



HydroBeamMonitor Software

User Manual

Manual Revision

Revision Date	Revision Level	Description
April,2025	2	HydroBeamMonitor Software User Manual 202504
November,2024	1	HydroBeamMonitor Software User Manual 202411

Version Description

April 2025

Applicable MultiBeam: HydroBeam M4

Applicable versions: HydroBeamMonitor software version 1.4.1.1

Updated content:

- ◆ Added Waterfall and SideScan Image
- ◆ Optimized point cloud quality, adding near-field focus and vertical terrain tracking.
- ◆ Optimized auto gain function

November,2024

Applicable MultiBeam: HydroBeam M4

Applicable versions: HydroBeamMonitor software version 1.4.0

Add the following chapter:

- ◆ Chapter 1 Software Introduction
- ◆ Chapter 2 Simple operation process
- ◆ Chapter 3 Parameterization
- ◆ Chapter 4 About the Software
- ◆ Chapter 5 Firmware Update

Preface

Introduction

Welcome to the HydroBeamMonitor Software. This introduction describes how to use this product.

Experience Requirement

In order to help you use the SatLab series products better, we suggest you carefully read the instructions. If you are unfamiliar with the products, please refer to www.satlab.com.se

Tips for Safe Uses



Notice: The contents here are special operations and need your special attention. Please read them carefully.



Warning: The contents here are very important. Wrong operation may damage the machine, lose data, break the system, and endanger your safety.

Exclusions

Before using the product, please read these operating instructions carefully: they will help you to use it better. SatLab Surveying Instrument Co., Ltd assumes no responsibility if you fail to operate the product according to the instructions or operate it wrongly due to misunderstanding the instructions.

SatLab is committed to constantly perfecting product functions and performance, improving service quality and we reserve the right to change these operating instructions without notice.

We have checked the contents of the instructions the software and hardware, without eliminating the possibility of error. The pictures in the operating instructions are for reference only. In case of non-conformity with products, the products shall prevail.

Technology and Service

If you have any technical issues, please call SatLab's technology department for help.

Relevant Information

You can obtain this introduction by:

1. Purchasing SatLab products: you will find this manual in the instrument container to guide you on operating the instrument.
2. Log onto the SatLab official website, downloading the electronic version introduction at "Download center" "Partners" and "Partner center".

Advice

If you have any comments and suggestions for this product, please email info@satlab.com.se.

Your feedback will help us to improve the product and service.

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Chapter 1

Software Introduction

This chapter contains:

- Software Overview
- Technical parameters
- Installation and Uninstallation
- Summary of the chapter

1.1 Software Overview

This software is HydroBeamMonitor, which is mainly used for water measurement multibeam control and image display. The functions of the software mainly include: connecting equipment to receive acoustic and sensor data, sonar image display, side-scan image display, data acquisition mode switching, underwater data filtering, sonar parameter setting, bottom tracking parameter setting.

From the customer's point of view, the software pursues more accurate measurement, more user-friendly operation, and more abundant functions to achieve diversified measurement work. The software has the following features:

(1) Parameter setting aspects

- ◇ Support the setting of sonar parameters, realize the setting of range, absorption, gain, diffusion and other parameters in the detection process.
- ◇ Supports the setting of bottom tracking parameters, enabling the switching of measurement modes, the changing of display color schemes, and the filtering of underwater data.

(2) Image display

- ◇ Supports the display of attitude curves, of which the heave curve is magnified 10 times.
- ◇ Support the display of sonar images, multiple color schemes can be selected, the beam opening angle to achieve the range of 30~140 degrees change
- ◇ Supports the display of side-scan images and real-time display of ping numbers and images.

(3) Other aspects

- ◇ Support for changing the size of the side-scan window, sonar image window and attitude curve window.
- ◇ Supports real-time display of sensor status
- ◇ Support for data playback
- ◇ Support software online upgrade function

1.2 Technical parameters

hardware requirement:

Universal PC platform

CPU: Intel i7 and above

random access memory (RAM):16G and above

hard disk:1T

operating system: Windows7/8/10/11 - 64bit

language environment: Chinese, English, Russian

1.3 Installation and Uninstallation

1.3.1 Software Installation

The steps are as follows:

Step 1

After selecting "I accept ...", click [Next] to enter the installation location selection interface

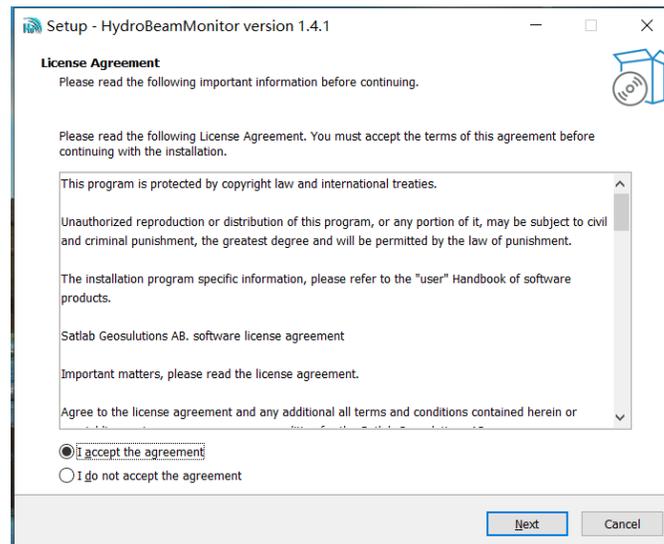


Figure 1-3-1 Software License Agreement

Step 2

After selecting the installation location, click [Next].

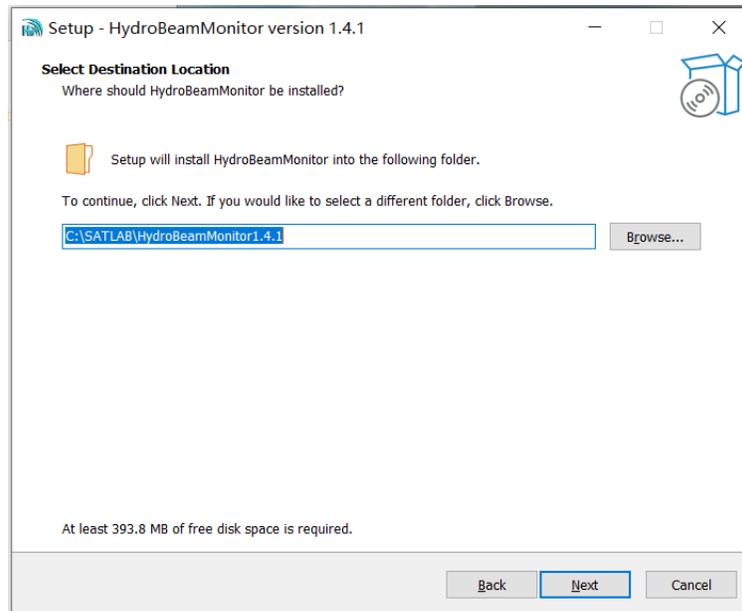


Figure 1-3-2 Initial installation screen

Step 3

Tick the box to create a desktop shortcut and click [Next].

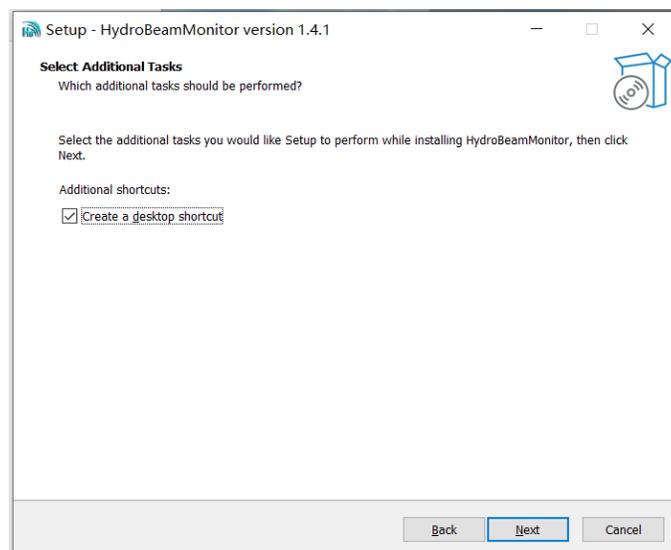


Figure 1-3-3 Creating desktop shortcuts

Step 4

Confirmation of installation location information.

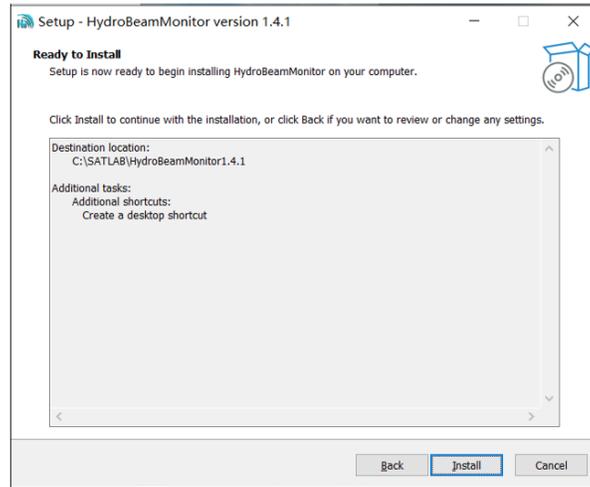


Figure 1-3-4 Start Installation

Step 5

Click the [Install] button to start the installation:

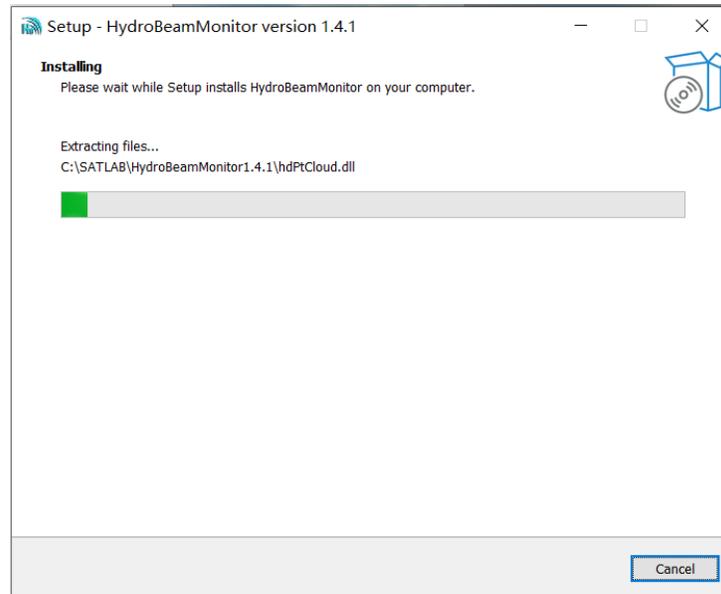


Figure 1-3-5 Installation in progress

Step 6

The installation is finished, click [Finish] to exit:

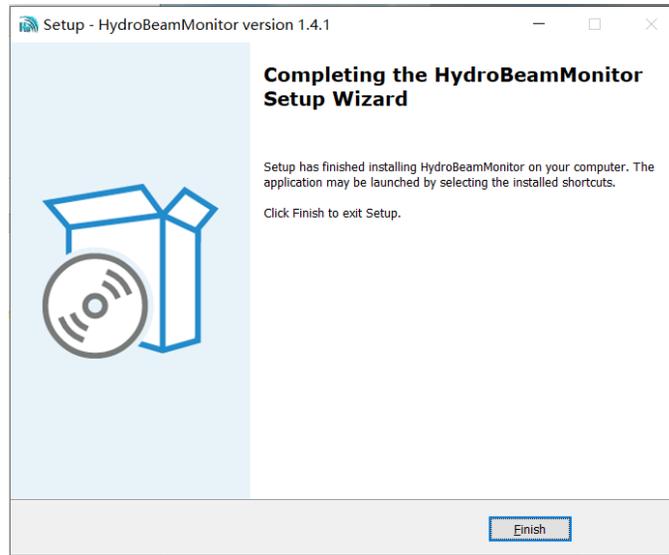


Figure 1-3-6 Installation completed

Step 7

After successful installation, a shortcut icon will be added to the desktop.



Figure 1-3-7 Software Shortcut Icons

Double-click the icon to run the display control software.

1.3.2 Software Uninstallation

To uninstall this software, you need to open the system control panel, enter the program interface, as shown in Figure 1-9, select the HydroBeamMonitor software, right-click and select "Uninstall", enter the uninstall process.

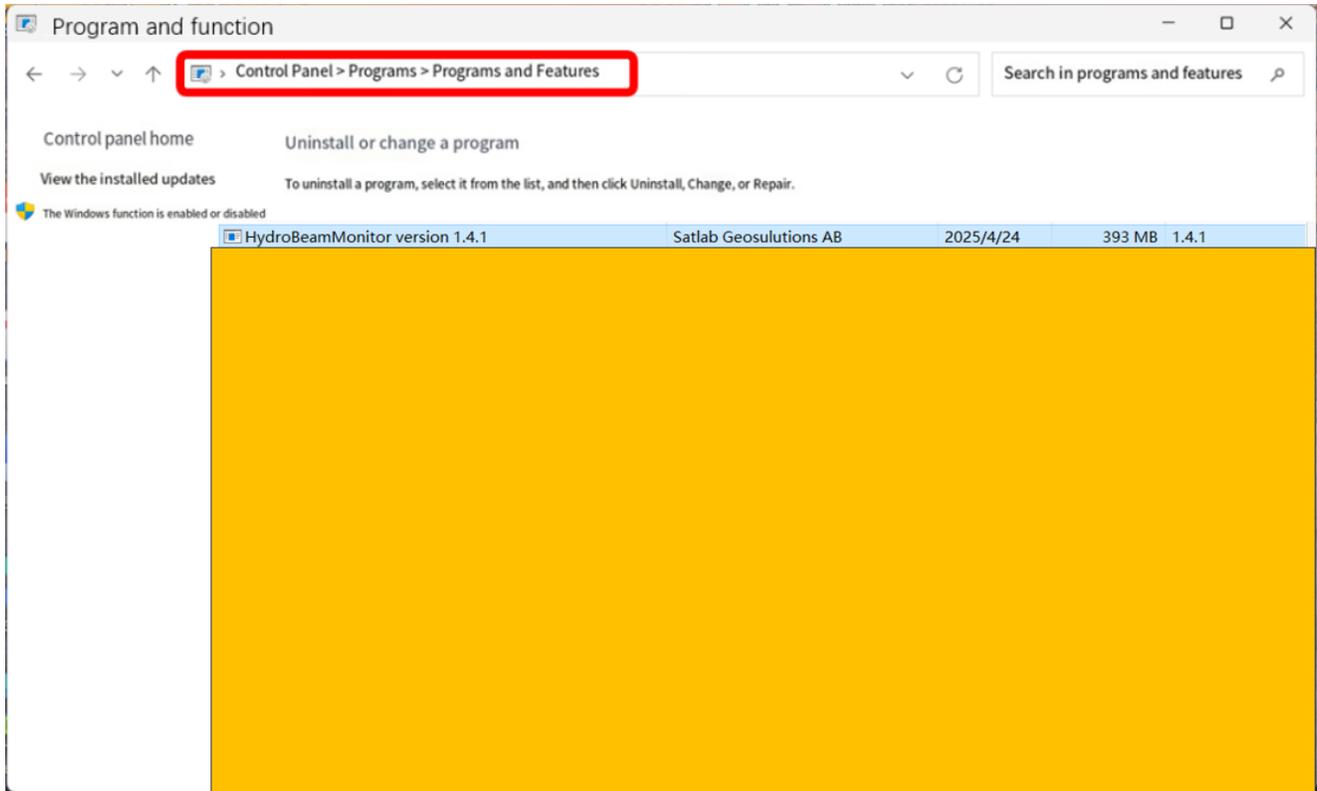


Figure 1-3-8 System Management Interface

Enter the uninstaller interface, click [Yes], start uninstalling, click [No] to exit the current operation.

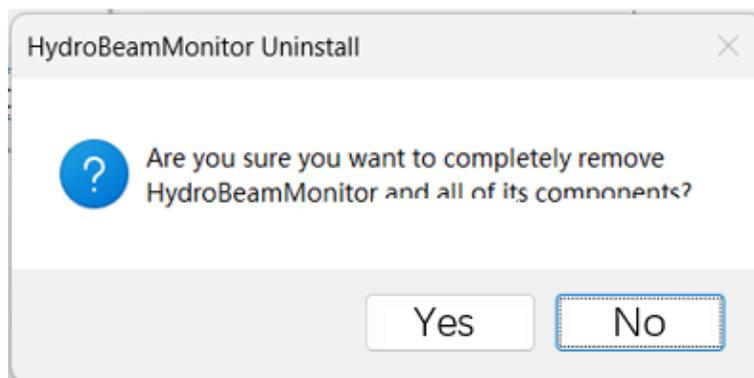


Figure 1-3-9 Start uninstallation

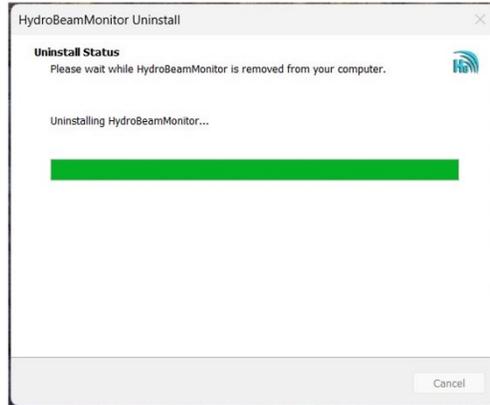


Figure 1-3-10 Uninstalling

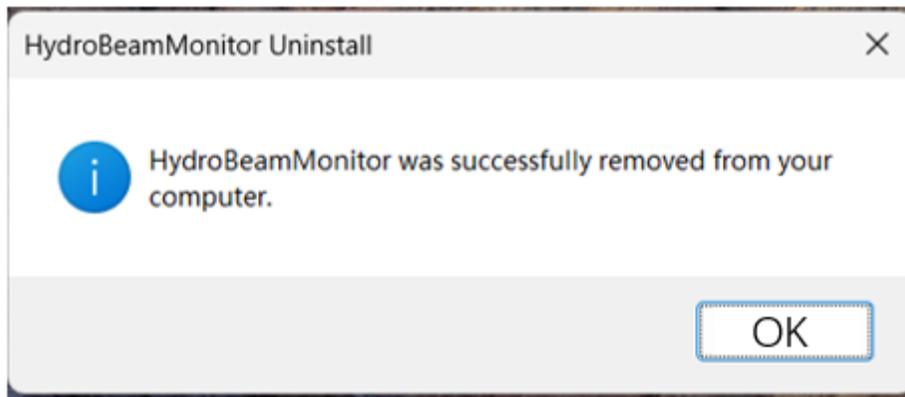


Figure 1-3-11 Start uninstallation

1.4 Summary of the Chapter

HydroBeamMonitor is a software which is applied to send out parameters and data analysis and collection of multi-beam equipment of Satlab. The humanized operation and richer functions of this software represent the advanced level of the multi-beam display and control software field.

Chapter 2

Simple operation process

This chapter contains:

- Main interface
- Language switching
- Simple operation process
- Summary of the chapter

2.1 Main Interface

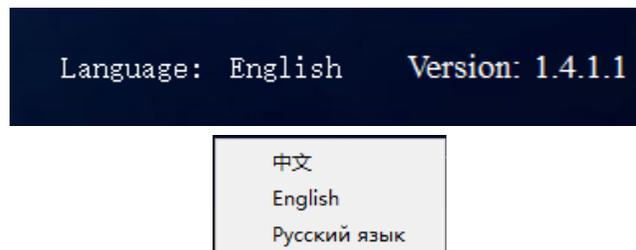
Run the software and enter the main interface. HydroBeamMonitor Includes both data acquisition and data playback functions.



Figure 2-1 Main interface of the software

2.2 Language Switching

On the main interface, click on the language tab in the lower right corner and select the language you want to switch to.



After selecting the corresponding language, the software language will be switched in real time to the need to display the language environment, currently supports the selection of the language environment for the Chinese, English, Russian.

2.3 Brief Operation Process

Click the [Detection] button  on the right side of the main interface, Enter the measurement mode.

Click the [Connect] button  at the lower left corner of the measurement interface to connect the HydroBeam multibeam sonar device, after the device is successfully connected, you can set the relevant parameters according to the needs of the specific parameter settings refer to the introduction of Chapter 4, after the connection is successfully connected, the connection button will be displayed as [Disconnect], click to stop the acquisition of data, the main interface in the process of the acquisition of real-time display of the sensor data information During the acquisition process, the main interface will display the sensor data information in real time, as well as the data access status, including the acoustic data frame number and acquisition ping rate.

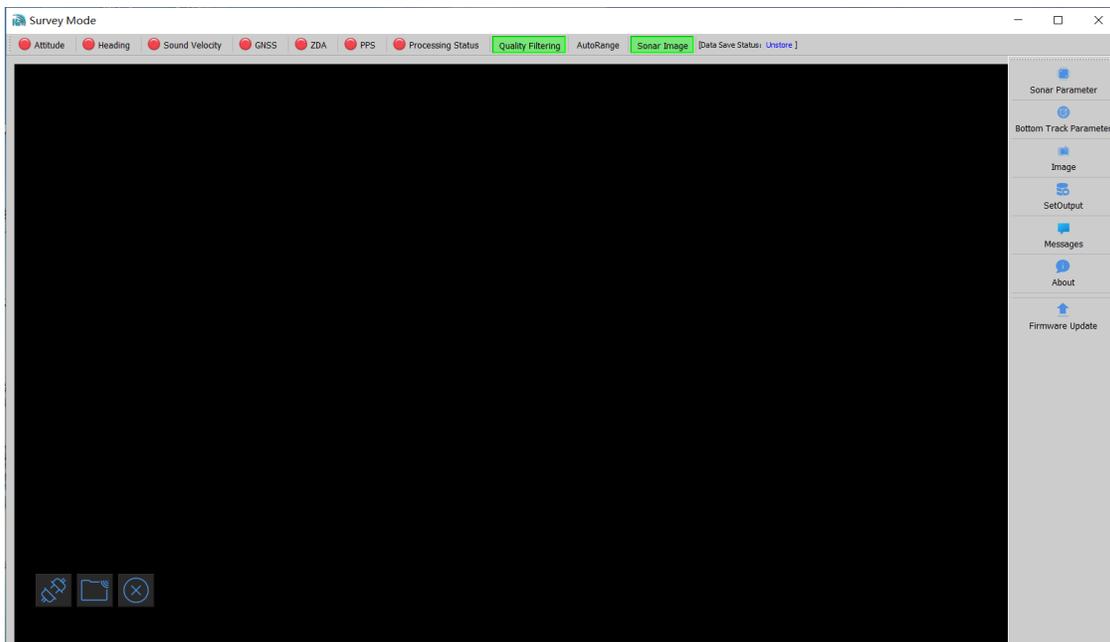


Figure 2-4 Measurement Mode Interface



warnings: During the process of completing the device connection and collecting data in real time, forcefully exiting the software may cause the hardware to not shut down properly, which can lead to damage to some of the sonar's devices when detached from the water.

Click the [Playback] button  on the left in the main interface to enter the playback mode screen, then click on the file [Select] button at the bottom left corner of the return mode interface to select the data file to be played back, In the data playback progress bar will display the current data loading progress and frame count information, after loading is complete, click the [Playback] button  to start playing back the data.

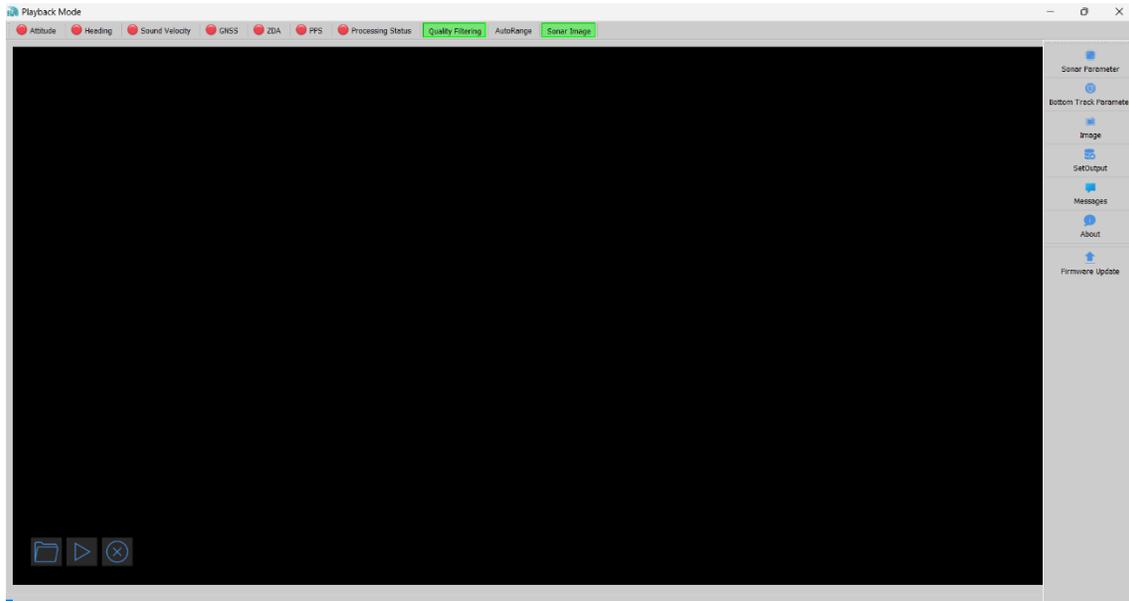


Figure2-6 Playback mode

The data playback function supports pause and repeat playback, when the data playback is complete, the software will prompt the completion of the data visit.

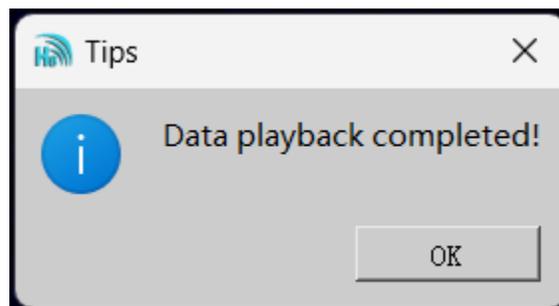


Figure 2-7 Data playback completion prompt

Click the [OK] button to close the prompt, and then click the [Playback] button again to restart the playback of the loaded data, currently data playback only supports single data file playback.

Click on the right side of the [Image] function, select the image window to be displayed, as shown in Figure 2- 8, when the mouse is moved to the vicinity window between the left mouse button, hold down the left mouse button, through the movement can be achieved by the free control of the window.

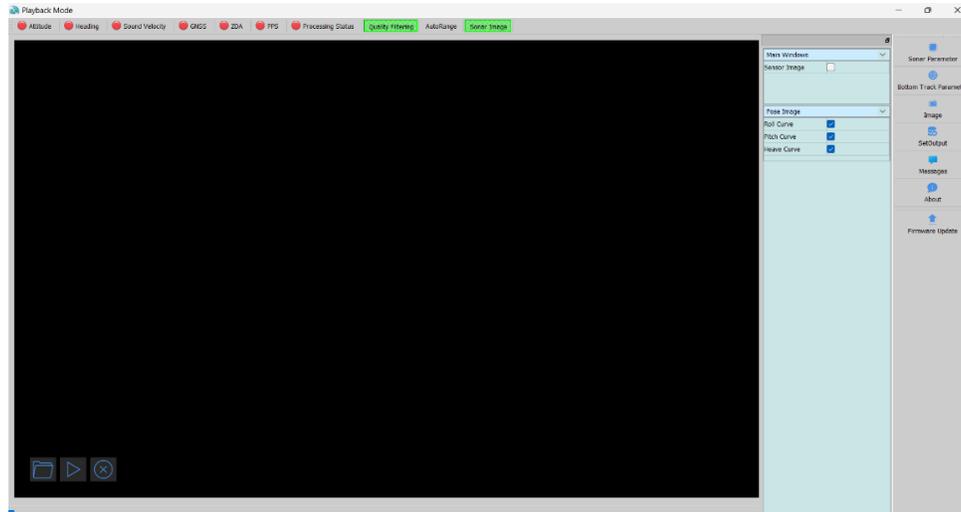


Figure 2-8 Window free control

During data acquisition and playback, the acoustic data will display a sonar image in the interface according to the set "sonar image" function, and at the same time, the transducer's transmitting and receiving angle can be controlled, with a maximum of 150 ° (140 ° for the 8120 device) and a minimum of 30 °.

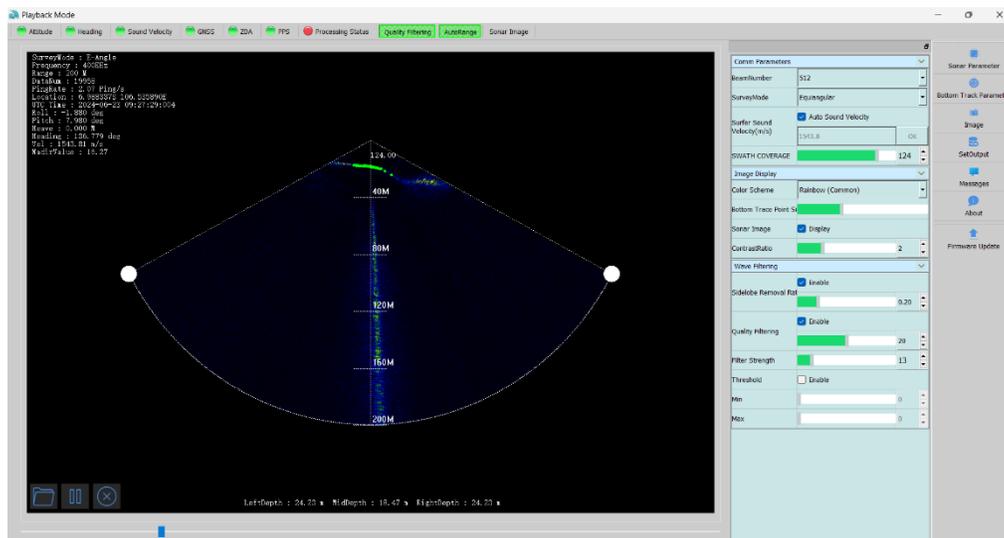


Figure 2-9 Sonar image

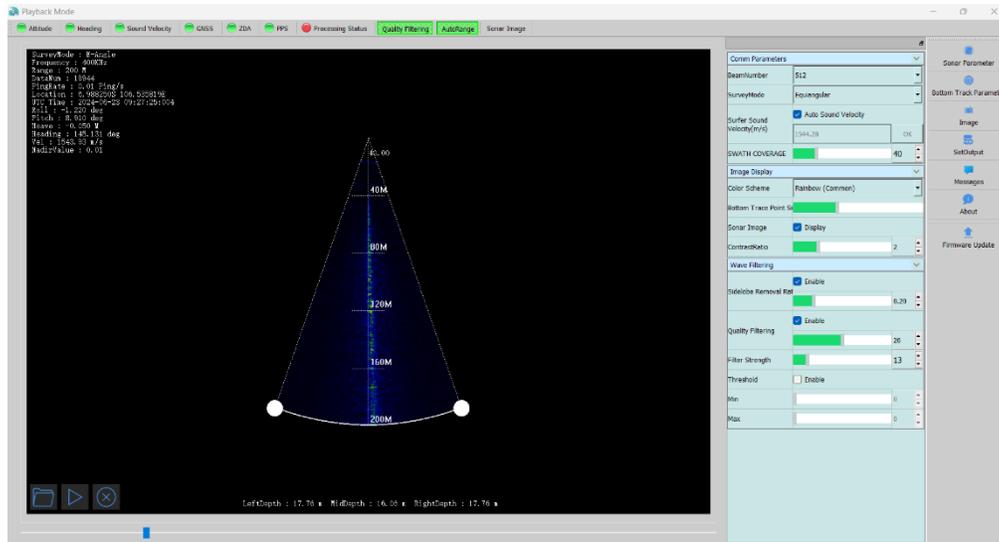


Figure 2-10 Sonar image

In the process of data acquisition and playback, the sensor data will be displayed at the bottom and the bottom of the sonar image, in which the bottom will display the curve of the attitude data, and the bottom will display the data status of the sensor, in which the green status represents that the sensor is working normally, and the red status represents that the sensor is working abnormally.

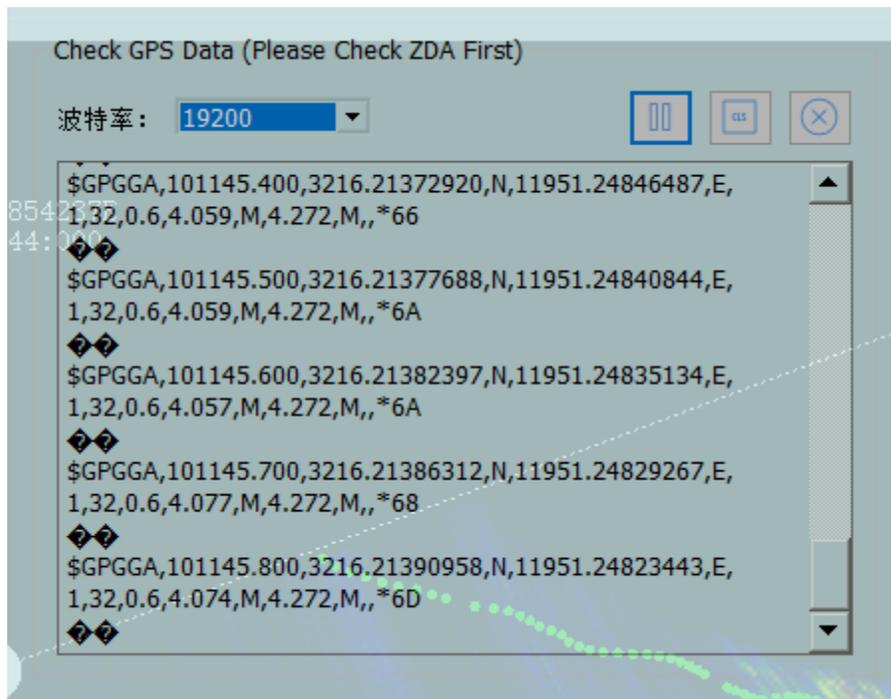


Figure 2-11 Baud rate selection screen

In the probe mode, clicking on [Horizontal Swing], [Longitudinal Swing], [Bow Swing], [Rise and Fall], [Heading], [Sound Speed], [GPS], [ZDA], [PPS] will bring up the corresponding baud rate setup window for baud rate selection.

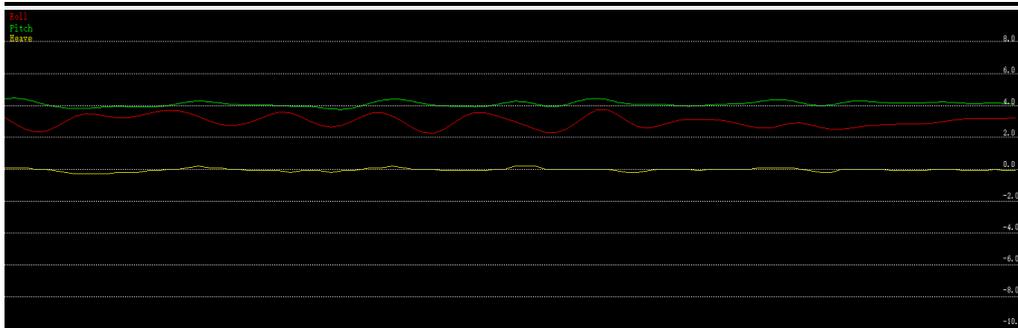


Figure 2-12 Attitude sensor data

The data from the attitude sensors in the graph above, red represents Roll (horizontal swing), green represents Pitch (vertical swing), and yellow represents heave (rise and sink), where heave is magnified by 10x.

In the upper left of the sonar image, the acquisition frequency, range, frame number, data reception frequency, GGA, ZDA, attitude, and speed of sound information are displayed, and in the lower left of the sonar image, the left-center-right range is shown.

```

SurveyMode : E-Angle
Frequency : 400KHz
Range : 200 M
DataNum : 19846
PingRate : 4.38 Ping/s
Location : 6.987774S 106.535351E
UTC Time : 2024-06-23 09:26:52:004
Roll : 0.930 deg
Pitch : 2.370 deg
Heave : 0.070 M
Heading : 158.035 deg
Vel : 1543.70 m/s
NadirValue : 12.96
    
```

Figure 2-13 Sonar image

2.4 Summary of the Chapter

The interface of the software is simple, efficient and easy to understand, and the detection and playback functions are divided into two modules designed to greatly facilitate the operation of the user. In addition, the software displays a wealth of data information in real time, providing users with convenient and fast.

Chapter3

Parameterization

This chapter contains:

- Sonar parameter setting
- Bottom tracking parameter setting
- Summary of the chapter

3.1 Sonar Parameter Setting

In the "Sonar Parameter Setting" interface, the acoustic image of the seabed is displayed on the upper right, the attitude data curve is displayed on the lower right, the status information of the attitude data is displayed at the bottom, and the parameter configuration table of the acoustic image is displayed on the left.

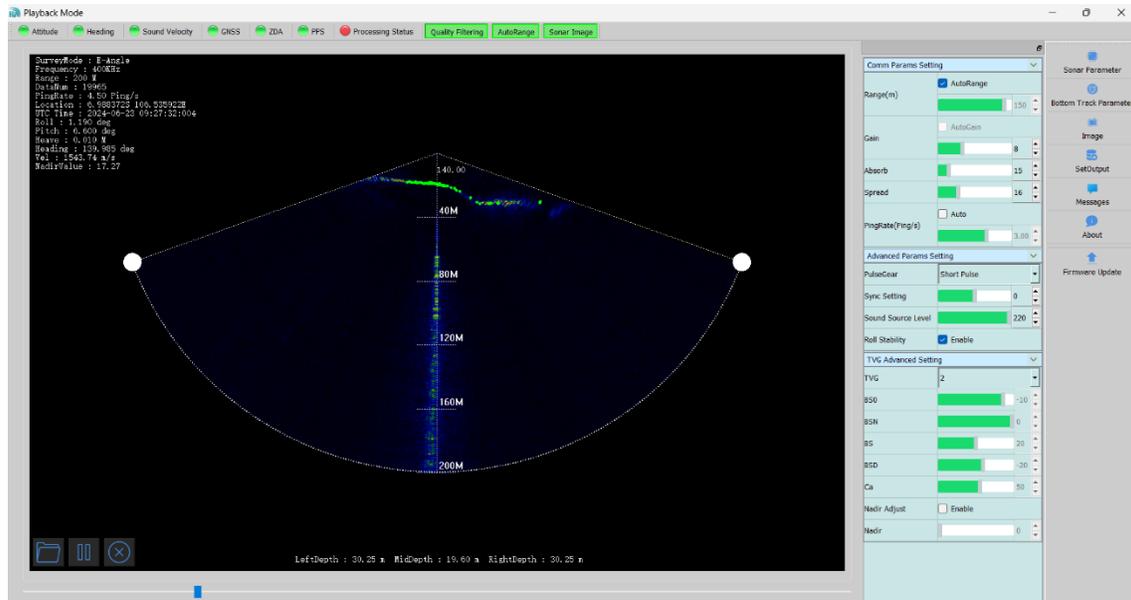


Figure 3-1 Sonar Parameter Setting Interface

Configuration sheet for sonar image display parameters, which includes the following:

- Range scope 5~300(m), Can be set to automatic or manual, usually set to automatic;
- Absorption (dB/Km), realm 0~120;
- Gain(dB), realm 0~25(dB);
- Automatic gain, according to the depth of water can automatically adjust the depth of water;
- Diffusion (dB/Km), realm 0~60, Generally set to 2;
- Sound source level (dB) realm 190~220, Generally set to 200;
- Pulse stops are divided into three levels, short pulse width, medium pulse width, and long pulse width, and are generally set to short pulse width.
- Synchronization setting is to set the time delay between acoustic data and transducer data, a positive number is acoustic data time overrun, a negative number is acoustic data time lagging;
- Cross-tilt stabilization, on by default.
- TVG advanced settings

3.2 Bottom Tracking Parameter Setting

In the Bottom Tracking Parameter Settings screen,

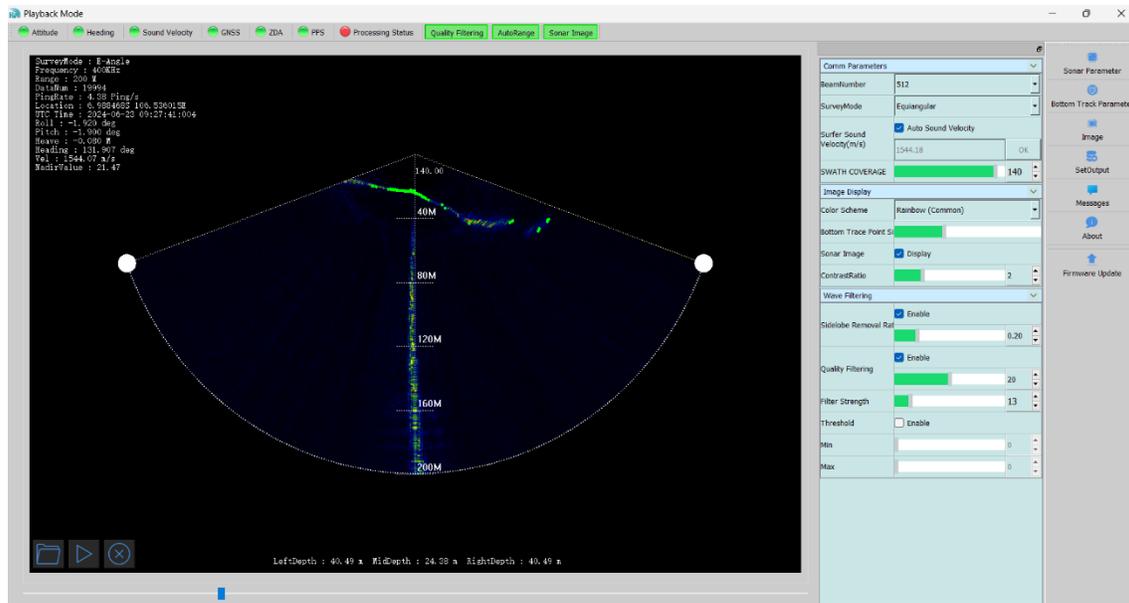


Figure 3-2 Bottom tracking parameter setting interface

- 1) Number of beams: 512 adjustable 256, 128
- 2) Measurement modes are divided into: equirectangular mode, equidistant mode, of which the default open is equidistant mode;
- 3) Surface speed of sound, surface speed of sound data in automatic mode, manual mode can be entered on demand;
- 4) Beam opening angle, range 30~150, normally set to 140; (maximum adjustable 140° for 8120 equipment)
- 5) The color scheme is the color setting for the sonar image, which is divided into rainbow color, brownish-yellow, reddish-yellow and black-blue, of which rainbow color is the common color;
- 6) Low tracking point size, can be adjusted as needed;
- 7) Filter point size can be adjusted after the filter function is turned on and the filter is displayed;
- 8) Sonar image, can be turned on and off by your choice;
- 9) Sonar Image/Contrast, display sonar image during data acquisition, default on, contrast, range 0~15, parameters of sonar image, usually set to 2;
- 10) Side flap elimination ratio column, range 0~1.00, generally set to 0.1, combined with the following
- 12) function, adjust the effect of side flap elimination;

- 11) Threshold, off by default, can filter abnormal flypoints and improve data quality by setting the maximum and minimum thresholds;
- 12) Quality filtering function, filtering the collected underwater data, default on, used to eliminate side flap interference;
- 13) Filter strength 0-100, usually 12, if the measurement process of the terrain is complex, you can appropriately increase the grade, in order to eliminate the depth of the quality of abnormal points;

3.3 Window Management

In the “Image” interface, you can realize the display and hiding of the sonar image window, waterfall image, pose window, and side scan image window:

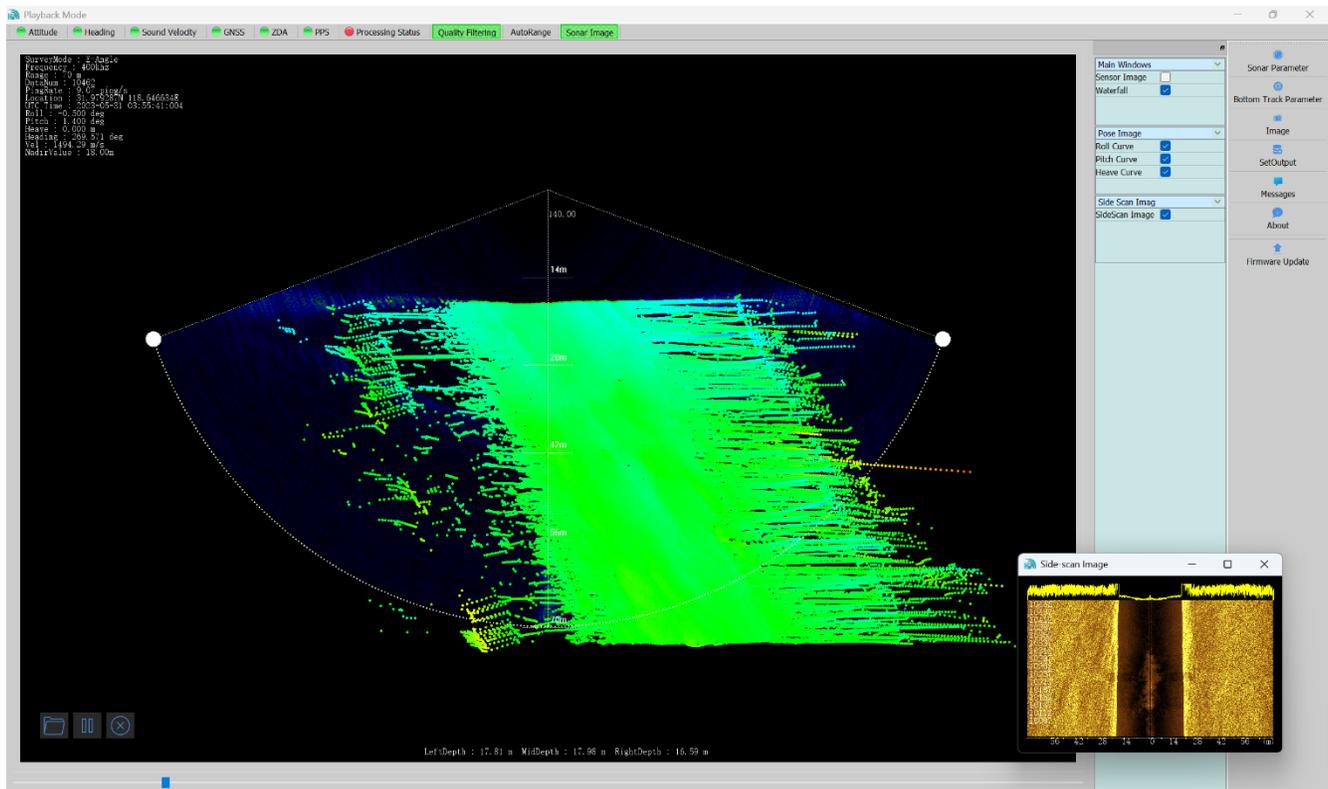


Figure 3-3 Windows management interface

3.4 Summary of the Chapter

After starting the software, enter the detection mode, click [sonar parameter setting] or [bottom tracking parameter setting] will pop up the corresponding parameter setting dialog box, you can change the sonar parameter and bottom tracking parameter in real time in the detection mode.

Chapter 4

About the Software

This chapter contains:

- Software version
- Firmware version
- About the software

4.1 Software Version

The software version information is displayed as the current software version, click the [Update] button to enter into the upgrade interface, before upgrading, please check whether the computer is connected to the Internet.

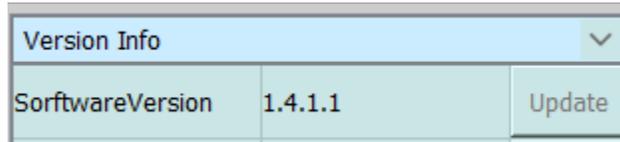


Figure 4-1 Software version

4.2 Firmware Version

After the device is connected, the firmware version information acquisition command is issued by default, which mainly displays the version status information of each hardware module, and click the [Update] button to enter the firmware upgrade interface.

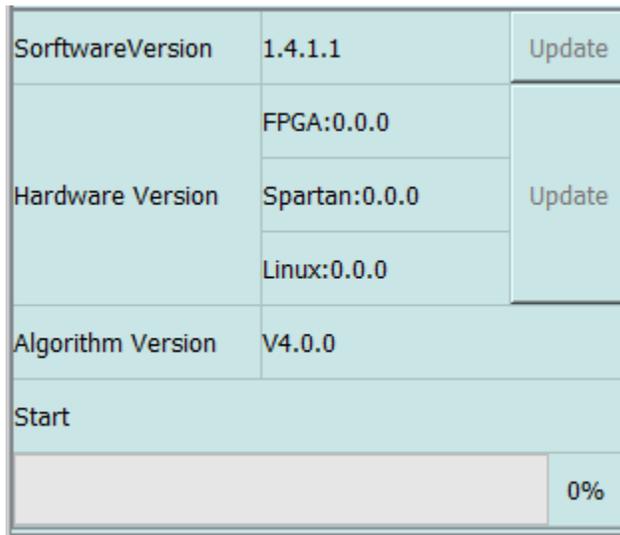


Figure 4-2 Firmware version

The firmware version is automatically fetched every time you connect, and the update function allows you to update the firmware of the lower unit on demand.

Chapter 5

Firmware Update

This chapter contains:

- Firmware Update

5.1 Firmware Update

In the firmware upgrade screen (recommended to be operated by a specialized technician):

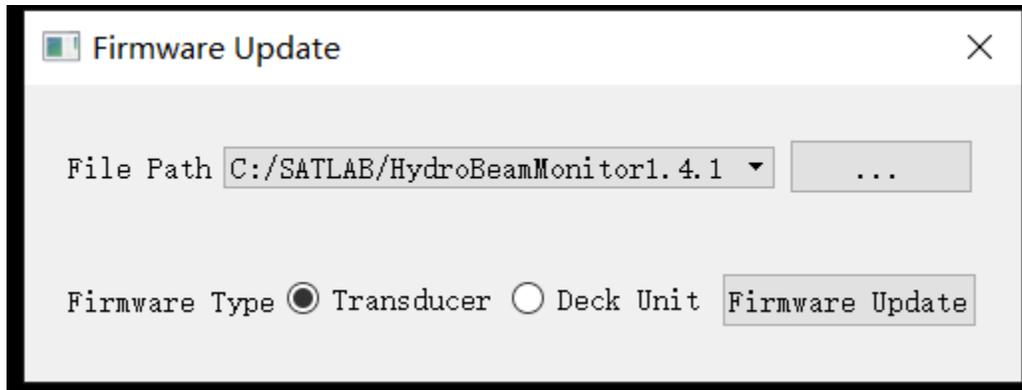


Figure 5-1 Window Management Interface

Procedure:

1. Select the directory where the firmware file to be updated is located (the directory holds only the firmware to be upgraded and change the firmware name to ibeam8140P ZJJT7045).
2. Select the Yes transducer and deck unit option.
3. Click Firmware Upgrade and wait for the transfer to complete.
4. power off and reboot the transducer or deck unit



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