CHCNAV

APACHE 3 PRO

COMPACT HYDROGRAPHIC DRONE

⊕

MARINE SURVEY
& CONSTRUCTION

ADVANCED USV FOR BATHYMETRIC SURVEY

The APACHE 3 Pro is a compact, professional unmanned surface vehicle (USV) designed for autonomous bathymetric surveys in shallow waters. Its double-layered carbon fiber hull provides exceptional impact resistance and unsinkability. The IP67 rating guarantees dust and water tightness, protecting on-board components under all circumstances. The semi-recessed motor reduces water resistance, improves endurance, and allows speeds up to 6m/s.

The Apache 3 Pro GNSS RTK + inertial navigation system ensures highly accurate measurements even when the GNSS signal is temporarily interrupted, such as when navigating under a bridge. The built-in CHCNAV echosounder provides the most reliable and accurate depth measurements at all times.

INTELLIGENT POWER MANAGEMENT

Equipped with balanced power supply functionality, it allows for hot swapping of batteries while the device is powered on. In the event of a measurement task interruption, it can continue the mission route from the point of interruption. It also supports round-the-clock continuous operation.

ENABLING SURVEYS IN DIVERSE WATER CONDITIONS

The semi-recessed motor and innovative internal rotor motor design provide the APACHE 3 Pro with a shallower draft, improving the USV's ability to navigate in different water depths. The motor design provides enhanced protection, reducing the risk of damage and ultimately extending the motor's service life.

LIGHTWEIGHT DESIGN

The APACHE 3 Pro is constructed from macromolecular polyester carbon fiber and Kevlar glass fiber, resulting in a remarkably light weight of only 10 kg (excluding sensors). This design allows a single operator to effortlessly manage a variety of remote deployment scenarios, ensuring versatility and ease of use in a wide range of operating conditions.

SINGLE-BEAM ECHOSOUNDER FOR BATHYMETRIC SURVEY

APACHE 3 Pro comes standard with single beam echo sounder. It is portable and integrates a built-in water temperature sensor to enable real-time correction of sound velocity in response to temperature changes, resulting in superior depth measurement accuracy.

REAL-TIME DATA FOR GREATER SECURITY AND PRODUCTIVITY

A combination of SIM, and network bridge with automatic switching capabilities ensures reliable communications. In addition, cloud-based remote monitoring is seamlessly integrated to provide real-time information on the status of the Apache 3 Pro, enhancing its control and security. The use of 4G and 2.4G remote control eliminates distance limitations and enables efficient data exchange in a variety of operating environments.
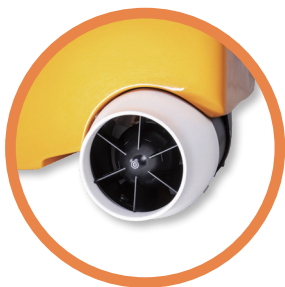
MAINTAIN HIGH ACCURACY UNDER BRIDGE

APACHE 3 Pro ensures consistent accuracy even when navigating under bridges. If the GNSS signal is lost, the USV maintains its course by automatically navigating under bridges and continuously providing high-precision position data. Accurate position and attitude data also compensates for the effects of hull sway on survey results. Tight integration of GNSS and INS data eliminates outliers and improves the reliability of the information collected.
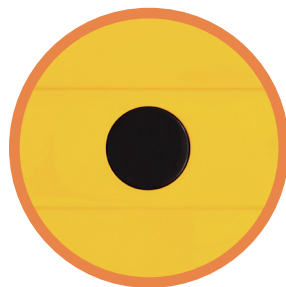
ANDROID VERSION CONTROL TERMINAL

The Android remote controller comes pre-installed with CHC's independently developed EasySail control software. It features video return transmission, parameters real-time display, and control of parameters to ensure timely acquisition of the unmanned boat's status for efficient operation. The integration of various path planning methods, data recording, and data processing streamlines field operations, making work more relaxed and convenient.

COMPACT TURNKEY USV SYSTEM

Motor

Transducer

360° Camera

Android remote control

SPECIFICATIONS

Physical

Hull Dimension (L x W x H)	1.05 m x 0.55 m x 0.39 m
Material	Macromolecule polyester carbon fiber
Weight (w/o instrument and battery)	10 kg
Maximum Payload	30 kg
Anti-Wave & Wind	3rd wind level and 2nd wave level
Hull Design	Triple-hull vessel
GNSS	Internal GNSS dual antenna
Waterproof	IP67
Draft	8.3 cm
Indicator Light	Two-color light (display positioning signal)
Camera	360° omnidirectional video
Safety	Millimeter wave automatic obstacle avoidance, equipped with bumper and double hull design, 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	800 W
Maximum Motor Speed	7200 rpm
Motor Installation	Pluggable
Li-ion Battery Capacity	32.4V 23.1Ah*4 rechargeable lithium battery
Power Supply	Support single battery independent power supply or dual battery balanced power supply
Battery Replacement	Support hot swap
Battery Endurance	2 x 3 h@2 m/s (running on 2 battery sets) (running on 2 battery sets, support hot-swap)
Maximum Speed	6 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 ° @ 0.771 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 [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

CE

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

WWW.CHCNAV.COM | MARKETING@CHCNAV.COM