

APACHE 5

Marine Construction



Hardware Description

APACHE 5

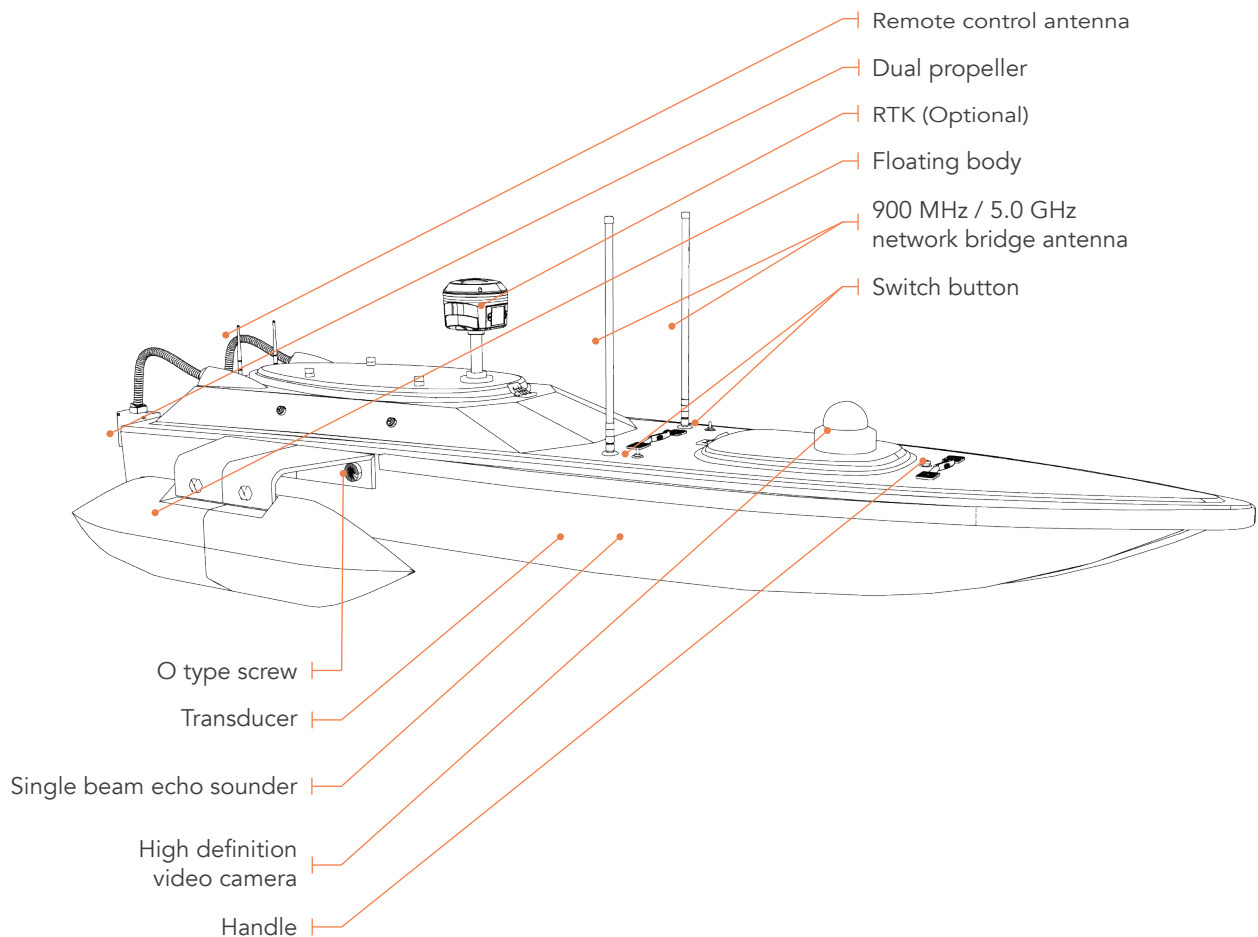
Advanced Unmanned Surface Vessel

APACHE 5 is the CHCNAV's professional USV solution with integrated single or multi-beam echo sounder. It features detachable triple-hulled vessel to match various environmental constraints such as open space lake or shallow draft channel without worrying about running aground.

APACHE 5 is the perfect solution for hydrographic surveys and mapping, channel surveys and underwater geological exploration. The system can be remote-controlled or fully autonomous to greatly improve the safety of field operators.

A high resolution wireless video camera and a single beam echo sounder come as standard on the APACHE 5. Additional GNSS RTK receiver is available to obtain high accurate coordinate in real time.

APACHE 5 collects and stores real time data from multiple sensors. The triple hull anti-corrosion technology makes it suitable to all kinds of environments.



Core Technology



Single Person Operation

With a weight of 10 kg (without battery and echo sounder), the APACHE 5 it can be carried by a single person during the entire project from on-site transport, installation, calibration and mission processing.



Triple-hulled Vessel design

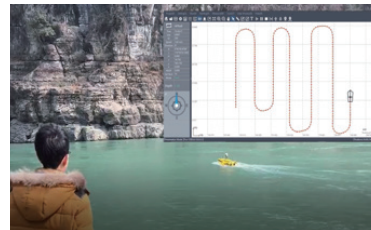


The detachable triple-hulled vessel design is perfectly meeting various mission environments. Fitted with its dual floating bodies to keep hull balance while operation in the open lake region. The floating bodies can be removed when surveying in shallow draft lake or channel to avoid run aground.



Absolute linear technology

APACHE 5 integrates high precision positioning and heading technology to maintain a perfect straight sailing course even in complex current conditions.



High Resolution Video Camera

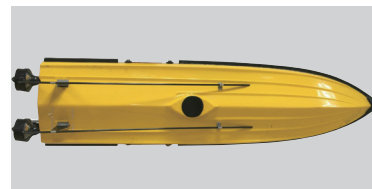


This unique feature provides real-time video feedback of the APACHE 5 up to 2 km when being out of line-of-sight or during fog situation. Live video feed increases mission efficiency and safety in emergency situations (riverfront survey, grounding...).



Dual Pole Protective Design

APACHE 5 integrates a dual tough and rigid carbon fiber pole to protect propellers to get rid of twined by aquatic plants and fishing net in riverways and shallow water.



Applications



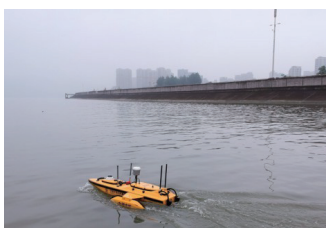
Channel Survey



Dam Monitoring



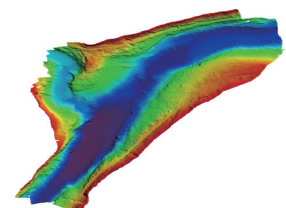
Site Selection of Hydropower Station



Settlement Monitoring



Bridge Construction



Scientific Research

Specifications

Physical	
Size (L x W x H)	160 cm x 38 cm x 24 cm (5.2 ft x 1.2 ft x 0.8 ft)
Weight (w instrument and battery)	< 30 Kg (66.1 lb)
Weight (w/o instrument and battery)	< 10 Kg (22.0 lb)
Material	Macromolecule polyester carbon fiber
Type	Triple-hull vessel
Maximum speed	5 m/s
Draught	0.15 m
Maximum load	35 kg
Wave resistance	1.25 m
Electrical	
Power consumption	300 W
Li-ion battery capacity	40000 mAh, 18.5 V
Navigation mode	Auto/Manual
Operating time ⁽¹⁾	2 hours (operating time can be extended with extra batteries)
Communications	
Communication way	UHF, network bridge
UHF frequency	900 Mhz - 5.0 GHz
Communication distance	Up to 2 km
Communication port	RS232/Internet access
Hydro Survey Software	
CHC Hydro Survey 6 software for collecting RAW data, base map import, mapping, positioning, drawing the USV track real-time, data process, various coordinate file export.	

Video Camera Specification	
Adjust angle – horizontal	0° to 355°
Adjust angle – vertical	0° to 75°
Conversion mode	ICR infrared filter
Video compression standard	H.265, H.264, MJPEG
Camera	3 megapixel
Infrared irradiation range	10 m to 30 m
Maximum image size	2048 x 1536
Storage	Micro SD/SDHC/SDXC card (128 GB)
Communication port	RJ45 10 M / 100 M adaptive
Operating temperature	-30°C to +60°C (-22°F to +140°F)
Humidity	≤ 95% condensation
D230 Singlebeam Echo Sounder	
Size (L x W x H)	24 cm x 16 cm x 5 cm (0.8 ft x 0.5 ft x 0.2 ft)
Weight	0.9 kg (2.0 lb)
Measure range	0.3 m to 200 m
Resolution	0.01 m
Accuracy	±0.02 m + 0.1% x D (D = depth of water)
Frequency	200 KHz
Sound velocity adjust range	1300 m/s to 1700 m/s
Pulse power	300 W
External power	10 V DC to 30 V DC 100 V AC to 240 V AC
Operating temperature	-30°C to +60°C (-22°F to +140°F)

*Specifications are subject to change without notice.

(1) Operating time varies based on temperature.

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– Revision February 2019

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