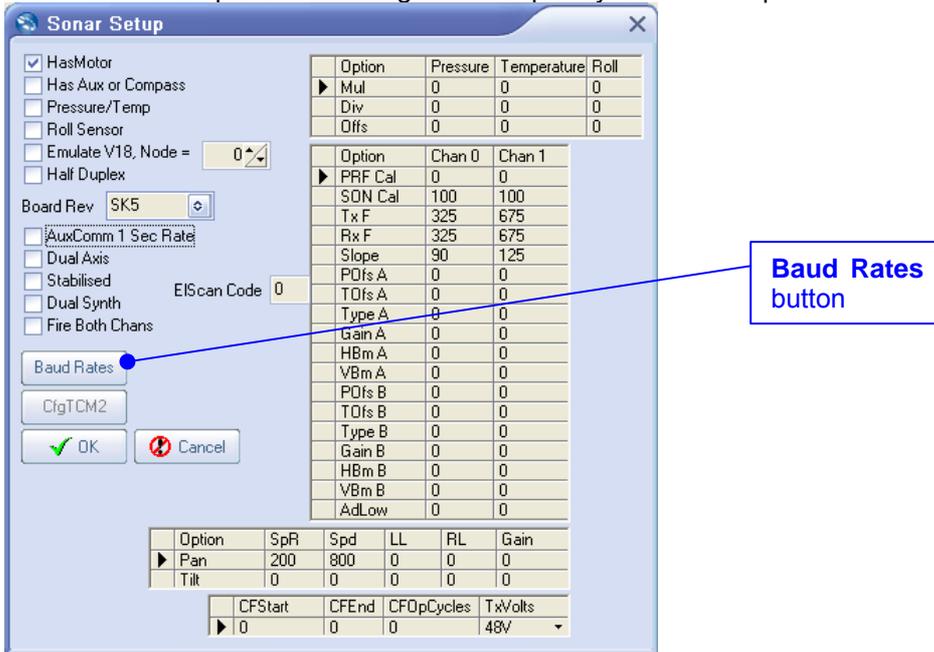
Click on the '**Baud Rates**' button…

In the **ARCNET** section, _check_ that the **'Hi Speed'** column is set to 156 and the **'Lo Speed'** column is set to 78. These are the default settings and should not be changed. If the settings do not appear as per the panel above then change them **NOW.**

Press OK twice to exit the panels and the head will automatically be reprogrammed with any changes

| ⚠️ NOTE	*See <u>Section 8</u> which details switching between Half and Full ArcNet Baud rates.*

7.1.3 Programming the AIF card

You may see slightly different panels displayed from that shown depending on whether the PCI card or the ISA card is used

Regardless of the type of AIF card in use...

Check the AIF baud rate by clicking on **Action** from the AIF's row (Node 255), a drop down menu will show. Select **Setup** from this menu.

The **Aif Setup** panel for the AIF card will appear, inside which will be a **Baud Rates** button, as below…
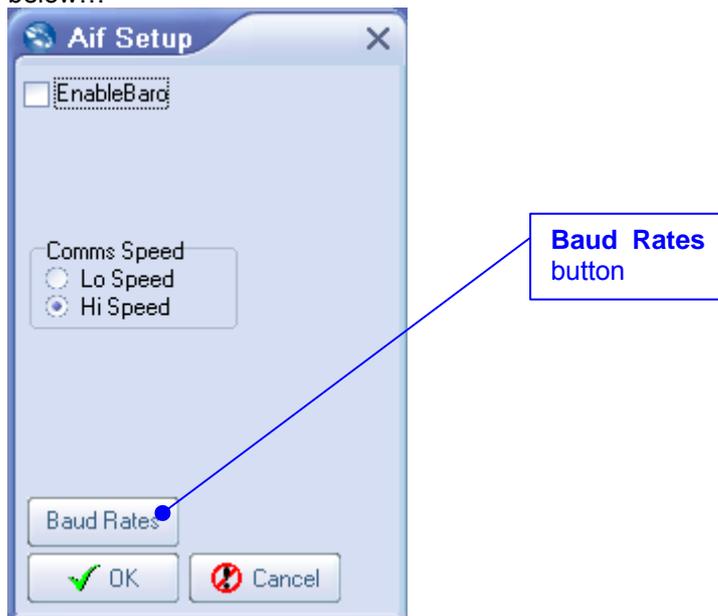
This pane is slightly extended when using a PCI card

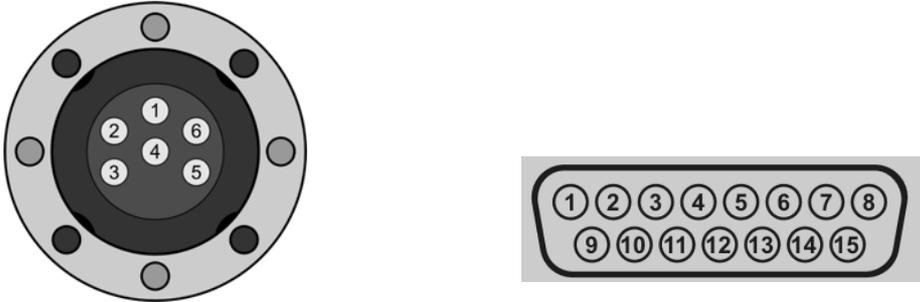Click on **Baud Rates** and the standard baud panel will appear.

In the **ArcNet** section, check that the **'Hi Speed'** column is set to 156 and the **'Lo Speed'** column is set to 78. These are the default settings and should not be changed. If the settings do not appear as per the panel above then change them **NOW**.

7.2   SETTING SENSOR HEAD HARDWARE

The AIF card and Sensor head are now ready to communicate as ARCNET but need the correct connections made and jumpers set.

Test cable connection for ARCNET communications is as follows;

Tritech 6-pin connector		SCU 15-way "D" type
1		8 [ArcNet LAN A]
2		15 [ArcNet LAN B]
3	24vdc Supply	
4	0v Supply	

⚠️ **CAUTION!**	**IMPORTANT!** *A termination resistor, of value between 39ohms - 68 ohms, must be connected across pins 8 and 15 in the SCU 15-way "D" type connector.*

The Sensor Head will also need jumper settings made inside.

To access the sensor head internals, undo the lock ring at the connector end and pull out the electronics. Carefully remove the two nuts and screw pillars securing the board stack and remove the top 3 boards leaving the comms board only attached to the endplate (...take care not to lose the spacers!)

Several types of comms board have been used in SeaKing Sensor heads; COMCV3 which can only be used in sonar heads (they do not have the pin 5 sync used in the profilers or an RS485 channel for a bathy altimeter). All other boards can be used in any head.

- The ARCNET jumper arrangements for **SeaKing** sensor head comm. boards are detailed in **APPENDIX 2** of this manual.

- The ARCNET jumper arrangements for **SeaPrince** sensor heads are detailed in **APPENDIX 3**.

…Refer to these pages now to configure your particular sensor and comms board combination

⚠️ **NOTE**	**After these jumper settings have been made, the system is ready to operate using ARCNET communications.**

SECTION 8

8.1   ALTERING ARCNET TELEMETRY SETTINGS FROM DEFAULT

The default ArcNet baud rate is 156.2 kBaud. This would be employed normally in systems with twisted pair cabling up to the length of around 1.5km. There may be a requirement to operate over longer cable lengths and to satisfy this requirement it is possible to lower the ArcNet baud rate to the 'Half Baud' setting of 78.1 kBaud. This may reach out to cable lengths approaching 2.5 kilometres (or more depending on cable specifications).

8.1.1 Changing Baud Rate of AIF card

As aforementioned, there are 2 revisions of AIF card (ISA and PCI). The procedure to change the baud rates for each type of card is the same although panels may appear slightly different. Details will now follow…
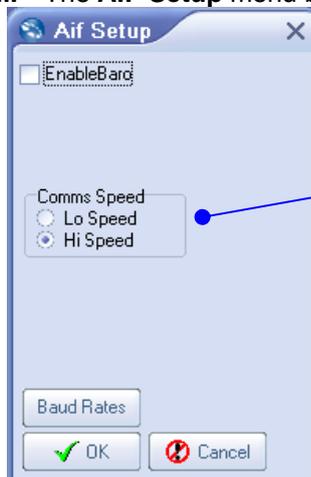
8.1.1.1   Changing AIF V4 Surface Card (ArcNet)

This is handled by a software flag in the **Seanet Setup** surface utility program;

    i.   Open the Seanet Setup program *(shown below)…*

Node 255 is the **AIF** card. Click **Setup** from the **Action** column.

    i.   Highlight the **Node 255** row *(as shown above)* and then click on the **Action - Setup** menu option.

    ii. The **AIF Setup** menu box shown below will appear…

Comms Speed (ARCNET)

Use these radio buttons to select between Normal and Half Baud rate

This panel is slightly extended when using a PCI card

   iii. The **Comms Speed** radio buttons select either the Normal or Half Baud rate.

- Set to **Hi Speed** *(as shown above)* to select the **Normal Baud#** Rate.
- Set to **Lo Speed** to select **Half Baud#** Rate.

> **#** Factory Settings for ARCNET are:
>
> **Normal Baud** = **156.2** (kBaud)
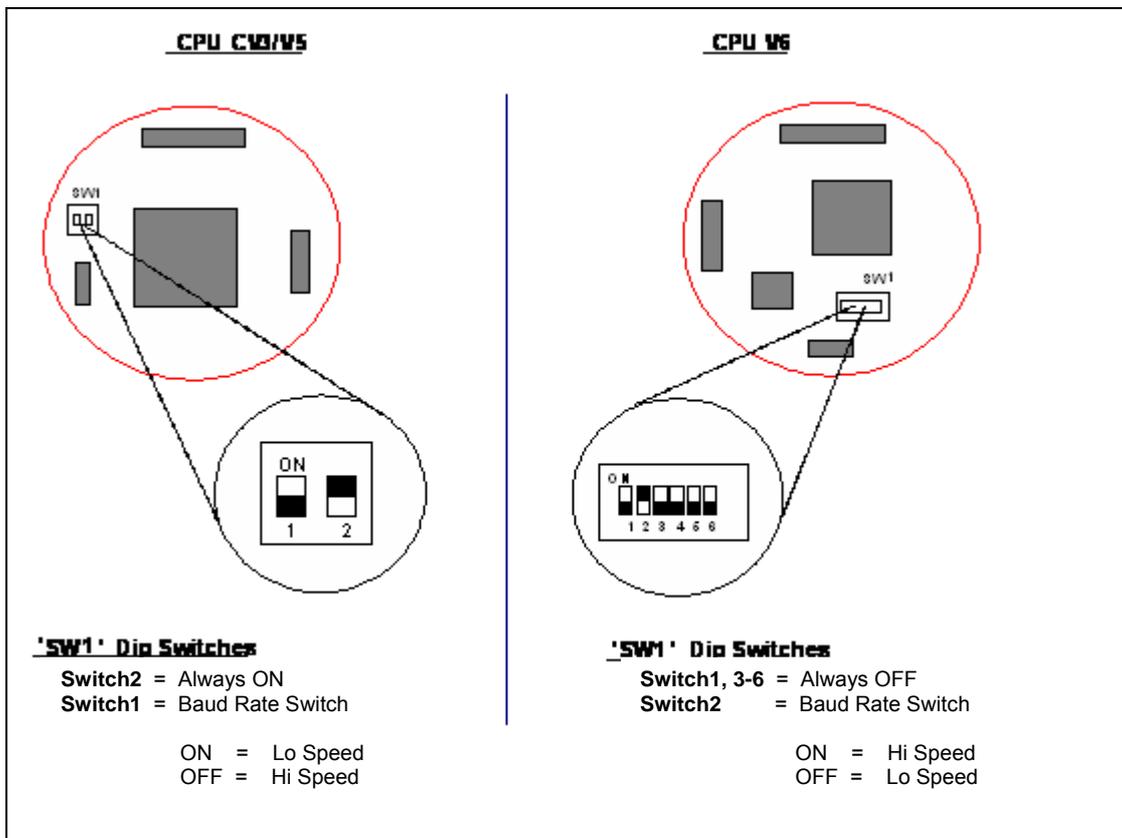> **Half Baud** = **78.1** (kBaud)

> ⚠ **NOTE**
> *If there is a requirement to drop to the 1/2 Baud rate, the SCU and Head(s) should be appropriately labelled for future reference.*

8.1.2 Changing Sensor Head Baud Rate

8.1.2.1 Changing SeaKing Heads; Sonar, Bathy, Profiler, Sidescan (ArcNet)

There is a hardware switch ("**SW1**") inside the Sensor Head, located on the CPU ("**CPUCV3, CPUV5, CPUV6 or S2CPUD for SeaPrince**") PCB.

"**SW1**" is used to select between the 2 pre-set communications rates for RS-232.

'SW1' Dip Switches
Switch2 = Always ON
Switch1 = Baud Rate Switch

    ON = Lo Speed
    OFF = Hi Speed

'SW1' Dip Switches
Switch1, 3-6 = Always OFF
Switch2 = Baud Rate Switch

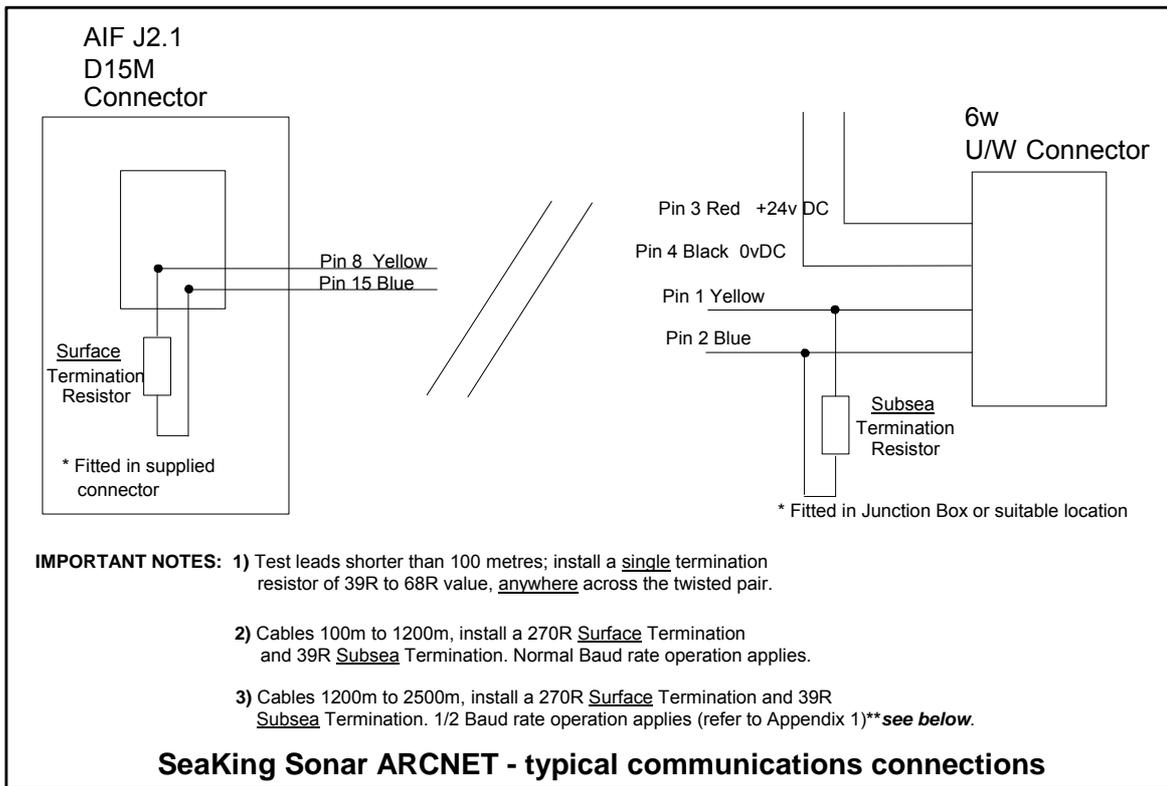   ON = Hi Speed
    OFF = Lo Speed

> ⚠ **NOTE**
> *In ARCNET the System should be switched between full and half baud only by using the Switch (or "Comms Speed" radio buttons), not by changing the drop down list in the ARCNET section of the BAUD setup panel.*

8.2 ARCNET TERMINATION AND BAUD RATE GUIDE

AIF J2.1
D15M
Connector

6w
U/W Connector

Pin 3 Red +24v DC

Pin 4 Black 0vDC

Pin 8 Yellow
Pin 15 Blue

Pin 1 Yellow

Pin 2 Blue

Surface
Termination
Resistor

Subsea
Termination
Resistor

* Fitted in supplied
connector

* Fitted in Junction Box or suitable location

IMPORTANT NOTES: 1) Test leads shorter than 100 metres; install a <u>single</u> termination
resistor of 39R to 68R value, <u>anywhere</u> across the twisted pair.

2) Cables 100m to 1200m, install a 270R <u>Surface</u> Termination
and 39R <u>Subsea</u> Termination. Normal Baud rate operation applies.

3) Cables 1200m to 2500m, install a 270R <u>Surface</u> Termination and 39R
<u>Subsea</u> Termination. 1/2 Baud rate operation applies (refer to Appendix 1)***see below*.

SeaKing Sonar ARCNET - typical communications connections

*SeaKing Communication <u>ARCNET</u> Wiring Diagram*

Note on Subsea Termination Resistor:
(as shown in diagram above)

This will normally be installed in the Junction point on the vehicle where the communications pair splits off to each SeaKing device that is connected; i.e. this junction point would normally be inside the vehicle Junction box/pod.

There are circumstances where it is not possible to install a permanent subsea termination resistor for the SeaKing communications; i.e. when operating over a single run of cable.

In these cases, a <u>Yellow Waterblock Adapter</u> (Part No. 2648) is available which has a <u>39 ohm termination</u> resistor installed internally.

These Yellow adapters are now supplied with each SeaKing system (SCU surface unit or PC Install kit) as supplied from mid-2000 onwards. For systems purchased before this date and which do not therefore include this Yellow adapter, they can be obtained from Tritech or through a local agent.
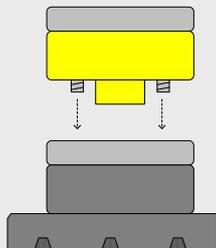
The Yellow terminated waterblock should be installed directly onto the 'Main' connector port on <u>one</u> of the SeaKing heads attached to the network *(as indicated left)*.

Important:
(1) Only <u>one</u> yellow 39Ω terminated waterblock to be used per system
(2) Check that there are no other termination resistors present – other than 270Ω at surface – prior to installation.

SECTION 9

9.1   CONFIGURING A SYSTEM FOR DIRECT COMMUNICATION BETWEEN PC COM PORT AND SENSOR HEAD

Generally it is advised that the SeaKing sensor head communicate to the surface PC or SCU using an AIF card. However, it is possible to use the PC COM port when the use of an AIF card is not possible.

⚠ **NOTE**	***Tritech is unable to guarantee that all PC com ports will support direct communication to a SeaKing sensor head.***

In RS232 each sensor must have its own dedicated com port although the use of more than one com port may be employed to connect multiple heads to a single PC.

⚠ **NOTE**	It should be noted that profiler Sync will not operate between 2 heads that are communicating to the surface PC on separate serial channels

9.1.1 Notes when using USB to RS-232 COM Port Adapters

It is common for new laptops to be supplied with no standard COM port hardware.

In this instance a USB to Serial adapter may be used to obtain a "virtual" COM port on such machines.

⚠ **NOTE**	There are many different types of adapter available on the market, however ***note the following prior to purchase…*** ▪ Because of the requirement to support half duplex operation, the timeout on the data link is critical. This means that no delays can be introduced between the PC and the Head, and the strings sent must arrive complete. ▪ Certain USB adapters buffer the data, which means the Seanet strings get broken up when passing through such adapters. When this is the case the following symptoms are common for a sonar head… The head can be detected in the "Seanet Setup" program, but when running the main Seanet program the head is intermittent or does not scan.

If problems are experienced with the USB adapters, try first to load the system on a PC with a normal Com port to confirm that the head is operational.

A proven USB serial adapter device can be purchased from Tritech International Ltd if required, contact Tritech Technical Support for details.

## 9.2   CONFIGURING THE SEAKING SENSOR HEAD AND PC COM PORT

If a Tritech AIF card or SCU is available then we would recommend running the head up on ARCNET and checking the baud rates inside the head are default. This can be done by following the first part of Section 3 in this manual.

Without an AIF card we must assume the baud rates are set to factory default and use a baud rate of 115,200 on the PC.

If, after carrying out the setup which follows, the head is not detected then refer to the emergency recovery procedure at the end of this section.

9.2.1 Programming the PC COM Port

The PC COM port settings are adjusted by means of the **Seanet Setup** Program.
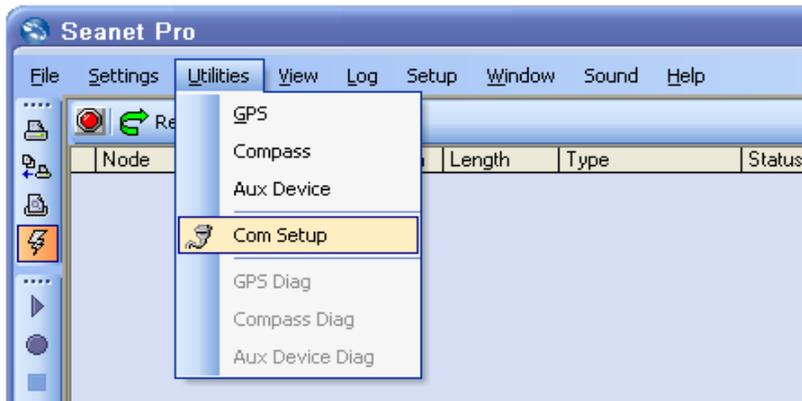
Run the Setup Program and select **Com Setup** from the **Utilities** menu option, see below…

The following **Channel Setup** panel will be displayed. This allows for configuration and setup of the Surface control computer. "**Aif**" is the entry which relates to the means of communicating with the sensor head.
Multiple com ports may be allocated for sensor interface by clicking NEW from the menu bar

Click on the
Settings
button here
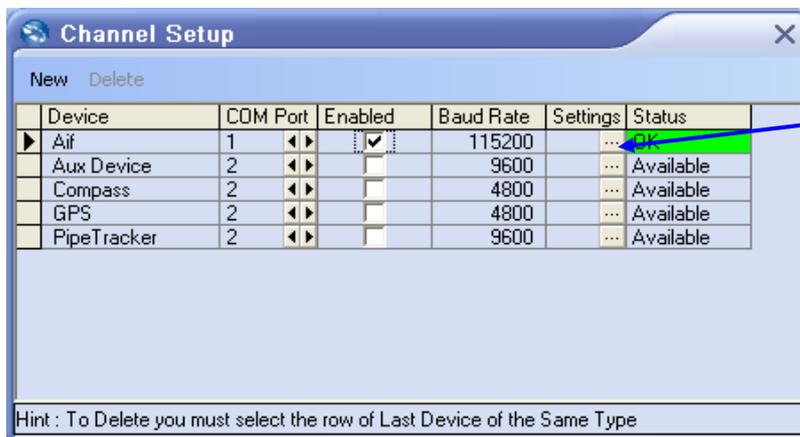
 i. Set the COM **Port** number used to communicate with the Sensor head, default is COM1

⚠ NOTE	*If a USB to Serial adaptor is utilised then a virtual COM port number will have been assigned to the device on installation. If you are unsure what this is then check the Device Manager from within Windows Control Panel/System.*

 ii. Ensure the **Enabled** box is checked and Status is OK

 iii. **Baud** rate – this is the baud used to communicate with the sensor head, it is advisable to keep this at the default 115,200 until communication with the head has been established. If the baud rate set inside the head is known then click on the button in the "**Settings**" column of the "**Aif**" row as indicated on the drawing above.

The resulting panel below is displayed.
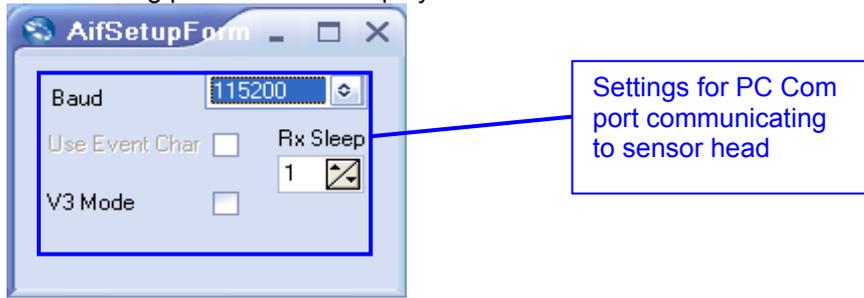
The "Use Event Char", "V3 Mode" and "Rx Sleep" parameters should be set as above for normal operation.

Close the two panels using the corner "Close" button and changes will be saved.

9.2.2 Setting Sensor Head Hardware

The PC COM port is now ready to communicate as RS-232 but the Sensor head needs the correct jumper connections to be made inside the Sensor head.
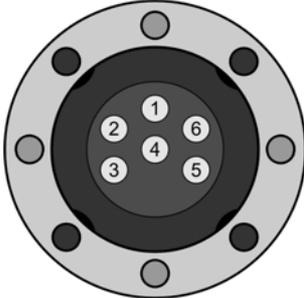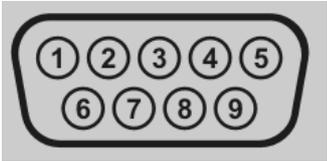
To access the Sensor head internals, undo the locking ring at the connector end and pull out the electronics block (be careful if Bathy as there is an internal wiring connection). Carefully remove the two nuts and screw pillars securing the board stack and remove the top 3 boards (or 2 for Bathy) leaving the comms board only attached to the endplate (...take care not to lose the spacers!).

Several types of comms board have been used in SeaKing Sonar heads; COMCV3 which can only be used in Imaging Sonar heads (these do not have the pin 5 sync used in the profilers or an RS-485 channel for a bathy altimeter). All other boards can be used in any Sensor head.

- The RS-232 jumper arrangements for **SeaKing** sensor head comm. boards are detailed in **APPENDIX 1** of this manual.

- The ARCNET jumper arrangements for **SeaPrince** sensor heads are detailed in **APPENDIX 3**.

Refer to these pages now to configure your particular sensor and comms board combination

The standard Tritech 6-way connector should be connected to the "MAIN" port on the SeaKing Sensor head. Cable wiring for RS-232 communications is as follows;

Tritech 6-pin connector		PC 9-way "D" type
1		2 [RS-232 UP]
2		3 [RS-232 DOWN]
3	24vdc Supply	
4	0v Supply	
5		5 [RS-232 GND]

⚠ CAUTION!	**IMPORTANT!** *Ensure that there is not a yellow waterblock or any internal ARCNET termination resistors fitted to the sensor head before connecting up as RS-232*

⚠ NOTE	**After these jumper settings have been made, the system is ready to communicate over RS-232 communications.**

The node should be detected in the Seanet Setup table. If it is not then refer to the section "Emergency recovery of RS-232 sensor" below…

Telemetry baud rate settings can be checked or changed to match modem hardware if necessary.

9.3   EMERGENCY RECOVERY OF RS-232 SENSOR HEAD (PC COM PORT)

If after carrying out / checking the software and hardware setup the node is not detected.
Firstly double check again that the settings have been made correctly.

If it is sure that the settings are correct then it is likely that the "Hi Speed" sensor baud rate does not match the com port setting.

The "Lo speed" baud rate should still be set to 9600 so the procedure to establish communications using (Recovery) 9600 Baud rate is as follows :-

i)   Follow section 6 of this document and set the surface baud rate to 9600.

ii)   Open the Sensor head and set the SW1 switch on the CPU pcb to the "Lo-Speed" position**.**

iii)   Do not close the head at this stage. Connect up the pc stack to the PC and confirm that the node can now be detected.

iv)   Once detected follow section 6 of this document and check/set the "Hi Speed" baud rate to the required speed.

v)   Power off the Sensor head, reset the CPU switch SW1 to the "Hi-Speed" position.

vi)   Confirm the head is now detected at the "Hi Speed" baud rate.
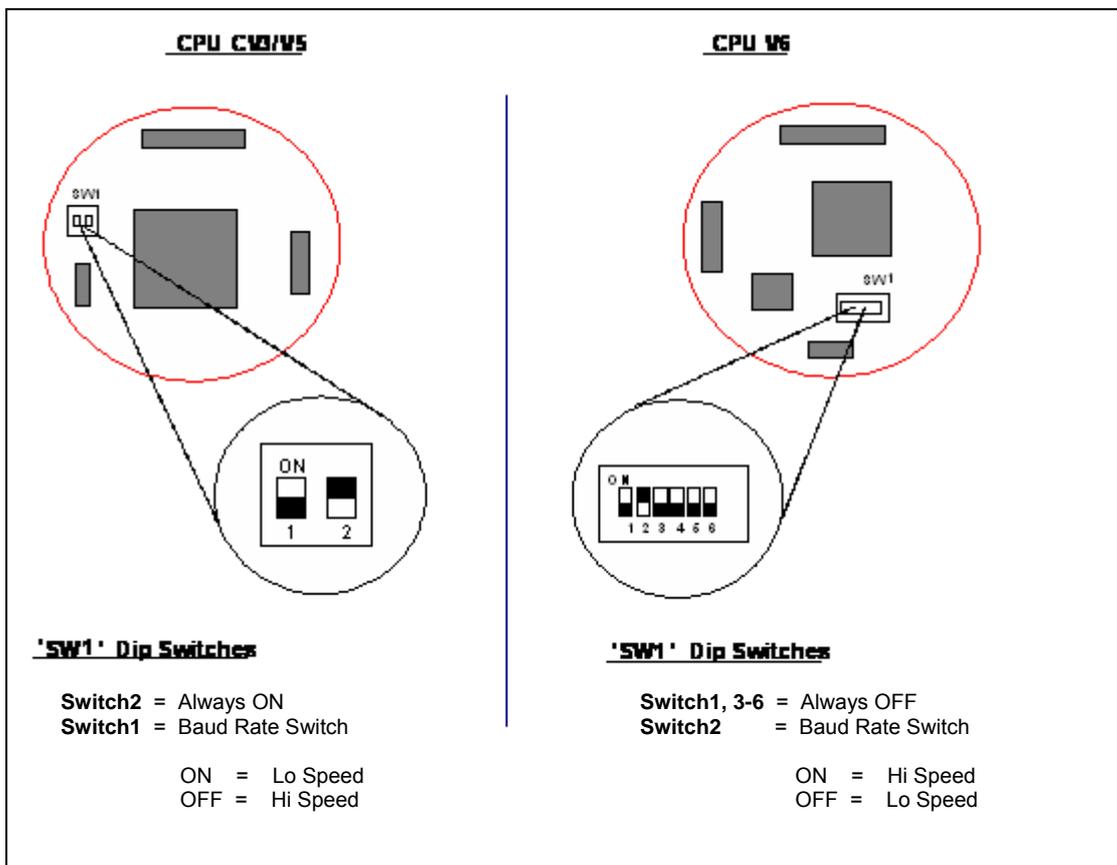
vii) Close the sensor head.

SECTION 10

10.1   ALTERING RS-232 BAUD SETTINGS (DIRECT PC COM PORT SYSTEM)

The default RS-232 telemetry rate is 115,200 Baud. It is recommended that this not be lowered below 57,600 Baud particularly with high data transmission devices such as Imaging Sonar, Sidescan and Sub Bottom Profiler heads. However, it may be necessary to operate through multiplexers or modems which have a limited capacity and reduced transmission rates. The following sections will describe how to alter the RS-232 rate for "direct to COM port" systems.

10.1.1 Changing Sensor Head Baud Rate

There is a hardware switch ("**SW1**") inside the Sensor Head, located on the CPU ("**CPUCV3, CPUV5, CPUV6 or S2CPUD for SeaPrince**") PCB.

"**SW1**" is used to select between the 2 pre-set communications rates for RS-232.

The baud rate switch should be set to operate on the **Hi Speed** setting.
The RS-232 rate of **115,200** is the factory setting which can be altered if necessary using the **SETUP** program as follows.

i)   Run **Seanet Setup** and locate the row for the **Sensor Node** *(i.e. Sonar = Node 2).*

ii)   Click on the **Action** column for the node and select **Setup** from the list

iii) From the Setup panel select **Baud Rates**, the following panel will be opened…
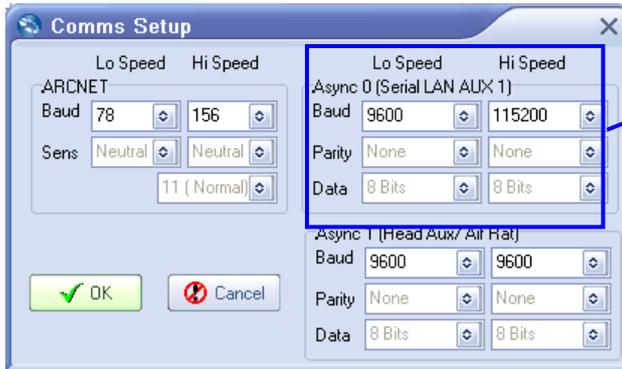
These are the settings for the RS232 telemetry link to the Surface.
Speed column used by the head is set by SW1-1 on the CPU pcb. (See above)

| ⚠ NOTE	***It is recommended that the Lo Speed is not changed from 9600. This is intended for emergency recovery use.***

iv) The **Async 0 (AUX 1)** panel sets the format for the RS-232 telemetry link to the surface, as shown in the diagram above.

v) Change the Right column (Hi Speed) to the required baud rate.

vi) After changes have been made, press the **OK** button twice and the node will be reprogrammed automatically.

vii) The Sensor head node will disappear from the list and this will confirm that telemetry with the Sensor Node has been lost. Do not worry as this is because both Nodes are operating at different baud rates at this stage.

| ⚠ NOTE	***Now proceed with Step 2 (10.1.2 / 10.1.3) and set the surface PC telemetry to the same baud rate that has just been set for the Sensor Head.***

10.1.2 Changing Baud Rate (PC COM Port)

The PC COM port settings are adjusted by means of the **Seanet Setup** program.

i. Run the Setup Program and select **Com Setup** from the **Utilities** menu option, see below.
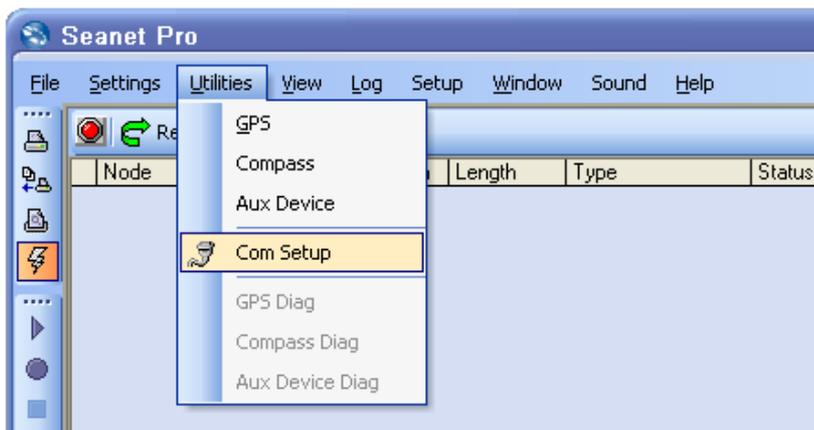
The following **Channel Setup** panel will be displayed. This allows for configuration and setup of the Surface control computer. "**Aif**" is the entry which relates to the device communicating with the sensor head.

Click on the **Settings** button here
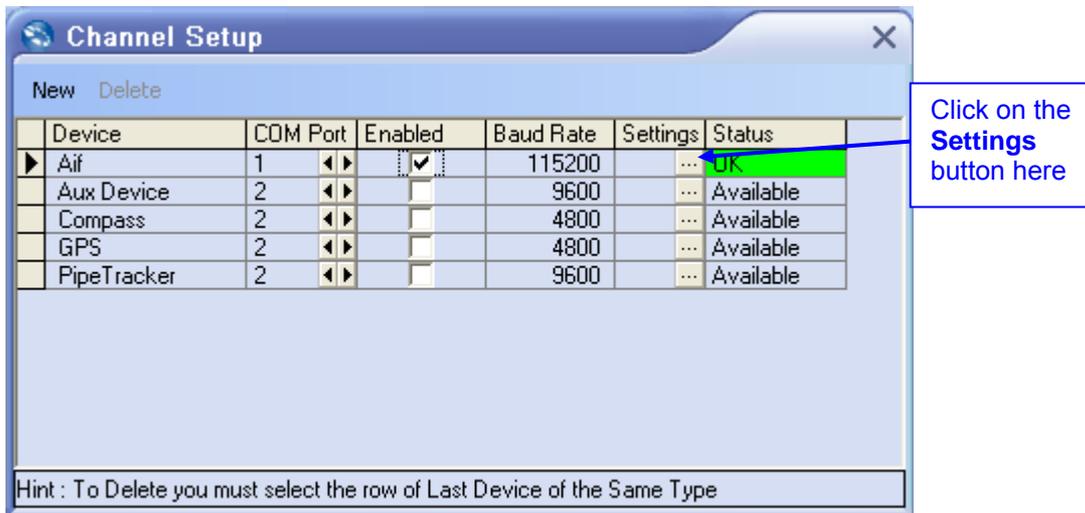
ii. To change the baud settings click on the button in the "**Settings**" column for the "**Aif**" row.

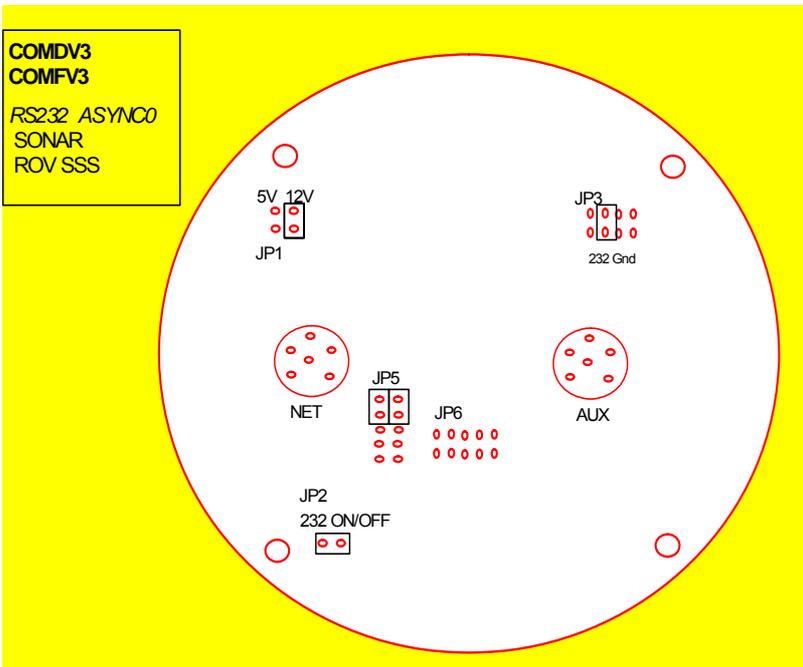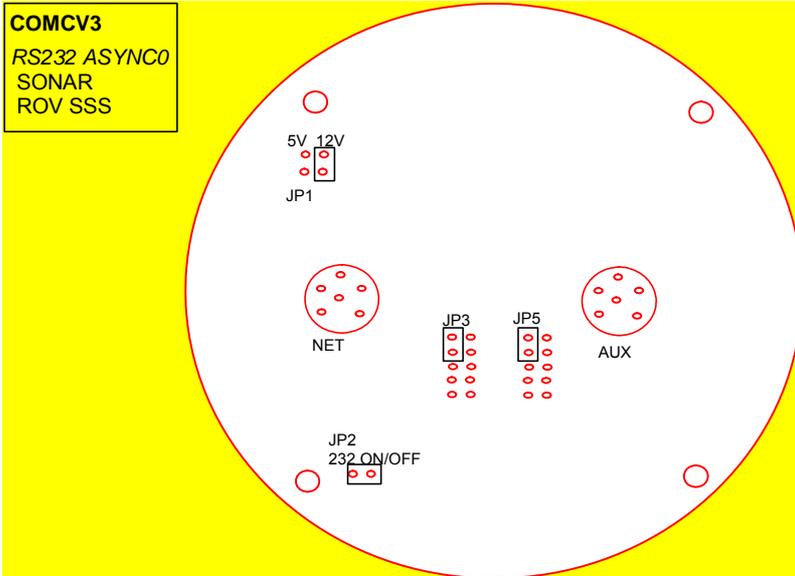iii. The resulting panel below allows the user to set the **Baud** rate to match the sensor head.

Settings for PC Com port communicating to sensor head
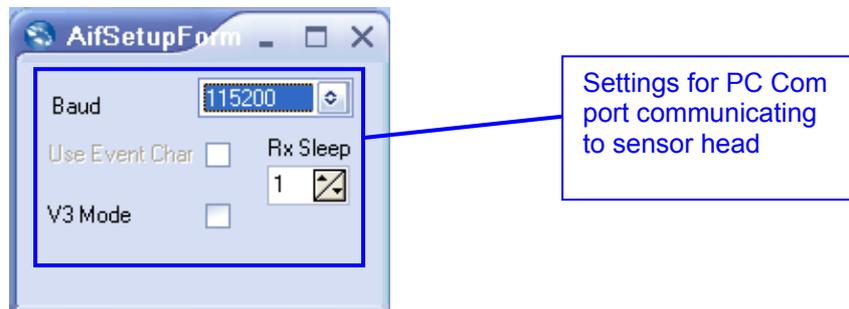
iv. Close the two panels using the corner "Close" button and changes will be saved

v. If the Setup table's Node list does not update after 10 seconds, press the '**Rebuild**' button. The Sensor Head Node should now re-appear confirming the COM port is communicating with it over the new telemetry baud rate.
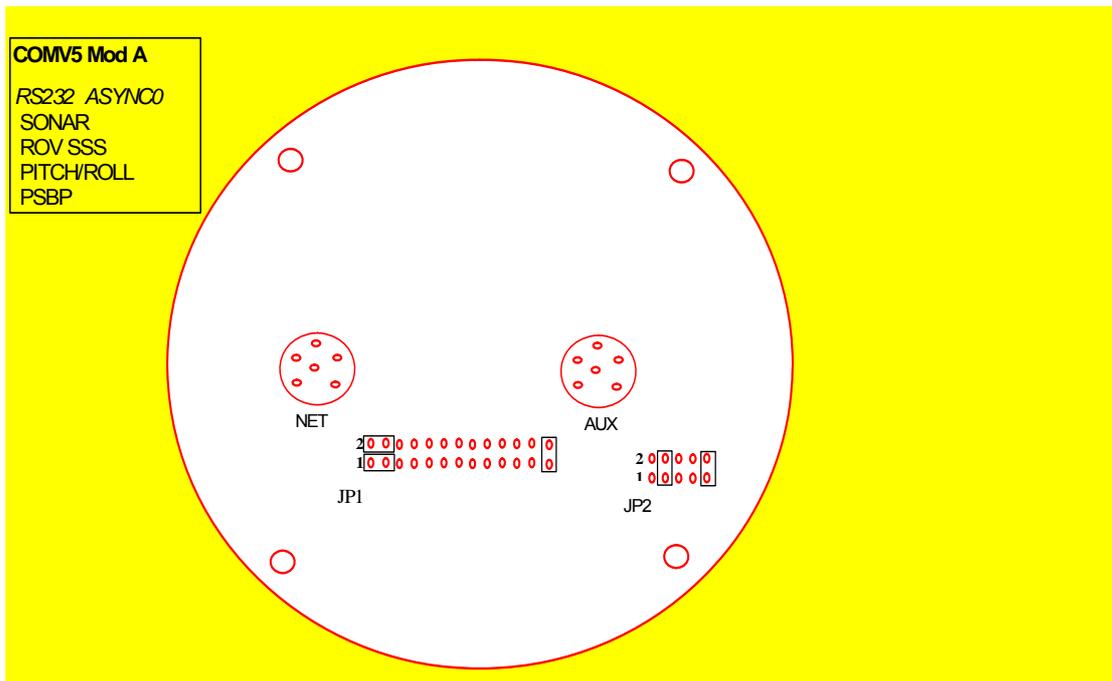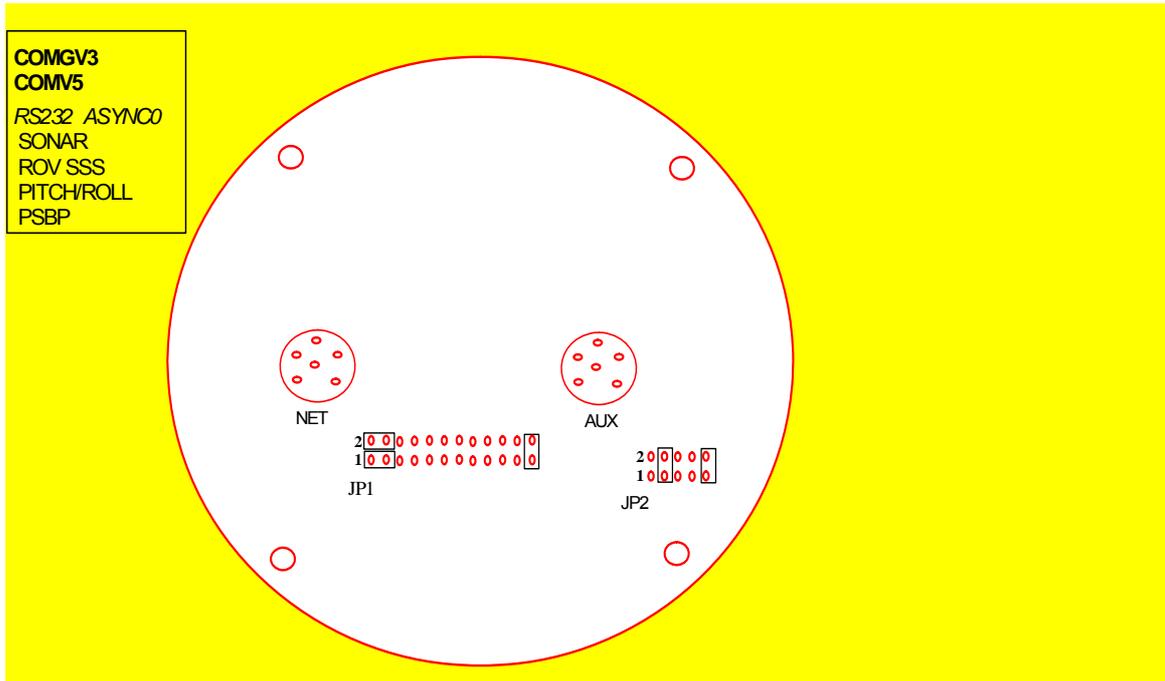
APPENDIX 1

I) RS-232 JUMPER SETTINGS FOR SEAKING SENSOR HEADS

**RS-232 Jumper Links for operation of
DFS sonar, DST sonar, ROV Sidescan and Parametric Sub Bottom heads**

COMCV3

RS232 ASYNC0
 SONAR
 ROV SSS

5V 12V
JP1

NET

JP3   JP5

AUX

JP2
232 ON/OFF

**COMDV3
COMFV3**

RS232 ASYNC0
 SONAR
 ROV SSS

5V 12V
JP1

JP3

232 Gnd

NET

JP5

JP6

AUX

JP2
232 ON/OFF

RS-232 Jumper Links for operation of
DFS sonar, DST sonar, ROV Sidescan and Parametric Sub Bottom heads (cont.)

COMGV3
COMV5

RS232 ASYNC0
 SONAR
 ROV SSS
 PITCH/ROLL
 PSBP

NET   AUX

2
1
JP1

2
1
JP2

COMV5 Mod A

RS232 ASYNC0
 SONAR
 ROV SSS
 PITCH/ROLL
 PSBP

NET   AUX

2
1
JP1

2
1
JP2

RS-232 Jumper Links for Single head DFP operation

COMDV3
COMFV3

RS232 ASYNC0
 PROFILER

5V 12V   JP3

JP1   232 Gnd

NET   JP5   JP6   AUX

JP2
232 ON/OFF
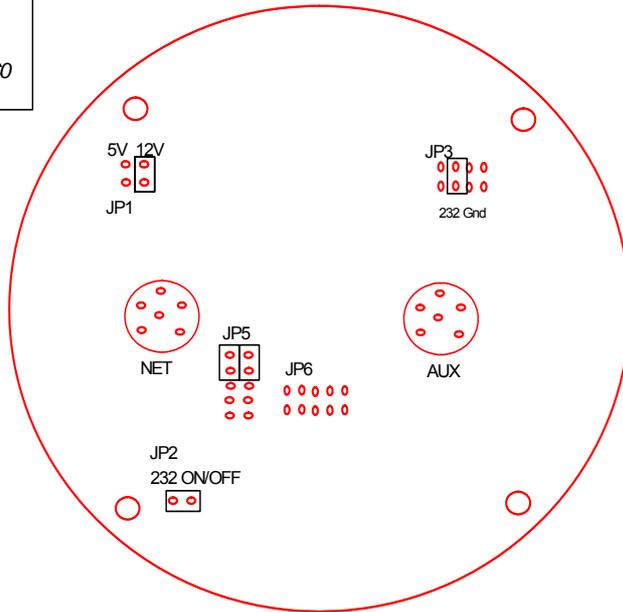
COMGV3
COMV5

RS232 ASYNC0
 PROFILER

NET   AUX

2
1
JP1   2
1
JP2
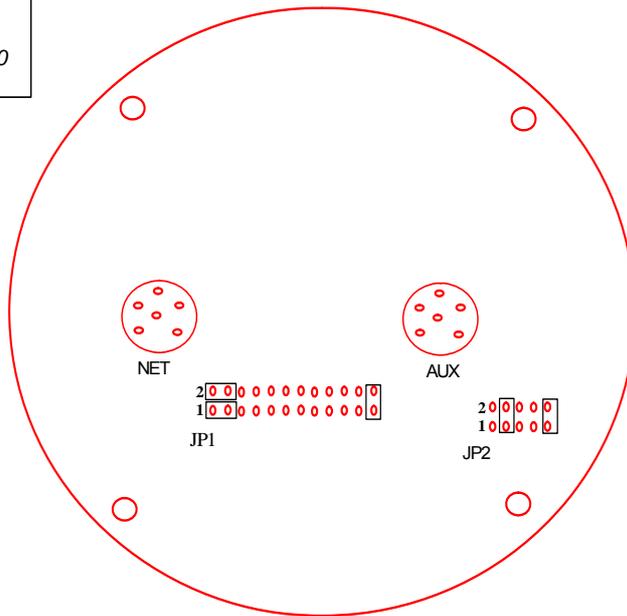
CAUTION!   **IMPORTANT! The COMGV3 and COMV5 pcb marked "profiler" may be modified with U10 removed and pads 3 & 6 linked. For single head RS-232 operation the pads of U10 pins 2 & 7 must also be linked together**
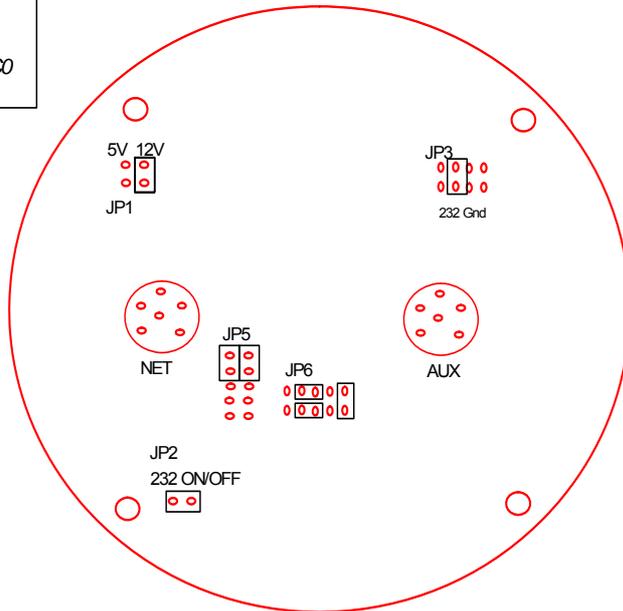
RS-232 Jumper Links for Single head DFP operation (cont.)
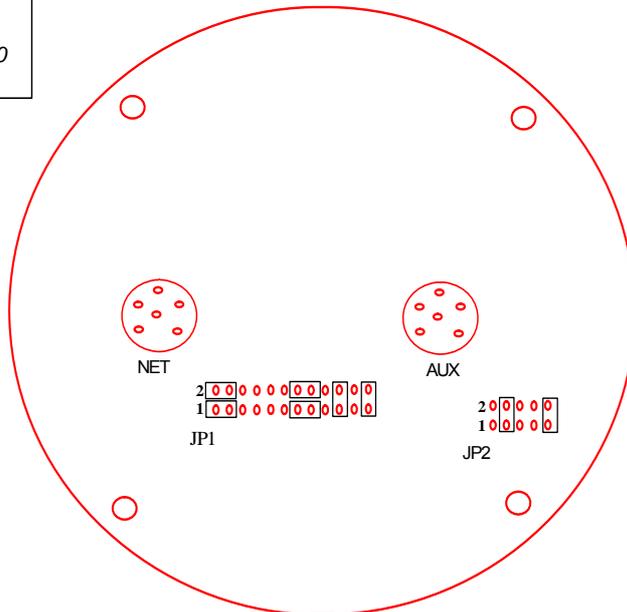
COMV5 Mod A

RS232 ASYNC0
 PROFILER

NET

AUX

2
1
JP1

2
1
JP2

RS-232 Jumper Links for Bathy head operation

COMDV3
COMFV3
RS232 ASYNC0
 BATHY

5V 12V

JP1

JP3

232 Gnd

NET

JP5

JP6

AUX

JP2

232 ON/OFF

COMGV3
COMV5
RS232 ASYNC0
 BATHY

NET

AUX

2
1

JP1

2
1

JP2

RS-232 Jumper Links for Bathy head operation (cont.)

COMV5 Mod A
RS232 ASYNC0
 BATHY

NET

AUX

2
1

JP1

2
1

JP2
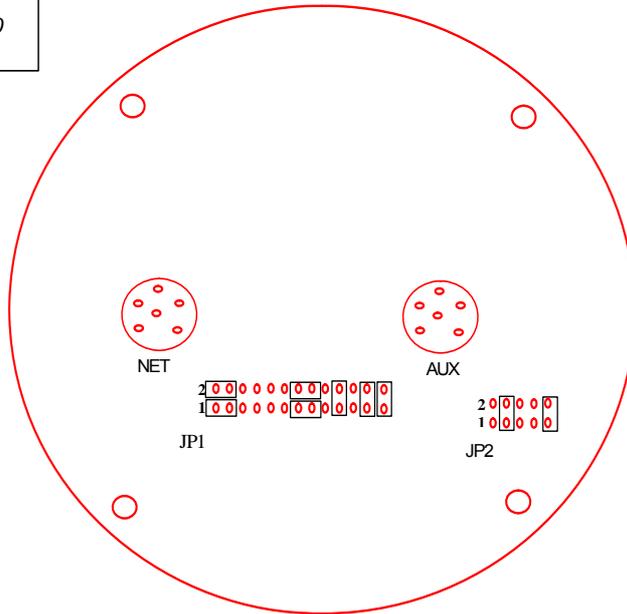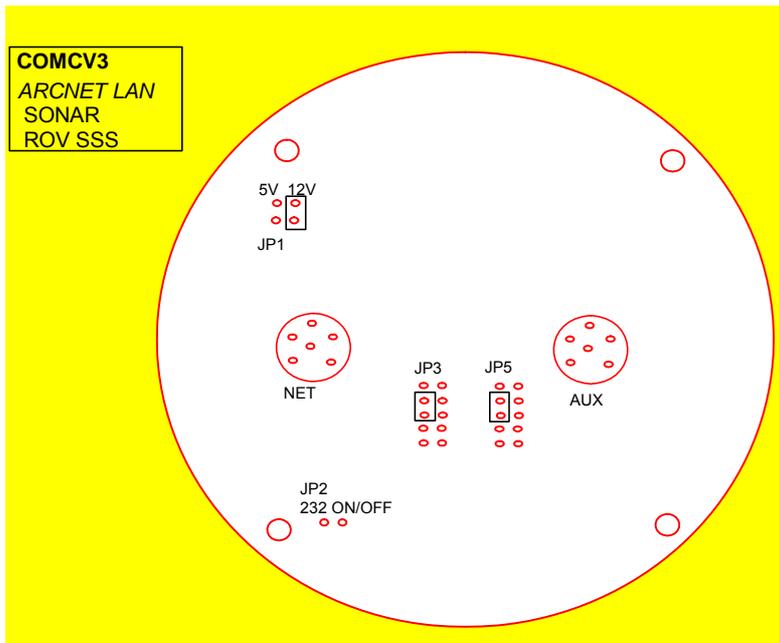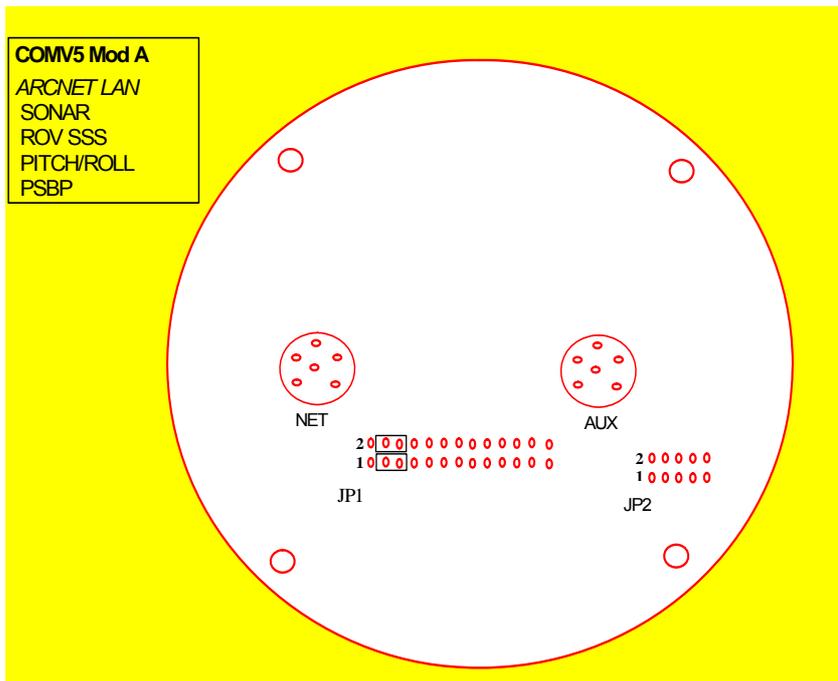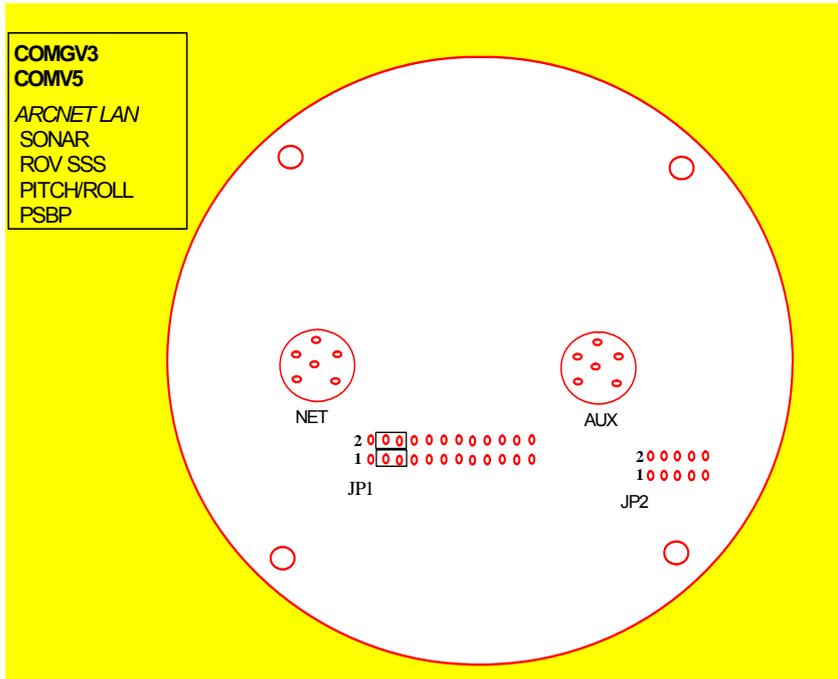
APPENDIX 2

I) ARCNET JUMPER SETTINGS FOR SEAKING SENSOR HEADS

ARCNET Jumper Links for operation of
DFS sonar, DST sonar, ROV Sidescan and Parametric Sub Bottom heads
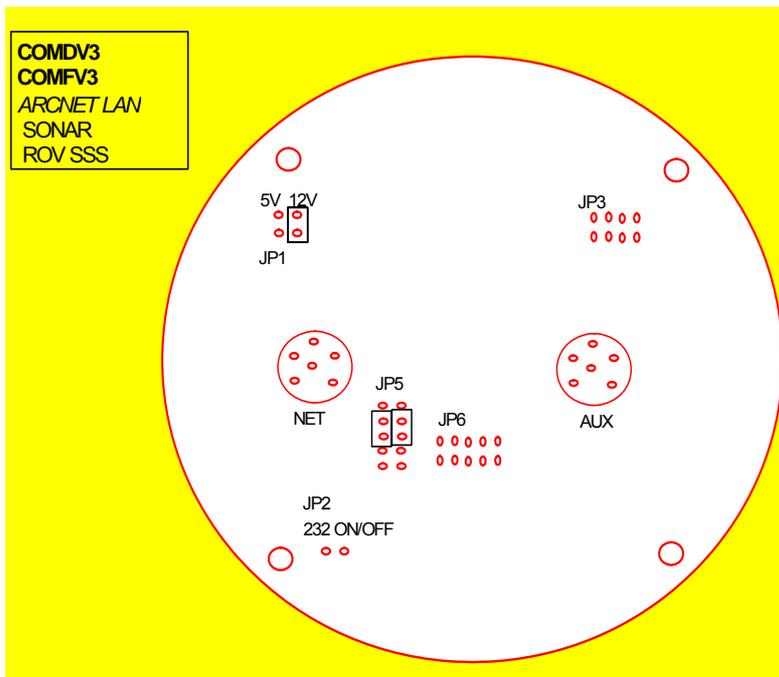
ARCNET Jumper Links for DFS head operation (cont.)

COMGV3
COMV5

ARCNET LAN
SONAR
ROV SSS
PITCH/ROLL
PSBP

NET

AUX

JP1

JP2

COMV5 Mod A

ARCNET LAN
SONAR
ROV SSS
PITCH/ROLL
PSBP

NET

AUX

JP1

JP2

⚠️ **NOTE**	Arcnet can use two different settings **on JP1 (3&5 4&6)** Or **(5&7 6&8) with GV3, V5 and V5 Mod A pcbs**

ARCNET Jumper Links for DFP head operation

COMDV3
COMFV3

ARCNET LAN
 PROFILER

5V 12V
JP1

JP3
DHP sync

NET   JP5   JP6   AUX

JP2
232 ON/OFF
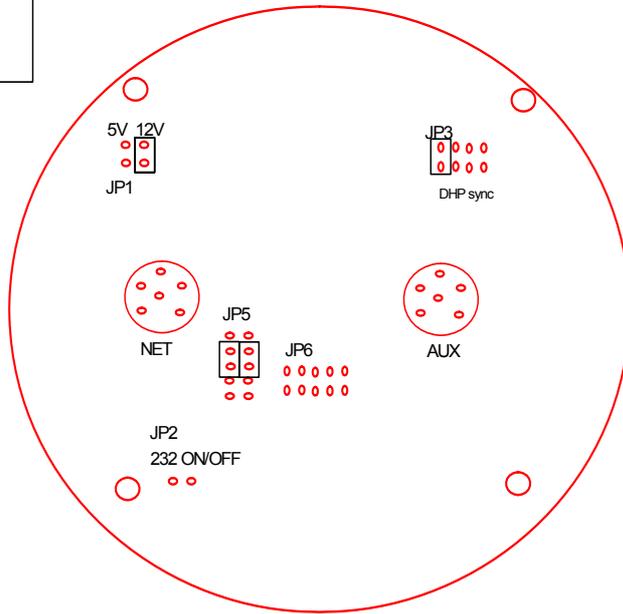
COMGV3
COMV5

ARCNET LAN
 PROFILER

NET   AUX

2
1
JP1

2
1
JP2

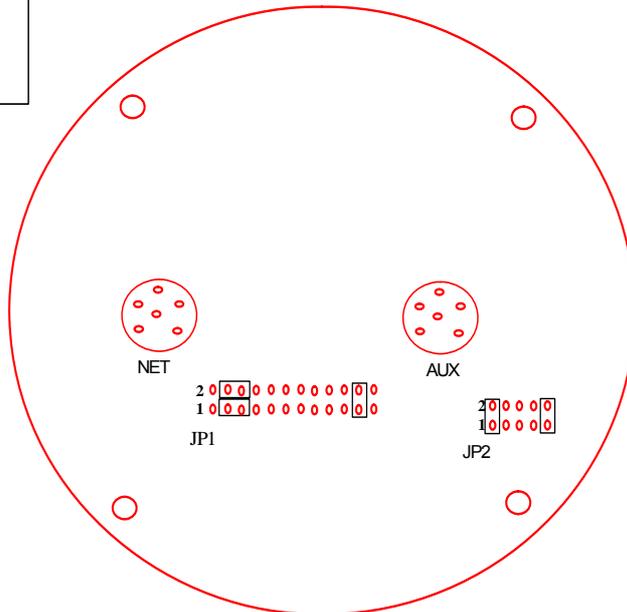**NOTE**

Arcnet can use two different settings **on JP1 (3&5 4&6)** Or **(5&7 6&8) with GV3, V5 and V5 Mod A pcbs**

ARCNET Jumper Links for DFP head operation (cont.)

COMV5 Mod A
ARCNET LAN PROFILER

NET

AUX

JP1

Moulded header with built in links See Note 2 below
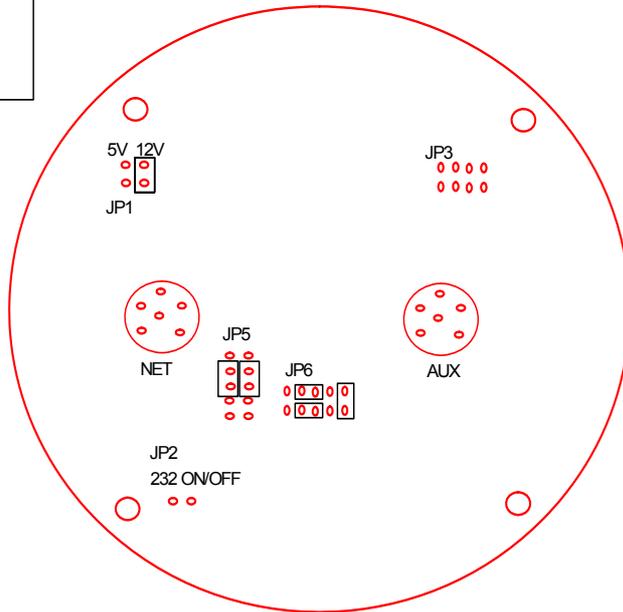
JP2
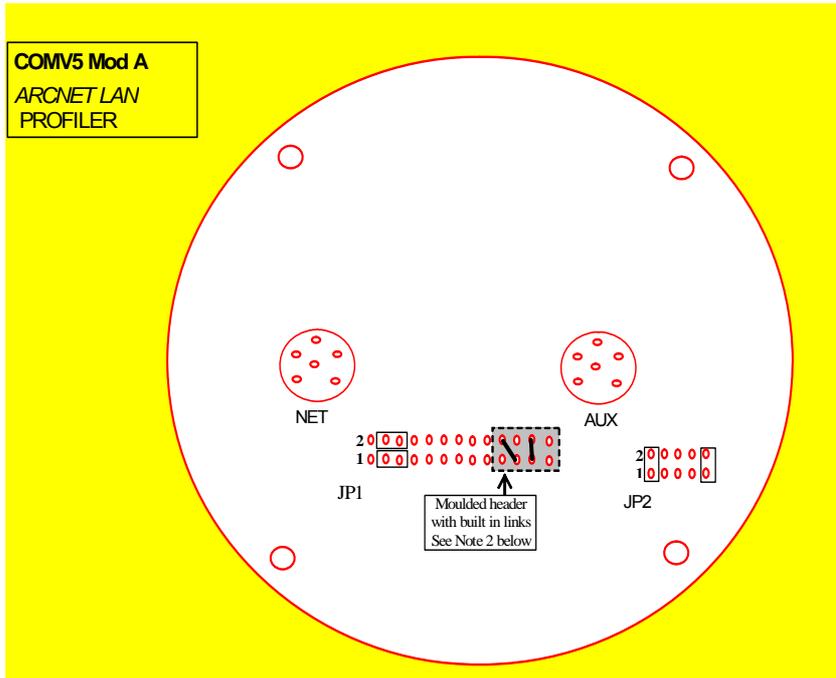
NOTE 1

Arcnet can use two different settings **on JP1 (3&5 4&6)** Or **(5&7 6&8) with GV3, V5 and V5 Mod A pcbs**
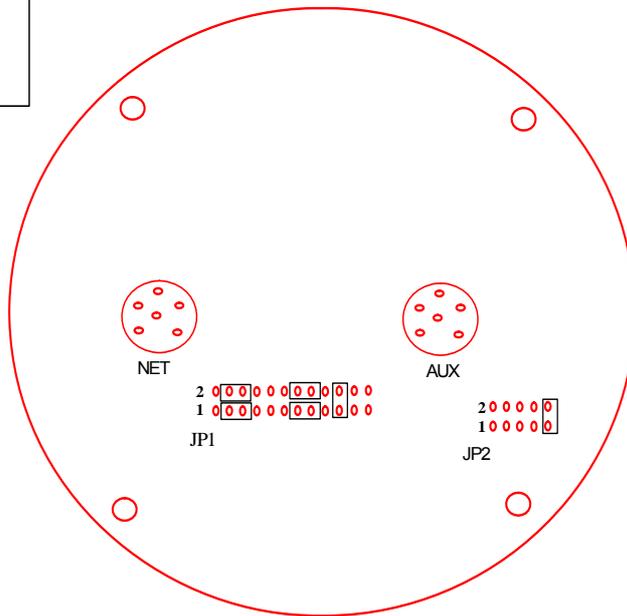

NOTE 2

Ping sync modification utilises a diagonal jumper on JP1 between pins 20 and 21 and new vertical jumper between pins 23 and 24. This can be made by fitment of a 4X2 moulded header (part number S7263) as indicated in the above drawing.
With this header in place, component R39 should not be fitted.

ARCNET Jumper Links for Bathy head operation

COMDV3
COMFV3
ARCNET LAN
BATHY

5V 12V
JP1

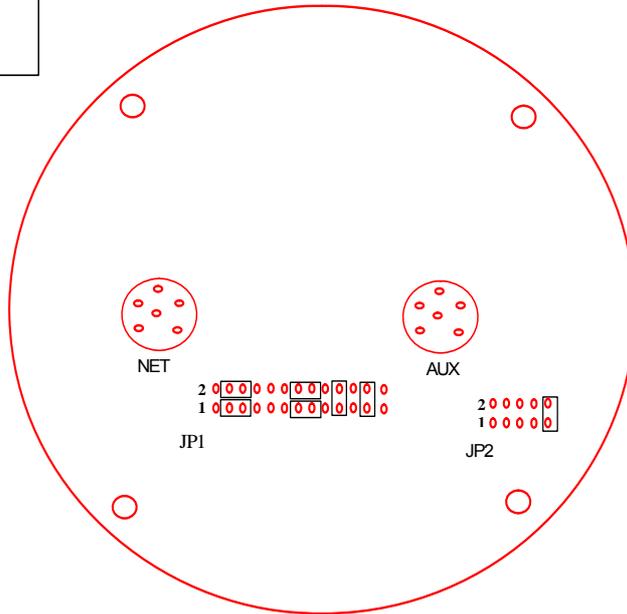JP3

JP5
NET   JP6   AUX

JP2
232 ON/OFF

COMGV3
COMV5
ARCNET LAN
BATHY

NET   AUX

2
1
JP1

2
1
JP2

⚠ NOTE	Arcnet can use two different settings **on JP1 (3&5 4&6)** Or **(5&7 6&8) with GV3, V5 and V5 Mod A pcbs**

ARCNET Jumper Links for Bathy head operation (cont.)

COMV5 Mod A
ARCNET LAN
BATHY

NET   AUX

JP1   JP2

NOTE	Arcnet can use two different settings **on JP1 (3&5 4&6)** Or **(5&7 6&8) with GV3, V5 and V5 Mod A pcbs**

APPENDIX 3

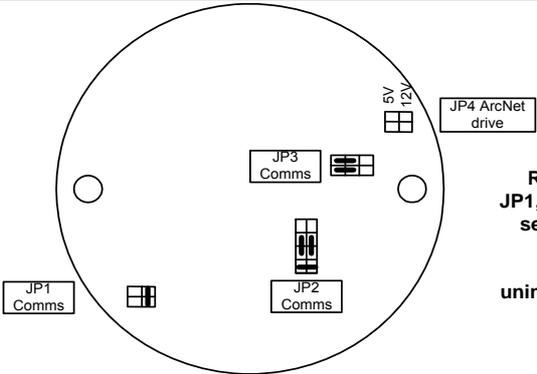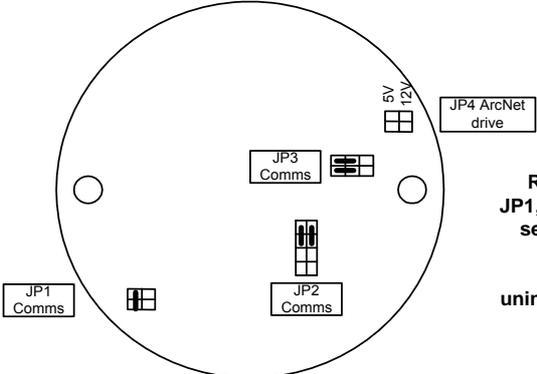## I) SEAPRINCE SENSOR HEAD HARDWARE JUMPER SETTINGS (RS-232 / RS-485 / ARCNET)
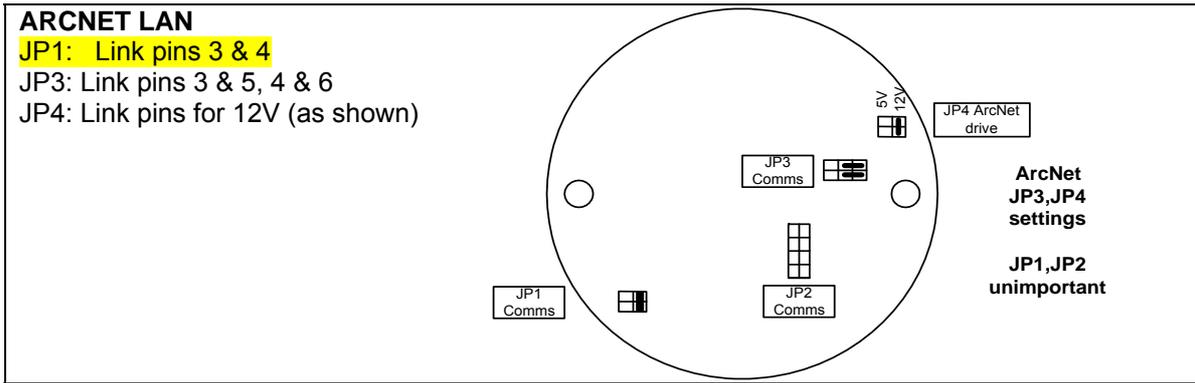*NOTE: THIS APPENDIX DOES NOT APPLY TO THE SUPER SEAPRINCE MODELS*

The SeaPrince head will use the **ASYNC 0 (AUX 1)** serial channel (as per SeaKing head) for RS-232 / RS-485 communications. Software setup for this is in the **Action** – **Setup** section of the **Seanet Setup** utility program.

⚠️ **CAUTION!**	**IMPORTANT!** a) The **AIFV4 ISA** card has only ARCNET or RS-232 comms options (NOT RS-485). b) The **AIFV4 PCI** card has ARCNET, RS232 *and RS485* The **AIFV4 PCI** card and SeaPrince can therefore be configured to run asynchronous through this RS-485 comms channel It is recommended that if required you contact Tritech for more details on this option.

To access the head PCBs remove the body-tube retaining cord and then remove the body-tube. Remove the two locking nuts securing the board stack and remove the top PCB leaving the S2COM pcb on the top of the stack.

The following **S2COM** PCB jumpers can be reconfigured for ARCNET LAN / RS-232 communications:

RS-232
JP1: Link pins 3 & 4
JP2 : Link pins 3 & 5, 4 & 6, 1 & 2
JP3 : Link pins 1 & 3, 2 & 4

RS-485
JP1: Link pins 1 & 2
JP2: Link pins 5 & 7, 6 & 8
JP3 :Link pins 1 & 3, 2 & 4

ARCNET LAN
JP1:　Link pins 3 & 4
JP3: Link pins 3 & 5, 4 & 6
JP4: Link pins for 12V (as shown)

5V
12V

JP4 ArcNet drive

JP3
Comms

**ArcNet
JP3,JP4
settings**

**JP1,JP2
unimportant**

JP1
Comms

JP2
Comms

II) ADDITIONAL NOTES FOR SEAPRINCE OPERATION

When running **RS-232**, ensure the following setup on connector board S2CONB PCB
S2CONB is the top PCB in the board stack…

- 'Y1' solderbridge is removed

- components R1, D2 are not fitted

- ground link to R1 pad is in place

When running **RS-485**, a 220Ω termination resistor may be included by remaking solderbridge Y1 and the ground link to R1 pad should be removed.

Y1

Solder bridge Y1
must be open for
RS232 &
closed for 220
Ohm.

D2

R1 & D2 removed
for sonar.
Top pad of R1
linked to ground
plane for RS232-
ground on pin 5

R1
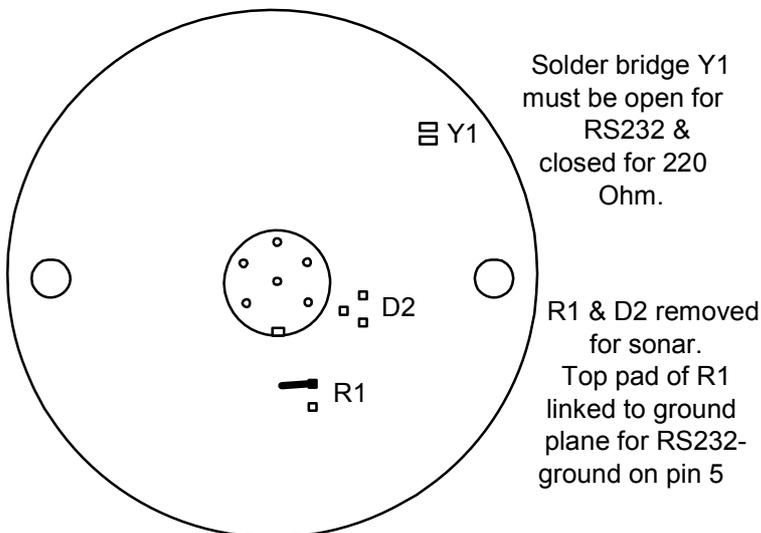
APPENDIX 4

AIFV4 Surface Card 15 way D-type connector pinouts

J2.1 - Communications D15F Rear Panel Socket

Pin	Signal Name	Usage	Note
1	*Supply -12V F0.3A*	*For Options*	
2	***Ground***	***RS-232 Ground***	
3	*SparePort*	*For Options*	
4	*Lan.RxInB*	*N/A*	
5	***Aux2.Rx / A***	***Aux 2 Comms***	*PCI card only*
6	***Aux1.Tx / B***	***Aux 1 Comms***	
7	*Lan.Pulse2*	*For Lan Modem*	
8	***Lan.A***	***ARCNET LAN-A***	
9	*Supply +12V F0.3A*	*For Options*	
10	*Supply +5V F0.3A*	*For Options*	
11	*Lan.Enable*	*N/A*	
12	***Aux2.Tx / B***	***Aux 2 Comms***	*PCI card only*
13	***Aux1.Rx / A***	***Aux 1 Comms***	
14	*Lan.Pulse1*	*For Lan Modem*	
15	***Lan.B***	***ARCNET LAN-B***	