

User Manual for the HYD10 Portable Depth Sounder



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1. Introduction

1.1.Introduction to the Depth Sounder



HYD10

The HYD10 Portable Depth Sounder Measurement System is a professional underwater depth measurement device that integrates high-precision measurement, portable design, and intelligent interaction. It is suitable for multiple scenarios such as underwater topographic survey, channel survey, river dredging, and reservoir capacity measurement, catering to both conventional manual measurement and unmanned carrier integration requirements. The product adopts a miniaturized depth sounder, featuring dual power supply, ultra-low energy consumption, and convenient configuration and connection. It uses a simple and lightweight bracket, can be lifted and operated with one hand, and allows for immediate measurement and movement, making it convenient, fast, effective, and reliable.

Main Features:

⊕ HYD10 provides multiple power supply options, with a built-in 3400mAh battery, eliminating the need to rely on an external power supply. It also supports an external power supply to extend runtime;

- ⊕ Lightweight and portable: HYD10's compact design makes it easy to carry and significantly reduces on-site workload;
- ⊕ Depth measurement range: 0.3-200m; ultra-high precision: $\pm 1\text{cm} + 0.1\% \cdot h$ (where h is water depth);
- ⊕ Adaptive water depth control, with automatic adjustment of gain, pulse width, power, range, and gear;
- ⊕ Integrated with GNSS receiver and measurement master, enabling convenient and simple operation.;

1.2.Components of HYD10 Depth Sounder

Serial Number	Name	Quantity	Model Image
1	Echo Sounder Main Unit	1	
2	Host battery	1	
3	USB Charger(Optional Specifications)	1	
4	7-Core Retractable USB Cable	1	
5	Transducer	1	

6	HYD10 Connecting Rod	2	
7	HYD10 Connecting Rod Bracket	1	
8	HYD10 Depth Sounder Bracket	1	
9	HYD10 Instrument Case	1	
10	7-pin Lemo to RS232 Cable	1	
11	External Power Cable	1	
12	tape measure	1	

1.3.Interfaces and Indicator Lights



Interfaces and Indicator Lights

Power Indicator	The power indicator is always on when the device is powered on.
Depth Sounder Indicator	The depth sounder indicator flashes red every 5 seconds when transducer data is not received.
	The depth sounder indicator flashes once per second when connected to the transducer normally.
Bluetooth Indicator	The red light is always on when Bluetooth is not connected.
	The green light is always on when Bluetooth is connected to the software successfully; the green light flashes when Bluetooth is receiving data.
Battery Indicator	All 4 lights are on when the battery is full, each light represents 25% battery.
	The battery indicator flashes when an external power source is connected and the battery is charging.

7-pin Port	Charging port, serial port.
9-pin Port	Depth sounder transducer port.

2. Hardware Connection

2.1.Product Assembly



Assembly completed picture

3. Software Operation

3.1. Software Introduction

Survey Master is a professional surveying software, mainly used for land surveying and marine surveying in combination with GNSS receivers and peripheral devices, supporting WiFi/Bluetooth connection. This time, it mainly connects the HYD10 Depth Sounder via Bluetooth, configures the depth sounder, and conducts underwater surveying together with the GNSS receiver and the depth sounder.



Survey master Icon and Download Method

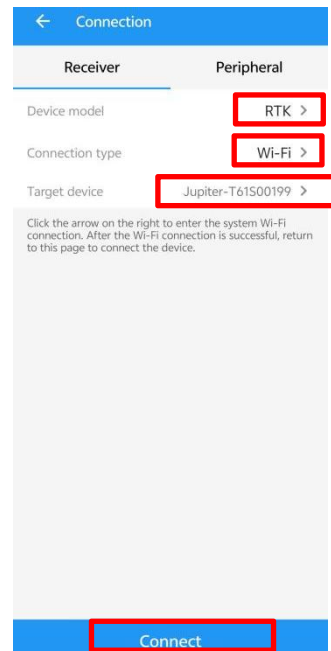
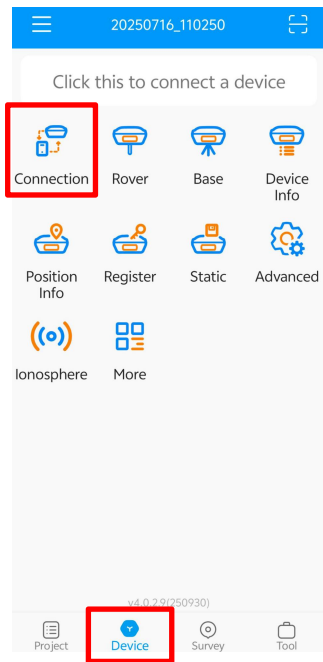
3.2. Software Connection Preparations

- 1、 Prepare a set of GNSS receivers supporting WiFi connection.
- 2、 A set of HYD10 Depth Sounder.

3.3. Software Connection

1、 GNSS device connection

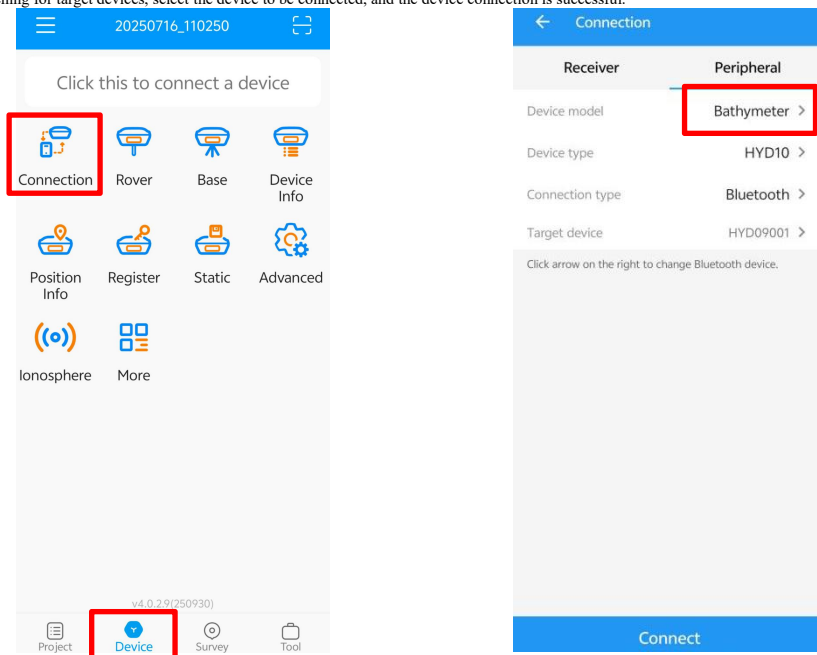
【Device】 → 【Connect Device】 → 【Select RTK for Device Type】 → 【Select Wi-Fi for Connection Method】 → 【Target Device】 . Start searching for target devices, select the device to be connected, and the device connection is successful.



GNSS device connection

2、 Connection of HYD10 depth sounder equipment

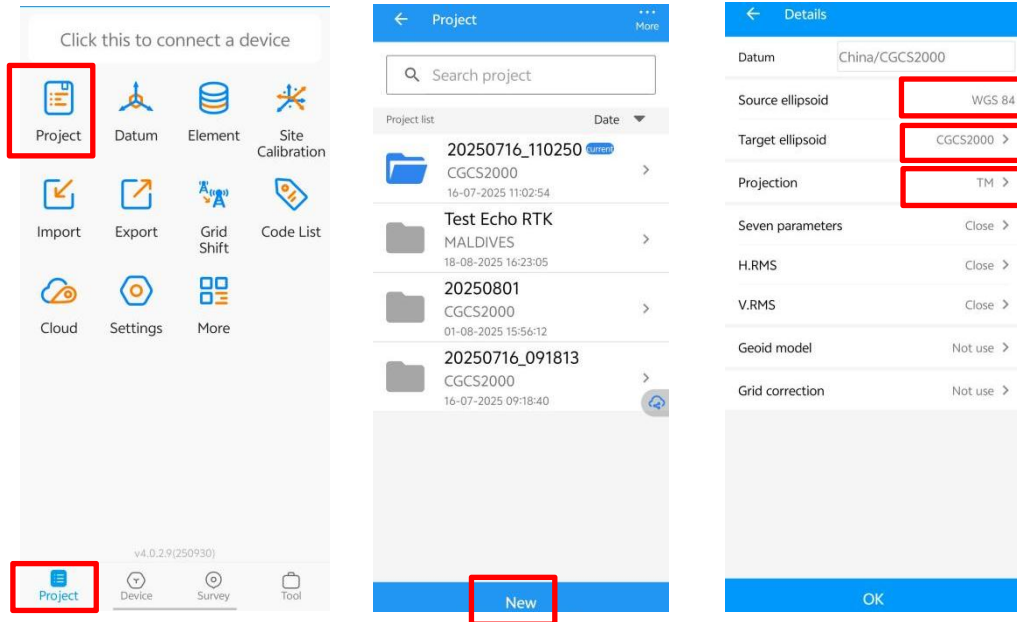
【Device】→【Connect Device】→【Peripheral】→【Device Type: Depth Sounder】→【Device Model: HYD10】→【Connection Method: Bluetooth】→【Target Device】. Start searching for target devices, select the device to be connected, and the device connection is successful.



HYD10 connect

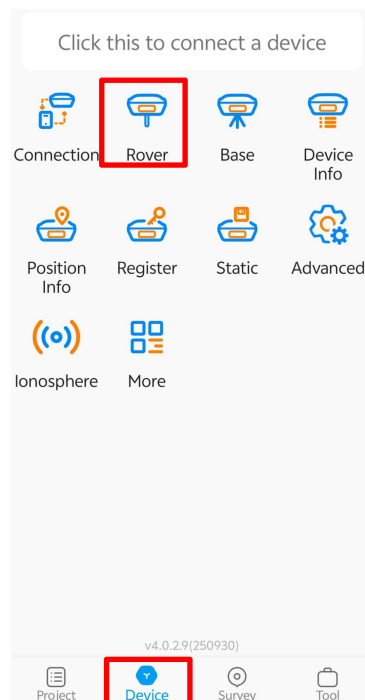
3.4.New project

【Project Management】→【New】→【Enter Name】→【Select Coordinate System】→【Place the device in an open area to automatically acquire the central meridian】→【Confirm】



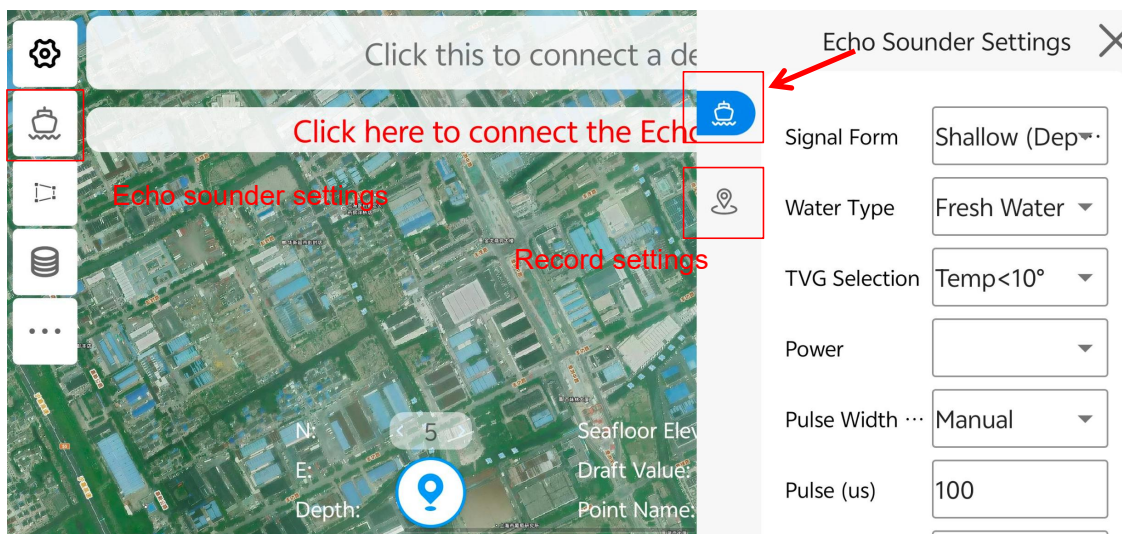
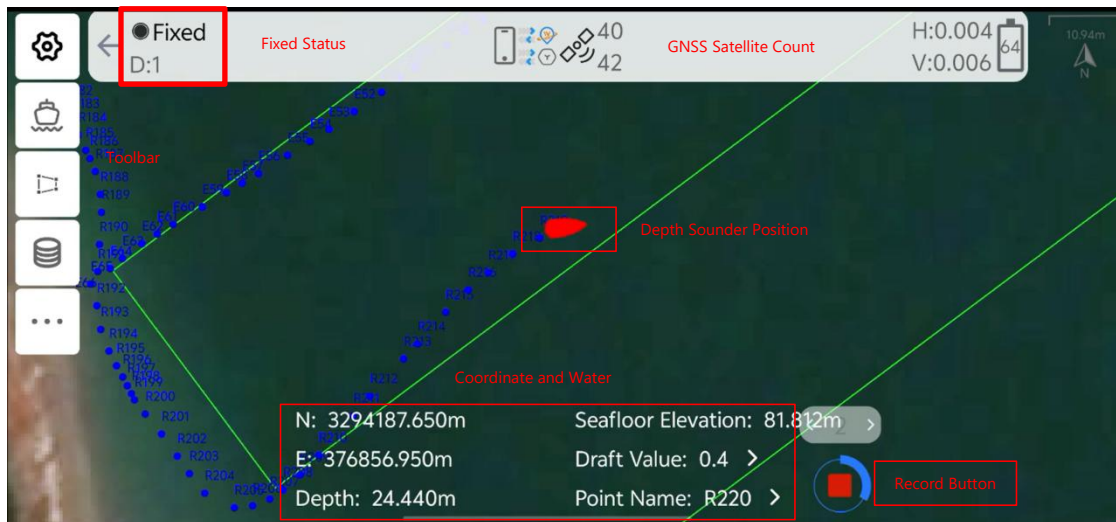
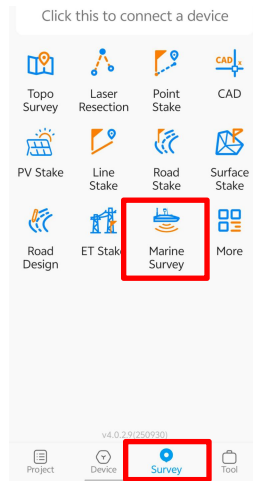
3.5.Connect cors

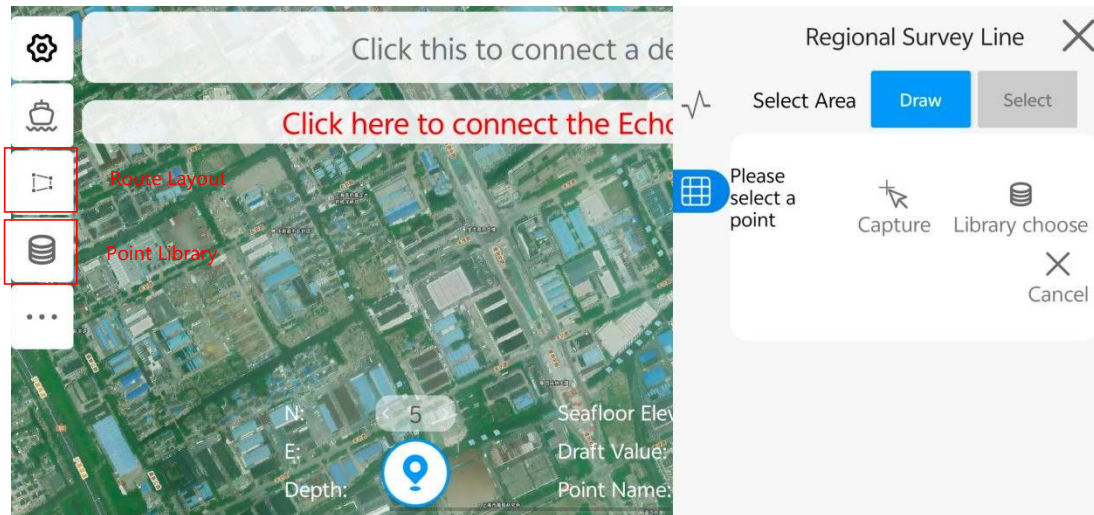
【Device】→【Rover】. After successful connection, "Fixed Solution" and "Device Connected Successfully" are displayed in the upper left corner.



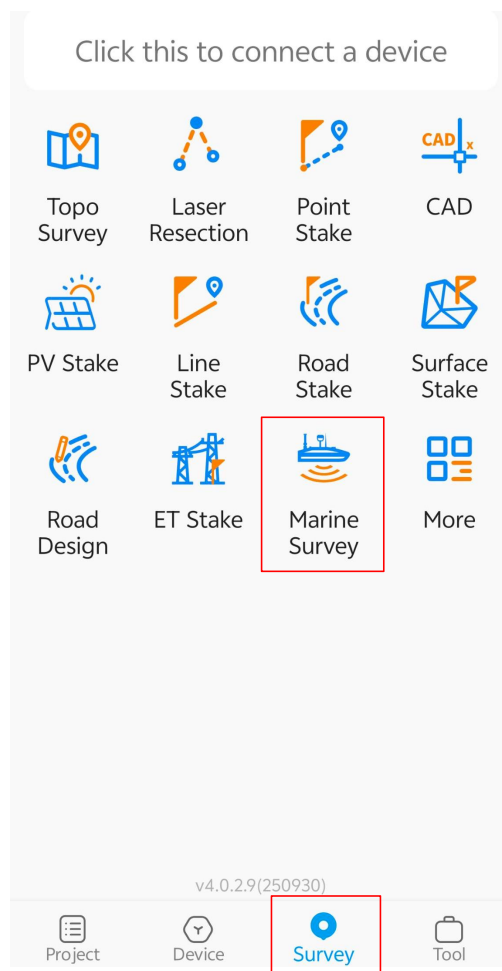
3.6. Marine Survey

Marine SurveyMain Interface Introduction





【Survey】→【Marine Survey】→【Modify Draft Value】→【Recording Settings (by Time or by Distance)】→【Modify Antenna Height】→【Water Depth Recording Settings: Select to save data by Time/Distance】→【Click the Survey Button to start recording data】



Notes:

For depth sounder parameter settings, power, pulse width, and range are generally set to Auto, and no additional parameter adjustment is required. If the underwater environment is complex (such as shallow water areas, areas with drastic underwater terrain changes, or areas with rapid currents) and automatic measurement fails to obtain satisfactory results, the **【Manual】** measurement mode can be used.

The meaning of each parameter is as follows:

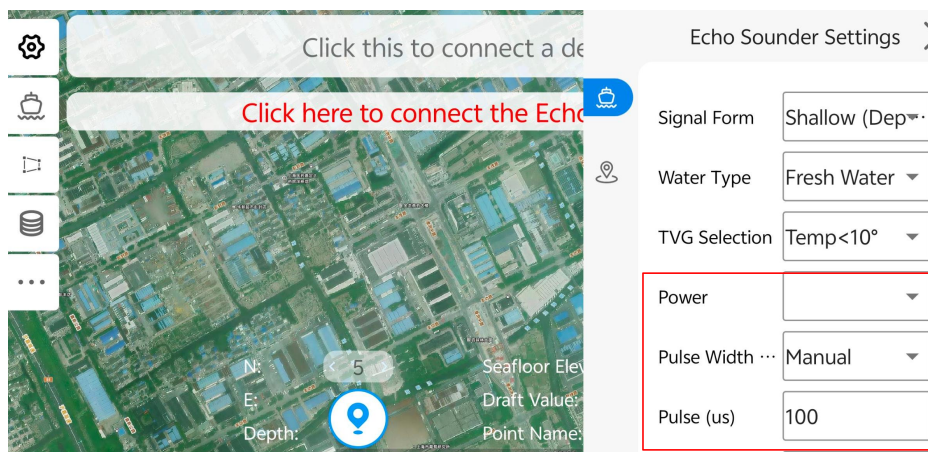
Power: The depth sounder has three power levels (High, Medium, Low). Set to High Power when operating in deep water or turbid water areas.

Pulse Width: Refers to the duration of ultrasonic transmission, during which ultrasonic waves are continuously emitted. Its value determines the length of the transmitted signal. The ability of water to absorb ultrasonic waves is related to water depth and salinity. Appropriately increase the pulse width in deep water or high-salinity areas to ensure sufficient echo signal strength.

Excessively large pulse width: Due to the overly long signal duration, the transmitted wave and echo signal overlap in shallow water areas, resulting in errors.

Excessively small pulse width: Due to the overly short signal duration, the signal absorption capacity is strong in deep water or high-salinity areas, and the probe may fail to receive a sufficiently strong echo signal, leading to loss of water depth data.

Range: Generally, the closer the range is to the actual water depth, the more accurate the measurement result.



4. Common Problems and check

If the problems listed in this section occur when using the HYD10 depth sounder receiver equipment, you can troubleshoot them according to the following methods. If the problem cannot be solved, please contact our technical support personnel in a timely manner

1. The device cannot be started

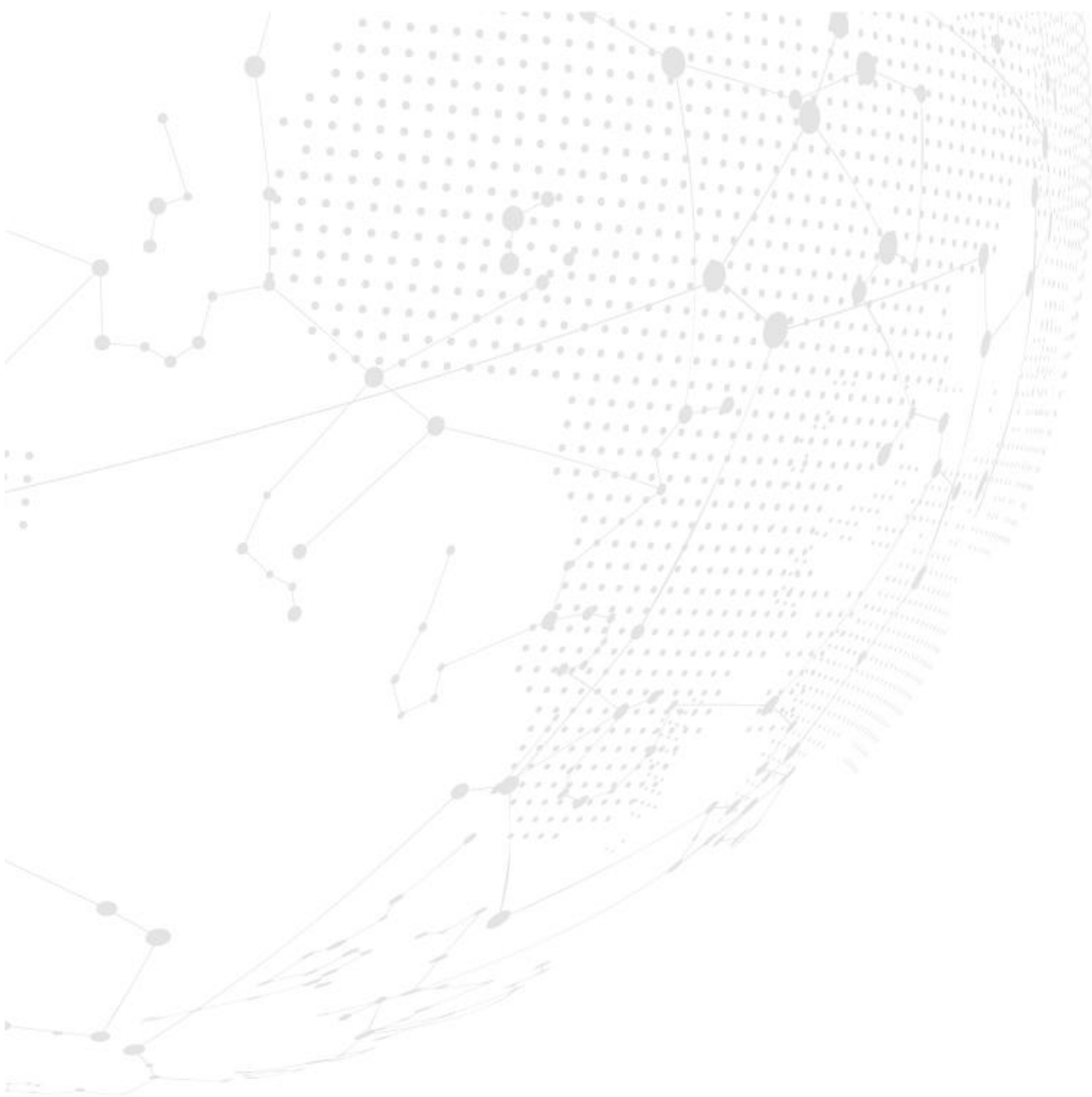
Solution:

1. Check if the battery is charged;
2. Check if the power cord connection is correct and secure.
3. Is the power cord damaged again.

2. There is no data available for depth measurement

Solution:

1. Check whether the transducer is connected correctly and securely;
2. Put the transducer to your ear and listen for any beeping sounds.
3. Check if the light of the depth sounder is flashing. If it is not flashing, click the depth sounder setting button again to make the transducer emit again.



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