NOVATECH
www.novatech-tw.com

B4820 CAR Brushless ESC Manual

Specifcation

1. Input Voltage:7.2V(NI-CD/MH) 7.4V(LI-PO) 6.6V(LI-FE)
2. Motor limit:Suport 540S Brushless Motor over 7.5R/7.4V(2S)
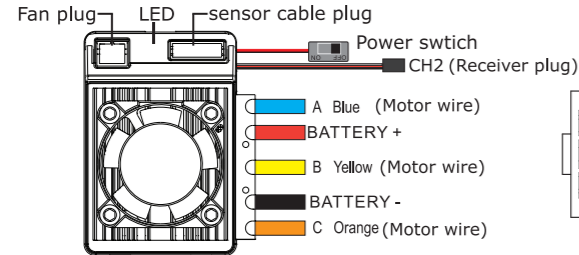3. BEC:6.0V/2.0A
4. Size/Weight:44.3mm×30mm×24.7mm/65g

Over temperature protection

The ESC will be turn off intermittently,when it reaches around 90 C/95 C/100 C/105 C (±3~5 C) by users setting.

Warning

1. Avoid touching ESC heat sink or motor casing right after operation for not burning your body or skin.
2. To avoid poor contact or overheat melting of connector and power abnormal cut off be sure to always use better current rated connector & wires while replacing the original ESC connector or elongating the connecting wires.
3. Connect the battery pack just before driving,disconnect & take it out the car immediately after termination.Don't soldrt ESC wires directly to the battery.A proper connector is a must to be used in brtween.
4. When using programming card(B6093), please turn off ESC Power and take the servo wire out of the receiver, then insert the set up card according to the electrode sign on the card. After setting programming card, needs to turn off power at the same time, then take servo wire into of the receiver.
5. Always make surt connecting the ESC to a proper power source that has the correct voltage & polarity.Incorrect voltages or reversed polarity will damage the ESC.Don't solder ESC wires directly to the battery.A proper connector is a must to be used in between.

ESC wiring diagrm

Fan plug   LED   sensor cable plug
Power swtich
CH2 (Receiver plug)

A Blue   (Motor wire)
BATTERY +
B Yellow (Motor wire)
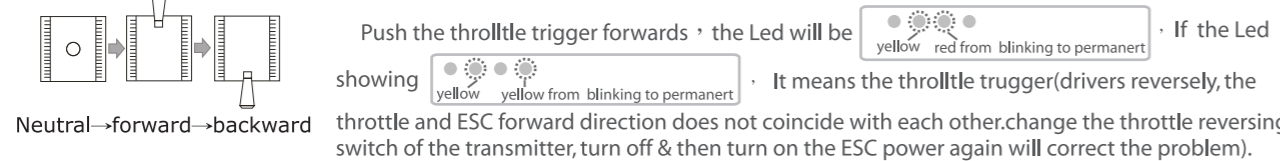BATTERY -
C Orange (Motor wire)

sensor cable

Receiver plug,plug into Ch2
Polarities only match with JR & Futaba receiver
Be careful to check for other brand receivers before plugging.
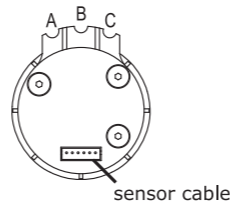
Test of throttle direction conincidence

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 throltle trigger forwards，the Led will be [yellow red from blinking to permanent]，If the Led showing [yellow yellow from blinking to permanent]，It means the throltle trugger(drivers reversely,the throttle and ESC forward direction does not coincide with each other.change the throttle reversing switch of the transmitter, turn off & then turn on the ESC power again will correct the problem).

Neutral→forward→backward

Check the function

Led Display	Throttle	Forward	Backward
	yellow yellow	yellow red from blinking to permanert	yellow yellow from blinking to permanert

Led Display	Neutral doesn't saved	RX Signal interrupt	Over heat
	yellow blinking	yellow yellow and red blinking	red flashes yellow

### Safe gear ratio test

※Firstly, trial running starting with a small gear motor for 2~3 minutes, measure the temperatures of both Esc & motor. If both temperatures are close with each other, they are at good match. The gear ratio can then be properly adjusted to optimum according to the features of the courses. However, It's very important to always keep both temperatures under 100 °c, while adjusting the gear ratio. Otherwise the demagnetization of the motor will happen, the motor efficiency will drop dramatically & the temperature will also raise up very quickly. Most battery power is now wasted on heat nothing on motor efficiency.

Input voltage	resistance	waste current
7.2V	0.18Ω	40A
11.1V	0.18Ω	61.6A

(V/R=1 7.2V/0.18Ω=40A)
(V/R=1 11.1V/0.18Ω=61.6A)

※It's ok to replace a higher gear ratio or a higher KV motor while the temperature of the ESC is under 80 °c. But it should be done according to para 6 described, from small to bigger. Unless the KV value of the original motor is very low enough, It should replace a motor with lower KV value when the input battery voltage is changed to a higher level. The ESC will be burnt if the motor doesn't be properly changed while input voltage is changed. See example by the side of lest on the current changed inside motor while input voltage is changed.

B6093 PROGRAMMER MANUAL

⊖⊕S

NOVATECH

MODE △ ▽ ENTER
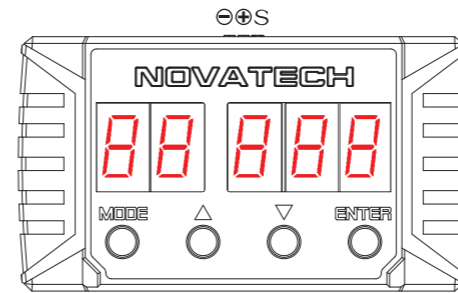
⊛ Linking

Plug servo wire into programming card,then turn on ESC. It would be linking immediately,the leds on the progamming care light up,and get a shorter sound of "Bi" from motor, then finish linking.

⊛ Information table:

LOAD : Loading the ESC setting information.
FILE : Save file that you set.

The Leds on the programming card will showing LORd when finish linking then.press enter button for loading.

LOAD / from ESC setting informations

It will showing the LED as below when loading setting informations from ESC:

⎯ ⎯⎯⎯ → UU UUU → UU UUU

When it finish loading , you will get 2 shorter sounds of "Bi Bi" from Motor then set options.

If want to select the save file.that you set before,please press the "MODE" button.when Leds on the programming card becomes "FILE" ,then press "ENTER" button get in FILE

FILE / Loading the saved file

0 —ESC`s default set.

1 ~ 15 — This is showing for the file that alveady deposited. EX:If it already save 5 files,it will showing 1 ~ 5 . You can press ▲ button to increase number or press ▼ button to decrease numbers,then press "ENTER" button to load the file that you select.

⊛ Setting information:

Button instruction:

MODE : Select / get into next item
  ▲ : It will stop when setting mode increase to its maximum.
  ▼ : It will stop when setting mode decrease to its maximum.

ENTER : get into / setting
It will loading to ESC,when setting item no. is 1 to 16
It will deposit setting mode to file.when setting item no. is 17
It will back to information table,when setting item no. is 18

Item 1 : Battery valtage check(V).this is read-only
Item 2 : ESC Max Temperature (°C),this is read-only.
Item 3 : Sensor motor Max Temperature(°C) ,this is read-only.
  ※ This programming card,only supports sensor motor

The model of parts as below is the default setting:

Item 4 : Start Power
No.	1	2	3	4	5	6	7	8	9
	-30%	-10%	0%	+10%	+20%	+30%	+40%	+50%	+60%
LED	-30	-15	00	10	20	30	40	50	60

Item 5 : Timing(Sensor only)
No.	1	2	3	4	5	6	7	8
	0.00°	3.75°	7.50°	11.25°	15°	18.75°	22.5°	26.25°
LED	00	375	750	112	15	187	225	262

Item 6 : Drag Brake Force
No.	1	2	3	4	5	6	7	8	9	10	11
	OFF	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
LED	OFF	10	20	30	40	50	60	70	80	90	100

Item 7 : ABS
No.	1	2	3	4	5	6	7	8	9	10	11
	OFF	5/sec	10/sec	15/sec	20/sec	25/sec	30/sec	35/sec	40/sec	45/sec	50/sec
LED	OFF	05	10	15	20	25	30	35	40	45	50

Item 8 : Max Brake Force
No.	1	2	3	4	5	6	7	8	9	10
	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
LED	10	20	30	40	50	60	70	80	90	100

Item 9 : Max Reverse Force
No.	1	2	3	4	5	6	7	8	9	10
	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
LED	10	20	30	40	50	60	70	80	90	100

Item 10 : Initial Force
No.	1	2	3	4	5	6
	= Drag Brake	10%	20%	30%	40%	50%
LED	dbF	10	20	30	40	50

Item 11 : Neutral Range
No.	1	2	3	4
	6%	9%	12%	15%
LED	6	9	12	15

Item 12 : Running Mode
No.	1	2	3
	Forward + Brake	Forward + brake +Backward	Forward + Backward
LED	Fb	Fbr	Fr

Item 13 : Over Heat Protection
No.	1	2	3	4	5
	OFF	90°	95°	100°	105°
LED	OFF	90	95	100	105

Item 14 : Select Battery Type
No.	1	2	3
	NiMh	LiPo	LiFe
LED	ni	LP	LF

Item 15 : Cut-off Voltage (V/cell) It doesn`t work for Ni-Mh,the default set of Ni-Mh is 5.6v
No.	1	2	3	4	5	6	7
	0v	2.4v	2.6v	2.8v	3.0v	3.2v	3.4v
LED	00	24	26	28	30	32	34

When this item has been revised,the next mode of cut-off Voltage will be ~ Ni-Mh:0V , Li-Po:3.2V , Li-fe:2.6V

Item 16 : Motor Reverse（Sensor only）
No.	1	2
	normal	reverse
LED	nor	rEu

Item 17 : Save file (It has priority to show the number which doesn`t saved,and will go back to item 1).

Item 18 : Top (It will go back to information table).

Update setting informations to ESC:

It will showing the LED as below when update setting informations from ESC.

_ _ _ _ _ → nn nnn → nn nnn

You will get five short sounds of Bi Bi Bi Bi Bi when it finishs loading.Then,please turn of ESC,and then take off the servo wire from progrmming card,plug the servo wire back into receiver.