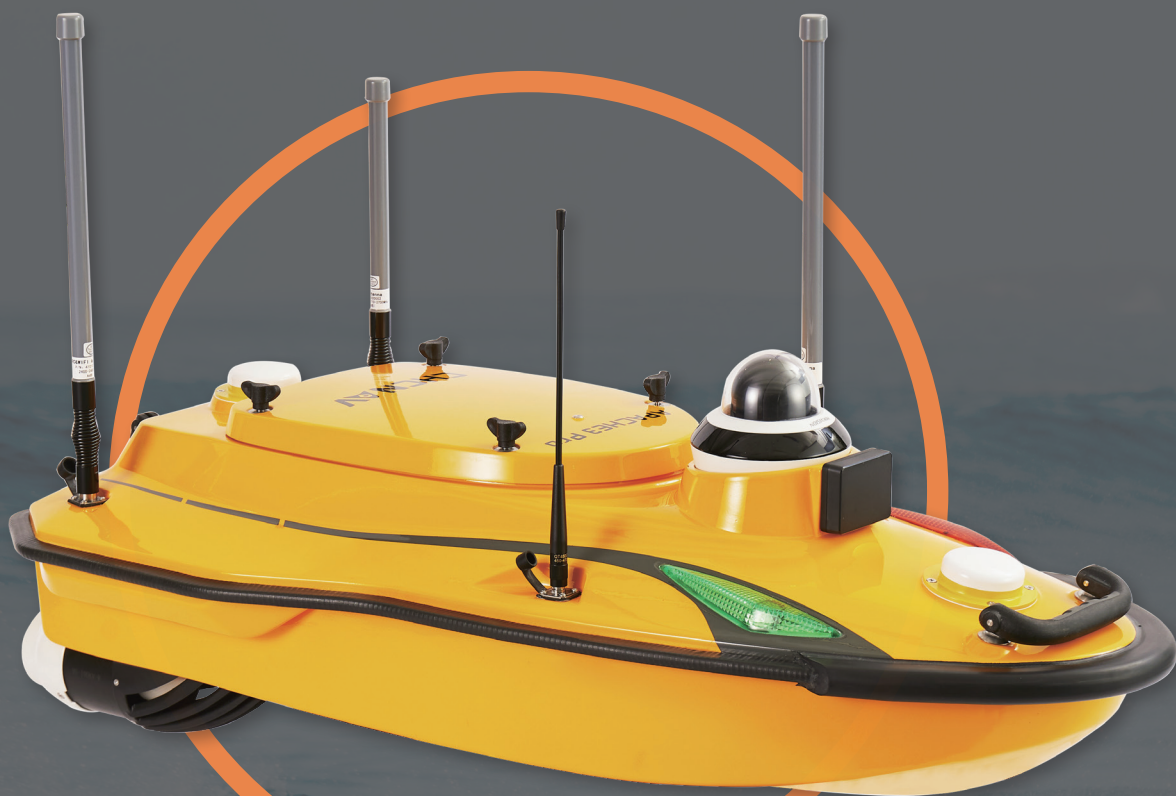


CHCNAV

APACHE 3 PRO

COMPACT HYDROGRAPHIC DRONE



**MARINE SURVEY
& CONSTRUCTION**

ADVANCED USV FOR BATHYMETRIC SURVEY

APACHE 3 Pro is a compact professional USV for autonomous bathymetric surveys in shallow waters. Its double-layered, all-carbon fiber hull is impact resistant and unsinkable, the IP67 dust and waterproofing secures onboard, regardless of operating conditions. The semi-embedded motor reduces water resistance, improves endurance and can reach speeds of up to 6 m/s.

Professional grade GNSS RTK+inertial navigation provides high accuracy measurements even when GNSS signals are temporarily interrupted, for example under a bridge. The built-in CHCNAV D270 echo sounder always provides the most reliable and accurate depth measurements.

MILLIMETER WAVE AUTOMATIC OBSTACLE AVOIDANCE

APACHE 3 Pro the standard is equipped with millimeter wave obstacle avoidance, It can identify obstacles within an angle of 110° in front of the boat and take autonomous detour to avoid obstacles, to reduce the risk of impact damage during the work of the USV.

LIGHTWEIGHT DESIGN

APACHE 3 Pro is made of macromolecule polyester carbon fiber and Kevlar fiber-glass (weighting 10 kg without sensors). It allows one operator to cope with most of remote deployment conditions.

MAKE SURVEY POSSIBLE IN ALL WATER CONDITIONS

The semi-embedded motor and the new internal rotor motor design not only have a shallower draft, but also better protect the motor from damage and improve the service life.

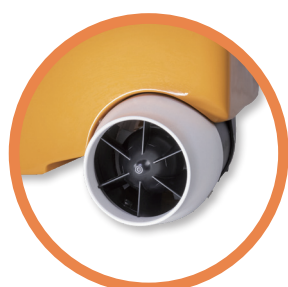
MAINTAIN HIGH ACCURACY UNDER BRIDGE

Accurate position and attitude data to compensate the hull sway on surveying results. Automatic bridge crossing during GNSS outage with continuously output of high-precision positions. Avoid outliers thanks to tight integration of GNSS and INS data. Save costs with embedded 4G and UHF modems.

REAL-TIME DATA TO BOOST SAFETY AND PRODUCTIVITY TO PROJECT

Data privacy on CHCNAV server. Reliable communication combining ESIM+SIM+network bridge and automatic switching. Cloud based remote tracking to ensure the Apache safety status in real-time. 4G/2.4G network communication with no distance restrictions.

 **COMPACT
TURNKEY
USV SYSTEM**



Motor



Transducer



360° Camera



Millimeter wave radar

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	3 rd wind level and 2 nd wave level
Hull design	Triple-hull vessel
Waterproof	IP67
Draft	9 cm
Indicator light	Two-color light (Display positioning signal)
Video	360° omnidirectional video
Auto-return	Auto-return while low battery or signal loss
Obstacle avoidance	Millimeter wave automatic obstacle avoidance

Power	
Type	Electric
Propeller type	Brushless DC
Direction control	Veering without steering engine
Maximum motor power	800 W
Maximum motor speed	7,200 rpm/min
Motor installation	Pluggable
Li-ion battery capacity	24,500 mAh, 36 V x 4 15,000 mAh, 18 V x 1
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)
Maximum speed	6 m/s

Communication	
Data communication	Network bridge: 1 km and 4G: unlimited
R/C communication	2.4 GHz
Remote control range	1 km
SIM Card slot	Nano SIM
Interface	2 x RJ45 network port 2 x RS232 serial port 1 x RS485 serial port 1 x PPS
Navigation mode	Manual or Auto-Pilot
Waterproof of master control	IP67
Data storage	Local storage (multi-channel storage) & Remote storage

Positioning	
Satellite system	BDS B1/B2, GPS L1/L2, GLONASS L1/L2, Galileo E1/E5, QZSS
Channel	432
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
Heading accuracy	0.2 ° @1 m baseline
Inertial navigation stability	6 ʘ/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
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
Frequency	200 kHz
Beam angle	6.5° ± 1°
Supply voltage	10-36 V DC / 100-240 V AC
Waterproof	IP67



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

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