

Thank you for purchasing our brushless electronic speed controller (ESC). Improper operation may cause personal injury and equipment damage. This high power system for RC model can be dangerous, we strongly suggest users read the instruction carefully and completely. We will not assume any responsibility for personal injury, property damage, or any consequential damages resulting from our product.

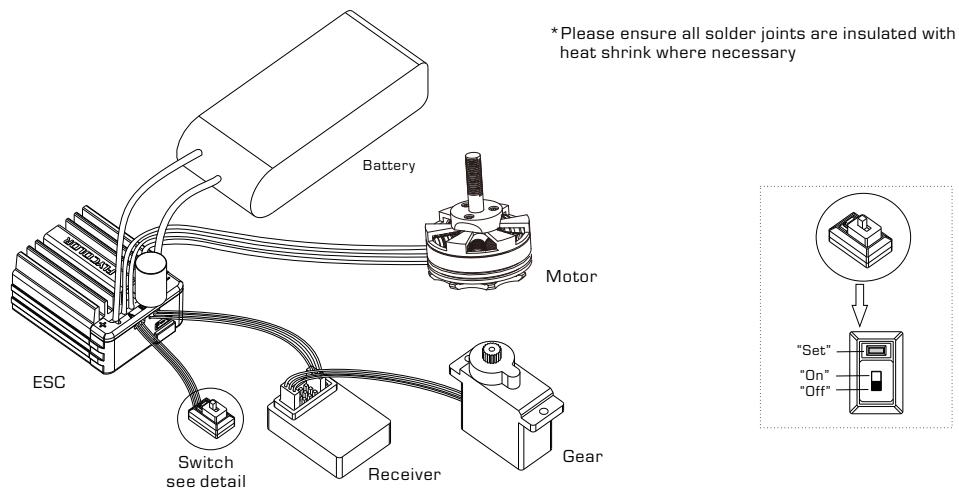
## 01 Main features

- Well-designed drive firmware for brushless sensor-less 3 phase motor, smooth, delicate handle of speed control.
- With high performance MCU, low internal resistance MOSFET and imported components. High reliability, with low impedance circuit board, strong resistance current, less heat production.
- 8 acceleration options. Applied for all kinds of RC cars.
- 8 timing options, make motor work with the best efficiency.
- Multiple protection functions: battery low voltage protection, over temperature protection, throttle signal loss protection, motor blocked protection, etc.
- Easy to use, set parameters with radio and programming card, according to sound prompt.

## 02 Specification

Model	A-CW018003	A-CW025003	A-CW035003	A-CW045003
Cont. Current	18A	25A	35A	45A
Burst Current	50A	90A	190A	260A
Battery	LiPO:2-3S ; NiHM:6-10cell			
BEC	Linear BEC; 2S Lipo or equivalent NiHM BEC output:6V/2A; 3S LIPO or equivalent NiHM BEC output:6V/1A			
Motor support	≥ 12T(2040 size Motor)	≥ 12T(2040 size Motor)	≥ 9T(3650 size Motor)	≥ 5.5T(3650 size Motor)
Heat-dissipating	Aluminum Heatsink	Aluminum Heatsink	Aluminum Heatsink	Aluminum Heatsink + Fan
Suitable Car	1:18/1:16	1:18/1:16	1:18/1:16	1:10
Motor Type	Brushless sensorless	Brushless sensorless	Brushless sensorless	Brushless sensorless
Dimension	34*29*19mm	34*29*19mm	34*29*19mm	34*29*31mm(Including Fan)
Weight	40g	42g	46g	54g

## 03 Wiring Diagrams



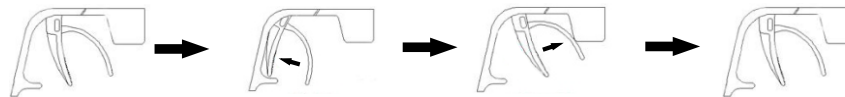
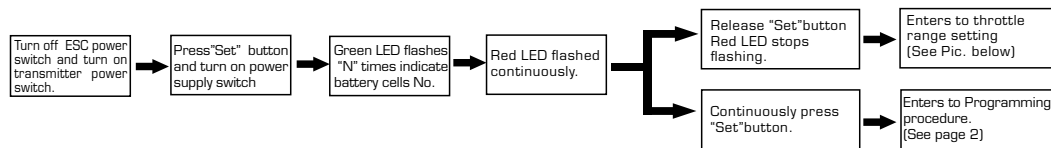
## 04 Operation Instruction

### 1 Connect all the equipments as the wiring diagram, and go to next step.

Note: We strongly advise the use of battery connections that do not allow reverse polarity, or ESC will be damaged. Please disconnect the battery and ESC, if not use for a long time to avoid damaging battery and accidents.

### 2 Set throttle range ( refer the setting process of throttle range)

First time to use remote control transmitter or change the parameters, like throttle middle point, ATL, EPA, throttle range will be set again. Remote control transmitter ABS must be set as "OFF", set throttle channel direction as "REV", set throttle trim as "0", EPA/ATL clockwise and anticlockwise direction of throttle channel are set as 100% ( Max. ), or it may cause no work or misoperation.



1. Keep the throttle stick in the neutral position. Press "set" button, green LED flashes once. Neutral point of the throttle is now memorized.
2. Move the throttle stick to full forward position. Then press the "Set" button, the green LED will flash twice. Now the full forward throttle position is memorized.
3. Move the throttle stick to the full reverse position. Press the "Set" button and green LED will flash 3 times. Full reverse throttle is memorized.
4. Return throttle stick to neutral position. All ranges now configured.

### 3 After Wire connection and basic setting, and motor prompt tone finished, the ESC can work.

- After setting, Turn off the power, and turn on again, the ESC will be ready for working.
- Indicator function: red light flashes when motor run. When motor run with full throttle, green light flashes.
- Reset to factory default setting: press the "set" button more than 3 seconds, then red and green lights will flash 3 times, all the setting will be the factory default setting. (this operation will not work during the process of setting throttle range or programming)

## 05 Setting options

\*Shadow parts are factory default value

Setting options	Option1#	Option2#	Option3#	Option4#	Option5#	Option6#	Option7#	Option8#	Option9#
1. Running Mode	Forward with brake	Forward and reverse with brake	Forward and reverse						
2. Fixed Area Accelerator	6%	9%	12%						
3. Initial Brake Force	0%	5%	10%	20%	30%	40%	50%	60%	
4. Low Voltage Protection	Non-protection	2.6V	2.8V	3.0V	3.2V	3.4V			
5. Start Mode (Punch)	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9
6. PWM	8KHz	12KHz							
7. Max Reverse Force	25%	50%	75%	100%					
8. Max Brake Force	50%	60%	70%	80%	90%	100%			
9. Drag Brake Force	0%	5%	10%	20%	40%	60%	80%	100%	
10. Timing	0°	3.75°	7.5°	11.25°	15°	18.75°	22.5°	26.25°	
11. Motor Direction Adjustment	Forward	Reverse							
12. Over heat Protection	Protection	Non-Protection							
13. Lipo Cells	Auto	2S	3S						

### 1. Running Mode:

- Forward with brake: only forward, reverse throttle is brake, no Reverse, it's mainly used for racing.
- Forward and reverse with brake: with reverse function, when push throttle from forward to reverse area, RC car is in the brake state and throttle must be back to the middle point. RC car will reverse when motor stops rotating. This mode is used for practice.
- Forward and reverse: Push throttle from middle point to reverse area, motor will rotate reverse immediately. This mode is used for rock crawler.

### 2. Fixed Area Accelerator: 6% 9% 12%, choose as personal preference.

### 3. Initial Brake Force: the brake force on motor when brake is in the initial position of throttle.

### 4. Low Voltage Protection: To protect battery damage from over discharging. ESC will monitor battery voltage during running process, once voltage is lower than set value, it will cut off motor output.

### 5. Start Mode(Punch): 9 level, default is 6 level, choose the appropriate acceleration according to the field and personal preference. The higher level, the faster the start acceleration, but high demand for battery discharging ability( it will cause abnormal start when battery capacity isn't enough ).

### 6. PWM: Working frequency .8KHz, 12KHz, choose the appropriate working frequency according to the features of motor and battery.

### 7. Max Reverse Force: 4 options : 25% 50% 75% 100%, different option with different force. Recommend to use the smaller options, to avoid crashing for the force is too heavy when back up.

### 8. Max Brake Force: ESC with potential brake the max. brake force is that the brake force when push throttle stick to the brake limit point. Choose the appropriate brake force according to personal preference and specific situation

### 9. Drag Brake Force: Push throttle stick from forward area to middle point, produce brake force for motor, it's easy for slowing down, starting the turns.

### 10. Timing: Options : 0°, 3.75°, 7.5°, 11.25°, 15°(default), 18.75°, 22.5°, 26.25°, Purpose are:

- Compatible with different types motor. If not work with default timing, please change the appropriate timing.
- Change motor Max. RPM by changing timing. Timing is higher, output RPM is faster, power consumption is bigger.
- Make motor work in the best efficiency point by changing timing.
- Auto timing can change timing between 0° and 30° automatically.

### 11. Motor Direction Adjustment: Change motor rotation direction with this option.

### 12. Over heat Protection: ESC or motor temperature is very high ( over 95° ), this option decides if cut off the motor output, default is protection.

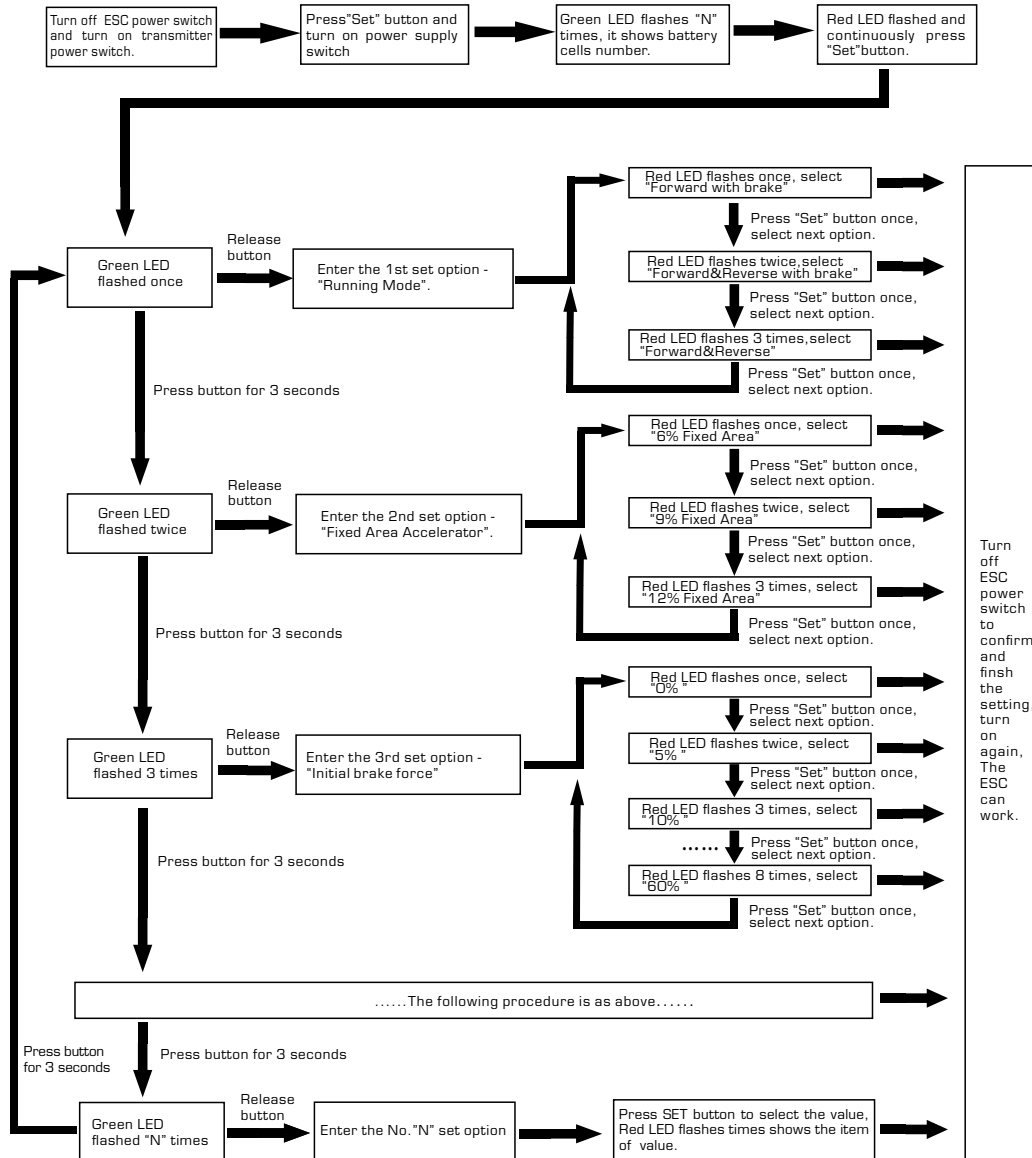
### 13. Lipo Cells: Auto : count Lipo cells automatically; 2S, 3S : choose the corresponding values according to battery cells number.

# 06 Programming

## 1 Programming with set button in the switch.

Note: ● Motor will emit "BEEP" when indicator light flashes.

● When N>=5, indicator light will flash for a long time (with long tone) to represent 5. For example, ESC red indicator flashes for a long time once (motor emits long tone "BEEP--" at the same time), shows that enter the 5th set option. If ESC green indicator flashes for a long time once then for a short time once (motor emits long "BEEP--" once and short "BEEP" once at the same time), shows that it enters the 6th set option. And the like, the 7th set option "BEEP--BEEP,BEEP,BEEP", the 8th set option "BEEP--BEEP,BEEP,BEEP".



## 2 Programming with Program Card.

It's the easiest way to set with programming card. Operation is as following: insert signal wire to the interface in programming card, select the options that you want (see in the above chart), press [OK], after VALUE screen displaying "S", this option sets successfully. If want to reset the option to factory setting, please press [RESET], then press [OK].

(Please see the instruction of program card for more detail)

## 07 Protections

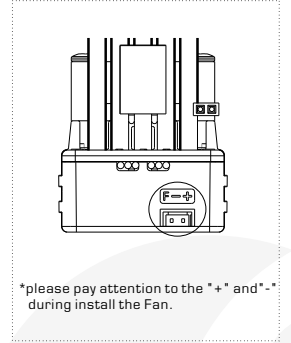
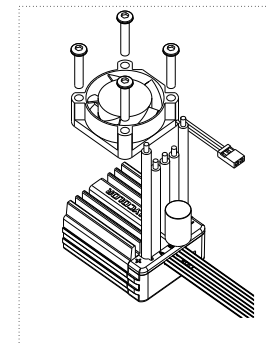
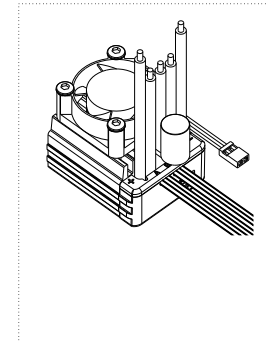
Lipo low-voltage protection	If running speed gets slowly (reduce power to cut off in 5 seconds), please reduce speed and stop. ESC red light will flash at this time, it means low-voltage protection starts. For NiMH battery, set no low-voltage protection.
Over heat protection	When temperature is higher than 95°, ESC will cut off with flashing green light. When temperature is lower than 80°, motor will restart again. Note: To make ESC not be burnt during working, please don't cancel over heat protection.

## 08 Trouble shooting

Troubles	Possible causes	Solutions
After connecting battery, indicator led doesn't flash, motor doesn't start, fan doesn't start.	1. ESC not powered. 2. Power supply switch damaged, or switch bad connection.	Check the soldering of all joints, especially between the battery and motor wires. If the switch or switch wire is damaged, return to factory for service.
Car goes backwards when forward is pressed.	1. The motor wires may not be connected in the correct sequence.	Make sure the motor wires are connected in the correct sequence
Stop suddenly during motor rotation.	1. Receiver meets interference. 2. ESC was protected by battery low-voltage or over heat.	See the explanation of low-voltage protection and over heat protection.
When motor starts, fast acceleration, motor gets stuck or pauses.	1. The battery discharge capacity isn't enough. 2. Motor is too fast or wrong gear ratio is used. 3. ESC startup acceleration is too fast.	1. Change good discharge capacity battery. 2. Use a slower motor or change the gear ratio. 3. Set ESC startup acceleration (startup mode) slower.

## 09 optional Kits

- 45A Model with Fan as factory default.
- 18A,25A,35A without Fan as factory default. according your requirement install or not install.



\*please pay attention to the "+" and "-" during install the Fan.



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