

FW450L

ACE Smart RC Helicopter

User Manual

2025.10



Reading Tips

Description of symbols



IMPORTANT



INSTRUCTIONS FOR OPERATION AND USE

Instructions for use of the product

It is recommended that the user first watch the instructional video and the User's Manual to understand the detailed use process and flight safety-related contents of the product. The product is then used safely in a compliant location.

Get instructional videos

Users can click on the links below or scan the QR code to view instructional videos to ensure proper and safe use of the product.



Official Website



Youtube



BILIBILI

Download debugging software

The user can download the ACE flight control parameter adjustment software at the following address:

<https://www.flywingrc.com/downloadCenter>



The operating ambient temperature of this product is -10°C to 40°C , which does not meet the requirements of military grade (-55°C to 125°C) requiring higher adaptation conditions according to the classification of applicable temperature of electronic components. Use the helicopter properly in an environment that meets the use scenario.

* In order to ensure flight safety, users using helicopter in mainland China shall complete real-name registration according to relevant regulations of Civil Aviation Administration of China. Please register through the real-name registration system of UAV of Civil Aviation Administration. For more information, visit <https://uas.caac.gov.cn>.

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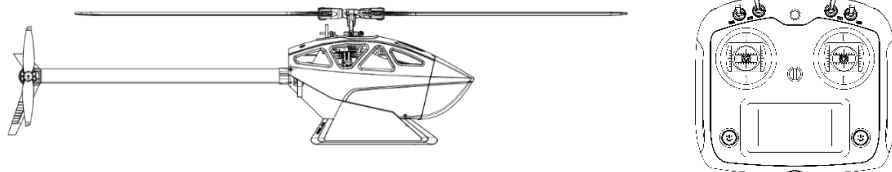
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Product Overview

Instructions for use of the product

The Flying FW450L ACE Smart Stunt Helicopter features a quick-release tailpipe design and a custom suitcase for easy carrying. The helicopter is equipped with multi-link GNSS system, supporting GPS/BDS/GLONASS/GALILEO and other positioning systems. Hover stably outdoors and support one-button return/low battery return. Hover outside without wind, maximum flight time is about 25 minutes*.

The Flying FW450L ACE intelligent stunt helicopter adopts the customized 2.4G transmitter, which can achieve the remote control transmission with the maximum communication distance of 1KM* in the non-interference and non-blocking environment. If the transmitter signal is lost too far away, the helicopter can return autonomously. During the return process, the return can be canceled by switching the return switch, and the helicopter can be taken over manually.



- * The maximum flight time of the helicopter is measured when the helicopter hovers in a windless environment at sea level until the remaining power is zero. It is for reference only. Please pay attention to the flight control indicator or return status during actual flight.
- * The maximum communication distance is the maximum communication distance (one-way non-return) that can be reached by the remote control equipment under the FCC standard when flying in the environment without shielding and electromagnetic interference, and the flying altitude is about 120m.



This helicopter has no relevant flight restrictions. Please use this product in accordance with local regulations.

首次使用

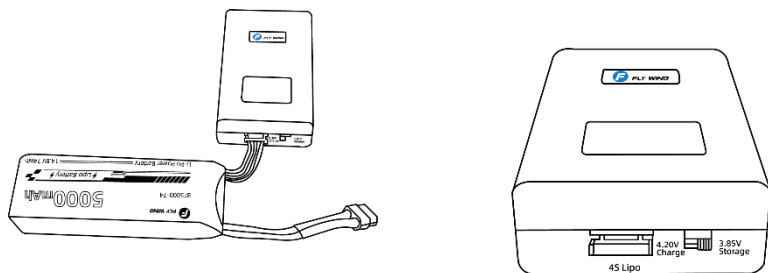


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Prepare the helicopter

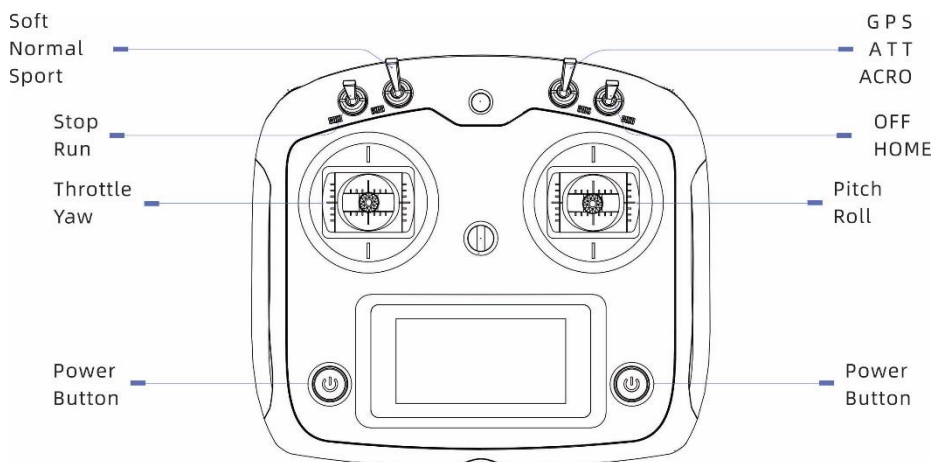
The flight battery needs to be charged for the first time. Connect the supplied charger to the battery plug, turn the charger mode switch to Charge mode, and connect to AC power to start charging. When 99 is displayed on the screen, the battery is fully charged.



If the battery is not used for more than 5 days, it is recommended to use the storage mode of the charger to save the battery, and check the operation once every month.

Preparing the Remote Control

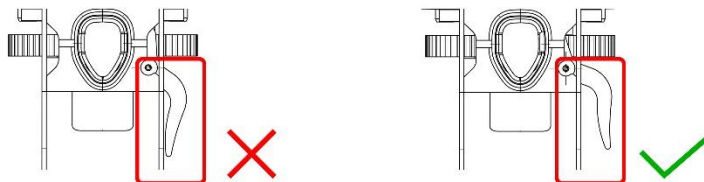
To use the remote controller for the first time, open the battery compartment cover on the back of the remote controller, prepare 4 AA batteries of No. 5, move all the toggle switches to the uppermost side, and press and hold the two power buttons for 5 seconds to complete the startup.



Outdoor flight

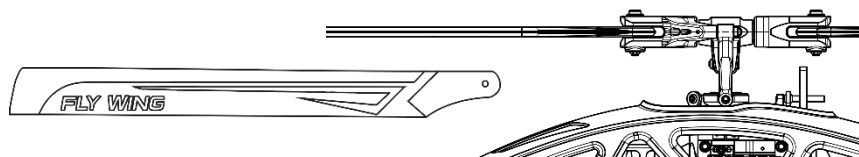
1、 Insert tail boom

Insert the tail boom into the fuselage and ensure that the trigger has been pulled out properly.



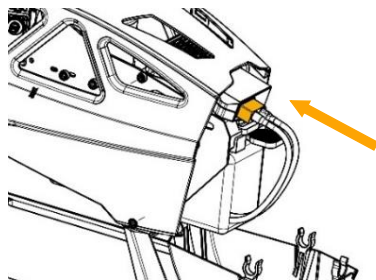
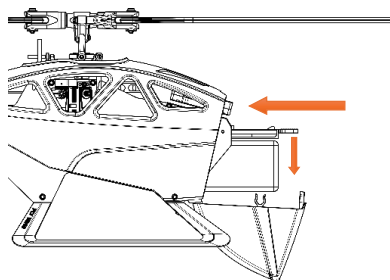
2、 Blade installation

Place the front of the blade with the lettering facing upwards and secure it to the rotor head using screws and self tightening nuts. Note that the nylon blade clamp has elasticity, so the screws cannot be tightened. Ensure that the blade has a certain degree of rotational resistance. Continuously tightening screws may cause deformation and cracking of the propeller clamp.



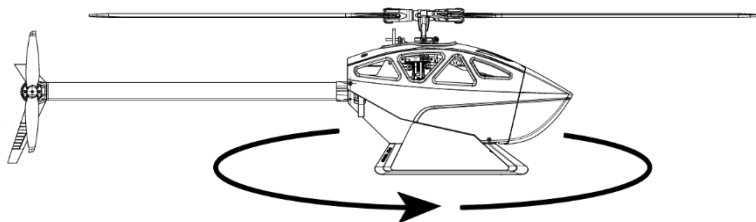
3、 Power on the helicopter

After the remote controller is started, the front cabin cover of the helicopter is firstly opened, and the battery bound with the fixed plate is inserted into the sliding groove of the battery cabin; Push the battery in by pressing down on the clip of the battery board until the battery board clicks into the retaining slot above the battery compartment. After fixation, insert the yellow XT60 battery plug into the electric regulator, power on the helicopter, close the hatch cover, place it on the ground, wait for the servo to move, and complete the self-inspection.



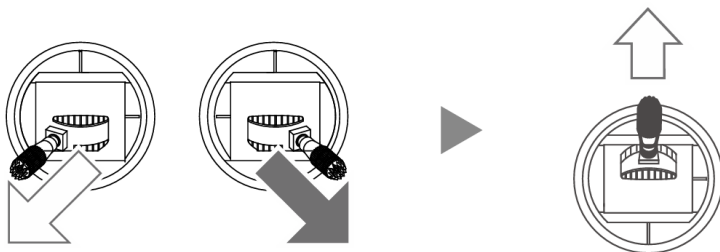
4、 Inspection before takeoff

The remote control is in GPS mode, and the helicopter is placed in an open field, waiting to search for satellites. When the green light of the helicopter is normally on, grasp the helicopter and horizontally rotate for 360°, and observe whether the indicator light turns yellow to red. If the green light is always on, it means that the compass is normal and can take off (it is recommended to wait for one minute after the green light is on to refresh the return point more accurately); if it flashes yellow or red, it is recommended to recalibrate the compass. See the compass calibration section for the calibration method. Then move the rocker to check whether the servo moves normally and whether the mechanical part is abnormal. Check and get ready to take off.



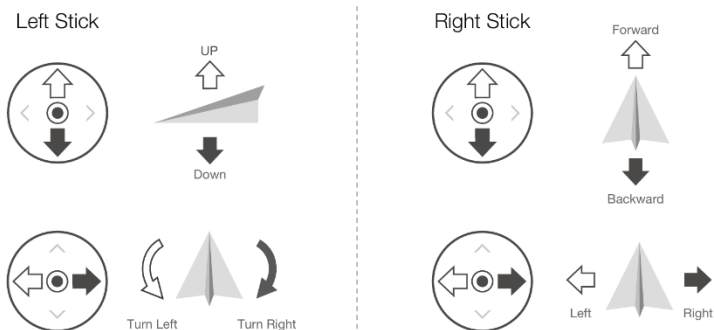
3、 Take-off

Ensure that the remote controller is in GPS mode and the helicopter is in an open field. Observe the flight environment. After confirming that it is normal, the flight control is unlocked and the green light flashes. During the flashing period, turn the start/stop switch to the start position, and the helicopter begins to accelerate slowly; Wait for about 10 seconds, the helicopter speed is stable, push the ascending and descending rocker for 1 second, and then the helicopter takes off; Release the rocker and hover the helicopter.



Attitude control:

Take Mode2 (left-hand throttle) as an example.



4、Landing

Ensure that the helicopter is above the open field, observe the flight environment, and after confirming that it is normal, pull down the throttle rocker. Do not pull it to the bottom. The helicopter will descend slowly until it lands; After stable landing, turn the flameout start switch to flameout, slowly release all the rockers and wait for the motor to stop.

Function introduction

1、One-button return

Ensure that the helicopter is above the open field, observe the flight environment, after confirming that it is normal, turn the return switch to return, all indicator lights of the flight control will turn purple and remain on (flight control indicator and external LED lamp panel), and select different return modes according to the distance from the take-off point:

Within 10m from the current position to the return point:

- When the front altitude is less than 5m, rise to 5m and return.
- When the current altitude is greater than or equal to 5m, return at the current altitude.

The current position is more than 10 meters from the return point:

- When the front altitude is less than 15m, return to the altitude of 15m.
- When the current altitude is greater than or equal to 15m, return at the current altitude.



The return point is the position where the helicopter unlocks the take-off position. The accuracy of the return depends on the satellite quality of GPS during the takeoff. When the satellite quality is good, the error of the return point is about 2m. It is recommended to wait for one minute after the flight control green light is normally on before takeoff to allow the satellite signal to stabilize before unlocking the takeoff. When the helicopter starts to land above the return point, the landing point can be finely adjusted through the remote controller, and the remote controller cannot operate the helicopter during the return process.

2、Low battery return

FW450L-ACE supports 4S/6S Li-Po battery. Built-in two-stage voltage protection mechanism. When the battery power of the helicopter is low, the helicopter will automatically trigger the low battery protection, and then the indicator light will give an alarm, and return is triggered after about dozens of seconds. Refer to one-key return for the return mode.

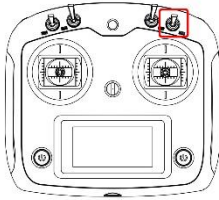
When using a 4S Li-Po battery:

- When the battery voltage is lower than 15.2V, it is forbidden to unlock the helicopter.
- When the battery voltage is less than 14.77V, the helicopter triggers a level I charge alarm. At this time, all indicator lights of the helicopter will flash slowly in purple.
- When the battery voltage is lower than 14.73V, the helicopter triggers the primary power return. All helicopter indicators will be solid purple. and triggers the first return voyage. At this time, the user can cancel the return voyage by switching the return voyage switch to the return voyage, and then switching the switch to close the return voyage. All indicators will flash yellow-green (yellow-blue flash in Smart effects and posture modes).
- When the battery voltage is less than 14.6V, the helicopter triggers a secondary battery alarm. All helicopter lights will now flash back to purple.
- When the battery voltage is lower than 14.53V, the helicopter triggers the secondary power return. All helicopter indicators will be solid purple. and force a second return. At this point the user cannot cancel until the helicopter returns and lands.

When using a 6S polymer battery:

- When the battery voltage is lower than 22.8V, the helicopter is forbidden to unlock.
- When the battery voltage is less than 22.135V, the helicopter triggers a level I charge alarm. At this time, all indicator lights of the helicopter will flash slowly in purple.
- When the battery voltage is lower than 22.095V, the helicopter triggers the primary power return. All helicopter indicators will be solid purple. and triggers the first return voyage. At this time, the user can cancel the return voyage by switching the return voyage switch to the return voyage, and then switching the switch to close the return voyage. All indicators will flash yellow-green (yellow-blue flash in Smart effects and posture modes).

- When the battery voltage is less than 21.865V, the helicopter triggers a level 2 charge alarm. All helicopter lights will now flash back to purple.
- When the battery voltage is lower than 21.795V, the helicopter triggers the secondary power return. All helicopter indicators will be solid purple. and force a second return. At this point the user cannot cancel until the helicopter returns and lands.



3、Compass calibration

Please select an open field and calibrate the magnetometer according to the following steps. For more information on magnetometer calibration, visit www.flyingrc.com for a video tutorial.

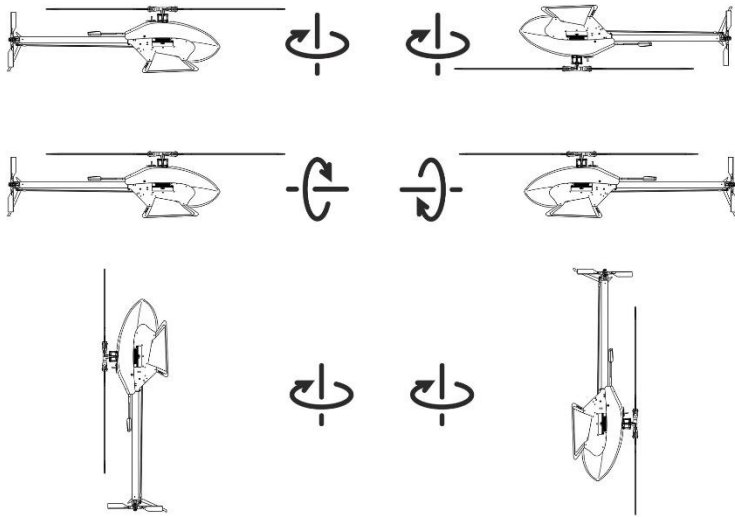
Method 1: Calibration with Remote Control

- Put the flight mode switch of the remote controller in the GPS mode, then quickly dial to the intelligent special effect, and then dial back to the GPS mode, repeat above 3 times, and finally stay in the GPS mode; Wait a few seconds and the GPS light begins to flash red and enter the magnetometer calibration state.
- Roll each face of the helicopter for at least 2 circles, the status light of the flight control will gradually change from red to green. Finally, when the flight control light is normally on and then off, the calibration is completed, and the flight control will restart automatically; When restarting, the LED lights flash red quickly, then turn off for a few seconds, and finally flash red and blue quickly, and the restart is completed.

Flight control LED: red-green flash-yellow flash-blue flash-green flash-green-steady green-automatic restart

External LED: red light is always on---orange light is always on---yellow light is always on---green light is always on---automatic restart

During the restart, the helicopter must be placed on the ground and held still, waiting for FCT (do not hold the helicopter in hand).



4、Coordinate turning

By default, the FW450L-ACE turns on the coordinated turn function. When using the direction rocker (left-hand and left-hand rocker for the American hand) to make a turn, the flight control will automatically increase the aileron roll control according to the current flight speed to help the helicopter turn in a smaller radius and obtain a more simulated and beautiful turn attitude.



This function is valid by default in GPS mode and attitude mode, but not in smart trick mode.

5、Intelligent special effects

Smart trick mode is the same as GPS positioning mode and uses the GNSS module for precise hover. In this mode, when the rocker exceeds the roll proportion (default value 80%), the helicopter enters the roll state, and the helicopter can roll in any direction. When both hands leave the rocker to operate, the helicopter automatic rescue helicopter shall keep the fixed point and fixed height locking (if the helicopter attitude is close to inverted flight at the moment of releasing the hand, the helicopter will keep inverted flight and hover, and the helicopter can complete half-turn rolling by pushing the full lever again).

If the helicopter is forced to switch into other flight modes under the intelligent stunt inverted hover, the helicopter will automatically rise to the safe altitude threshold of 12m (no rise above 12m) to right into other flight modes.

When the helicopter voltage is lower than 14.78V (4s battery)/22.145V (6S battery), it will trigger not to continue rolling; if the helicopter is in inverted hover, the helicopter will

automatically rise to a safe altitude threshold of 12m (no rise above 12m) to right into other flight modes.

LED indicator:

- In the locked satellite search state, the yellow light of the flight control indicator flashes slowly, and the left red and right green breathing light of the external indicator flashes.
- When the star search is completed after locking, the blue light of the flight control indicator is normally on, and the external indicator light is red on the left and green on the right.
- In the unlocking state, the blue light of the flight control indicator light flashes slowly, and the external indicator light flashes twice with a time interval of one second.



Conditions requiring attention

- This function should be larger than the safety line (default 5 meters) to operate the flight. When the stunt flies down below the safety line. The flight controller will automatically right the rescue helicopter and keep in the hover GPS mode. If you want to fly the stunt again, you need to operate. Raise to a height above the safety line.
 - This function needs to ensure that the FW450L is mechanically smooth and fault free.
 - When changing the speed causes weak power, it may cause a rollover crash.
-

6、Three-gear hand feeling mode

The helicopter has built-in three flight sensitivities, which can be switched by the remote control switch.

- In the soft mode, the maximum flight speed, maximum flight angle and reaction speed of the helicopter will be limited. This mode is very suitable for the novice to operate the helicopter.
- Under the normal mode , the maximum flight speed, the maximum flight angle and the reaction speed of the helicopter are faster than the soft mode, and the mode is very suitable for daily helicopter flight.
- In the sport mode , the maximum flight speed, maximum flight angle and reaction speed of the helicopter will all reach the maximum flight control value. At this time, the helicopter is very flexible and the flight speed is very fast. It is recommended that experienced players use it in an open field.

7、Soft take-off/landing

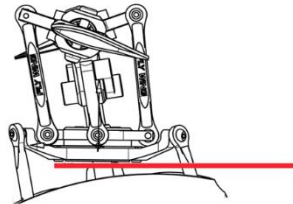
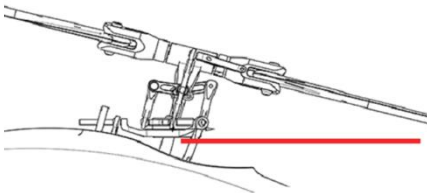
When the helicopter takes off and lands, the flight control takes over the vertical velocity completely, and when the altitude reaches 1m, it switches to the proportional control of the remote controller. It can solve the problem that the helicopter takes off too fast.

During take-off, except for the throttle lever, other rocker directional controls are not affected. (Since the distance from the ground is estimated by the barometric pressure, there may be some error in windy weather.)

flight safety

Pre-Take-off Inspection

- Installation and component inspection
 1. Each module is installed correctly and firmly.
 2. The wiring of electric regulator and receiver shall be correct and firm.
- Inspection of working condition
 1. Whether the mode switch corresponds to the LED status indicator flashing.
 2. Check whether the working status indicator of GNSS-Compass flashes correctly.
 3. Check whether the sensor parameters are normal and calibrate according to the prompt.
 4. Shake the helicopter before takeoff to check that it is always level and correct.



Safety Summary

Users are strongly encouraged to enjoy flying in a safe and reasonable environment. The necessary knowledge of flight safety is important for your safety and the safety of the people and environment around you. The user should ensure that there is a sufficient level of knowledge of the helicopter and that all emergency operations are known.

1. Environment

- Fly in open spaces away from people, traffic roads, ground facilities, property, airports, other helicopter or obstacles.
- The flying altitude is determined by the performance of the helicopter. High altitude environmental factors will affect the battery and power system, resulting in

degraded helicopter performance, so be sure to understand your helicopter performance and fly with caution.

- The ambient operating temperature range of the flight control system module is -10 to 55°C (not under direct solar conditions).
- Fly in good weather (not rainy, windy, or extreme weather), during the day or in a well-lit environment.
- Fly within the legal area.

2. Inspection

- Ensure that each equipment has sufficient power.
- Ensure that the propeller is not damaged and installed securely.
- Ensure that the helicopter components are clean and undamaged.
- Ensure that all modules of the flight control system are installed firmly and do not directly contact other metals and conductive materials; The installation position and orientation shall be correct; The connection shall be normal and firm, each plug shall be free of looseness, and the wire shall not be pulled by force when arranging and fixing the wire/plugging connector.

3. Operation

- Do not get close to the rotating propeller and motor.
- Fly within the visual range of the unaided eye.
- Do not transport dangerous and prohibited goods.
- Do not get close to the rotating propeller and motor.
- Fly within the visual range of the unaided eye.
- Turning the CH7 motor control switch during flight will cause the helicopter to crash. Use this function only in an emergency.
- Do not make or receive phone calls or text messages during the flight, and do not operate the helicopter under the influence of alcohol or drugs.
- Please return as soon as possible in case of low battery (or low voltage) warning.
- When the helicopter automatically returns, it will not avoid obstacles by itself. If the remote control signal is normal, the helicopter can cancel the return flight through the remote controller.
- After landing, close the helicopter first and then turn off the remote controller to avoid loss of the remote controller signal, and start the return mode.
- It is forbidden to use this product to throw or emit any dangerous articles to buildings, people or animals.

4. Maintenance

- Check the status of each module of flight control system regularly.

- The flight control system is suitable for long-term storage in a dry environment of 5°C to 35°C, no heat source nearby, no vibration, no strong magnetic field and no strong electric field.
- Do not store in a high place to avoid accidental drop, which may cause damage to the equipment or abnormal operation.

5. Flight restrictions and local regulations

- It is strictly prohibited to fly in the restricted area.
- It is recommended to control the flight altitude below 120m and strictly observe the local laws and regulations when flying.

Disclaimer and Warning

This product is not a toy and is not suitable for use by persons under the age of 18. Do not allow children to come into contact with this product and take special care when operating in the presence of children.

Read this document carefully before using this product. This statement has an important impact on the safe use of this product and your legal rights.

This product is a helicopter flight control system, which will provide safe and reliable flight control under the condition that the power supply works normally and all components are not damaged. Visit <http://www.flywingrc.com> for the latest instructions and warnings. Flywing reserves the right to update this disclaimer. Please refer to the version received at www.flywingrc.com for the latest disclaimer.

Be sure to read this document carefully before using the product to understand your legal rights, responsibilities and safety instructions; Otherwise, it may cause property loss, safety accident and personal safety hazard. By using this product, you are deemed to have understood, acknowledged and accepted all terms and contents of this statement. The user undertakes to be responsible for his own actions and all consequences arising therefrom. The user undertakes to use this product only for proper purposes and agrees to these terms and any relevant policies or guidelines that Flywing may have.

To the maximum extent permitted by law, in no event shall flywing be liable for any indirect, consequential, punitive, incidental, special or punitive damages, including damages arising out of your purchase, use or inability to use this product, even if flywing has been advised of the possibility of such damages.

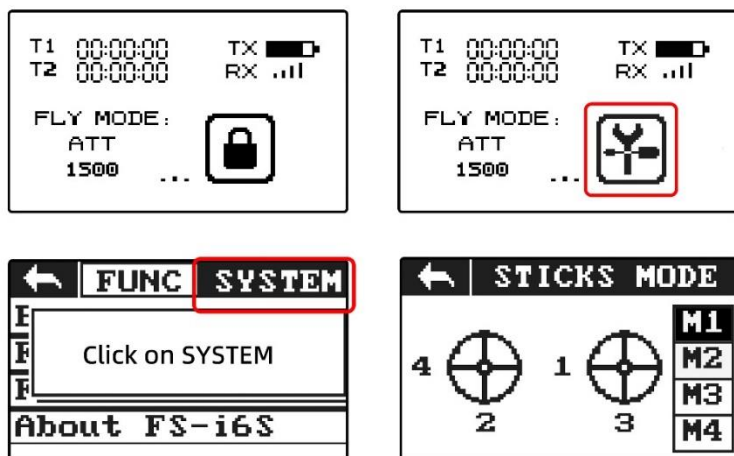
In compliance with laws and regulations, flying wing aviation has the right to the final interpretation of the above terms. Flying Wing Aviation reserves the right to update, revise

or terminate the provisions of this notice without prior notice. This notice is valid for a long time until the download service of this guide is terminated.

Appendices

How to switch the sticks modes (M1/M2)

The system has 4 stick modes . Long press the screen lock icon to unlock the screen, then click on the wrench icon to enter settings, and click on SYSTEM to find the Stick Mode option. Change the mode touch M1, 2, 3 or 4 on the right hand side of the screen. The currently selected mode is highlighted in black.



Advanced Parameter Explanations

The user is strongly advised not to change the value of this page, which has been debugged when it leaves the factory.

- 1、Throttle value: This is the percentage of helicopter blade speed value.
- 2、Pitch sensitivity: This is the correction sensitivity of helicopter forward and backward.
- 3、Roll sensitivity: This is the corrected sensitivity of the helicopter for left and right translation.
- 4、Tail lock sensitivity: this is the correction sensitivity of helicopter left and right rotation.
- 5、Brake force: This is the force with which the helicopter brakes and hovers when the rocker is released after the helicopter moves.

LED flight status indicator

Mode	Flight Controller LED Status	External Left LED Status	External Right LED Status	Content
GPS Mode				Locked Status, Acquiring GPS Positioning
				GPS Positioning Acquired - Ready to Unlock
				Unlocked Status
				Battery Voltage Abnormal
Intelligent Stunt Mode				Locked Acquiring GPS Signal
				Dual GPS Lock Acquired - Ready to Unlock
				Battery Voltage Abnormal
ATTitude Mode				Locked - Ready to Unlock
				Unlocked Status
				Battery Voltage Abnormal
RTH Mode				RTL (Return-to-Launch) Mode
Compass Calibration				Calibration Progress: 0-25%
				Calibration Progress: 25-50%
				Calibration Progress: 50-75%
				Calibration Progress: 75-99%
				Calibration Complete
Fault Status				Acceleration Abnormal
				Compass Abnormal
				Transmitter Abnormal
				Low Battery Level 1/2 Alert
				Other Anomalies



Flicker Velocity Interpretation

- Slow flash, about once a second.
- Fast flash, about every quarter of a second.
- Quick flashes, very fast flashes.
- Normally lit.



This manual is subject to updates without prior notice.

Latest User Manual on the official FLYWING website

<http://www.flywingrc.com>

If you have any suggestions, you can leave us a message on the official website.

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