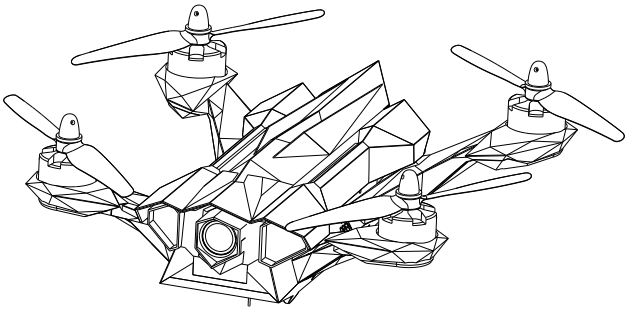
TOVSTO

FALCON

Quick start manual



Thank you for buying this product. TOVSTO company website: www.tovsto.com. There is website for FALCON, you can view that website for TOVSTO FALCON information.

Please strictly follow the manual to use your product. The manual shows you how to fly your aircraft easily.

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Disclaimer

Any users please read this statement carefully before using quadcopter “FALCON”. Once you use it, which will be regarded as approval and acceptance. This item is not suitable for teenagers under 14 years old.

“FALCON” is a type of excellent quadcopter, it flies brilliantly when power-supply is normal and parts are intact.

Although the aircraft “FALCON” has been equipped with smart control system which enables it to be a safe working status when powering on, we strongly advise you to take off propellers when adjusting and setting parameters, ensuring that power-supply system and other functional module plug wire correctly and keep the aircraft away from people as well as vulnerable, fragile and dangerous objects. Using our items, if any personal injury or property damage (including direct and indirect damage) are caused due to the following reasons, TOVSTO tech shall not assume compensation liability:

1.Damages caused when operator is drinking alcohol, taking drugs, anesthetic or feel dizzy, weak, sick or has other uncomfortable symptoms.
2.Damages caused by operator’s subjective deliberation
3.Any compensation related to the mental damage caused by accidents.
4.Not according to the correct guidance to assemble or operate the item.
5.Damages caused by arbitrarily refitting or changing spare parts or accessories not manufactured by TOVSTO.
6.Damages caused by using items not manufactured by TOVSTO or copied innovative items of TOVSTO.
7.Damages caused by operator’s inappropriate operation or subjective judgments.
8.Natural wear and tear (flight time is up to 100 hours), corrosion, aging line of aircraft result in improper operation.
9.Causing aircraft’s crash if it’s kept the air after sounding a alarm of low voltage.
10.Keep it flying even it’s in a abnormal state (such as water, oil, soil and other unnamed substances coming in, not fully assembled, breakdown of major parts, apparent lack of accessories.
11.Damages caused when the aircraft flies in magnetic field, radio interference area, no-fly zone or when operator can not see very clearly.
12.Flying in bad weather, like rainy, windy (exceed 4 level), snowy or hail day.
13.When aircraft meets natural disaster, such as crash, overturn, fire, explosion, lightning, storm, tornado, rainstorm, flood, tsunami, subsidence, earthquake, etc.
14.Damages caused due to infringement happened when operator use aircraft to acquire data, audio or video material.
15.Damaged caused by protecting circuit, batteries or mismatch of RC models and charger.
16.Losses that not belongs to the responsibility of TOVSTO.
17.The power of interpretation of this manual is within the limits prescribed by law belong to the company.

Intellectual Property

The intellectual property of the product and manuals only belongs to TOVSTO Technology, without the written permission of any institution or individual, they could not be reproduced in any form, copy and distribute. As a reference, published, you need to indicate the source of TOVSTO science and technology, and must not be contrary to the intent of the instruction manual references, deletions and modifications.
If you are unable to resolve problems encountered during installation, please contact TOVSTO Technology duly authorized agents to get contact.

Cautions for Product Use

Be sure to check the following items one by one before each flight:
1.Before using this product, please accept the flight training or practice (for example: using simulators for flight training practice, guidance by professionals).
2.Be sure to check all parts are in good condition, if part of overdue or damaged, do not fly.
3.Always disarmed ALL of the propellers when setting up your radio or receivers to avoid serious injury by turning propellers! Check the receiver and cables after every flight. Damaged or wet electronic components, even if re-dried, should no longer be used.
4.Please check whether the propeller and motor are installed correctly and securely, and confirmed positive spin and counter-spin propeller installed in the correct position. Do not close or touch when the aircraft armed to avoid being cut.
5.Always perform a range and function test on the ground . Repeat the test with the motor running and with short bursts of throttle.
6.Avoid the remote under other wireless devices affect o r interfered.
7.Make sure power supply for all components.
8.Make sure all connections are secure. Do not pull on the cables when you unplug the connector.
9.Remember to turn on the remote control, and then start the fly.
(After its landing, the first step is to lock the aircraft, next take out the battery and then turn off the remote control)
10.The high Speed rotation of the propeller will be away, keep the vehicle at least 3 meters' distance when the aircraft is working, and please be away from obstacles, people, power lines. Please take care of your flight.
11.All items should be oway from children. If a child accidentally swallowing some accessories, seek instant medical care.
12.The FALCON is built in ESC only supports fixed powered, higher voltage batteries should be forbidden.
13.Please use the TOVSTO original motor and 6-inch propeller.
14.Protect the model and receiver from dust, dirt, moisture . Do not expose this equipment to vibration and excessive heat or cold.
15.For safety and (CE) certification, unauthorized conversion and / or modification of the product is not permitted.
16.Before you start play, you have to check any relevant laws and regulations. These laws must be always obeyed.

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Battery and Charging Precautions

1.The battery cannot be invaded into the water, put the battery in a cool and dry place if they are not used for a long time.
2.Forbid using with the disposable batteries (such as dry battery) or the batteries in different capacity, type and variety.
3.Keep batteries out the reach of children, if the batteries were swallowed by children, seek instant medical care.
4.You cannot use or store the battery near a heat source, such as fire or heater.
5.It must meet the specifications of the charger when it is charging.
6.Check the polarity whether they are correctly connected.
7.Do not connect the battery directly to a wall outlet or car cigarette lighter socket.
8.Do not place the battery in fire or heat the battery.
9.Do not make the battery short-circuit with a wire or other metal objects positive and negative terminal.
10.Do not put the battery with necklaces, hairpins, or other metal objects together transport or storage.
11.Do not strike, throw batteries, make the battery hit by a hard object.
12.Do not directly solder the battery terminals.
13.Do not pierce with a nail or other sharp objects battery case, the battery is prohibited hammering or foot.
14.Do not disassemble the battery in any way.
15.Do not use or store the battery under the direct sunlight or inside a car in a hot day. Otherwise, the battery will be overheating, then catch fire (spontaneous combustion), which will affect the performance of battery and shorten battery life.
16.Do not use the battery in strong electrostatic properties, otherwise the electronic protection device may be damaged dangerous Accident.
17.If the battery electrolyte leakage into the eye, do not rub, rinse with water and immediately seek medical attention help. If not promptly treated, the eyes will get hurt.
18.If the battery does not cause the odor, heat, deformation, discoloration, or any other anomalies, do not use it; if the battery is being used or charged, the battery should be removed immediately and stop using the charger from electrical appliances or on.
19.If the battery terminals are dirty, wipe with a dry cloth before use clean. Otherwise the battery is bad, it will cause energy loss or cannot be charged.
20.Arbitrarily discarded batteries could cause a fire, the battery needs to deal with before the battery is fully discharged and with insulating tape to insulate the output terminal of the battery.

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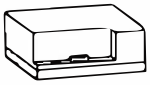
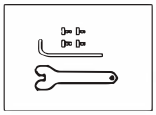
List of Items

Before using the product, check the package whether it is completed include.

Photo	Name	Photo	Name
	drone x 1		battery x 2
	remote controller x 1		charger x 1
	propeller x 8		Kit x 1

Product Introduction

TOVSTO FALCON is a race drone designed for those model lover. Full test is made for FALCON before EXW, just need to make a simple installation after you get this product, easy to operate.

Built in

CC3D fly control system
USB port (In battery compartment)
Support open pilot software

Function

Low voltage protection
Lose signal protection
Crash protection

Frequency Bands

2408MHz~2475MHz
5733MHz-5866MHz

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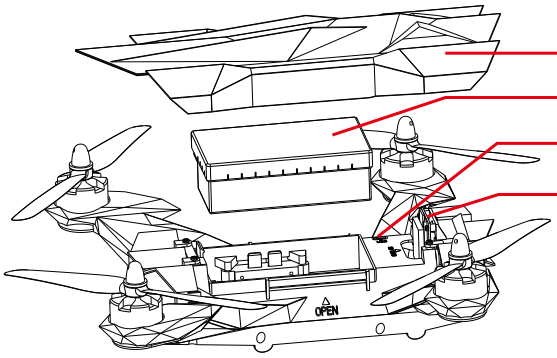
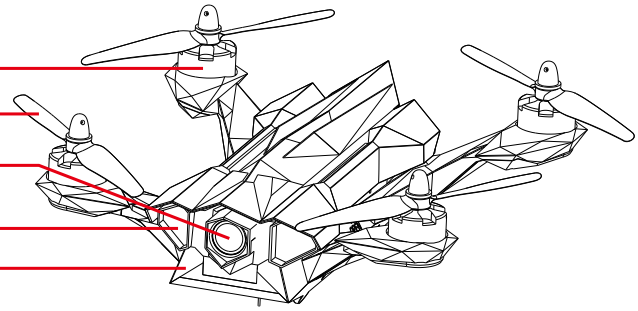
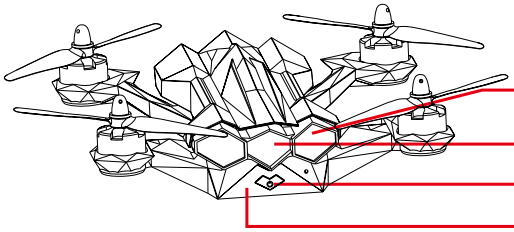


① Upper
② Battery
③ USB adjusting-parameter port
④ SD card

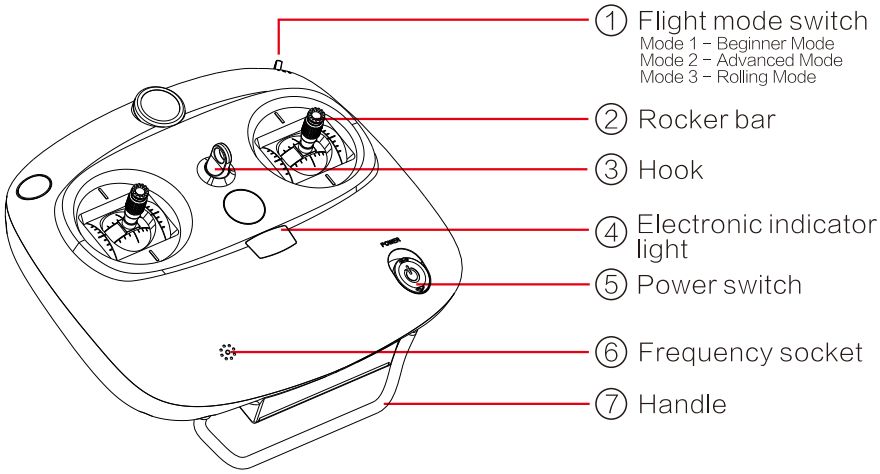


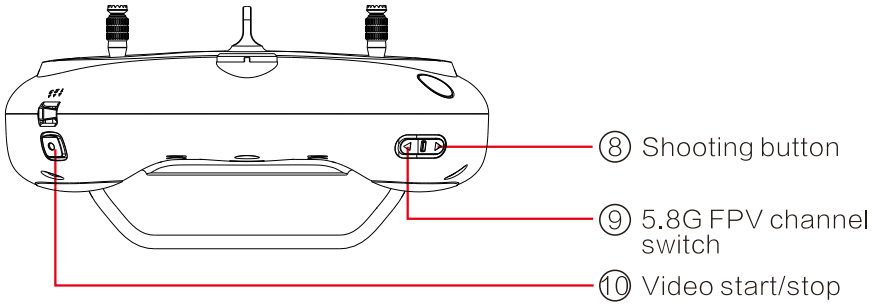
⑤ Motor
⑥ Propeller
⑦ Camera
⑧ Front LED indicator light
⑨ Middle case



⑩ Rear LED indicator light
⑪ LED status light
⑫ Power button
⑬ Bottom case

Working Frequency: 2.4GHz ISM
Remote control channel: 6
Communication distance (outdoor, non stop):300m
Receiver sensitivity: (1%PER) : >-93dBm
Transmitting power: <20dBm
Working current / Voltage: 52 mA@6V
AA battery (five): 4pcs





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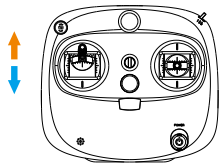
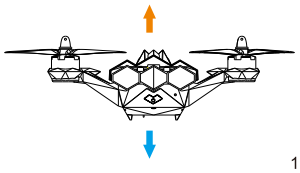
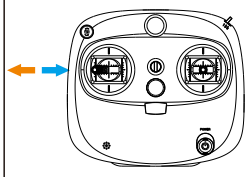
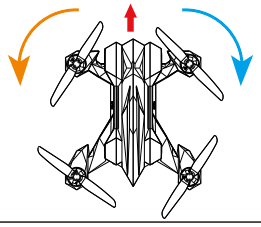
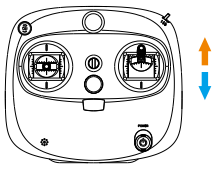
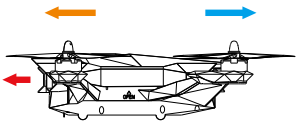
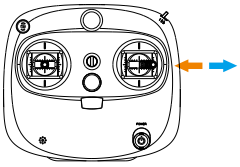
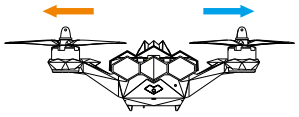
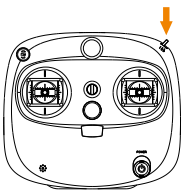
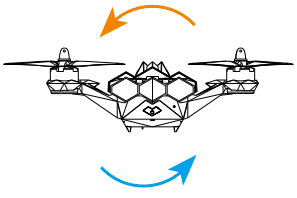
Basic usage for Aircraft &Transmitter

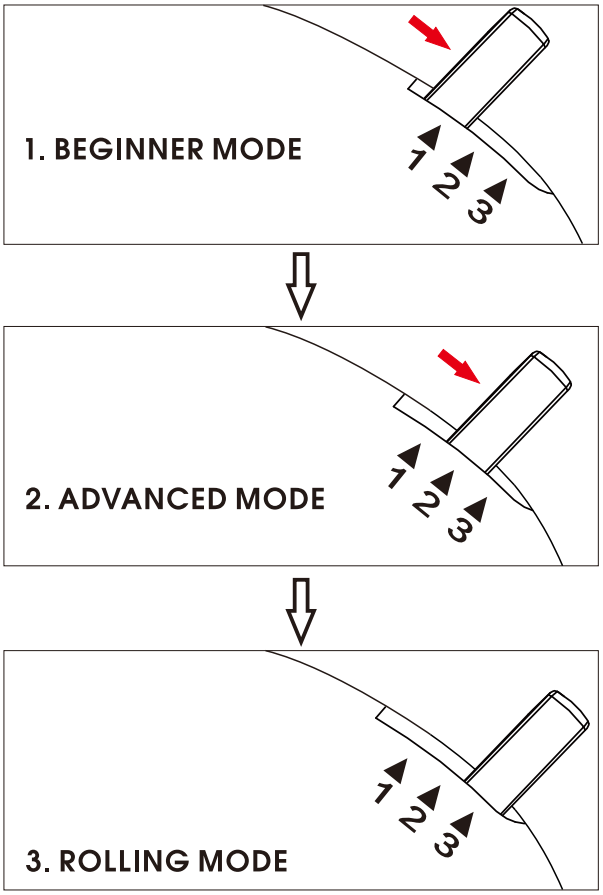
Remote control	Aircraft (← For the helicopter)	Function instruction
	 1	The throttle rocker is used to control the aircraft. Up the putter, aircraft increased. Down the lever, lower aircraft. (Please push the rocker slowly to prevent a sudden flight).
	 2	The yaw lever is used to control the aircraft heading.Left the pole, the aircraft will turn counterclockwise. Stick to the right, the aircraft will rotate in clockwise direction. The rotational angular velocity is in neutral position, aircraft does not rotate. The moving range of the rocket decides the rotational angular velocity, the larger the amount of the lever, the greater the rotational angular velocity.
	 3	Tilt lever is used to control the aircraft flying around.Up the putt, the aircraft tilted forward, and fly forward.Down the rocket, aircraft tilted backward, and fly backward.The front and rear direction of the aircraft maintain the level in neutral. The moving range of the rocket decides the angle of the inclination, the larger the amount of the lever, the greater the angle of inclination, the faster it flies.
	 4	The horizontal side rocket is used for controlling aircraft flying around. Stick to the left, the aircraft tilted to the left and fly to the left.Stick to the right, the aircraft tilted to the right and fly to the right. When it stays in the middle, the left and right direction of the aircraft keeps balanced in the air.The moving range of the vehicle decides the tilt angle, the larger volume the stick moves, the greater the angle tilted, the faster it flies.
	 5	Mode 3 – Rolling mode

Mode 1: Beginner Mode, rolling joystick controls the rolling range of aircraft; pitching joystick controls the pitching range of aircraft; direction joystick controls the direction of aircraft. When the rolling joystick and pitching joystick lie in the middle, the aircraft will return to self-stabilization status.

Mode 2: Advanced Mode (fast speed and reaction than Mode 1) .

Mode 3: Rolling Mode, In this mode, it is stabilize mode when pitching and rolling rocker are nearby middle, when at bottom is rolling mode. Suggest you flight the drone at least 10 meters high from the ground, push throttle slightly, then put the pitching and rolling rocker bottom , when the rolling almost finished, pitching and rolling rocker turn to middle point.

(The three modes are accessed by using the swith on the top right of the remote control)



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Preparation for Flight

1. Remote Controller Batteries Installation

(1). Take off the battery cover from the back of remote controller;
(2). Insert 4 × AA batteries into the battery compartment according to their anode and the cathode;
(3). Close the battery cover.

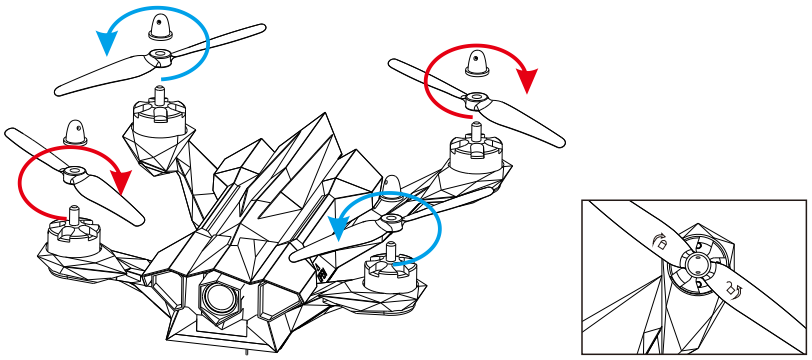
・The remote controller (receiver) of FALCON can’t be used together with third-part remote control device.
・Please use the correct type of batteries to prevent the explosion.
・Please disposal the useless batteries according to the battery instructions.
・Please take off the batteries after usage.
・Please replace a new battery when the voltage is lower than 4.2V and the remote controller warm with “BB……” sound.

2.Aircraft Battery Charging

Please use full charged 3S LiPo battery.
(Proposed Parameter: 1300mAh - 25C - 11.1V).
The built-in Electronic Speed Control (ESC) of FALCON only support 3S (11.1V) battery,it can not use higher voltage battery.

3.Propellers Installation

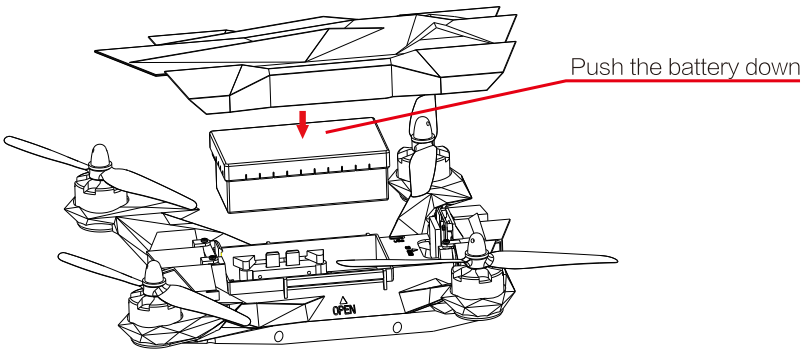
(1). Firstly, prepare the aircraft and the 6-inch propellers.
(2). Put the side of propellers with spin marks up. Make sure that the marks on them corresponding to the marks on the engine arms of the motors. (the arrows on sketches indicated the spin directions of the motors.)
(3). Finally, tighten the propeller nuts.



4.Open the Remote
(1). Firstly, push the Throttle Stick of the Remote to the lowest point.
(2). Push the power button up to turn on the Remote.

5.Aircraft Battery Installation
(1). Put the aircraft horizontally.
(2). Open the battery cover.
(3). put the battery into the compartment, press it down and turn on the switch, ensuring the ESC sounds normal.
(4). Don't touch the sticks of the remote and don't move aircraft, until the status LED turn from rapid flashing to slowly flashing and the system initialization and self-checking are completely finished.
(5). Close the battery cover and armed the motors, then start to fly.

powering on: double press and hold 3 sec.
powering off : press and hold 3 sec.



Installation methods of the Battery

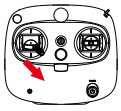
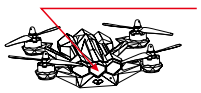
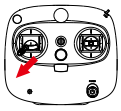
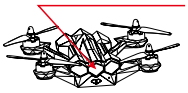
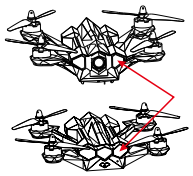
Flight Test

1. Place the aircraft horizontally 3 meters away from people, especially for the kids, to avoid accidental injury.

2. Unlock porgram:
(1). Push the Throttle down to the bottom right corner and hold for 3 seconds to armed the motors.

(2). When the green LED light turns from slow flashing of 0.8 seconds to rapid flashing of 0.5 seconds, it indicates that the aircraft is armed successfully and you can push the Throttle up. When the aircraft is going to take off, push the Throttle up quickly to let it flied quickly. (Don't push it overly to avoid it flied rapidly.)
(3). Please pay attention to the movement of the aircraft after it taking off, and pushing the throttle properly.

3. After finishing flight, lock the aircraft first, next take out the battery and turn off the remote control,then the test is completed.

Movement of throttle stick	Implication of transmitter's status	Position/status of LED lights on aircraft	Implications of LED lights when aircraft's working
	Push the throttle stick to right bottom and pause for 3 seconds, it will be armed	 1	Aircraft status indicator lamp changes from slow flashing of 0.8 seconds to rapid flashing of 0.5 seconds, it indicates that the aircraft is armed successfully Pull the throttle stick upwards, aircraft motors start work and propellers begin rotating, aircraft can work
	Push the throttle stick to left bottom and pause for 3 seconds, it will be disarmed	 2	Aircraft status indicator lamp from rapid flashing of 0.5 seconds to slow flashing of 0.8 seconds, it indicates that the aircraft is disarmed successfully Aircraft motors stop working
		 3	When battery voltage is lower than 10.5 V, LED lights flash every 0.5 seconds before and after aircraft's flying Aircraft can not work

Flight Safety Instruction

• If the voltage of the battery is too low in-flight, the aircraft will be in low voltage alarm,The power of front and back indicator light will flash, please land the aircraft quickly to avoid the serious crash etc!
• Please use Beginner Mode to take off the aircraft every time when you fly.
• After it lands, pull the throttle stick to the bottom left for 3 seconds to lock the aircraft, next take off the battery and then turn down the remote control.

Landing off: Please control the decent speed when the aircraft land off, it is better to slow down to avoid crash damage of the aircraft. After hearing the low voltage alarm of the remote control, please land off the aircraft quickly to avoid out of control or the crash due to the abnormal remote control.

Lose-Control Protection

When the device lose control signal, the device will automatic turn to low-speed rotation.

Low Voltage Alarm

Low voltage alarm is used to remind you of the current voltage is too low, it may not be able to provide enough power for your aircraft, so you need to land the aircraft quickly, The purpose is not for fun, if there appears the low voltage alarm, please land the aircraft quickly to avoid the serious crash etc. When the voltage is less than 10.5V, the front and rear lights flashing, it will alarm.

Aircraft Parameters

Parameters	Range
Flight time	8~10minutes
transmission range	500~600m
Camera resolution	720P
Yaw Angle Velocity	200° /s
Tiltable Angle	80°
Ascent Speed	±6m/s
Flight Speed	72km/h
Wheelbase	250mm
Flight weight	<580g
Operating Temperature	-10° C ~ 50° C
Battery type	3S 1300mAh LiPo

This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.If this equipment does cause harmful interference to radio or television reception,
which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
-- Reorient or relocate the receiving antenna.
-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-- Consult the dealer or an experienced radio/TV technician for help

The device has been evaluated to meet general RF exposure requirement.
The device can be used in ortable exposure condition without restriction.
FCC ID: 2AJLQ-S1

IC Caution:

RSS-Gen Issue 4 December 2014"&"CNR-Gen 4e Décembre 2014:

- English:

This device complies with Industry Canada licence-exempt RSS standard(s).

Operation is subject to the following two conditions: (1) This device may not cause interference, and (2) This device must accept any interference, including interference that may cause undesired operation of the device.

- French:

Le présentappareilestconforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitationestautorisée aux deux conditions suivantes:

(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareildoit accepter tout brouillageradioélectriquesubi, mêmesi le brouillageest susceptible d'encompromettre le fonctionnement.





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