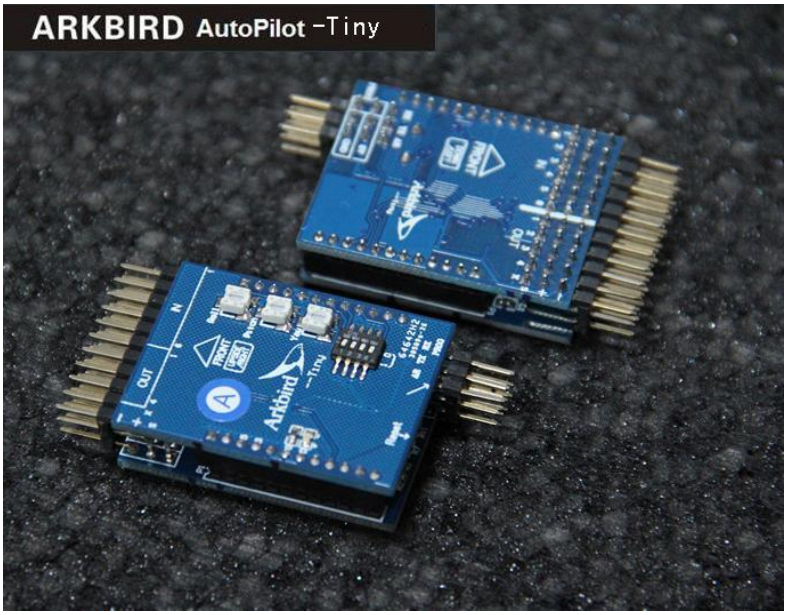
ARKBIRD-Tiny Product Features:

ARKBIRD System is a high-accuracy autopilot designed for fixed-wing, which has capability of auto-balancing to ease the manipulation while flying.

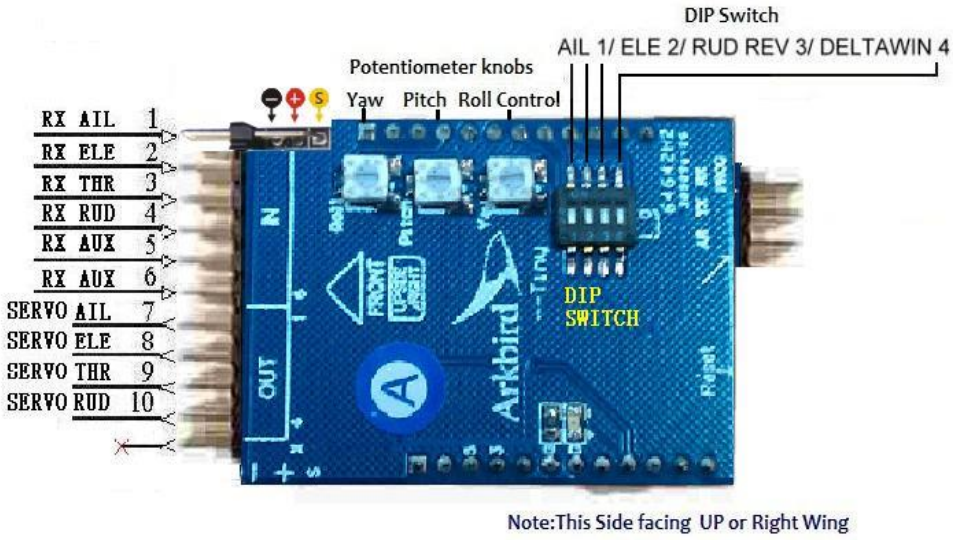
1. Function all in one broad, on broad IMU (Inertial measurement unit).
2. Plug & Play design, no need to weld any wire.
3. Intelligent PID controller. Easy to adjust, support delta-wing.
4. One button auto-leveling, semi-automatic flying; lock angle 45° with MAX sticks, auto-leveling after releasing sticks.
5. Gyro 3D balance.
6. One button hover mode. regard the hover position as balance position



Warning: Read this manual carefully before use! Pay attention to important detail and parameters!

Use “ctrl+F” to search this document to locate information, eg. ”neutral check”.

1. Wiring



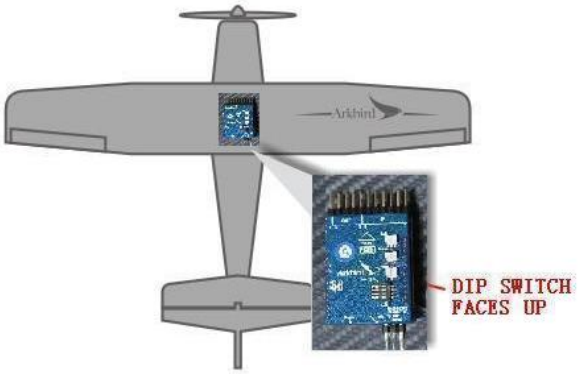
（Check carefully before power on, incorrect wiring will damage the autopilot permanently!）

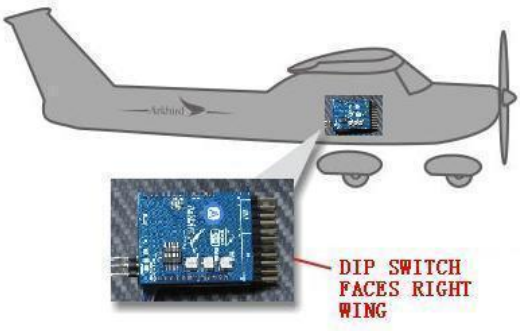
1. The pins of RX in & Servo out shall stay forward (toward flying direction), the side with 4P dip switch shall be upward or vertical installed toward right wing.（Default is level installation）

2. Put on heat-shrink tubing, fix by sponge and cable tie. Please keep away from motor to avoid vibration and reducing the accuracy of sensor.

3. While using on flying wing, connect channel 1 output to right servo and connect channel 2 output to left servo. DISABLE the mix function from transmitter, switch Dip switch 4 to “0” to enable flying wing mix.

4. While using on 3-channel plane, connect channel 1 output to rudder to steering.





2 ways of installation

2. Switch Modes through CH5 and CH6:

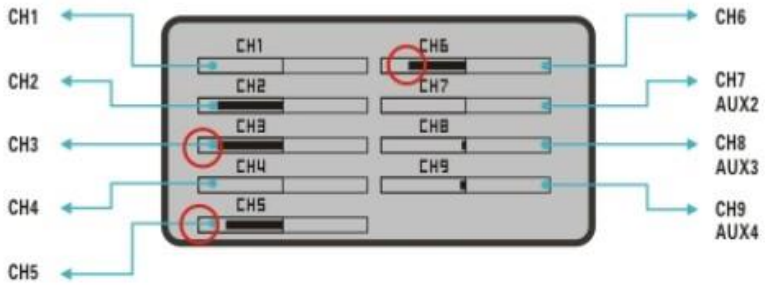
Use CH5 and CH6 to switch flight mode.

1) While CH5 is less than 50%, it switches to Manual Mode;
2) While CH5 is more than 50% and CH6 is less than 30%, it switches to Balance Mode;
3) While CH5 is more than 50% and CH6 is between 30% -70%, it switches to Gyro Compensation Mode; it will only do compensation when unintentional attitude changes.
4) While CH5 is more than 50% and CH6 is more than 70%, it switches to Hover Mode; it will hold the plane balanced hover attitude.

$$\begin{cases} CH5 < 50\% \text{ ---------- Manual Mode} \\ CH5 > 50\% \begin{cases} CH6 < 30\% - \text{ Balance Mode} \\ CH6 > 30\% - \text{ Gyro Mode} \\ CH6 > 70\% - \text{ Hover Mode} \end{cases} \end{cases}$$

Note: Check CH5 and CH6 reverse through radio monitor：

push throttle, CH5 and CH6 to 0%, the CH3, CH5, and CH6 status shown on radio shall be like picture below (Or check through servo).



3. Neutral Check

Neutral point alignment needed under first installation, changing of Vertical/Level installation, not using for weeks, or temperature variation is more than 10 degrees.

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

Aileron all the way to the right means it is waiting autopilot be put down,

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.

4. Manual Mode

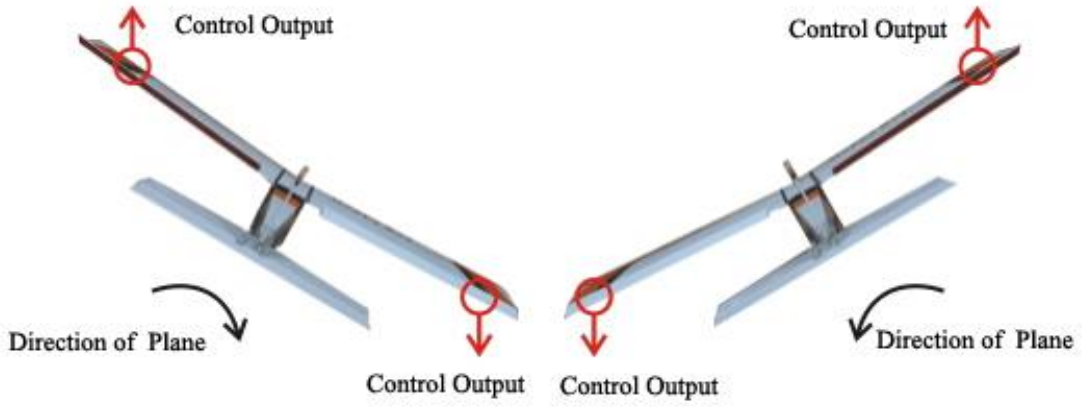
Radio Stick and SUB-TRIM back to center, set radio travel range as 100%.

Switching to Manual Mode, Arkbird will not participate control, set manual control's reverse through radio, adjust plane's CG and travel angle.

5. Reverse Balance Mode assistant Control

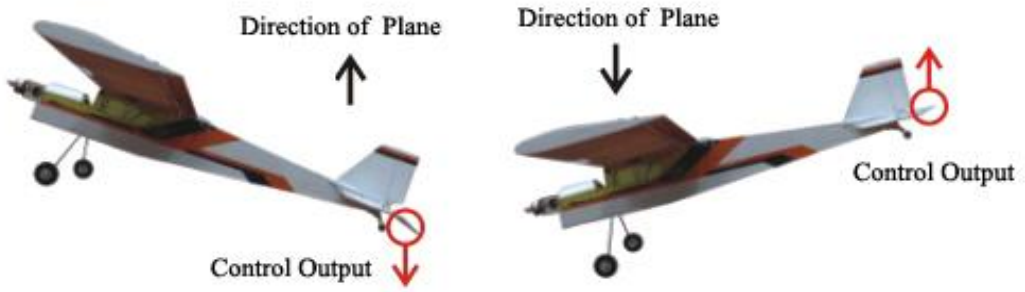
Switching to Balance Mode, by pushing CH5 to 100% and CH6 to 0%, if the neutral point is correct, rudder, aileron and elevator shall be at the neutral position, otherwise please check the neutral point again.

1. **Aileron**: When rolling the plane to right, aileron shall produce a left compensation automatically, make plane go back horizontal. On the contrary, when rolling to left, aileron will produce a right compensation. Please see as below:



If the compensation direction is not correct, please move the Dip switch 1 to the other side.

2. **Elevator**:When pitching up the plane, elevator shall produce a down compensation automatically. On the contrary, when pitching down, elevator will produce an up compensation. Please see as below:



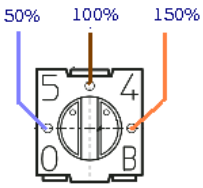
If the compensation direction is not correct, please move the Dip switch 2 to the other side.

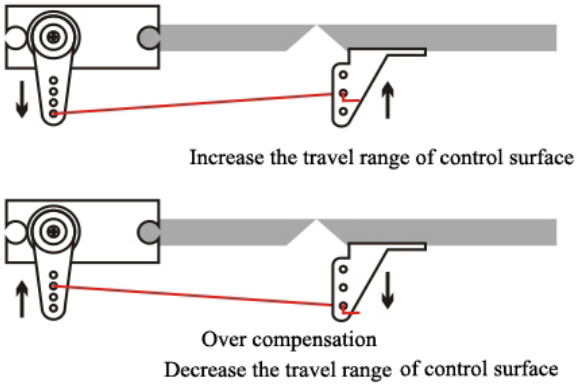
3. **Rudder**: When yawing the plane to right, rudder shall produce a left compensation automatically. On the contrary, when yawing to left, rudder will produce a right compensation.

If the compensation direction is not correct, please move the Dip switch 3 to the other side.

6. Adjust output travel range：

Please setup stick angle volume on RC Transmitter as 100%, fine tuning back to middle, and change stick volume by adjusting Roll/Pitch/Yaw Potentiometer knobs or plane's control surface.





Please increase control value when the stability not good enough under Balance Mode (drift even stick back to center), turn the Potentiometer knob clockwise

Decrease control value when the plane swings, turn the Potentiometer knob anticlockwise.

Please fly under Manual Mode while the first flight, switching to Balance Mode at safe height, turning back to Manual Mode and landing on any unexpected situation.

Attention：

Please read through carefully:

1. The design purpose of autopilot is to keep balance of flight, it is not able to manipulate plane or prevent stall. You must have sufficient experiences of fixed wing to control the flight.
2. The autopilot is only for small-scale RC model. For safety concern, please do not install in plane for aerial photography which might fly over crowd.
3. Please install the autopilot depends on your demands and check the condition before flying every time.
4. Any equipments and electric products on the plane couldn't be completely reliable, please using this system following the instruction. The system provider is not responsible for any direct or indirect loss and consequence caused by using this product.

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Revision Information：

12.12.14First Release