Seanet Pro

TTL Fibre Optic Interface Manual

Supplied by

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F063.1

Handling of Electrostatic-Sensitive Devices

Attention

Observe Precautions for handling Electrostatic Devices

Caution

Handling of Electrostatic-Sensitive Devices

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.

F110.0

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.*

INTRODUCTION

The TTL fibre optic interface consists of one subsea converter card with interconnect leads.
It is fitted when it becomes necessary to use a fibre optic modem for communications between the control unit and a standard ARCNET subsea sensor network.

This may be because a twisted pair is not available or if the cable length is too long to support the high-speed data link over conventional conductors.

The subsea converter card is used in conjunction with the standard Tritech AIF card, which must be configured to obtain a TTL output, bypassing the normal ARCNET drive circuit.

This manual details configuration when using Seanet Pro software.

(If the older SONV3 software is used then the "*SeaKing TTL Fiber Optic Interface Manual*" should be referred to)

There are 2 AIF cards, which can be used with Seanet Pro software.
   A) AIFV4 ISA card - Using a Legacy ISA motherboard slot
   B) AIFV4 PCI card - Using a PCI pnp motherboard slot

The setup is different depending on the card used and this document details configuration for both types.
To identify which card is being used in your system, then refer to Appendix 2 at the end of this document.

Caution! | **The TTL output on an AIFV4 PCI card is supported by Seanet Pro from version 1.12 onwards.**
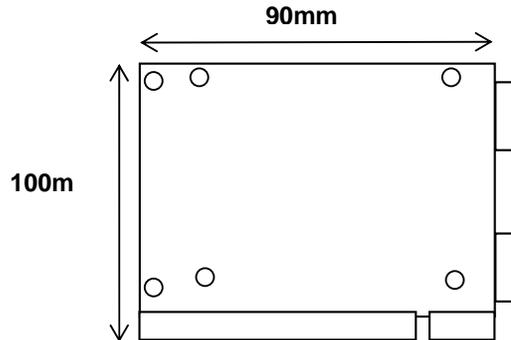
This manual must be used in conjunction with the other system manuals supplied with the system.

INSTALLATION

SUBSEA CONVERTOR CARD

It is down to the user to fit the subsea converter card in an appropriate place inside the ROV electronics pod.
Approximate card dimensions are given below

The card has a depth of 15mm

A short link cable is supplied for communications from the AIF card (J3) to customer Fibre optic surface modem. This carries TTL signals only.

At the subsea end connections may be made either using the DIN4162 J7 for all connections OR D connectors J8 for connection to the sonar heads and J2 for the TTL connection to the modem.

The converter card must be powered from an 18 to 36VDC supply via J8. Required power is 4W max.

Notes

Safety Statements

Caution! | The subsea converter card is factory configured for a Baud rate appropriate to the user's fibre optic system.

The baud rate is not user configurable.

It is imperative that system and serial numbers are quoted for any spares ordered in order to ensure the correct configuration.

Caution! | The ArcNet output on the converter card is normally terminated with 68 ohms, this should remove the necessity to fit further termination as described in the main manual.

A) AIFV4 ISA CONFIGURATION

The AIFV4 ISA card must be set with jumper JP2 3 & 4 linked see photograph below.

If the interface is removed and the AIF card is to be re-used for direct ArcNet communications then the jumper must be reset for pins 1 & 2.
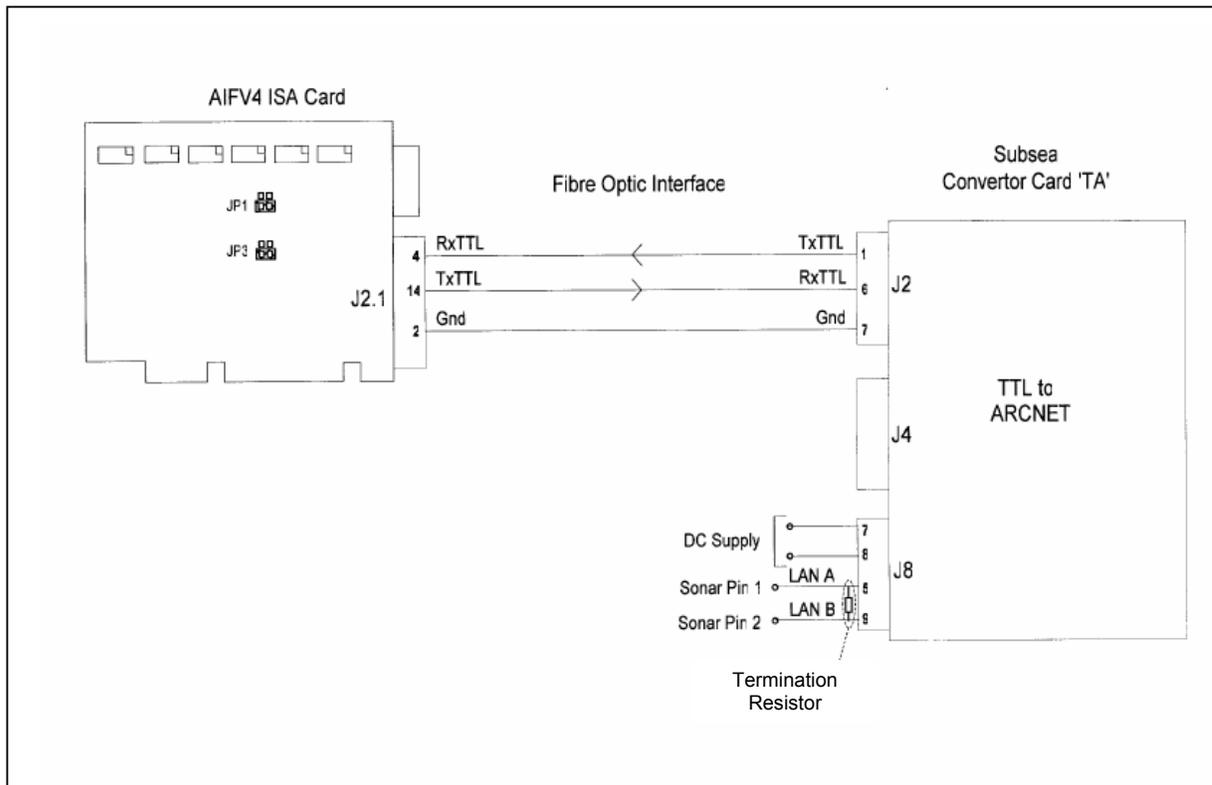
Jumper Positions V4 AIF
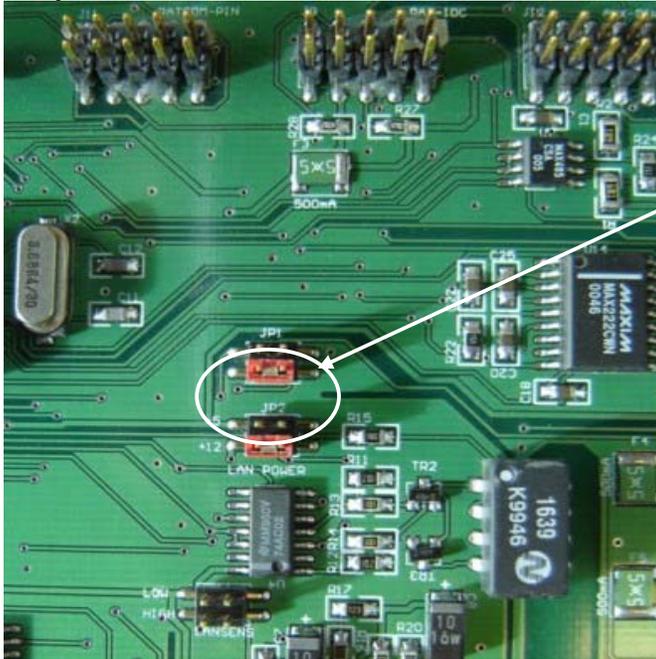
AIFV4 ISA CARD
JP1 Setting for AIF card

TTL (As shown)
Link made to pins 3 & 4

ARCNET
Link made to pins 1 & 2

CONNECTION DETAILS FOR AIFV4 ISA

B) AIFV4 PCI CONFIGURATION

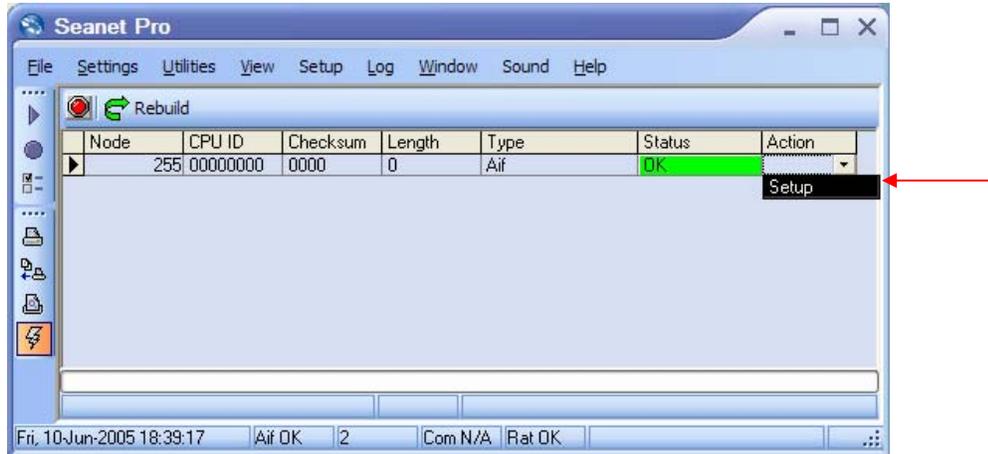The PCI version AIF card uses software to set the output mode between TTL and ARCNET rather than jumpers.

> ⚠️ **Caution!**   ***The PCI card can only be used with Seanet Pro software; it is not compatible with the SONV3 program.***

Details of how to switch between TTL and ARCNET modes of operation follow

Run Seanet Setup and ensure the AIF card is detected and OK as below

Select setup from the Action tab on the Node 255 row (See above).
Acknowledge the prompt and the following panel will open.

Arcnet Mode. Select TTL to set the AIF card to TTL mode
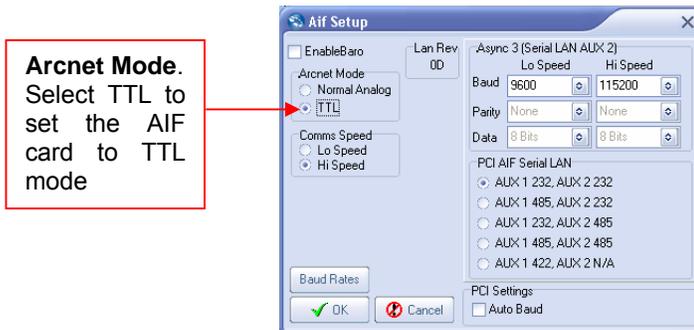
With TTL selected, the card will communicate through the 15 way D-type using the TTL pin outs as illustrated. Communication can only be made to a suitable TTL to ARCNET converter pcb.
This is normally situated at the subsea end and will convert the down and up data in order to communicate with the standard ARCNET subsea nodes.

It is advised at this stage to check the baud rates are set to default settings.
The subsea converter pcb will operate at a fixed baud rate, normally this is the full baud rate of 156kB.

> ⚠️ **Caution!**   ***If the interface is removed and the AIF card is to be re-used for direct ArcNet communications then the TTL Arcnet box must be unchecked.***

The subsea converter card is invisible to the system and will not be detected as a node number.
The node 2 below is detected through the TTL to ARCNET converter via a fiber modem system.

CONNECTION DETAILS FOR AIFV4 PCI

⚠️ **Caution!**

IT IS IMPORTANT TO NOTE THAT THERE IS A PINOUT CONFIGURATION DIFFERENCE BETWEEN THE AIFV4ISA AND THE AIFV4PCI CARDS.

On the main 15 pin connector J2.1, pin 2 is now an isolated ground connection and is no longer available for use with the TTL signals.
Ground reference for the TTL signal is now moved to Pin 3 on the PCI AIF card.
The TTL Tx and TTL Rx signals remain on pins 14 and 4.

See diagram below for a detailed connection diagram for the PCI card.

SURFACE CONNECTIONS

AIF CARD

J3 (=SCU 2.1)

TTL
COMM
(SCU

SUBSEA CONNECTIONS

INTERFACE
CARD
FOICOMM

J

HEAD
COMM
&POWER

J

TTL
COMM
(SUBSEA)

OR

HEAD COMMS
POWER &
TTL COMMS
(Customer supply)

J
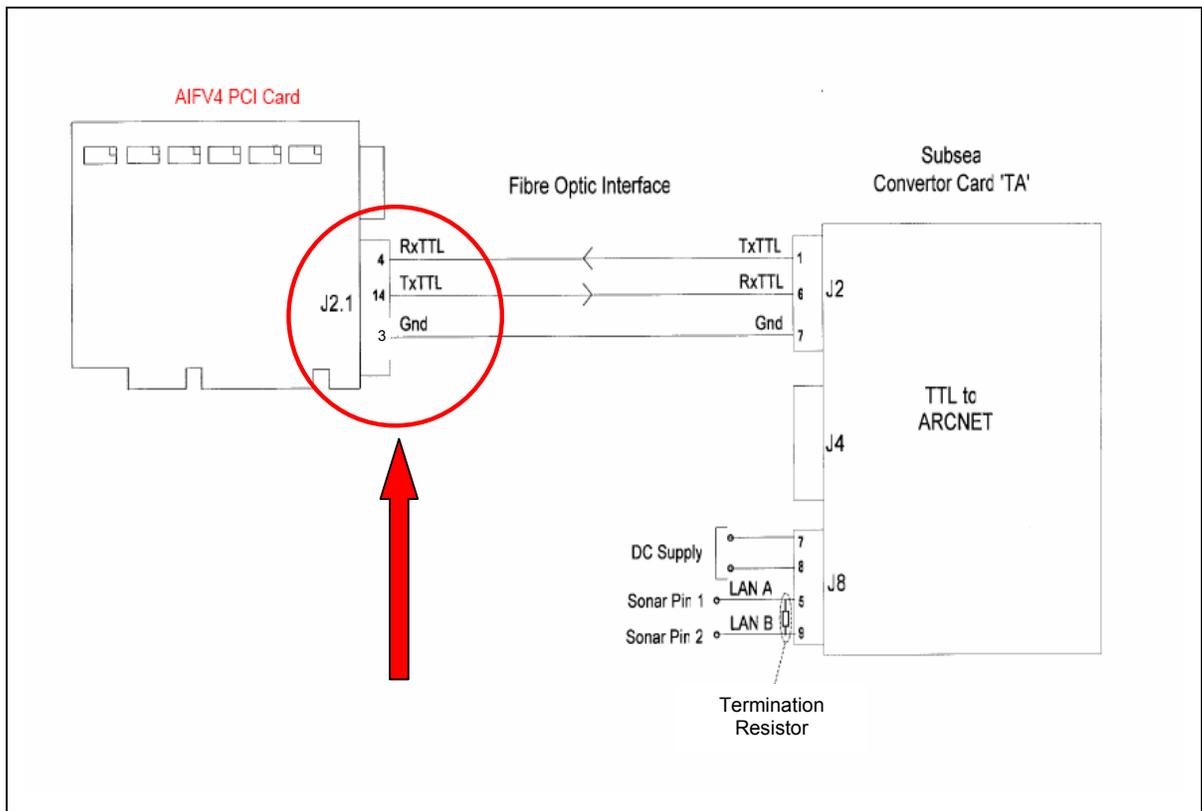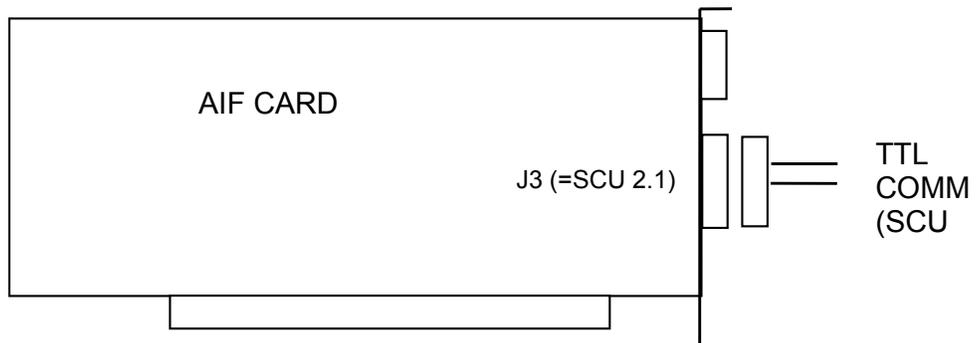
INTERFACE
CARD
FOICOMM
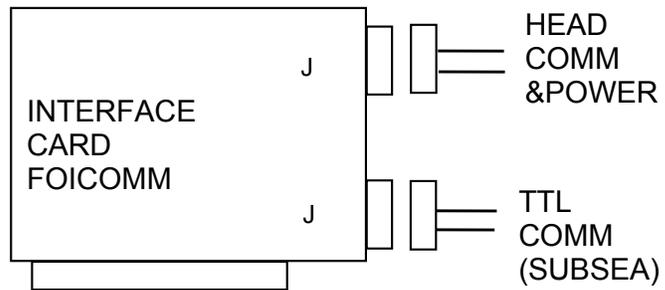
APPENDIX 1: DETAILED CONNECTION DATA FOR SUBSEA TTL CONVERTOR PCB

ARCNET Interface PCB I/O

DIN 41612 Type B connector

J2

5	
9	
4	
8	
3	
7	GND
2	
6	Rx.TTL
1	Tx.TTL

TTL I/O

J4

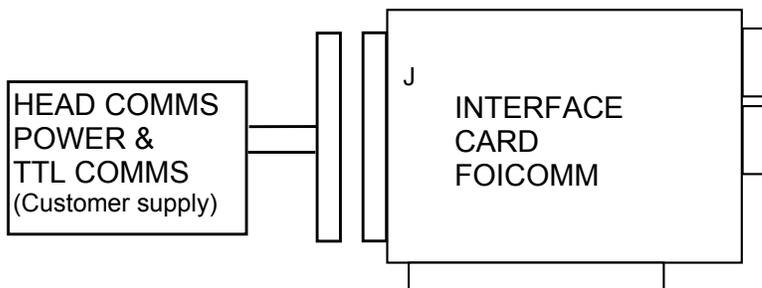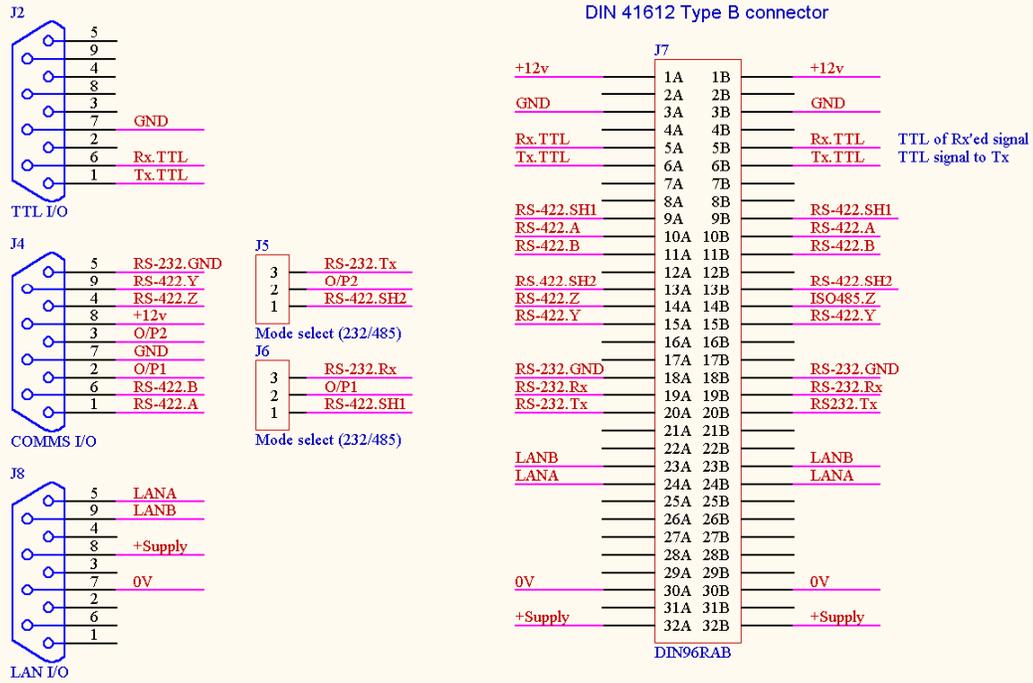|	
5	RS-232.GND
9	RS-422.Y
4	RS-422.Z
8	+12v
3	O/P2
7	GND
2	O/P1
6	RS-422.B
1	RS-422.A

COMMS I/O

J5

3	RS-232.Tx
2	O/P2
1	RS-422.SH2

Mode select (232/485)

J6

3	RS-232.Rx
2	O/P1
1	RS-422.SH1

Mode select (232/485)

J8

5	LANA
9	LANB
4	
8	+Supply
3	
7	0V
2	
6	
1	

LAN I/O

J7

+12v	1A	1B	+12v	
GND	2A	2B	GND	
	3A	3B		
Rx.TTL	4A	4B	Rx.TTL	TTL of Rx'ed signal
Tx.TTL	5A	5B	Tx.TTL	TTL signal to Tx
	6A	6B		
	7A	7B		
RS-422.SH1	8A	8B	RS-422.SH1	
RS-422.A	9A	9B	RS-422.A	
RS-422.B	10A	10B	RS-422.B	
	11A	11B		
RS-422.SH2	12A	12B	RS-422.SH2	
RS-422.Z	13A	13B	ISO485.Z	
RS-422.Y	14A	14B	RS-422.Y	
	15A	15B		
	16A	16B		
	17A	17B		
RS-232.GND	18A	18B	RS-232.GND	
RS-232.Rx	19A	19B	RS-232.Rx	
RS-232.Tx	20A	20B	RS232.Tx	
	21A	21B		
LANB	22A	22B	LANB	
LANA	23A	23B	LANA	
	24A	24B		
	25A	25B		
	26A	26B		
	27A	27B		
	28A	28B		
	29A	29B		
0V	30A	30B	0V	
	31A	31B		
+Supply	32A	32B	+Supply	

DIN96RAB

CABLE CONNECTIONS

TTL CABLE (SCU - SURFACE FO MODEM)

15w 'D' type plug	Wire colours	Modem Signal
14	Yellow	Down TTL (Modem Rx)
4	Red	Up TTL (Modem Tx)
2 (or3) *	Blue	GND

* Pin2 is used for ground on AIFV4 ISA
Pin3 is used for ground on AIFV4 PCI

TTL CABLE (INTERFACE CARD - SUBSEA FO MODEM)

9w 'D' type plug	Wire colours	Signal
6	Yellow	Down TTL (Modem Tx)
1	Red	Up TTL (Modem Rx)
7	Blue	GND

ARCNET CABLE (INTERFACE CARD - HEADS & POWER)

9w 'D' type plug	Wire colours	Signal	ARCNet Termination
5	Yellow	LAN A	⌐ 39
9	Blue	LAN B	⌐ Ohms
7	Green	0 V	
8	Red	18-36VDC	

APPENDIX 2: IDENTIFYING THE AIF CARD TYPE

The AIF card fitted inside the SCU can be easily recognised by paying a close visual inspection to the backplane of the Seanet SCU, see the pictures below.

AIFV4 ISA Card

AIFV4 PCI Card
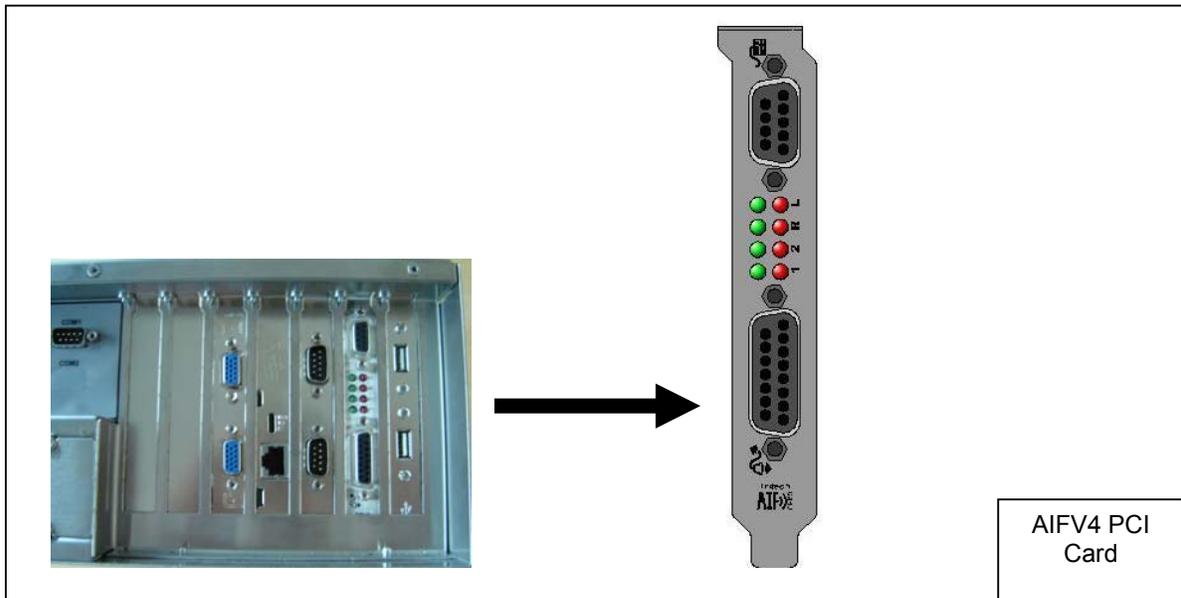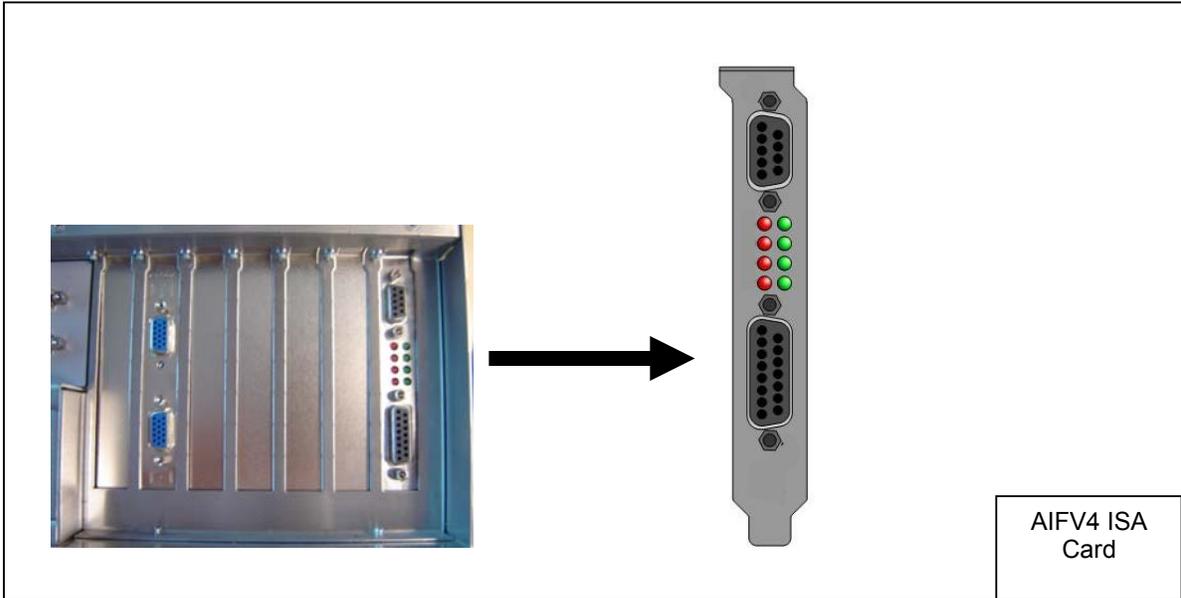
The main differences to look for are…

The D-type orientation is different between the two cards and the PCI LEDs are annotated.