EUSTANCE TECHNOLOGY

UNDERWATER THRUSTER OPERATION MANUAL
Product Name: Small-Sized Water Thruster
Model: ET02A Triblade Propeller
ESC Model: Waterproof Bidirectional 30A 2-4s UBEC 2A5V

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1. Overview

The ET02A Small-Sized Water Thruster is designed for underwater propulsion applications such as watercraft, ROVs, and similar systems. It is powered by a 900KV BLDC motor and controlled by a waterproof bidirectional 30A ESC, delivering up to **2 Kgf of maximum thrust**. The 65mm triblade propeller is optimized for water displacement, making this thruster ideal for small-scale aquatic propulsion systems.

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2. Components

1. **900KV BLDC Motor** – High-efficiency motor providing up to 2 Kgf thrust.
2. **ET02A Triblade Propeller** – 65 mm diameter for optimal water displacement.
3. **Hub** – 75 mm diameter, connecting the motor to the propeller.
4. **Waterproof Bidirectional ESC** – 30A ESC with UBEC 2A5V, designed for underwater environments.
5. **Power Source** – 7V to 16V DC battery (ESC).
6. **PWM Controller** – Controls motor speed using 1000-2000us PWM signals, 1500us for stop (Zero).

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3. Technical Specifications

- **Motor**: 900KV BLDC
- **Propeller**: ET02A Triblade, 65 mm diameter
- **Max Thrust**: 2 Kgf
- **Input Voltage**: 7V - 16V DC (ESC)
- **ESC Peak Current**: 30A
- **PWM Frequency**: 1000-2000us
- **UBEC Output**: 2A, 5V
- **Propeller Hub Diameter**: 75 mm
- **Operating Depth**: Up to 10 meters

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4. Operating Instructions

Step 1: Mount the Thruster

- Secure the ET02A thruster using a mounting bracket, ensuring sufficient clearance for the propeller.

Step 2: Connect Power

- Connect the motor to the waterproof bidirectional 30A ESC.
- Connect the ESC to a 7-16V DC power source for the ESC.
- Ensure all wiring connections are waterproof and securely fastened.

Step 3: Power On

- Set the throttle to 1500us on the PWM controller before starting.
- Power up the ESC, following its arming procedure (throttle should be at 1500us to begin operation).

Step 4: Control Speed and Direction

- Use the PWM controller (1000-2000us range) to adjust the motor's speed and direction.
- Gradually increase or decrease throttle to control the forward or reverse thrust.

Step 5: Monitor Operation

- Monitor the thruster for smooth performance and ensure it operates within safe limits (up to 2 Kgf thrust).

Step 6: Power Off

- Reduce throttle to 1500us, then power off the system after use.

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5. Safety Instructions

- Always operate the thruster fully submerged to avoid overheating.
- Keep hands and clothing away from the propeller when the motor is running.
- Ensure all electrical connections are fully waterproof before submersion.
- Avoid operating the thruster near objects that could become entangled in the propeller.
- Do not run the motor at maximum thrust (2 Kgf) for extended periods to prevent overheating.

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6. Maintenance

After Each Use:

- Rinse the thruster with fresh water, especially if used in saltwater environments.
- Inspect the propeller and motor for any debris or signs of wear.

Regular Maintenance:

- Check the condition of electrical connections and waterproof seals.
- Lubricate moving parts as needed.
- Monitor the ESC for signs of overheating and ensure proper cooling.

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7. Troubleshooting

Issue: Motor does not respond to throttle
Solution: Ensure throttle is set to 1500us at startup and check if PWM signals are within the correct range (1000-2000us).
Issue: Low thrust output
Solution: Ensure the propeller is unobstructed and that the power source is delivering the correct voltage (7-16V).
Issue: ESC overheating
Solution: Lower the throttle or ensure proper cooling of the ESC.

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8. Contact Information

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