CHCNAV

APACHE 6

MULTIBEAM MARINE USV

MARINE SURVEY & CONSTRUCTION

ADVANCED USV WITH NORBIT MULTIBEAM ECHOSOUNDER

The APACHE 6 USV is an innovative, fully integrated solution for 3D bathymetric surveys, positioning of underwater objects, offshore construction, underwater archaeology and wreck salvage. Built around a triple-hull vessel and optimized for the Norbit™ multibeam echo sounder series. the APACHE 6 offers a fully autonomous survey mode, powered by field-proven CHCNAV accurate straight line technology, to follow a predetermined path even in adverse current conditions.

The Android remote control design eliminates the redundancy of a computer, making it easy to achieve route planning and online data monitoring. The APACHE 6 multibeam echosounder USV reduces survey time, improves work efficiency and produces high-resolution data to always meet the requirements of the most demanding marine survey projects.

OPTIMIZED FOR NORBIT MULTIBEAM ECHOSOUNDERS

High-end turnkey multibeam USV solution for high resolution bathymetry

APACHE 6 design is optimized for the NORBIT iWBMSe, iWBMS and iWBMSh-STX series offering with high end performances to match the most demanding hydrographic survey requirements.

ANDROID REMOTE CONTROL

Reliable automatic navigation, sophisticated Android interface

The Android remote control is seamlessly integrated, boasting a comprehensive set of features. It facilitates real-time data gathering and visualization. The communication via 4G and 2.4 GHz remote control ensures uninterrupted connectivity and robust data transfer, enhancing overall operational effectiveness.

LIGHTWEIGHT FOR EASY DEPLOYMENT

Allow two operators to cope with most of remote deployment conditions

Made of macromolecule polyester carbon fiber and Kevlar fiber-glass weighting 15 kg without sensors.

HIGH PERFORMANCE TRIPLE-HULLED VESSEL DESIGN

Versatile USV solution for offshore, coastal and inland water and lakes surveys

Its dual detachable floating bodies keep the hull balanced even in the rapid current situation. Removing the floating bodies allows operation in shoals, channels and shallow rivers without run aground.

OPTIONAL TERRESTRIAL MAPPING LASER SENSOR

Collect up to 300 000 points per second at a 30 x 360-degree coverage

The optional NORBIT iLiDAR mapping sensor provides high accuracy combined marine and terrestrial 3D survey in a single pass, saving significant processing time when performing harbor and river surveys with height clearance evaluation (transmission lines, bridges…).

HIGH PERFORMANCE MARINE DRONE

Android remote control

multibeam echosounder

360° Camera

SPECIFICATIONS

Physical	
Hull Dimension (L x W x H)	1.8 m x 0.5 m x 0.25 m
Material	Macromolecule polyester carbon fiber
Weight (w/o instrument and battery)	15 kg
Maximum Payload	60 kg
Hull Design	Detachable triple-hull vessel
GNSS	Internal GNSS dual antenna
Waterproof	IP65
Draft	11.5 cm (unladen)
Indicator Light	Two-color light (Display satellite and positioning status)
Camera	360° omnidirectional video
Safety	Millimeter wave automatic obstacle avoidance, equipped with bumper , auto-return while low battery or signal loss,
Obstacle Avoidance Distance & Range	0.2~40m (horizontally & vertical angle:112°x 14°)

Propulsion	
Type	Electric
Propeller Type	Brushless DC
Direction Control	Veering without steering engine
Maximum Motor Power	1000 W
Maximum Motor Speed	7200 rpm
Li-ion Battery Capacity	32.4V 23.1Ah*9 rechargeable lithium battery
Battery Endurance	6 hours @ 2 m/s (running on 2 battery sets)
Maximum Speed	5 m/s

Remote control	
Display Screen	1000nit luminance
Resolution Ratio	1920*1200
Internal Storage	RAM 4GB, Storage 64GB
Endurance	5h
Communication Frequency	2.4 GHz
Peripheral Interface	USB port, Nano SIM card slot, TF card maximum support 128GB, Type-C

Communications	
Data Communication	Standard 4G and Remote control
Remote Control Communication	4G and 2.4 GHz Remote control
Remote Control Range	Remote control: 1 km and 4G: unlimited
SIM Card Slot	Nano SIM
Interface	2x RJ45 port; 3x RS232 serial port 1x RS485 serial port
Navigation Mode	Manual or Auto-Pilot
Waterproof of Master Control	IP67
Data Storage	Local storage (multi-channel storage) & Remote storage

Software	
Easysail	Route planning and autonomous navigation. Total mileage statistics, remaining mileage reminder, multi-angle video and online map display. hull parameter control, physical & virtual joysticks, system self-check at power-on. Data collection and post-processing. post-processing support waveform overlay and attitude correction. support coordinate conversion, trajectory, water depth, waveform and hull parameter real-time display. software and firmware push upgrades online. export results by USB flash drive and Type-C cable.

Positioning	
Satellite System	BDS B1I/B2I /B3I、GPS L1C/A/L2P(Y)/ L2C/L5、Galileo E1/E5a/E5b、GLONASS L1/L2、QZSS L1/L2/L5
Channel	1408
Single Point Position (RMS)	Horizontal: 1.5 m Vertical: 2.5 m
DGNSS Positioning Accuracy	Horizontal: 0.4 m + 1 ppm Vertical: 0.85 m + 1 ppm
RTK Positioning Accuracy	Horizontal: ±8 mm + 1 ppm Vertical: ±15 mm + 1 ppm
Radio Protocols	Satel 3AS protocol, CHC protocol (1) , TT450 protocol, Transparent Transport Protocol
Heading Accuracy	0.1 º @1.35 m baseline
Inertial Navigation Stability	6 º/ h (Accuracy attenuation 1 m after 20 s)
IMU Update Rate	200 Hz

D270 Single beam Echo Sounder	
Data Type	CHCGD (1) , NMEA SDDPT/SDDBT, original waveform
Operating system	Linux
Weight	0.84 kg
Sounding Range	0.15 m to 200 m
Sounding Accuracy	±0.01 m + 0.1% x D (D is the depth of water)
Resolution	0.01 m
Maximum Sampling Rate	30Hz
Frequency	200 kHz
Beam Angle	6.5° ± 1°
Sound Velocity Adjustment Range	1400m/s~1700m/s
Supply Voltage	10-36V DC
Waterproof	IP67
Integrated Water Temperature Sensor	-55°C~+100°C, real-time correction of the sound speed
Maximum Transmit Power	300W
Power Consumption	10W

*Specifications are subject to change without notice.
(1) CHCGD & CHC protocol is CHCNAV format.

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