EUSTANCE TECHNOLOGY

SUBSEA THRUSTER OPERATION MANUAL

Product Type: Marine/ROV/AUV Thruster
Model: ET07e
Propeller Configuration: Tri-Blade
Thrust Configuration: Bi-Directional

1. Overview

The ET07e Small-Sized Underwater Thruster is designed for underwater propulsion applications such as watercraft, ROVs, AUVs and similar systems. It is powered by a 400KV BLDC motor and controlled by a waterproof bidirectional 30A ESC, delivering up to **6.5 Kgf of maximum thrust**. The 85mm tri-blade propeller is optimized for water displacement, making this thruster ideal for small-scale aquatic propulsion systems.

2. Components

1. **400KV BLDC Motor** – High-efficiency motor providing up to 2 Kgf thrust.
2. **Propeller** – 80 mm diameter for optimal water displacement.
3. **Duct** – 85 mm diameter, connecting the motor to the propeller.
4. **Compatible ESC** – 30A ESC with Input 12-24 VDC.
5. **Power Source** – 12V to 24V DC (ESC).
6. **PWM Controller** – Controls motor speed using 1000-2000us PWM signals, 1500us for stop (Zero).

3. Technical Specifications

- **Motor**: 400KV BLDC
- **Propeller**: Tri-blade, 80 mm diameter
- **Max Thrust**: 6.5 Kgf
- **Operating Depth**: Up to 250 meters

4. Operating Instructions

Step 1: Mount the Thruster

- Secure the ET07e thruster using a mounting bracket, ensuring sufficient clearance for the propeller.

Step 2: Connect Power

- Connect the motor to the bidirectional 30A ESC.
- Connect the ESC to a 12-24V DC power source for the ESC.
- Ensure all wiring connections are 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.

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 (6.5 Kgf) for extended periods to prevent overheating.

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.
- Monitor the ESC for signs of overheating and ensure proper cooling.

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 (12-24V).
- **Issue**: ESC overheating
  Solution: Lower the throttle or ensure proper cooling of the ESC.

8. Contact Information

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