CHCNAV

Geospatial

APACHE 3 PRO

COMPACT BATHYMETRIC SURVEY USV

Highlight

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.

Key feature

New materials, lighter & stronger

High-speed motor, higher efficiency

Anti-tangle, safer navigation

Precise sounding, reliable results

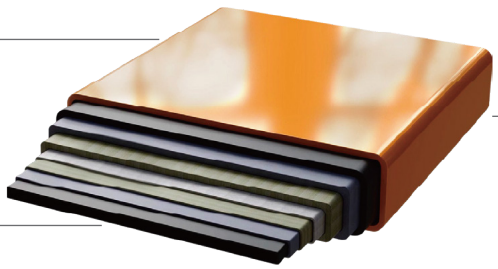
Rugged And Lightweight Hull

30% ↓

Hull weight reduced by 30%

60% ↑

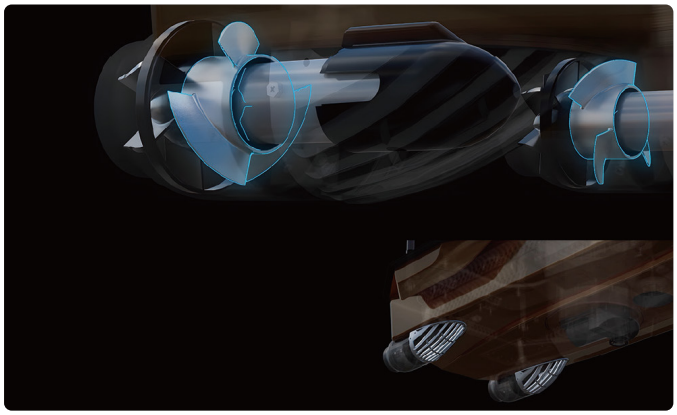
10 MPa Strength:
60% better impact resistance



High-strength

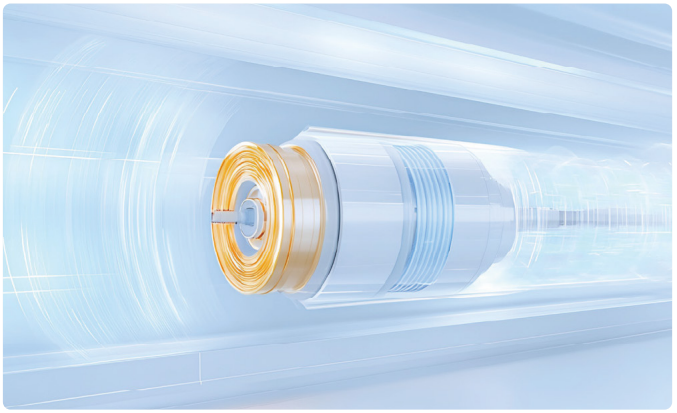
High-strength, high-modulus materials
One-piece molded hull construction
High-density, small-aperture mesh cover

Anti-Entanglement Design



Titanium alloy mesh guard and hybrid water pressure conversion greatly reduce weed entanglement. Real-time self-diagnosis alerts operators to obstructions, protecting the motor.

Semi-Embedded High-Speed Motor



Max motor speed up to 7200 RPM, supporting a top vessel speed of 7 m/s. Single battery set provides up to 10 hours of endurance at 1.5 m/s.

Precision Depth Sounding Transducer

High-sensitivity anti-interference transducer with residual vibration elimination

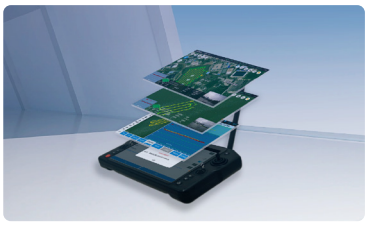
3 mm ranging resolution

10 cm blind zone

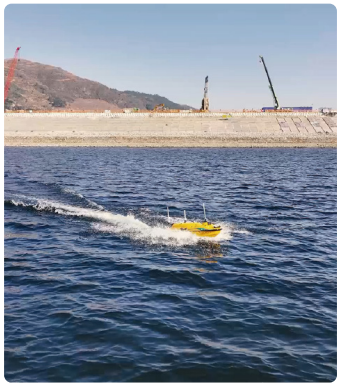
+6 dB SNR improvement

EasySail All-in-One Android Software

- Integrates display, control and acquisition in one unit, no PC needed, saving labor and boosting efficiency in field work.
- Remote controller supports 4G communication and data radio, with real-time video and data transmission.



Use Cases



Reservoir Volume Estimation

Emergency Rescue

Channel Dredging

River Section Measurement

SPECIFICATIONS

Physical

Hull Dimension (L x W x H)	1080 mm x 555 mm x 380 mm
Material	High strength, high modulus carbon fiber
Process	HPT one-piece molding
Weight (w/o battery and antenna)	21 kg
Maximum Payload	35 kg
Anti-Wave & Wind	3rd wind level and 2nd wave level
Hull Design	M-type triple-hull
GNSS	Internal GNSS dual antenna
Waterproof	IP67
Quick Transport	Removable land-assist transport wheels
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	1000 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 battery set, 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)	350 mm x 195 mm x 101 mm
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	1.5 km (Remote)(1); Unlimited (4G)
SIM Card Slot	Nano SIM
Reserved Interface	2x RJ45 ports, 2x 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/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(2), TT450, Transparent
Heading Accuracy	0.1 ° @ 1 m baseline
Inertial Navigation Stability	6 °/ h (accuracy attenuation 1 m after 20 s)
IMU Update Rate	200 Hz

D270 Single Beam Echo Sounder

Data Type	CHCGD(2), 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	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) For best communication, keep the remote controller at least 1.5 m above water level. Actual range may be affected by weather, swells, electromagnetic interference, and other environmental conditions.
(2) CHCGD & CHC protocol is CHCNAV format.

CHC Navigation Headquarter

577 Songying Road, Qingpu,
201703, Shanghai, China
Marketing@chcnav.com
+86 21 54260273

CHC Navigation Europe Kft

Office Campus, Building A, 6/B Gubacsi Street,
Budapest 1097, Hungary
Europe_office@chcnav.com
+36 20 510 6723