

# APACHE 3 PRO

COMPACT BATHYMETRIC SURVEY USV



## ► Highlight

The APACHE 3 Pro is a compact, professional unmanned surface vehicle (USV) engineered for autonomous bathymetric surveys in shallow water environments. Ideal for a wide range of applications, including channel mapping, river dredging, dam and hydropower inspections, and underwater infrastructure surveys. Constructed with a high-strength carbon fiber hull, the APACHE 3 Pro offers superior impact resistance and unsinkability. Its high-thrust motor supports speeds up to 7 m/s, enhancing survey efficiency. Equipped with a tightly integrated GNSS/INS receiver, it maintains positioning accuracy even during temporary GNSS outages, such as when operating under bridges. The integrated single-beam echosounder ensures continuous, precise depth measurements.



## ► Key feature



New materials,  
lighter & stronger



High-speed motor,  
higher efficiency



Anti-tangle,  
safer navigation



Precise sounding,  
reliable results

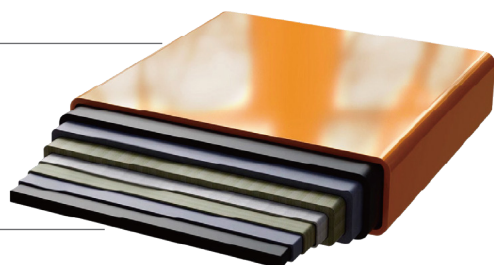
## ► Rugged And Lightweight Hull

30% ↘

Hull weight reduced by 30%

60% ↗

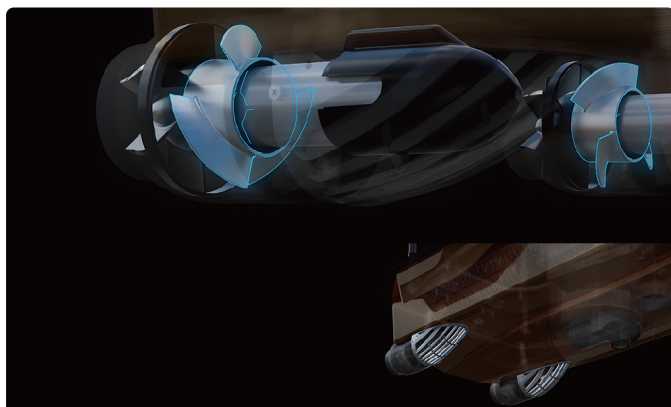
10 MPa Strength:  
60% better impact resistance



### High-strength

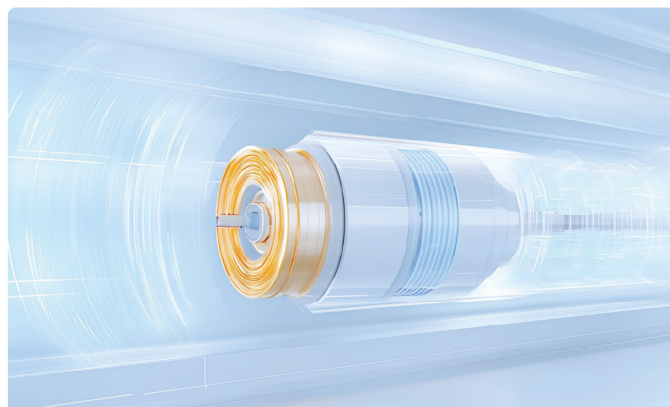
High-strength, high-modulus materials  
One-piece molded hull construction  
High-density, small-aperture mesh cover

## ► Anti-Entanglement Design



Titanium alloy mesh guard and hybrid water pressure conversion greatly reduce weed entanglement. Real-time self-diagnosis alerts operators to obstructions, protecting the motor.

## ► Semi-Embedded High-Speed Motor



Max motor speed up to 7200 RPM, supporting a top vessel speed of 7 m/s. Single battery set provides up to 10 hours of endurance at 1.5 m/s.

## ► Precision Depth Sounding Transducer

High-sensitivity anti-interference transducer with residual vibration elimination



**3 mm** ranging resolution



**10 cm** blind zone

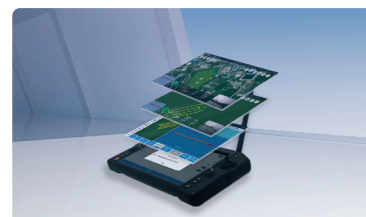


**+6 dB** SNR improvement



## ► EasySail All-in-One Android Software

- Integrates display, control and acquisition in one unit, no PC needed, saving labor and boosting efficiency in field work.
- Remote controller supports 4G communication and data radio, with real-time video and data transmission.



## ► Use Cases



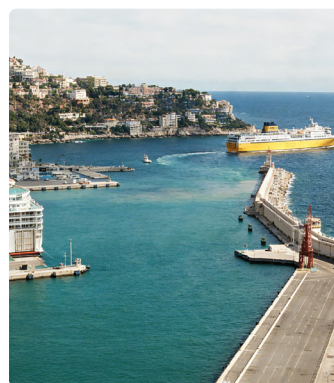
Reservoir Volume Estimation



Emergency Rescue



Channel Dredging



River Section Measurement

# SPECIFICATIONS

## ► Physical

|                                        |                                                           |
|----------------------------------------|-----------------------------------------------------------|
| Hull Dimension (L x W x H)             | 1080 mm x 555 mm x 380 mm                                 |
| Material                               | High strength, high modulus carbon fiber                  |
| Process                                | HPT one-piece molding                                     |
| Weight<br>(w/o battery and antenna)    | 21 kg                                                     |
| Maximum Payload                        | 35 kg                                                     |
| Anti-Wave & Wind                       | 3 <sup>rd</sup> wind level and 2 <sup>nd</sup> wave level |
| Hull Design                            | M-type triple-hull                                        |
| GNSS                                   | Internal GNSS dual antenna                                |
| Waterproof                             | IP67                                                      |
| Quick Transport                        | Removable land-assist transport wheels                    |
| Static Draft                           | 10 cm                                                     |
| Indicator Light                        | Two-color<br>(positioning and differential signal)        |
| Camera                                 | 360° omnidirectional video                                |
| Obstacle Avoidance<br>Distance & Range | 0.2–40 m (H: 112°, V: 14°)                                |

## ► Propulsion

|                         |                                           |
|-------------------------|-------------------------------------------|
| Propeller Type          | Brushless DC                              |
| Direction Control       | Veering without steering engine           |
| Rated Motor Power       | 1000 W                                    |
| Maximum Motor Speed     | 7200 ± 5% RPM                             |
| Motor Installation      | Pluggable                                 |
| Li-ion Battery Capacity | 32.4 V, 23.1 Ah                           |
| Battery Endurance       | 10 h @1.5 m/s (1 battery set, expandable) |
| Power Supply            | Single/dual balanced battery support      |
| Battery Replacement     | Hot swap supported                        |
| Charging Time           | 3 h                                       |
| Maximum Speed           | 7 m/s                                     |

## ► Remote Control

|                         |                                               |
|-------------------------|-----------------------------------------------|
| Dimension (L x W x H)   | 350 mm x 195 mm x 101 mm                      |
| Display Screen          | 10-inch                                       |
| Resolution Ratio        | 1920 x 1200                                   |
| Internal Storage        | RAM: 4 GB, Storage: 64 GB                     |
| Battery Endurance       | 5 h                                           |
| Communication Frequency | 2.4 GHz                                       |
| Peripheral Interface    | USB, Nano SIM, TF card (up to 128 GB), Type-C |

## ► Communications

|                      |                                                 |
|----------------------|-------------------------------------------------|
| Data Communication   | Standard 4G and Remote control                  |
| Remote Control Range | 1.5 km (Remote) <sup>(1)</sup> ; Unlimited (4G) |
| SIM Card Slot        | Nano SIM                                        |
| Reserved Interface   | 2x RJ45 ports, 2x RS232 serial ports            |
| Navigation Mode      | Manual or Auto-Pilot                            |
| Data Storage         | Local (multi-channel) & Remote                  |

## ► Software

|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EasySail | Route planning and autonomous navigation.<br>Total mileage statistics, remaining mileage reminder, multi-angle video and online map display.<br>Hull parameter control, physical & virtual joysticks, system self-check at power-on.<br>Data collection and post-processing.<br>Waveform overlay and attitude correction.<br>Coordinate conversion, trajectory, water depth, waveform and hull parameter real-time display.<br>Online software/firmware updates.<br>Export via USB/Type-C. |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## ► Positioning

|                               |                                                                                     |
|-------------------------------|-------------------------------------------------------------------------------------|
| Satellite System              | BDS B1I/B2I/B3I, GPS L1C/A/L2C/L5, Galileo E1/E5a/E5b, GLONASS L1/L2, QZSS L1/L2/L5 |
| Single Point Position (RMS)   | Horizontal: 1.5 m<br>Vertical: 2.5 m                                                |
| DGNSS Positioning Accuracy    | Horizontal: ±(0.4 m + 1 ppm)<br>Vertical: ±(0.8 m + 1 ppm)                          |
| RTK Positioning Accuracy      | Horizontal: ±(8 mm + 1 ppm)<br>Vertical: ±(15 mm + 1 ppm)                           |
| Radio Protocols               | Satel 3AS, CHC <sup>(2)</sup> , TT450, Transparent                                  |
| Heading Accuracy              | 0.1 ° @ 1 m baseline                                                                |
| Inertial Navigation Stability | 6 °/h (accuracy attenuation 1 m after 20 s)                                         |
| IMU Update Rate               | 200 Hz                                                                              |

## ► D270 Single Beam Echo Sounder

|                                     |                                                            |
|-------------------------------------|------------------------------------------------------------|
| Data Type                           | CHCGD <sup>(2)</sup> , NMEA SDDPT/SDDBT, original waveform |
| Sounding Range                      | 0.1 m to 200 m                                             |
| Sounding Accuracy                   | ±0.01 m + 0.1% x D<br>(D is the depth of water)            |
| Resolution                          | 3 mm                                                       |
| Maximum Sampling Rate               | 30 Hz                                                      |
| Frequency                           | 200 kHz                                                    |
| Beam Angle                          | 5°                                                         |
| Sound Velocity Adjustment Range     | 1400–1700 m/s                                              |
| Integrated Water Temperature Sensor | -55°C~+100°C, real-time correction of the sound speed      |

**\*Specifications are subject to change without notice.**  
(1) For best communication, keep the remote controller at least 1.5 m above water level. Actual range may be affected by weather, swells, electromagnetic interference, and other environmental conditions.  
(2) CHCGD & CHC protocol is CHCNAV format.

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