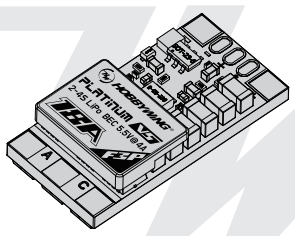


USER MANUAL

PLATINUM

Brushless Electronic Speed Controller

Platinum 18A V5 F3P

20250211

01 Disclaimer

Thank you for purchasing this HOBBYWING product! Please read this declaration carefully before use, once you starts to use, we will assume that you have read and agreed with all the content. Brushless power systems can be very dangerous and any improper use may cause personal injury and damage to the product and related devices, so please strictly follow the instruction during installation and use . Since we have no control over the use, installation, or maintenance of this product, no liability may be assumed for any damages 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 have the right to modify our product design, appearance, features and usage requirements without notification. We, HOBBYWING, are only responsible for our product cost and nothing else as result of using our product. Regarding the possible semantic different between two different versions of declaration, for users in mainland China, please take the Chinese version as standard; for users in other regions, please take the English version as standard.

HW-SMA010DUL

02 Warnings

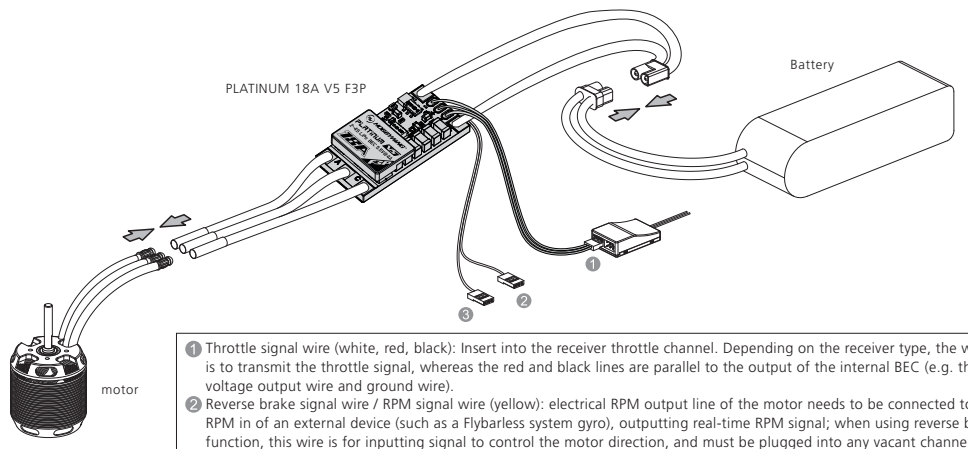
- Before using this product, read the instruction manual carefully. Ensure that all components are used correctly to avoid any damage of the ESC and other components of the system.
- it is important to ensure that all wires soldered are properly secured to avoid short circuits from happening. A good 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).
- Always remember to disconnect the battery each time after using it. Failure to do so will caused the battery to be completely discharged, resulting in an unpredictable danger.

03 Specifications

Model	PLATINUM 18A V5 F3P
Continuous/Peak Current	18A/30A
Input Voltage	2-4S LiPo
BEC	Switch Mode BEC; output voltage 5.5V； ; output current Cont. 4A, Peak 6A
Input/Output Wires	1 x black and 1x red 18AWG silicone wires / 3 x black 20AWG silicone wires
Separate Programming Cable	Gray, for connecting LCD program box or OTA module, or outputting the status data of ESC in real time
Reverse Brake Signal Wire	Yellow, for inputting reverse brake signal, or outputting real-time RPM signal
LED Light	RED,Display the statuses and fault alerts
Size/Weight	24.6*12.8*7.5mm /11.9g (INCL wires)
The Scope of Application	120g-320g, F3P electric fixed-wing

04 User guide

1 Wiring diagram



1. Throttle signal wire (white, red, black): Insert into the receiver throttle channel. Depending on the receiver type, the white wire is to transmit the throttle signal, whereas the red and black lines are parallel to the output of the internal BEC (e.g. the BEC voltage output wire and ground wire).
2. Reverse brake signal wire / RPM signal wire (yellow): electrical RPM output line of the motor needs to be connected to the RPM in of an external device (such as a Flybarless system gyro), outputting real-time RPM signal; when using reverse brake function, this wire is for inputting signal to control the motor direction, and must be plugged into any vacant channel on the receiver.
3. Separate Programming Cable (gray): for connecting the ESC to a LCD program box or OTA module.

2 Normal boot process

Turn on the transmitter and push the throttle stick to the lowest point (0% TH point) → After connected the ESC to a battery, the motor will emit " ♪ 123" indicating the ESC is normally powered on → The motor will emit several beeps to indicate the number of LiPo cells → Finally, a long "beep" tone indicates that the ESC self-check is complete and the motor can be driven at any time

3 Throttle stick calibration operation method

Turn on the transmitter and push the throttle to the 100% TH point → After connected the ESC to a battery, the motor will emit " ♪ 123" indicating the ESC is normally powered on → Then motor will sound off with a "beep-beep, indicating entering throttle stick calibration mode, and the highest point is successfully calibrated → Next, push the throttle stick to the bottom position within 5 seconds, and wait 1 second for the throttle lowest point to be calibrated successfully → The motor will emit several beeps to indicate the number of LiPo cells. → Finally, a long "beep" tone indicates that the ESC self-check is complete and the motor can be driven at any time

Note: ESC default throttle range is 1100μs-1940μs (Futaba standard). The throttle range should always be re-calibrated for the first time or when transmitter have been replaced.

4 4D throttle mode switching operation method

4D throttle mode has two ways to switch:
- Through LCD program box or LCD program box pro to switch the mode.
- Through moving throttle stick to access the quickly switching.

How to switch 4D throttle mode through moving throttle stick:

Turn on 4D throttle mode:

Turn on the transmitter and push the throttle to the 100% TH point → After connected the ESC to a battery, the motor will emit " ♪ 123" indicating the ESC is normally powered on → Then motor will sound off with a "beep-beep, indicating entering throttle stick calibration mode → Hold the throttle stick at 100% TH point still, after 5 seconds the motor will sound off with a "beep-beep-beep", indicating exiting throttle stick calibration mode, and entering 4D throttle switching mode, and 4D throttle mode is on → Next, push the throttle stick to the bottom position within 3 seconds, and wait 1 second for the 4D throttle mode to be turned on successfully, then the ESC will reset and reboot. When resetting and rebooting, move the throttle stick t o the 50% TH point → The ESC will proceed the normal boot process. the motor will emit " ♪ 123", indicating the ESC is normally powered on. Then the motor will emit several beeps to indicate the number of LiPo cells, and finally, a long "beep" tone indicates that the ESC self-check is complete and the motor can be driven at any time

Turn off 4D throttle mode:

Turn on the transmitter and push the throttle to the 100% TH point → After connected the ESC to a battery, the motor will emit " ♪ 123" indicating the ESC is normally powered on → Then motor will sound off with a "beep-beep, indicating entering throttle stick calibration mode → Hold the throttle stick at 100% TH point still, after 5 seconds the motor will sound off with a "beep-beep-beep", indicating exiting throttle stick calibration mode, and entering 4D throttle switching mode, and 4D throttle mode is on → Hold the throttle stick at 100% TH point still, after 3 seconds the motor will sound off with a "beep-beep-beep-beep", indicating 4D throttle mode is off → Next, push the throttle stick to the bottom position within 3 seconds, and wait 1 second for the 4D throttle mode to be turned off successfully, then the ESC will reset and reboot. When resetting and rebooting, keep the throttle stick at the bottom position → The ESC will proceed the normal boot process. the motor will emit " ♪ 123", indicating the ESC is normally powered on. Then the motor will emit several beeps to indicate the number of LiPo cells, and finally, a long "beep" tone indicates that the ESC self-check is complete and the motor can be driven at any time

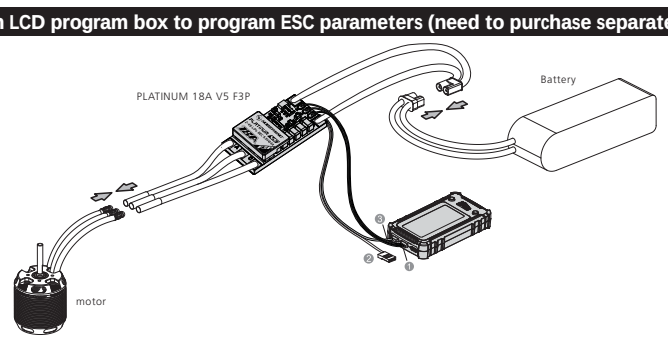
Note:
- If your transmitter is not Futaba series, we recommend you to execute the throttle stick calibration before flight.
- After entering 4D throttle switching mode, if the throttle keeps a high position (above 50% TH point), the ESC will loop emitting "beep-beep-beep" and "beep-beep-beep-beep". If you want to execute throttle stick calibration at this moment, you need to repower the ESC.
- What you can change through moving throttle stick is just turning on or off "4D" value in "Motor direction" item. For example, if you want to set from "Forward" to "4D Reverse", Please use LCD program box or LCD program box pro to set the "Motor direction" value to "4D Reverse" or switch the direction of any two motor wires, and turn on the "4D throttle mode" through moving your throttle stick.

05 ESC Programming & Data Checking

- The parameters of this ESC are programmable, you can adjust relevant parameter settings to meet different flight demands.
- The ESC will record relevant data like the the minimum voltage, and the maximum temperature of the current flight. Therefore, if you want to check the relevant data after the flight, please keep the ESC connected to the pack and then connect the LCD program box or OTA module to the ESC to check the data. Those data won't be stored after the pack is disconnected from the ESC.

1 Use Multifunction LCD program box to program ESC parameters (need to purchase separately)

1. Wiring diagram:



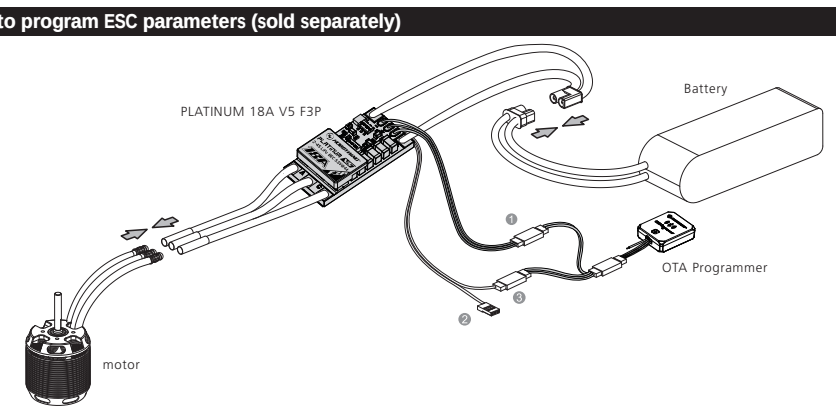
2. ESC Programming Method:
- As the diagram shown above, plug the throttle signal wire into the power supply interface of LCD program box, and plug the programming cable (gray) into the interface labeled "ESC" on the LCD program box, and the gray wire should be aligned with the "S" in label "-+S". Then connect the battery to ESC.
- Press the "OK" button (on the program box) to connect the program box to your ESC, the firmware version of the ESC will be displayed on the screen of the program box after the connection succeeds.
- After successfully entering the "Parameters/Programmable Items" page, press the "ITEM" button (on the program box) to browse the parameter(s) and then press the "VALUE" button to adjust the parameter value(s).
- Press the "OK" button to save the new value(s) to your ESC after adjusting.
- Repeat "step 3" and "step 4" will allow you to adjust the value(s) of other parameter(s).
- After the programming, disconnect the ESC from the battery, unplug the cable for connecting the program box to the ESC, and then power the ESC off and then back on will allow you to run your system with those new parameter settings.

Attention: You need to power the ESC off and then back on after adjusting parameter settings, otherwise, the new values won't come into effect.

3. Check the Running Data of Your ESC:
- (With the battery connected to the ESC), connect the LCD program box to the ESC as shown above.
- Press the "OK" button (on the program box) to connect the program box to your ESC, the firmware version of the ESC will be displayed on the screen of the program box after the connection succeeds.
- Press the "R/P" button to enter the "Data Record" page after successfully entering the "Parameters/Programmable Items" page, continue to press the "R/P" button to browse all the running data of your ESC.

2 Use OTA Module to program ESC parameters (sold separately)

1. Wiring diagram:



2. ESC Programming Method:
- As the diagram shown above, connect the throttle signal wire to a Y-wire, programming cable (gray) to the white end of the Y-wire, and connect OTA module to the other end of the Y-wire. Then connect the battery to ESC.
- Turn on your phone's Bluetooth and connect to the OTA module.
- Once connected, open "HW Link" software from the mobile phone and click on "connection" to make changes to the parameters, view data records and other operations.
- Once completed, disconnect the ESC from the battery by switching off and unplugging the OTA module. Power up again and you are ready to run the new settings.

3. Check the Running Data of Your ESC:
- Do not disconnect the ESC after the flight, then connect the ESC and OTA modules as shown above;
- Turn on your phone's Bluetooth settings and connect to the OTA module.
- Open "HW Link" and click on the icon to connect. Click on "data record" to select and "Airplane" to view the record data.

06 Programmable parameter items and instructions

1 Programmable parameter items and parameter values

	Item	Value			
1	LiPo Cells	*Auto Calculation	2S	3S	4S
2	Low-Voltage Cutoff Type	*Soft Cutoff		Hard Cutoff	
3	Cutoff Voltage	Disabled	2.5V-3.8V (Default *3.0V)		
4	Response Time	1-5 (Default *1)			
5	Brake Type	*Disabled	Normal Brake	Reverse Brake	
6	Brake Force	0-100% (Default 0%)			
7	Timing	0°-30° (Default 15°)			
8	Motor Direction	*Forward	Reverse	4D	4D Reverse
9	Active Freewheeling	*Enabled		Disabled	
10	Start-up Force	1-7 (Default *3)			

"*" in the form below indicate factory defaults.

2 Programmable parameters project description

1. **LiPo Cells:**
The number of battery cells can be calculated automatically and set manually. Select Auto-calculation to calculate the number of battery cells. Error on battery cells will be detectable during self-test and can be adjusted accordingly.
2. **Low-Voltage Cutoff Type:**
Soft Cutoff: The output power will be gradually reduced to 50% of the total power output after low voltage protection is triggered.
Hard Cutoff: Disconnect the power output immediately after low-current protection is triggered.
3. **Cutoff Voltage:**
2.5V~3.8V with 0.1V step adjustability. When using 4S batteries, the protection voltage should be Cutoff Voltage x battery cell count. You can also set the value to "Disabled", when it is set, the Low-Voltage Cutoff function will be turned off.
4. **Response time:**
Adjust the response speed of the throttle. The higher the value, the slower the throttle response speed. 1-5 fully adjustable.
5. **Brake types:**
Normal brake: This function will stop the motor from braking during operating according to the value set on the braking force and try to brake the motor to stop.
Reverse Brake: After selected this option, the Yellow signal wire (its signal range must be the same as the throttle range) must to be plugged into any vacant channel on the receiver, and you can control the motor direction via that channel. The channel range of 0-50% is the default motor direction, and the channel range of 50% to 100% will cause the motor to spin in the reverse direction. The channel stick should be within the channel range of 0-50% (0 would be better) when the first time you power on the ESC. After the Reverse function is activated, the motor will stop first and then spin in the reversed direction and then increase to the speed corresponding to the throttle input.
Attention: When set to "4D" or "4D Reverse", Reverse Brake is not available.
6. **Brake Force:**
When moving the throttle stick to the bottom position, it controls the brake speed (it's the speed that motor comes to a standstill from rotation). The higher the value, the more powerful the brake force and the shorter the time (from rotation to standstill). 0-100%, with 1% step adjustability. This function is only valid in normal brake mode.
7. **Timing:**
This item is for adjusting the ESC timing, it's adjustable between 0 and 30° with the step of 1°.
8. **Motor Direction:**
This item is for setting the rotation direction of the motor, it's "Forward" by default. After connecting the motor to the ESC, if the motor rotates clockwise, when setting this item to "Reverse", the motor will rotates counterclockwise; if the motor rotates counterclockwise when setting this item to "Reverse", the motor will rotates clockwise.
4D: When setting this item to 4D, the zero point of throttle is fixed at 1500us (±40us dead zone), which is the middle point of throttle. When pushing the throttle stick low (towards 1100us), the motor rotates reversely; when pushing the throttle stick high (towards 1940us), the motor rotates forwardly.
4D Reverse: Based on the 4D mode, the difference is that when pushing the throttle stick low (towards 1100us), the motor rotates forwardly; when pushing the throttle stick high (towards 1940us), the motor rotates reversely.
9. **Active Freewheeling:**
This item can be enabled or disabled. With this item enabled, the throttle linearity will be great.
10. **Start-up Force:**
This item is for adjusting the start-up force of the motor (during the start-up process). The higher the value, the larger the start-up force. It's adjustable between 1 and 7.

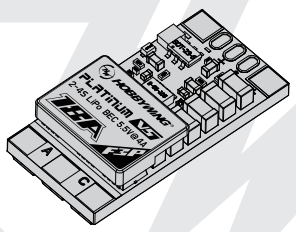
07 Warning Tones and Protection

1 LED indicators and warning notes

Protection	Tone	LED indicator	Instruction
The input voltage is abnormal	"Beep beep, beep beep, beep beep…"	Red LED, followed by the tone	The input voltage is not within the input voltage range
Throttle signal loss	"Beep, -, beep, -, beep, -…"	Red LED, followed by the tone	The throttle signal input was not detected
The throttle stick is not moved to the 0% position	"Beep, beep, beep, beep…"	Red LED, followed by the tone	The throttle value is not at 0% throttle When 4D mode is on, the throttle stick is not at the middle point
The throttle range is too small	"Beep, beep, beep, beep…"	Red LED, followed by the tone	When calibrating the throttle stroke, set the throttle travel too small
Temperature protection	"Beep beep, beep beep…"	Red LED, followed by the tone	The internal temperature of the ESC exceeds the protection temperature
Low voltage protection	"Beep beep beep beep, beep beep beep beep…"	Red LED, followed by the tone	The operating voltage is lower than the set protection voltage

2 Protection function description

1. **Abnormal power-on voltage protection:**
When the ESC is connected to the battery or power supply, it will detect the input voltage. If the input voltage is not within the ESC's operating voltage range, the ESC will determine that the power-on voltage is abnormal and enter the protection state, indicated by alternating high and low beeps and flashing light prompts.
2. **Start-up protection:**
During startup, the ESC will detect the motor speed. If the speed stops rising or the speed increases unsteadily, the ESC will determine that the startup fails. If the throttle is less than 15% at this moment, the ESC will automatically attempt to restart; if the throttle is greater than 20%, the throttle must be reset to 0% before attempting a restart. (Possible reasons for this issue: Poor contact between the ESC and motor connections or disconnection of individual output wires, motor faults, propeller blocked by other objects, jammed gear teeth, etc.)
3. **Temperature protection:**
When the ESC's operating temperature exceeds 120°C, the ESC will gradually reduce the output power for protection. However, the output power will not be completely cut off. The max output power will only be reduced to 50% of the full power to ensure that the motor has the power to land. After the temperature drops, the ESC will gradually restore to the maximum power (above is the soft-cutoff protection mode. If you choose the hard-cutoff mode, the power will be cut off directly).
4. **Throttle signal loss protection:**
When the ESC detects a loss of throttle signal for more than 0.25 seconds, the output is immediately switched off to avoid further damage due to the propeller rotating at a high speed. Once the signal has been restored, the ESC will restore power output accordingly.
5. **Overloading protection:**
If the load suddenly becomes too large or the motor is out of step, the ESC will cut off the power and restart automatically. After restart, if the load is still too large or the motor remains out of step, the power will be cut off completely.
6. **Low voltage cutoff protection:**
When the operating voltage of ESC drops below the set protection voltage, the ESC will gradually reduce the output power for protection. However, the output will not be completely cut off. The max power will only be reduced to 50% of the full power to ensure that the motor still has power to land. When the battery is replaced with a full battery and repowered, the ESC will return to normal.



PLATINUM
空模无刷电子调速器
使用说明书
Platinum 18A V5 F3P

20250211

HW-SMA010DUL

01 声明

感谢您购买本产品！在使用之前，请仔细阅读本声明，一旦使用，即被视为对本声明全部内容的认可和接受！请严格遵守手册安装和使用该产品，无刷动力系统功率强大，错误的使用可能导致人身伤害和设备损坏，我们不承担因使用本产品或擅自对产品进行改造所引起的任何责任，包括但不限于对附带损失或间接损失的赔偿责任！我们有权在不经通知的情况下变更产品设计、外观、性能及使用要求。关于不同语言版本的免责声明可能存在语义差异，中国大陆地区以中文版为准，其他地区以英文版为准。

02 注意事项

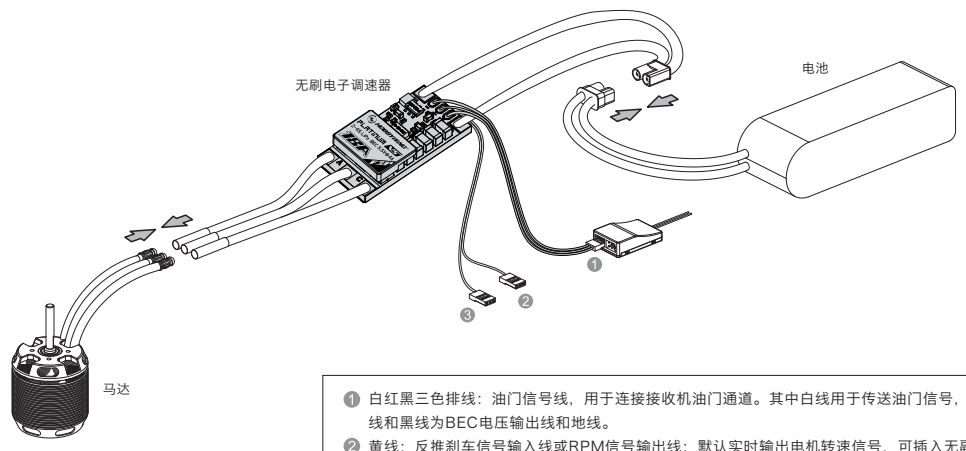
- 使用本产品前，请认真查看各设备以及飞行器的使用说明书，确保动力搭配合理，避免因错误的动力搭配导致电机超载，最终损坏电调。
- 安装本产品时，由于需要进行焊接，连接等操作，所以请务必确保所有电线和连接部件绝缘良好，短路将会毁坏本产品。对本产品的相关线材进行焊接操作时，为保证焊接牢靠，请使用足够功率的焊接设备进行焊接。若连接不良，您可能不能正常控制飞行器，或出现设备损坏等其他不可预知的情况。
- 使用本产品时请远离不安全因素，如障碍物，人群，高压线等。请严格按照本手册中规定的工作环境置（如电压，电流，温度等参数）使用，虽然本产品有相关保护措施，但极限的使用还是有可能会对本产品造成永久性的损坏。
- 使用完毕后，切记将电源切断。如使用电池未断开，电调有可能会误驱动电机转动，造成不可预知的危险，若长时间连接电池，电池最终会被完全放电，进而导致电池或电调出现故障。

03 产品规格

型 号	PLATINUM 18A V5 F3P
持续/瞬间电流	18A/30A
输入电压	2-4节锂电池
BEC	开关稳压BEC；输出电压5.5V；输出电流持续4A，瞬间6A
输入/输出线	1*黑色&1*红色18AWG硅胶线 / 3*黑色20AWG硅胶线
独立参数编程线	灰色，用于连接LCD参数设定盒或OTA模块调整电调参数，或实时输出电调状态数据
反推信号输入线	黄色，用于输入反推信号，或者实时输出RPM信号
LED指示灯	红色，用于显示电调运行状态以及故障提示
尺寸/重量	24.6*12.8*7.5mm /11.9g (含线)
应用范围	120g-320g小型电动固定翼F3P

04 使用向导

1 接线示意图



❶ 白红黑三色排线：油门信号线，用于连接接收机油门通道。其中白线用于传送油门信号，红线和黑线为BEC电压输出线和地线。
❷ 黄线：反推刹车信号输入线或RPM信号输出线；默认实时输出电机转速信号，可插入无副翼系统转速输入通道；使用反转刹车功能时，该线为反推刹车输入信号，必须将该线接入到遥控器的其他空闲通道上，使用该通道来控制电机的正转与反转。
❸ 编程线（灰）实时：连接LCD编程盒或OTA模块进行参数设置。

2 正常的开机过程

开启遥控器，将油门摇杆保持在最低点（0%油门位置） → 电调接上电池，电机鸣叫“♪123” 提示音，表示上电正常 → 随后发出N声短鸣音“哔”，表示锂电池节数 → 最后发出一声长鸣音“哔——”，表示系统准备就绪，随时可以起飞

3 油门行程校准操作方法

开启遥控器，将油门打到最高点 → 电调接上电池，电机鸣叫“♪123”提示音，表示上电正常 → 然后电机发出“哔，哔”双短鸣音，表示进入油门行程校准功能，并油门最高点校准成功 → 5秒内将油门摇杆推到最低，等待1秒，油门最低点校准成功 → 马达发出N声短鸣音，表示锂电节数 → 马达发出长鸣音“哔——”表示系统准备就绪，可随时起飞

注意：电调的油门行程出厂默认值为1100μs—1940μs（Futaba标准），当首次使用电调或者更换其他遥控器使用时，均应重新设定油门行程。

4 4D油门开关操作方法

4D油门有两种开启方法：
・一种可以通过LCD/LCD Pro设定盒或OTA开启或关闭。
・ 通过油门打杆快速开启或关闭。
下面介绍通过油门打杆快速开启和关闭：

开启4D油门：

开启遥控器并将油门打到最高点 → 电调接上电池，电机鸣叫“♪123”提示音，表示上电正常 → 随后电机发出“哔，哔”双短鸣音，表示进入油门行程校准功能 → 保持最高点不动，5秒后电机发出“哔，哔，哔”三声短鸣音，表示退出油门行程校准，进入4D油门开关设置，此时4D油门设置为开 → 3秒内将油门摇杆推到最低，等待1秒，4D油门打开成功，此时电调自动复位重启。重启复位时需将油门摇杆推至中位。 → 随后电调执行正常上电过程。电机依次鸣叫“♪123”，锂电池节数 提示音并在最后发出一声长鸣音“哔——”，表示系统准备就绪，随时可以起飞

关闭4D油门：

开启遥控器并将油门打到最高点 → 电调接上电池，电机鸣叫“♪123”提示音，表示上电正常 → 随后电机发出“哔，哔”双短鸣音，表示进入油门行程校准功能 → 保持最高点不动，5秒后电机发出“哔，哔，哔”三声短鸣音，表示进入4D油门开关设置，此时4D油门设置为开 → 保持最高点不动，3秒后电机发出“哔，哔，哔，哔”四声短鸣音，表示进入4D油门开关设置，此时4D油门设置为关 → 3秒内将油门摇杆推到最低，等待1秒，4D油门关闭成功，此时电调自动复位重启。重启复位时需将油门摇杆保持在低位。 → 随后电调执行正常上电过程。电机依次鸣叫“♪123”，锂电池节数 提示音并在最后发出一声长鸣音“哔——”，表示系统准备就绪，随时可以起飞

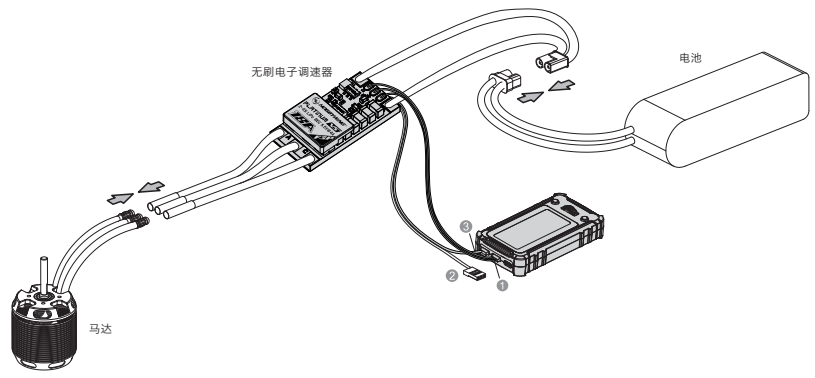
注意：
1）如使用非Futaba遥控时，建议先进行油门行程校准。
2）当电调进入4D油门开关设置时，如油门一直在高位不下拉，会在三声和四声鸣叫中循环提示，如果此时要进行油门行程校准，需断开电调的电源重新上电。
3）此操作打开或关闭的“4D”功能为参数 “电机转向”中的“4D”参数，如果需要反向4D模式下的电机转向，请使用LCD或LCD Pro参数设定盒设置“电机转向”为“4D反向”或手动调换电机连接电调的任意两根连接线。

05 参数设定与电调运行信息查看方法

・ 本电调可进行参数设定，以满足不同的飞行需求。
・ 本电调会记录当次飞行的最低电压、最高温度等信息，所以当此飞行结束后如需查看，请不要断开电源保持电调处于供电状态，连接LCD参数设定盒或OTA模块即可查看。断电后信息将不会保存。

1 使用LCD参数设定盒调参（需另购）

1. 接线示意图：

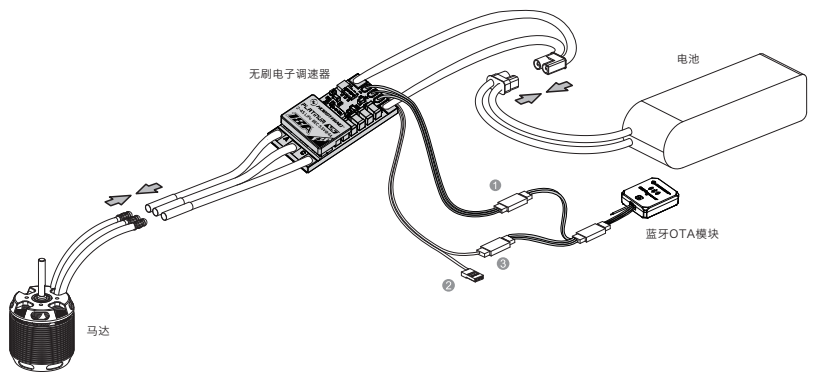


2. 参数设定方法：
・ 按上图将电调油门信号线插入LCD参数设定盒供电接口，将灰色编程线插入LCD参数设定盒标识“ESC”的接口，灰色线对准标识“-+S”中的“S”连接，随后将电调连接电池；
・ 按“OK”键连接设定盒与电调，连接成功后将显示电调当前的固件版本号；
・ 成功进入参数界面以后，按“ITEM”键即可浏览参数项，按“VALUE”键即可更改该参数项的设定值；
・ 更改设定值以后，按“OK”键即可保存修改后的设定值；
・ 重复第三第四步操作可修改其他参数项设定值；
・ 参数设定完成后，断开电调与电池连接，拔掉电调与参数设定盒连接线，将电调断电以后重新上电即可运行新的参数设置进行工作。
注意：更改任意参数设定值后，电调均需重新上电，新的参数设定值才可生效。

3. 电调运行信息查看方法：
・ 按上图连接电调与LCD参数设定盒；
・ 按“OK”键连接设定盒与电调，连接成功后将显示电调当前的固件版本号；
・ 成功进入参数界面以后，按“ITEM”键，在翻过电调参数设定后，即可进入浏览电调运行信息；

2 OTA模块调参（需另购）

1.连接示意图：



2. 参数设定方法：
・ 按上图使用Y线将电调油门线连接至Y线供电线，灰色编程线连接连接至Y线白色线端，Y线另一端连接OTA模块，随后将电调连接电池；
・ 打开手机蓝牙设置，连接OTA模块。
・ 成功连接以后，打开手机端“HW Link”软件，点选连接电调按钮，即可对电调进行参数更改，查看数据记录等操作。
・ 成功保存参数以后,断开手机APP与电调的连接，拔掉OTA模块，将电调断电以后重新上电即可运行新的参数设置进行工作。

3. 电调运行信息查看方法：
・ 按上图连接电调与OTA模块；
・ 打开手机蓝牙设置，连接OTA模块。
・ 成功连接以后，打开手机端“HW Link”软件，点选连接电调按钮，成功连接后，点击数据记录按钮选择空模即可查看记录数据。

06 可编程参数项及说明

1 可编程参数项目

	参数项目	参 数 值			
1	锂电节数	*自动计算	2节	3节	4节
2	低压保护模式	*软关断		硬关断	
3	低压保护阈值	关闭	2.5V-3.8V(默认3.0V)		
4	响应时间	1-5（默认1）			
5	刹车类型	*无刹车	普通刹车	反推刹车	
6	刹车力度	0-100%（默认0%）			
7	进角	0°-30°（默认15°）			
8	电机转向	*默认	反向	4D	4D反向
9	DEO开关	*开启		关闭	
10	启动力度	1-7（默认3）			

带*的为出厂默认设置

2 可编程参数项目说明

1. 锂电节数：
可自动计算，也可手动设置电池节数。选择自动计算，将按单节电池3.7V计算电池节数。若出现电调自检过程中鸣叫电池节数错误，可调节此项纠正检测；
2. 低压保护模式：
软关断：触发低压保护后输出功率将逐渐降低为总功率的50%；
硬关断：触发低压保护后，立即关闭动力输出。
3. 低压保护阈值：
2.5V-3.8V可调，步进为0.1V，该值为单节电池的电压值（例如3.0V/节），若您使用的是4节锂电池，则保护电压（例如12V）=设置低压保护的值（3.0V/节）×4；也可以设置为关闭，当设置为关闭时，低压保护功能关闭。
4. 响应时间：
调节油门的响应速度，数值越大，油门响应速度越慢。1-5可调，调节步长为1。
5. 刹车类型：
10.1普通刹车：设置为该功能时，油门摇杆归零后，电调将按照设定的刹车力度将电机减速直至停转。
10.2反推刹车：开启反推刹车功能后，须将黄色信号线（信号范围和油门行程一致）插入到接收机的一个空闲通道上，通过该通道控制电机正反转，通道行程0-50%为电机默认设置转向，通道行程50%-100%触发电机反转。初次上电该通道摇杆所处位置建议为该通道行程0-50%范围内（最好为0），否则有可能会出现推动油门后电机先正转后反转得情况。触发反转时，电机先刹停，再反转加速至油门摇杆输出的油门量。
注意：设置为“4D”或者“4D反向”时，反推刹车不可用。
6. 刹车力度：
设定普通刹车功能下油门归零以后，电机停转的速度，数值越大，电机拖刹的力度就越强，电机从旋转到停止的时间也就越短。0-100%可调，步长为1%；（该功能仅在普通刹车模式下有效）。
7. 进角：
调节电调驱动电机的进角，0-30°可调，步长为1°。
8. 电机转向：
设置电机转向，若您连接好电机与电调以后，默认电机为正转，则设置为反转后电机将反转，若默认电机为反转，则设置为反转后电机将正转；
4D：设置为4D转向时。此时油门零点固定为油门中位1500us（±40us死区）。向油门低位（1100us方向）拉杆电机反转。向油门高位推杆（1940us方向），电机正转。
4D反向：在4D转向的基础上。向油门低位（1100us方向）拉杆电机正转。向油门高位推杆（1940us方向），电机反转。
9. DEO开关：
可选择开启\关闭，开启DEO将带来更好的油门线性。
10. 启动力度：
调整电机启动时的启动力度，数值越大启动力度越大，1-7可调。

07 LED指示灯，警示音及保护功能说明

1 LED指示灯及警示音说明

保护情况	提示音	LED指示灯	说明
输入电压不正常保护	“哔哔、哔哔、哔哔、哔哔…”	红色，跟随提示音闪烁	输入的电压不在规定的输入电压范围内
油门信号丢失保护	“哔、—、哔、—、哔、—…”	红色，跟随提示音闪烁	电调未检测到油门信号输入
油门摇杆未归零保护	“哔、哔、哔、哔…”	红色，跟随提示音闪烁	电调检测到油门值不为0%油门，开启4D功能后，则为油门不在中位提示
油门行程过小保护	“哔、哔、哔、哔…”	红色，跟随提示音闪烁	进行油门行程校准时，设置的油门行程过小
电调温度保护	“哔哔，哔哔…”	红色，跟随提示音闪烁	电调内部温度超过规定的保护温度
电调低压保护	“哔哔哔哔,哔哔哔哔…”	红色，跟随提示音闪烁	工作电压低于设置的保护电压

2 保护功能说明

1. 上电电压异常保护：
电调连接电池或电源时，会检测输入的电压，若输入电压不在电调的工作电压范围，则判断上电电压异常，进入保护状态，高低音循环鸣叫并闪灯提示。
2. 启动保护：
启动过程中，电调会检测电机转速，当转速出现停止上升或者转速提升不稳定的情况，则判断启动失败，若此时油门小于15%，电调会自动尝试重新启动；若此时油门大于20%，需将油门归零后重新启动。（出现这种情况的原因可能有：电调和电机连线接触不良或有个别输出线断开、电机自身有故障，螺旋桨被其他物体阻挡、减速齿卡死等）
3. 温度保护：
当电调工作温度超过120摄氏度时，电调会逐渐降低输出功率进行保护，但不会将输出功率全部关闭，最多只降到全功率的50%，以保证马达仍有动力，避免因动力不足而摔机。温度下降后，电调会逐渐恢复最大动力；（以上为软关断保护方式，若选择硬关断，则直接切断动力）
4. 油门信号丢失保护：
当电调检测到油门遥控信号丢失0.25秒以上即立即关闭输出，以免因螺旋桨继续高速转动而造成更大的损失。信号恢复后，电调也随即恢复相应的功率输出。
5. 过载保护：
当负载突然变得极大或者电机失步时，电调会切断动力，并自动重启动，重启动后若负载依旧很大或者电机依旧出现失步，将彻底切断动力。
6. 低压保护：
当电调工作电压低于设定的保护电压时，电调会逐渐降低输出功率进行保护，但不会将输出功率全部关闭，最多只降到全功率的50%，以保证马达仍有动力可以降落，更换新电池重新上电后恢复正常。