

72V VDSL Adapter Unit

Product Manual

0713-SOM-00003-01

© Tritech International Ltd

The copyright in this document is the property of Tritech International Ltd. The document is supplied by Tritech International Ltd on the understanding that it may not be copied, used, or disclosed to others except as authorised in writing by Tritech International Ltd.

Tritech International Ltd reserves the right to change, modify and update designs and specifications as part of their ongoing product development programme.

All product names are trademarks of their respective companies.

Table of Contents

Help & Support	4
Warning Symbols	5
1. Introduction	6
2. Specification	7
2.1. Dimensions	7
2.2. Physical and Electrical Properties	8
3. Installation	9
3.1. Pin-Out Diagrams	10
3.1.1. Sonar Head Connector	10
3.1.2. Power connector	10
3.2. An Example Setup	11
4. Operation	12
5. Maintenance	14
5.1. After using the unit	14
5.2. Changing the Fuses	14
5.3. Simple Maintenance	15
5.3.1. Opening the unit up	16
5.3.2. Fuse connections	17
5.3.3. Power switch connections	17
5.3.4. Sonar Link	18
5.3.5. Ethernet Link	18
5.3.6. DC Supply for upper PCB	18
5.4. If storing the unit for extended periods	19
6. Troubleshooting	20
Glossary	22

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 a Warranty Statement at the end of the manual.

Tritech International Ltd can be contacted as follows:

	Mail	<i>Tritech International Ltd</i> Peregrine Road Westhill Business Park Westhill, Aberdeenshire AB32 6JL, UK
	Telephone	+44 (0)1224 744111
	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. Introduction

The Tritech 72V VDSL Adapter Unit is designed to provide long length power and communications for the *Tritech International Ltd* range of Gemini products.

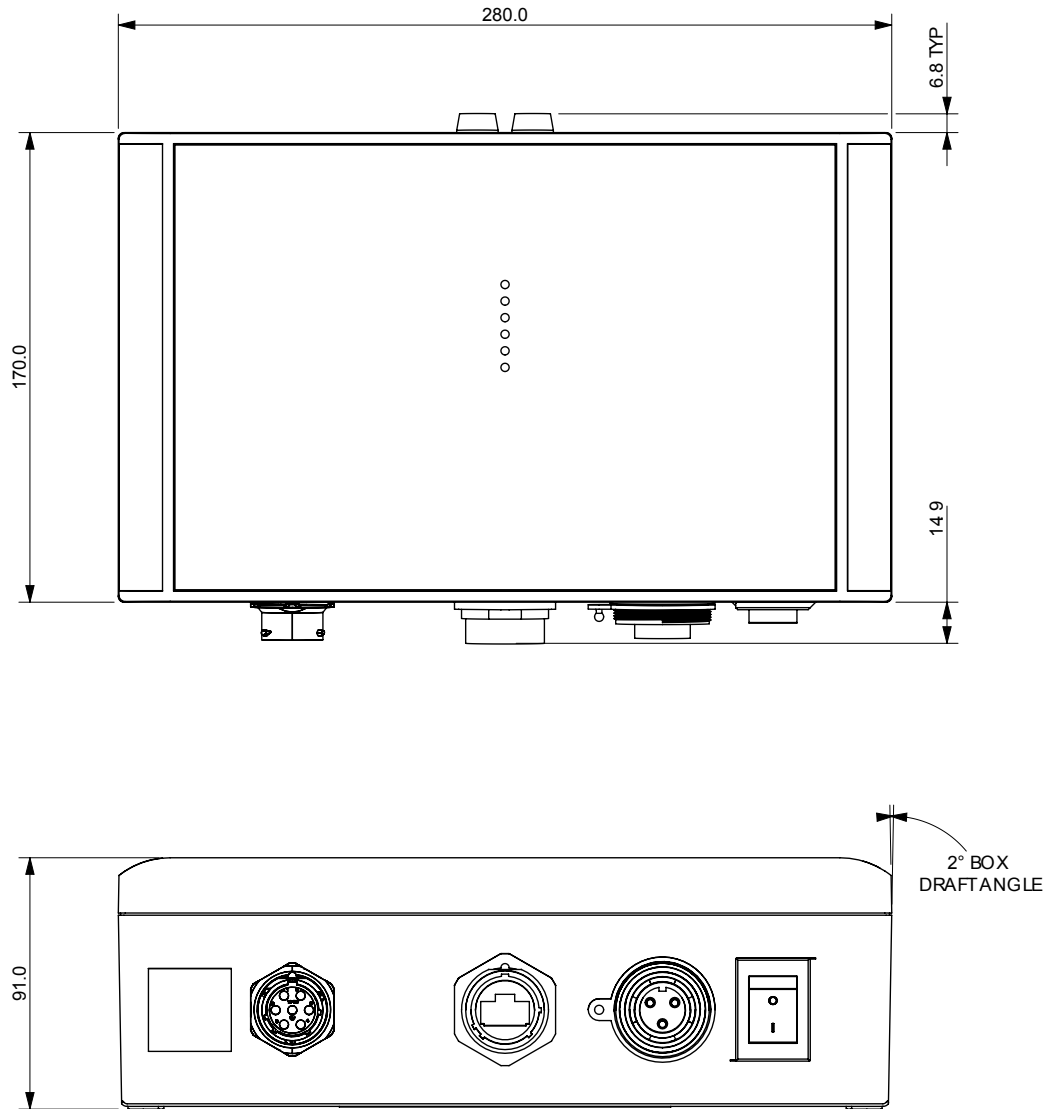
The Adaptor Unit is powered from a standard Mains power supply and communicates to a control PC via Ethernet. Power to the connected Gemini device can be controlled by an external power switch.

The Adaptor Unit can be used to communicate with Gemini Sonars on cable lengths up to 100m. This cable length can vary depending on the specific characteristics of the cable used. Appropriate Cabling can be purchased from *Tritech International Ltd*, with prices and lead times available upon request.

The Adapter Unit is fully compatible with all versions of the Gemini Software and versions of Seanet Pro that support the Gemini range of products.

2. Specification

2.1. Dimensions



2.2. Physical and Electrical Properties

Physical Properties	
Property	Details
Materials	Enclosure: Aluminium alloy (AC-44300), Connectors: thermoplastic
Finish	Powder Coated
Weights	2.93kg
IP rating	The Interface Box is sealed against dust and moisture ingress to IP67 standard
Temperature range	5 to 40°C (-20 to 50°C in storage)
Connectors	Bulgin PX0730/P (mates with PX0731/S) Souriau UTS7147S (mates with UTS6JC147P) Souriau UTS718RJFN (mates with UTS6JC18RJN25)

Electrical Properties	
Property	Details
Power requirement	100-240V (50-60Hz)
Power consumption	40W maximum
AC Fuse	1A, 250V 20x5mm quick acting
DC Fuse	2A, 250V 20x5mm quick acting

3. Installation



Caution

Although the 72V VDSL Adapter has a rugged design care should be taken during installation and de-installation. The connectors can be damaged if forced, or if the wrong cable is plugged into the wrong connector.

The 72V VDSL Adapter should be used with the appropriate umbilical capable of sustaining VDSL communications over a long cable length. Contact *Tritech International Ltd* if more information is required.



Note

The signal path should have a characteristic impedance of 110Ω ($\pm 10\Omega$) for the entire cable run for optimal performance. Cabling that deviates from this will result in reduce range capability for the VDSL signal.

When connecting a Gemini and PC to the 72V VDSL Adapter follow the steps below.

- Ensure that the Power switch button on the 72V VDSL Adapter is set to its OFF position
- Connect the subsea connector end of the umbilical to the Gemini
- Connect the surface connector end of the umbilical to the 72V VDSL Adapter
- Connect an Ethernet patch cable to the Ethernet port of the 72V VDSL Adapter
- Connect the Mains cable to the 72V VDSL Adapter and plug into an appropriate mains socket

The unit will now be ready to power on. An example of this setup can be seen in Section 3.2, “An Example Setup”

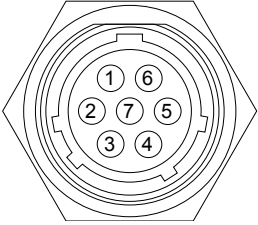



Warning

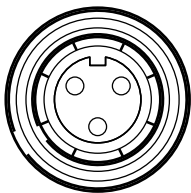

The 72V VDSL Adapter must never be opened when connected to the Mains supply, even if both the Power switch and Mains switch are off.

3.1. Pin-Out Diagrams

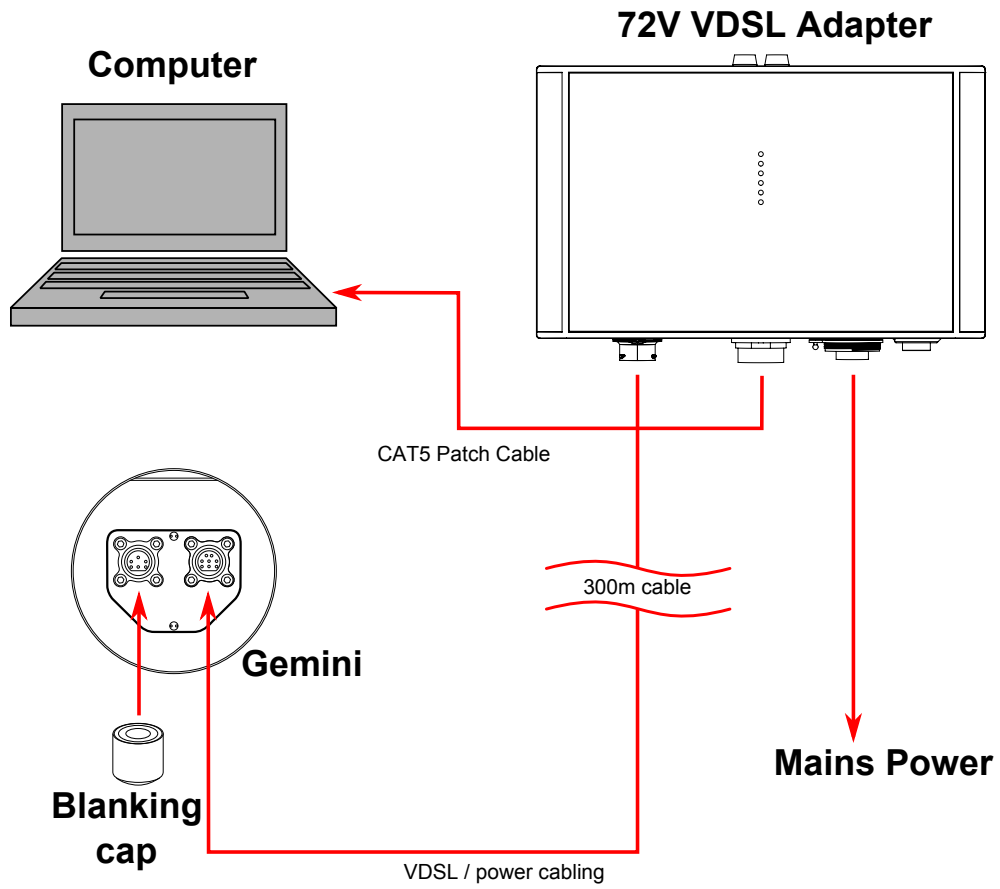
3.1.1. Sonar Head Connector

Pin	Function	Diagram	Photograph
1	DC Ground		
2	DC +		
3	not connected		
4	VDSL +		
5	VDSL -		
6	not connected		
7	cable screen		

3.1.2. Power connector

Pin	Function	Diagram	Photograph
1	DC Ground		
2	DC +		
3	not connected		

3.2. An Example Setup



4. Operation

With a fully set up unit (as described in Chapter 3, *Installation* the 72V VDSL Adapter will be ready to be switched on.



Note

To operate the Gemini unit the PC must be running either the Gemini software or Seanet Pro. Further details can be found within one of the following manuals: 0685-SOM-00001; 0695-SOM-00006.

The LEDs on top of the 72V VDSL Adapter help indicate the status of the unit as well as the state of communications to the attached Gemini unit.



When the unit is first powered on, the `Power` LED will illuminate.



Upon detection of a valid electrical connection to the Laptop / Computer the `Ethernet Status` and `Ethernet Link` LEDs will illuminate.

The `Ethernet Link` and `Ethernet Active` LEDs will flash, indicating communication between the 72V VDSL Adapter and the PC



The VDSL Link LED will illuminate and during both the initial negotiation of the VDSL link and the subsequent acquisition of data.



The Encoding Error LED should not illuminate during normal operation. See Chapter 6, *Troubleshooting* for more information should this LED become active.

5. Maintenance

The 72V VDSL Adapter has only one major serviceable item - the fuses for the AC and DC supplies. However should there be any power or connectivity issues the unit can be opened for visual inspection.

5.1. After using the unit

Make sure that after using the 72V VDSL Adapter the unit does not have any obvious signs of damage. Particular attention should be taken with the cable connections on the unit in order to ensure that none of the connectors have broken, or bent, pins. Ensure that the unit is dry and store in an appropriate storage container.

5.2. Changing the Fuses

The AC and DC fuses are located on the side of the unit opposite the connectors and power switch.



Using a flat bladed screwdriver, rotate the fuse carrier anti-clockwise



Remove the fuse carrier and visually inspect the fuse



Using a multimeter, check the continuity of the fuse



To refit the fuse, simply the reverse the process detailed above.

5.3. Simple Maintenance

In the unlikely event that the 72V VDSL Adapter box needs to be opened, the following instructions detail the process to follow.



Warning

The 72V VDSL Adapter must never be opened when connected to the Mains supply, even if both the Power switch and Mains switch are off. The unit must be completely disconnected before proceeding.



Important

Full anti-ESD precautions must be undertaken when opening up the 72V VDSL Adapter. Failure to do so may result in damage to the unit.

5.3.1. Opening the unit up

Lift the grey coloured shoulders located at each side of the unit. Take care not to damage the power coated surface.



Once loosened, pull off the shoulders to reveal the screw heads underneath.



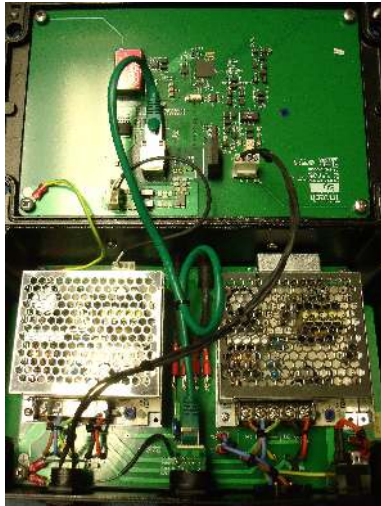
Using either a flat bladed or cross screwdriver of the appropriate size, unscrew the two bolts on each side.



With all four bolts loose, lift the lid of the 72V VDSL Adapter. The lid is hinged at the side opposite to the main connectors.



Once fully opened, the two internal PCBs will be visible. The upper PCB contains the circuitry used to convert data signals from VDSL to Ethernet. The lower PCB contains the circuitry required to regulate the Mains supply voltage.



There are several internal connections within the 72V VDSL Adapter that can be visually inspected in order to ensure full operation of the unit is maintained.

5.3.2. Fuse connections

The push fit connections marked T1 and T2 link the DC Fuse carrier to the lower internal PCB.

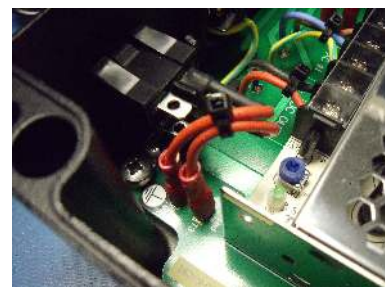


The push fit connections marked T6 and T7 link the DC Fuse carrier to the lower internal PCB.



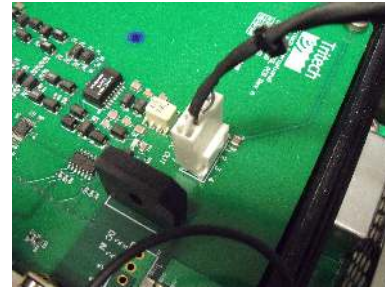
5.3.3. Power switch connections

The push fit connections marked T3 and T4 link the DC Fuse carrier to the lower internal PCB.



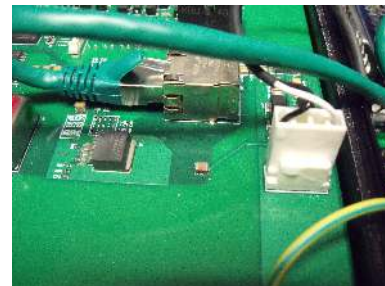
5.3.4. Sonar Link

The Molex style connector marked $J1$ on the upper PCB is linked to the `Sonar` connector on the front of the 72V VDSL Adapter.



5.3.5. Ethernet Link

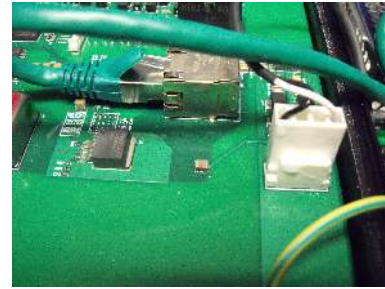
The Ethernet cable connects between the upper PCB and the `Ethernet` connector on the front of the 72V VDSL Adapter.



5.3.6. DC Supply for upper PCB

The two Molex style connectors marked $J2$ on the lower PCB and $J4$ on the upper PCB provides power to the upper PCB.





5.4. If storing the unit for extended periods

Make sure the unit is completely dry with no signs of moisture on any of the connectors. Fit all blanking plugs to the unit and pack into an appropriate storage container along with several pouches of silica gel.

Ensure that the storage location is appropriate and does not exceed the temperature specifications as detailed in Section 2.2, “Physical and Electrical Properties”

6. Troubleshooting

Power LED not illuminating

Check cable connection between the Mains supply and the connector on the 72V VDSL Adapter.

Check both fuses on the Mains cable and the AC fuse of the unit. See Section 5.2, “Changing the Fuses” for more information.

Check that the Power Switch on the unit is set to the correct position.

Open the unit and check that the internal connections are secure. See Section 5.3, “Simple Maintenance” for more information.

Ethernet Status and Ethernet Active LEDs not illuminating

Check that the Ethernet cabling between the computer and 72V VDSL Adapter is secure and properly fitted at both ends.

Open the unit and check that the internal connections are secure. See Section 5.3, “Simple Maintenance” and Section 5.3.5, “Ethernet Link” for more information.

VDSL Link LED not illuminating

Check that the cabling between the Gemini Sonar and the 72V VDSL Adapter is secure and properly fitted at both ends.

Check the DC Fuse on the unit. See Section 5.2, “Changing the Fuses” for more information.

Open the unit and check that the internal connections are secure. See Section 5.3, “Simple Maintenance” and Section 5.3.6, “DC Supply for upper PCB” for more information.

All LEDs are illuminating, but no communication to the Gemini Sonar

Check that the IP address of the Gemini and computer are compatible. Please refer to the relevant Appendix within one of the following manuals: 0685-SOM-00001, 0695-SOM-00006.

Glossary

AC	Alternating Current
DC	Direct Current
Ethernet	A family of computer networking technologies for local area networks (LANs).
Gemini	Unless specified this can refer to any of the multibeam sonars in the Gemini range by <i>Tritech International Ltd</i> such as the Gemini Imager (720id), Narrow Beam Imager or Gemini Profiler (620pd).
LED	Light Emitting Diode
PC	Personal Computer
PCB	Printed Circuit Board
Seonet Pro	The software supplied by <i>Tritech International Ltd</i> which is capable of running all the sonar devices.
VDSL	Very-high-bitrate Digital Subscriber Line - a method of communicating down un-twisted copper cable at uplink speeds of 18Mbit·s ⁻¹ and downlink speeds of 50Mbit·s ⁻¹ .