



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，强烈建议您在设备使用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

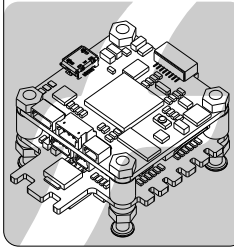
### 电调

- MCU: STM32F051, ARM 32-bit Cortex 核心MCU, 工作频率高达48MHz;
- 电调固件: Flycolor\_X\_Cross\_BL\_32;
- 极筒的两层塔式结构; 电调和飞控之间采用快捷式排线连接、减震螺丝支撑, 有效减少震动对飞控影响;
- Damped light再生制动, 使得效率更高, 油门从大到小变化时电机减速响应更加迅速, 稳定性和灵活性显著加强;
- 电调上电自动检测油门信号, 支持普通油门模式1-2ms的脉宽输入, 支持oneshot125, oneshot42和 multishot信号;
- 支持所有Dshot 数字信号, 最高达到Dshot1200; .

### 飞控

- MCU: STM32F405;
- 陀螺仪: MPU-6000 SPI;
- 飞控固件: OMNIBUSF4SD;
- 支持PPM, SBUS, SPECTRUM1024/2048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), 方便给接收机、图传、摄像头、蜂鸣器、LED灯等外设供电;
- 所有插接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;
- 安装孔: 30.5x30.5mm, M3.

# X-TOWER

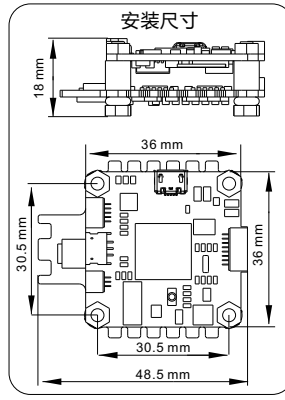
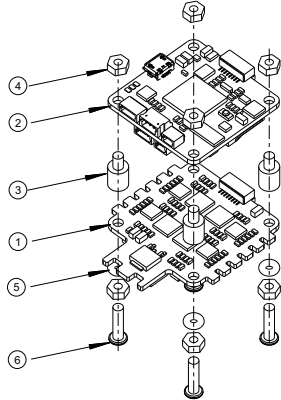


## 02 产品规格

型号	持续电流 (散热良好)	瞬时电流 (10S)	飞控输出电压	锂电池节数	重量	尺寸(供参考)	典型应用(供参考)
X-Tower F4-40A	40A	45A	3.3V/5V/12V	3-6S	26g	48.5x41.5x18mm	170-450多旋翼

## 03 元件清单/安装尺寸

序号	描述	数量
①	32bit 四合一电调	1
②	F4飞控	1
③	减震螺丝 M3*4.5	4
④	尼龙螺母 M3	8
⑤	O型橡胶圈	4
⑥	尼龙螺钉 M3*12	4



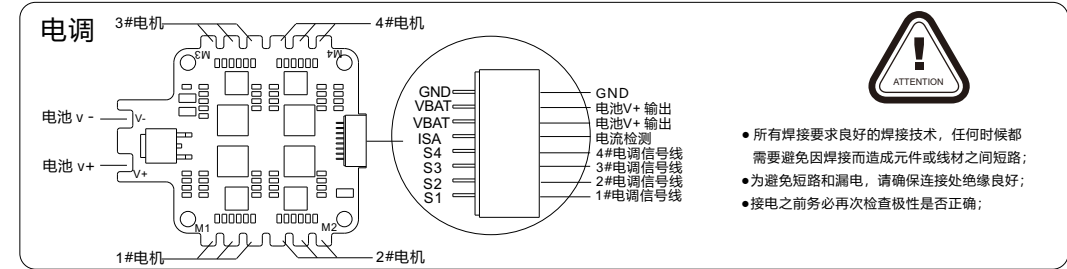
1. 为实现快速安装, 额外提供了:
- 一根5Pin线束 (5p SH1.0端子), 用于SBUS或PPM接收机;
  - 一根3Pin线束 (3p ZH1.5端子), 用于SPEKTRUM接收机;
  - 三根3Pin线束 (3p SH1.0端子), 用于不同的图传;
  - 两根3Pin线束 (3p SH1.0端子), 用于不同的摄像头;
  - 一根2Pin线束 (2p SH1.0端子), 用于蜂鸣器;
  - 一根5Pin线束 (5p SH1.0端子), 用于LED及S5, S6;
  - 一根6Pin线束 (6p SH1.0端子), 用于UART3, UART6.

2. 为加强更好滤波效果, 用户可选择使用配件包中的电解电容, 焊接在正负极两端。

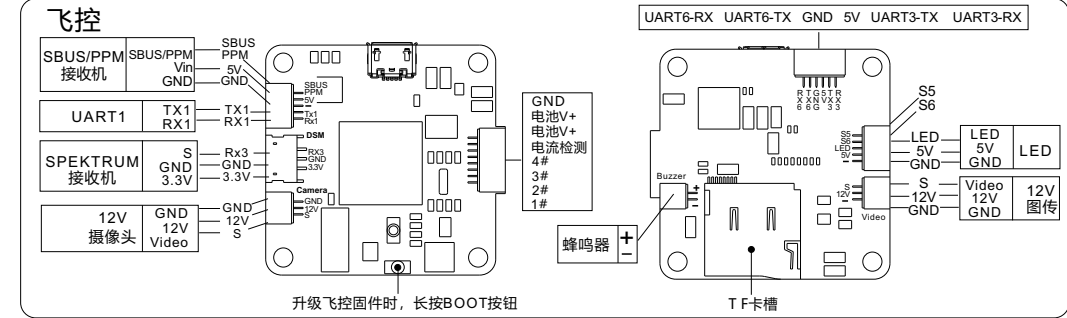


- 对于快速安装线束, 连接前务必须确认您设备接口的线序与飞控接口的线序是对应关系。如果您的图传或摄像头不适用配件连接线的端子, 请改装连接线以适用于您的设备。
- 请确保所有电线和连接部件绝缘良好, 避免短路造成产品损坏。
- 请保持产品器件底部与机架之间有足够的距离, 避免短路造成产品损坏;
- 请避免在潮湿、高温等恶劣环境下使用产品, 避免造成产品损坏。

## 04 电调及飞控连线示意图



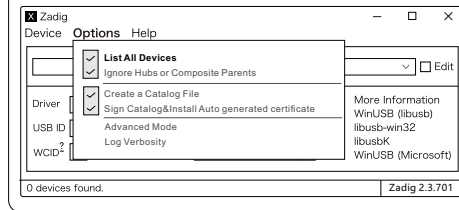
- 所有焊接要求良好的焊接技术, 任何时候都需要避免因焊接而造成元件或线材之间短路;
- 为避免短路和漏电, 请确保连接处绝缘良好;
- 接电之前务必再次检查极性是否正确;



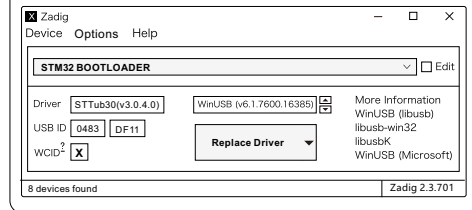
## 05 飞控固件升级

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。

1. 运行Zadig 工具;
2. 按住飞控上的BOOT键不放, 使用Micro USB线将飞控与电脑连接;
3. 点击Options, 选择List All Devices;



4. 在下拉选项中选择“STM32 BOOTLOADER”, 再点击Replace Driver;
5. 直到提示成功, 关闭Zadig, 断开飞控USB连接;



(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写;
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)。
- 首次使用无刷电调或更换遥控设备后需要进行油门行程校准; Dshot 模式时, 将不再需要校准油门;
- 使用BLHeli-32开源程序, 请勿刷写除Flycolor\_X\_Cross\_BL\_32以外的固件, 以免损坏电调;
- 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;
- 请不要超出ESC工作电流范围使用;
- 如需更多信息, 请联系飞盈佳售后或者技术支持。



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

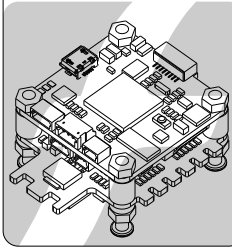
#### ESC

- MCU:STM32F051 , ARM 32-bit Cortex MCU, frequency up to 48 MHZ.
- ESC firmware: Flycolor\_X\_Cross\_BL\_32.
- Two layers tower structure between 4in1 ESC and FC, using cable for quick connection, using vibration damping screw for supporting, reducing the effect of vibration on Flight Control.
- Damped light does regenerative braking, causing very fast motor retardation, and inherently also does active freewheeling.
- The code supports regular 1-2ms pulse width input, as well as Oneshot125 , Oneshot42 and Multishot .
- Dshot signal is supported at any rate up to at least Dshot1200.

#### Flight Control

- 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.
- Install holes:30.5x30.5mm,M3.

## X-TOWER



### 02 Specifications

Model	Con. Current	Burst Current (10S)	F.C Vout	LiPo cells	Weight	Size (For reference)	Typical Applications (For reference)
X-Tower F4-40A	40A	45A	3.3V/5V/12V	3-6S	20g	48.5x41.5x18mm	170-450 Multi

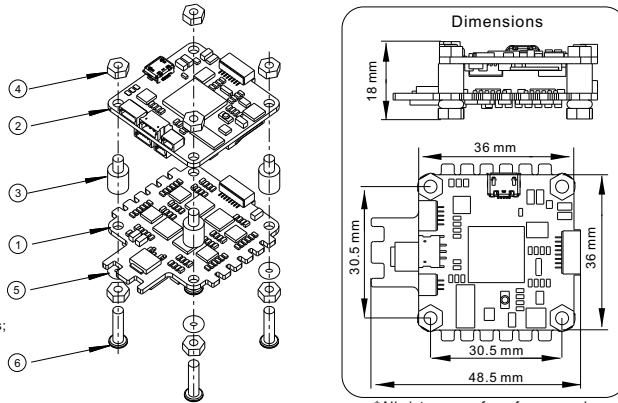
### 03 Part list / Dimensions

Item	Description	Qty.
①	32Bit 4in1 ESC	1
②	F4 Flight Controller	1
③	Vibration damping screw M3*4.5	4
④	Nylon Nut M3	8
⑤	O-Ring	4
⑥	Nylon screw M3*12	4

1. For quick plug, Flight Controller additionally provide:

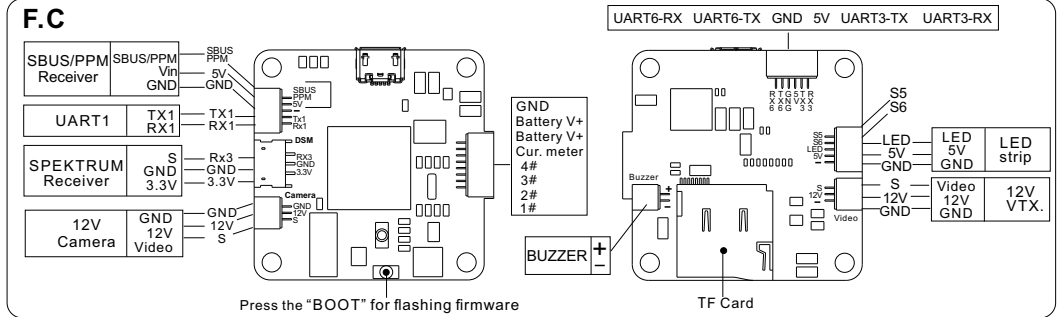
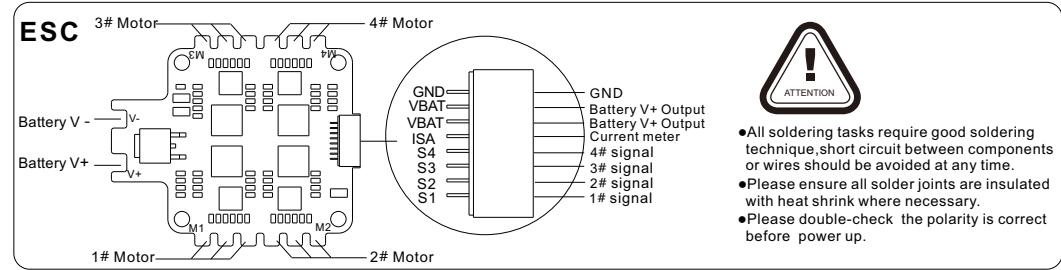
- One 5p cable (5-pin SH1.0 terminal) for SBUS or PPM receivers;
- One 3p cable (3-pin ZH1.5 terminal)for SPEKTEUM receiver;
- Three 3p cable (3-pin SH1.0 terminal)for different brand VTXs;
- Two 3p cables (3-pin SH1.0 terminal )for different brand Cameras;
- One 2p cables(2-pin SH1.0 terminal) for Buzzer;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

2. To enhance performance of filtering, users can solder the electrolytic capacitor which are included in the accessory pack to the positive and negative terminals.



- 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.
- The height from ESC to FC is fixed , please don't change the height of the nylon spacer between the ESC&FC. it will cause the PCBs to deform if the height too short. It will cause bad connection between the ESC&FC if the height too high.
- 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

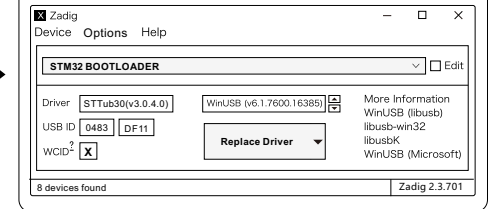
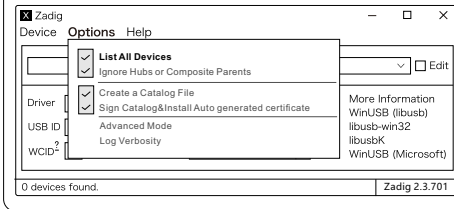
### 04 Connect diagram of ESC and FC



### 05 Flash firmware for FC

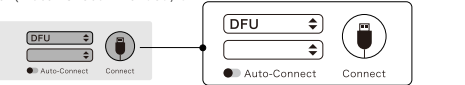
You need to use DFU mode to recover firmware for F4 Flight controller, and need a software tool called Zadig to replace the driver for you F.C when you flash firmware at the first time.

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).
- User needs to calibrate the throttle range when starting to use a new ESC or another transmitter. When the input signal is Dshot, throttle calibration is disabled.
- BLHeli-32 firmware, please don't flash any other firmware except "Flycolor\_X\_Cross\_BL\_32".
- 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 do not exceed the current range.
- Please contact Flycolor sales or technical support for more information.