USV-6S

Unmanned Surface Vehicle (USV)

Compact Surveying & Monitoring Platform

L0.98m / 7.0kg(Empty) / IP67 / Dual GNSS

Overview

The USV-6S is a highly integrated, lightweight Unmanned Surface Vehicle (USV).

Engineered for rapid deployment in bathymetric surveying, environmental monitoring, and emergency response, the USV-6S combines advanced sensors, artificial intelligence, and reliable communication technologies in a professional platform to ensure high efficiency and accuracy for work. With a length of 0.98 meters and a featured M-shaped hull, it ensures stable and safe navigation in various water areas.

Despite its compact size, it does not compromise on capability. The system comes standard with a high-precision GNSS module and a single-beam echosounder, with optional water quality sensors available for flexible mission configuration. It is the ideal, cost-effective, and one-stop solution.

Key Applications

- Underwater Topographic Mapping
- Hydrological and Bathymetric Surveying
- Environmental Monitoring
- Search and Rescue

Safety & Automatic Return Functions

- Low-Battery Return
- Tracking Return
- Auto Backing
- Disconnected Return
- Obstacle Avoidance

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Technical Specifications

Hull	
Hull Dimension (L*W*H)	0.98*0.52*0.255m
Material	Macromolecular Polyester Carbon Fiber&Kevlar
Shape	M-shape Monohull
Draft	8.5cm
Weight	7.0kg(empty) 20.4kg(w/o battery); 27.8kg(w/ 2 batteries)
Maximum Payload	35kg
Anti-Wind&Wave	3rd-Level Wind, 2nd-Level Wave
Waterproof	IP67
GNSS	Dual GNSS Antennas (positioning&Heading)
Indicators	Two Indicators: GNSS Positioning; Status&Controller Connection
Camera	360° Night-Visible Omnidirectional Camera
Angle Range and Distance of Obstacle Avoidance	Horizontal & Vertical anger:120°*120°; Distance:0.1~20m

Power	
Power type	Electric
Motor type	Brushless motor
Steering type	Differential Steering, Support Reversing
Maximum Motor Power	900W
Motor speed	5300RPM
Motor Installation	Pluggable
Anti-Clogging Design	Semi-Embedded Ducted Thruster:Weed-Resistant & Easy-Clean
Battery Specification	33.6V 25Ah*2 Rechargeable Lithium Battery; 21700mAh per Battery
Power Supply	Single-Battery Operation; Dual-Battery Extended Runtime
Battery Replacement	Hot-swap, 2h Fully Charged
Battery Endurance	3h@2m/s ; 7h@1.5m/s
Maximum Speed	7m/s
Operating Range38km	Operating Range38km

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Controller	
Screen Size	27.7*13.8*9.6cm
Screen Display	Touch-Sensitive Screen & Sunlight-Visible Display
Resolution Ratio	1920*1200
screen Luminance	1200nit
Internal Storage	4GB RAM + 64GB Storage
Controller System	Android
Communication Frequency	2.4 GHz
Communication Range	Data Transmission in 3km via 2.4G; Unlimited Distance via 4G Communication
Battery Capacity	20000mAh
Runtime	8h
Controller Charger	18W Type-C Fast Charging in 2h
External Interface	USB,Type-C,SIM Card Slot、TF Card Slot
Quick Operation	One-Click Switch: Manual, Auto, Hover, Return; Quick Buttons: Route Planning, Safety Settings, Parameters Managing, Status Checking; 360° Coverage: Full-Control Camera Dial

I-Sail	
Software System	Android
Update	Over-the-Air (OTA) Push&Update

Echosounder	
Frequency	200KHz
Beam Angle	8°
Sounding Range	0.15-200m(Optional Longer)
Resolution Ratio	8mm
Sounding Accuracy	±1cm+0.1%D (D is depth value of water)
Supply Voltage	9V-28V
Sound Velocity Adjustment	0m/s~1700m/s
Power Consumption	5~10W
Waterproof&Dustproof	IP67

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System	
Operating System	Linux
Base Station	UHF&Ntrip
Data Transmission	4G&2.4G&UHF
Controller Communication	4G&2.4G
SIM Card Slot	Nano Card Slot
Interface	2*RJ45 port；2*RS232 serial port；2*RS485 serial port
Storage	64GB Storage
Waterproof&Dustproof	IP67
Operating Mode	Manual&Auto
USV control	Multiple Route Planning； Automatic Navigation； Breakpoint Continuation； Real-time Trajectory Display； Automatic Obstacle Avoidance； Remaining Mileage Display； 360° Gimbal Camera； Dual Joysticks(Physical and Virtual)
Data Collection	Coordinate Conversion； Real-time Depth Value/Echo Signal/Water Quality Data/Sonar Imagery Display； Recording Points Control; Sonar parameter Management
Safety System	System Self-check & Anomaly Alert, Abnormal Cruising Speed Alert, Low-Battery and Signal-Loss Alert, Payload-Malfunction Alert, Near-Obstacle Alert, Near-Shallow Alert, One Button Auto Return
Data Post-Processing	Bathymetric Echo Stacking for High-Accuracy Data, Attitude correction, Targeted Feature Point Extraction, Point Modification and Addition, Multi-Format Data Import(dxf. kml.) & Export(txt. csv. dat. dxf.)

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Positioning	
Satellite System	BDS: B1I, B2I, B3I GPS: L1C/A, L2P(Y), L2 CGalileo: E1, E5b GLONASS: L1, L2 QZSS: L1C/A, L2 CSBAS: L1C/A
Cold Start	<30s
Initialization	<5s(D<10km)
Single-point Positioning (RMS)	Horizontal:1.5m; Vertical:2.5 m
DGNSS Positioning (RMS)	Horizontal:0.4m + 1 ppm; Vertical:0.8m + 1 ppm
RTK Positioning (RMS)	Horizontal:±8mm + 1 ppm; Vertical:±15mm + 1 ppm
Ntrip Protocol	Support CORS, NTRIP Client
Radio Protocol	TT450, Transparent
Heading Accuracy	0.1°@1m Baselin
Inertial Navigation Accuracy	6 °/h ,<1m/20s
IMU Update Rate/Frequency	200Hz

Expansibility	
Expandable Payload	Optical Camera, Laser Radar, Multi-parameter Water Quality Meter, Water Quality Sampler, Side-scan Sonar, Warning Horn, (Open SDK to Extend and Customize)

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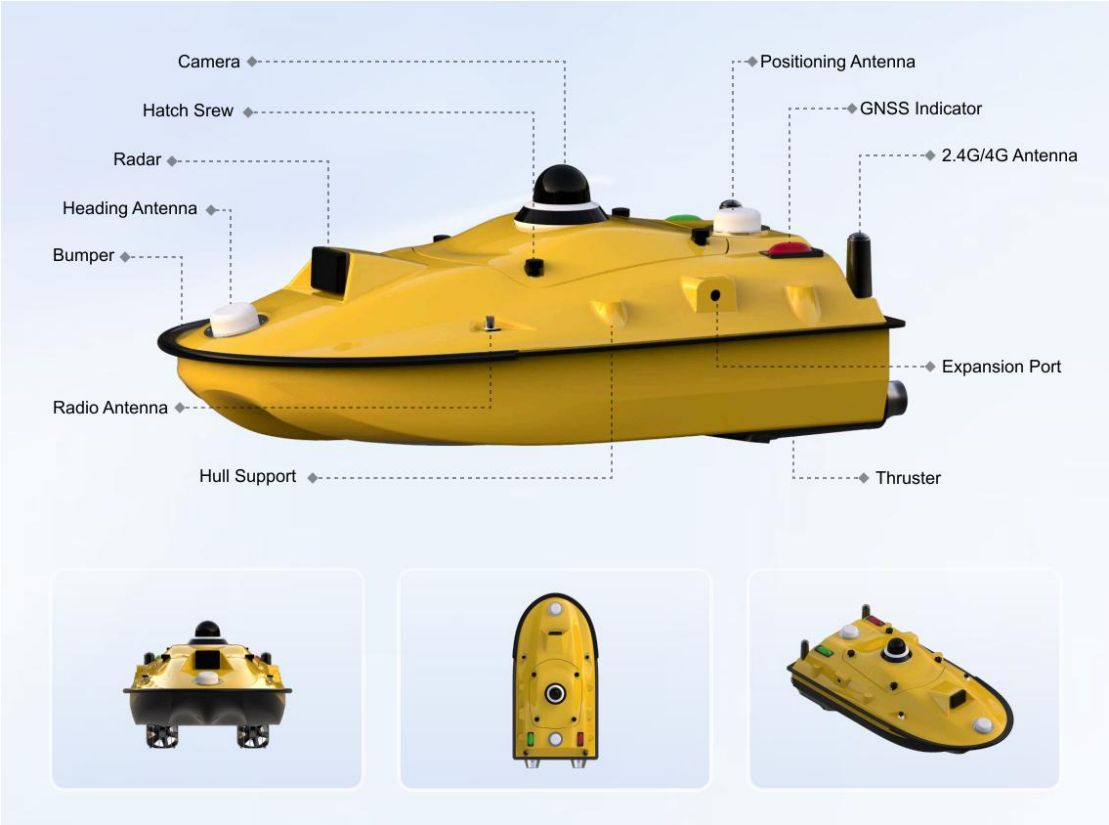
USV Structure & Component Diagram



Equipped with TFSS-4510 Tri-Frequency Side-Scan Sonar with Bottom-Scan Functions

iSail Software & U- Controller Handheld Terminal

iSail: Intelligent Control for USV Operations

iSail is an advanced Android-based software for controlling our USV and post-processing data. It processes operational commands and sensor data, executes control algorithms, and drives the USV to perform corresponding actions.

U-Controller: Professional USV Controller

- Sunlight-Readable 12" Touchscreen
- 2h Fast Charge for 8h Work Hours
- Quick Buttons for Key Functions