

# HydroBoat 1500

## Multi-beam Echo-sounder for bathymetric survey



The **HydroBoat 1500** is a highly versatile **bathymetric survey and monitoring platform** that can carry a **multi-beam echo sounder**. It is designed to **measure underwater topography** in lakes, rivers, and reservoirs.

The combination of the **HydroBoat1500 and the HydroBeam M4** portable multi beam echo sounder system provides accurate and high-resolution data collection, making it a powerful solution for experts who need **precise underwater topographic information.**

### **Applications with Multibeam Echosounder**

- Investigation of Natural River Beds
- Slope Scour Inspection
- Dam Deformation Monitoring
- Channel Navigation Surveys

The HydroBoat 1500 has a rugged IP67 hull and four thrusters on the sides, allowing it to follow the pre-defined navigate complex water environments easily. It is equipped with a high-precision positioning and directional GNSS receiver, and an IMU. Which ensures sub-meter positioning accuracy when satellite signal is temporarily blocked. This makes it an ideal unmanned vehicle for those needing to collect detailed underwater terrain data.

### **65 Kg Payload**

Carry up to 65 Kg of equipment and the through-hull design allows for larger equipment to be accommodated.

### **Android Control**

The Android SLHydro USV software allows for more user-friendly operation with its line wiring, boat controlling, parameter setting and safety warning features.

### **Unlimited Distance Control**

4G and 2.4G dual-channel control and communication, so that the distance is no longer limited, in the office can also be real-time data collection.

### **Safe Sailing**

Built-in 360° omnidirectional camera and millimeter wave radar, double-layer hull anti-sink design, smart obstacle avoidance, and shallow hovering functions make HydroBoat 1500 and payload safer.

## Linear Technology with Unwavering Precision

Navigate challenging conditions without hesitation, maintaining a precise course along a predetermined path.

## Expandable Equipment

- Dual-Frequency Echo Sounder
- Multi-Beam Echo Sounder
- Side Scan Sonar
- ADCP

## HydroBeam M4 - Portable Multi-Beam Echo Sounder

The HydroBeam M4 is an ingenious and compact portable multi-beam bathymetric system, brought to life by SatLab. It boasts exceptional precision without the need for frequent calibration, making it an ideal choice for lightweight operations.

Its compact design, coupled with its intelligent features and circular transducer, renders it effortlessly deployable on a range of platforms, including USVs, AUVs, and ROVs. This versatility empowers users to swiftly conduct precise measurements at any location and time, liberating them from the constraints of traditional multi-beam systems. Moreover, it ensures the dependable and stable operation of unmanned missions across diverse environments, from serene lakes and meandering rivers to bustling harbors, ports, terminals, and intricate waterways.



# Advanced Features

## Diverse Compatibility

The compact cylindrical shape of  $\Phi 228\text{mm}$  and lightweight design of 5.9kg makes it easily compatible with various unmanned platforms, and ease in transport and deployment in various settings.

## Reliable Performance

Supports up to 1024 high-density beams with resolutions up to 7.5 mm , maintaining high performance and accuracy across different tasks and conditions.

## Real-time Roll Stabilization

Real-time Roll stabilization maximizes the multi-beam sweep and improves work efficiency.

## Seamless Integration

Built-in INS and SVS in the transducer, eliminating complex attitude calibration , simplifying setup and reducing downtime.

## High Efficiency

Adjustable scan width from  $8^\circ$  to  $150^\circ$  for up to 7.5x depth coverage , reducing survey repeats and increasing overall efficiency.

## Intelligent Operation

Functional and smart survey software allows operators to monitor survey progress and reduces manual operation, and supports access to Kongsberg, R2sonic, Reson and other devices.

## Strict Compliance with Standards

Exceeds IHO special order, CHS exclusive order & USACE New Work.

## Technical features - HydroBoat 1500:

### Vehicle

Dimension	1528*1034(694)*494 mm
Weights	15 – 75 Kg
Material	Carbon fiber, rubber bumper
Waterproof	IP67
Anti-wave & Wind	4rd wind level & 3nd wave level
Anticollision Sensor	10-30 meters detection distance
Camera	360° omnidirectional video
Status Indicator Light	Display GNSS positioning and controller connection status
Safety Protection	Obstacle avoidance, shallow water warning, low battery return, disconnect return

### Power and Electrical Parameters

Propeller Type	Eliche ad innesto rapido * 4
Power	Max 1000 W
Speed	0,1 – 6 m/s
Battery Capacity	29.04 V/34.3 Ah (typical)
Battery Endurance	12h@2m/s, 22@1.5m/s, Running on 3 battery sets
Battery Safety	Multi-circuit equalization, power display, high-temperature/over-current/short-circuit protection

## Communication & Control

Type	2.4 GHz wireless technology (1.7 km); 4G network
Navigation Mode	Manual, Auto, Return
Data Storage Methods	Simultaneous support for ship-side storage and controller broadcast
System	Android 7.0; storage 5 GB; SD card supported
Dimension	272 mm, 183 mm, 94 mm
Weights	1034 g
Display	7 inches
Battery Capacity	20000 mAh
Battery Endurance	6-20 hours

## GNSS

Channels	1408
GNSS Differential Types	Radio; Network; Controller internet
Signal	BDS: B1I, B2I, B3I, B1C, B2a, B2b
GPS	L1C/A, L1C, L2P, L2C, L5
GLONASS	L1, L2
GALILEO	E1, E5a, E5b
QZSS	L1, L2, L5
Position Accuracy	H: $\pm 8$ mm+1 ppm; V: $\pm 15$ mm+1 ppm
Directional Accuracy	$\leq 0,2^\circ$
Timing Accuracy	$\leq 20$ ns

## IMU

Refresh Rate	200 Hz
Position Accuracy	< 1 m/30 s
Directional Accuracy	$\leq 2,1^\circ/h$
Control Software	App Android SLHydro USV
Supports	manual drawing, *.kml & *.dxf file import of sailing plans
Operation Temperature	-10°C – +40°C
Storage Temperature	-40°C – +85°C
Expandable Equipment	Ecoscandaglio a doppia frequenza, Ecoscandaglio multibeam, Sonar a scansione laterale, ADCP



## Technical features - HydroBeam M4 Portable Multi-Beam Echo Sounder :

Frequency	400 Khz
Beam Width	1° * 2°
Number of Beams	512 (max 1024)
Swath Coverage	8°-150°
Depth Range	0.2-200 m
Resolution	7.5 mm
Work Modes	Equal-angle/Equal-distance/High density
Max Ping Rate	30 HZ
Signal Type	CW
Depth Rating (Sonar Head)	50 m
Roll Stabilization	±10°
Built-in Heading Accuracy	0.08°(2 m base line); 0.05°(4 m base line)
Built-in Attitude Accuracy	0.02°
Position Accuracy	H: ±8 mm+1 ppm; V: ±15 mm+1 ppm
Heave Accuracy	5 cm/5%
SVS Accuracy	±0.02 m/s
SVS Resolution	0.001 m/s
Sound Velocity Range	1375-1900 m/s
Input Voltage	110-240V; DC: 10-32V
Power Wastage	60W
Transducer Dimension	Ø228 mm*175 mm
Transducer Weight	5.9 kg
Deck Unit Dimension	230 mm180 mm80 mm
Deck Unit Weight	2.6 kg
Operational Temperature	+4°C~+40°C
Storage Temperature	-20°C~+60°C

## Applications:

- Pipeline Survey
- Dredging Project
- Hydrographic Survey
- Underwater Archeology
- Harbor Survey
- Reservoir Storage Survey
- Environmental Research
- Rescue and Salvage

