

ZTW Mantis G2 85A

ZTW Mantis G2 Series 85A ESC User Manual

Model: Mantis G2 85A

1. INTRODUCTION

The ZTW Mantis G2 Series 85A Electronic Speed Controller (ESC) is an advanced 32-bit brushless speed controller designed for high-performance RC airplanes and fixed-wing aircraft. This ESC integrates a powerful 8A adjustable Switching BEC (SBEC) to provide stable power to your receiver and servos. It supports a wide range of battery configurations (3-8S LiPo/LiHV) and offers precise control and reliable operation for your aircraft's propulsion system.

Please read this manual thoroughly before installation and operation to ensure correct usage and maximize the performance and lifespan of your ESC.

2. SAFETY PRECAUTIONS

Improper use of the ESC can lead to personal injury and damage to the product or associated equipment. Always observe the following safety guidelines:

- **Battery Connection:** Always connect the battery with correct polarity. Reverse polarity will cause immediate and irreversible damage to the ESC.
- **Insulation:** Ensure all connections are properly insulated to prevent short circuits.
- **Propeller Safety:** Always remove the propeller from the motor before performing any setup, testing, or maintenance to prevent accidental injury.
- **Heat:** The ESC can generate significant heat during operation. Ensure adequate airflow for cooling and avoid touching it immediately after use.
- **Water and Moisture:** Keep the ESC away from water, moisture, and conductive contaminants.
- **Voltage Range:** Do not exceed the specified input voltage range (3-8S LiPo/LiHV).
- **Children:** This product is not a toy and is not suitable for children under 18 years of age without adult supervision.

3. PRODUCT FEATURES

- Advanced 32-bit microprocessor for precise control and rapid response.
- High-current capability: 85A continuous, 95A burst (10 seconds).
- Wide input voltage range: Supports 3-8S LiPo/LiHV batteries.
- Integrated 8A adjustable SBEC with selectable output voltages: 6V, 7.4V, or 8.4V.
- Designed specifically for RC airplane and fixed-wing applications.

- Multiple protection features including low-voltage cut-off, overheat protection, and throttle signal loss protection.
- Programmable via ZTW LCD Program Card G2 or dedicated Android/iOS mobile application.

4. SPECIFICATIONS

Parameter	Value
Continuous Current	85A
Burst Current (10S)	95A
Battery Input	3-8S LiPo/LiHV
BEC Output	6V/7.4V/8.4V Adjustable, 8A
Dimensions (L*W*H)	88mm * 38mm * 24mm
Weight	110g
User Program	LCD Program Card G2 / Android & iOS APP

5. SETUP AND INSTALLATION

Proper installation is crucial for the safe and efficient operation of your ESC. Follow these steps carefully:

1. **Motor Connection:** Connect the three motor wires (typically labeled A, B, C or U, V, W) from the ESC to the corresponding wires on your brushless motor. The order may affect motor rotation direction; this can be adjusted later if needed.
2. **Battery Connection:** Connect the main power wires (red for positive, black for negative) from the ESC to your LiPo/LiHV battery. Ensure the connector type matches and polarity is correct.
3. **Receiver Connection:** Plug the throttle signal cable (usually a three-wire servo connector) from the ESC into the throttle channel (typically channel 3) of your RC receiver.
4. **SBEC Voltage Selection:** The Mantis G2 85A ESC features an adjustable SBEC. Refer to the programming section or the dedicated program card/app to set the desired output voltage (6V, 7.4V, or 8.4V) for your receiver and servos. Ensure the selected voltage is compatible with your receiver and servos.
5. **Mounting:** Securely mount the ESC in your aircraft, ensuring good airflow for cooling. Avoid mounting it in enclosed spaces without ventilation.



Image 1: ZTW Mantis G2 85A ESC showing the main power input wires (red and black) and the heat sink design. The three motor output wires are also visible.



Image 2: ZTW Mantis G2 85A ESC illustrating the complete wiring setup, including the main power wires, three motor phase wires, and the smaller signal wire for receiver connection.

6. OPERATING INSTRUCTIONS

Before first flight, it is essential to perform a throttle range calibration to ensure the ESC correctly interprets your transmitter's throttle stick positions.

6.1. Throttle Range Calibration

1. Turn on your transmitter and set the throttle stick to its maximum (full throttle) position.

2. Connect the battery to the ESC. The ESC will emit a series of beeps.
3. After the initial beeps, the ESC will detect the full throttle signal and emit a confirmation tone.
4. Move the throttle stick to its minimum (zero throttle) position. The ESC will emit another series of beeps, indicating the throttle range has been successfully calibrated.
5. The ESC is now ready for normal operation.

6.2. Normal Operation

After calibration, connect the battery with the throttle stick at minimum. The ESC will arm, indicated by a specific tone. You can then slowly advance the throttle to control the motor speed. Always ensure the propeller is clear before applying throttle.

7. PROGRAMMING THE ESC

The ZTW Mantis G2 85A ESC offers various programmable parameters to fine-tune its performance to your specific aircraft and preferences. Programming can be done using either the ZTW LCD Program Card G2 or the dedicated Android/iOS mobile application.

7.1. Programmable Parameters (Examples)

- **Brake Type:** Off, Soft, Medium, Hard.
- **Timing:** Low, Medium, High (adjusts motor efficiency and temperature).
- **Cut-off Voltage:** Sets the voltage at which the ESC reduces or cuts power to protect the battery.
- **Start-up Mode:** Normal, Soft, Super Soft.
- **SBEC Voltage:** 6V, 7.4V, 8.4V.
- **Motor Rotation:** Normal, Reverse.

Refer to the specific instructions provided with the ZTW LCD Program Card G2 or within the mobile application for detailed steps on how to connect and adjust these parameters.

8. MAINTENANCE

Regular inspection and basic maintenance will help ensure the longevity and reliable performance of your ESC:

- **Cleaning:** Keep the ESC free from dust, dirt, and debris. Use a soft brush or compressed air to clean the heat sink fins.
- **Connection Check:** Periodically inspect all wire connections (motor, battery, receiver) for signs of wear, corrosion, or loose contacts.
- **Physical Damage:** Check the ESC casing and wires for any physical damage after each flight.
- **Storage:** Store the ESC in a dry, cool environment away from direct sunlight and extreme temperatures.

9. TROUBLESHOOTING

If you encounter issues with your ZTW Mantis G2 85A ESC, refer to the following common problems and solutions:

- **Motor Not Spinning:**
 - Check battery connection and charge level.
 - Verify throttle signal cable is securely connected to the receiver.
 - Perform throttle range calibration again.
 - Ensure motor wires are correctly connected and not shorted.
- **Motor Runs in Wrong Direction:**

- Swap any two of the three motor wires between the ESC and motor.
- Alternatively, reverse motor direction using the programming options.

- **ESC Overheats:**

- Ensure adequate airflow around the ESC.
- Check if the propeller is too large or motor timing is too aggressive (adjust via programming).
- Verify battery voltage and current draw are within specifications.

- **Intermittent Power/Loss of Control:**

- Check all connections for looseness or corrosion.
- Inspect for damaged wires or solder joints.
- Ensure receiver and transmitter are functioning correctly and within range.





10. WARRANTY AND SUPPORT

For warranty information and technical support regarding your ZTW Mantis G2 Series 85A ESC, please contact the retailer or the manufacturer, ZTW, directly. For purchases made through Buddy RC, please reach out to Buddy RC customer service for assistance.

Keep your purchase receipt as proof of purchase for any warranty claims.

© 2023 ZTW / Buddy RC. All rights reserved.

Related Documents - Mantis G2 85A

	<p>ZTW Mantis Slim G2 15A ESC User Manual</p> <p>User manual for the ZTW Mantis Slim G2 15A ESC, detailing features, specifications, setup, programming, and troubleshooting for RC aircraft. Learn how to calibrate, program, and maintain your ESC for optimal performance.</p>
	<p>ZTW Mantis Slim G2 Series ESC User Manual</p> <p>User manual for the ZTW Mantis Slim G2 Series Brushless Electronic Speed Controller (ESC), detailing features, specifications, setup, programming, and troubleshooting for RC applications.</p>
	<p>ZTW Mantis G2 Series ESC User Manual</p> <p>User manual for the ZTW Mantis G2 Series Electronic Speed Controller (ESC), detailing features, specifications, setup, programming, and troubleshooting for RC aircraft applications.</p>
	<p>ZTW SkyHawk Series ESC User Manual</p> <p>User manual for the ZTW SkyHawk series of brushless electronic speed controllers (ESCs), detailing features, specifications, and troubleshooting for RC aircraft and helicopters.</p>



[ZTW Shark G2 Series ESC User Manual](#)

User manual for the ZTW Shark G2 Series Brushless Electronic Speed Controller (ESC), detailing features, specifications, connections, throttle calibration, programming, protection functions, and troubleshooting.



[ZTW Seal G2 Series ESC User Manual](#)

Comprehensive user manual for the ZTW Seal G2 Series Brushless Electronic Speed Controllers (ESC), detailing features, specifications, wiring, programming, and troubleshooting for RC boat applications.