Gemini Profiler with Survey Software

Hypack & Hysweep

0695-SOM-00007, Issue: 02

Tritech

© 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. Hardware Setup for Hypack....7
3. Configure the Gemini Software....8
4. Configure Hypack & Hysweep....9
    4.1. Hysweep....9
    4.2. Hypack....13
Glossary....19

 © Tritech International Ltd.

Help & Support

First please read this manual thoroughly (particularly the Troubleshooting section, if present).

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.

 © Tritech International Ltd.

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.

 © Tritech International Ltd.

1. Introduction

In order to be used as a bathymetric survey system the Gemini Profiler will be used in conjunction with additional software. Details are presented here for Hypack and Hysweep Survey software package.

Hypack is the main program and Hysweep is a sub-program that is designed to interace with multibeam sensors and sidescan devices, this manual will cover the necessary steps to configure both programs.

The basic principle of operation is that the Gemini Software communicates with the sonar head and then sends out data in a compatible format to the survey software. Usually the survey software is installed on a separate computer and they are connected via a network link.

Note

For more details of the software and after sales support for Hypack Inc. please contact your sales representative or visit the Hypack Inc. website at www.hypack.com

 © Tritech International Ltd.

2. Hardware Setup for Hypack

In order to have a fully functional survey system it will be necessary to run the Gemini Profiler off one computer and the Hypack/Hysweep software on another computer. The two computers will be connected through an Etherent LAN.

The survey system should be connected as follows:

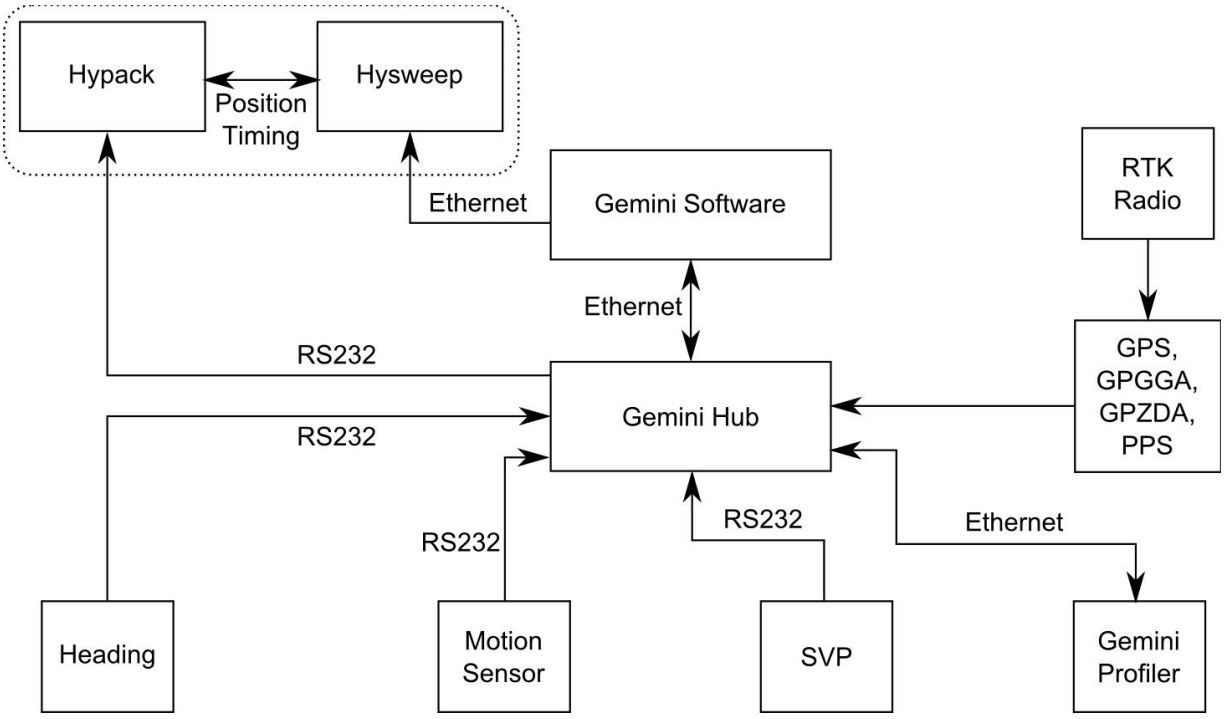


Figure 2.1. Hypack Hardware Configuration

Note

The RS232 link between the Gemini Hub and Hypack is required for time synchronization. The NMEA UTC time and PPS synchronization signal (CTS line toggle) is sent over the RS232 link.

 © Tritech International Ltd.

3. Configure the Gemini Software

To set the Gemini software for use with a survey computer running Hypack it will be necessary to configure the data output over an Ethernet port. The computer running the Gemini software will essentially be connected to two LANs, one for the Gemini Profiler head(s) and the other for the connection to the survey software.

Note

The computer running the Gemini software and the computer running the Hypack software should be assigned IP addresses within the same sub-network.

The network settings for the connection to Hypack are located in the section titled "Set up network data output" in the "Digitisation" section of the "Advanced" tab (as shown in *Figure 3.1. Gemini Software Digitization Settings*). The "Format" should be set to "Tritech" and the "Hostname" set to the IP address of the computer that is running Hypack/Hysweep.

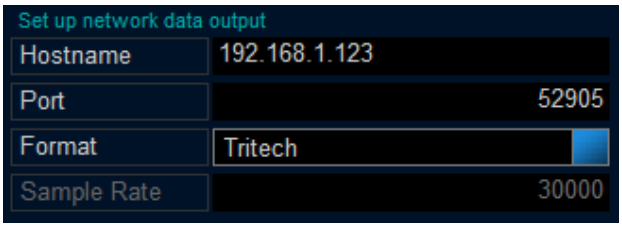


Figure 3.1. Gemini Software Digitization Settings

Once the network has been properly set it will be necessary to configure the "Hub Setup" so that the data from auxiliary sensors are passed through correctly. Example settings are shown in *Figure 3.2. Gemini Software Hub Setup* were there is a gyro on Port A, an MRU on Port B and GPS on Port C. To function correctly in Hypack it will also be necessary to echo the GGA and ZDA data strings from the GPS onto another port as shown (the PPS signal will also be sent to Hypack using CTS handshaking on this link and ensures accurate time-stamping of all system components).

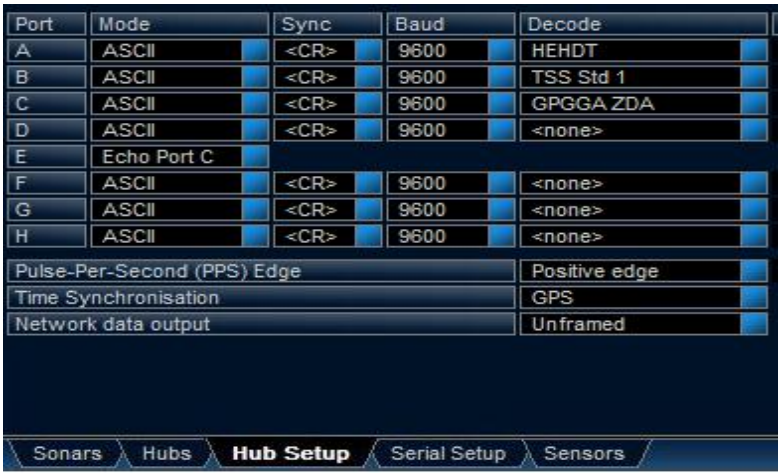


Figure 3.2. Gemini Software Hub Setup

In the "Hub Setup" tab ensure that the PPS edge is set to "Positive Edge", the time synchronization is set to "GPS" and the network data output is "Unframed".

 © Tritech International Ltd.

4. Configure Hypack & Hysweep

Note

Hypack and Hysweep are not produced by Tritech International Ltd and therefore this section is only a summary of the relevant parts. For full details of the operation of the Hypack and Hysweep software please refer to Hypack Inc. for documentation.

4.1. Hysweep

The first step of the configuration is to make sure that Hysweep is properly set up. Hysweep is the program that communicates with the computer running the Gemini software and brings the Gemini Profiler data in through the network port. All of the configuration options for Hysweep should be accessed from the "HYSWEEP" menu in the main Hypack program.

For configuring a Gemini system it should only be necessary to access the "HYSWEEP Hardware" option as shown in *Figure 4.1. Hysweep Menu.*

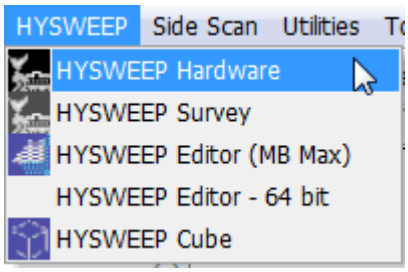
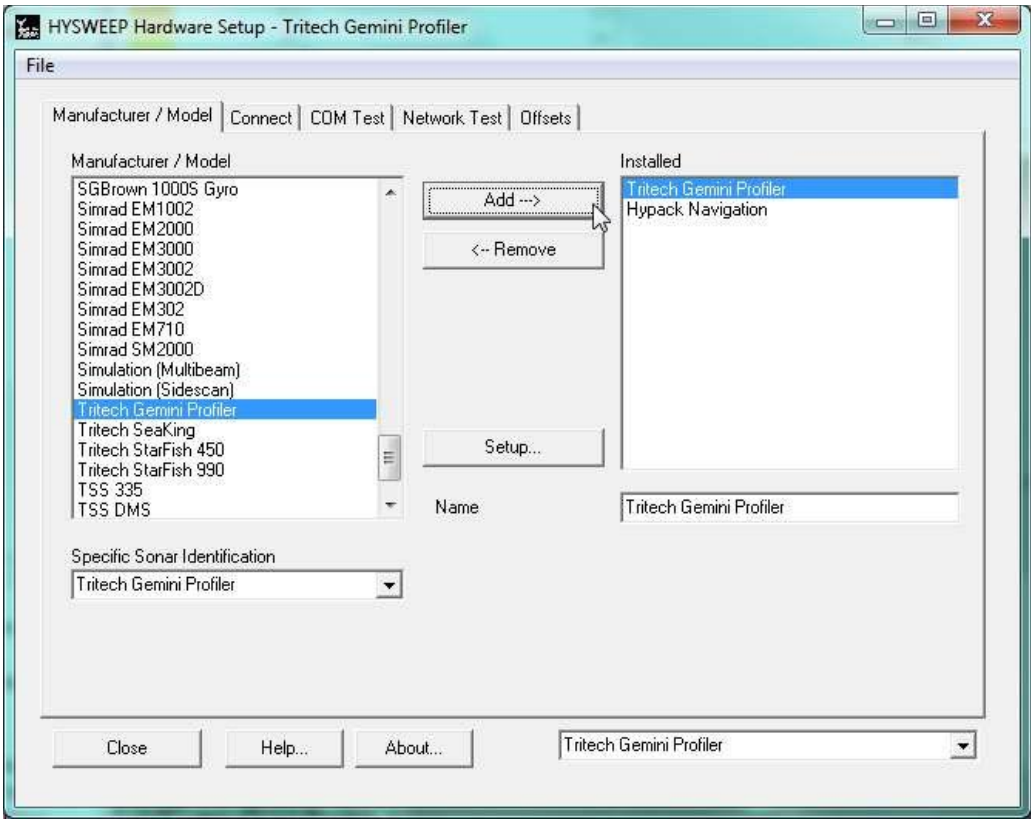


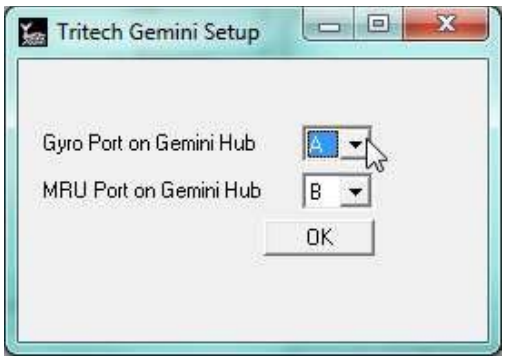
Figure 4.1. Hysweep Menu

The Hysweep Hardware dialog will be presented. Click on the "Manufacturer/Model" tab and then in the "Manufacturer/Model" pane on the left-hand side scroll down to find the entry named "Tritech Gemini Profiler" and click the "Add" button.

 © Tritech International Ltd.



Once the "Tritech Gemini Profiler" appears in the "Installed" pane on the right, highlight it and then click "Setup" (ensure the "Specific Sonar Identification" drop-down box is set to "Tritech Gemini Profiler"). This will bring up the dialog box shown in *Figure 4.3. Choose Gemini Hub Ports for Gyro and MRU* where it will be possible to choose the correct Gemini Hub port letters for the gyro and MRU.



Once the "Tritech Gemini Profiler" has been installed and the Gemini Hub ports configured move to the "Connect" tab and make sure "Enabled" is checked. Also on this pane enter the IP address and port of the computer that is running the Gemini software.

 © Tritech International Ltd.

Note

In Hypack the Internet Protocol address is labelled “Internet Address”. Where the box states “Internet Address” it refers to the Internet Protocol (IP) address.

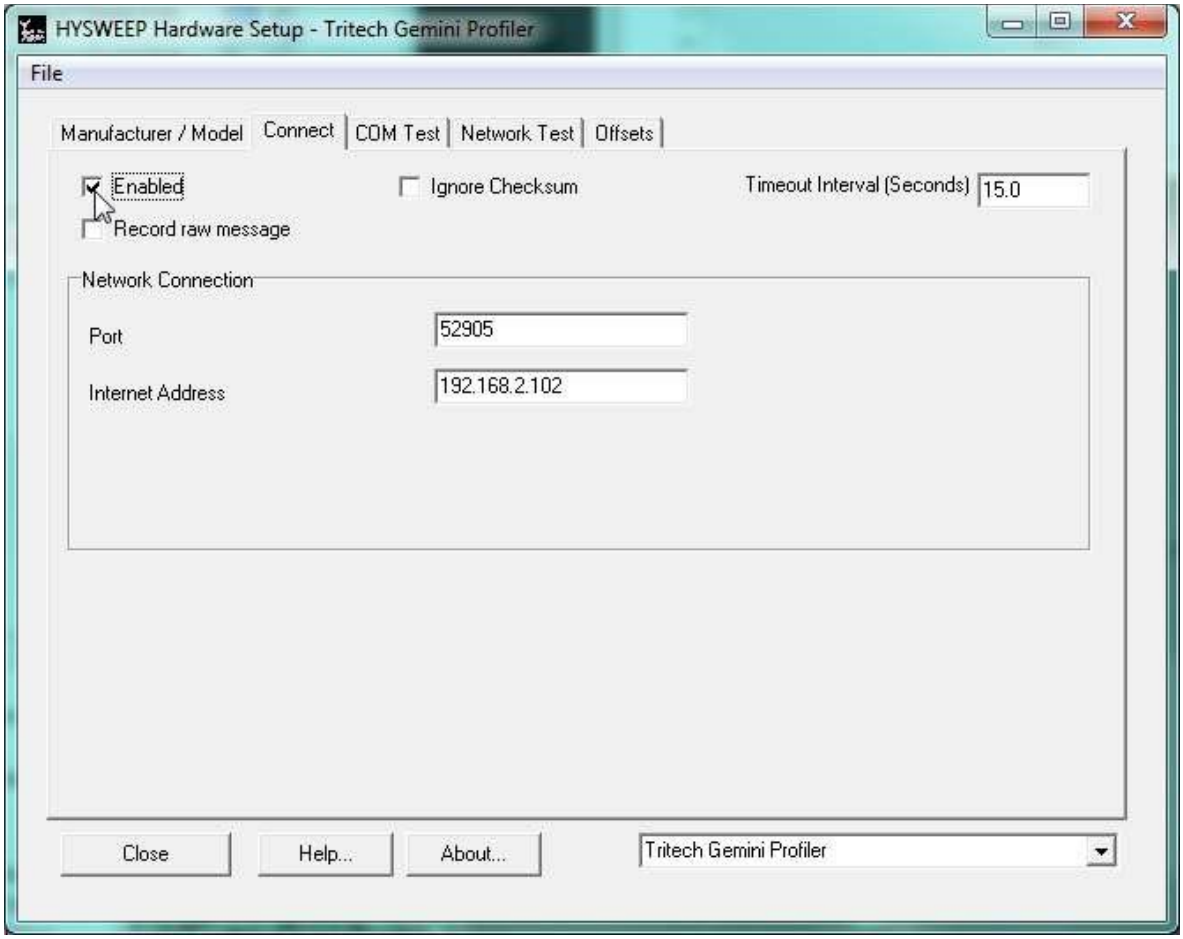


Figure 4.4. Enter Connection Details for Gemini PC

If this is the first time the network has been used it may be useful to run a test of the network connection. This can be done using the options in the “Network Test” tab. Ensure that the IP address and port number of the computer running the Gemini software are correctly entered an once they are, click on one of the test buttons. The “Status” box will indicate the health of the network connection. The text area which shows “Ready” in *Figure 4.5. Test Hysweep Network Connection* will turn red if the connection has failed or green if it s successful.

Note

In Hypack the Internet Protocol address is labelled “Internet Address”. Where the box states “Internet Address” it refers to the Internet Protocol (IP) address.

 © Tritech International Ltd.

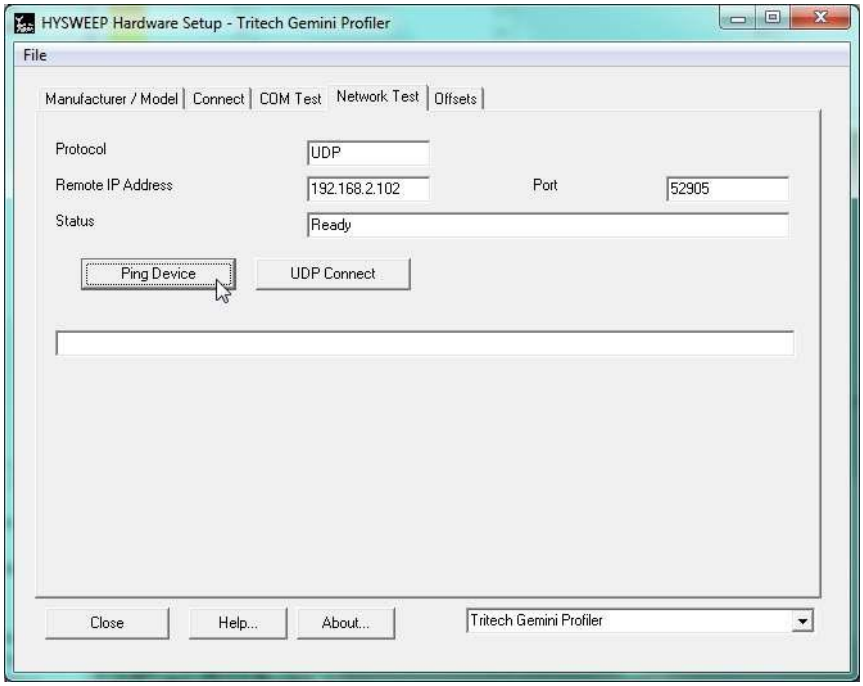


Figure 4.5. Test Hysweep Network Connection

Finally for the "Tritech Gemini Profiler" setup it will be necessary to open the "Offsets" tab and enter any offsets to correctly position the Gemini Profiler. An example is shown in *Figure 4.6. Configure Gemini Profiler Offset.*

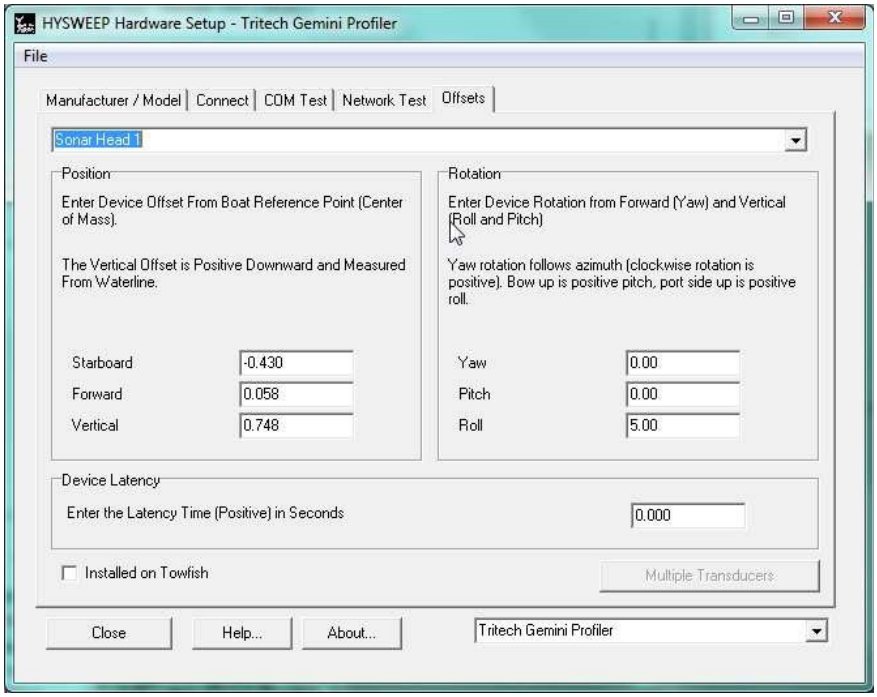


Figure 4.6. Configure Gemini Profiler Offset

Once all of the required tabs have been opened and configuration details entered, click on the "Close" button to exit the "HYSWEEP Hardware Setup dialog and return to the main Hypack screen. A prompt will appear as shown in *Figure 4.7. Hysweep Save Change Dialog* at which point "Yes" should be clicked to save the changes.

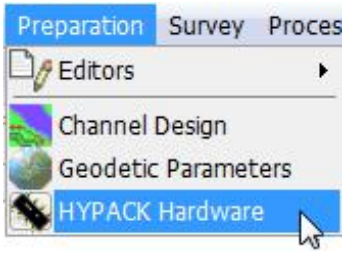
 © Tritech International Ltd.

Figure 4.7. Hysweep Save Change Dialog

4.2. Hypack

Once Hysweep has been configured it will be necessary to prepare Hypack.

The first step is to launch the "HYPACK Hardware" dialog by navigating to the "Preparation" menu and clicking on "HYPACK Hardware".



The "HYPACK Hardware" dialog will be opened and should show a display similar to *Figure 4.10: Configure Hysweep Interface* and *Figure 4.12: Configure the GPS.*

Note

The first time that the "HYPACK Hardware" dialog is run there should be no entries under the "Boat" item in the tree list on the left-hand pane (if an entry is present entitled "Simulation" it should be disabled by righ-clicking on the title).

To bring in the data from the Gemini Profiler (which will be communicating with the Hysweep program) it will be necessary first to add a "Hysweep Interface". Click on the "Boat" entry in the tree list and then clickn on the "Add Device" button. The "Add Device" dialog will be presented. Scroll down to the "HYSWEEP Interface" entry, select it and then click "OK".

 © Tritech International Ltd.

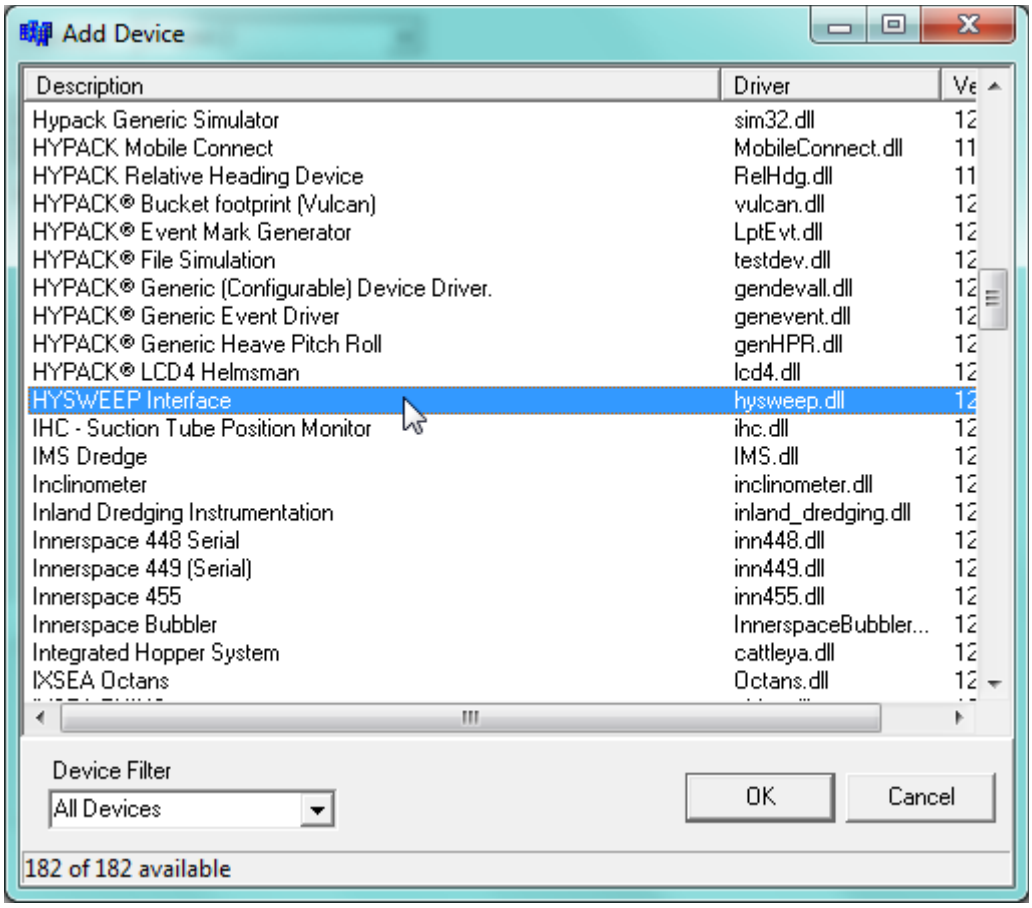


Figure 4.9: Add Hysweep Interface

Once the "HYSWEEP Interface" has been added,find it in the tree list under the "Boat" entry and highlight it. This will change the configuration options on the right-hand side of the "HYPACK Hardware" dialog. Make sure that the "Heading" option is selected as shown in *Figure 4.10: Configure Hysweep Interface.*

To set the network parameters make sure that the "Connect" drop down list is set to "Network Port" and the "Network Parameters" are set to use the "localhost" connection and loop-back port (Hysweep and Hypack are running on the same machine).

 © Tritech International Ltd.

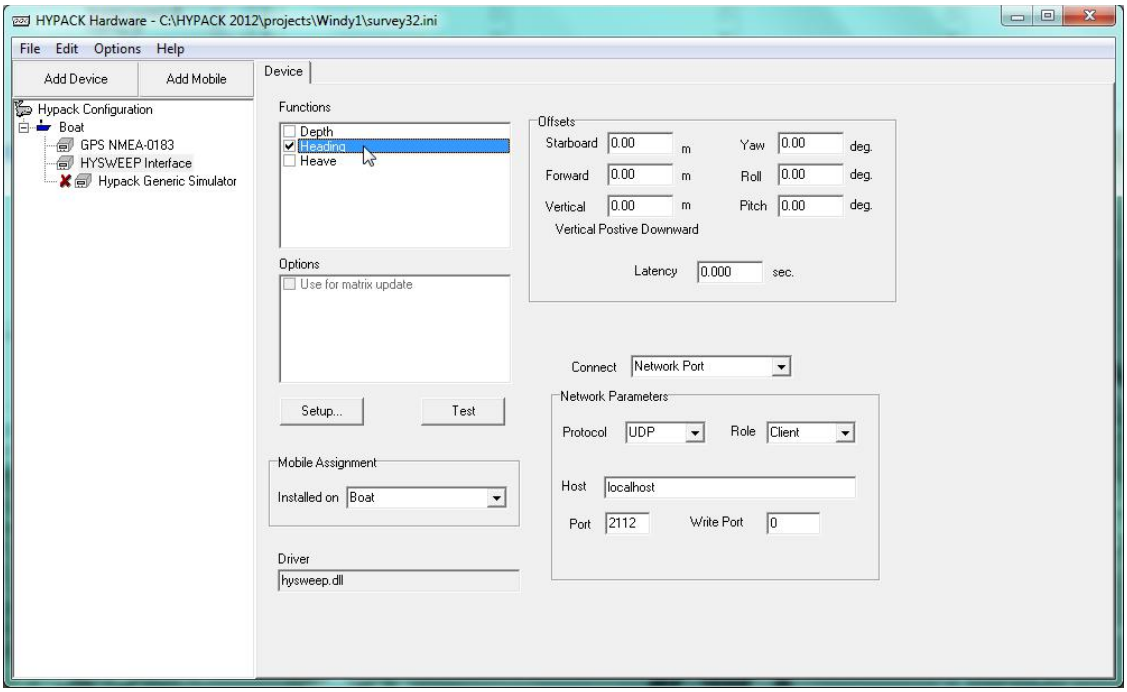
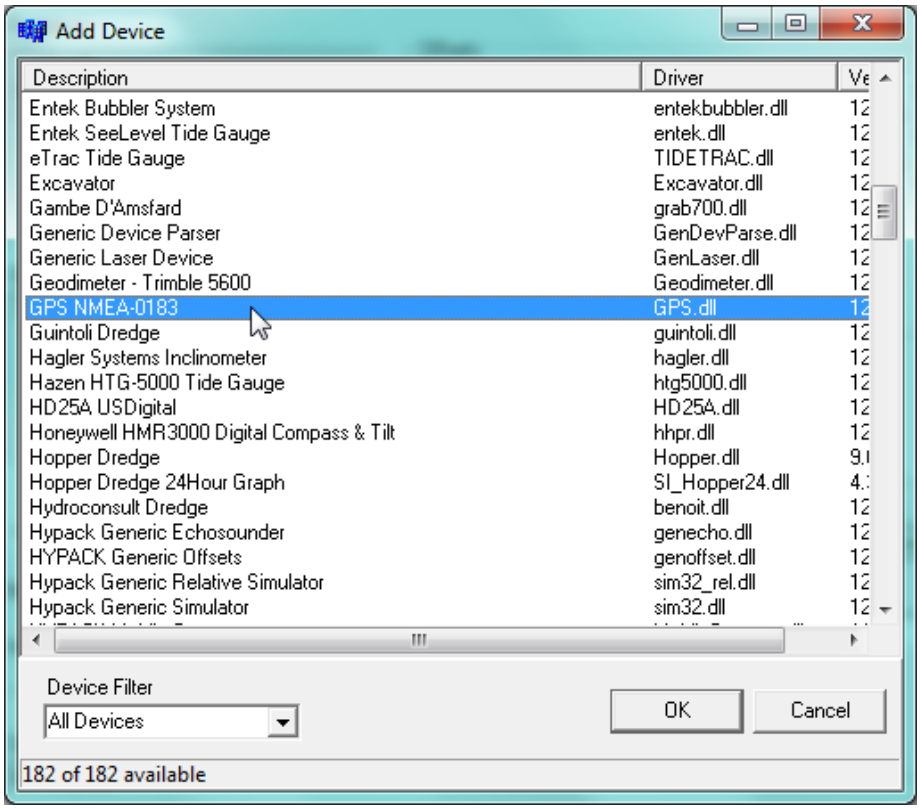


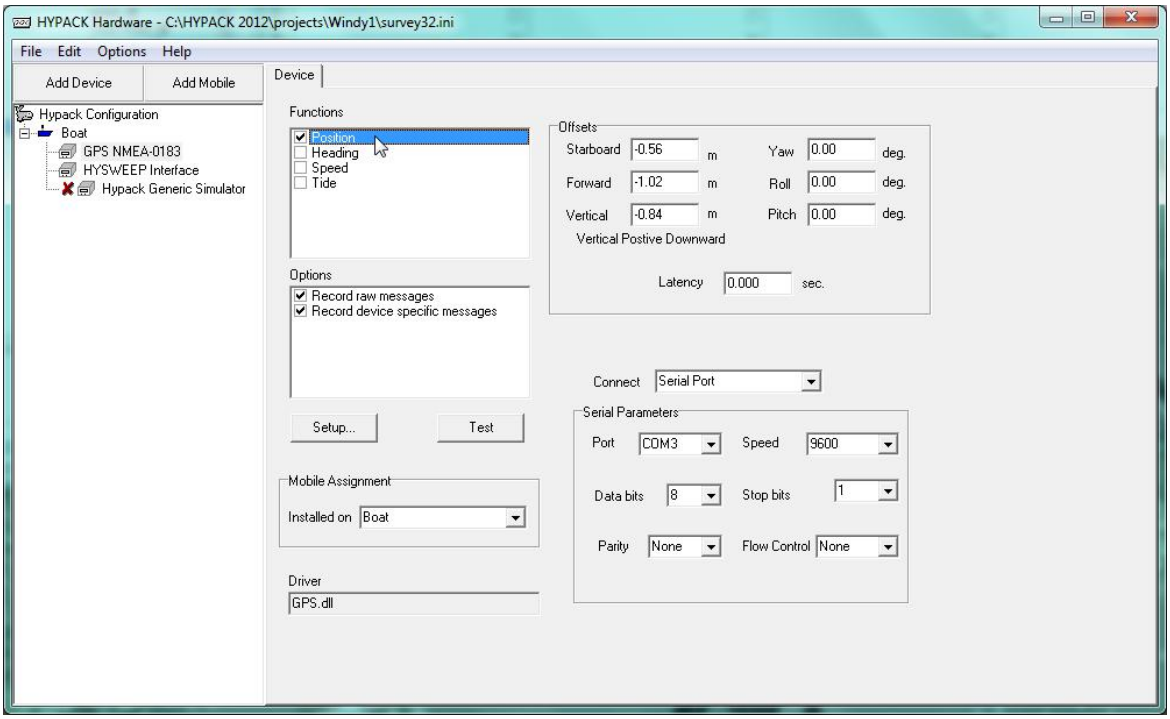
Figure 4.10: Configure Hysweep Interface

After the "HYSWEEP Interface" is correctly installed, add the GPS device by highlighting the "Boat" entry in the tree list and clicking on "Add Device" again. This time find the entry labelled "GPS NMEA-0183" as shown in *Figure 4.11: Add the GPS.*

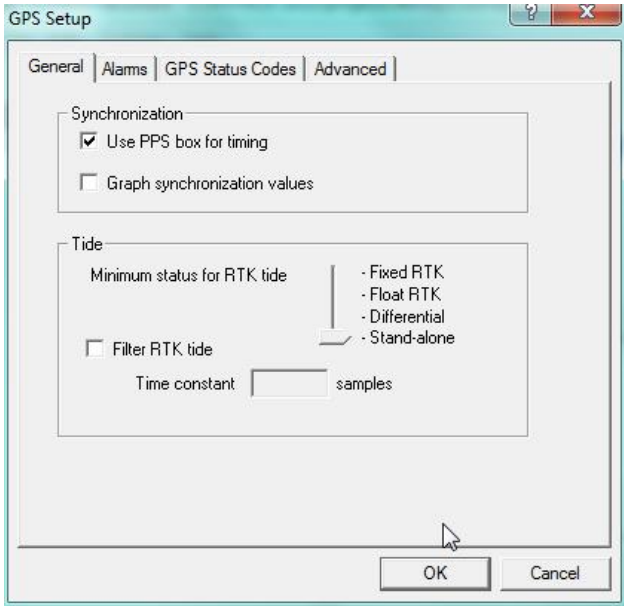


 © Tritech International Ltd.

Highlight the "GPS NMEA-0183" entry in the tree list and make sure that the "Position" is selected as shown in *Figure 4.12: Configure the GPS.* Also on this pane configure the serial port parameters (make sure that the "Connect" drop-down list is set to "Serial Port"). The port settings should match those of the Gemini Hub port that is echoing the GPS signal (in the example shown in *Section 3. Configure the Gemini Software*, this is Port E).



To finish configuring the GPS click on the "Setup" button and launch the "GPS Setup" dialog. Under the "General" tab select "Use PPS box for timing" and under the "Advanced" tab ensure that the "GGA" option is selected (as shown in *Figure 4.13: GPS Setup General Tab* and *Figure 4.14: GPS Setup Advanced Tab*).



 © Tritech International Ltd.

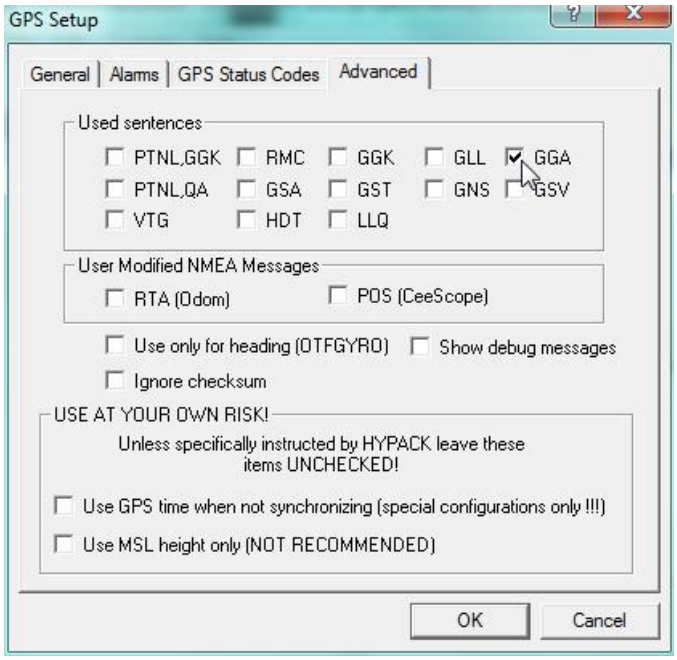


Figure 4.14: GPS Setup Advanced Tab

Finally close the "GPS Setup" dialog and then click on the "Hypack Configuration" entry in the tree list. Make sure that the "Device to Synch clock with" is set to "GPS NMEA-0183" as shown in *Figure 4.15: Hypack Hardware Configuration*. Click on the "File" then "Save" followed by "File" then "Exit to close and return to the main page.

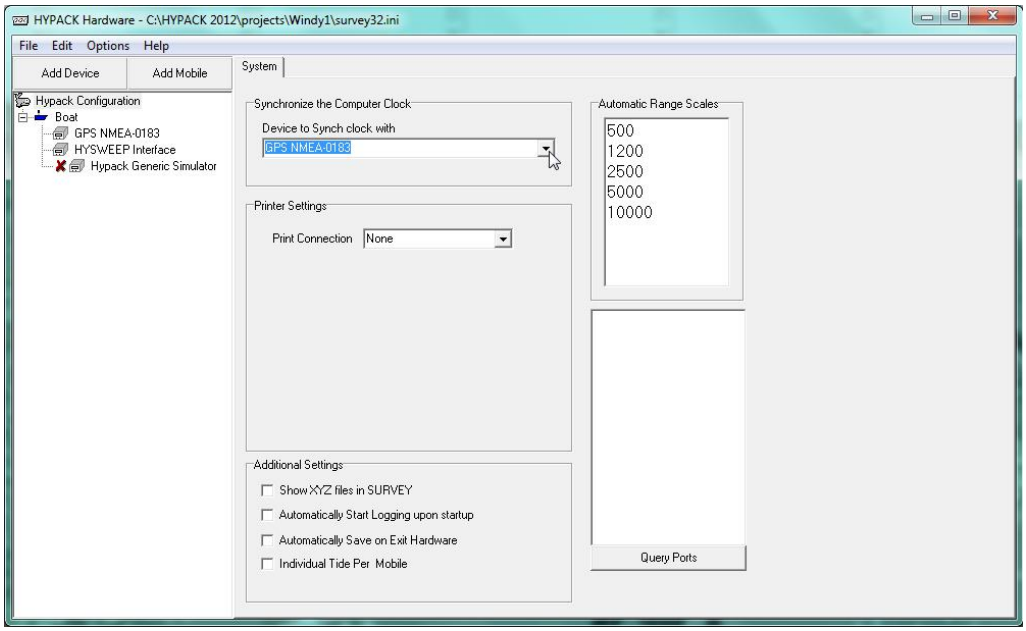


Figure 4.15: Hypack Hardware Configuration

Note

On the computer running Hypack, local firewall settings may interfere with communication and if possible they should be disabled.

 © Tritech International Ltd.

Once the "HYPACK Hardware" dialog has been dismissed it will be necessary to select the Gemini as the input for the heading display in the "HYSWEEP Survey" dialog.

First, launch the Hypack & Hysweep Survey program and then navigate to the "Device Selections" option in the "View" menu as shown in *Figure 4.16: HYSWEEP Survey View Menu.*

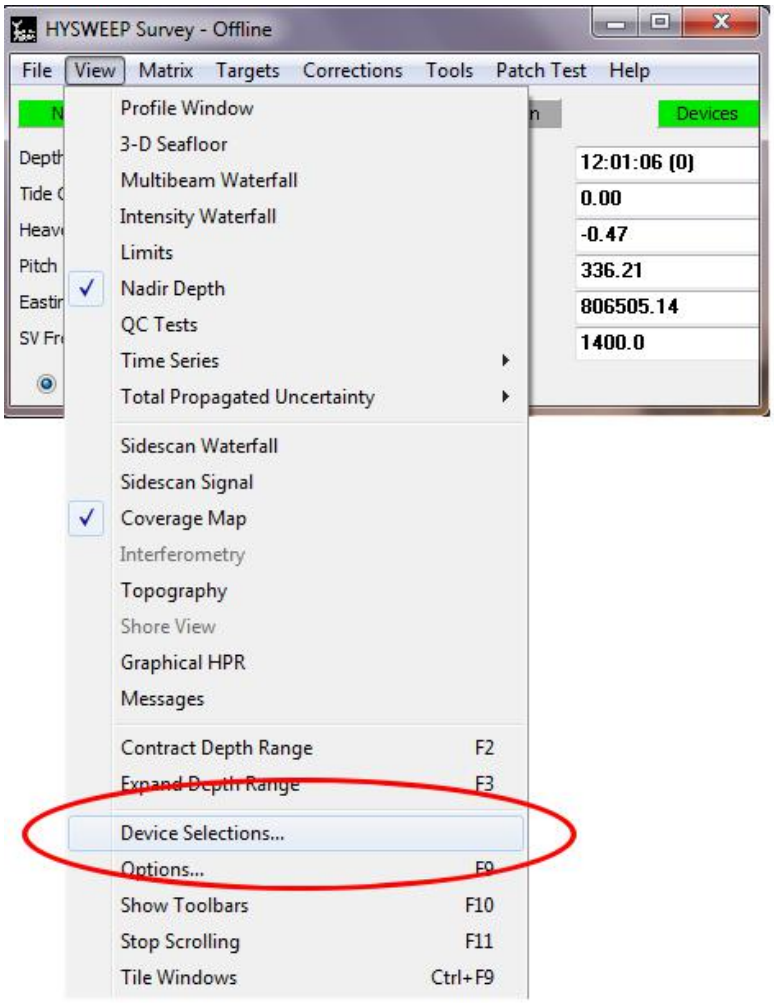


Figure 4.16: HYSWEEP Survey View Menu

The "Device Selections" dialog will now be shown. In the "Select Boat Corrections" tab make sure that the drop-down boxes are all set to "Tritech Gemini Profiler" as shown:

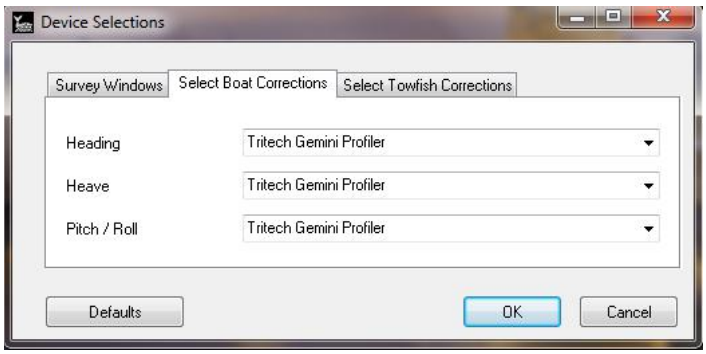


Figure 4.17: Device Selections Dialog

 © Tritech International Ltd.

Glossary

CTS	Clear To Send (data)
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 Tritech International Ltd such as the Gemini Imaging Sonar (720id), Narrow Beam Imager or Gemini Profiling Sonar (620pd).
Gemini Hub	A rack mountable device capable of driving 2 Gemini sonars and multiple serial sensors and outputting the data to a PC network.
GPS	Global Positioning System.
IP	Internet Protocol – generally used as a means of addressing individual computers.
LAN	Local Area Network
MRU	Motion Reference Unit
NMEA	National Marine Electronics Association – a USA based standards association responsible for overseeing electrical and data communications standards between marine devices (due to become the IMEA or International Marine Electronics Association in 2012).
PC	Personal Computer
PPS	Pulse Per Second
RS232	Traditional name for a series of standards for serial binary data control signals.
SVP	Sound Velocity Probe
UTC	Coordinated Universal Time (time data closely related to Greenwich Mean Time (GMT)).

 © Tritech International Ltd.