



K100 Electronic Speed Controller User Manual

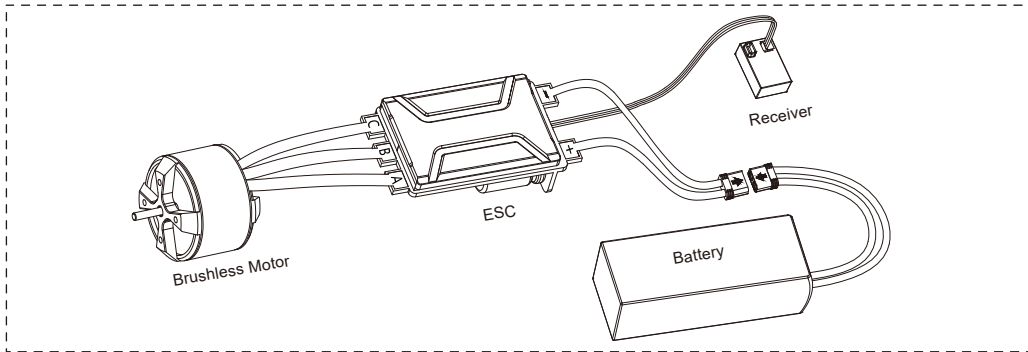
Product Features

- 1.ARM 32-bit Cortex-M4 MCU, running at up to 120 MHz.
- 2.High-voltage-resistant, low-RDS (on) MOSFETs capable of handling high currents.
- 3.BLHeli-32 firmware, ultra-fast response and outstanding performance.
- 4.Wide voltage compatibility supporting up to 12S batteries, suitable for X-Class drones.
- 5.Compact size and lightweight design, ideal for drones with narrow arms.
- 6.Damped light regenerative braking improves efficiency. It enables faster motor deceleration when throttling down, greatly enhancing stability and agility.
- 7.Aluminum alloy heat sink to slow down temperature rise.

ESC Specifications

Supported LiPo Cell Count	5~12S
Supported Throttle Protocols	Standard PWM (1~2 ms pulse width, throttle calibration supported), Oneshot125 (125~250 μ s), Oneshot42 (42~84 μ s), Dshot150 (6.67 μ s), Dshot300 (3.33 μ s), Dshot600 (1.67 μ s);
Continuous Current	100 A (under adequate heat dissipation conditions)
Dimensions (L*W*H)	55.0*30.0*21.5mm
Weight	Approx. 40 g (including electrolytic capacitors)
Operating Ambient Temperature	-20 ~ 65 $^{\circ}$ C

ESC Connection



Adjustable Parameters (Configurable via BLHeliSuite32 v32.9.6)

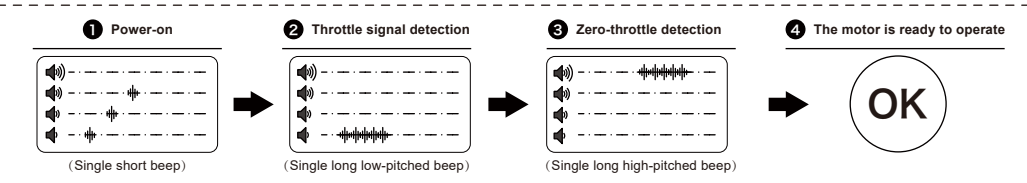
- 1. Rampup Power**
Adjustable from 3% to 150% relative value. This sets the maximum allowable power during startup and acceleration. Power output is limited at low RPM to facilitate low back EMF voltage detection.This parameter also affects bidirectional operation by capping power output during direction switching. Actual startup power is subject to throttle input and cannot drop below one-quarter of the set rampup power value.
- 2. Motor Timing**
Adjustable from 1 $^{\circ}$ to 31 $^{\circ}$. A medium timing value works for most motors.If the motor runs roughly, increase the timing angle. For high-inductance motors with long commutation demagnetization time, the motor may stall or operate jerkily if you quickly increase throttle at low RPM. Increasing the timing angle can alleviate this problem, as higher timing allows longer demagnetization time during commutation.
- 3. PWM Frequency**
The motor PWM frequency can be configured to 16 kHz or higher. Higher PWM frequencies deliver smoother motor operation, yet it may cause obvious throttle fluctuations when you slightly adjust the throttle.
- 4. Demag Compensation**
A protective function to prevent motor stall or jitter during rapid throttle ramp-up, especially at low RPM. While higher motor timing mitigates this issue, it sacrifices efficiency.Higher Demag compensation delivers stronger stall protection yet reduces peak power output if set excessively.
- 5. Maximum Acceleration**
Adjustable between 0.1%/ms and 25.5%/ms; unlimited acceleration can also be selected.The acceleration limit avoids out-of-sync faults caused by inconsistent power ramp-up. For example, a setting of 10%/ms restricts power increases to a maximum of 10% per millisecond.
- 6. Motor Direction**
Options: Forward, Reverse, 3D Bidirectional, 3D Bidirectional Reverse, Soft Bidirectional, Soft Bidirectional Reverse.
In bidirectional modes, the throttle midpoint serves as zero output: forward rotation above midpoint, reverse rotation below midpoint. Throttle calibration function cannot be used when bidirectional mode is selected.

Disclaimer

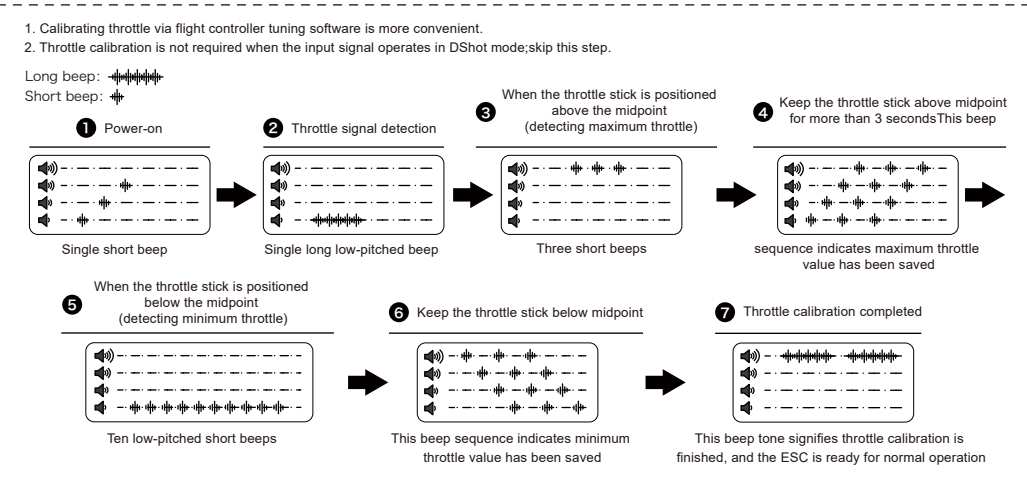
Thank you for choosing this product. Please carefully read this manual before using this product.
Using this product indicates you agree with all the terms in this manual.Please strictly follow these items during usage. We'll not commit any responsibility including but not limited to indirect loss or joint responsibility caused by improper usage, private modification and other faults.

- 7. Startup Beep Volume**
Adjusts loudness of the power-on startup tone.
- 8. Beacon/Signal Volume**
Adjusts loudness of the warning beacon tone. The ESC triggers the beacon if the throttle remains at zero for a set duration. Note that high beacon volume may overheat the motor or ESC.
- 9. Beacon Delay**
Sets the waiting period before the warning beacon activates.
- 10. Throttle Cal Enable**
Disabling this function locks throttle calibration.
- 11. Min Throttle, Max Throttle & Center Throttle**
Defines the full throttle range; center throttle only applies to bidirectional operation. Standard input signal range is 900 μ s to 2100 μ s; proportional adjustment is required for other signal ranges. These settings have no effect on Dshot signals.
- 12. Thermal Protection**
Toggle enable/disable, with configurable temperature threshold. The ESC reduces motor power once temperature exceeds the threshold; power is capped at 25% once temperature rises 15 $^{\circ}$ C above the threshold and will not drop further.
- 13. Low RPM Power Protect**
Toggle enable/disable. Disabling full power restriction at low RPM allows low-KV motors to run at full power under low voltage, yet raises risks of desync and overheating of motors/ESCs.
- 14. Brake on Stop**
Toggle enable/disable. When enabled, the motor will apply drag brake to lock rotation at zero throttle while powered on. This function only works if a valid zero throttle signal is received.
- 15. Music Note Config**
Supports custom startup melody programming.
- 16. Sine Modulation Mode**
Toggle enable/disable. Sine modulation boosts efficiency by several percentage points and delivers smoother motor operation.
- 17. Auto Telemetry**
When enabled, the ESC autonomously transmits telemetry data every 32 ms regardless of external telemetry requests from the input signal.
- 18. Stall Protection**
Two options are available: Normal (protection enabled) and Relaxed (no protection). If the motor fails to start after attempts, the ESC will stop the startup process.

Normal Operation & Audio Cue Sequence



Throttle Calibration



Important Notes

- 1.Do not flash other firmware versions, otherwise the ESC may be damaged.
- 2.After connecting the ESC to the flight system, it will automatically detect the input throttle signal and switch to the corresponding throttle mode every time it powers on.
- 3.Throttle calibration is mandatory for first use or after radio equipment replacement (unnecessary for Dshot protocol).
- 4.Cut all power before plugging/unplugging any wiring connections.
- 5.When using Dshot mode, retain the ground wire of the original twisted signal cable to guarantee stable signal grounding.