

Instruction Manual

BNF/PNP/Frame Kit

SCORPION 5" FPV RACING DRONE



NOTICE: Consult local laws and ordinances before operating FPV (first person view) equipment. In some areas, FPV operation may be limited or prohibited. You are responsible for operating this product in a legal and responsible manner.

Age Recommendation: Not for children under 14 years. This is not a toy.

Safety Precautions and Warnings

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Always keep a safe distance in all directions around your model to avoid collisions or injury.

This model is controlled by a radio signal subject to interference from many sources outside your control.

Interference can cause momentary loss of control.

Always operate your model in open spaces away from full-size vehicles, traffic and people.

Always keep all chemicals, small parts and anything electrical out of the reach of children.

Never operate your model with low transmitter batteries.

Always keep aircraft in sight and under control.

Always move the throttle fully down at rotor strike.

Always use fully charged batteries.

Always keep transmitter powered on while aircraft is powered.

Always remove batteries before disassembly.

Always keep moving parts clean.

Always remove batteries after use.

Specifications

Manufacturers	Gofly-RC
Product model	Scorpion 5"
Wheelbase	230mm
Size	240mm*300mm*45mm
Weight	345g(without battery)
Motor	2306 2500KV brushless motor
ESC	4in1 32Bit BLheliS 40A(Include 5v BEC)
Power input	4S-5S lipo battery
Max Propeller Diameter	5inch(127mm)
Flight time	4-5minutes
Support Receiver	DSMX/DSM2/PPM/SBUS
Camera	600TVL 1/3" SONY Super HAD II CCD
Video transmitter	5.8g 25-200MW 48CH
Flight controller	F4 flight controller

Package Content

Scorpion5" FPV Quadcopter PNP x1 set	
Propeller x2 pair	

Flight Preparation

Please prepare other equipment not included in this kit Transmitter, receiver, battery, FPV goggle, USB cable.

1>Binding the quad receiver to a radio

Installation receiver

Binding receiver and transmitter

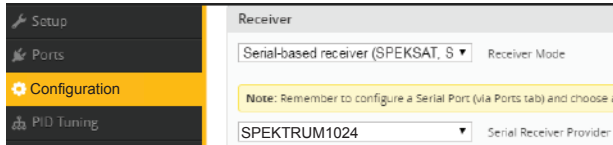
For details, please read your receiver and remote control manual.

2>Downloader and install Betaflight software in your PC.

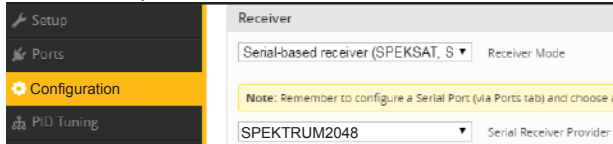
Go to Google Chrome web store and search the key word "Betaflight" to install the software in Chrome. This is the software to configure flight controller and your radio so that it can start and control the quad properly.

3>Set the receiver type

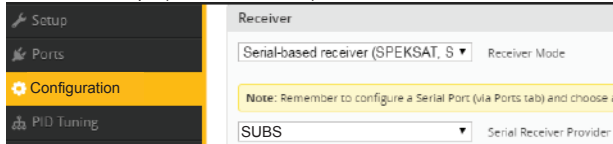
DSM2 Example



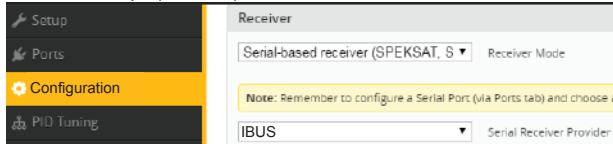
DSMX Example



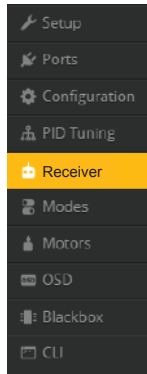
SBUS Example(FUTABA/FRSKY)



IBUS Example(FLYSKY)



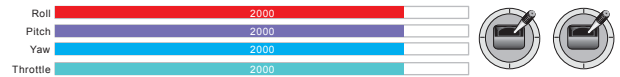
4> Betaflight and Radio settings



Set the minimum range smaller than 1100



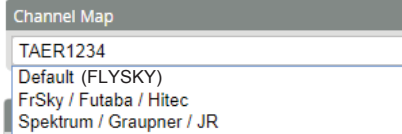
Set the maximum range bigger than 1900



Set the middle point to 1500

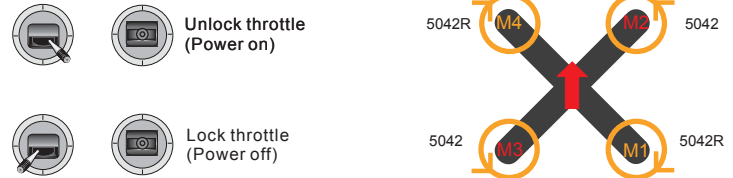


Select your receiver brand and save.



5>Lock and unlock throttle

For safety the throttle is locked in factory settings. To unlock throttle and power on the quad move the throttle stick all the way to the right lower corner.



6>Installing the Propellers

Refer to the illustration for the proper motor rotation and propeller location.

The 3blade propellers have an "5042R" or "5042" marked on one blade. Match the propeller location to the illustration.

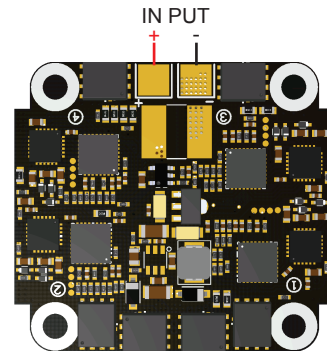
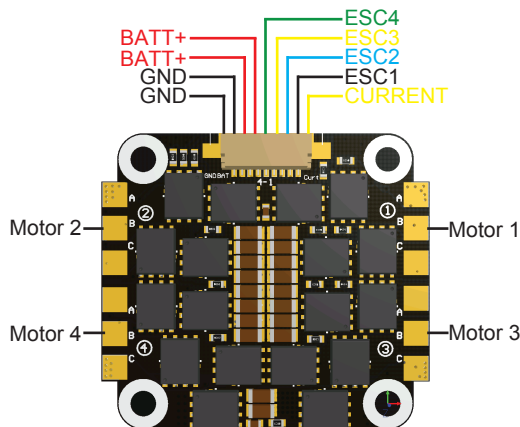
WARNING ⚠

DO NOT have propellers installed during setting procedures. Unexpected startup may cause serious damages or injury.

ESC Detail

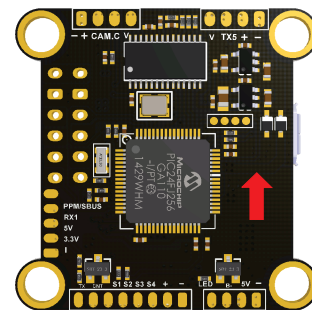
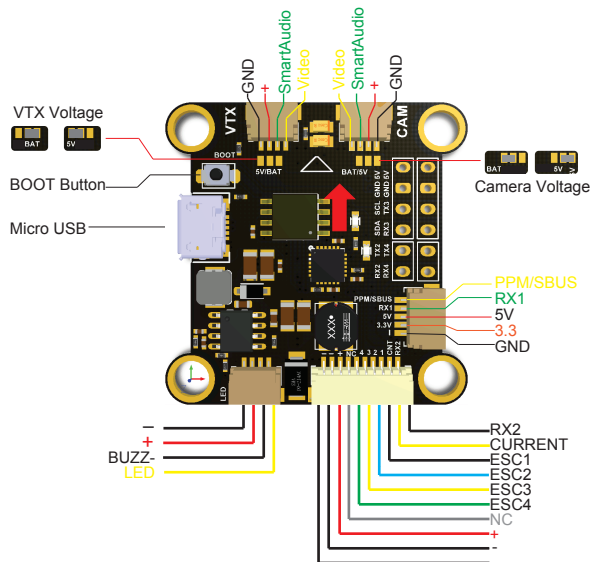
Specifications:

- Continuous Current: 35A-MAX45A
- Voltage Range: 2-5S LiPo
- Weight: 11g
- Mounting Size: 30.5X30.5mm
- Firmware: BLHeLi_32BIT
- Dshot Oneshot Multishot: Supported



Flight controller Detail

- F4 (STM32F405) Processor
- Gyroscope: MPU6000
- Firmware: Betaflight DALRC F405
- Input Voltage: 2-6s lipo support
- OSD: integrated
- BEC: 9V/2A
- Flash memory: 8M
- Supports receivers: SBUS , PPM, DSMX.
- Receiver serial ports:Uart1
- DSM receiver powered from 3.3V
- SBUS and PPM powered from 5V
- Supports alarm Buzzer, programmable LED.
- Size: 36x36mm - hole distance: 30.5x30.5mm



Video Transmitter

Specifications:

Input voltage: 6V to 28V (2S - 6S) VBAT
 Power Output: 5V for Camera @ 0.5A max
 Remote software protocol: SmartAudio V2.0
 Output Power: 14dBm (25mW) 23dBm (200mW*)
 Pit mode:

Activate: press button during powered up.

LED: red

Deactivate:

press button during powered up.

LED: blue

(red & blue when unlocked)

Pit mode-> flight mode:

After boot up, press button for 8sec

Channels:

Band A (8ch), B (8ch), E(5ch)

Fatshark 8ch

Race Band 8ch

Low Race Band 8ch**

Power consumption:

25mW: 250mA

200mW: 320mA

Range: Up to 2 km

Menu Table

RED LED		BLUE LED							
1x	Channel	1	2	3	4	5	6	7	8
2x	Band	A	B	E	Airwave	Race	Low Race		
3x	PowerLevel	25	200						

Frequency Table

Channel	1	2	3	4	5	6	7	8	
Band A	5865	5845	5825	5805	5785	5765	5745	5725	MHz
Band B	5733	5752	5771	5790	5809	5828	5847	5866	MHz
Band E	5705	5685	5665		5885	5905			MHz
Airwave	5740	5760	5780	5800	5820	5840	5860	5880	MHz
Race Band	5658	5695	5732	5769	5806	5843	5880	5917	MHz
Low Race Band*									MHz
Powerlevel	25	200							mW

There are categories in the menu, and settings. Pressing the button for 3 seconds will toggle between categories, pressing it for a short (1 second) press toggles between settings. To enter the menu, hold the button for 3 seconds. LED colors will signal the state of the menu, for an overview see the following table.

Channel select mode

Enter menu by pressing the button for 3s. Red LED will flash 1 time. Select channels by simple short presses.

Band select mode

Press button for an additional 3s. Red LED will flash 2 times. Select band by simple short presses.

Unlock & power select mode

(FOR HAM USERS ONLY!) Press button for 20 to 25 seconds. The Red LED will flash 3 times to confirm. You have unlocked the video transmitter for use with all frequencies (see frequency table below).

NOTE : Unlock only works if you are inside the band selection menu

The power select mode is now accessible. Once unlocked, you can select the power level according to the table below. To lock the transmitter, go back into band select menu and press the button for 20 to 25 seconds again.

PitMode

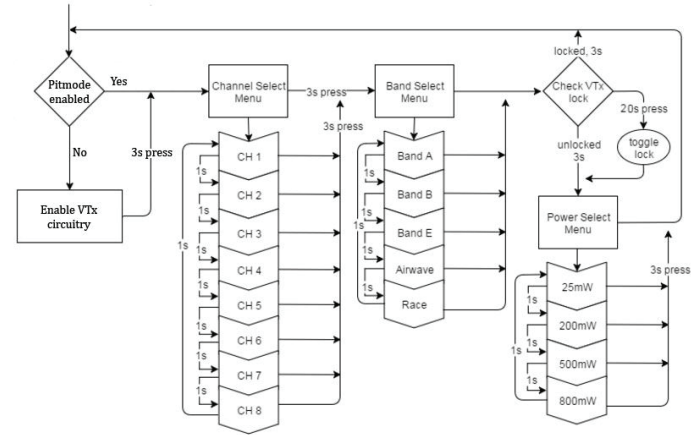
While in PitMode you can change channels and set power levels without affecting other pilots signal.

Pit mode function explained HERE

Save and exit

Press button for 3 seconds. Blue LED will turn on, settings are saved and it will exit the menu.

Button menu structure



LED Flash Codes for Channel, Band and Power

The TBS UNIFY PRO 5G8 signals selected channel, band and power levels using a startup sequence of LED codes. The same sequence is also repeated in the menu to make it unified. First the RED LED flashes to indicate the item being shown. One flash for channel, two flashes for band, three flashes for power level. Subsequently, the BLUE LED will indicate the value.

Red LED :	Indicate item -Channel, band or power setting
Blue LED :	Indicate value

For example, Channel 16, Band B, Power of 500mW, will have the following startup LED code:

- 1x Red and 6x Blue = Channel 6
- 2x Red and 2x Blue = Band, 2 (≠B)
- 3x Red and 3x Blue = Power, 3 (≠ 500mW)

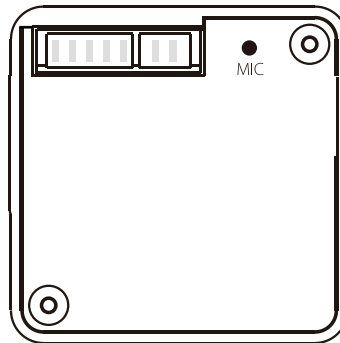
Once the Video transmitter has successfully booted up, it will show a constant BLUE for locked state, and a constant RED + BLUE for unlocked state.

For reference, see the following menu table.

Video System Detail

Image Sensor	1/3" SONY SUPER HAD II CCD
Horizontal Resolution	600TVL
Lens	2.5mm (Default) / 2.3mm / 2.1mm
Signal System	PAL/NTSC
Integrated OSD	Yes
Integrated MIC	Yes
S/N Ratio	>60dB (AGC OFF)
Electronic Shutter Speed	PAL: 1/50~100,000; NTSC: 1/60~100,000
Auto Gain Control (AGC)	Yes
Back Light Compensation (BLC)	Yes
Min. Illumination	0.01Lux@1.2F
WDR	D-WDR
DNR	2DNR
Day/Night	Color/Auto/B&W
Power	DC 5-36V
Working Current	5V@60mA 12V@140mA
Net Weight	14g
Dimensions	28.5mm*26mm*26mm

5-36V	GND	Video	Audio	VBAT+	GND	OSD
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MAIN MENU

SETUP	
EXPOSURE	
BACKLIGHT	OFF
WHITE BAL	ATW1
DAY & NIGHT	COLOR
IMAGE ADJ	
DPC	
LANGUAGE	ENGLISH
RESET	
EXIT	

- LANGUAGE (English/中文)
- WHITE BAL (ATW1 / ATW2 / AWC → SET /
- MANUAL: MANUAL, INDOOR, OUTDOOR)
- DPC (Cover the lens then press enter key)

EXPOSURE

EXPOSURE		AUTO
SHUTTER		50
BRIGHTNESS	→	ON
AGC		ON
DWDR		RET
RETURN		

- SHUTTER (AUTO / 50-100000 / FLK)
- BRIGHTNESS (50 / 0-255)
- AGC (OFF / LOW / MIDDLE / HIGH)
- DWDR (ON: 63 0-63 / OFF)

DAY & NIGHT(AUTO / COLOR / B&W / EXT)

D & N AUTO

D → N LEVEL	→	144
D → N DELAY	3	SEC
N → D LEVEL	→	112
N → D DELAY	1	SEC
RETURN		RET

DAY — NIGHT LEVEL (144 / 0-176)
 DAY — NIGHT DELAY (3 / 1-30)
 NIGHT — DAY LEVEL (112 / 0-255)
 NIGHT — DAY DELAY (1 / 1-30)

D & N B & W

BURST	OFF
IR SMART	OFF
IR LEVEL	HIGH
RETURN	RET

BURST (OFF/ON)
 IR SMART (OFF/ON)
 IR LEVEL (HIGH/LOW)

IMAGE ADJ

IMAGE ADJ	
LENS SHAD	OFF
2DNR	OFF
MIRROR	OFF
FONT COLOR	↓
CONTRAST	110
SHARPNESS	26
DISPLAY	LCD
NEG IMAGE	OFF
RETURN	

LENS SHAD (OFF / ON: 22 0-255)
 CONTRAST (110 / 0-255)
 SHARPNESS (26 / 0-31)
 DISPLAY (CRT / LCD / USER)

LCD ADJUST

GAMMA	0.5
PED LEVEL	17
COLOR GAIN	176
RETURN	RET

GAMMA (0.5 / 0.05-1.0)
 PED LEVEL (17 / 0-63)
 COLOR GAIN (176 / 0-255)

BACKLIGHT (BLC / HLC / OFF)

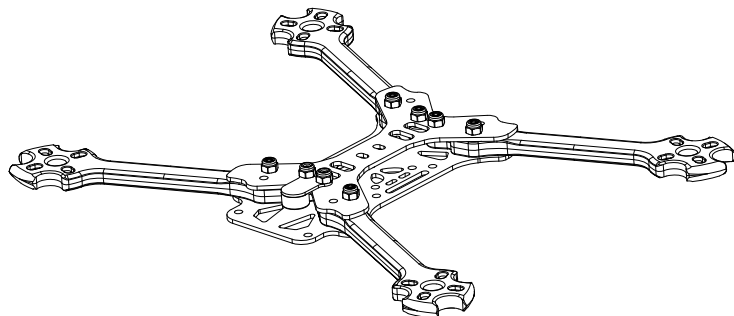
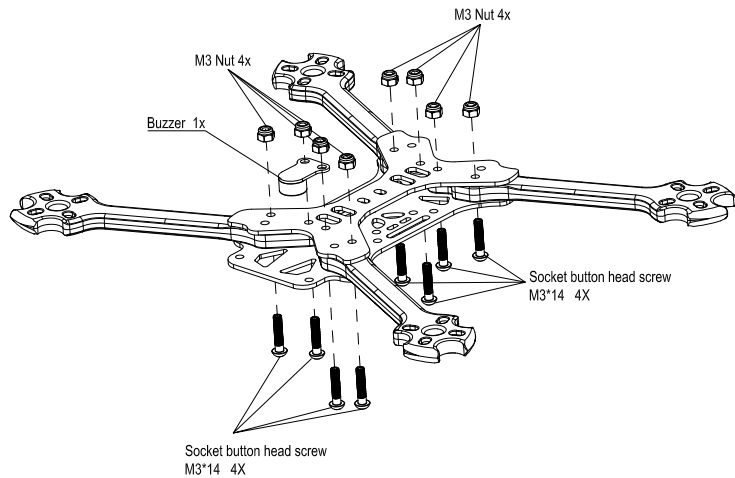
BLC	
AREA SEL	AREA1
AREA STATE	ON
GAIN	168
HEIGHT	005
WIDTH	005
LEFT/RIGHT	004
TOP/BOTTOM	004
RETURN	RET

AREA SEL (AREA1/AREA2)
 GAIN (168 / 0-255)
 HEIGHT (5 / 0-10)
 WIDTH (5 / 0-9)
 LEFT/RIGHT (4 / 0-6)
 TOP/BOTTOM (4 / 0-10)

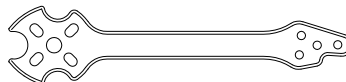
HLC	
LEVEL	200
MODE	ALL DAY
RETURN	RET

LEVEL (200 / 0-255)
 MODE (ALL DAY / NIGHT ONLY)

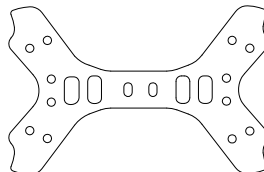
Frame ARM Assemble



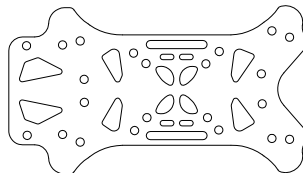
ARM 4x



Middle board 1x



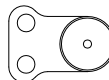
Bottom board 1x



Socket button head screw
M3*14 8X

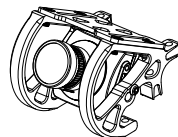
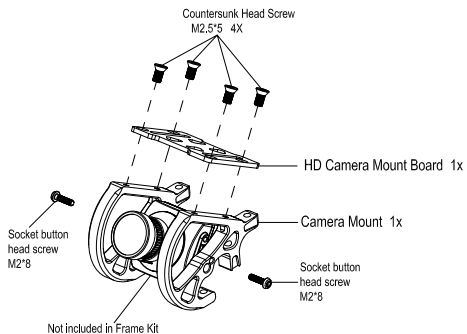


M3 Nut 8x

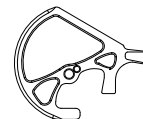


Buzzer 1x

Frame Camera mount Assemble



Camera Mount 1x



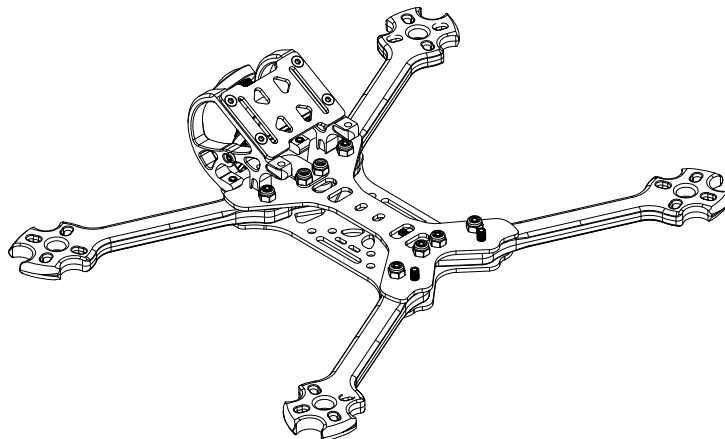
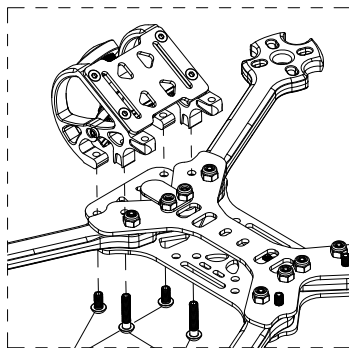
HD Camera Mount Board 1x



Socket button head screw M2*8 2X



Countersunk Head Screw M2.5*5 4X



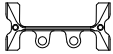
Socket button head screw M3*14 2X



Socket button head screw M3*5 2X

Frame rear mount Assemble

Frame rear mount



Antenna adaptor cable

Not Included In Frame Kit

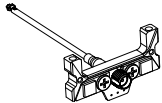
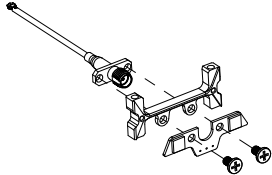


2812 LED

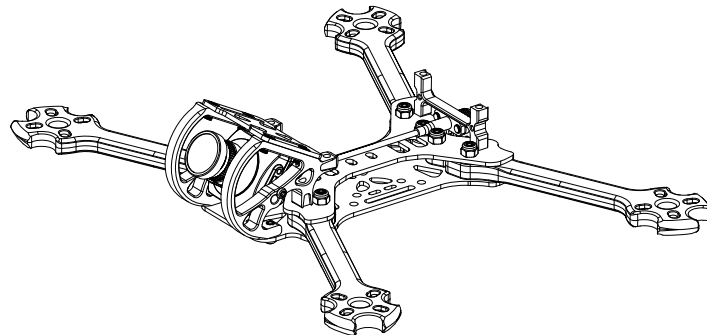
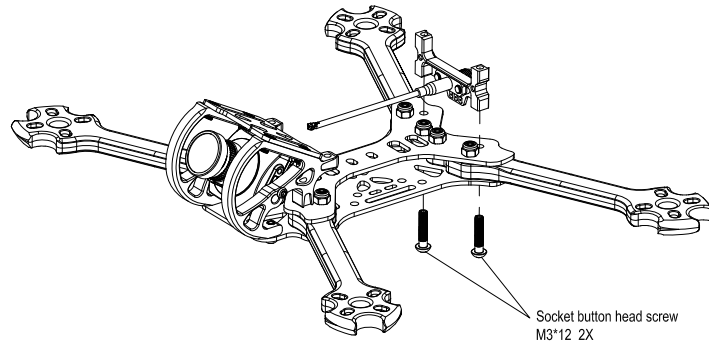


Flat head screw

M3*5 2x

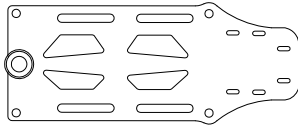


Socket button head screw
M3*12 2X



Frame Top board Assemble

Top Board 1x



Socket button head screw
M3*5 4X

