

SPCraft5

Full-Function Professional USV

○ *Smart Precision Navigation*



○ *Expandable Platform*

SPCraft5 *unmanned surface vessel (USV)*

SPCraft5 is a multifunctional unmanned surface vessel (USV) developed by Guangzhou Sphrefix Navigation Technology Co., Ltd. Built for underwater surveying, patrol and reconnaissance, and water-quality monitoring, it integrates a proprietary intelligent control system and supports payloads such as echo sounders, side-scan sonar, and water-quality sensors. Featuring high automation, strong anti-interference performance, and solid expandability, SPCraft5 works seamlessly with iSail to deliver end-to-end data acquisition and analysis—offering a safer, more efficient, and more precise solution for diverse water environments.



HEIGHT	DIAMETER	WEIGHT
254mm	980*520*254mm	30kg

Integrated Portable Design



The streamlined, fully curved hull is constructed from high-strength polymer composite and Kevlar fabric, achieving both lightweight design and structural rigidity. No assembly is required — the vessel is ready for deployment right out of the box, enabling fast transportation and rapid field operations.

High-Precision Intelligent Control



Equipped with self-developed high-precision navigation and control algorithms, the system supports RTK positioning accuracy of 8 mm + 1 ppm horizontally. Dual-antenna GNSS and an integrated IMU ensure stable sailing and highly accurate route tracking. Intelligent safety features include automatic obstacle avoidance, shallow-water alerts, and low-battery return.

Long Endurance & Powerful Propulsion



A dual lithium battery system supports hot-swappable replacement, enabling up to 7 hours of endurance at 1.5 m/s and an economical range of up to 38 km. The 900 W brushless motor and anti-clog propeller provide strong thrust and a maximum speed of 7 m/s, allowing the vessel to operate reliably in complex flow conditions.

Multi-Functional Expandability



SPCraft5 supports a wide range of sensors, including water-quality probes, side-scan sonar, and LiDAR. An open SDK is provided for secondary development, making it adaptable to water-quality inspections, concealed-pipe investigations, topographic surveying, emergency patrol, and many other mission scenarios.

GNSS

Characteristic



- Dual protection: omnidirectional bumpers with anti-sink design.
- Intelligent safety: collision avoidance & auto-reverse in shallow water.



- 7" controller: 1080P HD video, 3 km range (unlimited via 4G).
- Remote control endurance: up to 8 hours.

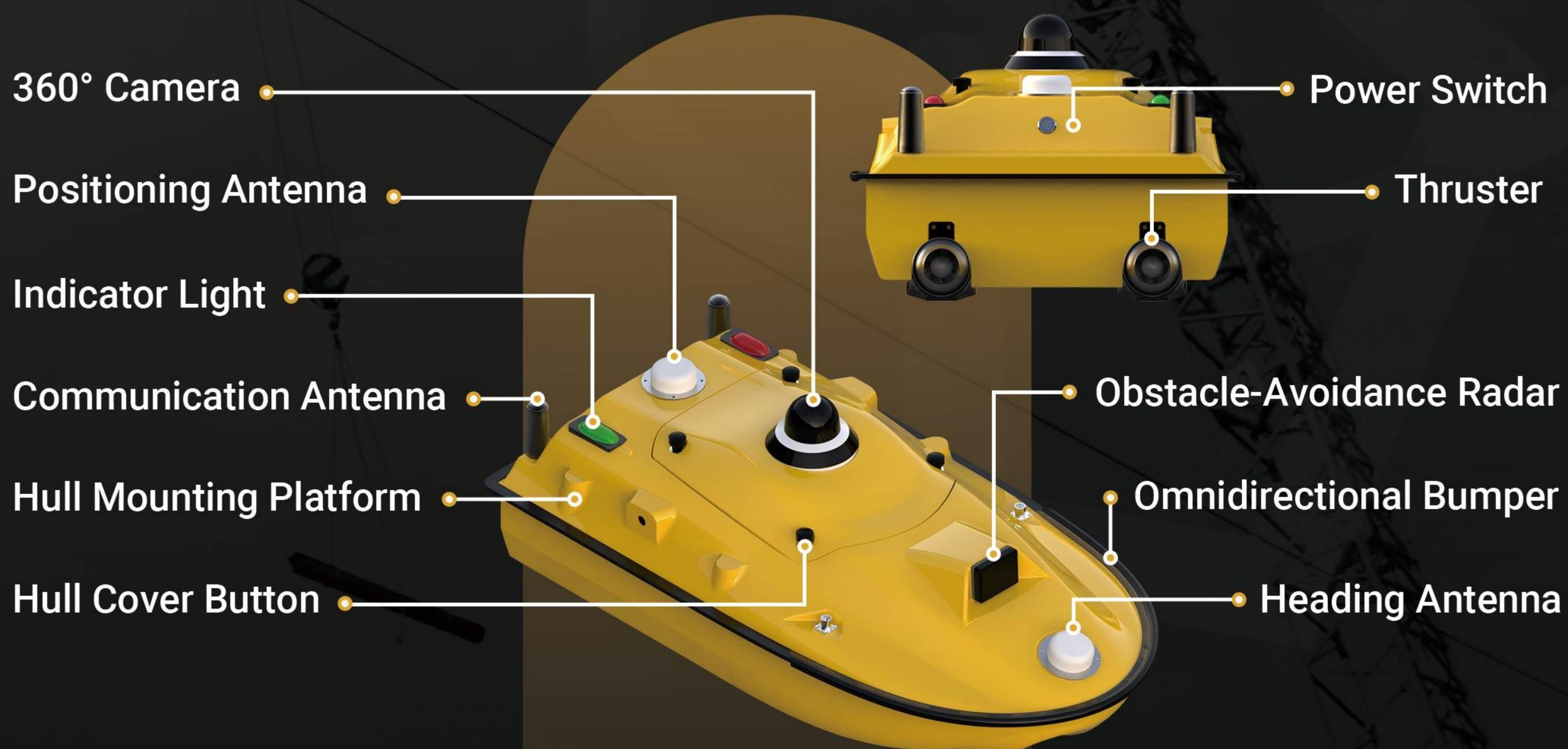


- PPK post-processing with attitude & tidal correction enhances data accuracy.
- AI target recognition improves processing efficiency.

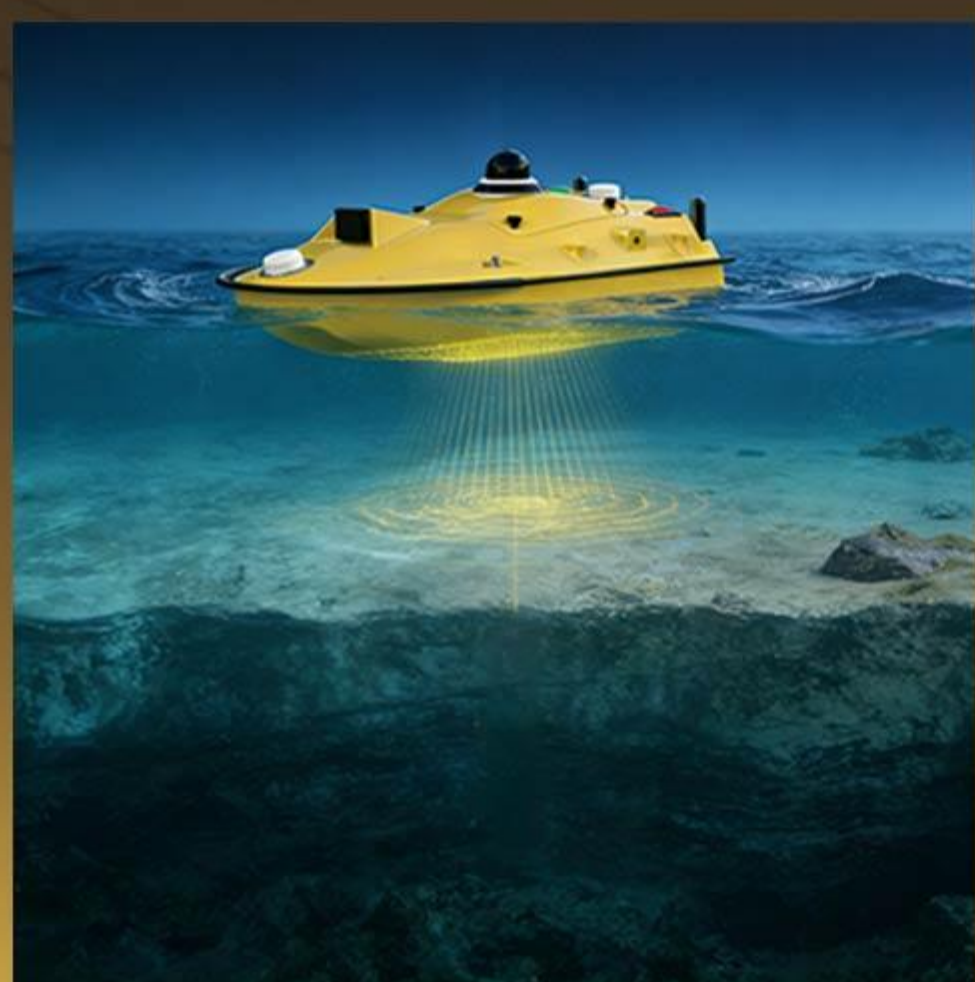


- Plug-and-play propulsion & hot-swappable battery for uninterrupted operation.
- Open interfaces enable flexible payload integration and secondary development.

System Components



Application Scenarios



Water Depth
Measurement



Water Quality
Sampling



Water Quality
Monitoring



Surface
Inspection

ITEM		SPECIFICATION	REMARKS
HULL	Hull Dimensions	980 × 520 × 254 mm	
	Material	High-molecular-weight polyethylene; Kevlar fabric reinforcement	
	Draft	8.5 cm	
	Weight	Hull 7 kg; Full system 30 kg (including external modules, controller, and battery)	
	Maximum Payload	35 kg	
	Anti-Wave Capability	Level 3 wind waves, Level 2 swell	
	Ingress Protection	IP67	
	GNSS	Built-in GNSS positioning, dual-antenna and dual-receiver system	
	Status Indicator Light	Dual-color LED, indicates remote-control signal and GNSS positioning status	
	Camera	360° all-round night-vision camera	
POWER SYSTEM	Obstacle Radar	Beam width: 120° × 120°; Detection range: 0.1–20 m (optional 40 m version)	
	Propulsion Type	Electric	
	Motor Type	Brushless motor	
	Steering Mode	Differential steering with dual motors; supports reverse thrust	
	Rated Power	900 W total motor power	
	Motor Speed	Rated 5300 RPM	
	Motor Mounting	Detachable plug-in design; easy to replace	
	Battery Type	High-capacity lithium battery, 33.6 V 25 Ah (two detachable battery compartments), 21700 cells	
	Battery Replacement	Supports quick replacement and plug-in/out swapping	
	Endurance	Approx. 3 hours @ 2.0 m/s; 7 hours @ 1.5 m/s	
REMOTE CONTROLLER	Range	Range at economical speed: 38km	
	Maximum Speed	7 m/s; supports stable operation in turbulent water / high-current environments	
	Dimensions	277 × 138 × 96 mm	
	Display	Industrial touch-screen; sunlight-readable Resolution: 1920 × 1200 Brightness: Up to 1200 nit	
	Memory	4 GB RAM, 64 GB storage	
	Frequency	2.400–2.483 GHz	
	Communication Range	Up to 3 km digital link; unlimited range via 4G	
	Battery Capacity	20,000 mAh	
	Operating Time	8 hours	
	Charging	18 W fast charging; compatible with standard Type-C port	
MAIN CONTROL UNIT	Interfaces	PPM, RJ45, USB, Type-C, SIM card slot, TF card slot	
	Operating System	Linux	
	Base Station Communication	Radio (optional) & Network & CORS	
	Video Communication	4G & 2.4G	
	SIM Slot	Nano SIM slot	
	Interfaces	2 × RJ45 ports, 2 × RS232 ports, 2 × RS485 ports	
POSITIONING	Satellite System	Supports BDS (BDS-2: B1I, B2I; BDS-3: B1I, B3I), GPS (L1C/A, L2P, L2C), GLONASS (G1, G2), Galileo (E1, E5b), QZSS* (L1C/A, L2C), SBAS* (L1C/A) and other multi-constellation signals	
	Cold Start	< 30 s	
	Initial Fix Time	< 5 s (D ≤ 10 km)	
	Single-Point Positioning Accuracy	Horizontal: ≤ 3 m; Vertical: ≤ 1.5 m	
	DGNSS Positioning Accuracy	Horizontal: 40 cm + 1 ppm; Vertical: 80 cm + 1 ppm	
	RTK Positioning Accuracy	Horizontal: 8 mm + 1 ppm; Vertical: 15 mm + 1 ppm	
	CORS Source	Supports network CORS	
	Differential Data Protocols	Supports TT450 protocol, transparent transmission, and other standard formats	
	Heading Accuracy	Precision: 0.1° (1 m baseline)	
	Gyro Drift	6°/h, 20 s drift stabilization, supports uninterrupted autonomous navigation	
ECHO SOUNDING	IMU Update Rate	200 Hz	
	Frequency	200 kHz	
	Beam Angle	8°	
	Depth Range	0.15–200 m (extendable for larger range)	
	Resolution	8 mm	
	Stability	±2 cm (CEP 95 @ 10 m)	
	Depth Accuracy	±1 cm + 0.1% × D (D = depth)	
	Power Supply	9 V–28 V	
	Sound Speed Range	0 m/s – 1700 m/s	
	Power Consumption	5–10 W	

► Manufacturers may update parameters at any time, please refer to the latest product information.