



Hydro-Tech MS400U Integrated Multi-beam Echosounder for small USV

Quick Start

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1.Introduction

Hydro Tech MS400U is an integrated multi-beam echosounder designed for the integration of small USVs and the upgrade of hydrological USVs. It is a multi-beam solution with an integrated surface sound velocity sensor, attitude sensor, positioning and heading.

Hydro Tech MS400U can be integrated on monohulled, catamaran and trimaran USVs and other self-propelled platform, to survey all lakes ponds, reservoir and river.

2.Fetures

(1) Compact size and highly integrated

In order to fit in small USVs, we optimized the design. It includes surface sound velocity sensor, attitude sensor and positioning systems into one transducer. All data can be output in standardized format and provide navigation information for USVs, which greatly saves time and equipment costs.

(2) Focus on small USVs to ensure the accuracy

For the problem of large changes in the attitude of small USVs, the system indicators and algorithms are specially optimized. 512 beams, $1^{\circ} \times 2^{\circ}$ beam angle, attitude accuracy of 0.025° , heading accuracy of 0.06° , all of these specification is to ensure that the surveying accuracy of all water depths is conform to China National Hydrographic Specification and IHO International Hydrographic Specification Accuracy Requirements.。

(3) Combination of standard customization and easy integration

For different user requirement, we can provide standard model or customized product. The size of the standard MS400U transduce is about the same size as ADCPs and can be integrated on most of USVs without customization.

Customized models provide diversify shape, parameters and functions according to USV or special surveying requirements.

(4) Interface and accessories are compatible with various applications

Hydro Tech MS400U support multiple interface and data types including standard attitude, position, time, synchronous data interface output, independent expandable network interface. We can provide strong support for users to have MS400U working together with 3D laser scanner, ADCP, multi-beam bathymetry and side scan sonar.

3. Applications

- (1) Integrated in small USVs working on rivers, lakes, ponds and reservoirs.
- (2) Renovation and upgrade of existing hydrological ADCP boat in order to get multi-beam bathymetry function;
- (3) Quick underwater 3D topographic survey for various small manned and unmanned vessels.

4.Parameters

Parameters	Details
Working frequency	400kHz
Number of beams	512
Beamforming	Dynamically focused beamforming
Vertical receiving beam width	1° (Customizable)
Parallel launching beam width	2° (Customizable)
Swath coverage	143° (Customizable)
Depth range	0.2-150m (Customizable)
Depth accuracy	0.75cm
Max ping rate	60Hz
Survey mode	EA/ED
Signal type	CW/Chirp
Standard	Meet the accuracy requirements of China's National Hydrographic Survey Code and IHO International Hydrographic Survey Specification
Features	
Near Field Focus	Yes
Bottom tracking	Yes
Real-time roll stability	Yes
Calibration free	Yes
Physical size	
Transduce size	φ220mm×240mm (Customizable)
Transducer weight	6.5kg

Deck unit size	200mm×135mm×110mm
Deck unit weight	3kg
Working temperature	-2°C~40°C
Storage temperature	-20°C~55°C
Power supply	DC 10-32V / AC 110~240V
Power consumption	80W
Software	
Software compatibility	1. Hydro Navi & Quest software ; 2. Compatible with Hypack.
Auxiliary survey equipment	
Surface Sound Velocity sensor (Integrated)	Sound velocity range: 1400~1600m/s Sound speed resolution: 0.001m/s Sound velocity accuracy: 0.05m/s
Attitude sensor accuracy (integrated)	Heading: 0.08°@2m baseline Attitude: 0.025° (post-processing); 0.03° (RTK) Heave: 5cm or 5%; 2cm or 2% (post-processing) Heading and attitude data can be exported externally via NMEA0183 format.
Positioning Accuracy (integrated)	Horizontal: ±8mm+1ppm Vertical: ±15mm+1ppm (RTK) Positioning data can be output externally via NMEA0183 format.

5. Standard products pictures

Transducer



Deck unit

