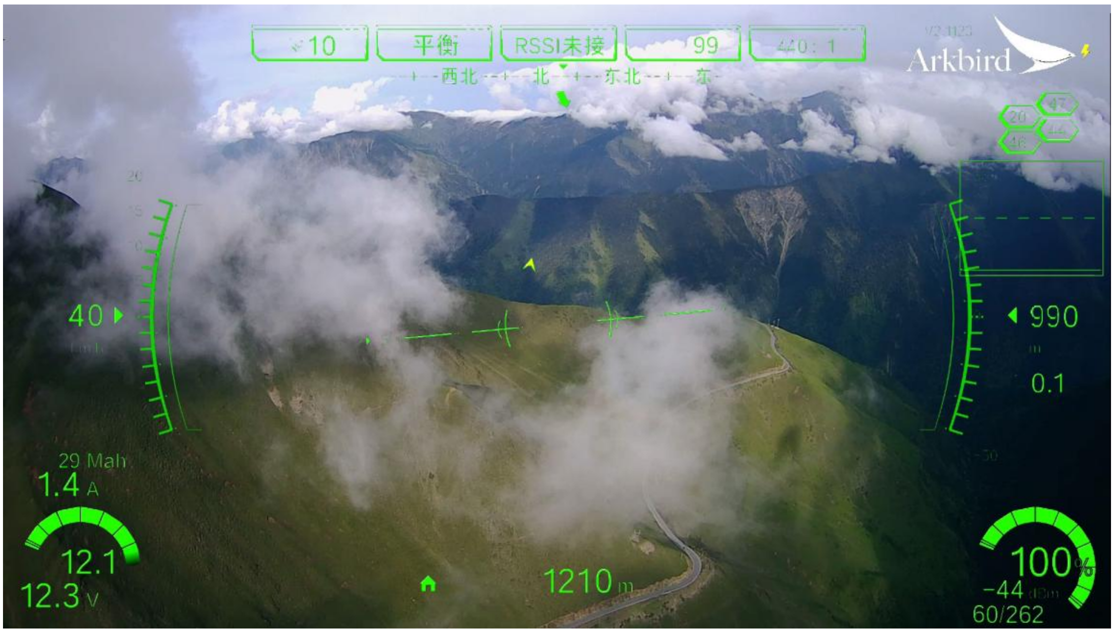


HDMI output! 1080P HD digital transmission, new animation interface, DVR recording!

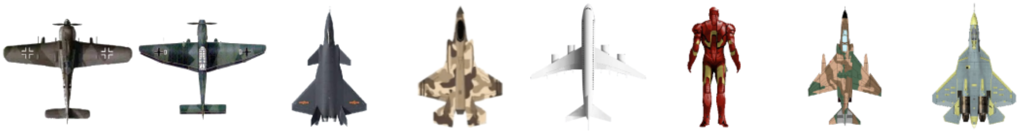
The ARKBIRD 3.0 Autopilot is based on a new architecture for HD video transmitter. it can control balance, return to home, waypoint and other modes with high precision.

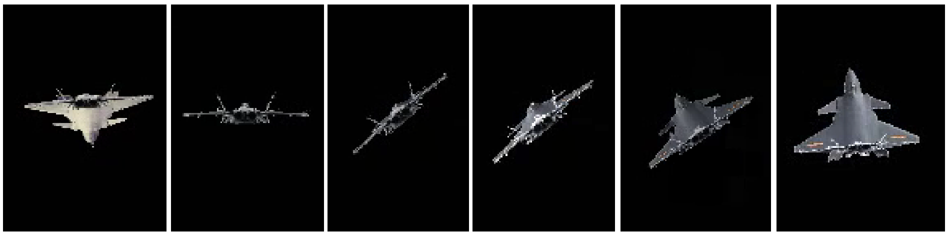
The super stabilizing system and Plug-and-Play design make you worry-free and effortless, and instantly enjoy the beauty of FPV.

(The product is continuously being upgraded, please follow the official website(www.arkbirdfpv.com), Facebook or join the QQ group 19329609 for the latest information and download the latest documents)

Arkbird 3.0 Set

1. HD video transmitter resolution: 1920x1080p 30fps; 1280x720p 60fps; 1296x972p 42fps; 1640x922p 40fps; ultra-low latency (typical 100ms, maximum 190ms)
2. Ultra-light weight (flight control + video transmitter + camera no more than 100g), air distance above 15km(TX is 650mW);
3. The receiver is equipped with DVR function, ground recording (.mp4 format); with ground station data recording, the flight track can be played back by computer.
4. HDMI output to the display, CSI or HDMI input (requires adapter module), supports mainstream cameras such as Gopro;
5. Easy adjustment, move the remote stick up and down to set every parameter, OSD interface style, including the following:
6. 256-color adjustable OSD interface; adjustable transparency;
7. Eight kinds of 3D three-dimensional aircraft (large, medium and small three sizes), you can make your favorite 3D aircraft style





Video manual: Arkbird3.0 flight control and high-definition digital image transmission method (6 minutes and 20 seconds from the Mavlink method)
https://www.bilibili.com/video/BV1BV411m7kR/

8. With high-precision digital airspeed meter interface; with airspeed/ground speed protection control;

9. Support Sbus or PPM input, 7-channel output, stabilized output with steering gear and pan/tilt;

10. Intelligent flap control, slow-release flaps, speed control flaps can be set, 1-7 channels (secondary-flaps) mixed control;

11. More mixing control methods include delta wing, V-tail mixing, dual-engine flying wings, dual-engine general layout (differential steering), butterfly brake mixing (1247 channel mixing)

12. Support Arkbird433 ten-channel + RSSI single wire transmission.

Arkbird 3.0 Main Functions

1. Function all in one broad, on broad IMU (Inertial measurement unit), OSD (On Screen Display), barometer Attitude sensor, 12V-5V regulation chip, “ESC + voltage regulation” dual power supply. Industrial reliable designed.

3. Can be installed flatwise or sidewise, suitable for small aircraft.

4. Intelligent PID controller. Easy to adjust.

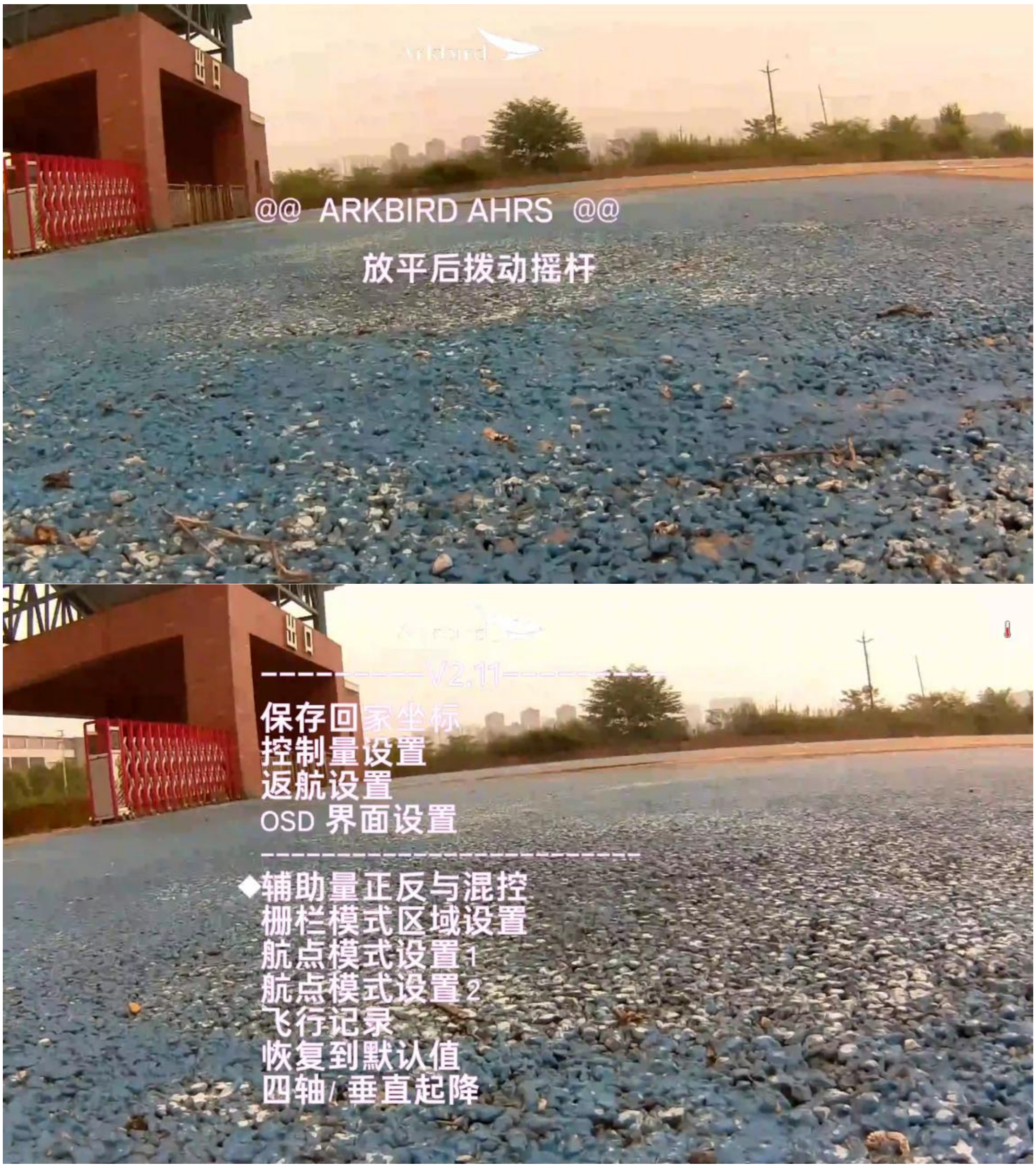
7. One button auto-leveling, stick back to center, plane can fly levelly.

8. One button RTH (return-to-home), lost radio signal return-home.

Extended 12 functions Meets all you need

Launch Assist	Run up with aircraft in hands, when the speed is higher than 5kmph, the throttle will start output and automatically control the take-off.
Fence mode	Out of rectangle area or safe height, it returns automatically, best helper for beginner
Waypoint Mode	It is able to trace the Way Point Set by menu.
Hover mode	Regard the hover position as balance position, nose up and keep steady
Cruise flight	Keep a straight & constant-height flight.
Flap control	Lower the flap surface automatically when speed is insufficient.
Butterfly brake	Mixed control Make the fly wing change its direction smoothly without aileron inclining
Flight Record	Records the time, voyage, data of power consumption and various maximum records of the flights.
Gyro Mode	It will do compensation for unintentional attitude changes to keep 3D angle status.
PTZ output	When the flight is tilting, channel 5&6 will give an opposite compensation, so as to level the camera.

Semi-Balance Mode	When the CH1 and CH2 of rocker is less than 50%, the plane is in Balance Mode. When the rocker is more than 50%, the plane is in Gyro Mode. (This function allows you making a turn with a large dip angle, even vertical rise and roll or other actions. After finished these actions, you only need to move the stick to the center to make the plane back.)
VTOL plane	A unique fpv fixed wing plane with vertical taken off and landing function


Arkbird
@@ ARKBIRD AHRS @@
放平后拨动摇杆
Arkbird
V2.11
保存回家坐标
控制量设置
返航设置
OSD 界面设置
◆辅助量正反与混控
栅栏模式区域设置
航点模式设置1
航点模式设置2
飞行记录
恢复到默认值
四轴/垂直起降

(Move controller' stick to adjust parameters)

Attention

All the details can be found in our instruction. Please read carefully before operating and pay close attention to the details and important parameters, in case you miss any important information which may leave hazards or cause damage.

Please install the propellers after debugging, and remember to open the radio controller before power on the plane, also please power off the plane before close the radio controller. Otherwise, the autopilot will out of control and returning, and 100% throttle output in condition of GPS incorrect positioning.

Reminding：

For the first installation, please power up after a wire check. Forcible satellite search interface will be entered (incontrollable) every time you power up. You can pop-up manually and adjust rudder angle directions in Manual Mode and auxiliary control in Balance Mode. A Neutral Point Check for the sensor is necessary. Also, you need a fail-safe protection for the receiver in case your autopilot loses control when returning home. Adjust the OSD voltage value before takeoff.

For the first flight, we suggest taking off with "Manual Mode". Check if the aircraft flies normally after switching to “Balance Mode” in a level flight. Then switch to "RTH Mode" and check the autopilot by using OSD parameter (see the last chapter in the instructions: Notes for Balance and RTH). Please keep an eye on the important parameters during the flight (Vibration value, Satellite number, Speed and Altitude).

When the maiden flight test is done, Balance Mode can be used freely for taking off the autopilot, or you can use extended functions such as waypoints, cruise flight or fence mode.

VTOL models haven’t manual mode. Please switch to balance mode to check if the remote control, the servos and motors movement are correct or not firstly. Then please switch to hover mode, after confirm all movement are correct, then unlock the plane to fly.

Working Principle & Suggested Setting Value

The working principle of the ARKBIRD Nano autopilot is: When you input 0-100% rudder quantity, it will be analyzed to lock 0-45 degree angle. Therefore, increasing the rudder angle of the remote control will only increase the maximum inclination angle of the rocker. Therefore, if you do not want to increase the flight inclination angle, you can set the rudder angle of the remote control to the default 100%.

The autopilot control value of CTL (roll, pitch, yaw) is corresponding to the installed mechanical angle of the aircraft, which determines the speed of the aircraft "reaching to the target angle". Because of most installed mechanical angles are designed during process of designing planes, usually using the second mounting hole, so you can use the default control value of CTL. (Models can use the default parameters include Pterosaur, Good Boy, Minth Cessna, Skywalker 1880, Skywalker 1900, Skywalker 2016, Skua, 757 series models and most like real models)

For some models, control value is designed quite large(for example Skywalker X5), or speed is designed very fast, so you need to reduce the control value (X5 control value is set to 45, 45, 90, Mini Talon can be set to 65, 65, 90, X-UAV Talon and Clouds set to 80, 80, 125, Skywalker X8 series set to 80, 80, 120, Most of the flying wings need to reduce the aileron lifting control value and increase the direction control value Yaw);

A few models rudder surface is narrow, which direction stability is weak and easy to be deflected by wind or returning in the shape of “S”. We suggest you to increase Yaw value properly. (For example, Skywalker 1680 recommends control values of 100, 100, 120, Skyhunter control values of 100, 100, 130; 1.4 m Surfers, Sirius, 2 m surfers MTD increased to 100, 100, 140 or even 100, 100, 170)

Attention:

When the aircraft reaches to the target angle under control of the autopilot, we cannot ensure the plane won't loss speed at high angle of attack flight. So we suggest you set up the RTH head-up angle to 25-30 degrees(Default angle is 35 degrees), such as Skyhunter, X8, Talon and mini Talon these heavy-loading planes, also please move the center of gravity forward, for avoiding the plane stalling and cannot come out from spiral status to level flight.

Adjusting autopilots' control value can only solve the rudder angle problem, but cannot cover the imbalance brought by mechanical problem, such as the uneven center of gravity and tension line. Therefore, please remember that you need to switch to Manual Mode to check if the plane is real "mechanical stabilization" or not.

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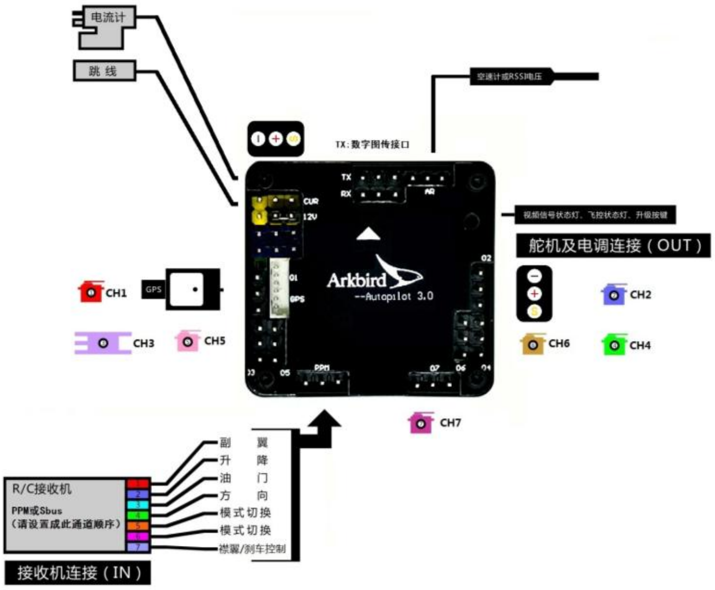
1 Wirings

Attention:

For each 3P wire, from left to right or from up to down the correct order is Ground, Power and Signal wire. The yellow port is high pressure port(for power supply, video power voltage, camera and video transmitter, please DON’T connect it to 5V power equipment).


电流计
跳 线
TX：数字图传接口
空速计或RSSI电压
TX
RX
AR
CUR
12V
视频信号状态灯、飞控状态灯、升级按键
舵机及电调连接（OUT）
O2
O1
GPS
Arkbird
--Autopilot 3.0
CH1
GPS
CH2
CH3
CH5
CH6
CH4
O5
PPM
O7
O6
O4
CH7
R/C接收机
PPM或Sbus
（请设置成此通道顺序）
1
2
3
4
5
6
7
副　翼
升　降
油　门
方　向
模式切换
模式切换
襟翼/刹车控制
接收机连接（IN）

Mixed control output

Arkbird 3.0 autopilot provides various intelligent mixed control

	Ordinary	Fly-Wing	V-Tail	Bi-motor	Bi-motor Fly-Wing	Butterfly Brake
CH 1	Aileron Y	Right surface	Aileron Y	Aileron Y	Right surface	Left-Outer surface
CH 2	Elevator	Left surface	Right V-Tail	Elevator	Left surface	Right-Inner surface
CH 3	ESC	ESC	ESC	Left ESC	Left ESC	ESC
CH 4	Rudder	Rudder	Left V-Tail	Right ESC	Right ESC	Left-Inner surface
CH 5	Gimbal Roll	Gimbal Roll	Gimbal Roll	Gimbal Roll	Gimbal Roll	Gimbal Roll
CH 6	Gimbal Pitch	Gimbal Pitch	Gimbal Pitch	Gimbal Pitch	Gimbal Pitch	Gimbal Pitch
CH 7	Flap Y*	Flap Y*	Flap Y*	Flap Y*	Flap Y*	Right-Outer surface *

Note：

1 When connecting CH7 to two Flap servos with a Y shape wire, you need a inversed servo, but when connecting Butterfly Brake, there is no need using a inversed servo.

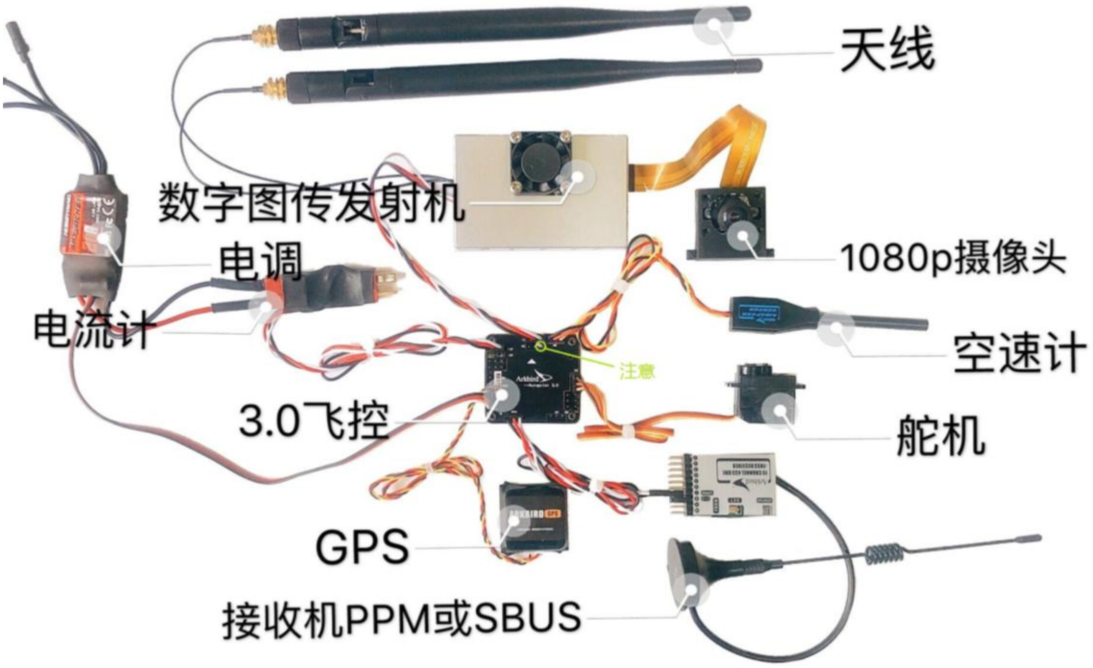
2 Except the fly-wings, you can use CH1/7 mixed control, using two surfaces to achieve aileron & flap functions.

3 Bi-motor mixed control, when throttle is less than 25%, there is no differential steering, when over 25%, throttle outputs differential steering.

4 You can plug the airspeed sensor into paralleling "RX" port if using GCS function.

5 CH5 and CH6 default output are gimbal roll and gimbal pitch, it can be set up direction, value, or it can be output through CH7, CH8, CH9 and CH10 directly. Please enter OSD menu and set up in the option of “Gimbal Roll” and “Gimbal Pitch”.

All Electric Equipment Configure



Note: The RX line (yellow) of 4P wire from video transmitter to flight control is a reserved port, should be connected to the signal port at the right end of the RX.

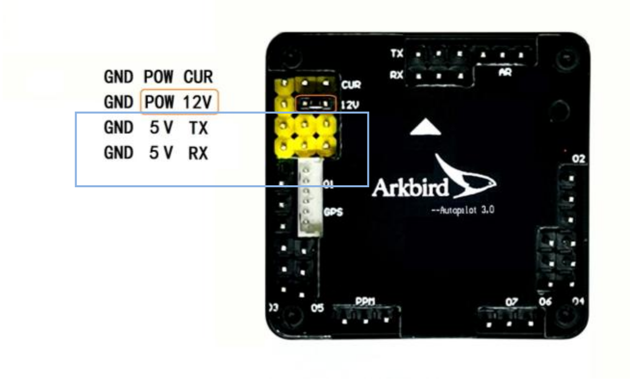
The new airspeed meter has a single 5V output wire (blue), please connect it to the middle power position of RX;

After the installation is completed, it is recommended to use hot melt glue to fix all the terminals to avoid loosening.

1. Do not unplug the camera cable! Unplugging the cable will cause it to fail to work!
2. It is recommended to place the digital video transmitter outside the fuselage to improve the heat dissipation effect; if it is placed outside the fuselage, the fan can be removed.
3. PPM port, support Arkbird 433 receiver to realize single-line transmission with 10 channels of rudder and signal strength RSSI. (Plug in automatic recognition)
4. Standard digital high-precision airspeed meter, if you need to use RSSI function, the airspeed meter can be connected to the RX port instead of AR port. Unlike GPS ground speed, an airspeed meter can measure the relative speed of the aircraft and the air. Since airspeed is a necessary condition for generating lift, insufficient airspeed may cause a stall. The airspeed meter collects the oncoming wind speed, and the aircraft accelerates downwind and decelerates against the wind, which is helpful for windy weather, slow flight and heavy load flight.
5. The airspeed indicator can be extended with a steering gear extension cord. Please do not place the nozzle close to the fuselage or propeller during installation to avoid airflow interference. It will be automatically calibrated within 10 seconds after power-on, please do not touch the nozzle during this period.
6. When the airspeed meter is connected, the OSD will display the airspeed value A 0km/h; in

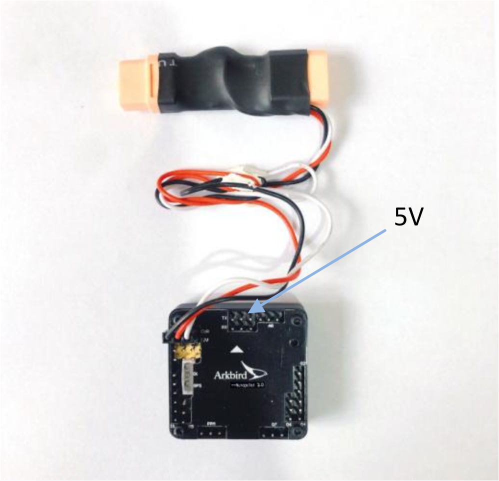
autonomous flight modes such as return home, waypoint, etc., if any value of the airspeed or ground speed is less than the setting "Safe Speed", it will press Increase the throttle proportionally.

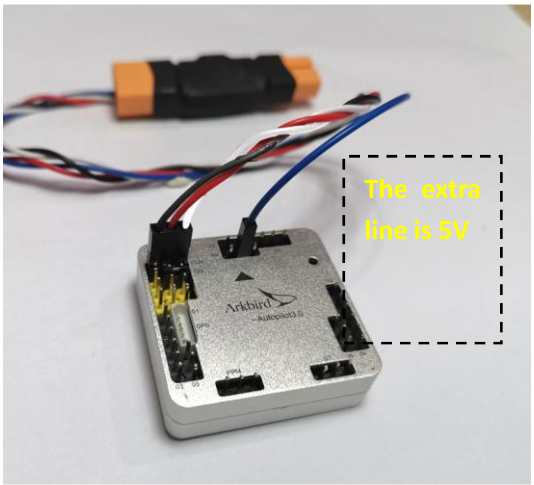
2 Power Supply Mode


GND POW CUR
GND POW 12V
GND 5V TX
GND 5V RX
TX
RX
AR
CUR
12V
01
GPS
02
Arkbird
--Autopilot 3.0
PPM
05
07
06
04

Note that there is a 5V port under 12V. Do not connect high voltage to 5V to avoid damage!

3S Battery Shared Power Supply (Factory Default)



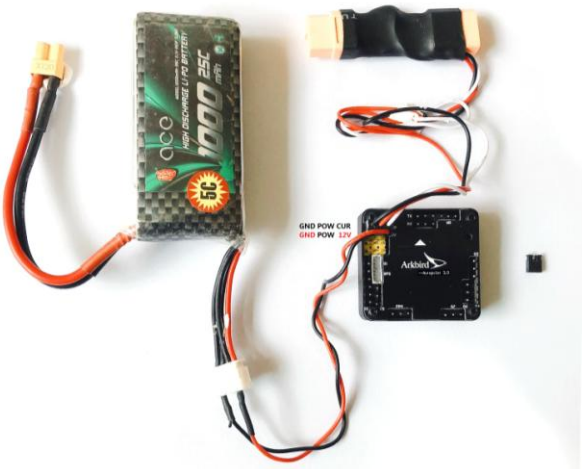

The extra line is 5V

The 3P wire definition: Black-Ground wire, Red-Power, White-Signal. (Left picture)

The latest model, add "extra line - 5V output", please connect to the 5V position of RX to increase power supply stability for image transmission. (Picture on the right)

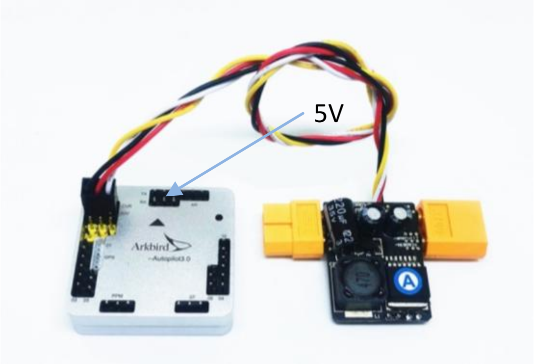
Connect the black, red and white wires of the current sensor to the flight controller. After the jumper cap is connected, the power supply and the video communication are connected to provide power for the flight control, camera and video transmitter.

Independent Power Supply



2. If the power exceeds the 4S battery, please supply power and video separately. Remove the jumper cap and **use a 12V battery to supply power independently in the second row. The 3P line is Ground GND, floating, and 12V line sequence. The power supply is on the left and right sides of the 3P line. Don't connect it wrongly** (800mah-1400mah is recommended).

(You can also use NANO and 3.0 dedicated 12V Mini stabilized current meter. The power and video parts share a battery. Note that it is not common with LITE and 2.0 stabilized current meters)

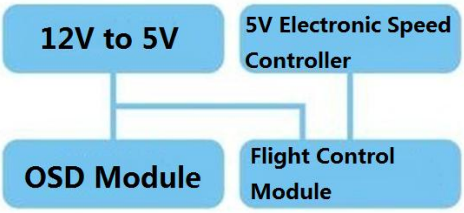


The new version of the current meter has a separate 5V wire, please connect it to the middle 5V position of the TX, RX or AR interface.

3 5V Dual Power Supply

Servos and receivers are 5V voltage, please connect a regulator 5V BEC to the autopilot when you testing, otherwise the servo cannot work.

The power (OSD 12V to 5V regulator) with 5V BEC (from ESC) supplies power to the CPU module at the same time.


12V to 5V
5V Electronic Speed Controller
OSD Module
Flight Control Module

If OSD function is not used, please plug in OSD 12V power as well to prevent a lack of power supply for 5V ESC.

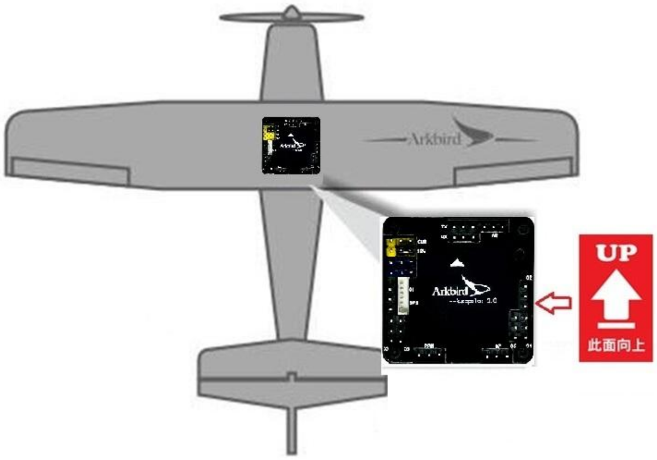
4 Installation:

WARNING 地面调试返航时，请将螺旋桨取下，谨防伤人。
During setting return-to-home, please take off propellers for safety concern.

1. **The pins of GPS and 12V ports** shall stay forward (toward flying direction); the side with Arkbird LOGO shall be upward or vertical toward right wing. (Default is level installation)
2. Keep GPS antenna upward placed and away from interference sources such as VideoTX and camera.
3. Put on heat-shrink tubing, fix by sponge and cable tie. Please keep away from motor to avoid vibration which will reduce the accuracy of sensor.
4. When setting return-to-home, please take off propellers for safety concern.

Level Installation

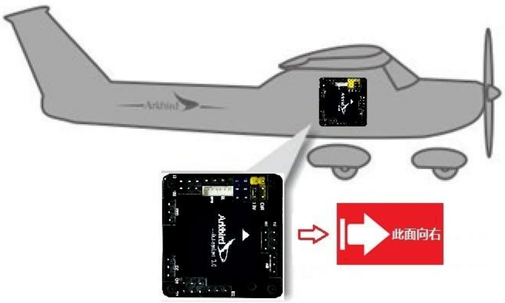
The arrow mark points to the direction of the machine head, and the side with the blue silk screen is up. (The schematic diagram is as follows)

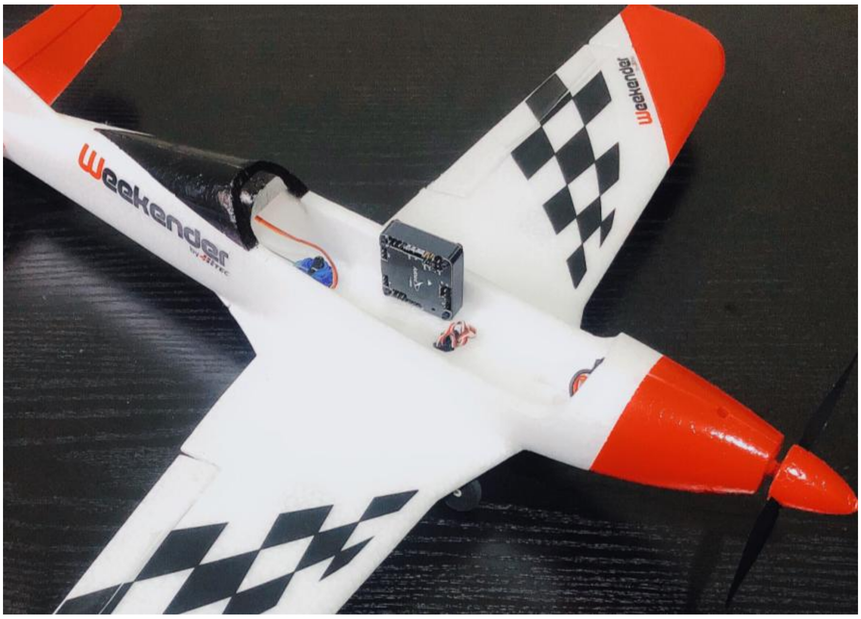


Weekender
Weeken

Vertical Installation

The arrow mark points to the direction of the nose, with the blue silkscreen facing the right wing. (The schematic diagram is as follows)


Arkbird
此面向右


Weekender
Weekender

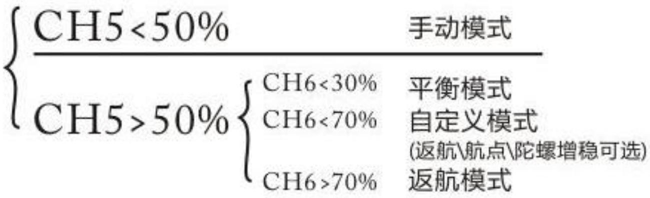
5 Switch Modes through CH5 and CH6

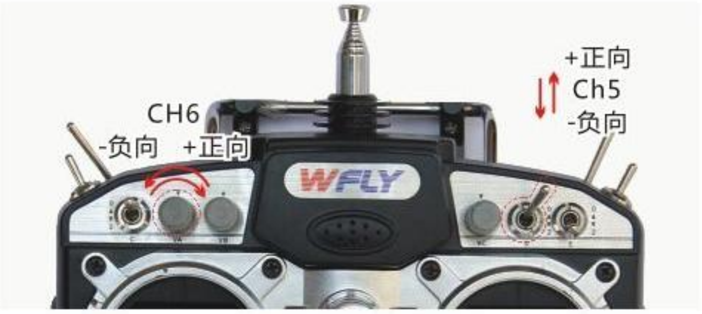
Use the remote control CH5, CH6 channel to switch mode:

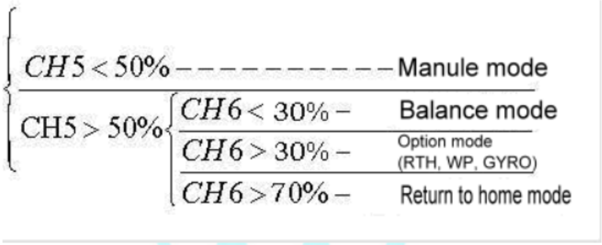
After installing the aircraft, first test the input and output of the rudder, and use the 5 and 6 channels of the remote control to switch the flight mode.

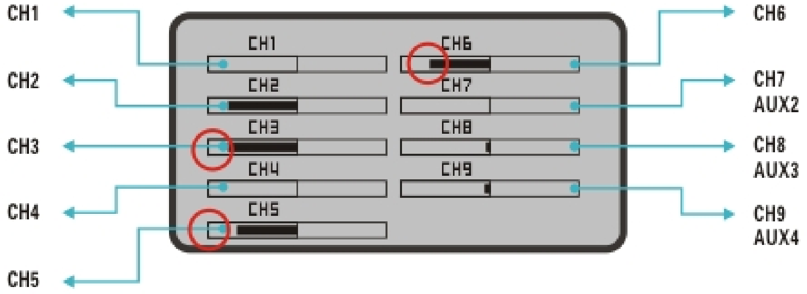
- While CH5 < 50%, it switches to Manual Mode, autopilot is not involved in the control.
- While CH5 > 50% and CH6 < 30%, it switches to Balance Mode;
- While CH5 > 50% and 30% < CH6 < 70%, it switches to Custom Mode(Waypoint Mode ,Hover Mode, Fence Mode, RTH mode), Default is RTH mode.

While CH5 > 50% and CH6> 70%, it switches to Return-to-home (RTH) Mode.


CH5<50%
手动模式
CH5>50%
CH6<30%
平衡模式
CH6<70%
自定义模式
(返航\航点\陀螺增稳可选)
CH6>70%
返航模式


+正向
Ch5
-负向
CH6
-负向
+正向
WFLY


CH5 < 50%
Manule mode
CH5 > 50%
CH6 < 30%
Balance mode
CH6 > 30%
Option mode
(RTH, WP, GYRO)
CH6 > 70%
Return to home mode


CH1
CH2
CH3
CH4
CH5
CH1
CH2
CH3
CH4
CH5
CH6
CH7
CH8
CH9
CH6
CH7
AUX2
CH8
AUX3
CH9
AUX4

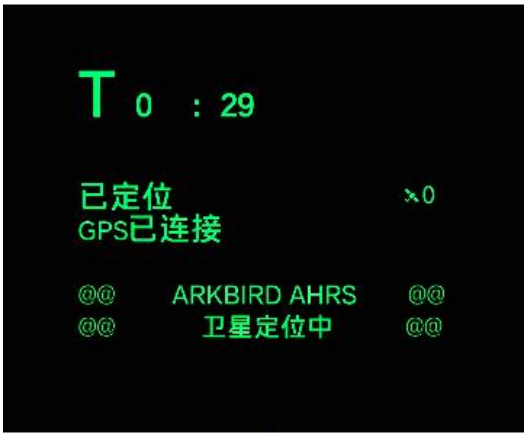
6 GPS & Save Home Position

After power on, Arkbird will start to search GPS satellite and save the first valid position as Home.

During searching, the elevator will be up and any manipulation of radio stick is invalid. If need to skip the searching, please push CH6 more than 75% and push CH1 to left or right side for 0.5 second.

For indoor testing，please unplug the GPS，or jump out of the search star waiting，after that，you will not be able to switch to the return home mode to prevent the output throttle from hurting people.

Once skipped the searching, it CANNOT switch to RTH mode, RTH logo will flash but it is balance mode.



T 0 : 29

已定位

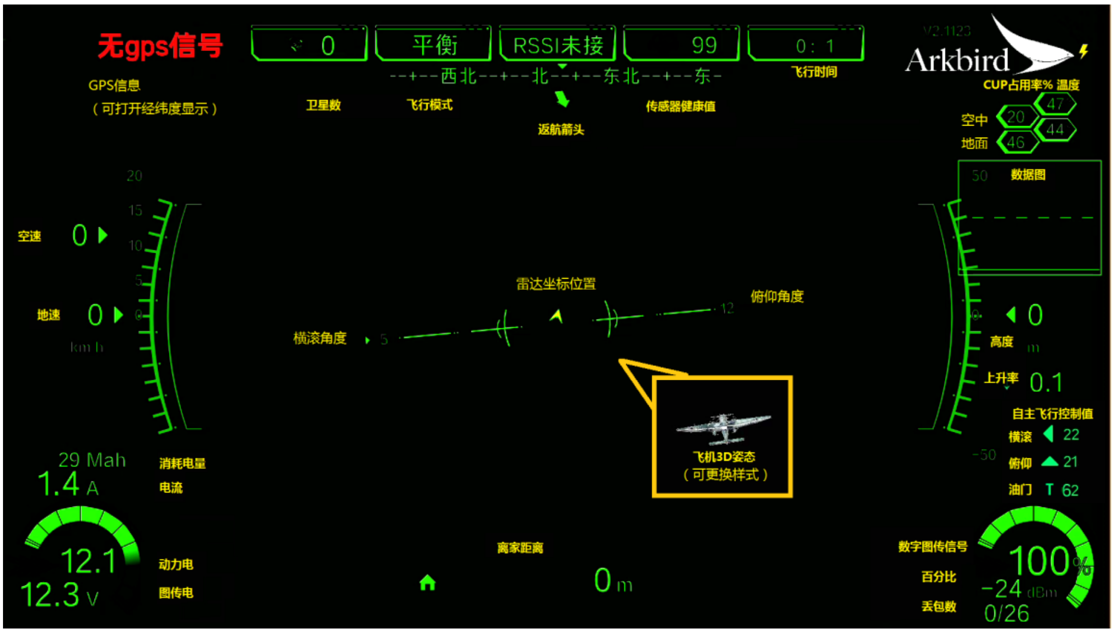
GPS已连接

⋆0

@@ ARKBIRD AHRS @@

@@ 卫星定位中 @@

GPS compulsory search star waiting interface，the aircraft cannot be operated at this time


无gps信号
GPS信息
（可打开经纬度显示）
0
卫星数
平衡
飞行模式
RSSI未接
--+--西北--+--北--+--东北--+--东-
返航箭头
99
传感器健康值
0：1
飞行时间
V2.1123
Arkbird
CUP占用率% 温度
空中 20 47
地面 46 44
50 数据图
空速 0
地速 0
km h
雷达坐标位置
横滚角度
俯仰角度
0
高度
m
上升率 0.1
自主飞行控制值
横滚 22
俯仰 21
油门 T 62
飞机3D姿态
（可更换样式）
29 Mah
消耗电量
1.4 A
电流
12.1
动力电
12.3 V
图传电
离家距离
0 m
数字图传信号
百分比
丢包数
100%
-24 dBm
0/26

Note:

1. When the flight control is flying autonomously, such as return to home, waypoint, fixed altitude and orientation, the lower right corner of the OSD will display the control target angle and throttle value. These three values can be used to judge how the flight control is operating the aircraft.

2. The camera signal needs to be connected to display the OSD and use the AAT function; when the video is not connected, the VDSTS yellow light of the side status light of the flight control flashes slowly, and the yellow light flashes quickly after identification;

3. There is an AAT modulation module inside the Arkbird OSD, which superimposes GPS information on the video signal and downloads it through the image transmission video. With the Arkbird AAT ground terminal, the GPS signal can be directly identified and tracked; (AAT ground terminal should be yellow light double flashing, positioning The rear yellow light flashes quickly. Because there is no audio output, the green light does not flash). If the VDSTS yellow light or the ground end yellow light does not flash quickly, please try to change the PN system. When using the N system, you need to upgrade the AAT ground module.

4. The acceleration health value of 99 is the maximum value, and the health value will be reduced if vibration or movement is too large. Please do a good job of damping to ensure that the ground is greater than 70 when the throttle is full.

5. The current value should be about 0.8A when the throttle is turned off. If it is not correct, please enter the OSD menu once and then exit to correct the current value.

6. Pay close attention to the number of GPS satellites and fly carefully. When the number of satellites is less than 7, it will cause inaccurate positioning.

7. Since Arkbird uses an anti-jamming inertial navigation compass instead of a magnetic compass, manual calibration is not required, but the flight direction (compass) is not accurate on the ground, and it will automatically be calibrated according to GPS coordinates within 10 seconds after takeoff. It can work normally after that.

8. The rolling ruler will roll with the ground speed and altitude, which is the same as the actual fighter.

9. The horizon position should be consistent with the actual horizon. If not, please recalibrate the sensor.

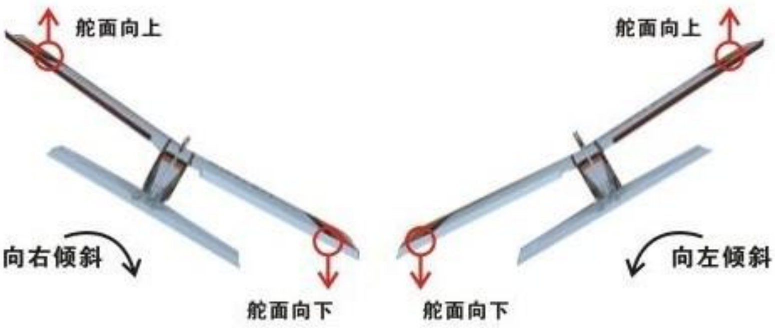
7 Balance Mode

1. First switch to "manual mode", set the rudder angle on the remote control to 100%, fine-tune it back to center, and set the amount of forward and reverse rudder manually controlled on the remote control.

2. Then switch to "Balance Mode", if the midpoint is correctly calibrated, the plane should be placed horizontally, the rudder surface should be basically at the midpoint, otherwise please recalibrate the midpoint. (Refer to OSD menu)

3. When tilting the aircraft on the roll and pitch axes, the flight control should give the correct movement that allows the aircraft to return to level flight.

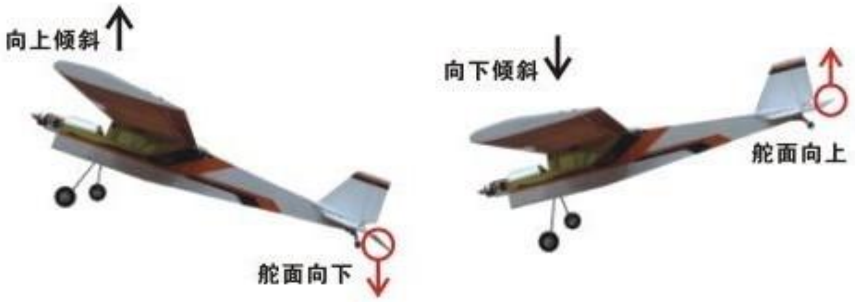
4. Tilt the aircraft in the roll direction, the fuselage tilts to the right, and a control quantity for the aircraft to roll to the left should be automatically given on the aileron. If the fuselage is tilted to the left, a control amount for the aircraft to roll to the right should be automatically given on the aileron. As shown below:



If the given roll direction is opposite, please adjust the roll value from “Norm” to "Reverse" in the menu "ROLL KEY1".

If other mixing controls are used, it is also to observe whether the flight control gives the correct movement to restore the plane to level flight.

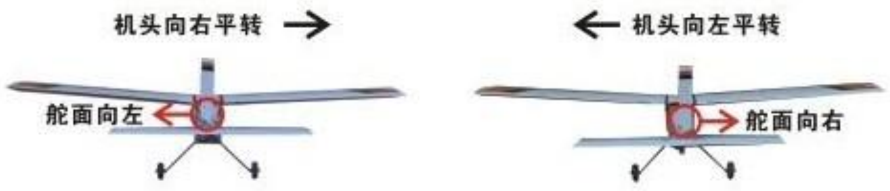
5. Elevator detection: tilt the aircraft in the pitch direction, the nose is tilted, and a control amount to make the aircraft bow should be automatically given in the elevator. The fuselage lowers its head, and a control quantity for raising the aircraft's head should be automatically given on the lifting. As shown below:



If the pitch direction given is opposite, please dial switch 2 to the other direction.

If other mixing controls are used, it is also to observe whether the flight control gives the correct movement to restore the plane to level flight.

6. Rudder detection: Shake the aircraft in the direction of the rudder, turn the nose to the right, and automatically give a control amount on the rudder to make the aircraft turn left. When the nose turns to the left, a control quantity for turning the aircraft to the right should be automatically given on the rudder. As shown below:



If the rudder direction given is opposite, please dial the DIP switch 3 to the other direction. If other mixing controls are used, it is also to observe whether the flight control gives the correct movement to keep the aircraft flying in a straight line. Pay special attention to the difference in the speed of the two motors during the dual-engine mixing.

7 GPS and Return to Home Instruction

While switching to **RTH Mode** (CH5 to 100% and CH6 to 100%), it will adjust the flying height to safe height to go home.

If the throttle safe is open and when height and distance is within 30m, there will be no throttle output, to avoid any hacking while adjusting. (Refer to OSD menu)

During RTH mode throttle will increase if altitude is low, or speed is slow, decrease if altitude is high, or speed is faster than set safe speed.

Once lost GPS satellite, switching to RTH, the plane will go home automatically based on the home angle of last position before out of signal. Within radio range, please switch to Balance Mode and land.

Please keep an eye on the quantity of GPS signal and voltage value, fly carefully. Please note if the quantity of satellite is less than 7, the positioning might not be correct.

8 Fail-Safe to RTH mode

Set the receiver's 5 and 6 channel out-of-control protection to realize the out-of-control return home (important!)

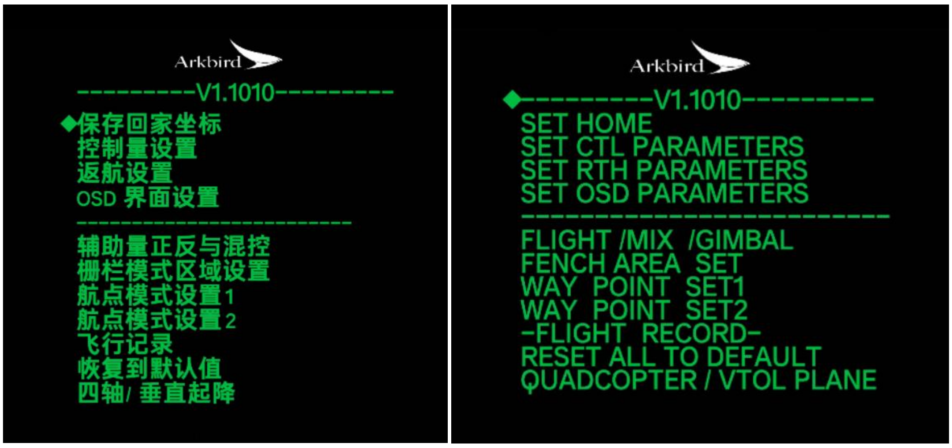
Fail-Safe is a receiver’s function to preset position when receiver is out of signal. Some receivers can set in the radio menu, and some save the current position through receiver (probably through a button).

Please refer to the manual of receiver. Set the fail-safe position the same as Return-to-Home Mode through CH5 and CH6 (CH5>50%, CH6 > 70%). And then turn off the radio to check if it switches to Return-to-Home Mode. (Note: No need to set fail-safe from channel 1 to channel 4 as these four channels are controlled by autopilot under Return-to-Home Mode, which is not relevant to receiver.)

9 OSD and Menu

CH5 switches to Manual Mode(<50%), throttle to 0%, and push CH1 to left or right side for 6 seconds, it will enter into main menu. Exit the main menu if CH5 switches to auto mode(>50%).

Moving stick up and down to change the value, pushing to right side to select, and pushing to left side to exit and save parameters.



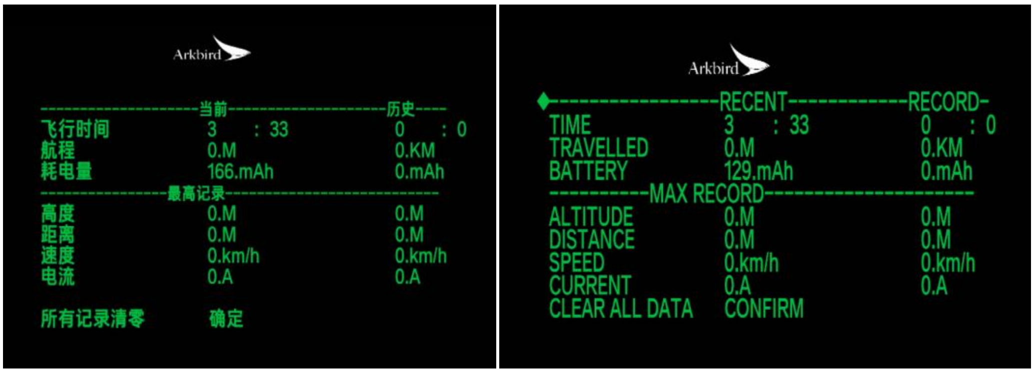
```
Arkbird
----------V1.1010----------
◆保存回家坐标
 控制量设置
 返航设置
 OSD 界面设置
 --------------------------
 辅助量正反与混控
 栅栏模式区域设置
 航点模式设置1
 航点模式设置2
 飞行记录
 恢复到默认值
 四轴/ 垂直起降
```

```
Arkbird
◆---------V1.1010---------
 SET HOME
 SET CTL PARAMETERS
 SET RTH PARAMETERS
 SET OSD PARAMETERS
 ---------------------------
 FLIGHT /MIX  /GIMBAL
 FENCH AREA  SET
 WAY  POINT  SET1
 WAY  POINT  SET2
 -FLIGHT  RECORD-
 RESET ALL TO DEFAULT
 QUADCOPTER / VTOL PLANE
```

Main Menu:

Set HOME	Save home position
Set CTL Parameters	Set CTL Parameters
Set RTH Parameters	Set RTH (Return to Home) Parameters
Set OSD Parameters	Set OSD Interface

Flight Parameters	Reverse and delta-wing mixing
Fence Area Set	Set Fence Mode Area
Way Point Set1	Set Way Point Mode1
Way Point Set2	Set Way Point Mode2
-Flight Record-	Records of flight time, curding range, power consumption and every highest record. " RECENT" refers to the recent flight record: " RECORD" refers to the total record.
Reset All to Default	Move stick to right side for 5 seconds to reset to default



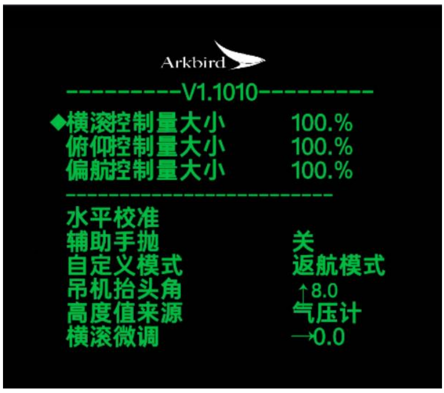
```
Arkbird
-------------------当前-------------------历史----
飞行时间              3   : 33          0   : 0
航程                  0.M               0.KM
耗电量                166.mAh           0.mAh
---------------最高记录---------------------------
高度                  0.M               0.M
距离                  0.M               0.M
速度                  0.km/h            0.km/h
电流                  0.A               0.A

所有记录清零          确定
```

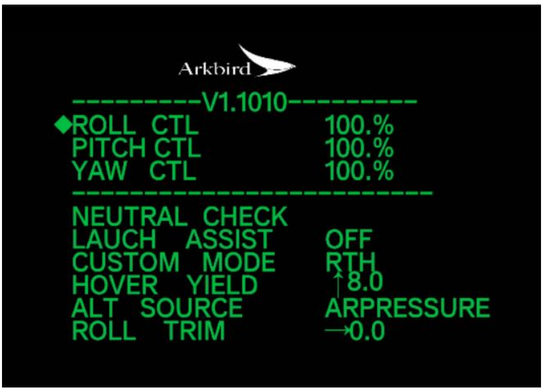
```
Arkbird
◆----------------RECENT------------RECORD-
 TIME            3   : 33         0   : 0
 TRAVELLED       0.M              0.KM
 BATTERY         129.mAh          0.mAh
 ---------MAX RECORD-----------------------
 ALTITUDE        0.M              0.M
 DISTANCE        0.M              0.M
 SPEED           0.km/h           0.km/h
 CURRENT         0.A              0.A
 CLEAR ALL DATA  CONFIRM
```

Flight Data Logging Function

Set CTL Parameters



```
---------V1.1010---------
◆横滚控制量大小        100.%
 俯仰控制量大小        100.%
 偏航控制量大小        100.%
-------------------------
 水平校准
 辅助手抛              关
 自定义模式            返航模式
 吊机抬头角            ↑8.0
 高度值来源            气压计
 横滚微调              →0.0
```



```
---------V1.1010---------
◆ROLL  CTL          100.%
 PITCH CTL          100.%
 YAW   CTL          100.%
-------------------------
 NEUTRAL  CHECK
 LAUCH   ASSIST     OFF
 CUSTOM  MODE       RTH
 HOVER  YIELD       ↑8.0
 ALT  SOURCE        ARPRESSURE
 ROLL   TRIM        →0.0
```

Roll Ctl	Roll Control(%)(equivalent to travel range on radio, Please adjust the travel range on OSD, do not adjust through radio)
Pitch Ctl	Pitch Control (%)
Yaw Ctl	Yaw Control (%)

Neutral Check Neutral Point Check:

Neutral point alignment needed under first installation, not used for weeks, or temperature variation is more than 10 degrees.

Aileron all the way to the right means it is waiting autopilot be put down, OSD shows “Waiting Neutral Point Check.”

Put the autopilot paralleled to the ground (Please prop up if there is a landing gear), and **move CH1 left and right** to do 3-seconds neutral point check. Aileron will be back to center once finished.

Note: Pushing CH5 and CH6 to minus (0%) and moving CH1 stick to left or right side within 3 seconds after power on can also enter neutral point check.

Launch Assist

After turning the function on (ON), "Launch Assist" function which can help to control throttle and reduce the difficulty of take-off in manual throwing process.

Switch to balance mode and the throttle will not be started.

Run up with aircraft in hands, when the speed is higher than 5kmph, the throttle will start output and automatically control the take-off.

Note: This function can only be started when more than 6 GPS satellites are available. In order to ensure safety, in run-up process, lower the throttle stick, lower the aircraft head down 35° or stop the run-up, throttle will be disabled. When the aircraft flies above 15m high, or more than 100 m away, launch assist will be disabled and throttle will under normal control.

Custom Mode Custom Mode(CH5> 50% and 30% < CH6 < 70%):

RTH : Return to Home(Default)

Way Point : Way Point Mode, it is able to trace the Way Point Set by WayPoint menu.

HOVER : Hover mode, regard the hover position as balance position

Gyro : Gyro Mode, it will do compensation for unintentional attitude changes.

Lock Dir/Heig: Lock direction and height (Cruise flight):

Under balance mode, when CH3>20% CH1 and CH2 stick back to center, height and direction will be locked and keep straight &constant-height flight.

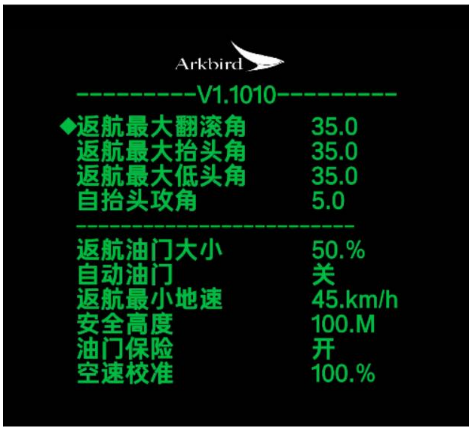
Aileron and elevator can also be controlled through CH1 and CH2.

Lock Dir:	lock direction only
Lock Heg:	lock height only

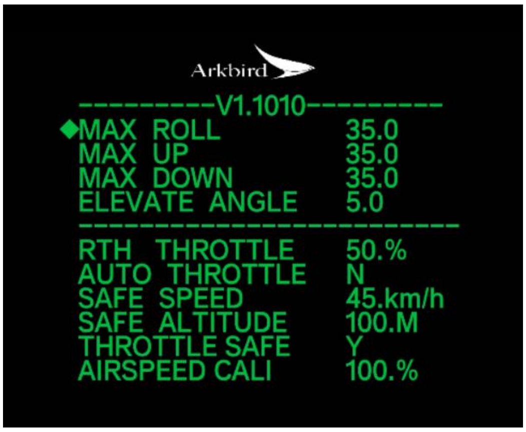
Semi-Balance Mode: When the CH1 and CH2 of rocker is less than 50%, the plane is in Balance Mode. When the rocker is more than 50%, the plane is in Gyro Mode.

Hover Yield	Switched to Hover mode, the plane will nose up , if the plane cannot maintain front/backward position ,increase this value so the elevator surface will move up a little angle (nose down).

Set RTH Parameters



```
Arkbird
----------V1.1010---------
◆返航最大翻滚角      35.0
 返航最大抬头角      35.0
 返航最大低头角      35.0
 自抬头攻角          5.0
 ------------------------
 返航油门大小        50.%
 自动油门            关
 返航最小地速        45.km/h
 安全高度            100.M
 油门保险            开
 空速校准            100.%
```



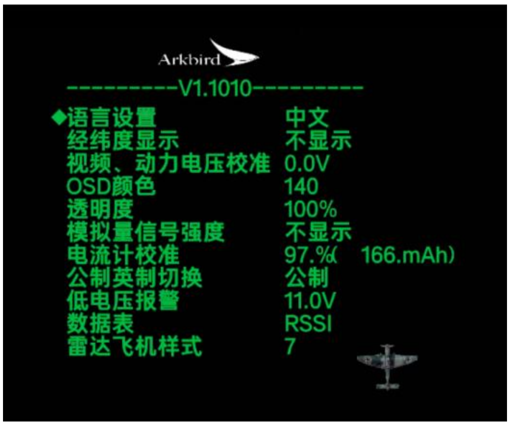
```
Arkbird
----------V1.1010----------
◆MAX ROLL          35.0
 MAX UP            35.0
 MAX DOWN          35.0
 ELEVATE ANGLE     5.0
 --------------------------
 RTH THROTTLE      50.%
 AUTO THROTTLE     N
 SAFE SPEED        45.km/h
 SAFE ALTITUDE     100.M
 THROTTLE SAFE     Y
 AIRSPEED CALI     100.%
```

Max Roll	Max roll angle while return to home, 20 to 40 degree recommended.
Max UP	Max pitch (up) angle while return to home, 20 to 40 degree recommended.
Max Down	Max pitch (down) angle while return to home, 20 to 35 degree recommended
Elevate Angle	Level flight’s elevate angle, 3 to 15 degree recommended. Please adjust this value while pitch up or down to have level flight even the stick is back to center.

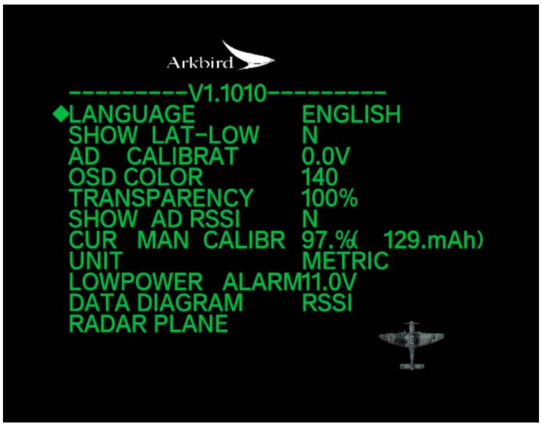
RTH Throttle	Return to home throttle (%)
AUTO Throttle	The autopilot will use the throttle value of level flight automatically as return to home throttle. (Default)

Safe Speed	Minimum speed of return to home (when speed is less than the certain value, it will accelerate throttle in proportion to avoid lost while being upwind.)
Safe Height	Safe Height (The minimum height of return to home, 80 to 200 m recommended.)
Throttle Safe	Throttle Safe (When distance and height are less than 30m, for safety concern, there is no throttle output under RTH Mode.)

Set OSD Parameters

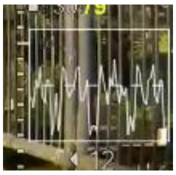


```
Arkbird
----------V1.1010----------
◆语言设置            中文
 经纬度显示          不显示
 视频、动力电压校准  0.0V
 OSD颜色             140
 透明度              100%
 模拟量信号强度      不显示
 电流计校准          97.%(  166.mAh)
 公制英制切换        公制
 低电压报警          11.0V
 数据表              RSSI
 雷达飞机样式        7
```

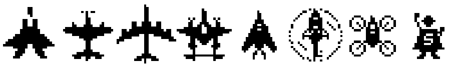


```
Arkbird
----------V1.1010----------
◆LANGUAGE          ENGLISH
 SHOW  LAT-LOW     N
 AD   CALIBRAT     0.0V
 OSD COLOR         140
 TRANSPARENCY      100%
 SHOW  AD RSSI     N
 CUR   MAN  CALIBR 97.%(  129.mAh)
 UNIT              METRIC
 LOWPOWER  ALARM11.0V
 DATA DIAGRAM      RSSI
 RADAR PLANE
```

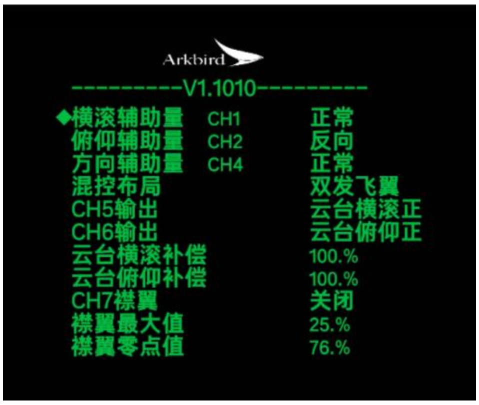
LANGUDGE	Chinese/English Page switching
SHOW LAT-LON	Show longitude and altitude
AD CALIBRAT	Battery voltage calibration
OSD PATTERN	OSD interface selection - DEFAULT: Normal interface - FIGHTER: HUD interface **Default 3D / Fighter 3D** ： The airplane attitudes will be shown as 3D animation.
P OR N	PAL/ NTSC selection
CUR CALIBRAT	Display the AR port's voltage, 0-3.3V is corresponding to 0-100%
CUR MAN CALIBR	Current calibration %. The current sensor will adjust and input the correct power. Consumption after landing to calibrate the displayed battery capacity (MAH).
UNIT	Ft(imperial)and Meter(Metric)Unit Selection；
LOWPOWER ALARM	There will be a flicker alarm when flight power is lower than this value.
DATA DIAGRAM	The three options “OFF”, “Altitude”, ”Speed” or “RSSI” in the menu could be chosen. Once the diagram be opened, it will be shown as a picture on top right of OSD.



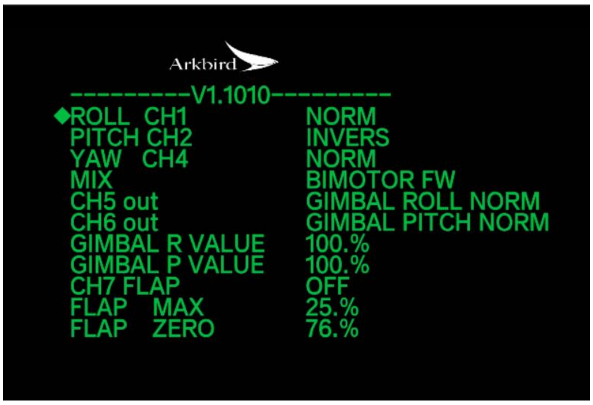
RADAR PLANE The radar mode plane is no longer marked as an arrow, it can be shown as 8 kinds of plane models as following pictures and 3 sizes are provided.



Flight Parameters And Delta Wing Mix Control



```
Arkbird
---------V1.1010---------
◆横滚辅助量  CH1    正常
 俯仰辅助量  CH2    反向
 方向辅助量  CH4    正常
 混控布局           双发飞翼
 CH5输出            云台横滚正
 CH6输出            云台俯仰正
 云台横滚补偿       100.%
 云台俯仰补偿       100.%
 CH7襟翼            关闭
 襟翼最大值         25.%
 襟翼零点值         76.%
```



```
Arkbird
----------V1.1010----------
◆ROLL  CH1          NORM
 PITCH CH2          INVERS
 YAW   CH4          NORM
 MIX                BIMOTOR FW
 CH5 out            GIMBAL ROLL NORM
 CH6 out            GIMBAL PITCH NORM
 GIMBAL R VALUE     100.%
 GIMBAL P VALUE     100.%
 CH7 FLAP           OFF
 FLAP  MAX          25.%
 FLAP  ZERO         76.%
```

Roll	Roll Reverse
Pitch	Pitch Reverse
Yaw	Yaw Reverse
MIX	More ways of mixed control include delta wing and V-tail wing, and Bi-motor plane, Bi-motor flying wing and butterfly brake (mixed control of 1247channel).
Gimbal roll	**Norm/Inverse**: Gimbal output of channel 5 left and right positive/negative compensation; **CH8** : port CH5 is directly output of CH8 in
Gimbal Pitch	**Norm/Inverse** ：Gimbal output of channel 6 up and down positive/negative compensation; **CH7 Norm/ CH7 Inverse** ：On the basis of Gimbal output of channel 6 positive/negative compensation, add stick's value of CH7. **CH7** : port CH6 is directly output of CH7 in **CH9** : port CH6 is directly output of CH9 in
Gimbal roll value	Gimbal output value of channel 5 left and right compensation
Gimbal pitch value	Gimbal output value of channel 6 up and down compensation

Please connect the output of channel 5 & 6 to the camera PTZ of servos. When the flight is tilting, channel 5&6 will give an opposite compensation, so as to level the camera.

Flap mode

CH7 (Default) CH7 output is directly the CH7 input

CH7/Speed CH7 output is control by the CH7 input and Speed. When the CH7 is at the two edges, CH7 has the priority to control the flap surface. When the CH7 is in the middle, the speed will participate in controlling the flap wing: Either airspeed or ground speed, when the lower speed is lower than "SafeSpeed", the flap wing will be lowered proportionally. When the speed is 0, FlapMax occurs. When the speed is over SafeSpeed, Flapzero occurs.

OFF turn off the control and OSD Flap value display

Flap Max FlapMax (OSD displays F, 100% output flap quantity). When doing the commissioning, the rudder will output FlapMax value. Correct FlapMax value can be set according to the rudder position; If the flap wings move in the opposite direction, adjust the value across 50%;

Flap zero Flapzero (OSD shows F, 0% output flap quantity). When doing the commissioning, the rudder will output Flapzero value. Correct Flapzero value can be set according to the rudder position; If the flap wings move in the opposite direction, adjust the value across 50%;

If the flap servo moves different from the OSD "Flap value"(0-100%), there is no inverse option, you can adjust Flapzero & Flapmax one over 50% and one lower than 50% ,for example setting (25%、57%) to (75%、25%) will make the servo moves a different direction. Firstly adjust the parameters by OSD , then check CH7 of radio TX, set CH7 's manual control’s reverse through radio

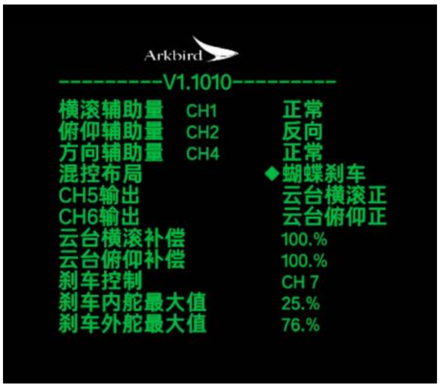
Attention: The flap is an aerofoil movable device on the edge of the flight. It can deflect or slide downward, which increases the lift force when flying. Flap wing output can release and retract slowly automatically (1.5s).It is advised to use a three section switch to control the flap wing so as to avoid accidence. **When install the servos, please adjust the CH7 to make the “flap/brake value "on the OSD is 100% (zero point),then install a level rudder surface.**

As the design of the aircraft shape, some aircraft may nod when lower the flap.

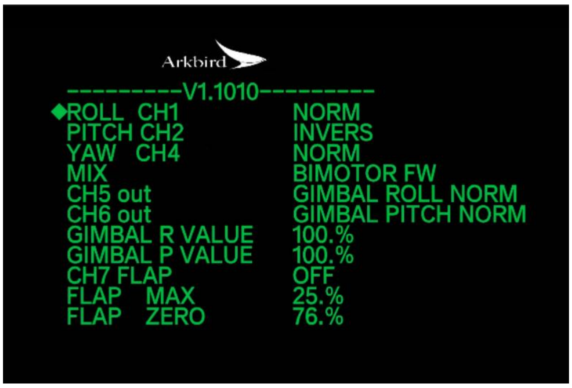
As most of the ailerons are on the outer side, when channel 1/7 mix control, the flap movement may cause the left and right side of the flight uneven.

Under the balance mode, uneven torque can be compensated by Autopilot. But under manual mode may lead to accidents. Test the rudder quantity well when using the flap, keep an eye on the flap/brake control value; Use the CH7 to control the flap. Add speed control after finishing testing the Flap max/Flap zero.

Butterfly brake



```
Arkbird
---------V1.1010---------
横滚辅助量    CH1        正常
俯仰辅助量    CH2        反向
方向辅助量    CH4        正常
混控布局                ◆蝴蝶刹车
CH5输出                  云台横滚正
CH6输出                  云台俯仰正
云台横滚补偿             100.%
云台俯仰补偿             100.%
刹车控制                 CH 7
刹车内舵最大值           25.%
刹车外舵最大值           76.%
```



```
Arkbird
---------V1.1010---------
◆ROLL  CH1         NORM
PITCH CH2          INVERS
YAW   CH4          NORM
MIX                BIMOTOR FW
CH5 out            GIMBAL ROLL NORM
CH6 out            GIMBAL PITCH NORM
GIMBAL R VALUE     100.%
GIMBAL P VALUE     100.%
CH7 FLAP           OFF
FLAP   MAX         25.%
FLAP   ZERO        76.%
```

When "Mix (KEY4)" is set to "flying wing butterfly brake" mix control, the Flight menu automatically changes to "Brake" and other options. Channels 1, 2, 4, and 7 are output for butterfly brake mixing. The plane will be controlled by the roll, pitch, yaw and braking (deceleration) four values,

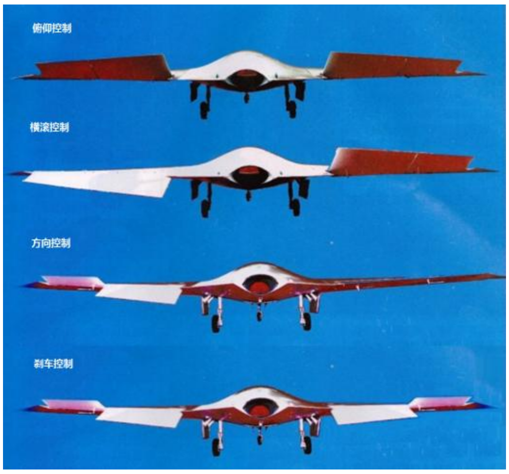
Two rudder surfaces on the left wing and two rudder surfaces on the right wing. The four rudder surfaces are respectively connected to the output ports of the flight control 1, 4, 7, and 2 from left to right;

Push the aileron stick to the left, lift the two rudder surfaces of the left wing, and press down the two rudder surfaces of the right wing;

Press the elevator joystick downwards, the two rudder surfaces of the left wing are lifted, and the two rudder surfaces of the right wing are also lifted;

Push the rudder joystick to the left, lift the outer rudder surface of the left wing, press down the inner rudder surface, and no action on the right side (increasing the left side resistance makes the aircraft turn left)

CH7 controls the butterfly brake, the outer rudder surface of the left wing is raised, the inner rudder surface is pressed down, the inner rudder surface of the right wing is pressed down, and the outer rudder surface is raised.



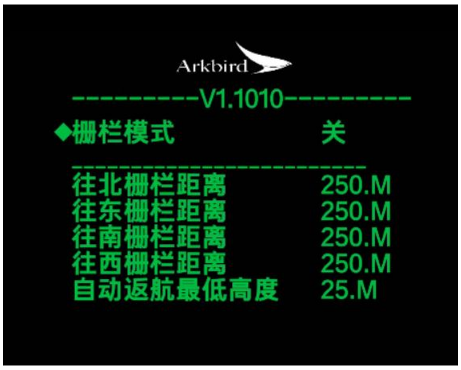
Brake Ctl	**CH7 (default):** CH7 controls the rudder amounts of brake.
InnerBrake Max	Inner Brake Max: It is the maximum position at the two control surfaces in inner side when it brakes (OSD displays F, 100% output brake quantity). When this item gets into the adjusting, the servos will output the adjusting value, Correct InnerBrake value can be set according to the rudder position.
OuterBrake Max	Outer Brake Max: It is the maximum position at the two control surfaces in outer side when it brakes (OSD displays F, 100% output brake quantity). When this item gets into the adjusting, the servos will output the adjusting value, Correct OuterBrake value can be set according to the rudder position.

Attention: The mixed control of butterfly brake aims to let the fly wings change its direction smoothly without aileron inclining, avoiding stall spinning. When install the servos, please adjust the CH7 to make OSD display “flap/brake value” is F 0% (zero point) status.

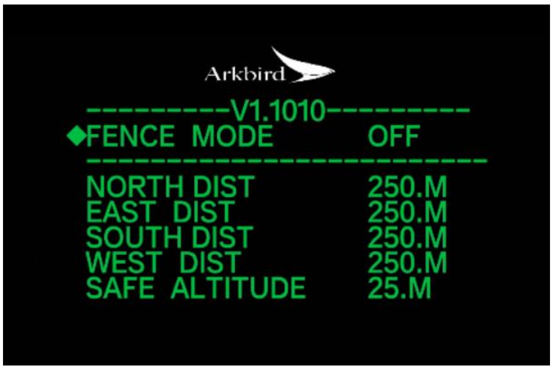
Since the inner torque is different from the outer torque, generally, OuterBrake Max and InnerBrake Max should be set one over 50% and one lower than 50%, and make the (OuterBrake-50%) set about a half of (InnerBrake-50%), for example, OuterBrake is set 65%(65%-50%=15%), the InnerBrake is set 20%(20% - 50% = -30%). If the wings can't yaw left and right smoothly, these two values can be adjusted.

CH7 controls brake. It increases the resistance flying, but no extra lift force. Generally it is used in rectilinear flight and landing. Please keep an eye on the value of flap/brake control displayed on the OSD.

Fence Area Set



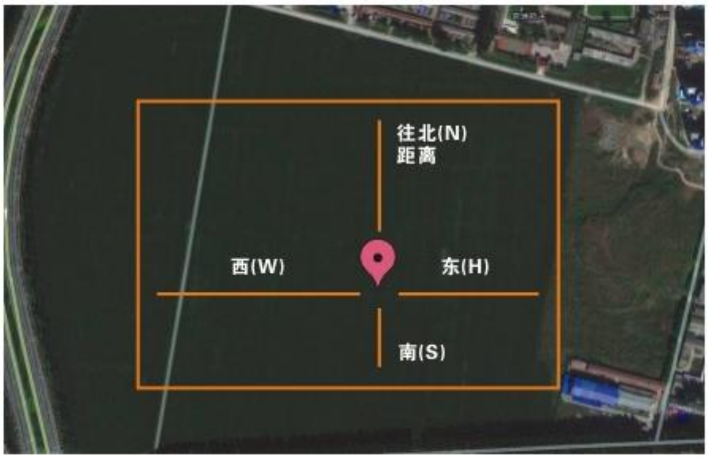
```
Arkbird
----------V1.1010----------
◆栅栏模式                关
--------------------------
往北栅栏距离             250.M
往东栅栏距离             250.M
往南栅栏距离             250.M
往西栅栏距离             250.M
自动返航最低高度         25.M
```



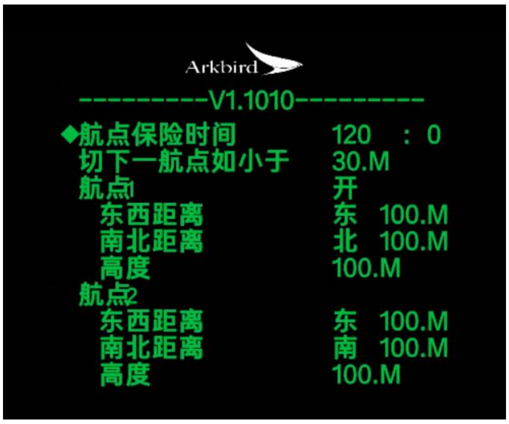
```
Arkbird
----------V1.1010----------
◆FENCE  MODE          OFF
---------------------------
NORTH DIST            250.M
EAST  DIST            250.M
SOUTH DIST            250.M
WEST  DIST            250.M
SAFE  ALTITUDE        25.M
```

Switching to CH5 > 50% and 30 %< CH6< 70%, within rectangle area and above safe height it is Balance Mode, otherwise it switches to RTH mode.

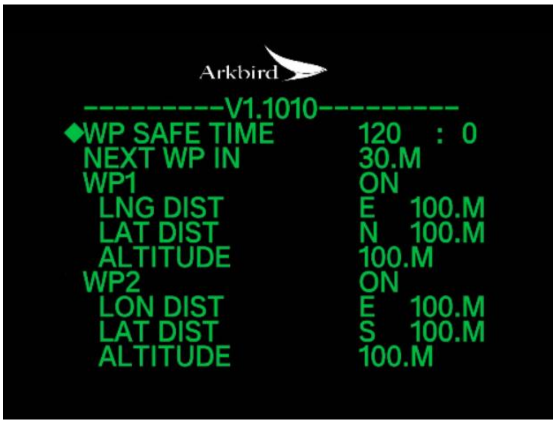
Fence Mode	Fence Mode , "ON" or "OFF"
North Dist	North Distance(m)
East Dist	East Distance(m)
South Dist	South Distance(m)
West Dist	West Distance(m)
Safe Height	Set Height(m)



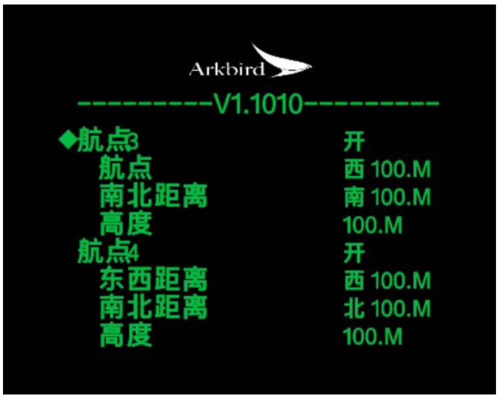
Way Point Set



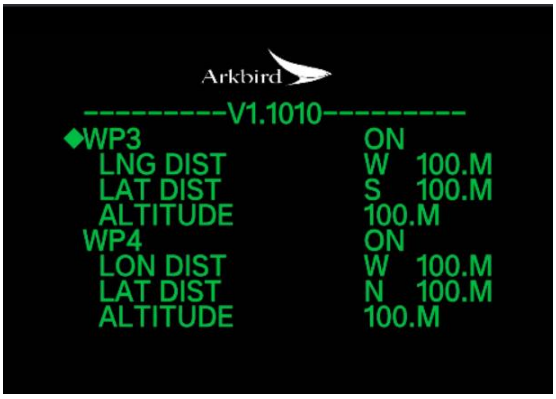
```
Arkbird
----------V1.1010----------
◆航点保险时间           120  :  0
 切下一航点如小于       30.M
 航点1                  开
   东西距离             东  100.M
   南北距离             北  100.M
   高度                 100.M
 航点2
   东西距离             东  100.M
   南北距离             南  100.M
   高度                 100.M
```



```
Arkbird
----------V1.1010----------
◆WP SAFE TIME         120  :  0
 NEXT WP IN           30.M
 WP1                  ON
  LNG DIST            E   100.M
  LAT DIST            N   100.M
  ALTITUDE            100.M
 WP2                  ON
  LON DIST            E   100.M
  LAT DIST            S   100.M
  ALTITUDE            100.M
```



```
Arkbird
----------V1.1010----------
◆航点3                开
   航点               西 100.M
   南北距离           南 100.M
   高度               100.M
 航点4                开
   东西距离           西 100.M
   南北距离           北 100.M
   高度               100.M
```



```
Arkbird
----------V1.1010----------
◆WP3              ON
   LNG DIST       W   100.M
   LAT DIST       S   100.M
   ALTITUDE       100.M
 WP4              ON
   LON DIST       W   100.M
   LAT DIST       N   100.M
   ALTITUDE       100.M
```

Set four way points (WP1~WP4), allow to turn on/off separately.

Set Custom Mode as Way Point Mode (CH5 > 50% and 30 %< CH6< 70%). The plane will fly in a loop upon the sequence of 1 to 4, skip the waypoint turned off, and return to home while over the safe time.

WP safe time ---------WP safe time.

Returning to home if reaches the safe time. Re-timing only next power-on.

WP1 ---------WP 1 On/Off

Lng Dist ---------Waypoint 1 East-West distance away from Home (m)

“>” means East and “<” means West.

Lat Dist ---------Waypoint 1 South-North distance away from Home (m) “︾”means South and“︽”means North

Height ---------Waypoint 1 Height(m)

WP2 ---------WP 2 On/Off

Lng Dist ---------Waypoint 2 East-West distance away from Home (m)

“>”means East and “<” means West

Lat Dist --------- Waypoint 2 South-North distance away from Home (m)

“︾”means South and “︽” means North

Height --------- Waypoint 2 Height(m)

WP3 ---------WP 3 On/Off

Lng Dist --------- Waypoint 3 East-West distance away from Home (m)

“>” means East and “<” means West

Lat Dist ---------Waypoint 3 South-North distance away from Home (m) “︾”means South and “︽” means North

Height ---------Waypoint 3 Height(m)

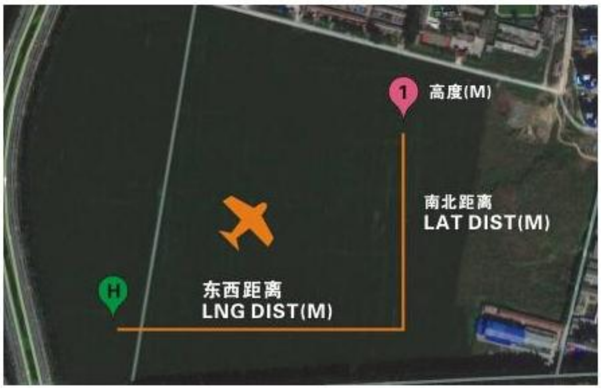
WP4 ---------WP 4 On/Off

Lng Dist --------- Waypoint 4 East-West distance away from Home (m)

“>” means East and “<” means West

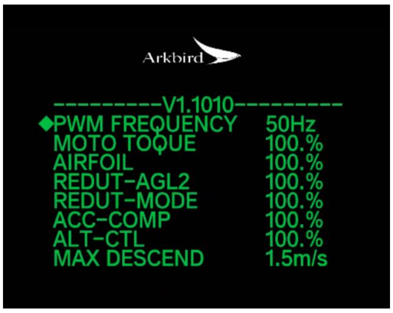
Lat Dist ---------Waypoint 4 South-North distance away from Home (m) “︾”means South and “︽” means North

Height ---------Waypoint 4 Height(m)



OSD main menu "Quadcopter/VTOL plane" (four-axis/vertical take-off and landing parameters) option submenu;
MIX mixed control menu vertical take-off and landing model "BimoFwing" (double-engine flying wings). Users can choose to DIY modified flying wing (post-push to double-engine, increase the aileron area, move the center of gravity backward, adjust the CTL control value) or choose the Arkbird-VTOL matching model (the parameters have been debugged).

When the mixing control is set to BIMOFW (double-engine flying wings), the above menu becomes:

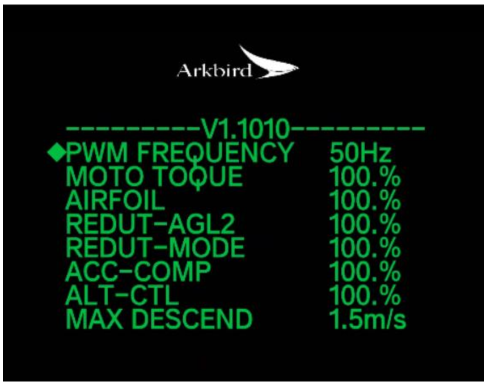


```
---------V1.1010---------
◆PWM FREQUENCY   50Hz
 MOTO TOQUE      100.%
 AIRFOIL         100.%
 REDUT-AGL2      100.%
 REDUT-MODE      100.%
 ACC-COMP        100.%
 ALT-CTL         100.%
 MAX DESCEND     1.5m/s
```

PWM Frequency	“PWM Frequency” Maximum of PWM frequency output speed is 320hz, which is suitable for high speed BEC, (Only affect VTOL mode and Quadcopter)
Motor Toque	During VTOL mode, motors toque caused by difference motors speed needs adjusted by aileron, Please increase this value if there exist torque when control channel 1 to make movement.
Airfoil	Airfoil will adjust the imbalance during VTOL mode and balance mode. Switch to balance mode before gets a stable vertical mode flight, then increase this value if plane’s nose up, otherwise decrease this value.
ReduT-agl2	Throttle will be decreased when plane pushed forward, Please increase this value if throttle is too much when you push CH2 to make plane go forward during VTOL mode,
ReduT-mode	Throttle will be quickly decreased when plane switch to VTOL mode, Please increase this value if plane suddenly up rush. Please decrease this value if plane decreasing when switch to VTOL mode
ACC-comp	Compensation parameters of speed accelerated, Please keep it default.
Alt-CTL	Increasing CTL value is able to make plane more altitude stable, but overlarge value

	will leads to the up and down plane vibration.
MAX Descend	Arkbird Autopilot will not decrease throttle when rate of descent over the MAX descend, but throttle will be automatically closed when throttle is less than 20%.

If quad is "+" and "X" mode, when the mixing control is set to non-BioMotor mixing, the above menu becomes the quad related parameter setting.



```
---------V1.1010---------
◆PWM FREQUENCY   50Hz
 MOTO TOQUE      100.%
 AIRFOIL         100.%
 REDUT-AGL2      100.%
 REDUT-MODE      100.%
 ACC-COMP        100.%
 ALT-CTL         100.%
 MAX DESCEND     1.5m/s
```

PWM output speed	"PWM Frequency" PWM waveform output speed, up to 320hz, can be used for high-speed ESC (fixed-wing mode is not affected by this parameter)
Four-axis Kp	"Q Roll Kp" The proportional Kp value of four-axis mixing (used in a symmetrical roll and pitch model, so there is only one pair of PIDs)
Four-axis Ki	"Q Roll Ki" Integral Ki value of four-axis mixing
Four-axis Kd	"Q Roll Kd" Four-axis mixing differential Kd value
Four-axis Ki speed	"Q Ki speed" The integral speed of four-axis mixing (how fast to reach the maximum Ki)
Four-axis direction stability	"Q Yaw Kd" Four-axis direction control value
Altitude control value	"Q Altitude Ctl" is the control force of the altitude control. Increasing it can increase the stability of the fixed height. If it is too large, it will cause up and down oscillations.
Maximum descent speed	"MAX Descend" Maximum descent speed, if the descent speed is too fast and greater than this value, the flight control will not reduce the throttle (but if the throttle is lower than 20%, it will be forced to close the throttle)

Under the bio-motor flying wing mixing control, the manual mode will become the hover mode, that is, the CH5 downward is the hover mode; the upward is the balance mode, custom mode and return mode; (Because there is no manual mode, it is not convenient to adjust the rudder amount mechanical midpoint, the new firmware will output the zero rudder value when entering the OSD menu, please enter the OSD menu to adjust the midpoint position of the rudder amount).

Roll Trim	It is able to adjust the different motors' speeds under vertical mode, please change this value if your bi-motor plane exist imbalance which caused by different motors' speed.
Hover Yield	Default pitch angle of VTOL mode is 6 degree, which is able to adjust pitch angle of plane in VTOL mode. Please decrease this value when plane has elevation angle, increase this value if plane has depression angle.

For bio-motor flying wing (VTOL) mixing, please connect the camera servo cable to the CH7 “Pout” port of the flight controller. The flight controller will automatically control the camera level in the horizontal and vertical state, and the camera can be moved up and down through CH7 input signal adjusted by the remote control.

For vertical take-off and landing models, first use the vertical mode to fly at a fixed point within a small open area after installation, and then test level flight. In vertical mode, you need to hit the eight-shaped joystick before you can unlock it (American hand aileron to the right, lift down, throttle to the lowest, and direction to the left), the lower line of the OSD will display L (lock) to 0 (unlock) Unlock the throttle and start flying.

For more details of installation, please refer to the document "Arkbird VTOL Vertical Take-off and Landing Installation Instructions".

11 Skills for Balance Mode and RTH Mode

The Arkbird flight control has an intelligent adaptive control algorithm, which automatically collects the throttle for horizontal flight. If the rudder angle is installed properly, there is no need to adjust any parameters, but if you want to achieve the most ideal state, you can debug according to the following methods:

After the first installation, enter the OSD menu to perform a level calibration. After calibration, tilt the flight control 45 degrees left and right to observe whether the horizon movement in the OSD is correct. Whether it quickly fits close to the actual horizon.

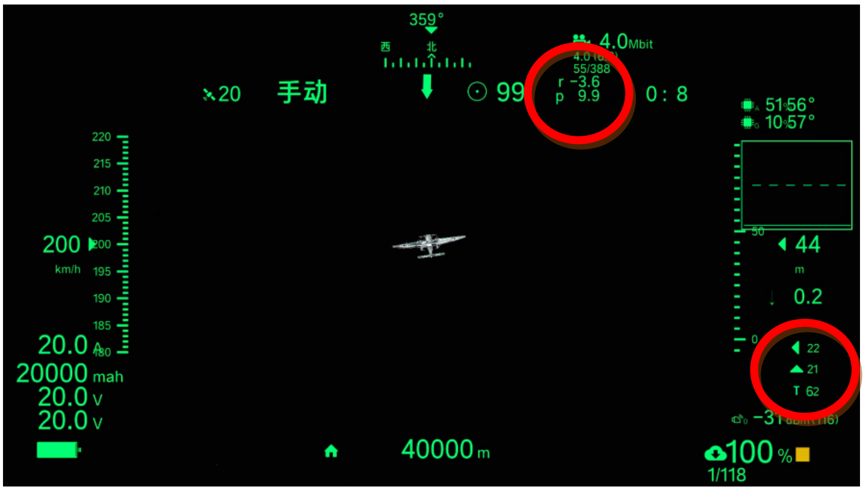
During the flight test, please test the flight with the default parameters first, make a ground recording, observe the flight data and adjust the parameters through the OSD data.

Adjusting Balance Mode:

Purpose: Stick and SUB-TRIM back to center, plane can be able to flight forward levelly.

The control ctl value is equivalent to the mechanical movement angle of servo arm. Generally, the default value is selected. However, if the control value is too large and plane shake obviously, please reduce the ctl value or the movement angle of the servo arm of the corresponding channel. When the joystick returns to the center, the head cannot be leveled, or the head is lowered or raised. Please increase or decrease the value of the "angle of attack for level flight" (do not use the joystick to fine-tune, otherwise the return mode will be inaccurate)

You can increase the yaw ctl (direction control value) appropriately to increase the heading stability. Please increase this value if it is easy to be deflected by a crosswind, or if you return home in S-shape when returning home.



Adjusting Return to Home Mode:

Switch to RTH Mode, important parameters “RTH Angle,” “Roll Control Value,” “Pitch Control Value,” and “Throttle Control Value” shown on OSD shall be checked all the time. Flying to certain height, switch to RTH Mode and check if these data are appropriate.

Adjust RTH parameters referring to these values. If the roll angle is too small to return promptly, please increase the Max Roll. If the turning is to fast so that the RTH line is “S” sharp, decrease the Max Roll and increase Rudder control (Yaw ctl). Adjust Max Up and Max Down to make plane pitch up and down smoothly. (Too prompt or slow are improper). Based on how far and high expect to fly, adjust safe height as high as possible (If fly far than 2km, please adjust this value more than 150m). Please set cruise speed as “Safe speed” in RTH menu.

12 Digital Video Transmitter Settings

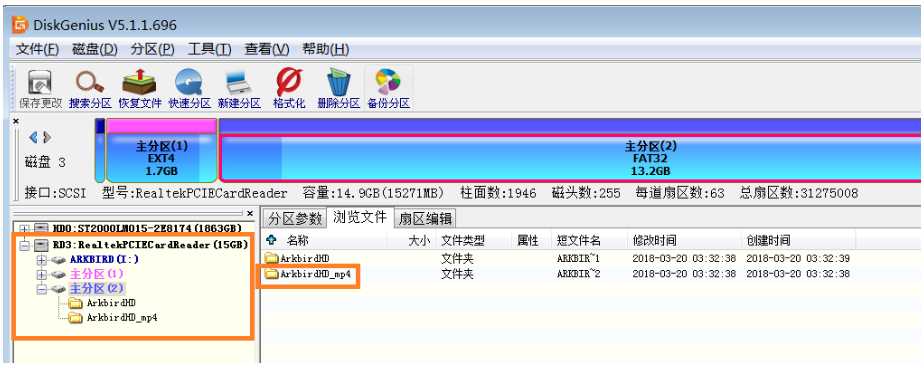
Receiver:

The receiver only needs to be connected to the round port (using 12V power supply) and HDMI interface, and it will work automatically after power on. (It is recommended to power on the display first, and then power on the receiver. The display is recommended to be set to 720P, which can increase the transmission efficiency)

The mp4 video is saved in the receiver TF card -> the third partition -> ArkbirdHD_mp4 folder;

Note: Windows system does not support TF card multi-partition, please use Linux or Apple system, or use DiskGenius software under Windows to read the mp4 file of the third partition. (The QQ group 19329609 group file is available for download)

(If the last video is lost due to power failure, power on again to repair the last video.)


DiskGenius V5.1.1.696
文件(F) 磁盘(D) 分区(P) 工具(T) 查看(V) 帮助(H)
保存更改
搜索分区
恢复文件
快速分区
新建分区
格式化
删除分区
备份分区
磁盘 3
主分区(1)
EXT4
1.7GB
主分区(2)
FAT32
13.2GB
HD0:ST2000LM015-2E8174(1863GB)
RD3:RealtekPCIECardReader(15GB)
ARKBIRD(I:)
主分区(1)
主分区(2)
ArkbirdHD
ArkbirdHD_mp4
分区参数
浏览文件
扇区编辑

接口:SCSI 型号:RealtekPCIECardReader 容量:14.9GB(15271MB) 柱面数:1946 磁头数:255 每道扇区数:63 总扇区数:31275008

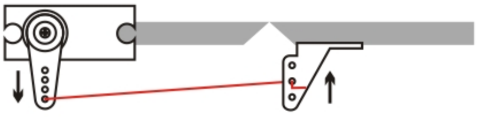
名称	大小	文件类型	属性	短文件名	修改时间	创建时间
ArkbirdHD		文件夹		ARKBIR~1	2018-03-20 03:32:38	2018-03-20 03:32:39
ArkbirdHD_mp4		文件夹		ARKBIR~2	2018-03-20 03:32:38	2018-03-20 03:32:38

13 FAQ and Solutions：

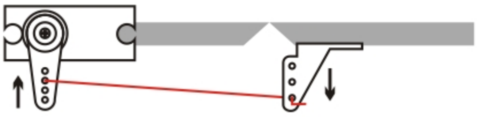
★When switching to Balance Mode, the elevator will lift up a bit because the “Elevate Angle in a level flight” in the menu is defaulted as 5°. Which means the plane will rise a bit in a level flight to ensure a level route.

★If the aileron move to the edge but you cannot enter the menu, please check if the route setup is too small on the remote control.

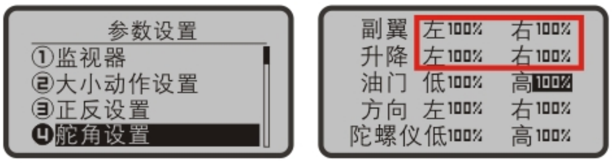
★For airplanes with too big servo angle installed, it may shake due to excessive stability. It is recommended to change the servo angle installation position and reduce the control amount at this time. And set the aileron, elevator and rudder amount of 100% normally on the remote control.



舵机向外，舵角向内,增加舵量



如有震荡舵机向内，舵角向外,减小舵量



副翼 左100% 右100%
升降 左100% 右100%
油门 低100% 高100%
方向 左100% 右100%
陀螺仪 低100% 高100%

Reduce the installation rudder angle and set the rudder angle to 100% on the remote controller

14 Other FAQ：

Q：There is no OSD / OSD is incomplete

A：Check the wiring, restart the power, check if the camera is turned on, to see if the VDLED flashes fast.

If there shows OSD but incomplete, check PAL/ NTSC signal custom option or change display device, some USB-AV card output is incomplete

Q：The OSD cannot be superimposed, and the OSD disappears after plugging in the camera

A：Please unplug the camera and replace the P/N mode of the flight control or the P/N mode of the display. If it still does not work, please replace the camera and choose the mainstream FPV camera (some surveillance cameras cannot superimpose OSD).

Q： Cannot locate home, displaying “Waiting GPS Home”

A： Seeing OSD “Waiting GPS Home” proves GPS wiring is OK, otherwise, please check GPS wiring.

GPS’s white antenna shall face up; keep GPS away from Video TX and Camera. Some inferior Video TX’s antenna will affect GPS, too. You can try to remove the casing of GPS, or put a layer of tin foil paper under GPS to enhance the performance.

GPS can only work Outdoors, First time about 5-10 minutes, next power on of the same day it would take less than 10seconds to locate.

Q: Plane tilts under Balance Mode / Manual Mode, can I adjust the radio TRIM

A: Damping to ensure that the acceleration health value is greater than 65 in level flight;

Try not to adjust the remote control fine-tuning, fine-tune it back to center, adjust the mechanical lever and the center of gravity to balance the manual mode.

Because in the balance mode, the flight controller can automatically correct the imbalance caused by the center of gravity and the mechanical servo angle to cover these tilts, but after all, it is not true mechanical stability, and there may be hidden dangers in the return to home mode.

Q: Inaccurate Return-To-Home

A: Adjust remote control servo angle to 100% and sub-trim back to center. Check carefully in reference to the "Debugging Skills for Balance and RTH Mode" chapter of our instructions.

Make ground video recordings. When switching to RTH or other autonomous flight modes, Roll/ Pitch inclination value and throttle control value will be shown at the bottom right corner of OSD. These data will tell you if the control values are proper and will help you judge which parameter needs to be sub-trimmed.

Q: The manual balance mode controls the throttle normally. After entering the OSD menu, the throttle starts and the motor rotates. Or cannot enter the menu.

A: If you fine-tune the throttle and aileron channels of the remote control or set the roll value so that the roll,pitch and yaw value is not the default, the all servos value of the remote control will not correspond to the flight control zero point. Please make sure that the servo value of each channel of the remote control is the default Of 100%. Refer to the ESC manual, connect the ESC directly to the receiver and recalibrate the throttle range of the ESC.

Q: When using delta wing mixing control and V-tail mixing control, the manual mode control mixing control is abnormal, and the steering gear moves in the same direction.

A: Do not set the mixing control on the remote control, set the mixing control in the flight control. When the flight controller controls the delta wing mixing and V tail mixing, the two steering gears that need to be mixed are the same steering gears. If a forward steering gear and a reverse steering gear are installed by mistake, the left and right steering gears should be The movement in the same direction becomes reverse and the mixing becomes wrong. Check whether the servos are reversed, or replace two servos in the same direction.

15 Attentions:

Please read carefully the safety measures of Arkbird fixed-wing balancer:

★The purpose of the balancer is to maintain the flight balance of the model airplane. It cannot control the aircraft or prevent stalls. You must have enough fixed-wing experience to control the flight of the aircraft.

★The balancer can only be used for small aircraft models. Do not install it in an aerial camera that may fly over people. You should fly in an open area and prevent any accidents from causing personal and property damage.

★You must install and use the balancer as required, and check the working condition of the balancer before each flight.

★The equipment on the aircraft and any electronic products cannot be completely reliable. When using the Arkbird fixed-wing balancer, you should evaluate the product and use the system in accordance with relevant regulations. The system provider will not cause any damage caused by the use of the product Responsible for direct or indirect losses and consequences.

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