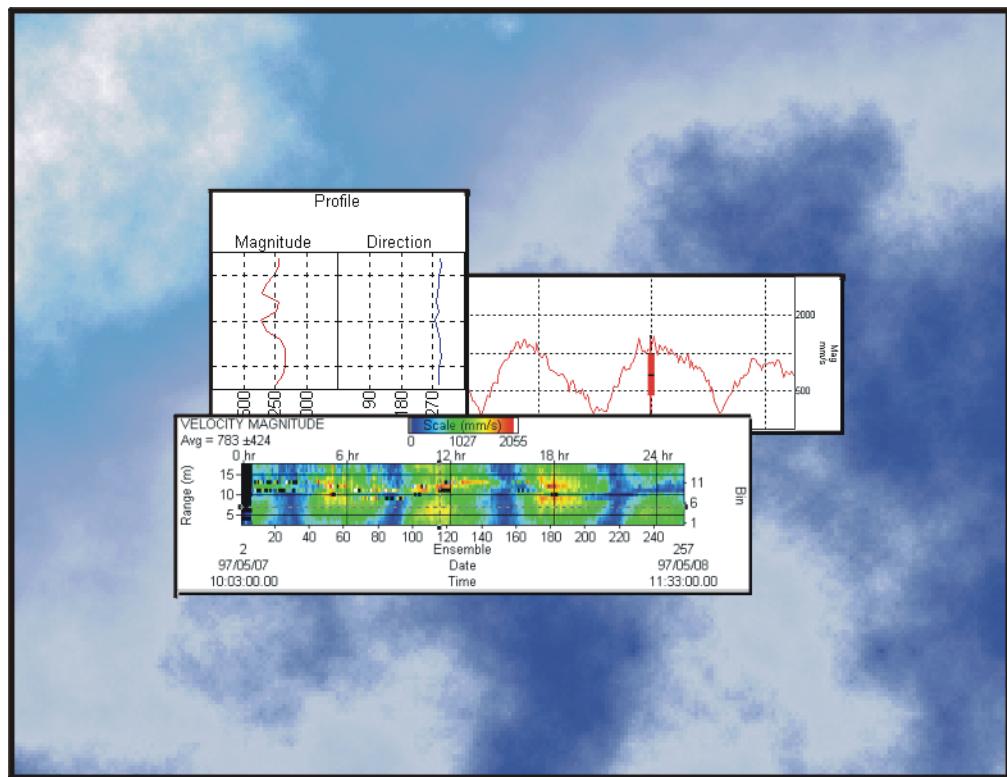


# WinADCP

# User's Guide



**RD Instruments**  
Acoustic Doppler Solutions

P/N 957-6158-00 (January 2001)



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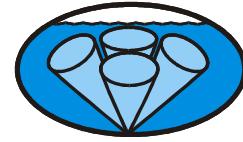
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## **NOTES**



**RD Instruments**  
*Acoustic Doppler Solutions*

# WinADCP User's Guide

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## 1 Introduction

This guide is an overview on using the *WinADCP* software provided with your system.



**NOTE.** This guide covers version 1.10 or earlier.

### 1.1 System Requirements

*WinADCP* requires the following:

- Windows 95®, Windows 98®, or Windows NT 4.0® with Service Pack 4 installed
- Pentium class PC 233 MHz (350 MHz or higher recommended)
- 32 megabytes of RAM (64 MB RAM recommended)
- 6 MB Free Disk Space plus space for data files (A large, fast hard disk is recommended)
- One Serial Port (two or more High Speed UART Serial Port recommended)
- Minimum display resolution of 800 x 600, 256 color (1024 x 768 recommended)
- CD-ROM Drive
- Mouse or other pointing device

## 1.2 Software Installation

To install the software, do the following.

- a. Insert the compact disc into your CD-ROM drive and then follow the browser instructions on your screen. If the browser does not appear, complete Steps "b" through "d."
- b. Click the **Start** button, and then click **Run**.
- c. Type **<drive>:launch**. For example, if your CD-ROM drive is drive D, type **d:launch**.
- d. Follow the browser instructions on your screen.

Once, installed, you will have a shortcut added to your Windows® **Start** menu. The **Winadcp** shortcut will start *WinADCP*.



**NOTE.** The default directory for WinADCP installation is C:\program files\RD Instruments\Winadcp.

## 2 Using WinADCP

*WinADCP* is a software package for use with RDI Acoustic Doppler Current Profilers. This software package supports both the Narrowband and the Broadband/Workhorse Binary Output Data Formats.

In general, *WinADCP* gives the user a visual sense of the entire set of data. It also allows the user to zoom in on a portion of the data for closer analysis.

### 2.1 Opening Data Files

You can open BroadBand, NarrowBand, or WorkHorse raw binary data files. Binary data files that have segmented consecutive file names (i.e. DEMO001r.000, DEMO001r.001, DEMO001r.002) will be read in as one file if **MultiFile** is enabled on the **File** menu.

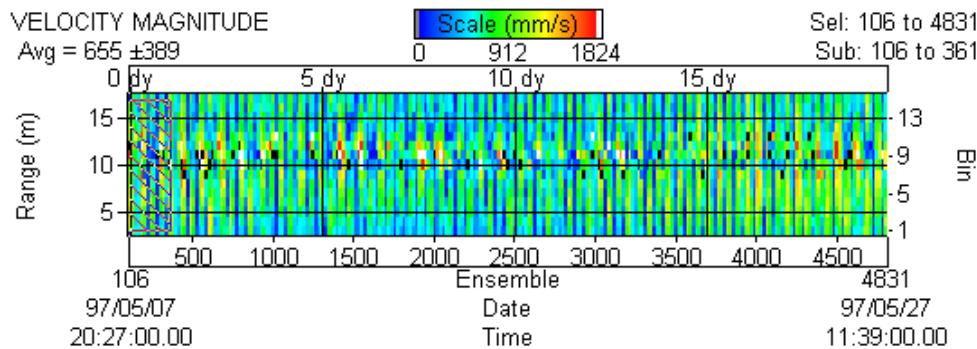
- a. On the **File** menu, check that **MultiFile** is checked. Click **Open**.
- b. Select the data file to be opened.
- c. Click **Open**.

### 2.2 Whole Set

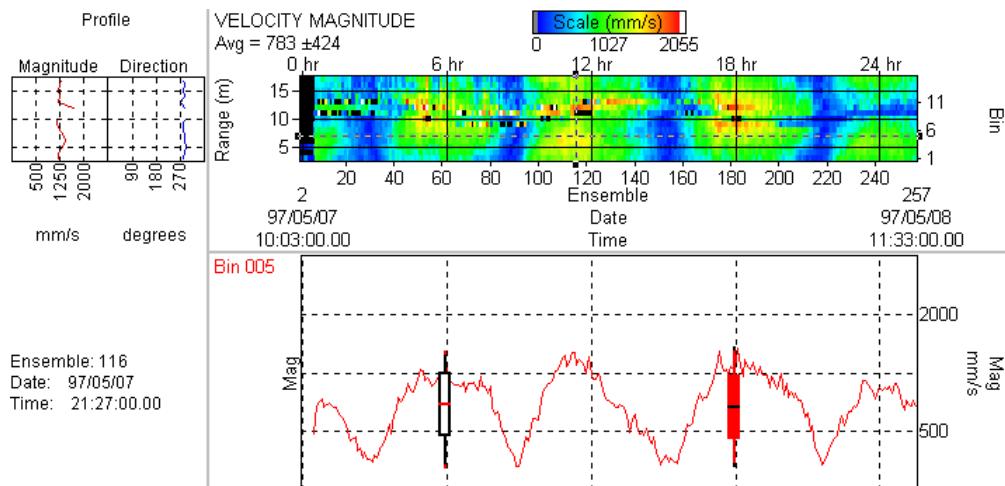
*WinADCP* has two main graphic display forms. The form located in the upper right portion of the screen is called the **Whole Set**. The form located across the bottom half of the display is called the **Sub Set**. Each of these forms displays a portion of the entire data set as a color contour. In addition

to the color contour, **Sub Set** displays the user selected **Profile**, **Series**, and **Ancillary** data.

The **Whole Set** form is displayed in the upper right-hand portion of *WinADCP*. When a file containing a Binary Output Data Format is opened, the entire set of the selected data type is displayed as a color contour located within the **Whole Set** form.



**Figure 1. Whole Set**



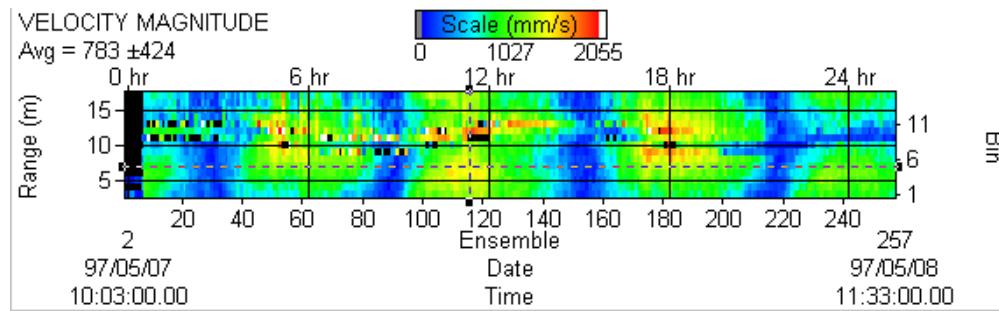
**Figure 2. Sub Set**

## 2.3 Selected Set

By holding down the **Spacebar** and then pressing the **Left** mouse button, the user can drag the mouse to select a portion of the entire data set. When the mouse button is released, the selected portion of the **Whole Set** is marked by a blinking box outline. The blinking box outlines a set of data called the **Selected Set**. A second blinking box is also created when the mouse is released. This second box is striped or solid depending on your graphics card. The solid blinking box marks a region of data called the **Sub**

**Set.** The width of the **Sub Set** box may not be as wide as the **Selected Set** box. The width of the **Sub Set** is dependent upon the **Options**, **Ensembles** setting selected from the main menu.

[Figure 1, page 3](#) shows an example of the **Whole Set** contour display. The **Sub Set** contour display is identical except it does not show the **Selected** and **Sub Set** ensemble numbers (located in the upper right corner of the chart).

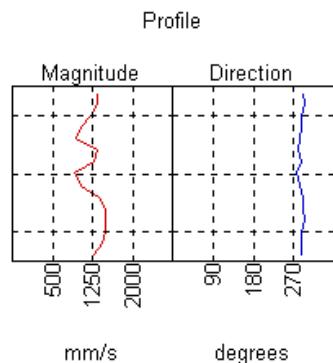


**Figure 3. Selected Set**

## 2.4 Profile Chart

The Profile chart, located on the left side of the **Sub Set** form, displays a user selected ensemble in several two dimensional (2D) charts. Each of these “sub charts” contains a different data type taken from the ensemble. The user can select the profile ensemble by double clicking the left mouse button just above or just below the **Sub Set** color contour.

 **NOTE.** Use the **left** and **right** keyboard arrows to scroll through the ensembles. Use the **Animate** menu to automatically scroll through the data file. To quickly select an ensemble, double-click a point just above or below the **Sub Set** color contour plot.



**Figure 4. Profile Chart**

## 2.5 Series Chart

The Series and Ancillary chart, located in the lower left-hand portion of **Sub Set**, displays user selected bins of user selected data types. In addition, the user may select any of the ancillary data types for display in this chart.

The candle chart shows the statistical information about the series chart. Use the **Options, Chart Options** menu to select the **Averaging Interval**. The candle chart will be centered on the averaging interval.

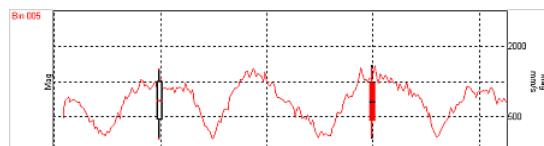
- The red line is the mean
- The middle rectangle shape is the Standard Deviation
- The long line shows the minimum and maximum values



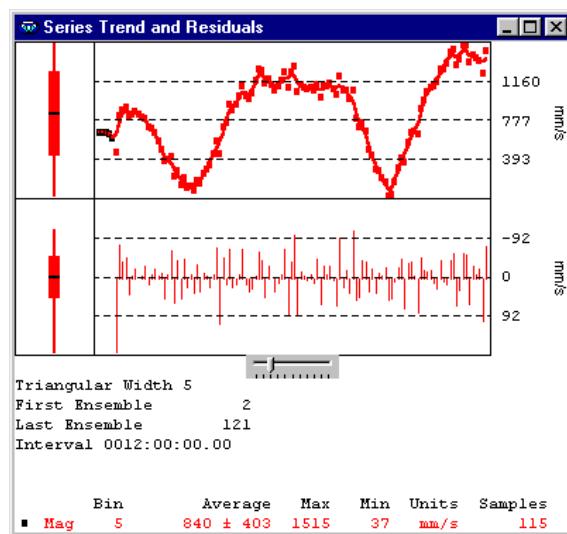
**NOTE.** Double-click the candle chart to display the Series Trend and Residuals chart.



**NOTE.** Use the **up** and **down** keyboard arrows to scroll through the bins. Use the **Animate** menu to automatically scroll through the data file. To quickly select multiple bins, double-click a point just to the left or right of the color contour plot on the **Sub Set** color contour plot. Double clicking the same point will unselect the bin.



**Figure 5. Series and Ancillary Chart**



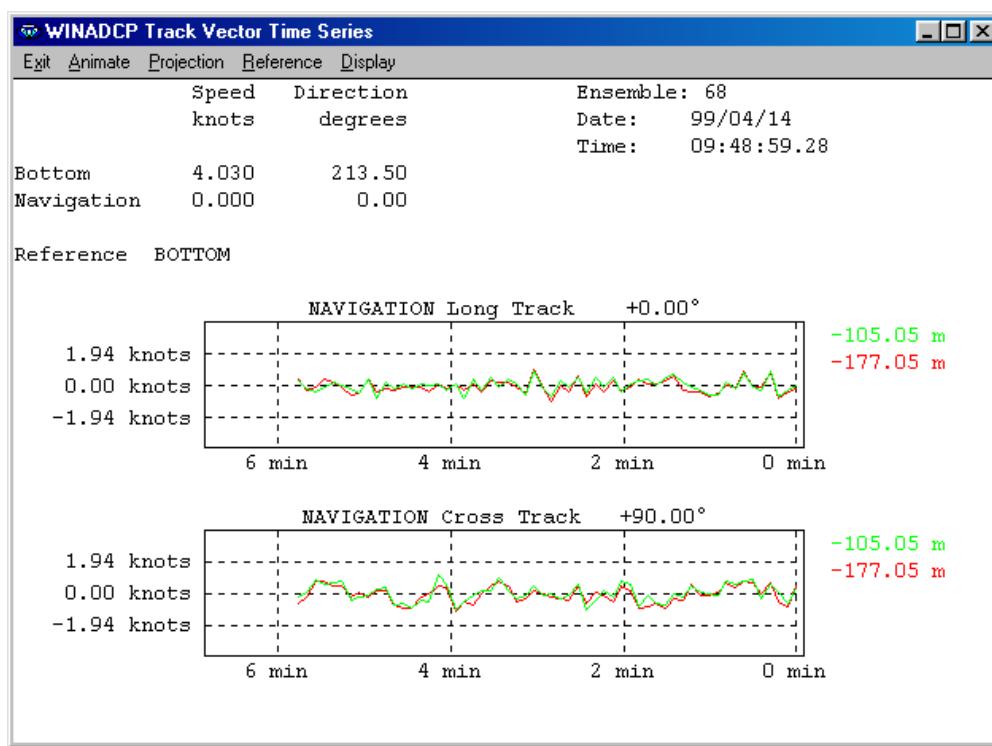
**Figure 6. Series Trend and Residuals Chart**

## 2.6 Track Vector Time Series

The **Track Vector Time Series** window displays two current vectors: one along a selected track and the other orthogonal to it (90 degrees). The user can select three different tracks: **Navigation**, **Bottom**, and **Projected**.

**Navigation** and **Bottom** use actual data contained within the ADCP ensemble. The **Projected** angle is input by the user.

An application where this display is useful is in cable laying. Ocean currents across the path of a ship tend to pull a cable off to the side. Information about current magnitude and direction relative to the ship track helps to guide the ship for better cable placement.



**Figure 7. Track Vector Time Series**

The **Track Vector Time Series** window has its' own menu.

**Exit** – Exits the **Track Vector Time Series** window. To display the window again, click **Window, Track Vector**.

**Animate** – Choose **Go** to animate the chart. **Stop** will stop the animation and **Rewind** will rewind the chart to the beginning of the file.

**Projection** – Choose between **Bottom Track**, **Navigation Track**, or **Manual**. If you select **Manual**, you can select your own projection angle.

**Reference** – Clicking **Reference** will display the **Chart Options** menu, **Processing** tab. Choose a reference from the list.

**Display** – Clicking **Display** will let you choose the **Units**, and **Font** for the display. Selecting **Time Origin on Left** will toggle the time origin being displayed on the right, to the left side of the display.

Clicking anywhere on the **Track Vector Time Series** display will display the **Chart Options** menu, **Series** tab. Choose the bins to display by selecting the bin box on the list.

**NOTE.** The **Animation** and **Reference** menus are disabled on the **Track Vector** window when the **Monitor** mode is enabled. All other menus are available.

 Negative range numbers are shown when the system is downward facing (bins are below transducer). If the system is upward facing the range numbers are positive.

## 2.7 Saving Files

The **Selected** and **Sub Set** plots may be saved to new data files as needed.

### 2.7.1 Save a Sub Set File

On the **Whole Set** color contour plot, use the **Zoom** feature (see “[Selected Set](#),” [page 3](#)) to select the portion of the **Whole Set** to be displayed in the **Sub Set** color contour plot. You can use the zoom feature on the **Sub Set** color contour plot to further zoom in on the data.

- On the **File** menu, click **Save Sub Set**.
- Give the file a unique name. *WinADCP* does not add an extension type to the file. To organize data files, you may want to add the \*.000 file extension.
- Click **Save**.



**CAUTION.** If the file name already exists as a closed data file, then the file will be written over. You will be prompted if it is OK to overwrite the file.

**NOTE.** If the file name you select is the *same* as the currently open file then the **Sub Set** of data is not written to the file.

The **Sub Set** has a limit of 8,192 ensembles.



If the Binary Data File that was opened had segmented consecutive file names (i.e. DEMO001r.000, DEMO001r.001, DEMO001r.002) when you save the **Sub Set**, it will be saved as one file. Make sure you use a unique name to avoid overwriting a data file.

The format of the **Sub Set** file is the same as the raw ADCP Binary Data File format. **Sub Set** files may be opened with other RDI Software.

## 2.7.2 Save the Selected Set

On the **Whole Set** color contour plot, use the **Zoom** feature to select the **Selected Set**.

- a. On the **File** menu, click **Save Selected Set**.
- b. Give the file a unique name. *WinADCP* does not add an extension type to the file. To organize data files, you may want to add the \*.000 file extension.
- c. Click **Save**.



**CAUTION.** If the file name already exists as a closed data file, then the file will be written over. You will be prompted if it is OK to overwrite the file.



**NOTE.** If the file name you select is the *same* as the currently open file then the **Sub Set** of data is not written to the file.

The Selected Set does not have a limit on the number of ensembles.

If the Binary Data File that was opened had segmented consecutive file names (i.e. DEMO001r.000, DEMO001r.001, DEMO001r.002) when you save the Selected Set, it will be saved as one file. Make sure you use a unique name to avoid overwriting a data file.

The format of the Selected Set file is the same as the raw ADCP Binary Data File format. Selected Set files may be opened with other RDI Software.

## 2.8 Printing Charts

Charts may be copied to the Windows® clipboard so that they may be pasted or printed in other programs.

- a. On the **Edit** menu, click **Copy**.
- b. Select either the **Whole Set** or the **Sub Set**.
- c. The chart will be placed on the Windows clipboard.
- d. Open the graphic program (or Word) and select **Edit, Paste**.
- e. Use the graphic program (or Word) to print the chart.



**NOTE.** If you use the **Edit, MSPAINT** menu the **Whole Set** or **Sub Set** will be placed as a Bit Map image on the Windows clipboard and will open the Microsoft Paint program. In Paint, select **Edit, Paste** to display the Bit Map.

The shortcut to the Microsoft Paint program expects the program to be in the default directory C:\Windows.

## 2.9 Flip

Selecting **Flip** from the **Edit** menu causes the file to be re-read with the orientation bit inverted. In other words, an upward facing data set appears as a downward set when **Flip** is clicked.

## 2.10 File Details

On the **Utilities** menu, click **File Details**. Select the data file to be examined. The file utility window will show you everything there is to know about the file contents.

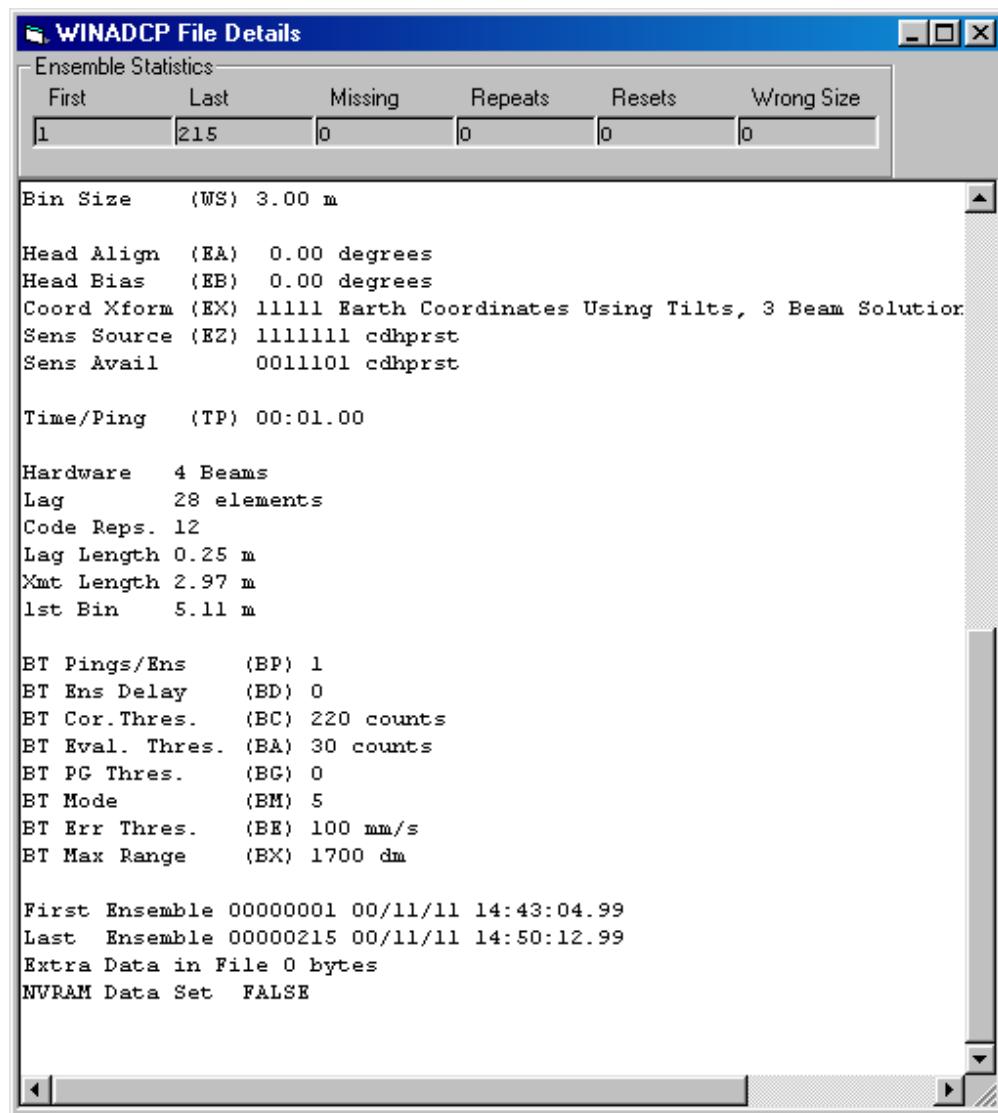


Figure 8. File Details

## 3 Chart Options

The **Options** menu controls how the displays are shown. Selecting **Chart Options** under the **Options** Menu brings up the **Chart Options** dialog box. There are five tabs on the dialog box:

- Contour Tab
- Profile Tab
- Series Tab
- Ancillary Tab
- Processing Tab

Six buttons are positioned along the bottom of the **Chart Options** dialog box.

**Default** - restores each of the four options pages to factory selected ones.

**Load** - reads in, from a selected file, a previously saved set of option pages.

**Save** - writes out, to a named file, the contents of the option pages.

**OK** - updates the screen to the new setting(s) and close the options dialog.

**Cancel** - close the options dialog.

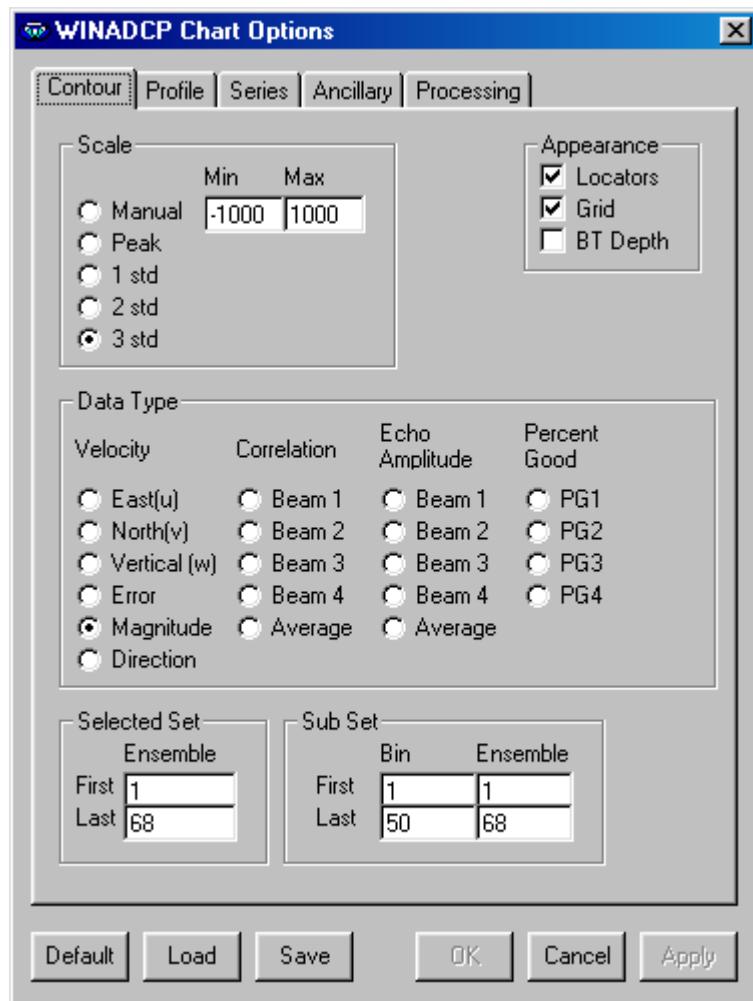
**Apply** - update the screen to the new setting(s) but **does not** close the options dialog.



**NOTE. Max Ensembles**, under the **Options** menu, is used to set the maximum number of ensembles shown in both the **Sub Set Color Contour** and **Series** charts.

### 3.1 Contour Tab

The **Contour** tab has five control groups for controlling the **Whole Set**, **Sub Set** and color contour charts.



**Figure 9. Contour Tab**

**Scale** - Five choices for selecting the maximum and minimum values of the color scale.

- **Manual** - user entry of values.
- **Peak** - Automatic setting to the max/min values contained in the data set.
- **1 std** - Automatic setting to data mean plus and minus ONE standard deviation.
- **2 std** - same as above but TWO standard deviations.

- **3 std** - same as above but THREE standard deviations.

**Appearance** - Three check boxes.

- **Locators** - turn on/off the blinking boxes of the **Whole Set** color contour.
- **Grid** - turn on/off the grid that overlays both color contour charts.
- **BT Depth** – When checked and Bottom Track depth data is available, a bottom contour line is drawn on top of the color contour plot. If beam 1 through 4 RSSI or correlation is selected for display, the beams depth is shown. Any other selection will show the contour line as the average of the four beams.

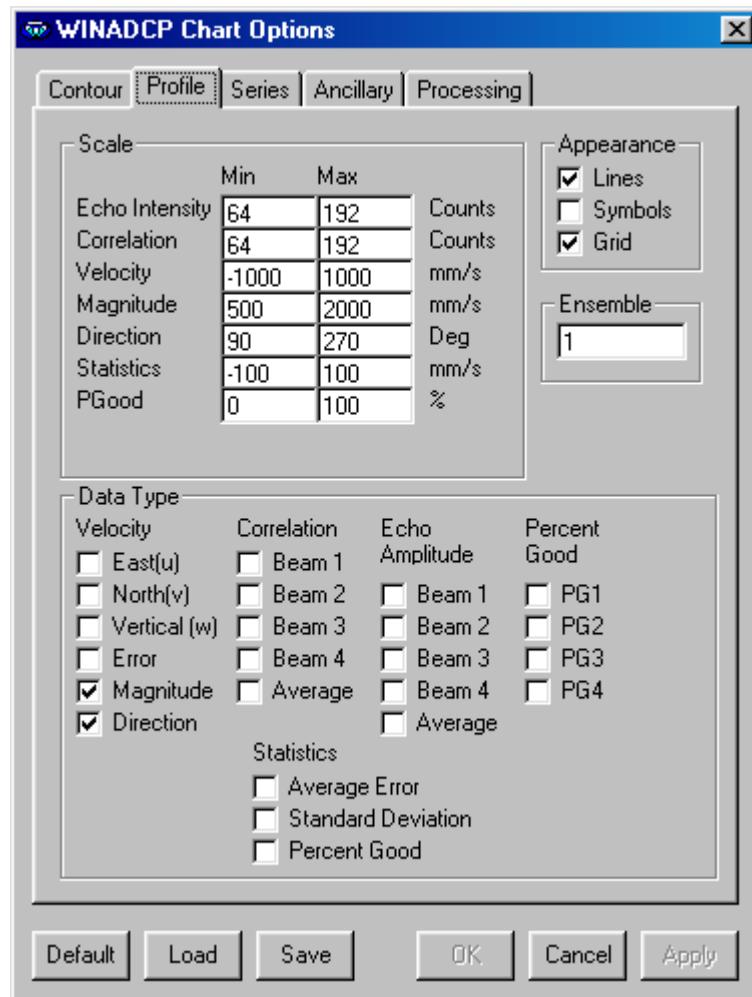
**Data Type** - Used to select one of the data types for display.

**Selected Set** - Used to select the first and last ensembles of the Selected Set.

**Sub Set** - Used to select the first and last ensembles of the **Sub Set**.

## 3.2 Profile Tab

The **Profile** tab has four control groups for controlling the Profile chart.



**Figure 10. Profile Tab**

**Scale** - Manual selection of the maximum and minimum values for each data type.

**Appearance** - Three check boxes.

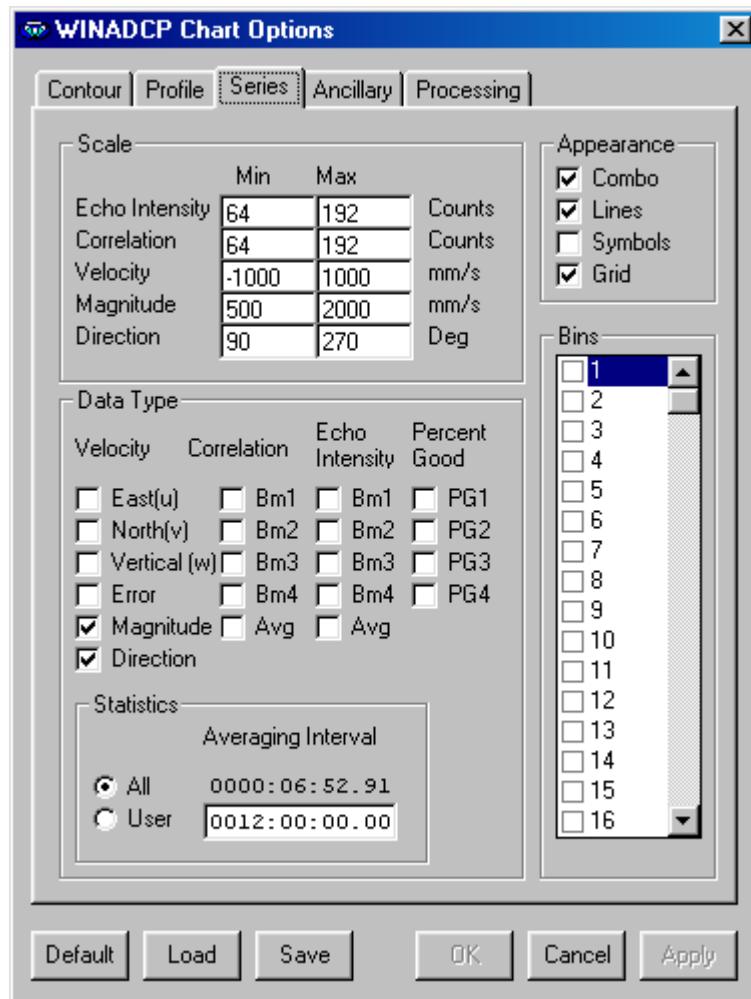
- **Lines** - Turn on/off the connection of lines between data points.
- **Symbols** - Turn on/off a symbol at each data point location.
- **Grid** - Turn on/off the grids that overlay the profile charts.

**Ensemble** - Used to select the current ensemble.

**Data Type** - Used to select several of the data types for display.

### 3.3 Series Tab

The Series tab has five control groups for controlling the Series chart.



**Figure 11. Series Tab**

**Scale** - Manual selection of the maximum and minimum values for each data type.

**Appearance** - Four check boxes.

- **Combo** - When selected each bin of a data type is plotted on the same chart.
- **Lines** - Turn on/off the connection of lines between data points.
- **Symbols** - Turn on/off a symbol at each data point location.
- **Grid** - Turn on/off the grids that overlay the series charts.

**Data Type** - Selects several of the data type for display.

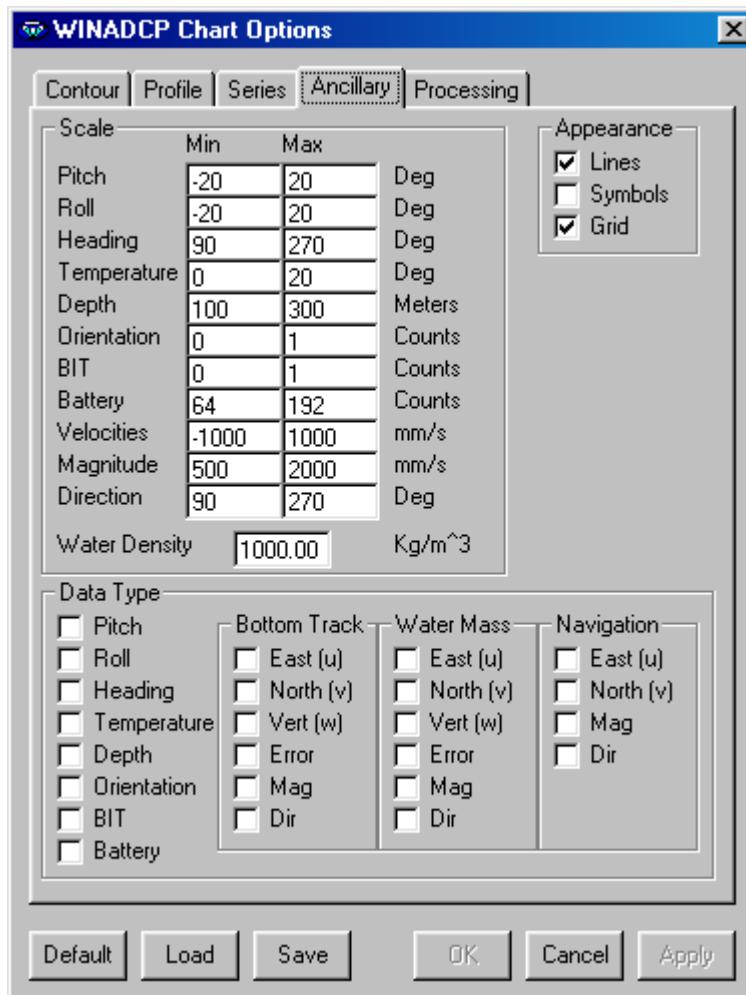
**Statistics** - Selects the time interval over which statistics are calculated.

- **All** - The total time of the **Sub Set** data.
- **User** - Used when several statistic sets over the **Sub Set** interval are desired.

**Bins** - Selects which bin to display.

## 3.4 Ancillary Tab

The Ancillary tab has three control groups for controlling the Ancillary chart.



**Figure 12. Ancillary Tab**

**Scale** - Manual selection of the maximum and minimum values for each data type.

**Appearance** - Three check boxes.

- Lines - Turn on/off the connection of lines between data points.
- Symbols - Turn on/off a symbol at each data point location.
- Grid - Turn on/off the grids that overlay the ancillary charts.

**Data Type** - Selects several of the data type for display.



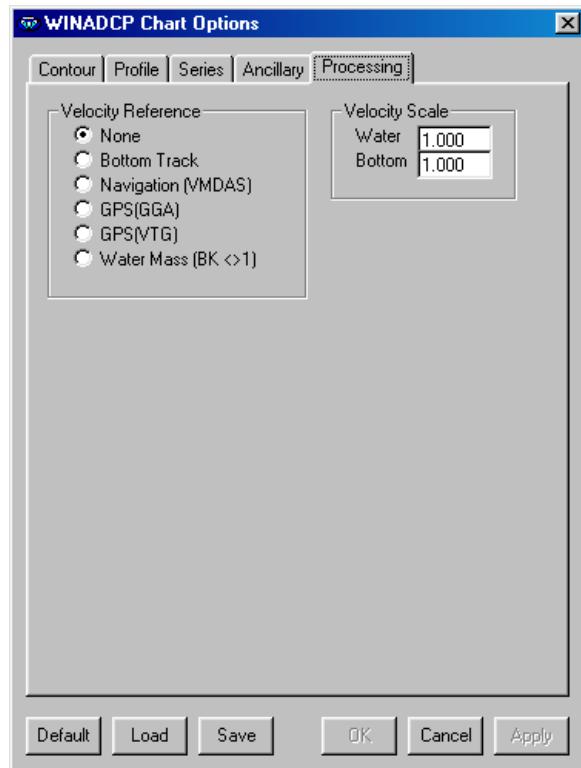
**NOTE.** Water density is used to convert pressure to depth, if the pressure data is available.

## 3.5 Processing Tab

The Processing tab allows the selection of a velocity reference; **None**, **Bottom Track**, or **Navigation**.



**NOTE.** The Navigation is *VmDas* format.



**Figure 13. Processing Tab**

## 4 Exporting Data

Clicking the main menu item **Export** brings up the *WinADCP Export Options* dialog box. There are three styles of export: **Contour**, **Profile**, and **Series/Ancillary**.

The MAT file output has a MatLab compatible binary format. From MatLab type **load filename.mat** then type **who**. The Column = Bin and Row = Ensemble. A list of variables for each output format is shown.

### 4.1 Contour

Exporting contour data allows the selection of one data type (**Velocity**, **Magnitude**, **Amplitude**, **Correlation**, and **Percent Good**), the first/last ensembles, the first/last bins, and the file format.

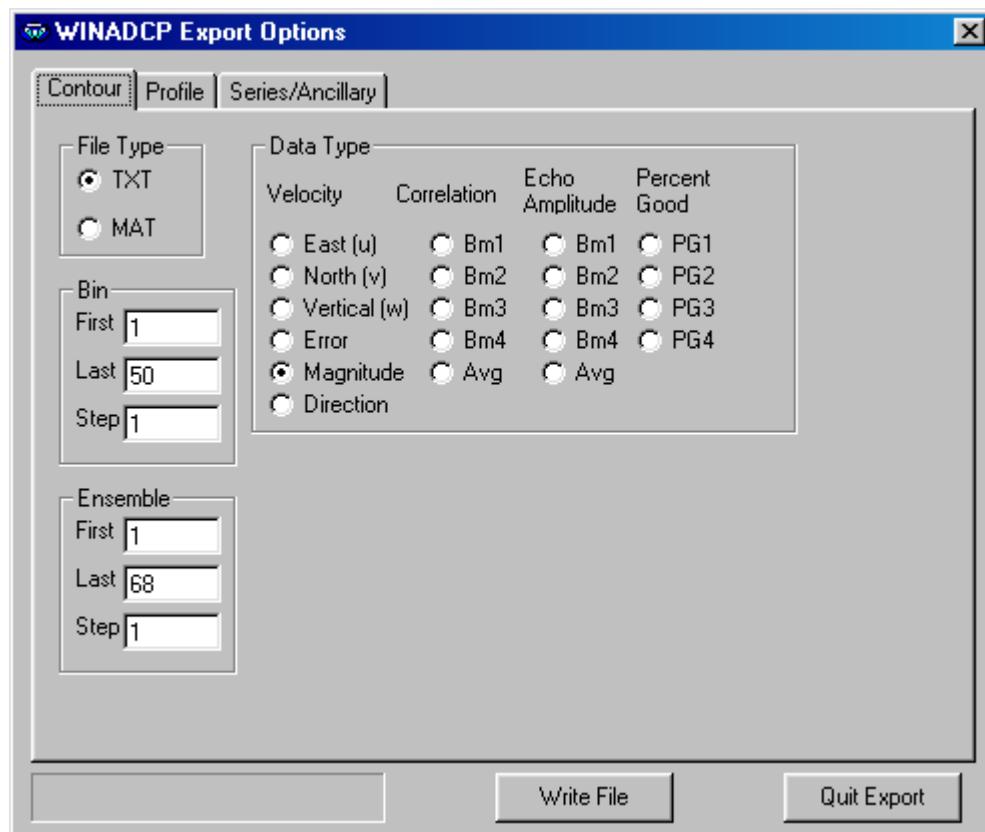


Figure 14. Export Data - Contour

## 4.2 Profile

Exporting Profile data allows the selection of many data types, one ensemble, the first/last bins, and the file format.

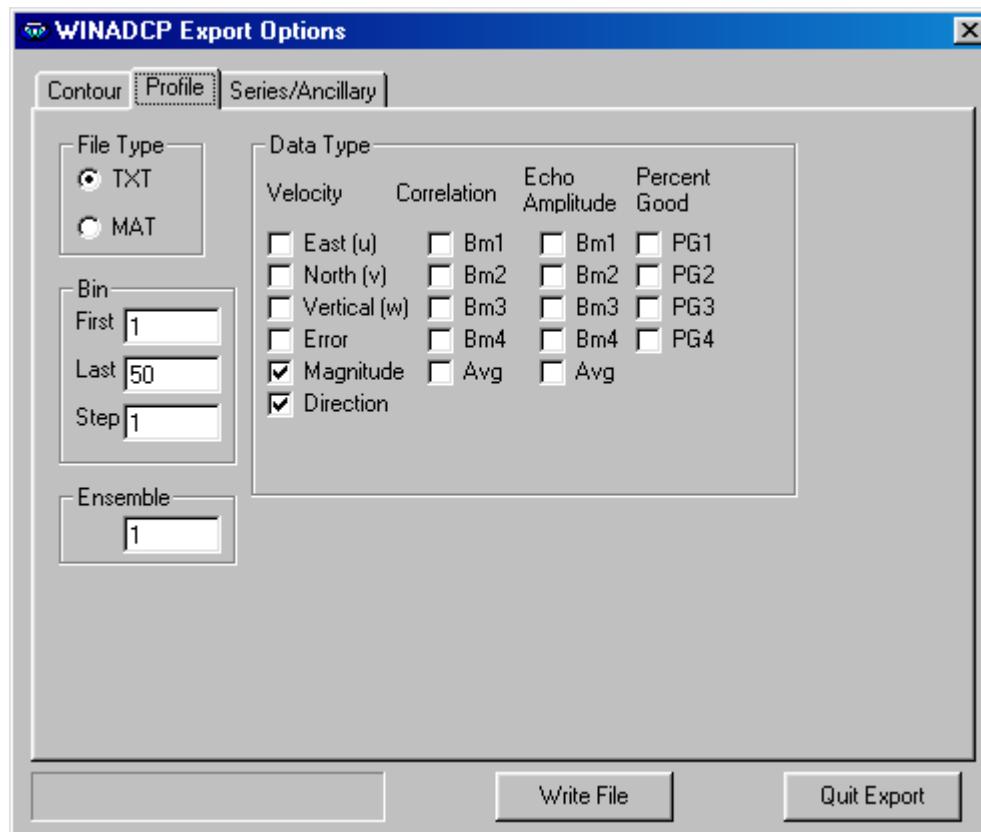


Figure 15. Export Data - Profile

## 4.3 Series/Ancillary

Exporting Series/Ancillary data allows the selection of many data types, the first/last ensembles, the first/last bins (of the series data), and the file format.

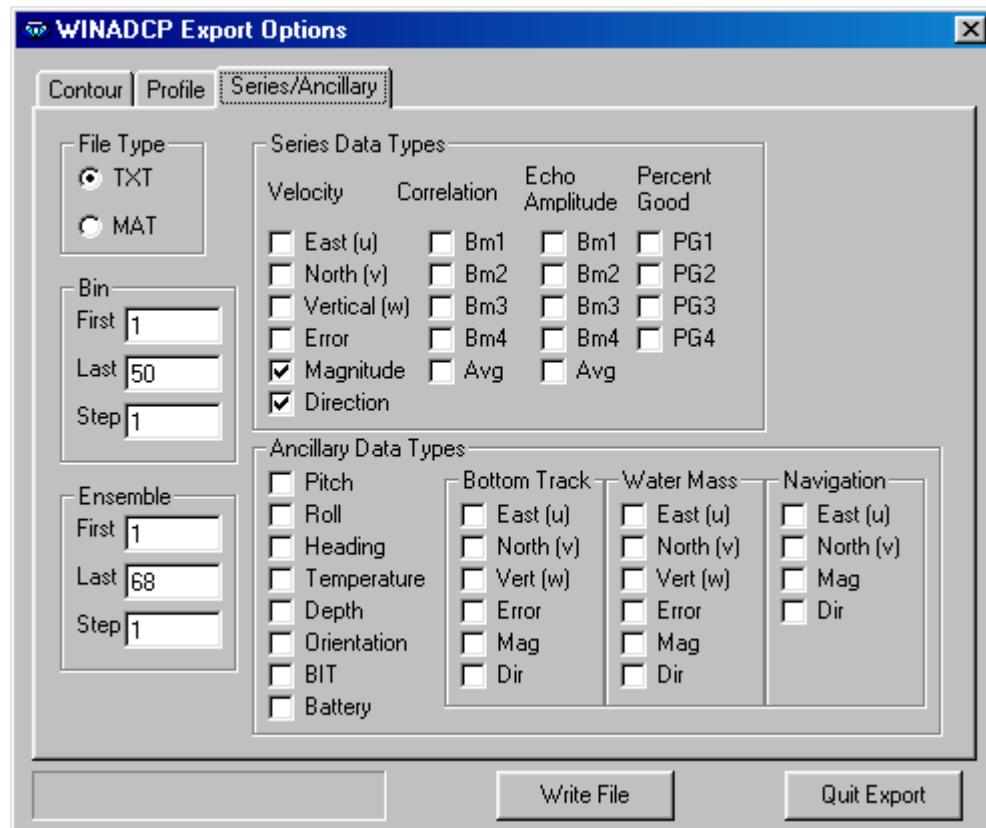


Figure 16. Export Data – Series/Ancillary

## 5 Monitor Mode

*WinADCP* has the ability to automatically update the reading of a file as real-time data collection is occurring. When the file size increases, (due to real-time data collection in another program such as *VmDas*) **Monitor** will automatically reread the file at selected intervals and display the contents. When **Monitor** is enabled and the file size is changing, all menu items except **Monitor** will be unavailable. You can change the interval by clicking **Monitor, Interval**. Enter the monitor interval in seconds.

## **NOTES**