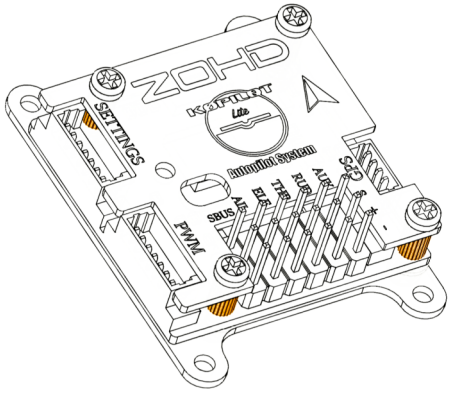
ZOHD

KOPILOT Lite

Autopilot System



FULL SCALE PROTECTION FOR THE RC PILOT:

Warbirds, EDF's, Twins, Gliders, you name it; KOPILOT Lite will be there when things get ugly, bringing your plane HOME!

User Manual: V1.0

The ZOHD Kopilot Lite is a miniaturized, lightweight flight controller designed to give peace of mind to any RC pilot. Supports the following features:

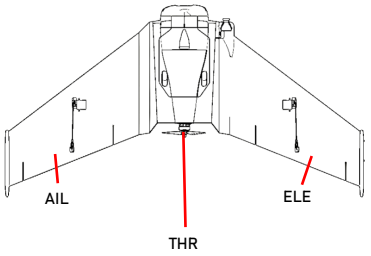
- One-click Return to Home (RTH), Fence Mode (RAD) and Stabilization Mode.
- Can be implemented on any type of fixed-wing RC plane, from conventional T-tail planes and Flying Wings / Delta layouts to V-tail.
- Extremely light weight (main unit weights 12 grams and the GPS module weights 8 grams), can be installed without affecting the flying characteristics of your plane in a non-intrusive way.

Package Contents

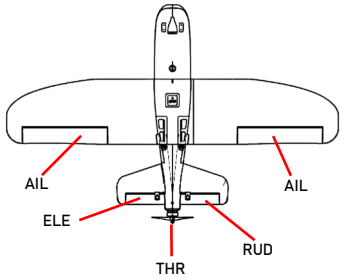
Kopilot main board	1 pc
Mounting support	1 pc
GPS	1 pc
Adjustment board	1 pc
Double side tape	1 pc
Screw driver	1pc

NOTE: Don't forget to check our NEW All-In-One camera, the VC400 (400mW in 5.8G). Matched with KOPILOT Lite, will give you a full FPV experience!

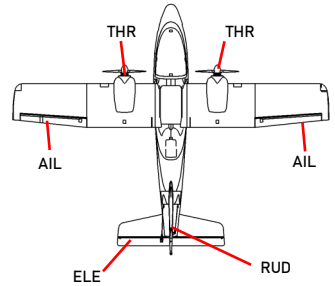
Flying Wing



V-Tail

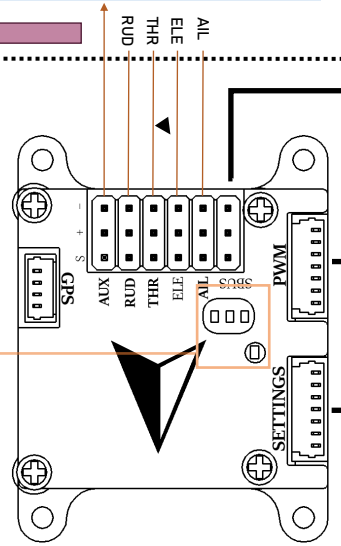


T-Tail



Connecting the airplane to Kopilot

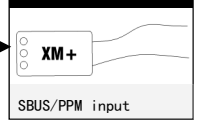
AUX: This will be CH6 when you're using SBUS mode, for example, you can use a pan servo.



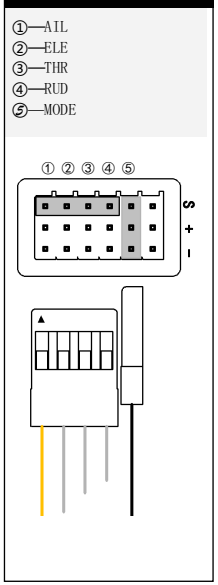
Connecting the radio receiver to Kopilot

SBUS and PWM can be used but not both at the same time.

SBUS connection



PWM connection



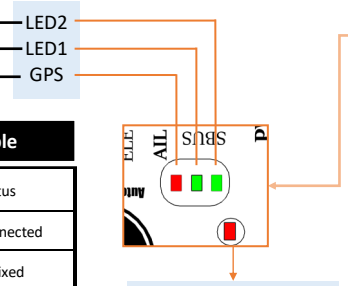
⚠ Be sure to have no mixes on your radio and set a 3-way switch on channel 5 which will be used for changing the flight mode.

Adjustment Board
Check the adjustment details next

Installation : Set the arrow aiming to the nose of the plane

Setup

The main LED section, will show the current flight mode and also the type of plane selected. When the plane type needs to be adjusted, first use the remote control to switch the flying mode until the LED 1 or LED 2 are lit, at this time long press the SET button on the adjustment board to switch the plane type.



LED Configuration Reference

LED1	LED2	Selected type of plane
Constant on	Constant off	V-Tail
Constant off	Constant on	T-Tail
Constant on	Constant on	Flying Wing / Delta Wing

GPS LED Status Table

GPS	GPS Status
Constant off	GPS not connected
Blink	GPS not fixed
Constant on	GPS fixed

Flight Mode Settings

The ZOHD Kopilot Lite supports 5 different flight modes. The flight mode is determined by the mode switch, GPS status, RTH / RAD knob together, regarding knob status, please check the "Fence mode (RAD) setting and return to home (RTH) setting" on the right side. After configure the radio mode switch, you can configure the preferred flight mode according to the table below.

LED	GPS status	RTH/RAD Knob position	mode	Mode description
Constant on			Balance mode	Radio will control the plane roll and pitch, also throttle, when the joystick go back to neutral, plane will keep level flying
Constant off			Manual mode	In this mode the Kopilot is just a mixer, it doesn't take part in the control, just like normal manual flying
Blink	Not positioned or not connected		Keep altitude	Self maintains altitude, throttle controlled by manual, plane will automatically climb if it is lower than 35m, when joystick go back to neutral, plane will keep balance flying and keep the current height
Blink	already positioned	RTH position	Return to home	One click return home, the plane will return home automatically when it was out of RTH range, this mode can be used for assist hand-launch, you can switch to this mode on ground, pull the throttle to 80%-100%, in this moment the throttle is not activated, when the plane flying speed is >4m/s, the throttle will be activated, you can hand-launch the plane and it will automatically climb to 35m height and auto-hovering in a circle
Blink	already positioned	RAD position	Fence mode	This E-Fence mode is suitable for beginners, the plane will return home automatically when it reach the E-fence, plane will climb automatically when it's lower than the E-fence height

Kopilot Neutral Calibration

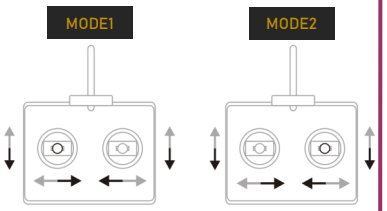
In order to maintain a leveled attitude during flight, a stabilized calibration is required, the calibration steps are as follows:

1) Put your plane level, power the plane ;

2) Wait for Kopilot to complete the start-up, set flight mode to the stabilized mode ;

3) Move the sticks of the radio to match the right figure state, waiting for 5s, until the mode indicators 1 and 2 and GPS indicators flash at the same time;

4) Wait until the flashing stops, re-power the plane, calibration completed ;



Radio Calibration

Please switch the flight mode to balance mode, throttle at the lowest position, the other joystick on neutral position, then long press the SET button on the tuning board for more than 3 seconds, do not move the radio and wait for few seconds, the aileron will move for two times, then the calibration finished.

⚠During the manual flight mode, the plane may need trim from the radio, this may cause the plane fly to one side during balance mode, so you need to re-do the Radio Calibration.

FAQ

Q: I connected the GPS, but the throttle only work on manual mode, it doesn't work on other flight mode.

A: GPS not fixed, please keep checking the GPS LED status, when it constant on, the throttle will be working.

PS: during RTH/RAD mode the throttle will be controlled by the Kopilot.

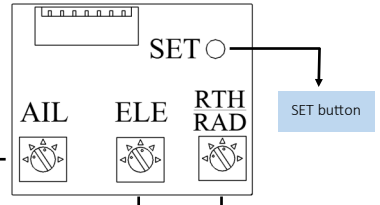
Q: I powered on the plane, after the Kopilot working, shortly the motor is working by itself (or the motor keep beeping), what is the reason?

A: The throttle range is not calibrated, please switch to manual mode, process the throttle range calibration according to the ESC manual.

Contact us:
info@sonicmodell.com
sales@sonicmodell.com

Customer service:
cs@sonicmodell.com

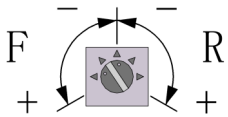
Control Surface Feedback Check And Sensitivity Adjustment



SET button

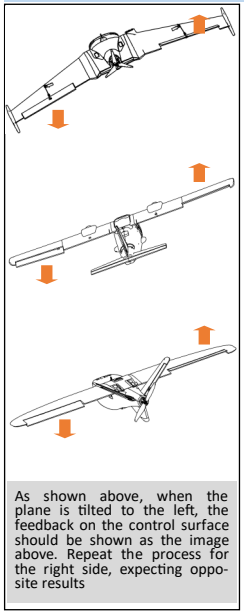
Aileron gain adjustment

Elevator gain adjustment

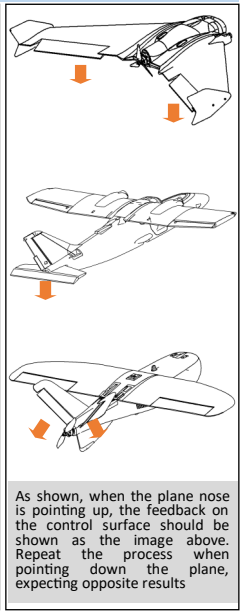


⚠Enter stabilizing mode using the 3-position switch until the mode light is constant on, in this status the Kopilot is in balance mode

The gain adjustment knob can adjust the amount of feedback on the control surface and feedback direction, when the knob is neutral (12 o'clock) will be no feedback, adjust the knob left or right-hand, then the feedback volume will increase, but the feedback direction is reversed. The amount of gain affects the stability of the plane, excessive gain may lead to continuous shaking during the flight and may lead to a crash, so use it with care.



As shown above, when the plane is tilted to the left, the feedback on the control surface should be shown as the image above. Repeat the process for the right side, expecting opposite results

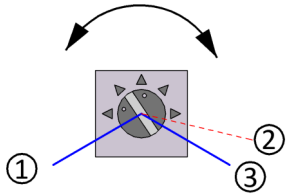


As shown, when the plane nose is pointing up, the feedback on the control surface should be shown as the image above. Repeat the process when pointing down the plane, expecting opposite results

Fence Mode (RAD) Setting And Return To Home (RTH) Setting

Fence/Home Mode Setting Knob

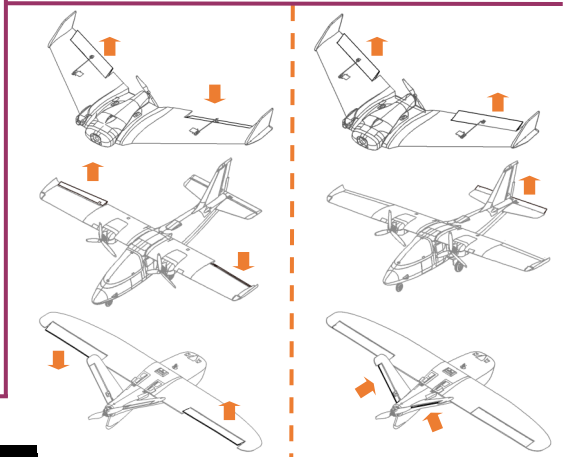
⚠The position of RAD/RTH knob determines whether to use RTH mode or fence mode and adjusts the radius of the fence mode.



- When the knob is between ① and ② position, the Fence Mode will be set.
- When the knob is between ② and ③ position, the RTH Mode will be set.

RTH Mode: Under this mode, the return circle fence is centered on the take-off point, 100 meters for the radius, the height is more than 35 meters range, if the plane is not in this range, it will return, enter the return circle with a radius of 100 meters around the take-off point and circling.

Fence Mode: under this mode, to take-off point as the center, radius 100-300 meters (according to the knob position, right-hand fence radius will be increased, left-handed will be reduced. If the altitude is more than 35 meters and hit the fence limit, the plane will return and circle above home point, then the pilot can decide what to do.



Remote Control And Control Surface Feedback

⚠Before flying, please check the control surfaces are reacting as they should to your radio inputs and when Kopilot is engaged, to the movement of the plane. Most crashes are caused for a poor setup and not putting attention to this step. Use the pictures on the right for reference