

Thank you for choosing this product! Brushless propulsion systems are highly powerful, and improper use may result in personal injury or equipment damage. Therefore, we strongly recommend that you read this manual carefully before using the product. We shall not be liable for any damages arising from the use of this product, including but not limited to incidental or consequential damages. We shall also not be liable for any damages arising from unauthorized modifications to the product or improper use.

We reserve the right to change the product design, appearance, performance, and operating requirements without prior notice.

Product Features

- Easy to use, stable and reliable, with strong resistance to interference and excellent speed control performance.
- Multiple safety protections: low-voltage protection, high-voltage protection, overcurrent protection, overtemperature protection, start failure protection, stall protection, and signal loss protection.
- Optically isolated signal input and output interfaces.
- Real-time data output via the serial port: supply voltage, motor speed, current, ESC temperature, and diagnostic data.

Specifications

- Operating Voltage: 14 - 24S LiPo
- Maximum Current: 200A (ambient temperature: 25° C; good heat dissipation; test voltage: 100V; duration: 3 seconds)
- Throttle Pulse Width: PWM 1000 - 2000 μ s, adjustable
- Signal Frequency: PWM 50 - 400 Hz; DSHOT 50 - 1000 Hz
- Standby Current: 6mA@100V; 9mA@60V

Protection Functions

- High-Voltage Protection: Prevents the motor from starting when the supply voltage exceeds the allowable limit.
- Low-Voltage Protection: Available as a customized option.
- Start Protection: Automatically retries if startup fails.
- Stall Protection: If a stall occurs during normal operation (generally caused by an external force), the ESC attempts to restart. Note: A stall at high throttle may damage the ESC.
- Overtemperature Protection: When the temperature exceeds 110° C, the maximum output power is gradually reduced, down to as low as 40% of full-throttle power. The original power is restored when the temperature decreases.
- Overcurrent Protection: The current protection threshold is set to 1.1 - 1.5 times the maximum current during normal operation. Response time: 0.1 second. The average current is limited so that it does not exceed the threshold.
- Signal-Loss Protection: After the signal has been lost for 200 ms, the output power is gradually reduced, by up to 50% of the full-throttle output.

PWM Throttle Calibration

- If the throttle is at its maximum position when the ESC is powered on, throttle calibration will start and the ESC will emit 🎵 123-3-3. Within a few seconds, move the throttle to its minimum position. Calibration is complete after the tones finish.

Signal Wire Definition

Black => PWM_GND White => PWM Green => CAN_L Yellow => CAN_H Gray => CAN_GND

Data Output

PWM is used by default. To use CAN, please refer to the “THUNDER ESC-CAN Series ESC Signal Mode Switching Instructions”. Data output uses a 3-wire CAN interface with a baud rate of 1 Mbps.

Precautions

- ※ The signal pulse width and frequency must meet the specified requirements. Do not plug or unplug the control signal wire while the system is powered. Ensure that the ESC signal wire is securely connected and free of looseness to prevent interference signals from causing abnormal control.
- ※ Always use a stable load. If the propeller is mechanically blocked by an external force, reduce the throttle to zero or disconnect the power as soon as possible to prevent excessive stall current from damaging the ESC.
- ※ Ensure good heat dissipation for the ESC. Prolonged operation at high temperatures accelerates component aging and significantly reduces the service life of the ESC.
- ※ It is recommended to monitor the operating temperature in real time and determine whether the current operating condition is safe based on the real-time temperature data (below 90° C is relatively safe; 90-110° C indicates insufficient heat dissipation or excessive load; above 110° C is unsafe).
- ※ Do not short-circuit the ESC output phase wires before the residual charge has been fully discharged, as this may damage the ESC.
- ※ An anti-spark connector is recommended for the power connection to prevent sparking and connector damage and improve power-on safety. Do not apply high throttle before ESC startup is complete.
- ※ Ensure that the supply voltage is stable and that all connections are secure; otherwise, the ESC may be damaged.
- ※ Use the ESC with the recommended configuration for optimal performance (thrust efficiency, power, and safety). Using an incompatible motor or propeller (including a non-propeller load or a variable load), or an incorrect voltage, may prevent optimal performance and may even damage the ESC.