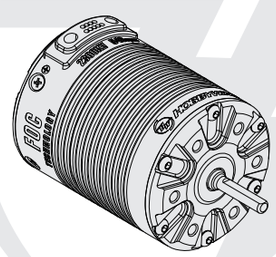

QUICRUN
USER MANUAL
ESC/Motor 2in1 system
QUICRUN Fusion Pro Elite

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20250828 HW-SMC358DUL00

01 Disclaimer

Thank you for purchasing this HOBBYWING product! Any improper use may cause personal injury and damage to the product and related devices. We strongly recommend reading through this user manual before use and strictly abide by the specified operating procedures. We shall not be liable for any liability arising from the use of this product, including but not limited to reimbursement for incidental or indirect losses. We do not assume any responsibility caused by unauthorized modification of the product. We have the right to change the product design, appearance, performance and use requirements without notice.

02 Attentions

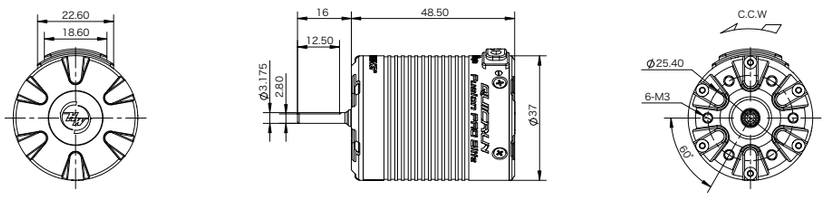
- Ensure all wires and connections are well insulated before connecting the 2-in-1 system to related devices, as short circuit will damage the system.
- Read the manuals of all the items being used in the build. Ensure gearing, setup, and overall install is correct and reasonable.
- It is important to ensure that all wires&connectors soldered are properly secured to avoid short circuits from happening. A good soldering station is recommended to do such a job to ensure connections are properly soldered.
- Do not let the external temperature of the system exceed 90℃/194℉, high temperature will damage the power system.
- The battery must be disconnected after use. There is a small draw even when the system is off, and will eventually fully drain the battery. This may cause damage to the ESC, and will NOT BE COVERED UNDER WARRANTY.

03 Features

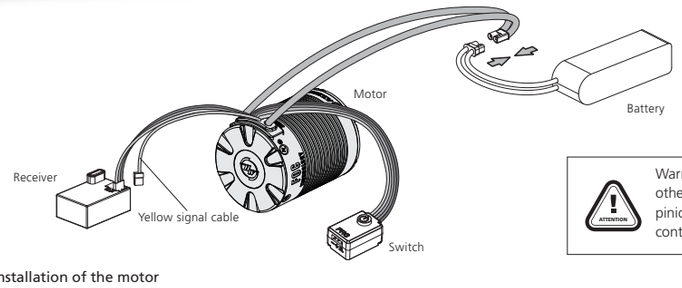
- Featuring an ultra-short integrated design with a length of just 48.5mm, this motor is 9.5mm shorter than the Pro Standard version and 1.3mm shorter than the AXE 540. It fits most 10th scale crawler chassis on the market, allowing for cleaner, more strealined wiring layouts.
- FOC(Field Oriented Control) driving mode to the power system of rock crawler. The low speed torque is very strong. This improves over standard brushless setups and is even preferred over the brushed setups for overall feel.
- The system has high efficiency, less heat, and effectively extends the run time; and the motor runs more quietly and soft.
- The protection grade of the whole system is IP67, capable of running in all conditions.
- Intelligent torque output and speed closed-loop control, making the control handy.
- Active drag brake force adjustment, providing super holding power on inclines.
- With strong built-in switch mode BEC, the continuous/peak current is up to 5A, and supports 6V/7.4V/8.4V adjustable, capable of driving high torque and high voltage servos.
- It has the function of using transmitter (AUX channel) to adjust the setting item in real time.
- Multiple protection functions: battery low voltage protection, overheat protection, throttle lost protection, lock-up protection.
- It supports LED and LCD Program Box Pro/G2 to set ESC parameters, making setting parameters more convenient.

04 Specifications

Model	QUICRUN Fusion Pro Elite
Continuous / peak current	50A/150A
Main applications	1/10 Crawler
LiPo/NiMH Cells	2-4S LiPo, 6-12 Cells NiMH
BEC output	6V/7.4V/8.4V adjustable, continuous current 5A (Switch mode)
Size/Weight	37mm(diameter)x48.5mm(length) / 178.5g(including wires&connectors)
Programming port	Independent programming port(switch position)
Motor KV	2300KV
Diameter / Length of motor	37mm / 48.5mm
Shaft diameter / exposed shaft length	3.175mm / 16mm
Motor Poles	4



05 Connections



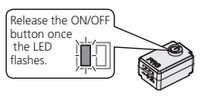
Warning: The power of the system is powerful. For the safety of you and other people around you, we strongly recommend that you remove the pinion gear before calibrating and setting the system, and turn on the control switch of the ESC when the wheels are off the ground!

- Installation of the motor
  This motor has 6xM3 installation screw holes, and the mounting holes are 5mm in depth, before installing the motor on the vehicle, please carefully confirm whether the length of the screws is appropriate , as not to damage the motor due to excessive length.
- Connect receiver
  Insert the throttle cable of the ESC into the throttle channel of receiver. The red wire of throttle cable provides the BEC voltage to receiver and steering servo, do not supply power to receiver, otherwise the ESC may be damaged. If need to supply power, unpin/disconnect the red wire with the throttle cable, insulate it and secure it away.
  Yellow signal cable
  This cable is used to connect the AUX/idle channel of the receiver and achieve the function of real-time setting of esc's parameter through the transmitter. The default parameter item is "Drag Brake Force",and other parameter items can also be specified through item 14 "AUX channel function".
- Connect battery
  The input line of the system has polarity. When connecting the battery, make sure that the (+) pole of the ESC is connected to the (+) pole of the battery and the (-) pole is connected to the (-). If the system is connected in reverse, the system will be damaged. There is no warranty service for damaging ESC due to reversed polarity.

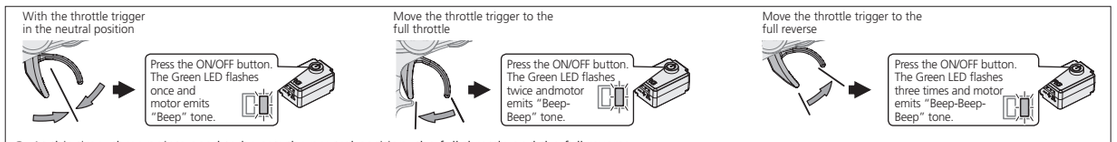
06 ESC Setup

1 Set the Throttle Range – ESC Calibration

The calibration must be done on the first use of the ESC, or if a new radio or receiver is installed, otherwise the esc may not work correctly. We recommend to set the fail-safe function of throttle channel（"F/S"）to close output mode or set the protection value to the neutral position, making the motor stop running when the receiver cannot receive signal of the radio. The calibration steps are below:



1. Turn on the radio, adjust the "D / R", "EPA", "ATL" of the throttle channel to 100% (if the radio has no display screen, adjust the corresponding knob to the maximum position), and adjust the "TRIM" of the throttle channel to 0 (if the remote control has no display screen, adjust the corresponding knob to the middle position). **This step can be skipped if the radio's settings are default.**
2. In power off state, press the power button and hold it continuously. The red light on the ESC's switch starts to flash, then release the power button immediately (If the power button is not released within 8 seconds, the ESC will enter other modes, and need to start over) , the motor will sound synchronously.



3. At this time, three points need to be set: the neutral position, the full throttle and the full reverse.
   - The throttle trigger stays at the neutral position, press the power button, the green light flashes once, and the motor emits "beep" once, indicating that the neutral position has been stored.
   - Move the throttle trigger to the full throttle position, press power button, the green light flashes twice, and the motor emits "beep" twice, indicating that the full throttle position has been stored.
   - Push the throttle trigger to the full reverse position, press power button, the green light flashes three times, and the motor emits "beep" three times, indicating that the full reverse position has been stored.
4. After calibrating, the motor can be operated normally.

2 Instruction for power on/off and Tones

Instruction for power on/off: Short press the switch button to start in off state; long press the switch button to shut down in on state.
Instruction for sound: Start in normal condition (Not setting throttle range), the times of beep emitted by motor indicates the number of LiPo Cells, for example, "Beep, Beep" indicates 2S LiPo; "Beep, Beep, Beep" indicates 3S LiPo. Finally, a long beep will sound to confirm.

3 Instruction for programmable items

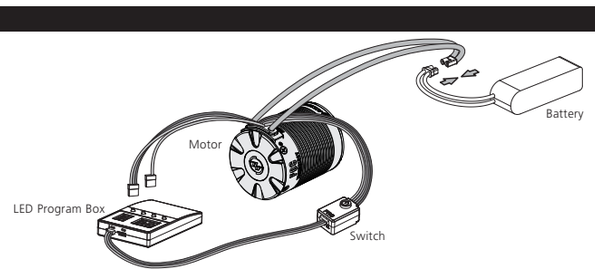
The highlighted options are the default settings of the system.

No.	Setting item	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6	Option 7	Option 8	Option 9
1	Running Mode	*Forward and Reverse (RPM Matching)*	Forward/Reverse with Brake (Normal mode)	Forward and Reverse (Normal mode)	Hybrid-RPM Matching	Hybrid-Normal				
2	LiPo Cells	*Auto*	2S	3S	4S					
3	Cutoff Voltage	Disabled	Low	*Medium*	High					
4	Thermal Protection	*105℃/221℉*	125℃/257℉							
5	Motor Rotation	*CCW*	CW							
6	BEC Voltage	*6.0V*	7.4V	8.4V						
7	Drag Brake Force	Disabled	Level 1	Level 2	Level 3	Level 4	*Level 5*	Level 6	Level 7	Level 8
8	Drag Brake Rate	*Auto*	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8
9	Max. Reverse Force	25%	50%	75%	*100%*					
10	Max. Brake Force	10%	20%	30%	40%	50%	*60%*	70%	85%	100%
11	RPM Decrease Rate	*Level 1*	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9
12	Punch	Level 1	Level 2	Level 3	Level 4	*Level 5*	Level 6	Level 7	Level 8	Level 9
13	Neutral Range	4%	6%	*8%*	10%	12%				
14	AUX CH Function	Item 1	*Item 7*	Item 8	Item 9	Item 10				

1. Running Mode:
   Option 1: Forward and Reverse(RPM Matching)
   When the throttle trigger is pushed to reverse position, the motor reverses immediately.
   Through speed closed-loop control to realize cruised control function, that is, when the resistance of the vehicle changes, the ESC will automatically adjust the output torque.
   Option 2: Forward/Reverse with Brake(Normal mode)
   The vehicle only brakes on the first time you push the throttle trigger to the reverse / brake position. If the motor stops when the throttle trigger return to the neutral position and then re-push the trigger to reverse position, the vehicle will reverse,if the motor does not completely stop, then your vehicle won't reverse but still brake, you need to return the throttle trigger to the neutral position and push it to reverse again.This method is for preventing vehicle from being accidentally reversed. Like common sensored brushless or brushed ESC, the ESC will not automatically adjust the output torque in this mode, that is, when the resistance of the vehicle changes, the speed will change accordingly.
   Option 3: Forward and Reverse(Normal mode)
   When the throttle trigger is pushed to reverse position, the motor reverses immediately.
   Like common sensored brushless or brushed ESC, the ESC will not automatically adjust the output torque in this mode, that is, when the resistance of the vehicle changes, the speed will change accordingly.
   Option 4: Hybrid-RPM Matching
   The actual running mode is linked to the drag brake. When the drag brake force is set to "Disabled", the running mode will be "Forward/Reverse with Brake(Normal mode)".
   When the drag brake force is set to any value other than "Disabled", the running mode will be "Forward and Reverse(RPM Matching)".
   Option 5: Hybrid-Normal
   The actual running mode is linked to the drag brake. When the drag brake force is set to "Disabled", the running mode will be "Forward/Reverse with Brake(Normal mode)".
   When the drag brake force is set to any value other than "Disabled", the running mode will be "Forward and Reverse(Normal mode)".
2. LiPo Cells:
   The default setting is auto detect. If you are always running the same cell count battery, we suggest you set manually the number of Lipo Cells to avoid miscalculation of the cell count Which may mistakenly judge 3S LiPo that have no power as 2S LiPo that are fully charged, which will cause the low-voltage protection function of the ESC operate incorrectly.
3. Cutoff Voltage:
   This function is mainly to prevent the irrecoverable damage caused by over discharge of LiPo Cells. If the voltage protection is turned on, the ESC will monitor the battery voltage all the time during operation. Once the voltage is lower than the set threshold value, the power output will gradually reduce to 50% of the full power, and the power will be completely disabled after 10 seconds. The RED LED will flash a short, single flash that repeats (☆, ☆, ☆,...) to indicate the low-voltage cutoff protection is activated. When set to "Disabled", there will be no low voltage protection function, for NiMH batteries,you can set this parameter to "Disabled". The low, medium and high options correspond to 3.0V/Cell, 3.25V/Cell, 3.5V/Cell.
4. Thermal Protection:
   After the system temperature rises to the set value, the power output will decrease to 50% of full power, and after about 40 seconds,it will completely shut down, The GREEN LED will flash a short, single flash that repeats (☆, ☆, ☆,...) to indicate the thermal(overheat) protection is activated. After the system temperature drops below a certain value, the output can be automatically restored.
5. Motor Rotation:
   Used to set the rotation direction of the motor. Due to differences in chassis frame structure, it is possible for the car to reverse when the throttle is applied to forward, in this case, you can solve it by adjusting this item.
6. BEC Voltage:
   BEC voltage support 6V / 7.4V / 8.4V. Generally, 6.0V is suitable for standard servos, while 7.4V is suitable for high-voltage servos. Please set according to the servo specifications.
   Note: 1. Do not set the BEC voltage above the maximum operating voltage of the servo and receiver, as this may damage the servo, receiver, or even the system.
   2. Due to the limits of the BEC circuit, when using a 7.4V(2S) LiPo the BEC can not maintain a 7.4V or 8.4V output.The BEC output will match the battery voltage.It is recommended to use a 3S or 4S LiPo with the 7.4V/8.4V BEC setting.
7. Drag Brake Force:
   Drag brake means a brake force on the motor when the throttle trigger returns to the neutral position. There are 9 options of drag brake force to adjust, "Disabled" means the drag brake force is 0; the corresponding drag brake force increases from level 1 to level 8. Select the appropriate drag brake force according to the actual situation.
   This parameter value can be adjusted in real time via the transmitter. When the yellow signal cable is connected to an idle channel (AUX channel) of the receiver, and the AUX CH Function is set to "Item 7", the drag brake force can be set in real time using the corresponding button/knob of that channel. In this case, the highest signal will be the drag brake setting, and decrease linearly as the signal is reduced to lowest signal.
8. Drag Brake Rate:
   Usually called slow brake, this will set how aggressively the drag brake is applied when the throttle is returned to neutral. This setting has 9 options to adjust, the higher the level is,the more agressive the drag brake will apply. When set properly for the surface being driven on the vehicle can stop stably. In Auto mode,the system adjusts the drag brake rate automatically as per the current draw, the higher the current draw, the lower the drag brake rate, it can help prevent vehicle from flipping over or the drivetrain from damage due to the aggressive application of drag brake when driving at a high speed but also provides precision control when driving at a low speed.
9. Max. Reverse Force:
   Select different parameter value can produce different max reverse force.
10. Max.Brake Force:
    The ESC provides proportional braking function, with the size of the braking force and the position of the throttle trigger relatable. The maximum braking force refers to the braking position when the brake is applied. Depending on the vehicle, select the appropriate maximum braking force.
11. RPM Decrease Rate:
    This refers to the speed of rpm change when reducing the throttle (from high to low throttle) in the normal mode. The higher the value, the faster the change. If you would like to have a "coasting" feeling when the throttle is reduced, like a normal brushless system, this value needs to be set low.
    Note: this parameter is only valid for normal running mode.
12. Punch:
    The Punch setting is used to control how aggressive the motor starts. The higher the value the more aggressive the starts will be. Lowering the punch setting can help with low traction situations, or stuttering when the throttle is aggressively applied.
13. Neutral Range:
    Some radios will have a larger neutral range. If you have difficulties calibrating the neutral position increase the value.
14. AUX CH Function:
    This parameter is used to set the real-time adjustment parameters for the idle channel of the transmitter. First, plug a single yellow signal cable from the esc into a idle channel of the receiver, and then set the parameter you want to adjust in real time for this idle channel. This way, you can use the button/knob on the transmitter corresponding to this idle channel to set this parameter in real time. For example, the default parameter is the item 7 "Drag Brake Force", which means that the button/knob on the transmitter corresponding to the channel connected to a single yellow signal cable can be used to adjust the drag brake force in real time. You can set other parameters that you want to adjust in real time using the transmitter through the program box.
    Note: When the AUX CH Function is set to "Item 1" for running mode, the running mode only switches between "Forward and Reverse(RPM Matching)" and "Forward and Reverse(RPM Matching)". Modes corresponding to options 2, 4, and 5 will not take effect.

4 Parameter setting method

This system supports the use of LED and LCD program box pro for parameter settings. Below is an example of the setting method using the LED program box,the connection method for the LCD Program Box Pro/G2 is the same:
With the system turned off, connect the 3pin setting interface on the switch with the interface marked with"- +л"on the program box according to the polarity using a cable with JR plug at both ends. Then power on the system, after a few seconds, all parameters of the ESC can be displayed. The "ITEM" and "VALUE" button on the programming card can quickly select the programming items and parameter values, press "OK" button to save the new parameters in ESC.



5 Factory reset

Use LED program box to restore factory settings:
After connect program box and the ESC, press "RESET" button and then press "OK" button to save, the factory settings can be restored.
Use LCD program box Pro to restore factory settings:
After connecting the program box to the ESC,Click on【Parameter Settings】and select the【Reset Parameters】to restore the factory settings.

6 Automatic Motor Pairing(Optional)

If the motor has been subjected to severe impact or has abnormal heating and abnormal power output during operation, need to do the following automatic motor pairing. The operation method is as follows:
Step 1: Unplug the throttle wire from the receiver, and separate the motor from the gearbox (the motor is in an unloaded state).
Step 2: Connect the esc to the battery and the esc is in the off state. Press and hold the power button, the red light will flash first, then switch to green light flashing after about 8 seconds, now you can release the button, the motor will enter the automatic pairing process (the motor will not rotate), after about 3 seconds, the system will restart and self-check(report LiPo cells), which indicates that the pairing is completed.
Step 3: Re-calibrate the throttle range to ensure normal operation.

07 Explanation for LED Status

1. Startup stage
   - In the normal state after power on, the red light is always on.
   - The red light flashes continuously and rapidly: No throttle signal is detected by the ESC or the neutral position of the ESC does not match with the radio.
   - The green light flashes N times: The number of Lipo Cells detection, flashes N times indicates there are N Lipo.
2. Driving stage
   - The throttle trigger is in neutral range, and the green light goes out.
   - When forwarding, the green light flashes; when at full throttle, the green light is always on.
   - When reversing, the green light flashes; when at full reverse and max reverse force is set to 100%, the green light is always on.
3. When relevant protection functions are triggered, the LED status means:
   - The red light flashes continuously(single flashing, "☆, ☆, ☆"): the system enters low-voltage protection status.
   - Green light flashes continuously(single flashing, "☆, ☆, ☆"): the temperature of system is too high, and enters overheat protection status.

08 Troubleshooting

Malfunction	Cause	Solution
The indicator light is not on after power on, the motor cannot start.	1. The battery voltage is not input to the system; 2. The switch of ESC is damaged.	1. Check whether the connection between the battery and the system is good, whether the plug is soldered poorly, whether there is a problem with the battery; 2. Replace the switch.
Power on and finish inspecting the number of Lipo cells (Green light flashes N times), red light flashes quickly.	1. Throttle signal is not detected by the ESC; 2. The neutral position of ESC and radio is unmatched.	1. Check whether the throttle line is inserted reversely, whether the channel is inserted wrongly and whether the radio is on; 2. The throttle return to neutral position. Recalibrate throttle range.
The car is going in the reversed direction when the forward.	The default rotation direction setting of motor and car frame is unmatched.	Set the parameter item "Motor Rotation" to the opposite direction via program box.
The motor suddenly stopped or significantly reduced the output in running.	1. The receiver is interfered; 2. The ESC enters low voltage protection; 3. The ESC enters overheat protection.	1. Check why the receiver is interfered. Check battery level of transmitter; 2. Red light flashes continuously is low voltage protection, please replace battery; 3. Green light flashes continuously is overheat protection. Please use it after the temperature drops.
When the throttle is in neutral position, the car slowly moves forward or backward.	1. The middle position of radio drifts and the signal is unstable; 2. Throttle range is not calibrated well.	1. Replace a radio with stable signal; 2. Recalibrate throttle range or use throttle TRIM to calibrate midpoint.
The throttle range setting could not be completed.	1. The throttle cable of esc is not inserted the correct channel of receiver, or inserted reversely; 2. Problem with the receiver or transmitter.	1. Check whether the throttle cable is correctly connected to the receiver; 2. If the servo works normally,you can connect the throttle cable of esc to the steering channel to have a test, or change the transmitter/receiver system for test directly.

Resources & Specifications

Visit www.hobbywing.com/en/products/quicrun-fusion-pro-elite for more details about HOBBYWING QuicRun Fusion Pro Elite RC Car Motor