PHEREFIX

SPCraft6

Full-Function Professional USV

Centimeter Precision

Reliable Continuous Operation

SPCraft6 unmanned surface vessel (USV)

SPCraft6 is a professional-grade unmanned surface vessel (USV) developed by Guangzhou Spherefix Navigation Technology Co., Ltd. Featuring a 1.3-meter high-strength composite hull, it delivers excellent payload capacity and stability, supporting simultaneous integration of multibeam sonar, ADCP, water-quality sensors, and other large-scale instruments—serving as a mobile waterborne laboratory. Powered by the self-developed iSail intelligent control platform, SPCraft6 enables end-to-end workflows from mission planning and autonomous operation to data processing, making it ideal for hydrographic surveying, hydrological research, environmental monitoring, and search-and-rescue missions.

HEIGHT	DIAMETER	WEIGHT
430mm	1280*580*430mm	50kg

Multi-Layer Intelligent Safety & Protection

The platform includes an active safety system with low-battery/signal-loss auto-return, radar obstacle avoidance, and panoramic night vision. Its IP67 rating and dual-layer structure ensure reliable performance in harsh hydrological conditions.

Intelligent Data Platform

The iSail control system combines mission planning, autonomous navigation, and real-time data visualization. It supports professional multi-format data processing and OTA online upgrades, providing an integrated workflow from task execution to deliverable output.

Advanced Sensor Integration & Expandability

As an open “mobile waterborne laboratory,” the platform offers large payload space and robust power supply, supporting simultaneous integration of multibeam sonar, ADCP, water-quality analyzers, and other professional sensors. With an open SDK, users can customize functions to meet research or engineering requirements.

Long Endurance & High-Reliability Hardware

Dual hot-swappable batteries support up to 5 hours of operation and a 38 km range. The system includes a high-brightness professional controller, dual-antenna GNSS RTK, and multi-mode communication (4G/2.4G/UHF) to ensure accurate, stable, and continuous operation in large water areas.

Characteristic

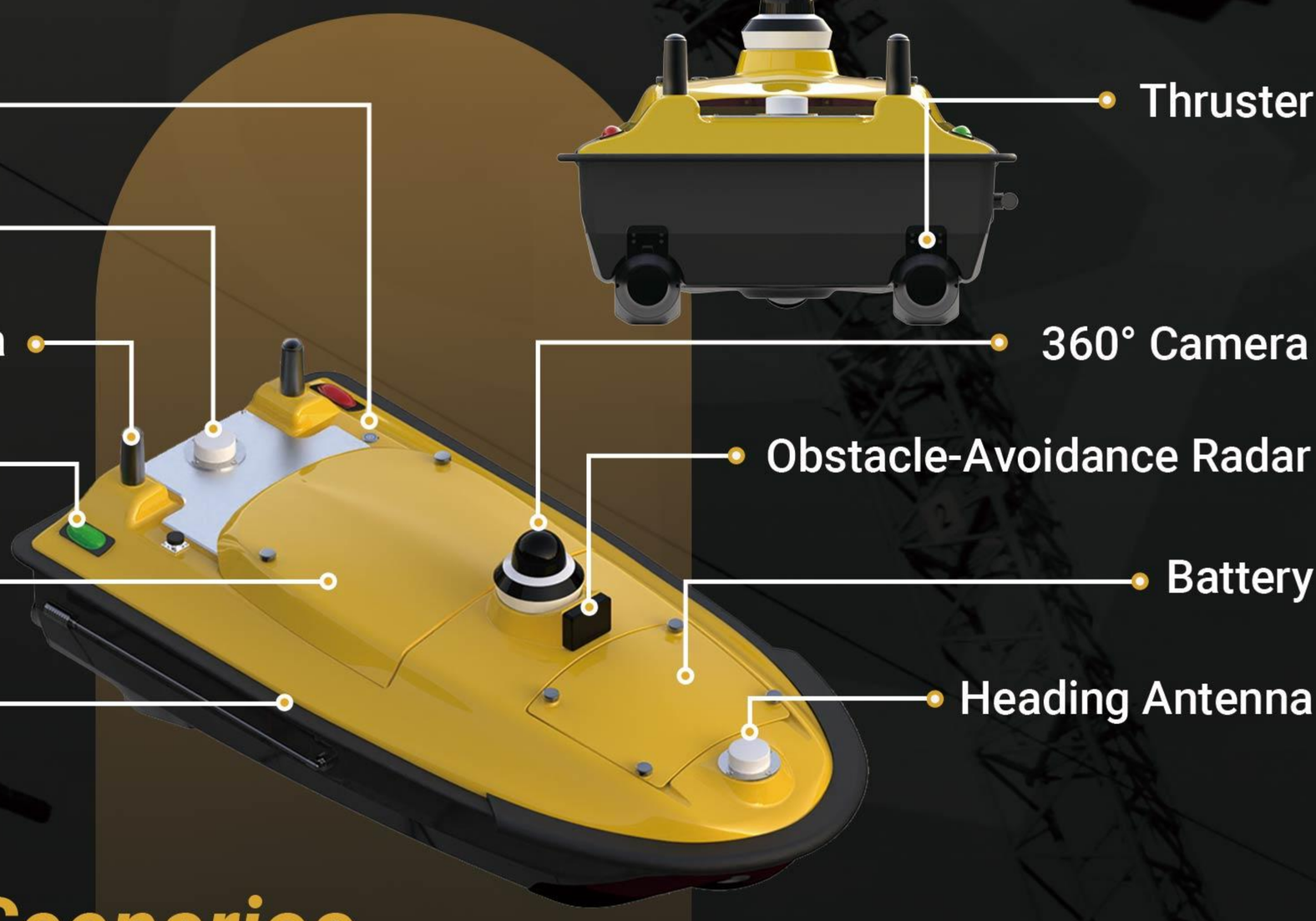
- Achieves ±8 mm accuracy with multi-constellation support.
- Features dual-antenna GNSS and attitude sensors for reliable performance.

- Easy-Maintenance Design: Plug-in propulsion and hot-swappable batteries.
- Portable & Powerful: 12 kg lightweight structure with 50 kg payload capacity.

- 12" Touch Terminal: Bright display, 8-hour battery with fast charge.
- Physical Controls: Buttons, dual joysticks, camera wheel.

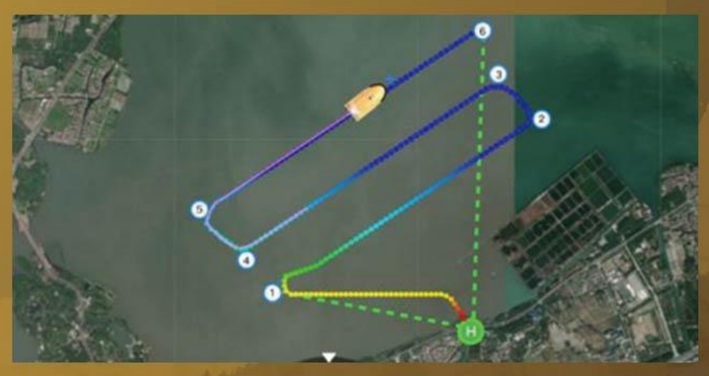
- Versatile Connectivity: 4G/2.4G/UHF with manual/auto/hover/tracking modes.
- Smart Management: Built-in diagnostics and alerts for automated oversight.

System Components



Application Scenarios

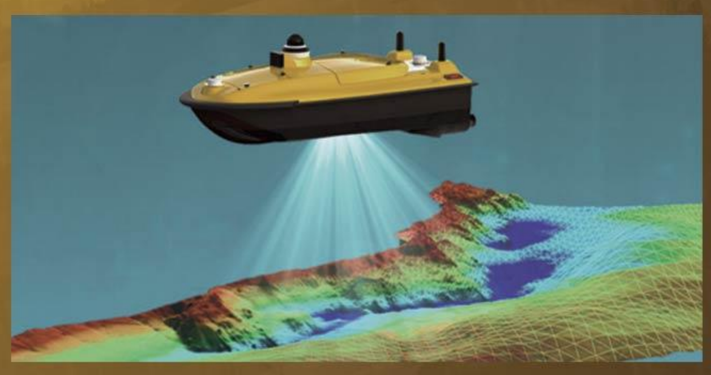
Water Depth Measurement



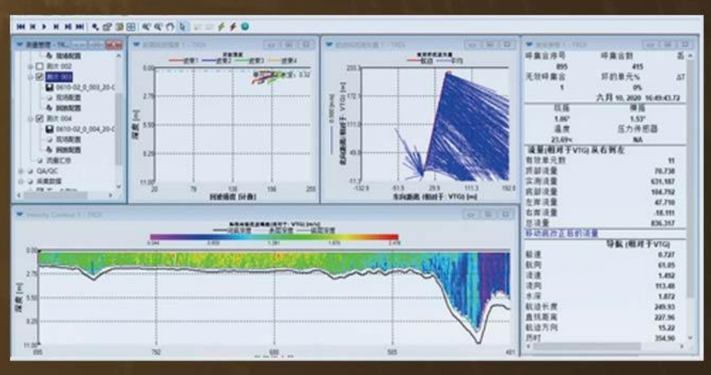
Water Quality Sampling

Water Quality Monitoring

Surface Inspection



Underwater Surveying



Hydrological Monitoring

ITEM		SPECIFICATION	REMARKS
HULL	Hull Dimensions	1280 × 580 × 430 mm	
	Material	Macromolecular Polyester Carbon Fiber&Kevlar	
	Draft	10 cm	
	Weight	Hull 12 kg; Full system 40 kg (including external modules, controller, and battery)	
	Maximum Payload	50 kg	
	Anti-Wave Capability	3rd-Level Wind, 2nd-Level Wave	
	Waterproof	IP67	
	GNSS	Dual GNSS Antennas Inside/Internal Dual GNSS Antennas	
	Indicators	Two Indicators: GNSS Positioning Status and Controller Connection	
	Camera	360° Night-Visible Omnidirectional Camera&AI Camera(Optional)	
	Obstacle Radar	Beam width: 120° × 120°; Detection range: 0.1–20 m (optional 40 m version)	
POWER SYSTEM	Propulsion Type	Electric	
	Motor Type	Brushless motor	
	Steering Mode	Differential steering with dual motors; supports reverse thrust	
	Rated Power	1100 W total motor power	
	Motor Speed	Rated 7000 RPM	
	Motor Mounting	Detachable plug-in design; easy to replace	
	Battery Type	High-capacity lithium battery, 33.6 V 30 Ah (two detachable battery compartments), 21700 cells	
	Battery Replacement	Hot-swap, 2h Fully Charged	
	Endurance	3h@2m/s; 5h@1.5m/s; 8h@2m/s; 10h@1.5m/s(Optional)	
	Range	Range at economical speed: 38km	
	Maximum Speed	6m/s	
REMOTE CONTROLLER	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	
	Interfaces	PPM, RJ45, USB, Type-C, SIM card slot, TF card slot	
MAIN CONTROL UNIT	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	
	IMU Update Rate	200 Hz	
ECHO SOUNDING	Frequency	200 kHz	
	Beam Angle	5°±1°	
	Depth Range	0.15-200m (Optional up to 300m)	
	Resolution	1cm	
	Stability	±2 cm (CEP 95 @ 10 m)	
	Depth Accuracy	±1 cm + 0.1% × D (D = depth)	
	Power Supply	9 V–18 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.

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