ZTW Shark G2 40A SBEC

ZTW Shark G2 Series 40A Bi-Direction Water Cooling Brushless ESC User Manual

This manual provides detailed instructions for the setup, operation, and programming of the ZTW Shark G2 Series 40A Bi-Direction Water Cooling Brushless Electronic Speed Controller (ESC) with SBEC 4A/5V.

1. Product Overview

The ZTW Shark G2 Series 40A Bi-Direction Water Cooling Brushless ESC is designed for RC boat applications and other DIY projects requiring precise motor control. It features a robust design with water cooling for optimal performance and durability.

Key Features:

- Bi-directional function (forward and backward).
- Aluminum water cooling system to reduce ESC heat.
- Soft start capability adaptable to different RPM and motor pole configurations.
- Over-temperature protection, low voltage cut-off protection, and signal loss protection.
- Strong BEC output: 4A/5.5V continuous, peak 8A.
- Supports high RPM motors and is programmable via LCD programming card and transmitter.
- High efficiency with low resistance and low heat MOSFET and 32-bit CPU.

Applications:

- RC boat inrunner motors.
- Underwater thruster engines for RC bait tug boats, ROVs, and submarines.
- Various DIY projects requiring bi-directional motor control.

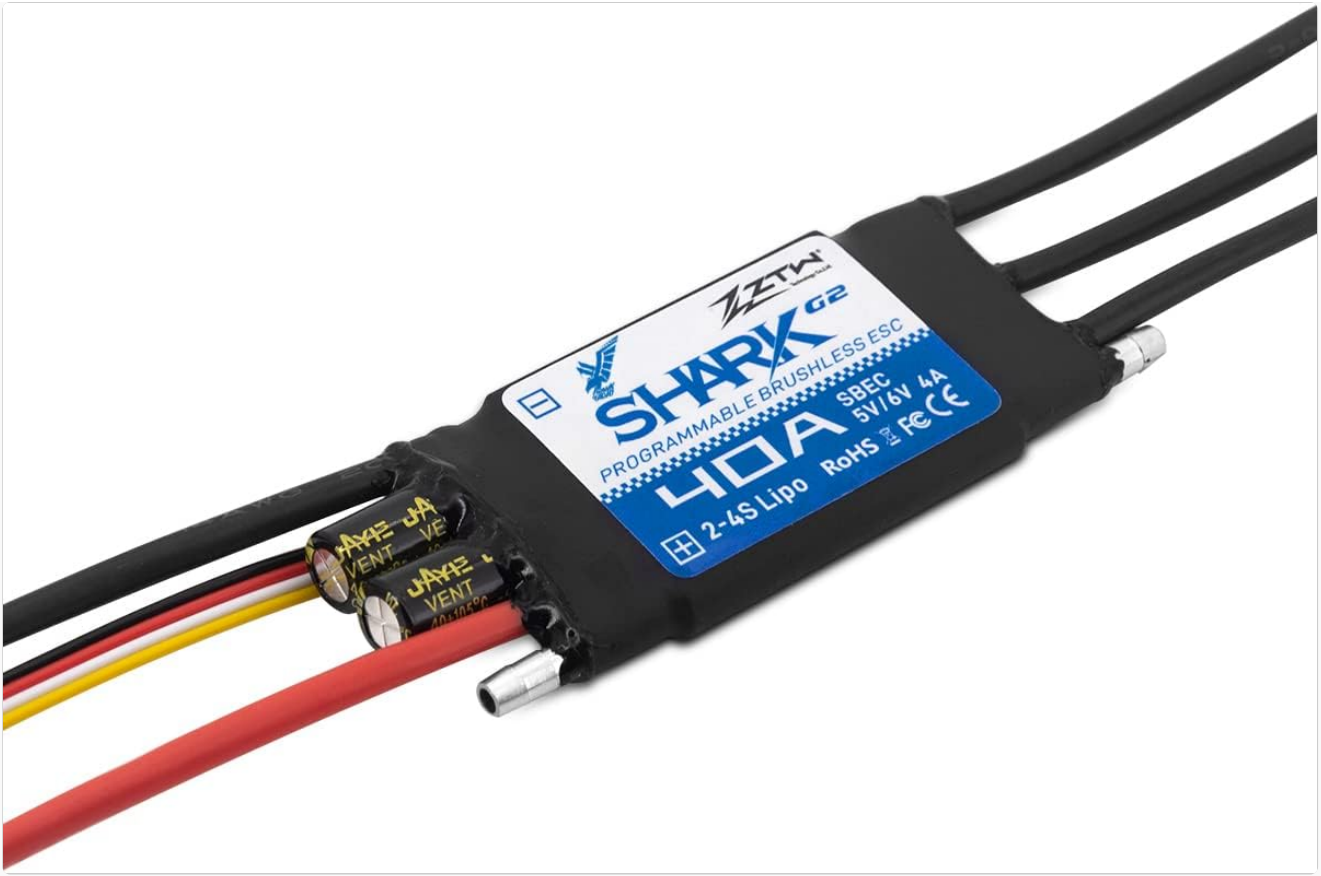

Figure 1: The ZTW Shark G2 40A Bi-Directional Electronic Speed Controller.

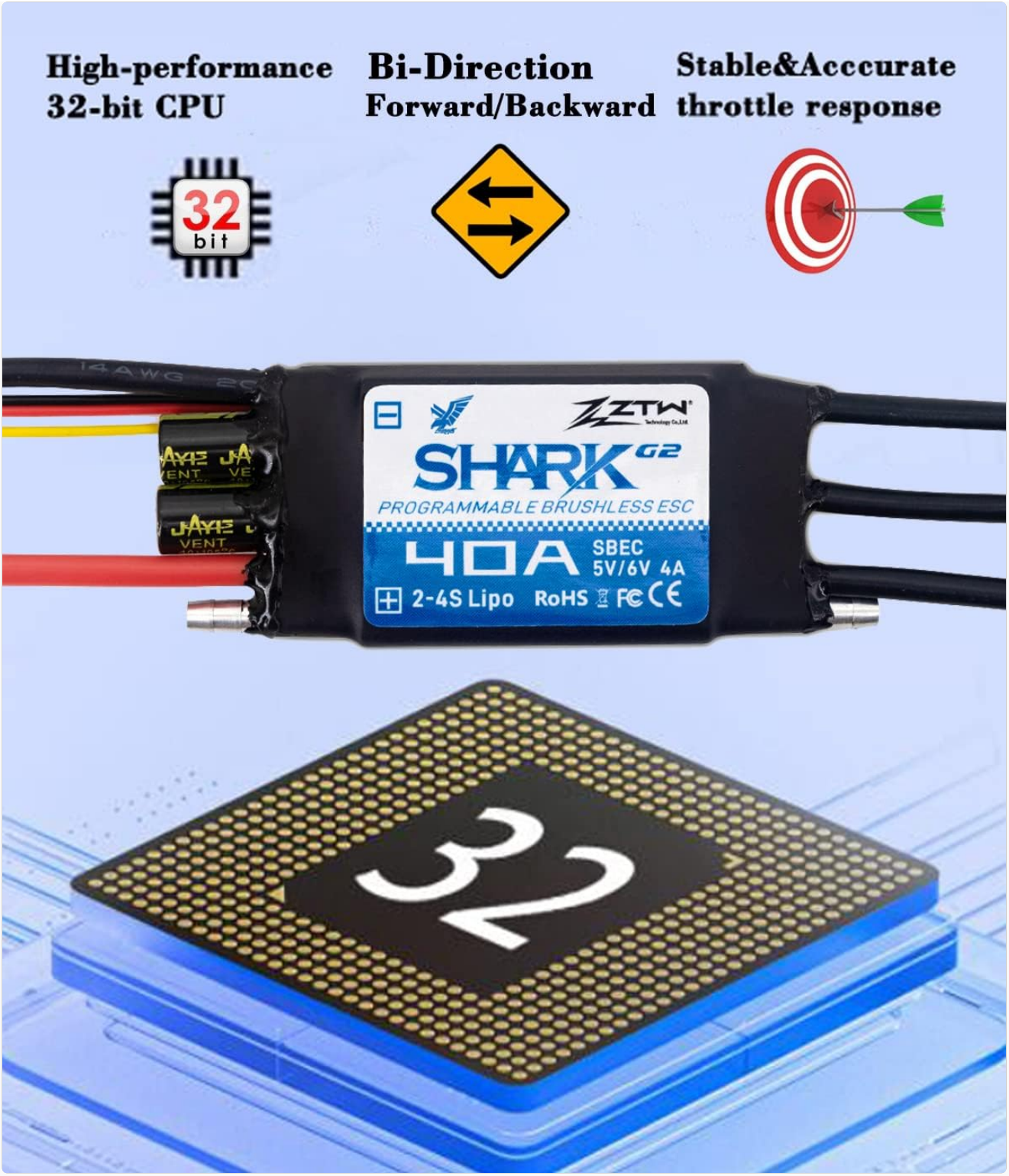

Figure 2: Overview of the ZTW Shark G2 ESC highlighting its new generation bi-directional capabilities and various applications.

Figure 3: The ZTW Shark G2 ESC, emphasizing its high-performance 32-bit CPU and stable, accurate throttle response.

2. Specifications

Feature	Detail
Model	Shark G2 40A SBEC
Dimensions (LxWxH)	75mm x 32mm x 9mm (2.9in x 1.38in x 0.35in)
Weight	40g (1.76 ounces)
Battery Support	2-4S Lipo / 5-12NC
Voltage Range	7.6V-15.8V
Continuous Current	40A
Peak Current	55A (for 10 seconds)
BEC Output	4A/5V, peak 5A
Motor Type	Brushless
Motor Rotation	Bi-Directional

Feature	Detail
RPM Support (2-pole)	200,000
RPM Support (6-pole)	82,000
RPM Support (12-pole)	42,000

3. Setup and Programming

The ZTW Shark G2 ESC can be programmed using either your transmitter or an optional LCD programming card. This section details both methods.

3.1 Programming via Transmitter

Follow these steps to program your ESC using a transmitter:

1. Turn on the transmitter.
2. Move the throttle stick to the top (maximum) position.
3. Connect a battery to the ESC. The ESC will emit a series of tones indicating the programming mode.
4. Listen to the tones and refer to the programming chart (typically provided with the ESC) to identify the desired parameter.
5. Once the tone for the desired parameter is heard, move the throttle stick to the bottom (minimum) position. This enters the corresponding parameter item.
6. The ESC will then emit tones corresponding to the available values for that parameter. Move the throttle stick to the top position when the tone for the desired value is heard. This saves the value.
7. Programming is complete for that parameter. Disconnect the battery to exit programming mode.

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Video 1: Demonstrates how to program the ESC using a transmitter, including connecting the battery, moving the throttle stick, and selecting parameters based on audible tones.

3.2 Programming via LCD Program Box

For more precise and visual programming, an optional LCD Program Box can be used. Connect the signal wire from the ESC to the program box, then power the ESC. The program box will display the current settings, allowing you to adjust them directly.

Figure 4: The ZTW Shark G2 ESC showing its various wiring connections for power, motor, and signal.

4. Operating Instructions

4.1 Bi-Directional Function (SMR)

The ZTW Shark G2 ESC supports a Switch Motor Rotation (SMR) function, enabling bi-directional motor operation. This feature is particularly useful for applications requiring forward and reverse movement.

1. Ensure the SMR function is set to 'ON' in the ESC programming (refer to Section 3.1 or 3.2).
2. Plug the throttle and reverse signal wire into the receiver.
3. To change the motor rotation direction, flip the 2-stage switch on your transmitter.
4. **Note:** The SMR function is effective only when the throttle is below 50%.
5. **Important:** The SMR function is intended for use when the aircraft (or RC vehicle) is landing on the ground. It can effectively shorten the landing distance. It is not recommended for in-flight or high-speed directional changes.

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Video 2: Illustrates how to set and use the SMR (Switch Motor Rotation) function on the ESC, demonstrating the change in motor direction via transmitter switch.

5. Maintenance

To ensure the longevity and optimal performance of your ZTW Shark G2 ESC, consider the following general maintenance guidelines:

- Regularly inspect all wiring and connectors for signs of wear, corrosion, or damage. Replace any compromised components immediately.
- Keep the ESC clean and free from dirt, dust, and debris. Use a soft, dry brush or compressed air for cleaning.
- Ensure the water cooling system is clear of obstructions and functioning correctly, especially after use in dirty or sandy water.
- Store the ESC in a cool, dry place away from direct sunlight and extreme temperatures.

Figure 5: The ZTW Shark G2 ESC positioned near water, demonstrating its water-cooling design. Regular inspection of the cooling system is recommended.

6. Troubleshooting

If you encounter issues with your ZTW Shark G2 ESC, consider the following common troubleshooting steps:

- **No Power:** Check battery connections, ensure the battery is charged, and verify all wiring is secure.
- **Motor Not Responding:** Confirm the ESC is properly connected to the receiver and motor. Recalibrate the throttle range if necessary. Check motor and ESC connections for continuity.
- **Intermittent Operation:** Inspect for loose connections, signal interference, or overheating. Ensure adequate

ventilation for the ESC.

- **Incorrect Motor Direction:** Adjust the motor rotation setting in the ESC programming (refer to Section 4.1).
- **Overheating:** Verify the water cooling system is functioning correctly and not obstructed. Ensure the ESC is not overloaded (e.g., using an undersized propeller or motor).

If problems persist after attempting these steps, contact ZTW customer support for further assistance.

7. Safety Information

While specific safety information was not provided, it is crucial to observe general safety precautions when operating RC electronic components:

- Always handle LiPo batteries with care. Do not overcharge, over-discharge, or puncture them.
- Ensure all electrical connections are secure and properly insulated to prevent short circuits.
- Operate RC equipment in open areas, away from people, animals, and obstacles.
- Keep hands and loose clothing away from rotating propellers or moving parts.
- Disconnect the battery from the ESC when not in use or during maintenance.
- Do not modify the ESC or its components, as this may void the warranty and create safety hazards.

8. Warranty and Support

For warranty information, technical support, or service inquiries regarding your ZTW Shark G2 Series 40A Bi-Direction Water Cooling Brushless ESC, please refer to the official ZTW website or contact your authorized dealer. Keep your purchase receipt as proof of purchase for warranty claims.