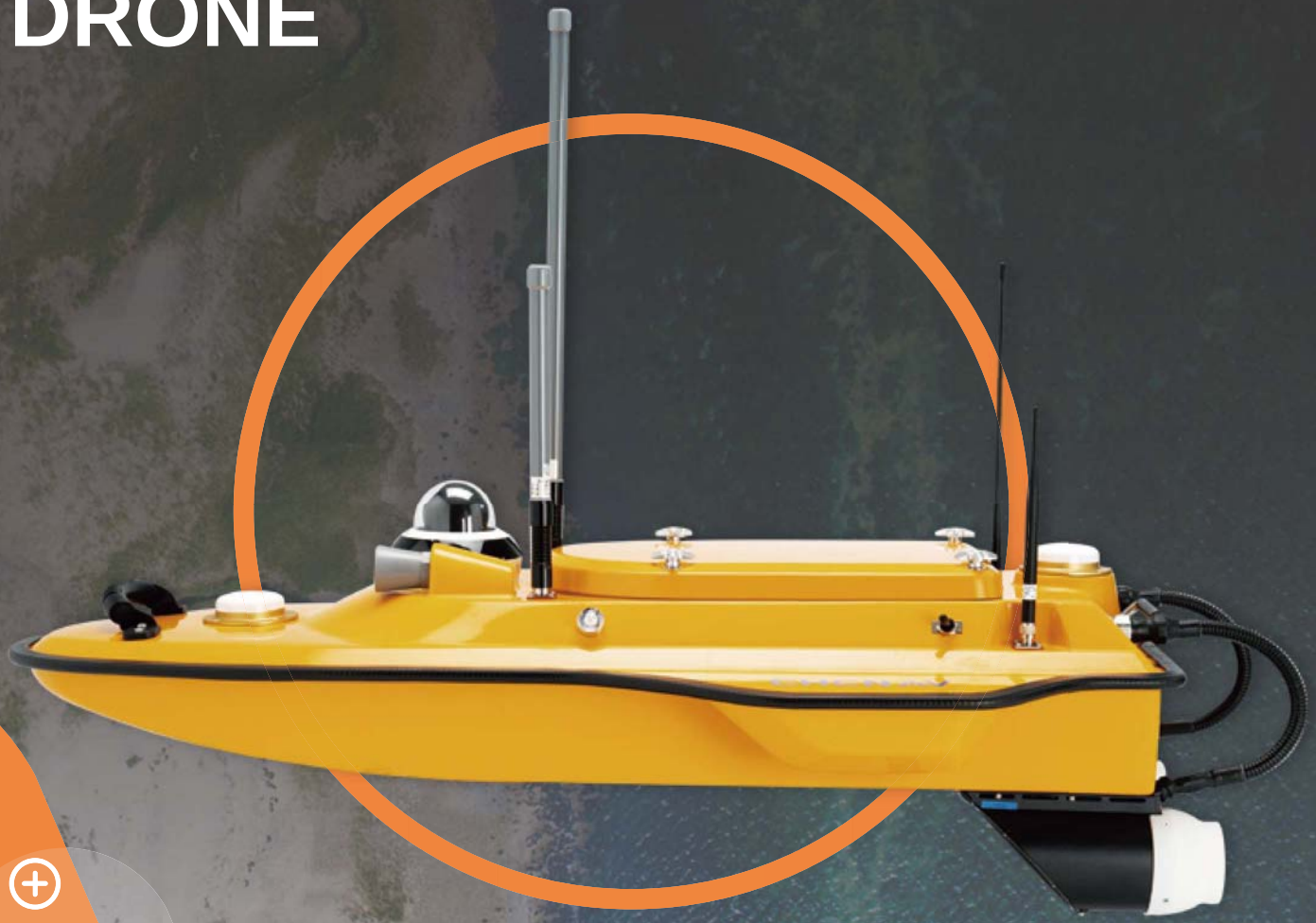
CHCNAV

APACHE 3

COMPACT HYDROGRAPHIC DRONE



MARINE SURVEY
& CONSTRUCTION

COST-EFFECTIVE SINGLE BEAM ECHOSOUNDER

The APACHE3 is a portable shallow-draft hull with a single beam echo sounder for bathymetric surveys of lakes, inland rivers, and coastal areas. The master control unit provides seamless 4G communication, removing the limitations of traditional network bridge base stations and transmission distances, making field work easier.

The APACHE3 USV combines a dual GNSS positioning and heading sensor, a stable and reliable hull attitude and an IMU sensor, allowing uninterrupted survey while passing below bridges. The high efficiency 5 m/s motors and absolute straight-line technology allow a fully automatic pre-determined course in autonomous mode under adverse current and flow conditions.

ONE-MAN OPERATION

Allow one operator to cope with most of remote deployment conditions

Made of macromolecule polyester carbon fiber and Kevlar fiber-glass weighting 7 kg without sensors. It can be carried by a single person during the entire project from on-site transport, installation, calibration, and mission processing.

MAINTAIN HIGH ACCURACY UNDER BRIDGES

Integrated IMU to overcome temporary GNSS outage

The integration of GNSS and IMU sensor provides accurate position and attitude data to compensate for hull sway on survey results. The Apache3 provides consistently high accuracy positions even during temporary GNSS outages while passing under bridges. Tight integration of GNSS and INS data eliminates outliers.

MAKE SURVEY POSSIBLE IN MOST WATER CONDITIONS

High-efficiency maritime design propulsion

DC-injection rotary motor technology provides a 40% increase in energy conversion efficiency. The motor's high speed (7,000 rpm), its anti-collision design with a sealed straw cover with oblique titanium alloy mesh and its anti-corrosion design (resistant to one month's immersion in sea water) make it extremely durable.

HIGH PERFORMANCE POCKET-HULLED VESSEL DESIGN

Keeps the hull balanced even in the rapid current situation

With less than 1 m length and pocket-hulled vessel design, the APACHE3 supports operation in shoals, channels, and shallow rivers for the bathymetric survey without run aground.

ABSOLUTE LINEAR TECHNOLOGY

Maintain a perfect straight sailing course even in complex current conditions

Integrate high precision GNSS positioning and heading technology to ensure high accuracy bathymetric survey in fully autonomous mode.

COMPACT TURNKEY USV SYSTEM

Motor

Transducer

360° Camera

CAS Radar

SPECIFICATIONS

Physical	
Hull Dimension (L x W x H)	100 x 65 x 30 cm
Material	Macromolecule polyester carbon fiber
Weight (w/o instument and battery)	7 kg
Maximum payload	25 kg
Anti-Wave & Wind	3rd wind level and 2nd wave level
Hull Design	Triple-hull vessel
Waterproof	IP65
Draft	13 cm
Indicator Light	Two-color light (display positioning signal)
Video	360° omnidirectional video
Auto-return	Automatic reture in case of low battery or signal losss

Power	
Type	Electric
Propeller Type	Brushless DC
Direction Control	Veering without steering engine
Maximum Motor Power	700 W
Maximum Motor Speed	7000 rpm
Maximum Speed	5 m/s
Li-ion Battery	4 x 40 000 mAh, 18.5 V 1 x 15 000 mAh, 18.5 V
Battery Endurance	2 x 2 hours @ 2 m/s (running on 2 battery sets)

Communications	
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 port 2 x RS232 serial port 1 x RS485 serial port 1 x PPS
Navigation Mode	Manual or Auto-Pilot
Waterproof (master control)	IP67
Data Storage	Local multi-sessions and FTP push

Positioning	
Satellite System	BDS B1/B2, GPS L1/L2, GLONASS L1/L2, Galileo E1/E5, SBAS, QZSS
Channel	432 channels
Single Point Position (RMS)	Horizontal: 1.5 m Vertical: 2.5 m
SBAS Positioning Accuracy	Horizontal: 0.5 m Vertical: 0.85 m
DGNSS Positioning Accuracy	Horizontal: 0.4 m + 1ppm Vertical: 0.85 m + 1ppm
RTK Positioning Accuracy	Horizontal: ±8 mm + 1ppm Vertical: ±15 mm + 1ppm
Heading Accuracy	0.2° @1 m baseline
Inertial Navigation stability	6°/h

D230 SinglebeamEcho Sounder	
Data Type	CHCGD,(1) NMEA SDDPT/SDDBT, original waveform
Weight	1.1 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°

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

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