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TOKNAV

Unmanned Surface Vehicle

Tboat10

Unmanned Surface Operations

Tboat10 series Unmanned Surface Vehicle

The Tboat10 Unmanned Surface Vehicle is a multi-functional platform independently designed and developed by Toknav, specializing in underwater topographic surveying, surface patrol reconnaissance, and water quality monitoring. Equipped with Toknav's proprietary intelligent vessel control system, it features high automation and strong disturbance resistance. Its hull offers extensive expandability, accommodating equipment such as echo sounders, side-scan sonars, and water quality sensors. It efficiently and accurately automates the collection, processing, and analysis of underwater topography, multi-parameter water quality data, and specific target objects.

CHARACTERISTIC

High-Precision Navigation System

The Tboat10 features full-system multi-frequency signal tracking, enabling its antenna to receive signals from all major global constellations including BDS, GPS, GLONASS, GALILEO, SBAS, and QZSS. This robust signal reception, processed by proprietary high-precision algorithms, ensures exceptional straight-line stability and steady operation.

High-intensity

The Tboat10 features a double-hull M-type monohull made of high-molecular-weight carbon fiber, combined with full-perimeter and reinforced bow/keel protection strips, for ultimate stability, buoyancy, and damage resistance. Complementing its robust construction is a streamlined, precision design that enables easy transport and assembly-free, ready-to-use operation.

High Adaptability

The Tboat10 is powered by dual automotive-grade 33.6V 25Ah ternary lithium battery packs. It supports both single-battery independent and dual-battery balanced power supply modes, as well as hot-swap replacement without shutdown. This system ensures continuous operation, providing up to 3 hours of runtime at 2 m/s and 7 hours at 1.5 m/s per battery set.

Comprehensive Safety Assurance

The Tboat10 delivers comprehensive safety and control through robust hardware and automated software. The system employs radar-based obstacle avoidance and automatic shallow-water tracking reverse, and features a clog-resistant high-power propeller that ensures robust propulsion and rapid acceleration. Mission control is facilitated by the dedicated tSail software, supporting multi-mode route planning, breakpoint resume, and multi-angle video feeds.

Expansion Platform

The Tboat10 is compatible with numerous payloads (e.g., cameras, LiDAR, gas detectors) for diverse applications such as environmental monitoring and surveying; an open SDK and expansion platforms also enable full custom integration.

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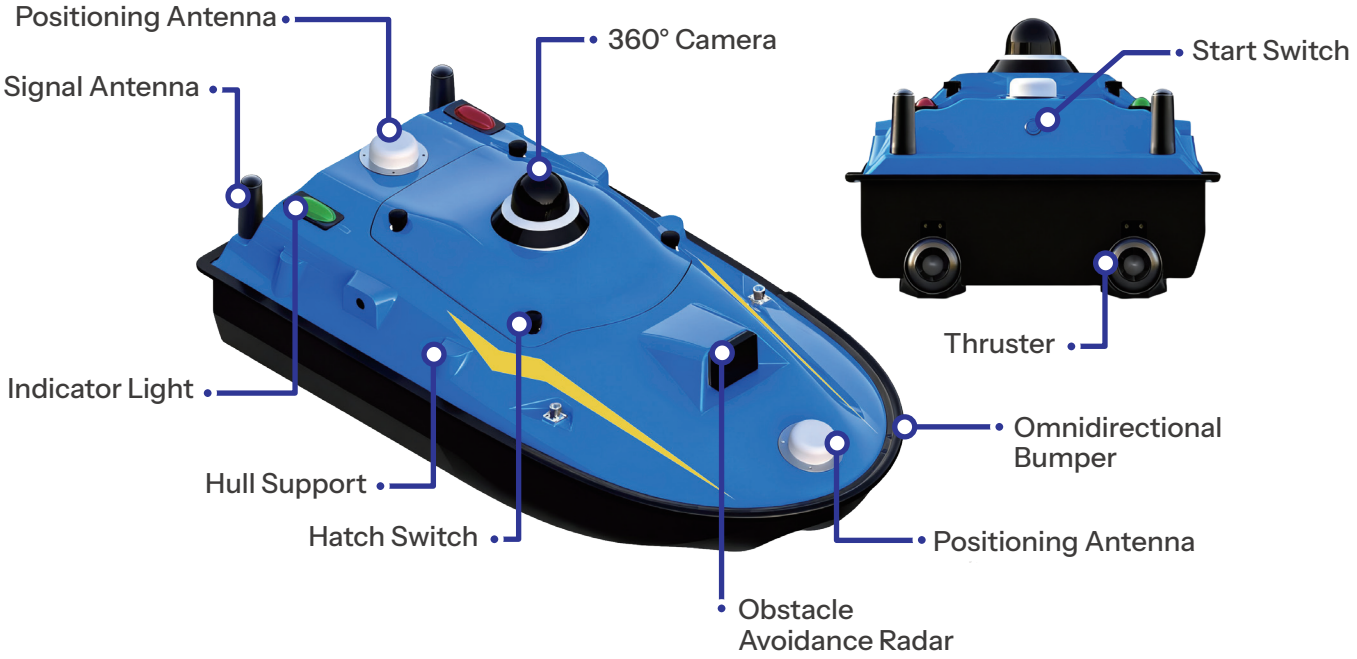
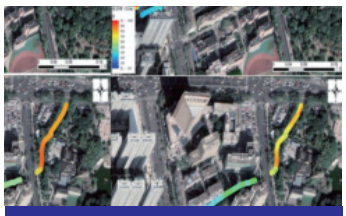


Application Scenarios

Tboat10-A

Bathymetric Survey

Tboat10-B



Water Quality Monitoring

Tboat10-C

Water Quality Sampling

Tboat10-D

Water Surface Inspection

Hull: 7kg, Total Weight: 30kg

Maximum Payload: 35kg

33.6V 25Ah*2

3 hours per battery set(2m/s)
7 hours(1.5m/s)

360° Omnidirectional Night Vision Camera

One-touch Control

Manual/Auto/Hover/
Return-to-home modes

Automatic Shallow-water Tracking Reverse, Radar-based Obstacle Avoidance

Maximum Speed **7 m/s**

Supports safe passage through
4 m/s current cross-sections

SPECIFICATION

HULL

Hull Dimensions	980*520*254mm
Material	Polyester carbon fiber Composite, Kevlar fabric
Draft	8.5 cm
Self-weight	Hull: 7kg, Total weight: 30kg (including base peripherals, boat controller, and battery)
Maximum Payload	35kg
Wave Resistance Rating	Wind force 3, wave height 2
IP Rating	IP67
GNSS	Built-in GNSS positioning and orientation dual antenna
Indicator Lights	Dual-color indicator lights display remote control signal status and GNSS positioning status
Video	360° omnidirectional night vision camera
Obstacle Avoidance Range	Pitching*Azimuth: 120°*120°, Range: 0.10~20m (Optional upgrade to 40m range)

POWER

Power Type	Electric
Motor Type	Brushless motor
Steering Type	Differential steering without servo, supports reverse
Motor Power	Rated Power 900W
Motor Speed	Rated 5300 RPM
Motor Mounting Method	Plug-and-play design for easy replacement
Battery Specifications	33.6V 25Ah*2 rechargeable ternary lithium battery, 21700 cells
Battery Replacement	Supports hot-swap replacement without powering down
Operating Time	3 hours per battery set (2m/s) 7 hours (1.5m/s)
Range	Range at economical speed: 38km
Maximum Speed	7 m/s, supports safe passage through 4 m/s current cross-sections

DEPTH MEASUREMENT

Frequency	200 kHz
Beam Angle	8°
Depth Range	0.15-200m (Extended range available as an option)
Resolution	8 mm
Stability Rate	±2 cm (CEP 0.95 @ 10 m)
Depth Measurement Accuracy	±1 cm + 0.1% D (Where D is the water depth value)
Supply Voltage	9V-28V
Sound Velocity Adjustment Range	0 m/s to 1700 m/s
Power Consumption	5-10W

REMOTE CONTROL

Dimensions	277*138*96mm
Display	Industrial touchscreen & sunlight-readable display Up to 1200 nits
Resolution	1920*1200
Memory	RAM: 4GB, Storage: 64GB
Frequency Band	2.400–2.483 GHz
Communication Range	Data transmission range: 3km, 4G range: unlimited
Battery Capacity	20000mAh
Operating Endurance	8 hours
Charging Power	18W fast charging, compatible with standard Type-C ports
Interfaces	PPM, RJ45, USB, Type-C, SIM card slot, TF card slot

CONTROL

Operating System	Linux
Base Station Communication	Radio (optional) & Network & CORS
Data Communication	4G & 2.4G & Radio (Optional)
Video Communication	4G & 2.4G
SIM Card Slot	Nano Card Slot
Interface	2x RJ45 Ethernet ports, 2x RS232 serial ports, 2x RS485 serial ports

POSITIONING

Satellite System	BDS (BDS-2: B11, B2I, B3I; BDS-3: B11, B31), GPS (L1C/A, L2P, L2C) GLONASS (G1, G2), Galileo (E1, E5b), QZSS* (L1C/A, L2C), SBAS* (L1C/A), and other full-system multi-frequency signal tracking
Cold Start	<30s
Initialization Time	<5s (D<10km)
Single-point Positioning Accuracy	Horizontal ⩽3m, Vertical ⩽1.5m
DGNSS Positioning Accuracy	Horizontal: 40cm + 1ppm, Vertical: 80cm + 1ppm
RTK Positioning Accuracy	Horizontal: ±8mm + 1ppm, Vertical: ±15mm + 1ppm
CORS Differential Source	Supports network CORS
Radio Differential	Supports TT450 protocol/ Transparent Transmission Protocol, etc.
Directional Accuracy	Accuracy: 0.1° (1m baseline)
Inertial Navigation Accuracy	6°/h, 1m accuracy at 20-second decay rate, supports continuous autonomous navigation and surveying under bridges
IMU Update Rate	200Hz

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

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