ZTW Beatles G2 40A SBEC

ZTW Beatles G2 40A ESC User Manual

Brand: ZTW | **Model:** Beatles G2 40A SBEC

1. Introduction

The ZTW Beatles G2 40A Electronic Speed Controller (ESC) is designed for brushless motors in RC fixed-wing airplanes and various DIY projects. It features a 32-bit microprocessor for enhanced computing ability and faster response. This ESC includes multiple protection mechanisms and offers programmable functions for optimal performance and safety.

2. Safety Precautions

- Always connect the battery with correct polarity. Reverse polarity can cause severe damage to the ESC and battery.
- Ensure all connections are secure to prevent intermittent power loss or short circuits.
- Operate the ESC in a well-ventilated area to prevent overheating.
- Keep hands and loose clothing away from rotating propellers or motor parts during operation.
- Disconnect the battery from the ESC after use to prevent accidental motor activation.
- Do not modify the ESC or its components, as this may void the warranty and create safety hazards.

3. Key Features

- 32-bit microprocessor for stronger computing ability and faster running speed.
- Multiple protections: start-up, over-heat, low-voltage cutoff, signal loss, phase loss.
- Stronger BEC output up to 4A/5V, 6V continuous and peak to 8A.
- Super smooth, accurate, and programmable throttle linearity and throttle response.
- Supports high RPM motors and is programmable by LCD card or transmitter.
- Synchronous rectification for energy-saving and high efficiency.

4. Specifications

Specification	Value
Size (L x W x H)	68mm x 25mm x 10mm (2.4 x 0.98 x 0.39 inches)
Weight	37g (3.2 ounces)
Battery	2-4S Lipo / 5-12NC
Voltage	7.6V-15.8V
Current	40A (continuous), peak 55A for 10 seconds
BEC Output	4A/5V or 6V, peak 8A
Motor Type	Brushless
RPM Support	200,000 for 2-pole, 82,000 for 6-pole, 42,000 for 12-pole

5. Package Contents

- ZTW Beatles G2 40A ESC x 1
- User Manual x 1

6. Installation and Wiring

Proper installation and wiring are crucial for the safe and efficient operation of your ESC. Refer to the diagrams below for correct connections.

Figure 1: Top view of the ZTW Beatles G2 40A ESC, showing the main power input (red/black wires with yellow connector) and three motor output wires (black).

Figure 2: Angled view of the ZTW Beatles G2 40A ESC, highlighting the main power input, three motor phase wires, and the signal wire for receiver connection.

1. **Connect to Battery:** Connect the red and black power wires of the ESC to your 2-4S LiPo or 5-12NC battery. Ensure the polarity is correct (red to positive, black to negative).
2. **Connect to Motor:** Connect the three black output wires from the ESC to the three phase wires of your brushless motor. The order of connection determines the motor's rotation direction. If the motor spins in the wrong direction, swap any two of the three motor wires.
3. **Connect to Receiver:** Plug the signal wire (usually a three-wire servo connector: orange, red, brown) from the ESC into the throttle channel of your RC receiver.

7. Throttle Calibration

Throttle calibration is essential for the ESC to correctly recognize the throttle range of your transmitter. Perform this procedure before the first use or if you change your transmitter.

1. Turn on your transmitter and move the throttle stick to its maximum (top) position.
2. Connect the battery to the ESC. The ESC will emit a series of beeps.
3. Wait for the ESC to emit a specific tone indicating it has detected the maximum throttle position.
4. Move the throttle stick to its minimum (bottom) position.
5. The ESC will emit another series of beeps, confirming the minimum throttle position has been set.
6. Disconnect the battery to exit calibration mode.

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Video 1: This video demonstrates how to program your ESC via the transmitter, including throttle calibration.

8. Programming the ESC

The ZTW Beatles G2 40A ESC offers several programmable parameters to fine-tune its performance. Programming can be done either via your transmitter or an optional LCD program card.

8.1. Programming via Transmitter

To program the ESC using your transmitter, follow the throttle calibration steps, but instead of disconnecting the

battery after setting the minimum throttle, you will enter programming mode. The ESC will emit a sequence of beeps corresponding to different programmable items. Move the throttle stick to select and confirm settings based on the provided programming chart.
Refer to *Video 1* for a visual guide on programming via the transmitter.

8.2. Programming via LCD Program Card (Optional)

For easier and more precise programming, an optional LCD program card can be used. Connect the ESC's signal wire to the program card, then power the ESC. The program card will display the current settings, allowing you to adjust parameters directly.

Figure 3: The ZTW Beatles G2 40A ESC shown with an optional program card, which simplifies parameter adjustments.

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Video 2: This video provides an overview of the ZTW BEATLES Series ESCs, including the 40A model, and demonstrates the use of

a program card for setting parameters.

9. SMR (Switch Motor Rotation) Function

The SMR function allows for quick reversal of motor rotation. This feature is primarily intended for use when the aircraft is landing on the ground, as it can effectively shorten the landing distance. It is effective only when the throttle is below 50%.

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Video 3: This video demonstrates how to set and use the SMR (Switch Motor Rotation) function on your ESC.

10. Maintenance

- Regularly inspect all wires and connectors for signs of wear, damage, or corrosion. Replace any damaged components immediately.
- Keep the ESC clean and free from dust, dirt, and moisture. Use a soft, dry brush or compressed air for cleaning.
- Ensure adequate airflow around the ESC during operation to prevent overheating.
- Store the ESC in a cool, dry place when not in use.

11. Troubleshooting

Problem	Possible Cause	Solution
Motor does not start or stutters.	Incorrect throttle calibration, motor wires incorrectly connected, signal loss.	Perform throttle calibration. Check motor wire connections; swap any two if rotation is incorrect. Verify receiver connection and signal.
ESC overheats.	Insufficient airflow, motor/propeller combination drawing too much current, incorrect motor timing.	Ensure proper ventilation. Use a smaller propeller or a motor with lower current draw. Adjust motor timing settings.
Motor runs in the wrong direction.	Incorrect motor wire connection.	Swap any two of the three motor phase wires. Alternatively, use the SMR function if applicable.
No response from ESC.	No power, damaged ESC, incorrect receiver connection.	Check battery connection and charge. Verify ESC is correctly plugged into the receiver. If issues persist, the ESC may be damaged.

12. Warranty and Support

ZTW and HAWK HOBBY offer a 100% free warranty for this ESC. For warranty claims or technical support, please contact your retailer or the manufacturer directly. Keep your proof of purchase for warranty validation.