

## USER MANUAL OF PROGRAM CARD

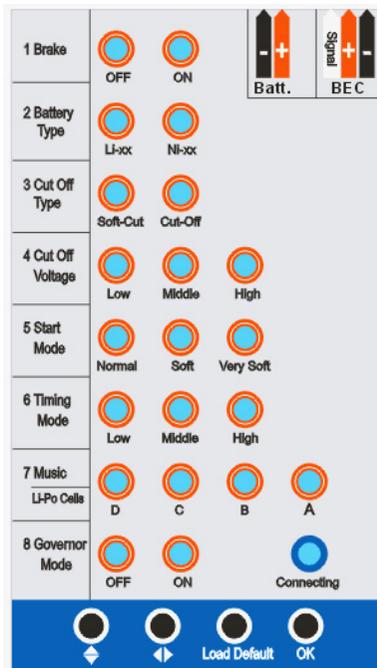
Thank you for purchasing program card for the brushless motor electronic speed controller (ESC). With this device, you can easily set the programmable value of the ESC. Now you can just forget the complex and boring program method with the throttle stick of your transmitter. This program card has a friendly user interface. It is as small as a business card, so you can put it in your pocket when you are on the field.

### SPECIFICATION

1. SIZE: 92mm \* 52mm \* 6mm
2. WEIGHT: 26g

### FRONT PANEL

1. Use “up/down” button to select the programmable item, use “left/right” button to select each item value;
2. Brake: When “Brake” is ON, the motor will be stopped immediately when throttle stick is moved to bottom;
3. Low Voltage Protection Mode (Cut-off Type): When “Soft-Cut” is selected, the ESC will gradually reduce the output power. When “Cut-Off” is selected, the ESC will immediately shut off the output power to the motor.
4. Low Voltage Protection Threshold (Cut-off Voltage):
  - ◆ For Li-xx battery (Li-ion or Li-poly), the number of battery cells are calculated automatically, Low / Medium / High cut-off voltage of each cell is: 2.6V/2.85V/3.1V. For example: 3S Li-Poly, when “Medium” cutoff voltage is set, the cut-off voltage is:  $2.85 \times 3 = 8.55V$ .
  - ◆ For Ni-xx battery (NiCd or NiMH), Low / Medium / High cut-off voltages is 0%/45%/60% of the initial voltage when the model is power on. (0% means the cut-off function is disabled)  
For example: 10 cell NiMH battery, fully charged voltage is  $1.44 \times 10 = 14.4V$ , when “Medium” value is selected, the cut-off voltage is :  $14.4 \times 45\% = 6.5V$ .
5. Music/Li-Po Cells:
  - The 4 LEDs have different meanings for ESC with or without a postfix letter of “HV”.
  - ◆ For ESC without a postfix letter of “HV”, for example, “Pentium-60A”, 4 LEDs have 16 possible states, representing 16 rhythms for ESC. The ESC will play the music when it is started. (Please refer to the Table 1 in the next page)
  - ◆ For ESC with a postfix letter of “HV”, for example, “Pentium-90A-HV”, 4 LEDs



represent the number of lithium battery cells (Please refer to the Table 2 in the next page)

### WIRING SEQUENCE

#### A) When you are using an ESC with a built-in BEC (Battery Elimination Circuit)

1. Disconnect the main power pack from the ESC
2. For normal ESC with the built-in BEC, (Supports 2-6 cells Lipo battery), please disconnect the BEC cable (trio wires) of the ESC from your receiver, then connect it to the program card at the top right corner position marked with “BEC”.
3. Connect the main power pack to the ESC
4. The LEDs on the program card will light to show the current programmable values of the ESC



**NOTE1: THE SEQUENCE OF STEP 2 AND STEP 3 CANNOT BE REVERSED! Otherwise the program card cannot work properly.**

#### B) When you are using an ESC without a built-in BEC

If the ESC is marked with “BEC OPTO”, that means this ESC hasn't a built-in BEC, so you must use an additional battery pack (4.8-6V) to power the program card, and usually a receiver battery pack is a good choice. By the way, every high voltage ESC (Supports 5-12 cells Lipo battery) hasn't built-in BEC.

1. Disconnect the main power pack from the ESC
2. Disconnect the BEC cable (trio wires) of the ESC from your receiver, and then connect it to the program card at the top right corner position marked with “BEC”  
For high voltage ESC, **if it has an individual data cable** (that is a very short trio wire just nearby the BEC cable), please disconnect the BEC cable of the ESC from your receiver, and then connect the individual data cable to the program card at the position marked with “BEC”.
3. Connect the receiver battery pack (4.8-6V) to the program card at the top right corner position marked with “Batt”
4. Connect the main power pack to the ESC
5. The LEDs on the program card will light to show the current programmable values of the ESC

**NOTE2: THE SEQUENCE OF STEP 2, STEP 3 AND STEP 4 CANNOT BE REVERSED! Otherwise the program card cannot work properly.**

**NOTE3: Don't use a battery pack higher than 6V to supply the program card!**

**OPERATION**

Press the "up/down" button, you can select the programmable item, the corresponding LED will flash. Then press the "left/right" button to select the item value, the flashing LED shows the value you are just selecting. Finally, press the "OK" button, the blue LED will flash, which means the programmable value is being transmitted to the ESC. When the data transmission is finished, the blue LED will stop flashing, it means the new settings are accepted and stored in the ESC.

**MUSIC LIST**

Table 1: Music list ● = LED is lighting

No.	LED				MUSIC
	D	C	B	A	
1	○	○	○	○	Disable the music playing function
2	○	○	○	●	Susanna (USA)
3	○	○	●	○	To Alice (Germany)
4	○	○	●	●	Ode to joy (Germany)
5	○	●	○	○	Take off your hood (China)
6	○	●	○	●	Jasmine (China)
7	○	●	●	○	Red river valley (Canada)
8	○	●	●	●	Auld Lang Syne (Scotland)
9	●	○	○	○	Jingle Bells (USA)
10	●	○	○	●	Song of matador (Spain)
11	●	○	●	○	The end of the world (USA)
12	●	○	●	●	Rhythm of triumph (Germany)
13	●	●	○	○	Love is blue (USA)
14	●	●	○	●	Beautiful Spanish lady (Italy)
15	●	●	●	○	Post carriage (Japan)
16	●	●	●	●	Love bird (China)

**LI-PO BATTERY CELLS NUMBER LIST**

Table 2: Li-Poly cells number list ● = LED is lighting

No.	LED				Li-Poly Cells Number
	D	C	B	A	
1	○	○	○	○	Auto detect
2	○	○	○	●	Auto detect
3	○	○	●	○	Auto detect
4	○	○	●	●	Auto detect
5	○	●	○	○	5 CELLS (18.5V)
6	○	●	○	●	6 CELLS (22.2V)
7	○	●	●	○	7 CELLS (25.9V)
8	○	●	●	●	8 CELLS (29.6V)
9	●	○	○	○	9 CELLS (33.3V)
10	●	○	○	●	10 CELLS (37.0V)
11	●	○	●	○	11 CELLS (40.7V)
12	●	○	●	●	12 CELLS (44.4V)
13	●	●	○	○	Auto detect
14	●	●	○	●	Auto detect
15	●	●	●	○	Auto detect
16	●	●	●	●	Auto detect

**We strongly suggest manually setting the cells number of your lithium battery pack. Please be careful to use "Auto detect" method.**

**DECLARATION**

This program card is ONLY suitable for the ESC made by the same manufacturer. Please ask your retailer for detail product information.