## Features

| |
|---|
| Toothpick HD and Whoop HD 2 in 1 combo (Default Comes in Toothpick HD style) |
| Toothpick style compatible both 2.5inch or 3inch propellers |
| New design EX1203 High efficiency brushless motors |
| Caddx baby Turtle provide 1080P 60FPS DVR video |
| Camera Angle adjustable |
| Full range receiver options |
| Buzzer ready |
| Smooth and powerful |
| Compatible both for 2s-3s Lipo/LIHV |

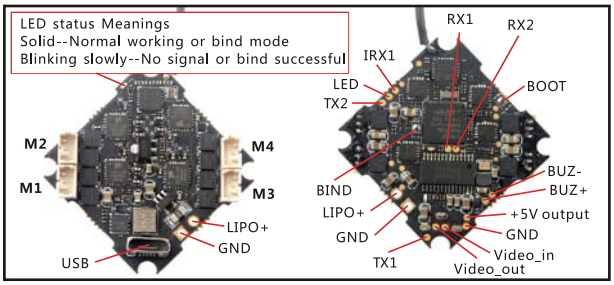
## Specifications

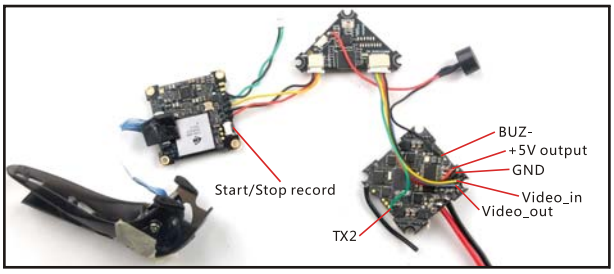
| |
|---|
| Brand Name: Happymodel |
| Item Name: Larva-X HD Micro FPV brushless Drone |
| Wheelbase: 125mm |
| Size: 105mm*105mm*35mm(without propellers) |
| Weight: Toothpick style ductless 63g (without battery) |
| Whoop style ducted 79g (without battery) |
| Receiver options: |
| Frsky SPI receiver |
| Flysky SPI receiver |
| DSM2/DSMX compatible receiver |
| Frsky XM+ receiver |
| Frsky R-XSR receiver |
| TBS Nano CRSF receiver |

## Package includes

| Item Name | Qty |
|---|---|
| Larva-X HD frame (with Toothpick style canopy and Whoop style canopy) | 1 |
| Whoop duct for Larva-X HD | 4 |
| SPI Receiver Option1: Crazybee F4FR V3.0 PRO FC built-in Frsky SPI D8 RX | 1 |
| SPI Receiver Option2: Crazybee F4FS V3.0 PRO FC built-in Flysky SPI RX | |
| Receiver Option3: Crazybee F4 V3.0 PRO FC with external DSM2/DSMX RX | |
| Receiver Option4: Crazybee F4 V3.0 PRO FC with external Frsky XM+ receiver | |
| Receiver Option5: Crazybee F4 V3.0 PRO FC with external Frsky RXSR receiver | |
| Receiver Option6: Crazybee F4 V3.0 PRO FC with external TBS Crossfire Nano RX | |
| EX1203 KV6200 brushless motors | 4 |
| Propeller sets | 1 |
| CADDX Baby turtle | 1 |
| VTX 5.8g 25mw~200mw switchable | 1 |
| 3S 11.1v 450mah 75c Li-po battery | 2 |
| 5.8g Micro UXII antenna | 1 |
| Propeller disassemble tool | 1 |

## Flight controller connection diagram

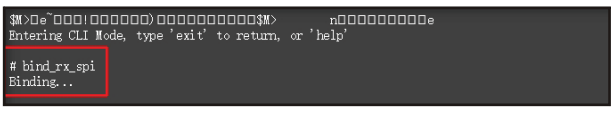



## Binding procedure

1.Powering the Larva X HD then the red LED at the bottom of the flight controller will blinking slowly. And then press and hold the bind button for 2 seconds , the red led will getting to be solid , this indicate the receiver is in bind mode.

Another simple way to bind with the Frsky transmitter is : Plug the usb and go to the CLI command tab in the betaflight configurator, then type "bind_rx_spi" ,the receiver will getting into bind mode , and then make your Frsky transmitter to bind mode.

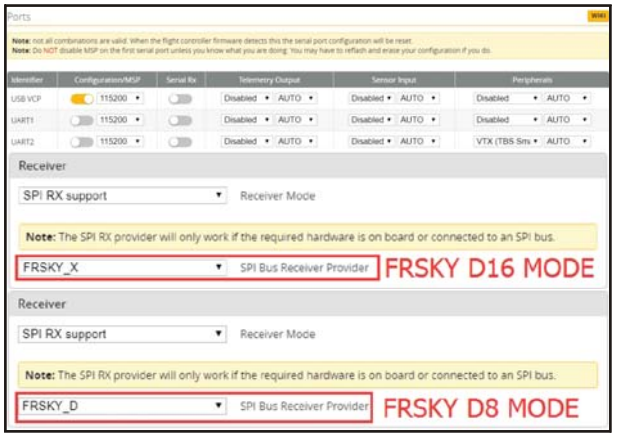



2.Turn on your Frsky Taranis transmitter, and move to BIND OPTION from SETUP MENU, Choose receiver mode D16 or D8 according to your Betaflight receiver configuration (Frsky_X = D16 mode, Frsky_D=D8 mode)we recommend use D8 mode


3.ENT [Bind] to binding with the Larva X HD ,the red LED at the bottom of the flight controller will blinking slowly on the flight controller ,this indicate binding successfully, and then exist binding mode of your Frsky transmitter, the red LED at the bottom of the flight controller will getting to be solid again, this indicate working normal.

## Receiver configuration

Please set Receiver mode to be SPI RX Support from the Configuration tab of the Betaflight Configurator, then select FRSKY_X Provider for FRSKY D16 MODE or Select FRSKY_D Provider for FRSKY D8 MODE, don't enable Serial RX since the CRAZYBEE Flight controller is integrated SPI BUS Receiver

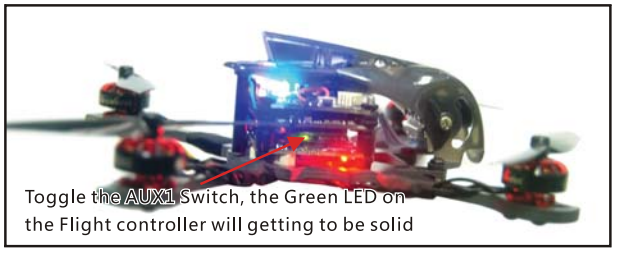



## Arm/Disarm the Motor

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

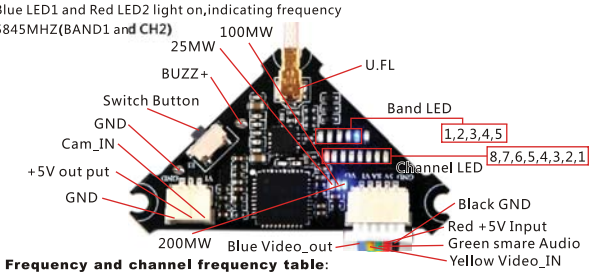
2.Turn on the Frsky transmitter (Use X9D+ as an example) and move to the MIXER interface, Set "SA" or "SB" switch etc. for Ch5 to ARM/DISARM the motor.


3.The default channel map for Larva X HD Frsky 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 HD level before arming .Be careful and enjoy your flight now !



## VTX Bands and Channels setup

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




**Frequency and channel frequency table:**

| FR \ CH | CH1 | CH2 | CH3 | CH4 | CH5 | CH6 | CH7 | CH8 |
|---|---|---|---|---|---|---|---|---|
| Band1 | 5865M | 5845M | 5825M | 5805M | 5785M | 5765M | 5745M | 5725M |
| Band2 | 5733M | 5752M | 5771M | 5790M | 5809M | 5828M | 5847M | 5866M |
| Band3 | 5705M | 5685M | 5665M | 5665M | 5885M | 5905M | 5905M | 5905M |
| Band4 | 5740M | 5760M | 5780M | 5800M | 5820M | 5840M | 5860M | 5880M |
| Band5 | 5658M | 5695M | 5732M | 5769M | 5806M | 5843M | 5880M | 5917M |

**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"

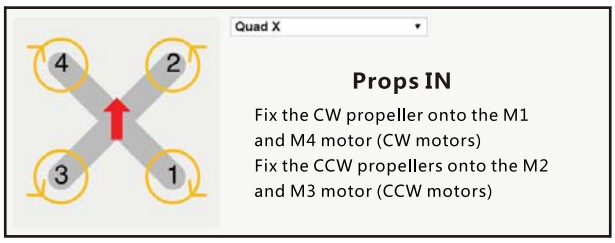
**There are 3 ways to switch the vtx channels:**

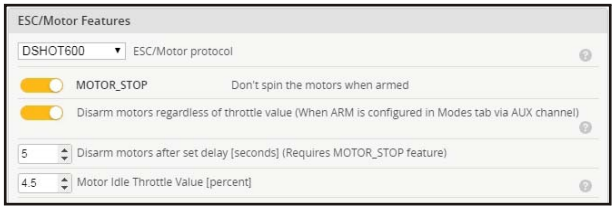
**1.**Short press the switch button to choose the VTX channel,Press and hold the butoon for 2 seconds and release to choose the VTX band(Can't save,it will lost the channel while power off)

**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

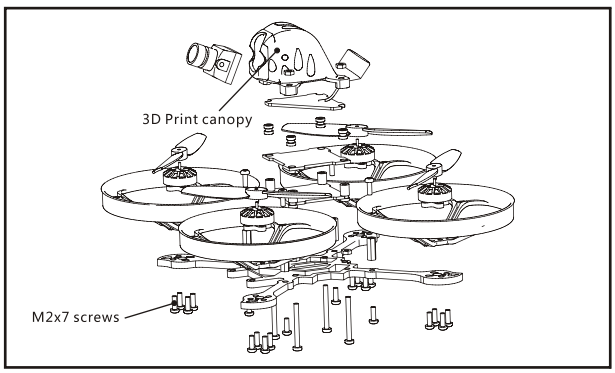
**3**.Enable Smaraudio for UART2,then move the stick of the transmitter(THR MID+YAW LEFT +PITCH UP)to enter OSD Menu,Enter to Features,then enter to VTX SA to set VTX Band and channel


## Mixer type and ESC/motor protocol

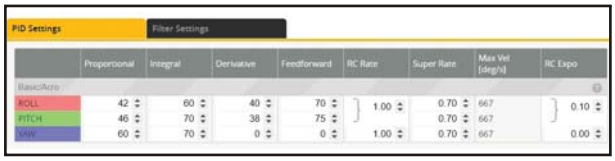



## Whoop mode assemble

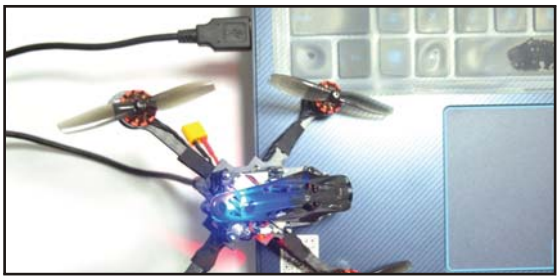



## Default PID setting

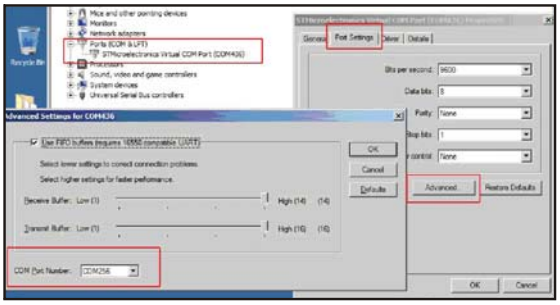



## ESC Check and Flash firmware

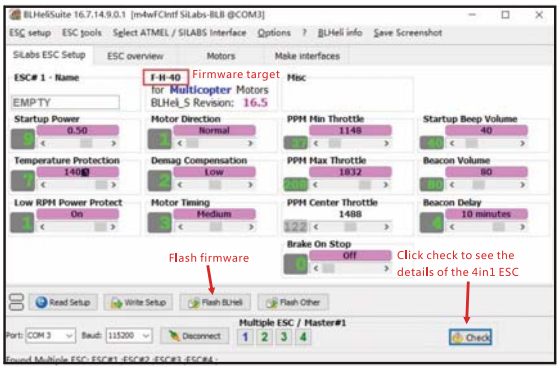
1.Download New release Blhelisuite from:
https://www.mediafire.com/folder/dx6kfaasyo24l/BLHeliSuite
2.Plug the usb and connect the flight controller to computer



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 bellowing step :

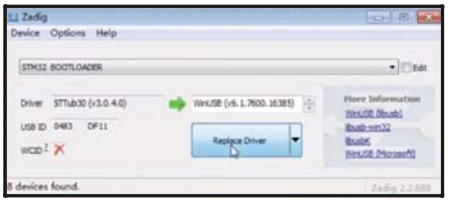


4.Open the BLHELISUITE, Select SILABS BLHeli Bootloader (Cleanflight) from the third tab on the top side. Then Select the right Serial com port and Click connect. You can also Flash the new release BLHeli_s firmware via the BLHELISUITE, the firmware Target is "F-H-40"




## 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 "Crazybee F4 FR" ,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.




## Notes:

1. Add external Sbus RX, Disable SPI RX---Connect SBUS wire to the IRX1 pad ---Enable Serial RX for UART1---Choose serial_based receiver and Sbus protocol
2. Add external Crossfire rx , use Tx2 RX2 port