



Congratulations and thank you for your trust in Hobbywing product. By purchasing WP-MAX10/SCT-RTR, you have chosen a high performance brushless electronic speed controller! This sensorless speed-control is equipped with high-tech features to enhance your experience with Hobbywing Brushless power systems. Improper usage and unauthorized modifications to our product is extremely dangerous and may damage the product and related devices. Please take your time and read the following instructions carefully before you start using your speed control.

**01 Warnings**

- Ensure all wires and connections are well insulated before connecting the ESC to related devices, as short circuit will damage your ESC.
- Ensure all devices are well connected to prevent poor connection that may cause your vehicle to lose control or other unpredictable issues such as damage to the device.
- Read through the manuals of all power devices and chassis and ensure the power configuration is rational before using this unit.
- Please use a soldering iron with the power of at least 60W to solder all input/output wires and connectors.
- Do not hold the vehicle in the air and rev it up to full throttle, as rubber tires can "expand" to extreme size or even crack to cause serious injury.
- Stop using the ESC when its casing temperature exceeds 90°C/194°F; otherwise your ESC will get destroyed and may also get your motor damaged. We recommend setting the "ESC Thermal Protection" to 105°C/221°F (this refers to the internal temperature of the ESC).
- We recommend removing the cooling fan from ESC before exposing vehicle to liquids, and fully dry it right after use.
- Always disconnect the batteries after use, as the ESC will continue to consume current if it's connected to batteries (even if the ESC is turned off). Long-time contact will cause batteries to completely discharge and result in damage to batteries or ESC. This WILL NOT be covered under warranty.

**2 Features**

- ESC is compatible with both sensorless and sensored brushless motors (only in sensorless mode).
- Fully waterproof design for all conditions.
- Super internal switch-mode BEC with switchable voltage of 6V/7.4V for usage with high torque and high voltage servos.
- Highly reliable electronic switch design prevent mechanical switch failure due to dirt, water, dust and etc.
- Separate programming port to easily connect the LED program card or the LCD program box to the ESC.
- Proportional brake with 9 levels of maximum brake force and drag brake force.
- 5 levels of acceleration/punch from soft to aggressive for different vehicles, tires and tracks.
- Capacitor Protection: Innovative Capacitor Protection effectively protects capacitors from exploding and causing irreversible damage to the ESC from overloading.
- Multiple protections: motor lock-up protection, low-voltage cutoff protection, thermal protection, overload protection, and fail safe (throttle signal loss protection).
- Single-button ESC programming and factory reset.
- Advanced programming via portable LED program card.

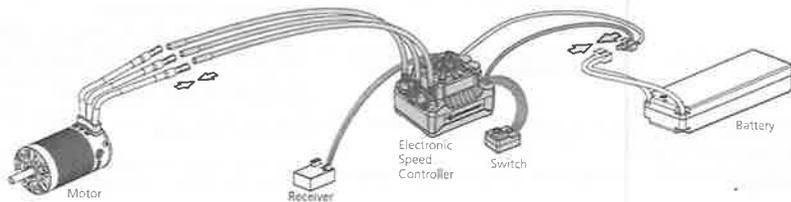
**3 Specifications**

Model	WP-MAX10-SCT-120A-4S-RTR	WP-MAX10-SCT-120A-3S-RTR	WP-MAX10-SCT-100A-3S-RTR	WP-MAX10-SCT-80A-3S-RTR	WP-MAX10-RTR
Cont./Peak Current	120A/830A	120A/830A	100A/650A	80A/520A	60A/450A
Motor Limit	Sensored / Sensorless Brushless Motor(only in sensorless mode)				
Applications	1/10th Short Course Truck, Truck and Monster Truck				1/10th Buggy, On-road, and Light-weight 2WD SCT/Truck/Monster Truck
Motor Limit	with 2S LiPo: KV≤6000 with 3S LiPo: KV≤4000 with 4S LiPo: KV≤3000 (36XX size motor)	with 2S LiPo: KV≤6000 with 3S LiPo: KV≤4000 (36XX size motor)	with 2S LiPo: KV≤5500 with 3S LiPo: KV≤3500 (36XX size motor)	with 2S LiPo: KV≤5000 with 3S LiPo: KV≤3000 (36XX size motor)	with 2S LiPo: KV≤6000 with 3S LiPo: KV≤4000 (3652 size motor)
LiPo / NiMH Cells	2-4S LiPo / 6-12Cell NiMH				
BEC Output	6V/7.4V Switchable, 4A (Switch-mode)				
Fan (Included)	Powered by the stable BEC voltage of 6V/7.4V				
Connectors	Input End: No Connectors. Output End: 4.0mm Female Gold Connectors (pre-soldered onto the PCB of the ESC).				Input End: No Connectors. Output End: 3.5mm Female Gold Connectors (pre-soldered onto the PCB of the ESC).
Size/Weight	49 x 39.5 x 34.7mm (W/Fan) / 105g				39.4 x 32.8 x 23.1mm (w/o Fan) / 67.8g
Programming Port	FAN/PRG Port				

**4 Begin To Use The New ESC**

**1. Connect the ESC, Motor, Receiver, Battery And Servo**

The #A, #B, #C wires of the ESC can be connected with the motor wires freely (without any sequence), if the motor runs in the opposite direction, please swap any two wire connections.



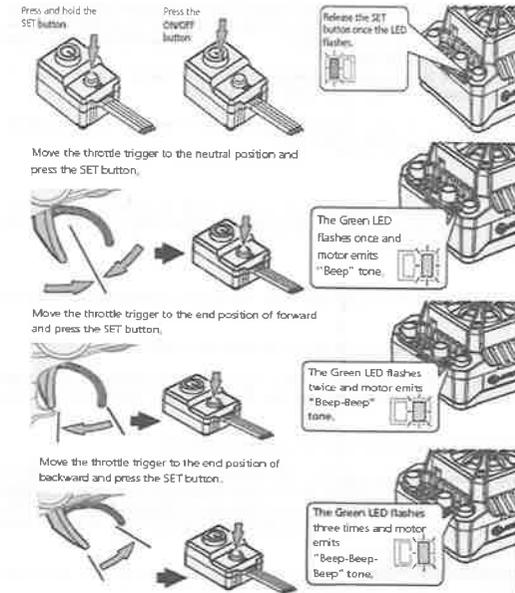
This is an extremely powerful brushless motor system. For your safety and the safety of those around you, we strongly recommend removing the pinion

before performing calibration and programming functions with this system, and keeping wheels in the air when you turn on the ESC.

**2. Radio Calibration**

Begin using your ESC by calibrating with your transmitter. We strongly recommend Hobbywing users to use the "Fail Safe" function on the radio system and set (F/S) to "Output OFF" or "Neutral Position".

Example of calibrating Neutral range and Endpoint.



- 1 Turn on the transmitter, ensure all parameters(D/R, Curve, ATL) on the throttle channel are at default (100%). For transmitter without LCD, please turn the knob to the maximum, and the throttle "TRIM" to 0. Please also turn the corresponding knob to the neutral position. For Futaba™ transmitter, the direction of throttle channel shall be set to "REV", while other radio systems shall be set to "NOR". Please ensure the "ABS / braking function" of your transmitter must be DISABLED.
- 2 Start by turning on the transmitter with the ESC turned off but connected to a battery. Holding the SET button and press the ON/OFF button, the RED LED on the ESC starts to flash (Note 1 the motor beeps at the same time), and then release the SET button immediately. (The ESC will enter the programming mode if the SET button is not released in 3 seconds, please restart from step 1.)  
*Note 1: Beeps from the motor may be low sometimes, and you can check the LED status instead.*

- 3 Set the neutral point, the full throttle endpoint and the full brake endpoint.
  - 1) Leave transmitter in neutral position and press the SET button, After the RED LED dies out, Mode LED flashes GREEN and motor beeps 1 time, Neutral setting is stored.
  - 2) Hold full throttle on transmitter and press the SET button once, GREEN LED blinks and motor beeps 2 times. Full throttle setting is stored.
  - 3) Push and hold full brake and press the SET button, the GREEN LED blinks and the motor beeps 3 times, Full brake setting is stored.
  - 4 The motor will work 3 seconds after the ESC/Radio calibration is complete.

**5 Power On-OFF Warning**

- 1) Power ON/OFF: (Start with the ESC turned off), press the ON/OFF button to turn on the ESC; (start with the ESC turned on) press and hold the ON/OFF button to turn off the ESC.
- 2) Warning Tones: Turn on the ESC (that is to turn it on without holding the SET button); the motor will beep the number of LiPo cells you have plugged in. For example, 2 beeps indicate a 2S LiPo, 3 beeps indicate a 3S LiPo.

**6 Programmable Items (Those black background and white text options are the factory default settings)**

Programmable Items	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9
1. Running Mode	Fwd/Br	Fwd/Rev/Br							
2. LiPo Cells	Auto Calculation	2S	3S						
3. Low Voltage Cutoff	Disabled	Auto (Low)	Auto (Intermediate)	Auto (High)					
4. ESC Thermal Protection	105°C/221°F	125°C/257°F							
5. Motor Thermal Protection	Disabled								
6. Motor Rotation	CCW	CW							
7. BEC Voltage	6.0V	7.4V							
8. Max Brake Force	12.50%	25.00%	37.50%	50.00%	62.50%	75.00%	87.50%	100.00%	Disabled
9. Max Reverse Force	25.00%	50.00%							
10. Start Mode (Punch)	Level 1	Level 2	Level 3	Level 4	Level 5				
11. Drag Brake	0%	2%	4%	6%	8%	10%	12%	14%	16%

**1) Running Mode**

**Option 1: Forward with Brake**

It has forward and brake functions only and is usually a racing mode.

**Option 2: Forward / Reverse with Brake**

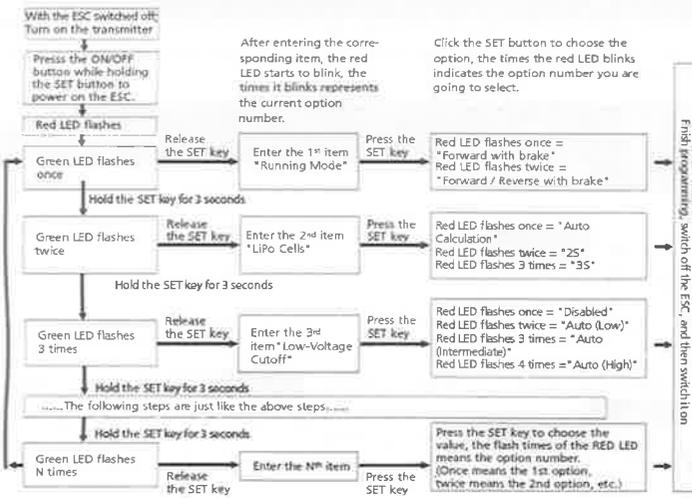
This mode can be used as for training and it has "Forward/ Reverse with Brake" mode. Hobbywing adopted the "DOUBLE-CLICK" method, that is your vehicle only brakes on the 1<sup>st</sup> time you push the throttle trigger forward (brake) (1<sup>st</sup> push). The motor stops when you quickly release the throttle trigger

and then re-push the trigger quickly (2<sup>nd</sup> push), only then the vehicle will reverse. The reverse function will not work if your car does not come to a complete stop. The vehicle only reverses after the motor stops. This method is for preventing vehicle from being accidentally reversed.

- 2) **Lipo Cells**  
"Auto Calculation" is the default setting. If LiPo batteries are often used with the same cell count, we would strongly recommend setting this item manually to avoid the incorrect "calculation" (For instance, the ESC may take a not fully charged 3S LiPo as a fully charged 2S LiPo) which may cause the low-voltage cutoff protection to not function ideally.
- 3) **Cutoff Voltage**  
Sets the voltage at which the ESC lowers or removes power to the motor in order to either keep the battery at a safe minimum voltage (for LiPo batteries). The ESC monitors the battery voltage all the time, it will immediately reduce the power to 50% and cut off the output 10 seconds later when the voltage goes below the cutoff threshold. The RED LED will flash a short, single flash that repeats (☆ ☆ ☆) to indicate the low-voltage cutoff protection is activated. Please set the "Disabled" the "Cutoff Voltage" if you are using Ni-MH batteries.  
**Warning:** If you set the Cutoff Voltage to Disabled when you use a LiPo pack, then please pay attention to the power change of your vehicle. In general, the battery voltage gets pretty low when your vehicle is severely losing power, then you should stop using that pack.
- 4) **ESC Thermal Protection**  
The ESC will automatically cut off the output with the GREEN LED flashes (☆ ☆ ☆) when the temperature gets up to the value you've previously preset and activates the ESC Thermal Protection. The output will not resume until the temperature gets down.
- 5) **Motor Thermal Protection**  
This item has been permanently set to "None" by the manufacturer.
- 6) **Motor Rotation**  
Pull the throttle trigger with the motor shaft facing you, the motor spins counter clockwise. When this item is set to CCW; the motor spins clockwise. When it is set to CW. The (A/B/C) wiring order of motors from different manufacturers may vary, so do the direction of the motor rotations. You can adjust the "Motor Rotation" or swap any two (ESC-to-motor) wires if the motor runs in reverse.
- 7) **BEC Voltage:**  
**Option 1: 6.0V**  
It's applicable to ordinary servos, Do not use this option with high voltage servos; otherwise your servos may not function normally due to insufficient voltage.  
**Option 2: 7.4V**  
It's applicable to high voltage servos, Do not use this option with ordinary servos; otherwise your servos may be burnt due to high voltage.
- 8) **Max. Brake Force**  
The ESC provides proportional braking function; the braking effect is decided by the position of the throttle trigger. It sets the percentage of available braking power when full brake is applied. Large amount will shorten the braking time but it may damage your pinion and spur. Please select the most suitable brake amount as per your car condition and your preference.
- 9) **Max. Reverse Force**  
Different reverse amount will bring different reversing speed. For the safety of your vehicle, we recommend using a low amount.
- 10) **Start Mode / Punch**  
You can choose the punch from level 1 (very soft) to level 5 (very aggressive) as per the track, tires, grip, conditions. This feature is very useful for preventing tires from wheel-spinning during the warm-up process. In addition, "level 4" and "level 5" have strict requirement on battery's discharge capability. It may affect the starting-up if the battery discharges poorly and cannot provide large current in a short time. If the car stutters or suddenly loses power in the starting-up process, indicates that the battery's discharge capability is poor, you might need to reduce the punch or increase the FDR (Final Drive Ratio).
- 11) **Drag Brake**  
Drag brake is the braking power produced when releasing from full speed to neutral zone. This is to simulate the slight braking effect of a neutral brushed motor while coasting. (Attention! Drag brake will consume much power, so apply it cautiously.)

7. ESC Programming

1) Programming your ESC with the SET button



- Note 2:**
- a) For easy recognition, the motor beeps at the same time when the GREEN LED flashes.
  - b) When "N" (the number) is equal to or bigger than 5, we use a long flash to represent "5". For example, the GREEN LED flashes a long flash (and the motor beeps a long beep at the same time) indicating you are in the 5<sup>th</sup> programmable item; if the GREEN flashes a long flash and a short flash (and the motor beeps a long beep and a short beep at the same time) indicating you are in the 6<sup>th</sup> programmable item; a long flash and two short flashes ( a long

beep and two short beeps at the same time) indicating you're in the 7<sup>th</sup> programmable item and so on.

2) Program your ESC with a LED program card

The portable LED program card is an optional accessory applicable for field use. Its friendly interface makes the ESC programming easy and quick. Before the programming, you need to connect your ESC and the program card via a cable with two JR male connectors (as shown below), and then turn on the ESC, all programmable items will show up a few seconds later. You can select the item by choosing via "ITEM" & "VALUE" buttons on the program card. Press the "OK" button to save all new settings to your ESC.

**Note 3:** the programming port of this ESC is also the fan port, so you need to unplug the fan first and then plug (one end of) the programming cable in the PRG/FAN port and the other end (of the programming cable) in the ESC port on the LCD program box. Please don't use the throttle control cable (also called Rx cable) on the ESC to connect the program card/box, otherwise the program card/box won't function.



8 Factory Reset

- 1) **Restore the default values with the SET button**  
Press and hold the SET button for over 3 seconds anytime when the throttle trigger is at the neutral position (except during the ESC calibration and programming) can factory reset your ESC. RED & GREEN LEDs flash simultaneously indicating you have successfully restored all the default values within your ESC. Once you power the ESC off, and then back on, your settings will be back in the default mode.
- 2) **Restore the default values with a LED program card**  
After connecting the program card to the ESC, press the "RESET" button and the "OK" button to factory reset your ESC.

9 Troubleshooting

Trouble	Possible Reason	Solution
After power on, motor doesn't work, and the cooling fan doesn't work	No power was supplied to the ESC.	Check if all ESC & battery connectors have been well soldered or firmly connected.
	The ESC switch was damaged	Replace the broken switch.
After power on, motor can't work, but emits "beep-beep-, beep-beep-" alert tone. (Every "beep-beep-" has a time interval of 1 second )	Input voltage is abnormal, too high or too low	Check the voltage of the battery pack
After the ESC was powered on and finished LiPo cells detection (the GREEN LED flashed N times), and then the RED LED flashed rapidly.	The ESC didn't detect any throttle signal.	Check if the throttle wire is reversely plugged in or in the wrong channel and if the transmitter is turned on.
	The neutral throttle value stored on your ESC is different from the value stored on the transmitter	Re-calibrate the throttle range after you release the throttle trigger to the neutral position.
The motor runs in the opposite direction when it is accelerated	The (ESC-to-motor) wiring order was incorrect.	Swap any two wire connections between the ESC and the motor.
	Your chassis is different from popular chassis.	
The motor suddenly stops running while in working state	The throttle signal is lost	Check the transmitter and the receiver Check the signal wire from the throttle channel of your receiver
	The ESC has entered the Low Voltage Protection Mode or Over-heat Protection Mode	Red LED flashing means Low Voltage. Green LED flashing means Over-heat
The motor stuttered but couldn't start.	Some soldering between the motor and the ESC was not good.	Check all soldering points, please re-solder if necessary.
	The ESC was damaged (some MOSFETs were burnt).	Contact the distributor for repair or other customer services.
The vehicle could run forward (and brake), but could not reverse.	The throttle neutral position on your transmitter was actually in the braking zone.	Re-callibrate the throttle neutral position. No LED on the ESC will come on when the throttle trigger is at the neutral position.
	Set the "Running Mode" improperly.	Set the "running mode" to "Forward/Reverse with Brake".
	The ESC was damaged.	Contact the distributor for repair or other customer services.
The car ran forward/backward slowly when the throttle trigger was at the neutral position.	The neutral position on the transmitter was not stable, so signals were not stable either.	Replace your transmitter
	The ESC calibration was not proper.	Re-calibrate the throttle range or fine tune the neutral position on the transmitter.
The LED program card kept display 3 short lines (- -) after you connected it to your ESC.	The programming card/box was connected to the ESC via the throttle control cable (Rx cable).	It is wrong to use the Rx cable to connect programming card/box. The programming port of this ESC is also the fan port, so please connect the ESC and programming card/box by plugging the programming cable into the fan port.
When pressing the SET button to set the throttle neutral position, the GREEN LED didn't flash and no beep was emitted, or you were unable to set the full throttle endpoint and the full brake endpoint after the neutral position was accepted.	The ESC throttle cable wasn't plugged in the correct channel on the receiver.	Plug the throttle cable into the throttle (TH) channel on your receiver.
	The ESC throttle cable was reversely plugged in.	Plug in the throttle cable properly by referring to relevant mark shown on your receiver.