NEEBRC DX2306 Motor and ES25 ESC (CUIPPWRJ123)

NEEBRC DX2306 Brushless Motors and ES25 25A ESCs User Manual

Model: DX2306 Motor and ES25 ESC (CUIPPWRJ123)

1. Introduction

This manual provides essential information for the installation, operation, and maintenance of your NEEBRC DX2306 Brushless Motors and ES25 25A Electronic Speed Controllers (ESCs). These components are designed for high-performance racing drones and RC aircraft, offering reliability and efficiency. Please read this manual thoroughly before use to ensure proper setup and safe operation.

2. Package Contents

Verify that all items listed below are included in your package:

- 2 x DX2306 2300KV/2700KV CW Brushless Motor
- 2 x DX2306 2300KV/2700KV CCW Brushless Motor
- 4 x Motor Accessory Set (screws, nuts)
- 4 x ES25 25A Electronic Speed Controller (ESC)

3. Product Specifications

3.1. DX2306 Brushless Motor Specifications

Feature	Specification
Model	DX2306 Motor
KV (RPM/Volt)	2300KV / 2700KV (selectable variant)
LiPo Cell Count	2-4S
Suggested Propeller	5045, 4045
No. of Stator Arms	12

Feature	Specification
No. of Rotor Poles	14
Length	33.5mm
Width	28.5mm
Shaft Diameter	5mm
Item Weight (each)	33.5g

3.2. ES25 25A Electronic Speed Controller (ESC) Specifications

Feature	Specification
Continuous Current	25A
Burst Current	35A
Voltage Range	2-4S LiPo
Weight	5.9g
Dimensions	12.8mm x 25.8mm x 5mm
Firmware	BLHeli_S

4. Setup and Installation

Proper installation is crucial for the performance and safety of your drone. Always refer to your drone frame's specific assembly instructions in conjunction with these guidelines.

4.1. Component Overview

This image displays the complete set of four NEEBRC DX2306 brushless motors and four ES25 25A Electronic Speed Controllers. Each motor is red with black accents, featuring the NEEBRC logo and KV rating. The ESCs are compact, transparently encased circuit boards with wiring for connection to the motors and flight controller. The motors have three thick black wires for ESC connection, and the ESCs have thinner red, black, and white wires for signal and power.

4.2. Motor Mounting

1. Mount each DX2306 motor securely to the drone's motor arms using the provided screws. Ensure the screws are of appropriate length to avoid damaging the motor windings.
2. Note the CW (Clockwise) and CCW (Counter-Clockwise) markings on the motors. Install them according to your flight controller's motor layout (typically alternating CW/CCW).

4.3. ESC Connection

1. Connect the three thick wires from each motor to the corresponding three pads/wires on an ES25 ESC. Soldering is typically required for a secure and reliable connection. The order of these wires determines the motor's rotation direction. If a motor spins in the wrong direction, swap any two of these three wires.
2. Connect the power wires (red and black) from each ESC to your Power Distribution Board (PDB) or flight controller, ensuring correct polarity.
3. Connect the signal wire (white) from each ESC to the appropriate motor output pin on your flight controller. The ground wire (black) from the ESC signal cable should also be connected to the flight controller's ground.

4.4. Propeller Installation

Install propellers after all electronic connections are complete and verified. Ensure that CW propellers are installed on CW motors and CCW propellers on CCW motors. Tighten propeller nuts securely but do not overtighten.

5. Operating Instructions

After successful installation, follow these steps for initial setup and operation:

1. **Flight Controller Configuration:** Connect your flight controller to a computer and use the appropriate software (e.g., Betaflight, Cleanflight) to configure motor outputs, ESC protocols (BLHeli_S is supported), and calibrate ESCs if necessary.
2. **Motor Direction Check:** Before installing propellers, power on your drone (without propellers) and carefully test each motor's rotation direction using the flight controller software. Adjust wiring if any motor spins incorrectly.
3. **Pre-Flight Check:** Always perform a thorough pre-flight check. Verify all connections are secure, propellers are correctly installed and tightened, and there are no obstructions to motor rotation.
4. **First Flight:** Conduct your first flight in a safe, open area, away from people and obstacles. Start with gentle throttle inputs to observe drone behavior.

6. Maintenance

Regular maintenance helps ensure the longevity and reliable performance of your motors and ESCs.

- **Cleaning:** Keep motors and ESCs free from dirt, dust, and debris. Use compressed air or a soft brush to clean cooling vents and motor bells.
- **Inspection:** Periodically inspect motor bearings for smooth operation. Check for any signs of wear, damage to wires, or loose connections.
- **Propeller Balance:** Unbalanced propellers can cause excessive vibration, leading to premature motor wear. Ensure propellers are balanced or replace damaged ones.
- **Storage:** Store components in a dry, cool environment, away from direct sunlight and extreme temperatures.

7. Troubleshooting

If you encounter issues, refer to the following common troubleshooting steps:

- **Motor Not Spinning:**
  - Check all motor-to-ESC and ESC-to-flight controller connections.
  - Verify ESC is receiving power and signal.
  - Ensure motor wires are not short-circuited or broken.
  - Recalibrate ESCs.
- **Incorrect Motor Rotation:**
  - Swap any two of the three motor-to-ESC wires to reverse direction.
  - Adjust motor direction in flight controller software if supported.
- **ESC Overheating:**
  - Ensure adequate airflow around ESCs.
  - Check for propeller obstructions or binding motors that could cause excessive load.
  - Verify battery voltage and current draw are within specifications.
- **Unusual Vibrations/Noise:**
  - Inspect propellers for damage or imbalance.
  - Check motor bearings for roughness or play.

- Ensure motors are securely mounted.

8. Safety Information

Operating RC drones involves inherent risks. Adhere to the following safety precautions:

- **Propellers:** Always remove propellers when performing maintenance, testing, or configuration. Spinning propellers can cause severe injury.
- **Batteries:** Use appropriate LiPo batteries and chargers. Never overcharge or discharge batteries. Handle damaged batteries with extreme caution.
- **Soldering:** Exercise caution when soldering. Use proper ventilation and protective eyewear.
- **Environment:** Operate your drone in safe, open areas, away from people, animals, and property. Be aware of local regulations regarding drone operation.
- **Heat:** Motors and ESCs can become hot during operation. Allow them to cool before handling.

9. Warranty and Support

For warranty information or technical support, please refer to the retailer or manufacturer's official website where the product was purchased. Keep your proof of purchase for any warranty claims.