Spreading Wings S800 User Manual

V 1.7

2012.12.24 Revision

www.dji-innovations.com

Disclaimer

Read this disclaimer carefully before using Spreading Wings S800. By using this product, you hereby agree to this disclaimer and signify that you have read them fully. Spreading Wings S800 is an excellent multi-rotor. With a good autopilot, it will offer tremendous flight features. Despite the controller of DJI autopilot operate in the safest manner when the main power battery is connected, we strongly recommend customers to remove all frame arms, and keep children away during system calibration and parameter setup.

As DJI Innovations has no control over use, setup, final assembly, modification (including use of non-specified DJI parts i.e. motors, ESCs, propellers, etc.) or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability.
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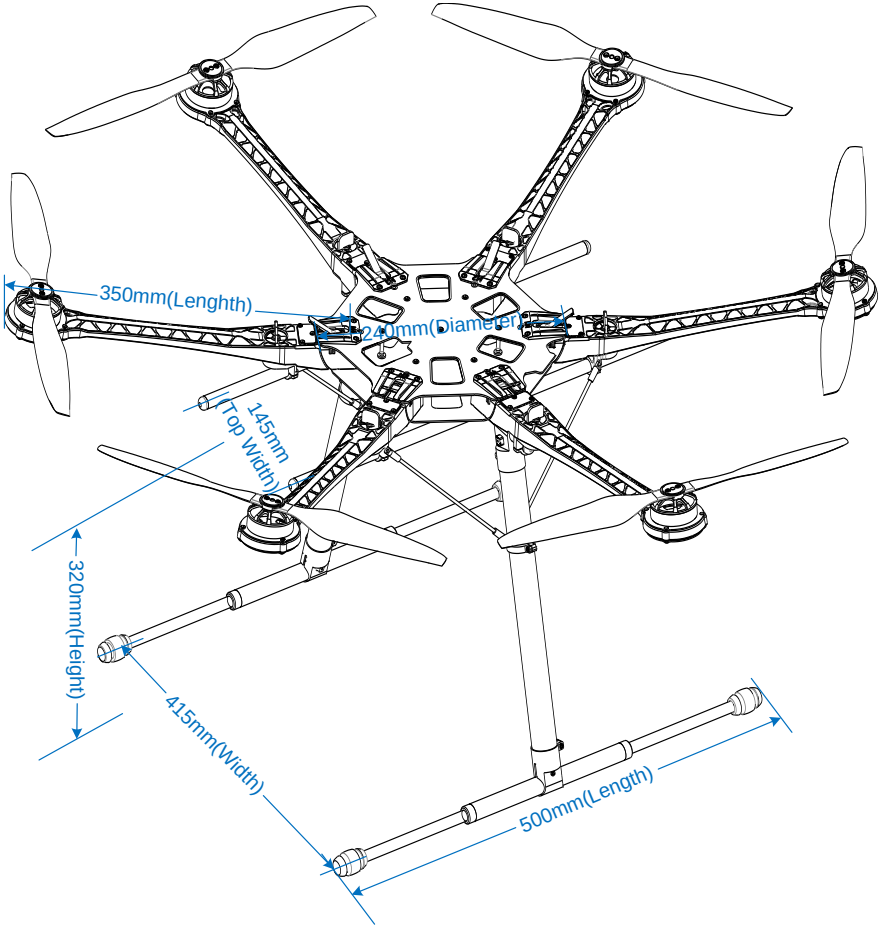
S800 Profile

DJI Spreading Wings S800 is a multi-rotor designed for AP. It simplifies users' installation and enables quick disassembling. Frame arm integrates with ESC and motor. With DJI WKM autopilot system, it can achieve hovering, cruising and other flight elements. S800 can be applied for aerial photography and other aero-modeling activities.



Contents

Product Usage Cautions

When flying, the fast rotating propellers of S800 may cause serious damage(s) and injuries. Therefore, please fly with a high safety in mind at all time.

Mount Attention

- **Mount GPS with a bracket, to avoid interference from the power board of center frame.**
- **For IMU position, make sure the arrow direction marking is pointing to the aircraft nose.**
- **The receiver is recommended strongly to be installed under the bottom board of center frame, and the head of antenna is downward without any obstacle. The aircraft will be out of control, since the wireless signal may be lost by the obstacle.**
- **Mount the arms correctly.**

  Center frame ⊗ ⟷ Arm ⊗

  Center frame ◎ ⟷ Arm ◎
- **For removing screws in the bottom board, please proceed with cautious, avoiding damages. Do not remove any other screws fixed with glue.**
- **Notice matching the indications is very important, please pay attention to them.**

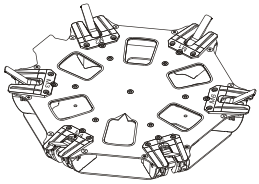
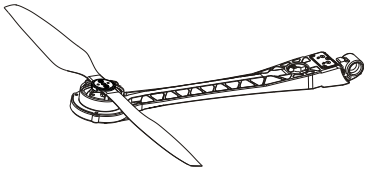
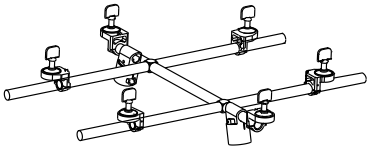
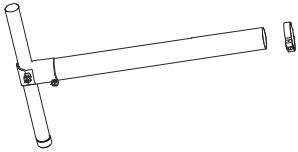
Flight Attention

- **With DJI WKM autopilot system, make sure the output signal of WKM F1~F2 and M1~M6 are all normal, to avoid serious damage(s) and injuries.**
- **Keep flying multi-rotor a distance from people, building, high-voltage lines, etc.**
- **Make sure to use 6S LiPo power battery.**
- **Do not get close to or touch the working motors and propellers, which will cause serious injury.**
- **Do not over load the multi-rotor.**
- **Make sure the propellers and the motors are installed correctly and firmly before flying.**
- **Make sure all parts of S800 are in good condition before each flight. Do not fly with wore or broken parts.**
- **Strongly recommend you use DJI parts as much as possible.**

Others

- **If you have any problem you cannot solve, please contact agents or DJI customer service.**

In Box

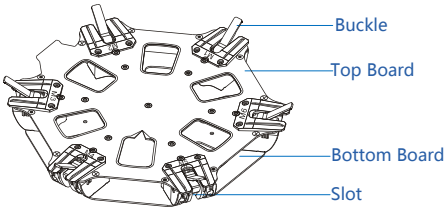
Center Frame 800CF×1	**Frame Arm 800FA×6**
	
H Frame 800HF ×1	**T Frame 800TF×2,Aluminum Ring 800AR×2**
	
Base Pipe 800BP×2	**Bi-pod Drawbar 800BD×4**
Silicone Rubber Damper 800SRD×4	**Nonslip Damper 800ND×4**
	
3-PIN Servo Cable 800SC ×1	**Screw Package 800SP ×1**
	Hexagonal screws: M3×8、M2.5×5 Hexagonal socket head cap screws: HC-M3.0×22 、HC-M2.5×5、HC-M2.5×8、HC-M3×8、T2×9
Adhesive Velcro 800AV ×1, Battery Band 800BB ×2	

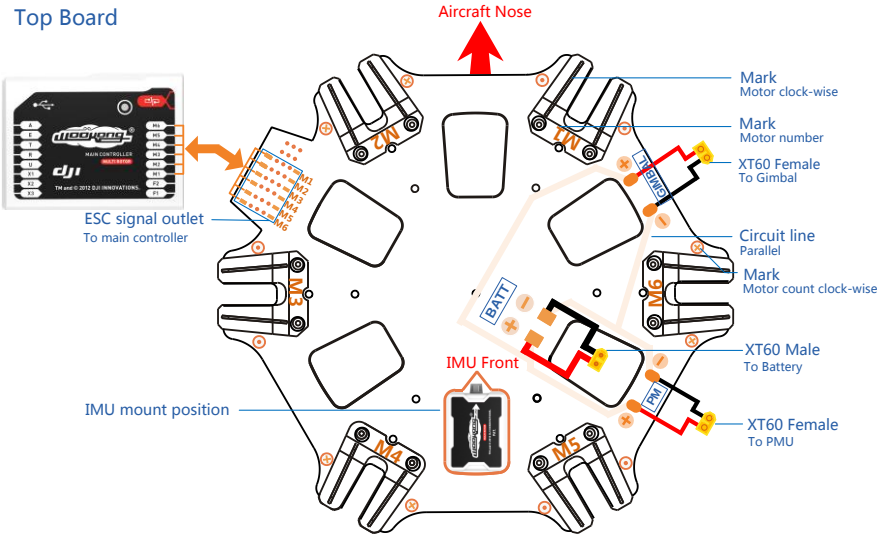
Tools Needed

2.0mm Hex Wrench, 2.5mm Hex Wrench	For mounting screws.
Screw Glue	For fastening screws.
Nylon Cable Tie	For binding devices and wires.
Scissors	
Diagonal Cutting Pliers	
Foam Double Sided Adhesive Tape	For fixing receiver, controller and other modules.

Center Frame Wiring

Top board is power distribution board, and the bottom board is for loading autopilot system components.





Notices:

- For IMU position, make sure the arrow direction marking is pointing to the aircraft nose.
- Connect the motor 3-pin connector (M1~M6) from WKM M.C. to ESC signal socket (M1~M6) on center frame markings accordingly.

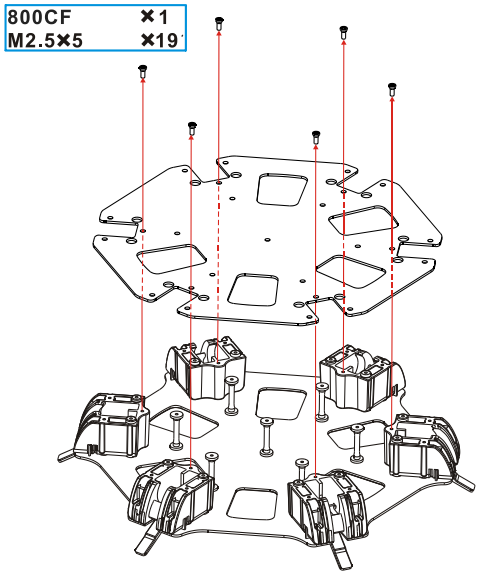
  (WKM M.C. M1↔ESC signal socket M1, ... , WKM M.C. M6↔ESC signal socket M6)

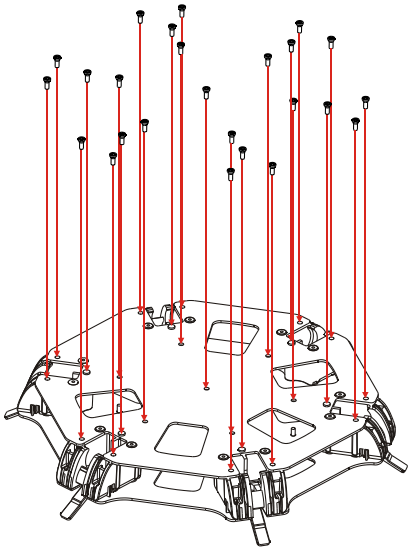
Tips:

- Main battery power leads, gimbal and PMU leads are on the bottom surface of the top board.
- Markings ⊗ and ⊙ stand for the propeller rotation direction. ⊗ means clock-wise, and ⊙ means counter clock-wise.
- If you need other lead connector, please cut the original connector and solder on the new connector. (But not Recommend)

Mount Center Frame

Remove Screws	Fix Screws





Step1: Mount IMU module into IMU position in the center frame. Ensure IMU casing is out of touch the top board edge, as vibration can cause IMU mal-function.

Step2: Please mount DJI Autopilot System parts onto the bottom board (not including GPS modules). Please remove all the screws from the bottom board first if necessary.

Step3: Connect Autopilot System and receiver. Please refer to DJI *WKM User Manual* for details.

Step4: Please mount the screws to bottom board, and use adequate screw glue.

Step5: Mount the GPS on the top board with a bracket.

Step6: Configure Autopilot System. Please refer to DJI *WKM User Manual*.

Notices:

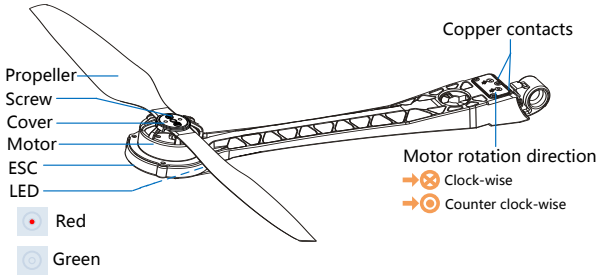
- Make sure to mount the IMU module at the IMU position first.
- Mount the GPS with a bracket, to avoid interference from center frame power board.
- Ensure the USB port of the M.C. outwards for easy access.
- Please wire neatly. Make sure wires will not be cut by the edge of frames.

Tips:

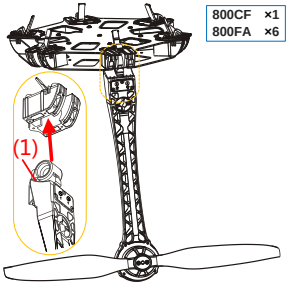
- Install screws with appropriate strength to prevent damage threads.

Mount Frame Arms

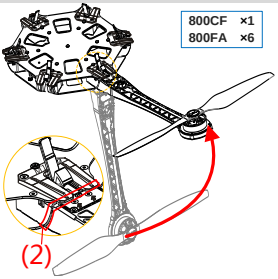
Step 1



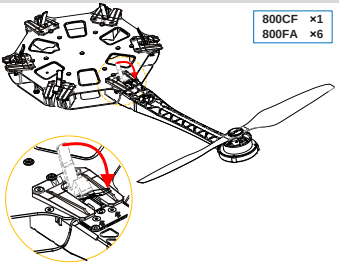
Step 2



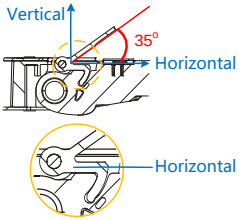
Step 3



Step 4



Step 5



Step1: Check arms.

(1) Make sure copper contacts are in good condition without bend or severe wear.

(2) Make sure propellers are without crack, and screws in propeller cover tight.

(3) Make sure motors are mounted firmly, and rotate freely.

(4) Distinguish LED indicator on the ESC bottom. With a red point in is red LED, others are green LED. We recommend you mount arms with red LED to M1 and M2.

(5) Distinguish marks ⊗ and ⊙ on the arms.

Arm⊗ ⟷ Center frame⊗

Arm⊙ ⟷ Center frame⊙

Step2: Insert frame arm into center frame vertically.

Step3: Slowly rotate the frame arm upward until positioned completely.

Step4: Press down the buckle to lock the arm. Make sure the arm does not move.

Step5: Make sure the buckle is pressed down correctly, about 35° under normal circumstances.

Notices:

- Please add some lubricant at the position (1) if it is hard to press down the buckle.

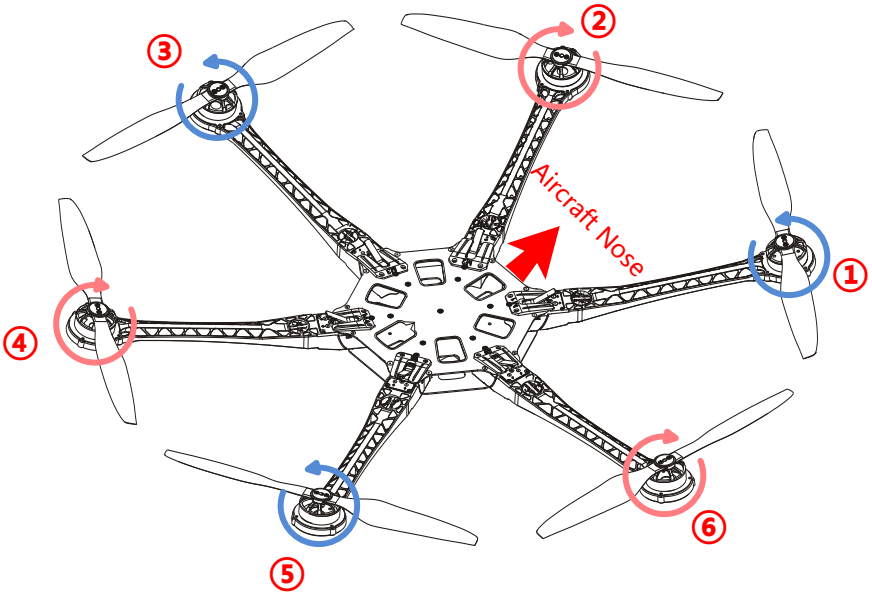
- Slowly rotate the frame arm to prevent from breaking the copper contacts.
- Please refer to (2) to ensure the arm is perfectly positioned.
- Make sure use appropriate strength to press down the buckle correctly.
- Do not hot plug arms.
- If the motor mount loosens, please tighten it by following the procedures in *trouble shooting* of *Appendix*.

Tips:

- LED is on after motor start.

Examination

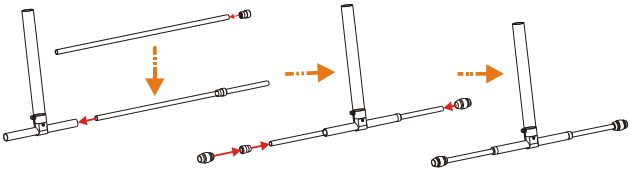
Arms①②are aircraft nose direction, arms④⑤ are aircraft tail. See from top, motors on arms①③⑤ rotate counter clockwise; motors on arms②④⑥ rotate clockwise.



Mount Bi-pod

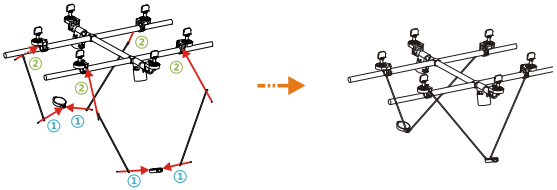
Step1

800TF	×2
800BP	×2
800SRD	×4
800ND	×4



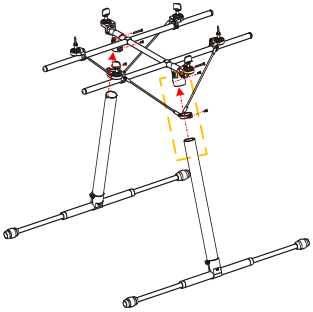
Step2 (Fix, but not tighten screws)

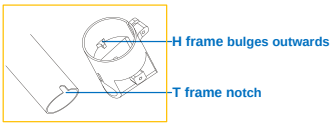
800HF	X1
800BD	X4
800AR	X2
HC-M2.5X5	X8



Step3

M2.5X8	x4
HC-M3.0X22	x2





Step1: Mount T frame 800TF and base pipe 800BP.

(1) Put nonslip damper 800ND through the base pipe.

(2) Put the base pipe into T frame until the head of nonslip damper is embedded into T frame.

(3) Embed the other nonslip damper into the T frame.

(4) Put silicon rubber damper 800SRD onto both sides of the base pipe.

Step2: Mount H frame 800HF and bi-pod drawbars 800BD.

(1) Fix (but not tighten) hexagonal socket head cap screws M2.5×5 (Fig.①) to H frame and bi-pod drawbar (Fig.①).

(2) Adjust drawbar and T frame, and fix (but not tighten) hexagonal socket head cap screw M2.5×5 (Fig.②) to drawbar and aluminum ring 800AR.

Step3: Mount H frame and T frame.

(1) Insert T frame through aluminum ring until it plugs into H frame.

(2) Fix T frame notch into H frame bulges outwards, make sure T frame will not move.

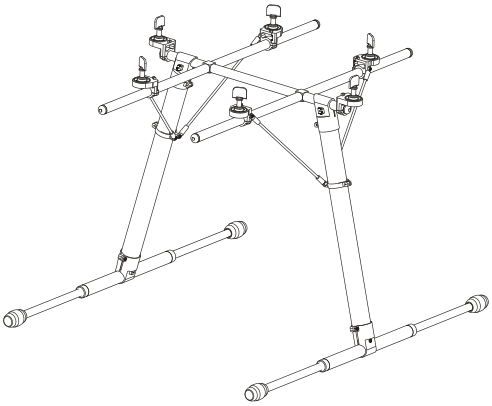
(3) Put the bi-pod on the flat floor to adjust H frame and T frame.

(4) Tighten all hexagonal socket head cap screws (including ① and ②).

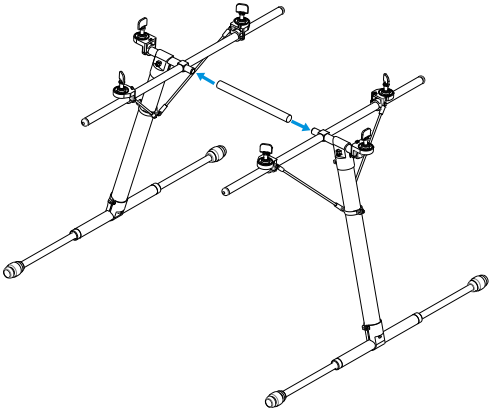
Notices:

- Put bi-pod on the flat floor to finish mounting smoothly and correctly.
- Please mount the screws and use adequate screw glue.
- Separate the bi-pod by disconnecting the H frame to make for easy carriage.

Completed

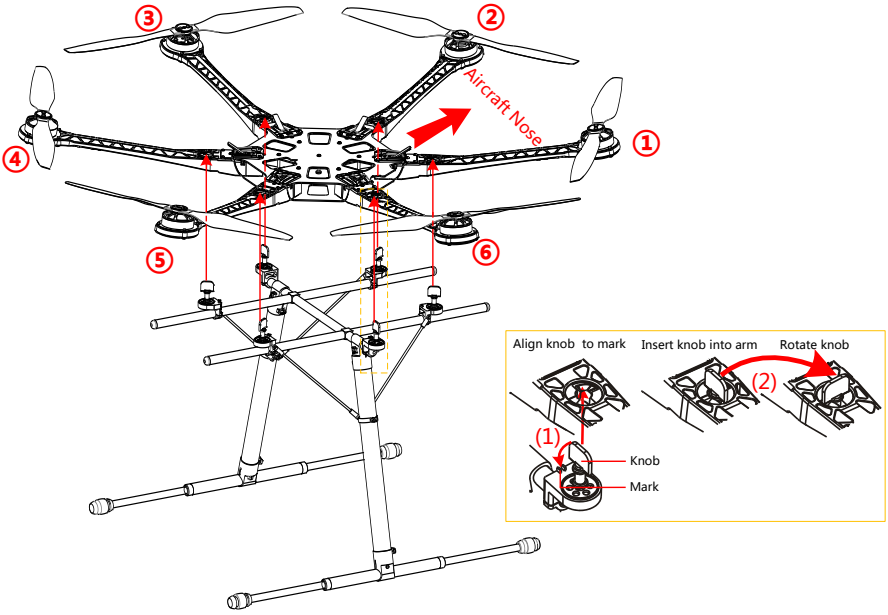


Quick Disassembly



Assembly

Assembly



Step1: Align all knobs on the H frame to the marks; refer to fig **(1)**.

Step2: Lie frame and bi-pod horizontally, insert knobs into arms ③ and ⑥ first, and then adjust to insert others into the arms.

Step3: Rotate the knob to the end, as fig **(2)** shown.

Notices:

- Ensure all knobs on the H frame aligned to the marks, and they would go through the arms successfully.

Tips:

- It is convenient for you to carry S800 by quick disassembly (Frame, Bi-pod, Frame and Bi-pod).

ESC Sound

ESC State	Sound
Ready	♪1234567
Throttle stick is not at bottom	BBBBBB…
Input signal abnormal	B--------B--------B…
Input voltage abnormal	BB---BB---BB---BB…

Tips:

DJI ESCs are specially designed for multi-rotors. When use with DJI autopilot systems, you do not have to setup any parameters or calibrate travel range.

Specifications

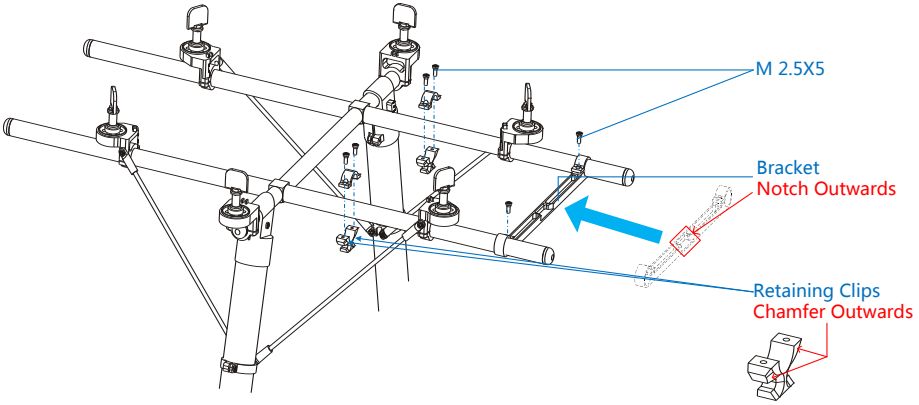
Frame	
Diagonal Wheelbase	800mm
Frame Arm Length	350mm
Frame Arm Weight (Including Motor, ESC, Propeller)	304g
Center Frame Diameter	240mm
Center Frame Weight	365g
Bi-pod Size	500mm(Length)×415mm(Width)×320mm(Height) (Top width: 145mm)
Bi-pod Weight	428g
Total Weight	2.6Kg
Motor	
Stator Size	41×14mm
KV	320rpm/V
Max Power	360W
Weight	147g
ESC	

Current	40A OPTO
Voltage	6S LiPo
Signal Frequency	30Hz ~ 450Hz
Drive PWM Frequency	24KHz
Weight	18g
Propeller	
Material	Carbon Fiber
Size	15×04in
Weight	15g
Flight Parameters	
Takeoff Weight	5.0Kg ~ 7.0Kg
Load Weight	0Kg ~ 2.5Kg
Power Battery	LiPo (6S、10000mAh~15000mAh、15C(Min))
Max Power Consumption	2100W
Hover Power Consumption	720W(@ Takeoff Weight 6Kg)
Hover Time	Max: 16 min (@10000mAh&6KgTakeoff Weight)

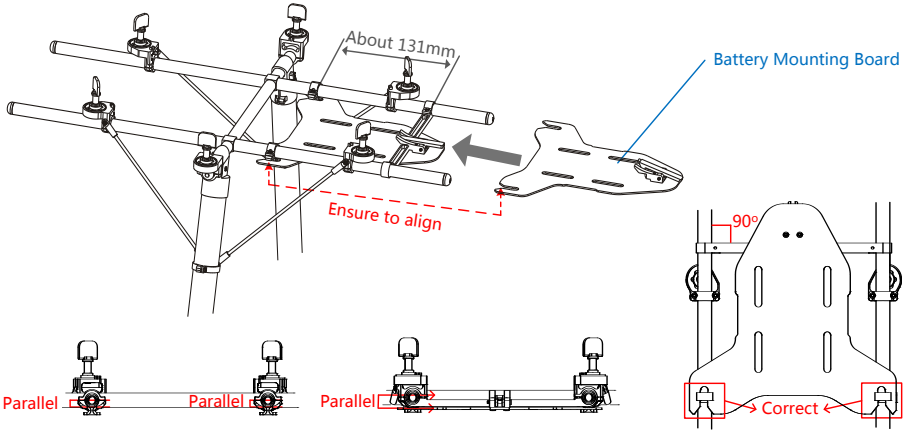
Appendix

Mount Battery Bracket

Step1: Mount the retaining clip and the bracket, fix screws (but not tighten).



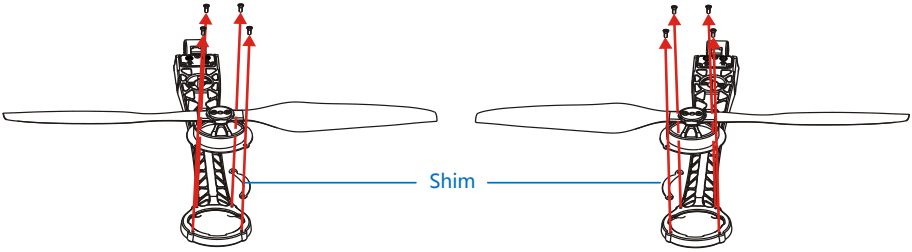
Step2: Place the mounting board and adjust its position, and then tighten all screws.



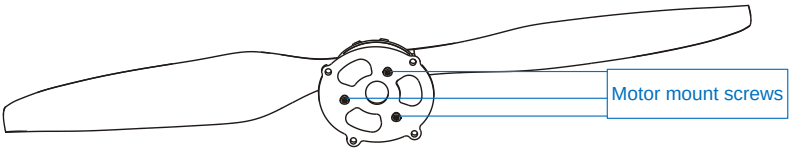
Trouble Shooting

If the motor mount loosens, please tighten it by following the procedures.

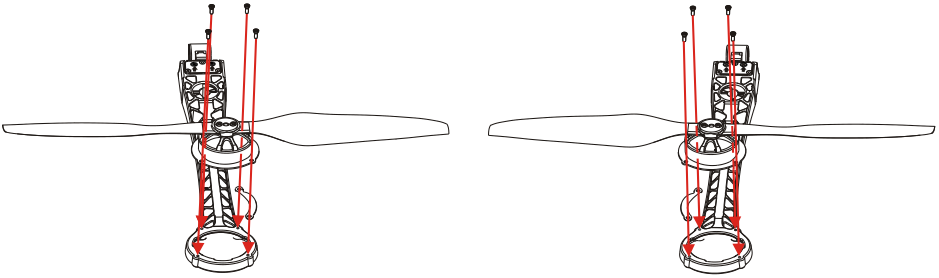
Step1 For arms For arms



Step2



Step3 For arms For arms



Step1: **Remove.** Please unscrew the screws on the top.

Step2: **Tighten.** Retighten the motor mount screws on the back to make the motor firmly attached.

Step3: **Remount.** Remount the screws on the top.

Notices:

Shim should be mounted in the correct position, as shim mount position of arm is different from arm .

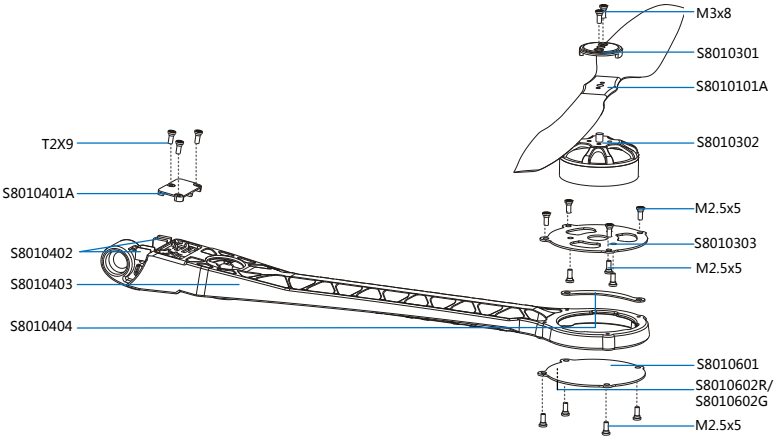
Tips:

- Please use adequate screw glue.
- Install screws with appropriate strength.

Spare Parts Listing

If S800 needs part replaced, please refer to the following diagram to identify the part with the NO. and components, and then make a purchase. Each package includes screws needed.

Frame Arm



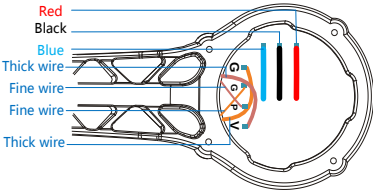
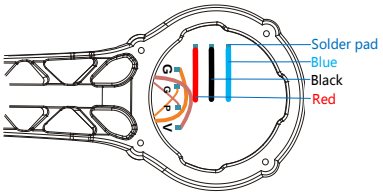
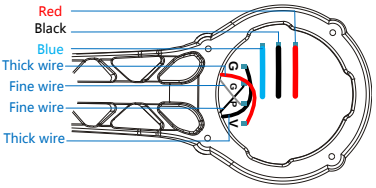
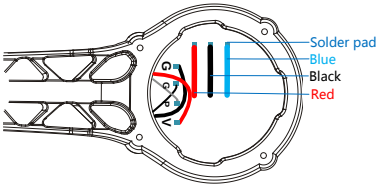
NO.	Name	Components
1	15'Propeller CCW	S8010101A
2	15'Propeller CW	S8010101B
3	4114 Motor 320KV	S8010301、S8010302、S8010303
4	Frame Arm (Counter Clockwise)	S8010401A、S8010402、S8010403、S8010404
5	Frame Arm (Clockwise)	S8010401B、S8010402、S8010403、S8010404
6	ESC (Red LED)	S8010601、S8010602R
7	ESC (Green LED)	S8010601、S8010602G
8	Frame Arm w/ Propeller& Motor& ESC	
	1. CCW & Red LED	1、3、4、6
	2. CCW &Green LED	1、3、4、7
	3. CW & Red LED	2、3、5、6
	4. CW & Green LED	2、3、5、7

Notices:

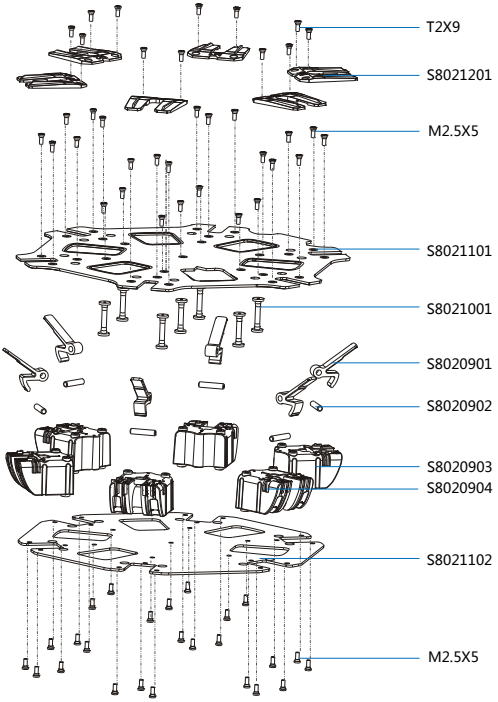
- The diagram is only for counter clockwise rotation propeller and frame arm.
- For clockwise propeller and frame arm, it is S8010101B and S8010401B.

Ensure to solder thick wires and fine wires correctly, when solder ESC to frame arm.

Clockwise and counter clockwise motor should be soldered to ESC correctly by different color order.

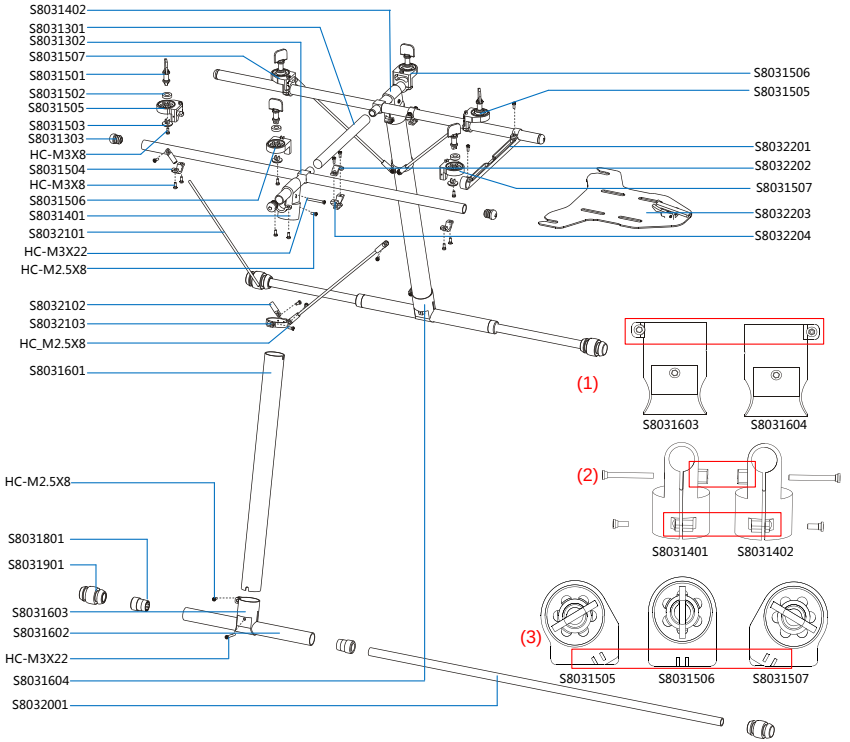
	For arms	For arms
Enamel Wire		
Shield Wire		

Center Frame



NO.	Name	Components
9	Arm Mounting Bracket	S8020901、S8020902、S8020903、S8020904
10	Center Frame Support Pillar	S8021001
11	Center Frame Top &Bottom Board	S8021101、S8021102
12	Top Board Cover for Arm Mounting Bracket	S8021201

Bi-pod



Note1: All unlabeled screws are HC-M2.5X5.

Note2: (1) Left and right T-frames are different; (2) Left and right bi-pod top mounting hubs are different; (3) Left set, middle set and right set of bi-pod carbon tube bracket are different.

NO.	Name	Components
13	H-Frame	S8031301、S8031302
14	Bi-pod Top Mounting Hub	S8031401、S8031402
15	H-Frame w/Bi-pod Top Mounting Hub	S8031501、S8031502、S8031503、S8031504、S8031505、S8031506、S8031507、13、14

16	T-Frame(Right)	S8031601、S8031602、S8031603
17	T-Frame(Left)	S8031601、S8031602、S8031604
18	T-Frame Nonslip Damper (4pcs)	S8031801
19	T-Frame Silicone Rubber Damper (4pcs)	S8031901
20	Bi-pod Carbon Tube	S8032001
21	Bi-pod Drawbar	S8032101、S8032102(2pcs) 、S8032103
22	Battery Tray	S8032201、S8032202、S8032203、S8032204
23	Bi-pod Carbon Tube Bracket(Left Set)	S8031501、S8031502、S8031503、S8031504、S8031505
24	Bi-pod Carbon Tube Bracket(Middle Set)	S8031501、S8031502、S8031503、S8031504、S8031506
25	Bi-pod Carbon Tube Bracket(Right Set)	S8031501、S8031502、S8031503、S8031504、S8031507
26	Screw Pack M2.5X5	10pcs
27	Screw Pack M3X8	10pcs
28	Screw Pack M2.5X8	10pcs