



40AMP BRUSHED C&B WATERPROOF SPEED CONTROLLER - USER MANUAL

KN-BRUSH40-CRAWBT

Thank you for purchasing this product! We strongly recommend reading through this user manual before use. Because we have no control over the use, installation, or maintenance of this product, no liability may be assumed for any damage or losses resulting from the use of the product. We do not assume responsibility for any losses caused by unauthorized modifications to our product. Besides, we have the right to modify our product design, appearance, features and usage requirements without notification. We are only responsible for our product cost and nothing else as result of using our product.

WARNINGS

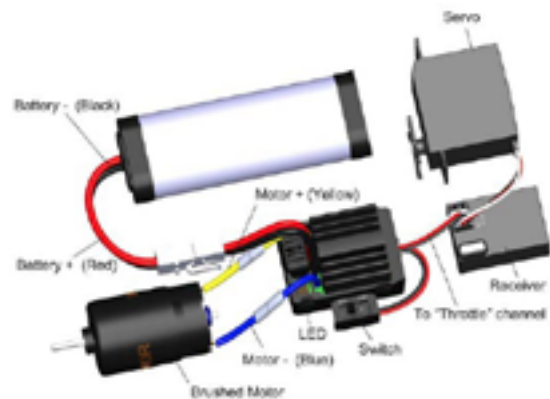
- To avoid short circuits, ensure that all wires & connections must be well insulated and there is no issue like poor contact, sold joint exists before connecting the ESC to related devices.
- Read through the manuals of all power devices and chassis and ensure the power configuration is rational before using this unit.
- To avoid accidents, we strongly recommend holding the vehicle in the air during the connecting and adjusting process.
- Stop immediate usage once the casing of the ESC exceeds 90°C/194°F as this may cause damages to both the ESC and motor.
- Users must always disconnect the batteries after use as the current on the ESC is consuming continuously if it's connected to the batteries (even if the ESC is turned off). The battery will completely be discharged and may result in damage to the battery or ESC when it's connected for a long period of time. This WILL NOT be covered under warranty.

FEATURES

1. Fully waterproof and dustproof for all weather conditions. (Note: please clean and dry it after use for avoiding rusty connectors.)
2. New algorithm, specially programmed for cars & boats, guarantees excellent throttle linearity, brake linearity and control performance.
3. Features adjustable drag brake (0% and 100%), you can adjust it by yourself as per the terrains, personal preference and etc. 100% drag brake is applicable to crawlers, the 0% drag brake is applicable to boats.
4. Built-in switch-mode BEC with cont. /peak current of 3A/6A for usage with most servos on the market.
5. Multiple protections: low-voltage cutoff protection, thermal protection, throttle signal loss protection, and motor lock-up protection.
6. Simple and easy ESC programming via jumper caps.

SPECIFICATIONS

Model	KN-BRUSH40 C&B
Cont. / Burst Current	40A / 180A
Input	2-3S LiPo, 5-9 Cells NiMH
Cars Applicable	1/10th Crawlers & Light-duty Boats
Motor Limit	2S LiPo: 540/550 Size Brushed Motor \geq 12T or RPM < 30000 @7.2V 3S LiPo: 540/550 Size Brushed Motor \geq 30T or RPM < 15000 @7.2V
BEC Output	6V@3A (Switch-mode)
Dimension & Weight	46.5mm*37.5mm*27.5mm / 67g



BEGIN TO USE

Step 1. Connect all the devices (as shown above) as per the motor you are using, and recheck all the connections before moving to the next step.

Notes: 1. swap the two wires from motor to ESC if you find the motor runs in reverse.

Step 2: Set the Throttle Range

This ESC can automatically recognize the neutral position of the transmitter, but you need to follow the following steps.

- 1) Turn on the transmitter and move the throttle stick/trigger to the neutral position.
- 2) With the ESC powered off, connect the motor, battery and other devices to it.
- 3) Turn on the ESC, when setting the "Battery Type" to "LiPo", the motor will beep two short beeps if you are using a 2S LiPo, three short beeps if you are using a 3S LiPo. If setting the "Battery Type" to "NiMH", the motor will beep one short beep, and a long beep 1 second later to indicate the self detection is over and it's ready to function.

Attention!

1. After turning on the ESC, you must wait (about 3 seconds) till the self detection completes. Otherwise, it may not function normally.
2. After turning on the ESC, if there is no power output and the Red LED flashes rapidly, then it means the actual throttle of the transmitter is not at the neutral position. In that case, please check if the "Throttle Trim" of the transmitter is at the "0" position, fine tune the throttle neutral position till the Red LED stops flashing.
3. To avoid any possible trouble, please always turn on the transmitter first and the ESC last; turn off the ESC first and the transmitter last.

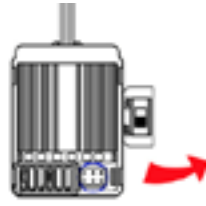
Step 3: The motor can function normally after the wiring & setting completes. The Red LED flashes in the following ways during the running.

1. The Red LED dies out when the throttle trigger is in throttle neutral zone.
2. The Red LED flashes rapidly when your vehicle runs forward and it turns solid Red when you pull the throttle trigger to the full throttle endpoint.
3. The Red LED flashes rapidly when your vehicle runs backward and it turns solid Red when you push the throttle trigger to the full brake endpoint.

ESC PROGRAMMING

The ESC has two programmable items, you can easily program them via jumper caps (as explained and shown below).

The first row is "Drag Brake", connecting one jumper cap to the two pins on the left will allow you to have 100% drag brake; connecting it to the two pins on the right will allow you to have 0% drag brake. The drag brake is 100% by default. Note: 100% drag brake are applicable to crawlers, 0% drag brake is applicable to boats, you can adjust it as per the actual condition. When setting the "Drag Brake" to 100%, the "Maximum Reverse Force" will be 100%, when setting to "0%", the "Maximum Reverse Force" will be 25%.



DRAG BRAKE	100%	0%
BATTERY	LiPo	NiMH

The second row is "Battery Type", connect the other jumper cap to the two pins on the left when you're using a LiPo pack, and connect it to the two pins on the right when you're using a NiMH pack. The "Battery Type" is "LiPo" by default, you can adjust it as per the actual condition.

PROTECTION FUNCTIONS

1. Low-voltage Cutoff Protection

When the "Battery Type" is set to "LiPo", the cutoff voltage for one cell is 3.2V. That means when you're using a 2S LiPo, the cutoff voltage for the pack will be 6.4V; the cutoff voltage for the pack will be 9.6V when you're using a 3S LiPo. When the "Battery Type" is set to "NiMH", the cutoff voltage (for the pack) is 4.5V.

The ESC will have the output when it detects the battery voltage has reached the threshold for 2 seconds, and cut off the output 2 seconds later. It will resume the 50% output when the throttle trigger is released to the neutral position, cut off the output 2 seconds later, resume the 50% output (when the throttle trigger is released to the neutral position), and then cut off the output 2 seconds later,this will continue (unless the battery is removed or changed). The Red LED flashes a single flash that repeats when the LVC protection is activated. Please try to charge the pack or change another one when the protection is activated, as long-time usage will cause the pack to over-discharge and be damaged.

Note: please check if you've set the "Battery Type" properly when the low-voltage cutoff protection can easily get activated. If you've set the "Battery Type" correctly, then the issue is probably caused by the poor discharge capability of the battery. In that case, please try with a battery with better discharge capacity to see if the problem can be solved.

2. Thermal Protection

The ESC will directly cut off the output and the Red LED will flash a double flash that repeats when its internal temperature reaches the value (105°C/221°F) preset by the factory. You can use it again when the ESC temperature gets below 60°C/140°F.

Note: if the thermal protection can easily be activated, then the issue in general is caused by improper configuration. That's the ESC cannot meet the demand of the vehicle. In that case, please reduce the vehicle's load or change another ESC with higher continuous current.

3. Throttle Signal Loss Protection

The ESC will immediately cut off the output and the Red LED flashes rapidly when it detects that the throttle signals have been lost for 0.1 second.

Note: because the ESC works based on the throttle signals received from the transmitter, so its performance (after losing throttle signals) is closely related to the setting of your transmitter.

TROUBLESHOOTING

PROBLÈME	RAISON POSSIBLE	SOLUTION
The ESC was unable to start the status LED and the motor after it was powered on	No power was supplied to the ESC.	Check if all ESC & battery joints or connections have been well soldered or firmly connected
	The ESC switch was damaged.	Replace the switch
The ESC was unable to start the motor but the Red LED flashed rapidly after it was powered on.	The neutral position on the transmitter was moved or changed.	Re-calibrate the throttle range or fine tune the throttle trim to make the neutral position on the transmitter match the existing neutral position of the ESC.
	The throttle control cable was reversely plugged in.	Check if the throttle cable has been reversely plugged in.
The vehicle ran backward when you pulled the throttle trigger towards you.	The motor-to-ESC wiring order was incorrect.	Swap the two wires from motor to ESC.
The motor suddenly stopped spinning in operation.	The throttle signals were lost.	Check the transmitter and the receiver.
	The LVC protection or the thermal protection was activated.	The Red LED would flash a single flash repeatedly. Please check the battery voltage and the ESC temperature.
The motor accelerated suddenly, stuttered or stopped during the starting-up process.	The discharge capacity of the pack was insufficient.	Change another pack with better discharge capability.
	The RPM was too high, the gear ratio or FDR was improper.	Change another motor with lower RPM or increase the gear ratio or FDR.



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