DUALSKY®
ADVANCED POWER SYSTEMS

XC850TF

TRACK & FIELD™

Brushless Competition
Electronic Speed Controller
竞 赛 级 无 刷 速 度 控 制 器

No. 45362

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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.

1. Introduction

After the successful launch of the industry-leading Track&Field brushless competition Motors;Dualsky has developed the new XC850TF brushless competition Electronic Speed Control. It comes with pre-installed Ttronic V2.1 high boost firmware, which takes controlling your motors to a new level.

Thank you for choosing the XC850TF 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 XC850TF 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.

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 Core2 Technology
- New low-resistance power transistor
- Control Module Overhead
- Super mini design
- Full Metal Shell
- Thermal overload protection
- Support fan.

Software

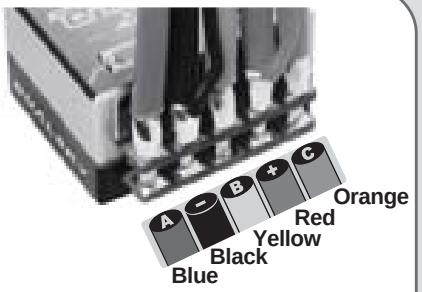
- Competition brushless one-way design
- Smart sensorless driven algorithm.
- D²RP Tech - Dualsky Digital Racing Profiles
- AutoCell Tech
- Dynamic Digital Timing Tech
- Support Dualsky LINK technology

5. Parameters

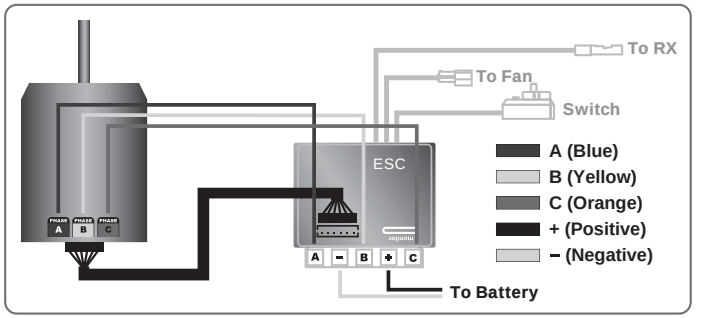
- Dimensions (LxWxH): 34.5 x 33 x 21.0mm
- Weight: 47g (Exclude the wires and capacitor)
- Instantaneous current: 800A
- Rated current: 150A
- Resistance: 0.0003 Ohm
- Battery: 4.8V-8.4V (2S LiPo, 4-6 cell NiMH)
- B.E.C.: 6V, 3A Linear
- Motor limit: All 540 size Brushless Motors 2 or 4 poles brushless motors
- Fan interface: Yes
- Applicable models: 1:10 & 1:12 race car & short course car

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 XC850TF 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 - XC850TF 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

- **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.

- **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.

  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

Pre-set 4 drivers setting for 4 types of different motors. Ttronic technology provided as many as 9 items of setting. 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.

D²RP Operation Mode	*** Profile 1 MOD 4.5T**	Profile 2 For 10.5T	Profile 3 For 13.5T	Profile 4 For 17.5T

- Every configuration file pre-set 9 items of Tronic parameters to fit the typical motor applications.
- For specific project setting of interpretation and value, please refer to <Ttronic V2.1 instructions>.
- The default value may change without notice.
- Please always check the system work, we're not responsible for the damage of the power system.

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)

Brake Amount

Brake amount shows the braking force when the throttle is in the maximum braking position. Braking force is linear, before it reaches the maximum braking, the brake force will increase in linear increments. Too small or too large a braking force will affect performance in turning and the speed of car. Please adjust according to your driving style.

Reverse Force

Reverse Force default value is 50%. When the force is not in zero, the first backward movement of the throttle is brake, the second sliding action is reversing. The reversing function is convenient for the users daily use.

Note: Reversing function is not allowed in some competitions, please turn off the function. (set to 0%)

Over Heat

Over Heat protection function default setting is turned on (ON), to protect the system will not be damaged when overload. Under extreme race conditions, you can turn it off as much as possible to reduce overheating interrupt the game.

Note: Turn off the over heat function will void your warranty.

9. Quick setting form

Programming		1	2	3	4	5
1	D²RP Operation Mode	Profile 1	Profile 2	Profile 3	Profile 4	USB
2	AutoCell	None	LiPo	NiMH	LiFe	USB
3	Neutral Brake	0%	10%	15%	20%	USB
4	Brake	25%	50%	75%	100%	USB
5	Reverse Force	0%	25%	50%	75%	100%
6	Over Heat	YES	NO			

- The bold text is the ESC default value.
- The 5th mode is for the user to define, this value can be set from Track&Field Firmware on a PC connected through the optional Dualsky USB LINK.
- D²RP programming settings and default values may be changed without notice.

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

Dualsky assumes no responsibility for any errors that may appear in this manual. Information contained herein is subject to change without notice.

XC850TF

竞赛级无刷速度控制器

1. 介绍

在成功推出业界领先水平的新一代Track&Field车用竞赛级无刷马达后，Dualsky推出全新的XC850TF无刷竞赛用电子调速其，并预装Ttronic V2.1超增压固件，将动力的输出和控制提升到了一个新的水平。

感谢您选择XC850TF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，并设法使它干燥。
- 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触碰，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要安装马达齿轮。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，采用大于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 2 散热技术

支持所有540级别2极房车马达或4极短卡马达

150A 高功率输出

- ICE Core2技术：全金属夹层式外壳（专利技术），完整贴合全部功率器件。同时，双层功率板，降低了PCB的内阻。PCB上还焊有量身定做的纯铜导电散热片，所有这些技术处理，构成了全新的ICE CORE2散热技术。
- 150A高功率输出：新型低内阻功率管结合Ice Core2技术，使850可以承受更高冲击电流，全面支持4极马达和短卡。
- 控制模块顶置：借助ICE Core技术和新型MosFET，XC850TF具备更低发热和更好散热。这使得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，控制板不再需要突出功率板，只是为了安装感应器插口和LED设定灯。同时双层MosFET功率板进一步缩小体积。
- 全金属外壳：散热良好，散热面积超过一般的散热片。在极端的比赛条件下甚至不需要风扇散热。
- 大容量高频电容。外置电容布局方便，散热好，确保控制模块更稳定的工作。
- 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

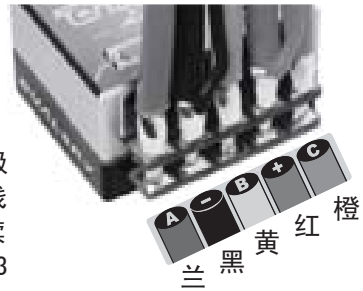
预装 Ttronic V2.1 竞赛程序

- 预装全新的TtronicV2.1竞赛程序：Ttronic超增压程序，经过2年的开发测试，现已成熟推出，预装850电调，提供多达9项对于不同转速的设定，并预设4个车手设定。
- D^2RP 技术－Dualsky Digital Racing Profiles：通过车手大量测试和实战，工程师多达9项的Ttronic V2.1进行了优化，制定出适合Modified和STOCK的设定，用户不再需要耗时的测试，便可以获得最优的性能。
- 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。
- 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，ESC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。
- 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

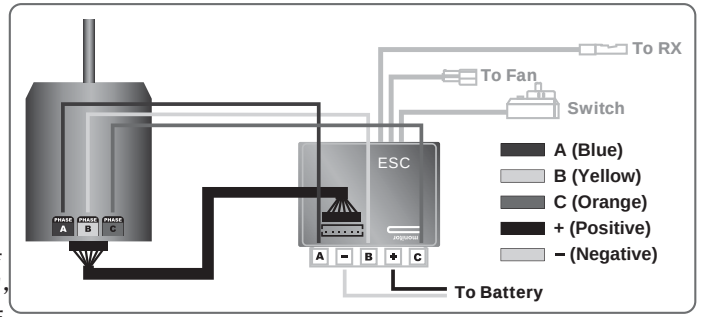
外形尺寸（长 x 宽 x 高）：	34.5 x 33 x 21.0mm
重量：	约47g（导线，电容除外）
瞬间电流：	800A
连续电流：	150A
内阻：	0.0003欧姆
使用电池：	4.8 - 8.4V（2节锂电池，4-6节镍氢电池）
B.E.C.：	6V，3A
对应电动机：	支持所有540级别2级房车马达或4级短卡马达
风扇接口：	有，可由开关控制，电压未经过稳压
适用车型：	1:10,1:12房车及短卡越野车

6. ESC安装



●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（Sensed）：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。XC850TF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量，建议采用高品质Dualsky原装感应线，同时每隔20轮更换。

●遥控器-XC850TF支持市面上的主流遥控器。支持2.4GHZ系统。将ESC的型号线插入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 3A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

支持3.5T及更高T数的有感或有感无刷车用马达。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

●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。XC850TF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。

●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

预设4个车手设定，对于4种不同类型的马达。Ttronic技术提供了多达9项的设定，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实现更适合自己的设定。

D²RP 运行模式 Dualsky Digital Racing Profiles	* Profile 1 MOD 4.5T	Profile 2 For 10.5T	Profile 3 For 13.5T	Profile 4 For 17.5T

■每一个配置文件均预设了9项Ttronic参数，以适合典型的马达。
■具体设定项目的解释和数值，请参考《Ttronic V2.1使用说明》。
■预设值可能会发生变化，恕不通知。
■总是检查系统工作问题，不对动力系统的损坏负责。

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Modifiled由于马达制动力较弱需要采用较高数值。

Brake Amount

刹车力度表示油门处于最大刹车位置的制动力。刹车力度是线形的，在没有到达最大制动位置时，刹车力度线形递增。过小或过大的刹车力度都会降低弯道的表现，影响车速。

Reverse Force

倒车力度。默认值为50%，当力度不为零时，油门第一次向后动作为刹车，第二次先后动作为倒车。开放倒车功能给爱好者日常使用带来便利。
注意：有些比赛禁止倒车功能，请关闭此功能（设为0%）。

Over Heat

过热保护功能。默认为开启（ON），以保护系统在过载时不被损坏。在极端的竞赛条件下，可以将其关闭，尽可能降低过热中断比赛的情况。
注意：关闭过热保护功能使用，会导致保修实效。

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。
- 本担保不适用于错误安装，错误处理，滥用，撞击所引起的损坏，也不适用于由任何未经授权的机构擅自修理或更改的部件。
- 在任何情况下，买方都有权对必然的或偶然的损坏要求赔偿。本担保有限地赋予您特定的法律权利，你可能因国家不同而拥有其他的权利。
- 本担保只适用于从合法授权的经销商或者批发商处购买的Dualsky产品。

13. 版权及公司信息

14. 设定快速对照表

编程项目		1	2	3	4	5
1	D²RP运行模式 Dualsky Digital Racing Profiles	Profile 1	Profile 2	Profile 3	Profile 4	USB
2	AutoCell 电池类型	None	LiPo	NiMH	LiFe	USB
3	Neutral Brake 拖刹力度	0%	10%	15%	20%	USB
4	Brake 刹车力度	25%	50%	75%	100%	USB
5	Reverse Force 倒车力度	0%	25%	50%	75%	100%
6	Over Heat 过热保护	保护	不保护			

- 黑体（Bold）设定值为对应编程项目的默认值；
- 第五项USB为用户自定义，该数值可以通过Dualsky USB LINK 连接PC机 Track&Field Firmware 设定；
- 编程项目对应的设定值和默认值可能会变化，恕不另行通知。