wassp®
MULTIBEAM

OPERATOR MANUAL

WMB-3230

WMB-5230

Document Revision History

Revision Date	Reason for Change	Version
27 February 2013	WMB-X230 Operator Manual First Revision	v1.0
28 April 2013	Changes for WMB-X230 v1.1 software release	v1.1
12 June 2013	Updated Key Pulse Information	v1.1a

Disclaimer

WASSP LTD. RESERVES THE RIGHT TO CHANGE THIS MANUAL WITHOUT NOTICE. ALTHOUGH WASSP LTD. HAS MADE EVERY EFFORT TO ENSURE THE INFORMATION IN THIS MANUAL WAS CORRECT AT PUBLICATION TIME, WASSP LTD. DOES NOT ASSUME AND HEREBY DISCLAIMS ANY LEGAL LIABILITY OR RESPONSIBILITY TO ANY PARTY FOR ANY DIRECT, INDIRECT, SPECIAL OR CONSEQUENTIAL LOSS, DAMAGE OR DISRUPTION CAUSED BY ERRORS OR OMISSIONS, WHETHER SUCH ERRORS OR OMISSIONS RESULT FROM NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE.

General Notices

WASSP LTD. RESERVES THE RIGHT TO CHANGE THE CONTENTS OF THIS MANUAL AND ANY SYSTEM SPECIFICATIONS WITHOUT NOTICE. CONTACT WASSP LTD. REGARDING COPYING OR REPRODUCING THIS MANUAL.

Copyright and Confidentiality Notice

Related Documents

Document P/Number	Title
WSP-009-009	WMB-X230 Installation Manual

Warnings, Cautions, and Notes

Warnings, cautions, and notes are indicated by the following icons throughout this manual:

A WARNING indicates that if the instruction is not heeded, the action may result in loss of life or serious injury.

A CAUTION indicates that if the instruction is not heeded, the action may result in equipment damage or software malfunction.

A Note indicates a tip or additional information that could be helpful while performing a procedure.

Safety Notices

THE INSTALLER OF THE EQUIPMENT IS SOLELY RESPONSIBLE FOR THE CORRECT INSTALLATION OF THE EQUIPMENT. WASSP LTD ASSUMES NO RESPONSIBILITY FOR ANY DAMAGE ASSOCIATED WITH INCORRECT INSTALLATION.

Electrical Safety

► Fire, electrical shock, or equipment damage may occur if the BTxR becomes wet.

► The equipment is rated for operation at:

- BTxR 24 V DC
- WASSP Processor 6 - 30 V DC

► Make sure that the power is switched OFF at the main supply (e.g. switchboard) before beginning the installation. Fire or electrical shock may occur if the power is left ON.

► Do not open equipment covers unless you are totally familiar with the system's electrical circuits.

► Make sure all safety precautions for electrical equipment are taken when operating or servicing the equipment. These to be carried out in accordance with local or national regulatory body safety regulations.

► Make sure that the transducer cannot become loosened or insecure due to the vessel's vibration.

Contents

8. Operating Procedures

9. Frequently Asked Questions (FAQs)

10. Troubleshooting

1. Introduction

1.1 Purpose of this Operator Manual

This Operator Manual contains instructions and information on the operation of the software package supplied with your WMB-X230 (i.e. WMB-3230 or WMB-5230) system. Installation and Commissioning procedures are contained within the Installation Manual, also supplied alongside this manual.

Please refer to the Installation Manual for instructions on transducer and BTxR installation, sensor connection, system configuration and setup, and commissioning steps required to get your WASSP system up and running.

1.2 Introducing the WASSP Sonar System

The WMB-X230 is a multi-beam sonar system that uses a wide-angle sonar transducer to profile the water column and seafloor to a high resolution. It is this unique combination of multi-beam sonar and processing power which provides you with unparalleled information about the underwater environment. It gives you a wide 120° port-starboard swath of the water column and seafloor, allowing you to find and position reefs and wrecks, fish schools, seafloor hardness changes, and foreign objects in the water column or on the seafloor. From the 120° swath, the system processes 112 dynamic beams, with each beam containing detections from the water column and seafloor.

The information is presented in a user-friendly, mouse controlled, Windows-based operating system. The intuitive graphical user interface displays both acoustic views and charting views for complete knowledge of the world beneath with the ability to view both real-time and previously recorded maps from any part of the globe in 2D and 3D. Depth and backscatter colours can be dynamically changed while viewing. The system can output data to plotting software packages. For optimal performance, roll, heave, pitch, heading and position inputs are all required.

The WMB-X230 can be applied to a variety of fishing methods, as well as search and rescue, customs, and police applications.

1.3 Main Features

The WMB-X230 has the following main features:

► **Improved performance.**
The use of separate transmit and receive arrays has enabled WASSP to optimise both transmit performance and receive sensitivity, giving improved performance over traditional sonar and sounders.

► **High detail picture of marine environment.**
The transmit beam spreads over a 120° port-starboard swath and covers 4° fore-aft while the receive beam covers 10° fore-aft, displaying a highly detailed picture of the marine environment.

► **Real-time map generation.**
Generate new maps in real-time from bottom detections.

► **Beam stabilisation.**
Beam stabilisation compensates for the movement of the vessel, providing accurate seafloor profiles and fish school locations.

► **Variable beam width.**
Unique to the WMB-X230 the single beam view can not only be stabilised, but the beam width can be varied from 5° to 40°.

► **Triple beam view.**
With variable width and angle, the port, centre, and starboard beams display together to help build your understanding of the sea environment.

► **Navionics chart overlay.**
The charting displays can draw a vector Navionics hydrographic chart overlaid on the WASSP seafloor data. The displayed chart features can be turned on or off as required. Maps are available from

Navionics to cover almost every part of the world.

► **Bottom lock.**
Bottom lock provides a traditional bottom lock mode where the changes in bottom depth are ignored and the bottom is drawn flat. Fish and other echoes are shown relative to the flat bottom image, enabling better discrimination between bottom fish and the seafloor.

► **Computer based profile storage.**
A computer-based system means the WMB-X230 can generate and store very detailed seafloor profiles.

► **Map resolution based on depth.**
Your WASSP system dynamically changes the resolution of the stored maps to suit the depth of the seafloor. Shallow seafloor data is stored at resolutions as high as 250mm to give the maximum detail available, while deep seafloors have their resolution restricted to 4m to avoid saving spurious fine detail.

► **Database management.**
The WASSP system uses one or more databases for storing and displaying WASSP data including the depth, backscatter and water column information. Additional databases can be created at any time and incoming data can be assigned to any database. Unnecessarily large databases can be down-sized to save recording space.

► **Digital signal processing (DSP).**
Using DSP technology, the WMB-X230 can provide an indication of changes in seafloor hardness, ideal for scalloping, crayfishing, and trawling where you want to understand and locate small changes on the seafloor.

► **160 kHz operating frequency (WMB-3230).**
Operating at a frequency of 160 kHz provides high seafloor definition at depths down to 200m.

► **80 kHz operating frequency (WMB-5230).**
This frequency provides performance down to 500m with a slight reduction in the shallow water < 60m performance.

► **Depth and seafloor coverage.**
Seafloor coverage is determined by the beamwidth in use: For a 90 degree beamwidth, the seafloor coverage will be approximately twice the water depth. For example, 100m depth gives 200m seafloor coverage with 112 beams - every ping. For a 120 degree beamwidth, the seafloor coverage is 3.4 x depth. For example 200m depth gives approximately 680m seafloor coverage.

► **Unique power management system (14 power levels).**
14 power levels provide optimal performance over a wide range of seafloor types and water depths.

► **More accurate seafloor - faster.**
Profiles 90 times faster than conventional single beam echo sounders, leading to reduced costs and improved accuracy.

► **Future proof technology.**
The computer based operating system and BTxR firmware are both upgradeable as new software features are developed.

1.4   System Overview

A complete WASSP system is made up of a variety of hardware which all combine to provide the WASSP software package with all the information required to generate a seafloor profile with water column information. Figure 1 below shows an overview of a complete WASSP system.
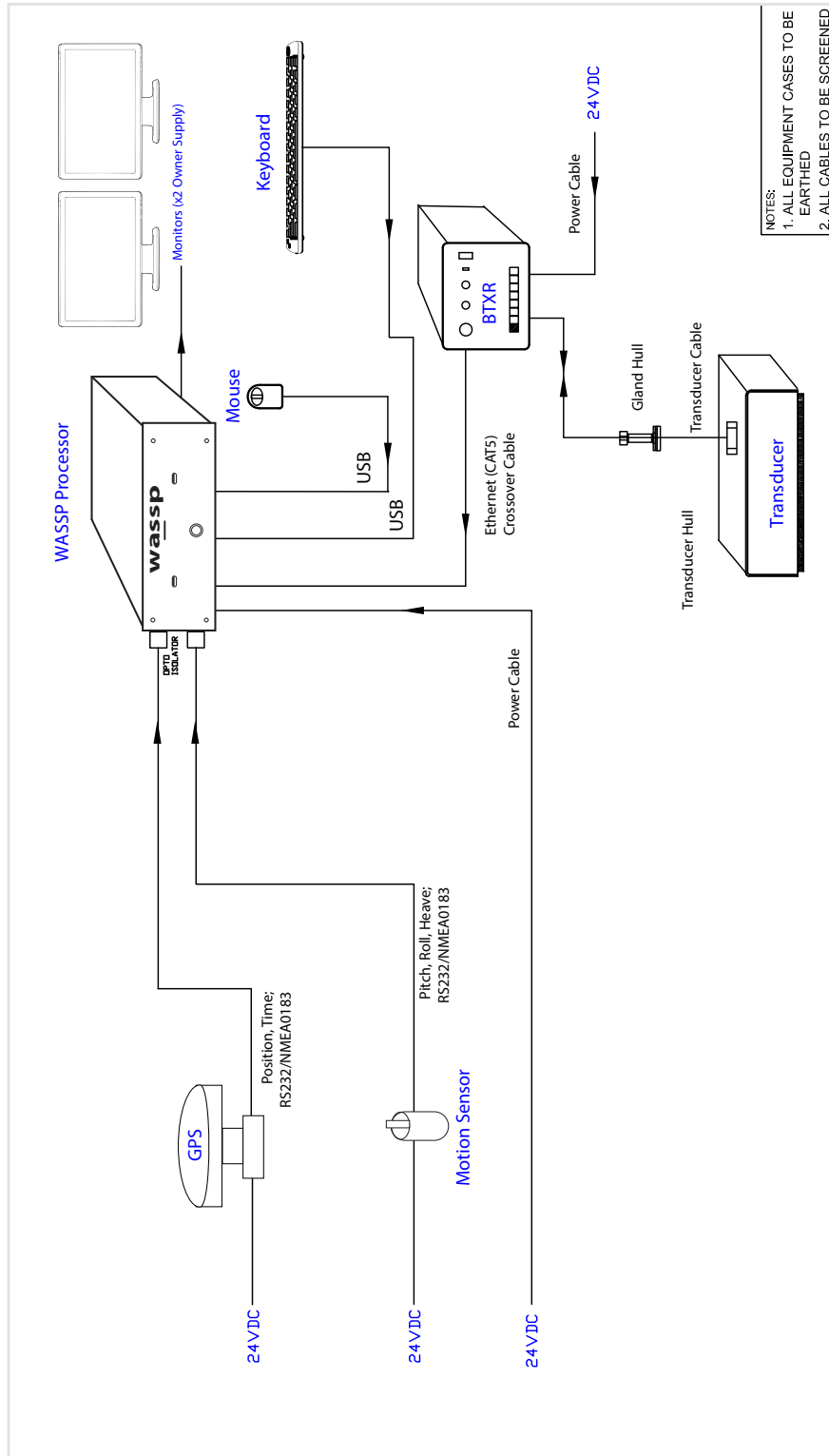
Figure 1.   Overview of a complete WASSP system

> ⚠️ **CAUTION**
>
> **Before proceeding with the contents of this Operator Manual, the user should ensure that the Installation Manual has been read, and that the commissioning steps contained within it have been followed through and completed.**

The software package supplied with your WASSP system is your gateway to the world beneath. Modern computer processing capabilities have provided a means for interpreting the tremendous amount of data collected by the WASSP system, and it is through this gateway that we are able to see this data in an arrangement which is easy to understand and use.

> 👍 Note: You will require a USB WASSP dongle to operate the software. You have been supplied one with your system. Ensure it is plugged into one of the USB ports on the WASSP Processor before continuing.

1.5 Application Startup

Your WASSP Processor will automatically run the WMB-X230 software as it is powered up. Alternatively, the software can be run from the Windows Start Menu (**Start > All Programs > WASSP**) or Desktop.

Figure 3.   Desktop Icon
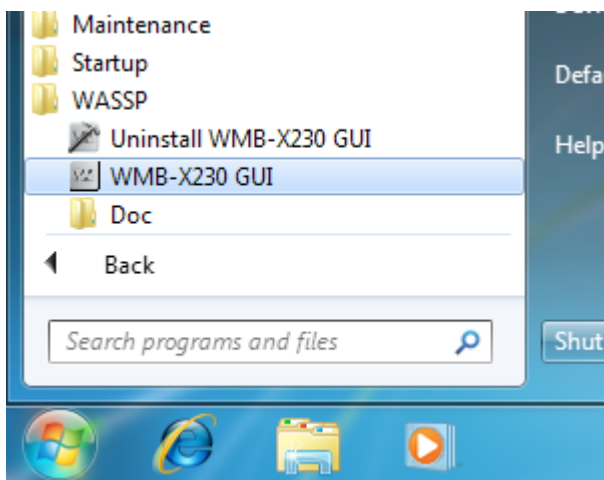
Figure 2.   Start Menu Icon

1.6 Splash Screen and Navigator Warning

The splash screen that appears on the application start-up contains a warning to the user. Please read this warning and take note of what it says.

1.7 Monitor Resolution

The resolution of the monitor you have chosen to use with your WASSP Processor will be automatically detected and the appropriate display configuration applied.

2.   Main Menu

The Main Menu is a panel with several buttons, dials and indicators, and is used to control the majority of the operations of your WASSP system. The following pages contain an overview of what each control does, with references to further sections in this manual with more detail.

2.1   Overview

Each of the buttons or controls on the Main Menu are talked about in some detail over the following section. Buttons requiring a more detailed explanation have their own chapter.

Info Panel
See page 6

Device Connection Indicators
See page 6

MODE button
See page 6

Gain Control
See page 7

Range Control
See page 7

Acoustic Layout Selection
See page 7

Chart Layout Selection
See page 7

Power Level Selection
See page 7

Snapshot button
See page 8

Map Recording Button
See "Mapping Options" on page 8.

Watercolumn Recording Button
See "Mapping Options" on page 8.

Utility Panel
See page 8

Close button
See page 8

2.2   Info Panel

Clicking the [i] button will reveal the information panel. This panel displays error messages and information important for the user to know.
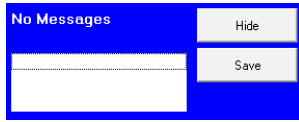
Hide: Hides the information panel. Click the [i] button again to expand.

Save: Saves the text in the information panel to file.

2.3   Device Connection Indicators

At the top of the Main Menu are three device connection indicators. The indicators are RED when the WASSP program is unable to read or detect the device, and GREEN when devices are connected and/or readable.

► **Dongle**

This is the user dongle supplied with your system. This should always be plugged into your WASSP Processor.

► **Navionics Chart**

If you have connected a Navionics chart to use with your WASSP system, this indicator will be green (see page 61 of the Installation Manual for further information).

► **BTxR (Transceiver)**

When the BTxR is ON and connected, this indicator will be green.

2.4   Mode Button

This button is used to control the BTxR, and has four modes:

Standby Mode

The MODE button is BLACK during start up. The button turns YELLOW for about 3 seconds while the BTxR self-calibrates and then turns BLUE, indicating the BTxR has just calibrated and is ready to go.

A RED counting button indicates a communications failure. This means that a ping was requested but no data was received. A new ping is sent at least every 5 seconds. A communications failure can happen if the BTxR power is interrupted.
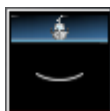
Transmit Mode

During transmission, the button animates with each pulse that the BTxR transmits.

Demo Mode

A BLACK button with DEMO displayed indicates the system started without a valid dongle.

In this mode, only Replay Files can be viewed.

2.5   Gain Control
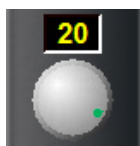
The Gain Control adjusts the display gain of the received information.

Manually adjust by either clicking and then using the scroll wheel on the mouse, or be using the mouse pointer to drag the knob clockwise to increase and counter-clockwise to decrease.

2.6   Range Control

Adjusts the depth range of the receiver.

The numeric display is YELLOW for manual and GREEN for automatic adjustment. Default is green (automatic mode).

Manually adjust by either clicking and then using the scroll wheel on the mouse or by using the mouse to drag the knob clockwise to increase and counter-clockwise to decrease. Double clicking on the number causes the control to switch from manual to automatic and vice versa. Automatic mode is recommended.

2.7   Layout Selection

|		
	Acoustic Layout Select	These buttons cycle through preset display layout arrangements. Each of the Sonar displays and Chart displays can be configured in different arrangements, and those arrangements can be cycled through.
	Chart Layout Select	**Left-click** to cycle **forwards** through the layouts, or **right-click** to cycle **backwards**. See section "7.5 Layout Tab" on page 52 for information on configuring the preset layouts.

2.8   Power Level Control

The transmit power level selector / indicator operates in the manual and auto modes. Initially use auto power by signal (BLUE) until you are familiar with the operation of the unit.

	Manual Mode	There are 14 transmit power levels that can be selected. Click the increment (+) or decrement (–) buttons to adjust between 01 to 14.
	Auto Mode	Double-clicking the LED indicator selects the auto mode, indicated by the LEDs changing to GREEN or BLUE. GREEN automatically selects the power based on the current depth. BLUE automatically selects the power based on the signal level. Consult the Power Tab of the Ship Setup Options if you wish to change the Automatic Power settings. See "7.2.5 Power" on page 47 for more details.

2.9   Snapshots Button

Clicking this button creates a snapshot of ≈1000 pings of a selected area.

See "7.6 Snapshots Tab" on page 53 for detailed procedures on how to play snapshot files.

2.10   Mapping Options

Used for interfacing seafloor and water column data to chart displays (see "4. Chart Display Modes" on page 17) and external viewers. This is useful for users who are recording to a database, but want to stop recording temporarily, as the interfacing is an easy toggle ON / OFF. Both WASSP seafloor data and watercolumn targets can be toggled.

These options only affect database recording for the Charting display, and will not stop raw data recording.

This button toggles seafloor detection recording for the Chart displays. When **enabled**, the seafloor data as detected by the pinging transducer **will be saved** to the current recording database.

When **disabled**, the charting display will **not record** the seafloor data detected by the WASSP sonar.

See "6.9 Database Manager" on page 40 for more information on recording databases.

This button toggles 3D fish marks recording for the Chart displays. When enabled, 3D fish mark information from the pinging transducer will be recorded for use on the charting display. When disabled, 3D fish marks will not be recorded for use on the charting displays.

> You may find that operating in conditions that restrict good seafloor return (such as deep water) doesn't allow water column detections such as fish to be passed through to the charting displays. You will find an override for this (to pass ALL detections) under section "7.1.4 System" on page 45.

2.11   Utility Panel Button

This button brings up the Utility Panel, which is a quick-access panel for frequently used options and displays.

The Utility Panel is also the place for modifying ship settings and configurations, under the System tab.

This panel is covered in much more detail in section "6. Utility Panel" on page 32.

2.12   Close Button

Clicking this button exits the WMB-X230 program.

After clicking **Close**, you must then click **OK** for the program to shut down fully. See "8. Operating Procedures" on page 54 for detailed procedures.

3. Acoustic Display Modes

The WMB-X230 graphical user interface has three acoustic display modes and two chart display modes. These display modes all show acquired data in different ways, with various settings available for adjusting each type of display.

Each of these display modes can be viewed in multiple different layout configurations. For information on configuring different display layouts, see section "5. Layout Selection" on page 31.

► Each acoustic display can be zoomed by using the mouse wheel - just click on the display and scroll up or down to zoom in or out.

► The zoom on each acoustic display can be reset by double-clicking on the window.

The following display modes make up the acoustic feature of the WASSP software.

3.1 Sonar Display

The sonar display shows the water column and seafloor profile below the transducer. This represents a sonar view of the water column and seafloor as seen from behind the vessel. See Figure 4.

A 120° wide by 4° long swath or footprint is covered. The system generates 112 beams over the 120° footprint to provide a high-resolution sonar view. The swath or footprint is used to develop seafloor profiles and gives a seafloor coverage of twice the depth (e.g. 100 m depth gives 200 m seafloor coverage).
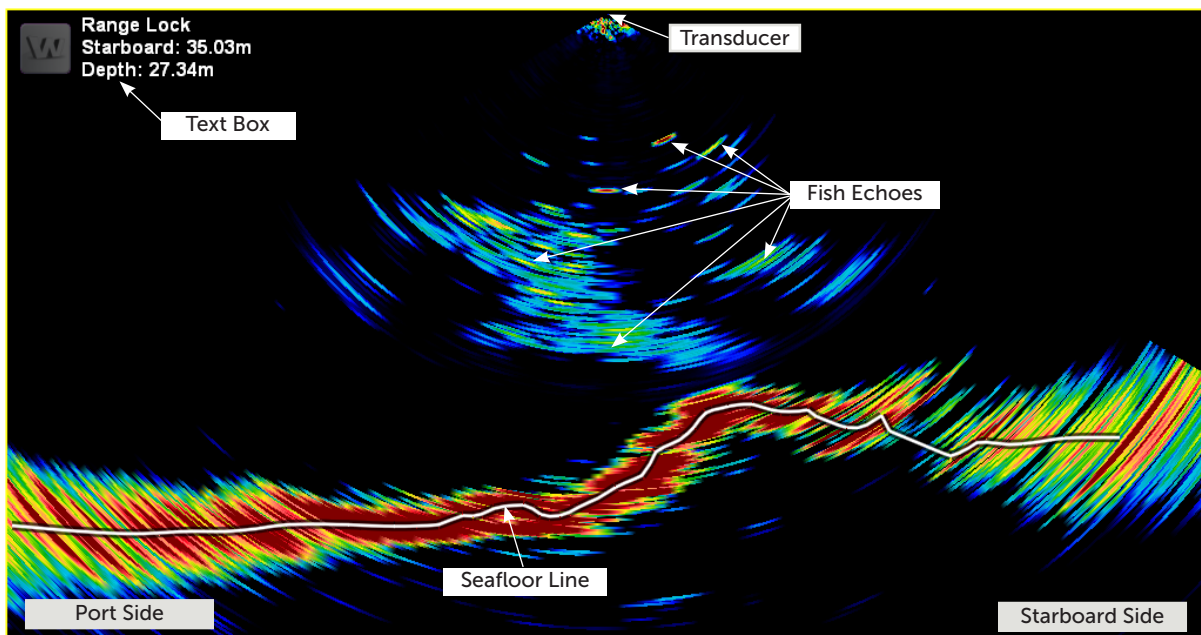
Figure 4.   The Sonar Display showing a few fish schools and individual fish.

3.1.1 Configuration

The Sonar Display can be configured by clicking the [W] in the top left corner of the display window.

	OPTIONS	This button opens up the Options for the Sonar Display.
	GRID	Overlays a grid on top of the sonar view, to enable the user to quickly judge distances to targets.
		Grid size selectable from **5** depth units to **100** depth units.

	TEXT BOX	Provides the option of a **Text Box** to appear in the top left-hand corner of the sonar display. The text box provides X and Y axis information on the location of the cursor within the window. You can the place the cursor on a target and know the X and Y distances to the target.
		Click to display Text Box options.
	BACK	Takes the user back one menu level.
	CONFIG	Settings for the Sonar Display which can be toggled are found under this menu.
	SEAFLOOR LINE	This button toggles the software-generated line of the profile of the seafloor. The line is white, and is drawn as an overlay on the sonar display.
	TRIPLE BEAM OVERLAY	Click this button to overlay the current Triple Beam configuration onto the sonar display. The position (angle) and width of each beam will be clearly visible. A RED mask for the port beam, grey mask for the centre beam, and GREEN mask for the starboard beam.
	NORMALISE	Enable this to normalise the colours on the sonar display for intensity based on power level, spreading and absorption loss. Increasing the power will thus decrease the gain by a factor that should mean the same fish echoes will be the same colour at any power level.
	FISH OPTIONS	This button opens the Fish Options window.
		See "3.4 Fish Options" on page 16 for more details.

Advantages

➊ Shows an instant snapshot of the area inside the 120° x 4° swath.

➊ Shows seafloor profile and fish distribution under the vessel at the same time.

➊ The best tool for judging power level and side lobe suppression levels.

➊ Shows full resolution of sonar data collected and could allow an operator to pick up seafloor features too small to appear on the charting displays.

Disadvantages

➊ No history. Information from previous snapshots is not shown.

3.2   Single / Triple Beam Display

The Single / Triple Beam Display shows seafloor and water column information in a similar fashion to the traditional fish-finder display. Signal returns are drawn vertically in slices, with new information appearing on the right of the display, and old information dropping off the left side.

In Single Beam mode, only the middle beam is used to draw the information from the seafloor.

In Triple Beam mode, additional port and starboard beams are used to draw information from selectable areas of the water column through configuration of the beam width and beam angle. See Figure 5.

Single Beam (Middle Beam)   Triple Beam (Horizontal)   Triple Beam (Vertical)
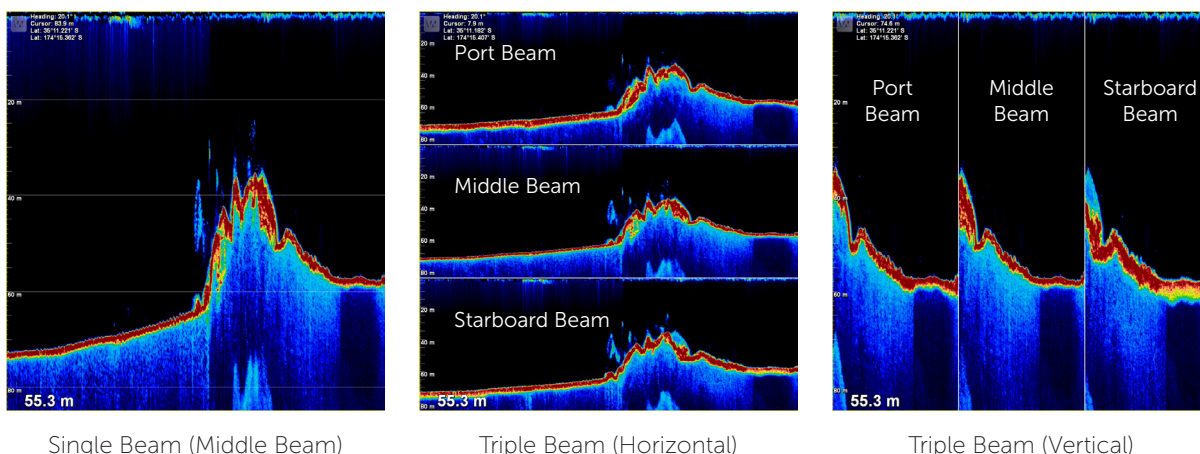
Figure 5.   Single / Triple Beam Display Layouts

3.2.1   Configuration

The Single / Triple Beam Display can be configured by clicking the [W] in the top left corner of the display window.

	OPTIONS	This button opens up the Options for the Single / Triple Beam Display.
	GRID	Overlays a grid on top of the Single / Triple Beam display, to enable the user to quickly judge distances to targets. Grid size selectable from **5** depth units to **100** depth units.
	BEAM ANGLE	This adjusts the angle which the centres of the port and starboard beams are set from the middle beam. Larger angles move the beams further from the middle beam, and smaller angles move the port and starboard beams closer to the middle beam. The beam angle can be set to **5**, **10**, **15**, **20**, **30**, or **40°**.
	BEAM WIDTH	This adjusts the width of the three individual beams used for the Single / Triple Beam Display, and can be set to **5**, **10**, **15**, **20**, **30**, or **40°** widths. Selecting a 10° beam width with a 20° triple beam angle will therefore give a 50° swath for the Triple Beam view. See Figure 6.

Example 1

Range Lock
Starboard: 63.02m
Depth: 36.14m

Triple
Beam Angle
Set to 30°

Port Beam   Middle   Starboard Beam
                   Beam

Beam Width
Set to 20º

Example 2

Range Lock
Starboard: 52.32m
Depth: 52.37m

Triple
Beam Angle
Set to 20°

Port Beam   Middle   Starboard Beam
             Beam

Beam Width
Set to 10º
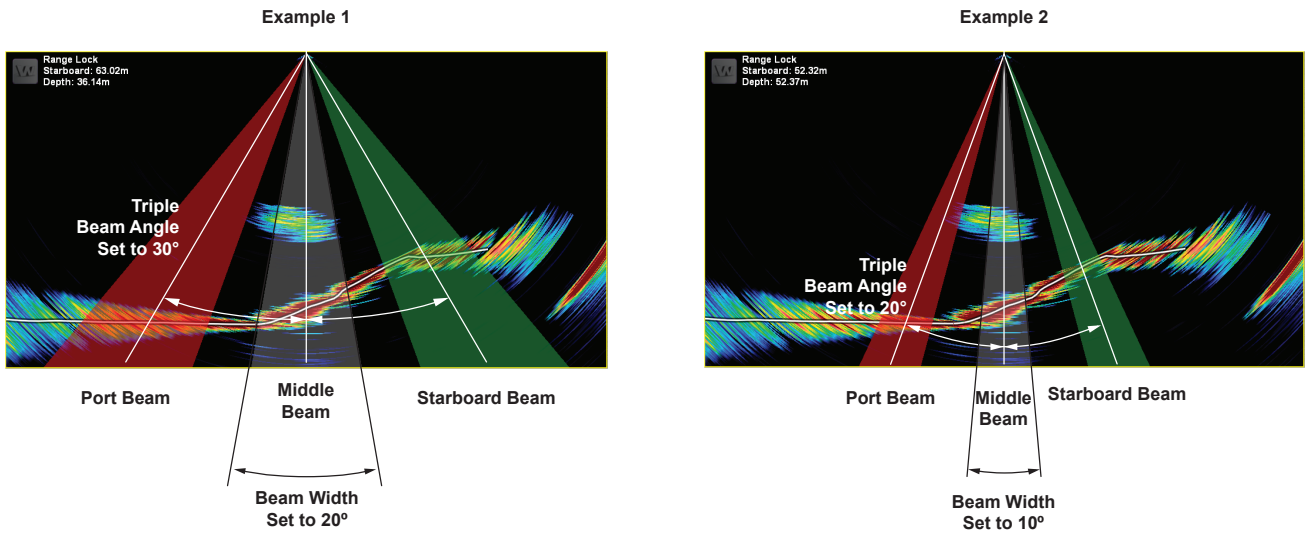
Figure 6.   Beam Angle and Beam Width examples

Note: While adjusting Beam Angle and Beam Width, it is suggested to set the Acoustic Layout to display both the Sonar and Triple Beam displays simultaneously, and to enable the Triple Beam overlay on the Sonar Display so that changes to the beam properties can be seen while changing settings.

	TEXT BOX	Provides the option of a **Text Box** to appear in the top left-hand corner of the Single / Triple Beam Display. Several options are available for display: ▶ **Depth**: Overlays the current depth on the display. ▶ **Status**: beam properties, current cursor window and zoom status. ▶ **Roll**: current vessel roll. ▶ **Heading**: current vessel heading. ▶ **Cursor**: depth at the cursor location. ▶ **GPS History**: latitude / longitude at cursor. ▶ **Tide Offset**: current depth adjustment due to the tides.
	ADVANCE	Changes the pixel width and consequently the rate (from 1 to 5) at which the Single / Triple Beam information scrolls across the display. Click to display options and select the rate.
	CONFIG	Settings for the Single / Triple Beam Display which can be toggled are found under this menu.
	BOTTOM LOCK	This enables a traditional bottom lock mode where the changes in bottom depth are ignored and the bottom is drawn flat. Fish and other echoes are shown relative to this flat bottom image enabling better discrimination between bottom fish and the seafloor.
	SEAFLOOR LINE	This button toggles the software-generated line of the estimated profile of the seafloor. The line is white, and is drawn as an overlay on the Single / Triple Beam Display.

www.wassp.com

	SMOOTHING	Selecting this option enables the smoothing option for the Single / Triple Beam display.
	NORMALISE	Enable this to normalise the colours on the sonar display for intensity based on power level, spreading and absorption loss. Increasing the power will thus decrease the gain by a factor that should mean fish echoes from the same fish will be the same colour at any power level.
	SEAFLOOR TRACKING	This is the method used by the program to constantly display the seafloor during scanning operations regardless of the changes in seafloor depth. This is indicated by the word **(Tracking)** being tagged to the end of the words **Manual Zoom** in the **Text Box** when the text box **Status** option is enabled. Seafloor Tracking must be enabled in the Config sub-menu and the **Range Control** dial set to **automatic** (GREEN). If Seafloor Tracking is disabled in the config sub-menu, the word (Tracking) disappears from the Text Box. If the Range Control setting is in manual mode (YELLOW) and the seafloor then drops below the range setting, the seafloor will stop being tracked (and lost from the screen).
	TRIPLE BEAM	This button enables the Triple Beam display. Triple Beam orientation can be changed between Horizontal and Vertical in the System Tab of the System Configuration Utility (see "7.1.4 System" on page 45).
	FISH OPTIONS	This button opens the Fish Options window. See "3.4 Fish Options" on page 16 for more details.

3.2.2 Display Offset (Shifting)

Zooming the Single / Triple Beam Display, by default, is centred toward the transducer location (0 m depth), but the focus of the display can be changed by using a display offset.

With the Bottom Lock mode **disabled**, left-click on the Single / Triple Beam Display window and keep holding down the left mouse button. By scrolling the mouse wheel, the zoom centre on the Single / Triple Beam Display can be shifted from 0 metres depth (centred on the transducer), to deeper down the water column.

Note: Right-click at a point on the Single / Triple Beam display to send a mark to the Charting display at the cursor location.
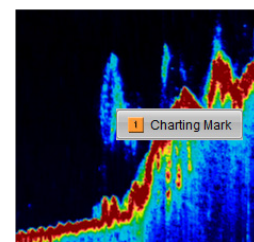
Advantages

- Shows past information.
- Width and colours of seafloor return can be used to help determine bottom types.
- Adjustable beam width allows optimisation for full coverage or high resolution to see small detail changes.
- Display redraws dynamically when range, gain, or zoom change.

Disadvantages

- Harder to relate the location of features seen to the vessel's position.
- Does not show all information seen by the sonar view.

3.3 Sidescan Display

The sidescan display is another display type for viewing information generated from sonar data received by the system. The display is drawn on the screen as a waterfall – the newest information appears at the top of the screen, while the oldest falls off the bottom of the screen. This is similar to the way the Single / Triple Beam Display operates, except that in their case, the new data appears on the right and the old data disappears off the left of the display.

The left side of the Sidescan Display shows the signals received from the port side while the right shows signals received from the starboard side. By default, the sidescan view starts at the centre of the vessel and works its way out to port and starboard.

As the sidescan image moves further out along the seafloor, the picture shows features on the seafloor. Objects such as rocks appear as bright white marks followed by a shadow. Harder ground gives strong returns (lighter on the grey scale), while a patch of mud or kelp causes a dark patch/shadow to appear.

The primary advantage of the sidescan view over the other views is in locating and identifying objects on the seafloor off to each side of the vessel. Some structures such as a shipwreck may appear like a large fish school on the sonar view and thus not appear as an object on the other acoustic or chart displays. Figure 7 shows how a wreck sitting on the seafloor can be distinguished as a clearly shaped structure by using the Sidescan Display, allowing the user to interpret the sonar information from a different viewpoint.

Due to the nature of the origin of the data, any signals of significant strength register as a faint mirror on the opposite side of the display.
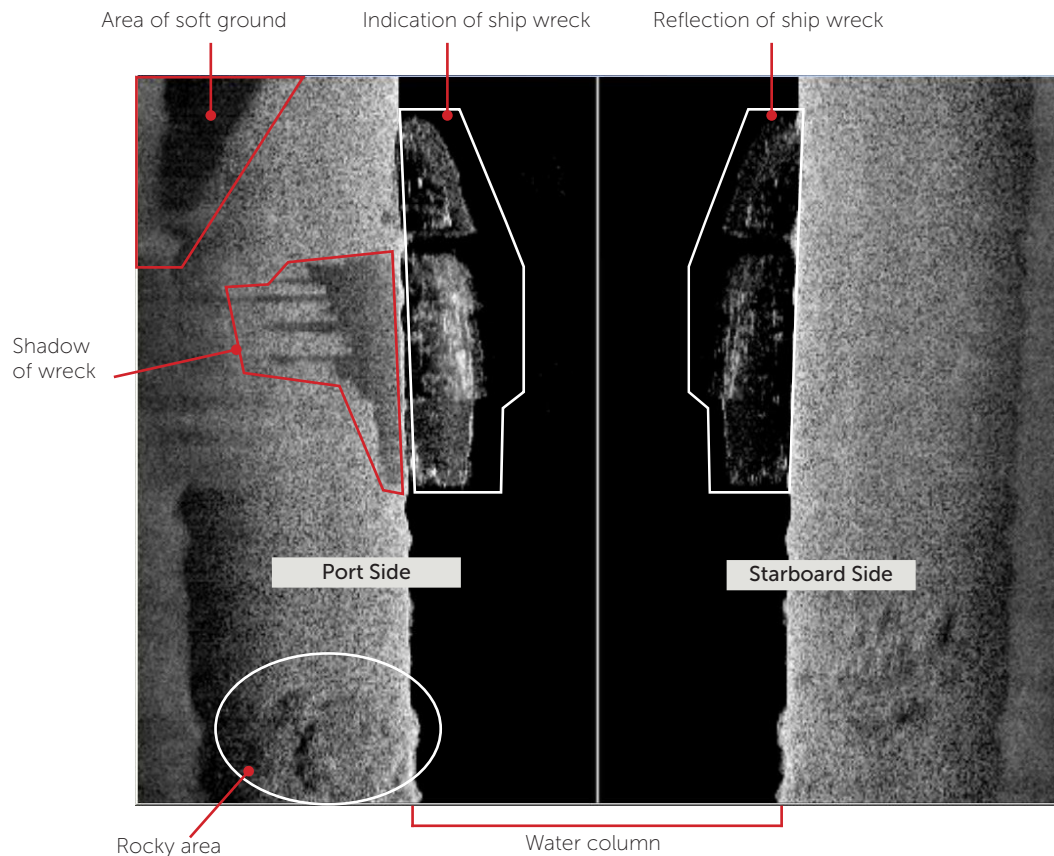
Figure 7.   Sidescan Display

www.wassp.com

3.3.1 Configuration

The Sidescan Display can be configured by clicking the [W] in the top left corner of the display window.

T	**TEXT BOX**	Provides the option of a **Text Box** to appear in the top left-hand corner of the Single / Triple Beam Display.
		On: Enables the text box overlay.
		Gain: Current sidescan gain setting.
		Cursor: Current cursor displacement.
	GAIN	When you click the **Gain** button the **Sidescan Options** box appears and enables you to adjust the gain factor for the Sidescan Display.
		The slider allows you to increase or decrease the brightness scale of the Sidescan Display.
		The number in the white box is the **Sidescan Gain Threshold Limit**. Adjusting this value will effectively change the contrast of this display.
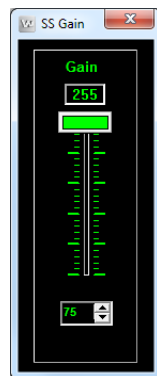
3.3.2 Zooming

The Sidescan Display can be zoomed in or out independently of other screens. Click in the **Sidescan Display** and roll the scroll wheel to zoom in or out. To return to the default zoom level, double-click in the **Sidescan Display** window.

Advantages

ᕙ Shows a detailed picture of the seafloor, allowing you to locate and identify objects on the seafloor off to each side of the vessel.

ᕙ Can detect small objects or changes in the seafloor texture or density.

Disadvantages

ᕚ Position of display content is not georeferenced.

ᕚ Doesn't compensate for the slope of the seafloor.

Doc. P/N: WSP-009-008
Version: V1.1a
Issue Date: June 2013

www.wassp.com

15

3.4   Fish Options

The Fish Options window contains preferences for watercolumn target detection. The user is able to select any depth range and threshold for target detections, and view a detection histogram with an adjustable 30 minute history. The settings contained in this window affect both the 2D and 3D fish shown on the charting displays (NB: the 2D fish will ignore the history setting).

3.4.1   Fish Display Options

▶ **Between Depths**: The user can set a depth range for watercolumn detections. The WASSP program will ignore detections outside of this range.

▶ **From Seafloor**: If the user is only interested in near-bottom targets, the **From Seafloor** option will only use detections that are located a certain distance above the seafloor, ignoring the rest of the water column. If Bottom Lock is enabled (see "Bottom Lock" on page 12), the Single / Triple Beam display will show a green line where the detections start.

3.4.2   Fish Threshold

Generally speaking, large fish return a stronger signal than small fish. The Fish Threshold control dial allows you to tune the "Fish Detection" for your vessel. The control has a range of 1 to 30. It is recommended that this threshold is set high enough that only the desired targets are 'detected'. This control also affects the fish shown on the charting displays as well as the Fish Histogram.

3.4.3   Fish Histogram

The histogram shows a gain-adjusted colour table to help reference the Fish Threshold to normalised signals on the Sonar and Single / Triple Beam displays. The Fish Threshold setting is visible as a white line on the colour table. By adjusting the Fish Threshold and referring to the histogram, you will find an optimum level for your vessel's installation.

When the **Between Depths** or **From Seafloor** selections are clicked, the Fish Histogram will Hide to allow the ranges to be changed if desired.

These Colours vary with the Gain Control dial

This Bar shows that around 10 Targets at this amplitude have been detected in the last time period (2 minutes).

This line shows the current Target Threshold

No Targets will be shown on the Histogram if they are below the Target Threshold

Current Detection Depth settings

Fish Threshold dial, adjust this to change the lowest intensity of sonar echoes to use for fish targets

History dial, history range is 30 seconds to 30 minutes. The current settings is 2 minutes

Total target count within history time
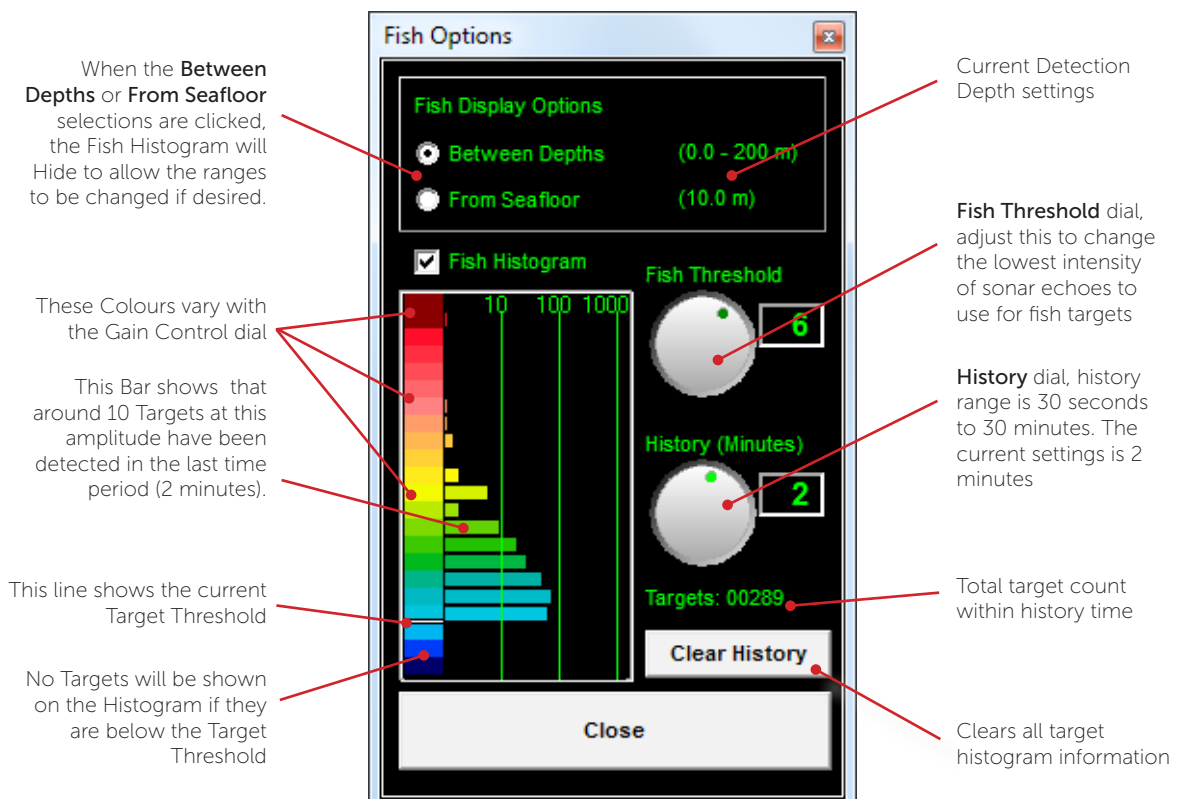
Clears all target histogram information

Figure 8.   Watercolumn Target (Fish) Options Window, showing Histogram

4. Chart Display Modes

► Each charting display can be zoomed by using the mouse wheel - just click on the display and scroll up or down to zoom in or out.

► The zoom on each acoustic display can be reset by double-clicking on the window.

The following display modes make up the charting feature of the WASSP software:

4.1 2D Display

The 2D Display shows a bird's-eye panning view of the chart and WASSP seafloor data. This is the main chart display and is used for moving around the globe and zooming in/out.

The interface to the chart display uses the functions of a standard mouse or touch screen.

► Left Mouse Button: Select menu, interface with map (click and drag to pan around).

► Mouse Wheel: Zoom In/Out

Menu Button
See "Configuration" on page 18

Bookmark
See "Add Bookmark"
on page 26

North indicator
See "North Up" and
"Heading Up" on page 24

Text box
See "Text Box"
on page 27

Heading line
See "Chart Tab" on
page 50

Cursor
Text Box values are
dependant on the
cursor location

COG line
See "Show COG"
on page 25

Measure line
See "Profile Options"
on page 27

Vessel
See
"Vessel"
on page
23

Uncharted area

Fish School
See "Fish Options" on page 10

Current Grid display resolution
See "Database Manager" on page 40

Mark
See "Marks" on page 25

Scale indicator
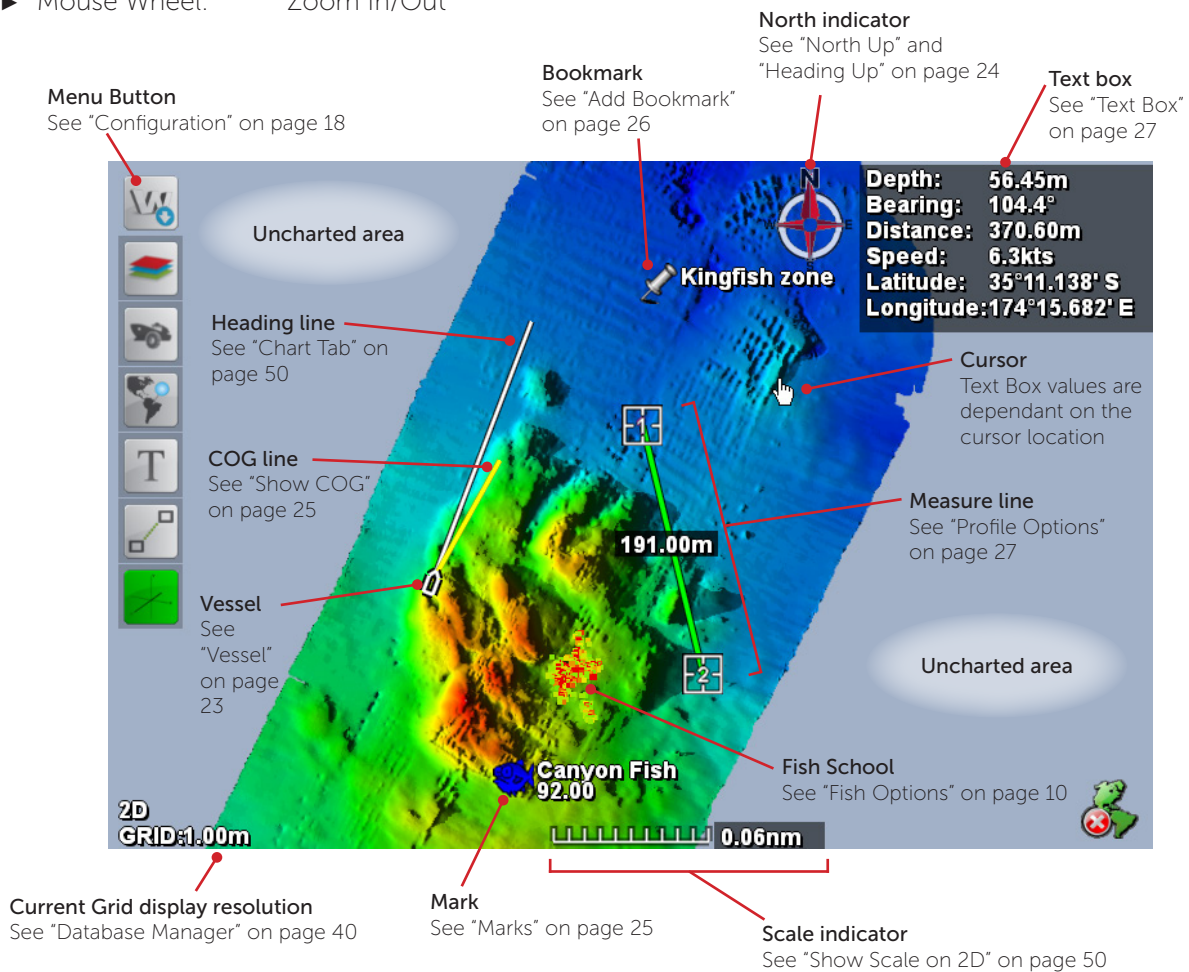See "Show Scale on 2D" on page 50

Figure 9.   Charting 2D Display

Note: If the charting displays aren't updating the ship's position, make sure your GPS is ON.

4.1.1 Configuration

The 2D Display can be configured by clicking the ⊞ in the top left corner of the display window.
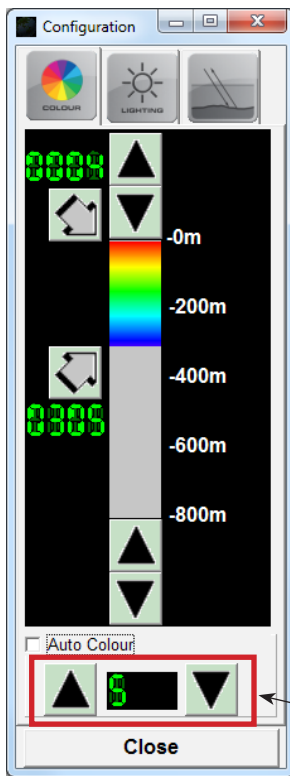
	LAYERS	This menu contains the settings that influence how the bottom data is drawn

	LIGHTING/COLOUR	

COLOUR TAB

The **Colour Tab** shown allows you to set the depth limits over which the colour range will apply when viewing seafloor data.

There are two angled arrow buttons (⬁, ⬀):

▶ The top one sets the **Red** colour depth.
▶ The bottom one sets the **Blue** colour depth.

Both buttons can be clicked on with the left mouse button and then dragged up/down.

When the mouse button is released, the colours will change on the main window.

The other four up/down arrow buttons can be used to fine-tune the colour range.

Colours only effect the display of seafloor data if in **Colour Depth** mode.

The **Auto Colour** check box will automatically assign a colour range, centred around the current depth.

While Auto Colour is enabled, it is not possible to manually change the upper or lower colour settings. Instead, the range value can be modified using the up/down arrows beneath the Auto Colour check box.

Lighting Tab

The **Lighting Tab** shown here contains various settings for how lighting operates in the chart displays.

The **Light Direction** setting allows you to set the direction from which the rendered light is coming from when viewing seafloor data.

There are four choices: **North**, **South**, **East** or **West**.

Left click on one of the four buttons around the globe image to change the lighting direction.

The **Light Level** slider can be left clicked with the mouse and dragged left or right to adjust the intensity of the lighting. When the left mouse button is released, the seafloor data shown will be updated with the new lighting level.

The **Shadow Level** slider can be used in a similar way to the Light Level slider to adjust the length of shadows cast by objects on the seafloor. The darkness of the shadow is adjusted by the **Light Level** slider.
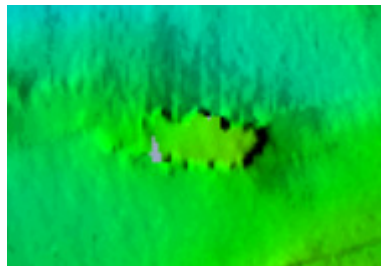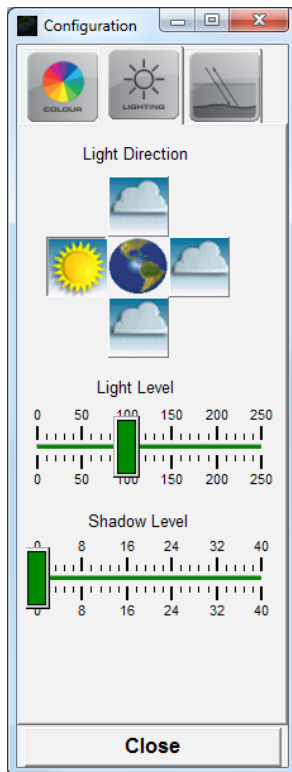
Shadow Level set to zero (0), and it is difficult to tell the significance of this wreck.
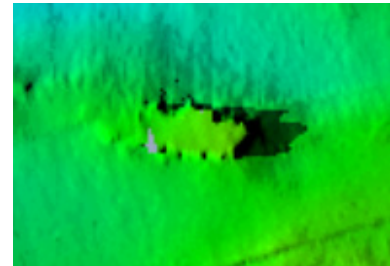
Shadow Level set to eight (8) makes this wreck cast a shadow. The length of the shadow reflects how big the wreck is.
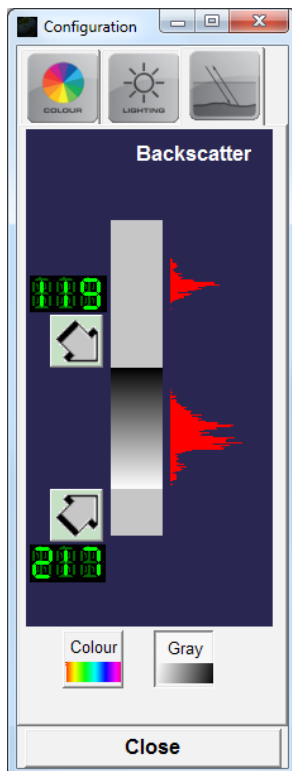
Hardness Tab

The **Hardness (Backscatter) Tab** shown here allows you to set the backscatter colour range.

Correct setting of these controls will greatly assist in viewing seafloor changes.

To change the gain values for Soft/Steep bottom (top arrow) or Hard/Flat bottom (bottom arrow), left click on one of the arrows and hold, then drag up/down to change the values.

Colour or black and white (grey) backscatter can be selected by clicking on the Colour or Grey buttons at the bottom of the window.

Click on **Close** to exit the Configuration window.

![WASSP MULTIBEAM logo]

Colour Depth

Colour by depth allows the user to show the seafloor data coloured between the selected values on the configuration windows.

By changing this range of colours you can more easily visualise detail of the area you are viewing.
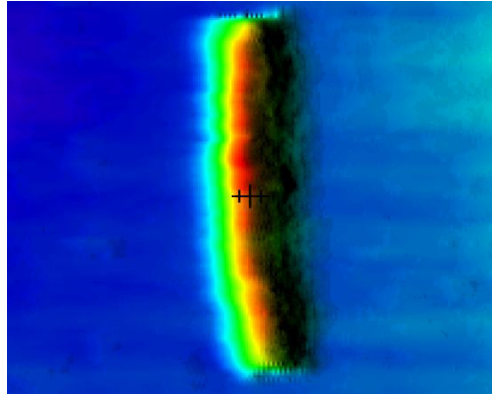
Any area which is outside the selected colour range will show up as grey.
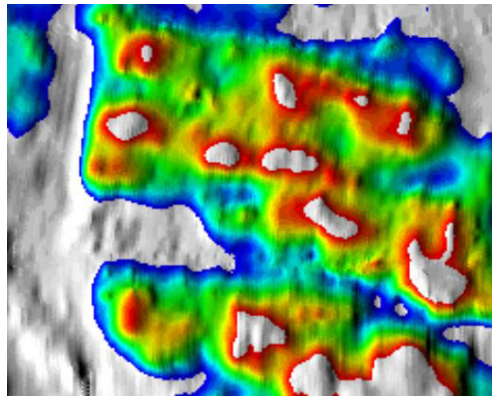
	MONOCHROME DEPTH	Monochrome depth is used to display the seafloor using only one colour.

This colour can be changed from the System Config (System Page).

The seafloor image will still be lit from the selected lighting direction.
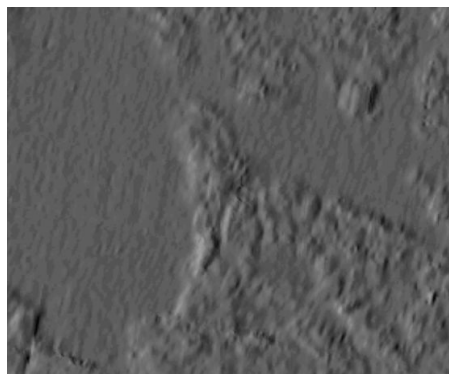
This mode is useful if using 3D water column to help distinguish between the 3D water column marks and the seafloor.
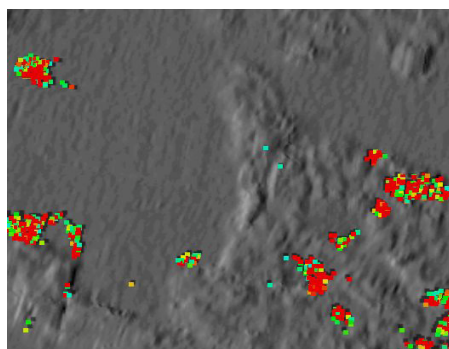
| | **BACKSCATTER** | Show backscatter is used to display the backscatter/hardness information. |

The backscatter information can be displayed in grey-scale or colour-scale. See "Hardness Tab" on page 19 for configuration.

Changes in hardness will be drawn as different intensity/colour.
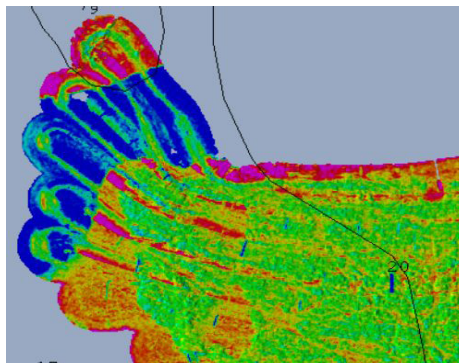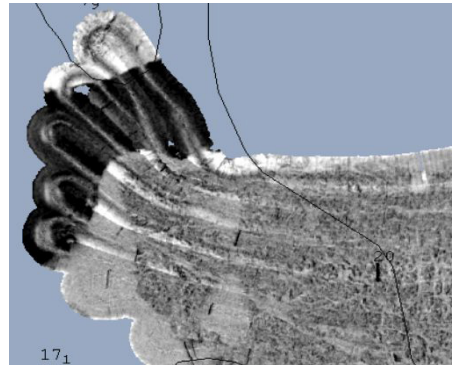
This mode is very useful for finding the changes in seafloor even when the seafloor is very flat. This gives the user a good indication of where the rocky/hard areas and the soft/muddy areas are.

| | **SHOW 2D FISH** | Show 2D Fish will overlay the detected water column marks on the 2D display. |

These marks are coloured by intensity, so red marks are strong echoes and blue marks are weak echoes.

To get the best from the water column data, the WASSP GUI fish overlay settings should be correctly set. It is recommended that the **Fish Threshold** in WASSP is set to at least 4 depending on how noisy the sonar display is. See "Fish Options" on page 16 for more information.

	CONTOUR LINES	This mode draws the seafloor by colour and traces the contours of the seafloor at the specified interval.
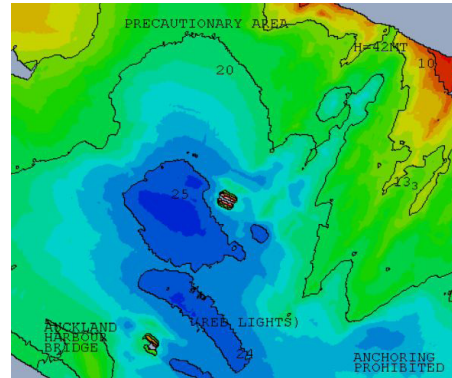
This interval is setup in the **Chart Tab** of the **System Configuration Utility** under Bathymetry heading. See "7.4 Chart Tab" on page 50 for more information.

	VESSEL	This menu contains settings pertaining to how the vessel is displayed on the chart windows.
	CENTRE ON VESSEL	When this button is enabled, the chart will stay centred on the vessel position.

To disable this mode, click on the icon again or pan the display.

	NORTH UP	When this button is enabled, the map will always be drawn with North pointing directly up the screen. The vessel will rotate to show the current heading.
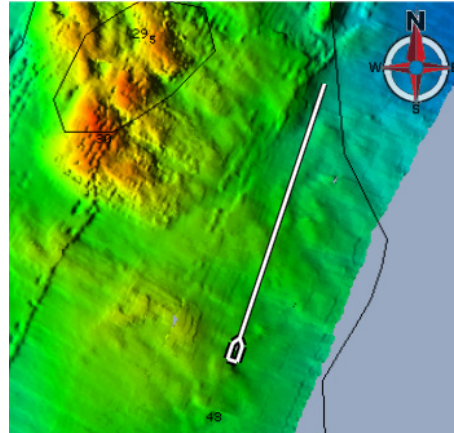
	HEADING UP	When this button is enabled, the map rotates around the vessel. The vessel icon will always point directly up the screen.
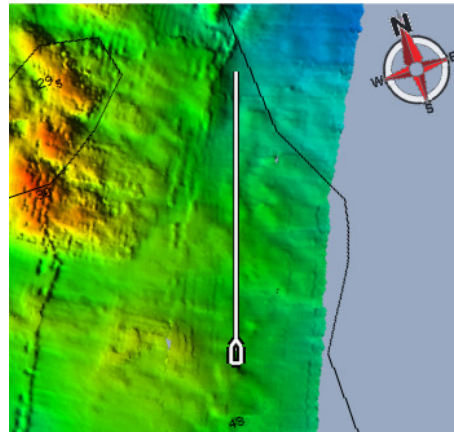
	SHOW VESSEL TRACK	When this button is enabled, the vessel track will be displayed over the seafloor map and chart. This track will continue to update based on user settings found in the **Chart Tab** of the **System Configuration Utility** under the **Vessel Track** heading. See "7.4 Chart Tab" on page 50 for more information.
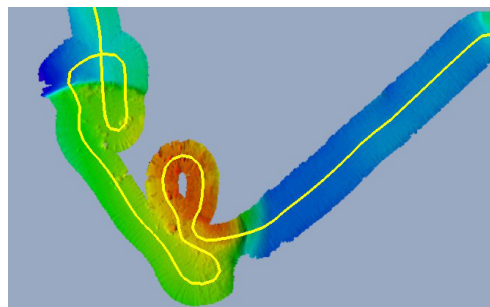
	Sʜᴏᴡ **COG**	When this button is enabled, the **Course Over Ground** of the vessel will be overlayed on the 2D display in yellow. The COG is calculated from the GPS position.
	Mᴀʀᴋs	Marks are used to place a user marker at a location of interest.
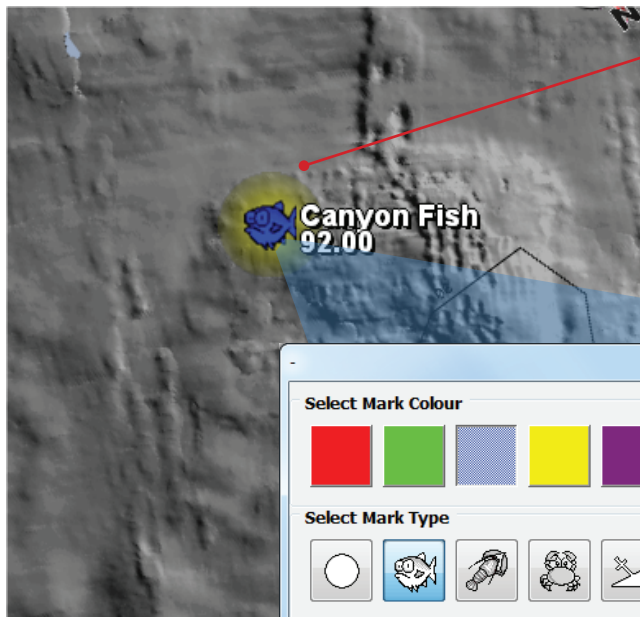
The mark will have a yellow circle when it is highlighted. Left clicking will bring up the Mark Setup window. Configuring the mark is optional.

Press to select Mark Colour

Press to select Mark Type

Enter Mark Name

Mark Position can be changed

Enter a number

Press to Close AND Activate changes made to the Mark

Press this to enable deleting the mark. Press UPDATE to complete the process.

Press to Close without saving changes.

Figure 10.   Mark Setup form

	MARK AT VESSEL	When this button is clicked a mark will be placed at the current vessel position.

This mark will be identical to the last mark added. To change the mark settings, simply left click on the mark you wish to change. |
| | **MARK AT CURSOR** | When this button is clicked a mark will show under the mouse cursor. The next time the left mouse button is clicked, this mark will be placed at the mouse cursor position.

This mark will be identical to the last mark added. To change the mark settings simply left click on the mark you wish to change. |
| | **MARK AT LAT/LONG** | When this button is clicked the Mark Setup form will appear.

Enter mark information including the mark position and press **Add** to add a new mark at the entered latitude and longitude. As with all marks, the colour, shape, name and value can be modified as desired. |
| | **ADD BOOKMARK** | When this button is clicked a bookmark will be placed at the cursor position when the operator next presses the left mouse button. The Bookmarks Menu can be found inside the Database Menu on the System Configuration Utility panel. See "6.9 Database Manager" on page 40. |

What is a bookmark?

A bookmark is similar to a marked screen position. It is designed for saving the area you can currently see. If you GOTO a bookmark:

► The current view changes focus to centre on the bookmark's position.

► The Zoom level changes to the zoom level at time of bookmark creation.

► The Current Viewing database changes to the database being shown at the time the bookmark was created.

Left clicking on a Bookmark brings up the **Bookmarks** window, and this enables moving to another bookmark, changing the name of any of the bookmarks, and shows the position and date of creation of each bookmark. The icon for a bookmark cannot be changed, unlike a mark.

Left click on one of the marks in the list to select it.

Press to update the name of the selected bookmark to the text entered.

Press this button to Close this window and to GOTO the selected bookmark.

Pressing this button deletes the bookmark **permanently**.

Press to Close

	MARK ENABLE	When this button is enabled all marks will be shown on top of the map/chart. When disabled, all marks will be hidden from the chart display. This allows the user to see the seafloor detail which the mark may obscure.
	TEXT BOX	These options effect what is shown in the Text Box overlay on the main window. ► **Depth At Cursor**: Shows the depth value at the mouse cursor. ► **Bearing From Vessel**: The angle from the centre of the vessel to the mouse cursor. ► **Distance From Vessel**: Distance from centre of the vessel to the mouse cursor. ► **Latitude, Longitude**: Shows the latitude and longitude at the mouse cursor position. ► **Speed over Ground**: Shows the vessel's speed relative to the seafloor (calculated from GPS position).
	PROFILE OPTIONS	These tools can be used to measure the distance between two points on the chart display. The seafloor profile between these two points can be viewed in the Profile Window.
	ADD MEASURE	When the **Add Measure** button is clicked and highlighted, the next two left mouse clicks will add two measure markers on the main window.
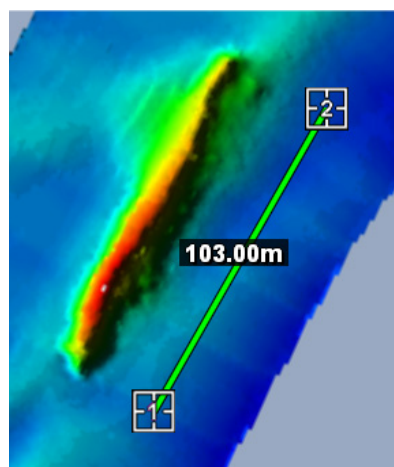
After placing marker #1 the distance between both markers will be displayed on the line between them.

When placing marker #2 the line will then be anchored in place.

At this point, both markers can be re-located by clicking and dragging each marker to a new location.

The purpose of each marker is to provide a measuring tool between two points on the map as well as providing a cross-section of the seafloor depths between the two marks in the profile window.

Click the Add Measure button again to remove the current markers.

Distance between the two measure points

Measure Point #2
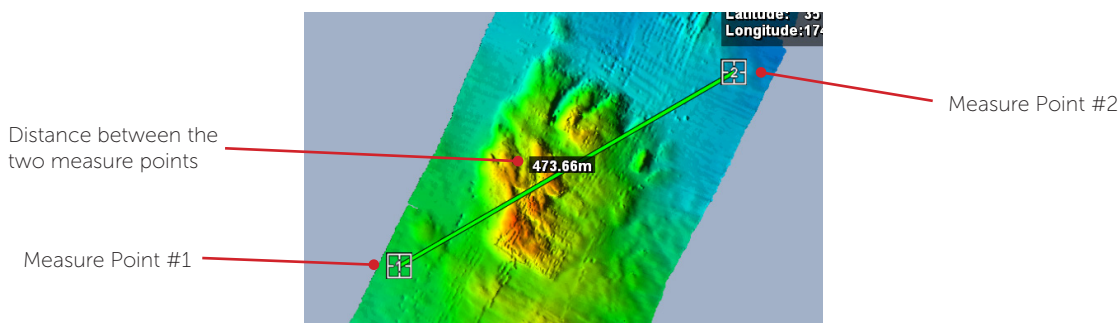
Measure Point #1

Figure 11. Add Measure Tool

	Show Profile Window	When this button is enabled, the Profile Window is displayed. The Profile Window will show a profile of the detected seafloor between the two points determined by the 'Add Measure' tool. The mouse pointer can be used to determine the depths at points along the profile

Shallowest profile reading

Depth Profile

31.13m

51.24m

30.08m

Depth difference between the shallowest and deepest points on the profile

61.21m

Deepest profile reading

Distance 473.66m

Close

Close the Profile Window

Cursor depth: 51.24m   Distance from first Point: 334.74m

Distance along profile from measure point #1 to cursor

Cursor showing depth reading on the profile

Figure 12.   Profile Window

	3D MASTER	Enabling this button will set the active 2D display to be the master of the 3D display. This means that the 3D display will be drawn dependant on how the 2D display is setup (including the draw distance and map resolution of the 2D display).

i.e. If the 2D display is showing colour depth, the 3D display will show colour depth. See the example in Figure 13.
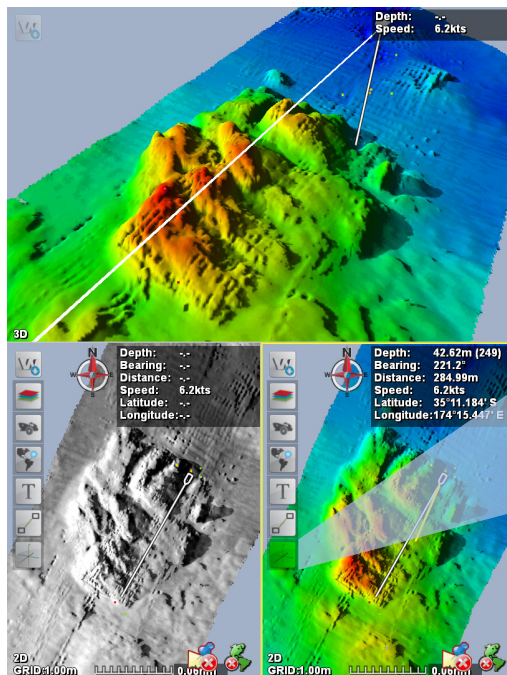
3D Master Enabled – the 3D display above is linked to this 2D display.

Figure 13.   3D Master

4.2   3D Display

The 3D display renders the seafloor data in 3-dimensional space. This display also provides an ability to change the vertical scale (1x, 2x, 4x), to rotate the view from any angle, and can draw watercolumn data such as fish.

Either of the 2D displays can be set to be the 'master' of the 3D display - this means that the 3D display is configured in the same way as its 2D master. See "3D Master" on page 28 for more details.

The interface to the 3D display uses the functions of a standard mouse or touch screen.

- ► **Left Mouse Button:**   Select menu, click-and-drag rotating, interface with display.
- ► **Mouse Wheel:**   Zoom In/Out.
- ► **Right Mouse Button:**   Move display up/down.
- ► **Double Left-Click:**   Return to default display orientation

Figure 14.   3D Display Example

4.2.1 Configuration

The 3D Display can be configured by clicking the ⊞ in the top left corner of the display window.

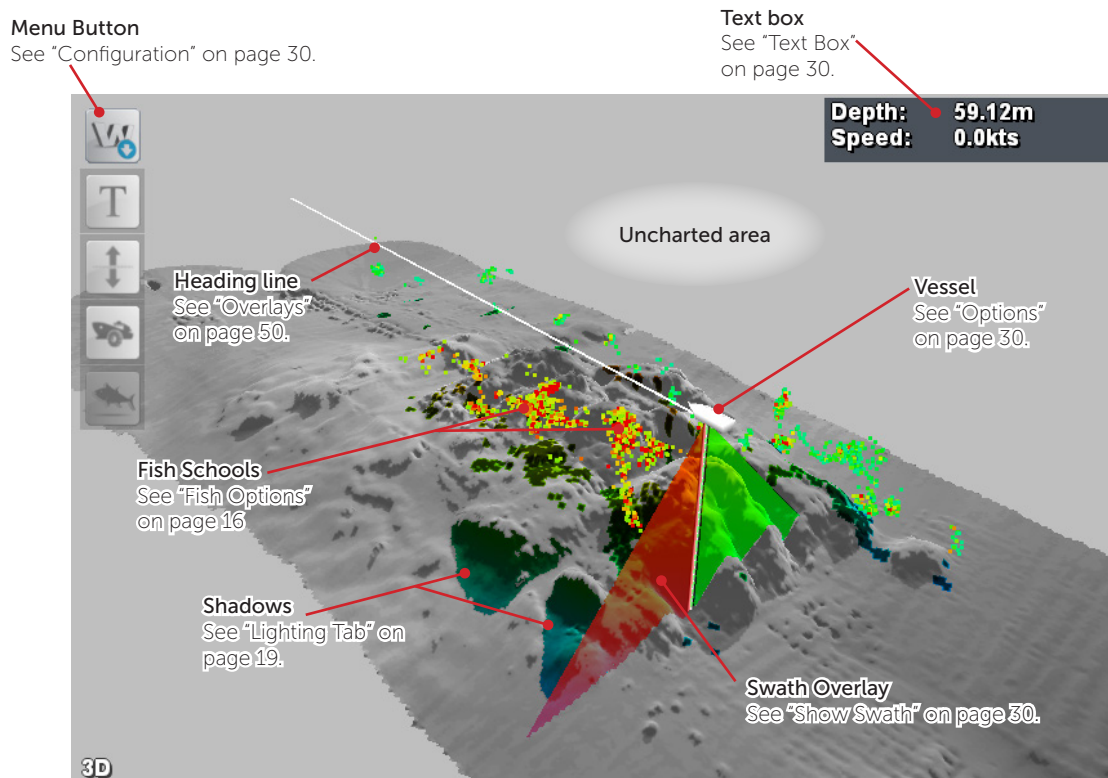|		
T	**TEXT BOX**	These options effect what is shown in the Text Box overlay on the main window. ▶ **Depth At Cursor**: Shows the depth value at the mouse cursor. ▶ **Speed over Ground**: Shows the vessel's speed relative to the seafloor (calculated from GPS position).
↕	**VERTICAL SCALE**	These options allow the vertical scale of the 3D display to be changed while the horizontal scale remains unchanged - this accentuates seafloor features.
↕1	**1x**	This scale has a vertical:horizontal display ratio of 1:1, so the 3D display and all contained features are drawn just as they would appear under the water.
↕2	**2x**	This scale has a vertical:horizontal display ratio of 2:1, so the 3D display and all contained features are drawn twice as high as they would appear under the water.
↕4	**4x**	This scale has a vertical:horizontal display ratio of 4:1, so the 3D display and all contained features are drawn four times as high as they would appear under the water.
	OPTIONS	This menu contains options for controlling what is shown on the 3D display, and how it is displayed.
	SHOW SWATH	The **Show Swath** button toggles the swath overlay on and off beneath the current vessel position. The swath overlay can be used to give an indication of where the sonar is currently pinging.
N	**NORTH UP**	Enabling **North Up** orients the 3D display to be point North. North Up in the 3D display can be different from the setting on the 2D display.
H	**HEADING UP**	Enabling **Heading Up** orients the 3D display to point the same direction as the vessel. Hence, the display will rotate with the vessel, and the vessel will always point up/into the screen. Heading Up in the 3D display can be different from the setting on the 2D display.
	FREE ROTATE	Enabling **Free Rotate** allows the 3D display to be rotated to whatever angle the user wants.
	SEAFLOOR LINE	Enabling this button will draw a vertical line from the vessel to the seafloor on the 3D display. This feature is helpful in determining where the vessel is relative to the seafloor data.

	CENTRE ON SHIP	With **Centre on Ship** enabled, the chart displays will stay centred on the vessel as new position information is received.
		To disable this mode, click on the icon again or pan the 2D display.
	3D FISH	Enabling 3D fish will overlay the detected watercolumn targets on the 3D display.
		These marks are coloured by intensity, so red marks are strong echoes and blue marks are weak echoes.
		The fish marks are stored on the WASSP Processor's hard-drive. There is a finite number of fish marks which can be stored. Once this maximum has been reached for a geographical area, the oldest fish marks are removed.
		See "Fish Options" on page 16 for more details.

5. Layout Selection

The WMB-X230 graphical user interface allows the user to arrange displays in many different ways.

The Main Menu houses two buttons for changing the display layouts:

ACOUSTIC LAYOUT BUTTON

This button will cycle through the Acoustic display layouts.

CHART LAYOUT BUTTON

This button will cycle through the Chart display layouts.

Layouts can be customised in the **Layout Tab** of the **System Configuration** (see "Layout Tab" on page 52 for more information).

6. Utility Panel

The Utility Panel is a quick-access panel for a lot of the functions contained within the WASSP GUI. The panel can be accessed from the Main Menu, and once enabled, it will remain 'on top' of other displays until it is closed.

6.1 Overview

Each of the functions that the Utility Panel contains is talked about in more detail over the following section. Refer to the links below:
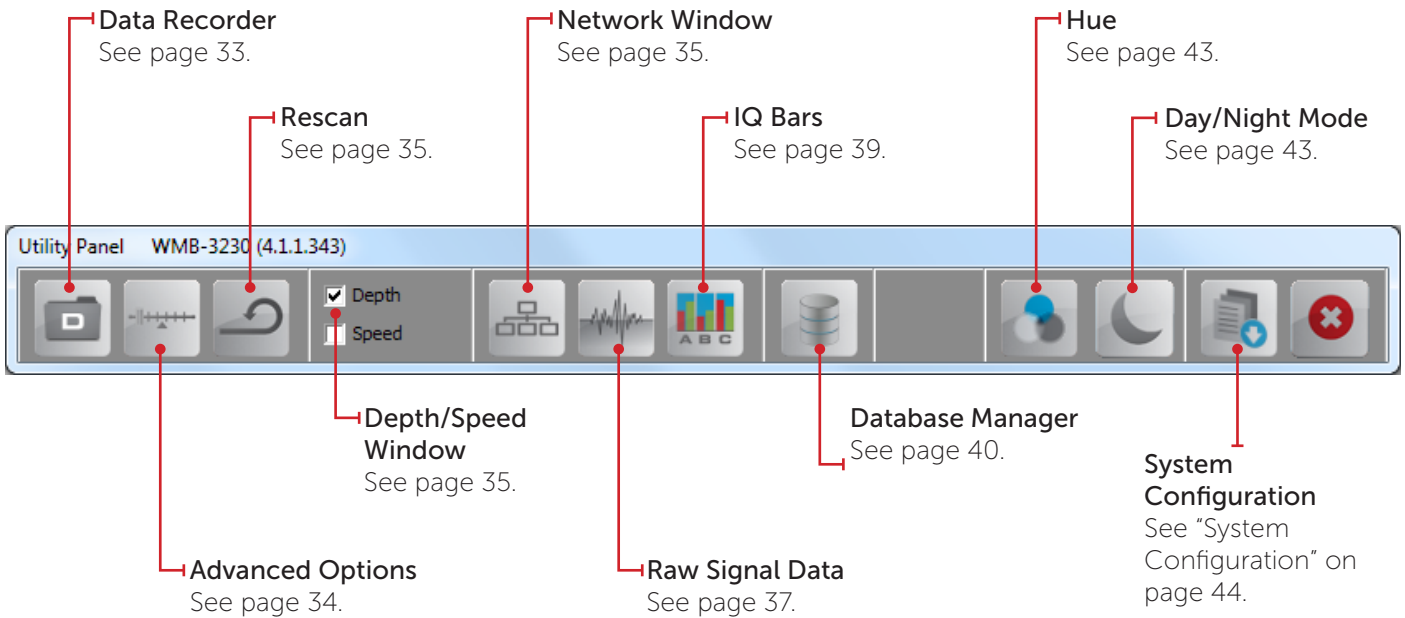
Figure 15. Utility Panel Overview

6.2 Data Recorder

Clicking the **Data Recorder** button opens the **Data Recorder** control panel. This allows raw data from the BTxR to be recorded and replayed.

Recorded data files contain:

► Raw Sensor Data

► Sensor Serial Information from enabled Transfer Task ports (whether the transducer is pinging or not)

► Current Ship Setup settings

All of this data is time stamped.

Controls
Slider Bar
Ping information
Options
XYZ Data Recording
See below.
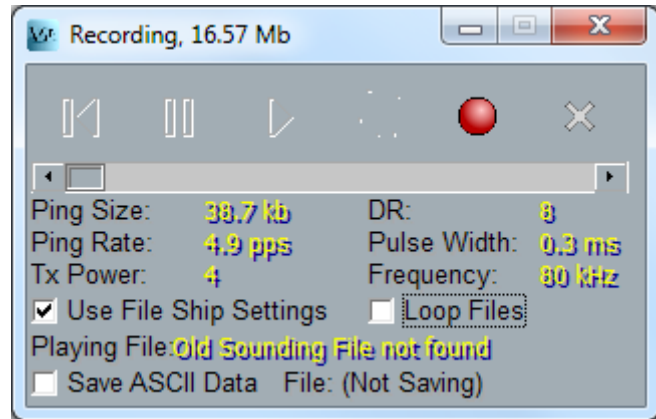
Figure 16.   Data Recorder Window

Note: The size of raw data files is very large and recording raw data files is not recommended for inexperienced operators. Recording data files allows you to look at acquired soundings data at any time.

	Rewind to Start of the File		Select File to Play
	Pause Playback of Current File		Record (Displays a Save As dialogue box)
	Play Current File		Close Replay Controls

The **Slider Bar** below the buttons allows for quickly jumping through a replay file to a particular point. The lower section of the data recorder window shows information about the last ping and displays this information whether replaying a file, recording acquired data, or acquiring data without recording.

OPTIONS:

► **Use File Ship Settings**

Selecting this check box applies the original ship's settings to the file being replayed. Not selecting this check box applies the current settings of the program running on your WASSP Processor to the replay file.

NOTE: Once the check box is selected, files opened after the check box is selected use the new settings.

Note: When replaying a demo file, the MODE button must be on STBY. If left in the TRANSMIT mode, the SELECT FILE TO PLAY button on the Replay Controls box is not active.

► **Loop Files**

Selecting this check box allows single files in a selected folder to loop, or all the data files in a folder to run continuously one after the other in a loop.

XYZ DATA RECORDING (SAVE ASCII DATA)

If you want to output the sonar data to XYZ format, check this box. A Save As dialogue will pop up for you to select the location and name of the data you want to save.

The XYZ ASCII output is an easy to read corrected version of the bathymetry data computed by the WASSP system. This form can be read by GIS packages. The data created is as processed by WASSP so includes any tide value selected in WASSP. Up to 112 points are created per ping and are written sequentially to the file:

ptNumber, latitude, longitude, depth, date, time - in comma delimited form.

6.3 Advanced Options

Clicking this button to open the **Advanced Options**. Configure these functions to best suit your requirements.

The suggested values for the Advanced Options are:

► Minimisation: 4000 (or 800 if using auto power by signal).
► Clutter: 0-500.
► Mapping Beamwidth: 0,0 (Full 120 degree beam width).
► Interference Filter: Enabled (High) if another sounder is transmitting.
► Noise Filter   Disabled (only enable if interference issues present).

MINIMISATION	Minimisation describes the filtering process used to remove sidelobe signals. Sidelobe generated signals show up as a ring on the sonar view where the transmission pulse first strikes the seafloor, or as a mirror of features on either port or starboard.

Sidelobe generated features can confuse the sonar picture making it hard to interpret. However, too much minimisation can also distort the sonar image. Refer to section "8.2.3 Sea Trial - Commissioning Step 10: Side Lobe Levels" on page 49 of the WMB-X230 Installation Manual for more information on selecting correct minimisation settings for your installation.

CLUTTER	Clutter describes the filtering process used to remove all signals below a threshold level from the sonar and fish finder displays. The control sets the threshold for the minimum signal level that will be displayed on these displays. This control is dynamic and does not affect any other aspect of the system including the contour fish detection!
BEAMWIDTH REDUCTION	Mapping Beamwidth sets how far apart seafloor detection points are calculated. Port = 0 and Starboard = 0 means detections are processed for 120º of the 120º swath. Port = 10 and Starboard = 10 means detections are processed for 100º of the 120º swath.

The default value for Mapping Beamwidth is 10 beams from port and starboard. Set this value to 0 for both Port and Starboard to get the maximum seafloor mapping width. Sound speed errors and significant ship motion will make mapping correctly with these outer beams more difficult.

INTERFERENCE FILTER	The Interference Filter enables a reduction in interference caused by other ultrasonic sub-sea acoustic devices such as sounders. It also provides some noise filtering. It is recommended that the interference filter be left selected (**Enabled**) if you have another sounder or sonar on your vessel that operates at the same time as the WMB-X230. Best results are achieved if all other sounders are turned off. Set the Interference Filter Level to **High** when encountering strong interference, and **Low** when interference is weak.
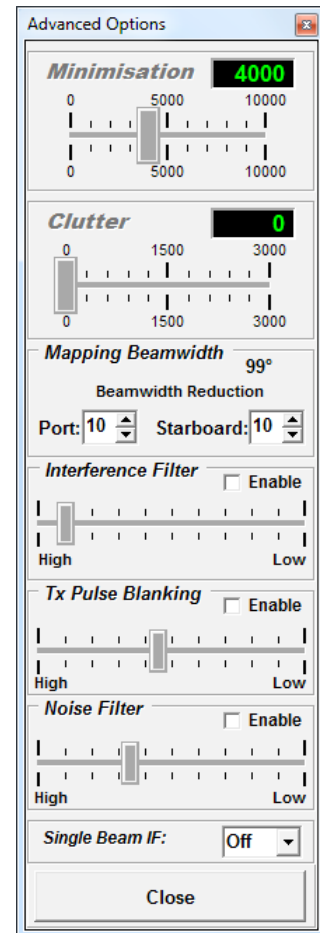
Tx Pulse Blanking	This will remove noise which is constant across the sonar display, such as transmit pulses from other acoustic sounder equipment. Works just with the sonar display and single beam display.
	It is best to start the slider from the right hand side and move to the left until you see less interfering pulses on the sonar display.
	This filter will also remove bottom detections which intersect with interfering pulses.
Noise Filter	This Filter is used to remove low level electronic white noise from influencing the sonar. Unlike Clutter this setting effects all processing and changing this value will not update all previous fish finder history.
	The Noise Filter is designed to helping clean up the Sonar and Fish Finder Views and to prevent low level noise amplifying up with TVG and standard Gain to confuse the sonar and fish finder displays.
Single Beam IF	This is a filter just for the single beam display. It will remove interfering pulses from the sonar data.
	NOTE: this will leave holes where these pulses occurred.
	LOW = remove large pulses MED = remove large & medium pulses HIGH = remove large, medium and small pulses

6.4   Rescan

The Rescan button rescans for Navionics chart cards and WASSP dongles.

If you want to change the WASSP dongle or Navionics chart while the program is running, remove the dongle or chart and insert a new one, then click the **Rescan** button. The program rescans the dongle and should read the new one you have inserted. See "9. Navionics Chart Card Information" on page 61 of the Installation Manual for more information on registering Navionics chart cards.
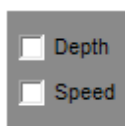
6.5   Depth / Speed Window

You can enable an informative overlay which displays the current depth and/or the current vessel speed by enabling either of the **Depth** / **Speed** checkboxes.

608.1 m
6.6 kts

This window can be moved to any convenient location on the screen by clicking and dragging the frame with the mouse. To close the depth/speed window, click on the "X" close box.
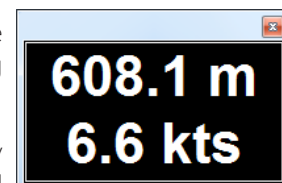
6.6   Network Window

Clicking the **Network Window** button on the **Utility Panel** displays the **WASSP Network Status** window showing an overview of the data input into the WMB-X230 system.

TCP Status

There are two TCP port network connections that need to be made for the WMB-X230 to work, these are **Transfer Task** and **Navigator**. NMEA sentences also need to be incoming for WASSP to operate correctly. See the Installation Manual for details.

While in the Demo mode, the system does not need network connections to operate correctly as data files are played back through the program.

KP (Key Pulse) Settings

The key pulse functions are presented as an option to improve WASSP performance when operating alongside other sonar systems. WASSP will always output a Key Pulse through the ping gate when it transmits.

To make use of this functionality, the KP connections on the front plate must be in use. See "4.2.2.3 Key Pulse Connection" on page 19 of the Installation Manual for connection details. To determine if the Key Pulse is being detected by the BTxR, refer to "6.7.1.1 Key Pulse Graph" on page 38.

► **Master Mode**: Use this if there is no key pulse from other sounders.

► **Slave Mode**: Use this to only ping when another sounder (with key pulse wired into input of BTxR) pings. If the sounder is off, WASSP will eventually time out, and only sync to this device once key pulses are detected again.

► **Rx Blanking**: Use this setting to allow WASSP to ping at its native rate, but to blank out any data received during the key pulse interval received at the BTxR key pulse input. Removing data can cause issues with tracking, but maintains the maximum ping rate on both systems.

► **Hybrid Mode**: This mode automatically detects the key pulse device ping rate to optimise the choice between Rx Blanking (above) and Slave Mode (above). This option finds a balance between the least interference and best ping rate.

Transfer Task TCP Ports:
Shows the status of the connections to the transfer task program.

Navigator TCP Port:
Shows the output connection status to the Chart Display.

External Output TCP Port:
Shows the external output connection status to another program using the WASSP data, e.g. Olex.

Activity Lamps:
The Activity lamps glow GREEN when there is activity on a port.

Keying Pulse Settings:
See "KP (Key Pulse) Settings" above for more information.

Diagnostics Window:
Allows an operator to view NMEA data received by the WASSP system. Click **Show Activity** under the Activity heading to see these messages.

Interface Not Licenced:
This message will appear if your WASSP dongle doesn't have the required licence permissions for a particular output.

NMEA Realtime:
Enables data on port to be used by WASSP. If unchecked data will only be logged to file if recording.

CheckSum:
Allows rejection of corrupted NMEA data if ticked. It is recommended that these are always ticked.

Figure 17. Network Status Window

6.7 Raw Signal Data

This button opens the Raw Info form which is used for diagnostic purposes to analyse individual receiver channel signals and to look at the attitude information being used by WASSP. This tool is used predominantly during commissioning and troubleshooting (see section "8.1.3 Commissioning Step 3: Channel Signal Function" on page 41 of the Installation Manual for the relevant commissioning procedure).

6.7.1 IQ Raw Data Tab

The user has the ability to zoom in on an area of the display by clicking and dragging across the display. The zoom can be reset by double-clicking on the display, or by clicking 'Auto Zoom'.
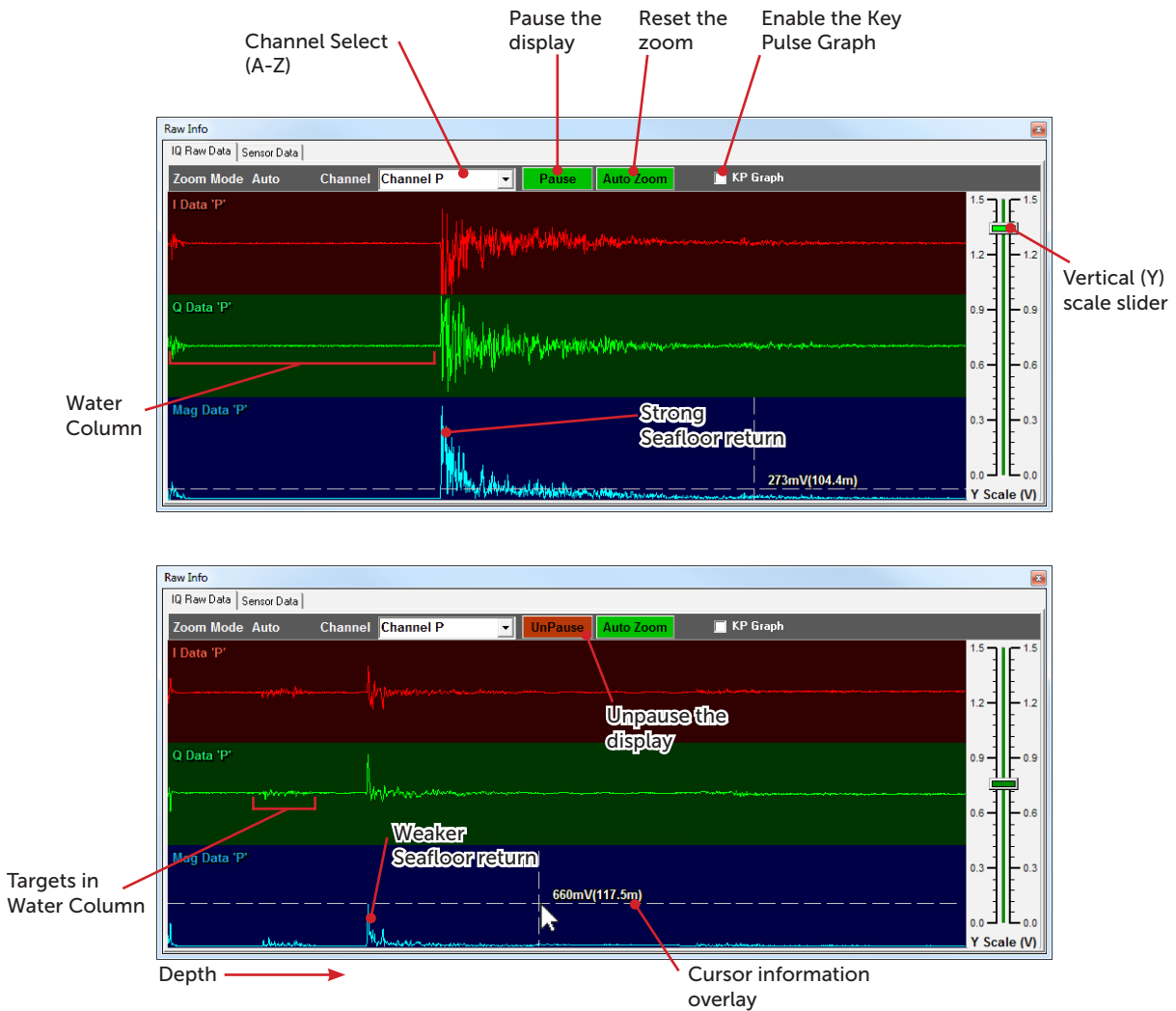
Figure 18.   IQ Raw Data Signal Examples

6.7.1.1 Key Pulse Graph

The Key Pulse Graph shows the state of the input key pulse according to how the WASSP system has interpreted it. The WASSP detects changes between input states, and draws those on the graph at the point of the ping time where the state change is detected.

When enabled, the KP Graph replaces the "I" data stream on the IQ Raw Data tab, and is the same regardless of the selected channel.

> ⚠ **CAUTION**
>
> **Ensure the input key pulse from the secondary sounder has been correctly installed according to the pin configuration on page 19 of the WMB-X230 Installation Manual.**

Note: The KP Graph is not an oscilloscope. It will not show the raw KP voltage. The graph is only indicative of detected key pulse state changes. The polarity drawn on the graph may not correspond to the input polarity.

Figure 19 shows an example where the WASSP is operating in **Slave Mode**. The first key pulse visible has triggered the WASSP system to ping and collect data.

During the data collection, a second key pulse was detected, but this did not trigger another ping, as the WASSP system was still acquiring data. The WASSP system will wait until the next key pulse after data acquisition for the current ping has finished before pinging again.
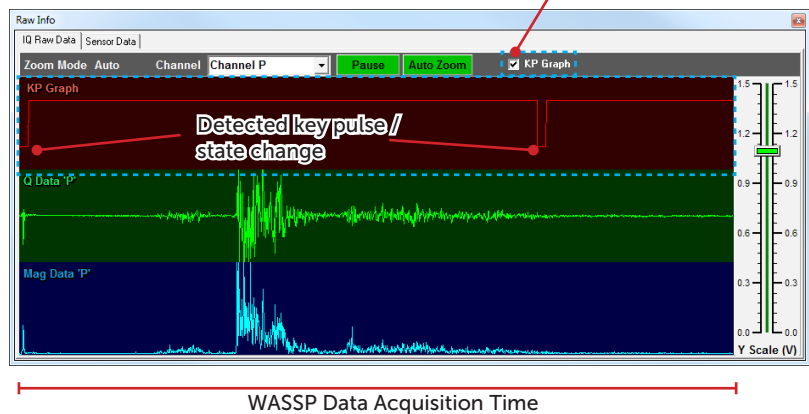
Figure 19.   Synchronised Key Pulse Input (Slave Mode)

Figure 20 shows an example of the WASSP system operating in **Master Mode** or **Rx Blanking Mode**. Here, the WASSP system is pinging at its native rate, ignoring the input key pulse. The WASSP ping is not synchronised with the input key pulse.
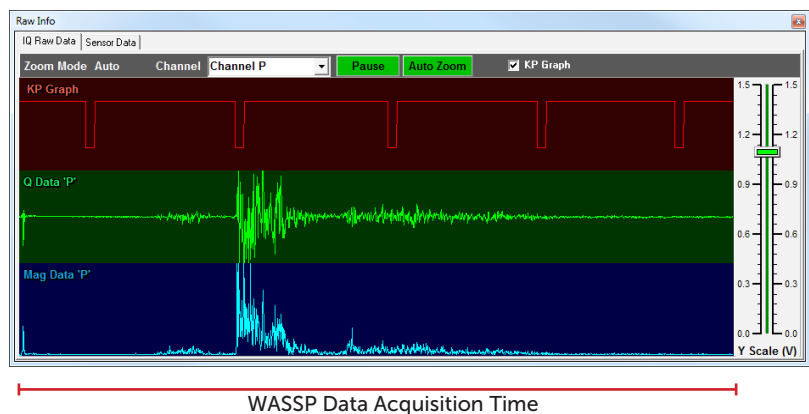
Figure 20.   Unsynchronised Key Pulse Input (Master / Rx Blanking Mode)

6.7.2 Sensor Data Tab

The Sensor Data tab shows current sensor data used by WASSP. The latest 10 seconds of Roll, Pitch and Heave information of the vessel are drawn on the scrolling graph. Vessel Heading, Speed over Ground and the current UTC Time and Date are also represented on this display.

If vital sensor information is missing, the Status will read RED, and will show what sensor is required.
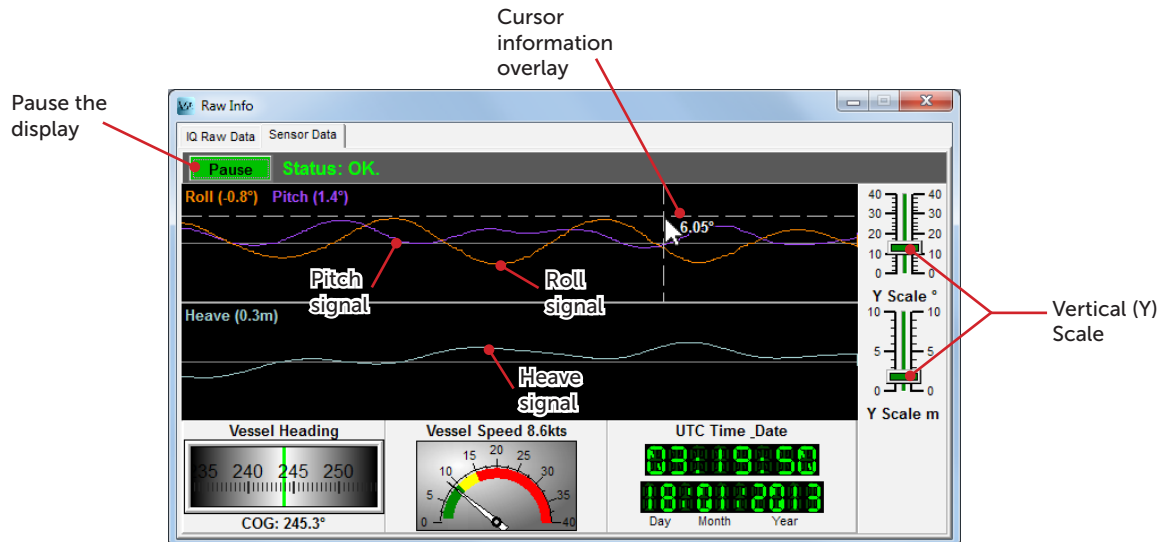
Figure 21.   Raw Info - Sensor Data Tab

6.8   IQ Bars

This display shows the IQ and magnitude of the received signal on each channel.

Refer to section "8.1.2 Commissioning Step 2: Channel Gain" on page 39 of the Installation Manual for further information.
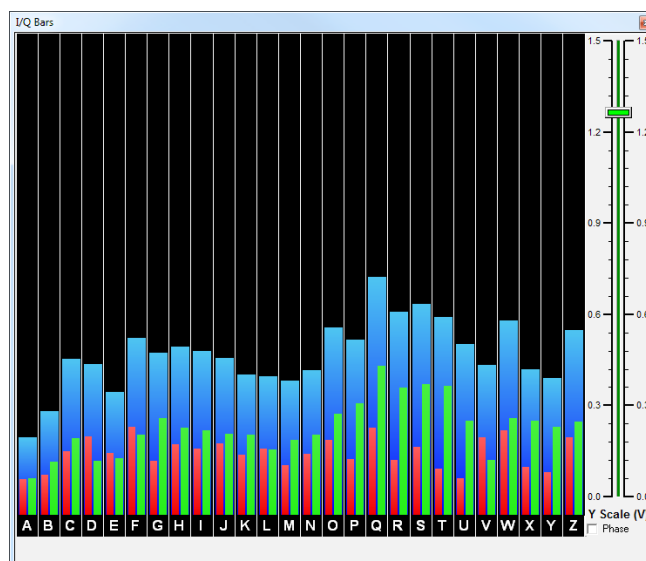
Figure 22.   IQ Bars display

6.9 Database Manager

The charting display stores and displays the WASSP information in databases. Each database can store information from any geographic area or areas. The areas do not have to be co-located or continuous but can cover different parts of the globe if desired.

The **Database File Path** must be set to the directory in which the databases are created. Additional databases can be created by clicking on the "**New**" button.

The databases allow the operator to store WASSP information from one or more visits to an area. This allows changes between the visits to be easily compared. A database may however be overwritten by selecting it for writing on a subsequent visit.

The **Database Manager** provides an ability to select both a "**Viewing**" and a "**Recording**" database. The information displayed on the chart display is always taken from the "**Viewing**" database. Incoming data from the WASSP is always written to the "**Recording**" database. To view incoming seafloor data as the WASSP collects it (normal operation), set the Viewing database to the same as the Recording database. By selecting a different database for "Viewing" than "Recording", the operator is able to look at the information previously recorded while still saving to the recording database.

Figure 23.   Database Manager Window
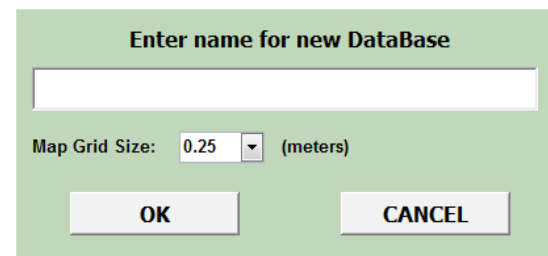
When the WASSP Navigator is first installed a Database called "Default" will be generated. This is automatically setup ready for storing WASSP information.

6.9.1   Adding a new database

To add a new database, click on the "**NEW**" button at the bottom right of the **Database Manager** window. The following prompt will appear.

Enter a name for the database, select a Map Grid Size (see below), then click "**OK**" to create the new database.

The new database will show up on both the **Viewing** and **Recording** side of the Database Manager window. The database files are sorted by name so the database may not show up at the bottom of the list. If you plan to record to the new database, make sure it is selected as the active Recording database.

Because the database will be created as a new folder on the WASSP Processor, it is best to use plain text and numbers as some characters cannot be used.

MAP GRID SIZE:

This is used to set the resolution of the seafloor maps. The smaller the grid size, the greater the resolution and accuracy of the seafloor data.

▶ **0.25 m** (applicable for the first 40m) is the highest resolution, and the best option for accurate seafloor mapping.

▶ **0.5 m** (applicable for the first 100m) is a good compromise between saving hard-drive space and recording semi-accurate seafloor data.

▶ **1.0 m** (applicable for the first 250m) is the least accurate selection for mapping seafloor data, but is the most economic selection in terms of saving hard drive space. This is the recommended setting for fishing purposes, as 3D fish marks are unaffected by the choice of database grid size.

Beyond the above applicable depths, the next map grid size will be used to store seafloor data. This eliminates unnecessary precision at larger depths.

6.9.2 Database Management

Database Management allows you to export recorded databases to an external storage location such as a USB drive, and convert higher resolution databases to a lower resolution. This allows you to free up hard drive space.

Database Export

► Click on the "**Manage**" button on the bottom right of the Database Manager window.

► Select the database you want to export.

► Click "**Save Database to Disk**" and select the location where you want the database to be saved.

► Click '**OK**'

Database Reduction

A database on the WASSP Processor can be reduced in size by converting it from a high resolution to a medium resolution database. When this is done the grid size is changed from 0.25 to 0.5 metres.

Before reducing the database, carry out the database export as above, as all high resolution data will be lost during the reduction process.

► Click on the "**Manage**" button on the bottom right of the Database Manager window.

► Select the database you want to export. The Map Grid Size of each database is shown in the window. The space saved by carrying out the database reduction is indicated below the database list.

► Click the "**Convert to 0.5m Gridding**" button to carry out the conversion.

► Close the **Database Tools** window.
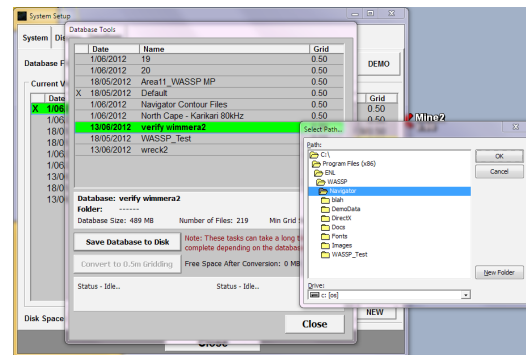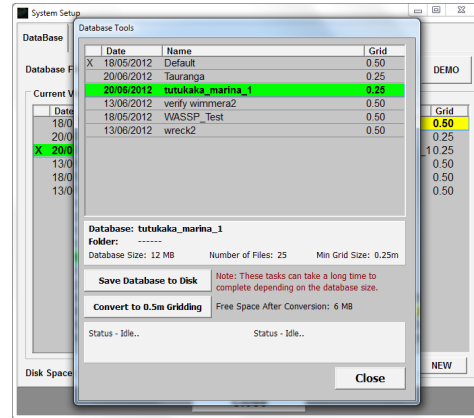
6.9.3 Database File Path

Databases will be generated in **C:\WMBData\BathMaps** by default. This can be changed by clicking on the ⬚ button. Any location on any hard drive can be used and the location can be changed whenever necessary.

⚠️ **CAUTION** **Be aware that if you change the database file path while recording to a database, that database will no longer be visible and data loss can occur.**

6.9.4 Demo

As part of a standard WMB-X230 installation there is a small demo database which can be selected by pressing the **Demo** button. When the button is green, this demo database is listed on the "**Current Viewing**" side of the database list.

If the demo database is selected, the chart display will automatically go to the location of the database for demo viewing. When the **Demo** button is clicked again, the chart display will return the previous view.

The text "**Demo**" will be present on the main window when in demo mode.

6.9.5 Show Bookmarks

This button opens the **Bookmarks** List. For more information about bookmarks, see "Add Bookmark" on page 26.

6.10   Hue

The Hue or Colour Scheme of the Sonar and Single Beam acoustic displays can be changed by using this button. The button cycles through three (3) hue presets:
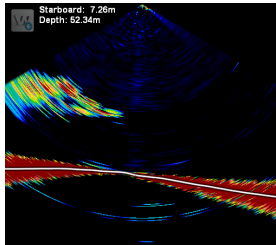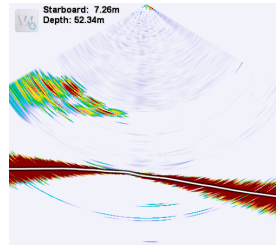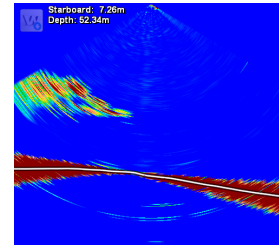
Black	White	Blue

6.11   Day/Night Mode

By default, the WASSP program runs in Day Mode. This means that the user interface and all windows are shown with normal brightness as required during day time or bright ambient light conditions.

If the WASSP program is being used during the night time or in reduced lighting conditions, the user may find it more comfortable to use **Night Mode**. Night Mode darkens the entire user interface so that the user is able to use the program in a darkened wheelhouse without having to allow time for the eyes to adjust to a bright screen.

The **Day/Night Mode icon** is used to toggle **Day Mode** (normal operation) and **Night Mode**.

The brightness of the user interface while Night Mode is enabled can be set in the System Tab of the System Configuration (see page 45). The selectable Night Mode brightness value ranges from **10%** (darkest) to **90%** (brightest).

Adjusting the display brightness on the monitor you are using can also be used to reduce / increase the screen brightness.

7. System Configuration

The System Configuration button holds drop-down access to options, settings and configurations that are required less frequently than items on the Main Menu or Utility Panel. It consists of six (6) tabs,

7.1   System Tab

The **System** tab allows you to configure the following system-wide settings, as per the user's requirements.

7.1.1   Units

The following units are available to choose from:

▶ **Depth**:   Meters, Feet and Fathoms
▶ **Distance**:   Meters and Feet
▶ **Position**:   Degrees, Degrees/Minutes, Degrees/Minutes/Seconds

7.1.2   Language

The language of the user interface can be changed here. Select a Language from the drop-down list and click **Apply**.

7.1.3   Configuration Manager

Swapping between different preset configurations can be useful. This tool can be used to store and load configuration settings used by the WASSP program.

The Configuration Manager allows an operator to save and load complete sets of configuration settings including all of the settings previously discussed. This allows different configurations to be switched between in a few seconds.

▶ **Active Configuration**:
  Displays the currently active configuration. This configuration can be deleted with the 'Delete' button.

▶ **My Configurations**:
  A list of previously saved configurations. The user can Load or Delete any configuration in the list. The current configuration can also be restored to default settings. NB: The current configuration will be lost unless it is saved prior to restoring defaults. Ship Setup information will be kept to prevent the need for a new sea trial.

▶ **New Configuration**:
  The user can save the current configuration by typing a name in the box and clicking 'Create'. The new configuration will appear in the 'My Configurations' list above.
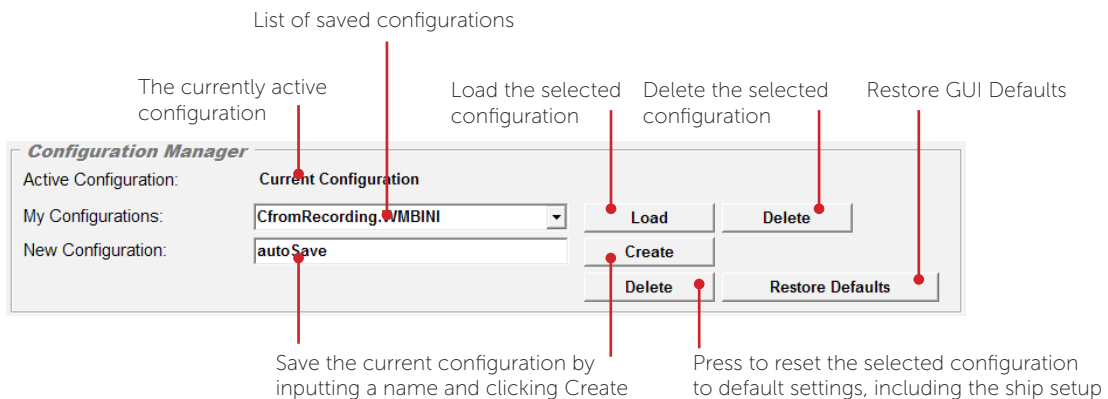
Figure 24.   Configuration Manager

www.wassp.com

7.1.4   System

► Snapshot Path:
This is the location where snapshot data is stored. To change the snapshot path, click the ⋯ button and browse to the new location, then click 'OK'.

► HD Display Mode:
For monitors set to resolutions of **1920x1080 or greater**, the user can select either **Acoustic and Chart** (side-by-side displays), or **Single Display** (Acoustic or Chart displayed one at a time).
For displays **smaller than 1920x1080**, the configuration is limited to **Single Display** (alternating between Acoustic and Chart displays). See Figure 25.

► Brightness:
The level of brightness during Night Mode is adjustable via this setting in 10% increments, between 10% and 90%. See "Day/Night Mode" on page 43 for more information.

► Bottom Factor:
The Bottom Factor setting sets the gain level to use below the first seafloor return on the Single/Triple Beam display. The gain of signals received above the seafloor line remains unchanged. See Figure 26 for some examples.

Figure 25.   Display Mode Options

► Water Column Targets
Only targets above seafloor:
Targets recorded are those that are positioned above the detected seafloor line, and whose signal return exceeds the current fish threshold (see "Fish Options" on page 16). If no seafloor line is detected, no targets will be recognised.
All Targets in Ping: Operation for passing all water column targets through to the charting display when there is no seafloor return. Used for **deep water operation** where no seafloor line is detectable and the user wants to collect water column targets.

| Bottom Factor of 100% | Bottom Factor of 20% |

Figure 26.   Bottom Factor examples

NB: When the **Water Column Targets** is set to "All Targets in Ping", ALL DETECTIONS including any seafloor returns with signal strength above the fish threshold will be sent to the chart display as fish targets. See "Fish Options" on page 16 for further information on the fish threshold.

► Triple Beam Layout:
The Triple Beam display can be set to a **horizontal** or **vertical** arrangement, depending on the user's preference.

► Enable Tooltips:
Tooltips can be enabled/disabled with this checkbox. When enabled, positioning the cursor over buttons on the Main Menu and the Utility Panel will reveal the operation of that button.

Figure 27.   Tooltips example

7.2 Ship Setup Tab

7.2.1 General

General settings provide:

▶ **Vessel Information**: Vessel's name, country and home port may optionally be entered here. This will be recorded inside any raw data recordings.

▶ **WASSP Hardware Settings**: The Transducer Serial Number and BTxR Serial Number are filled in at time of installation. These should not be changed by an operator. The BTxR Versions are reported from the BTxR for diagnostic purposes.

▶ **Device Settings**: The three sensor types required for accurate profiling can be selected from drop down lists. Select the appropriate installed sensor for each of the sensor types. The advantages of having correctly selected sensors are that you can compensate for pitch (and possibly heave) as well. To make corrections using the SC30's Pitch, Roll and Heave values, select the appropriate check boxes.

7.2.2 Offsets

Offsets are configured during the installation and commissioning of the WASSP system. See "8.1.1 Commissioning Step 1: Ship Measurements" on page 37 of the Installation Manual for more information.

▶ **Transducer Heave Compensation**: This check box should be selected if the X, Y, and Z offsets have been recorded AND a motion sensor is configured. This settings enables the system to compensate for relative heave at different points on the vessel generated by the vessel pitching and rolling.

7.2.3 Sound Speed

The **Sound Speed** sub-tab allows you to set surface speed correction settings for fresh and sea water. Valid values for both sea and fresh water range between 1000 and 2000 m/s.

Knowing the temperature gives a close approximation for the sound speed. In **Manual** mode the **Surface Sound Speed** can be modified directly or calculated from temperature given a Salinity value.
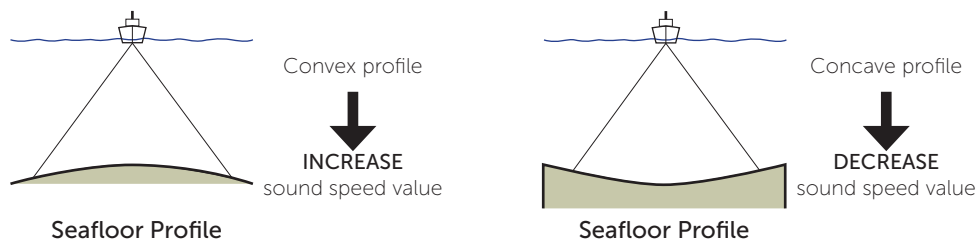
Figure 28.   Sound Speed correction

Salinity

The default value for the **salinity of sea water is 35**. This value should not be changed unless the actual salinity of the surrounding water is known. If fishing in **fresh water**, the value should be set to **1**.

Clicking on the **Calculate** button will re-calculate the Surface Sound Speed value based on the **Salinity** and **Surface Temperature** values.

NMEA Temperature

If **Use NMEA Temp** is selected, the WASSP software will use NMEA temperature data from an external temperature sensor. This information is shown adjacent to this option and will be reported in the "Surface Temperature" window with any "Temperature offset" added to correct for any error in the external temperature sensor.

WASSP Transducer Temperature

If **Use WASSP Transducer** is selected, the WASSP application software will use temperature data from this sensor. This information is shown adjacent to this option and will be reported in the "Surface Temperature" window with any "Temperature offset" added to correct for any error in the external temperature sensor.

7.2.4   Sensor

The **Sensor** tab provides a selection of motion compensation options and corrections for sensor misalignment and time delay. These settings should not be changed by the operator outside of the commissioning process.

> The settings on the Sensor sub-tab require an understanding of the motion sensors equipped and carrying out a series of procedures covered in section "6. Sensors" on page 28 of the Installation Manual.

If roll correction is enabled and configured correctly and the vessel is rolling less than 15°, the sonar picture should remain on almost the same angle from ping to ping on reasonably flat ground. If the sonar picture rocks as the vessel rolls, then the roll compensation setting is likely to be wrong or the motion sensor is not being read by the WASSP system.

Heading and Pitch Offsets

The **Heading and Pitch Offsets** will correct for transducer and motion sensor misalignment.

GPS Time Delay

All GPS positioning systems have some delay from receipt of the satellite signal to output of the correction data. When a Furuno SC-30 is used as the source of position data, this delay is approximately 1.0 seconds and equates to an error of 5m in the location of an object on the seafloor at 10 knots. This value should only be changed post-commissioning if the type of position sensor or its configuration is changed.

Motion Delay

The motion delay value is displayed for information only and cannot be changed. The value is determined by the type of motion sensor selected in the General Tab of the Ship Setup.

7.2.5   Power

The WMB-3230 (5230) BTxR can output 14 (16) different power levels, 7 in the low range and 7 (9) in the high range. Each power level has a corresponding pulse width which is automatically applied.

The type of power control can be selected from three methods:

► **Manual Power**: The output power level is selected manually using the Power Controls on the Main Menu (see "Power Level Control" on page 7)

> To switch between Manual and Automatic Power, double click on the LED Power Level indicator on the Main Menu.

► **Auto Power by Depth**: The output power level is determined by the current depth. The depth ranges are selectable from 14 drop-down boxes. A **Defaults** button resets all fourteen power levels to a default setting. When setting power level depth settings individually, click the **Apply** button after setting the levels.

► **Auto Power by Signal**: The output power level is set according to the maximum acoustic echo received (normally the seafloor). The received level is set to prevent saturation of the receiver. This option should provide the best overall system performance.

> Note: There are TWO different Automatic Power modes. Automatic Power by Signal AND Automatic Power by Depth. Automatic Power by Signal is better for seafloor mapping and seeing fish out on the sides near the seafloor. Automatic power by Depth is useful to detect smaller fish easier at the cost of seafloor detection.

If a power level is set out of sequence, for example level 5 is set to 14 m, level 6 is 50 m and level 7 is 40 m, then a WASSP information box appears and informs you that a specific power level is invalid (level 6 in our example). Level 6 can then be set individually to a level below that of level 7 and above level 5. See Figure 29.

Manual Power

Automatic Power By Depth

Automatic Power By Signal
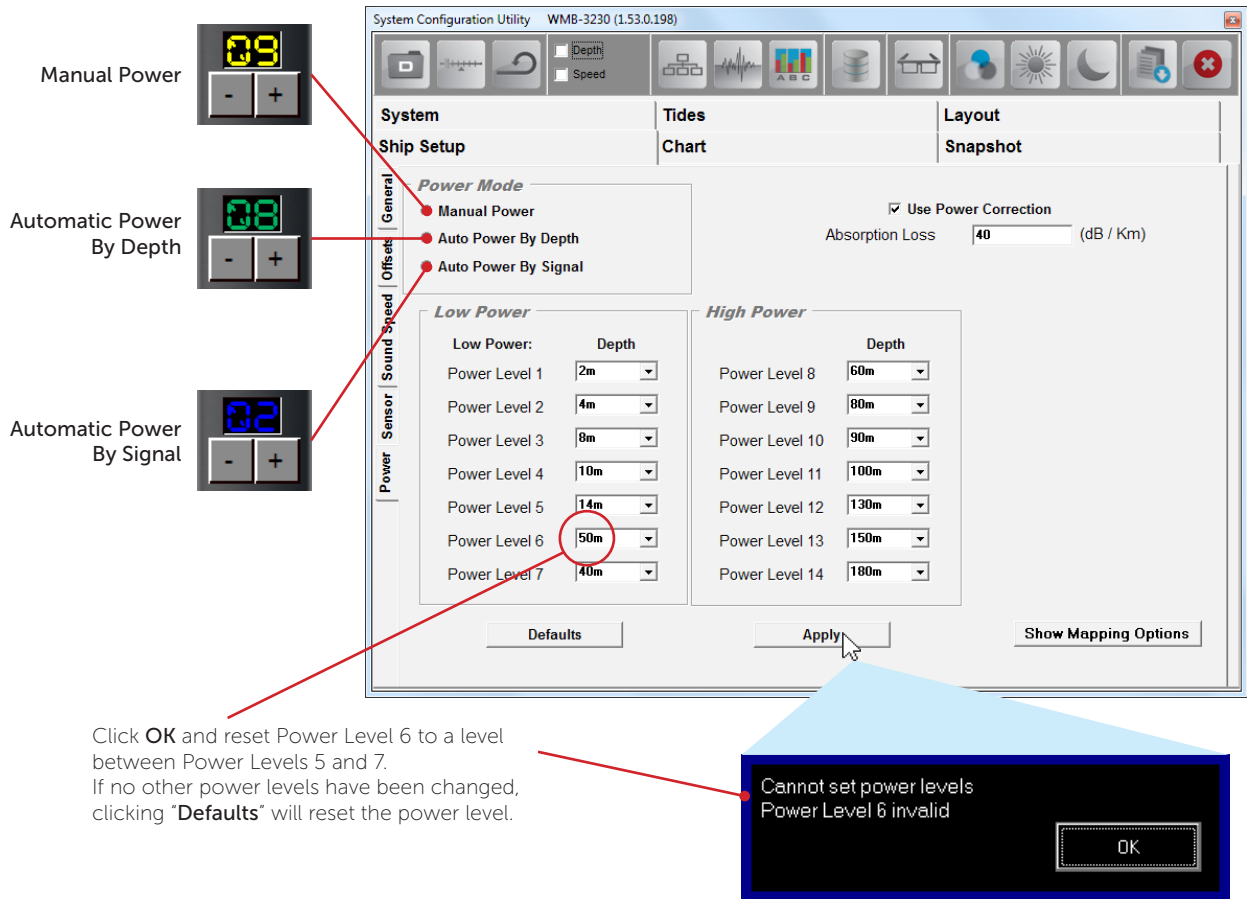
Click **OK** and reset Power Level 6 to a level between Power Levels 5 and 7.
If no other power levels have been changed, clicking "**Defaults**" will reset the power level.

Figure 29.   Ship Setup Power Tab

► **Absorption Loss**: As sound travels through water, some of the energy contained is absorbed by the water, resulting in attenuation of the signal. The chosen value of absorption loss is set at the time of installation, and is used when calculating backscatter. For the WMB-3230 system, a default value of 40dB/km is used. For the WMB-5230 system, a default of 25dB/km is used. This value should not be changed without a clear understanding of the absorption properties of the water in the area you are working in.

7.3   Tides Tab

The **Tides** window allows you to change the way the WMB-X230 uses tide information. Assuming the **Disable Tides** check box is cleared, the WASSP system uses the GPS positioning information coming through the WASSP Processor communications port to automatically select the closest tide station. The WASSP system then calculates a tide offset value and adjusts the seafloor profile data using the tide offset value.

Selecting the **Disable Tides** check box can cause the seafloor depth to vary as the tide waxes and wanes, resulting in inconsistencies in seafloor mapping. **Disable Tides** should be selected if you are working on a lake.

Enter the local time difference in hours (from Coordinated Universal Time UTC) into the **Local Time difference** field to update the **Current Time** and **Next Tide** times to local time.

The currently selected Tide Station

UTC Time + Local Time Difference

Disabled Tides if you are working on a lake

Local Time Offset from UTC

Active Tide Station's GPS Position

Current Vessel GPS Position
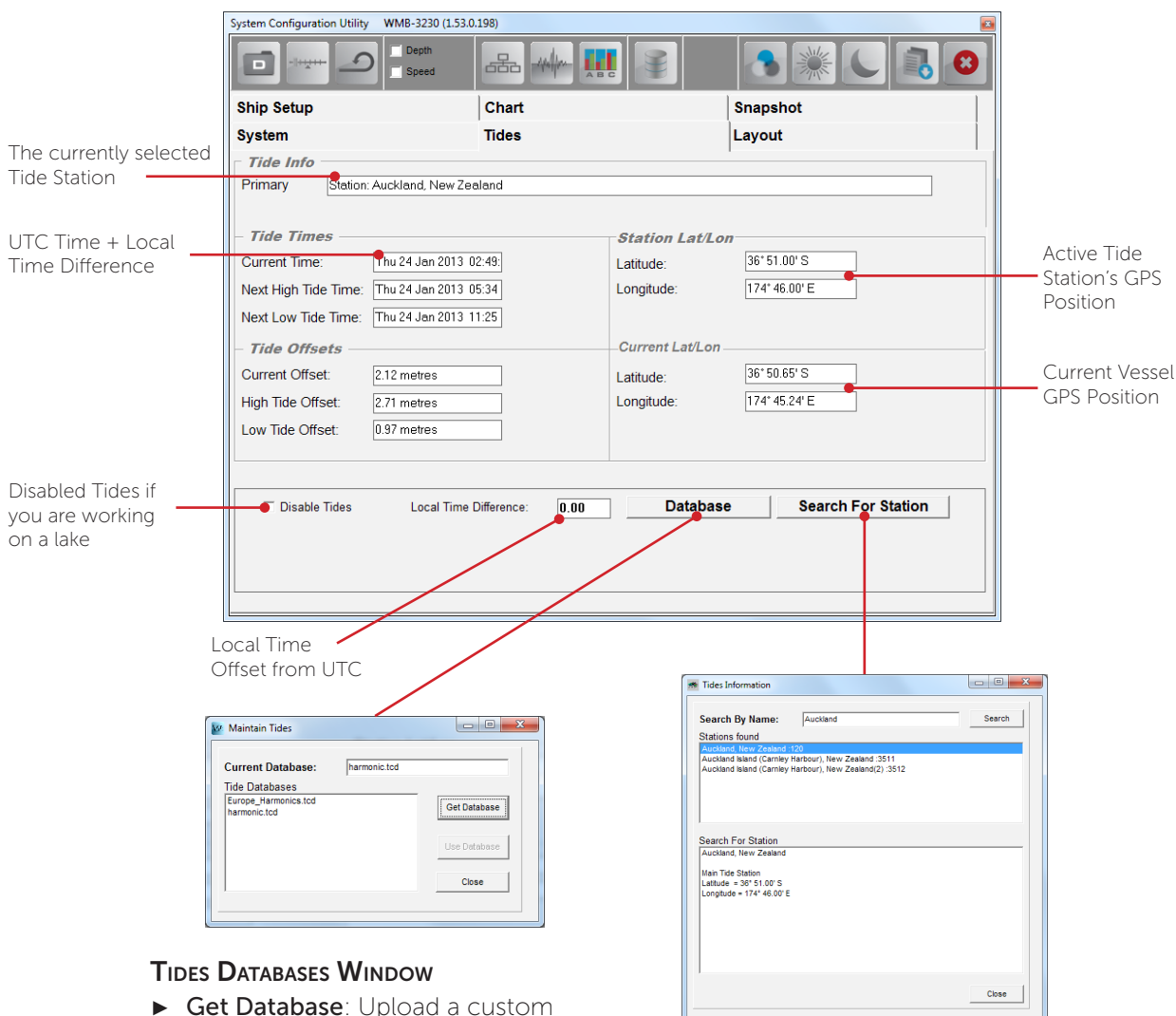
TIDES DATABASES WINDOW

► **Get Database**: Upload a custom .tcd database file for WASSP to use.

► **Use Database**: Select a database from the database list and click this to activate it.

TIDES INFORMATION WINDOW

► **Search**: Search by name for a Tide Station stored in the active database. The station information is shown below.

Figure 30.   Tides Tab

7.4 Chart Tab

The Chart Tab allows the user to configure the information that is presented on the charting displays. This includes the ability to determine what features of the Navionics charts are enabled, how the water column targets and vessel track are displayed, where and how depth information is displayed, and various other settings.

7.4.1 Cartography

SHOW CHART   The user can elect to have the Navionics chart overlay enabled or disabled. Without a Navionics chart connected, a rough country-level overlay is drawn which is replaced with the Navionics data once the card is installed and a Rescan is performed (see "6.4 Rescan" on page 35 for more information).

| Chart Disabled | Chart Enabled (no Navionics Card) | Chart Enabled (with Navionics Card) |
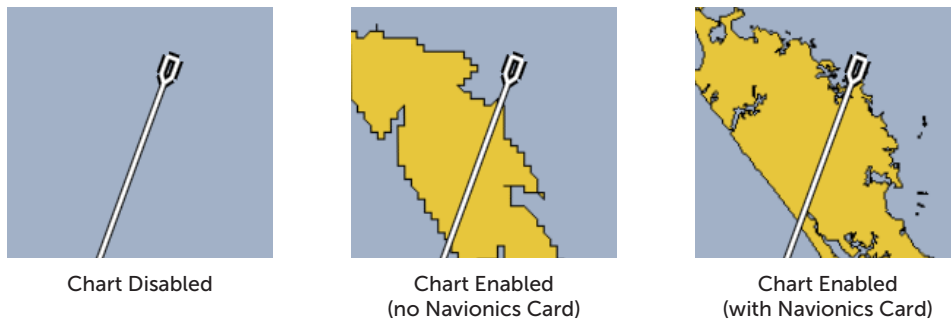
Figure 31.   Chart Enabled / Disabled Examples

CHART LAYERS   Selects the layers which will be shown on the chart overlay. Any changes made to the active layers must be activated by clicking 'SET'.

► **Anchorage Areas**: Areas where vessels can anchor and shows marinas, jetties and wharfs.

► **Cables**: Overlays locations of underwater cables.

► **Depth Contours**: Shows the depth contour lines from the chart card.

► **Depth Soundings**: Shows the single depth soundings from the chart card.

► **Nature Of Seabed**: Indicates what the seabed is at various locations.

► **Nav Aids**: Shows location of navigational lights, beacons, buoys and markers.

► **Port**: Show port shapes such as pylons.

► **Pipeline**: Show location of pipelines.

► **Wreck, Rocks**: Locations of wrecks and rocky areas.

► **Names**: Shows names of harbours and locations on the chart. Will also show warnings and information.

7.4.2 Overlays

HEADING LINE WIDTH   Adjusts the thickness of the heading line of the vessel on the 2D charting displays

SHOW SCALE ON 2D   Overlays a dynamic scale on the 2D charting displays

SHOW DEPTH AT CURSOR	When these options are enabled, a depth overlay will follow the cursor on the screen so that the user can read depths where the cursor is placed. There are separate options for both the 2D and 3D display.
SHOW MENU LABELS	The menu names /labels can be disabled. This will prevent the text from interrupting the viewing of the chart window.
SHOW MARK LABELS/VALUES	The user can enable / disable the text labels (Name and Value) that appear beside marks. Placing the cursor over a mark will always reveal the name of that mark.
FISH 2D TYPE	The fish overlay on the 2D charting display can be drawn in two different ways: ▶ **Fish 2D Data**: Fish detections are drawn on top of the seafloor image. The colour on the overlay is dependant on the number of detections. ▶ **Fish 3D Data**: This is a flattened view of how the fish appear on the 3D display. The colour of the fish detections is based on the intensity of return. See "Show 2D Fish" on page 22 for information on how to enable the 2D Fish.
3D FISH AGE	This controls how long 3D fish marks are displayed. Options range from 10 seconds to 24 hours, or ALL (default).
VESSEL TRACK	▶ **Mode**: The user can toggle whether tracking points are drawn when the vessel has covered a certain distance, or when a certain amount of time has passed since the last tracking point. ▶ **Thickness**: This changes how thick the vessel track is drawn. ▶ **Distance / Time**: Depending on the Vessel Track **Mode** setting, these settings influence how far apart each tracking point is drawn. ▶ **Colour**: This changes the colour of the vessel track.

7.4.3 Bathymetry

CONTOUR INTERVAL	This option sets the interval of the contour lines drawn through the WASSP seafloor data when Contour mode is enabled. See "Contour Lines" on page 23.
ENABLE LIGHTING FOR HARDNESS	When the backscatter overlay is enabled on the 2D display, this will show lighting changes due to slopes if enabled.
MONOCHROME COLOUR	This allows the user to select the colour the seafloor will appear in monochrome mode. The seafloor will be rendered in this colour with shading. It is useful for when the 3D water column information is being shown.
MAPPING OPTIONS *It is recommended to select Best Beam method and to enable the noise filter.*	▶ **Best Beam**: This stops less accurate points from the outside beams overwriting the more accurate points from the inside beams. ▶ **Overwrite All**: All existing map points are overwritten with new points as they are received. ▶ **Enable Noise Filter**: When enabled, this filter will reduce the noisy points which occur when the detection line mis-tracks the seafloor.
TRACKING OPTIONS	These options apply slight changes to the seafloor tracking algorithm. ▶ **Shallow Bias** - When enabled, this option will always choose the shallowest point from a range of points where there is tracking ambiguity.
SMOOTHING OPTIONS	These options apply to the construction of the seafloor mapping data into a surface. ▶ **Low** smoothing will draw more raw data but is unlikely to match up as well. ▶ **High** smoothing should reduce the effects of noise and mapping errors.

7.5 Layout Tab

The user interface of the WASSP program is very customisable. Seven (7) acoustic display layouts and four (4) charting display layouts are available to customise to the user's preference. Each preset has been pre-configured at installation to provide a range of options for the user; however, modifying the presets to the user's preference is both easy and encouraged. The Acoustic and Chart displays can each be configured to present different displays in a variety of arrangements:

Single Display **Vertical Split** **Horizontal Split** **3-Way Split**
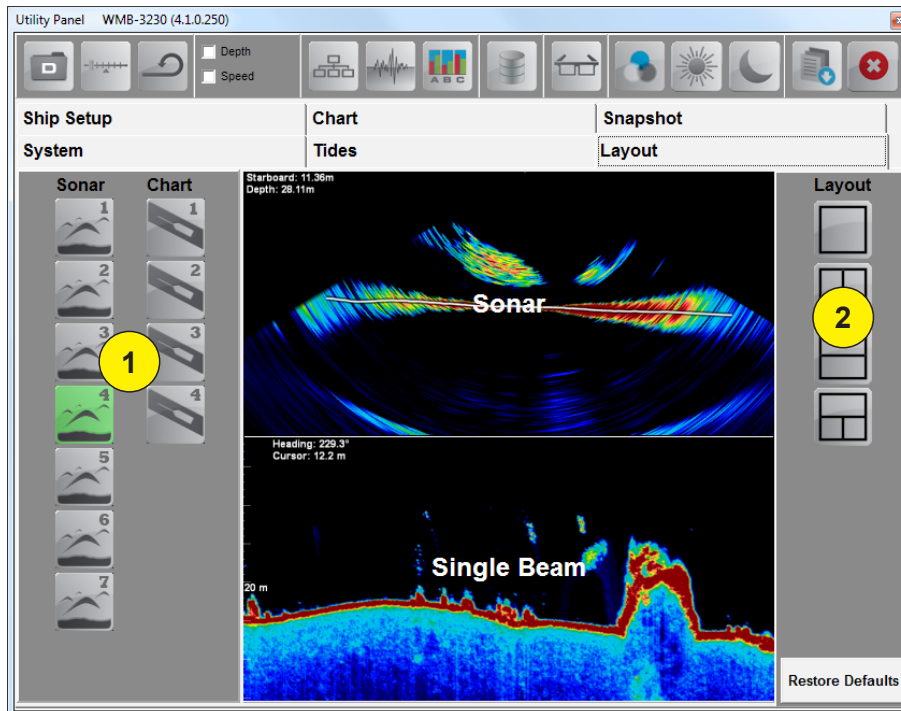
To Configure the Display Layouts:

1 Select the preset you want to configure.

2 Select what display layout you want. The available options can be cycled through by clicking the selected layout button until the desired layout is displayed in the middle.

Now that layout you selected in Step 1 (Sonar 1-7 or Chart 1-4) is stored as part of the configuration, and can be activated by cycling through the Acoustic or Chart Layout buttons on the Main Menu. See "2.7 Layout Selection" on page 7 for more information.

3 Move on to the next preset if you so wish to configure another layout (Step 1).

> Layout arrangements can be restored to the default settings by clicking the 'Restore Defaults' button in the bottom right-hand corner of the window.

7.6   Snapshots Tab

The Snapshots Tab allows reviewing and renaming of snapshots taken with the **Snapshot button** located on the Main Menu (see page 8).

The Snapshot button records the last ~1000 pings duration of the current seafloor and water column scanning session or demo file. The snapshot is stored in the WASSP Processor and can then be renamed and displayed in the **Single / Triple Beam** and **Sidescan** displays at a later time under the Snapshots Tab.

Note - Sonar data is not saved and the Sonar display will be blank when viewing a snapshot.

The snapshot does not replay like a demo file. When selected and loaded into the program it remains static. All menu options are still available and each display can still be independently zoomed in or out.

LOAD SNAPSHOT	Clicking the **Load Snapshot** button loads the selected snapshot file and displays it on the WASSP user interface.
DELETE SNAPSHOT	If a snapshot is no longer required, or is out-of-date, it can be deleted by highlighting it and then clicking the **Delete Snapshot** button.
UPDATE	The **Update** button saves any changes made to the name of a snapshot. Select the snapshot name you want to change in the **Current Snapshots** box, then edit the name under the **Current Snapshot Details** box and click **Update**.

8. Operating Procedures

1 TURN ON THE POWER:

Press the **POWER** button on the BTxR.

The BTxR starts up and the **LED** glows **RED**.

Turn on the **WASSP Processor**.

In standard installations, the WASSP program starts up automatically. The BTxR **LED** will turn **GREEN** once the program has initialised.

If no dongle is found, a **Dongle Error** message appears on the screen.

The program then performs a self-calibration (**MODE** button turns **YELLOW**). When the button turns **BLUE** it is ready to go.

Ensure a dongle has been plugged into the WASSP Processor's USB port and click **Retry**. If this doesn't work, remove the dongle and try plugging it in again.

STATUS   **POWER**

No Dongle Found In System. Please Plug Dongle In And Try Again.

Cancel   Retry
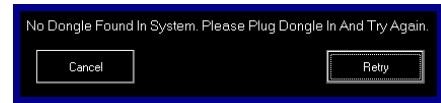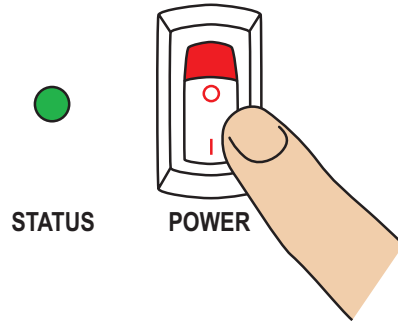
You can click Cancel and run a demo file from the Utility Panel.

2 TRANSMIT, RECEIVE:

Click the MODE button to switch from STBY (standby) to the transmit mode.

When transmitting, the transmit button animates showing a pulse being transmitted from the vessel.

STBY ▶

3 CHOOSE A DISPLAY MODE:

Cycle through the display layouts to choose a display mode you want to use. Left-click to cycle forwards, right-click to cycle backwards.

7

3

4 CUSTOMISE THE SELECTED DISPLAYS:

Click the [W] icon in the top-left corner of each display to open the menu for that display.

Select any options you require.

5 PERFORM ANY SEAFLOOR PROFILING OPERATIONS YOU REQUIRE

6

QUIT THE **WASSP** PROGRAM:

When you have completed your profiling operations:

► Click the **MODE** button to set the BTxR to standby.

► Click the **Exit** button on the main menu.

The Exit System box appears.

► Click OK.

► All files opened by the system are closed automatically and the program shuts down.

► Shut down the WASSP Processor following standard Windows procedure.

► Turn the BTxR **OFF** using the **POWER** button on the face plate.

► The **WASSP** system is now shut down.

STATUS   POWER
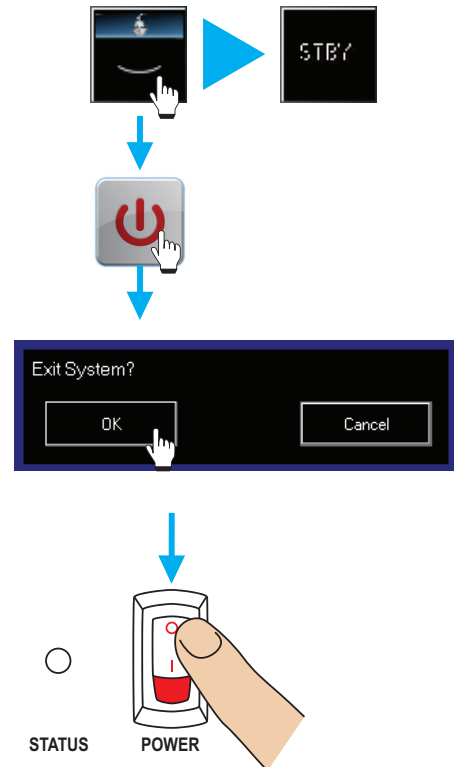
9. Frequently Asked Questions (FAQs)

Following is a list of frequently asked questions (FAQs) covering common problems encountered when operating the WMB-X230 system. Note the Troubleshooting section of this manual covers most of the typical operational problems, and this section should be consulted only after reading the Troubleshooting section. Each FAQ question is numbered and answered in the following pages.

9.1 The system is transmitting too slowly, how can I speed it up?

Remember that the WASSP system must acquire twice the depth of standard sounders to enable the full seafloor profile across 120°. If the entire profile is to be captured, the ping rate will need to be at least half that of a standard single beam sounder.

Manually adjusting the range dial will increase the ping rate significantly but will result in the loss of seafloor information, including break up of the seafloor data on the charting 3D display after a point. If you are only interested in the centre beam of the Triple Beam display, the range dial can be manually reduced to just over half the current depth in metres. The optimal range is twice the current depth in metres. The range dial should normally be set to automatic (green digital display).

Other programs running at the same time as the WASSP program consume processing power and take processing time away from the WASSP system, slowing down the rate of transmission. For optimal performance, ensure WASSP programs are the only applications running.

9.2 Why does the range not change on the display when I move the Range Dial?

Double-click each acoustic viewing mode (Sonar, Single / Triple Beam, Sidescan displays) to reset the view so that automatic range control is re-enabled. The range continues to track the range dial while in this mode. If any zooming is done with the wheel mouse then automatic range control will be disabled again until you once again double-click on the appropriate view.

9.3 Why is no seafloor profile generated on the charting displays after the system initially starts transmitting?

Check that the NMEA data input is being received and that the communications ports are configured correctly. If the range for data collection is too small, the system cannot acquire the seafloor and cannot track the range automatically. Enter the manual range mode and set the range deep enough to acquire the seafloor before returning to the automatic range mode. Also check that seafloor mapping is enabled (see "2.10 Mapping Options" on page 8).

9.4 Why do gaps appear between the swath footprints on the charting displays?

There are multiple possibilities here:

▶ The vessel may be travelling too fast to map the seafloor in this depth of water.

▶ The range setting could be set much larger than necessary and as a result the system is transmitting slower than is optimal.

▶ The WASSP Processor is giving processing power to another operation (other than the WASSP program) causing processing of sounding information to take longer, resulting in a slowed transmission rate of the WASSP system.

▶ The GPS data has come in at irregular intervals.

▶ The WASSP system has stopped. See Question 9.5.

▶ The GPS data source may have dropped out completely, preventing the system from mapping the seafloor data to its appropriate location. Ensure an isolation device is being used to convert the current loop NMEA to RS-232.

▶ The seafloor detection may have briefly failed due to aeration or excess noise.

9.5 The system has stopped transmitting without operator intervention. Why?

If time is taken from the system by another application for long enough, the WASSP system may restart transmission in a number of seconds. If the system does not restart, try stopping and then starting the system using the MODE button on the Main Menu. If this does not work, try to restart the WASSP program and the BTxR. The most likely cause of this is a sudden power supply spike or drop.

9.6 When I click the MODE button, or run a replay (demo) file I get no picture on the display. Why?

The WASSP program is designed to run in 32-bit colour, with a minimum 1024x768 resolution. Check your display settings and change if required.

9.7 When I press the MODE button, the button goes red and a number on it counts up, but there is no activity on the WASSP display. How do I fix this?

First make the following checks of your WASSP installation:

Check that the BTxR power is ON and the LED light on the front panel has lit up either GREEN or RED.

Make sure the CAT5 network cable is connected at both the BTxR and the WASSP Processor ends (unplug and re-plug to make sure).

Check that the Transfer Task application is running (look for the icon on the Start Bar at the bottom of your monitor) and was running when you started WASSP. If not, restart WASSP after running the Transfer Task application.

9.8 What does the error message that appears when I run WASSP mean? Is my WASSP system faulty?

Consult the list below for the cause/course of action if an error message is displayed in WASSP.

▶ *Cannot Find Tide TCD File*
  Use the tide function to search for a valid database file.
  Check file is present in directory. Reinstall if not present.

▶ *Error Loading TVG File*
  Check in the Windows Control Panel under Regional and Language Options,
  Regional Options, Customize, Numbers Tab, that the "Decimal Symbol" setting is set to a '.' rather than a ',' (comma)
  Check file is present in directory. Reinstall if unable to locate.

▶ *"Too Many Files With This Name. Aborted."*
  This occurs when storing raw data using the data recorder if there are more than 1000 files of the same initial name in a directory. Change the name or directory if you wish to continue to save raw data files. NOTE: Unless you require the raw data for some purpose it is not recommended to record raw data files – these files are very large (≈ 2Gb/hour) and will require careful management in order to prevent the Hard disk drive of your WASSP Processor from becoming full. A WASSP Processor with a full disk drive becomes unusable. Try to have at least 10 Gb of free drive space at all times to allow sufficient room for system file management.

► *Cannot set power levels. Power Level x invalid.*

This occurs when setting the power level settings when the depth values do not increase as the power levels increase. Check that every depth selection for each sequential power level is greater than the previous.

► *No Dongle Found In System. Please Plug Dongle In And Try Again.*

This error can occur if the USB device has not been detected by windows or the Dongle is not connected to the system. Remove the dongle if it is already in place and then reconnect it to the WASSP Processor after a few seconds. Press the retry button. The system will operate in replay mode without a WASSPDONGLE but will not work in real time.

► *This dongle does not support the WMB-X230 system.*

This error will occur if the current WASSP dongle is not licensed to run a WMB-X230 system. Contact your dealer to acquire an appropriate WASSP dongle.

► *No License File Found On Dongle.*

The most likely cause of this error is that the WASSP dongle has been modified or the contents have become corrupted. If the license file has been removed from the dongle the system will not operate.

Contact your dealer to source a new WASSPDONGLE – you will need to return your current faulty Dongle.

► *License File Is Corrupted.*

The licence file on the WASSPDONGLE has been modified in some way and is no longer valid. Contact your dealer to source a new WASSPDONGLE – you will need to return your current faulty Dongle.

► *No Attitude: No Pitch.*

The system is configured to compensate for Pitch and there has been a gap of multiple pings where there was no Pitch data received. Check the Motion Sensor configuration in WASSP. Also check the Serial Port configuration in the WASSP Transfer Task and finally that the sensor itself is on and operating correctly.

► *No Attitude: No Heave.*

The system is configured to compensate for Heave and there has been a gap of multiple pings where there was no Heave data received. Check the Motion Sensor configuration in WASSP. Also check the Serial Port configuration in the WASSP Transfer Task and finally that the sensor itself is on and operating correctly.

► *No Attitude: No Roll.*

The system is configured to compensate for Roll and there has been a gap of multiple pings where there was no Roll data received. Check the Motion Sensor configuration in WASSP. Also check the Serial Port configuration in the WASSP Transfer Task and finally that the sensor itself is on and operating correctly.

► *TX PWR ERROR*

This warning informs the operator that the Transmitter did not reach full voltage during the system start up sequence - the most common cause for this is a low 24V power supply voltage/current. If the system appears to operate correctly after you see this message then this is not an issue. If the system does not appear to function then the error implies that the BTxR Transmitter unit has failed - Contact your Dealer for further assistance.

► *System Initialisation Failure*

This error implies that the system was not fully operational when the WASSP GUI was run. Shut down the WASSP Processor and the BTxR and do a complete restart. If the error message continues to be shown, refer to the troubleshooting section on Page 76, or contact your dealer for further assistance.

9.9 Why is there a ring displayed just above the seafloor? What causes these 'ring' marks? How can I get rid of them?

This ring is a by-product of the multi-beam technology of your WASSP system. It is supposed to be there but in practice we want to make it as difficult to see as possible. To avoid these rings confusing the seafloor tracking algorithms or being confused as fish marks, the **Minimisation** feature allows these rings to be suppressed on the Sonar display. Care should be taken because hiding these rings will also make it hard to see any signals below them such as fish on the bottom.

When a signal arrives at the receiver it creates a shadow like effect that creates a ring of much weaker echoes - the stronger the signal, the stronger the rings. Unfortunately the signal return from the seafloor is many orders of magnitude stronger than a fish echo and thus the shadow of weaker echoes can be comparable to fish targets.

How do I know if I have a problem then? When running with Auto Power By Signal (BLUE) and the power level is above 1 then the required minimisation should be **1500 or less**. The lower this is the more chance of seeing fish below the ring but the more chance of the rings being visible on the Sonar display. If you are required to use a higher power level then it may well be impossible to hide them completely with Minimisation.

If you have the system working with no sign of these rings and then they start to appear and you have not changed the Minimisation settings then something has changed for the worse – keep reading.
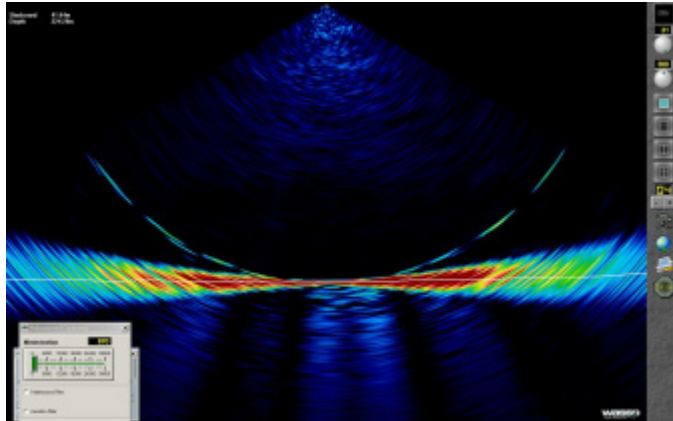
► **Too much power**

This is the most common cause of problems. When there is too much acoustic energy in signals returned from the seafloor they may distort. Distortion of the signals will cause ambiguity in resolving the position and thus create rings of very high amplitude. Unless in very shallow water, **Auto power by Signal** mode will automatically try to select the highest power level that doesn't cause distortion. You may get the occasional strong return causing faint rings, but this is good so that you have as much power as practical for detecting fish.

► **Gain settings**

This ring will appear more or less significant as the **Gain Control dial** is changed (see "Gain Control" on page 7). The **Normalise** option will change the relative intensity.

► **Shading of Receiver**

Any difference across the receiver caused by marine growth or any other irregularity across the face of the receiver will contribute to a reduction in the discrimination of the WASSP system. This will lead to higher intensity rings.

► **Reconnection Fault**

If the cable from the BTxR to the Transducer was disconnected and has been reconnected recently it is possible the receiver is connected incorrectly. Check the colour codes of Ethernet connections.

► **Calibration**

It is possible that the system calibration was disrupted by another sounder. Close the WASSP GUI and re-run to allow the system to re-calibrate.

► **Electronics Failure**

If one or more central channels fail in the electronics this will increase the intensity of the ring.

► **Configuration**

Changes made in the Technician configuration could significantly change the system performance. Restart the WASSP GUI if you are unsure what state the system is in. The **Configuration Manager** has a **Defaults** option to load your default configuration settings if all else fails (see "Configuration Manager" on page 44).

9.10 What is this constant signal on the sonar/fish finder display?

There are many sources of noise, interference and general acoustic reflections which can make these displays difficult to use. A description of the different types of noise and ways in which you might be able to determine and eliminate them follows.

► **Sonar/Sounder**

Other sound-producing devices will produce constant blips on the WASSP sonar display which will vary in intensity and size depending on the transmission power and angle of the system. If you wish to continue using your other sounders you can suppress this noise using the **Interference Filter** option.

► **Aeration**

Air in the water around the transducer can cause transmitted signals to be absorbed or reflected prematurely resulting in false signal reports from the transducer.

► **Biomass**

Large bodies of photo plankton can float through the sea covering very large areas. This may be the source of large areas of constant faint signal return through a region of the water column.

► **Own Transmission**

WASSP shows all received signals starting from half way through the transmission pulse. Thus you should see a red or yellow ring at the top of the Sonar display. As power level and pulse width increase this signal return will be stronger and larger.

► **Keel Reflection**

If the WASSP system is mounted in such a way that transmitted signals can reflect off the ship's hull you may find that there is a constant strong return shown on the sonar display. This may happen even if the hull is just outside the 120degree transmission swath. If a strong signal follows the boat and is within the dimensions of the ship then this signal is probably a reflection off your own ship. This will make it hard to detect fish at this depth but otherwise shouldn't affect the performance of your WASSP system.

► **Electrical**

There are an almost infinite number of ways in which Electrical Noise can influence system performance. The first priority is that the system be well grounded – this means a large and preferably short grounding wire connects the BTxR to the Power supply ground. WASSP is relatively protected by noise on Power supply sources but a very noisy supply could cause trouble. More likely causes of electrical interference are if noisy, high power machinery or wiring is run beside the transducer cable. Electrical noise is either constant, regular or transmit power dependant.

► **Water Temperature Layers**

A thin faint horizontal line that is present ping after ping in the same place could be a temperature layer. The sea is often layered with various temperature layers due to pressure and surface mixing. Often a reflection can be created at the depth where a significant change in water temperature occurs – causing an acoustic return.

► **Prop Noise**

If the turbulent water flow off the props is directed onto the transducer face this could create aeration noise. Especially relevant for lower frequency models – it may be possible to pick up the prop noise as an acoustic source. For this reason it pays to mount the transducer some distance from the ships props. Prop acoustic noise will appear on the side of the Sonar display close to the prop and will look like a regular pulse or solid signal depending on the rotation speed.

► **Vibration**

Shudders of vibration and vibrating mounting structures can induce significant noise. Additionally a vibration in mounting can cause motion compensation of the system to fail. Sharp jolts and vibrations will generate rings of high signal.

9.11 Why is my WASSP System not tracking the Seafloor?

Any source of noise mentioned in the answer to 9.9 and 9.10 above can cause the seafloor detection to fail if it is bad enough. In some cases bad noise can cause the tracking to fail and it could take a number of pings for the WASSP system to re-acquire the seafloor. In some instances noted below and in bad cases of noise, it may not be possible to automatically resume seafloor tracking.

► **Power**

If too much power is being used for the depth of water you are operating in, the seafloor tracking signal could be noisy especially if there is enough power to cause signal distortion as the tracking algorithm may track the rings produced by this. Conversely, too low a power level may result in the signal levels from the seafloor being below the noise floor of the system and thus they will be ignored as noise. This will tend to cause the surface noise to be considered as a bottom detection candidate.

► **Depth**

The WASSP system can acquire a seafloor profile swath 3.5 times the nadir depth but this requires the acquisition depth to be at least twice that of the maximum depth on that swath. WASSP takes this into account and when the Range Dial reads 100m the system acquires to 210m. If the acquisition depth (i.e. range dial) is in manual mode or the system fails to track down with the seafloor then you may need to manually increase the system range to allow it to re-acquire the seafloor.

► **Fish**

Occasionally a very large dense school of fish can be detected as a mountain on the seafloor. This should be easy to determine with a second pass over the area at a later time. This function also allows wrecks to show on the contour display as these are often similar in density to fish schools.

► **GPS Position**

If there is no position input, the WASSP system will not output depth data and will cease to map the seafloor.

► **Minimisation**

The seafloor tracking is affected by the Minimisation level; ensure this is set appropriately as described in the Installation Manual on page 49.

9.12 Why doesn't the seafloor line up when I go over it again?

There are several factors which can cause this to show on your WASSP display however remember that if the vessel is operating in a high sea state, your motion sensor may not be able to fully compensate for the vessel's movement:

► **GPS Time Lag**

The standard Furuno SC-50 and SC-30 Heading sensors have a **1.2 second delay** on GPS data. Ensure that any GPS delay is entered into the Sensor Tab of the Ship Setup as this will cause large errors in depth (see "Sensor" on page 47).

► **Motion Compensation**

To make good use of motion compensation we must ensure that the WASSP transducer and any motion sensors are securely mounted and do not move at all. The dynamic and static accuracy of the motion sensor effectively determines the differences you can expect when you pass over the same area again.

► **Sea State**

Motion Compensation is a complex process and makes some assumptions – the bigger the sea state and the smaller the boat the less reliable the seafloor data will be as there is more reliance on the accuracy of measurements and the input from the motion sensors.

► **Cornering**

Motion compensation is costly to do to the nth degree. Most low end motion sensors have poor performance on corners due to the centripetal acceleration forces caused by the turn affecting the delicate balance of the sensor. Thus, seafloor detections collected while the boat is turning are likely to be of lesser quality than those collected in a straight line.

► Water Temperature

The water temperature and salinity affect the sound speed and thus the angle at which the sound moves through the water column. This causes the seafloor to curve up or down as noted on page 46. If the seafloor exhibits a curve up or down on the edges, adjust the sound speed. Note: The surface water temperature will probably change during the course of a day.

► Tide Correction

Tide correction is essential for matching up overlapping swaths. If you have disabled the Tide correction (see "Tides Tab" on page 49), the swaths will rarely line up on your WASSP displays. Ensure that the ZDA sentence is being collected and sent to the WASSP Processor so it can determine the UTC time and use the correct tide compensation value.

► Transducer Offsets

The transducer, GPS and draft offsets need to be input into the WASSP ship setup configuration so that the motion-induced errors in the seafloor can be correctly compensated for.

► Roll Offset

If there is a fixed offset in the mounting of the transducer or Motion Sensor you will need to conduct a patch test to determine this error. Without this, the roll correction will not work correctly.

9.13   Why does the seafloor move if the system is motion compensated?

The acoustic views are only compensated for vessel roll to save on processing time and to avoid creating artefacts in the data. If the Sonar display is rotating with the vessel, then the roll correction is not working. Remember too that if the vessel is operating in a high sea state, your motion sensor may not be able to fully compensate for the vessel's movement.

► Check roll information is being received

Open the Sensor Data Tab of the Raw Info window and check that a roll signal is being read by the WASSP system (see "Sensor Data Tab" on page 39 for more information). You should see an orange line on this display if the roll information is being processed.

► Check that the device that you receive roll information from is on and that all your serial cables are still connected to your WASSP Processor.

► Check that the correct sensors are selected in the Ship Setup, this configuration could have been inadvertently changed.

► Check that the Roll Configuration settings have not been changed.

If the transducer has been re-installed, the **Swap Array** setting could have changed in which case you will need to invert the **Swap Roll** setting. If the roll offset is incorrect, a slight roll of the display will occur. If the Swap Roll setting is incorrect you will see a doubling of the actual vessel roll (i.e. the roll received when Roll Correct is disabled).

► Finally if the seafloor is not uniformly flat you could see rapid changes in the sonar display with each ping as the ship moves across the seafloor. As there is no heave or pitch compensation on this display it will often move up and down and if the seafloor changes angle it will also appear to roll a bit. If you are unsure, check that the seafloor remains flat on a flat piece of seafloor and remember that a vertical shift is expected if there is vessel roll, pitch and or heave. These artefacts should be mostly removed when you look at the charting displays which is corrected for the measured attitude elements.

9.14 The MODE button animates as if pinging but nothing happens. What is wrong?

The charting displays will not update without enabling the GPS information, seafloor profile information and mapping. Check your GPS is on. This can be validated by checking the Network window or Transfer Task diagnostics displays. If the seafloor line is not being traced on the Sonar display or the Mapping has been disabled, then new data will not be added to the charting database.

Increase the gain, and range. Can you see noise on the Sonar display? If not, reset the power to the BTxR, and reset the WASSP Processor and retry. If this problem persists and there are no error messages, contact your dealer. If you are getting an error message or messages, look at the relevant information for the error message in the error section of this FAQ (page 58).

Ensure that the Transducer has not been disconnected from the BTxR - both the receiver cables and the transmit cables need to be connected in order for the WASSP system to operate. If problems persist after a full system shutdown and power up then contact your dealer.

10. Troubleshooting

If the WASSP program provides no data when you transmit, check the following:

► Ensure that all cables and connections have been installed correctly. For example, TCP/IP cables, GPS, NMEA sensor, BTxR cables and so on (see "2.1 WASSP System Interconnections" on page 5 of the Installation Manual).

► Software installation and settings. See **Checking Software Installation** procedures below.

► NMEA data sentences. See Step 5 of the **Checking Software Installation** procedures below.

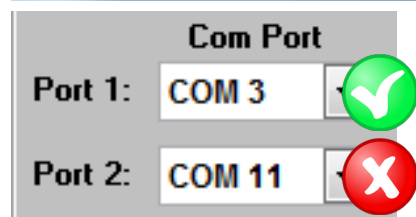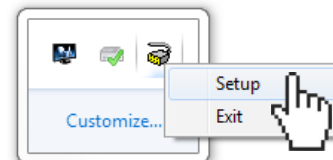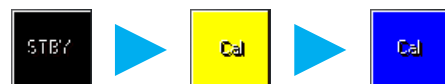|		
1	Confirm that the **Device Connection Indicator** for the **Dongle** and **BTxR** are both green.	
	If the Dongle indicator is red, plug in the WASSP Dongle and Rescan (see page 35).	
	If the BTxR indicator is red, ensure the BTxR is powered ON and connected to the correct network port of the WASSP Processor via the supplied ethernet cable (see "APPENDIX A - Specific WASSP Processor Information" on page 63 of the Installation Manual).	
2	Confirm the **Transfer Task** symbol is present in the Windows Task Bar.	
	If not in the Task Bar, run the Transfer Task. Click **Start > All Programs > WASSP > Transfer Task**.	
3	Open the **Transfer Task** then the **NMEA** tab.	
	Check that the COM ports are **correctly configured** to receive the incoming NMEA data. If the Activity LEDs are RED, there is a problem. Check that only **COM 1-4** are selected for the NMEA ports.	
4	Restart the WASSP program.	
	If the system is correctly configured and the BTxR is ON, the MODE button turns YELLOW almost immediately while performing a self calibration, and turns BLUE approximately 3 seconds later.	
5	Switch to the charting view and confirm that the vessel icon shows the vessel in the correct position.	

6

Open the **Raw Info** display from the **Utility Panel**, then the **Sensor Data** tab.

Confirm that the **Roll**, **Pitch**, **Heave** and **Heading** readings are all **active and correct**.
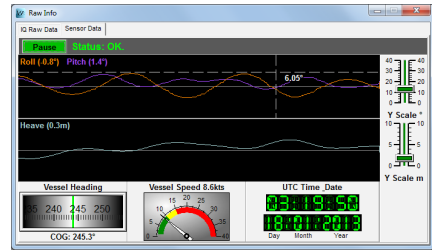
7

Click the **MODE** button to start pinging.

Confirm that the icon animates while pinging, showing a pulse moving down from the vessel.


8

Switch to the **Sonar** display.

9

The Range Control might have locked on to an incorrect depth. Adjust the **Range Control** dial so that the returned signal from the seafloor can be seen on the Sonar display.

Double-click on the range indicator to switch between automatic range and manual range.

10

On the **Main Menu**, set the **Power Level** to **Automatic**.

Double-click on the power level indicator to switch between automatic power and manual power.
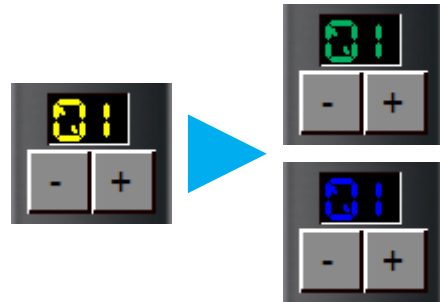
11

Cycle through each of the layouts for both the Acoustic and Charting views, and confirm that they all display and draw correctly.

THIS PAGE HAS BEEN LEFT INTENTIONALLY BLANK.

WMB-X230 Technical Specifications

Dimensions

BTxR:	Height: 180 mm Width: 221.5 mm Length: 535 mm	**160kHz (WMB-3230) Transducer**:	Height: 94 ± 2 mm Width: 164 ± 2 mm Length: 327 ± 2 mm	**80kHz (WMB-5230) Transducer**:	Height: 130 ± 1 mm Width: 337 ± 1 mm Length: 527 ± 1 mm	

WASSP Processor

Serial Ports:	4 - Motion / Position Sensors
Ethernet Ports:	2 - BTxR / Secondary Network
Displays:	1 or 2 - Owner supplied
	Minimum Resolution: 1024x768 Recommended Resolution: 1920x1080
Inputs:	USB Keyboard + Mouse / Trackball
Storage:	SSD + HDD (System Dependent)

BTxR

Output power:	14 power settings from 40 W to 1.5 kW.
Ping rate:	Automatic, determined by depth.
Frequency:	160 kHz (WMB-3230) 80kHz (WMB-5230)
Beam width:	112 beams at 1.07º over 120º port/ starboard swath, Transmit 4º fore/aft, Receive 10º fore/aft.
Maximum depth:	

Display

Display Range:	5 - 400m (WMB-3230) 5 - 800m (WMB-5230)
Display Modes:	Sonar view Single / Triple beam view Sidescan view 2D Charting view 3D Charting view
Display Layouts:	For both Acoustic and Charting: Single screen Vertical split screen Horizontal split screen 3-screen
Advance speed:	Slow – fast (5 speeds).

Interface

Inputs:	TSS1, PSXN, PASHR, HDT, HDG, VTG, RMC, GGA, GGL, ZDA, PFEC-Gpatt, PFEC-Gphve.
	Key Pulse
Outputs:	Olex
	Sodena
	MaxSea (pending)
	Key Pulse
Recording:	Realtime bathymetry mapping
	Raw Data
	XYZ (ASCII)

Power Supply

BTxR:	24 V DC, 100 W.
WASSP Processor:	6 - 30 V DC, ship's supply.

Environmental

Temperature:	0 to 40 ºC.
Relative humidity:	5 to 95% non condensing.
Vibration:	IEC 60945, protected equipment.

Weight

BTxR:	10 kg
Transducer:	
WMB-3230:	12 kg incl. 10m cable
WMB-5230:	39 kg incl. 20m cable
Processor:	5.7 kg

Equipment List

Standard:	See "APPENDIX B - Part Numbers" on page 64 of the Installation Manual for a full list.
Transducer:	Mounting options for through hull or pole mounted.
BTxR	
WASSP Processor	
Glands:	Options for alloy, steel or plastic.
Options:	See "APPENDIX B - Part Numbers" on page 64 of the Installation Manual for a full list.

Specifications subject to change without notice.

WASSP Ltd.

65 Gaunt Street
Westhaven
Auckland 1010
NEW ZEALAND

PO Box 5849
Auckland 1141

Phone: +64 9 373 5595
Fax: +64 9 379 5655
Email: wassp@wassp.com

JAS-ANZ

www.wassp.com