Potensic®

User Manual

14+   5.8 GHz

Contents

Important Statement

Thank you for purchasing the item with Potensic. This is a toy drone, not a professional drone, but also need skills to control/play it.

(1)This drone is suitable for those experienced RC drone user aged 14 years or more.

(2)Please read the user manual carefully before flying.This product is a complicated equipment integrated with professional knowledge of mechanic, electronic, air mechanics,etc., so it should be installed and adjusted correctly to aviod accidents.

(3)The user must always operate in a safe manner. Potensic undertake no liability for human injury or property damage caused by improper operation as we could not control the procedure of installation, usage and operation of this drone.

(4)Potensic undertakes no liability for those accidents caused by improper operation, usage and control fo the drone after sale of the product.

(5)We provide technology support and after-sale service. If you have any questions about usage, operation, repairment etc., please contact :**support@ipotensic**.**com**.

Safety Precautions

This drone is suitable for those experienced RC drone user aged 14 years or more. This product includes small parts, please keep it away from kids under 3.

(1)Flying field

The flying field must be legally approved by local government. Areas around airport of radius of 5000m are not allowed for flying all kinds of remote controlled quadcopters. Flying fields must be spacious enough and we suggest at least 8m(length)*8m(width)*5m(height).

(2)Correct Usage

For safety, please use the Potensic parts to replace the damaged. Improper assembly, broken main frame, defective electronic equipment or unsilled operation all may cause unpredictable accidents such as drone damage or human injury.Starters are recommended to learn from others who are experienced in operating a drone.Please pay special attention to safety operation and have a good knowledge of accident responsibility that the user may cause.

(3)Keep away from obstacles and crowds

The speed and status of a flying RC drone is uncertain and it may casue potential danger. For security, we strongly suggest that the user must keep away from crowds, buildings, power lines etc. Forbid flying the drone in rainy,storm, thunder and lighting weather for the safety of user, people around and property.es.

(4)Do not look straight into the highlighting nevigation LED lights , which may cause discomfort to the eyes.

(5)Keep away form humid environment
The drone inside is consisted of precise electronic components. Humidity or water vapor may damage electornic components and cause accident.

(6)Safe operation
Please operate the RC drone in accordance with your physical status and flying skill. Fatigue,listlessness and imporper operation may increase the rate of accident.

(7)Keep away from the rotating parts
Please control and operate the drone within your sight.Keep your face, body and other spectators away from rotating parts, otherwise, it may casue serious injury and damage.

(8)Keep away from heat
The drone is made of metal, fiber, plastic and electronic components. Keep away from heat and sunshine to avoid distortion and damage.

(9)Controller range
The best control distance is 30 meters line of sight and altitude. Do not fly the drone in area with tall buildings,power line etc. around that may influence the drone signal to avoid any unexpected accident due to out of signal and control.

(10)Only Potensic battery charger can fit this drone. Please diconnect the charger with the drone before cleaning. Check the charger wire, plug, fuselage and other components on a regular basis to make sure they are in good condition. Please do not operate the drone if there's any parts damaged.
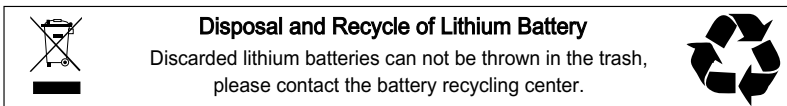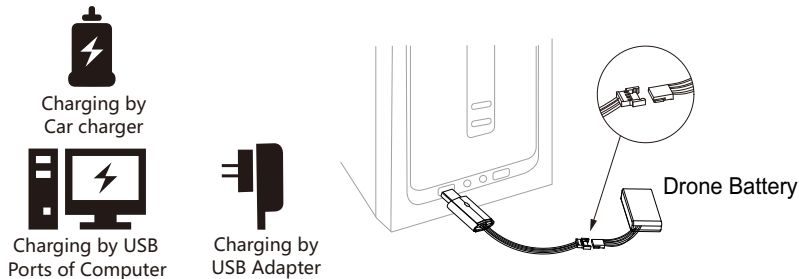
Safe Notice on the Li-Po Battery

＊Do not put the battery on high temperature place, such as fire or heating device to avoid damage or explode.

＊Do not use the battery to crash or hit hard surface.

＊Do not put the battery into the water. Keep it in dry place.

＊Do not detach the battery.

＊Do not leave the battery without supervision when charging.

＊ Check the power supply connection before charging to make sure it works.

＊Use Potensic original charger only.

＊Check the charger wire, plug, fuselage and other components on a regular basis to make sure they are in good condition. If any of those parts damaged, please do not use them until they are repaired.

＊If not using the drone for over a week, please make sure that the power of the battery remains above 50% to keep its performance and utility.

Charging Method of Li-Po Battery

1. Plug the USB charging cable to your computer USB interface, the light will indicate red.
2. Then connect it with the battery, the red light will off which indicates that the battery is being charged.
3. If the red light comes on again, then the battery is fully charged. Charging time is about 50 minutes.

Charging by Car charger

Charging by USB Ports of Computer

Charging by USB Adapter

Drone Battery

Disposal and Recycle of Lithium Battery
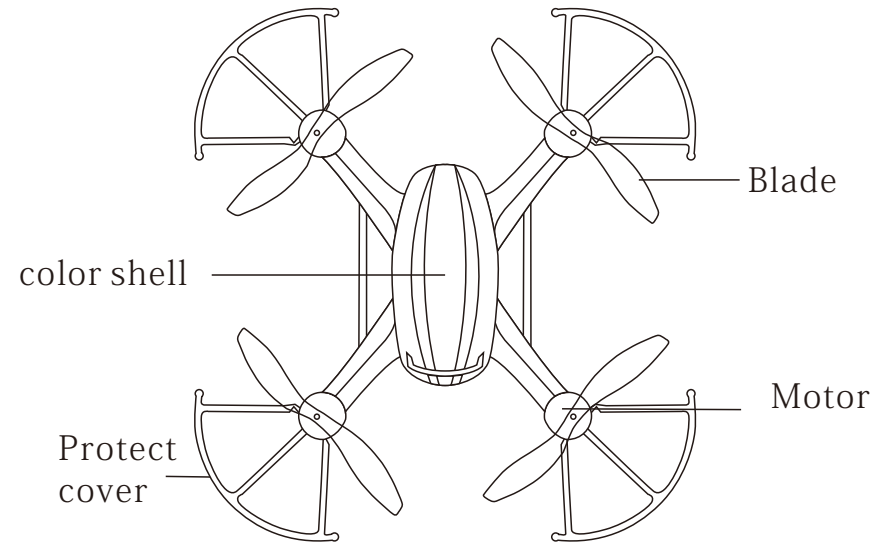Discarded lithium batteries can not be thrown in the trash, please contact the battery recycling center.

It is recommended to select the output 5V2A current adapter, which will be faster for charging. The maximum current can not exceed 5V, otherwise the battery could be damaged.
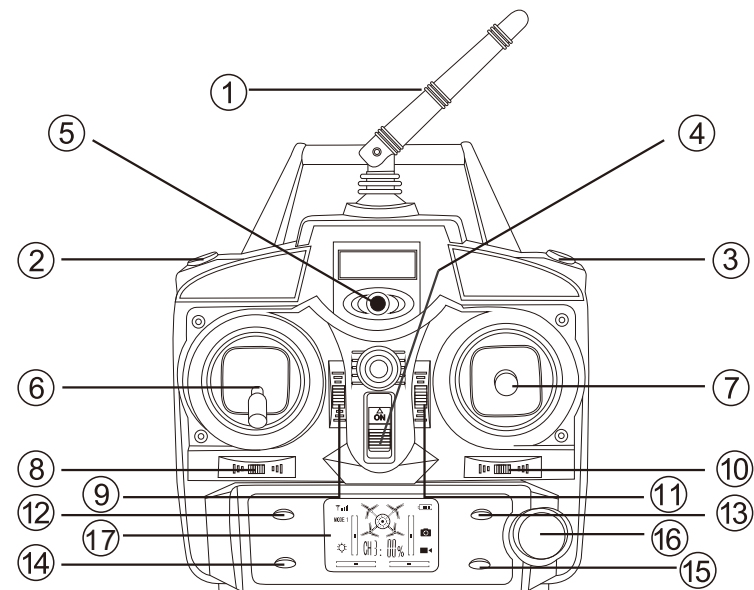
Flyer warnings

（1）Confirm that the battery is fully charged.

（2）Confirm that the left throttle is in the middle position before power on.

（3）Before flight, please turn on the controller, first and then power on the drone. While after flight, power off the drone first and then turn off the controller. Incorrect steps may result in the drone out of control.

（4）Make sure the drone parts are connected strickly and securely. The continuous vibration during flight may loosen the connection between the drone parts which may result in hard control.

（5）Incorrect operation may result in crashing and make the drone parts damaged/faulty. We suggest that the user should purchase the drone parts to replace immediately for sustainable flying. please feel free to contact us at **support@ipotensic.com** . We will be standing by all the time for you!

## Definition of the Flyer and the Controller

Name of Parts

Blade

color shell

Motor

Protect cover

Transmitter

1. Antenna	Transmit Signal to the drone
2.Side Lights On/Off	Turn on or turn off the side lights of the drone
3.Flip	Make the drone 360 degree roll over
4.Power On/Off	Push up to turn on the transmitter, down to turn off.
5.Power On/Off Indicator Light	Indicates the states of the transmitter and low voltage alarm
6.Throttle Up/Down	Push the throttle Stick Up or Down, left or right and the drone flies to up or down, rotate to left or right synchronously.
7.Left/Right/Forward/ Back Flying Stick	Push the Left/Right/Forward/Back Flying Stick up or down, left or right, the drone flies forward or backwards, left or right synchronously.
8.Move Head Left/Right Steering Trim	Adjust the trim to right if the drone head rotates to left when taking off, and vice versa.
9.Throttle Trim	Adjust the flying speed of the drone.
10.Side Trim In Hover	Adjust the trim to right if the fuselage drifts to left when taking off, and vice versa.
11.Forwards/Backwards Trim	Adjust the Trim to backwards if the drone fuselage drifts to forward when taking off, and vice versa.
12.Picture	Press the button to take pictures, they will be saved in the SD card installed in the camera
13.Video	Press the button to begin recording, press it again to end recording.The videos will be saved in the SD card and it will be saved every 3 minutes.
14.Start/Landing	Press the button to take off the drone after binding. Press the button during flight to slowly landing the drone.
15. Headless Mode	Press the button and the transmitter will continuously issue "beep beep beep" sound, press the button again and the drone will exit headless mode.
16.Speed Adjustment	Press the button and the transmitter issues a "beep" sound, the percentage of speed output on the LED screen will flash,turn it around left or right to adjust the percentage. Press the button again and output speed you choose will take effect.
17.LED Screen	Display the power of the transmitter and other adjustment parameters.

Replace/Install the Drone Battery
1.Open the bottom battery cover of the drone
2.Take out the battery carefully, avoid using too much force,it may damage the power cable of the drone.
3.Pinch the buckle on the battery wire connection,then disconnect the battery with the cable of the drone.
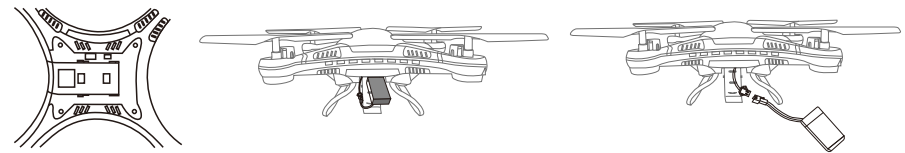
Transmitter Battery Installation

Open the battery cover on the back of transmitter and put 4 alkaline batteries (excluding) into the box in accordance with electrode instructions.Pictures as below.
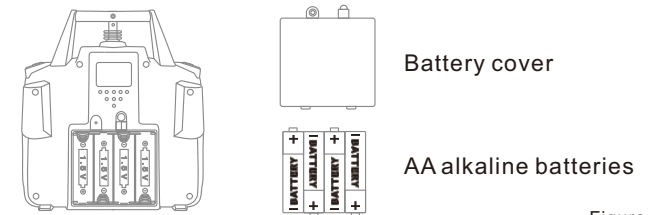
Battery cover

AA alkaline batteries

Figure 1

Notice:
1.Make sure the electrodes are correct.
2.do not mix using new and old batteries.
3.do not mix using different kinds of batteries.
4.Non-rechargeable batteries can not be charged

FPV Monitor Installation

Turn the antenna clockwise into the assembly of the monitor(Figure2),then insert the monitor into the slot on the transmitte(Figure 3),open the sunshade.Power on the transmitter, drone and the monitor, the monitor will automatically receive image transmit from the drone.After successfully pair the drone with the transmitter, you can take pictures and viedos with the transmitter. All pictures and videos taken will be saved in the SD card in the camera under the aircraft. After aerial photography, you can remove the SD card,and use SD card reader(included) to read aerial data in your computer.
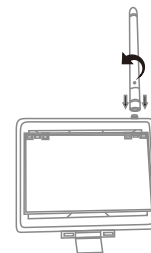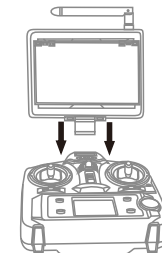
Figure 2   Figure 3

Charge Your Monitor

Connect our original USB charging cable with any USB port, the red USB indicator light keeps bright. Then connect the USB cable with the monitor, the red light turns off, which indicates that the monitor is charging.About 30 minutes later, the light turns red again and keeps bright when fully charged.The total using time upon a fully charged monitor is about 25 minutes.* Be sure to power off the monitor when charging, or it would be damaged.(Figure 4)

OFF ■ ON
CHA

Figure 4

Specifications

1. Video Resolution: 1280*720/ 30FPS
2. Photo Pixels: 1600*1200
3. Camera light-sensitive chips: 1/4 inch HD Color CMOS
4. Lens Specifications: 4P visible angle 68 degree
5. Video format: PAL NTSC
6. Image area: 3888um * 2430um
7. Video output: 1.0Vp-p / 75Ω
8. Signal to noise ratio: 38db
9. 5.8G Receiving sensitivity: -94dbm
10. Camera module working voltage: DC3.0-4.2V
11. Camera module power consumption: 440MA ± 10% (DC3.7V)
12. Monitor working voltage: DC3.3-5 v
13. Monitor power consumption: 620 ma, + / - 10% (DC3.7 V)
14. Working temperature: - 5 ℃ to 55 ℃ RH95 % of Max
15. Storage temperature: -40 ℃ -85 ℃ RH95% Max
16. Transmission power: 20 mw

Flying Operation

Pair your drone with the transmitter

1. Turn on the transmitter(Figure 5), then turn on the Drone,the side lights of the drone flash slowly, move the left throttle forward and backword(Figure 6/7),the sides lights of the drone stop flashing and stay bright, at this moment, the drone is successfully connected to the transmitter.
2. Put the drone on the flat ground, press the swithover button on the controller(Figure 8), the blades begin rotate and you can operate your drone with the transmitter.
Important Notice: Please make sure the gyro of the receiving board is placed on the horizontal position after powering on the drone, so that the drone can be controlled.
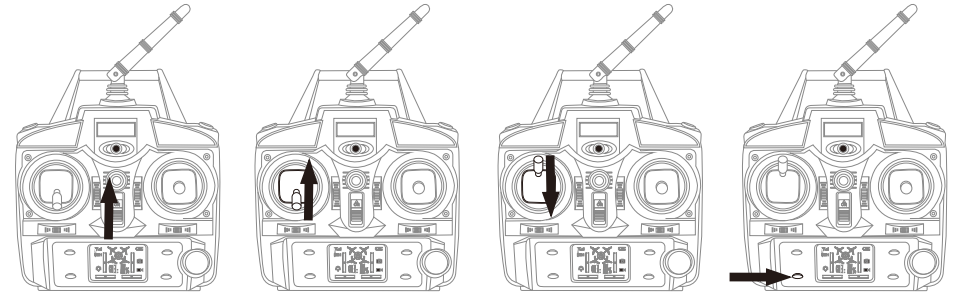

| Figure 5 | Figure 6 | Figure 7 | Figure 8 |

Additional Instruction before Flying

1. The camera lens is front(head).Players should keep away from the head of the drone.
2. After frequency pairing,press the Start/Landing button and check the rotating blades. The left front/right rear blades(blades A) rotates towards clockwise direction while the right front/left left rear blades(blades B)rotates towards counterclockwise direction.
3. Slowly push the left throttle stick up, the drone flies upwards, then push the left stick slowly down to end, the drone flies downwards and landing.
4. Adjust relative transmitter Trim button to adjust the rudder if the drone tilts to one side when flying.

Calibration Instruction

Please follow the below steps to calibrate the drone if the drone wouldn't hover after taking off, and can not be adjusted by trim button and cause difficult operation.
1. Turn off the drone switch and then turn off the transmitter switch.
2. Turn on the transmitter switch, then power on the drone switch and put it on the horizontal ground, after successful frequency piaring, press the fip button (Figure 9), you will hear "beep,beep,beep" sound from the transmitter. Push the left stick and right stick to left rear positon about 45 degrees at the same time(Figure 10),the percentage displayed on the transmitter LCD screen turns to 0.0%(Figure 11).
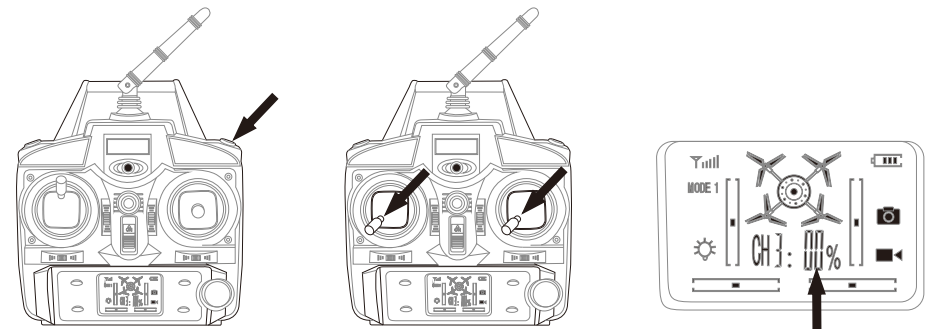

| Figure 9 | Figure 10 | Figure 11 |

3. After 8 seconds later, the side lights stop flashing and stay solid, which indicates that the calibration is done and the drone is ready to fly.

Flying Control

1. Left and Right flying
Push Left/Right/Forward/Back Flying Stick(Right stick) left or right and the drone flies to left or right synchronously.(Figure 12)
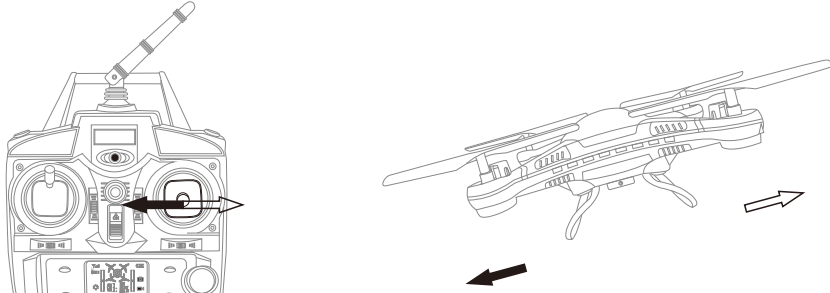
Figure 12

2. Upwards and Downwards Flying
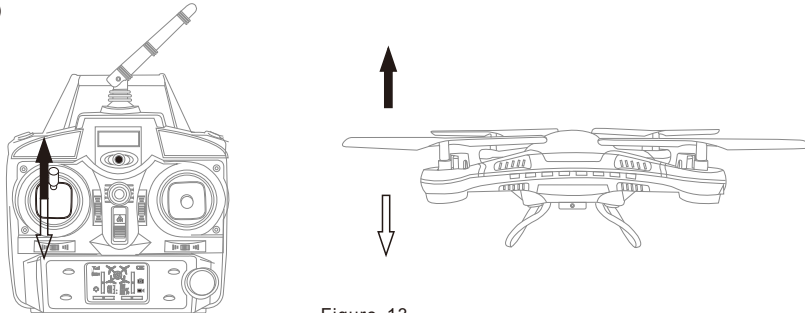Push the left throttle Up or Down and the drone flies to up or down synchronously. (Figure 13)

Figure 13

3. Rotate to Left or Right
Push the left throttle Stick left or right and the drone rotates to left or right synchronously. （Figure 14）
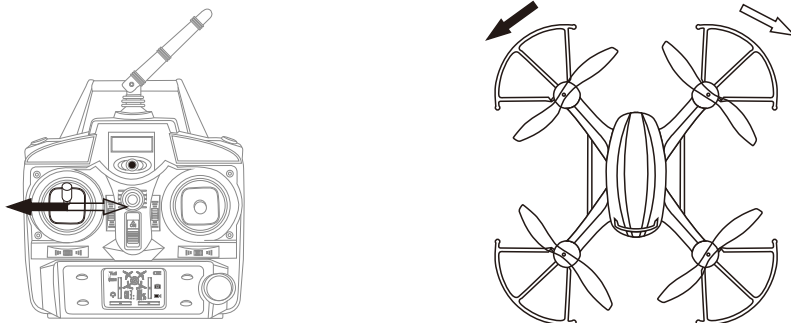
Figure 14

4. Forwards/Backwards Flying
Push the Left/Right/Forward/Back Flying Stick(Right stick)Up or Down and the drone flies to forwards and backwards synchronously.(Figure 15)
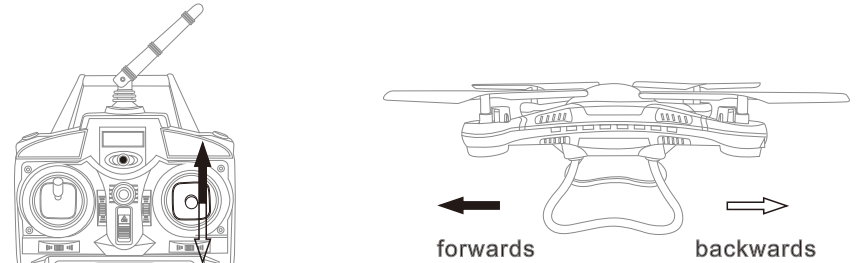
forwards   backwards

Figure 15

5. Adjust Move Head Left/Right Steering Trim
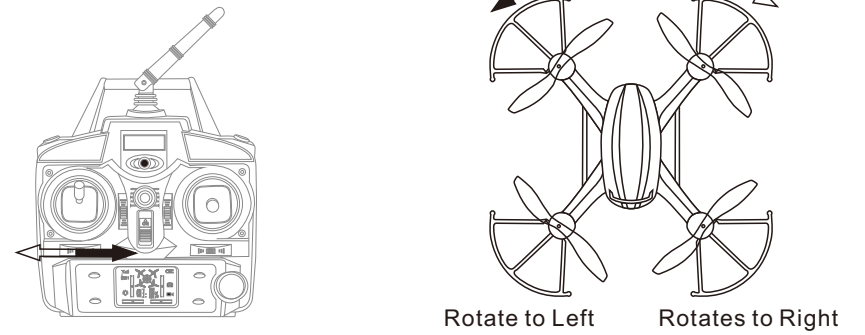Ajust the Trim to right if the drone head rotates to left when taking off, and vice versa. （Figure 16）

Rotate to Left   Rotates to Right

Figure 16

6. Adjust Forward/Backwards Trim
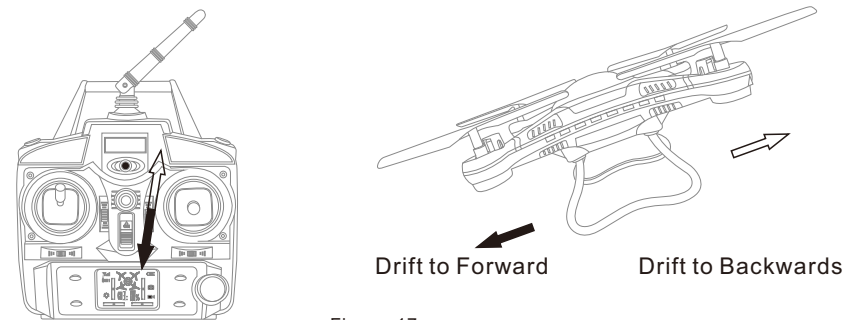Adjust the Trim to backwards if the drone fuselage drifts to forward when taking off, and vice versa.(Figure 17)

Drift to Forward   Drift to Backwards

Figure 17

7.Adjust Side Trim In Hover
Adjust the trim to right if the fuselage drifts to left when taking off, and vice versa.
(Figure 18)

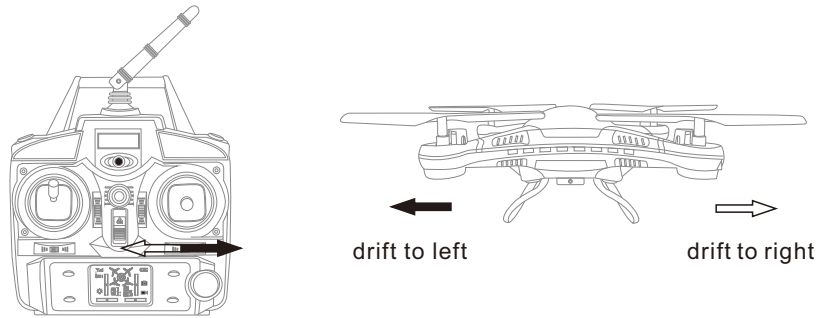drift to left   drift to right

Figure 18

Function of the Flyer

1.Take Off: Turn on the transmitter and then power on the drone, push the left throttle to the utmostcontrol distance and then to the low end, release the throttle, the side lights stop flash and stay solid, which indicates successful frequency pairing. Press the start/landing button and the drone begin to fly.

2.Landing: Push the left throttle down to the end while flying, the drone will slowly flies downwards to the ground until the motors stop rotating.

3.One key to landing: Press the Start/Landing button while flying, the drone will fly down to the ground until the motors stop rotating.(Forbid to move the left throttle when using the the one key to landing function or it will not take effect.

4.Immediate landing: Push the left throttle and right stick to internal angle of 45 degree at the same time when immediate landing is need in urgent condition (Figure 19), the motors will stop rotating and the drone will fall to the ground directly. (Please keep away from clowds while using the function, the drone may generate some impact in the process of immediate landing.)
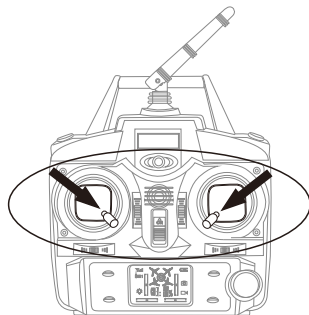
Figure 19

13

Variable Gain

Before flight,turn on the transmitter and press the Speed Adjustment button, the transmitter will issue "beep" sound, the percentage displayed on the LCD will flash (Figure 20), turn around it to left or right to adjust the speed(Figure 21),choose a proper speed and press the button again, the percentage on the LED screen will stay solid and the speed is set.Percentage below 50% will reduce the sensitivity of the drone, starters are advised to set the speed percentage between 30% and 50% to practice it. Percentage above 50% will increase the drone's sensitivity and its operation difficulty,recommand not try speed percentage above 50% until you are completely get the hang of it.
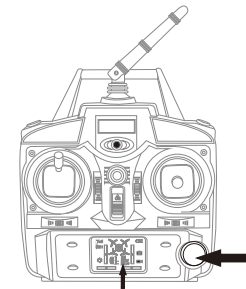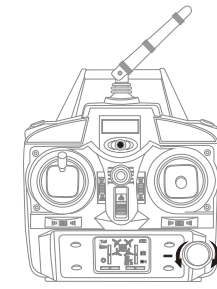
Figure 20   Figure 21

Flip Mode

Press flip mode button of the transmitter(Figure 22) when flying and the transmitter will issue sound of "beep beep…"which indicates the drone enters flip mode. Push the Left/Right/Forward/Back Flying Stick(Right stick) to left/right/forward/back(Figure 23), the drone will do 360 degree flipping to corresponding direction synchronously.
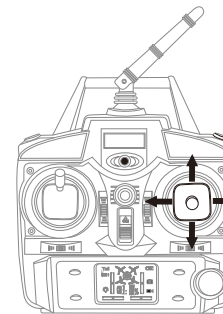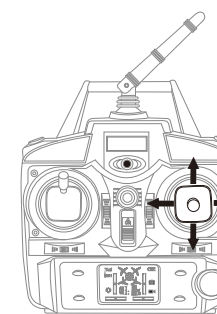
Figure 22   Figure 23

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Headless Mode

By using headless mode, players are not needed to tell the front or rear of the drone when operate it. Suitable for situations that the drone in sunshine or the drone over a long distance and can not recognize the drone head and tail.The drone is set as "head mode" by default.

Press the Headless button to enter the headless mode. While in Headless mode, no matter which way the quad copter is facing, the right lever will move the quad copter in the same direction the lever is being pushed - left for left, right for right, forward for forward, or backwards for backwards - "Headless" mode. The controller will continue to beep while in Headless mode.Press the Headless button again if you want to exit the headless mode.

InstallationBlades

F181Blades Installation

1.Remove the screws by counterclockwise rotate the screwdriver.
2.Upwards pull out the blades.
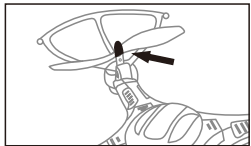3.Install the blades with the same rotate direction,then tighten the screws by clockwise rotate the screwdriver.
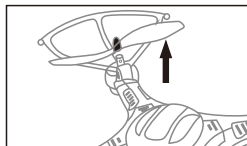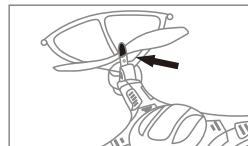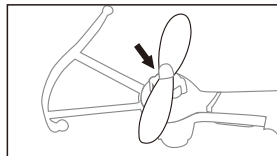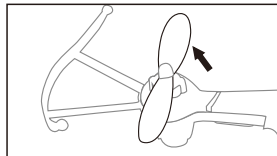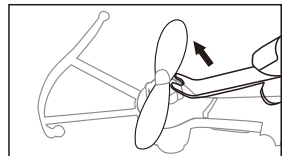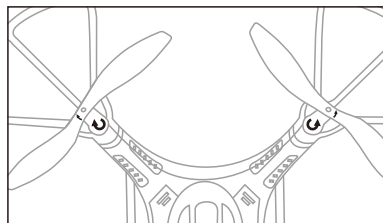

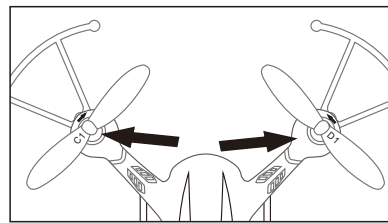| Figure 24 | Figure 25 | Figure 26 |

F186 Blades Installation

1. Put the blade changer to the base of the blades.
2.Push up the blades.
3.Put the new blades into its correct position.

.Make sure the blade be accordant with its rotate direction

F181   F186

Problem phenomenon	Cause	Solution
One or more blades stop spinging	One or more motors were damaged	Swap with new motors
blades spin slowly or can't spin.	The larger white gear and the mental motorgear are not meshed together, it usually result from a strong crash.	Change the gears and base.
Grindy sound from the gear shaft	The gears were worn out. The gear shaft disformed after crahses that result in tight mesh of the blades gear with the motor gear, further ware out the gears.	
Fly to one side	The original program of the aircraft has changed slightly during operation, or the gyro is not reset after a violent impact.	Use the tuning button on the transmitter or calibration function, please refer to the User Manual for how.
	The motor has been crashed damaged.	If it can't be fixed by fine tuning or calibration resetting, then the motors should have been damaged, please replace the abnormal parts.
Can't lift off ground	The blades are severely deformed.	Change with the same type blades.
	The drone battery is low in power.	Charge the battery follow the instruction or try again with another fresh battery.
	incorrect installation of the props.	Reinstall the blades in accordance with the instruction.
	The drone won't be ready to fly until you press the Start/Landing button Switchover button) after successful pairing.	Before take flight, press the left rear button on the remote control to make the blades rotate. More details please refer to the User Manual.
″No Signal" error shown on the monitor screen	Loose connection of the camera wire with the drone.	Ensure that the camera wire has been strickly connected with the drone wire at the bottom, if there's no issue with the camera, there will be solid blue indicator light lit up in the camera box when the drone is powered on.
	The camera is damaged(No blue light in the camera box even if it has been full attached to the drone bottom and the drone is powered on)	Change with a new camera.
	There's interference signal around that affect the transmission of the drone signal.	Avoid flying the drone in fields around with power lines,radar and others that could release radio signal.Play in a clear wide field with no to little interference.
	If above causes are not the reason, then the monitor is damaged.	Replace the monitor.
Monitor can't be fully charged	The charging method is incorrect and the charging time is too short.	Turn off the monitor before charging it, the charging time is no less than 50 minutes, and the last time out of fresh is about 20 minutes.
can't take photos or videos	The camera is not connected full.	Ensure that the camera is strickly conneted, in normal cases, there would be green indicator light in the camera when the drone is turned on.
	SD card is not inserted full. Or SD card is damaged.	Ensure the SD card is inserted to the full,and the camera is strickly attached, switch on the drone, if the indicator light in the camera flash red and then quikly dies out, then the issue lies in the SD card.
	If the camera is connected strickly to the bottom of the drone, but no red or green indicator light lit up with drone switched on, then the camera should be damaged	Replace the camera
	If above causes are not the reason, then the button on the transmitter does not work.	Replae the transmitter.
Can't bind.	There's signal interferences nearby.The interval between switch on the transmitter and the drone is too long(more than 8 seconds).The drone battery or transmitter battery is low in power.	Please try again in area with no signal interfence; Restart the drone and the transmitter, turn on the transmitter first and then turn on the drone, the two steps should be done quickly(no longer than 4 seconds);ensure there's enough power in the drone battery and the monitor.