

PANDA-ADCP-600K

Underway Survey Manual



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1. Equipment Installation and Precautions

1.1 During equipment installation, align the forward mark on the bottom of the transducer with the ship's bow direction.



Figure 1 Forward Mark

1.2 Immersion depth: below 1 meter to avoid turbulence and bubble interference.

2. VccDisp Software Operation

2.1. Run the program, select model ADCP-600K, and establish connection with the ADCP according to the corresponding COM port and the baud rate set in the device.

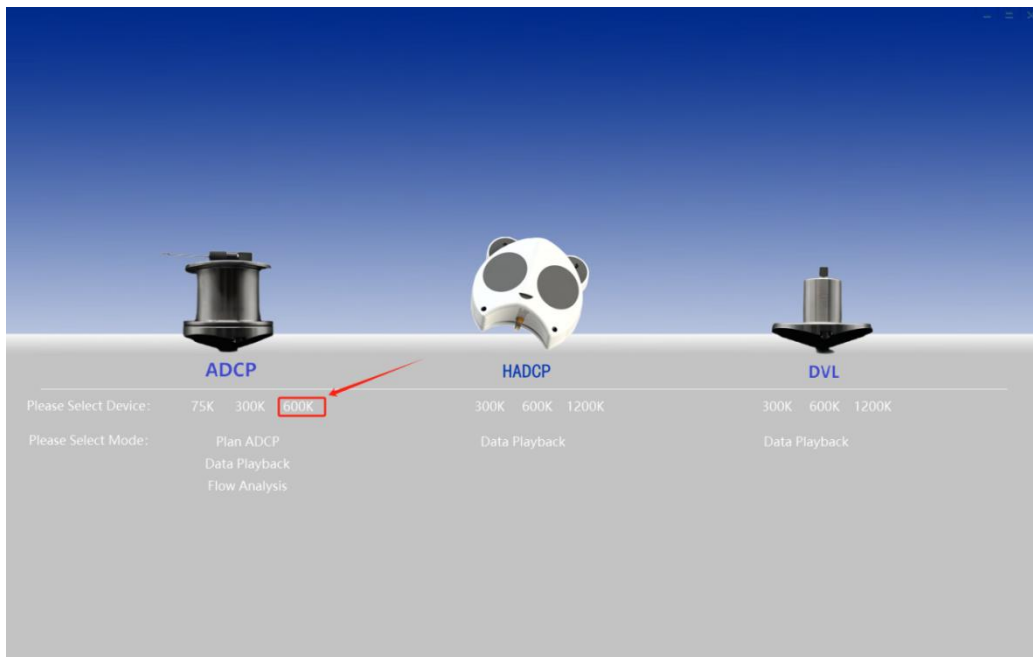


Figure 2: Launch the software and select the 600K model

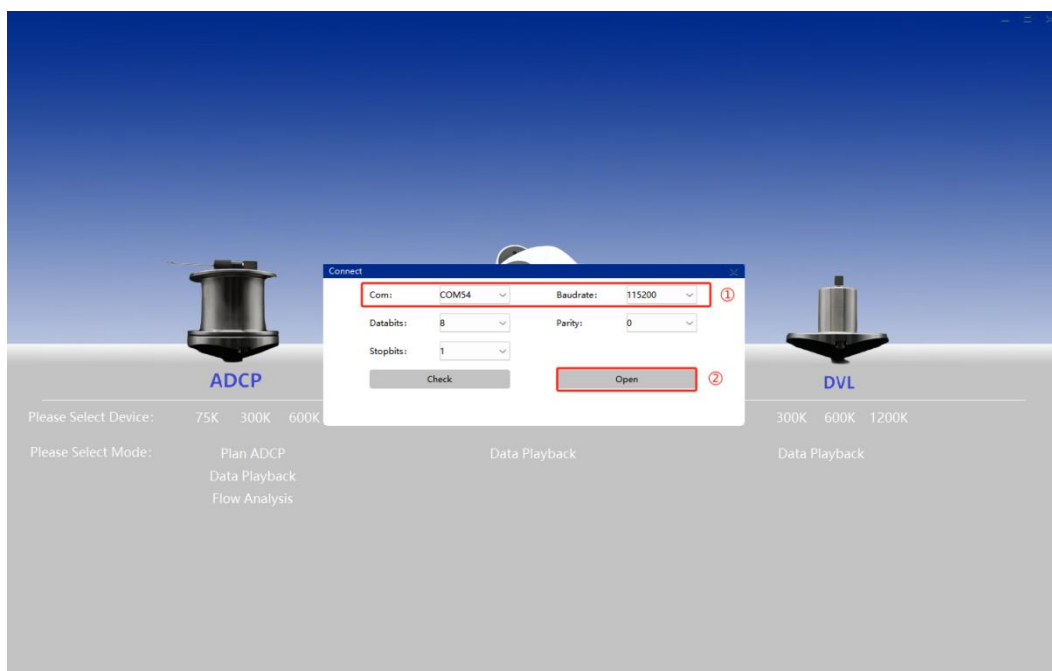


Figure 3: Select Interface and Baud Rate

2.2. Query device parameters and test communication: Verify whether the device parameter response codes are returned normally.

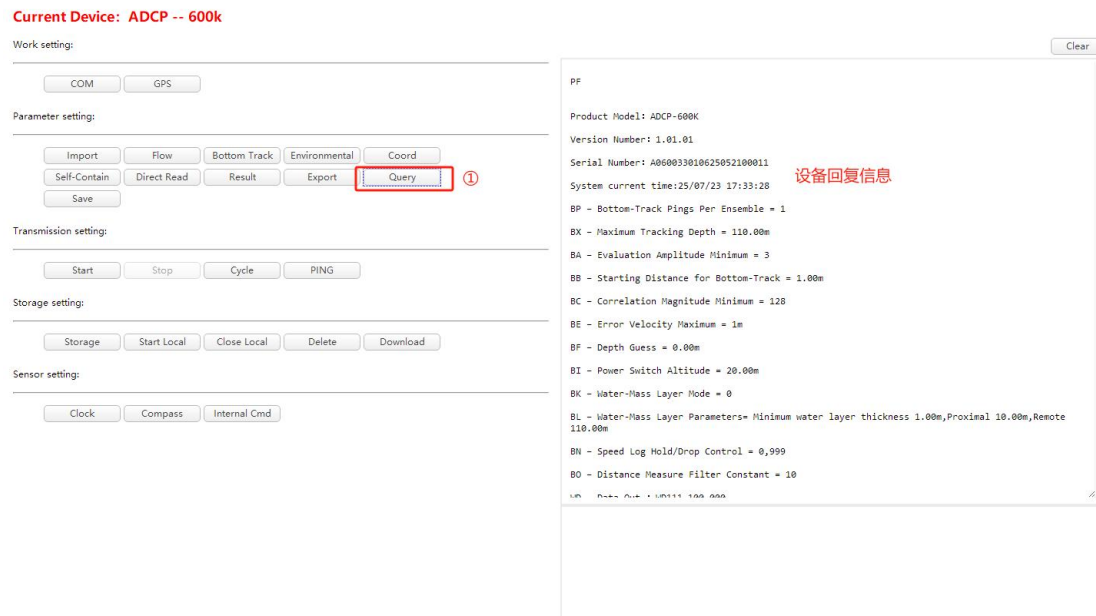


Figure 4: Query Device Parameters

2.3. Parameter Configuration:

Set the heading correction value (EA) in environmental parameters to 45 ° (4500, unit: 0.01 °);

set ping interval (TP) to 1 second; set water ping parameter (WP) to 1;

set working cycle (TB) to 1 second;

for coordinate system selection (EX), configure beam coordinate system with attitude data disabled, three-beam solution disabled, and flow layer mapping off;

set bottom ping (BP) to 1, then save and verify all parameters.

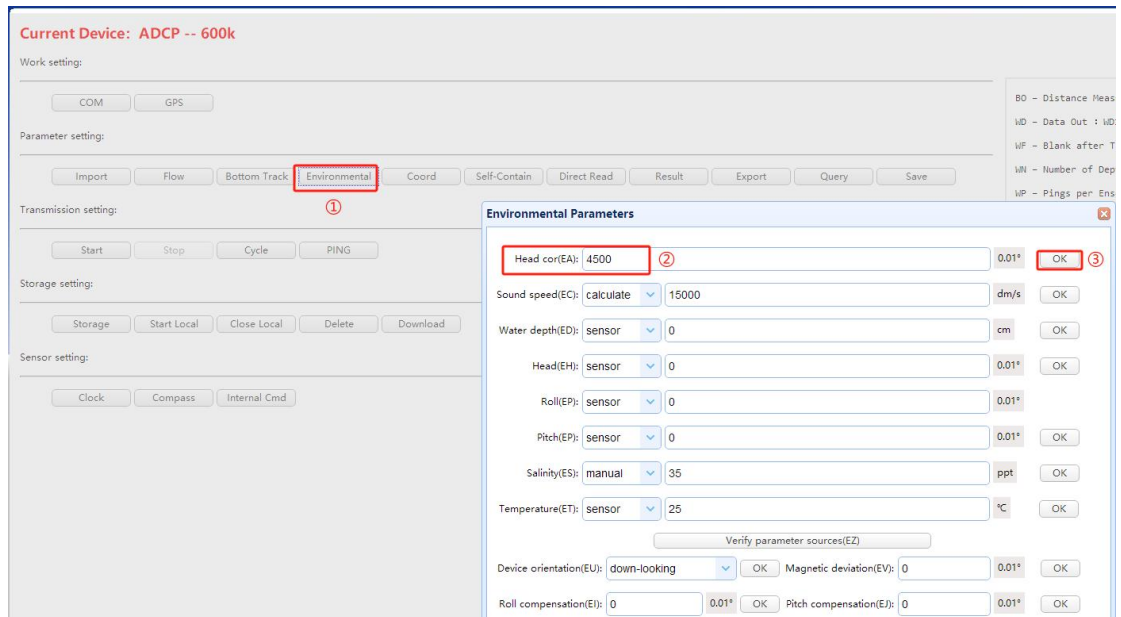


Figure 5: Setting EA Value to 45°

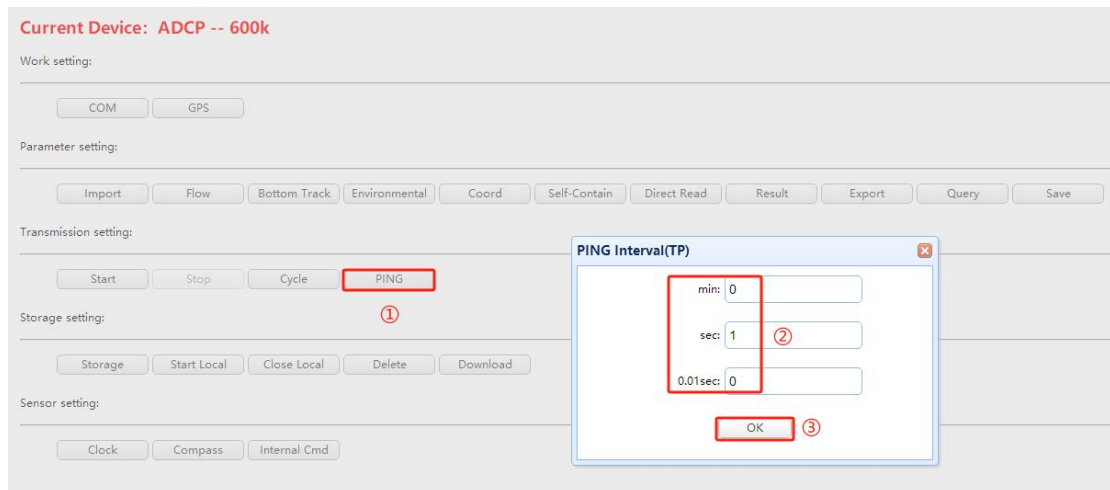


Figure 6: Setting the Ping Interval (TP) to 1 Second

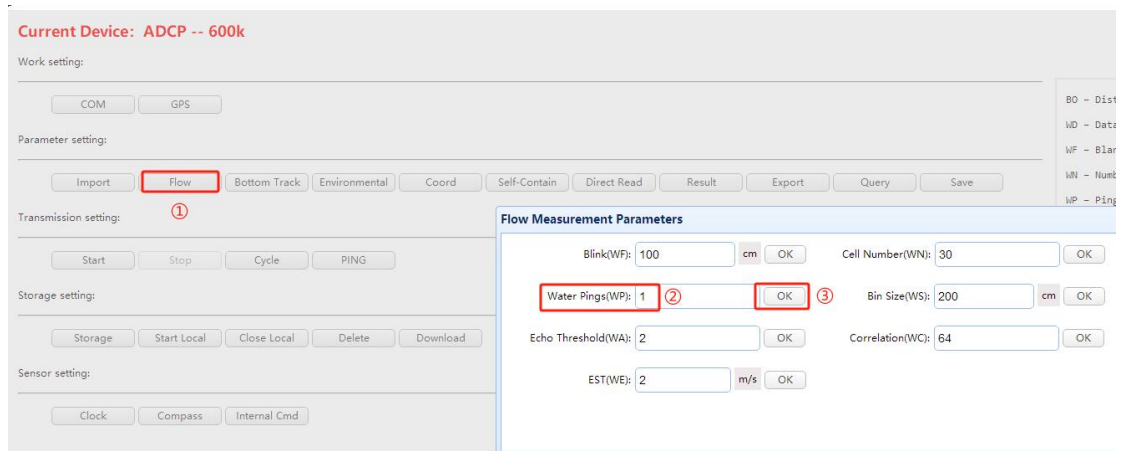


Figure 7: Water Ping (WP) Parameter Setting to 1

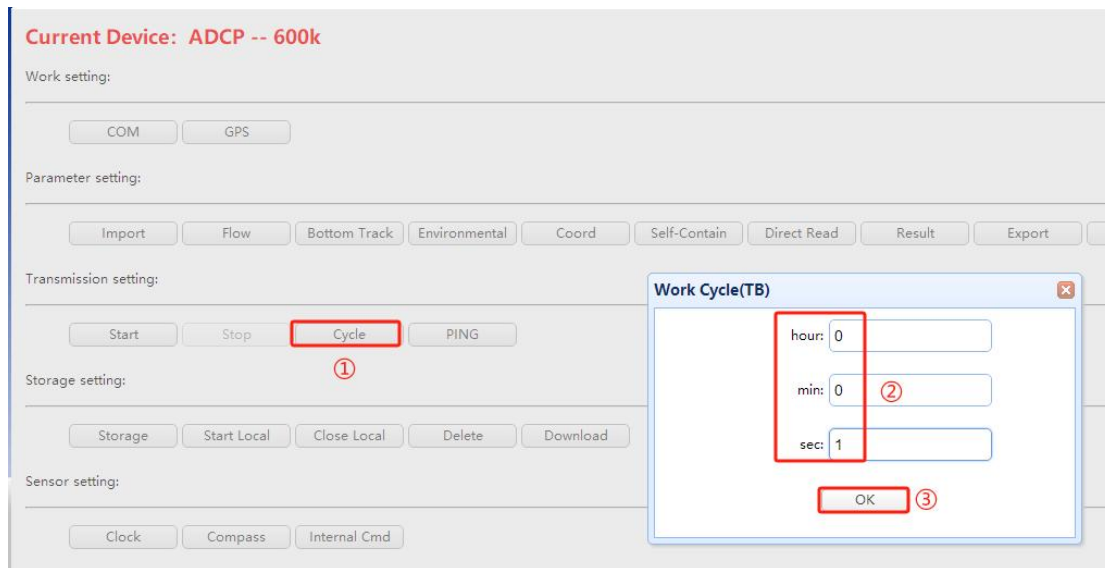


Figure 8: Setting the Operation Cycle (TB) to 1 Second

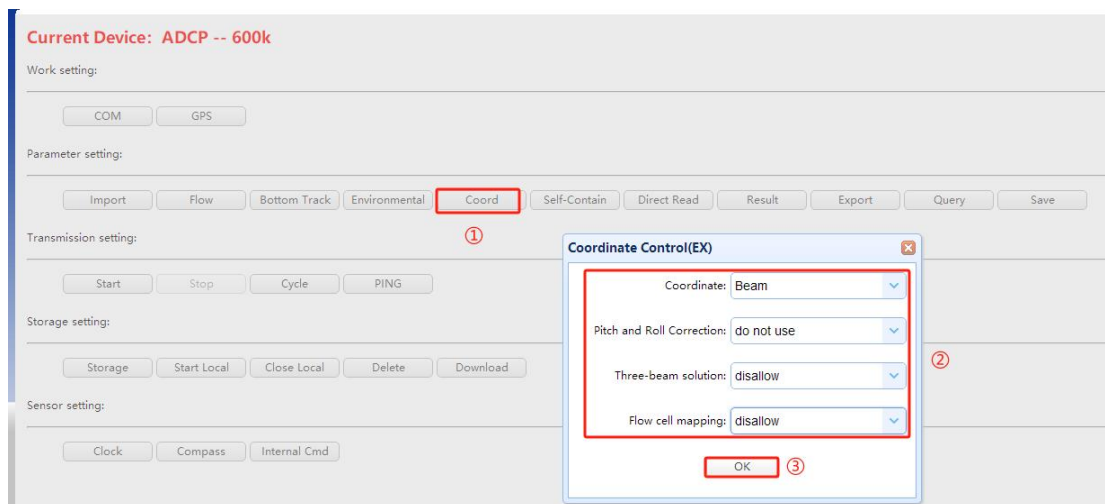


Figure 9: Coordinate system selection (EX) configured to beam coordinate system with attitude data disabled, three-beam solution deactivated, and flow layer mapping turned off.

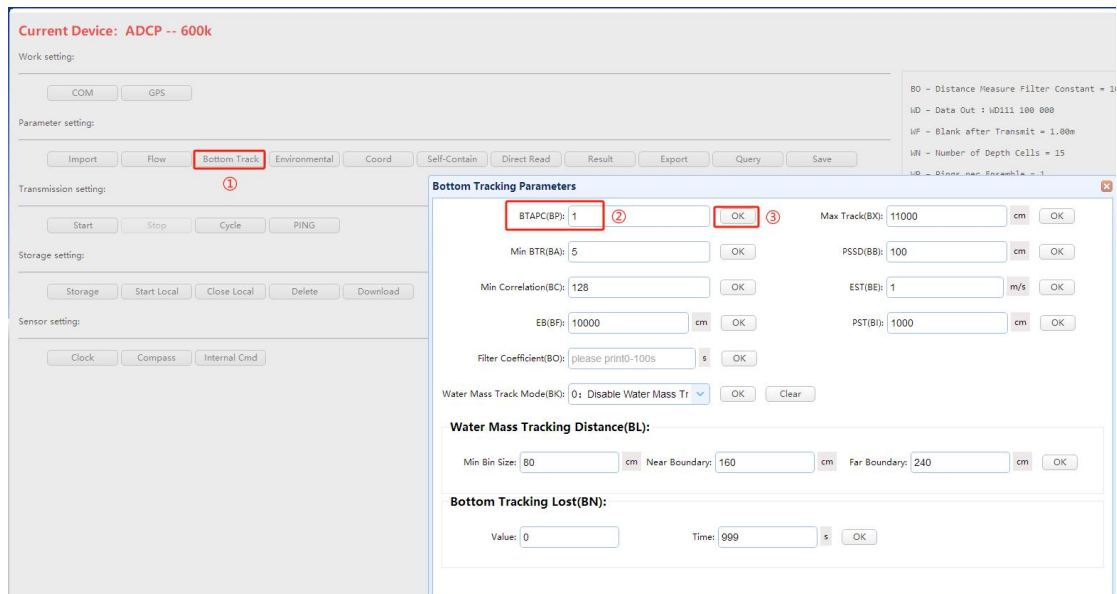


Figure 10: Bottom Ping (BP) Set to 1

2.4. Query status and verify successful parameter configuration.



Figure 11: Check Response Code 1

WP - Pings per Ensemble = 1
 WS - Depth Cell Size = 1.00m
 WA - False Target Threshold Maximum = 2
 WC - Low Correlation Threshold = 64
 WE - Error Velocity Threshold = 2m
 TB - Time Per Ensemble = 0h0min1s0cs
 TP - Time Between Pings = 0min1s0cs
 TG - Time of First Ping 01/01/01 00:00:00
 TO - Time for Working 0 seconds
 EA - Heading Alignment = 45.00 degree
 EC - Speed of Sound = 1500.0m/s
 ED - Depth of Transducer = 1.00m
 EH - Heading = EH30.00 degree
 EP - Roll and Pitch = EP0.00 degree,0.00 degree
 ES - Salinity = 35.00‰
 ET - Temperature = 10.00 degree
 EU - Up or Down = 0
 EV - Heading Bias = 0.00 degree
 EX - Coordinate Transformation : EX00000
 EZ - Sensor Source : EZ1011101EI - Roll Compensation = 0.00 degree
 EJ - Pitch compensation = 0.00 degree

Figure 12: Check Response Code 2

2.5. After clicking "Start Work", close the software.

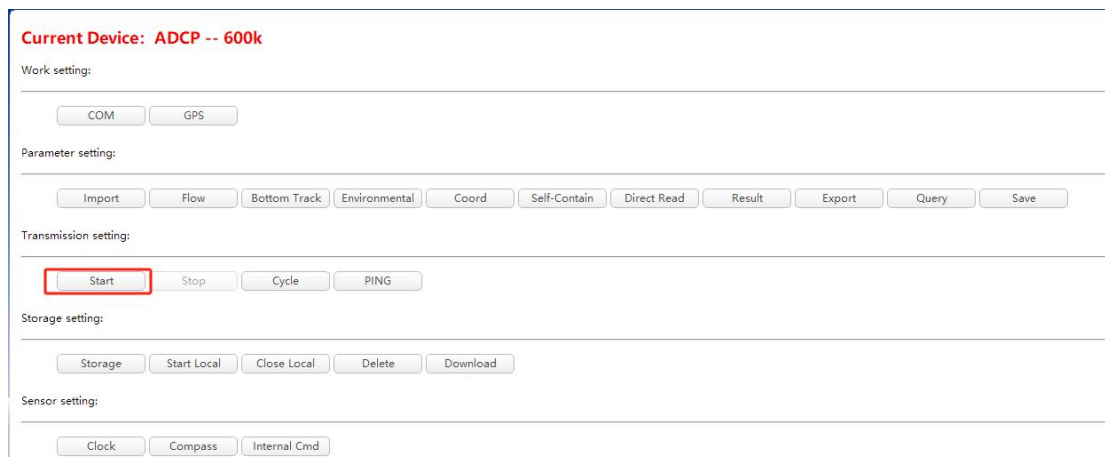


Figure 13: Click "Start Work"

3. Start Measurement (VmDas Software Operation)

3.1. Launch and run the VmDas .

3.2. Click File->Collect Data

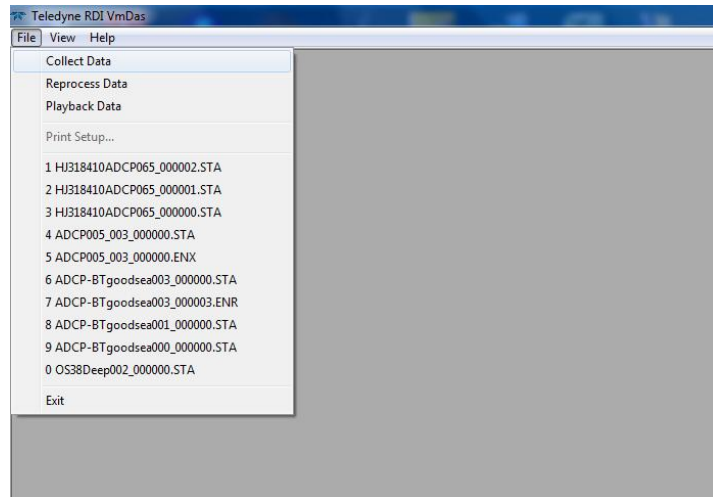


Figure 14: File-> Collect Data

3.3. Click Options->Edit Data Options

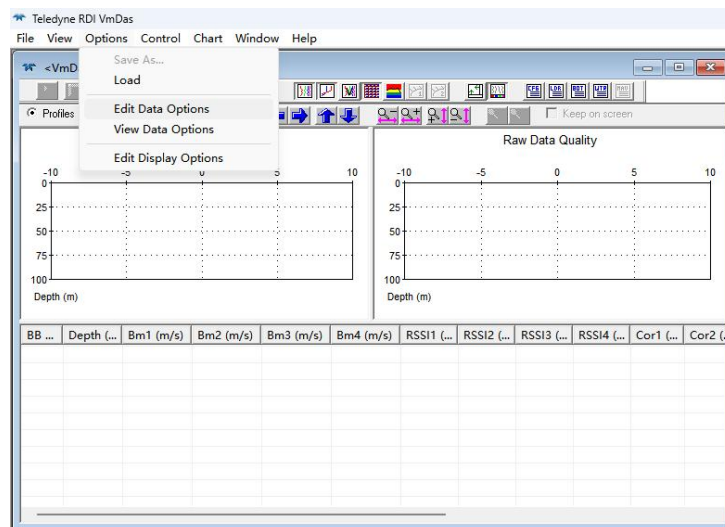


Figure 15: Options->Edit Data Options

3.4. On the Communications tab, configure communication parameters for ADCP, GPS (NMEA1 Input), and attitude sensor compass (NMEA2 Input). Select "Enable serial", choose the COM port and baud rate, then click "Set". Repeat this configuration separately for ADCP, GPS, and attitude sensor compass. Note: Parameters will only take effect after clicking the "Set" button.

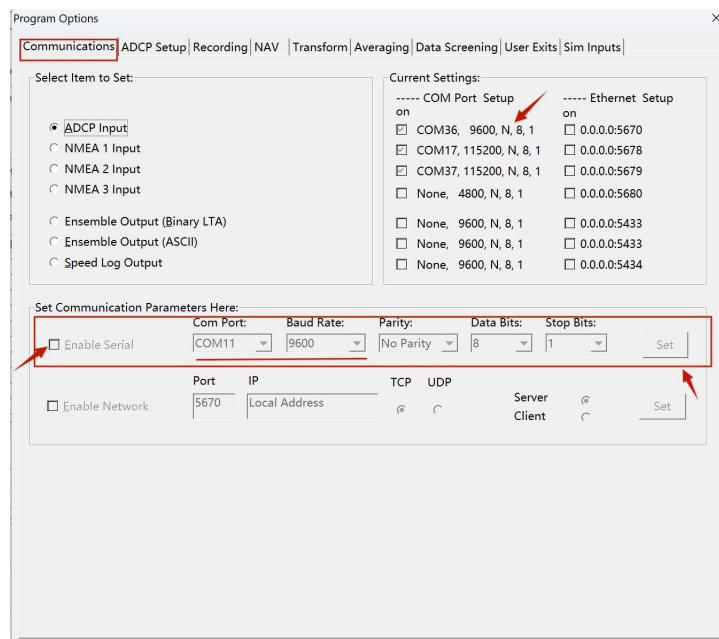


Figure 16: Configuring Communication Parameters for ADCP, GPS (NMEA1 Input), and Attitude Sensor Compass (NMEA2 Input)

3.5. In the ADCP Setup tab, click "ADCP already Pinging" and select Monitor Mode.

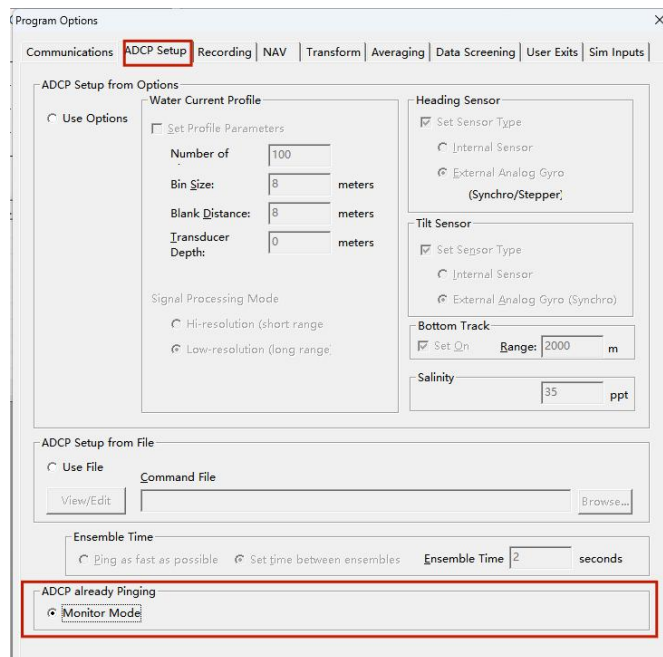


Figure 17: Monitor Mode Selected

3.6. In the Recording tab, enter the filename in the text box, typically set Number to 0 and Max size to 10, then click the "Browse" button to select the file storage path. As shown in the figure below.

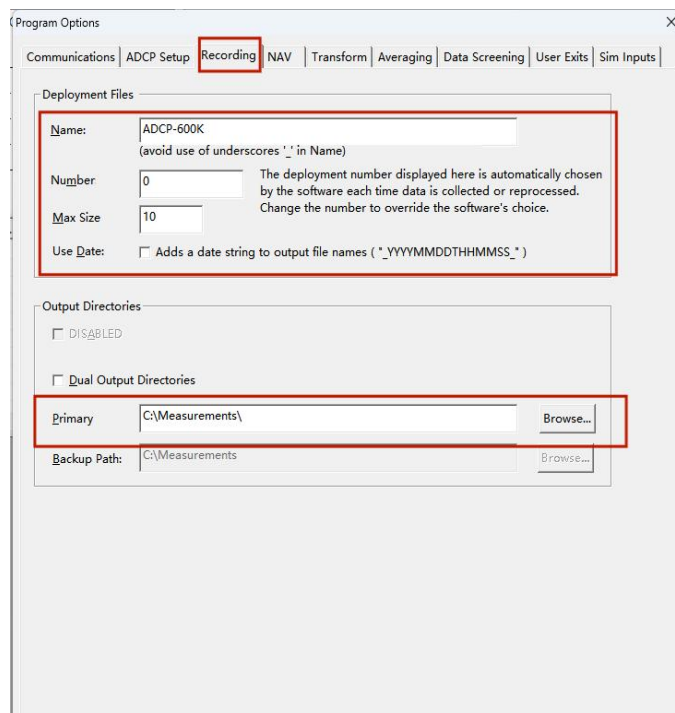


Figure 18: Recording Settings

3.7. In the NAV tab, check "Enable" and select "NMEA1 (GPS)" from the dropdown menu. Note: The GPS must output at least two NMEA formats including GGA and VTG simultaneously.

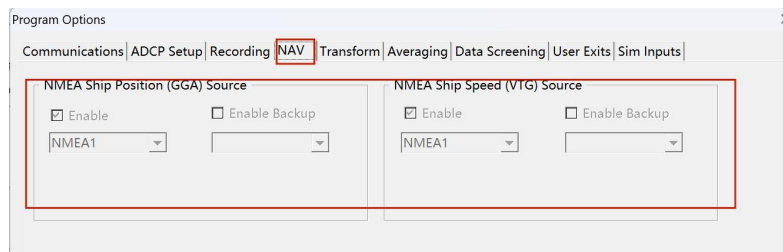


Figure 19: NAV Configuration

3.8. In the Transform tab, select NMEA2 as the input source for heading and attitude. Note: The heading output sensor must support either HDT or PRDID format output. Select the actual format type (example shown: PRDID) that the sensor outputs to the software before NMEA2. In the ADCP Alignment Correction section, enter "the calibrated ADCP transducer installation angle" (default: 45.00 °) in the designated field.

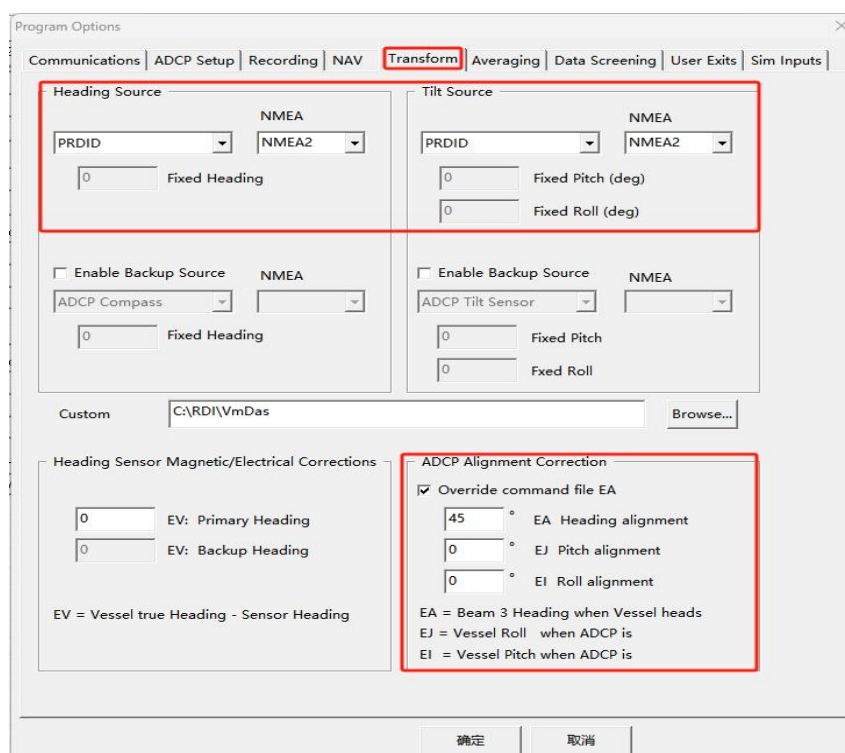


Figure 20: Transform Configuration

3.9. In the Averaging tab, perform time-averaging of the data as required by the measurement. As shown in the figure below.

Figure 21: Averaging Settings

Note: These settings do not affect raw data integrity, allowing reprocessing and re-averaging in VmDas. Standard parameters: STA (60/120) | LTA (300/600).

3.10. After completing the settings, click "OK" at the bottom to save the configuration.

3.11. Navigate to Options->Edit Display Options->Ship Track . Under “current sticks”, set the RGB values for both Ship Track 1 and 2 as follows: red=3, green=4, blue=5.

Figure 22 : Ship Track Settings

Click OK to complete the configuration.

3.12. Click File->collect data. Click  to start collecting data.

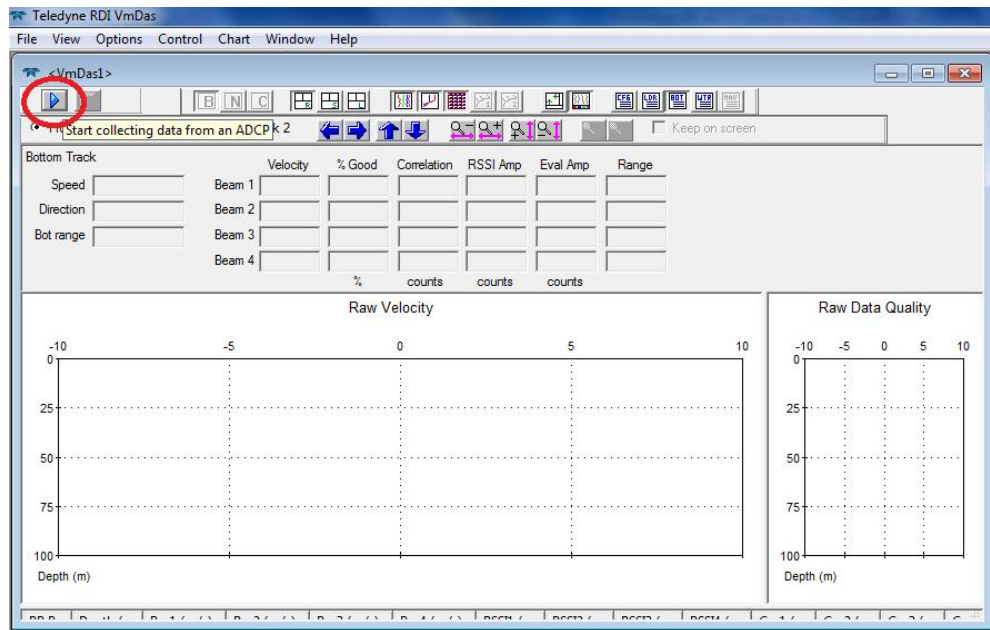






Figure 23 : Data collection

3.13. There are R, S and L icons in the main interface,  ENR data, STA data and LTA data correspond respectively. Select the R icon to display the original data in real time, and you can simply check whether the value is abnormal. Select the S icon to display the short-term average data (including GPS data) in real time. Then click the CFG icon, BOT icon and NAV icon,  to display system configuration data in real time, track and GPS information.

Meanwhile, Click  to display the table, click  icon, to display the GPS and bottom tracking (water depth up to 300m) track line and bar velocity map in real time (bottom of the window below).

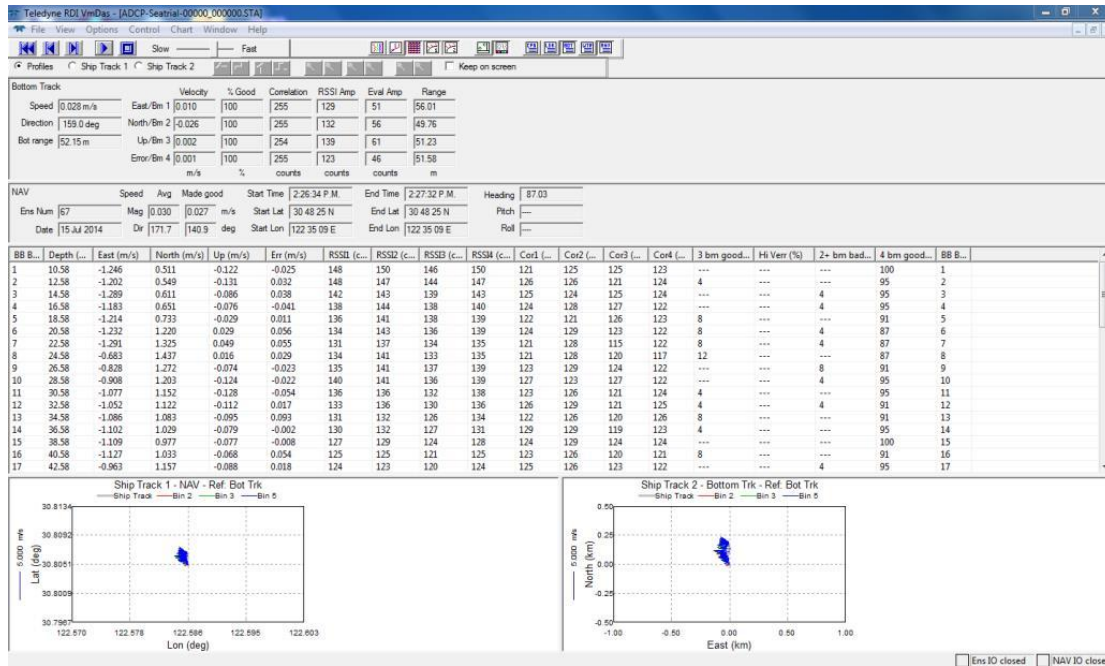



Figure 24: Data Display Settings

If the display of the figure is abnormal, Check , Resize windows.

In Ship Track1, the grey line represents the GPS trajectory, the red line represents the flow velocity bar, and its direction represents the real-time flow direction (0° directly above, increasing clockwise, range $0-360^{\circ}$), and the length represents the real-time flow velocity.

After the measurement is completed, click "stop" to end the data collection.

4. Data processing and transformation (WinADCP software operation)

Data processing requires the use of WinADCP software. The processing and data conversion steps are as follows:

4.1. Run the WinADCP software and click File->Open.

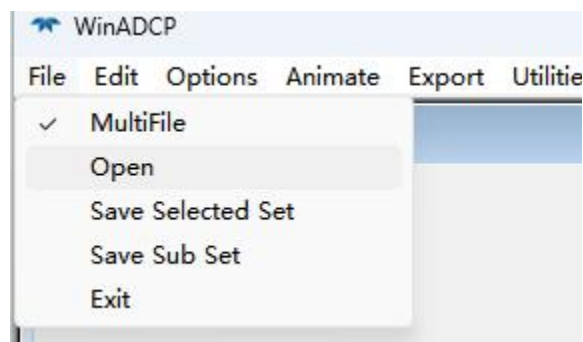


Figure 25 : File->Open

4.2. Select the one generated in real time in the root directory. STA or.LTA format files, both of which contain flow rate, bottom tracking and GPS data as shown in the following figure:

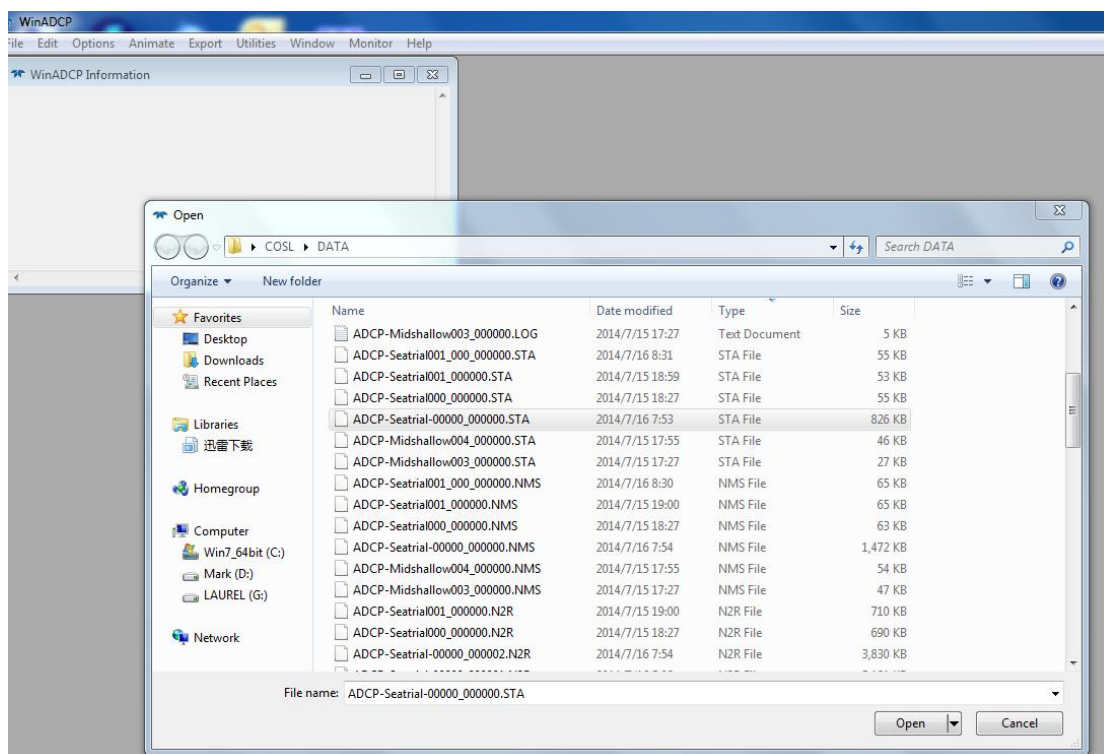


Figure 26 : Open the file

4.3. WinADCP shows the short-term average or long-term average of all and local cross-sectional flow velocities and directions, as shown in the following figure:

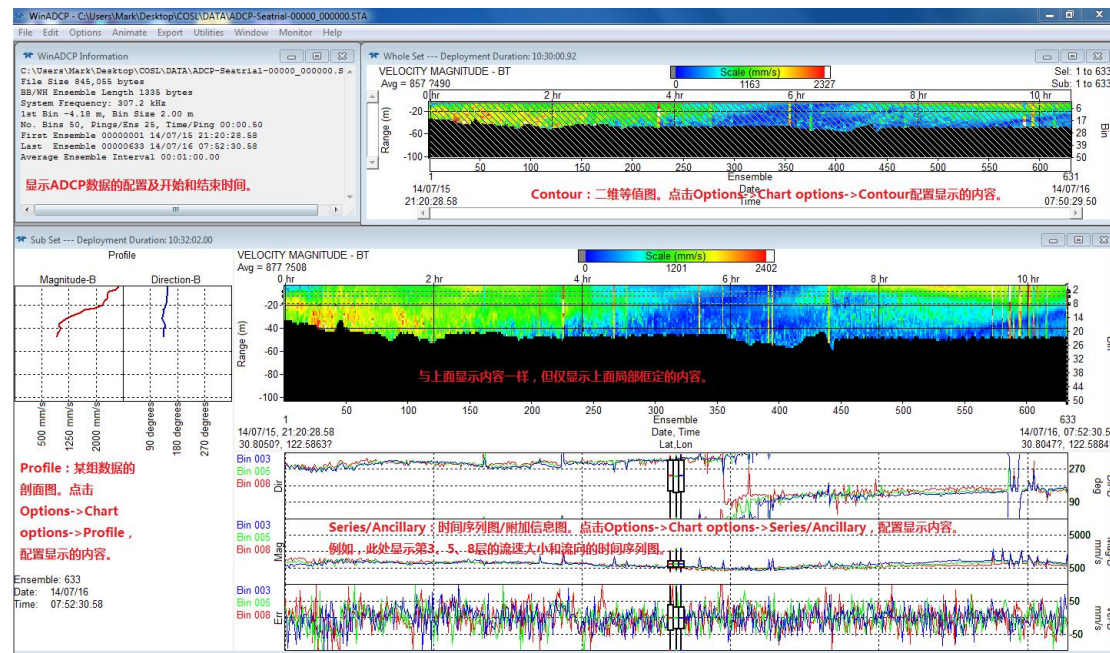


Figure 27 shows the data situation

4.4. When using WinADCP to analyze travel data, to display the real flow velocity, flow direction or export data, you need to click Options->Chart options->Processing to remove the moving speed of the carrier:

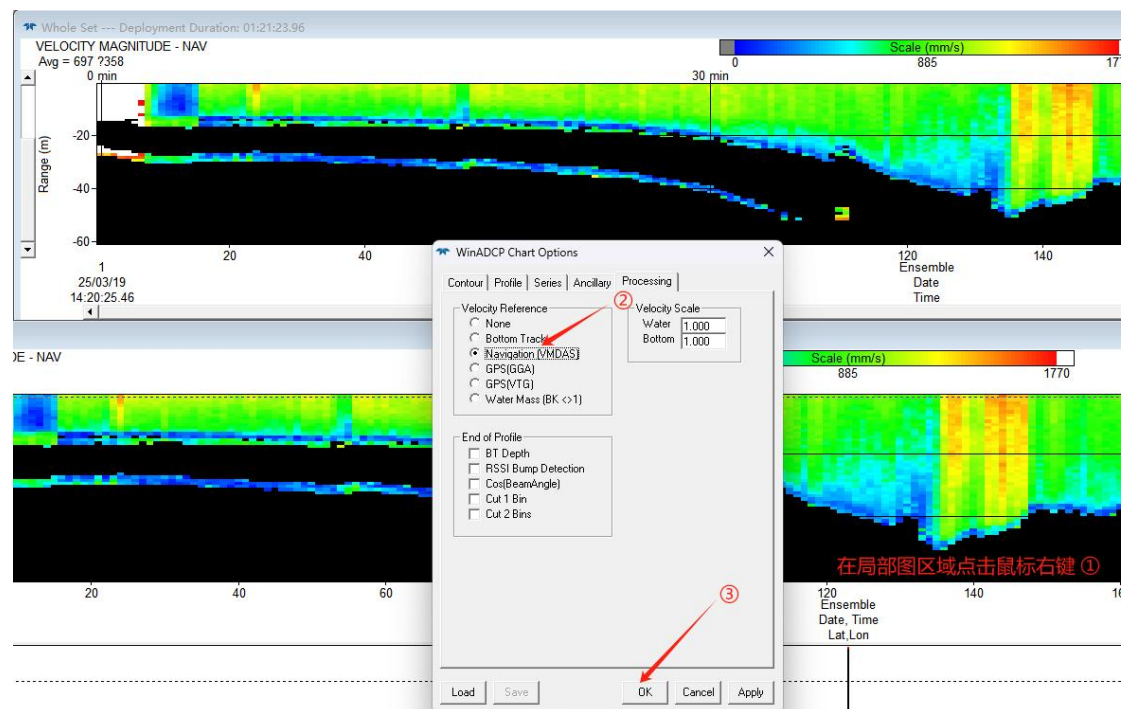


Figure 28 : shows the moving speed of removing the carrier

Note: The configuration Windows for Contour, Profile, Series and Ancillary can all be brought up by right-clicking on the data window displayed in WinADCP.

4.5. For data output, simply click "Export" in the main window. Select series/Ancillary Select "ALL", select "Magnitude" and "Direction" in series Data Types, and "Lat/Lon" in Anc Data Types, then choose whether the output File format is TXT or MAT, and finally click "Write File" Export the file as shown in the following figure:

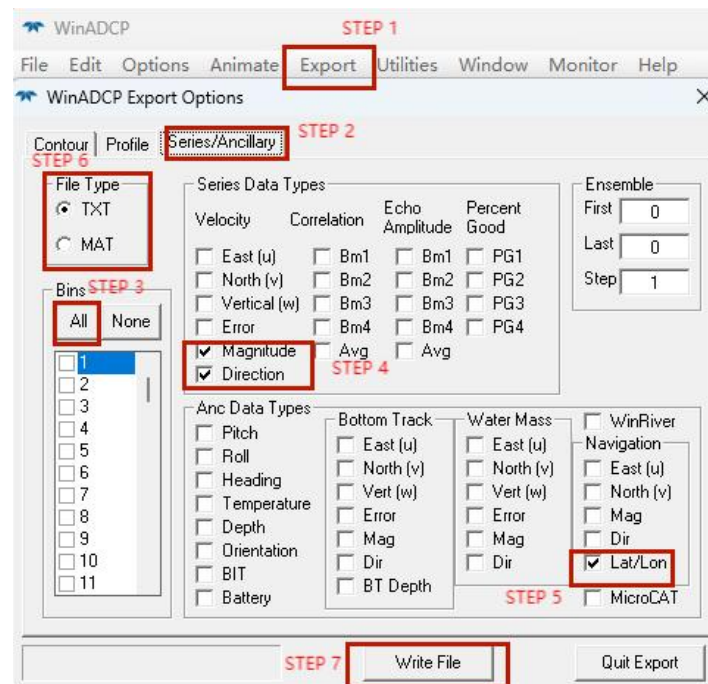


Figure 29 Export file

4.6. Click the "Write File" button, select the path to Save the file, and then click "Save".

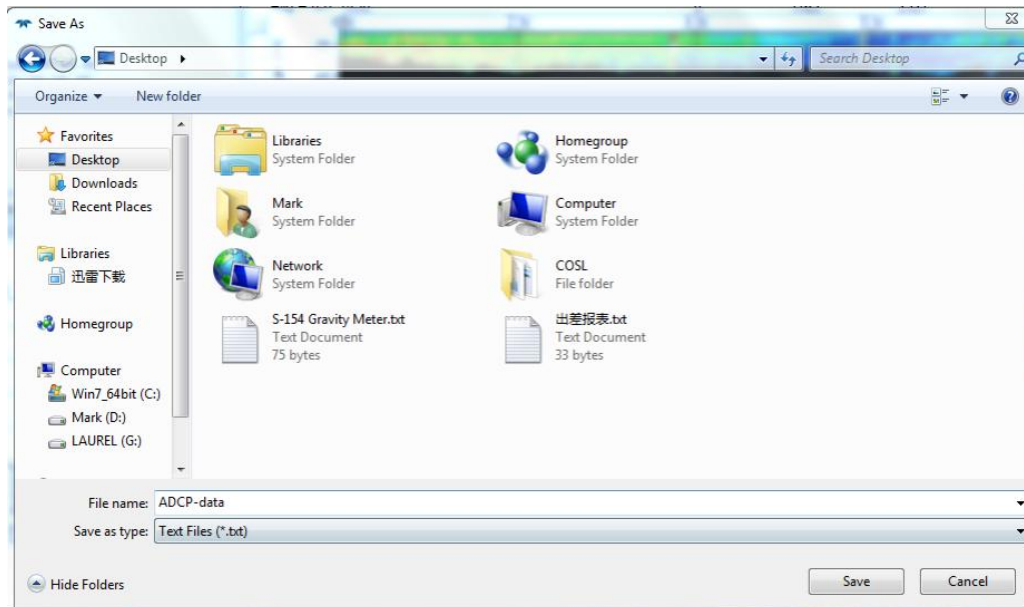


Figure 30: Save to the specified path

Note: The file save path and file name can only be entered in English!! After exporting, just click the Quit Export button.