



Product no: #8066 BLC-70C
#8067 BLC-30C

ACE RC Brushless ESC

Introduction

The "Plug & Play" ACE RC BLC series brushless motor ESC delivers top performances and efficient power in a compact and easy-to-tune system built for 1:10 on / off road rc cars.

Features

1. LiPo programmable low-voltage cutoff
2. High performance anodized aluminum heat sink
3. Proportional braking for great control off-power
4. Huge amount of continuous power handling
5. Smooth startup and run with sensorless motors
6. Reversing ESC with programmable reverse lock-out for racing
7. Extremely light weight
8. Durable on/off switch
10. Automatic initial programming
11. Ability to easily adjust ESC parameters with program card

Specifications

ESC No.	No.8066	No.8067
Description	BLC-70C ESC	BLC-30C ESC
BL motor type	Sensorless	Sensorless
Continuous current	70A	30A
Input voltage	6V~7.4V(2S LIPO)	6V~7.4V(2S LIPO)
Over temperature protect	YES	YES
Motor limit @7.4V	540-5000KV	540-3500KV
Pulse frequency	1KHz	1KHz
BEC	6V@2A	5V@2A
Dimension (mm) w/o cooling fan	25 x 51 x 13.5	38 x 32 x 19
Weight (g)	66g	50g
Recommendation	1:10 on/off road	1:10 on road

Low power battery auto cut-off voltage

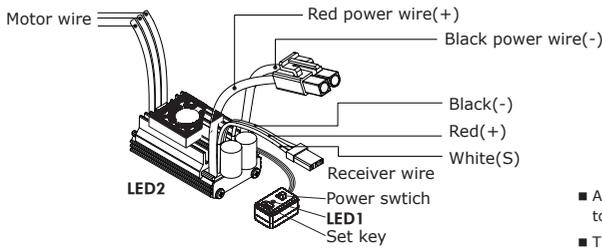
Battery	7.2V	7.4V	6.6V
Auto	Initial Detected Voltage x 70%		
Ni-cd/ NIMH	5.4V		
Li-po		6.0V	
Li-Fe			4.8V

Contents

All ACE RC brushless motor ESC include ESC, on/off switch, ESC program card and cooling fan. ACE RC brushless motor ESC. Delivering much more!

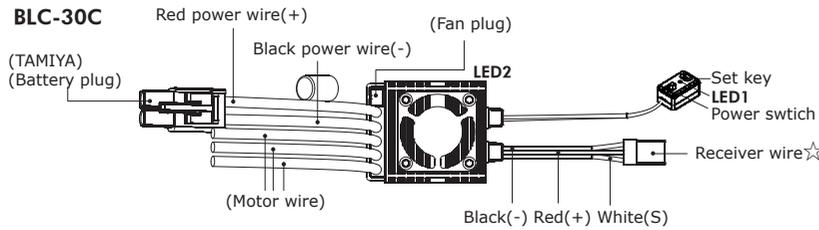
Installation

BLC-70C



- Actual contents of ESC are subject to change without notice.
- The vented fan and set-up card of the ESC are not included in some of the ready set model(RTR/ATR).

BLC-30C

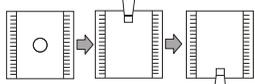


☆Receiver plug, plug into Ch2

Polarities only match with JR & Futaba receiver. Be careful to check for other brand receivers before plugging.

1. Wiring ESC according to above diagram.
2. Switch on the transmitter.
3. ESC denotes a sound and starts setting neutral.
4. Denoted by another confirmation sound after succeed in setting neutral.

Refer to the left test sequence right above setting is completed: Push the throttle trigger forwards, quickly pull the throttle trigger backwards & hold it, If the system keeps braking, the throttle direction test is ok. Otherwise, if it drives reversely, the throttle and ESC forward direction does not coincide with each other.



Neutral → forward → backward

Change the throttle reverse switch of the transmitter, turn off & then turn on the ESC power again will correct the problem.

LED status table

(* LED blinking speed becomes fast when ESC speed raising)

Status	Neutral	Forward	Full throttle	Brake	Backward	Full backward
LED2	Green	Red blinking*	Red	Red and Green blinking	Green blinking*	Green

Status	Neutral position is abnormal	Throttle signal lost	Low power cut-off	Over Temperature	Motor wire connection is abnormal
LED2	Green / Red flash	Red flash 1 time	Red flash 2 times	Red flash 3 times	Red flash 4 times

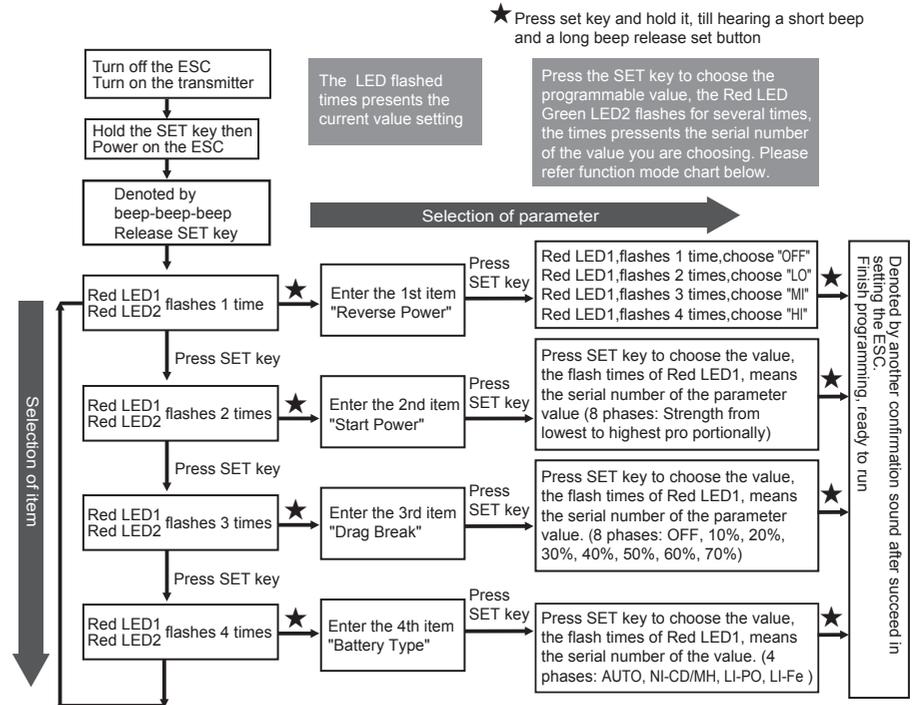
Safe gear ratio test

1. 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

$$(V/R=I \ 7.2/0.18=40A) .$$

Set-up procedure



NOTE:

1. The other Led1 is on the ESC switch can only display a red color.
2. Led2 mounted on the ESC can display green or red.
3. Red LED1, Red LED2 → Item select mode
4. Red LED1, Green LED2 → Parameter setup mode
5. Please connect motor, when execute set-up

(The gray highlight are default setting)

Item	LED blinking times	Parameter							
		1	2	3	4	5	6	7	8
Reverse Power	1	OFF	LO	MI	HI				
Start Power	2	1 lowest	2	3	4	5	6	7	8 highest
Drag Break	3	OFF	10%	20%	30%	40%	50%	60%	70%
Battery Type	4	AUTO	NI-CD/MH	LI-PO 7.4V	LI-Fe				

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.

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 forwards, 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.

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.

Manufactured by

THUNDER TIGER CORP.

<http://www.thundertiger.com>



產品料號：#8066 BLC-70C
#8067 BLC-30C

車用無刷ESC使用說明書



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

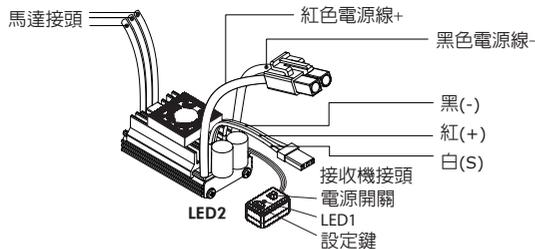
產品名稱	BLC-70C ESC	BLC-30C ESC
產品料號	8066	8067
支援無刷馬達種類	無感馬達	無感馬達
持續負載電流	70A	30A
輸入電壓	6V~7.4V(2S LiPO)	6V~7.4V(2S LiPO)
過載保護	YES	YES
支援馬達種類@7.4V	540-5000KV	540-5000KV
輸出頻率	1KHz	1KHz
BEC	6V@2A	5V@2A
尺寸(長x寬x高)(mm)	25 x 51 x 13.5	38 x 32 x 19
重量(g)	66g	50g
建議車種	1:10越野車/房車	1:10房車

電池低電壓保護

電池種類	7.2V	7.4V	6.6V
Auto自動偵測	(Initial Detected Voltage x 70%)		
鎳鎘/鎳氫Ni-cd/NIMH	5.4V		
鋰電池		6.0V	
鋰鐵電池			4.8V

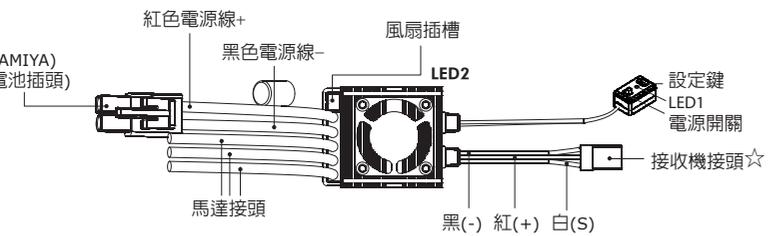
安裝說明

BLC-70C



■速控器實際內容變更將不另行通知。
■部分完成套件模型(RTR/ATR)之速控器並不附散熱風扇及設定卡。

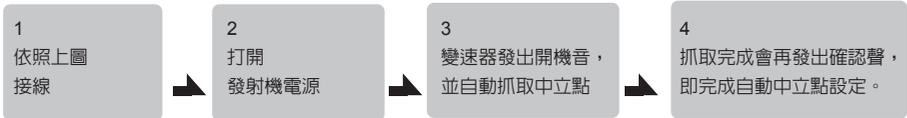
BLC-30C



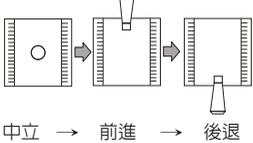
☆連接接收機線材到CH2

接頭僅支援JR&Futaba接收機

連接其他廠牌接收機前請先確定極性



完成設定後,接下來就是測試前進後退的方向是否正確。測試方向如左圖示:



將油門往前進方向推進,此時燈號應呈
如呈,表示遙控器油門(TH)正逆相反;此時需切換遙控器上註明REV(REVERSE)之切換開關。切換後再將變速器開關關閉再重新開啓。

LED狀態顯示

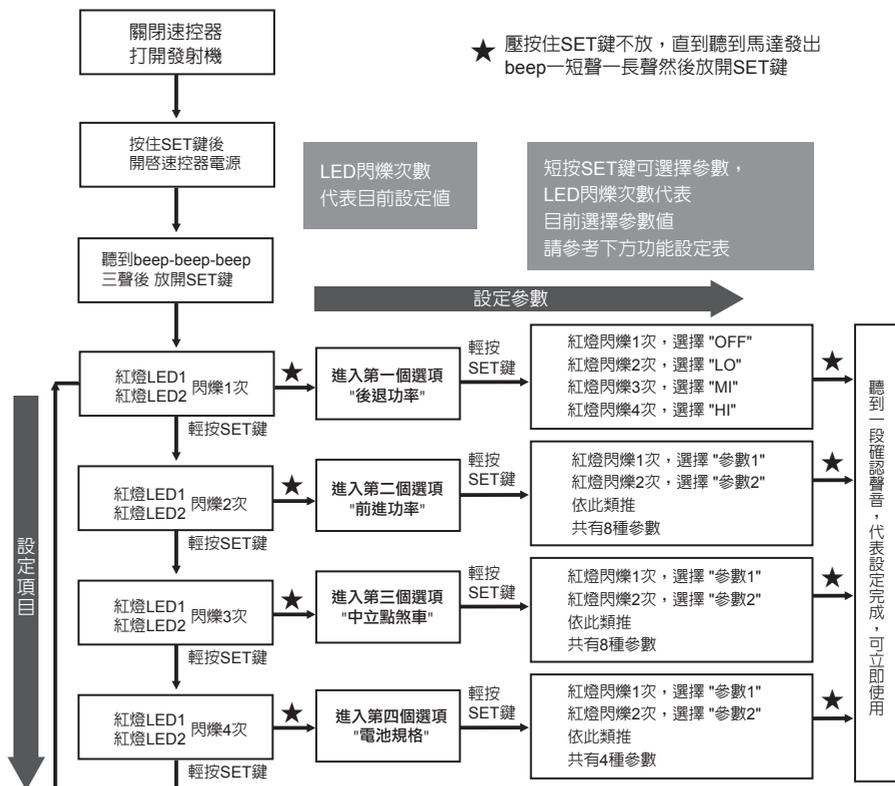
*LED閃爍速度會跟著油門速度增加

狀態	中立點	前進	全油門	煞車	後退	全後退
LED2	綠燈	紅燈閃爍*	紅燈	紅綠燈閃爍	綠燈閃爍*	綠燈

狀態	中立點不正確	油門訊號異常	低電壓保護	過溫	馬達線連接異常
LED2	紅綠燈交互閃爍	紅燈閃爍1次	紅燈閃爍2次	紅燈閃爍3次	紅燈閃爍4次

- 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度以內的話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,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

設定操作說明



備註:

- LED1在按鍵開關上只能顯示紅燈。
- LED2在速控器上可顯示紅燈或綠燈。
- LED1紅燈, LED2紅燈 → 項目選擇設定
- LED1紅燈, LED2綠燈 → 參數選擇設定
- 設定時需連接馬達,馬達會發出聲音,幫助辨別。

(灰色欄為出廠設定)

項目	LED閃爍次數	參數							
		1	2	3	4	5	6	7	8
後退功率	1	OFF	LO	MI	HI				
前進功率	2	1 最小	2	3	4	5	6	7	1 最大
中立點煞車	3	OFF	10%	20%	30%	40%	50%	60%	70%
電池規格	4	AUTO	NI-CD/MH	LI-PO 7.4V	LI-Fe				

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做加油動作時,才會重新啟動馬達。
- 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,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。
- 過溫保護: 本ESC內部設有溫度檢知功能,並設定95度時啓動過溫保護,以避免ESC因過溫操作而燒毀。本型ESC有外接風扇的插座,可以安裝散熱風扇組來改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,可以安裝散熱風扇組來改善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。
- 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。