Gemini 1200id

Product Manual

0703-SOM-00004-01

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General Public License ("GPLv2") Inquiries: Please direct all GPL inquiries to the following address:

Tritech International Ltd
Peregrine Road
Westhill Business Park
Westhill, Aberdeenshire
AB32 6JL, UK

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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 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

Introduction

The Gemini 1200id is a 2D imaging sonar retaining the same overall physical form factor of our popular Gemini 720is model with the addition of dual frequency capability. This offers the opportunity to choose the benefit of either longer acoustic ranges, or higher resolution imagery between the lower and higher frequency channels respectively.

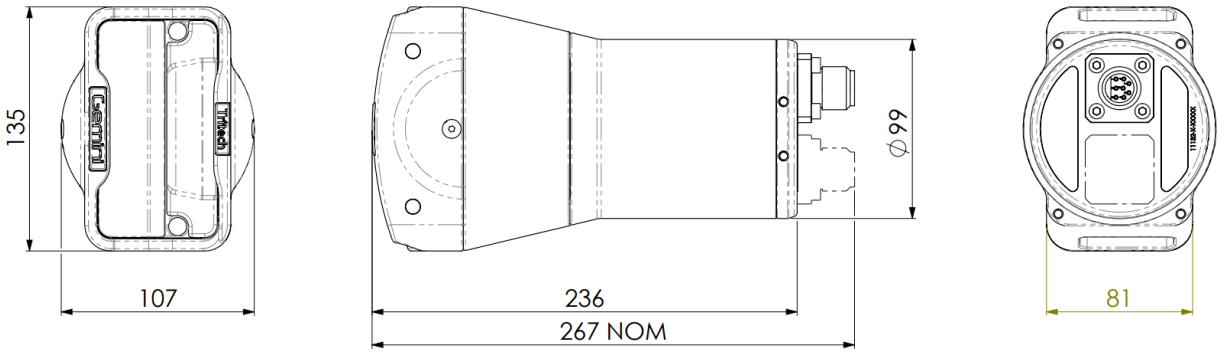
The Gemini 1200id is a multibeam sonar, offering a 120° horizontal field of view with update rates of up to 40Hz giving rapid feedback to the user and communicates with Tritech's next generation integrated software suite Genesis using Ethernet and/or VDSL. Advanced adaptive processing ensures that the most detailed image possible is generated regardless of range. This includes automatic switching between Compressed High Intensity Radar Pulse (CHIRP) and Continuous Wave (CW) modes of operation to maximize image definition.

The sonar can be supplied as 'Single Port' or 'Dual Port' models. The 'Dual' Port option connects and runs in the same way as a 'Single Port' unit but has a secondary 'Aux Port' connection which allows additional serial (RS232 & RS485) sensors to be connected and the option of a TTL IN synchronisation signal.

Tritech's next generation integrated software suite Genesis is supplied with the Gemini 1200id and is available to download from the Tritech website. There are also Windows® and Linux Software Development Kits (SDK) available for the sonar to allow users to fully integrate the Gemini 1200id into a customised system.

The Gemini 1200id sonar is supported in Genesis version 1.10.3.16 and later. The sonar will no operate under Seanet Pro or any other legacy Tritech software.

Technical Specifications



Acoustic Specifications	Low Frequency	High Frequency
Operating frequency	720 kHz	1200 kHz
Angular resolution	1.0° acoustic, 0.25° effective	0.6° acoustic, 0.12° effective
Range	0.1 m to 120 m	0.1 m to 50 m
Number of beams	512	1024
Horizontal beamwidth	120°	65° or 120°
Vertical beamwidth	20° (tilted down 10°)	12° (tilted down 10°)
Range resolution	4 mm	2.4 mm
Update rate	5 to 40 Hz (range dependent)	
CHIRP support	Yes	
Speed of Sound	Integrated VoS sensor	

Interface Specifications	
Supply voltage	19 V to 74 V DC
Power requirement	16 W to 27 W (range dependant) [1]
Main port protocol	Ethernet or VDSL
Auxiliary port (optional)	RS232, RS485 (half duplex), TTL in, Ethernet
Connector type [2]	SeaCon 55 series, SubConn FCR 15 series Schilling SeaNet

Physical Specifications	
Depth rating	4000 m
Weight in air	5.0 kg
Weight in water	3.0 kg
Temperature rating	-10°C to 35°C(operating), -20°C to 50°C (storage)

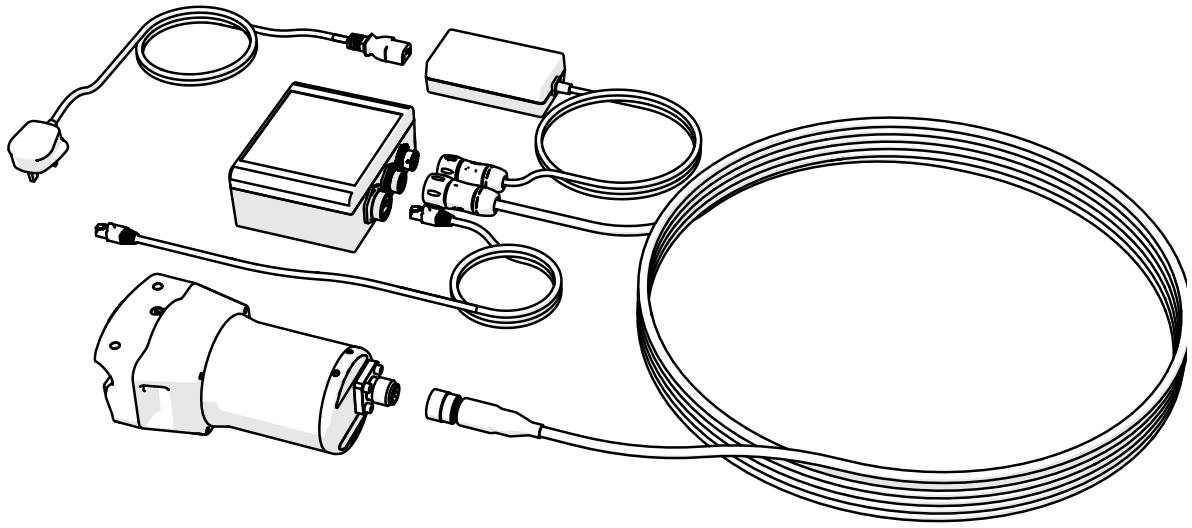
1. The power consumption range quoted is for a standalone unit and does not include cable losses.
2. Typical specifications include a Main port only, second Aux port available on request.

All specifications subject to change in line with Tritech's policy of continual product development.

Getting started

The following instructions are to help the user connect the system together for the first time and be able to successfully power on the unit. In order to prepare the system and test its functionality before mounting to a vehicle, the Gemini 1200id requires either an Ethernet or VDSL test kit (depending on user requirement).

If seeking support from Tritech, reference may be made to bench testing the unit on a short test cable



An example Gemini 1200is test setup – With Ethernet or VDSL top box

Ethernet System Test Kit

The standard Ethernet system test kit is designed for a Gemini 1200id fitted with a Seacon 1508 FCR. Other kits can be supplied for units utilising a different main connector type.

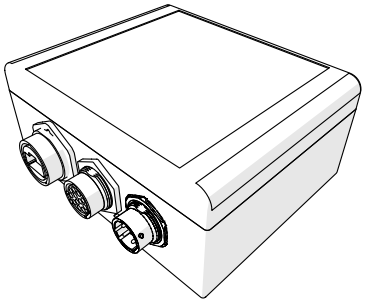
(*please contact Tritech for more information referencing the serial number of the Gemini 1200id and connector variant fitted*)

S11416−ETH−KIT Seacon 1508 Interface Kit (Ethernet)

The Ethernet system test kit comprises the following parts:

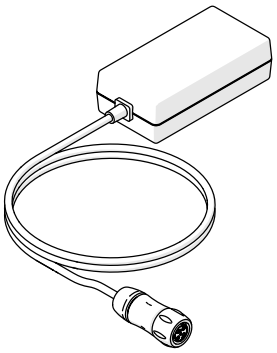
S08815 - Gemini Ethernet Adaptor Unit

A Gemini Power/Ethernet Comms break-out box assembly, enabling an Ethernet connection via an RJ45 plug



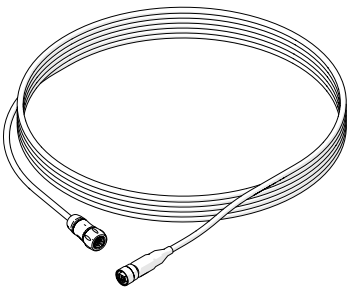
S11346 - Gemini Imaging Sonar PSU

Universal AC power supply unit
(Country specific mains plug, specify at point of sale)



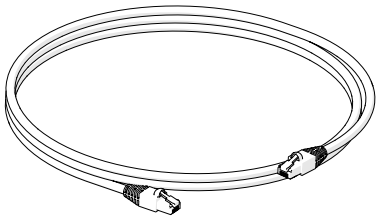
S11366 10M - 10m test cable

Seacon 5501-1508 to Souriau 12w ethernet / power



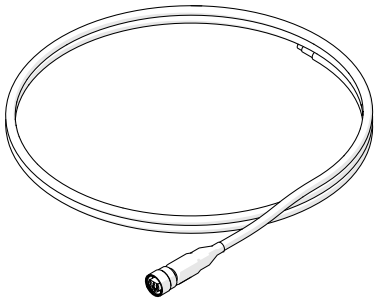
S06230 – CAT5e Patch Cable (2m)

A standard Ethernet patch cable to connect the Ethernet Adapter Unit to the surface computer



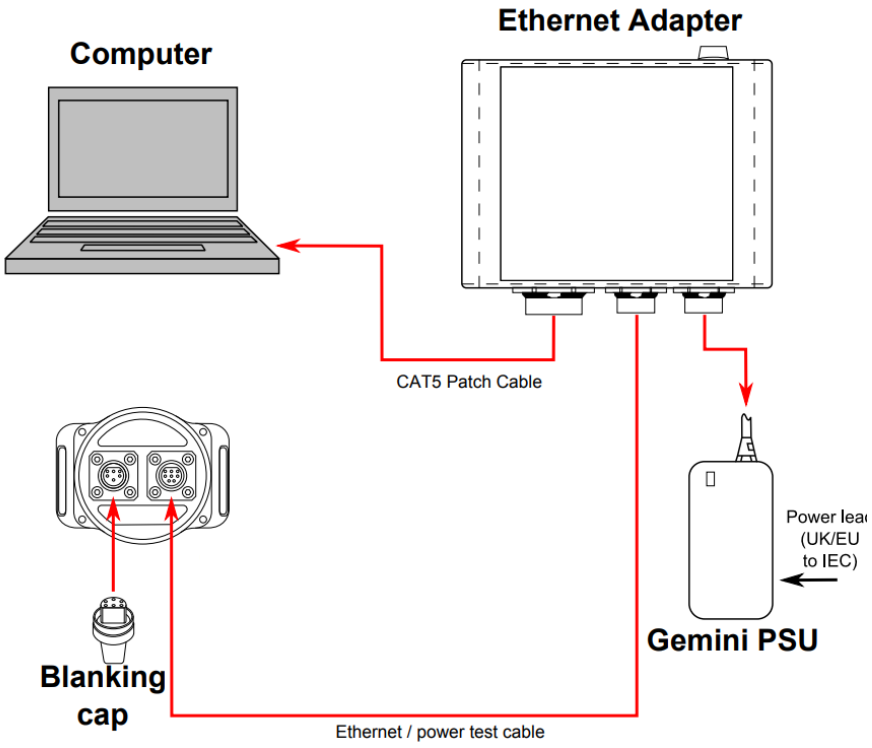
S1363 3M - Seacon 5501-1508 VDSL/Ethernet/Pwr. Tail 3m

Standard connector tail supplied with all new sonars to allow connection to the vehicle.



An Example Ethernet Setup

Test or bench setup for the Gemini 1200id Sonar system using Ethernet communications via the Ethernet adapter unit.



VDSL System Test Kit

The standard VDSL system test kit is designed for a 1200id fitted with a Seacon 1508 FCR.
Other kits can be supplied for units utilising a different main connector type.

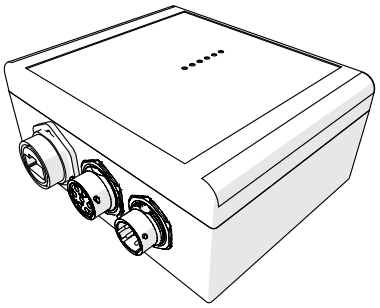
(*please contact Tritech for more information referencing the serial number of the Gemini 1200id and connector variant fitted*)

S11416−VDSL−KIT Seacon 1508 Interface Kit (VDSL)

The VDSL system test kit comprises the following parts:

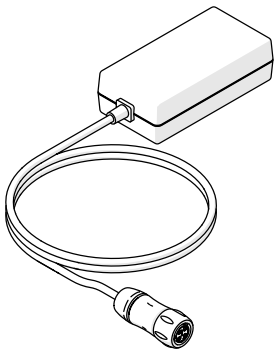
S08802 - Gemini VDSL Adaptor Unit

A Gemini Power/VDSL Comms Break-out Box Assembly, enabling an Ethernet connection via an RJ45 plug



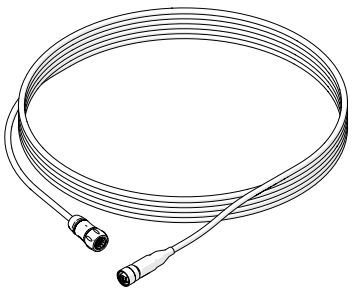
S11346 - Gemini Imaging Sonar PSU

Universal AC power supply unit
(Country specific mains plug, specify at point of sale)



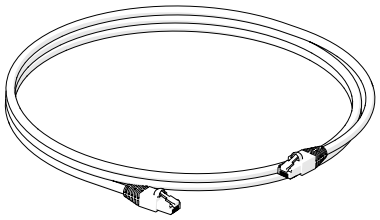
S11365 10M - 10m test cable

Seacon 5501-1508 to Souriau 7w VDSL / power



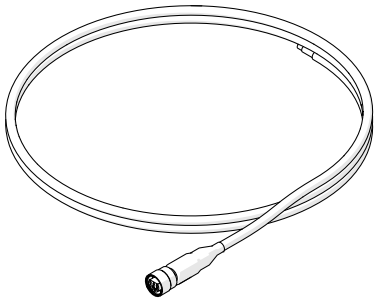
S06230 – CAT5e Patch Cable (2m)

A standard Ethernet patch cable to connect the Ethernet Adapter Unit to the surface computer



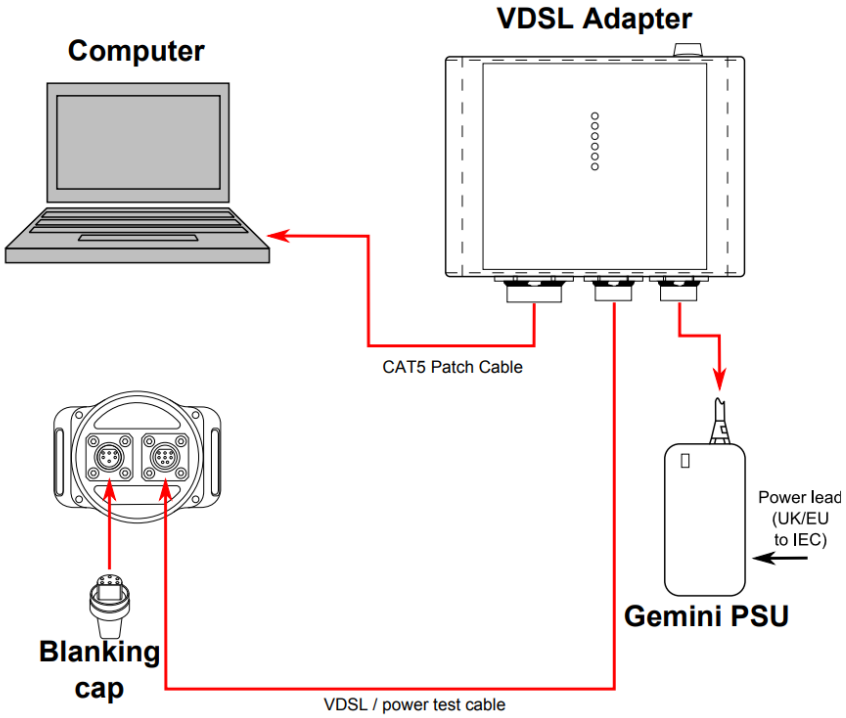
S1363 3M - Seacon 5501-1508 VDSL/Ethernet/Pwr. Tail 3m

Standard connector tail supplied with all new sonars to allow connection to the vehicle.



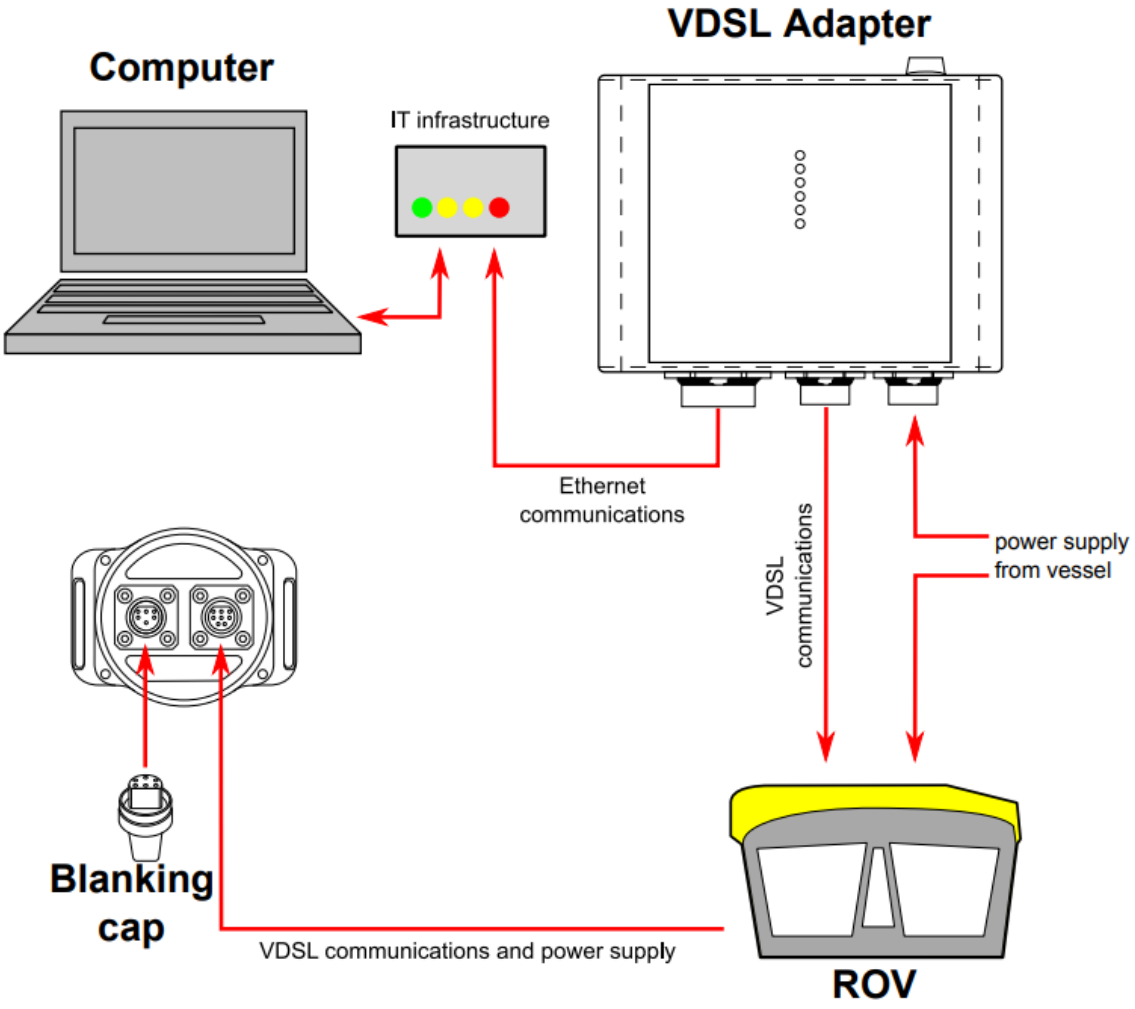
An Example VDSL Setup

Test or bench setup for the Gemini 1200id Sonar system using VDSL communications via the VDSL adapter unit.



An Example ROV Setup

An example of connections for an ROV, with the Gemini Sonar system using VDSL communications via the VDSL adapter unit.

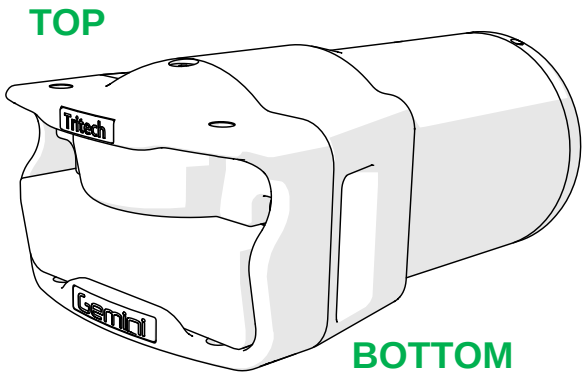


Installation

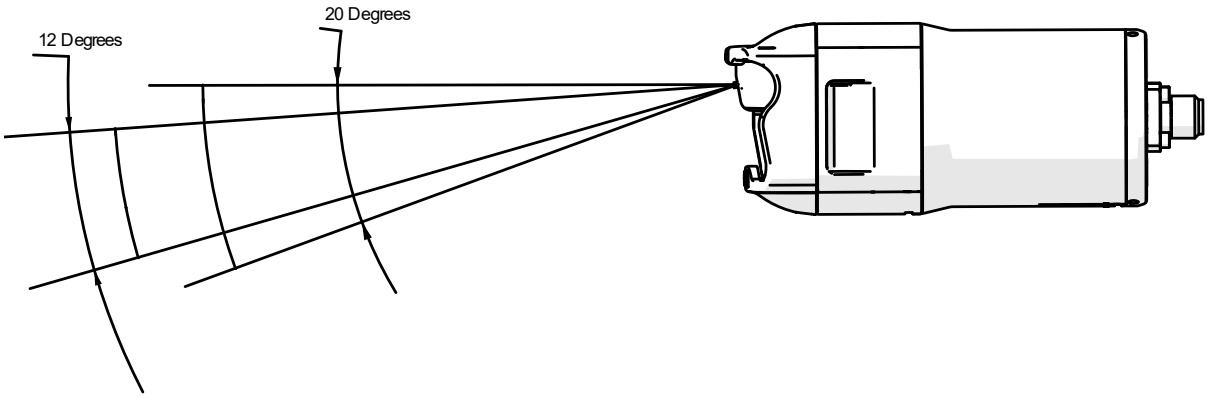
Hardware Installation & Configuration

Although the sonar head is rugged, it should be handled with care, particularly the connector and receiver/transmitter elements. The plastic guard fitted to the unit will not protect the sonar against significant impacts.

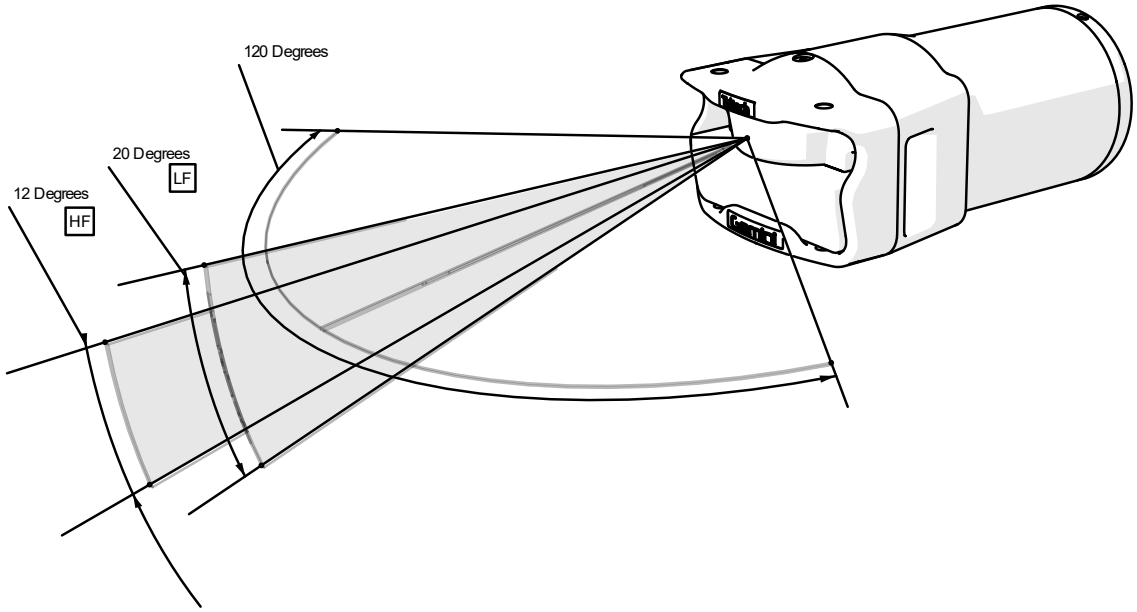
To correctly install the Gemini 1200id ordinarily it should be mounted horizontally with the Gemini logo on the bottom, and the Tritech logo label at the Top.



The transmit and receive elements are arranged along the horizontal axis incorporating a downward tilt of 10 degrees which should be considered when mounting the sonar.

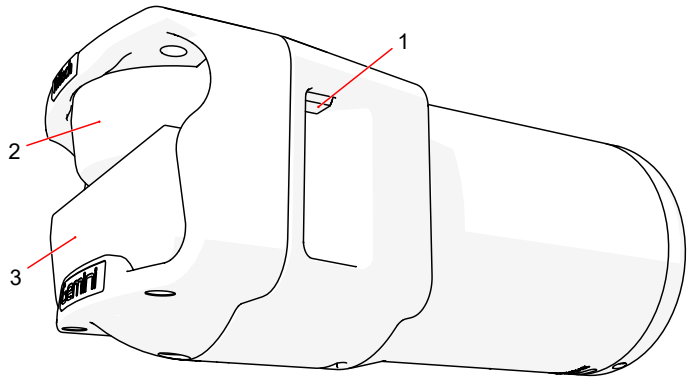


Beam Angles



Any metallic clamps should be electrically insulated from the sonar body by either rubber or plastic strips or mounting brackets of at least 3 mm thickness and extending at least 3 mm beyond the clamp boundary to reduce any galvanic corrosion effect. Non-metallic clamps are preferable; if metallic clamps are used (especially if they are different in composition to the material used by the sonar) they should be painted or lacquered with at least two or three coatings.

When deploying the aluminium version of the Gemini 1200id, alloys containing copper such as brasses or bronze should be avoided.



1. Sound Velocity Probe
2. Transmitter Elements
3. Receiver Elements

Electrical connection

Please refer to *Sonar Variants* section of this manual for details on the connector fitted and the appropriate communication mode supported. A cable whip supporting Ethernet & VDSL communications can be supplied. The other end of this cable whip should be terminated with a suitable connector for the users own application.

Connector Maintenance Guidelines

Mating surfaces should be lubricated with 3M Silicone Spray or equivalent. **Do not apply oil based greases.** Connectors must be lubricated on a regular basis. Clean plugs and receptacles with soap and fresh water.

When attaching a connector make sure that both connector and socket are completely dry. Any water trapped in the connection could result in an electrical short.

If the Gemini has two connection ports then the unused connector must have a blanking cap fitted prior to immersing in water. Failure to do this will cause permanent damage.

Ground Fault Monitoring

The power supply within the Gemini includes an electrically isolated DC-DC converter front-end. There is a small capacitive connection between the isolated ground and the sonar chassis which should not noticeably affect any impressed current ground fault indicator (GFI) equipment.

When used with either the Ethernet or VDSL Adaptor top box and the Gemini PSU please note that the Gemini 1200id chassis will be directly connected to Earth.

Power

Please see *Technical Specifications* section for details on the power requirements for the sonar.

Never try to make the Gemini work down a long cable by increasing the PSU output voltage above 74V DC.

The Gemini PSU that is supplied with the Gemini system is intended for INDOOR USE ONLY and should not be placed in a position where it could get wet.

Power should only be applied to the MAIN port of the Gemini. The AUX port, if fitted, provides an un-regulated pass through power supply taken directly from the MAIN port input supply.

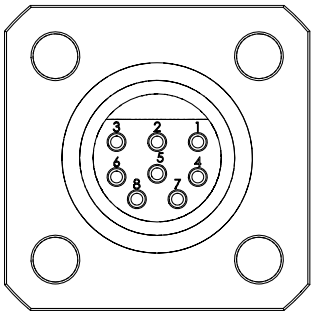
Sonar Variants

Connector Pin-Out

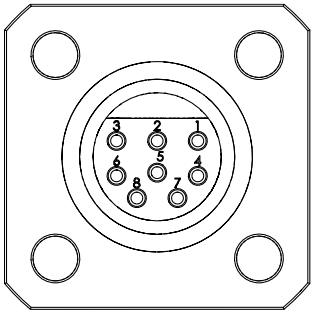
The following pin out diagrams detail the appropriate connectors for each major variant of the Gemini 1200id. The Ethernet & VDSL Test kits are applicable to Gemini 1200id sonars utilising Seacon connectors. Test kits for sonars utilising other connector types may be available on request.

Single Seacon 5506-1508 connector

S13413 (4000m)
Gemini 1200id fitted with a single Seacon 55 series connector using Ethernet communications only.

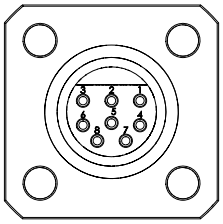
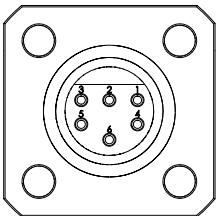
Bulkhead view	Main Port	
	Pin	Function
	1	Ethernet RX+
	2	Ethernet RX-
	3	Ethernet Tx+
	4	+V DC
	5	not connected
	6	Ethernet Tx-
	7	0V DC
	8	not connected

S13330 (4000m)
Gemini 1200id fitted with a single Seacon 55 series connector using Ethernet and VDSL communications.

Bulkhead view	Main Port	
	Pin	Function
	1	Ethernet RX+
	2	Ethernet RX-
	3	Ethernet Tx+
	4	+V DC
	5	VDSL +
	6	Ethernet Tx-
	7	0V DC
	8	VDSL -

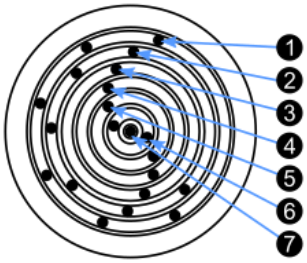
Dual Seacon 5506-1508 and Seacon 5506-1506 connectors

S13328 (4000m)
Gemini 1200id fitted with two Seacon 55 series connectors. The main connector uses Ethernet or VDSL communications with the auxiliary connector allowing either RS232 or RS485 (software selectable) communications to an attached device. A regulated 24V DC output is also available.

Main port			Aux port		
Bulkhead view	Pin	Function	Pin	Function	Bulkhead view
	1	Ethernet Rx+	1	RS232 Rx / RS485 B	
	2	Ethernet Rx-	2	RS232 Tx / RS485 A	
	3	Ethernet Tx+	3	+24V DC	
	4	+V DC	4	0V DC	
	5	VDSL +	5	RS232 / TTL Ground	
	6	Ethernet Tx-	6	TTL In	
	7	0V DC			
	8	VDSL -			

Single Schilling SeaNet connector

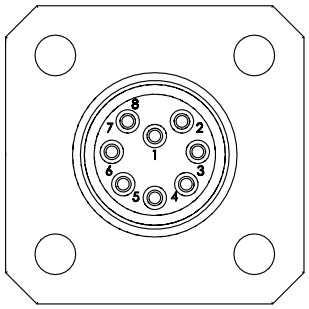
S13450 (4000m) only
Gemini 1200id fitted with a Schilling Seanet connector, using Ethernet communications.

Bulkhead view	Main Port	
	Pin	Function
	1	+V DC
	2	0V DC
	3	Chassis
	4	Ethernet RX+
	5	Ethernet RX-
	6	Ethernet Tx-
	7	Ethernet Tx+

When fitted with a Schilling Seanet connector the sonar will not be RoHs compliant.

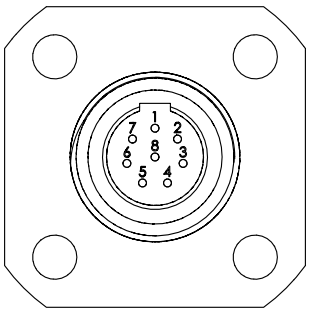
Single SubConn FCR1508M connector

S13451 (4000m)
Gemini 1200id fitted with a single SubConn FCR1508M connector, using Ethernet communications.

Bulkhead view	Main Port	
	Pin	Function
	1	Ethernet RX+
	2	Ethernet RX-
	3	not connected
	4	DC +
	5	Ethernet Tx+
	6	Ethernet Tx-
	7	DC Ground
	8	Chassis

Single CRE Type A FRA08M connector

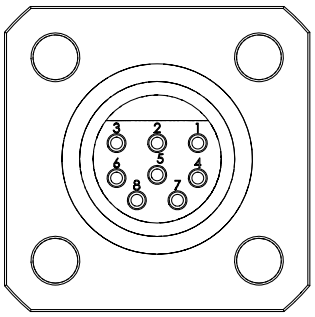
S13471 (4000m)
Gemini 1200id fitted with a single CRE FRA08M connector, using Ethernet communications.

Bulkhead view	Main Port	
	Pin	Function
	1	0V DC
	2	not connected
	3	+V DC
	4	Ethernet RX+
	5	Ethernet RX-
	6	Chassis
	7	Ethernet Tx+
	8	Ethernet Tx-

Single Burton 5506-1508 connector

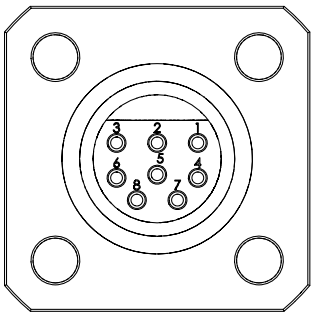
S13467 (4000m)

Gemini 1200id fitted with a single Burton 55 series connector using Ethernet comms. only.

Bulkhead view	Main Port	
	Pin	Function
	1	Ethernet RX+
	2	+V DC
	3	0V DC
	4	Ethernet RX-
	5	Ethernet Tx+
	6	Ethernet Tx-
	7	not connected
	8	

S13469 (4000m)

Gemini 1200id fitted with a single Burton 55 series connector using Ethernet comms. only.

Bulkhead view	Main Port	
	Pin	Function
	1	Ethernet RX+
	2	Ethernet RX-
	3	Ethernet Tx+
	4	+V DC
	5	N/C
	6	Ethernet Tx-
	7	0V DC
	8	not connected

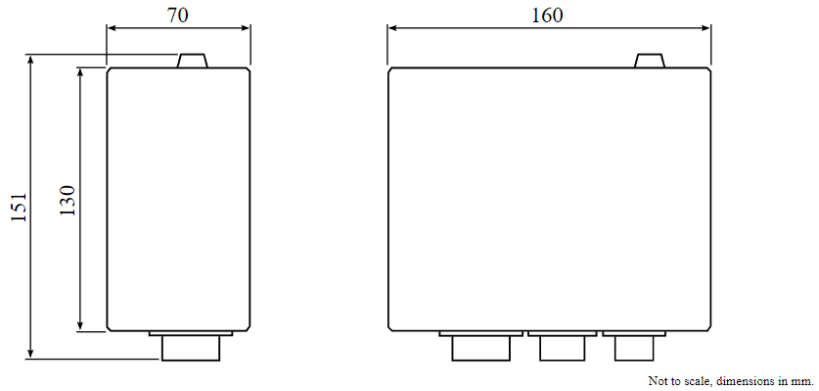
Burton & Seacon Connector Compatibility

There have been issues reported where Gemini sonars have been used in installations and test environments and connected using differing connectors that do not match the sonar. Dependant on the model of Gemini Sonar and requirements at the time of ordering, the unit may come fitted with either Seacon 55 series or Burton 55 series flange connectors. Although very similar to each other, tolerances and small design details may result in compatibility problems between the differing manufacturers.

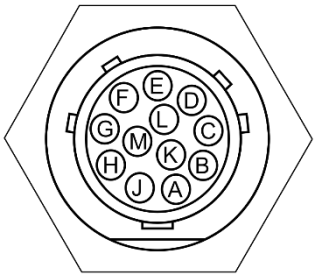
Please refer to Technical Notice Document Ref: 0080-TNS-00031 within the Support area on the Tritech website for more details.

Surface Adapter Specifications

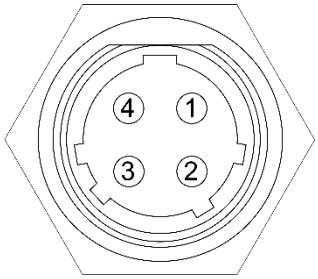
Ethernet Adapter



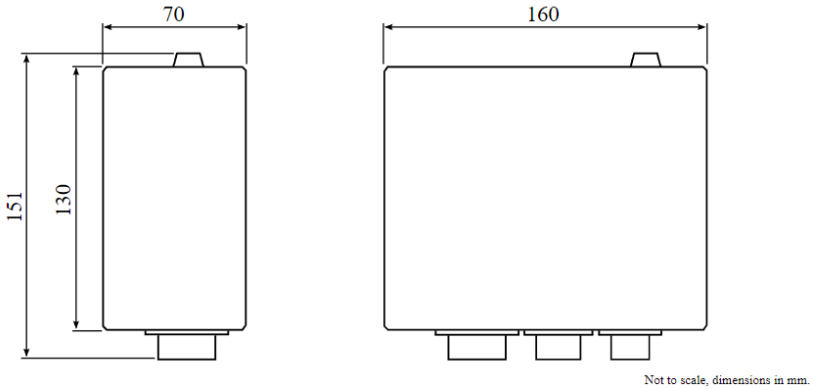
Sonar Head Connector (Souriau UTS71412S)

Pin	Function	Diagram	Photograph
A	Ethernet Rx+		
B	Ethernet Rx-		
C	Ethernet Tx+		
D	+V DC		
E			
F	Ethernet Tx-		
G	0V DC		
H			
J	not connected		
K			
L			
M	cable screen		

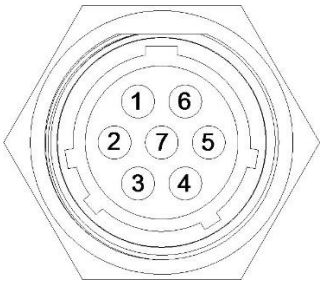
Ethernet Power Connector (Souriau UTS7124P)

Pin	Function	Diagram	Photograph
1	0V DC		
2	+V DC		
3	not connected		
4	Earth		

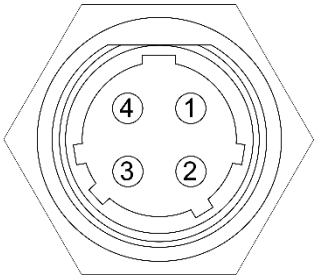
VDSL Adapter



Sonar Head Connector (Souriau UTS7147S)

Pin	Function	Diagram	Photograph
1	0V DC		
2	+V DC		
3	not connected		
4	VDSL +		
5	VDSL -		
6	not connected		
7	cable screen		

VDSL Power Connector (Souriau UTS7124P)

Pin	Function	Diagram	Photograph
1	0V DC		
2	+V DC		
3	not connected		
4	Earth		

For all system types the connection to the surface computer or IT infrastructure from the Gemini Hub, Ethernet or VDSL adapter should be via a shielded Cat5e cable fitted with an RJ45 connector. The 72V VDSL Adapter Unit can also be used in applications where long length power and communications is desirable. For more information see the associated Product Manual: 0713-SOM-00003 available at www.tritech.co.uk.

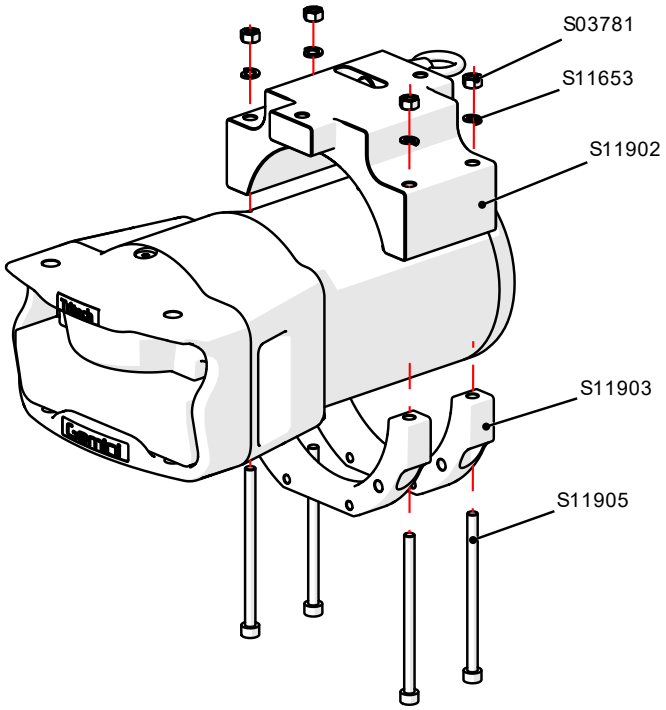
Tritech Mounting Options

Mounting the Gemini 1200id to an ROV

Tritech have produced a mounting bracket kit to enable the customer to easily fix the Gemini 1200id to a flat plate.

The mount can be attached to a flat plate which is already fitted to the vehicle at the desired angle. N.B. when mounted horizontally the transducer already has 10 degrees of downward tilt. Refer the *Beam Angles* section of this manual for more details.

Tritech Gemini is/id ROV Mount Assembly S11936

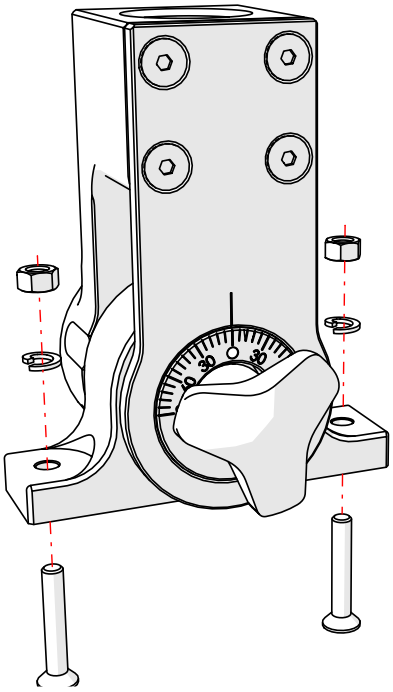


Part No.	Qty.	Description
S03781	4	M5 Nut
S11653	4	M5 Spring Locking Washer A4
S11902	1	Gemini is Sonar Mount - Top
S11903	2	Gemini is Sonar Mount - Brace (Ø99mm tube mount)
S11905	4	M5x80mm Cap Head Screw (DIN 912) A4 SS

Pole Mounting the Gemini 1200id

Tritech International Ltd have also created ancillary systems to allow users to Pole Mount a 1200id. This methodology would be perfect for rapid deployment and imaging of an area where ROV access can be limited, or inappropriate. The Pivot & Pole Mount Assembly has been designed to be used in conjunction with the Sonar Mounting Bracket.

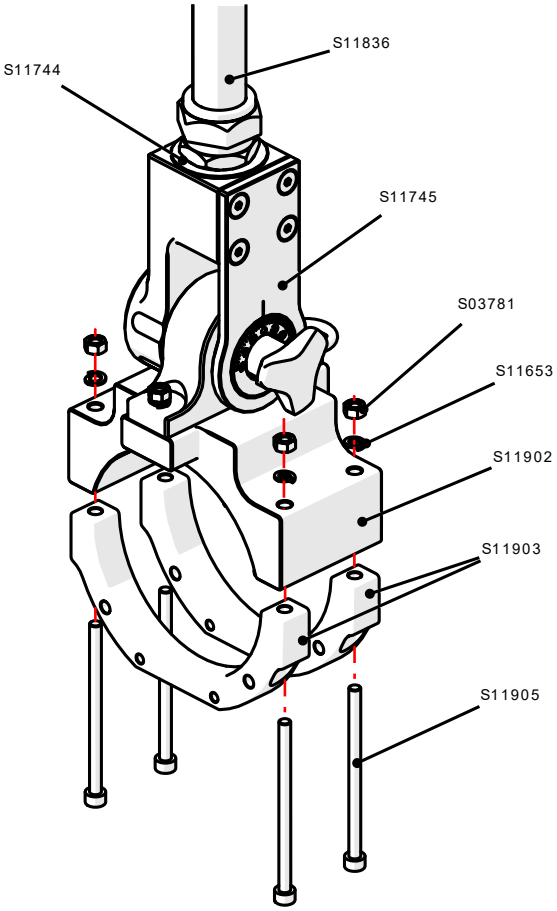
Tritech Pivot & Pole Mount Assembly S11745



The Gemini Pole Mount Kit allows the user to mount the sonar onto a pole for manual deployment. The kit allows the sonar to be angled between ±90°.

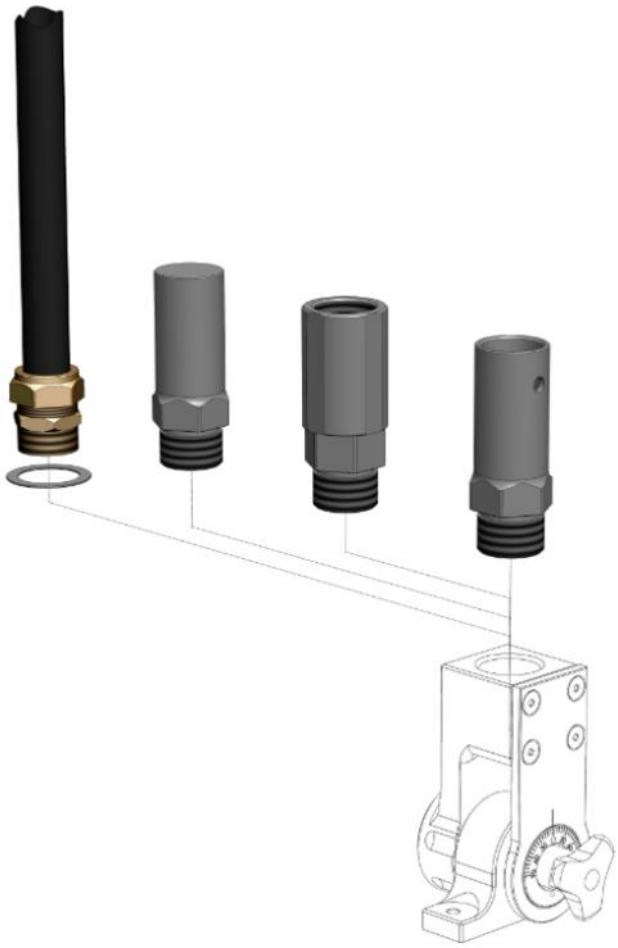
Part No.	Qty.	Description
S11754	1	M5x30 Skt Head C'sunk Screw A4
S11653	2	M5 Spring Locking Washer A4
S03781	4	M5 Nut A4

Tritech Gemini is/id Pole Mount System S11901



Part No.	Qty.	Description
S11836	1	Gemini DB - Ø22mm Pole Assembly 0.5m
S11744	1	29mm ID x40mm OD x 1mm Washer
S11745	1	Gemini DB - Pivot & Pole Mount Assembly
S11903	2	Gemini is Sonar Mount - Brace (Ø99mm tube mount)
S03781	4	M5 Nut
S11653	4	M5 Spring Locking Washer A4
S11902	1	Gemini is Sonar Mount - Top
S11905	4	M5x80mm Cap Head Screw (DIN 912) A4 SS

Alternative Tritech Pole Adapters



Details of the Pole Mount Adapters are shown in the table below from left to right.

Part No.	Description
S11836	22mm diameter carbon pole coupling as per USBL system
S11744	29mm ID x40mm OD x 1mm Washer
S11904	For US customers connecting to a MINN KOTA® style Flexible Composite Shaft
S11743	A blank adapter for customer adaption
S11741	Configured to accommodate "sprung" pin engagement common to a range of 'Reach & Rescue' telescopic pole systems

All mounts have a common 1⅛"-14 BSW (Whitworth) interface thread.

Sonar Operation

Genesis Software Installation

The Gemini head is supplied with software to control the functions of the sonar and to display the captured images. The software is supplied as an installer package which installs the software and a number of supporting files and documentation.

The software is also available for download from the Tritech website at https://www.tritech.co.uk/support/software/genesis

System Requirements

In order to install and run Genesis to its full potential, the PC hardware and operating system should meet the following system requirements:

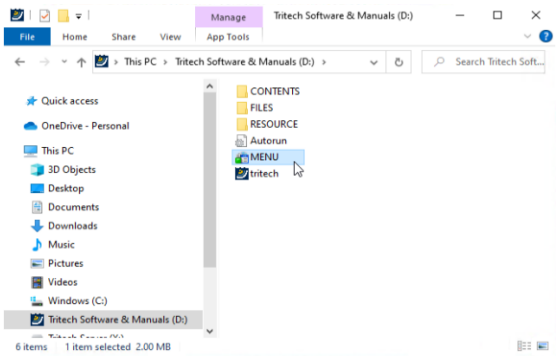
Specification	Minimum	Recommended
Processor	Intel i5™, 2 GHz Dual Core	Intel i7™, 8 Core
RAM	4 GB	8 GB+
Disk Space	500 MB free for program installation 500 GB (SSD recommended) for data recording and storage	
Graphics	3D hardware accelerated graphics	
Open GL	ver. 3.3	ver. 4.2 and above
Display	800x600 32 bit (True) Colour	1920x1080 32 bit (True) Colour
Operating System	Microsoft Windows 7 and later	
Network Interface	100BASE-TX Ethernet	1000BASE-T Ethernet
Serial Interface	RS232 or RS485 Hardware Based or USB Converter	

Genesis uses the OpenGL graphics library to display data from several of the supported hardware devices. It is important that the computer being used has the latest updates for its graphics drivers installed.

Genesis is written and tested on full and standard installations of Microsoft Windows™ with the default installation components. Custom, restricted or reduced feature installations of Microsoft Windows™ may not contain the Microsoft features and software components required for Genesis to run correctly. Windows may require to connect to “Windows Update to install any features not present on the computer.

Software Installation

A Software and Manuals USB memory stick is supplied with the purchase of each Tritech product which includes the latest version of Genesis at the time of delivery. To ensure you are using the latest release of Genesis it is recommended you download the software from the Software Download area of the Tritech website www.tritech.co.uk.



File Explorer window showing the USB memory stick root folder.

Front page of the Software and Manuals USB menu system.

If the USB memory stick does not automatically run when inserted, open the memory stick in a File Explorer window and run the 'MENU' file to start the menu system. The menu will give you access to install Genesis as well as other current and legacy Tritech software. The USB memory stick also contains a full set of product manuals which can be accessed through the menu system.

To avoid compatibility issues between differing versions of Genesis it is recommended that any previous version is uninstalled and the computer restarted prior to the installation of a new version.

Once installed Genesis will create a shortcut icon on the Windows desktop and program menu which can be used to start the program.

Full instructions for configuring and operating the Genesis software suite can be found in the 'Tritech Genesis Software Suite Product Manual' which is located in the 'Available downloads' section in the Software resource section within the Support area of the Tritech website.

Ethernet

Ethernet network comms allows multiple Geminis to be integrated using standard networking equipment. The Ethernet adapter on the host PC must be in the same IP address range as the Gemini being attached. For more details on setting the IP address of the computer refer to the section *Appendix A - Setting the computer IP address in Windows® 7 or Windows® 10* of this manual.

The default IP address for a Gemini multibeam is 192.168.2.201 on subnet 255.255.255.0

Reserved IP Addresses

There are a number of unique IP addresses that are reserved for different functions on Tritech devices. If reconfiguring the device IP address away from the default the following should not be used:

192.168.2.16 192.168.2.200
192.168.2.17 192.168.2.201 (default sonar IP)
192.168.2.100 (default surface IP)

Subnet Mask Limitations

Genesis will only accept a subnet masks of 255.255.255.0 (CIDR Prefix /24) or larger. Any more restrictive subnet masks will not be accepted (e.g. 255.255.255.128, prefix /25).

Things to note:

- The Gemini 1200id works on 100BASE−TX link.
- It is not recommended that you connect the Gemini units through a network hub. It is recommended that Gemini sonar units are connected using a network switch.

Connecting Multiple Ethernet Devices.

A network hub broadcasts to all its ports and thus shares its bandwidth with each of the ports. If multiple devices are connected then the bandwidth allocation will be shared between devices, and so the bandwidth per device will drop. This will negatively affect the performance of the network.
A network switch keeps records of the MAC addresses of the devices connected so when a frame of data is received the data is sent to the appropriate port rather than broadcast. This means that each port on a network switch will have the maximum amount of bandwidth.

- Check your antivirus situation. Firewalls will see the data from the Gemini and may stop the broadcast message. Occasionally a firewall will allow the broadcast message but will stop the high data rate, from imaging, believing it to be a denial-of-service attack.

Maintenance

General guidance

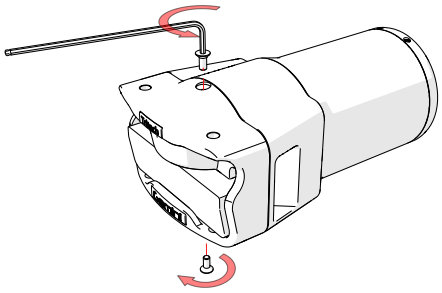
Although the Gemini range is not field serviceable regular care and maintenance of the unit should be carried out.

Regular visual inspection of the unit around the areas where salt build up can occur will help highlight any potential issues of corrosion and allow for corrective action to be undertaken before any integrity failure of the unit. The areas around the Transmitter and Receiver array should be inspected, as well as the VOS sensor. The mechanical interface between the bulkhead connectors and housing elements should also be inspected.

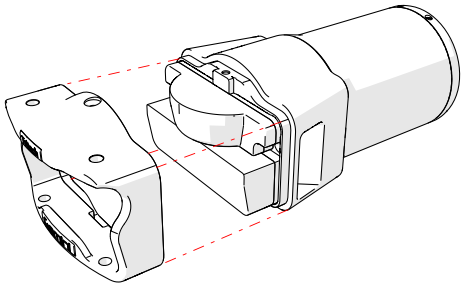
The Front Protective Cover

As part of a regular visual inspection cycle it is recommended that the front protective cover of the Gemini be removed in order to clean around the front elements of the sonar.

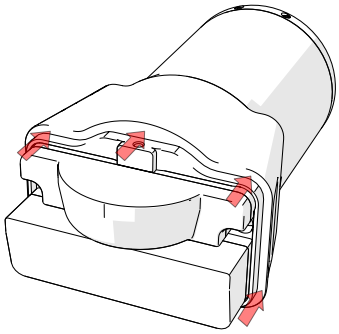
Using a M3 Allen key, unscrew the top and bottom retention screws from the cover.



Once both screws have been removed, gently pull the cover away from the main body of the sonar.



The area surrounding the transmitter and receiver can now be visually inspected for any salt deposits and cleaned as appropriate.



To refit the protective cover reverse the above steps.

Caution
Do not deploy the Gemini without the cover being attached to the unit.

It is recommended that Gemini units be returned to Tritech as part of a regular maintenance schedule. An annual return is highly recommended, but this can be lengthened, or shortened, by various factors:

- Frequency of use
- The operating environment (i.e. salinity, temperature)
- The presence of any galvanic action from dissimilar metals, or case voltages

After Use

After using the sonar head ensure it is washed down with fresh water and check the unit for any signs of obvious damage. Pay particular attention to the transducer faces and sacrificial anodes. Once the unit is clean, dry thoroughly and place in a storage container.

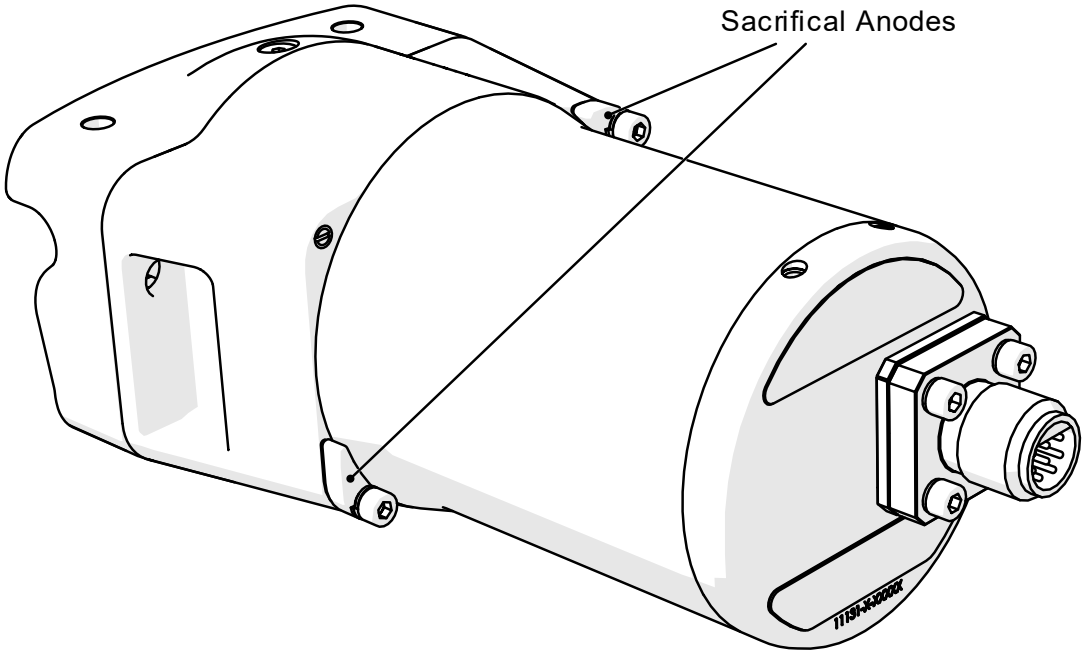
Equipment Storage

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.

Sacrificial Anode Information

There are four M5 threaded hole mounting points on the Gemini 1200id head housing to enable the fitment of zinc alloy sacrificial anodes. These are intended to prolong the units active life when submerged for long periods of time.

Tritech Gemini sonars made from Titanium do not have anodes fitted, and they should not be fitted unless under direct instruction from Tritech. The fitting of Sacrificial Anodes to Titanium Gemini sonars may result in damage not covered under warranty.

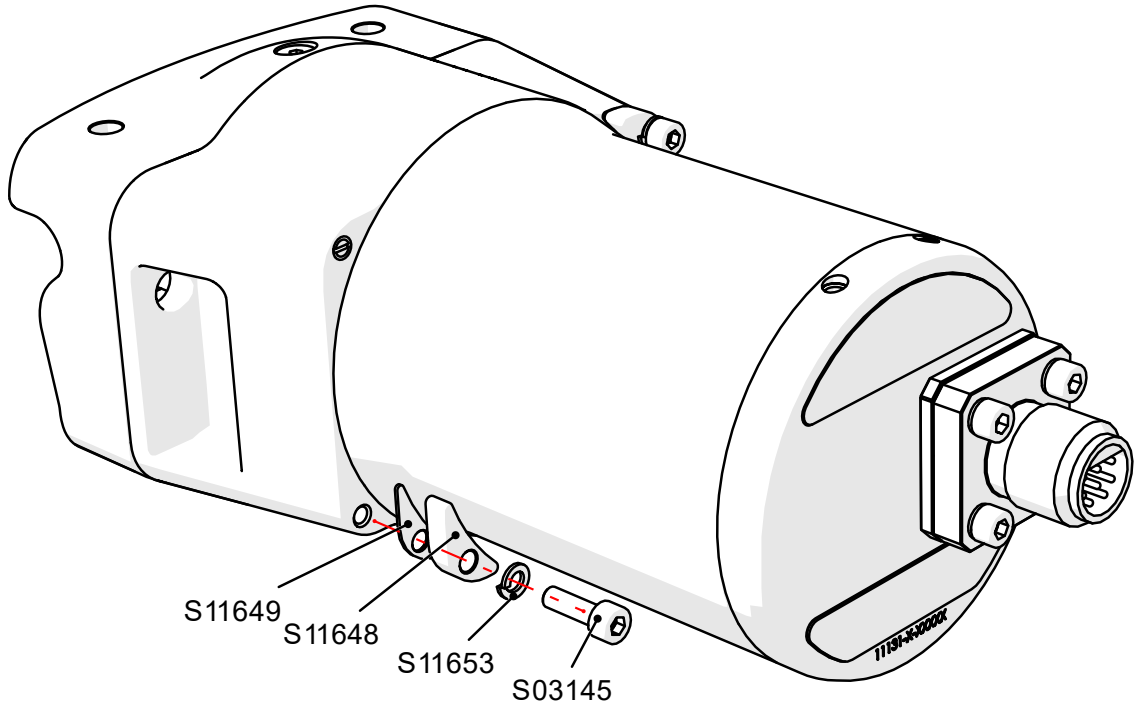


Lifespan of the anodes vary greatly depending on the conditions the sonar is exposed to. The condition of these anodes should be closely monitored for excessive deterioration as this may indicate or point to a ground fault condition requiring further investigation. As a minimum, Tritech International recommend replacing the anodes every year with the sonar in regular use.

The anodes are fitted onto the housing by way of a hex head cap screw, locking washer and insulator.

As a minimum it is recommended that two anodes be fitted and ideally the anodes should be mounted diagonally so the cathodic protection effect is optimal.

Tritech Gemini is/id Sacrificial Anode Kit S11654



Part No.	Qty.	Description
S11648	2	Gemini 720is Sacrificial Anode - Zinc
S11649	2	Gemini 720is Sacrificial Anode Insulator
S11653	2	M5 Spring Locking Washer A4
S03145	2	M5x16 Skt Head Cap Screw A4

Tritech International recommend a spare set of sacrificial anodes are retained with the sonar or vehicle to allow replacement during operations if required.

Troubleshooting

The software reports that no sonars are detected

Ensure that the latest revision of Genesis software is running on your computer. Visit www.tritech.co.uk to download the latest version.

Check all cabling to the sonar and verify that it is powered correctly with appropriate voltage at the sonar.

For Ethernet systems: Check that the correct cable is in use, this needs to be a cable of at least CAT5e standard. If the sonar has successfully established a link then the problem will be with the network settings on the PC.

Ethernet connection requires Cat5e cable for the entire cable run (max 80m) – lengths of untwisted cable must be kept to an absolute minimum. Some firewalls have been known to cause this issue. Contact the network administrator for advice if the sonar is connected to a network where disabling the firewall would present a security risk.

Genesis crashes as soon as the Gemini 1200id is detected

Without the Gemini connected, run Genesis then select [Help] then [About] and note the OpenGL driver version detected - it should be at least version 2.1. If this is not the case, update the graphics drivers present on the computer.

For **Windows® OS**: Ensure that the file system is not corrupted by launching a `cmd.exe` window with Administrative privileges then use the `sfc/scannow` command. This will analyse and correct any issues.

Sonar goes offline while operating out of water

The sonar head outputs heat to the body casing (using it as a heatsink) which is dissipated to the surrounding water during normal operation. In order to protect the internal electronics from damage due to overheating a thermal cut off will shut down the sonar if it gets too warm. It will be necessary to allow the unit to cool down before it will operate again. The unit should not be operated out of water for extended periods.

Sonar is present but will not ping

Ensure that you have OpenGL version 2.1 or greater installed.

For Ethernet systems: Check your network settings on the PC. Typing `route print` into the command line will show the PC routing table. The sonar and PC must be on the same subnet and the PC's routing table needs to be set up so that packets are routed correctly to the sonar.

If the sonar is receiving ping requests, then the IP address of the PC will appear in the `Surface IP Address` field under the General settings Tab within the Genesis software. If the sonar is connected to the PC then the most likely cause is particularly bad packet loss on the network between sonar and PC.

The sonar will only respond to ping requests from IP addresses on the same subnet as the sonar. Some firewalls have been known to cause this issue. To view the computers routing table type route print from the command line.

Update rate is slow and there are sometimes large gaps between pings

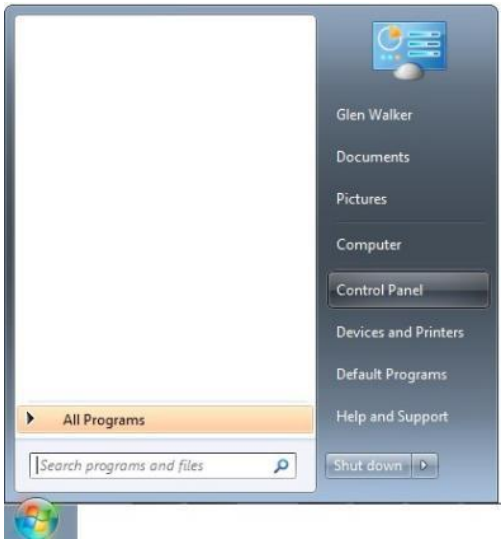
Check that there is no other software, or service, that is intensively using the network connection. Run the PC or laptop with just the Gemini software and verify that the unit's performance has been improved. There may be noise induced onto the Ethernet cables, be sure to route these as far away as practicable from noise sources.

Appendix A - Setting the computer IP address in Windows® 7 or Windows® 10

The following instructions apply to a computer running Windows® 7 or Windows® 10, though the sequence for other operating systems will be similar. All screenshots are from a Windows® 7 installation.

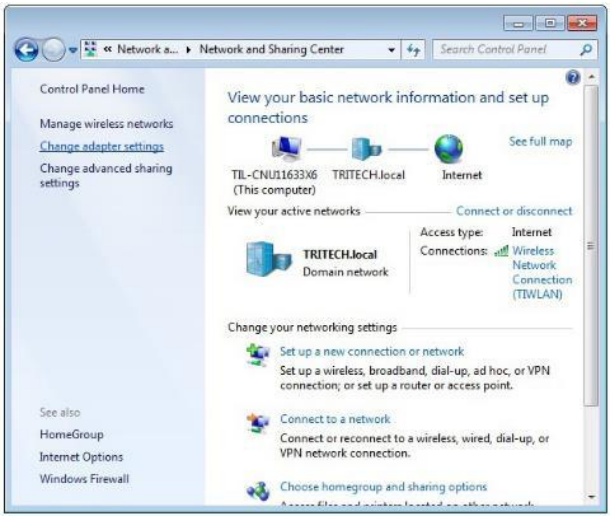
Disconnect the computer from any existing network.

First click on the `[Start Menu]` and select `[Control Panel]`.



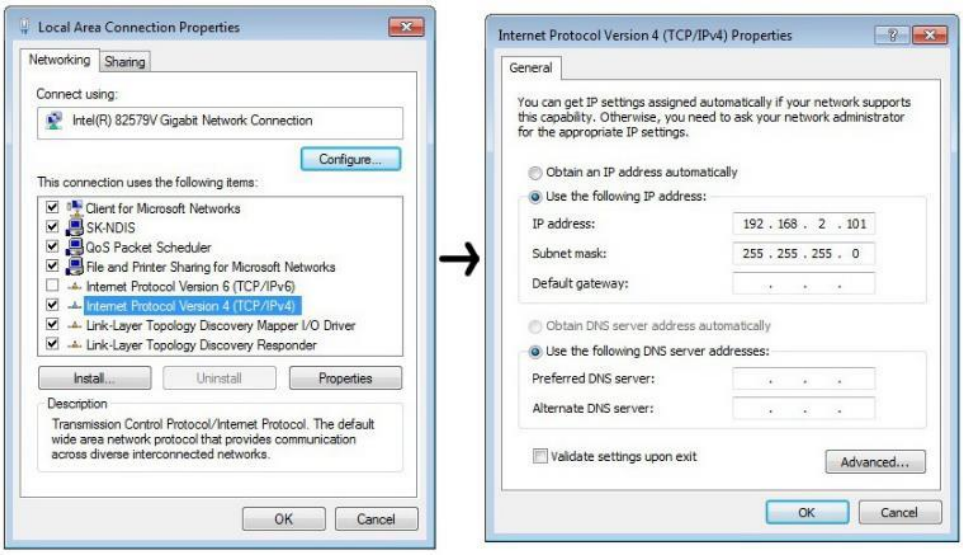
Under `[Network and Internet]` click on `[View network status and task]`.

This will bring up the [Network and Sharing Center] which allows configuration of any networks on the computer. Click on [Change adapter settings] on the left-hand pane.



A list of attached network devices should now present itself. Find the one which the Gemini head is to be connected to and double-click on it.

The [Local Area Connection] Properties dialog should be displayed. Find the entry labelled [Internet Protocol Version 4 (TCP/IPv4)], select it and then click on the [Properties] button.



In the properties dialog which opens there will either be [Obtain an IP address automatically] or [Use the following IP address] selected. If an IP address is already present, make a note of it before changing any values since it will be needed if the computer is ever restored to the previous network. Refer to appropriate section of this manual for the correct IP addresses to use.