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APACHE 3

COMPACT BATHYMETRIC SURVEY USV

MARINE SURVEYING

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COST-EFFECTIVE USV WITH SINGLE-BEAM ECHOSOUNDER

The APACHE 3 is a portable, shallow-draft unmanned surface vessel (USV) equipped with a single-beam echo sounder for bathymetric surveys of lakes, inland rivers, and coastal zones. With seamless 4G communications, dual GNSS positioning and heading, an IMU sensor, and high-efficiency motors, the APACHE 3 navigates pre-determined courses in autonomous mode under adverse current and flow conditions, ensuring accurate and efficient data collection.

OPTIMIZED STRUCTURE AND DURABILITY

High-impact-resistant hull

Built with carbon fiber and one-piece molding, the APACHE 3 USV hull delivers up to 10 MPa of strength and a 60% improvement in collision resistance. A reinforced aluminum cover adds structural integrity and reduces deformation upon impact. The design is 30% lighter than its previous version, making the Apache 3 even easier for one person to carry and deploy.

MAINTAIN HIGH ACCURACY UNDER BRIDGES

Integrated IMU to mitigate temporary GNSS outages

The integration of GNSS and IMU sensor provides accurate position and attitude data to compensate for hull sway on survey results. The APACHE 3 provides consistently high accuracy positions even during temporary GNSS outages while passing under bridges. Tight integration of GNSS and INS data eliminates outliers.

SURVEYING IN CHALLENGING WATER CONDITIONS

High-efficiency propulsion design

The APACHE 3 features a semi-recessed motor design that enhances protection and reduces the risk of damage in shallow water. Its next-generation bathymetric algorithms support adaptive parameter adjustment, ensuring reliable performance in dynamic riverbeds and diverse aquatic environments.

SINGLE-BEAM ECHOSOUNDER FOR BATHYMETRIC SURVEY

The APACHE 3 comes equipped with D270 single-beam echo sounder as standard, making it highly portable. The D270 also integrates a built-in water temperature sensor, enabling real-time sound velocity corrections based on temperature variations. This feature enhances the accuracy of depth measurements, providing reliable bathymetric data even under dynamic environmental conditions.

INTELLIGENT ANDROID REMOTE CONTROLLER

An easy-to-use solution for bathymetric surveys.

The APACHE 3's remote control comes pre-installed with the Android-based EasySail software, eliminating the need for cumbersome computer systems. The software features real-time video transmission, parameter monitoring, and an integrated suite of path planning, data logging, and processing functions. These capabilities streamline field operations, providing a more user-friendly and efficient experience for the operator.

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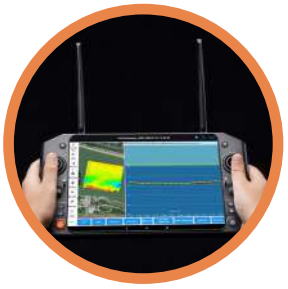
COMPACT TURNKEY USV SYSTEM

Motor

Reinforced Aluminum Alloy Cover

360° Camera



Android Remote Controller

SPECIFICATIONS

Physical	
Hull Dimension(L x W x H)	1050 mm x 550 mm x 390 mm
Material	High strength, high modulus carbon fiber
Process	HPT one-piece molding
Weight (w/o instrument and battery)	7 kg
Maximum Payload	35 kg
Anti-Wave & Wind	3rd wind level and 2nd wave level
Hull Design	Triple-hull vessel
Waterproof	IP67
Protection	Equipped with anti-collision strips
Static Draft	10 cm
Indicator Light	Two-color (positioning and differential signal)
Camera	360° omnidirectional video
Obstacle Avoidance Distance & Range	0.2–40 m (H: 112°, V: 14°)

Propulsion	
Propeller Type	Brushless DC
Direction Control	Veering without steering engine
Rated Motor Power	800 W
Maximum Motor Speed	7200 ± 5% RPM
Motor Installation	Pluggable
Li-ion Battery Capacity	32.4 V, 23.1 Ah
Battery Endurance	7 h @1.5 m/s (1 battery set, expandable)
Power Supply	Single/dual balanced battery support
Battery Replacement	Hot swap supported
Charging Time	3 h
Maximum Speed	6 m/s

Remote control	
Dimension(L x W x H)	346 mm x 196.5 mm x 89.4mm
Display Screen	10-inch
Resolution Ratio	1920 x 1200
Internal Storage	RAM: 4 GB, Storage: 64 GB
Battery Endurance	5 h
Communication Frequency	2.4 GHz
Peripheral Interface	USB, Nano SIM, TF card (up to 128 GB), Type-C

Communications	
Data Communication	Standard 4G and Remote control
Remote Control Range	1 km (Remote); Unlimited (4G)
SIM Card Slot	Nano SIM
Reserved Interface	2 × RS232 serial ports
Navigation Mode	Manual or Auto-Pilot
Data Storage	Local (multi-channel) & Remote

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. Waveform overlay and attitude correction. Coordinate conversion, trajectory, water depth, waveform and hull parameter real-time display. Online software/firmware updates. Export via USB/Type-C.

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
Single Point Position (RMS)	Horizontal: 1.5 m Vertical: 2.5 m
DGNSS Positioning Accuracy	Horizontal: 0.4 m + 1 ppm Vertical: 0.8 m + 1 ppm
RTK Positioning Accuracy	Horizontal: ±8 mm + 1 ppm Vertical: ±15 mm + 1 ppm
Radio Protocols	Satel 3AS, CHC(1) , TT450, Transparent
Heading Accuracy	0.1 º @ 1 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
Sounding Range	0.1 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	30 Hz
Frequency	200 kHz
Beam Angle	6.2° ± 1°
Sound Velocity Adjustment Range	1400–1700 m/s
Integrated Water Temperature Sensor	-55°C~+100°C, real-time correction of the sound speed

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

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