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APACHE 3 PRO

COMPACT BATHYMETRIC SURVEY USV

MARINE SURVEY
& CONSTRUCTION

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HIGH PERFORMANCE USV WITH SINGLE-BEAM ECHOSOUNDER

The APACHE 3 Pro is a compact, professional unmanned surface vehicle (USV) engineered for autonomous bathymetric surveys in shallow water environments. Ideal for a wide range of applications, including channel mapping, river dredging, dam and hydropower inspections, and underwater infrastructure surveys.

Constructed with a high-strength carbon fiber hull, the APACHE 3 Pro offers superior impact resistance and unsinkability. Its high-thrust motor supports speeds up to 7 m/s, enhancing survey efficiency. Equipped with a tightly integrated GNSS/INS receiver, it maintains positioning accuracy even during temporary GNSS outages, such as when operating under bridges. The integrated single-beam echosounder ensures continuous, precise depth measurements.

RUGGED AND LIGHTWEIGHT HULL DESIGN

Built using high-modulus carbon fiber and HPT one-piece molding technology, the hull achieves a strength rating of 10 MPa for enhanced collision resistance. At just 1 meter long and weighing 6 kg (hull only), the APACHE 3 Pro is easily deployed and transported by a single operator for rapid field operations.

HIGH-PRECISION NAVIGATION EVEN UNDER BRIDGES

Thanks to the integrated GNSS/INS system, the APACHE 3 Pro maintains positional accuracy when GNSS signals are interrupted, such as when operating beneath structures. The GNSS+INS receiver compensates for hull sway, eliminates data outliers, and ensures consistent, high-fidelity survey results.

ANTI-ENTANGLEMENT ENGINEERING

A titanium alloy mesh guard, combined with hybrid water pressure conversion technology, significantly reduces the risk of water plant entanglement. Real-time self-diagnosis software alerts the operator if obstructions are detected, safeguarding the motor during operation.

SINGLE-BEAM ECHOSOUNDER WITH TEMPERATURE COMPENSATION

APACHE 3 Pro onboard echosounder features an integrated water temperature sensor, enabling real-time sound velocity correction. This ensures precise and consistent depth readings across varying conditions.

RELIABLE PERFORMANCE IN COMPLEX WATER CONDITIONS

Equipped with high-sensitivity, anti-interference transducers and residual vibration suppression, the APACHE 3 Pro minimizes the sounding blind zone to just 10 cm with a resolution of 3 mm. Adaptive bathymetric algorithms auto-tune in real time to suit varying underwater terrains, ensuring reliable performance in diverse environments.

ANDROID-BASED REMOTE CONTROLLER

The included Android remote controller runs CHCNAV's EasySail software, offering real-time video streaming, data display, and parameter control. With built-in path planning, data logging, and on-site processing features, EasySail streamlines operations and enhances field efficiency.

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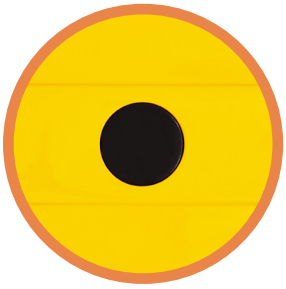
COMPACT TURNKEY USV SYSTEM

Motor



Transducer

360° Camera

Android remote control

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)	6 kg
Maximum Payload	35 kg
Anti-Wave & Wind	3rd wind level and 2nd wave level
Hull Design	Triple-hull vessel
GNSS	Internal GNSS dual antenna
Waterproof	IP67
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	10 h @1.5 m/s (1 set battery, expandable)
Power Supply	Single/dual balanced battery support
Battery Replacement	Hot swap supported
Charging Time	3 h
Maximum Speed	7 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*1200
Internal Storage	RAM 4GB, Storage 64GB
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	3 mm
Maximum Sampling Rate	30 Hz
Frequency	200 kHz
Beam Angle	6.2° ± 1°
Sound Velocity Adjustment Range	1400m/s~1700m/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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