Hobbywing 30120402

HOBBYWING Quicrun Fusion PRO 2300KV FOC System 2in1 User Manual

Brand: Hobbywing

Model: 30120402

1. Introduction

The HOBBYWING Quicrun Fusion PRO 2300KV FOC System 2in1 is an advanced integrated motor and Electronic Speed Controller (ESC) designed for RC crawlers. This innovative system significantly reduces overall volume and weight, simplifying car frame layout and wiring. It features Field-Oriented Control (FOC) driving mode for strong low-speed torque and smooth operation, surpassing common sensored brushless systems and even brushed power. The sine wave driving mode ensures high efficiency, minimal heat generation, and quiet motor operation, extending endurance time.

The entire system boasts an IP67 protection grade, offering excellent waterproof and dustproof performance, allowing it to handle diverse weather conditions and complex terrains including mud, sand, ice, snow, and water. Intelligent torque output and speed closed-loop control provide a realistic 1:1 vehicle experience, including cruise control and steep slope slow descent functions. The system also features active drag brake force adjustment for superior parking capability on inclines. With a robust built-in switch mode BEC, it delivers up to 6A continuous current, switchable between 6V and 7.4V, capable of driving various powerful steering servos. Multiple protection functions are integrated for enhanced safety, including battery low voltage, overheat, throttle lost, and lock-up protection. Parameters can be conveniently set using a HOBBYWING LED program box via an independent interface integrated with an electronic switch.

2. Key Features

- **Integrated Design:** ESC and motor are combined into a single unit, reducing overall size and weight for simpler car frame layout.
- **FOC Driving Mode:** Provides strong low-speed torque and smooth, quiet operation, superior to sensored brushless and brushed systems.
- **IP67 Waterproofing:** Ensures excellent waterproof and dustproof performance for all-weather and track conditions.
- **Intelligent Control:** Features torque output and speed closed-loop control for realistic driving, including cruise control and steep slope descent.

- **Adjustable Drag Brake:** Offers 8 levels of drag brake force and 9 levels of drag brake acceleration for enhanced hill-holding capability.
- **Powerful BEC:** Built-in 6A continuous current BEC, switchable between 6V and 7.4V, supports high-voltage steering servos.
- **Multiple Protections:** Includes battery low voltage, overheat, throttle lost, and lock-up protection.
- **Easy Parameter Setting:** Supports HOBBYWING LED program box with an independent setting interface and electronic switch.
- **Enhanced Efficiency:** FOC drive algorithm upgrade increases efficiency by 8% and reduces power consumption by 30%.

3. What's in the Box

Upon opening the package, you will find the following components:

- (1) HOBBYWING Quicrun Fusion PRO 2300KV FOC System 2in1 (Integrated Motor & ESC)
- (1) LED Program Card Sticker (for reference with your LED program box)
- (1) Double-ended Harness (for programmer connection)
- (1) Extension Cable (for input harness if needed)
- (2) Zip Ties
- (1) Mounting Tape (for on/off button)
- (1) User Manual (detailed instructions and programmable item chart)
- (1) Sheet of HOBBYWING Decals



Image: The HOBBYWING Quicrun Fusion PRO 2300KV FOC System 2in1, along with its accessories including cables, mounting tape, and the user manual.

Your browser does not support the video tag.

Video: An unboxing and overview of the HOBBYWING Quicrun Fusion PRO 2300KV FOC System 2in1, detailing the contents and initial setup.

4. Setup and Installation

Proper installation is crucial for optimal performance and longevity of your Fusion PRO system. Please refer to the detailed user manual included in the box for specific wiring diagrams and mounting instructions relevant to your RC vehicle.

4.1. Basic Connection

- Connect the motor's power wires to your battery connector (e.g., XT60).

- Plug the signal wire from the ESC into the throttle channel of your receiver.
- Mount the on/off button in a convenient location using the provided mounting tape.

4.2. Automatic Motor Pairing (Sensor Reset)

The Fusion PRO utilizes an FOC system that may require an automatic motor pairing or sensor reset, especially if the motor's performance seems abnormal (e.g., overheating, erratic behavior). This process helps the ESC recognize the motor's unique characteristics for optimal performance.

1. Ensure the system is connected to a charged battery.
2. Press and hold the on/off button until the LED light on the button turns red, then green.
3. Release the button. The motor will emit a series of beeps and may cycle briefly.
4. The system will then beep the detected LiPo cell count, indicating the reset is complete.

This process should resolve most motor-related anomalies. Always ensure the programming port is sealed with its rubber cap when not in use to maintain IP67 waterproofing.

5. Operating Modes

The Fusion PRO offers three distinct running modes to suit various driving styles and applications:

- **Forward/Reverse with RPM Matching (FOC Mode - Default):** This is the standard FOC mode, providing precise throttle control and RPM matching for smooth, consistent low-speed crawling. The motor's RPM directly corresponds to throttle input.
- **Forward/Reverse with Brake Normal Mode:** In this mode, the throttle matching is adjusted to provide a more "brushed motor" feel. It includes a brake function when the throttle is released.
- **Forward/Reverse Normal Mode:** Similar to the above, but without the brake function. This mode offers a more organic feel with adjustable throttle response, allowing for a slight coast when the throttle is released.

The "Normal Modes" (with or without brake) provide a less direct throttle response compared to FOC mode, which some users prefer for a more traditional brushed motor feel, allowing for a slight delay or "coast" in throttle input.

6. Programmable Parameters

The Fusion PRO ESC features 13 adjustable parameters for fine-tuning its performance. These settings can be accessed and modified using a HOBBYWING LED program card (not included, but compatible with standard LED program cards). A sticker with the parameter chart is provided for easy reference.

Item No.	Parameter	Description	Default Setting	Adjustable Range
1	Running Mode	Selects the vehicle's driving mode.	Forward/Reverse with RPM Matching	Forward/Reverse with RPM Matching, Forward/Reverse with Brake Normal Mode, Forward/Reverse Normal Mode
2	Lipo Cells	Sets the number of LiPo cells.	Auto Calculate	Auto Calculate, 2S, 3S
3	Cutoff Voltage	Sets the voltage at which the ESC cuts off power to protect the battery.	Low	Disabled, Low, Medium, High

Item No.	Parameter	Description	Default Setting	Adjustable Range
4	Thermal Protection	Sets the motor temperature protection level.	Low	Low, High
5	BEC Voltage	Adjusts the output voltage of the built-in BEC.	7.4V	6.0V, 7.4V
6	Motor Rotation	Sets the motor's rotation direction.	CCW	CW, CCW
7	Drag Brake Force	Adjusts the strength of the drag brake.	Level 5 (50%)	Disabled, Level 1 (10%) to Level 8 (100%)
8	Drag Brake Rate	Controls how quickly the drag brake is applied.	Level 5	Level 1 to Level 9
9	Max. Reverse Force	Sets the maximum reverse power.	50%	25%, 50%, 75%, 100%
10	Max. Brake Force	Sets the maximum braking strength in normal mode.	75%	25%, 50%, 75%, 100%
11	RPM Decrease Rate	Controls the amount of FOC throttle matching. (Only applies in Normal Modes)	Level 5	Level 1 to Level 9
12	Punch	Adjusts the linearity of the throttle response.	Level 5	Level 1 to Level 9
13	Neutral Range	Sets the dead zone between throttle and brake.	Level 2	Level 1 to Level 5

Note: Always refer to the physical user manual for the most accurate and up-to-date parameter details.

7. Specifications

Specification	Value
Product Dimensions	2.99 x 2.99 x 2.09 inches; 9.42 ounces
Item Model Number	30120402
Brand	Hobbywing
Model Name	Fusion Pro
Voltage	7.4 Volts (2-3S Lipo, 6-9 Cells NiMH)
Material	Plastic
Manufacturer	Hobbywing Technology

Specification	Value
Recommended Age	12 years and up

8. Safety Precautions

- Always read the user manual thoroughly before installation and use.
- Ensure proper battery connection polarity to avoid damage.
- Keep the system dry and clean. Despite IP67 rating, prolonged submersion or exposure to corrosive liquids should be avoided.
- Do not operate the motor if it is obstructed or damaged.
- Ensure adequate ventilation to prevent overheating during operation.
- Always disconnect the battery when the system is not in use.
- Use only compatible batteries (2-3S LiPo, 6-9 cells NiMH) and chargers.
- Avoid modifying the product as it may void the warranty and cause damage.

9. Troubleshooting

- **Motor Not Responding:** Check all wiring connections, battery charge, and ensure the on/off button is pressed correctly. Perform an automatic motor pairing (sensor reset) as described in Section 4.2.
- **Overheating:** Verify proper gearing, ensure no binding in the drivetrain, and check the thermal protection setting. Reduce load or adjust settings if necessary.
- **Erratic Behavior:** Re-calibrate the throttle range on your radio. Perform an automatic motor pairing. Check for loose connections or damaged wires.
- **Inconsistent Drag Brake:** Adjust the Drag Brake Force and Drag Brake Rate parameters using the LED program card. Increase Neutral Range if needed.
- **Motor Runs in Wrong Direction:** Adjust the "Motor Rotation" parameter (Item 6) using the LED program card. Do not reverse direction via your radio's settings.

10. Maintenance

- **Cleaning:** Regularly clean the motor and ESC unit to prevent dirt and debris buildup. Use a soft brush or compressed air. Avoid using harsh chemicals.
- **Inspection:** Periodically check all wires, connectors, and the motor shaft for any signs of wear or damage.
- **Storage:** Store the system in a cool, dry place away from direct sunlight and moisture.
- Ensure the programming port's rubber cap is always securely in place when not in use to maintain waterproofing.

11. Warranty & Support

For warranty information, technical support, or service inquiries, please contact HOBBYWING North America directly or refer to the official HOBBYWING website. Always retain your proof of purchase for warranty claims.

Important: Please read the user manual before installation to ensure safe and proper use. The manufacturer is not liable for any liability arising from the use of this product, including but not limited to reimbursement for incidental or indirect losses. We reserve the right to change the product design, appearance, performance, and use requirements without notice.

Ask a question about this manual

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page's manual context to help answer it.

Name

Anonymous

Email

you@example.com

After a successful submission, we securely hash the supplied account or form email before sending it to Microsoft Advertising for conversion attribution. Privacy details.

Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question