

H1

Heli

User Manual

V2.6

Manual

2023.03



FLY WING

Flight safety notice

Flying suggests that users enjoy flying in a reasonable safe environment. The knowledge of flight safety is very important for the safety of yourself, the surrounding people and the environment.

1. Fly in open areas away from buildings, trees, high voltage power cable lines, crowd, water surface, and any near by obstacle.
2. Please keep the transmitter in hand, even when using the auto flight /auto landing and auto home function, to control the helicopter any time.
3. Please operate the helicopter within your sight range at all the times.
4. To ensure flight safety, please do not fly the helicopter beyond 120 meters above the ground. If there are no flying height restriction or if the restriction is lower than 120 meters in your area, please follow the regulations.

Please visit <http://www.flywingrc.com> Watch flight safety teaching videos and acquire more comprehensive safety knowledge such as flight restrictions

Pre-flight safety inspection

Please check the helicopter carefully before taking off. Precautions are as follows:

1. Check whether the main blades, tail blades, helicopter body and landing skids are damaged or distorted, please replace them with the genuine Fly Wing RC parts.
2. Check whether the flight control linkages and fuselage are fixed firmly, and whether the GPS unit is correctly fixed on the helicopter tail boom (horizontally placed, straight line behind the main mast) H1 Unit is fixed firmly on the double sided foam pad either at the front or at the back of the main mast. Pay attention to the direction of the arrow which has to be pointed towards the direction of travel
3. Check whether the power of the helicopter and the transmitter are sufficient. After the transmitter is powered on, turn on the power supply of the helicopter, and check whether the helicopter passes the self inspection test (the rotor head and swash plate move regularly for several seconds)

Flight operation requirements

1. Do not fly in bad weather, such as strong wind (10m / s), rain, snow and foggy weather, etc.
2. Choose an open place with no tall buildings around the flight pathway. Any large number of buildings using steel bars will affect the effectiveness of compass function, and they will block GPS signal, resulting in poor positioning of helicopter and even unable to receive the signals.
3. Please do not fly in any area with high voltage cable line, radio tele-communication station, mobile phone transmission tower or Wi-Fi, to avoid signal interference of your transmitter and receiver.
4. Please take extra caution when flying above 6000 meters as performance of the battery and the motor power system of the helicopter will be reduced to cold temperature and thinner air density.

Flight operation requirements

1. Fly within your sight of range (VLOS)
2. Keep away from rotating blades and motor.
3. Activating the stop switch during flight will cause the helicopter to fall. Please use this function only in case of emergency.
4. During the flight, please do not answer or make phone calls, send short messages or use other mobile devices that may interfere with your helicopter operation.
5. Do not operate the helicopter under the influence of alcohol or drugs.
6. Please return home as soon as possible when low power warning appears from the transmitter.
7. In the process of runaway return, when the radio signal becomes normal again, the helicopter landing position can be controlled by the transmitter.
8. After landing, the helicopter electronic power should be stopped first and then the transmitter should be turned off to avoid any loss of transmitter signal.
9. When using the GPS Autopilot flight mode and Return Home functions, you should always be prepared

10.to control the helicopter manually by turning the transmitter 3D mode switch in case of Emergency .

11.Please note that the helicopter is still in the Auto GPS flight mode state at this time. If you need to completely exit the flight mode, please turn the flight stop button on the transmitter.

12.Please keep control of the helicopter all the way. Do not rely on GPS to provide information. In specific flight mode or flight environment, GPS system can not work normally, such as precise landing or active braking and other functions will not be available. Please make a reasonable judgment on the flight condition by naked eye observation, and set the corresponding flight and return altitude according to the flight environment.

Disclaimer:

The remote control model is not a toy. This product is only suitable to adults who have experience in correct model helicopter assembly, setting, commissioning and operation. The helicopter should only be flown in legal remote control flying field. This product is not suitable for children or those who do not have experience in remote control model helicopters. For inexperience or a new beginner, the helicopter must be operated under the direct supervision of someone with considerable skills or expertise. The remote control model product of this specification belongs to the operator who has high operational skills. Improper or unfamiliar use of this product may cause serious harm to yourself and others, or even death. If the product is disassembled , it can cause loss of parts in various situations. If the product is defective due to improper use, it will not be possible for us to replace with the new product or to accept return of the item ,under the warranty conditions. The dealer is unable to correct the abnormal loss of parts and components, because of the end user improper installation and setting methods, modification of the goods (including use of the non-original parts), other equipment that does not meet the specifications, and poor operation. For any damage, accident or injury caused,. Buyers and Operators assume full responsibility at the time of purchase. Those who can not operate any professional remote-controlled model helicopters, they shall not operate this product. At the same time, the operator must operate in the legal remote control model flying site, pay attention to the personal safety of himself and others and strictly abide by and comply with national and local laws and regulations. The whole machine hood is a fragile product. Many glass fiber parts are surface painting products. Due to shrinkage, temperature and transportation process, there may be problem of blasting and cracking on these items. This is the nature of the product itself. We can not be responsible for any serious problem after face-to-face courier signed direct delivery of the product to you, Please be aware of terms and conditions before you buy this sophisticated high tech radio control helicopter!



Warning

Through reading of the entire user manual to familiarize with the product functions before operation.

If the product is not operated correctly, it may cause serious injury to yourself or others, or cause product damage and property loss. This product is complex, it needs to be familiar with it for a period of time before safe usage, and you need to have some basic knowledge before operation. If there is no strong safety awareness, improper operation may lead to product damage and property loss, and even cause serious injury to oneself or others. This product is not suitable for children. Do not use parts not provided or recommended by our company. You must strictly follow the company's guidelines to install and use the products. This guidance document contains safety, operation and maintenance instructions. Be sure to read all instructions and warnings in the user's manual carefully before assembling, setting up and using. You have read and understood all the contents of this document before using it.

To avoid possible injury and loss, it is important to observe the following items:

1. Users are not allowed to operate this product in any condition of poor physical or mental state such as drinking, drug taking, drug anesthesia, dizziness and fatigue, nausea, etc.
2. Except in special circumstances (such as the helicopter may hit a crowd), it is forbidden to turn off the engine during the flight
3. After landing, be sure to turn off the helicopter before turning off the remote control transmitter.
4. It is forbidden to use this product to throw or launch any dangerous object to buildings, people or animals.
- 5.The user shall immediately stop using the helicopter with abnormal flight status in case of accident (such as collision or overturning). The user shall not continue to use the helicopter until it is repaired by the company or its recommended maintenance center.

The documentation of this product is subject to update without prior notice. Please visit the official website <http://www.flywingrc.com>, go to the product page for the latest information.

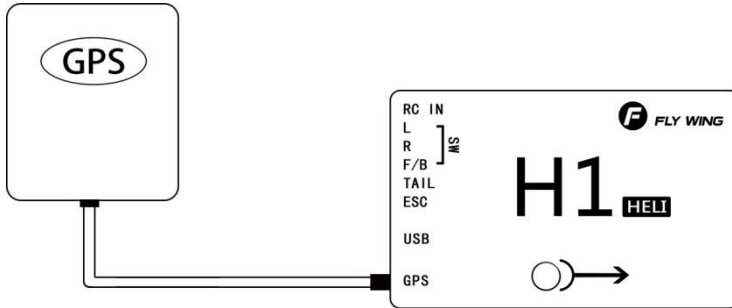
About H1

Overview

The H1 helicopter flight control system, with its built-in floating IMU and double-layer damping sponge, combined with a new generation of control and IMU algorithms, makes it easy to experience helicopters.

The H1 flight control system consists of a main controller

(built-in floating IMU, compass and barometer) and a dual-mode GPS module.



System composition

● Working principle:

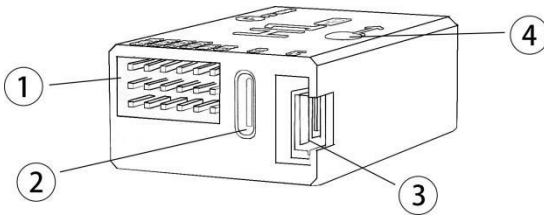
The main controller is the core module of the flight control system. The IMU, barometer, GPS and compass modules are used to realize the precise attitude control and high-precision positioning of the aircraft. The H1 parameter adjustment assistant is used to configure parameters to the main controller, including the parameters of installation, flight control and other external equipment. The LED light shows the current system status in real time to help you better understand the current status of flight control.

● Components and ports:

● Main controller:

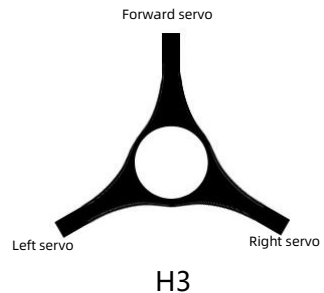
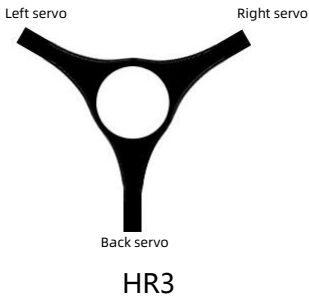
- 1.The main controller has 5 PWM outputs and a receiver input port. The PWM output port is respectively connected with three servo of the swash plate, the tail servo and the main ESC. The tail lock supports the tail motor and the tail servo.
2. The built-in IMU and barometer are used to measure the flight attitude and altitude, and the horizontal direction of the aircraft is fixed together with GPS, so as to realize the flight control.
- 3.Support a variety of receiver types, receiver input support ppm, s.bus and other mainstream single line mode, automatic identification.
- 4.Type-C plug is adopted, which is convenient and easy to use.

● About main controller port:



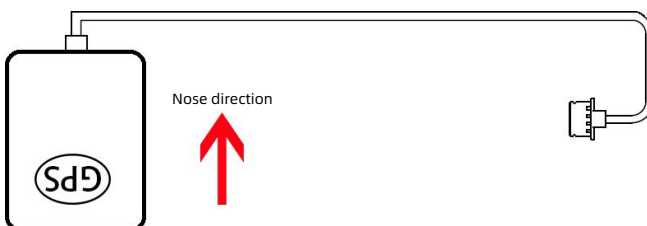
1. Pin Port:
Receiver,servo,ESC connection
2. USB Port:
TYPE-C port , connect to computer to adjust
3. GPS Port :
Interface between GPS and external compass
4. LED:
H1 status indicator

● Support swash plate Type: :



● GPS Module:

GPS module contains GPS / GLONASS dual-mode receiver and compass. Compass is used to measure geomagnetic field, and together with GPS, it can realize horizontal fixed point of aircraft. The compass should be calibrated before use, and it should not be stored and used in ferromagnetic environment.



Installation

Overview

Install procedure

Please read this section carefully, install and set up your flight control system according to the following process to ensure the normal operation of the system.

1. Ensure that the modules required for installation are complete.
2. Watch the teaching video(www.flywingrc.com/web/fyhken/fxjc):
 - Watch the installation demonstration and module connection video, install the flight control system to the helicopter and connect it correctly.
 - Watch the transmitter setup tutorial, set the transmitter to airplane mode, and set the return / GPS / manual mode switch (5 channels)
 - Set the Stop/ Run (7 channels), the circle / 8 fly (8 channels) and the invert flight (9 channels).
 - Watch the parameter adjustment software setting tutorial, run the parameter adjustment software, select the corresponding COM port (not COM1), click the connection, and complete the parameter setting according to the software guidelines and instructions.
3. Check whether the motor rotation direction, transmitter channel setting and transmitter out of control protection (turn off the transmitter, and the software shows that the transmitter signal is lost) are set correctly.
4. Move the magnets and speakers out of the room to ensure that there is no magnetic material in the room (or use a notebook computer to calibrate it in the open area without high-voltage wires or iron buildings outside), and then calibrate the compass in the software.
5. Confirm that the connection of each module is reliable, and there is no error prompt on the left side of the main interface of the software.
6. The first flight test was carried out in the open area without high-voltage lines and iron buildings. Keep away from the crowd and do not test in the community.
7. When the helicopter is powered on and the transmitter is powered on, put the transmitter mode switch in the GPS position, the route switch in the off position, the stop switch in the stop position, and the invert flight switch in the normal position. At this time, the yellow light of the flight control flashes, and the blue light is always on. In the 3D mode, move the transmitter rocker to check the movement of the servo. After completion, flip to GPS mode to wait for satellite search. It takes 3-5 minutes for the first use to preheat the satellite search. It is recommended to wait for a while after the green light is on to ensure good satellite signal. Finally, push both sticks to the bottom outer corners to unlock. After the green light flashes, flip STOP switch to STAR. The helicopter begins to accelerate and rotate. After the speed is stable, the push rocker rises.
8. Fw450L as an example, the following figure shows the installation effect:



Ready to install

When using H1, you need to prepare helicopter, transmitter receiving system, ESC, servo, battery and other equipment. Device support type:

1. Helicopter type : H3 or HR3 swash plate ; The main power is electric ; Helicopter with variable pitch or motor driven tail.
2. Servo type: 1520us broadband servo is used as swash plate servo, 1520us broadband or 760us narrowband servo is used as tail servo.
- 3.ESC type : Main motor and tail motor tail ESC support standard PWM speed control ESC, working range: 1000us-2000us.
- 4.Receiver type: Support s.bus/i.bus/w.bus protocol, PPM protocol, Grauper SUMD HD08 protocol.
- 5.Battery: Support 3-6s lipo battery, support voltage detection, with low voltage protection function.

Download software

Download software H1-Heli

<https://www.flywingrc.com/web/fyhken/download>



Win7 and above systems are required for parameter adjustment software, and Win10 is recommended

Install software

H1 Heli will guide you to complete the parameter setting of flight control system. Please follow the steps below

Support Win7, Win8 , Win10 (32 or 64 bit)

1. Use TYPE-C USB wire connect flight controller and your computer
2. Drive H1-Heli installation package and install it according to the prompts.
3. Double-click H1-Heli icon to run the parameter adjustment software.



For safety, when adjusting the parameters, please remove the blade or disconnect the motor



- The original Win10 64 bit operating system is recommended to achieve the best experience.
 - If the software prompt does not find flight control, or the communication interface initialization fails, please install the driver and restart the computer.
 - If you are still prompted, please replace the cable and try again
-

Start Installation

It is necessary to install and set parameters properly according to the requirements, otherwise, it may not be able to fly or even cause serious safety accidents.

Installation Steps :1、Install main controller and GPS; 2、Connection; 3、Set transmitter; 4、Adjust software

● Install flight controller system

Install main controller

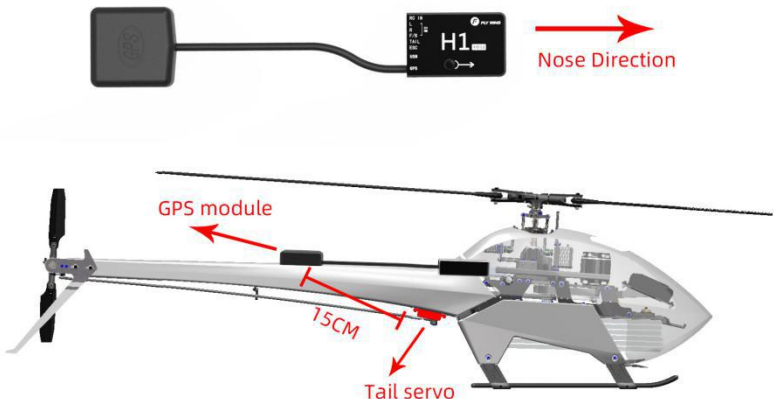
The main controller is upwards and parallels the fuselage. The LED mounting mark is pointed to the nose direction, and the centre position is close to the centre of gravity of the aircraft as far as possible, and then fixed to the fuselage with a double-sided adhesive.

● Install GPS Module

The GPS module is horizontally parallel to the fuselage, the GPS outlet direction points to the head direction, and then it is fixed to the fixed seat with double-sided adhesive tape, and the fixed seat is fixed on the tailpipe with double-sided adhesive tape and tie. After installation, make sure that the GPS module is level with the aircraft fuselage, the GPS is fixed firmly, and the outgoing line is level with the aircraft nose. GPS should be installed at least 15cm away from magnetic materials (including but not limited to the power cord, steering gear, motor, magnet, horn, etc.), otherwise, it will interfere with GPS internal compass.

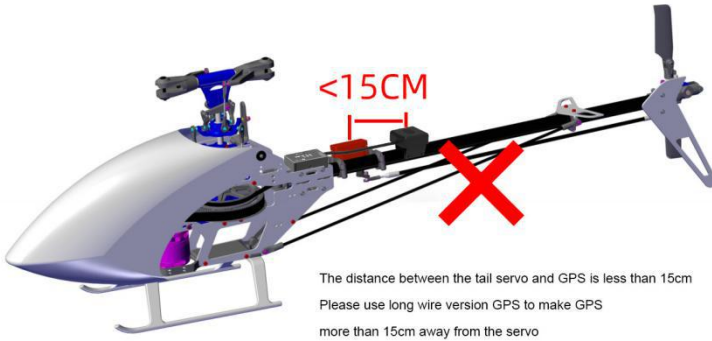
● GPS application requirements:

1. Keep the side of the GPS mark upward and the arrow pointing to the nose of the aircraft, otherwise it will not fly normally.
2. Please try to keep no tall buildings and trees around
3. 3. Compass is a magnetic sensitive equipment, which should be far away from strong magnetic field, strong electric field and strong electromagnetic field (wire). If compass interference or abnormal course control occurs near some objects, please stay away as soon as possible
4. In order to avoid the interference to the compass in the process of operation, it is necessary to select the appropriate GPS installation position to ensure that the warning of compass interference will not appear when any equipment on the aircraft is in the maxi load operation, and the phenomenon of circling will not appear in the process of flight.



GPS keep distance from servo at least 15cm.

Please use long wire GPS module, if the tail servo on the tail tube of helicopter such as SAB580.



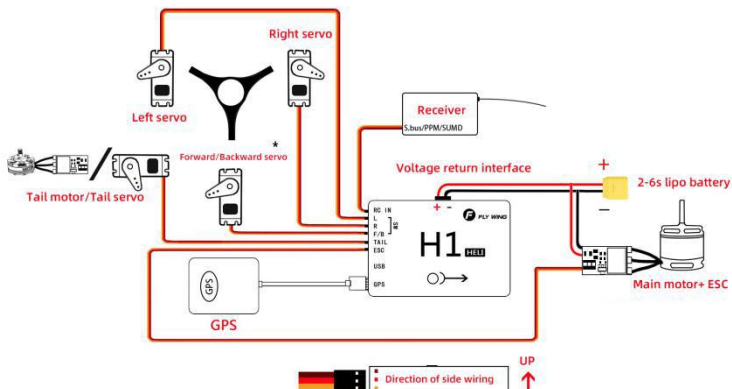
- Face up, never upside down
- If you need to use in severe cold conditions, Please do a good job of heat preservation.
- It is recommended to install it close to the place with small vibration



- It is recommended to install it close to the position with small vibration and parallel to the fuselage. The vibration near the center of gravity is small
- The flight control system is not waterproof, oil proof and dust-proof.
- Check regularly to ensure that the double-sided tape is firmly installed.

Flight control system connection

Follow the instructions below to complete the connection. If there is no BEC, please connect the external BEC and the signal line in parallel (y line can be used) to the flight control electrical control port, and do not connect the BEC to the receiver. If the low voltage return function is not required, the voltage return line on the side of the flight control can be disconnected. If it is a 12s battery helicopter, the voltage detection function is not available.



HR3 Swashplate connect backward servo, H3 connect forward servo



The metal shell of H1 is designed for grounding. Please do not connect the power supply to H1 or the carbon plate in contact with H1.

Aircraft equipment connection:

When using H1, it is necessary to connect the receiver, ESC, battery and other related equipment, and set their parameters in the software, otherwise it may not be able to fly or even lead to serious safety accidents. A helicopter with a tail servo, **don't connect the servo. Select broadband and narrowband in the software before connecting the servo** (When selecting a standard model, please check whether the configuration table is consistent with your own hardware, and then connect the tail servo after confirmation)

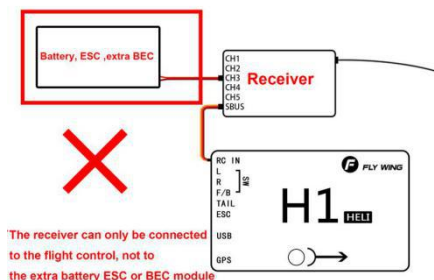
Receiver connection:

Different types of receivers have different connection interfaces, please connect accordingly.

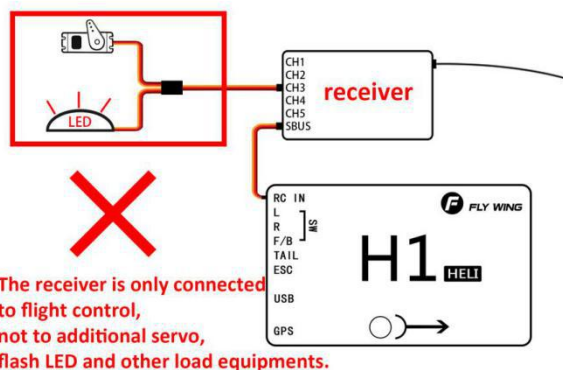
After successful connection, the main controller will automatically recognize the signal and display the rocker information on the software. The power supply of the receiver is directly used by the receiver after stabilized by the flight control. **Do not supply additional power to the receiver or connect any additional electrical equipment, otherwise the internal voltage stabilizing system of flight control will be burned.**

Common wrong connection:

1. The receiver shall not be connected with any other battery ESC or extra BEC module, capacitor and other equipment



2. No load equipment can be connected to the receiver, including but not limited to: servo, graphic transmission, flash LED light. If you need the transmitter to control the load equipment, please only connect the signal line to the receiver and supply power to the equipment separately (it is not allowed to directly or indirectly connect the power supply to the receiver, refer to error).



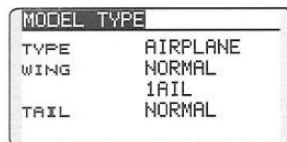
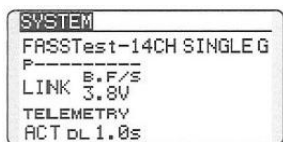
Transmitter settings

Transmitter Requirement:

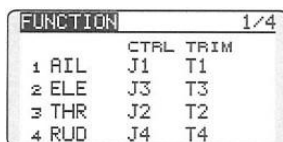
1. The transmitter must support SBus mode. It has at least 9 channels and own Failed-Safe function. And you can set the out of control protection output of all channels by yourself. Otherwise, the out of control protection function cannot be realized.
2. The working mode of your transmitter should be Airplane.
3. All channels of the transmitter should work independently, and no need to set any mixed control, including but not limited to "pitch curve related to helicopter, throttle curve, and linkage stop switch built in the transmitter".
4. You need to use 5-channel three section switch as control mode switch, 7-channel two section switch to control motor stop and start, and 8-channel three section switch as semi autonomous flight switch. If you need to fly backward with one button, you need to set 9 channels as a 2-stage switch.

Take Futaba 14sg as an example:

1. Set 7008sb receiver to mode B (s.bus 1) and connect flight control with s.bus 1 interface of receiver.
2. Bind transmitter with receiver, build new model, select AIRPLANE, no mix.



3. LINKAGE MENU---FUNCTION Set 5 channels of transmitter as 3-stage switch (SA), Return of corresponding aircraft ---GPS mode---3D manual mode; 7 channels are set as 2-stage switch (SF), Corresponding motor disarm and arm; The 8-channel is set as a 3-stage switch (SB), corresponding to the semi-automatic flight closing - one key to 0 figure fly - 8-figure fly; 9 channels set to 2-stage switch (SC), Corresponding to one key normal flight and invert flight.




4. Enter fail safe mode, Turn on the 5-channel f / s. Set the 5-channel mode switch (SA) to the return gear, Press and hold the "RTN" key at POS for 1 second. Then return to the main interface, Observe on software, turn off the transmitter in the GPS position. Will the software prompt you to lose the transmitter signal, or will the transmitter automatically jump to the RETURN, Channel 7 stays on the start position (if channel 7 is in the STOP position after the transmitter is turned off, please set channel 7 as out of control and stay on the start position according to the setting of channel 5).



Adjust software

Install new helicopter:

Please watch the "tutorial video", run parameter adjustment assistant, Complete the parameter setting according to the software guidelines. The specific process is as follows:

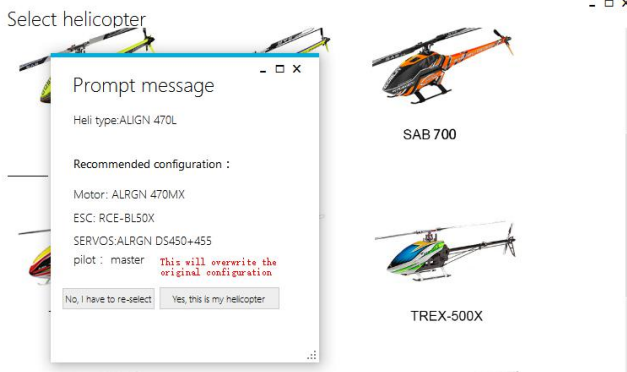
1. Ensure the power supply of flight control system is normal.
2. Connect H1 to the computer, set the transmitter correctly, bind and turn it on, and the mode is in 3D.
3. Run the parameter adjustment software. Choose the right COM port (not COM1), click  connect computer, until the Interface become Light up.

4. Click "install new machine" in the main interface. 

5. Select the corresponding model.

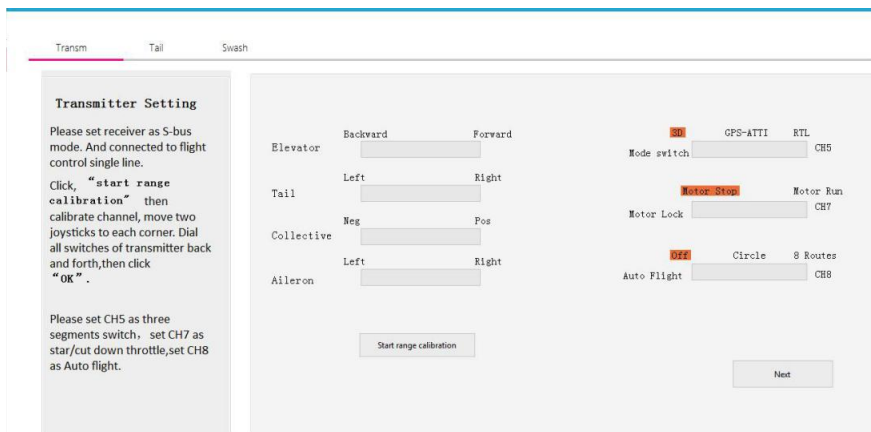


6. Confirm the model configuration.

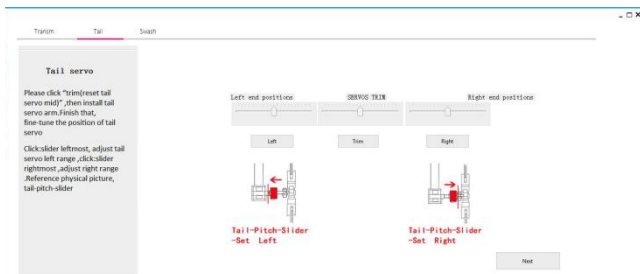


7. click "yes, this is my helicopter", the preset parameter information is written, the import is successful. If the configuration is different, please click "configuration is different" and go to step 11 to select general model installation.

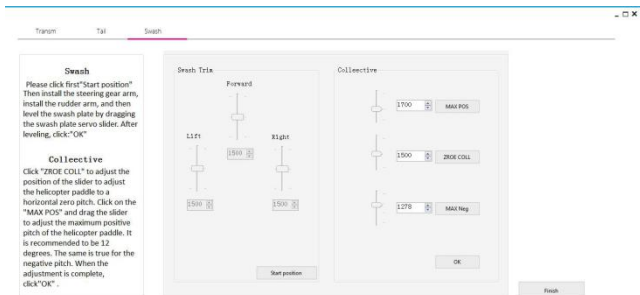
8.After importing parameters successfully,calibrate transmitter according to the prompts on the left ; If the software display is inconsistent with the direction of the transmitter (The transmitter is pushed forward , and the software progress bar is at the "back" end) , The corresponding channel is reversed in the menu of the transmitter (Refer to the remote control manual for details) , until all channels are correct.



9.Enter the tail servo installation option and follow the instructions on the left to determine the neutral position and stroke calibration of the tail servo.



10.Click "swash" , Adjust according to the prompts



11.If it is not the helicopter with this configuration, please select the Universal model top for installation; select the helicopter with the corresponding size (here, the length of a single rotor is used to distinguish the helicopter type.)

Select helicopter

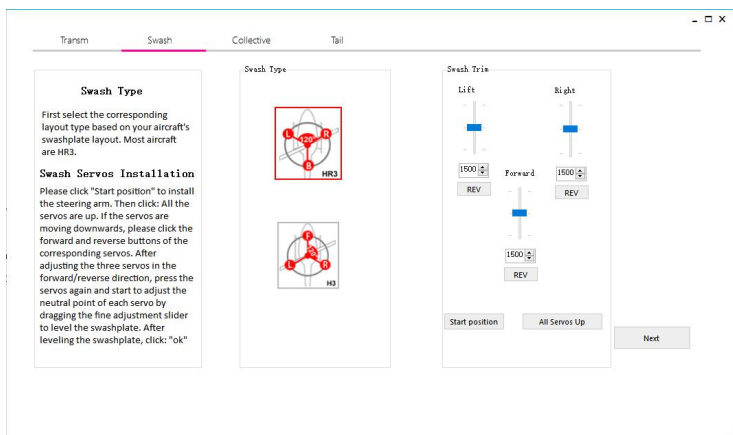
Universal model

450(325-380 mm)

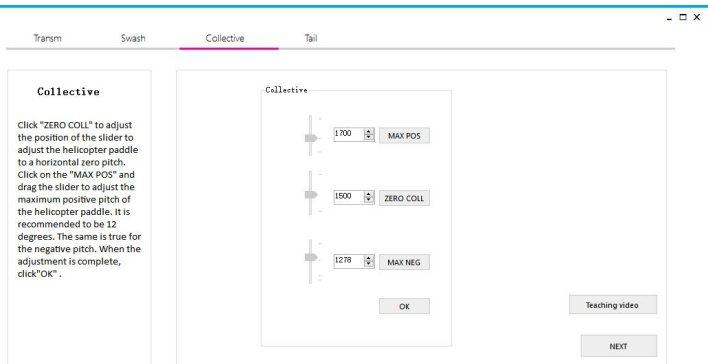
500(470-570mm)

700(690-810mm)

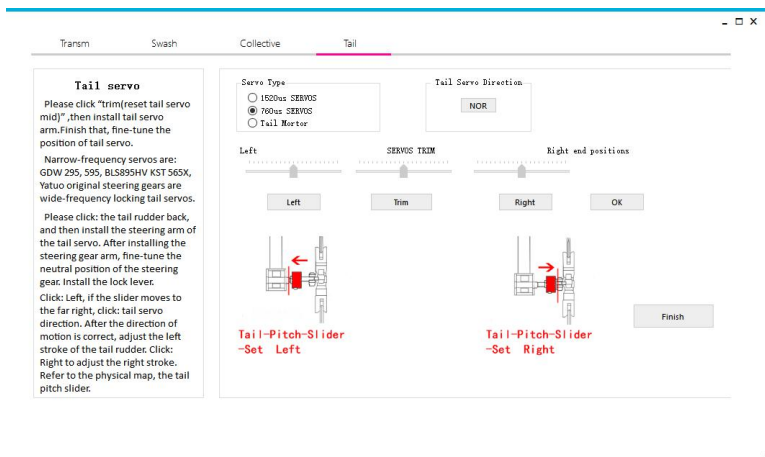
12.Click" swash " , first select the corresponding swash plate type according to the left prompt, then adjust the forward and reverse direction of the servo to ensure the correct direction of the steering gear. Finally, fine-tune the servo neutral point for swash plate leveling.



13.Click" Collective" Adjust the zero pitch according to the prompts,Then adjust the positive pitch 12 degrees and the negative pitch 12 degrees.

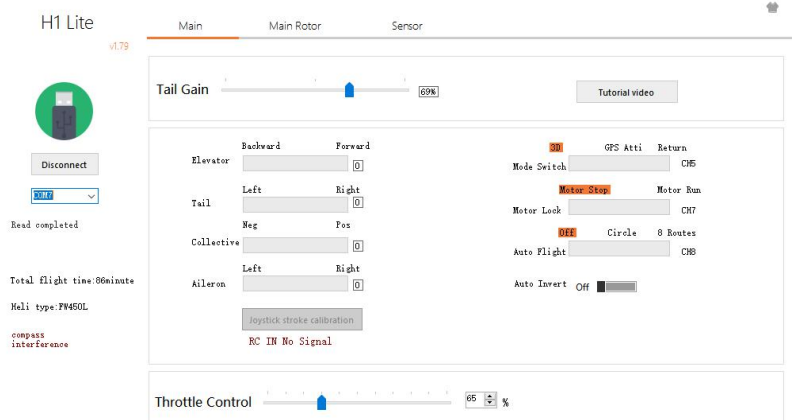


14. Click "Tail", follow the prompt to select the servo type first, then click the slider to the left, if the slider is to the right, click the tail servo output to reverse; then click the tail servo back, calibrate the neutral point, The far left of the slider and the far right of the slider, drag the slider until the slider just touches the maximum limit of the tail axis.



Adjustment

1.Main interface

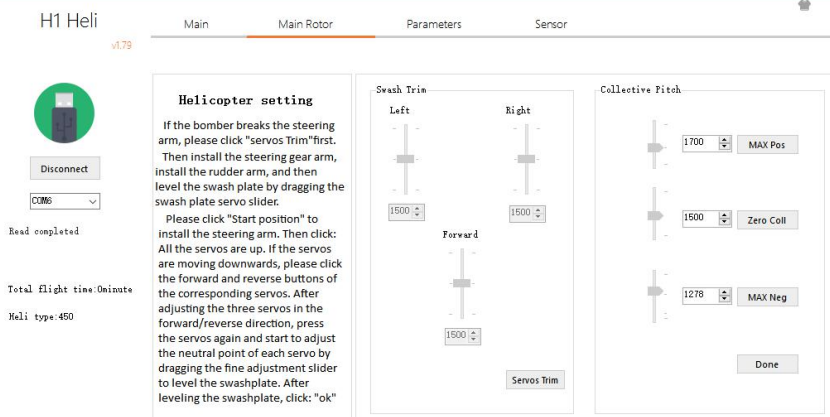


The error message can be displayed below the main interface connection, When the aircraft is abnormal, it can not be powered off, Connect the computer to view the error message and correct it (See the common errors and solutions section for solutions). After installing the new helicopter, the tail gain and throttle value can be set in the main interface

2.Main rotor adjustment

After installing the new helicopter, the transmitter mode is in 3D.

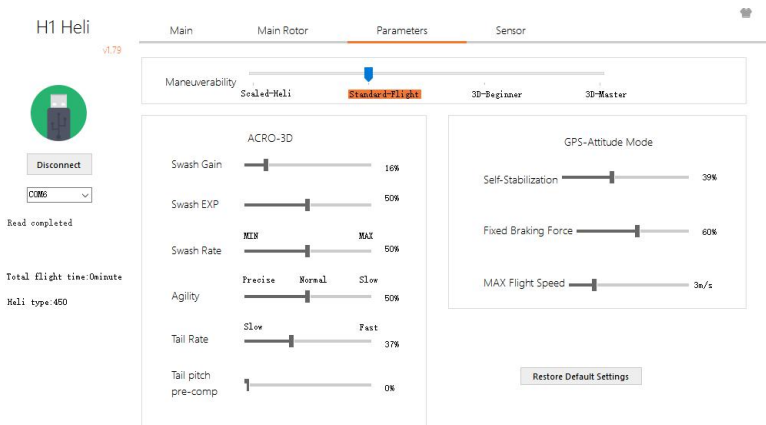
You can reset the swash plate and pitch on this page. Click the servo to return to the center, The current servo angle can be adjusted by three progress bars. Until the swash plate is level (Vertical to the front and side of the main shaft). Then click the adjustment to complete the adjustment of the positive and negative pitch in pitch adjustment. The recommended setting is ± 12 degrees.



Parameters

Adjust the sensitivity according to the helicopter state. The default standard flight is recommended to meet the needs of most helicopter. Clear the default value of aircraft parameters and click the button to clear all flight control data and restore the default settings (you don't need to click on it except in special circumstances).

1. If the tail swings quickly from left to right, the tail gain can be reduced. If the tail swings slowly, the swash gain can be increased or the tail gain can be increased.
2. If the helicopter shakes violently, and there is no mechanical problem, Please reduce the sensitivity of the swash plate properly, If the helicopter shakes left and right, increase the speed or sensitivity of the swash plate.
3. The curve of the swash plate, the rolling speed and the spin speed are all controlled by the handle, Everyone's situation is still adjusted, the default applies to most player feel, Novice recommended default.
4. The tail lock compensation is in 3D mode, When the pitch is changed quickly, the advance compensation of the lock tail is enhanced, which does not need to be changed for non special needs.



3. Compass calibrate

If the compass is used for the first time, it must be calibrated, otherwise the system may not work normally, thus affecting flight safety. Compass is easy to be disturbed by strong electric field, strong magnetic field and strong electromagnetic field, which will lead to compass abnormality and even flight accidents. Frequent calibration can make the compass work in the best condition.

Calibration notes:

1. Do not calibrate in the area of strong magnetic field and electric field or near large metal, such as magnetite, parking lot, building area with underground steel bar, or indoor place with sound, etc.
2. Do not carry ferromagnetic materials, such as keys, watches, etc. with you during calibration.
3. If the compass is calibrated indoors, remember to re-calibrate it when flying outdoors to prevent the compass from abnormal during the flight due to the difference of magnetic field between the two areas.
4. If the compass may be affected by steel, please move the aircraft to another location.

H1 Heli Main Motor Parameters **Sensor**

v1.79


Compass considerations

Every time you install a new machine, or change the flight control installation position, you need to calibrate the compass, otherwise you will not be able to unlock or cause crash. The steering gear and motor on the helicopter are all strong magnetic equipment, which will interfere with the flight control compass. Please install the flight control as far as possible from these magnetic equipment. Pay special attention to keep away from the high current conductor, and the large current conductor will also generate magnetic interference. Once the installation and calibration have been successfully completed, the GPS module position must not be moved at will, otherwise it will need to be recalibrated.

Calibration method

After the flight control and GPS module are installed firmly, click to start calibration. Pay attention to each side of the helicopter, as shown in the instructional video. After the progress is completed, the calibration will be prompted. If the calibration fails at all times, please be aware of the magnetic interference on the helicopter or the indoor environment in which you are located.


Magnetometer Calibration

External Magnetometer (GPS) ☐ 

Internal Magnetometer (H1) ☐ ☒ Learning mode

GPS star 0

Voltage: The battery is not detected

Low Battery Protection On 

Current Voltage

Tutorial

Disconnect

COMB

Lead completed

Total flight time: 0 minute

Battery type: 450

Function

Flight Function

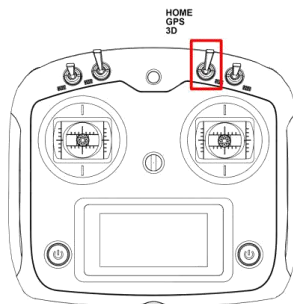
Flight Mode:

Flying designs a variety of control modes for users , Using different control modes, the flight performance of the aircraft will be different , You can set the transmitter 5-channel switch as the flight mode switch through the parameter adjustment software.

GPS mode: The aircraft uses dual-mode GPS satellite signal It can locate and return automatically at any flight altitude.

3D mode: Don't use GPS module and air pressure altimetry system For positioning, it only provides attitude maintenance, no self stabilization, and can be used in 3D if you are flying, you can't return. If you use this mode, the speed will automatically change Increase to ensure flight requirements.

Home mode: Same as GPS mode, dual mode is used GPS module and air pressure setting are used to realize the return function. In this mode, the aircraft will rise appropriately, and then spin to the right side to return. Over the return point, spin to tail, slow and automatic landing, touchdown. After the automatic stop, turn off the motor.



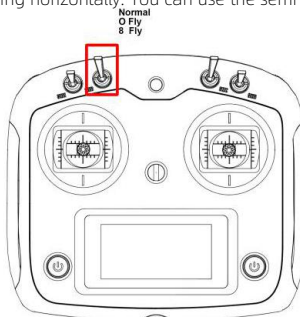
Auto flight

Flying has designed an auxiliary route training mode for users , Using this mode, the aircraft will automatically fly the route. At this time, the transmitter can intervene to achieve the purpose of practice. This function needs to set the 8-channel switch of transmitter as the automatic route switch.

About auto flight:

In this mode, the aircraft will not start auto return , pay attention to the battery voltage , The function can be turned off midway, and the helicopter will automatically switch to GPS mode. The center radius of automatic cruise is 4m, and it can't be adjusted. Pay attention to use it in open area. When you start the auto cruise, you can control the flight altitude and the course freely. After you operate the stick of the transmitter, the flight control will give the direction control right to the user, but the helicopter will keep moving horizontally. You can use the semi-automatic auxiliary cruise function to do course control training.

- Route closing mode: The helicopter does not carry out automatic route. It needs to be in this position before taking off.
- Circle route mode: Using dual-mode GPS and air pressure altimetry, the helicopter can make the nose of the helicopter move towards the center of the circle in horizontal space.
- 8-figure route mode: Use dual-mode GPS and air pressure altimetry to make the aircraft conduct ∞ figure automatic route.



Home Mode

The process that the helicopter automatically returns to the last recorded return point is called return. There are three different ways to return:

Out of control return:

When the GPS signal is good, the Compass works normally, and the return point is successfully recorded (the point of each helicopter unlocking), If the transmitter signal is interrupted for more than 3 seconds, the flight control system will control the helicopter to fly back to the nearest recorded return point at an altitude of 15 meters. If the radio signal returns to normal during the return flight, the return flight will continue, but the user can control the flight through the transmitter and cancel the return flight. This function needs to set 5-channel out of control protection in the transmitter to jump to the HOME



- When the LED light flashes slowly or the GPS doesn't work, it can't HOME.
- In the process of returning, the helicopter can not avoid obstacles, so it is necessary to check the surrounding environment before taking off to avoid more than 15 meters of objects.
- In the process of returning, when the helicopter rises to 15m and returns to the landing point, the user can fine tune the landing point of the helicopter through the transmitter.

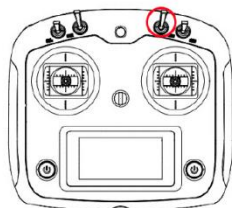
One key to return:

The one button return mode can be started through the transmitter mode switch (5 channels), and the return process is the same as the runaway return.

When using the transmitter receiving system, the user needs to assign a switch on the transmitter as the mode switch key (5 channels), and set it in the parameter adjustment software.

Low voltage return:

- Flight control realizes low voltage return by judging battery voltage.
- When the voltage is too low, the motor may not be able to output enough power. At this time, the user should land the helicopter as soon as possible, otherwise the helicopter will fall directly, causing damage to the helicopter or other hazards. In order to prevent unnecessary danger caused by insufficient battery voltage, the flight control system will judge whether the current voltage is sufficient. (currently supports 3S, 4S, 6S intelligent judgment)
- If the current voltage is insufficient, the helicopter will be forced to return. Please ensure that the current distance of the aircraft is in line with the range of the remaining power set by the helicopter. When it touches the low battery to return, the helicopter will actively rise to 15m above the ground and turn around to fly back to the take-off point. At this time, the transmitter can not operate the aircraft. In the second half of the descent process, the remote control (if the signal of the remote control is normal) can control the aircraft to fine tune to the appropriate landing point.
- If you need to stop the low-voltage return, please switch the mode HOME mode, and then switch to the GPS mode. You can manually control the helicopter to manually turn off the motor after landing. During this period, the aircraft will not return with low-power until the aircraft is powered off.



Dial stick
up to HOME



HOME

Dial stick
to GPS



GPS

*One-key acrobatic

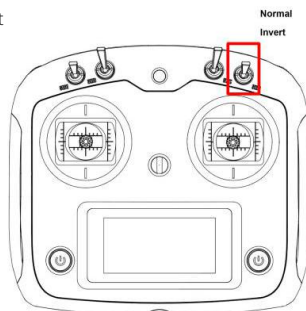
Flying has designed one key switch Normal /Invert mode for users. In inverted mode, GPS can still fly at fixed point and fixed altitude, providing users with a good acrobatic training platform.

- When using this function, the aircraft will switch between forward flight and backward flight according to a two-stage switch of the transmitter.

When the aircraft is in forward flight, the switch will switch to backward flight, and the helicopter will automatically roll to backward flight, and hover

- The HOME function will be invalid on invert mode

Please note the battery voltage. This function can be used only when the 9-channel switch of the transmitter is set as one key fly back switch by the parameter adjustment software, and the height is more than 10 meters above the ground



- There are two modes :

simple inverted mode and expert inverted mode.

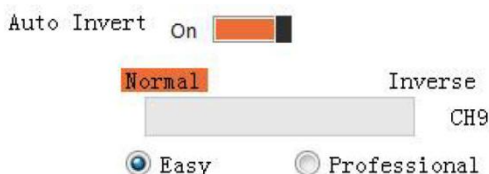
- simple inverted mode:

This mode is suitable for novice , and can quickly experience the fun of reverse flight. It needs to be set in the parameter adjustment software. When the reverse flight switch is turned on, the helicopter will automatically roll to inverted flight and hover at fixed point by GPS. At this time, the user's operation mode is the same as that of forward flight. (if the throttle stick is pushed upward, the helicopter will climb upward. If the elevator stick is pushed forward, the helicopter will move towards the nose).

- Expert inverted mode

This mode is suitable for 3D stunt training operation, and can be used for basic hovering operation of 3D stunt assisted by GPS. It needs to be set in the parameter adjustment software. When the reverse flight switch is turned on, the helicopter will automatically roll to inverted flight and hover at fixed point by GPS. At this time, the operation mode of the helicopter is the same as that of 3D stunt.

(push the throttle stick upward, the helicopter will descend, and if the elevator stick move forward, and the helicopter will move towards the tail.)



This function is a test function. Due to the different performance and power of each helicopter, the rolling effect will be slightly different. By default in the software ,if the height of the helicopter is less than 10 meters above the ground, this function cannot be turned on.



- In GPS mode, if the satellite signal is not good, the plane will not be able to take off, please move it to the open space.
- Manual mode, if the satellite is not good enough to take off, but it can not guarantee the accuracy of the return point. If the GPS signal is still bad after take-off, the GPS mode will be invalid and remain in the current mode.

Flight controller status indicator description

● ———	Green solid	GPS status is good, can take off
● . . .	Green flash	GPS status has been locked, start switch can start motor
● . . .	Yellow flash	Helicopter is getting positioning
● . . .	Red flash slowly	Compass calibration required
●	Red flash quickly	Receiver has no signal or the sensor is seriously disturbed
● ———	Blue solid	3D status is good, can take off
● . . .	Blue flash	3D status has been locked, start switch can start motor
● ———	Purple solid	Return mode or automatic flight mode
● ●	Green,yellow flash	Low battery power in GPS mode
● ●	Blue, yellow flash	Low battery power in 3D mode

How to flight

How to unlock:

1、Turn the transmitter motor run switch to stop position, dial mode switch to GPS , and the H1 light is flashing yellow.



3、After waiting for a few minutes, the light changes from flashing yellow to solid green . The helicopter was positioned successfully.



2、Move the helicopter to the outdoor open environment without trees and buildings, and power on to wait for the GPS satellite signal search.



4、Unlock as shown in the figure and hold for about 5 seconds until the H1 flight control unit flashes green light.



5、While the green light is flashing, turn the stop switch to run position , and the helicopter motor will start the light is solid green, repeat the unlock procedure again.

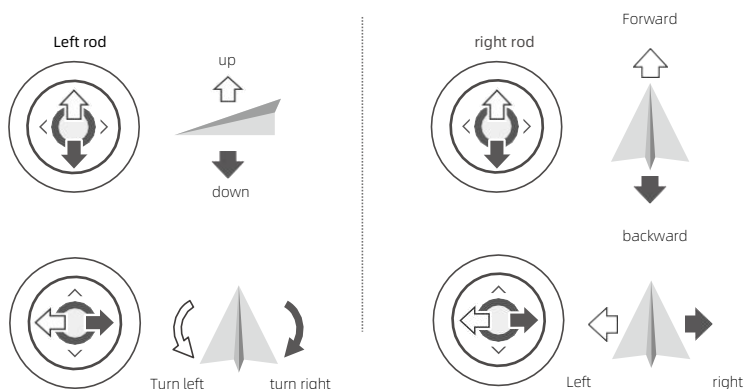


6、When the helicopter rotor head speed is stable, push the throttle stick upwards to take off and raise the helicopter above ground , then release the rod helicopter hover .



Attitude control:

Take Mode 2 (left throttle) as sample:



Flight restrictions and no fly zones

According to the regulations of the International Civil Aviation Organization (ICAO) and national air traffic control on airspace control and the regulations on the management of UAVs, UAVs must fly in the specified airspace. For the sake of flight safety, please consciously abide by local laws and regulations to use this product more safely and legally. In the state of safe flight (GPS), no fly zone and altitude and distance restrictions affect flight together. The airspace that the aircraft can fly is the intersection of all restricted airspace. When the aircraft can fly safely (without GPS), it is only limited by altitude, and the maximum altitude of actual flight will not exceed 120 meters.

FAQs

Q: Why is the flight control red light flashing and the software prompt compass abnormal after connecting the line and inserting the computer for adjusting?

A : Because the compass is not calibrated or the calibration is unsuccessful, the flight control red light flashes slowly. Please move the speaker and other magnetic objects out of the room, and re-calibrate the compass. After the calibration, disconnect the battery and USB cable, and dial to 3D to display blue.

Q : Software prompt 3 channel throttle value is too low, how to do?

A : This is caused by the large range of 3 channels of the transmitter. You can enter the transmitter settings page to reduce the maximum and minimum value of 1-4 channels and reduce the range. After adjusting the range of the transmitter, the rocker needs to be re-calibrated.

Q : Software prompt GPS connection abnormal, how to do?

A : Check whether the GPS plug is loose, and whether the wire comes off or damaged from the buckle. If it is damaged, replace the wire.

Q : When adjusting, what to do without negative pitch?

A : Please set the mode switch of the transmitter to the 3D and re-adjust the positive and negative screw pitch. If necessary, remove the servo arm, click zero pitch, re-install the servo arm, adjust the pitch lever to make the aircraft pitch zero, and then adjust the positive and negative pitch.

Q : Why doesn't the swash plate servo move? Only the tail servo moves?

A : This kind of flight control is in GPS mode or automatic flight mode (controlled by 5-channel and 8-channel switch), and the swash plate servo does not move. Only when the 5-channel mode switch is switched to 3D mode, the swash plate steering gear will move.

Q : Why is the flight control not corrected after the correct adjusting?

A : The swash plate is completely locked before unlocking take-off. As long as the correct adjustment is carried out according to the specified steps, the flight control will be automatically correct.

Q : I removed the blades and run the helicopter to test , why can't do that?

A : The flight control has take-off detection (with propeller detection). It is invalid to run it on the table without the blade. Either the servo does not move or it moves randomly.

Q : Should I set the stop switch on my transmitter?

A : No need, the flight controller thinks that your 3 channels are pitch control and 7 channels are motor control. If you cut down the 3 channels, the collective pitch becomes -12 degrees and the lock is completely locked. Unable to fly, or directly hit the ground (the flight controller does not read the 6 channel value, this is invalid).

Q : Why can't I run the helicopter? Turn the stop switch, the motor does not turn?

A : Because this is a flight controller, you need to unlock the outer eight before you can dial the motor start switch (before unlocking, you must ensure that the motor switch is in the stop position to unlock. After the unlock flashes, dial the run switch and the motor will turn) .

Parameter	H1 user manual
Helicopter type	HR3 Flybarless Swashplate H3 Flybarless Swashplate
Battery type	3S, 4S, 6S Lipo battery, 12S do not support low voltage return
Receiver type	5.bus / i.bus / w.bus PPM SUMD HD 08
Assistant operating system requirements	Win7, Win8, Win10 (32 or 64 bits)
Rated system power	2W
Rated peak power	4 W
Voltage input range	6.0-8.4V, ESC BEC supply power (can't use 5V BEC)
Size	FC: 31.4mm × 48.5mm × 18.5 mm GPS: 39 mm × 46 mm × 15mm
Working temperature	-10° C to 55° C
Weight	FC: 38.7g GPS: 28.1 g
Hover accuracy (GPS mode)	Vertical :± 0.5 m, horizontal:± 1.5 m
Maximum wind resistance	10 m/s
Maximum yaw rate	3D mode about 300° /s
Maximum tilt angle	45° (default 35°)
Maximum rising speed	4m/s
Maximum falling speed	4m/s

Please watch more video by scanning QR code:



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Please check the latest version of the User Manual on the FlyWing official website.
<http://www.FlyWingRC.com>