ZTW Shark G2 100A SBEC

ZTW Shark G2 Series 100A Bi-Direction Water Cooling Brushless ESC User Manual

Model: Shark G2 100A SBEC

1. Introduction

This manual provides essential instructions for the proper installation, operation, and maintenance of your ZTW Shark G2 Series 100A Bi-Direction Water Cooling Brushless Electronic Speed Controller (ESC). Designed for RC boats and other DIY projects requiring bi-directional motor control, this ESC offers robust performance and reliability. Please read this manual thoroughly before use to ensure safe and optimal performance of your device.

2. Safety Information

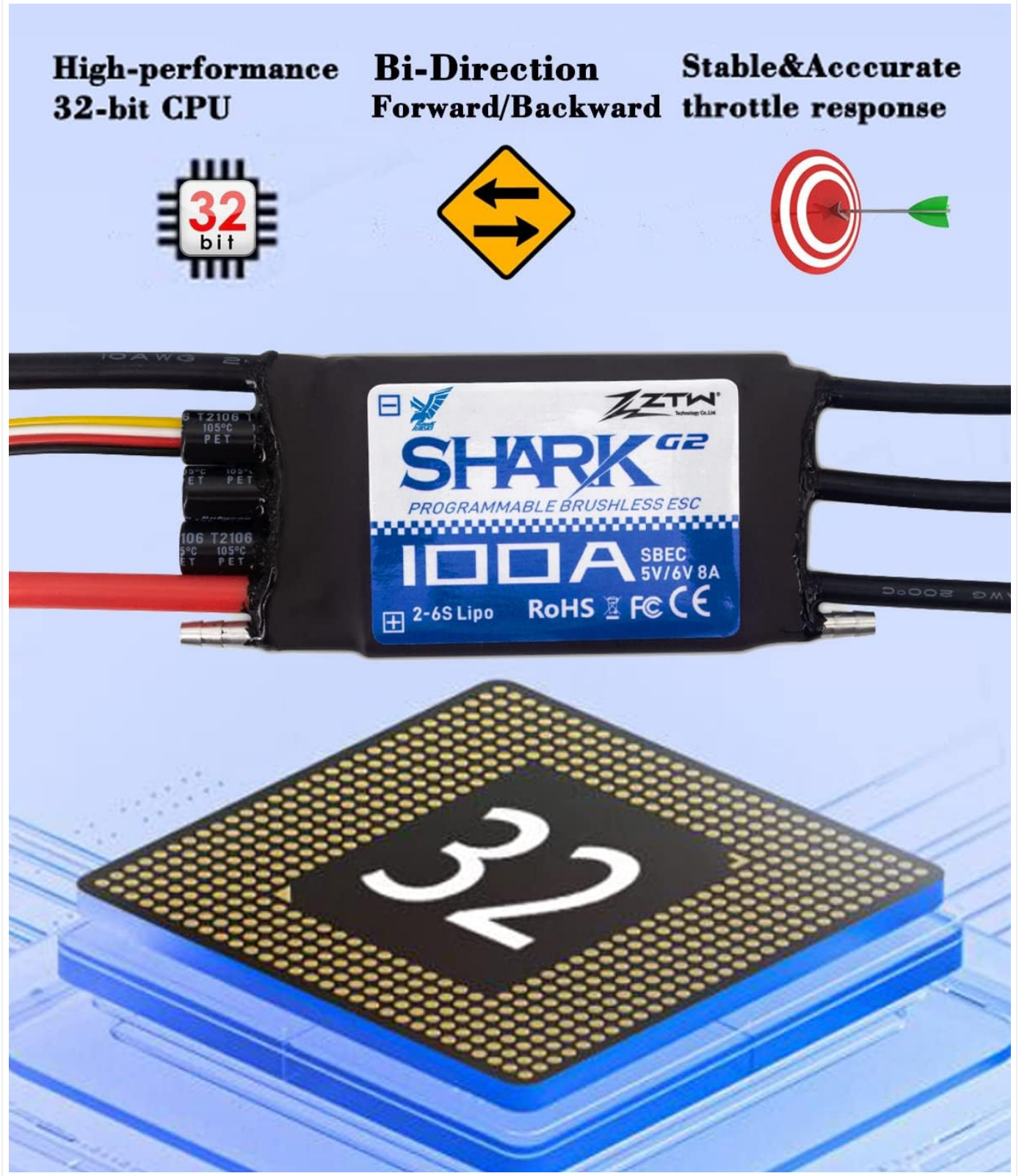
No specific safety information was provided in the product details. Users should always adhere to general safety guidelines when operating electronic speed controllers (ESCs) and RC equipment. Failure to do so may result in property damage, injury, or product malfunction.

- Always ensure correct polarity when connecting batteries to avoid short circuits and damage.
- Use appropriate battery types and voltages as specified for the ESC.
- Ensure all connections are secure and insulated to prevent accidental contact.
- Operate in well-ventilated areas to prevent overheating.
- Keep the ESC away from water unless specifically designed for submersible use, even with water cooling.
- Disconnect the battery immediately after use and before any maintenance.

3. Product Features

The ZTW Shark G2 100A ESC incorporates advanced technology for superior control and protection:

- Super smooth, accurate, and programmable throttle linearity and throttle response.
- Integrated protection features including over-temperature protection, low voltage cut-off protection, and signal loss protection.
- Strong BEC output: 8A/5V continuous, with a peak of 10A.
- Supports high RPM motors and is programmable via a programming card or transmitter.
- High efficiency design with low resistance and low heat MOSFETs, powered by a 32-bit CPU.



This graphic highlights key features of the ESC, including its high-performance 32-bit CPU, bi-directional capability for forward and backward movement, and stable, accurate throttle response.

4. Specifications

Size (LxWxH)	96mm x 44mm x 13mm / 3.8in x 1.73in x 0.51in
Battery Support	2-6S Lipo / 5-18NC
Voltage Range	7.6V - 24V

Continuous Current	100A
Peak Current	120A (for 10 seconds)
BEC Output	8A/5V (continuous), peak 10A
Weight	100g / 3.2 ounces
Motor Rotation	Bi-Directional
Motor Type	Brushless (no brushed motor support)
RPM Support	200,000 for 2-pole; 82,000 for 6-pole; 42,000 for 12-pole motors
Product Dimensions	4 x 2 x 1 inches

5. Package Contents

Upon opening your package, you should find the following items:

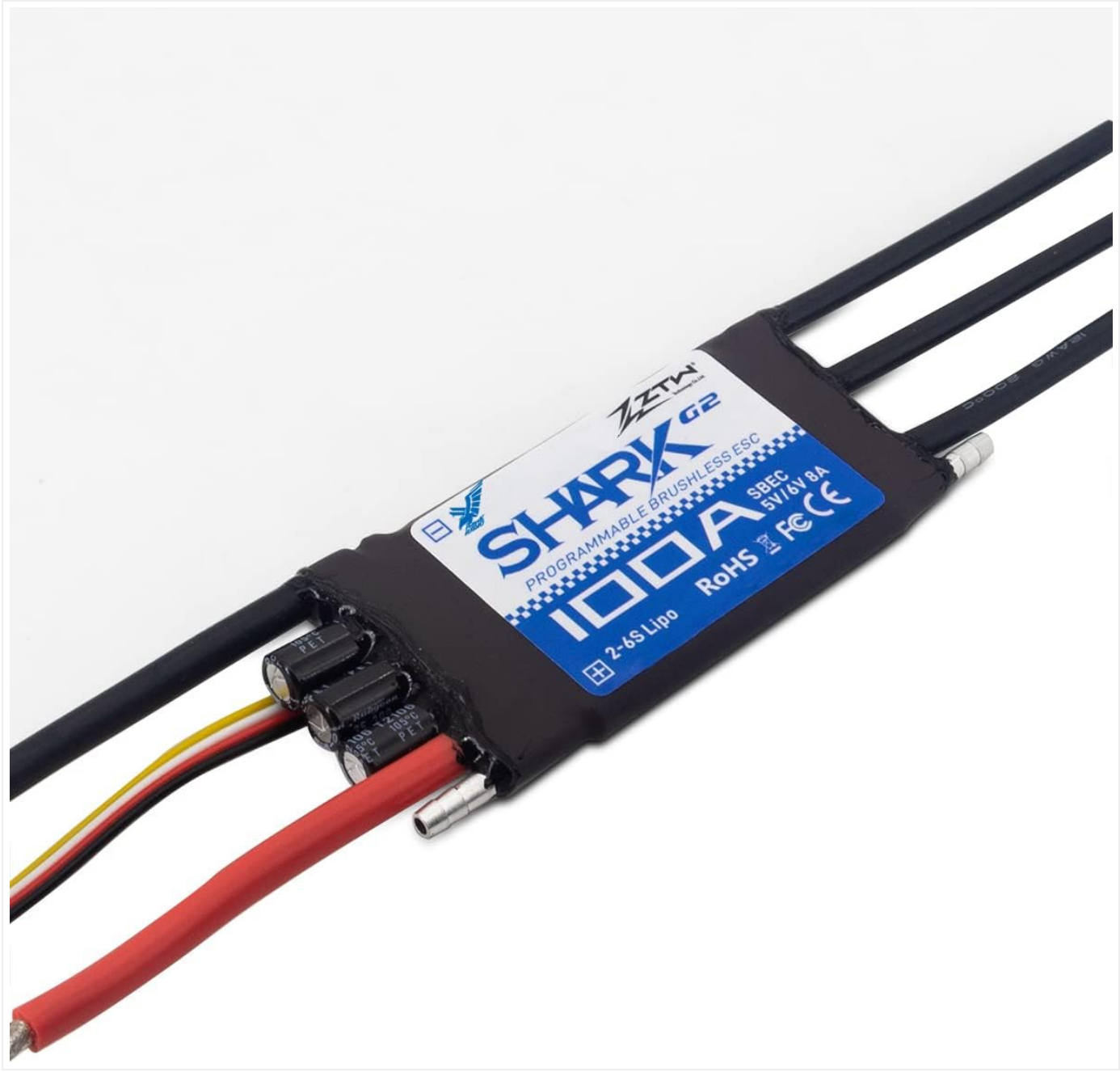
- 1 x ZTW Shark G2 100A Bi-Direction Water Cooling Brushless ESC
- 1 x User Manual (this document)
- 1 x Remote Controller (if included in your specific kit)
- 1 x Battery (if included in your specific kit)

Please inspect all components for any signs of damage before proceeding with installation.

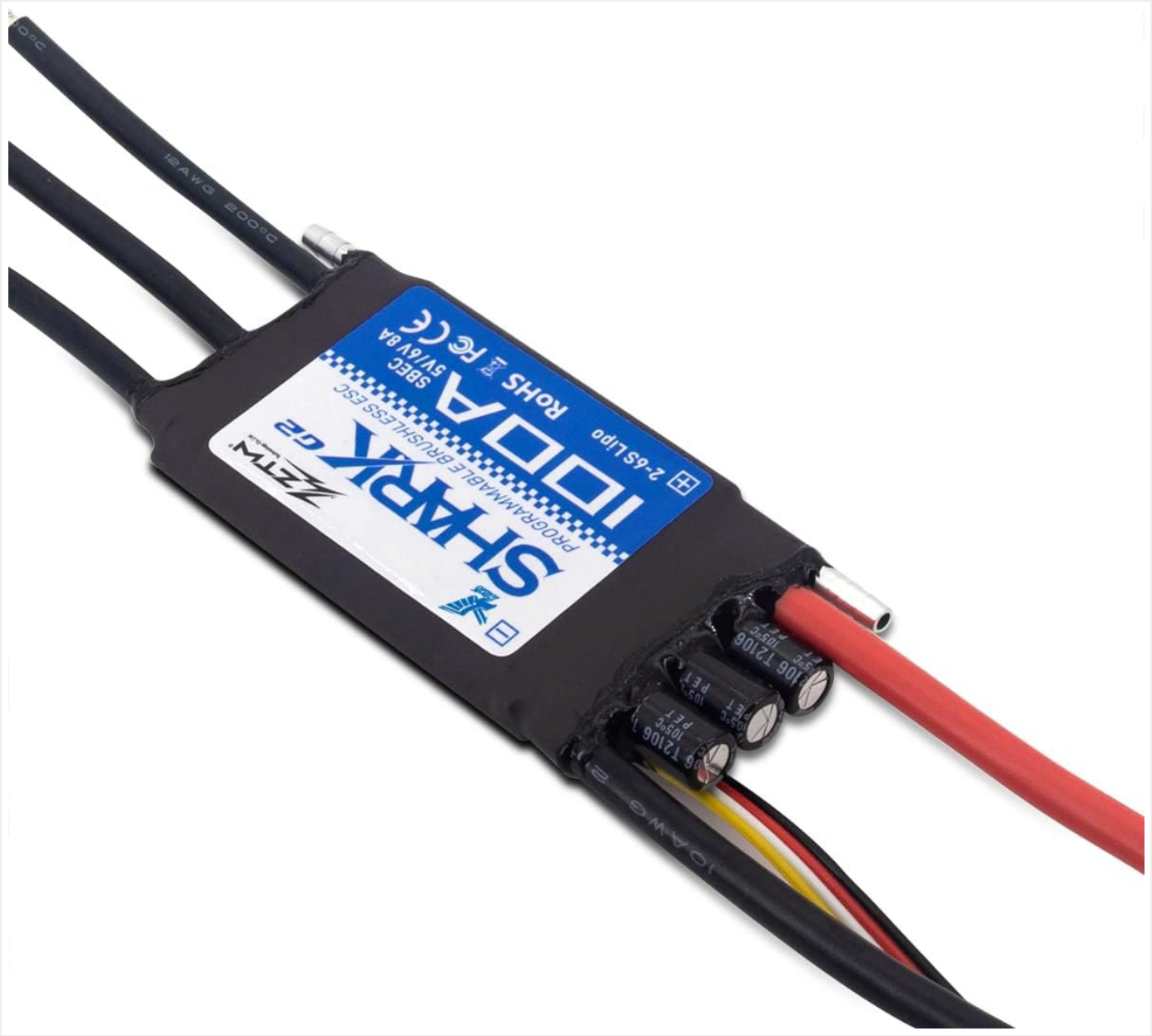
6. Setup and Installation

Proper setup is crucial for the performance and longevity of your ESC. Follow these steps carefully:

1. **Motor Connection:** Connect the three black wires from the ESC to the three wires of your brushless motor. The order of connection may affect motor rotation direction. If the motor spins in the wrong direction, swap any two of the three wires.
2. **Battery Connection:** Connect the red wire from the ESC to the positive (+) terminal of your Lipo battery and the black wire to the negative (-) terminal. Ensure correct polarity to prevent severe damage to the ESC and battery.
3. **Receiver Connection:** Plug the signal cable (usually a three-wire connector: red, white, yellow) from the ESC into the throttle channel (typically channel 2) of your RC receiver.
4. **Water Cooling Connection:** Connect the water inlet and outlet tubes to the designated ports on the ESC. Ensure a continuous flow of water through the cooling system when the ESC is in operation, especially for high-performance applications.
5. **Mounting:** Securely mount the ESC in your RC boat or project, ensuring it is protected from excessive vibration and impact. Allow for adequate airflow around the unit, even with water cooling, to aid in heat dissipation.



This image displays the ZTW Shark G2 100A ESC from a top-down perspective, showing the main label with specifications and the various wire connections for motor, battery, and signal.



A side view of the ESC, highlighting the robust wiring for power input (red/black), motor output (three black wires), and signal (red/white/yellow), along with the capacitors.

7. Operating Instructions

Before initial use or if you change your transmitter, it is essential to perform a throttle calibration to ensure proper synchronization between the ESC and your remote control.

7.1. Throttle Calibration for Bi-Directional Operation (with Reverse)

1. Ensure your transmitter's throttle stick is at the **neutral position**.
2. Power on the ESC. You will hear a series of beeps.
3. Immediately move the throttle stick to the **MAX (full forward) position**. After another beep, indicating the maximum throttle point has been learned.
4. Move the throttle stick to the **MINIMUM (full reverse) position**. After a final beep, indicating the minimum throttle point has been learned.
5. Power off the ESC, then power it back on. The calibration is now complete.

7.2. Throttle Calibration for Forward-Only Operation (without Reverse)

1. Ensure your transmitter's throttle stick is at the **MAX (full forward) position**.
2. Power on the ESC. You will hear a series of beeps.
3. Immediately move the throttle stick to the **MINIMUM (full reverse) position**. After another beep, indicating the minimum throttle point has been learned.
4. Power off the ESC, then power it back on. The calibration is now complete.

Note: Always perform throttle calibration for the first time using the ESC or if you change your transmitter to ensure correct operation.

8. Maintenance

Regular maintenance helps extend the lifespan and ensure consistent performance of your ZTW Shark G2 ESC:

- **Cleaning:** After each use, especially in marine environments, gently clean the ESC and its cooling system to remove any salt, dirt, or debris. Use fresh water and a soft brush, then dry thoroughly.
- **Inspection:** Periodically inspect all wires and connectors for signs of wear, fraying, or corrosion. Ensure all connections remain secure.
- **Cooling System:** Verify that the water cooling lines are clear and free of blockages. A clogged cooling system can lead to overheating.
- **Storage:** Store the ESC in a dry, cool place away from direct sunlight and extreme temperatures. Disconnect from batteries during storage.

9. Troubleshooting

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

Problem	Possible Cause	Solution
ESC does not power on	Incorrect battery connection, discharged battery, faulty wiring.	Check battery polarity, ensure battery is charged, inspect all power connections.
Motor does not spin or spins erratically	Incorrect throttle calibration, motor wires swapped, signal loss, motor fault.	Perform throttle calibration, check motor wire connections, verify receiver signal, test motor separately.
ESC overheats	Insufficient water flow, excessive load, improper motor/propeller combination.	Check water cooling system for blockages, reduce load, ensure motor/propeller are suitable for the application.
Motor spins in wrong direction	Motor wire connection order.	Swap any two of the three motor wires.

If the problem persists after attempting these solutions, please contact customer support.

10. Warranty and Support

ZTW and HAWK HOBBY provide a 100% free warranty for this ESC. For specific warranty terms, conditions, and duration, please refer to the warranty card included with your product or contact the manufacturer directly.

For technical support, programming assistance, or any other inquiries, please reach out to your retailer or the official ZTW

customer service channels.