



Product no:#8060

ACE RC BLC-40C Brushless ESC

Features

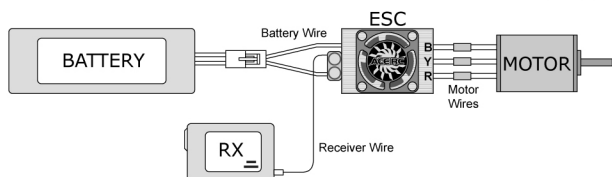
1. High power, high efficiency, low weight, compact size.
2. Automatic cut-off, auto neutral setting and auto detection of all types and number of cells.
3. Perfect design for direct drive applications. The motor will respond to throttle input & accelerate instantly. The ESC features immediate motor power cut-off function when the battery voltage drops. Move the throttle to the neutral position & then push throttle forwards, the car will run again. Repeat above actions until the voltage has been dropped to its battery specific low cut-off voltage, the motor will be then completely shut down.
4. Thermal protection – The motor will be intermittently turned off when the temperature reaches around 95°C. The use of the cooling fan is recommended.
5. Fail safe mode – While detecting any abnormal signals or signal failure between transmitter & receiver for about 2 seconds, the controller will cut off the motor power automatically. Once the signal gets back to normal, the system will be turned on automatically again.
6. ESC Set-up card- This card can be helpful for changing ESC's setting in a user-friendly way. For more information, please see the instruction manual of the ESC Setting Card.

Specifications

1. Input voltage: 7.2V (Ni-cd & Ni-MH) 7.4V~11.1V(Li-po)
2. Output: Max. 360w/40sec, 60A (at 25°C) 54A (at 70°C) under good ventilation
Support:
A < 5000KV 540S(36X50) motor (1/10 car)
B < 4000KV 540S(36X50) motor (1/10 cross-country car)
3. BEC: 5V 2A low distortion regulator IC, 5V 1A x 2 parallel
4. Mosfet (inner resistance): 0.0166mΩ
5. Weight: 66g (with wire, connector and fan)
6. Dimension: 46mmx28.8mmx31.5mm(with fan)
7. Low power auto-cut table

| Battery/ volt | 7.2V | 7.4V | 11.1V |
|---------------|------|------|-------|
| Ni-cd | 5.4V | | |
| Ni-MH | 5.4V | | |
| Li-po | | 6.0V | 9.0V |

Installation and Set-up



1. Install the ESC according to the diagram shown above. Switch on the transmitter first, and then switch on the ESC power.
2. Once the ESC is switched on, it will denote a series sound indicating the ESC is actuating. Adjust the throttle trim to get the best neutral position. When neutral is set, it will be denoted by another confirmation sound. If it fails to set up neutral, the confirmation sound will not be heard. In such a case where neutral is unable to be set, re-do & re-check the system again starting from Step 1 of these instructions. This ESC is applicable to transmitters with either 50/50 or 70/30 throttle/brake movement range.
3. Confirm that the throttle forward direction coincides with the ESC forward direction. Lift the car off its wheels. Move the throttle forward and watch the wheel's rotation direction, then move the throttle backwards and see if the system brakes.
4. If the wheels' movement coincides with the throttle input then the setting is correct. If the movement is opposite then switch off the ESC, change the setting on the transmitter's throttle reversing switch, and go back to Step 2.
5. Motor rotation direction - Slowly apply throttle to check if the motor is rotating in the correct direction you expect. To reverse the direction of the motor, switch any two of the motor wires. **Note: Do not reverse the battery wire connections! Reversing the battery polarity will permanently damage the ESC.**

6. For the first trial run, start with a smaller gear motor for 2~3 minutes then monitor the temperatures of both the ESC & motor. If both temperatures are similar to each other, they are at good match. The gear ratio can then be properly adjusted to the desired optimum ratio depending on the type of car and track. However, it is very important to always keep both temperatures under 95 °C, when selecting a gear ratio. A higher gear ratio (larger pinion or smaller spur gear) will increase the system temperature. Running the system at increased temperatures will cause demagnetization of the motor will start to result in a dramatic drop of motor efficiency.
7. It is ok to replace a higher gear ratio or a higher KV motor if the temperature is kept under 80 °C but it should be done in accordance to the instructions in Step 6. Start from a lower ratio then incrementally adjust higher. Battery selection is also an important consideration. Changing to a higher voltage battery will require a lower KV motor and/or a lower gear ratio, unless the original motor has a low enough KV rating to begin with. The ESC will be burn out if the motor and gear ratio does not match the input voltage properly. See the example below showing how battery voltage affects power output.

Input 7.2V, internal resistance 0.18Ω---40A
(V/R=I 7.2/0.18=40A)

Input 11.1V, internal resistance 0.18Ω---61.6A
(V/R=I 11.1/0.18=61.6A)

Operating Instructions

■ Driving forward

With the car at rest, move the throttle full forward and the car will be in so-called "Hard Start" mode with a very fast initial start without any delay on accelerating. The car will reach the full speed from still in the shortest time. The motor perfectly responds to the signal of acceleration instantly.

(User can use the ESC setting card to set the level of forward driving power, there are 4 modes to select from. Default has been set in standard mode. For more information, please see the instruction of ESC setting card.)

■ Braking

The brakes will be actuated by reversing the throttle direction while driving forwards. Braking power is modulated by the amount of throttle input in the brake/reverse direction. The maximum braking power can be adjusted using the transmitter EPA. (Depends on the functions of the chosen transmitter, for details please consult the instructions of your transmitter). The brake efficiency will be also influenced depending on whether the reversing function is switched on. See section "Driving backwards".

■ Driving backwards

Reverse is actuated by moving the throttle to the brake/reverse direction after the car has come to a stop. Reverse speed is modulated by the amount of throttle input in the brake/reverse direction. While the car is still moving forward, the brakes will be actuated when the throttle is moved in the brake/reverse direction. Reverse will not engage until the wheels have come to a stop.

(User can use the ESC setting card to set the level of driving power, there are 3 modes to select from. Default has been set in standard mode. For more information, please see the instruction of ESC setting card.)

■ Over temperature protection

Motor will be intermittently turned off if the temperature reaches around 95°C. The cooling fan is recommended in order to enhance the ESC ventilation.

Warning

1. Once the battery pack is connected, handle the model with extreme care; make sure body parts and clothing are clear of all rotating parts.
2. Be sure to turn off the ESC power before plugging / un-plugging the setting card
3. **Connect the battery pack just before driving and disconnect immediately after driving. When the car is not in use, do not leave the battery connected or unattended over long periods of time.**
4. Always make sure you are connecting the ESC to a proper power source that has the correct voltage & polarity. Incorrect voltages or reversed polarity will damage the ESC.
5. Avoid touching the ESC heat sink or motor casing right after operation to prevent burns



產品料號：#8060

車用無刷ESC使用說明書 BLC-40C

簡介

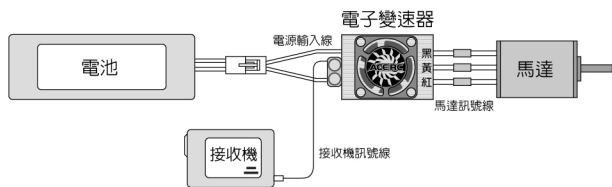
本型電子變速器(以下簡稱ESC)所支援的馬達規格,依車型配合的馬達Kv值有所不同,由於馬達所標示的Kv值實際上是依馬達內部繞線的匝數及線徑和繞法來決定馬達轉數,最終都會回到關鍵的問題,就是“內部阻抗”一般都稱內阻,無刷ESC跟馬達要有良好的使用效率的話兩者的阻抗匹配非常重要,所以建議不要輕易嘗試使用高出ESC所標示規格太多的馬達來搭配這個電子變速器,很容易使ESC燒毀,而且各型車種的重量及齒輪終傳比不同,建議應該由較輕的齒輪比先測試,再由電子變速器跟馬達的溫度來判斷目前的搭配是否最佳化,以下規格供使用者參考。

規格

- 輸入電壓：7.2V (Ni-cd & Ni-MH) 7.4V~11.1V(Li-po)
- 輸出能力：
 - 支援5000KV以下540S(36X46)馬達(1/10電房車)
 - 支援4000KV以下540S(36X46)馬達(1/10越野車)
- FET規格：25度時60A,瞬間最大90A(以上數據為FET規格,需在有良好的散情況下的數據)
- BEC：5V2A低壓差線性穩壓IC 5V1A x 2並聯
- 過溫保護：全時溫度偵測溫度達98(+3~5度)度時啟動保護功能
- 最大輸出功率：360W/40sec
- 尺寸/重量：46mmx28.8mmx31.5mm(含風扇)/66g(含線材插頭及風扇)
- 截止電壓：請參考下表

| 電池/電壓 | 7.2V | 7.4V | 11.1V |
|-------|------|------|-------|
| Ni-cd | 5.4V | | |
| Ni-MH | 5.4V | | |
| Li-po | | 6.0V | 9.0V |

接線及設定



- 請依上圖所示接線,完成後打開發射機的電源,再開ESC的電源,(先確定遙控器的“前進”定義與ESC的“前進”定義是否一致,請先將遙控車墊高,使四個輪子可以空轉)打開後ESC會先發出一組開機音,接著自動抓取中立點,完成後會再發出確認音,如果沒有確認音,即表示ESC沒有抓到中立點尚未完成設定,請檢查發射機電源是否開啟,若沒有時請將它打開即可自動偵測,並支援50%:50%及70%:30%的遙控器切換模式,自動完成中立點設定。
- 輕推遙控器上的油門撥桿往前進方向推,先不管車輪是否正轉,只要馬達有起動運轉即可,然後迅速將油門控制撥桿推到後退的位置不要放開,如果是呈煞車狀態,表示目前遙控器的前進定義與電子變速器的定義一致,(如果只有停頓一下就立即反轉,表示遙控器與變速器的定義相反,請將遙控器上油門位置的正反轉開關切到相反方向)放開油門控制撥桿使它回到中立點,關掉ESC電源再重新開啟,重新抓取中立點後,再往前進方向推一次,此時遙控車應呈前進狀態,請檢視車輪旋轉方向是不是在前進,如是即表示目前所有設定都是正確,可以下場試車了,如果這時車輪旋轉方向是後退,請將電子變速器連接到馬達的三條輸出線中的任意兩條對調,即可改變馬達的運轉方向了。(在大部份情況下油門正反轉設定跟ESC的設定相反時ESC不會抓取中立點,不同廠牌的遙控器會有不同的差異)。注意!!!應注意電源輸入端的極性不可逆接,一旦逆接會使ESC產生嚴重的短路並燒毀。
- 先用較小齒數的馬達齒安裝,試跑2~3分鐘後檢查一下馬達跟ESC的溫度是否會相差很多,如果兩者的溫度相近表示目前搭配適合,可依據場地賽道的特性來改變齒比,但仍須留意ESC及馬達的溫度,建議應該把溫度控制在攝氏95度以內,超過攝氏100度時馬達的磁鐵其實已會開始退磁,整體效率也會開始下降,導致馬達溫度快速上升,銅線阻抗也開始變大,反而消耗掉電池的部份電量,變成熱消耗掉而已。

- 若兩者溫差過高時,就要依據ESC或馬達兩個何者較高來做一些調整,如果ESC的溫度在約攝氏80度以內,表示可以加大馬達齒輪比或換用Kv值略大的馬達試試看,以增加車速,但同時也要注意馬達溫度,同樣把握一個原則,先用較輕的齒比搭配,再依兩者的溫昇來調整齒比。如改用較高電壓的電池時一定要換較低Kv值的馬達或更換較輕馬達齒輪比,因為同一個馬達的內部阻抗是固定的,若使用不同的電壓輸入的話其消耗電流會有很大的不同,沒有注意ESC的規格隨意配用馬達或變動輸入電壓的話很容易使ESC燒毀,以下為一個簡例說明:

輸入電壓7.2V時,一個內阻為0.18Ω的馬達會消耗40A的電流
($I=V/R$ 即 $7.2/0.18=40$)=288W

輸入電壓11.1V時,一個內阻為0.18Ω的馬達會消耗61.6A的電流
($I=V/R$ 即 $11.1/0.18=61.6$)=684W

輸入電壓雖然只提高3.9V,但是功率卻多了一倍,所以我們強烈的建議使用者在使用較高電壓前一定要先檢查ESC的溫度,同時降低馬達的Kv值,再依兩者的溫昇來調整齒比。

操作方法

- 前進**：操作遙控器上的油門撥桿往前推(槍控型則往後勾)可使車子前進,起動快速,加速不延遲的特性,即一般所謂硬起動的方式,使馬達從靜止狀態加速到全速耗時最短,符合即時加速反應的需求,低電壓的CUT方式為關閉輸出使馬達停止運轉,待油門控制撥桿回到中立點後再加油動作時才會重新啟動馬達。(前進的啟動功率可經由設定卡調整大小,共有4種模式可選擇)
- 煞車**：車子前進中將油門控制撥桿推到後退時即可煞車,可以以點煞方式煞車。除非車速下降到一定程度或輪胎打滑,否則不管點煞幾次都可以,馬達不會反轉。煞車強度可經由遙控器的動作行程調整(有支援此功能的遙控器才能)煞車力道,但有開啓後退功能的話會同時影響後退功率。
- 後退**：車子靜止中或慢速滑行時將油門控制撥桿推到後退,即可使遙控車後退,後退車速可以用油門撥桿的推量來做比例式的控制,後退中將遙控器上的油門撥桿往前推時馬達會立即反轉,只做短暫的煞車。(後退功能及功率可經由設定卡調整開啓或關閉及功率大小,共有3種模式可選擇)
- 過溫保護**：本ESC內部設有溫度檢知功能,並設定95度時啟動過溫保護,以避免ESC因過溫操作而燒燬。本型ESC有外接風扇的插座,可以選購散熱風扇組來改ESC的過熱問題。

注意事項

- 請務必使用具有防止極性逆接(防呆)保護的電源端插頭,因為一旦輸入端的正負極性逆接時會對本ESC造成毀滅性且無法修復的損害,因此在本ESC的電源輸入端設有辨識二極體,在發生極性逆接時,該零件會一併燒毀,在此狀況下,本公司將不負責保固及保修責任,所以請一定要確定極性正確無誤後才送電,尤其是在首次使用或更換過接頭及使用新電池時,最好能先行確認極性是否有誤。
- 使用設定卡時需確實關閉ESC的電源開關,再自接收機上抽出ESC的伺服線,按照正確極性插上設定卡,設定完成後同樣須先關閉電源開關,再將伺服線插回接收機上。
- 如須延長輸入或輸出端的線長時,其線徑規格不可比現在的線徑規格小,較小的線徑在大電流情況下,銅線的阻抗造成的損耗是以平方倍增加,造成導線發熱和電壓下降,另外,選錯連接插頭也是造成壓降常見的原因之一,壓降太大常造成馬達轉速無法全速,導線發燙。
- 如發生在輸入端則常造成低電壓截止點提早。本型ESC有外接風扇的插座,可以選購散熱風扇組來改善ESC的過熱問題。遙控車的馬達及ESC的散熱蓋在操作過程或操作後會產生高溫,請小心勿觸碰,以避免燙傷。
- ESC的輸入端插頭如需更換或延長時須注意線徑和插頭規格,額定電流不可比現在的規格小,以免發生插頭接觸不良或融化及提早斷電等現象。
- 不建議將電池接線不經接頭而直接焊在ESC器上,應有插頭做隔離,以確保萬一發生短路或ESC燒毀時,可以斷開隔離電源。
- 請務必於操作完後,將電池插頭拔除,以避免發生危險!並請勿於電池未斷電前,就將產品儲放於未能留意之處。