

CHCNAV

HQ-400

MULTIBEAM ECHOSOUNDER



MARINE
SURVEYING

LIGHTWEIGHT, INTEGRATED MULTI-BEAM SOUNDER FOR HIGH-RESOLUTION SURVEYS

The CHCNAV HQ-400 multibeam echosounder is a powerful, highly integrated and compact system designed to provide exceptional performance for bathymetric and hydrographic surveys. The echosounder integrates sonar, temperature sensors, attitude sensors, positioning and a compass, all in a lightweight and portable form factor. With support for the Surface Velocity Meter, it meets the diverse needs of various applications, including river and lake topography, reservoir volume measurements, and hydrometrics.

HIGH-RESOLUTION DATA COLLECTION

Capture detailed underwater topography with the HQ-400's advanced multibeam sonar. Featuring 512 beams (maximum 1024), the system delivers high-resolution data for precise mapping and analysis, ensuring accuracy in bathymetric surveys.

HIGH-PRECISION POSITIONING SYSTEM

The HQ-400 integrates attitude and temperature sensors for accurate depth measurements, compensating for roll, pitch, and yaw to enhance survey data quality. The Post-Processed Kinematics (PPK) solution ensures reliable data output, even in challenging water conditions, mitigating issues caused by poor GNSS signal reception or water turbulence.

VERSATILE FUNCTIONALITY

The HQ-400 supports a range of functions, including tilt measurement, real-time roll stabilization, side-scan imaging, near-field focusing and water column imaging. The comprehensive data acquisition capabilities make the HQ-400 a versatile tool for a variety of underwater survey applications. Real time roll stabilization ensures consistent data quality even in rough water conditions, improving the accuracy of survey results.

SOFTWARE ECOSYSTEM

CHCNAV's CMS for PC is a comprehensive multibeam data acquisition and post-processing software, offering an all-in-one solution for efficient survey operations. CHCNAV EasySail for Android allows seamless switching between multibeam point clouds, sonar maps, satellite maps, video, and other data types, providing flexibility and ease of use in the field.

SBG's Qinertia PPK software option improves the accuracy of GNSS/INS data for a variety of applications.

The HQ-400 also supports integration with third-party acquisition and post-processing software, such as BeamworX and Hypack, offering versatile options for data processing and analysis.

LIGHTWEIGHT AND COMPACT

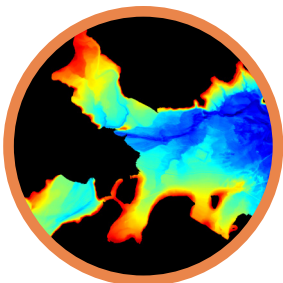
The HQ-400 is housed in a 12.5 cm cubic shape, making it easy to mount on small unmanned vehicle platforms (USVs) and manned survey boats. Its lightweight design makes it easy to transport and use in the field. Despite its compact size, it delivers powerful performance and high-resolution data for detailed underwater mapping and analysis.

CALIBRATION-FREE OPERATION

Equipped with an integrated IMU, the HQ-400 comes pre-calibrated for roll, pitch and yaw, eliminating the need for field calibration and greatly improving operational efficiency. It reduces setup time and allows surveyors to focus on data collection, ensuring timely project completion.

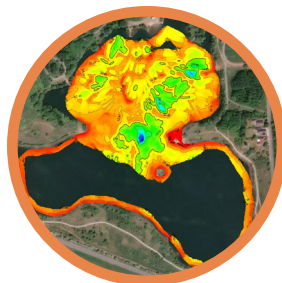


ULTRA-LIGHTWEIGHT
MULTI-BEAM SOLUTION



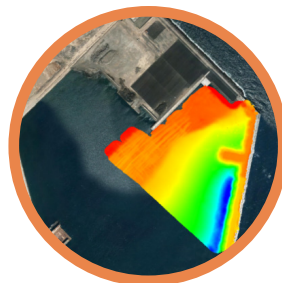
**River and Lake
Topography**

Capture detailed underwater topography point cloud data of inland rivers, lakes, and reservoirs, facilitating accurate mapping and analysis.



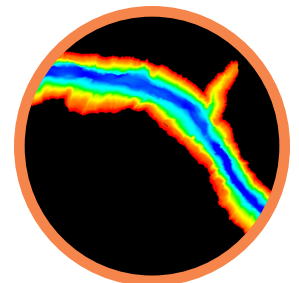
**Tailings Pond
Survey**

Deliver precise survey data for tailings ponds, even under high pH levels and strong corrosiveness.



**Port Terminal
Survey**

Complete port terminal survey more flexibly and provide more complete bathymetric data



**Channel
Dredging**

Assist in the measurement of navigation channels, providing essential data for dredging workload assessment and postdredging project acceptance.

SPECIFICATIONS

Sonar

Depth Range	0.2 m - 150 m ⁽¹⁾
Depth Resolution	10 mm
Swath Coverage	140°
Number of Beams	512 (Maximum 1024)
Survey Mode	Equal Angle and Distance
Resolution (Across x Along)	1.6° x 1.8°
Maximum Ping Rate	60 Hz
Operating Frequency	400 kHz ± 20 kHz
Signal Type	CW
Feature	Real Time Roll Stabilization
Depth Rating	50 m
Pulse Length	20 μs - 2 ms

Positioning System

IMU Mounting Method	Built-in Sonar
Position Method	RTK, PPP ⁽²⁾ , PPK ⁽³⁾
Heading Accuracy	0.1° @ 2 m baseline
Roll / Pitch Accuracy	0.05° (Real Time) 0.03° (Post-processing)
Position Accuracy	0.8 cm + 1 ppm (RTK) 0.6 m (SBAS) 1.2 m (Single)
Heave Accuracy	5 cm or 5%
IMU Frequency	200 Hz (Maximum 1000 Hz)

Surface Sound Velocity

Sound Velocity Range	1375 m/s - 1900 m/s
Sound Velocity Accuracy	±0.02 m/s
Sound Velocity Resolution	0.001 m/s

Electrical Parameter

DC Power Supply	18 V - 36 V (24 V typical)
AC Power Supply	100 V - 240 V, 50/60 Hz
Average Power Consumption	25 W
Data / Control Interface	Gigabit Ethernet

Physical

Sonar Size	125 x 125 x 130 mm
Sonar Weight	2.7 kg
Deck Unit Size	125 x 125 x 42 mm
Deck Unit Weight	0.5 kg

Environment

Working Temperature	-10°C ~ +60°C
Storage Temperature	-20°C ~ +70°C

(1) Measured in a water environment at 25°C and 0% salinity, for reference only. If in seawater, it is recommended to use it in an environment with a water depth of 0.2-100 m and waves less than 0.5 m.

*Depth range may vary to varying degrees in different water environments, please refer to actual experience.

(2) PPP service is only available within the BDS PPP-B2b signal coverage (China and surrounding areas).

(3) Qinertia PPK software requires additional payment.

* Specifications are subject to change without notice.

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