

## Lumenier 30A BLHeli\_S ESC OPTO (2-4s) DSHOT

# Lumenier 30A BLHeli\_S ESC OPTO (2-4s) DSHOT Instruction Manual

Model: 30A BLHeli\_S ESC OPTO (2-4s) DSHOT

## 1. INTRODUCTION

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The Lumenier 30A BLHeli\_S ESC is an Electronic Speed Controller designed for high-performance RC applications, particularly multirotors. It features the powerful BusyBee2 (EFM8BB21F16) chip, operating at 48MHz, which provides precise motor control and takes full advantage of the BLHeli\_S firmware. This ESC is compact, lightweight, and supports various digital and analog protocols for versatile integration into your system.

## 2. KEY FEATURES

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- **Processor:** New BusyBee2 MCU (EFM8BB21F16) operating at 48MHz, supporting up to 500k eRPM.
- **Firmware:** Improved BLHeli\_S firmware pre-installed.
- **PWM Driver:** Hardware PWM controller at 36KHz for ultra-smooth throttle response and near-silent motor operation.
- **Protocol Support:** Compatible with DSHOT, Oneshot125 (125-250us), Oneshot42 (41.7-83.3us), and Multishot (5-25us). Features auto-detection.
- **Design:** Ultra-lightweight and compact size for easy integration.
- **Motor Compatibility:** Adaptive timing, compatible with a wide range of motors and Kv values.
- **Efficiency:** Synchronous rectification technology enhances efficiency and provides damped light.
- **Braking:** Powerful regenerative braking / active braking.
- **Battery Compatibility:** Supports 2-4s LiPo batteries.
- **Configuration:** OPTO (no BEC) design.

## 3. SETUP AND INSTALLATION

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### 3.1 Wiring Connections

The Lumenier 30A BLHeli\_S ESC comes pre-soldered with motor, signal, and power wires for convenience.

- **Motor Wires:** Connect the three motor wires to your brushless motor. The order may affect motor rotation

direction; this can be adjusted in BLHeli\_S configurator if needed.

- **Signal Wire:** Connect the signal wire to the appropriate motor output pin on your flight controller.
- **Power Wires:** Connect the red (+) and black (-) power wires to your LiPo battery distribution board or direct battery connection. Ensure correct polarity.

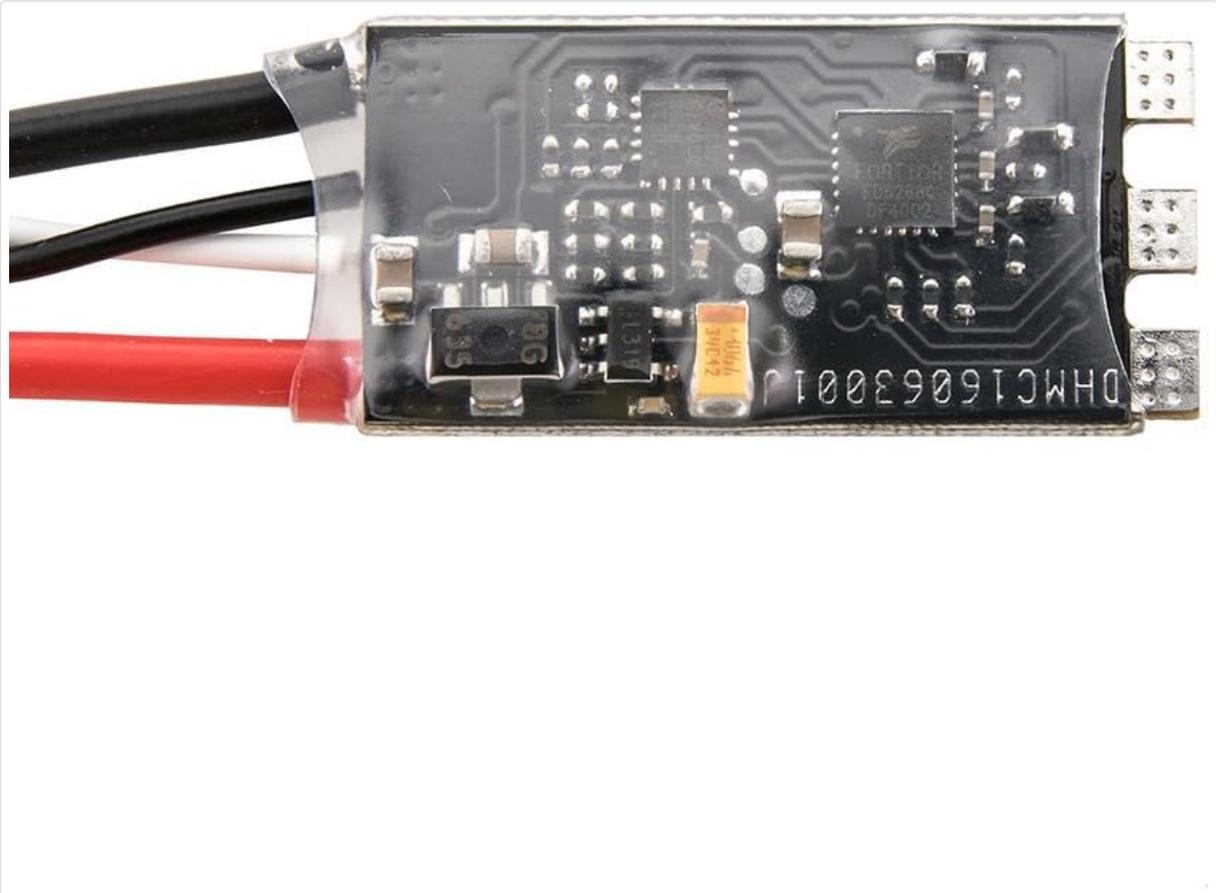


Image 1: Lumenier 30A BLHeli\_S ESC showing the main board and pre-soldered motor, signal, and power wires.

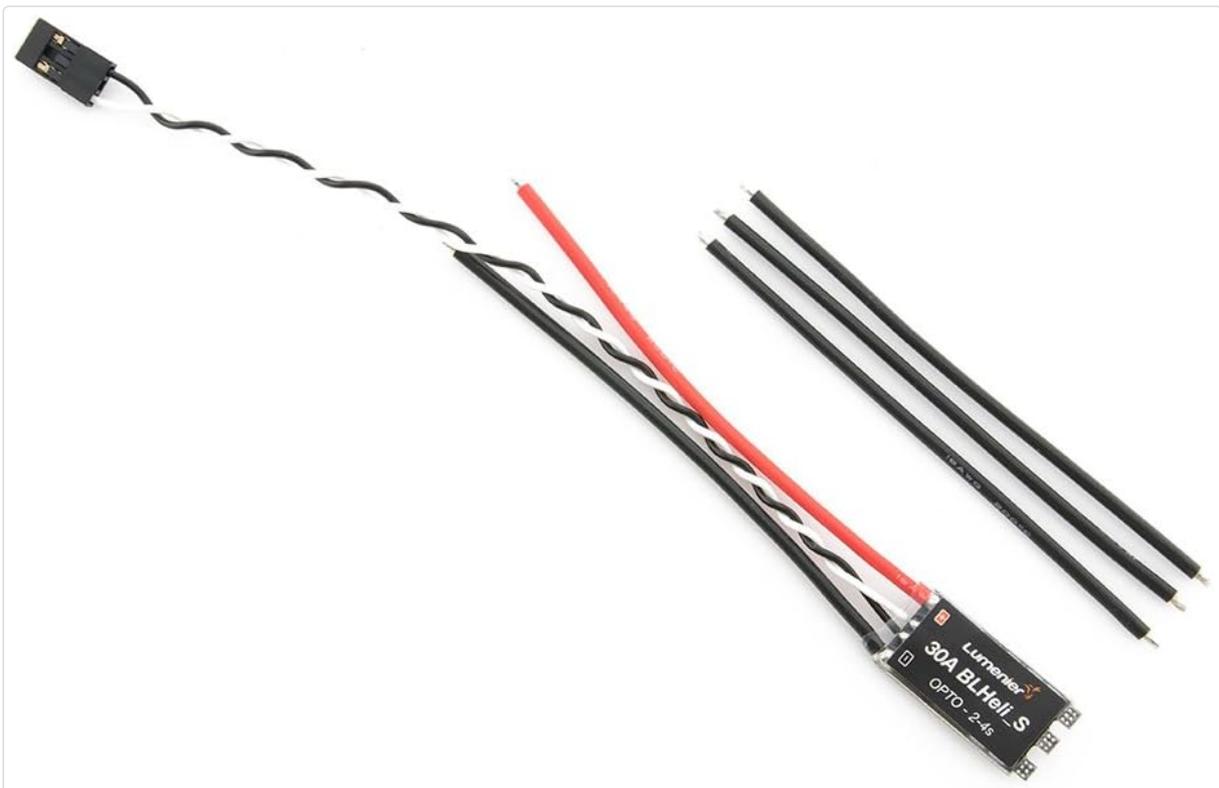


Image 2: Lumenier 30A BLHeli\_S ESC with protective heat shrink, showing the signal wire connector and power leads.

## 3.2 Firmware and Configuration

The ESC comes with BLHeli\_S firmware pre-installed. No initial firmware installation is required.

- **Protocol Auto-Detection:** The ESC automatically detects the protocol (PWM, Oneshot125, Oneshot42, Multishot, etc.) enabled in your flight controller software. Simply enable the desired feature in your flight controller's configuration.
- **BLHeli Configurator:** For advanced settings, motor direction changes, or firmware updates, use the official BLHeli Configurator software. This tool allows you to fine-tune ESC parameters. You can download the latest version from the official BLHeli resources.

## 4. OPERATION

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Once properly installed and configured with your flight controller, the Lumenier 30A BLHeli\_S ESC will operate seamlessly.

- **Smooth Throttle:** The 36KHz hardware PWM driver ensures a very smooth and responsive throttle curve.
- **Motor Noise:** Expect near-silent motor operation due to the high PWM frequency.
- **Adaptive Timing:** The ESC automatically adjusts motor timing for optimal performance across various motors and Kv ratings.
- **Active Braking:** The powerful regenerative braking (damped light) feature provides quick motor response and improved flight characteristics.

## 5. SPECIFICATIONS

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Feature	Detail
Input Voltage	2-4s LiPoly
Constant Current	30 Amps
Burst Current	35 Amps
BEC	No BEC, OPTO only
Dimensions	28mm x 14mm x 5mm
Signal Wire Length	15cm
Motor/Power Wire Length	9cm
Weight	5g (without motor wires)
MCU	BusyBee2 (EFM8BB21F16)
PWM Frequency	36KHz (Hardware PWM)
Supported Protocols	DSHOT, Oneshot125, Oneshot42, Multishot

## 6. MAINTENANCE

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The Lumenier 30A BLHeli\_S ESC is designed for durability and reliability. Minimal maintenance is required.

- **Inspection:** Periodically inspect the ESC for any signs of physical damage, loose connections, or burnt components.
- **Cleaning:** Keep the ESC free from dust, dirt, and moisture. Use compressed air or a soft brush for cleaning.
- **Heat Management:** Ensure adequate airflow around the ESC during operation to prevent overheating, especially in enclosed spaces.
- **Firmware Updates:** Check the official BLHeli resources periodically for any new firmware updates that may offer performance improvements or bug fixes.

## 7. TROUBLESHOOTING

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If you encounter issues with your Lumenier 30A BLHeli\_S ESC, consider the following troubleshooting steps:

- **Motor Not Spinning:**
  - Check all wiring connections between the ESC, motor, and flight controller for continuity and correct polarity.
  - Verify that the flight controller is sending a valid signal to the ESC.
  - Ensure the motor is not physically obstructed.
- **Erratic Motor Behavior:**
  - Confirm that the correct ESC protocol (DSHOT, Oneshot, etc.) is selected in your flight controller software.
  - Check for any loose motor connections.
  - Inspect the ESC for any visible damage or signs of overheating.
- **ESC Not Powering Up:**
  - Ensure the battery is fully charged and connected with correct polarity.
  - Check for any short circuits in the power lines.
- **Overheating:**
  - Ensure adequate ventilation around the ESC.
  - Verify that the motor and propeller combination is not drawing excessive current.
  - Check for any motor issues that might cause high current draw.

For further assistance, refer to online resources for BLHeli\_S firmware or contact Lumenier support.

## 8. WARRANTY AND SUPPORT

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Lumenier products are manufactured to high standards. For specific warranty information, please refer to the official Lumenier website or contact their customer support directly.

For technical support, product inquiries, or warranty claims, please visit the [Lumenier Store on Amazon](#) or their official website.