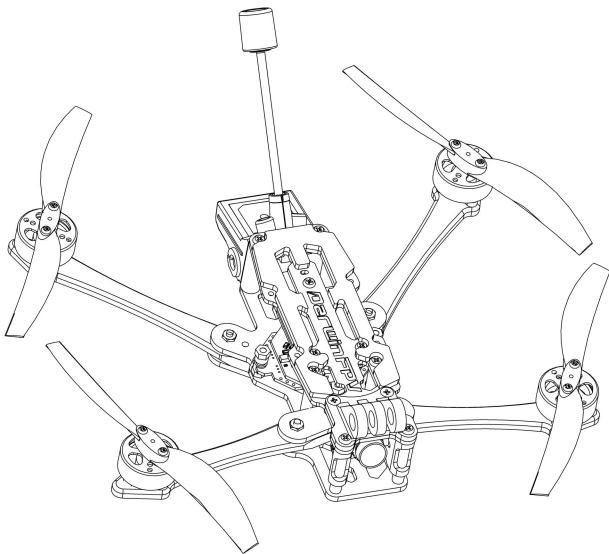




FoldApe4 使用说明书



哔哩哔哩
达尔文FPV

UID: 3493296856893537



抖音
DarwinFPV 电子模玩专卖店
抖音号: 70066625196



淘宝
DarwinFPV 达尔文品牌店



微信
DarwinFPVsupport

注意事项

- ① 此 AIO 板载 SPI ELRS 2.4G 接收机，默认出厂固件为 Betaflight4.4.2 版本，支持 ELRS_V3.0 及以上的高频头。
- ② 1504-3800KV 电机最高支持 3S 电池；切记不得将电池接反，否则会烧坏飞机。
- ③ 如果由于各种原因导致飞控参数异常无法正常使用，可以添加达尔文微信联系客服获取官方参数配置。
- ④ 收到产品后先进入 Betaflight Configurator 查看是否有检测陀螺仪和加速度计，以及陀螺仪姿态是否正常。
- ⑤ 在 Betaflight 中拉动油门，确保四个电机正常转动包括电机转向正确，再装桨试飞；**拉油门时务必卸桨，以免发生重大事故。**

确认以上注意事项无任何产品问题即可装桨开始爽飞！

快速入门指南

板载 SPI ELRS 接收机对频

将 AIO 接入电脑连接 Betaflight，进入接收机配置页面，在页面右下角点击“接收机对频”，此时 AIO 的接收机绿色指示灯会从慢闪变成双闪，代表已进入接收机对频模式。等待指示灯变为常亮后，则说明对频成功；对频成功后接收机会记住对频信息，以后重启会自动连接，无需重新对频。

建议对频前检查高频头与接收机固件是否一致，如不一致请更新高频头或 AIO 的固件；Betaflight4.4 版本及以上支持 ELRS_V3.0。

	指示灯状态	含义
	蓝灯常亮	连接成功
	蓝灯双闪	已进入对频模式
	蓝灯慢闪	无 TX 模块信号连接

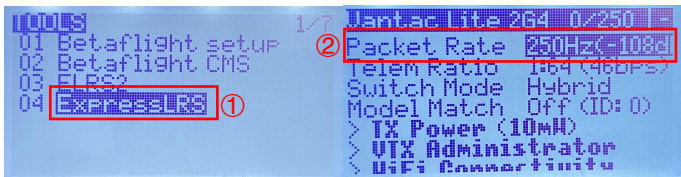
可能遇到的问题

当接收机与遥控器绑定完之后，接收机灯一直处于慢闪状态，无法正常连接遥控器，导致的原因是遥控器与接收机的刷新率不一致，可以通过遥控器更改刷新率或连接 Betaflight 修改 SPI ELRS 接收机的刷新率。

SPI ELRS 接收机默认使用 250Hz，可通过以下两种方法解决

方法一：修改高频头刷新率：

- ① 进入 ExpressLRS lua 脚本
- ② 将高频头的刷新率修改为 250Hz



方法二：修改 SPI ELRS 接收机刷新率：

需要进入 Betaflight CLI 并使用以下命令：

```
set expresslrs_rate_index = [索引]
```

其中 [索引] 对应于以下内容：

500Hz = 0

250Hz = 1

150Hz = 2

50Hz = 3

例如，如果想将刷新率切换到 150Hz，需要在 Betaflight CLI 中执行以下命令：

```
set expresslrs_rate_index = 2
```

```
save
```



遥控器拨杆开关确认

对频成功后，连接 Betaflight 地面站，进入模式选项，尝试拨动遥控器各功能开关，黄色光标移动到设定的范围就会开启相应的通道设置（购买 RTF 版本无需对频，出厂时已经对频完成）。

解锁	ARM	AUX 1	最小: 1300 最大: 2100
	添加范围		
自稳模式	ANGLE	AUX 4	最小: 1300 最大: 2100
	添加链接		
	添加范围		
GPS救援模式	GPS RESCUE	AUX 3	最小: 1700 最大: 2100
	添加链接		
	添加范围		
蜂鸣器	BEEPER	AUX 2	最小: 1700 最大: 2100
	添加链接		
	添加范围		
Air mode	AIR MODE	AUX 3	最小: 900 最大: 1300
	添加链接		
	添加范围		
反乌龟模式	FLIP OVER AFTER CRASH	AUX 2	最小: 1300 最大: 1700
	添加链接		
	添加范围		

检查电机转向

进入“电机”页面，打开“我已了解风险”选项开关，逐个转动电机检查旋转的方向是否符合电机转向图所指示的方向。

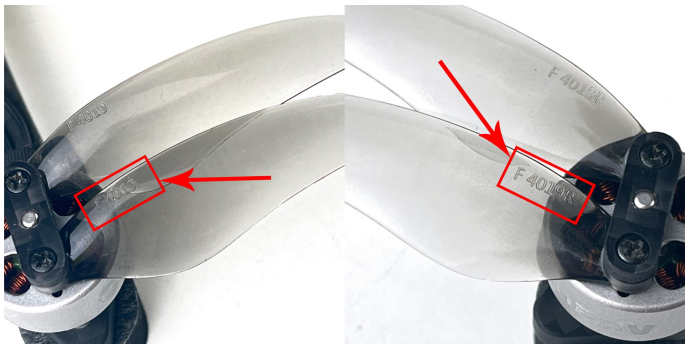
注：转动电机前一定要拆卸所有桨叶，避免安全事故发生！

电机转向图

电机测试模式/解除锁定提示：
 移动滑块或使用遥控器输入飞机可能会导致电机翻转！
 为了避免造成故障，在使用此功能之前，请务必先：
 启用电机测试模式并禁用遥控器飞行控制，以确保在工作台上无螺旋桨时能自动锁定电机。
 我已了解风险，螺旋桨已被移除，启用电机控制和允许解锁，并禁用遥控器飞行控制。

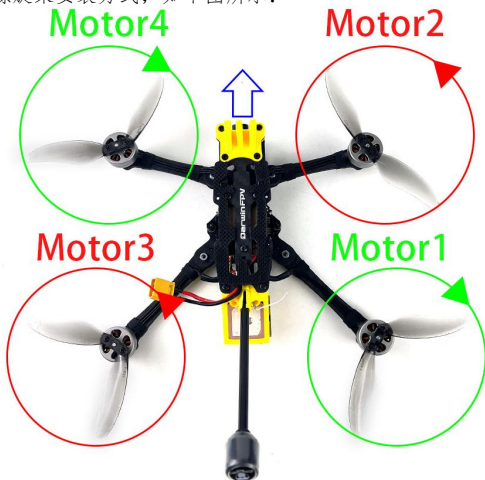
螺旋桨安装方式

第一步：将四个螺旋桨上有字的一面朝上放置，如下图所示：



第二步：

将写有 **F4019** 字样的两副螺旋桨分别安装在 2 号和 3 号电机上；
将写有 **F4019R** 字样的两副螺旋桨分别安装在 1 号和 4 号电机上；
正确的螺旋桨安装方式，如下图所示：



螺丝规格

螺丝清单

① M1.6*5 mm (8个)

② M1.6*6 mm (12个)

③ M2*3 mm (3个)

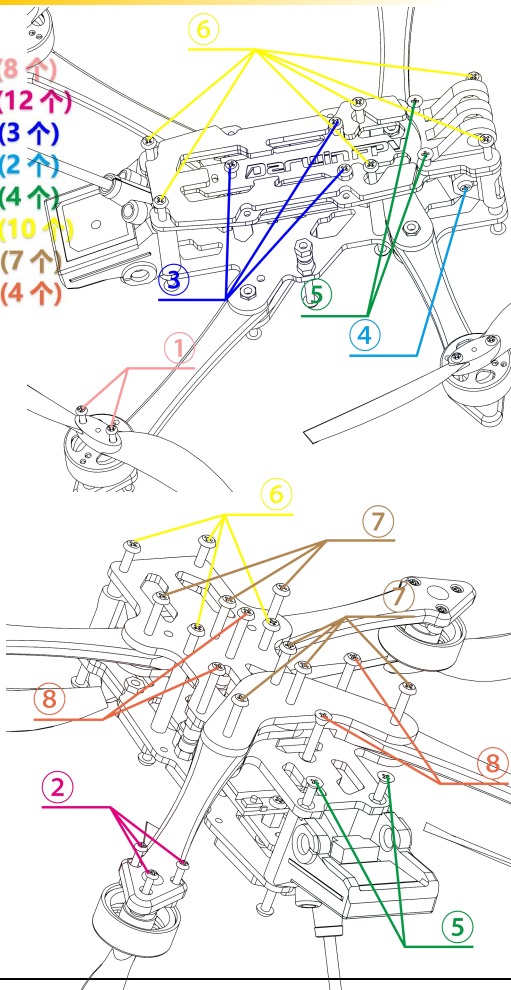
④ M2*4 mm (2个)

⑤ M2*6 mm (4个)

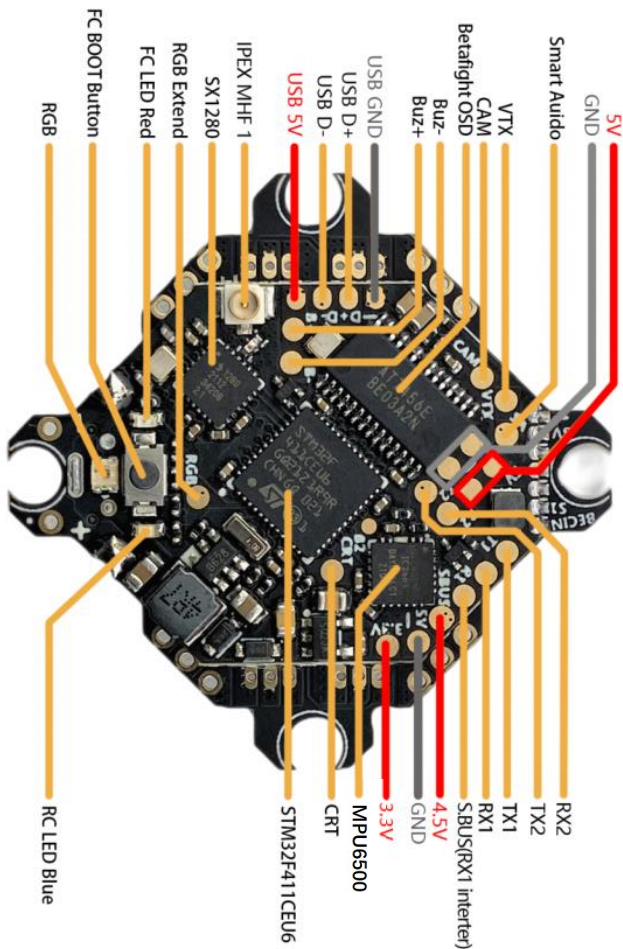
⑥ M2*7 mm (10个)

⑦ M3*10 mm (7个)

⑧ M3*12 mm (4个)



飞控接线图

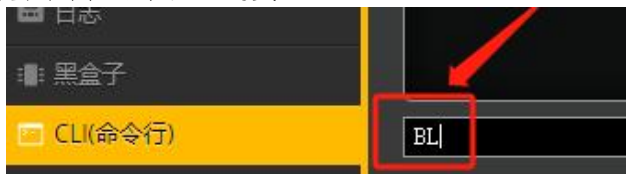


如何进入 DFU 模式

① 按住 Boot 键连接电脑，即可进入 DFU 模式；连接成功后 Betaflight 的端口处会显示 DFU。



② 将飞控连接到 Betaflight Configurator，在“CLI(命令行)”中输入“BL”（大小写均可）也可进入 DFU 模式。



如何烧录固件

进入 DFU 模式后，选择“DARWINF4SX1280HD”固件和版本后加载固件，然后点击“烧写固件”等待烧写完成即可连接 Betaflight Configurator。



烧写成功后飞控的状态指示灯也会重新亮起

包装清单



1 x FoldApe4 模拟/FoldApe4 黄蜂
/FoldApe4 蜗牛/FoldApe4 O3



1 x 灰色绒布袋



1 x 备用螺丝包



1 x 配件包



1 x 说明书卡片



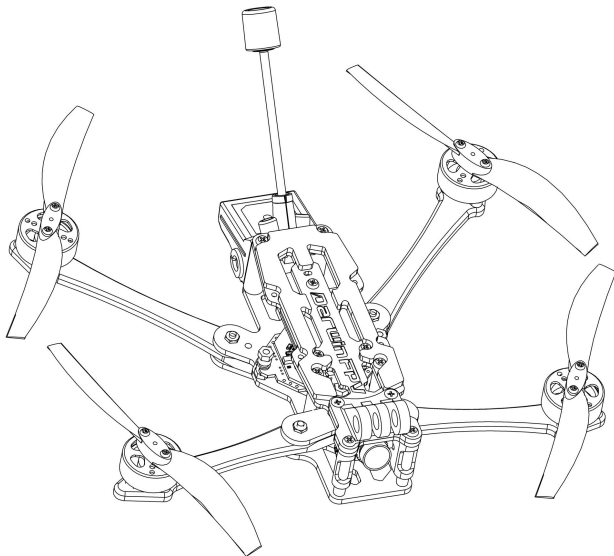
1 x Logo 贴纸
(120x120mm)

更多有关 AIO、飞塔的固件、CLI、配置文件、最新的说明书等及更详细的配置教程，请到 DARWINFPV 官网支持下获取。

DARWINFPV 官网: <https://www.darwinfpv.com>



FoldApe4 USER MANUAL



Instagram: @darwinfpv_official

Facebook: DarwinFPV1

Email: support@darwinfpv.com

Manufacturer:

Room 2209, Building 2, Tonggao Factory, Sanlian Industrial Zone, Songbai Road, Baoan District, Shenzhen, Guangdong

DARWINFPV official website: <https://www.darwinfpv.com>

CAUTIONS

- ① This AIO has an onboard SPI ELRS 2.4G receiver, and the default factory firmware is Betaflight version 4.4.2 supports TX module of ELRS_V3.0 and above.
- ② 1504-3800KV motor max supports 3S battery, Must remember not to reverse the battery, otherwise it will burn the drone.
- ③ If the FC parameters are abnormal due to various reasons and cannot be used normally, you can go to DarwinFPV official store's support page to obtain the official parameter configuration.
- ④ After receiving the FC, first connect to computer on Betaflight Configurator software to check whether the gyroscope and accelerometer are detected, and whether the gyroscope attitude is normal.
- ⑤ Increase the throttle in Betaflight software to ensure the normal rotation and correct rotation direction of the 4 motors, and then install the propellers to test flight;

Be sure to remove the propellers when pulling the throttle in Betaflight software to avoid accidents.

After confirming the above precautions, you can install the propellers and start flying.

QUICK START GUIDE

Onboard SPI ELRS receiver binding

Connect the AIO to the computer and connect to Betaflight, enter the receiver configuration page, on page Click "Receiver Binding" in the lower right corner of the screen. At this time, the green indicator light of the AIO receiver will from slowly flashing to double flashing. After waiting for the indicator light to turn solid, indicates that the binding is successful; after the binding is successful, the receiver will remember the binding information and will automatically connect , no need to re-bind.

We recommend checking whether the firmware of the TX module and the receiver are consistent before binding. If they are inconsistent, please update the firmware of the TX Module or AIO; Betaflight version 4.4 and above support ELRS V3.0.

		RC LED Status	Receiver Mode
Blind Receiver	Refresh	Blue Light Stays On	Paired
	Save	Blue Light Flashes Flashing	In Pairing Mode
		Blue Light Slow Flashing	Not Paired

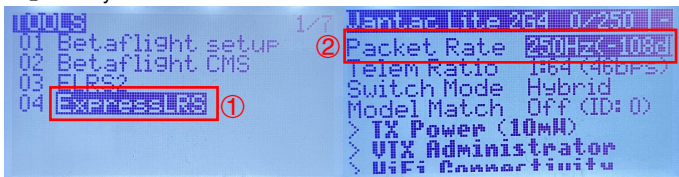
Possible problems

After the receiver is bound to the transmitter, the receiver light keeps flashing slowly and the receiver cannot connect to the transmitter normally. The reason is that the packet rate of the transmitter and the receiver are inconsistent. At this time, we can change the packet rate of the transmitter or connect Betaflight modifies the packet rate of the SPI ELRS receiver to solve this problem.

The SPI ELRS receiver uses 250Hz by default, which can be solved by the following two methods

1: Modify the TX module packet rate:

- ① Enter the ExpressLRS lua script
- ② Modify the refresh rate of TX module to 250Hz



2: Modify SPI ELRS receiver packet rate:

You need to enter the Betaflight CLI and use the following command:

```
set expresslrs_rate_index = [index]
```

where [index] corresponds to the following:

500Hz = 0

250Hz = 1

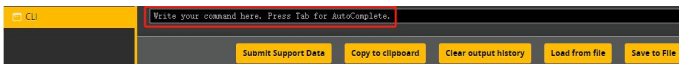
150Hz = 2

50Hz = 3

For example, if you want to switch the packet rate to 150Hz, you need to execute the following command in Betaflight CLI:

```
set expresslrs_rate_index = 2
```

```
save
```



Transmitter lever switch confirmation

After successful binding, connect Betaflight, enter the mode option, and try to toggle the function switches of the transmitter. When the yellow cursor moves to the set range, the corresponding channel settings will be opened (If you order the RTF version, there is no need for binding, as the binding has been completed at the factory) .

The screenshot displays the transmitter settings interface for Betaflight. It features several sections, each with a title, an 'Add Link' button, an 'Add Range' button, and a slider control. The sections are:

- ARM:** AUX 1, Min: 1300, Max: 2100. Slider is at approximately 1300.
- ANGLE:** AUX 4, Min: 1300, Max: 2100. Slider is at approximately 1500.
- GPS RESCUE:** AUX 3, Min: 1700, Max: 2100. Slider is at approximately 1700.
- BEEPER:** AUX 2, Min: 1700, Max: 2100. Slider is at approximately 1700.
- AIR MODE:** AUX 3, Min: 900, Max: 1300. Slider is at approximately 1300.
- FLIP OVER AFTER CRASH:** AUX 2, Min: 1300, Max: 1700. Slider is at approximately 1300.

Check motor steering

Enter the "Motor" page, turn on the "I understand the risks" option switch, and turn the motors one by one to check whether the direction of rotation is in line with the direction indicated by the motor steering diagram.

Note: Be sure to remove all propellers before turning the motor to avoid accidents!

The screenshot shows the Motor Test Mode interface. It features seven motor sliders (1-7) and a 'Motors' section. A red box highlights the temperature and RPM data for the first four motors:

Motor	RPM	Temp
1	0	25°C
2	0	23°C
3	0	28°C
4	0	37°C

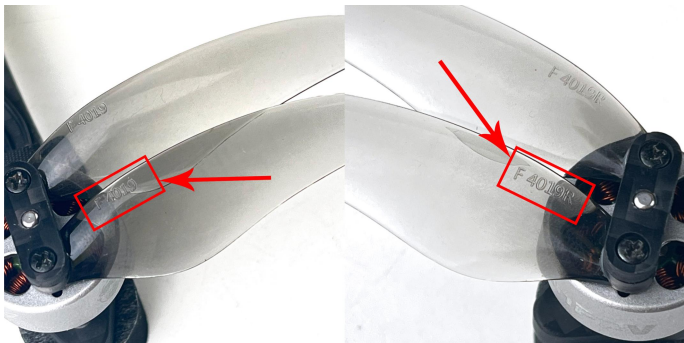
To the right is a motor steering diagram showing a four-armed cross with motors 1, 2, 3, and 4 at the ends. Arrows indicate the rotation direction: clockwise for 1 and 3, counter-clockwise for 2 and 4. A red arrow points upwards from the center.

At the bottom, a 'Motor Test Mode / Arming Notice' section contains the following text:

Motor Test Mode / Arming Notice:
 Moving the sliders or arming your craft with the transmitter will cause the motors to spin up.
 In order to prevent injury **remove all propellers** before using this feature.
 Enabling motor test mode will also temporarily disable Runaway Takeoff Prevention, to stop it from disarming the craft when bench testing without propellers.
 I understand the risks, the propellers are removed - enable motor control and arming, and disable Runaway Takeoff Prevention.

Propeller installation steps

Step 1: Place the 4 propellers with the words facing up, as shown in the figure below:

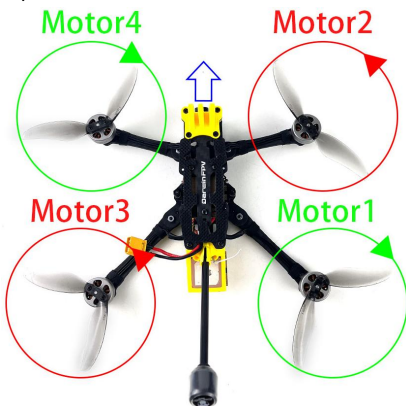


Step 2:

Install the two propellers with the words **D90S** on the No. 2 and No. 3 motors respectively;

Install the two propellers with the words **D90RS** on the No. 1 and No. 4 motors respectively;

The correct propeller installation method is shown in the following figure:



SCREWS BOM

Screw List

① M1.6*5 mm 8pcs

② M1.6*6 mm 12pcs

③ M2*3 mm 3pcs

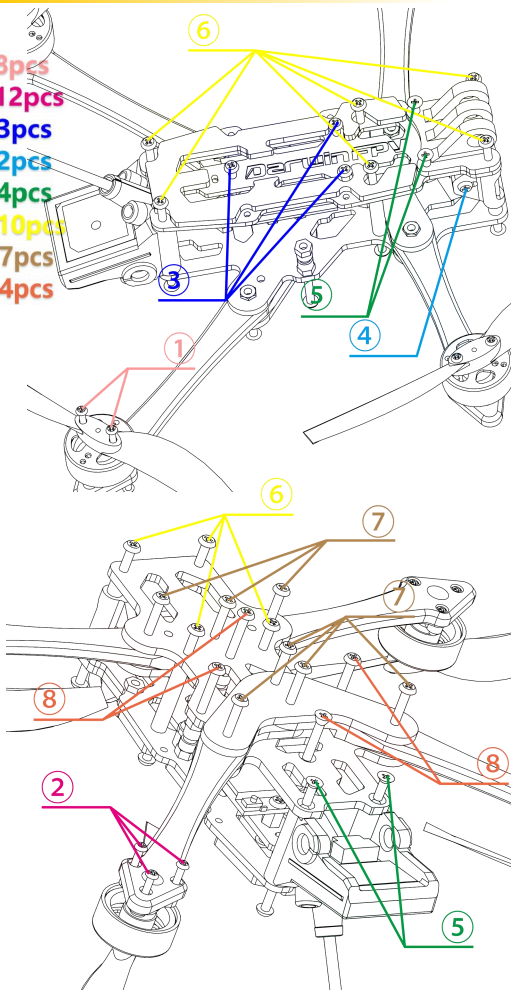
④ M2*4 mm 2pcs

⑤ M2*6 mm 4pcs

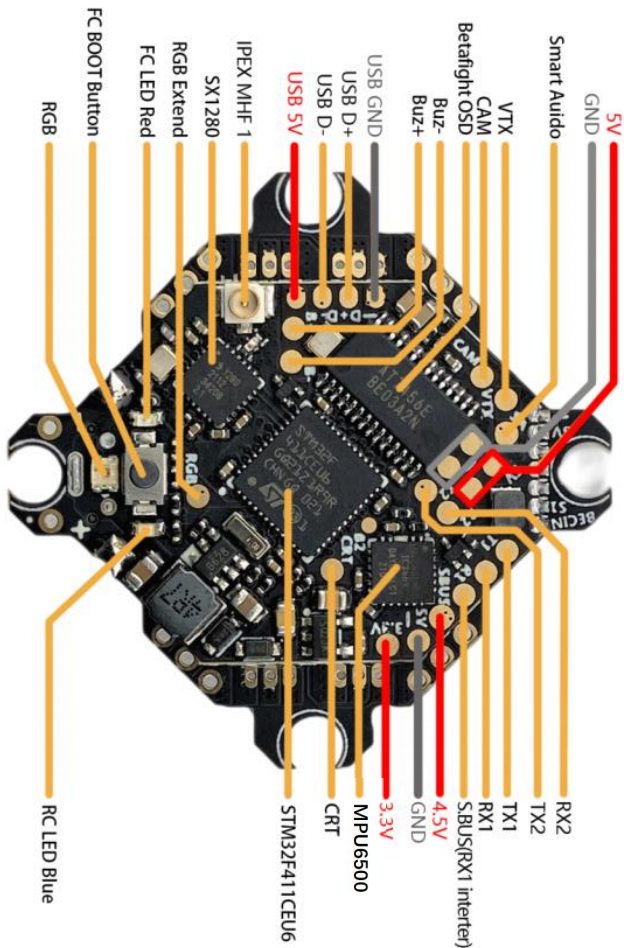
⑥ M2*7 mm 10pcs

⑦ M3*10 mm 7pcs

⑧ M3*12 mm 4pcs

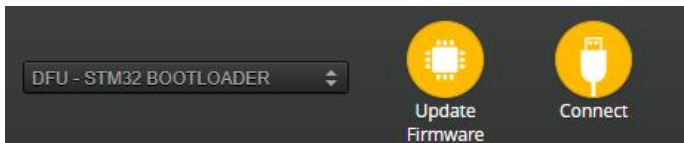


FC WIRING DIAGRAM



HOW TO ENTER DFU MODE

① Press and hold the **Boot** button to connect to the computer to enter DFU mode; after the connection is successful, DFU will be displayed at the port of Betaflight.

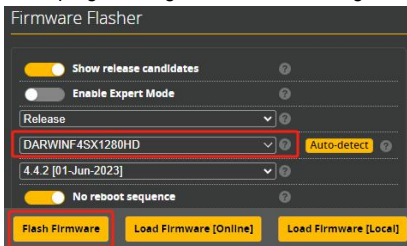


② Connect to computer by USB-C cable, open the Betaflight Configurator software and click connect button - CLI menu, entering "BL" in the menu bar can also enter DFU Mode ("BL" can be uppercase or lowercase).

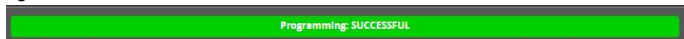


PROGRAMMING FIRMWARE

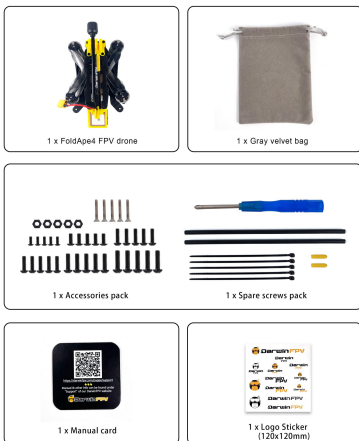
After entering the DFU mode, select the "DARWINF4SX1280HD" firmware and version and load the firmware, then click "Program firmware" and wait for the completion of the programming to connect to Betaflight Configurator.



After the programming is successful, the FC status indicator will also light up again.



IN THE BOX



For more information about FC firmware, CLI, configuration files, the latest manuals etc., and more detailed configuration tutorials, please refer to DarwinFPV official website support menu.

DARWINFPV official website: <https://www.darwinfpv.com>

AFTER-SALES SERVICE

About Refunds: New/unopened/unused products purchased directly from DarwinFPV can be returned unconditionally within 20 workdays, and the customer is responsible for the return shipping cost. If the returned product is lost or opened for use, damaged or missing accessories, it will not be unconditional Refund.

About Warranty: If DarwinFPV determines that the problem is not covered by warranty, we will provide a discount for ordering new product replacement, and do not support free replacement.

Cases not supported by warranty:

1. Drone crash or fire damage due to user operation error.
2. Damage caused by incorrect soldering, improper installation and use.
3. Damage caused by unauthorized modification of circuit and mismatch of battery and charger.
4. Damage due to component aging or drone collision.

CONTACT



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