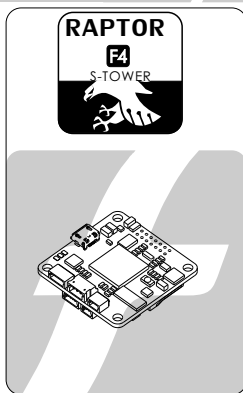


### Raptor S-Tower F4 飞控



感谢您使用本产品！本产品功率强大，错误的使用可能导致人身伤害和设备损坏，强烈建议您在使用设备前仔细阅读本说明书并保存，严格遵守规定的操作程序。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一切责任，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的设计、外观、性能及使用要求。



### 01 主要特性

- MCU: STM32F405;
- 陀螺仪: MPU-6000 SPI;
- 飞控固件: OMNIBUSF4SD
- 支持PPM, SBUS, SPEKTRUM1024/2048等类型接收机;
- 支持最大32G的TF卡扩展, 方便用户存储更多的飞行数据
- 飞控集成OSD, 可以使用BetaFlight 调参软件调整OSD参数;
- 飞控集成3.3V、5V、12V以及电池电压 (VBAT), 方便给图传、摄像头、蜂鸣器、LED灯等外设供电;
- 所有接插头均配有快速连接线, 支持主流摄像头、图传等设备; 给您前所未有的安装体验。

### 02 产品规格

型号	飞控工作电压	重量	尺寸(供参考)
FK-S1F4	7-16V或2-4S锂电池电压	9.2g	36x36x8mm

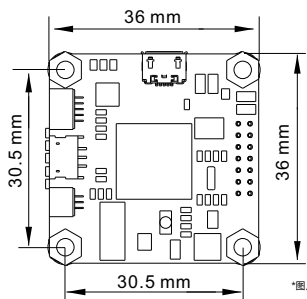
- \*1. F4标准版飞控: 通孔焊盘, 与电调连接线需手工焊接;
- \*2. F4匹配版飞控: 带排母, 完美匹配Flycolor S-Tower四合一电调。

### 03 元件清单/安装尺寸

为实现快速安装, 额外提供了:

- 一根5Pin线束 (5p SH1.0端子), 用于SBUS或PPM接收机;
- 一根3Pin线束 (3p ZH1.5端子), 用于SPEKTRUM接收机;
- 三根3Pin线束(3p SH1.0端子), 用于不同的图传;
- 两根3Pin线束 (3p SH1.0端子), 用于不同的摄像头;
- 一根2Pin线束(2p SH1.0端子), 用于蜂鸣器;
- 一根5Pin线束(5p SH1.0端子), 用于LED及S5, S6;
- 一根6Pin线束(6p SH1.0端子), 用于UART3, UART6。

安装尺寸

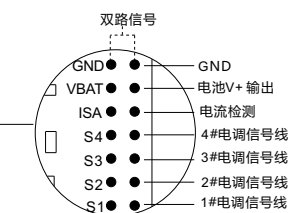
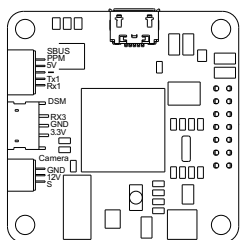


\*图片仅供参考, 产品以实物为准



- 对于快速安装线束, 连接前务必确认您设备接口的线序与飞控接口的线序是对应关系。如果您的图传或摄像头不适用配件连接线的端子, 请改装连接线以适用于您的设备。
- 请确保所有电线和连接部件绝缘良好, 避免短路造成产品损坏。
- 请保持产品器件底部与机架之间有足够的距离, 避免短路造成产品损坏;
- 请避免在潮湿、高温等恶劣环境下使用产品, 避免造成产品损坏。

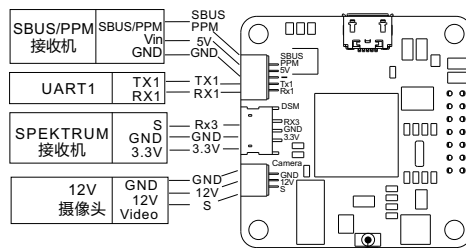
### 04 连线示意图



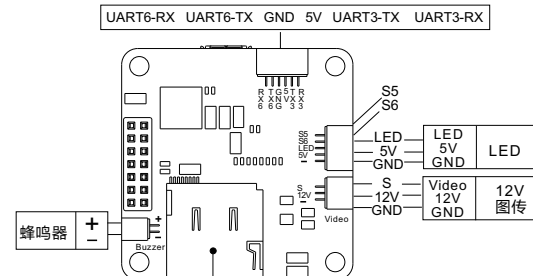
- VBAT, GND为电池电压给飞控供电;
- 所有焊接要求良好的焊接技术, 任何时候都需要避免因焊接而造成元件或线材之间短路;
- 为避免短路和漏电, 请确保连接处绝缘良好;
- 接电之前务必再次检查极性是否正确;

正面

反面



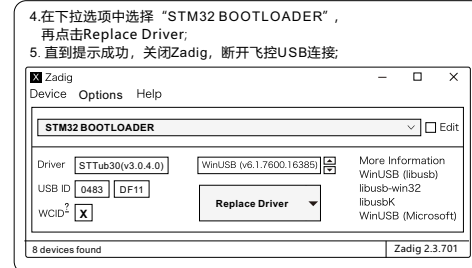
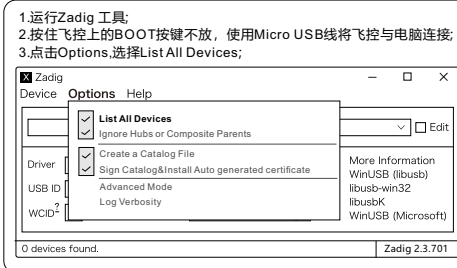
升级飞控固件时, 长按BOOT按钮



TF卡槽

### 05 飞控固件升级

F4 飞控需使用DFU模式升级固件。首次使用需按照以下步骤使用Zadig工具替换驱动, 方能使用DFU模式。



(注意: 如果您之前运行过以上步骤, 之后将不再需要重复, 直接从第6步开始)

6. 打开Betaflight;
7. 按住飞控上的BOOT键, 将飞控USB与电脑连接, 此时看到Betaflight更改为DFU模式连接, 此时可以进行固件刷新;
8. 可以通过两种方式刷固件: 加载本地固件 (推荐, 需在Betaflight官网提前下载) 和在线加载固件;

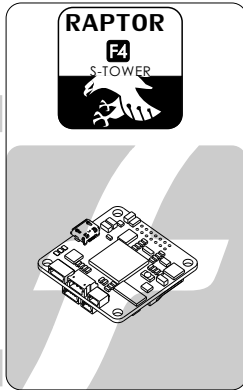


### 06 注意事项

- 飞控固件请勿刷写除OMNIBUSF4SD以外的固件, 以免损坏飞控;
- PPM 接收机无需设置端口;
- SBUS接收机需手动将UART1的Serial RX打开;
- SPEKTRUM 接收机需手动将UART3的Serial RX打开;
- 当使用LED灯带时, 需在CLI界面手动输入命令:  
输入: resource led\_strip a8 然后回车;  
输入: save 然后回车保存;
- 当检测到的电压和电流与实际有偏差时, 可以调节Betaflight-Power&Battery 中电压计和电流计的Scale值;
- 5V 12V只能用于低功率设备 (5V最大1A, 12V最大500mA) 。
- 无论任何时候都要注意极性, 供电之前一定要反复检查;
- 在插拔或者做任何连接时, 请关闭电源;
- 可以做一些减震措施尽量避免震动, 因加速度计/陀螺仪对震动很敏感;
- 飞控要远离一切磁性材料;
- 如需更多信息, 请联系飞盈佳乐售后或者技术支持。



Thank you for using our product. Any Improper operation may cause personal injury damage to the product and related equipments. This high power system for RC model can be dangerous, we strongly recommend reading the user manual carefully and completely. We will not assume any responsibility for any losses caused by unauthorized modifications to our product. We have the right to change the design, appearance, performance and usage requirements of the product without notice.



## 01 Main features

- MCU:STM32F405.
- Gyro : MPU-6000 SPI.
- FC firmware:Betaflight\_OMNIBUSF4SD
- Supports PPM,SBUS,SPEKTRUM1024/2048 etc. remote control / receiving mode.
- Supports max. 32G TF-card, which can record and save more flight/black box data.
- FC integrated OSD, users can adjust OSD parameters via Betaflight configurator.
- FC integrated 3.3V,5V, 12V/ for receiver, VTX, camera, buzzer, LED and other peripheral devices.
- Provided several silicone cables for FC ,and will give you an unprecedented experience for assembly;

## 02 Specifications

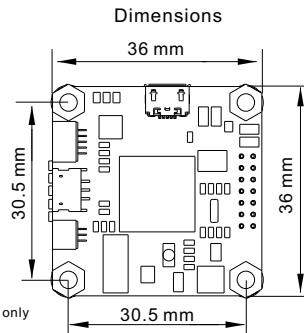
Model	Operating Voltage	Weight (For reference)	Size (For reference)
FK-S1F4	7-16V Or 2-4S LiPo VBAT	8.5g	36x36x8mm

- \*1.F4 standard version : through hole soldering pad, connection wires need to be manually welded;
- 2.F4 matching version : with female header, matching Flycolor S-Tower 4in1 ESC.

## 03 Part list / Dimensions

Recommend Flycolor Raptor S-Tower 4in1 ESC, Assembly will be more simple

- For quick plug, Flight Controller additionally provide:
- One 5p cable (5-pin SH1.0 terminal) for SBUS or PPM receivers;
  - One 3p cable (3-pin ZH1.5 terminal)for SPEKTEUM receiver;
  - Three 3p cable (3-pin SH1.0 terminal)for different brand VTXs;
  - Two 3p cables (3-pin SH1.0 terminal )for different brand Cameras;
  - One 2p cables(2-pin SH1.0 terminal) for Buzzer;
  - One 5p cables(5-pin SH1.0 terminal) for LED,S5 and S6;
  - One 6p cables(6-pin SH1.0 terminal) for UART3 & UART6.

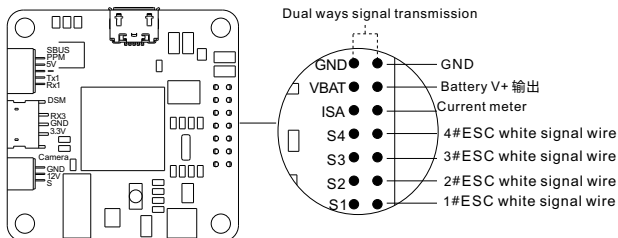


\*All pictures are for reference only

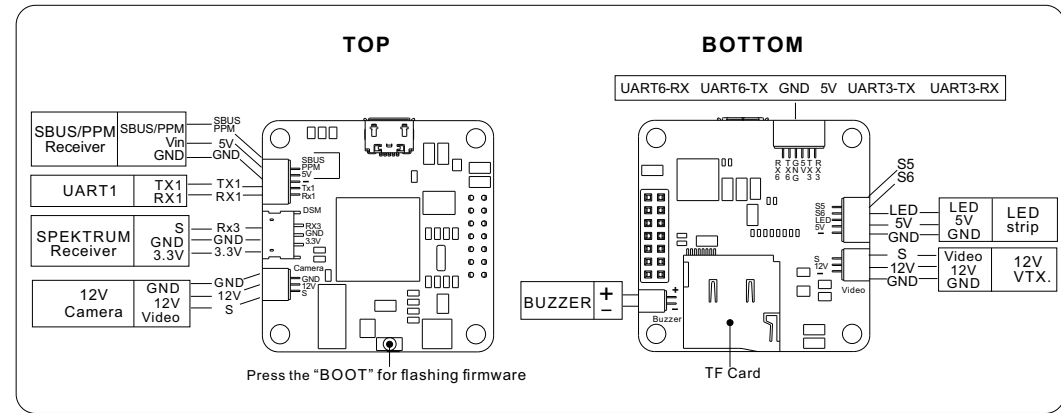


- For these quick plug cables, please confirm the wire sequences on your devices' connector are corresponding with the Flight controller's before connecting. If the terminals are not fit your devices ,please make a modified connection to fit.
- Please ensure all solder joints & wires are insulated well, as short circuit will damage the product.
- Please ensure enough safety space between the ESC& Drone frames, as short circuit will damage the product.
- Never use this product in harsh environments such as humidity, high temperature, and so on to avoid product damage

## 04 Connect diagram of FC



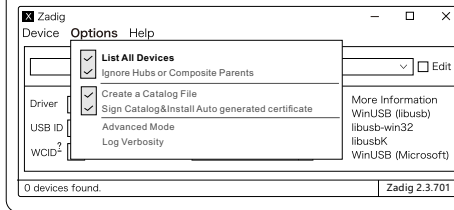
- VBAT, GND are battery voltage supply to FC.
- All welding requires good welding technology, short circuit between the element or the wire should be avoided at any time.
- Please ensure all solder joints are insulated with heat shrink where necessary.
- Please double-check the polarity is correct before power up.



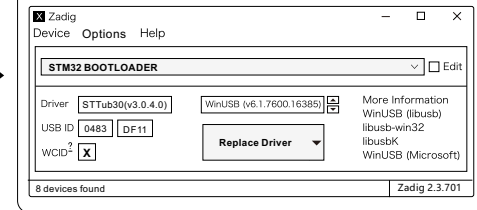
## 05 Flash firmware for FC

You need to use DFU mode to recover firmware for F4 Flight controller, and need a software tool called Zadig to replace the driver for you F.C when you flash firmware at the first time.

1. Start the Zadig software tool;
2. Press and hold the "BOOT" on the FC, connect the FC to the PC.
3. Click "Options", and select "List All Devices".



4. Then select "STM32 BOOTLOADER", Then click "Replace Driver"
5. Close the Zadig software tool when replace successfully, Then disconnect the FC from the PC.



( Notice : If you've run the above steps before, then you don't need to repeat, starting directly from the 6th step )

6. Start the "Betaflight" configurator on the PC;
7. Press and hold the "BOOT" on the FC, connect the FC to the PC, then the FC is connected in the "DFU" mode, then you can flash the firmware;
8. For the firmware flashing, you can choose to load the firmware online or local ( Local is recommended, it needs to download in advance in Betaflight website)



## 06 More information

- Please don't flash any other firmware for FC except "OMNIBUSF4SD".
- PPM receiver does not need to set the port.
- SBUS receiver needs to turn on the "Serial RX" of UART1 port.
- SPEKTRUM receiver needs to turn on the "Serial RX" of UART3 port.
- When using LED\_Strip, please key in the following codes on the CLI :  
key in: "resource led\_strip a8", then press the "Enter" on the keyboard.  
key in: "save", then press the "Enter" on the keyboard.
- If there is any deviation between the detected voltage/current with actual situation, you can adjust the Scale value in the Betaflight-Power&Battery .
- 5V ,12V supply is for low-current use only(5V 1A MAX, 12V 500mA MAX).
- Observe polarity at all times. Check and double check before applying power.
- Power off before unplugging ,plugging in or making any connections.
- Keep magnets away from the Flight Controller.
- Do everything you can to prevent vibrations.
- Please contact Flycolor sales or technical support for more information.