



感谢您购买本产品！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

- 采用功能强大EFM8BB21F16G MCU，工作频率高达50MHz；专用三合一驱动IC，启动更加舒畅，电调支持最高50万转速；
- 体积更小，重量更轻，更适合超小型多旋翼无人机；
- 极简的两层塔式结构；电调和飞控之间采用快捷式插针连接，安装更快更方便；
- 外露式电源线 and 电机线焊盘，无需额外拆卸实现快速焊接，更换电机更方便；
- F3飞控，支持PPM、SBUS等主流遥控/接收模式；
- 飞控集成OSD，不再需要外接OSD设备；集成5V/1A输出，方便给图传、摄像头、LED灯等外设供电；
- 飞控通过USB连接电脑，通过飞控调参软件，可以直接给电调升级软件或者调参设置；
- 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；
- 电调多种参数可设置，使得其能够在最暴力的配置下运行，即使默认设置也能在正常配置下出色的运行；
- 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；
- 全面支持Dshot数字信号，抗干扰能力强，而且电调不需要校准油门行程。

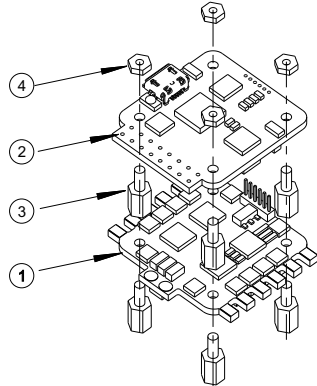
02 产品规格

型号	持续电流	瞬时电流 (10S)	BEC	锂电池节数	重量	尺寸(供参考)	典型应用(供参考)
*Raptor S-Tower-12A-OSD	12A	15A	5V/1A(F.C)	2-3S	11.5g	30.5x33.4x19mm	80-130多旋翼

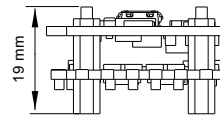
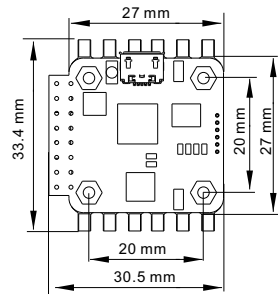
* Raptor S-Tower-12A-OSD, 飞控为集成OSD版本。
Raptor S-Tower 电调使用的BLHeli-S固件为**A-H-30**；飞控使用固件为**SP Racing**；请联系Flycolor以获取更多信息。

03 元件清单/尺寸

序号	描述	数量
①	猛禽BLS 12A四合一电调	1
②	F3飞控	1
③	尼龙支撑柱 M2*6+5	8
④	尼龙螺母 M2	4
⑤	尼龙螺钉 M2*8 (附件，图中未显示)	4



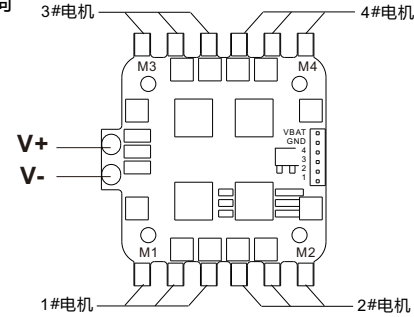
安装尺寸



*图片仅供参考，产品以实物为准

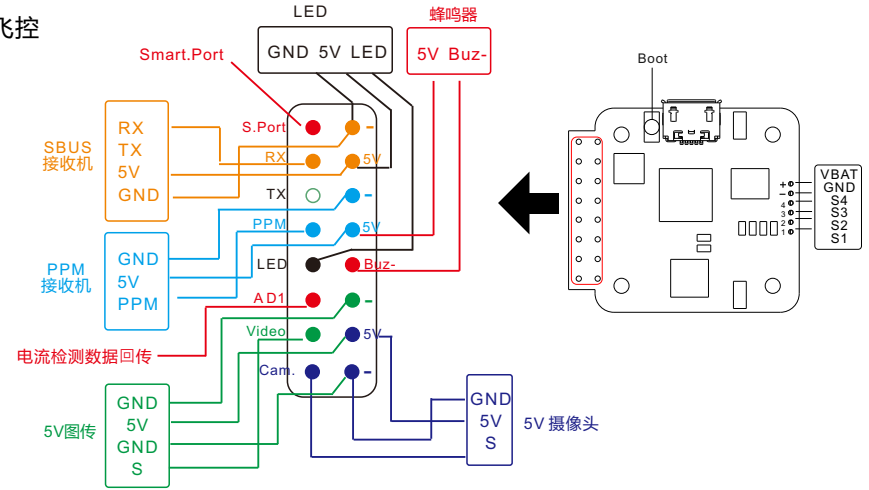
04 电调及飞控连线示意图

四合一电调



- 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



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只能用于低功率设备（5V最大1A）。
- 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，请联系飞盈佳售后或者技术支持。



Thank you for purchasing 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 with 50 MHz maximum operating frequency, using dedicated 3in1 drivers, makes the start more smooth. ESC maximum speed is limited to 500k eRPM.
- small size&lighter in weight. More suitable for ultra small multirotors.
- Two layers tower structure between 4in1 ESC and FC using quick pin connection. makes the installation faster and more convenient
- Exposed pads for Battery and Motor wires, fast welding without additional disassembly, motor replacement is more convenient.
- F3 flight controller, supports PPM and SBUS remote control / receiving mode.
- FC integrated OSD, no external OSD device is required, integrated 5V/1A for Image transmitter, camera, buzzer, LED and other peripheral devices;
- BLHeli-S firmware designed for superior performance in multirotors, and uses hardware generated motor pwm for smooth throttle response and silent operation.
- There are tuneable parameters that can make the code run well even in the most demanding situations, although default settings will work excellently in normal operating environments.
- The code supports regular 1-2ms pulse width input, as well as Oneshot125, Oneshot42 and Multishot. The input signal is automatically detected by the ESC upon power up.
- Supports Dshot digital signal, anti-interference ability is stronger, and do not need throttle calibration.

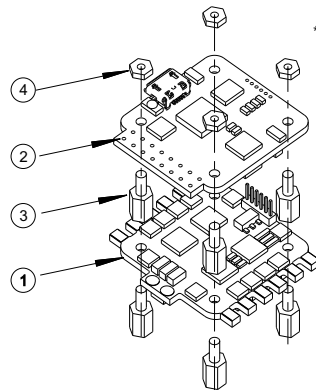
02 Specifications

Model	Con. Current	Burst Current (10S)	BEC	LiPo cells	Weight	Size (For reference)	Typical Applications (For reference)
*Raptor S-Tower-12A-OSD	12A	15A	5V/1A(F.C)	2-3S	11.5g	30.5x33.4x19mm	80-130 Multi

* Raptor S-Tower-12A-OSD, Flight controller is the version integrated OSD.
ESC is using the A-H-30 BLHeli-S firmware; FC is using SPRacing firmware; Please contact Flycolor for more information.

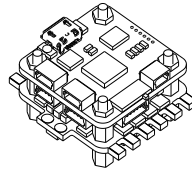
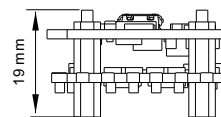
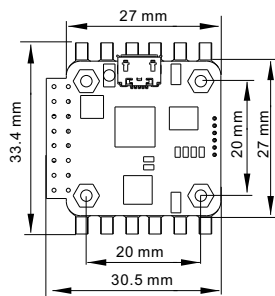
03 Part list / Dimensions

Item	Description	Qty.
①	Raptor BLS 12A 4in1 ESC	1
②	F3 Flight Controller	1
③	Nylon spacer M2*6+5	8
④	Nylon Nut M2	4
⑤	Nylon screw M2*8 (Not shown in figure)	4



*All pictures are for reference only

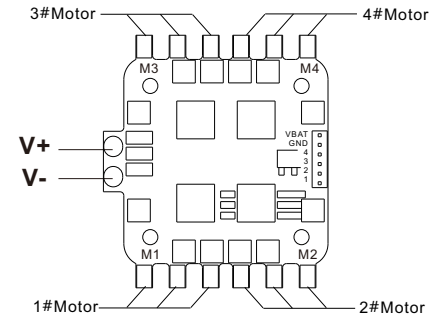
Dimensions



Built-in OSD Version

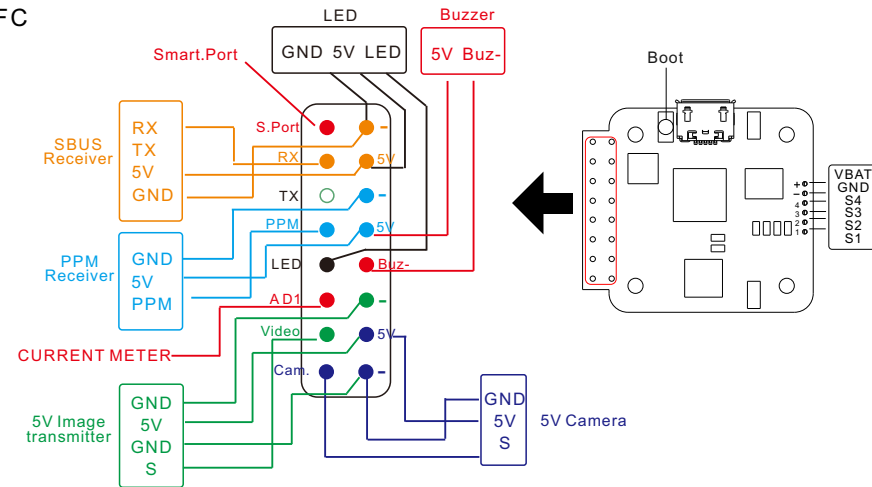
04 Connection diagram

4in1 ESC



- 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.

FC



05 Attention

- User need 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 supply is for low-current use only(5V 1A 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.