SeaKing Parametric Sub-Bottom Profiler

Product Manual

0374-SOM-00014, Issue: 04

Tritech

Outstanding Performance in Underwater Technology

A Moog Inc. Company

Table of Contents

Help & Support

First please read this manual thoroughly (particularly the Troubleshooting section, if present). If a warranty is applicable, further details can be found in the Warranty Statement, 0080-STF-00139, available upon request.

Tritech International Ltd can be contacted as follows:

	Mail	*Tritech International Ltd* Peregrine Road Westhill Business Park Westhill, Aberdeenshire AB32 6JL, UK
	Telephone	++44(0)1224 744 111
	Fax	++44(0)1224 741 771
	Email	support@tritech.co.uk
	Website	www.tritech.co.uk

Prior to contacting *Tritech International Ltd* please ensure that the following is available:

1. The Serial Numbers of the product and any *Tritech International Ltd* equipment connected directly or indirectly to it.

2. Software or firmware revision numbers.

3. A clear fault description.

4. Details of any remedial action implemented.

Contamination

If the product has been used in a contaminated or hazardous environment you *must* de-contaminate the product and report any hazards *prior* to returning the unit for repair. *Under no circumstances should a product be returned that is contaminated with radioactive material.*

The name of the organisation which purchased the system is held on record at *Tritech International Ltd* and details of new software or hardware packages will be announced at regular intervals. This manual may not detail every aspect of operation and for the latest revision of the manual please refer to www.tritech.co.uk

Tritech International Ltd can only undertake to provide software support of systems loaded with the software in accordance with the instructions given in this manual. It is the customer's responsibility to ensure the compatibility of any other package they choose to use.

Warning Symbols

Throughout this manual the following symbols may be used where applicable to denote any particular hazards or areas which should be given special attention:

Note

This symbol highlights anything which would be of particular interest to the reader or provides extra information outside of the current topic.

Important

When this is shown there is potential to cause harm to the device due to static discharge. The components should not be handled without appropriate protection to prevent such a discharge occurring.

Caution

This highlights areas where extra care is needed to ensure that certain delicate components are not damaged.

Warning

DANGER OF INJURY TO SELF OR OTHERS

Where this symbol is present there is a serious risk of injury or loss of life. Care should be taken to follow the instructions correctly and also conduct a separate Risk Assessment prior to commencing work.

1. Specification

Dimensions Diagram
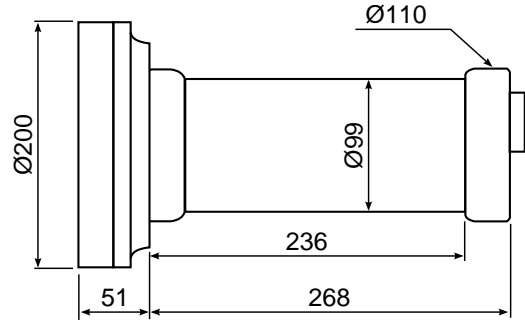
Not to scale, dimensions in mm.

Acoustic Properties

Acoustic	Low frequency	High frequency
Frequency	20kHz	200kHz
Beamwidth	4.5°	4°
Pulse length	100µs	

Electrical Properties

Electrical and Communications	
Power requirements	20V to 72VDC at 8W AUX port voltage equal to Main port supply (see note)
Communication protocols	ARCNET, RS232, RS485

Note

The current specified is during operation; during startup there will be a current spike which is higher than this value.

Physical Properties

Physical	
Weights	Air: 6.3kg, Water: 2.7kg
Depth rating	4000m
Materials	Aluminium alloy (hard anodised)
Temperature	-10 to 35°C (Storage: -20 to 50°C)

Software

Software
Tritech Seanet Pro or low-level direct command control

2. Introduction

A SeaKing Sub-Bottom Profiler System is made up from the Profiler, the *Tritech International Ltd* Seanet Pro control and display software and either a Surface Control Unit (SCU) or SeaHub. This manual deals with the Sub-Bottom Profiler and any specific aspects of Seanet Pro that are necessary to get a system working. For more details of Seanet Pro please refer to the Seanet Pro Software Manual and further details of the SeaHub or SCU can also be found in their respective manuals (all current manuals are available on www.tritech.co.uk).

The Seanet Pro software is Windows based and provides control of the complete range of sub-sea products that *Tritech International Ltd* produce. It is also possible to display multiple devices within Seanet Pro.

The SeaKing Sub-Bottom Profiler is typically configured to communicate with the SCU or SeaHub using the ARCNET LAN telemetry protocol. This is the standard protocol that is used in all SeaKing devices and provides a high bandwidth at a default communications rate of 156kbit·s^{-1}. It is also possible to reconfigure sensors to communicate at a lower rate or using serial protocols (such as RS232 or RS485).

The DST SeaKing SBP has the following features:

Scan rate	The head can achieve a very fast scan rate which gives faster target acquisition.
Dual Frequency Operation	The SeaKing SBP can use up to two operating frequencies - one giving a profile of the seabed and the other for penetrating through sediments and revealing objects beneath the seabed. It is effectively two profiler heads in a single housing.
Electrical Connection	The SeaKing uses a *Tritech International Ltd* 6 pin waterblock but can be fitted with an alternative connector on request.

RS485 Connection

Communication with the SeaKing SBP using the RS485 protocol is only available if the unit is fitted with the V6 COM PCB. Please contact *Tritech International Ltd* if you require more information about the V6 COM PCB, or if you are unsure if your unit has this PCB fitted.

3. Installation

3.1. General Overview

The SeaKing heads are supplied with a waterblock fitted to the device and as standard a proprietary connector usually referred to as the "Tritech 6-Way Connector". Other connectors are available and various lengths of test cable can be supplied with the connector. For more details contact *Tritech International Ltd*.

The waterblock is fastened to the body tube of the head, and provides a 4000m rated pressure bulkhead. This will protect the electronics from water ingress in case the connector is damaged or not fitted correctly. The connector may be disconnected from the heads by unscrewing the four securing screws.

Note

It is not necessary to remove the waterblock when removing the connector. While the connector is removed from the head, the blanking plugs supplied should be fitted to prevent the ingress of dirt or moisture.

3.2. Seanet Pro Software

The Seanet Pro Windows software will be provided either on an Installation CD-ROM (for SeaHub interface to user computer) or pre-installed on the Seanet SCU.

For the CD Installation, if Setup does not auto-run on disc insertion, run the SETUP.EXE file from the disc to start the installation.

3.3. Installing the Profiler Head

Caution

Although the Profiler heads are rugged, they should be handled with care, particularly the connector and transducer.

The heads should be secured by clamping on the cylindrical body section such that the transducer is unimpeded and not shielded. A guard can be fitted

over the head to protect from impact damage but this must not overlap the transducer area or it may have an effect on the profiler image.

> **Caution**
>
> It is important that no clamping force is applied to the transducer.

The clamp should be applied centrally to the aluminium body tube and should not be over-tightened. Any metallic clamps should be electrically insulated from the profiler body by means of rubber or plastic strips or mount brackets of at least 3mm thickness and extending at least 3mm beyond the clamp boundary to reduce any galvanic corrosion effect. Non-metallic clamps are preferable: if metallic clamps are used they should be painted or lacquered with at least two or three coatings.

> **Caution**
>
> Avoid any metal alloys containing copper such as brass or bronze.

Care should be taken to mount profiler heads to ensure that they are mounted as close to the true vertical as possible in relation to the trim position of the vehicle. Errors in the head alignment can give rise to unreliable results.

3.3.1. SeaKing Communication Configuration

> **Note**
>
> The Seanet SCUv5 and SeaKing heads cannot be used with AIF cards as used in earlier WINSON based SCU-3 systems. They must be used with SeaKing AIF ARCNET cards (AIFV3/V4). The Series 2 Sonar, Profiler and devices heads cannot be directly used with SeaKing and Seanet systems. For upgrade options please contact *Tritech International Ltd*

The Profiler head may form part of an ARCNET multi-drop, network of sensors that are normally interfaced to the Surface Unit through the internal AIF interface PCB (installed in the SCU) or external SeaHub serial interface module.

Normal communications with the Profiler head is via a customised version of the ARCNET network system and requires a good quality balanced twisted pair cable. It is possible to interface the ARCNET to wide band multiplexer systems - contact *Tritech International Ltd* for details.

> **Note**
>
> For an ARCNET connection termination resistors need to be fitted at each end of the umbilical. Refer to Appendix A, *ARCNET Termination*

Note

There is a single-head RS232/RS485 option built into SeaKing heads but this is not multi-drop.

Refer to the Seanet Pro and Seanet SCU manuals for more information on serial RS232/RS485 configuration and baud setup.

3.3.2. Subsea Sensor Electrical Installation

If using a rectified transformer PSU, the output of the PSU must have a filter capacitor of not less than 470µF, for each head being powered. If an unregulated PSU is used, then make sure that the voltage value measured at the head is in the range 20-36v DC, in power on/off and running conditions. If powering the head(s) down a long lead or umbilical, the maximum recommended loop resistance of the power line must not exceed 10Ω for one head, 5Ω for two heads, and 3Ω for three heads. If the supplied voltage is less than 20V DC the profiler head may not operate correctly.

Caution

Never try to make SeaKing profiler work down a long cable by increasing the PSU output voltage above 36V DC.

3.3.3. Ground Fault Monitoring Equipment

The power supply within SeaKing subsea devices includes an electrically isolated DC-DC converter front-end, There is a small capacitive connection to the profiler chassis which should not noticeably affect any impressed current ground fault indicator (GFI) equipment.

3.3.4. Waterblock Pin-out Diagram
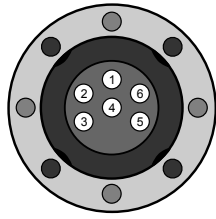
Tritech Waterblock

Pin	MAIN port	AUX port	Cable colour
1	RS232 TX ARCNET A RS485 A	RS232 RX ARCNET A RS485 A	Yellow
2	RS232 Rx ARCNET B RS485 B	RS232 TX ARCNET B RS485 B	Blue
3	+DC Power		Red
4	-DC Power		Black
5	Dual Head Sync/ RS232 Ground		Green
6	Earth/cable shield		cable screen

4. Operation

4.1. Seanet Pro

The Seanet Pro application can be run from the `Programs` group in the Windows `Start` menu or from the desktop by double clicking on the shortcut icon on the desktop.
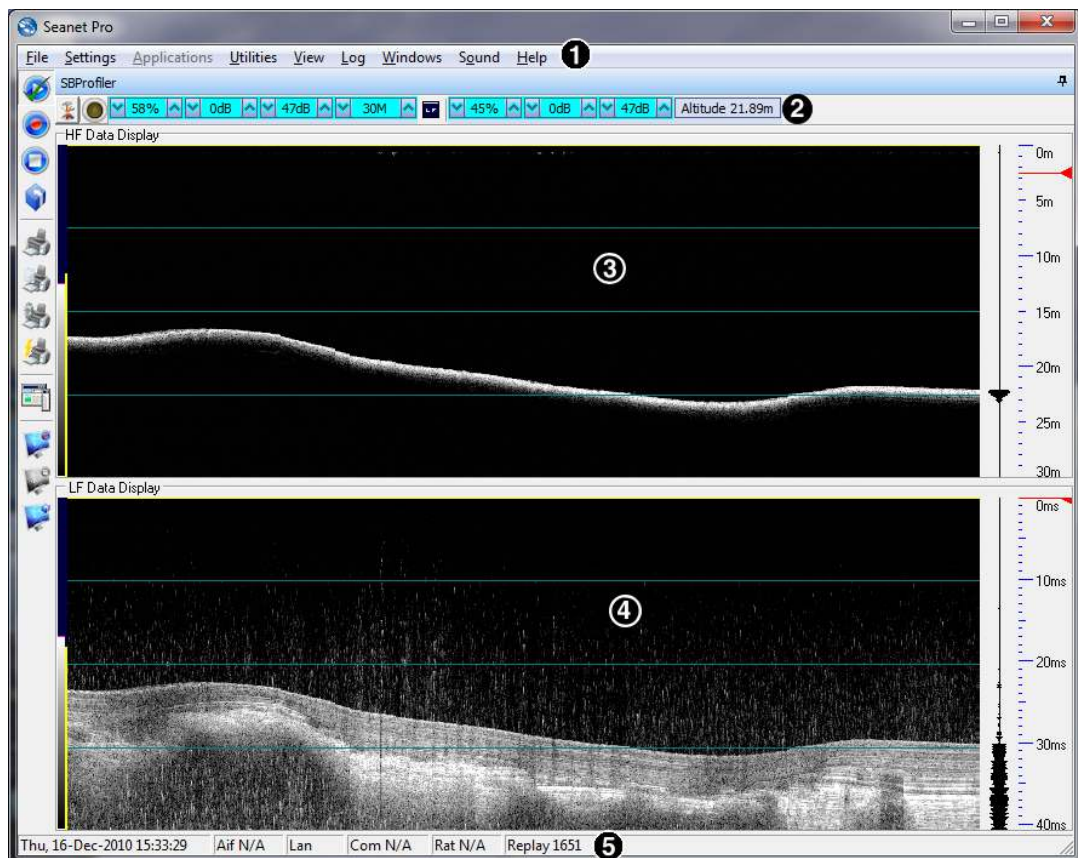

Figure 4.1. SBP Seanet Pro Main Screen

❶   Menu bar
❷   Sub Bottom Settings Bar
❸   High Frequency Echosounder display
❹   Low Frequency Sub-Bottom display
❺   Status bar

4.1.1. SBP Settings

The SBP controls are displayed on the Sonar Settings bar. When the RAT is used or screen cursor is moved over the Sonar Settings bar, a pop-up control panel will appear which will display the remaining controls. These mimic the

positions of the rotary controls (C1 to C5) and function buttons (F1 to F7) on the RAT. Adjustments may be made using the RAT or the on screen controls using the pointer device.
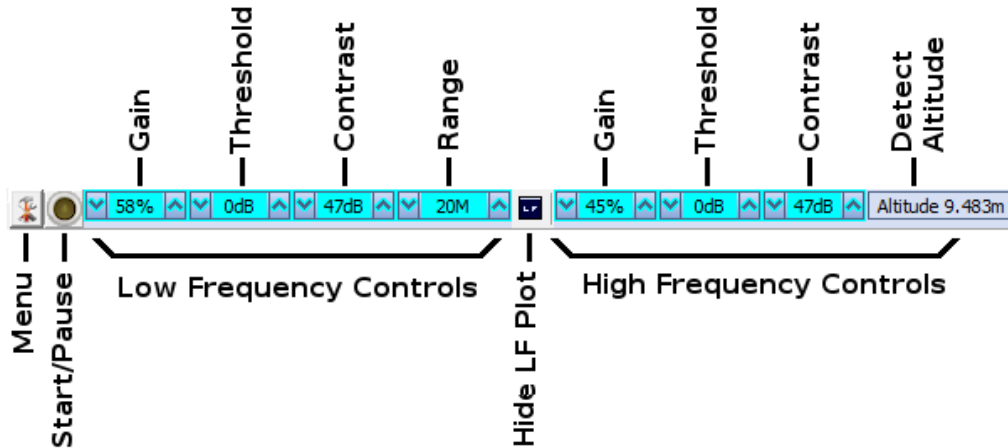

Figure 4.2. SBP Settings Bar

ⓘ Note

The F1 and F2 Function buttons are only applicable in multi-window applications.

LF/HF Gain	This sets the sonar receive gain as required – typically this is around 20% but is varied according to water and target conditions and user preference. There are 2 Gains controls; an LF (Low Frequency = 20kHz) and an HF (High Frequency = 200kHz)
LF/HF Contrast and Threshold	This sets the size and position of the receiver sampling window (see 'Dynamic Range and Sonar Rx Indicator'). Usually set to user preference, it can help find small features in a generally featureless situation or exclude clutter from a heavily featured seabed. As with the Gain control, this applies to Low Frequency (LF) and High Frequency (HF) receiver channels.
HF Detect Altitude	When the 'Detects' is enabled in the Setup menu of Application Tools (see further below), the 1'st High Frequency signal echo that the receiver samples will be taken as being the bottom surface. This will be displayed as the 'Altitude' value. N.B. The Altitude data string can also be output serially via the REMV4 utility.
Range (C3)	This sets the maximum range the sonar will scan. Long ranges are scanned more slowly than short

ranges due to the limit imposed by the velocity of sound in water.

Show HF	The Sub-Bottom Profiler display can be set to display only the Low Frequency 20kHz returns or the screen may be horizontally split to display Low Frequency and High Frequency (HF = 200kHz) returns. The 20kHz is the sub-bottom frequency which is usually of most interest and therefore the HF echo-sounding display portion of the screen may be disabled by un-checking the 'Show HF' check-box.
CYC (F1) - Cycle Window	This can be used when one of the display windows is maximised using the Expand (F2) button and will cycle between the Sonar display windows. Also use the F1 button to switch focus between the display windows. The optional RAT controller will switch its control to the display that has the focus. Note: clicking on a display with the mouse pointer will also switch focus to that display.
EXP (F2) - Expand Window	This will maximise the current display window that is in focus. Either click on a display window to switch focus to it before expanding, or press the Cycle (F1) button to switch focus to a display window.

4.1.2. Application Tools

Click on the Tools icon on the left of the Sonar Settings Bar to open the popup menu which includes all the Application Tools for the main LF (Low Frequency, 20kHz) sub-bottom channel.

ⓘ **Note**

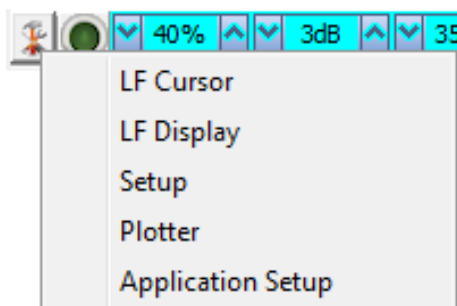Right click on the LF and HF displays to open the popup menu for Low and High Frequency channels.

Figure 4.3. Application Tools Menu
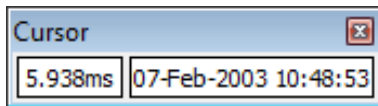
LF Curssor

Figure 4.4. Application Tools, LF Cursor

Adds the cursor position panel to the LF 20kHz Sub-Bottom display plot.

Move the mouse pointer over the LF 20kHz waterfall display to update the cursor position giving Range to pointer and Time of scan-line that the pointer is positioned over.

> **ⓘ Note**
>
> If the system has real-time GPS position and heading data input, the panel will extend to additionally display the target co-ordinates (Lat/Lon or E/N).

LF Display

Figure 4.5. Application Tools, LF Display
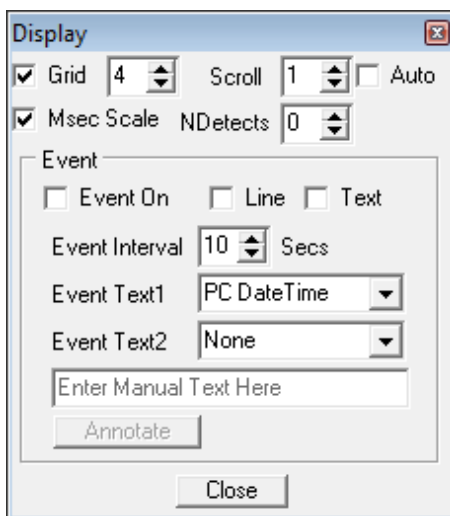
Sets up LF 20kHz Sub-Bottom display.

Grid   Display the set number of range lines.

Scroll   Zoom the waterfall plot on the time axis (i.e. accommodates different vehicle speeds).

Auto   Auto-adjust scroll from incoming vehicle speed data.

Msec Scale   Millisecond scaling on/off.

NDetects   Number of detects (see 'Setup' below).

Event On   Toggle display event on/off.

Line   Toggle event line on/off.

Text   Toggle event text on/off.

Event   Set a time interval of 1-60secs between events. This is not
Interval   applicable for 'Manual Text' events.

Event Text1   Select an event type from the list. Options are:

                 1. None (no event text displayed)

                 2. PC DateTime (current date and time from scu/pc)

                 3. Manual Text (enter text via edit box and click 'Annotate'
                    button)

                 4. Remote Text (from serial 'Aux' device through Seanet
                    'Utilities' -> 'Aux Device' menu)

                 5. GPS E/N (from serial 'GPS' device through Seanet
                    'Utilities' -> 'GPS' menu)

                 6. GPS Lat/Lon (As 'GPS E/N' except data is Latitude/
                    Longitude, not Eastings/Northings)

                 7. GPS UTC Time (from serial 'GPS' device through Seanet
                    'Utilities' -> 'GPS' menu)

Event Text2   As 'Event Text1' except text is plotted on the opposite side of
                 the display. This provides the option of plotting two separate
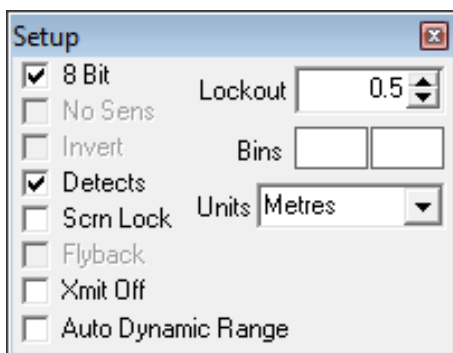   event texts together.

Setup

Figure 4.6. Application Tools, Setup

8 bit   Usually checked. Selects the intensity sampling of sonar data
                 (4-bit or 8-bit).

Detects	Paint the leading edge of strong targets on the screen. Used to emphasise sub-bottom layers.
	This control must be enabled to calculate an 'Altitude' value which is displayed on the Settings Bar.
Scrn Lock	Locks the number of range 'bins' sampled to the screen resolution. This over-rides the Resolution (F4) control.
Lockout	Sets a minimum lockout range for the detects (always in metres).
Units	Waterfall display Range units (Metres, Feet, Fathoms, Yards).
Auto Dynamic Range	This will auto adjust the Display Contrast and Sensitivity whilst the SBP is scanning. Auto adjustment occurs periodically.

Plotter

This is for printout to a parallel port EPC or Alden thermal plotter.
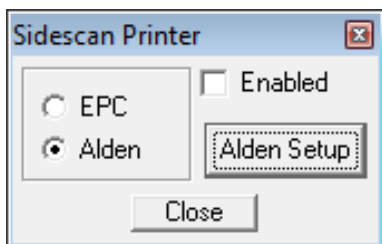

Figure 4.7. Application Tools, Plotter

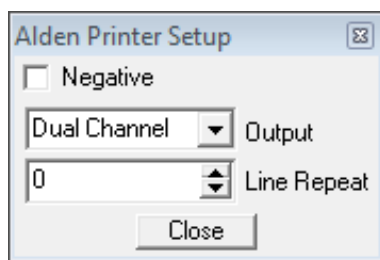| EPC / Alden	Select the desired printer and then tick the 'Enabled' tick-box to open the parallel port connection.
Alden Setup	When Alden is selected this button will become active. Click on this button to setup the Alden interface.

Figure 4.8. Printer Setup

- `Negative` – invert greyscale output.

- `Output` – Dual Channel or Left or Right Channel.

- `Line  Repeat` – stretches printout by repeating line printouts (0 = off).

5. Maintenance

5.1. After using the Profiler

Make sure that after using the Profiler head that it is washed down with fresh water and check the unit for any signs of obvious damage. Pay particular attention to the transducer head and free any organic matter which has become trapped. Once the unit is clean; dry thoroughly and place in storage container.

5.2. If storing the head for extended periods

Make sure that the Profiler is completely dry (if necessary leave to air-dry before stowing). Pack into storage container along with several pouches of silica gel.

5.3. SeaKing regular maintenance

General Guidelines

⚠️ **Caution**
It is essential to have a regular maintenance schedule so that any defects arising from corrosion or erosion can be spotted early and corrected before they cause severe damage to the unit. It is recommended that the unit is annually serviced and can be returned to *Tritech International Ltd* for this purpose

Competent, trained, personnel can perform regular preventative maintenance on these units. Contact *Tritech International Ltd* for more details on the training courses available.

Servicable Items

The standard Tritech SeaKing unit has several user serviceable items, all located on the connector endcap.

Exploded view diagram	Item	Part Number	Description
	3	S01037	Body O-ring
	4	S01204 ASSY	Connector Endcap
	5	S00009	0161-16 O-ring
	6	S01252	Endcap puller
	7	S01299	M5x25 Endcap puller screw
	8	S00987	Waterblock
	9	S01182 ASSY	Pressurised blanking cap
	10	S01038	Retaining O-ring
	11	S01023	Retaining ring
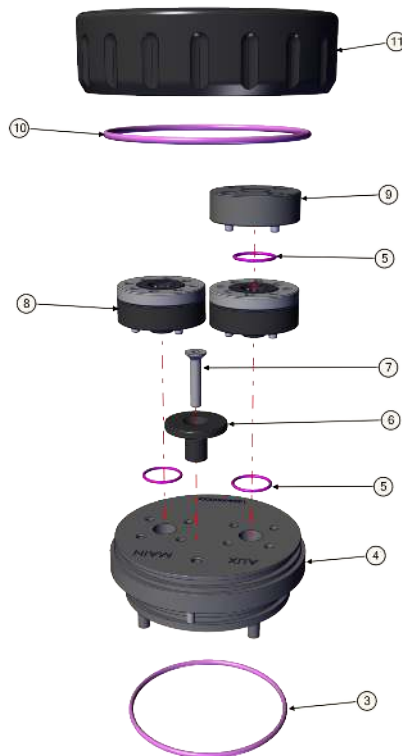
i

Note

The part numbers expressed are subject to change.

i

Note

Alternative configurations may have additional serviceable items, if in doubt please contact *Tritech International Ltd* to establish the correct service routine.

The o-ring seals should be regularly inspected, cleaned and lubricates with the appropriate greasing compound. The body of the unit should also be inspected for any obvious signs of corrosion, especially in mating surfaces (such as the waterblock).

5.3.1. Disassembly of the SeaKing unit

!

Warning

In the unlikely event that the subsea housing has suffered water ingress at depth there may be internal pressurization. This could forcibly eject the end-cap when the lock ring is removed.

If wishing to dismantle the unit, for any reason, due care and attention should be taken to prevent damage or injury.

Important
The steps outlined here will expose sensitive electronic equipment and so appropriate steps should be taken to prevent any static discharge occurring which may harm the equipment.

Caution
Servicing of the SeaKing unit should only be carried out by competent personnel in a dry, clean environment with full ESD precautions.

Service tools required

• Clean absorbent wipes

• Silicon grease MS-111 lubricant (or equivalent)

• A M3 Allen Key or Hex driver

• A 5.5mm spanner, or nut spinner

Procedure

1. Rinse the unit and connector in fresh water and dry with absorbent wipes

2. Using the M3 Allen key, loosen each of the retaining screws of the Pressurised blanking cap (if present)

3. Using the M3 Allen key, loosen each of the retaining screws of the MAIN and AUX (if present) waterblocks. Each screw should be loosened by a quarter turn in order to prevent damage to the screw threads.

4. Remove the connector endcap locking ring

5. Using the endcap puller, pull the connector endcap off the unit

6. The electronics block will then slide out of the housing attached to the connector endcap.

Caution
Care should be taken when removing the electronics block. There will be fly leads from the top most PCB leading to other areas within the SeaKing. These leads may be damaged if too much force is used when extracting the electronics.

7. On the top of the electronics block, use the 5.5mm spanner to carefully remove the four retaining nuts

8. In turn, remove each PCB and each set of four stand off posts underneath until only the PCB closest to the endcap remains – the COM PCB

9. Remove the last PCB and then unscrew the four guide posts from the connector endcap

Once fully disassembled, inspect the various o-ring seals and sealing surfaces for signs of damage and corrosion. Pitting and corrosion within an o-ring sealing area can cause a unit to lose integrity and lead to water ingress and significant damage.

Waterblock O-Ring   **Endcap O-Ring**

The highlighted areas on the images above are the critical sealing areas that should have no signs of corrosion. Corrosion in these areas will necessitate the replacement of the connector endcap.

5.3.2. Reassembly of the SeaKing unit

Important
The steps outlined here will expose sensitive electronic equipment and so appropriate steps should be taken to prevent any static discharge occurring which may harm the equipment.

Caution
Servicing of the SeaKing unit should only be carried out by competent personnel in a dry, clean environment with full ESD precautions.

Service tools required

• Clean absorbent wipes

• Silicon grease MS-111 lubricant (or equivalent)

• A M3 Allen Key or Hex driver

• A 5.5mm spanner, or nut spinner

Procedure

1. Carefully clean all parts and check for damage.

2. Inspect o-ring seals and replace if necessary.

3. Screw in the four guide posts onto the connector endcap

4. Fit the COM PCB and a set of four stand off posts

5. Refit each PCB and set of stand off posts

6. On the top most PCB, locate the four hexagonal pictures on the PCB

7. Using the 5.5mm spanner secure the retaining nuts at these locations

8. Carefully insert the electronics block back into the Body tube, ensuring that the dowel pin on the connector endcap lines up with the recess point on the Body tube

9. Fit the connector endcap locking ring

10. Using the M3 Allen key, fit the MAIN and AUX (if applicable) waterblocks. Each of the waterblock screws should be tightened, in turn, by a quarter turn until the waterblock is flush and level to the connector endcap

11. Using the M3 Allen Key, fit the Pressurised blanking cap (if applicable) either directly onto the AUX port, or on the AUX waterblock if it not to be used.

12. Visually inspect the unit to ensure that all surfaces have mated correctly

6. Troubleshooting

Continuous Status `Timeout 15` *message*

This indicates that there is no communication with the device flagged - in this case the Node number of the device is 15.

Check the power and communication links to the Sub Bottom Profiler head for continuity, correct polarity and voltage. Ensure that the power supply can provide sufficient current to power all devices.

If a cable flood is suspected the conductors will need to be insulation tested, the sonar heads and SCU must be disconnected.

Appendix A. ARCNET Termination

Depending on the cable length the ARCNET communication link requires a termination resistor to be installed at each end of the umbilical cable. Normally this is supplied fitted within the ARCNET cable DA-15 or within the SCU/SeaHub at the surface and is left for the user to fit at the sub-sea end in a convenient junction box or by use of a special waterblock.

The purpose of these terminations is to attenuate any electrical interference or "reflections" which may occur due to an impedance mis-match and the overall aim is to improve signal quality and negate any effects which might otherwise be felt by other sources of impedance such as from the cable itself.

The diagram below shows best practice to use when installing termination resistors on an ARCNET network of *Tritech International Ltd* sonar products.

ⓘ Note

A special yellow waterblock is available from *Tritech International Ltd* which contains an in-line impedance of 39Ω which will enable quick and easy installation of the subsea termination resistor.
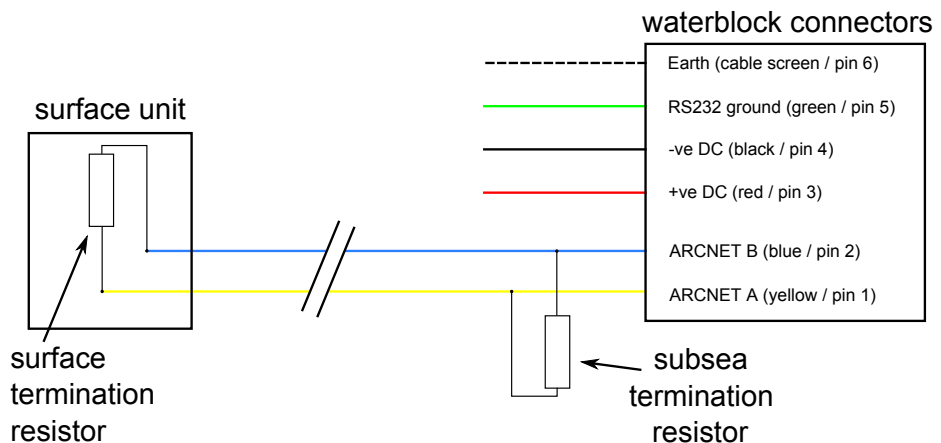
Cable length	Termination	Baud rate setting
Less than 100m	Single 39Ω subsea resistor	Normal baud rate
100-1200m	270Ω at surface and 39Ω subsea	Normal baud rate
1200-2500m	270Ω at surface and 39Ω subsea	Half baud rate

ⓘ Note

If there is more than one sensor connected then the sub-sea resistor should be fitted at the junction box or splice of the cable.

Appendix B. V6 COM PCB Reset

In the unlikely event that communication to a SeaKing becomes impossible, units fitted with a V6 COM PCB can be reset to a pre-determined standard using the magnetic reset function

The default values that will be applied to the SeaKing unit for the magnetic reset are as follows:

Item changed	Default value	Item changed	Default value
Main Port Comms	RS232	Aux Port Comms	RS232
Main Port Baud (Hi/Lo)	115200 / 9600	Aux Port Baud (Hi/Lo)	9600 / 9600
Main Port Parity (Hi/Lo)	None	Aux Port Parity (Hi/Lo)	None
Main Port Data-bits (Hi/Lo)	8	Aux Port Data-bits (Hi/Lo)	8
ARCNET Baud (Hi/Lo)	156 / 78	Half-Duplex	False
ARCNET Sens (Hi/Lo)	Neutral	Aux. Comms rate	1000ms
ARCNET Timeout	11 [Normal] (ET3)	Disable AutoComms	True
		COMV6 Fitted	True
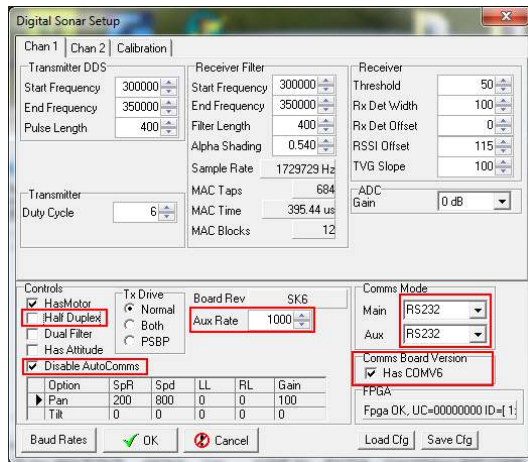
Main setup changes   **Baud rate changes**
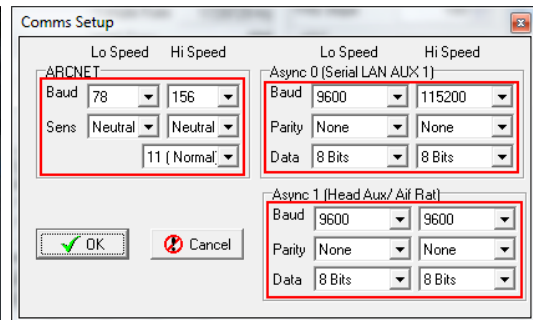
Within the standard SeaKing accessory kit there is a strong magnet supplied specifically for this purpose.

Note

The magnet supplied within the accessory kit has a very strong magnetic field. Due care should be taken to ensure that it is not placed or left to devices that can be damaged due to exposure to this type of field, i.e. Harddrives.

To use the magnetic reset, place the SeaKing unit onto a short test lead connected to an appropriate surface control unit, such as a SCUv5 or SeaHub, running Seanet Pro with the `Setup` application.

Note

The port being used by the SeaKing unit should be set to RS232 communications at 115200 Baud.

With the SeaKing unit powered down, place the magnet onto the body tube of the head approximately 55mm from the end of the connector endcap locking ring and in line with the endcap puller.

Apply power to the unit and wait for the device to be detected by Seanet Pro.

Once detected, remove the magnet from the body tube of the SeaKing unit and safely store.

The unit can now be re-configured to the desired communications. Please refer to the *Arcnet and Serial Communications Manual - 0374-SOM-00003* for more information, or contact *Tritech International Ltd*.

Glossary

AIF	Originally "Acoustic Interface" but also used to refer to "ARCNET Interface" in which case it can refer to either the interface port on a SeaHub or SCU or to the expansion card available for installation into a computer.
ARCNET	Attached Resource Computer NETwork - a network protocol similar to Ethernet but with the advantage of working over much longer ranges.
CD-ROM	Compact Disc - Read Only Memory
DA-15	A 15 pin D shaped connector used mainly for the ARCNET connection on the SCU and SeaHub.
DC	Direct Current
DST	Digital Sonar Technology
GPS	Global Positioning System.
HF	High Frequency
LAN	Local Area Network
LF	Low Frequency
RAT	Remote Access Terminal - the detachable front part of the Tritech Surface Control Unit (SCU) computer. Provides an alternative to using a keyboard and mouse.
RS232	Traditional name for a series of standards for serial binary data control signals.
RS485	A standard for defining the electrical characteristics of drivers and receivers for use in a balanced digital multipoint system (also known as EIA-485).
RX	Receive (data)
SBP	SeaKing Sub-Bottom Profiler - a profiler capable of penetrating sedimentary seabeds.
SCU	Surface Control Unit - a specially manufactured computer which is rack mountable and capable of processing the data from the sonar equipment running either Windows XP Embedded or Windows 7 and Seanet Pro or Gemini software.

SeaHub   An alternative to using a Seanet SCU, this device connects to a laptop or PC via USB interface, essentially this takes the signal from the sonar (in RS232, RS485 or ARCNET) and converts it into a signal suitable for the USB port of the computer.

SeaKing   A specific sonar produced by *Tritech International Ltd* but also refers to the family of sonar equipment manufactured by *Tritech International Ltd* comprising of the SeaKing, SeaKing DST scanning and profiling sonars and the Hammerhead survey sonar.

Seanet Pro   The software supplied by *Tritech International Ltd* which is capable of running all the sonar devices.

Tritech waterblock   The 4000m depth rated connector developed by *Tritech International Ltd* for their subsea equipment.

TX   Transmit (data)

WINSON   Sonar control software produced by Tritech that predates Seanet Pro and was used to control the Series-2 family of devices.