

DUALSKY®
ADVANCED POWER SYSTEMS

XC500TF-Crawler



Brushless Electronic
Speed Controller
无刷速度控制器

No. 45620

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Please read these Instructions carefully before using
this product in order to avoid incorrect operation which
may cause damage to the product.

<http://www.dualsky.com>

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使用产品前, 请仔细阅读本使用说明书, 并妥善保管!

1. Introduction

After the successful launch of the industry-leading Track&Field XC800TF competition ESC, Dualsky rapidly developed the new XC500TF series brushless competition Electronic Speed Controls for 1/10 and 1/12 racing cars. The XC500TF-Crawler version ESC has reversing rotation mode, which is convenient for the user to upgrade brushless climbing power system.

Thank you for choosing Track&Field ESC. Please read these Instructions carefully before using this product in order to avoid incorrect operation which may cause damage to the product.

You will find warranty information for this product at the end of these instructions.

2. Usage Warning

- The Electronic Speed Control is not a toy. It should only be used by RC drivers above the age of 14, or with adult supervision
- DO NOT exceed the specified limits of the ESC as it may cause damage to the product.
- Do NOT let the ESC come in contact with any liquids as it may cause permanent damage to the product.
- Do NOT cut off or change the original leads and connectors.
- Do NOT disassemble the product, or modify any of the components as it will void your warranty.
- Do NOT use any defective products (e.g. faulty motors), as it may cause a short in the ESC.
- Do NOT wrap the ESC with any material which will lead to poor heat Dissipation.
- Do NOT connect the battery polarity in reverse, as it will short out the ESC.
- Do NOT solder one part of the ESC for more than 5 seconds as it

may damage the product due to overheating. A minimum of a 60W soldering iron is recommended.

- Do NOT let the power connectors come in contact with any metals as this may short out the ESC or Battery.
- Make sure the leads are fixed securely, and avoid any rotating parts like gears or drive shafts.
- Keep hair and clothing away from any rotating parts on your RC model.
- Never cycle the unloaded system at wide open throttle as it may cause damage to bearings and other rotating parts.
- Make sure the tyres are well bonded to the rims. Tyre trouble whilst running the car can also be very dangerous.
- Always disconnect the battery from the ESC after operation.
- Always turn on the transmitter first, then switch on the ESC, to avoid signal interference. Do the opposite when turning off the system

Note: The Manufacturer will not be responsible for any damage caused by Non-compliance with the above instructions.

3. Quick Start Guide

- Firmly fix the ESC on the RC model's chassis with a double-sided, adhesive. Fix the on and off switch to a convenient place.
- Insert the throttle signal cable into the throttle channel of the receiver.
- Remove the motor gear. Ensure the ESC switch is OFF, and connect the battery to the esc.
- Turn on the power for the transmitter and check the servo direction setting for the throttle channel.
- JR systems use the NOR setting for throttle. Futaba systems use the REV setting for throttle.
- Switch on the ESC power, test acceleration of the motor and check the running direction. If all is correct, you can shut down the ESC and

install the motor gear. If the motor rotates in the wrong direction, please switch the A and C wires from the ESC to the Motor.

- After you have properly configured your motor and ESC you may re-install the pinion gear and start driving your RC model.

4. Features

Hardware

- ICE Core Technology
- New low-resistance power transistor
- Control Module Overhead
- Super mini design
- Thermal overload protection
- Built-in programmable key switches
- Support fan.

Software

- Preloaded climbing vehicle two-way running firmware
- Provide the motor default clockwise working CCW firmware
- Support Sportman rules
- Intelligent Dual-mode driver
- D²RP Tech - Dualsky Digital Racing Profiles
- AutoCell Tech
- Quick Restart Technology
- Most simplified settings
- Support Dualsky LINK technology

5. Parameters

- Dimensions (LxWxH): 34.5 x 33 x 15.5mm
- Weight¹: 38g (Exclude the wires and capacitor)
- Instantaneous current: 300A
- Rated current²: 45A
- Resistance: 0.0008 Ohm
- Battery³: Up to 3S LiPo, 4-10 NiMH
- B.E.C.: 6V, 2A Linear
- Motor limit: 10.5T and higher
- Fan interface⁴: Yes
- Batt/Motor Plug⁵: DC3A/DB3F
- Applicable models: 1:10, 1:8 crawling vehicles

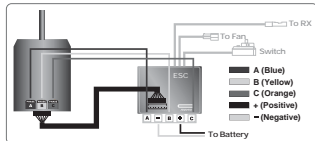
1. The weight does not include wire and capacitor.
2. Rated current testing environment: Airflow through the ESC to 10KM/h, the full throttle runs 5 minutes.
3. If you upgrade the HV capacitor, 3S Lipo is applicable.
4. The optional fan can be controlled by switch. Note: The voltage is not regulated.
5. DC3A-Dualsky DC3 large current plug, DB3F-Dualsky DB3F (Female) 3pcs.

6. ESC installation

- The order of input and output wires: ESC has been soldered with different colors of input and output wires in the factory. If you need to replace input / output wires, please be sure to follow the picture carefully.



- Battery: The input wire of ESC can be soldered to the terminals of battery directly. The preferred method is to add a plug



which matches the output wire of battery. In order to ensure optimal system performance, the plug's continuous rated current capacity should be greater than 40A. We recommend the Dualsky DC3 Heavy Duty plug. In the current market for competition, it is popular to use a battery with female sockets 4MM x 2 on the output wires. For this battery system, you have to solder 2pcs male plugs of same kind (4mm) on the input wires of the ESC. They possess a higher conductivity (lower resistance), but it is also very easy to mistake the positive and negative terminals when connecting the battery to the ESC, which will burn out the ESC. So please check the polarity carefully.

- Brushless Sensorless motor: Through the ABC three power wires, the ESC delivers power to the sensorless motor. The combination is very simple. ABC power wires can be soldered directly to the motor terminals with a 60W electric soldering iron. The ABC power wires can also be soldered to plugs which match the motor outlet plugs, and the rated current capacity of the plugs should be greater than 40A. We recommend the use of a Track & Field original motor, and make it A-A, B-B, C-C. The phase of other brands motors may be different, which will result in the motor rotating in reverse. If

reverse rotation happens, you can exchange any two poles to change the direction of rotation.

- **Brushless Sensed motor:** There is one more sensor wire between the sensed motor and ESC, this is the only difference from the connection of a sensorless motor. It makes the ESC drive the sensed motor through the Hall signal, and greatly enhances low-speed driving torque and acceleration. The XC500TF-Crawler has the ability to work in two modes, and can automatically identify the mode of sensed or sensorless. Please use Track & Field original motors or motors that are IFMAR approved. Otherwise, in the sensed mode, it may lead to the motor or ESC working incorrectly or burning out. Sensor wires are consumables; they may be broken or have intermittent connections due to a poor working environment and possible vibration. We recommend to use high-quality original Dualsky sensor wires, and replace them after every 20 runs.
- **Remote Controller - XC500TF-Crawler** supports the main remote controllers currently in the market. It works perfectly with 2.4GHZ systems. Insert the ESC signal cable into the Throttle channel of RX. For JR, the throttle channel is set to NOR; for Futaba, throttle channel set to REV. Meantime, the ESC has the capacity of continuous power supply at 6V 2A, that can supply the power to a current high-torque digital servo for steering function.

7. ESC setting

The setting is based on Track&Field newest V2.1 driver. The climbing vehicle firmware version is V1.0_B005Crawler and V1.0_B006_CCW. The two version of the setting method and program are identical. The difference lies in the version of CCW motor default direction of rotation is clockwise (in contrast with B005), in order to fit the minority crawlers.

Note: The V1.0_B006_CCW is an optional firmware, which can be got by upgrading on a PC connected through Dualsky USB LINK.

● Enter into operation mode

The ESC will enter into operation mode under three circumstances:

- I) ESC is turned on without touching the buttons of the switch.
 - II) At the end of throttle calibration.
 - III) quit from the running programming mode. The ESC will sound a longer tweet, meaning the ESC has entered operation mode.
- The XC850TF has two operation modes of sensed and sensorless, at any time the system will automatically select the operating mode, with the priority of sensed mode being higher than sensorless mode.

Note: XC500TF is special for sensorless.

● Indicator LED meaning

There are two LED indicator lights on the ESC, one red and one green. The red light indicates an error and failure during working time; for details please refer to "Trouble shooting". Without abnormality, the red light is in the off state. Green light indicates throttle state: When the throttle is at Neutral, the green light is off (except Neutral Brake @100% when the green light will be on); when the throttle is in forward, the green light flashes; when braking, the green light will be half bright; when in full throttle forward or maximum braking, the green light stays on.

• ESC / Radio Calibration

You should perform this function when you receive your new Dualsky ESC, update firmware using Dualsky link or when replacing the receiver.

First Step: Turn on the transmitter and set throttle channel to reverse (futaba) and set throttle trim to zero. Set throttle EPA to 100% and turn off ABS function.

Note: Futaba system remote controller needs to set the throttle channel reverse to REV.

Second Step : Connect battery to ESC. Then while holding down red set key on power switch turn the ESC on. The Red light will blink immediately and the motor will tweet, ESC is now in throttle calibration mode and you can release set button.

Third Step: With throttle trigger at neutral position press the set button once to record neutral position. Green light will flash indicating successful recording.

Fully depress throttle trigger and press the set button once to record full throttle position. Green light will flash twice indicating successful recording. With trigger at full brake/reverse press the set button once to record full brake/reverse position. Green light will flash 3 times indicating successful recording.

Fourth Step: After 3 seconds the ESC will go into operation mode.

• Running Programming

Differing from throttle calibration, running programming operates entirely through the ESC itself, and does not need the involvement of the transmitter. In order to ensure security, the transmitter is suggested to be ON (but not used/controls not moved).

How to enter the mode of Running Programming?

Turn on the ESC, allow it enter the operation mode, then press the SET button and hold it more than 3 seconds. The red light starts

flashing, indicating that the ESC has entered into the running programming mode.

How to choose the setting item?

Under programming mode, red light flashing means the setting item, flash one time, on behalf of Item1; flash two times, on behalf of Item2, and so on. Red light will flash in turn automatically to indicate different setting items. When you see the setting item you want to enter, press the SET button, the red light is off, the green light starts flashing, indicating you have entered into the setting item, then you can change the value. If you have not chosen any item by the last flashing, the ESC will quit the programming mode automatically.

How to check the current value of the setting items?

After entering into the setting item, the times of green light flashes first time represents the current setting value, then the green light will flash circularly to indicate different setting values.

How to change the value of setting items?

When you see the times of green light flashes for your desired settings, press the SET button, and the value is automatically saved. Meantime return to setting options, the green light will be off, and the red light starts flashing.

How to quit from the running programming mode?

Wait for the red light to flash the last setting item and the ESC will automatically quit from programming mode. Or, you can simply switch off and then switch on to return to operation mode.

Note: when the red and green light flashes, the motor will tweet synchronously.

8. Meaning of setting items

D²RP–Dualsky Digital Racing Profiles

Operating parameters are composed of the throttle curve, start mode and timing advance. We need to consider the applied situation and power system features to arrange them accordingly. It is sometimes difficult and time-consuming for users to determine these settings. Dualsky joined with top drivers and have done extensive testing in many different conditions, and these settings are shown as D²RP, and are very easy to use and understand (see the table below). Of course, advanced racers can make their own settings that may be more suitable using the optional Dualsky USB LINK.

Firmware V1.0_B005Crawler for XC500TF-Crawler

D ² RP Operation Mode	Profile 1 Default Sportsman	Profile 2	Profile 3 Modified	Profile 4 STOCK
Throttle Profiles	"+EXP"	Linear	"-EXP"	Linear
Start Mode	9	7	8	9
Timing Advance	1	3	4	6

- Throttle Profiles: -EXP means at the beginning throttle is gentle, Linear means original linear output, + EXP means at the beginning throttle is rapid and fierce.
- Start Mode is divided into a total of 9 grades, the higher grade, the greater burst of power at the start. It is not always correct for burst power that greater is better. It also depends on the tire grip and battery characteristics.
- Timing advance is divided into 8 grades. The higher timing advance will help improve the output power, but also makes the motor run hotter. Applied with the latest dynamic variable timing technology, it can enhance the system efficiency significantly under high and low speed dynamic conditions. The first grade

timing advance is 0 degree. The ESC's green LED light is flashing when the throttle out of neutral point to remind user the timing advance is 0 degree at the moment. (Comply with Sportsman competition rules)

- These profiles were preset for D²RP, users can set them individually by Dualsky LINK.
- D²RP programming settings and default values may be changed without notice.

Auto Cell

This ESC supports the popular LiPos (default), NiMH or even LiFe batteries that are currently in the market, and it is able to judge the number of battery cells automatically, protecting the battery from over-discharging.

Neutral Brake

Neutral Brake can adjust the brake force when the throttle is in neutral. Usually, for off-road cars, we set the brake to be of a lower force. While for the Modified cars, we will set it higher due to the weakness of motor braking force. (lower wind motor typically)

Reverse Force

Reverse Force default value is 100%. Once the XC500TF-Crawler version throttle into the negative travel then reverse immediately. (Other version first backward movement of the throttle is brake, second sliding action is reversing)

9. Quick setting form

Firmware version V1.0_B005Crawler

Programming		1	2	3	4	5
1	D ² RP Operation Mode	*Profile 1	Profile 2	Profile 3	Profile 4	Custom
2	AutoCell	None	*LiPo	NiMH	LiFe	
3	NeutralBrake	25%	50%	75%	*100%	
4	Reverse Force	0%	25%	50%	75%	100%

- The bold text is the ESC default value.
- The user can set the value from Track&Field Firmware on a PC connected through the optional Dualsky USB LINK.
- The Climbing version setting items are different with other Track&Field ESC, please pay attention when setting.

10. Troubleshooting Guide

Problem: No throttle response, Red LED flashes continuously.

Solution: This means there is no connection to the transmitter. Check that the transmitter is turned on and the lead from the ESC is correctly plugged in to the receiver.

Problem: Throttle response cuts in and out, and the Red LED is flashing.

Solution: This is the Low Voltage Cut Off. Allow the esc to cool then plug in a freshly charged pack.

Problem: The motor and ESC stop operating and the Red LED repeatedly flashes 2 consecutive times.

Solution: ESC has gone into thermal overload protection, reduce the load appropriately (gear ratio) and wait for the ESC to cool then continue to run your RC.

Problem: The system is running, but the Red LED stays on.

Solution: The system switched from sensored mode to sensorless mode. First, check if the sensor wire is off or damaged. Second, check if the motor sensor port is damaged.

11. Warranty Information

- Dualsky Track&Field speed controllers are covered against defects in material and workmanship to the original owner for six months from the original date of purchase. During this period Dualsky will repair or replace, at our discretion, the defective component.
- This warranty does not apply to improperly installed, abused, damaged in crash, or any units which have been repaired or altered by unauthorized agencies.
- Under no circumstances will the buyer be entitled to consequential or incidental damages. This limited warranty gives you specific legal rights; you may have other rights which vary from country to country.
- This warranty applies only to Dualsky products purchased from authorized dealers/distributors.

12. Company information

www.dualsky.com

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XC500TF-Crawler

**TRACK
& FIELD**™



无刷速度控制器

1. 介绍

如今，无刷浪潮正迅速地席卷整个遥控车领域。在比较高级别的比赛中，几乎已经看不到有刷马达的身影。在成功推出业界领先水平的XC800TF竞赛级ESC后，Dualsky迅速推出用于1/10、1/12遥控车XC500TF系列电子调速器，这款Crawler版本具备转向旋转模式，方便用户升级无刷攀爬动力系统。

感谢您选择Track&Field产品，请在使用本产品之前，完整细致地阅读本说明书，避免操作不当发生危险或损坏产品。说明书将帮助您了解更多关于无刷系统的知识。本产品的使用方法与有刷ESC存在很大不同，即使与其他无刷ESC相比，也有很多不同。

注意：请妥善保管说明书，如果说明书缺失，请不要使用本产品。说明书后部有保修条款，请仔细阅读。

2. 注意事项

- 本产品不是玩具，不适合14岁以下儿童使用。
- 不可采用超出产品最大允许电压/电流来驱动系统。
- 不可让ESC接触到水，油或导电液体，这可能造成永久性损伤，甚至烧毁ESC。一旦接触，请立即停止使用，并使它保持干燥。
- 不可剪断或修改原装导线和插头。
- 不可拆开产品，更不要修改焊接PCB上的器件。
- 不可使用发生破损的产品，这会导致严重的后果，甚至短路。
- 不可用任何材料裹覆产品，会影响产品散热，也不可用金属材料包裹，容易短路。
- 不可反接电池极性，这会导致ESC烧毁。
- 不可焊接一处超过5秒，产品部件会因过热导致损坏。建议采用至少60W以上的烙铁。
- 确保接线柱没有与金属零件接触，这会直接导致短路。
- 确保导线固定稳固，剧烈晃动会使插头松动。并且不会触碰到齿轮等旋转部件。
- 本产品和与之连接的马达属于大功率系统，为了安全起见，强烈建议调整系统是不安装马达齿轮。头发、衣服以及零件要与动力系统和车体旋转部件保持距离。
- 不要全功率空转动力系统，以免导致轴承及一些旋转部件的损坏。
- 认真检查车辆轮胎是否粘好，模型车辆跑动中发生轮胎故障同样危险。
- 总是在使用结束后断开电池和ESC的连接，即使开关已经关闭，也会有很小的电流消耗，经过一段较长时间，会导致电池完全深度放电，造成不可修复的损坏。
- 总是先开遥控器电源，再开ESC开关，以免信号干扰导致系统误动作。关机则步骤相反。

注意：由于不遵守以上注意事项而导致的损坏，生产商概不负责。

3. 快速入门

- 将ESC预先摆放在遥控车上，确定合适的安装位置。在导线上标记下合适的长短。在不碰到运动部件的前提下，导线越短越好。
- 取出ESC，采用60W烙铁将红黑输入线与电池插头焊接，注意极性不要搞错。
- 将ABC输出线焊接至马达对应Phase，ABC相位与马达必须对应（注意：此处所说的马达为Track&Field车用系列，不同厂家的马达ABC顺序可能不同）。
- 用双面胶将ESC牢固固定在车模底板上。在方便开关的地方固定开关，将油门信号线插入RX油门通道。再次确认导线没有触碰运动部件的可能。
- 拆卸掉马达齿轮。确保ESC开关处于OFF，连接ESC和电池。
- 先开发射机电源。JR系统，油门为NOR。Futaba油门设为REV。
- 接通ESC电源。测试马达加减速和运行方向。正常的话可以关闭系统，安装马达齿轮。
- 到目前为止，你可以驱动赛车了。油门的校准以及高级设定请参考后续章节。

4. 特点

硬件方面

- ICE Core技术：采用低内阻功率板，度身定做的纯铜导电散热片，进一步降低内阻，增强散热。
- 新型低内阻功率管：可以承受更高冲击电流，内核采用贴片技术，使热量可以快速散出。
- 控制模块顶置：控制模块可以放置在MosFET上面，利用ESC顶部宝贵的区域，给LED指示灯和感应线接口的布置提供了极大便利。
- 超小型设计：极端最小化的体积，同样得益于控制模块顶置的专利技术。
- 过温保护。提供对系统过载的温度保护，确保系统在过温条件下不至于损坏。
- 内置编程设定按键的开关。结合顶部LED显示和马达鸣叫，设定变成一种乐趣。
- 支持风扇。提供受开关控制的外置风扇供电接口，可以选择Dualsky的升级风扇产品提升系统的功率级别。

软件方面

- 预装攀爬车双向运转固件。倒车动作立即执行，不再经过刹车过程。油门处在中立点时，ESC提供100%刹车力度。
- 提供马达默认顺时针工作的CCW固件。有些攀爬车马达默认前进工作方向相反（顺时针），可以选装此固件。
- 支持Sportsman规则。为该系列ESC开发的程序默认支持0度进角设定，并可以通过

6. ESC安装

LED灯的闪烁分辨,使得玩家可以注意力集中在车辆的设定和操纵上。

- 智能双模式驱动。同时兼具有感和无感驱动程序,并自动切换。有感起步不拖泥带水,动力紧跟你的手指,在残酷的竞赛场上,当感应线不小心脱落,无感驱动将确保你顺利完成比赛。
- D²RP 技术 - Dualsky车手设定。通过大量车手测试和实战,工程师对启动模式,进角,油门曲线甚至频率进行了优化,制定出适合不同用途的几个配置,用户不再需要耗时的测试,便可以获得最优的性能。
- AutoCell 技术: 无需设定电池类型和电压,基于最新的锂电池水平优化电压保护。
- 快速重启技术。在4-5节NiMH的比赛中或某些极端情况下,重负载会拖低电池电压,甚至低于MCU的工作电压,导致整个系统重启。一旦发生这种情况,电调必须有迅速恢复的能力,保证顺利完成比赛。而且,按键编程方式较油门编程能更有效避免在重启后误入编程模式。
- 最简化的设定。Dualsky已经通过自己的经验和测试将最简单的设定呈现给用户,四个必要设定项,简单明了。
- 支持Dualsky LINK 技术。通过Dualsky LINK USB连接线(单独购买),我们会将更多的技术细节呈现给专业用户,用户可以完美配置自己的动力系统。

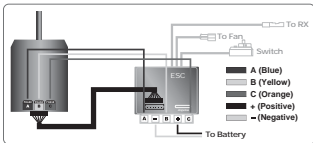
5. 参数

- 外形尺寸(长 x 宽 x 高): 34.5 x 33 x 15.5mm
- 重量¹: 约38g(导线,电容除外)
- 瞬间电流: 300A(FET额定)
- 额定电流²: 45A
- 内阻: 0.0008欧姆
- 使用电池³: 锂电池 3节;镍氢电池 4-10节
- B.E.C.: 6V, 2A
- 对应电动机: 仅适用于10.5或更高T数的马达
- 风扇接口⁴: 有,可由开关控制,电压未经过稳压
- 电池/马达插头⁵: DC3A/DB3F
- 适用车型: 适用于1:10和1:8房车及越野车

1. 重量不包括电线和电容。
2. 额定电流开足油门操作10KM/h气流过ESC5分钟。
3. 如果升级HV电容,可以使用3S锂电。
4. 可选择(选配)的风扇可以用开关控制,注意:风扇电压未被降压。
5. DC3A - Dualsky DC3大电流插头, DB3F - Dualsky DB3F(母头)3个。

- 输入输出线的顺序: ESC在出厂前已经焊接了标注为不同颜色的输入输出线。如果需要自己更换输入/输出线,请务必按照图示顺序。
- 电池: ESC输入线可以直接焊接在电池两极使用,常用的做法是加装一个与电池输出线匹配的插头,为保证系统的性能,插头的连续电流能力应大于40A,建议采用Dualsky DC3 Heavy Duty 插头。竞赛市场,目前比较流行用4MM x 2母插输出的电池,如果你采用这种电池,需要在ESC的输入端焊接2颗一样的4mm公插。他们具备较高的导流能力,但是也很容易在连接时搞错正负极,这将导致ESC烧毁,请务必特别仔细确认极性。

- 无刷无感马达(Sensorless) ESC通过ABC三根动力线将动力输出给无感马达,结构简单。动力线可以用60W电烙铁直接焊在马达极片上,也可以焊接与马达匹配的插头,插头的电流能力应大于40A。请采用Track&Field原装马达,并且做到A-A, B-B, C-C。第三方马达相位的定义可能不同,会造成马达反转。如果反转,可以通过对换任意两极来改变旋转方向。
- 无刷有感马达(Sensored): ESC与有感马达的接线唯一的区别在于有感马达多了一条与ESC连接的感应线,这使得ESC可以通过霍尔信号驱动马达旋转,大大提升低速驱动扭矩和加速度。XC500TF-Crawler具备双模工作能力,自动识别有感或无感工作模式。请采用Track&Field原装马达或IFMAR认定马达,否则在有感模式下,可能导致马达或ESC烧毁。感应线属于耗材,由于恶劣的工作环境和剧烈的震动,导致线材重现断裂和接触不良,建议采用高品质Dualsky原装感应线,同时每隔20轮更换。



●遥控器—XC500TF—Crawler支持市面上的主流遥控器。支持2.4GHZ系统。将ESC的信号线插入RX的Throttle通道，JR用户油门通道保持NOR，Futaba设备油门通道设置为REV。同时，ESC提供6V 2A的连续供电能力，满足当前大扭矩数字舵机的供电需要。

7. 适用的马达

马达必须符合IFMAR规范，使用不符合IFMAR规范的马达导致ESC损坏，不属于质保范畴。不同的马达齿轮比、不同的运行模式的选择，甚至不同的轮胎、场地等，会导致ESC的发热量不同。所以，请遵循马达说明书上对齿轮比的建议，并将ESC的运行模式设置在较低档位。ESC的温控保护模式是开启的，如果曾通过USB LINK关闭，在使用新马达时请开启保护。

8. ESC设定

设定基于Track&Field最新V2.1驱动，其中攀爬车的固件版本号为：V1.0_B005Crawler和V1.0_B006_CCW。

两个版本的设定方法和项目完全相同，不同之处在于，CCW版本马达的默认旋转方向为顺时针（与B005相反），以适合市场上的少数攀爬车。

注意：V1.0_B006_CCW为选装固件，需要通过USB LINK自行升级获得。

●进入运行模式

三种情况会进入运行模式： I) 在不触碰开关上按键的情况下开机。II) 油门调校结束。III) 退出运行参数编程模式。

ESC会发出较长鸣叫声，表示ESC已进入运行模式。ESC具备有感和无感双模运行能力，此时系统会自动选择运行模式，有感模式的优先级高于无感模式。

注：XC500TF为无感专用ESC。

●LED指示灯含义

ESC上面有2个LED指示灯，一红一绿。运行模式下，红灯指示错误和故障，具体参考“故障解决”，没有异常时，红灯处于熄灭状态。绿灯指示油门状态，当油门处在中位（Neutral）时，绿灯灭（Neutral Brake为100%除外，此时绿灯亮）。当油门处于前进时，绿灯闪烁。刹车时，绿灯半亮。当全油门前进或最大力度刹车时，绿灯长亮。

在编程模式中，红灯指示设定项，绿灯指示设定项的值。

●遥控器和ESC的油门调校

为什么要进行油门调校？

调校有利于更高效的使用ESC和您的遥控器。未经调教即盲目使用，可能导致系统性能无法正常发挥，甚至造成危险。

何时需要油门进程调校？

第一次使用ESC，更换遥控器或者变更模型数据时需要调校遥控器和ESC。通过Dualsky LINK更新ESC软件后也需要重新调校油门。

第一步：首先打开发射机电源，此时不要连接ESC和电池。将中立点（Sub Trim）和微调（Trim）设为0，将油门行程（ATV/End Point）设为正负100%，油门敏感度设为0%，关闭ABS功能。如果是简单的遥控器，只需要将微调归零，油门行程设为100%。注意：Futaba体系的遥控器，需要先将油门通道的Reverse设为REV。

第二步：保持发射机为ON的状态，连接电池与ESC，按住开关上的SET按键，此时将开关拨到ON。红灯立即开始闪烁，同时马达发出鸣叫声，表明已进入ESC的油门调校模式，松开按键。

第三步：接下来让ESC记录中立点，最高点和最低点三个数据：

将油门放在中立点处，按一次SET键，绿灯闪烁1次，表示已记录中立点位置；

将油门放到全油门处，按一次SET键，绿灯闪烁2次，表示已记录最高点位置；

将油门放到最大刹车处，按一次SET键，绿灯闪烁3次，表示最低点已被记录；

此过程红灯熄灭，绿灯闪烁，马达发出同步鸣叫声。

第四步：3秒后自动退出调校模式，ESC进入运转状态。

●运行参数编程设定

与油门调校不同，运行参数编程完全通过ESC本身进行，不需要遥控器的配合，但为了确保安全，遥控器应处在ON的状态。

如何进入运行参数编程模式？

ESC开机，在运行模式下，按下SET键并保持3秒以上，红灯开始闪烁表示已经进入运行参数编程模式。

如何选定设定项（Item）？

编程模式中，红灯的闪烁代表设定项，闪烁1次，代表Item1，闪烁2次，代表Item2，以此类推。红灯会自动依次闪烁提示不同的设定项。当看到想要进入的设定项时，按一下SET键，红灯熄灭，绿灯开始闪烁，表示进入了设定项，可以更改设定值。如果到了最后一项闪烁结束还没有选择，ESC会自动退出运行编程模式。

如何查看当前项的设定值？

进入设定项后，第一次绿灯闪烁的次数就代表当前项的设定值，之后绿灯将循环闪烁不同的设定值。

如何改变设定值?

当看到绿灯闪烁次数为所需要的设定值，按一下SET键，该值自动保存。同时返回设定项选择，绿灯熄灭，红灯开始闪烁。

如何退出运行参数编程模式?

等待红灯闪烁完最后一个设定项，ESC会自动退出编程模式。当然，关闭开关再打开也可以回到运行模式。

说明：红灯和绿灯闪烁时，马达会同步发出鸣叫声。

9. 设定项含义

D²RP-Dualsky Digital Racing Profiles

运行参数由油门曲线，启动模式和进角组成。它们之间的合理搭配需要考虑到应用场合和动力系统的特点。确定这些对于用户来说有些困难和耗时。Dualsky联合车手在不同条件下作了大量的测试，并将这些设定以D²RP的方式呈现出来，非常易于使用和理解（下表）。当然，高级玩家可以通过Dualsky USB LINK连接电脑实现更适合自己的设定。

固件 V1.0_B005Crawler for XC500TF-Crawler

D ² RP 运行模式	Profile 1 默认 Sportsman	Profile 2	Profile 3 Modified	Profile 4 STOCK
Throttle Profiles	+EXP	Linear	-EXP	Linear
Start Mode 启动模式	9	7	8	9
Timing Advance 进角	1	3	4	6

- Throttle Profiles: -EXP表示油门初段细腻，Linear为原始线形输出，+EXP设定初段偏向迅猛。
- Start Mode: 共分为9档，档位越高，启动时的爆发力越大。但并不是爆发力越大越好，这取决于轮胎抓地力和电池的情况。
- Timing Advance: 进角分为8档。较高的进角有利于提高输出功率，同时也会使马达更热。采用最新的动态可变进角技术，使系统在高低速动态环境下的效率得以大幅提升。第一档进角为0度进角，当油门处于中立点时，ESC的绿色LED指示灯闪烁，提示用户此时ESC的Timing为0度。（符合Sportsman比赛规则）

- 这些项目为D²RP预设，用户可以通过Dualsky LINK对它们进行单独设定。
- D²RP对应的设定值和默认值可能会变化，恕不另行通知。

Auto Cell

ESC支持当下流行的LiPo（默认），NiMH甚至LiFe电池，并具备自动电池节数判断功能，保护电池不会过放电。

Neutral Brake

中立点刹车调节油门在中位时的刹车力度。通常Off-road考虑到跳跃采用较低力度，而Modified由于马达制动力较弱需要采用较高数值。

Reverse Force

倒车力度设定。默认为100%，Crawler版本一旦油门进入负行程，则立即倒车（其他版本第一次为刹车，第二次倒车）。

10. 故障解决

故障：系统不工作，红灯5S定期闪烁1次，马达同步鸣叫。

解决：这是由于ESC上电后，没有遥控信号。打开遥控器即可。

故障：系统不工作或跑动停止工作，红灯持续闪烁。

解决：电池组电压过低。即电池电压低于当前设定电池的最低工作电压。检查电池组是否正常，是否充足电。

故障：跑动中途停止运行，红灯重复2次连闪。

解决：ESC过温保护，适当降低负载，等待ESC冷却后再运行。

故障：系统可以运行，但红灯一直亮着。

解决：系统中途自动由有感模式切换到了无感模式。首先，查看感应线是否脱落或损坏。其次，检查马达的感应器是否损坏。

11. 环保信息

右图打叉带轮垃圾桶是根据欧盟废旧电气电子回收指令要求使用的回收图标，这说明产品在使用完毕后必须分类回收。不可当做未分类城市垃圾来处理。



12. 维修和有限质保

- Dualsky Track&Field调速器对原始购买者自购买日起六个月内发现的材质和工艺缺陷进行担保。在这段期间，Dualsky将自行判断并对有缺陷的部件进行修理或赔偿。
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14. 设定快速对照表

固件版本V1.0_B005Crawler

编程项目		1	2	3	4	5
1	D ³ RP运行模式 Dualsky Digital Racing Profiles	*Profile 1	Profile 2	Profile 3	Profile 4	Custom
2	AutoCell 电池类型	None	*LiPo	NiMH	LiFe	
3	NeutralBrake 拖刹力度	25%	50%	75%	*100%	
4	Reverse Force 倒车力度	0%	25%	50%	75%	100%

- 黑体(Bold)设定值为对应编程项目的默认值；
- 通过Dualsky USB LINK 连接PC机Track&Field 设定软件，可以对以上参数进行更细致的设定；
- 攀爬版本的设定项目与Track&Field其他ESC有所不同，设定时请注意。