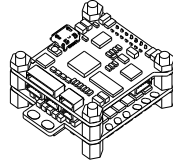




感谢您使用本产品！本产品功率强大，错误的使用可能导致人身伤害和设备损坏，强烈建议您在设备使用前仔细阅读本说明书并保存，严格遵守规定的操作程序。我们不承担因使用本产品或擅自对产品进行改造所引起的任何责任，包括但不限于对附带损失或间接损失的赔偿责任。我们有权在不经通知的情况下变更产品的设计、外观、性能及使用要求。

## 01 主要特性

- 采用功能强大EFM8BB21F16G MCU，8位C8051核心，工作频率高达50MHz；
- 专用高速驱动IC，启动更加舒畅。电调支持最高50万转速；
- 极简的两层塔式结构；电调和飞控之间采用快捷式插件连接，双信号传输具有双保险，提高飞行稳定性。
- 外露式电源线和电机线焊盘，无需额外拆卸实现快速焊接，安装更快，更方便；
- F3飞控，支持PPM、PWM、SBUS等主流遥控/接收模式；
- 飞控集成OSD，并且集成5V/1A、12V/500mA，方便给图传、摄像头、蜂鸣器、LED灯等外设供电；所有接头均配有快速连接线，给您前所未有的安装体验；
- 电调自带电流计，无需任何额外连接，可直接OSD显示实时电流；
- 电调使用BLHeli-S固件，专为多旋翼提升优越的性能，硬件产生的电机PWM可提升平滑的油门响应和降低噪音；
- 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，oneshot420 multishot信号；
- 全面支持Dshot150、Dshot300和Dshot600。Dshot为数字信号，抗干扰能力强，而且电调不需要校准油门行程。



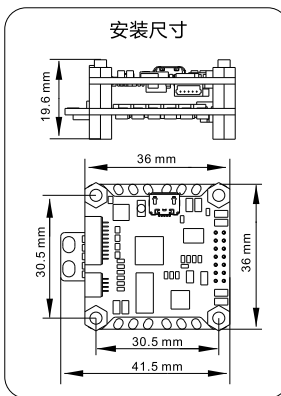
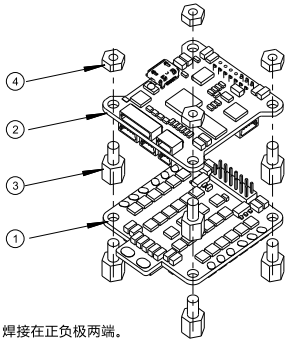
## 02 产品规格

型号	持续电流	瞬时电流(10S)	BEC(飞控)	锂电池节数	重量	尺寸(供参考)	典型应用(供参考)
Raptor S-Tower-20A	20A	30A	5V/1A 12V/0.5A	2-4S	20g	41.5x36x19.6mm	130-330多旋翼
Raptor S-Tower-30A	30A	40A	5V/1A 12V/0.5A	2-4S	20g	41.5x36x19.6mm	170-450多旋翼
Raptor S-Tower-40A	40A	50A	5V/1A 12V/0.5A	2-4S	20g	41.5x36x19.6mm	170-450多旋翼

\*Raptor S-Tower 电调使用的BLHeli-S固件为A-H-30；飞控使用的是SPRACINGF3；请联系Flycolor以获取更多信息。

## 03 元件清单/安装尺寸

序号	描述	数量
①	猛禽BLS四合一电调	1
②	飞控	1
③	尼龙支撑柱 M3*6+6	8
④	尼龙螺母 M3	8
⑤	尼龙螺钉 M3*10 (图中未显示)	4

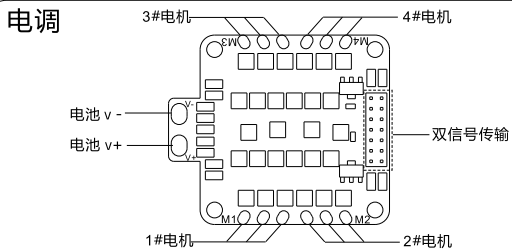


- 为实现快速安装，额外提供了：
  - 一根10Pin线束（10p SH1.0端子），用于PWM或者PPM接口；
  - 一根3Pin线束（4p SH1.0端子），用于SBUS接口；
  - 一根5Pin线束（5p SH1.0端子），用于LED及蜂鸣器；
  - 三根4Pin线束（4p SH1.0端子），用于不同的图传
  - 两根3Pin线束（3p SH1.0端子），用于不同的摄像头；
- 为加强更好滤波效果，用户可选择使用配件包中的电解电容，焊接在正负极两端。

注意：不得使用金属螺丝，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的关系。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。

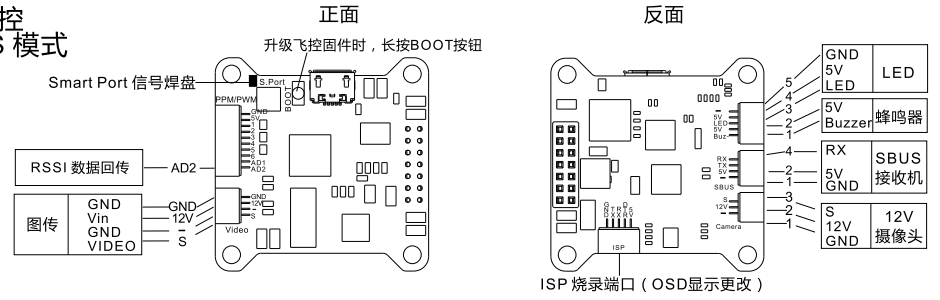
\*图片仅供参考，产品以实物为准

## 04 电调及飞控连线示意图

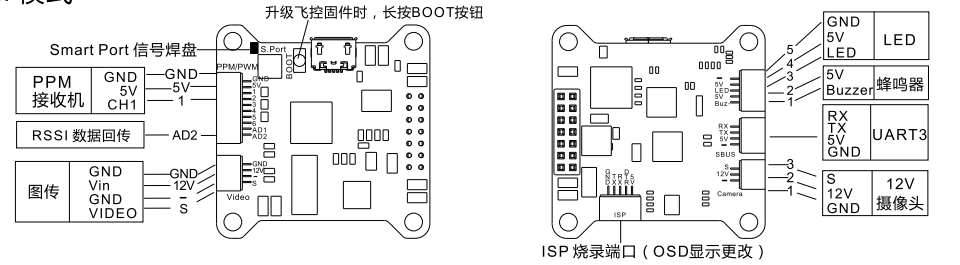


- 所有焊接要求良好的焊接技术，任何时候都需要避免因焊接而造成元件或线材之间短路；
- 为避免短路和漏电，请确保连接处绝缘良好；
- 接电之前务必再次检查极性是否正确；

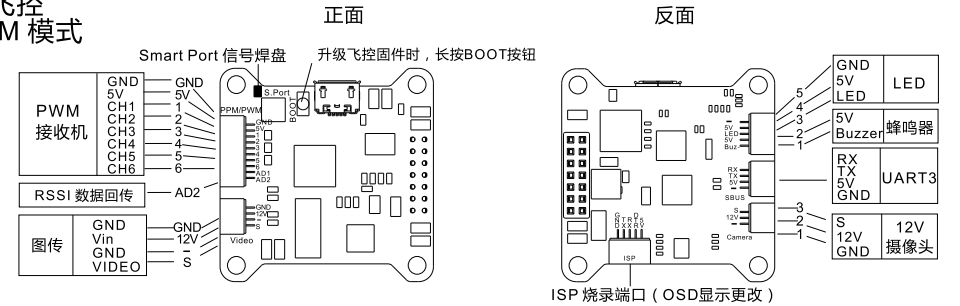
## 飞控 SBUS 模式



## 飞控 PPM 模式



## 飞控 PWM 模式



## 05 注意事项

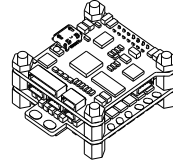
- 首次使用无刷电调或更换遥控设备后需要进行油门行程校准；Dshot模式时，将不再需要校准油门；
- 使用BLHeli-S开源程序，当电机出现异常或者要求达到更高转速时，可尝试更改进角参数；
- 无论任何时候都要注意极性，供电之前一定要反复检查。
- 在插拔或者做任何连接时，请关闭电源。
- 5V 12V只能用于低功率设备（5V最大1A,12V最大500mA）。
- 可以做一些减震措施尽量避免震动，因加速度计/陀螺仪对震动很敏感。
- 飞控要远离一切磁性材料。
- 如需更多信息，请联系飞盈佳乐售后或者技术支持。



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

- EFM8BB21F16G MCU, pipelined 8-bit C8051 core with 50 MHz maximum operating frequency.
- Dedicated high frequency driver, makes the start more smooth. ESC maximum speed is limited to 500k eRPM.
- Two layers tower structure between 4in1 ESC and FC using quick pin connection. Dual ways signal transmission makes the flight more stable
- Exposed pads for Battery and Motor wires, fast welding without additional disassembly, makes the installation faster and more convenient.
- F3 flight controller, supports PPM, PWM and SBUS remote control / receiving mode.
- FC integrated OSD, also integrated 5V/1A, 12V/500mA for VTX, camera, buzzer, LED and other peripheral devices ; provided several silicone cables for connectors on FC ,and will give you an unprecedented experience for installation;
- Built-in current meter, OSD directly display the real-time current without any additional connection;
- BLHeli-S firmware. It designed for superior performance in multicopters, and uses hardware generated motor pwm for smooth throttle response and silent operation.
- The code supports regular 1-2ms pulse width input, as well as Oneshot125 , Oneshot42 and Multishot .
- Supports Dshot150, Dshot300 and Dshot600. Dshot is digital signal, anti-interference ability is stronger, and do not need throttle calibration.



### 02 Specifications

Model	Con. Current	Burst Current (10S)	BEC(F.C)	LiPo cells	Weight	Size (For reference)	Typical Applications (For reference)
Raptor S-Tower-20A	20A	30A	5V/1A 12V/0.5A	2-4S	20g	41.5x36x19.6mm	130-330 Multi
Raptor S-Tower-30A	30A	40A	5V/1A 12V/0.5A	2-4S	20g	41.5x36x19.6mm	170-450 Multi
Raptor S-Tower-40A	40A	50A	5V/1A 12V/0.5A	2-4S	20g	41.5x36x19.6mm	170-450 Multi

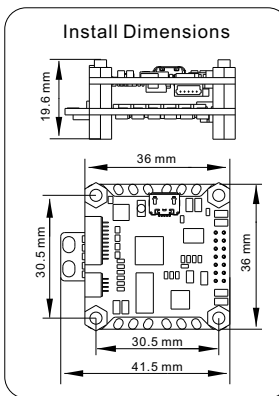
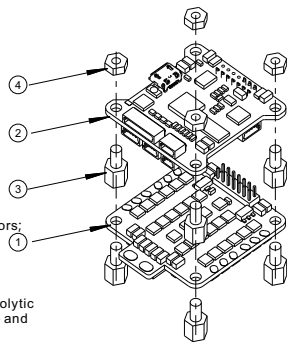
\*Raptor S-Tower ESC is using the A-H-30 BLHeli-S firmware; F.C is using SPRACINGF3 firmware; Please contact Flycolor for more information.

### 03 Part list / Install Dimensions

Item	Description	Qty.
①	Raptor BLS 4in1 ESC	1
②	Flight Controller	1
③	Nylon spacer M3*6+6	8
④	Nylon Nut M3	8
⑤	Nylon screw M3*10 (Not shown in figure)	4

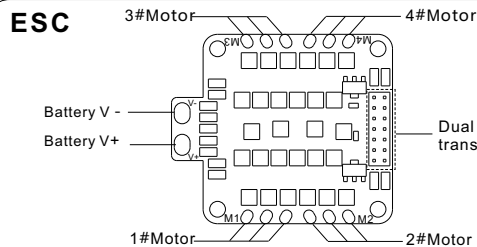
- For quick plug, Flight Controller additionally provide :  
One 10p cable (10-pin SH1.0 terminal) for PWM or PPM connectors;  
One 3p cable (4-pin SH1.0 terminal) for SBUS connector;  
One 5p cable (5-pin SH1.0 terminal) for LED and Buzzer.  
Three 4p cables (4-pin SH1.0) for different brand VTX.  
Two 3p cables (3-pin SH1.0) for different brand Cameras;
- To enhance performance of filtering, users can solder the electrolytic capacitor which are included in the accessory pack to the positive and negative terminals.

Attention: Never use metal screws, 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.



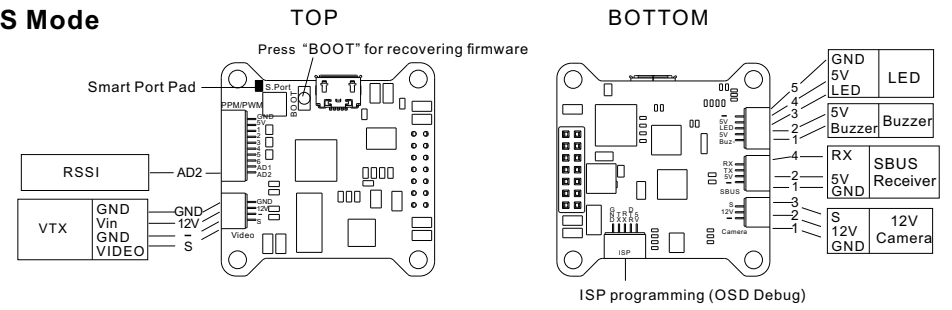
\*All pictures are for reference only

### 04 Connect diagram of ESC and FC

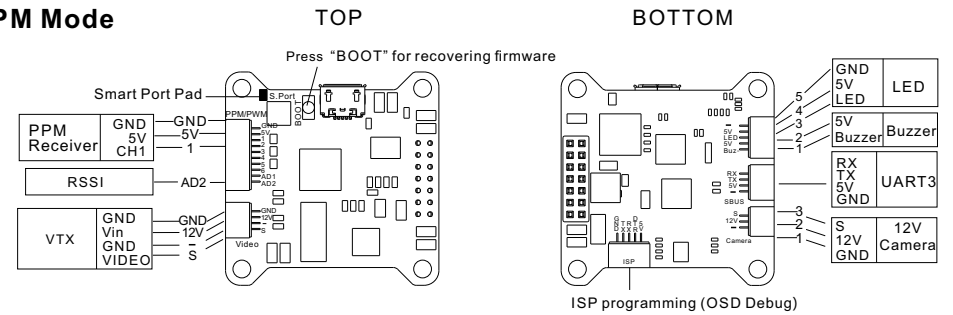


- All welding requires good welding technology, short circuit between the element or the wire should be avoided at any time.
- Please ensure all solder joints are insulated with heat shrink where necessary.
- Please double-check the polarity is correct before power up.

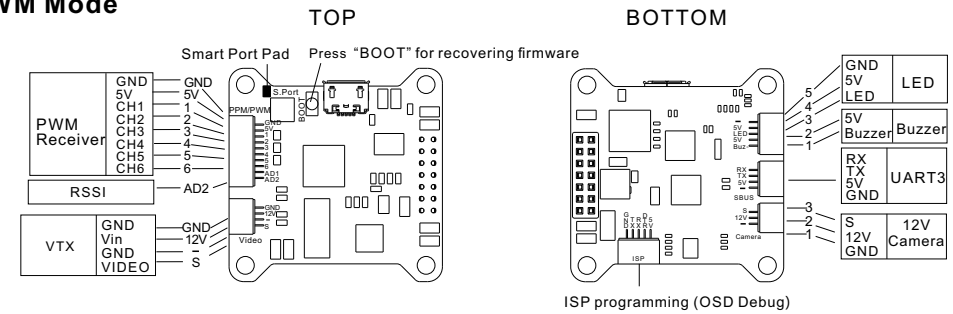
### SBUS Mode



### PPM Mode



### PWM Mode



### 05 Attention

- 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-S open-source firmware, when some abnormality occurs in ESC driving the motor or need the motor to reach a higher RPM, user can try to change the timing.
- Observe polarity at all times. Check and double check before applying power.
- Power off before unplugging ,plugging in or making any connections.
- 5V , 12V supply is for low-current use only (5V 1A MAX, 12V 500mA MAX).
- Keep magnets away from the Flight Controller.
- Do everything you can to prevent vibrations.
- Please contact Flycolor sales or technical support for more information.