Arkbird Wireless Head Tracker

Arkbird Wireless Head Tracker maybe the first wireless head tracker in FPV field, C**amera on plane** can be controlled with the help of this wireless head tracker, providing a wonderful VR(Virtual Reality) FPV view.

You can also **directly control the roll - pitch flight of the aircraft**! Enjoy more interesting flight control (kinect flight).

Feature:

- Providing an Omni-directional FPV view;
- Variety connection methods available;
- Precisely calculation and movement;
- No wires, neat performance and move freely;
- Good compatibility, work with most Radios and UHFs.

Attention:

Please read manual carefully before using this product.

Checking all details including connection carefully before powering is very important. Any wrong connections may result in permanent damages.

Receiving module of Arkbird Wireless Head Tracker has PPM in and PPM out(for radio TX). Meanwhile it is also work with 2 PWM out, you need a servo PTZ on your plane to be controlled:

When you using PPM in and PPM put, the roll and pitch control value will be superimposed to Channel 7 and Channel 8 of your radio PPM.

When you using two PWM output, head tracker is able to give a pitch and roll control of your servo. (You can use it directly on PWM mode of any 433 UHF systems)

Transmitter Module

1. Assembly method of Transmitter Module (Recommended)

Assemble the transmitter module on the front side as shown in the following picture:

2. Guide for using transmitter module

(1) Calibrating sensor:

Step 1, switching ON the transmitter module, you will see the Yellow LED light and Blue LED keep lighting in about 3 seconds, which means the transmitter is in pairing frequency status ;

Step 2, when the frequency has been paired, please let the USB port is pointing left side, then pressing the white function button for 10seconds (until Yellow LED and Blue LED keep light), and release the white button, Yellow LED will be turned off, wait 3seconds for calibration.

(2) Restore center point:

It is important for you to pressing the white button on transmitter to restore center point, which will make the servos go back to center. You can restore center point when you are using head tracker, current direction will be set as start position.

(3) Change PTZ control mode or kinect mode （gyroscope output）

When in the kinect mode, the head motion is used to control the pitch/direction of the multi-rotor/fixed wing, so as to realize the kinect feeling flight.

If the transmitter is in PTZ control mode, the direction output absolute angle, the LED yellow light is off, and the LED blue light is double flashing,;

If it is the kinect mode, the output of the direction is the data of the rotating gyroscope (0 when it is not moving), the LED yellow light is always on, and the LED blue light is double flashing

Press the button of the transmitter module 10 times in 10 seconds to switch between two modes, and the flashing status of the yellow light will also change.

Receiver module

1. **Receiving Module Definition:**

Receiver Power:(4.0V-18V)

(1) Port 1 for radio TX: Any radios which have PPM port such as Futuba, Frsky, x9d can be directly connected. Definition of each port (See above picture): PPM IN, Power input, input, GND and blank. (PS: The two Power inputs are individually powered)

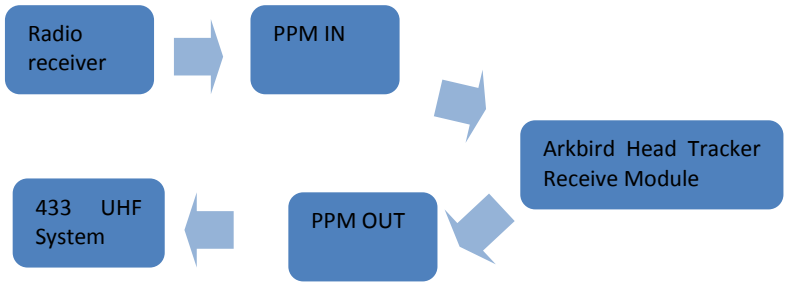
(234) Port 234: Pitch PWM OUT, Roll PWM OUT, Radio PPM IN, Radio control PPM OUT.

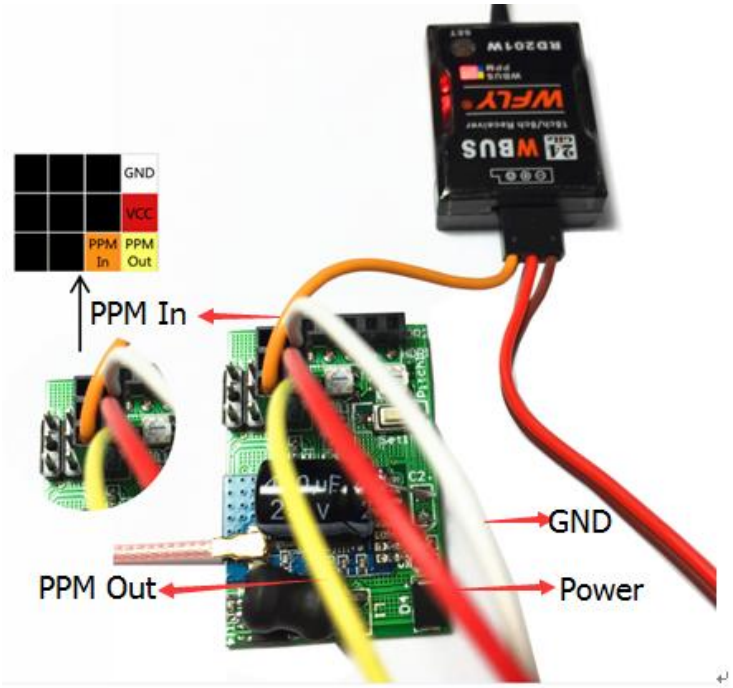
(5) PWM value spinner. Starting from the top as shown above, definition of Port 5 are Roll Spinner and Pitch Spinner.

(6) Port 6 is the function button, which will also be used when firmware updating.

2. **Wiring instructions:**

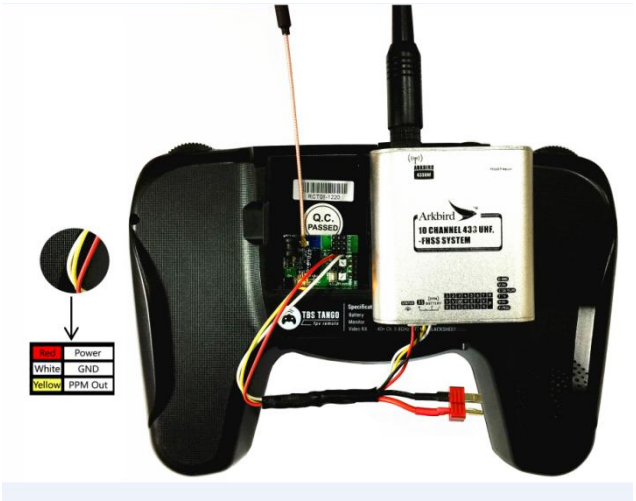
Connection Method A: PPM transit connection:





External 433 UHF will supply power for receiving module and radio receiver. The radio PPM signal is connected with PPM input of Arkbird wireless head tracker receiving module; PPM output of Arkbird wireless head tracker receiving module is connected with PPM input of 433 UHF.

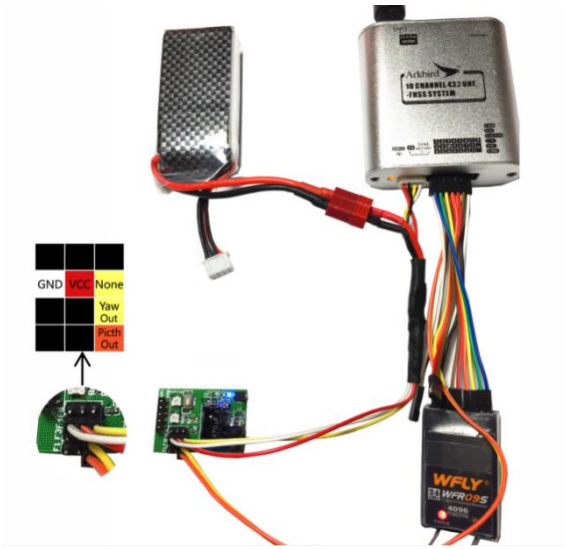
Connection Method B: PPM directly connection (One cable connection)



In PPM mode, Radio (Plug T not connected) will supply power for head tracker receiving module and 433 UHF transmitter. PPM signal from radio will be sent to receiving module of head tracker, which will imposes pitch and roll control values to PPM signal Channel 7 and Channel 8. The signal will be sent to 433 UHF.

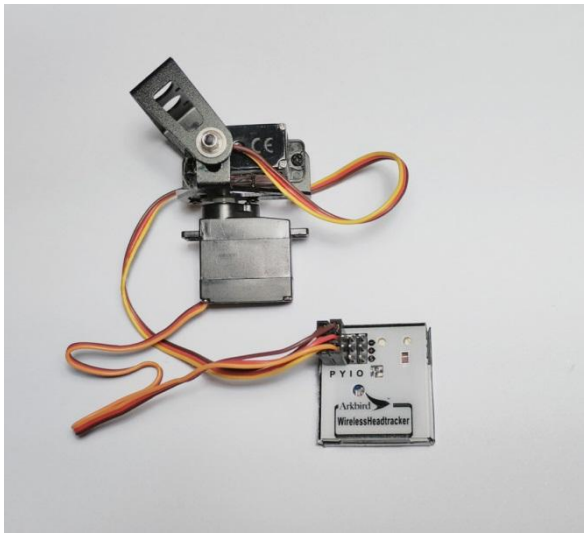
Connection Method C: PWM directly connecting

Individually connect Channel 1 to Channel 6 of radio receiver with corresponding Channel 1 to Channel 6 of 433 UHF transmitter; connecting PWM PITCH output of head tracker receiver module with Channel 7 of 433 UHF transmitter; connecting YAW output of head tracker receiver module with Channel 8 of 433 UHF transmitter;



Connection Method D: Directly connection with two servos

All above connection methods are connected with radio controller or UHF. If for short distance flying, only need connecting the head tracker receiver to two servos with PWM output.



E 接入遥控器教练口，按通道教练

支持按通道教练的遥控器（OpenTX、EdgeTX），可以将接收机的 PPM 输出信号直接接入到教练接口，再参照遥控器说明书，将遥控器的第 7 通道和第 8 通道设置为教练模式，这样可以通过遥控器直接发射出去。

（接 1S 电池或者遥控器电源给接收机供电）

（头追接收机->PPM 给 遥控器教练口输入->遥控器设置 7 8 通道为教练信号->遥控器接收机->舵机）

Connection MethodE Connect to the remote control trainer and press the channel trainer

The remote controller (OpenTX, EdgeTX) that supports training by channel can directly connect the PPM output signal of the receiver to the training interface, and then set the 7th and 8th channels of the remote controller to the training mode according to the instructions of the remote controller, so that it can be directly transmitted through the remote controller.

(Connect 1S battery or remote control power supply to power the receiver)

(Head tracking receiver ->PPM input to the trainer port of the remote control ->set 7 8 channels for the trainer signal of the remote control ->remote control receiver ->steering gear)

Enter the model setting, and set the Trainer mode to Master/Jack.

If you need to control the camera PTZ, enter the remote control output setting, and set the output channel (such as 9, 10) to TR7 and TR8;

If it is necessary to control the pitch/rudder amount of the aircraft to achieve body feeling flight:

Enter the remote control **mix control setting**, add TR7 and TR8 on the pitch and direction (2 and 4 channels) mixed control, as shown in the figure, you can add a channel for the switch (such as SB+), the amplitude and positive and negative can be adjusted by the knob on the receiver, and can also be set by the remote control (such as 400% and 200% for more sensitivity in the figure);

3. Guide for operating receiving module

(1) Frequency alignment

Frequency alignment is needed when you firstly use this device or update firmware. Yellow LED light and Blue LED light will interactively flash when firstly power it, which shows receive module is in frequency status, then turn on the transmitter module, which will be automatically pair frequency.

Press the white button for 11 seconds or more when you want to fair frequency again. Keep pressing white button until Yellow LED light and Blue LED light interactively flash, which shows

receive module is in frequency status, then turn on the transmitter module, and receive module will be automatically pair frequency and save data.

(2) Failsafe Setting

Pressing the white button for 8 seconds and do not release button until Yellow LED light and Blue LED light interactively flash. If the receive module lose signal, it will automatically enter into failsafe mode..

In failsafe mode, only PPM signal from Channel 9 and Channel 10 will be interfered, others do not have any influence. (Arkbird head tracker only uses these two channels.)

(3) Trim servo value

Turn Pitch and Roll (Yaw) potentiometer clockwise or counterclockwise to set or trim value of servo until get satisfactory status.

Attention: Do not turn the potentiometer with extreme force. Not allowed to turn the potentiometer when it is stuck to protect potentiometer.

III. Introduction of working status of transmitter module and receiver module

1. Introduction of working status of transmitter module

- **Frequency alignment status:** when the module is powered on, **Yellow LED light and Blue LED light** will keep lighting on about 3 seconds. Then frequency will be automatically paired.
- **Normal working status:** when the frequency alignment is done, **Yellow LED light will turn off and Blue LED light will double flash.**
- **Power shortage status:** when the module is lack of enough power, **Blue LED will turn off and Yellow LED light will flash.** Transmitter module will stop working and waiting for being charged.
- **Charging mode status:** when the transmitter module is lack of power, USB data cable could be used for charging. In the charging mode, **Red LED light will keep on** until it is fully charged. **Then Red LED will turn off which means full of power.**

2. Introduction of working status of receiving module:

- **Failsafe mode status:** if the transmitter module is not powered on or lose signal, the receiving module will be automatically entry into failsafe mode. In this mode, **Yellow LED and Blue LED will slowly and interactively flash.**
- **No PPM signal input status: Blue LED light double flashing and Yellow LED light flashing successively which** indicates both transmitter module and receive module are in working status, while the PPM signal input is abnormal. Checking the PPM signal wire connection of receive module is needed.
- **Normal working condition: when Blue LED light flashing 1 second per circle and Yellow LED light flashing successively** indicates head tracker is normal working condition.