HOBBYWING QUICRUN WP Mini24 ESC Supports Sensorless Brushless Motors User Manual

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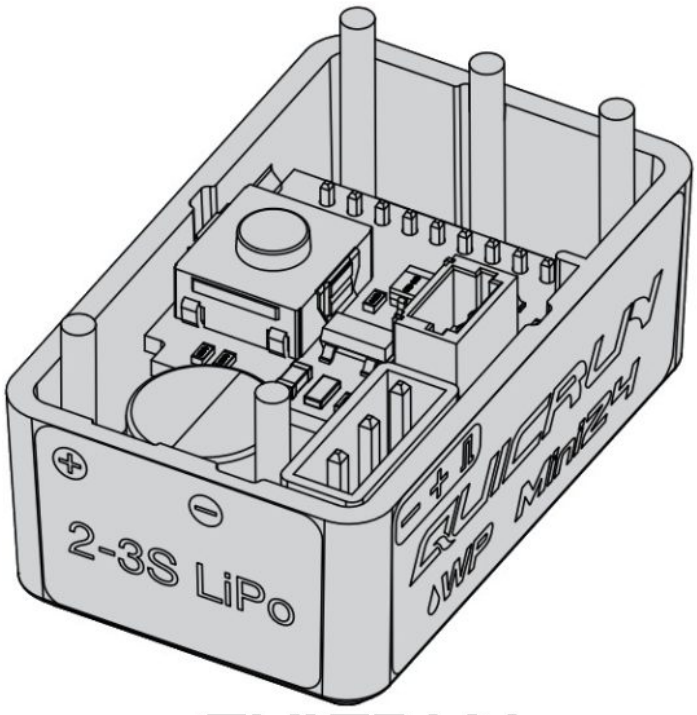


QUICRUN

USER MANUAL
QUICRUN WP Mini24
20240821

Contents

Disclaimer

Thank you for purchasing this HOBBYWING product! We strongly recommend reading through this user manual before use. Since we have no control over the use, installation, or maintenance of this product, no liability may be assumed for any damage or losses resulting from the use of the product. We do not assume responsibility for any losses caused by unauthorized modifications to our product. We, HOBBYWING, are only responsible for our product cost and nothing else as result of using our product.

HW-SMA339DUL00

Warnings

- 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 soldered are properly secured to avoid short circuits from happening. A good soldering station is recommended to do such a job to avoid overheating the circuit board as well as to ensure connections are properly soldered.
- Even though the product has relevant protective measures, always use it in a safe manner in accordance with the operating environment noted in the manual (e.g, voltage, current, temperature and etc).
- 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.

Features

- It supports sensorless brushless motors and brushed motors.Compatible with most brushed or brushless

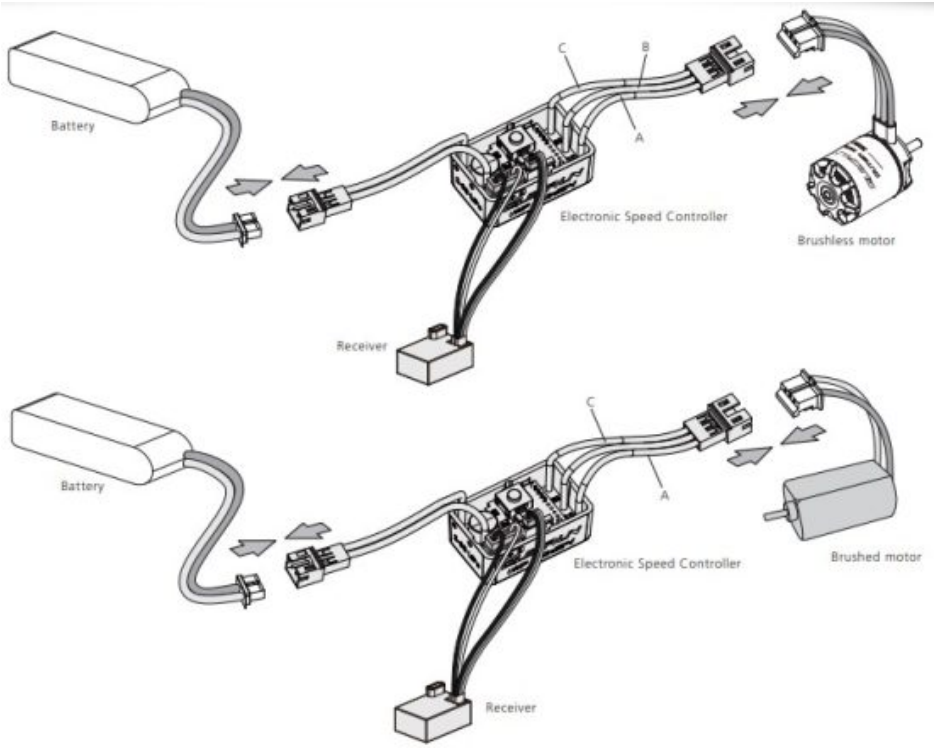
motors on the market.

- 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.
- Separate programming port to easily connect the LED program card or the LCD Pro program box to the ESC.
- Multiple protections: motor lock-up protection, low-voltage cutoff protection, thermal protection, overload protection, and fail safe (throttle signal loss protection).
- It has the function of using transmitter (AUX channel) to adjust the drag brake force in real time.

Specifications

Model	QUICRUN WP Mini24
Cont./Peak Current	25A/60A
Supported types of motors	Sensorless brushless motor, and brushed motor.
Applications	1/24 Vehicles 1/18&1/16 Crawlers
Applicable motors	QUICRUN Outer 1621, mainstream 1212, 1806 sensorless outrunner motors; 050, 130, 180 including other brushed motors.
LiPo Cells	2-3S LiPo
BEC Output	6V/7.4V adjustable Continuous Current of 2A
Size/Weight	28.1mm*17.9mm*12mm/10.8g (Included wires&connectors)
Programming Port	Independent programming port

Connections



Refer to the wiring instructions and wiring diagram

1. **Motor connection**

   • Brushless motor

   The #A/#B/#C of the ESC can be connected to the three wires of the motor randomly. If the direction of rotation is reversed, exchange the two motor wires or adjust using a program box to change the parameter item “Motor Rotation”.

   • Brushed motor

   The two wires of the brushed motor need to be connected to #A/#C of the ESC. If the direction of rotation is reversed, you should exchange the two motor wires, or change the parameter item “Motor Rotation”. Do not connect the two wires of the brushed motor to the #B wire of the ESC, otherwise the vehicle will not be able to operate normally.

   Note: According to the motor used, please make sure to set the correct Motor Type (item 2 in the parameter table), otherwise it will not work correctly.

2. **Recevier connection**

   • Connect the ESC throttle cable to the throttle channel on the receiver. Since the throttle cable of esc will have BEC voltage output to the receiver and servo, please do not supply additional power to the receiver, otherwise the esc may be damaged. If additional power is required, disconnect the red wire on the throttle plug from the ESC.

   • Connect the independent programming interface of the esc to the idle/Aux channel of the receiver using the white and black signal wires (with JR plugs at both ends) from the packaging box, which can achieve the function of real-time adjustment of the drag brake force corresponding to the channel switch/knob of the transmitter. This is optional and not required.If you do not have an AUX channel to use, the aux cable can be unplugged.

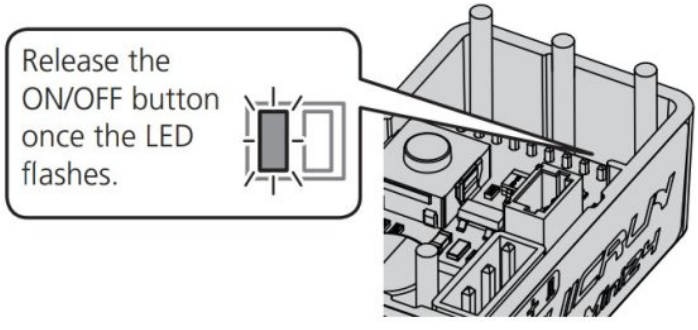
3. **Battery connection**

   Make sure that the (+) pole of the ESC is connected to the (+) pole of the battery and (-) to the (-). If the connection is reversed, the ESC will be damaged and will not be covered by the warranty service.

ESC Setup

1. Set the Throttle Range-ESC Calibrat ion Process

On the first use the ESC or the transmitter changes “Throttle TRIM” ,or the transmitter has been replaced, the throttle range is need to reset. We strongly recommend to open the fail safe function of the transmitter, set the no signal protection of throttle channel (“F/S”) to close the output or set the protection value to the throttle neutral position. Thus the motor can stop running if the receiver cannot receive the signal of the transmitter. The calibration steps are below.



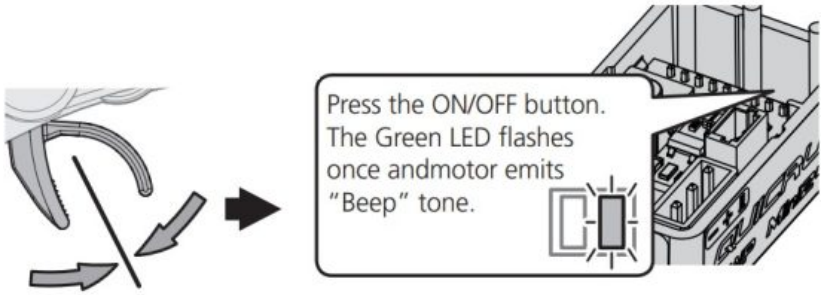
1. Turn on the transmitter, ensure all parameters (D/R, EPA, ATL)on the throttle channel are at default (100%). For transmitter without LCD, please turn the knob to the maximum, and the throttle “TRIM” to 0. (If the transmitter

without LCD, turn the knob to the middle point). This step can be skipped if the transmitter's settings are default

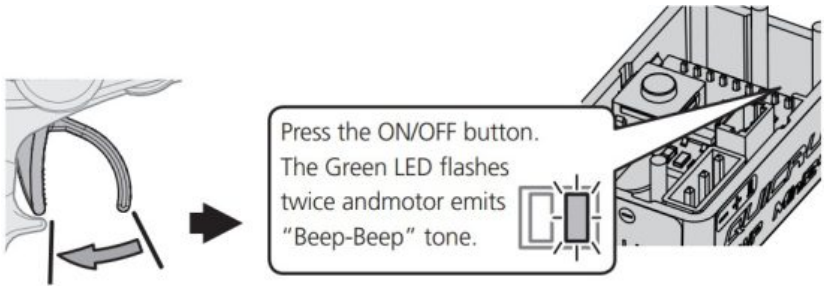
2. Start by turning on the transmitter with the ESC turned off but connected to a battery. Holding the "ON/OFF" button, the RED LED on the ESC starts to flash the motor beeps at the same time, and then release the ON/OFF button immediately.

   Note: Beeps from the motor may be low sometimes, and you can check the LED status instead.

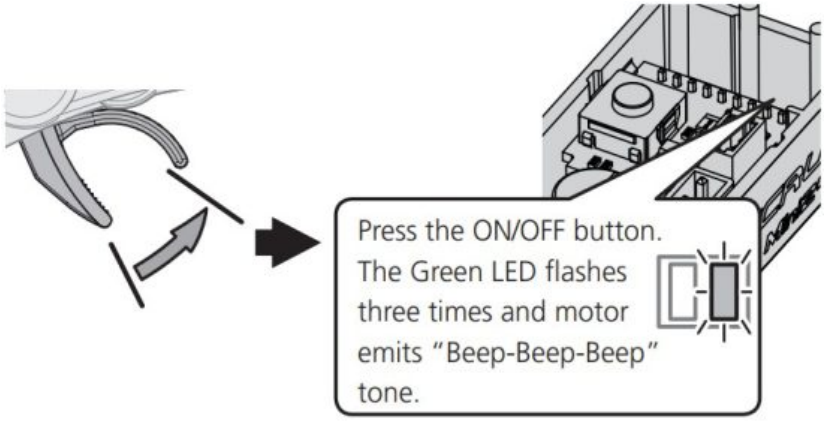
   With the throttle trigger in the neutral position



   Move the throttle trigger to the full throttle



   Move the throttle trigger to the full reverse/brake



3. Set the neutral point, the full throttle endpoint and the full reverse/brake endpoint.

   • Leave transmitter at the neutral position, press the "power" button, the GREEN LED blinks 1 time and the motor beeps 1 time to acceptthe neutral position.

   • Pull the throttle trigger to the full throttle position, press the "power" button, the GREEN LED blinks 2 times and the motor beeps 2 times to accept the full throttle position.

   • Push the throttle trigger to the full brake position, press the "power" button, the GREEN LED blinks 3 times and the motor beeps 3 times to accept the full reverse/brake position.

4. The motor can be started after the ESC/Radio calibration is complete.

2. Power on/of f and beep instruct ions

Switch instructions: short press power button to power-on, long press on power button to shut down.
Instruction for sound: Start in normai 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.

3. Instruct ion for programmable items

The highlighted options are the default settings of the system.

Item	Option 1	Option2	Option3	Option4	Option5	Option6	Option7	Option8	Option9
1. Running Mode	Forward with Brake	Forward/ Reverse with Brake	Forward and Reverse						
2. Motor Type	Brushed	Brushless							
3. Cutoff Voltage	Disabled	Auto(low)	Auto(medium)	Auto(high)					
4. Motor Rotation	CCW	CW							
5. BEC Voltage	6.0V	7.4V							
6. Drag Brake Force	0%	10%	20%	30%	40%	60%	80%	90%	100%
7. Drag Brake Rate	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9
8. Max.Reverse Force	25%	50%	75%	100%					
9. Max.Brake Force	10%	20%	30%	40%	50%	60%	70%	85%	100%
10. Punch	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9
11. Neutral Range	4%	6%	8%	10%	12%				
12. FOC Power	Disabled	9%	12%	15%	18%	21%	24%	27%	30%
13. Low Speed Throttle	10%	15%	20%	25%	30%	40%	60%	80%	100%

Note: 1% step adjustment is allowed when using LCD for items 6 9 12 13. After reconnecting the LED, the corresponding items will be displayed in a rounding manner.

1. **Running Mode:**

   Option 1: Forward with brake The vehicle can only move forward and has brake function. This is also commonly acceptable at races.

   Option 2: Forward/Reverse and Brake This option is known to be the “training” mode with “Forward/Reverse with Brake” function. 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.

Option 3: Forward and Reverse When the throttle trigger is pushed from neutral to reverse position, the motor reverses. This mode is generally used in special vehicles.

2. **Motor Type:**

   This parameter is used to select either brushed or brushless motor types. Please set this parameter according to the actual motor used. Wrong selection will operate abnormally.

3. **Cutoff Voltage:**

   Low Voltage Cutoff for LiPo Protection. This item is mainly for preventing the LiPo pack from over-discharge. If the low-voltage cutoff protection is enabled, the ESC will monitor the battery voltage all the time and gradually reduce the output to 50% (in 3 seconds) and cut it off about 40 seconds later when the voltage goes below the cutoff threshold. The Red LED will flash a single flash that repeats (☆-, ☆-, ☆-….) when the ESC enters the low-voltage cutoff protection. The ESC will not cut off the power when the voltage is low if the low-voltage cutoff protection is disabled. We don't recommend setting the "Cutoff Voltage" to "Disabled" when using a LiPo pack, otherwise, the battery will be damaged due to over-discharge. Voltage – The specific voltage values correspond to "Low/Intermediate/high" are 2.8V/3.1V/3.4V per cell. Please note, due to a number of variables you may not see exactly these same voltage values.

4. **Motor Rotation:**

   This feature allows the changing of the motor's forward direction. To check, look at the motor with the shaft facing you. If the motor spins counter clockwise if this item is set to CCW; the motor spins clockwise if set to CW. The drive train of your chassis will determine what direction motor you should use. Some vehicles use normal or CCW rotation, other vehicles use CW or backwards rotation motors.

5. **BEC Voltage:**

   BEC voltage supports 6.0V/7.4V adjustable, generally 6.0V is applicable to common steering servo, if high voltage steering servo is used, it can be set higher.

   Please refer to the steering servo voltage identification for specific setting voltage.

   Note: Do not set the BEC voltage above the maximum operating voltage of the servo, as this may damage the servo or even the ESC.

6. **Drag Brake Force:**

   It is the braking power produced when the throttle is at the neutral position. (**Attention!** Drag brake will consume more power and heat will be increased, apply it cautiously.). Higher drag brake means stronger hold or hill brakes.

7. **Drag Brake Rate:**

   It's the rate at which the drag brake increases to the preset value. This feature slows down how rapidly the ESC applies the drag brakes. Lower values are slower and prevent sudden stops or jerky stopping movements. You can choose the drag brake rate from level 1 (very soft) to level 9 (very aggressive).

8. **Max. Reverse Force:**

   The reverse force of the value will determine its speed. For the safety of your vehicle, we recommend using a low amount.

9. **Max. Brake Force:**

   This ESC provides proportional braking function,the braking effect is decided by the position of the throttle trigger. It sets the maximum brake force when the throttle trigger is at the full brake position. Large amount will shorten the braking time but it may damage your pinion and spur gear.Please set the appropriate value according to the vehicle's condition.

10. **Punch:**

    Punch can be used to control overall motor response,in relation to the throttle input. The higher the set

value,the faster the acceleration. Lower punch settings are advised for softer starts, lower traction, or to help with motor hesitations or stuttering when throttle is applied rapidly.

11. **Neutral Range:**

    As not all transmitters have the same stability at “neutral position”, please adjust this parameter as per your preference. You can adjust to a bigger value when this happens. The neutral range is the “dead zone” or “dead band” of the throttle/brakes. If you notice inconsistent drag brakes, you would increase your neutral range value.

12. **FOC Power:**

    The torque will be greater in the low-speed throttle range when the FOC power is set to a bigger value. Select the appropriate value according to the actual usage when the vehicle is climbing. The larger the value is selected, the greater the climbing force in the low-speed throttle range. At the same time, the temperature of the motor will rise.

13. **Low Speed Throttle:**

    The larger the setting of this parameter, the larger the range of the low-speed throttle range. For example, if Low Speed Throttle is set to 60%, then 0%-60% of the throttle will operate at low speed. Set the corresponding value according to the usage and needs.

    Note: Items 12 and 13 are only effective when using brushless motors.

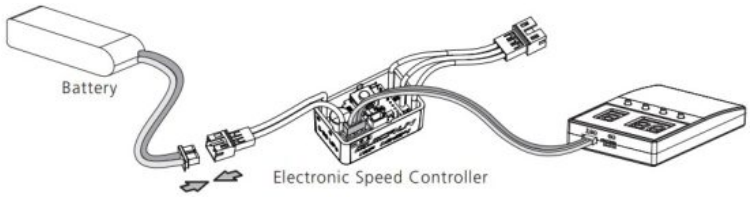
4. Programming method

1. **The LED program card is used to set the parameters**

   Connect the interface marked with “- + ” on the esc to the interface marked with “- + ” on the program card using a separate programming cable(a cable with JR plugs at both ends included in the program box packaging),then connect the esc to the battery and turn it on. Using the “ITEM” and “VALUE” buttons on the program card to quickly select and change the values. Press “OK” to save the parameters.

2. **Program your ESC with a multifunction LCD program box pro**

   Connect the interface marked with “- + ” on the esc to the interface marked with “ESC” on the program box using a separate programming cable(a cable with JR plugs at both ends included in the program box packaging), then connect the esc to the battery and turn it on. Click on Parameter Settings to set the esc.



5 Factory reset

Below are several ways to recover factory parameters:

1. **The LED program card:**

   Once the LED program card is connected to the ESC, press the “RESET” key and then press “OK” to save to restore the factory settings.

2. **The LCD program box pro:**

   After connecting the program box to the ESC, Click on Parameter Settings and select the Reset Parameters to

restore the factory settings.

Explanation for LED Status

1. **During the Start-up Process**
   • The RED LED turns on solid indicating the ESC doesn't detect any throttle signal or the throttle trigger is at the neutral position.
   • The GREEN LED flashes "Number" times indicating the number of LiPo cells you have connected to the ESC.
2. **In Operation**
   • RED & GREEN LEDs die out when the throttle trigger is in throttle neutral zone.
   • The RED LED turns on solid when your vehicle runs forward. The GREEN LED comes on when pulling the throttle trigger to the full (100%) throttle endpoint.
   • The RED LED turns on solid when you reverse, the GREEN LED will also come on when pushing the throttle trigger to the full reverse endpoint and setting the "maximum brake force" to 100%.
3. **When Some Protection is Activated**
   • The RED LED flashes a short, single flash and repeats (☆, ☆, ☆) indicating the low voltage cutoff protection is activated.
   • The GREEN LED flashes a short, single flash and repeats (☆, ☆, ☆) indicating the ESC thermal protection is activated.
   • The red and green lights flash simultaneously (single flash, flashing in "☆, ☆, ☆" mode): Motor error protection, the motor used does not correspond to the parameter item "Motor Type" option.

Trouble Shooting

Trouble(s)	Possible Causes	Solution(s)
The light does not turn on after power-up, the motor does not start.	1. The battery voltage is not output to the ESC; 2. The switch is damaged.	Check the battery,and whether the connection between battery and esc is good and whether the plug is soldered well;
The motor does not start after power-up, with a "beep beep-, beep-beep-" warning tone accompanied by a flashing red light (approximately 1 seconds for each set of two-tone intervals) .	The battery pack voltage is not within the range of support.	Check the battery voltage or change the battery for test.
After power on, the red light flashes quickly.	1. The throttle signal is not detected by the ESC; 2. The neutral point of the ESC is not calibrated correctly.	1. Check if the throttle wire is plugged into the correct channel. Check if your transmitter is turned on. Check if the receiver ok. 2. Recalibrate the throttle travel.

The car is going in the reversed direction when the forward throttle is applied.	The transmission on the car kit is different.	1. For brushless motors, any two of the three wires on the motor can be interchangeable or adjusted through the ESC parameter item “motor rotation direction”. 2. For brushed motors, interchange the two wires, or adjust it through the ESC parameter item “motor rotation direction”.
The motor suddenly stopped or significantly reduced the output in running.	1. Possible interference; 2. The ESC enters into low-voltage protection state; 3. The ESC enters into overheat protection state.	1. Check the cause of the interference in the receiver and check the battery level of the transmitter; 2. Replace the battery if red light keeps flashing; 3. The green light continues to flash for temperature protection, please continue to use after the ESC or motor temperature is reduced (it is recommended to reduce the load on the vehicle).
The motor stuttered and unable to start.	1. The motor is connected incorrectly; 2. ESC fault (partial power pipe MOSFET burned out). 3. Motor type selection error	1. Check the plugs and the solder points and whether the sequence of A, B and C wires is correct.; 2. Contact the dealer to handle the repair. 3. Adjust the electrical parameters and select the corresponding motor type.
Going forward normally, but not reverse.	1. The neutral point of the remote control throttle channel deviates from the brake area; 2. The parameter item “Runnig Mode” is set incorrectly; 3. The ESC is damaged.	1. Recalibrate the esc,when the throttle trigger is at the neutral point, the esc lights are off; 2. The parameter item “Runnig Mode” is set to incorrectly; 3. Contact the distributor to handle the repair.
The car ran forward/backward slowly when the throttle trigger was at the neutral position.	1. The neutral position on the transmitter was not stable, so signals were not stable either. 2. The ESC calibration was not proper.	1. Replace your transmitter 2. Re-calibrate the throttle range or fine tune the neutral position on the transmitter.
LED displays three end horizontal lines all the time —— — when connecting LED program card.	The program box is connected incorrectly to the ESC.	Please use the correct interface to connect to the programming box. This ESC has a dedicated programming port to connect to.
The throttle travel setting could not be completed.	The ESC did not receive the correct throttle signal.	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.

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Documents / Resources

	**HOBBYWING QUICRUN WP Mini24 ESC Supports Sensorless Brushless Motors** [pdf] User Manual HWA30109004, HW-SMA339DUL00, QUICRUN WP Mini24 ESC Supports Sensorless Brushless Motors, QUICRUN WP Mini24, ESC Supports Sensorless Brushless Motors, Supports Sensorless Brushless Motors, Sensorless Brushless Motors, Brushless Motors, Motors

References

- **User Manual**