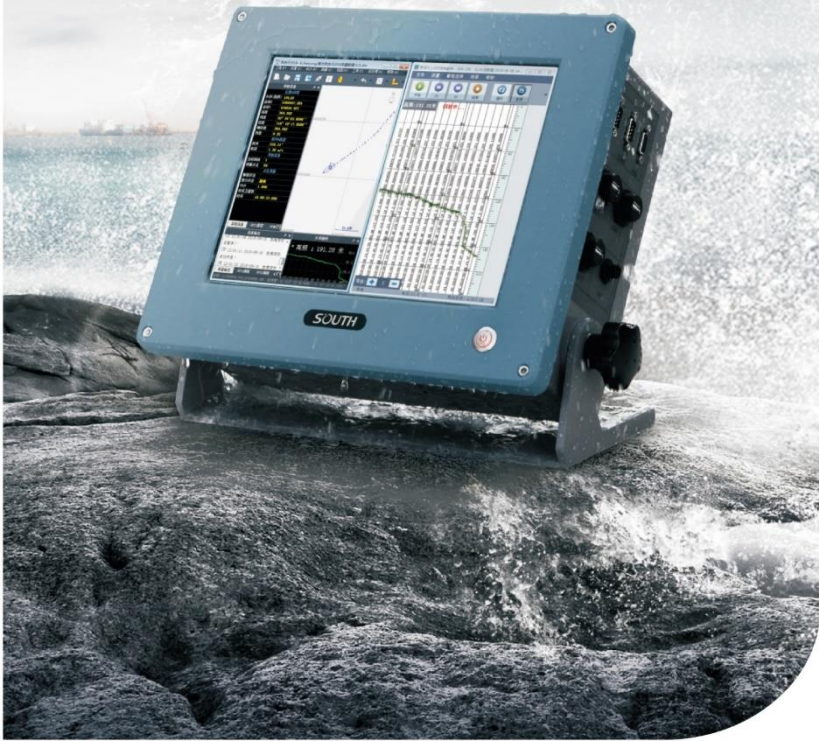


SOUTH
南方卫星导航



SOUTH ECHO SOUNDER USER MANUAL

Content

| | |
|---|-----------|
| Chapter 1 SOUTH echo sounder introduce | 1 |
| 1.1. SOUTH echo sounder models introduce | 1 |
| 1.2. Echo sounder interface introduce | 5 |
| Chapter 2 Echo sounder installation | 7 |
| 2.1 Hardware connection | 7 |
| 2.2 Classical fix the transducer beside the boat | 8 |
| Notice..... | 8 |
| Chapter 3 Software Introduction..... | 9 |
| 3.1 EchoSounder software..... | 9 |
| 3.2 Hysurvey software | 13 |
| Chapter 4 Quick guide..... | 24 |

Chapter 1 SOUTH echo sounder introduce

1.1. SOUTH echo sounder models introduce

SDE-28S+ single beam and digital echo sounder

SOUTH SDE-28S+ echo sounder is a new designed echo sounder base on SDE-28S. 28S+ optimized circuit design, improved hardware stability and bathymetric effect, industrial computer platform and windows XP operating system, internal integration of bathymetry, software graphics navigation and other functions of high-end digital single-frequency sounder software. Instrument real-time recording of underwater curve and water depth data, playback and printing at any time, external GNSS receiver, the results of the operation.

Basic feature

| | |
|-------------|-----------------------------|
| Language | English |
| Frequency | 200KHz |
| Depth range | 0.3-600m |
| Accuracy | 0.01m±0.1%D |
| Software | Hysurvey |
| Power | DC: 10-36V AC: 110V-260V |
| Rom | 8G |
| Display | 12.1 inch LCD |
| Resolution | 1024×768 |
| Size | 340mm×280mm×130mm |
| Weight | 6kg |



Performance

- ① High Speed DSP Chip processing Technology to ensure reliable Waveform and Water depth
- ② The software automatically controls the pulse width, the gain, the power and the gear, the interface and the operation is simple.
- ③ All aluminum alloy shell, compact structure, good earthquake resistance, suitable for high strength work on water
- ④ Good performance in shallow Water tracking

SDE-230 single beam and digital echo sounder

SDE-230 is a new generation of high precision digital sounder in the south, all metal shell design, waterproof and shock proof, with new, high speed industrial control motherboard and simplified custom windows XP system to form a stable operating platform. Sde-230 can connect most of GNSS receiver to get stable performance, it integrate intelligent, professional navigation and bathymetric software.

Basic Feature

| | |
|-------------|---------------------------|
| Language | English |
| Frequency | 200KHz |
| Depth range | 0.3-600m |
| Accuracy | 0.01m±0.1%D |
| Software | Hysurvey |
| Power | DC:10-36V AC:110V-260V |
| ROM | 16G |
| Display | 12.1 inch LCD |
| Resolution | 1024×768 |
| Size | 340mm×280mm×130mm |
| Weight | 6.7kg |



Performance

- ① All-metal shell, integrated molding, multi-sided heat dissipation, stable and reliable
- ② Highlight LCD screen and five-wire resistance touch screen, highlight, accurate touch, outdoor operation is more convenient and simple
- ③ High speed and low power industrial control platform, stable windows system, perfect system protection and system reduction measures
- ④ Time and space double filtering and unique bubble filtering method adapt to complex waters, get stable and continuous echo recognition performance. Also this method has strong anti-interference ability.

SDE-260D Dual frequency echo sounder

SOUTH SDE-260D is full digital dual frequency echo sounder, follows the style of the SOUTH echo sounder products, has very good performance product with advanced echo and digital processing technology. The standard configuration of the sde-260d dual-frequency sounder is 200 kHz and 20 kHz. high-frequency precision, good low-frequency penetration and strong anti-interference performance, can not only ensure the precision of the water depth measurement, but also effectively eliminate the influence of the muddy water, the quicksand layer, the weeds, the hull noise and the water vortex on the water depth measurement, and more effectively reduce the interference of the false water depth, The measurement of the silting and floating mud in the dredging construction is also very effective.

Basic Feature

| | |
|-------------|-------------------|
| Language | English |
| Frequency | H:200KHz;L:20KHz |
| Depth range | H:0.3-600m |
| | L:0.8-1200m |
| Accuracy | H: 0.01m±0.1%D |
| | L: 0.1m±0.1%D |
| Software | Hysurvey |
| Power | DC: 11-36V |
| | AC: 220V |
| Rome | 16G |
| Display | 12.1 inch LCD |
| Resolution | 1024x768 |
| Size | 340mm×300mm×150mm |
| Weight | 6kg |



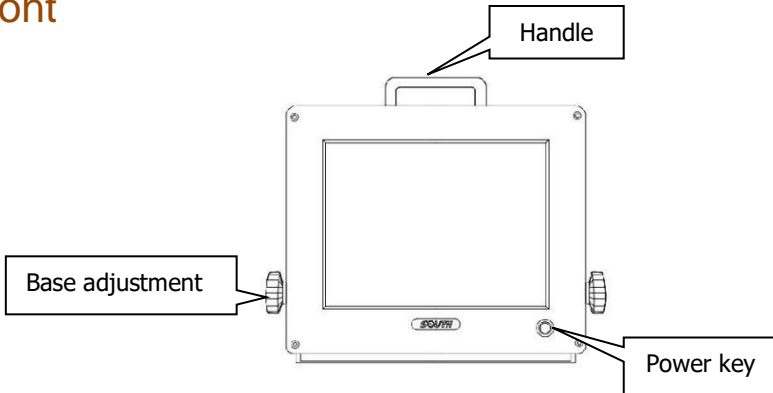
Performance

- ① All-metal shell, integrated molding, multi-sided heat dissipation, stable and reliable
- ② Highlight LCD screen and five-wire resistance touch screen, highlight, accurate touch, outdoor operation is more convenient and simple
- ③ High speed and low power industrial control platform, stable windows system, perfect system protection and system reduction measures
- ④ Time and space double filtering and unique bubble filtering method adapt to complex waters, get stable and continuous echo recognition performance. Also this method has strong anti-interference ability.
- ⑤ Dual frequency, 200Khz and 20Khz

1.2. Echo sounder interface introduce

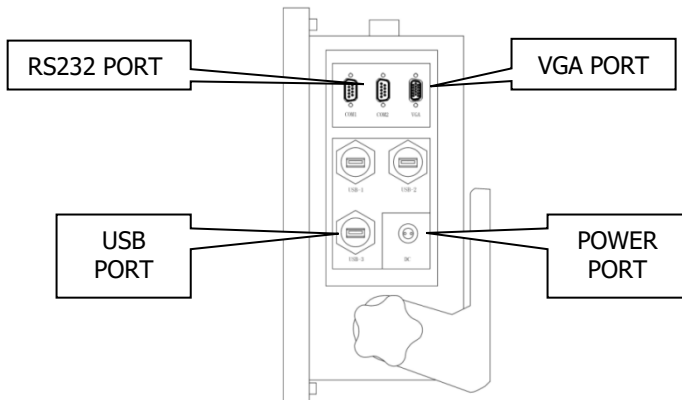
The main differences of SOUTH SDE series are the hardware and software, but the main interfaces are similar.

Front



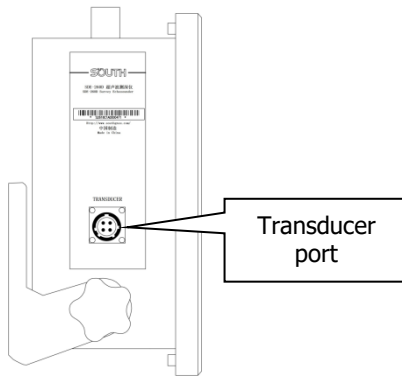
**Different model SDE echo sounder have different interface, but they are similar.*

Right side



| | |
|-------------------|---|
| RS232 PORT | Connect with GPS receiver |
| VGA PORT | Connect with external display |
| USB port | Connect with USB device |
| Power port | Connect with AC or DC power, use the power supply cable |

Left side

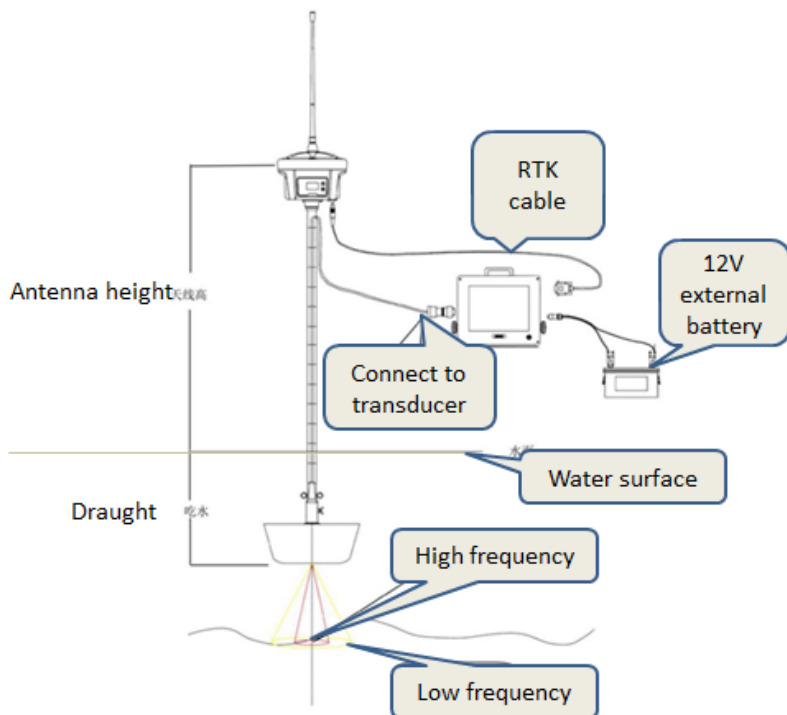


| | |
|------------------------|-------------------------|
| Transducer port | Connect with transducer |
|------------------------|-------------------------|

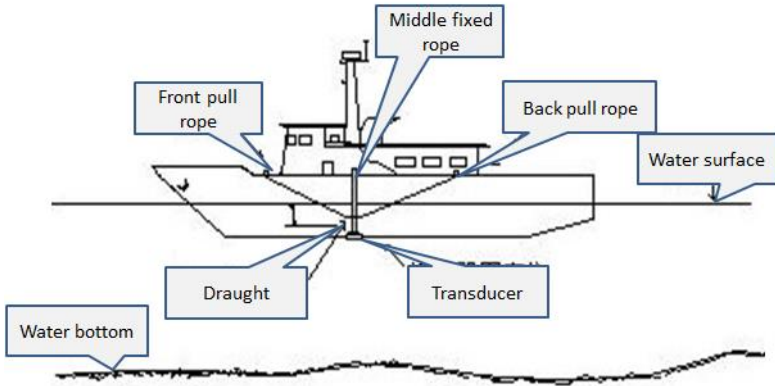
Chapter 2 Echo sounder installation

2.1 Hardware connection

See as below picture:



2.2 Classical fix the transducer beside the boat



The position of the fixed transducer is best selected next to the middle side of the hull, avoiding the noise interference of the hull as far as possible, and then fixing it by pulling the rope at the front, rear and bottom.

Notice

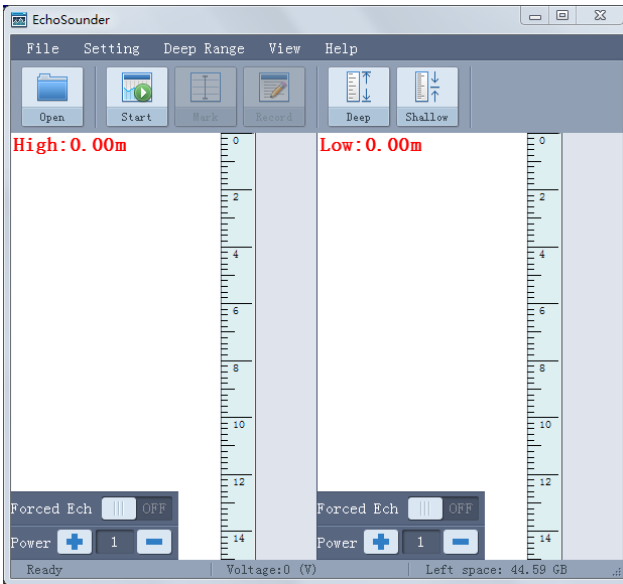
During the whole depth measurement, the transducer rod shall be kept vertical at all times. When you find the rod is not vertical, you need to check the data. So, it is important to fixed the rod before you go to survey.

Chapter 3 Software Introduction

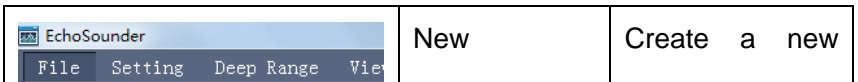
SOUTH echo sounder needs two software to do the marine survey job. One is EchoSounder software, another is Hysurvey software.

3.1 EchoSounder software.

EchoSounder software is main use for configure the transducer sounding parameters, collect the echo wave raw data, transmit the data depth data to the Hysurvey software. See below picture is the main interface of this software:

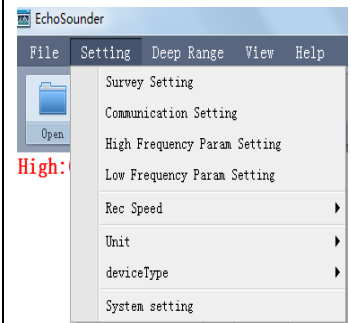


File

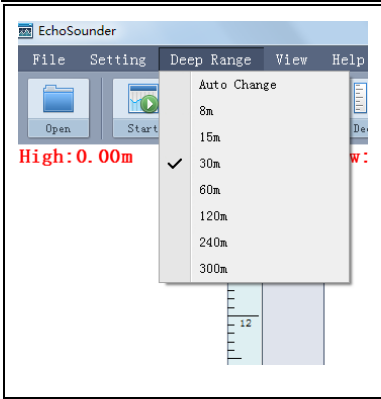


| | | |
|--|----------------------|-----------------------------|
| | | data file |
| | Recently opened file | Open the previous data file |
| | Page setup | Print page settings |
| | Print preview | Preview the echo wave print |
| | Print to PDF | Print as PDF format |
| | Exit | Exit the software |

Setting

| | | |
|--|----------------------------------|---|
|  | Survey setting | Input the draught, velocity, and alert settings |
| | Communication setting | Setting the depth transmit, tide gauge and mark |
| | High frequency parameter setting | Set the high frequency sounding parameters |
| | Low frequency parameter setting | Set the low frequency sounding parameters |
| | Record speed | Set the echo wave record speed |
| | Unit | Set the unit: Metric or British |
| | Device type | Select the echo sounder model |
| | System setting | Set the font size and color |

Depth range



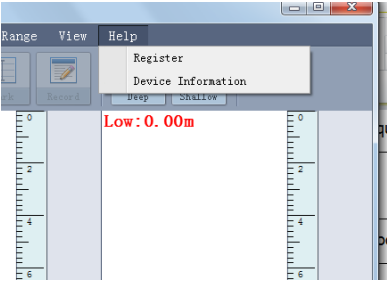
Depth range is important for auto survey mode, and you need to select the correct range to let SOUTH echo sounder adjust the sounding parameters automatically.

If the real depth is out of setting range, the depth will show 0.00 m

View

| | | |
|--|-----------------------|------------------------------|
| | High frequency mode | Only use high frequency mode |
| | Low frequency mode | Only use low frequency mode |
| | Double frequency mode | Use dual frequency mode |
| | Color mode | Set the color |
| | Display setting | Set the display parameters |
| | Ruler increment | Set ruler increment |
| | Status bar | Display status bar or not |

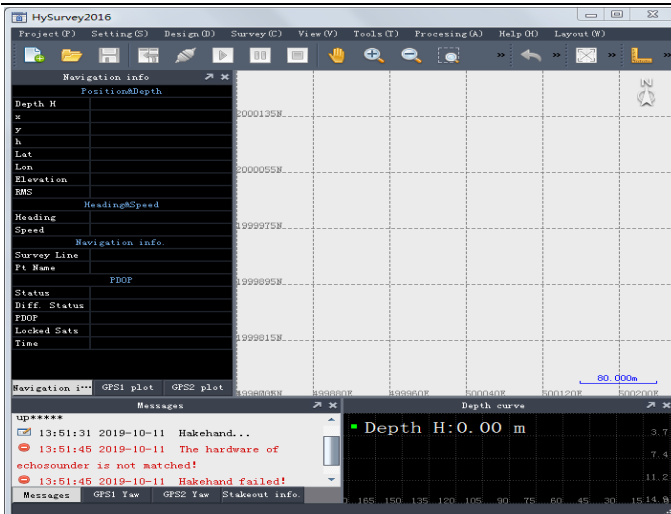
Help

| | | |
|---|---------------------------|---|
|  | <p>Register</p> | <p>Check the left using time and register the echo sounder</p> <p>Normally SOUTH echo sounder will have around 30 hours for demo using.</p> |
| | <p>Device information</p> | <p>Check the device information</p> |

3.2 Hysurvey software

Hysurvey software is main used for setting up project parameters, survey navigation, collecting the depth and position data, echo data process and result data output.

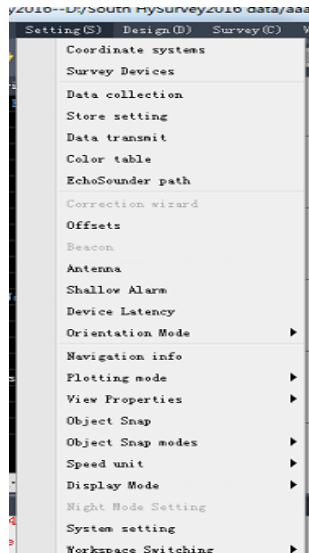
Below is the main interface and the function introduce of the Hysurvey:



Project

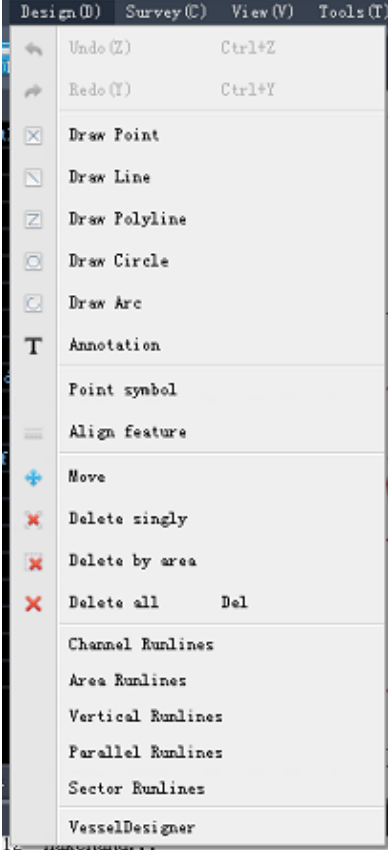
| | | |
|--|----------------|--------------------------------|
| | New project | Create a new project |
| | Open project | Open the existing project |
| | Modify project | Modify the project information |
| | Import | Import the DXF file |
| | Export | Export the DXF file |
| | Save | Save the project |
| | Exit | Exit the project |

Setting

| | | |
|--|-------------------|--|
|  | Coordinate system | Modify the current coordinate system |
| | Survey Device | Configure the device connecting settings |
| | Data collection | Set the data collection parameters |
| | Store setting | Set the store parameters |
| | Data transmit | Configure the data transmutation |
| | EchoSounder path | Set the echo sounder path |
| | Correction wizard | Set the correction parameters |
| | Offsets | Set the GPS1 and GPS2 antenna offsets |
| | Beacon | Set the beacon signal parameter |
| | Antenna | Set the antenna height |
| | Shallow alarm | Set the shallow alert |


| | | |
|--|----------------------|--|
| | Device latency | Set the device signal delay |
| | Orientation mode | Set the display orientation mode |
| | Navigation info | Select which content of navigation to be display |
| | Plotting mode | Mapping mode by coordinate or mouse |
| | View properties | Check the properties |
| | Object snap | Object capture |
| | Object snap modes | Object capture mode |
| | Speed unit | Set the speed unit |
| | Display mode | Set the display mode, day and night mode |
| | Night mode setting | Set the night mode brightness |
| | System setting | Set the display parameters |
| | Work space switching | Switch the software main interface |

Design

| | | |
|---|---------------|------------------------------------|
|  | Undo | Undo the last draw action |
| | Redo | Redo the last draw action |
| | Draw point | Draw a point on the back ground |
| | Draw line | Draw a line on the back ground |
| | Draw polyline | Draw polyline on the back ground |
| | Draw circle | Draw a circle on the back ground |
| | Annotation | Write some text on the back ground |
| | Point symbol | Draw a point as symbol |
| | Align feature | Draw a line as symbol |
| | Move | Move the display |
| | Delete by | Delete the targets by |

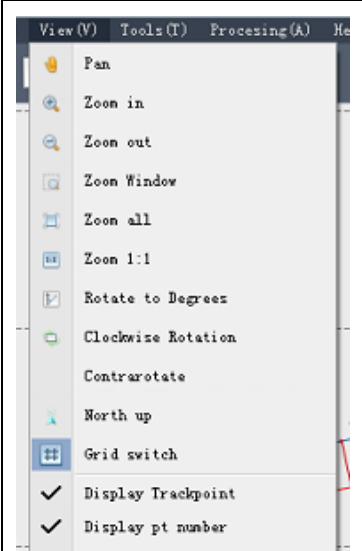
| | | |
|--|-------------------|--|
| | area | area |
| | Delete all | Delete all |
| | Channel runlines | Design the channel survey plan lines |
| | Area runlines | Design the area survey plan lines |
| | Parallel runlines | Design the parallel survey plan lines |
| | Sector runlines | Design the fan-shape survey plan lines |
| | Vessel design | Design the survey vessel shape |

Survey

| | | |
|--|-------------------|---------------------------|
|  | Re-handshake | Connect the devices again |
| | Device connection | Connect the device |
| | Record | Record the data |

| | | |
|--|----------------|---------------------------------|
| | Pause survey | Pause record the data |
| | Stop record | Stop record data |
| | Auto record | Auto record by time or distance |
| | Stakeout point | Stakeout point |
| | Heading | You can select the |
| | Compass | Display the compass |
| | Replay | Replay the project |

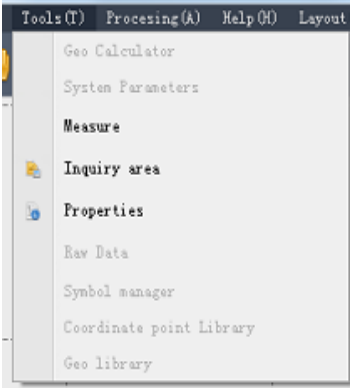
View

| | | |
|---|-------------|--------------------------------|
|  | Pan | Move the display area |
| | Zoom in | Zoom in |
| | Zoom out | Zoom out |
| | Zoom Window | Zoom window |
| | Zoom all | Zoom all |
| | Zoom 1:1 | Zoom 1:! |
| | Rotate | to Input the rotate angle, the |

| | | |
|--|----------------------|---|
| | Degrees | display will rotate as the angle |
| | Clockwise rotation | Click one time, the display will rotate clockwise 10 degree |
| | Contra rotate | Click one time, the display will rotate anticlockwise 10 degree |
| | North up | Let the display back to north up |
| | Grid switch | Hide and display the grid lines |
| | Display track point | Display or hide trace point |
| | Display point number | Display or hide the point number |
| | Track display | You can select the survey line which you want to display in the back ground |
| | Track lines | It will let the trace line connect one by one |

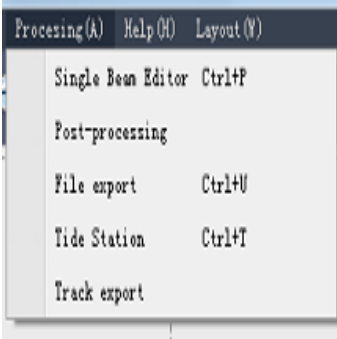
| | | |
|--|------------|---------------------------------------|
| | Color bar | Show the color bar in the back ground |
| | Scale text | Set the text scale |

Tool

| | | |
|--|--------------------------|---|
|  | Geo calculator | Coordinate calculate tool |
| | System parameters | View coordinate system parameters |
| | Measure | Measure the direction and distance on the back ground |
| | Inquiry area | Area calculation |
| | Properties | Check the target properties |
| | Raw data | Check the raw data |
| | Symbol manager | Symbol edit, you can draw the symbol as customization |
| | Coordinate point library | NEH Coordinate point library, you can view, |

| | | |
|--|-------------|---|
| | | add and modify the point coordinate |
| | Geo library | BLH Coordinate point library, you can view, add and modify the point coordinate |

Processing

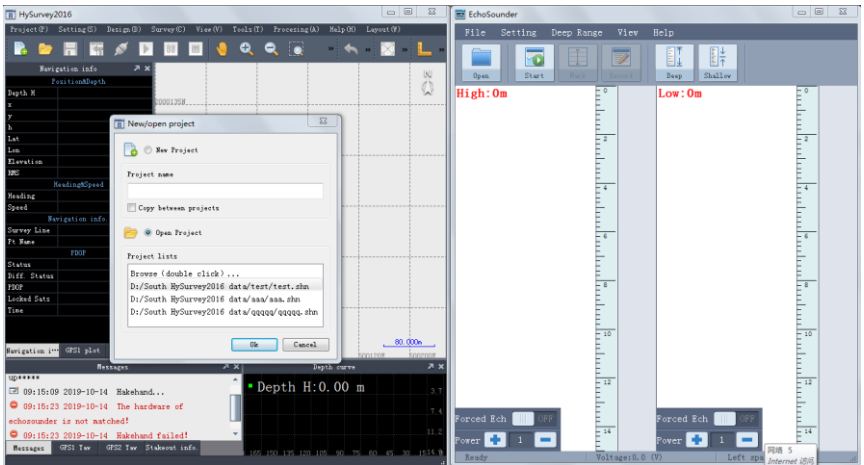
| | | |
|--|--------------------|--|
|  | Single beam editor | Check the echo wave, and if have some incorrect data, you can edit it |
| | Post-processing | Use for when you input the incorrect coordinate system, this function can let you translate to the correct one |
| | File export | Result export, you can customize the result data format and output it |
| | Tide station | Setup the tide station |

| | | |
|--|--------------|---|
| | | and input the tide data |
| | Track export | Export the trace file as DXF2000 format |

Chapter 4 Quick guide

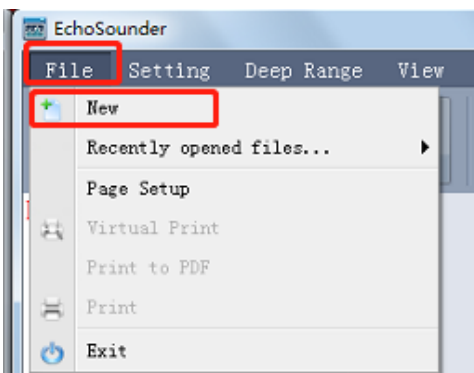
4.1 Install the echo sounder and RTK, fixed the transducer on the boat. Check the chapter 2 hardware installation.

4.2 Power on the echo sounder and open the EchoSounder and Hysurvey software. See as below picture after open the software.

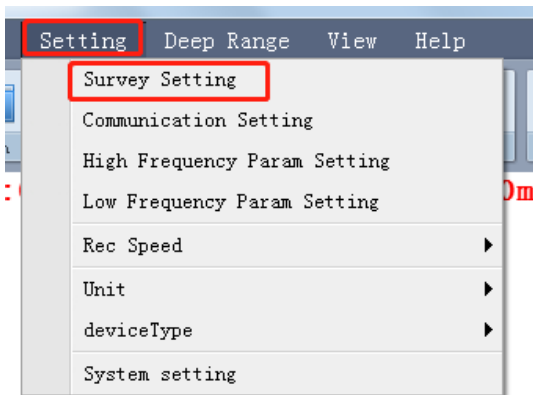


4.3 First configure the EchoSounder software.

4.3.1 Create a new data file and input a new file name.



4.3.2 Configure the survey setting

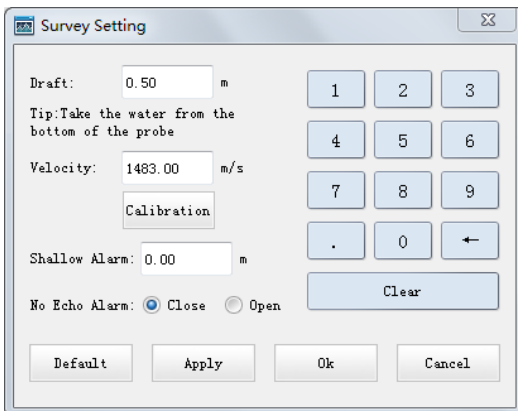


Input the draft, sound velocity, and shallow alarm.

The Draft is the depth value of the transducer.

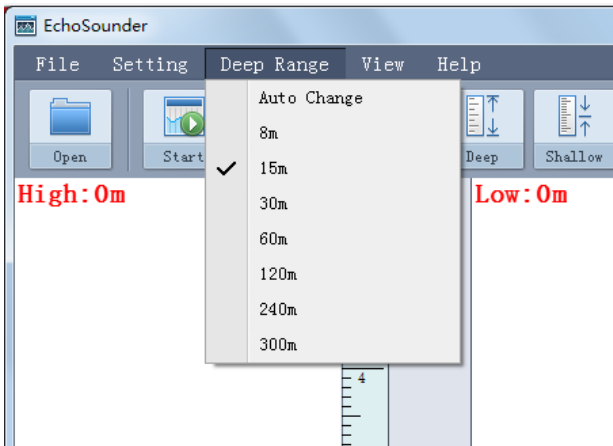
The velocity is the sound velocity, you can compare the real depth with the echo sounder display, then change the value.

E.g.: the depth you test is 5m, but the echo sounder is 4.95m, you can input a bigger velocity let echo sounder display 5m.

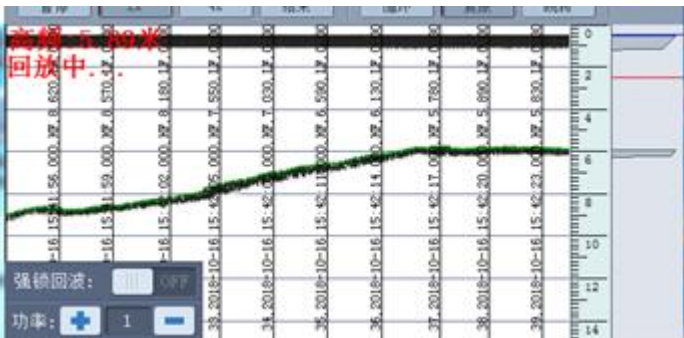


4.3.3 Select a deep range.

The deep range is use for auto survey mode, it is important when use the auto survey mode. Make sure the range is correct, if the depth is over the range, the echo sounder will show 0 m. But we can't select the range more bigger, the range is a key value for the auto survey algorithm.

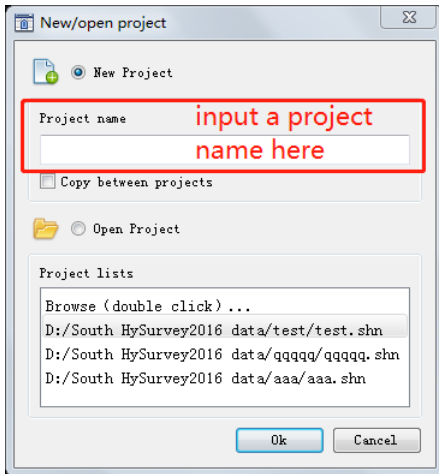


Click "Start" icon, when you can see the depth and echo wave stable, the EchoSounder is normal.

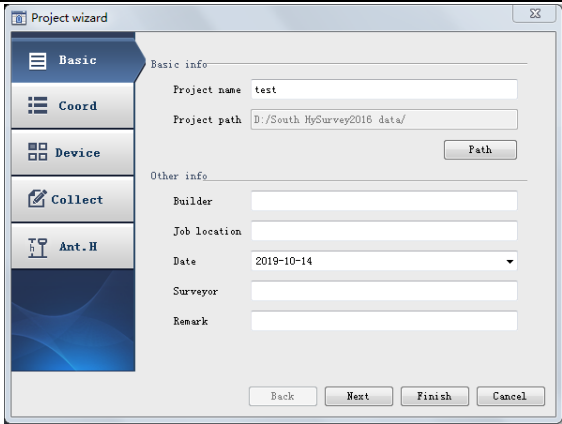


4.4 Then you can minimize the EchoSounder and go to configure the Hysurvey software.

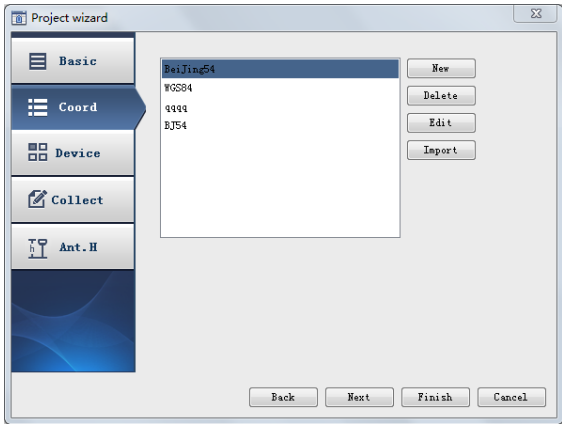
4.4.1 Create a new project by click “Project – new project”, click “OK”, see as below picture:



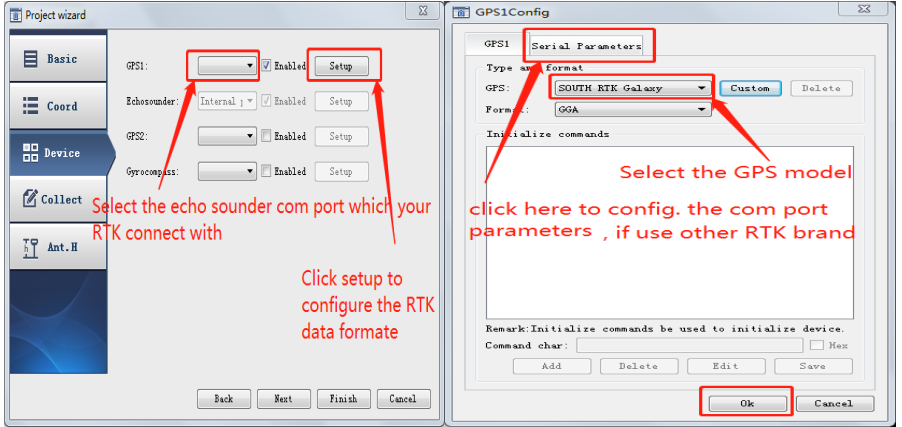
4.4.2 You will see the wizard, and you can input the project parameters step by step, See as below pictures:



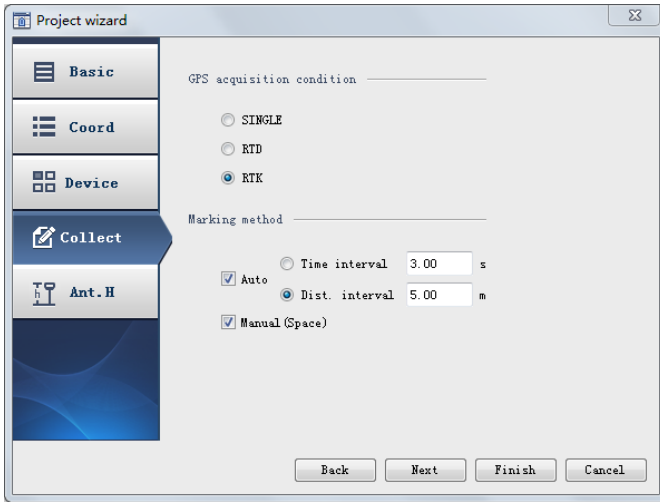
Above picture, you can input the project information



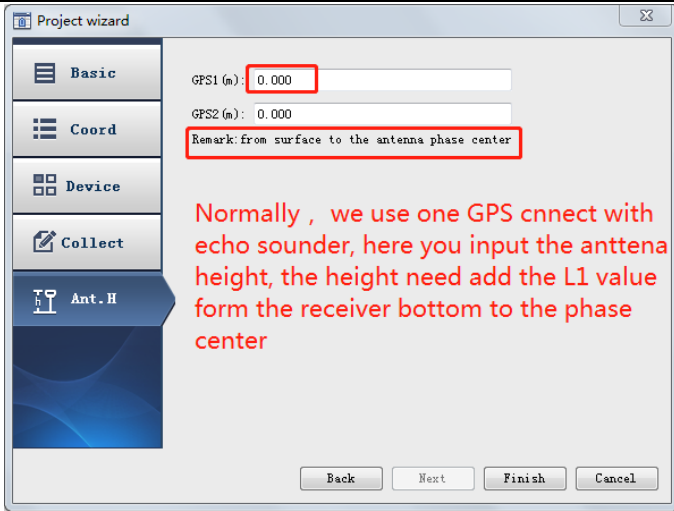
Above picture, you can create your local coordinate system by click the “new” button



Above picture is configure the device sample, and the Echo sounder please select the "Internal port" and tick "Enable"

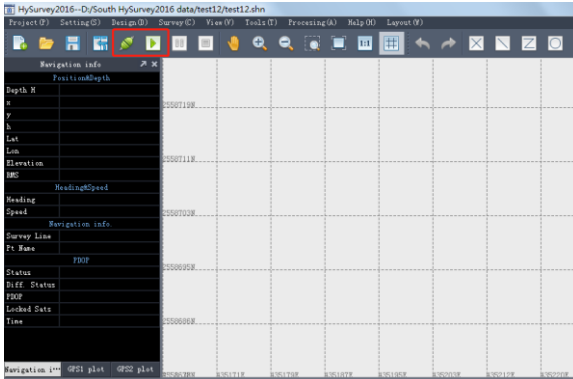


Above picture is the collect data setting.



Above picture need user input the antenna height, after input the height, click “Finish” icon.

4.4.3 After click “Finish” the software will back to main interface. Click the connect icon and record icon, if connect successfully, you can see the coordinate and depth display in the “Navigation info”



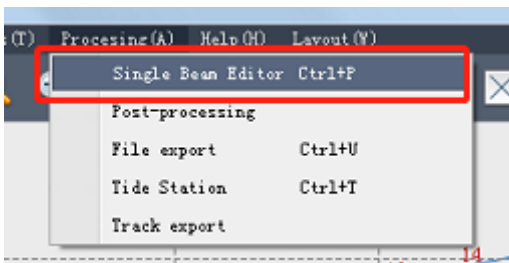
If there is no information come, please check the configuration in “setting – survey devices” again, and check the EchoSounder and Hysurvey software is not expired in “Register”.

4.5 For the survey plan line, you can Import the DXF2000 format file in “Project - Import”, or draw it in the “Design” function.

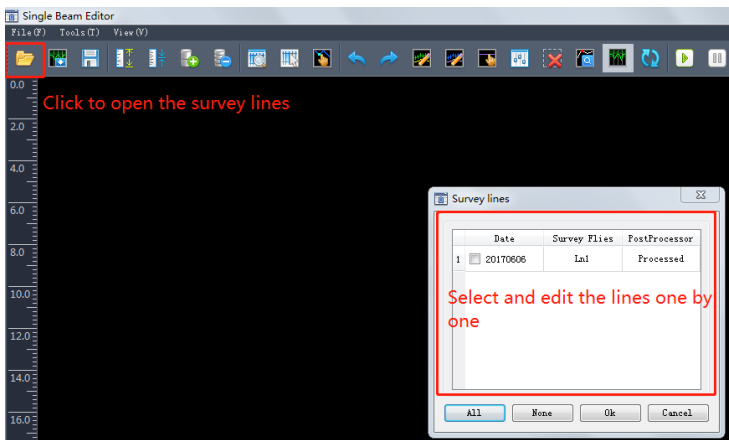
After your back ground have the survey plane lines, you can click “Record” and drive the boat follow the lines, echo sounder will automatically record the data as your project collecting setting.

4.6 After collecting the data, the final step is data processing.

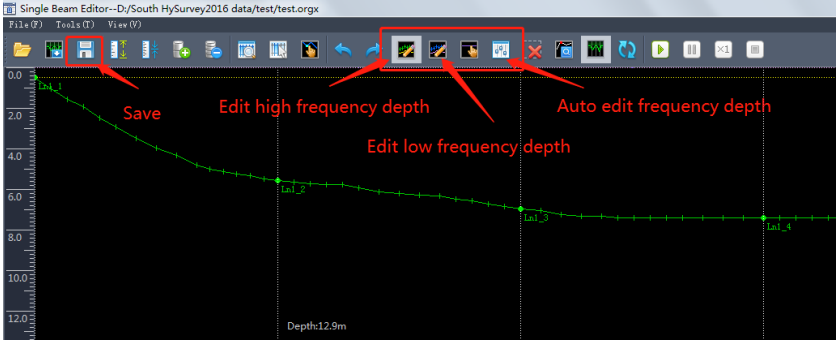
4.6.1 Check the echo wave data, Click “processing – single beam editor”, then you can open the single beam editor



In the editor, you can open the line files and check the echo wave.

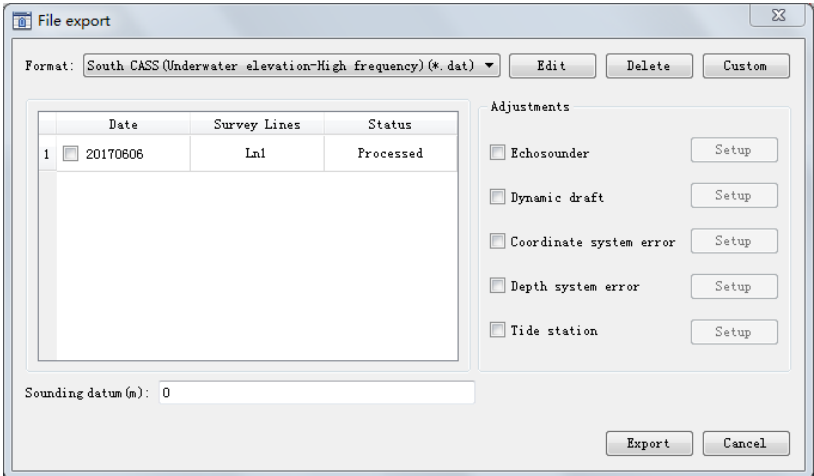


Opened the line file and check the data, if find some false data, you can use the edit tool bar to edit the data.



After you open the line file, you can click the “Auto” process first, then you can check by manual. If you find some echo wave error, use the edit high or low depth to edit it back to normal. **After finishing edit 1 line, click “Save” to save the data, and open another line to process.**

4.6.2 After finish all the survey lines process, close the single beam editor, and click “Process – file export”.



You can customize the output format as you want in “custom” function.

Normally, when you use RTK for marine survey, you only need to select the output format and select all the survey lines, then click “Export”.

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.