海卓同创
Hydro-tech Marine

SVS1500

Sound Velocity Sensor

User Manual

Beijing Hydro-Tech Marine Technology Co., Ltd.

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Customer Supports

Welcome to contact us at any time. We would feedback in time and provide good service to you. Below is the contact information.

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1. Product Introduction

SVS1500 sound velocity sensor adopts "Time Leap" technology for sound velocity measurement. Combining with advanced digital signal processing technology, the sound velocity measuring accuracy can reach 0.05m/s. Base on compact IC and sensing technology, SVS1500 is small size and easy to carry. It is so convenient that completely reduce not only the big error risk caused by the table checking method, but also troublesome of the original inspection board comparing work.

The main Features of SVS1500 are listed as below.

- **High Accuracy:** With "Time Leap" technology, SVS1500's accuracy was enhanced to 0.05m/s.
- **Quick Response:** Highest output rate can reach 30Hz, which means SVS1500 can rapidly feedback to abnormal water current and sound velocity changing in some water field, so that it can provide accurate calibration to sound velocity.
- **Stable Performance:** Adopt up-to-date sound velocity sensor, new material & measuring technology, SVS1500 greatly minimize the impact caused by environment in order to ensure the data performance.
- **Easy Operation:** Plug and play mode is suitable for out field application. It can quickly work with Laptop and various echo sounder, or integrated with other devices requiring sound velocity measuring results.

2. System Specifications

2.1. Technical Specifications

Sound Velocity Range	1400m/s ~ 1600m/s
Sound Velocity Resolution	0.01m/s
Sound Velocity Accuracy	0.05m/s
Sound Frequency	2MHz
Sampling Rate	1 ~ 30Hz
Max. Working Depth	300m
Temperature Sensor Type	PT1000
Temperature Resolution	0.001℃
Temperature Accuracy	0.05℃

2.2 . Electrical Specification

Power Supply	12V
Data Port	RS232
Data Rate	2400bps ~ 115200bps

2.3 . Physical Specification

Cover Material	316L Stainless Steel
Weight	1kg
Size	Φ34mm x 163.5mm
Working Temperature	-5℃ ~ 45℃
Storage Temperature	-20℃ ~ 55℃

3. Installation

Use the cable provided with SVS1500, connect to the power & data port at the back side of SVS1500 and screw it clockwise.

Connect the DB9 end to standard serial port of computer.

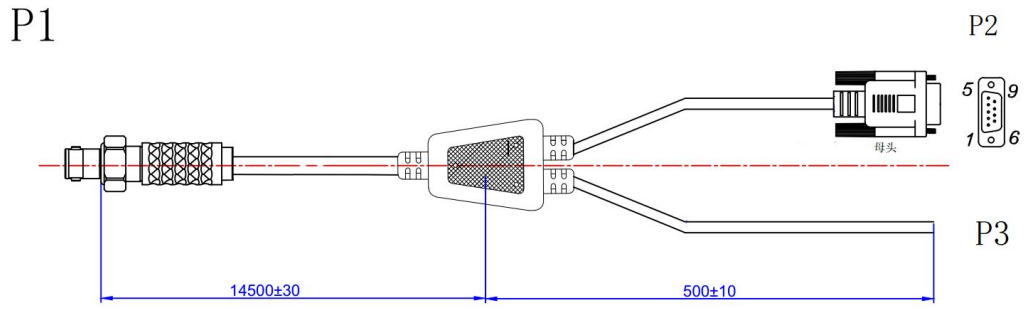
Connect power cable to 12V power supply.

Put the probe into water, and SVS1500 is ready to work normally.

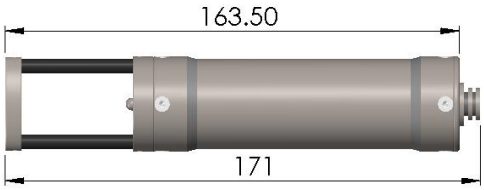
Power on the power supply, about 10 seconds later, it starts to output sound velocity measurement results.

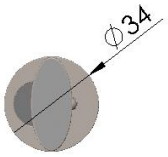
The definition of each pin of the cable is shown in the following table.

Item	P2 (DB9)	P3 (Cable Pins)	Description
12V		Pin in Red	12V Positive
PGND		Pin in Black	12V Negative
TX	Pin2		RS232 TX to PC RX
Rx	Pin3		RS232 RX to PC TX
SGND	Pin5		RS232 Ground



Below is the size of SVS1500.





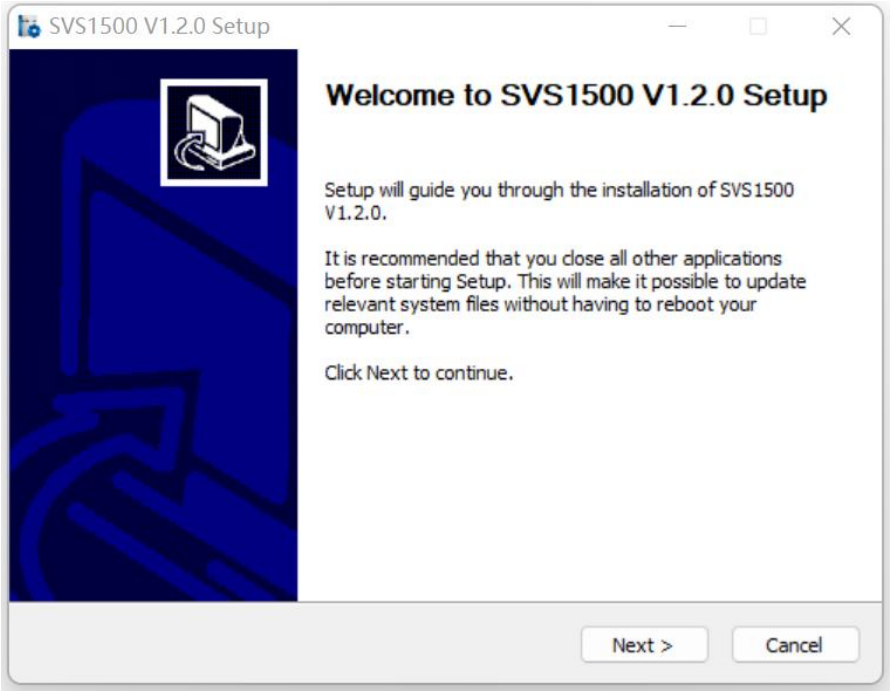
In the process of usage, in order to prevent sound velocity sensor from directly colliding with the hull or water bottom ground and causing the deformation of the reflective surface support rod, it is recommended to pay attention to avoid damage this part on the sound velocity sensor.

Notice: The sound velocity sensor connecting cable cannot bear too big weight, so we recommend to use another dragging cable during operation.

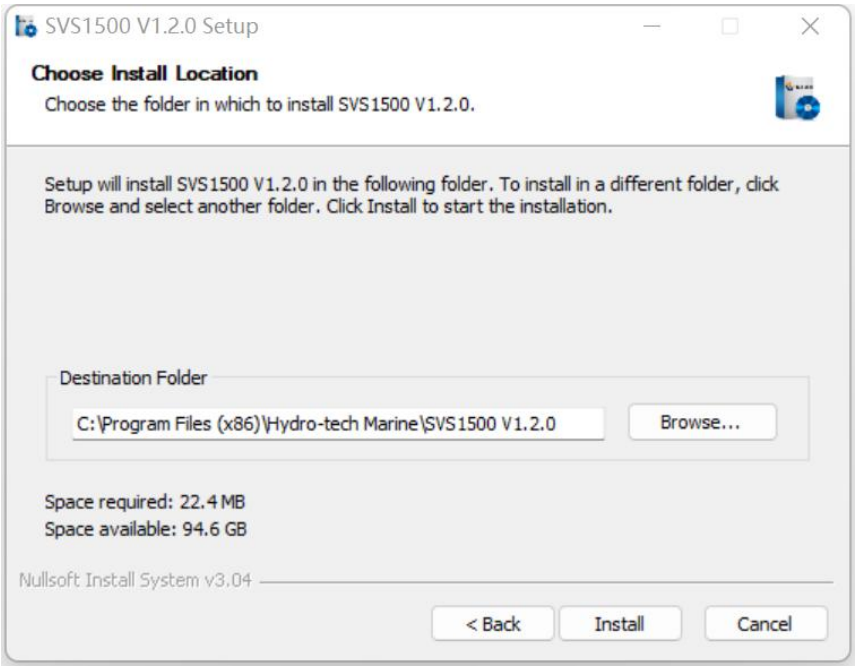
4. Configuration & Operation

The sound velocity sensor can be configured the baud rate, output sound speed rate, and whether to output water temperature. For the specific setting method, see the following setting process.

1) Connect sound velocity sensor to computer serial port.
2) Double-click the "SVS1500SetupEN V1.2.0" file and run the setup software;

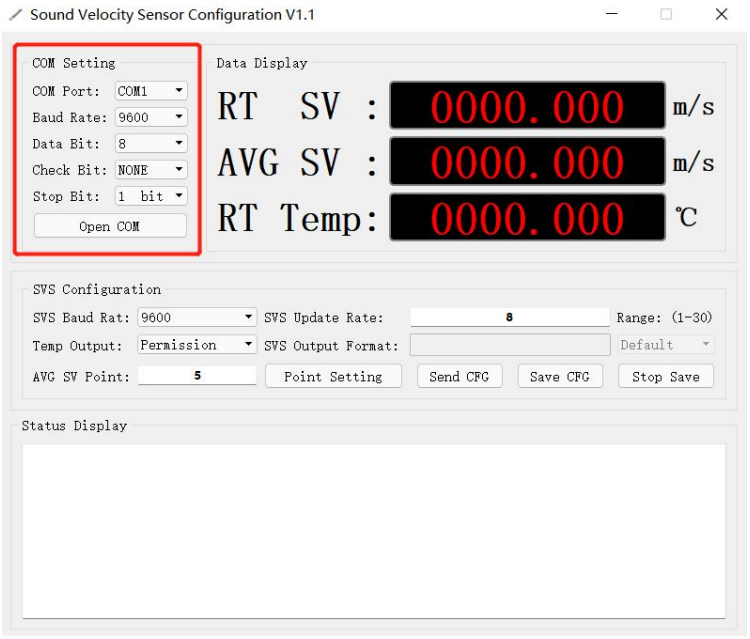


3) Select the software installation path as you like. The default installation path is C:\Program Files. Then click "Next" to install the software to the computer, as shown in the following figure:



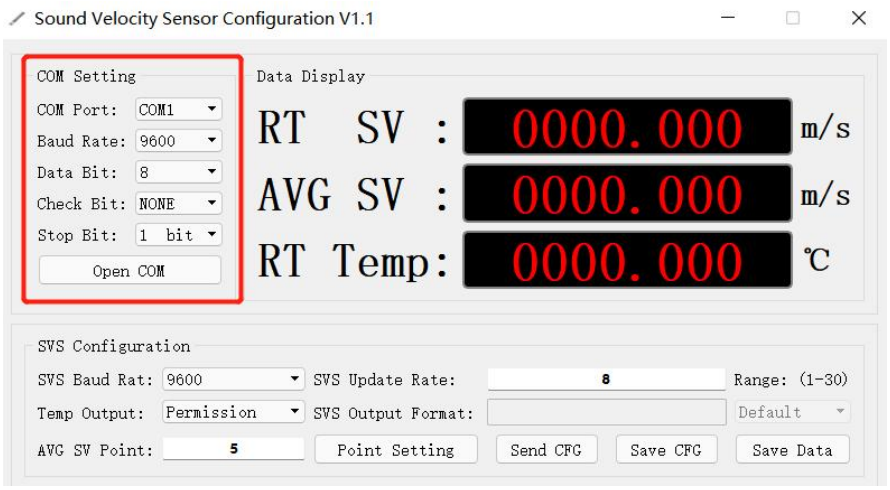
4) After the installation is completed, SVS software will automatically create a shortcut of "SVS1500" on the desktop.

5) Double-click the "SVS1500" shortcut to run the software, first set up the working serial port as shown in the red box in the figure below.
Select the right port and baud rate, which default is 9600bps, data bit is 8, check bit is NONE, stop bit is 1 bit, click “Open COM” and complete the setting.



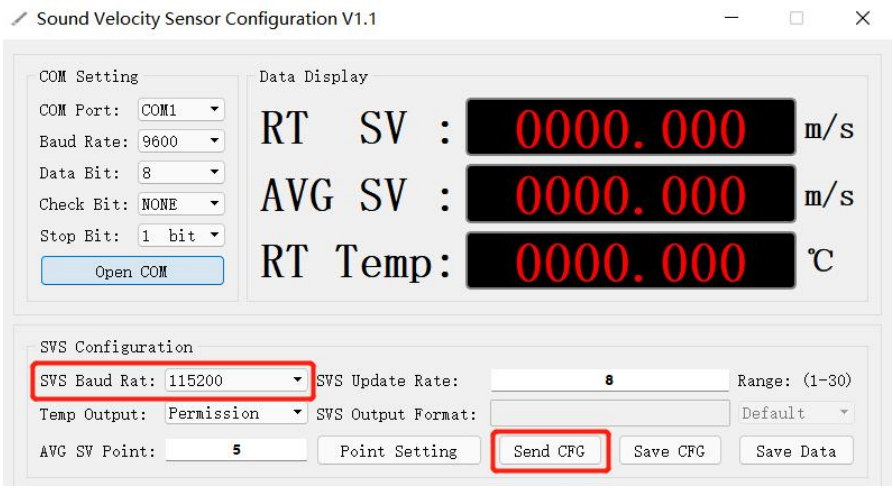
6) After the connection is completed, user can configure the corresponding working parameters of the sound velocity sensor, including baud rate of the sound velocity sensor, output rate of sound velocity information, and whether to output water temperature.
For example, if user need set baud rate to 115200, update rate is 8 Hz, and water temperature output is turned on. The configuration method is as follows:

- Step 1: Before the sound velocity sensor is powered on, first set the parameters in "serial port parameter setting" area same as the parameters currently used by sound velocity sensor. Then open the working serial port, as shown in the red box in the following figure.



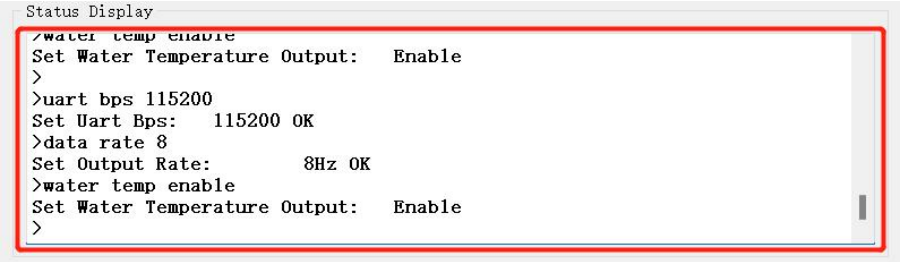
- Step 2: In the "SVS Configuration" area, input SVS Baud Rate to what you want, such as 115200.

  Power on sound velocity sensor, and quickly press the "Send CFG" button on the software within 3 seconds after the sound velocity sensor is powered on to enter configuration mode, as shown in the red box in the following figure.



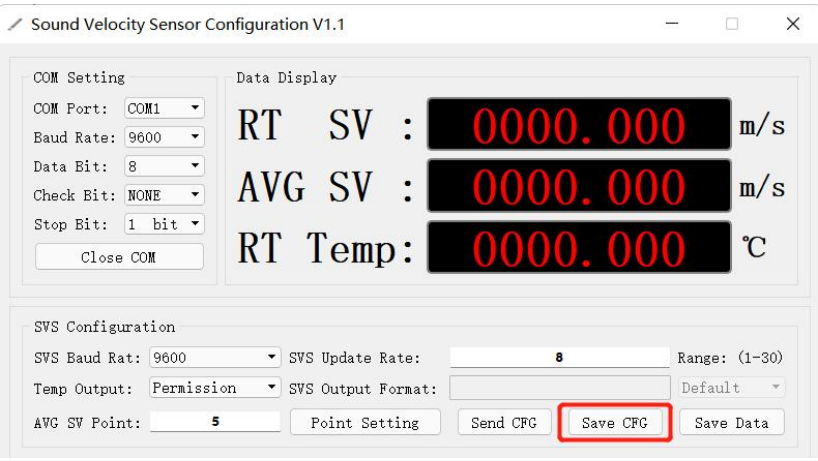
If in the “Status Display” area, display the following information shown in the red box below, it means that the configuration is completed successfully.

Otherwise, please power off and repeat the steps above to re-configure.

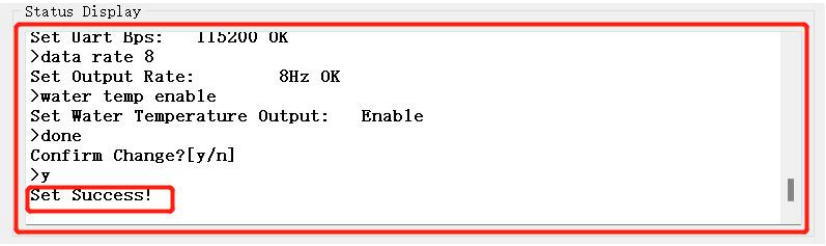


Notice: If you do not click "Send CFG" button within 3 seconds after powering on, the system cannot modify working parameters. It means if you want to modify parameters, you must click the "Send CFG" button within 3 seconds after powering on.

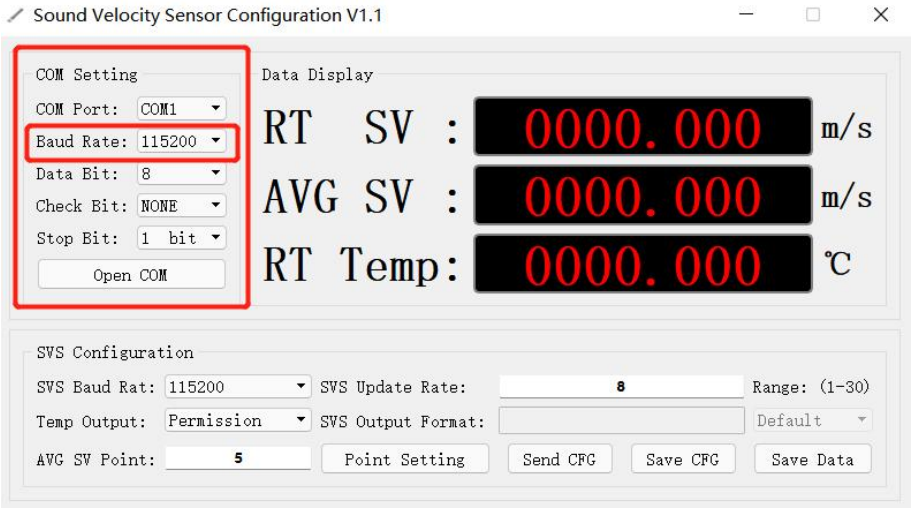
- Step 3: After configuration, click the "Save CFG" button to save the configuration information into SVS as shown in the red box below:



If in the “Status Display” block, it displays message of “Set Success!” shown as red box below, it means the configuration is saved successfully. Otherwise, click "Save CFG" again to save configuration parameters.

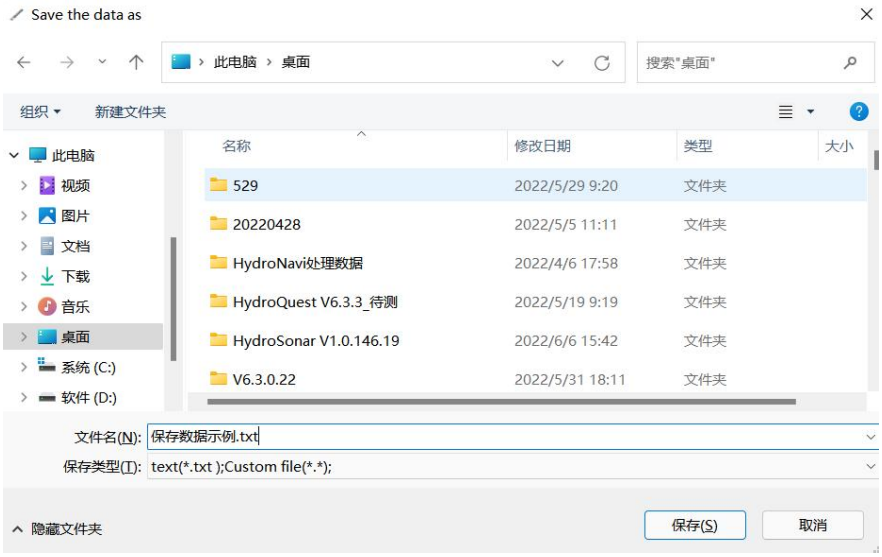


- Step 4: If baud rate has been reset, click "Close COM". When next time powering on, select baud rate as 115200 and then “Open COM”. At this time, sound velocity sensor will work under baud rate of 115200 as shown in the red box below.



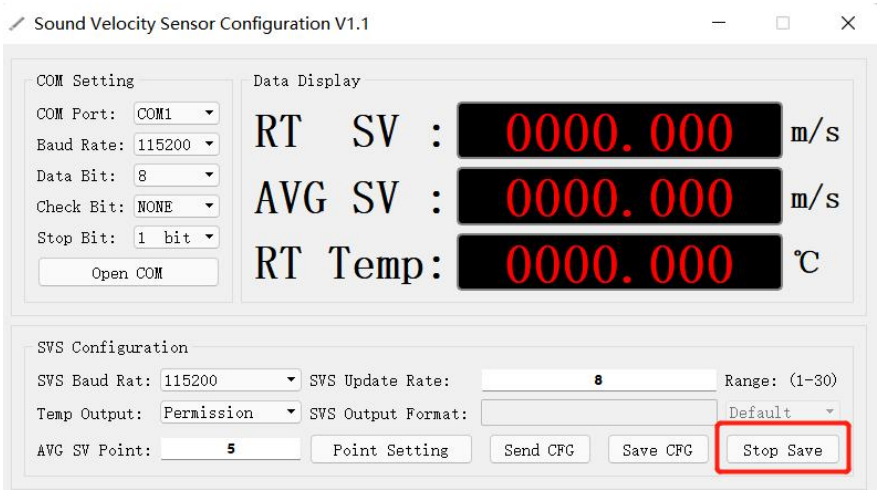
7) Save sound velocity measurement data

Click "Save Data" button on the right bottom of the software user interface and input saving file name, file format and saving path to save data during surveying process in real time as shown below.

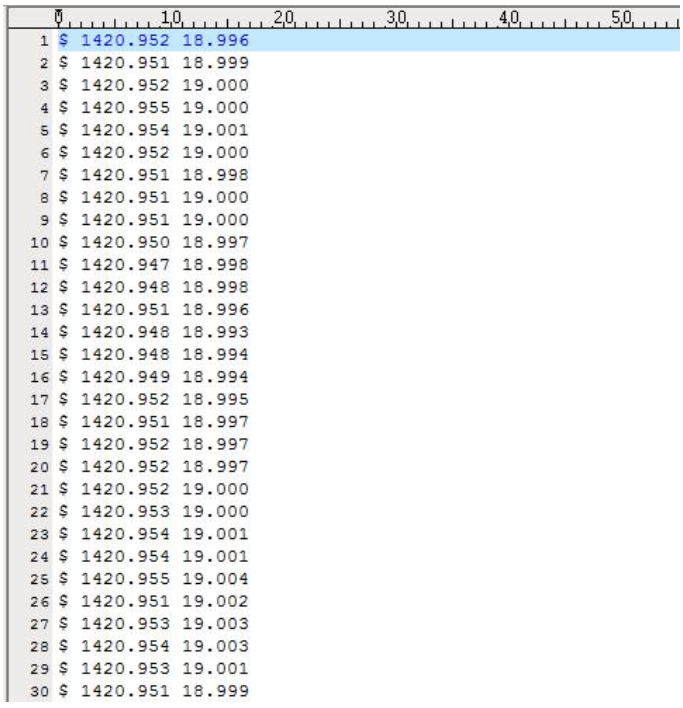


During saving, click "Close Save" to stop saving data, as shown in the

following figure.



At this time, you can open the data file to view the saved measurement data as shown in the following figure.



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1  $ 1420.952 18.996
2  $ 1420.951 18.999
3  $ 1420.952 19.000
4  $ 1420.955 19.000
5  $ 1420.954 19.001
6  $ 1420.952 19.000
7  $ 1420.951 18.998
8  $ 1420.951 19.000
9  $ 1420.951 19.000
10 $ 1420.950 18.997
11 $ 1420.947 18.998
12 $ 1420.948 18.998
13 $ 1420.951 18.996
14 $ 1420.948 18.993
15 $ 1420.948 18.994
16 $ 1420.949 18.994
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19 $ 1420.952 18.997
20 $ 1420.952 18.997
21 $ 1420.952 19.000
22 $ 1420.953 19.000
23 $ 1420.954 19.001
24 $ 1420.954 19.001
25 $ 1420.955 19.004
26 $ 1420.951 19.002
27 $ 1420.953 19.003
28 $ 1420.954 19.003
29 $ 1420.953 19.001
30 $ 1420.951 18.999
```

Item	Description	Demo	Remark
0	$(space)SoundVelocity(space)Temperature(space)TemperatureCR/LF	$ •1500.000 •20.000 •20.000	Default
1	(space)Temperature(space)SoundVelocityCR/LF	• 20.00 • 1500000	
2	(space)Temperature(space)SoundVelocityCR/LF	• 20.00 • 1500.00	
3	(space)Temperature(space)SoundVelocityCR/LF	• 20.000 • 1500.000	
4	(space) SoundVelocityCR/LF	• 1500000	
5	(space) SoundVelocityCR/LF	• 1500.00	
6	(space) SoundVelocityCR/LF	• 1500.000	
7	$(space) SoundVelocityCR/LF	$ • 1500.000	

5. Cautions

1) Any small change of the acoustic reflecting surface at front of sound velocity probe will lead to big measurement error. So it is necessary to avoid collision with other objects. Especially when it needs to be placed on the deck, hold the sound velocity sensor and gently place it horizontally to the deck surface. Make sure it will not roll over due to any boat moving.

2) After each measurement, clean it with fresh water immediately. Pay special attention to avoid foreign matters on the acoustic reflecting surface.

3) In order to ensure the sound velocity measurement accuracy, the equipment needs to be returned to the manufacturer for calibration every 3 years.