

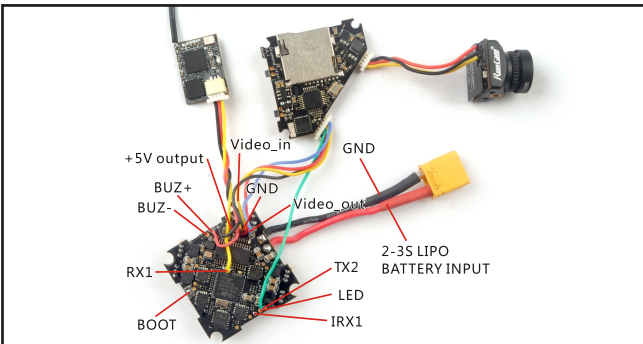
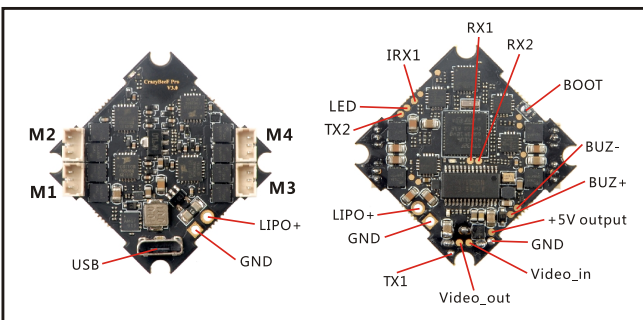
## Specifications

Brand Name:Happymodel
Item Name: Larva X 2-3S 2.5inch Brushless FPV drone
Wheelbase: 100mm
Size: 88mm*88mm*45mm(without propellers)
Weight: 50g(without battery)
Recommended Battery:
3S 300mah/350mah 2S 450mah

## Package includes

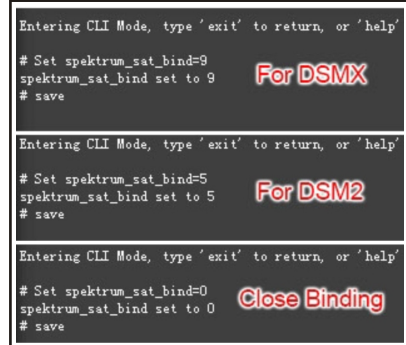
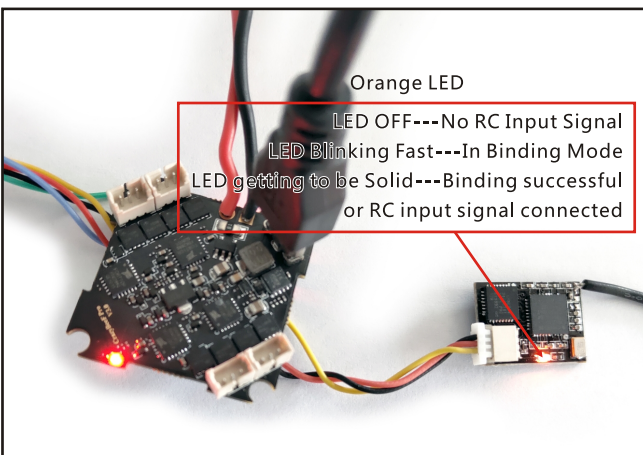
Item Name	Qty
Larva X frame	1
Option1: Crazybee F4FR V3.0 PRO FC built-in Frsky NON-EU RX	1
Option2: Crazybee F4FS V3.0 PRO FC built-in Flysky RX	
Option3: Crazybee F4 V3.0 PRO FC with external DSM2/DSMX RX	
Option4: Crazybee F4 V3.0 PRO FC with external Frsky RXSR receiver	
Option5: Crazybee F4 V3.0 PRO FC with external TBS Crossfire Nano RX	
1103 KV7000 motor	4
2.5inch tri-blades propeller (4cw+4ccw)	1
Camera : Runcam Nano2	1
VTX: 5.8g 25mw~200mw switchable with 720p DVR (Diamond_vtx)	1
Propeller disassemble tool	1
Screwdriver	1

## Flight controller connection diagram



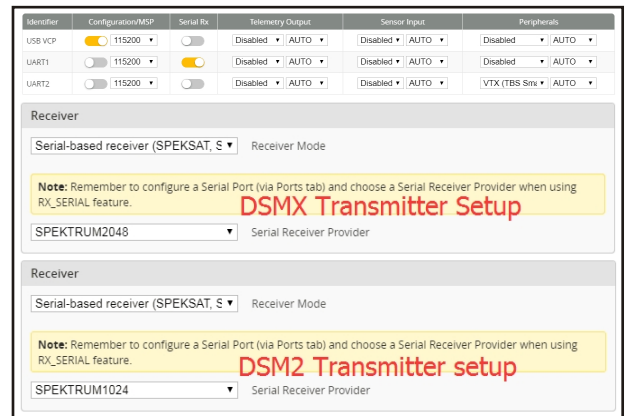
## Binding procedure

- (1)Connect Crazybee F4 PRO DSM2/DSMX Version to computer and open Betaflight configurator, From CLI tab type: "set spektrum\_sat\_bind = 9" for DSMX radio or "set spektrum\_sat\_bind = 5" for DSM2 radio
- (2)Type "save" and after Flight controller reboot remove USB cable (=Power off the board)
- (3)Wait a second and reconnect the USB cable. After cold start the orange LED on the receiver should start blinking and transmitter should be turned on while pressing the bind button
- (4)After binding the orange LED on the receiver should be solid. Connect Betaflight and use receiver tab to test that satellite is working correctly.
- (5)Final step is to go to CLI tab and type "set spektrum\_sat\_bind = 0" and then type "save". This must be done so that satellite doesn't go back to binding mode when the flight controller is repowered again.



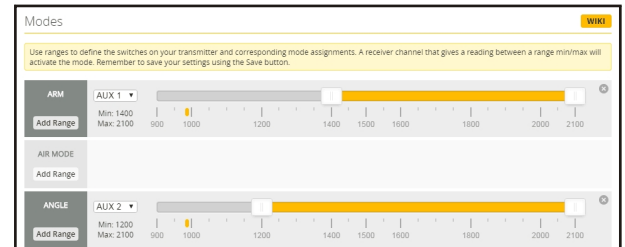
## Receiver configuration

We have configured the DSM2/DSMX receiver for the Larva X before shipping. If you flashed the firmware ,Please setup as the following steps: Enable Serial\_RX for UART1, then select RX\_SERIAL from the RECEIVER Mode and set the Serial Receiver Provider to be Spektrum1024 for DSM2 radio and Spektrum2048 for DSMX Radio in Betaflight Configurator.



## Arm/Disarm the Motor

1. The Default Arm/Disarm switch for Larva X is AUX1(Channel 5),and you can also customize it with Betaflight Configurator.



- 2.For most of Spektrum radio the default channel 5 is Gear switch and you can also customize it. Use DX9 for example, Go to menu and select System setup ,then choose Channel sign.



- 3.The default channel map for Larva X DSM2/X version is TAER1234, please make sure your transmitter is matched, otherwise it will can't be armed. Toggle the AUX1 Switch, the Green LED on the flight controller will getting to be solid, this indicates the motor was armed . And also you can found "Armed" displayed on your FPV Goggles or the FPV Monitor. Please make sure keep the Larva X level before arming .Be careful and enjoy your flight now !



### VTX Bands and Channels setup

Blue LED5 and Green LED8 light on, indicating frequency 5917MHZ (BAND5 and CH8)  
Blue LED1 and Green LED2 light on, indicating frequency 5845MHZ (BAND1 and CH2)

100MW U.F.L. Start/Stop  
25MW Red LED Blinking: Recording Solid: Standby  
Switch Button  
Band LED 1,2,3,4,5  
Channel LED 1,2,3,4,5,6,7,8  
Cam IN +5V output GND  
200MW  
Blue Video\_out  
Yellow Video\_IN  
Green smart Audio  
Red +5V Input  
Black GND

**Frequency and channel frequency table:**

FR	CH	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8
Band1(A)	5865M	5845M	5825M	5805M	5785M	5765M	5745M	5725M	
Band2(B)	5733M	5752M	5771M	5790M	5809M	5828M	5847M	5866M	
Band3(E)	5705M	5685M	5665M	5645M	5625M	5605M	5585M	5565M	
Band4(F)	5740M	5760M	5780M	5800M	5820M	5840M	5860M	5880M	
Band5(R)	5658M	5695M	5732M	5769M	5806M	5843M	5880M	5917M	

The DVR will recording automatically when power on.  
Press the start/stop to start or stop recording.

### VTX power set

Go to Betaflight configurator CLI tab, type "set vtx\_power=1" to choose 25mw, "set vtx\_power=2" to choose 100mw, "set vtx\_power=3" to choose 200mw, need to type "save"

### \*NOTES:

Default VTX setting is 200mw but the VTX power LED indicate will always show 25mw when the quad was disarmed, because we have "set VTX\_low\_power\_disarm=on"

There are 3 ways to switch the vtx channels:

1. Short press the switch button to choose the VTX channel, Press and hold the button for 2 seconds and release to choose the VTX band (Can't save, it will lost the channel while power off)
2. If we need to use Channel 5705 then we should Go to Betaflight CLI, type the command:  
Set VTX\_band=3  
Set VTX\_channel=1  
save
3. Enable Smaraudio for UART2, then move the stick of the transmitter (THR MID + YAW LEFT + PITCH UP) to enter OSD Menu, then enter to VTX SA to set VTX Band and channel

Generator	Configuration	Serial	Telemetry	Output	Sensor	Input	Peripheral
USB VCP	115200	115200	Disabled	AUTO	Disabled	AUTO	Disabled
UART1	115200	115200	Disabled	AUTO	Disabled	AUTO	Disabled
UART2	115200	115200	Disabled	AUTO	Disabled	AUTO	VTX (TBS SMC) / AUTO



### DVR firmware update

- Step 1. Download the latest firmware from [www.happymodel.cn](http://www.happymodel.cn), extract the CRESFW.BIN to an empty TF-SD card
- Step 2. Put the TF-SD card into Diamond VTX, and power on for it, the red LED will start flashing. Then waiting to the red LED turn off, this indicates firmware upgrading successfully
- Step 3. Important!!! You must power off the Diamond VTX immediately once the red LED turn off. Don't turn off the power during firmware upgrading. And remember to remove the CRESFW.BIN firmware from TF-SD card after upgrading.

### Mixer type and ESC/motor protocol

**Props IN**

Fix the CW propeller onto the M1 and M4 motor (CW motors)  
Fix the CCW propellers onto the M2 and M3 motor (CCW motors)

Motor direction is reversed

ESC/Motor Features

DSHOT600 ESC/Motor protocol

MOTOR\_STOP Don't spin the motors when armed

Disarm motors regardless of throttle value (When ARM is configured in Modes tab via AUX channel)

5 Disarm motors after set delay [seconds] (Requires MOTOR\_STOP feature)

4.5 Motor Idle Throttle Value [percent]

### Default PID setting

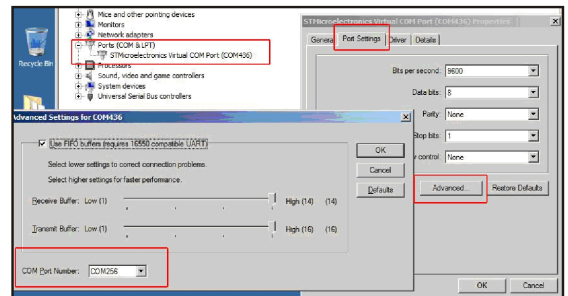
	Proport...	Integral	Derivative	Feedfor...	RC Rate	Super Rate	Max Vel [deg/s]	RC Expo
Basic/Acro								
ROLL	40	50	32	60	1.00	0.75	800	0.10
PITCH	42	50	37	60	1.00	0.75	800	0.10
YAW	65	55	0	100	1.00	0.70	667	0.10

### ESC Check and Flash firmware

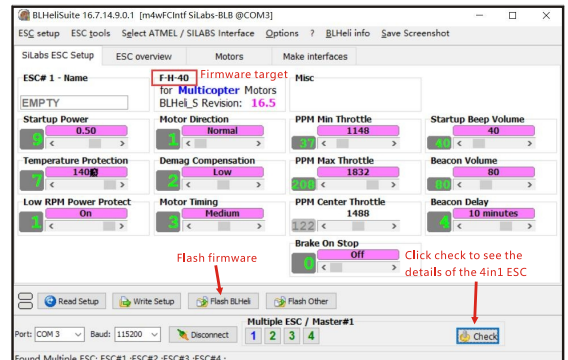
1. Download New release BLHeliSuite from:  
<https://www.mediafire.com/folder/dx6kfaasyo241/BLHeliSuite>
2. Plug the usb and connect the flight controller to computer



3. Open the Device Manager of your computer, find the Ports, please make sure the Com port Serial Number is under 255, otherwise it will can't connect to the BLHELISUITE. You can change the port serial number like the following step:



4. Open the BLHELISUITE, Select SILABS BLHeli Bootloader (Cleanflight) from the third tab on the top side. Then Select the right Serial com port and Click connect. You can also Flash the new release BLHeli\_s firmware via the BLHELISUITE, the firmware Target is "F-H-40"



### Flight controller firmware update

1. Install latest STM32 Virtual COM Port Driver  
<http://www.st.com/web/en/catalog/tools/PF257938>
2. Install STM BOOTLOAD Driver (STM Device in DFU MODE)
3. Open Betaflight configurator and choose firmware target "CrazybeeF4DX", then select the firmware version.
4. There are 2 ways to get in DFU Mode: 1). solder the boot pad and then plug USB to computer 2). loading betaflight firmware and hit "flash", then it will getting into DFU Mode automatically.
5. Open Zadig tools to replace the drivers from STM32 Bootloader to WINUSB Driver.
6. Reconnect the flight controller to the computer after replace driver done, and open Betaflight Configurator, loading firmware and flash.

