HAKRC MC27764-6

HAKRC 15A/20A Blheli_S BB2 4-in-1 ESC Speed Controller User Manual

Model: MC27764-6

1. Product Overview

The HAKRC 15A/20A Blheli_S BB2 4-in-1 ESC (Electronic Speed Controller) is designed for FPV racing drones and multicopters. This compact and lightweight unit integrates four ESCs into a single board, simplifying wiring and improving assembly efficiency. It features a BB2 chip and supports Blheli_S firmware, offering versatile control signal options including D-shot 600, D-shot 150, D-shot 300, Oneshot125, and Multishot.

Key Features

- 15A/20A Blheli_S BB2 4-in-1 ESC
- BB2 Chip for high performance
- Programmable via dedicated software
- Compact design with 20x20mm mounting holes
- Supports D-shot 600 (default), D-shot 150, D-shot 300, Oneshot125, and Multishot protocols
- Lipo compatibility: 2-4S
- Weight: 4.8g
- Size: 27x31mm (PCB)

Product Images

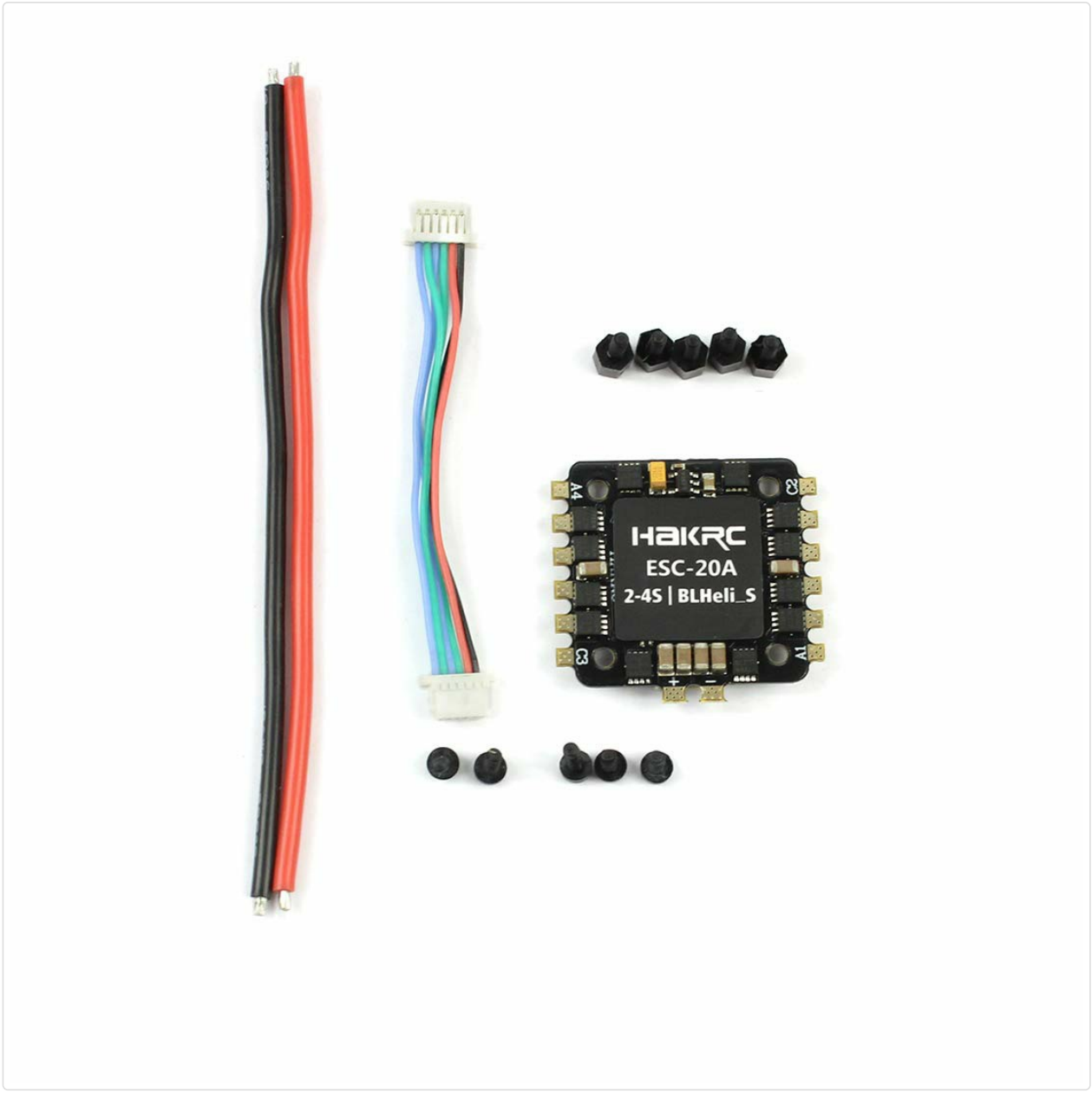

Figure 1: Top view of the HAKRC 15A/20A Blheli_S BB2 4-in-1 ESC Speed Controller.

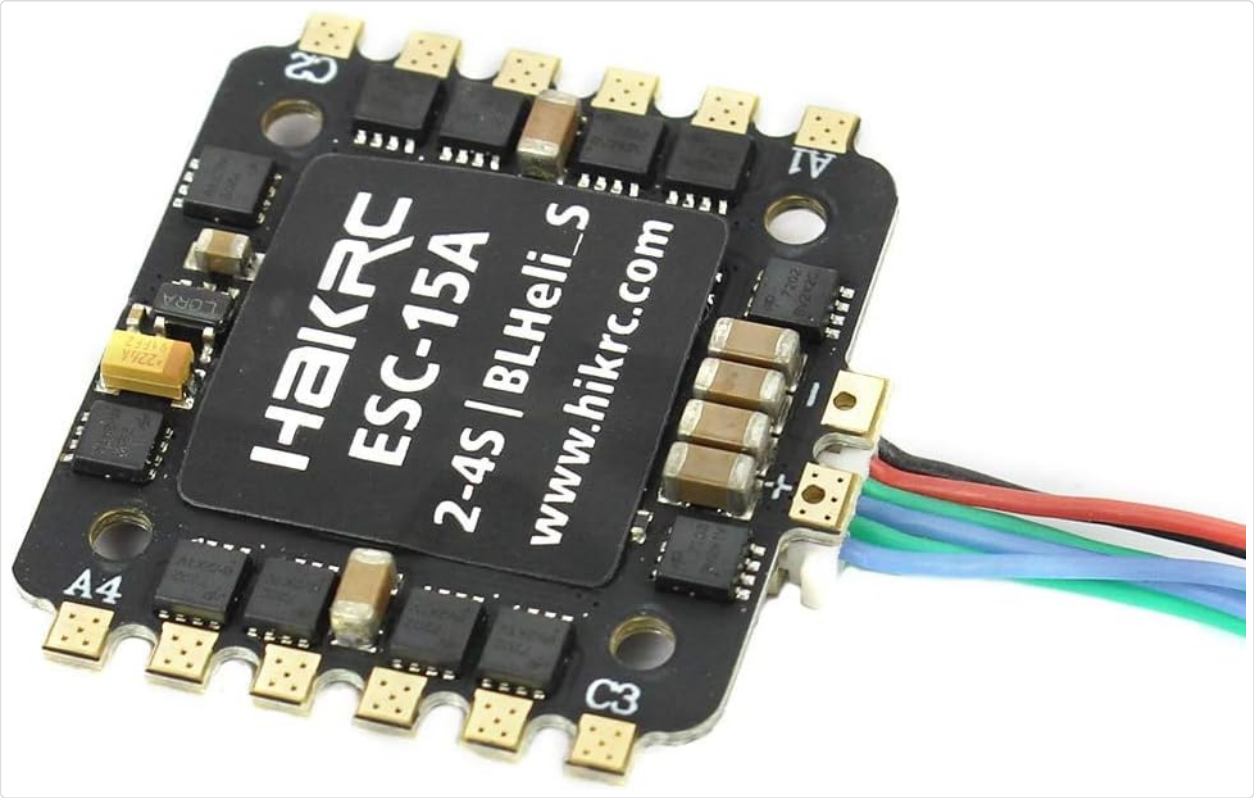

Figure 2: HAKRC 15A ESC showing motor wire connections.

Figure 3: HAKRC 20A ESC with visible solder pads for motor connections.

Figure 4: Angled view of the HAKRC 20A ESC, highlighting its components and solder pads.

Figure 5: Bottom view of the HAKRC ESC, showing the 'QC PASS' sticker and main connector.

Figure 6: Detailed bottom view of the HAKRC ESC, revealing the main chip and connector.

Figure 7: Contents included with the HAKRC 15A ESC package.

Related Videos

Video 1: Overview of a 60A 4-in-1 ESC, demonstrating features, specifications, and connectivity diagrams. Useful for understanding general 4-in-1 ESC principles and wiring.

Video 2: Short preview of an F405 Flight Controller Stack with a 4-in-1 ESC board, highlighting features like Bluetooth configuration, battery indicators, and protective components.

2. Specifications

Specification	Value
Item Name	15A Blheli_S BB2 4 In 1 ESC

Specification	Value
Continuous Current	15A / 20A (depending on variant)
Max Current	20A / 30A (5S)
BEC	No
Lipo Support	2-4S
Programmer	Yes
Weight	4.8g
Size (PCB)	27x31mm
Mounting Hole	20x20mm
Firmware	Blheli_S
Supported Protocols	D-shot 600 (default), D-shot 150, D-shot 300, Oneshot125, Multishot
Model Name	15A Blheli_S BB2 4 In 1 ESC
Part Number	MC27764-6

3. Package Contents

Verify that all items are present in your package:

- 1x HAKRC 15A/20A Blheli_S BB2 4-in-1 ESC
- 1x Power Cable (Red/Black)
- 1x Signal Cable
- Mounting Screws
- Mounting Nuts

4. Setup & Installation

Mounting

The HAKRC 4-in-1 ESC features 20x20mm mounting holes, making it suitable for a wide range of FPV drone frames. Ensure proper insulation between the ESC and the carbon fiber frame to prevent short circuits. Use the provided mounting hardware (screws and nuts) to secure the ESC firmly to your drone frame.

Wiring Diagram

Connect the ESC to your flight controller and motors according to the wiring diagram provided in your flight controller's manual or general FPV build guides. The 4-in-1 design simplifies wiring by integrating all four motor outputs onto a single board. Connect the main power leads (red and black) to your LiPo battery connector. The signal cable connects to the appropriate motor output pins on your flight controller.

Refer to Video 1 in the Product Overview section for a visual representation of a typical 4-in-1 ESC connectivity diagram.

Firmware

This ESC comes pre-loaded with Blheli_S firmware. For advanced configuration, tuning, or firmware updates, you will need to connect the ESC to a computer using a compatible USB adapter or through your flight controller (pass-through). Software like BLHeliSuite or BLHeli_S Configurator can be used for these tasks. Ensure you use the correct firmware target for your specific ESC variant (15A or 20A).

5. Operating Instructions

The HAKRC 4-in-1 ESC supports various digital and analog protocols for motor control, including D-shot 600 (default), D-shot 150, D-shot 300, Oneshot125, and Multishot. D-shot protocols offer improved precision and noise immunity compared to older analog protocols.

- **Motor Direction:** After initial setup, verify motor direction using your flight controller's configurator software (e.g., Betaflight, Emuflight). Adjust motor direction in the BLHeliSuite/Configurator if necessary.
- **Calibration:** With digital protocols like D-shot, traditional ESC calibration is generally not required. However, always follow the specific instructions for your flight controller and firmware.
- **Power On:** Connect your LiPo battery to the drone. The ESC will typically emit a series of beeps indicating successful initialization.
- **Flight:** Ensure all pre-flight checks are completed before arming your drone.

6. Maintenance & Care

- Keep the ESC clean and free from dust, dirt, and moisture.
- Regularly inspect solder joints and connections for any signs of damage or corrosion.
- Avoid exposing the ESC to extreme temperatures or direct sunlight for prolonged periods.
- Ensure adequate airflow around the ESC during operation to prevent overheating.
- If the ESC gets wet, disconnect power immediately and allow it to dry completely before re-applying power.

7. Troubleshooting

- **No Power:** Check battery connection, power cables, and ensure the battery is charged.
- **Motors Not Spinning:** Verify motor connections, signal cable connection to the flight controller, and check motor direction in the configurator. Ensure ESC firmware is compatible and correctly flashed.
- **Erratic Motor Behavior:** This could indicate a loose connection, damaged motor, or incorrect ESC settings. Recheck all connections and ESC parameters.
- **Overheating:** Ensure proper ventilation. Check for short circuits or excessive current draw from motors.
- **ESC Not Detected:** Confirm USB connection to the computer and ensure the correct drivers are installed. Try a different USB port or cable.

8. Warranty & Support

For warranty claims, technical support, or further assistance, please contact your retailer or the manufacturer directly. Keep your proof of purchase for any warranty-related inquiries. Detailed contact information can usually be found on the manufacturer's official website or product packaging.