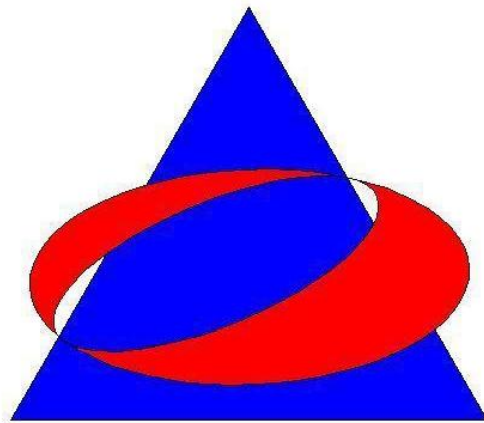




FY-41AP AutoPilot & OSD System

Installation & Operation Manual

(Fixed Wing Version)



F e i y u T e c h

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Dear Customer :

Thank you for choosing FY-41AP as your autopilot system. Please read this manual carefully to ensure correct installation & operation. FY-41AP has fixed wing and Multi-rotor version, you can through firmware upgrade to choose use which version. Now you are reading the fixed wing version manual.

User Agreement:

The use of FY - 41 AP is prohibited for any illegal intentions and purposes. The user will be fully responsible for the use of this product and FY-Tech will not be held liable it's misuse either in its original or altered state by the customer (including the direct, indirect, or third party losses caused by a faulty plane or plane crash).

Please read this manual carefully before using this product. If you have any questions, do freely contact us and we will attempt to provide you with a satisfactory clarification and/or resolution should it be required. The products' functions maybe changed only by firmware upgrades which is available from our website from time-to-time. Please do check our website for available firmware upgrades. The company reserves the right to alter the contents of the product firmware.

This agreement takes immediate effect upon the purchase of the product.

Attention:

- The installation and use of this device require some skill and knowledge in flying remote controlled aircraft.
- If you are a complete beginner & have never flown one before, we do not recommend you install this device on your own. Please find an experienced RC pilot who may provide you with the basic knowledge required to use this device successfully.
- If you are already an experienced flyer, you will find the FY-41AP installation to be easy & logical. Follow this manual & you won't go wrong.
- If you need further technical support, contact us at: service@feiyu-tech.com

FY-41AP AutoPilot & OSD System Introduction

FY-41AP Module

FY-41AP is an inertial attitude measurement instrument used for FPV flight on fixed-wing aircrafts and multi-rotors aircrafts. It has an integrated OSD video overlay system that presents critical flight information such as power management, airspeed, altitude, and flight direction via its electronic compass, allowing for a clear visual flight while ensuring key information is within sight.

The new FY-41AP with its enhanced Altitude Control and GPS module, can now realize improved pinpoint inertial navigation and automatic piloting.

Flight stabilization is achieved via an integrated 3 axis gyro, 3 axis accelerometer, 3 axis magnetometer and a barometric pressure sensor. This enables the module to accurately measure flight attitude, earth azimuth & relative altitude to achieve:

- Extremely stable conventional flight pattern
- Stabilized 3D flight
- Automatically return to home (RTL)
- Fixed altitude flight
- Heading lock flight
- GPS waypoint flight
- Auto circling over a fixed GPS location.

GPS Module

GPS module– enables the FY-41AP to calculate the flight course & sense the exact location of the aircraft. GPS Data allows aircraft return to home (RTL), Auto Circle, Fixed altitude, Heading lock flight and fully autonomous flight via GPS waypoints setting.

Airspeed Module

The Airspeed Sensor included enables the system to automatically control airspeed via throttle management and prevents the aircraft from stalling and ensures a stabilized flight.

Compared to GPS the Airspeed Sensor reacts quicker and is affected less by the wind.

OSD System

FY-41AP has integrated OSD hardware with optimizing display interface. Critical flight parameters are displayed like Altitude, Speed, Direction, flying voltage and Amp draw, and most display parameter outlay can be changed via RC control.

Power Manager Module

FY-41AP can connect Power Manager Module which is integrated with Current Sensor module and Voltage-Regulating module. Current Sensor is used to check voltage, Amp draw. The integrated Voltage-Regulating module provides stable +12V to FPV video camera and video transmitter.

Altitude Control

Altitude control - is achieved using a high sensitivity barometric sensor which measures relative height. Altitude is fixed via elevator servo control and throttle management.

Heading Control

Heading control – is achieved by utilizing the three axis magnetometer, which senses the aircraft heading angle. Both the aileron & rudder servo is used to control flight heading. GPS data is used to automatically correct heading even in windy conditions.

Speed Control

The airspeed information is made available when using with the GPS module. For more accurate airspeed information, the included Airspeed Sensor should be

connected to FY-41AP.FY-41AP, will automatically select the airspeed reading from the latter and display within the telemetry information.

Function Introduction

FY-41AP Single Module Function

- **Activated Mode** - In this mode, the FY-41AP auto stabilization is turned off. The aircraft is completely under pilot control.
- **Stabilized Mode** - level flight is automatically maintained, making flight simple, especially for beginners. If a pilot feels the plane is out of control, simply reduce input control and the plane will automatically recover level flight.
 - **3D Mode** – if no input is given by the pilot (all sticks in the middle position), 3D mode will lock the current aircraft attitude. Therefore the aircraft can be easily maneuvered to complete a variety of 3D flight with added stability & smoothness.
 - **Fixed altitude & Heading lock Mode** – this mode maintains aircraft flight course & holds the altitude on activation. By using GPS data, the system automatically corrects flight course deviation & maintains straight-line flight.
 - **Auto Circling Mode** –On activation, the plane will maintain altitude and flight speed, while initiating a counterclockwise circle, but this is not hovering around a fixed point, is likely to be blown away from the original place of circle.

FY-41AP with GPS function

- **Fixed altitude & Heading lock Mode** – this mode maintains aircraft flight course & holds the altitude on activation. By using GPS data, the system automatically corrects flight course deviation & maintains straight-line flight.
- **Waypoint Navigation Flight Mode** - enable you to fly fully autonomous, with up to 20 waypoint settings via the FY Ground Control Station (GCS) software.
- **Auto Return To Launch Mode (RTL)** – Upon activation of this Mode, the aircraft will automatically return to the Home point, maintaining its current altitude. Upon reaching the Home point, it will initiate auto circling.
- **Auto Circling Mode** –On activation, the plane will maintain altitude and flight speed, while initiating a counterclockwise circle. The centre of the circle is the point of activation at a default radius of 80 meters (can be changed via FY GCS).
- **GCS software** – By using a field computer and connecting the FY41AP to an FY Data Radio via the UART port, you can set the FY41AP flight parameters, monitor the flight progress & record / reply the flight via the FYGCS software. For more information, please refer to the FY Data Radio manual.


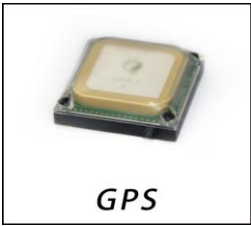

OSD Video Overlay System Function

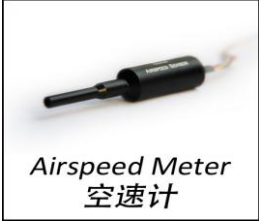





First Person View (FPV): FY-41AP has an integrated OSD video overlay system that presents critical flight information on the video for easy enjoy FPV, at the same time, Auto stable, Fixed altitude & Heading lock, Waypoint Navigation , Auto Return To Home function will make FPV operation more easy.

FY-41AP can be connected to a Data Link

Connecting to a Data Link can increase flight distance. Additionally, when used with FY-GCS (Ground Control Station) System you can view telemetry data of flight conditions and more effectively, you are able to make changes real-time including setting of flight path and other parameters including flight attitude etc.

FY-41AP Configuration




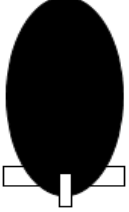
NO.	Module	Introduction
1	 <p>FY-41AP</p>	<p>FY-41AP module</p> <p>Size</p> <p>Weight:34g</p>
2	 <p>GPS</p>	<p>GPS receiver module</p> <p>Size: 32mm * 32mm * 13.5mm</p> <p>Weight: 24g</p>
3	 <p>Power Manager 电源管理模块</p>	<p>Integrated with Current Sensor and regulate voltage module to provide stable +12V to FY-41AP and FPV video camera and transmitter at the same time.</p> <p>Size:</p> <p>Weight:</p>

4	 <p>Airspeed Meter 空速计</p>	<p>To measure airspeed Size: 64.5mm * 13.5mm * 13.5mm Weight: 9g</p>
5	 <p>USB Data Cable USB线</p>	<p>For FY-41AP upgrade version For connect data link to PC For connect remote adapter to PC</p>
6	 <p>2*4P Receiver Connecting Wires 2*4P RC接收机配线</p>	<p>For connect FY-41AP to remote receiver</p>
7	 <p>Video Connecting Wires 视频连接线</p>	<p>For connect video camera or video transmitter</p>
8	 <p>Power Supply T-Head 电源T头</p>	<p>Can weld to power manager module for connect the batter and ESC</p>
9	 <p>GPS Extension Cord GPS延长线</p>	<p>GPS extension wire</p>

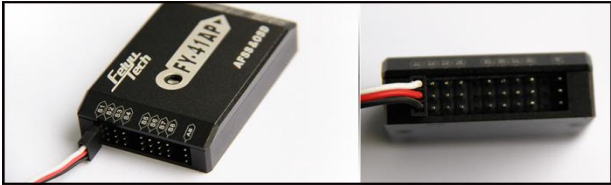
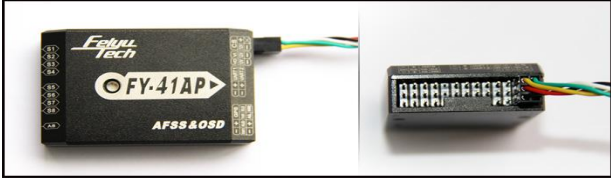
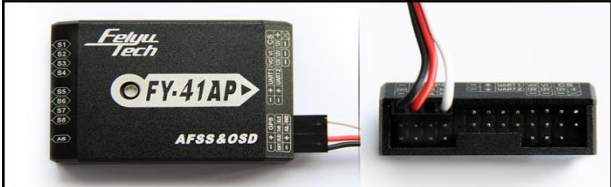
FY-41AP Connection Summary:

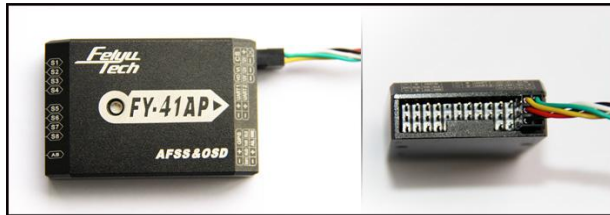

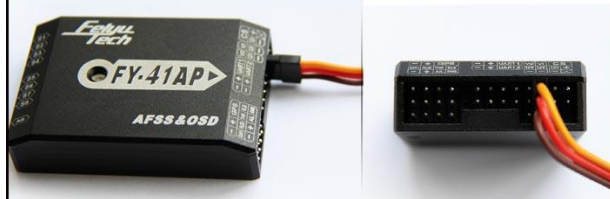
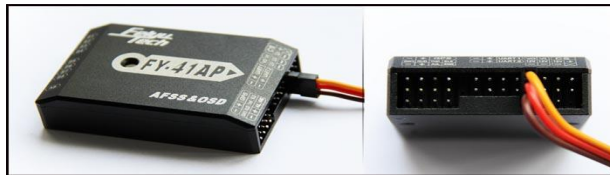
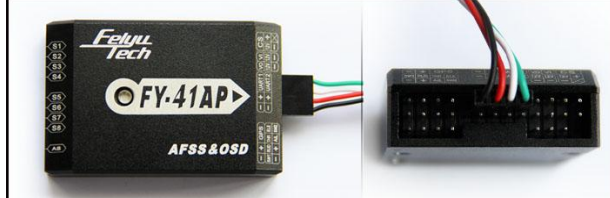
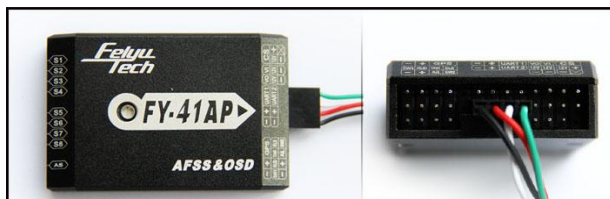
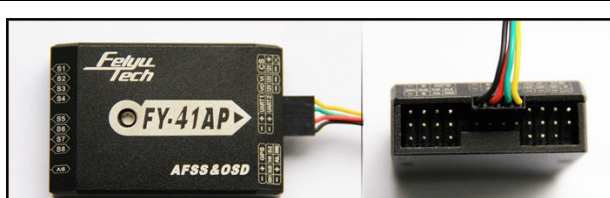



S1~S8 Servo Interface Connection Instructions

No.	 traditional	 flying wing	 V tail	 airship
S1	Aileron servo 1	Aileron & Elevator mix control servo 1	Aileron servo 1	Not use
S2	Elevator servo	Aileron & Elevator mix control servo 2	Elevator & Rudder mix control servo 1	Elevator servo
S3	Throttle servo/ESC	Throttle servo/ESC	Throttle servo/ESC	Throttle servo/ESC
S4	Rudder servo	Not use	Elevator & Rudder mix control servo 1	Rudder Servo
S5	Aileron servo 2	Not use	Aileron servo 2	Not use
S6	Not use	Not use	Not use	Not use
S7	Not use	Not use	Not use	Not use
S8	Not use	Not use	Not use	Not use

Connection Introduction

Connection picture	introduction
	S1~S8 servo wiring connection Pay attention to the signal wiring sequence
	Power manager wiring
	GPS module wiring

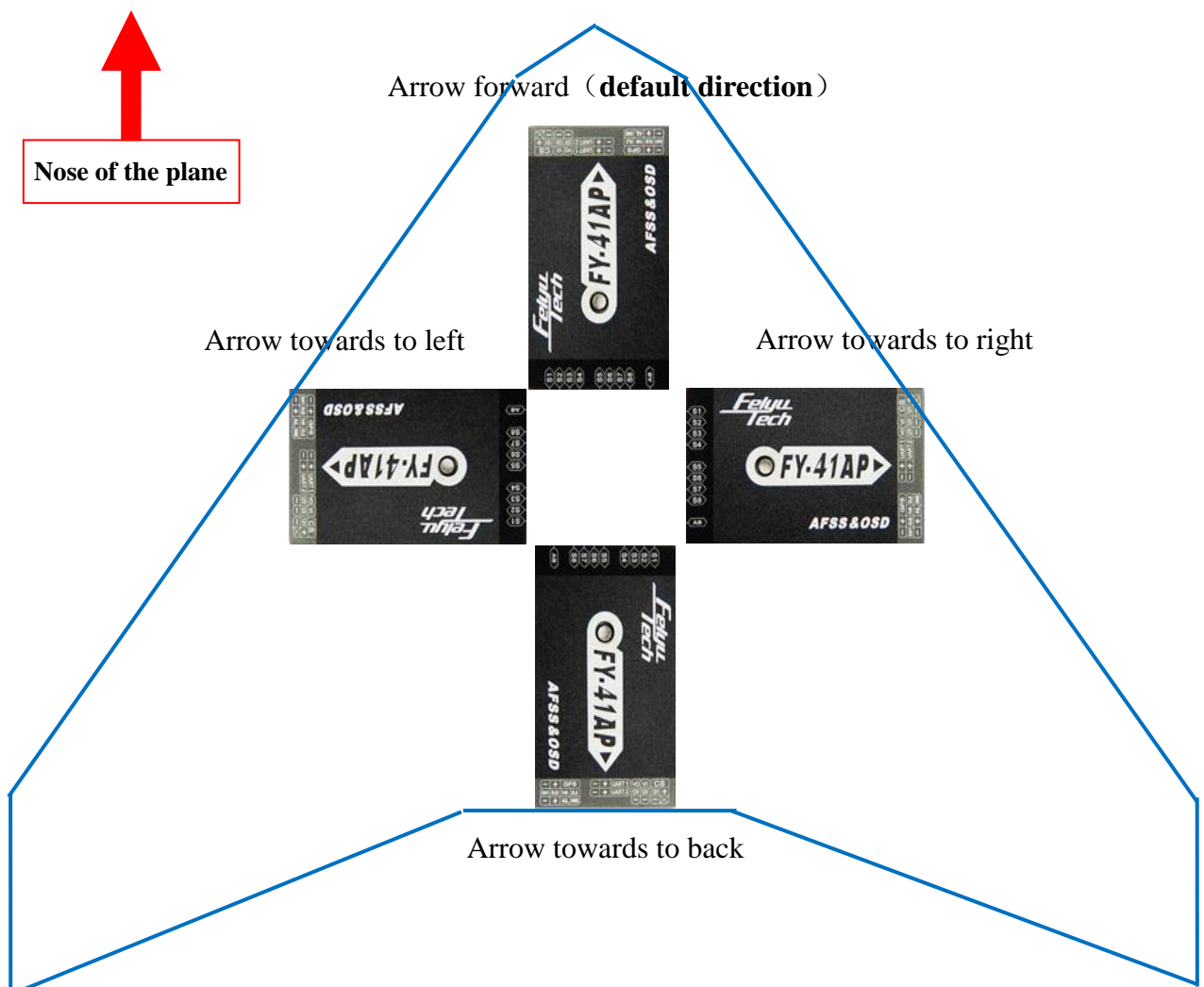
	<p>2x4P RC receiver wiring For FY-41AP Black&white——AIL orange——ELE green——THR yellow——RUD brown——CH5 blue——CH6</p>
	<p>Airspeed meter wiring</p>
	<p>Video camera wiring Yellow-video signal Red--+12V Black--GND</p>
	<p>Video transmitter wiring Yellow-video signal Red--+12V Black--GND</p>
	<p>Connect the USB data cable to UART1 port to firmware upgrade for FY-41AP control module</p>
	<p>Connect the USB data cable to UART2 port to firmware upgrade for OSD module</p>
	<p>Data link wire Connect the FY-602 data radio to UART1 port</p>
	<p>Vibration absorbing pads (dampers),use for FY-41AP vibration damping installation.</p>

Main Module Installation



FY-41AP module installation

- When installing, please keep FY-41AP horizontal and as close as possible to the "Centre of gravity" (COG) of the aircraft. The modules orientation can be changed by FY-GCS (Ground Control Station) system: arrow to front, back, left or right.
- Efficient anti-vibration components are very important and to be used when installing. You can use the included 'vibration absorbing dampers' or your DIY equipment. Please note: For Nitro planes, flying without using efficient 'anti vibration damper's', will lead to FY-41AP working abnormally.





GPS module install

- GPS receiver module has integrated plate type GPS passive antenna with stronger reception ability shielding the false signal by ground reflection efficiently. **DO NOT** install next to metal or carbon fiber & other shielding material, which may block satellite signal reception. Install the GPS Module horizontal and away from electromagnetic sources such as ESC's, power wires, servo wires & video transmitters which can interfere with GPS signal.



Power manager module install

- Power manager module supports 2S ~ 6S lithium battery input; the integrated current sensor can measure APM draw and voltage; DC-DC module offers 5V to FY-41AP meanwhile 12V to video camera and video transmitter. But servo power is supplied by ESC or S1~S8 any port access.



Power manager module install

- The airspeed sensor need to pull ahead the front of the pneumatic opening and in the line with the direction of flight. You can install the Airspeed sensor to the wing or in the front of the nose, do not block the front of the air inlet , we can use the glue to fix the airspeed sensor. **Note: Make sure that after installation, the fuselage in flight airflow can not interfere with air intakes.**





Remote control setting: SW1&SW2

- FY-41AP needs remote control and receiver with at least 6 channels, including 4 normal channels for AIL,ELE,THR,RUD, and two for SW1,SW2 to control flying mode.
- You need to choose normal fixed wing plane mode canceling all mix control modes, meanwhile setting CH5,CH6 to two three-switch.
- FY-41AP need two three-switch to control flying mode:SW1 for deactivated mode, stable mode, 3D mode; SW2 for return to home and path flight (default mode),circle, and fixed attitude and head locking mode(need set)
- After setting the Switch, you can double check by monitoring the indicator light on the module against selected flying mode. Detail see the indicator light manual
- SW1&SW2 default set:

SW1			SW2		
deactivated	●	▲ ■ ▼	Path flight	●	▲ ■ ▼
stable	●●		NULL		
3D	●●●		Path flight	●●	

NOTE: SW-2 has priority over SW-1. Only when **SW-2** is in the 'Null' Mode can **SW-1** work. Therefore 'Null' should be one of the options for **SW-2**, otherwise **SW-1** will not work.



Gyroscope Reset

If the following conditions occur, the FY-41AP initialization is recommended:

- (1) The device has not been used for a long time.
- (2) There is a change in environmental temperature of over 30 degrees since last flight.
- (3) The purple LED flashes continuously even when the FY-41AP remains stationary and you never activate the motor.(When you in non navigation mode, which means SW2 is “NULL”).

Note:

For the better flight, we suggest you to do the gyro reset before each flight.

There are three way to realize the gyro reset. (The FY-41AP must keep stationary during the gyro reset procedure)

- Through SW1:

On SW1,switch ABM to Deactivated Mode 6 times, time interval has to be less than 3 seconds as follows:

ABM→ Deactivated Mode → ABM → Deactivated Mode → ABM → Deactivated Mode
→ ABM → Deactivated Mode → ABM → Deactivated Mode → ABM → Deactivated Mode.

- Through OSD video overlay menu “INIT GYRO” option.
- Through FY-41AP setting software “Init GYRO” button.



FY-41AP indicator light instruction

FY-41AP with three colors LED which can send out red, blue, green light. Also yellow, white, purple and other colors light through the combination.

Operators can know the FY-41AP's operating mode by judging the different colors which the LED sends out and the flash frequency. green light flash means GPS location fixed, red and blue light indicate FY-41AP working mode. Under manual mode, stabilization mode or 3D mode, keep FY-41AP in the static state. If it sends out purple light it means FY-41AP needs Gyro Reset.

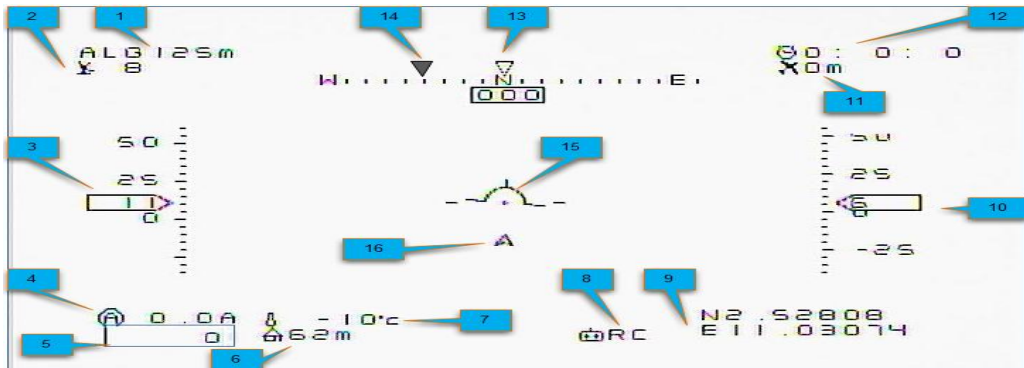
Operating Mode	LED	Gyro Needs Reset or module senses movement	GPS lock (>4 Satellites)
Manual Mode			
Stabilized Mode			
3D Mode			
Return To Launch Mode			
Fixed Altitude & Heading Lock Flight Mode			
Waypoint Navigation Mode			
Auto Circling Mode			
During Gyro reset		Flash white light for one second	
Too much vibration		Red light Stay on solid	

e.g.: Red Manual Mode, GPS not lock
 Red—Red—Green Stabilized Mode, GPS lock
 Purple—Purple—Green Stabilized Mode, GPS lock,
 If it stay static means need Gyro Reset.
 Blue—Blue—Blue—Green Waypoint Navigation Mode, GPS lock

OSD interface instruction

The integrated OSD module supports PAL or NTSC form video input.

OSD display interface:



No.	Instruction	No.	Instruction
1	GPS altitude(Unit: m)	9	Current latitude & longitude of the plane (Format: dddmm.mmm)
2	The quantity of satellite used for positioning	10	Relative altitude (Unit : m)
3	GPS speed (Unit : km/h)	11	Flight total mileage (Unit : km)
4	The battery voltage of the video transmitter (Unit: V)	12	Total flight time (Format:h:m:s)
5	Battery power consumed (Unit : mA/h)	13	Current course of flight (Unit : deg)
6	Distance to Home Point (Unit : m)	14	The angle of turning to the Home Point (Unit: deg)
7	Power battery current (Unit : A)	15	Attitude table
8	Flight mode	16	Relative position of Home Point (Icon in the middle position when the aircraft is around Home Point.)

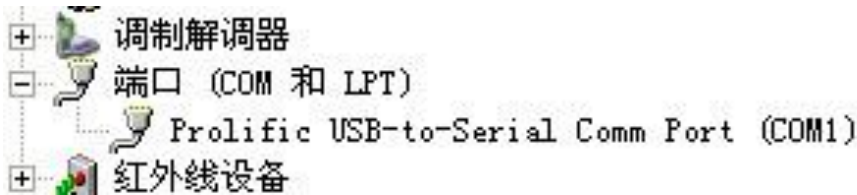
Flight mode instruction

name	introduction	name	introduction
RC	Deactivated mode	ADH	Fixed altitude & Heading lock Mode
3D	3DAerobatic Flight	ACM	Circle mode
ABM	Stable mode	NAV	Path mode
RTL	Return to home		

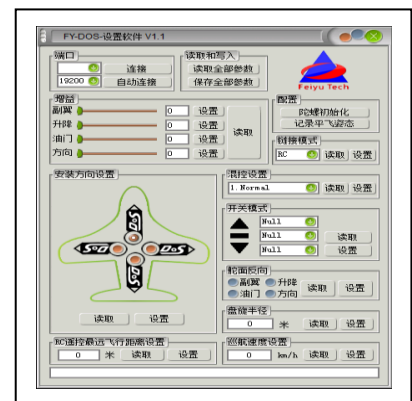
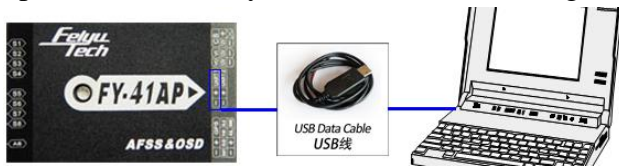


Install USB driver

- Download the latest Setting software and USB-TTL device driver for FY-41AP from our official website: www.feiyudz.cn
- After installing the USB driver, plug USB-TTL to computer's USB port (to be sure TTL port is available), the system will auto-identify USB-TTL, in Ports (COM & LPT) will add new port. COM1 in "Prolific USB-to-Serial Com Port" is the right one.



Extracting setting software, run directly, open the software, you will see the following software:



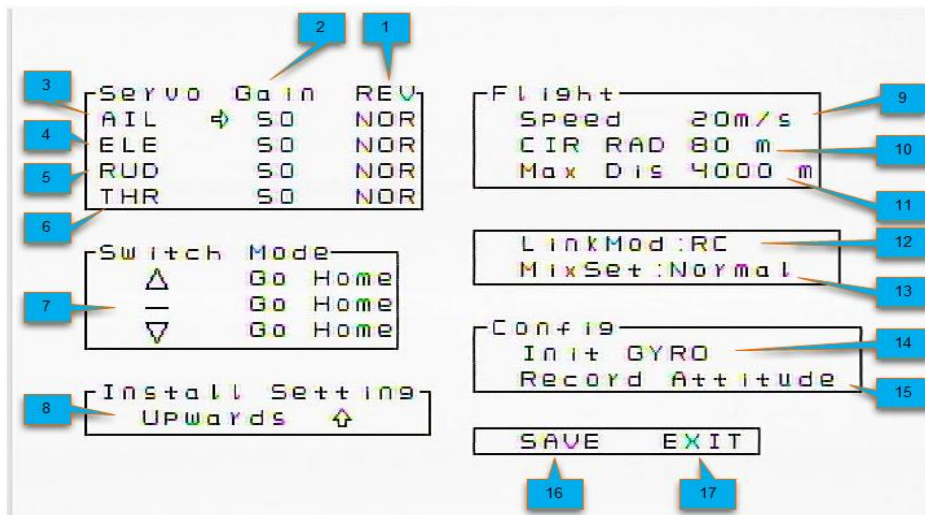
FY-41AP setting software

There are two ways to set the FY-41AP, one is via remote control and OSD overlay menu settings. Another solution is connected via USB cable to the computer by using the setting software to set up. Here we introduce the use of these two methods.



Via remote control and OSD overlay menu set FY-41AP

- ① Activate the OSD setup menu: switch "ABM" to the "3D mode" 6 times in SW1, between two switching it has to be less than 3 seconds, the process is as follows: ABM → 3D mode → ABM → 3D mode → ABM → 3D mode → ABM → 3D mode → ABM → 3D mode → ABM → 3D mode. This will activate OSD setup menu interface.
- ② Move Elevator stick to the project you want to set.
- ③ Move aileron stick to the project you want to set.
- ④ Please put elevator stick to SAVE, after your setting. Through the stick of ailerons carried out to save the action, when saving, "SAVE" will flicker for two seconds, the end of the flashing, been saved successfully.



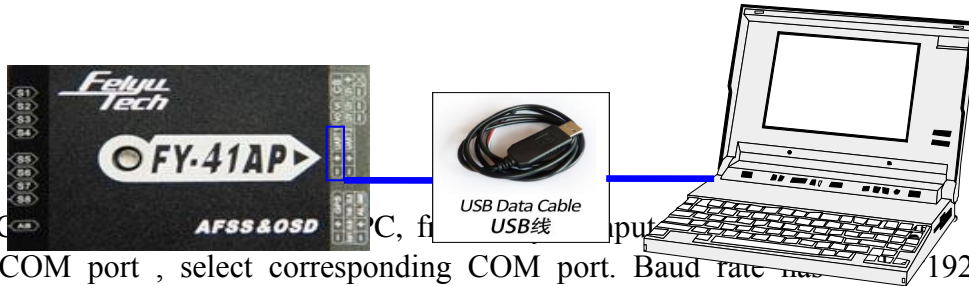
NO.	Setup instructions	NO.	Setup instructions
1	Auto-control rudder surface reverse	10	circling radius setting
2	Control gain	11	Farthest flight distance setting
3	ailerons	12	RC mode (receiver / data transmission radio)
4	Elevator	13	Rudder mixing mode
5	Rudder	14	Initialize gyroscope
6	Throttle	15	Record flight attitude
7	Three-switch mode selection	16	Save the settings



Via FY-41AP setting software set FY-41AP

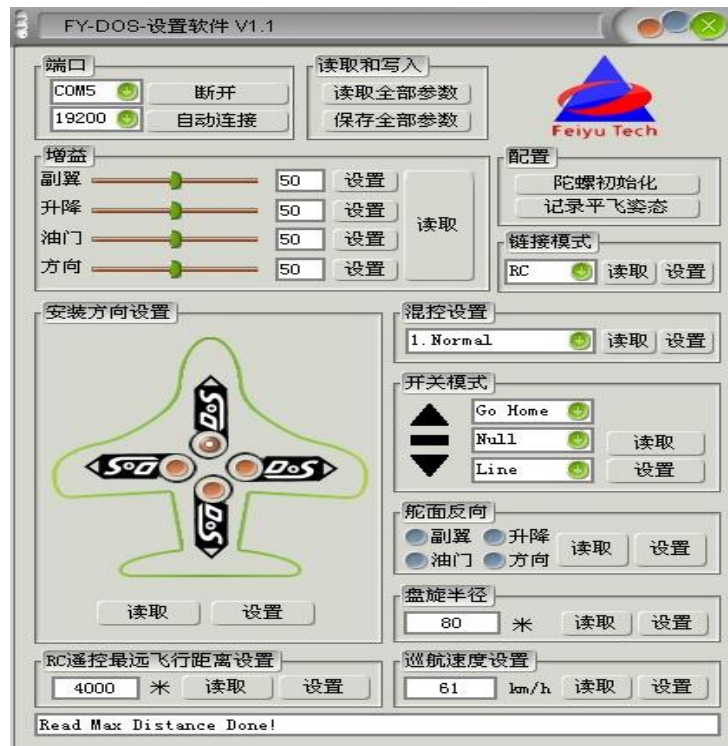
USB-TTL device driver for FY-41AP from our official website: www.feiyudz.cn

Please according to the picture below, through USB data cable to connect FY-41AP to PC.



On the PC, find the COM port, select corresponding COM port. Baud rate set to "19200", click "connect" button. Or just click "Auto Connect" button, it will search automatically, but it's takes time. Note: only after this has been done, then you can set other settings.

Software Interface Description:(Parameter in the following picture is default parameter)





FY-41AP Setting and Debugging

After FY-41AP system has been installed connected, you can set the FY-41AP, follow the steps below.

Direction Setting

First of all, according to the direction of the FY-41AP installation set direction.



Mix Setting

Based on the aircraft models to select the correct rudder output

Aircraft Config	Mix Setting Selection	Remark
Traditional aircraft layout with Aileron	1.Normal	Navigation control using aileron.
	4.Normal(RUD NAV)	Navigation control using rudder.
Flying wing aircraft	2.Elevons	Navigation control using aileron. Used for most kinds of flying wing planes.
	5.Elevons(RUD NAV)	Used for flying wings with independent rudder for Navigation.
V-Tail aircraft with Aileron	3.V-Tail	V-Tail with navigation via aileron.
	6.V-Tail(RUD NAV)	V-tail planes with independent Rudder for navigation control.
Traditional aircraft layout with no Aileron	1. Normal	The rudder servo must be connected to FY-41AP aileron servo output (AIL)
V-tail without aileron	2. Elevons	V-tail servo has to connect to FY41AP Differential Servo 1 & 2 output.
Airship	4.Normal (RUD NAV)	Due different airship configurations, use with caution. Carry out test flights to confirm normal function.



RC setting、SW1&SW2 channel setting

FY-41AP requires a minimum of 6-channel RC receiver.

① First, the remote control is set to fixed-wing aircraft of conventional layout mode, do not set any mixing. The rudder angle of the remote control is set to 100%, and fine-tune gyros.

② Need two three-stage switch or rotary switch settings for CH5, CH6 used to connect SW1 and SW2. Used to switch the flight mode.

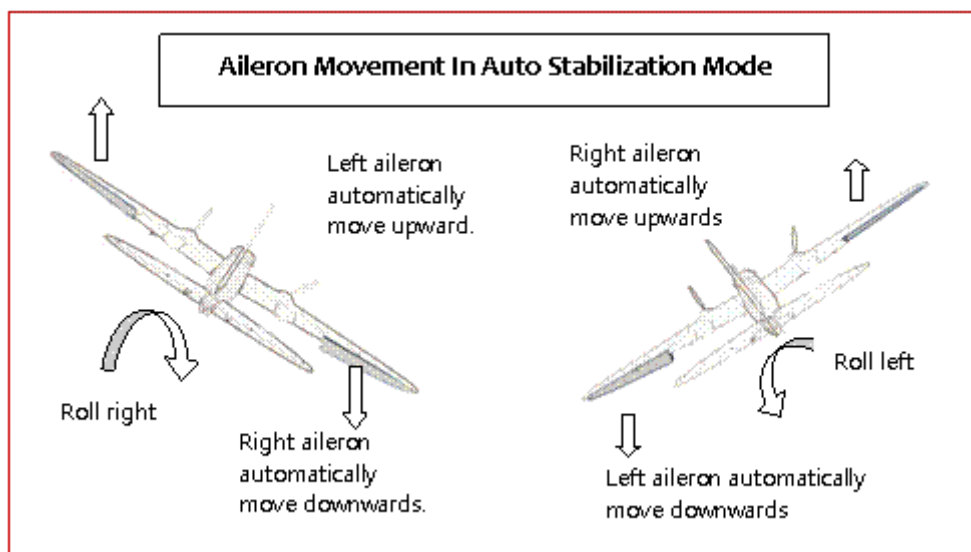
③ Connection is completed, the call CH5, CH6 check the settings are correct control mode, the status of the lights, or OSD display mode to confirm.

④ To switch to manual mode, check the control surfaces of the joystick remote control aircraft direction is correct, if not correctly adjusted positive on the remote control rudder control to correct the reverse.

⑤ Switch to the "**Auto Balance Mode**" mode, check the control direction as explained below.

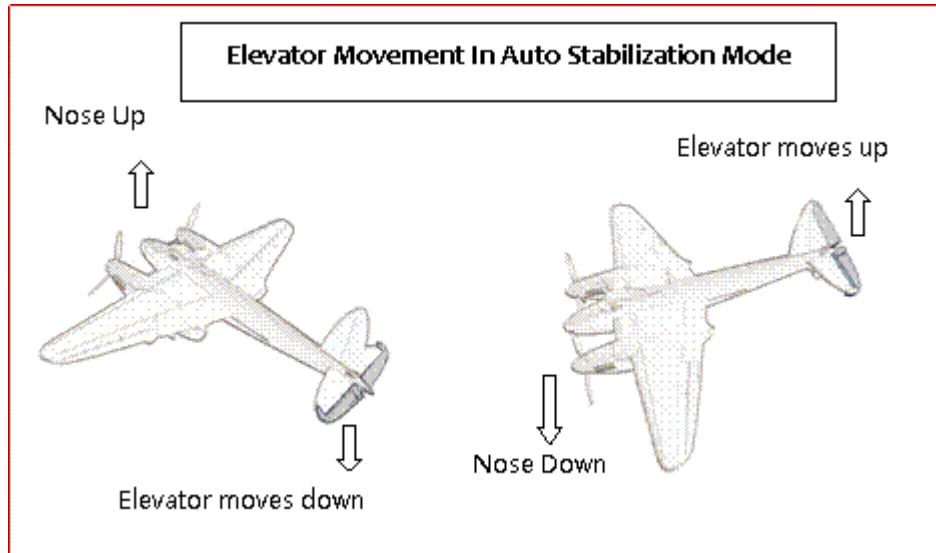
AILERONS - Roll the plane to see the following action:

- Incline the plane to the right (roll right). The ailerons should give a control signal to counter this roll direction (see below). Same as when rolled to the left. If the ailerons move correctly, the knob has been turned in the right direction. You can now adjust gain by moving nearer (low gain) or further away (high gain) from center;
- If the ailerons do not follow the movements shown above, simply turn the aileron knob to the opposite side (beyond centre). You should now see the correct aileron movement.



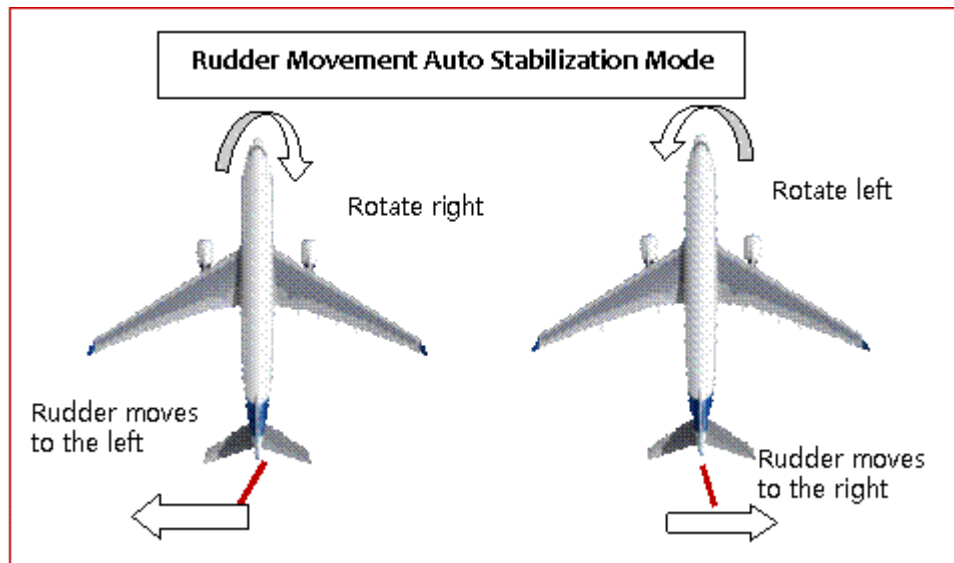
ELEVATOR - Pitch the plane nose up and down to see the following elevator action:

- Incline the plane NOSE UP. You should see the elevator move down. And when you move the NOSE DOWN, the elevator should move up.
- Move the Elevator knob to the opposite side (from Centre) if the servo movement is incorrect.



RUDDER - Turn your plane clockwise or counter clockwise to see the rudder movement below:

- Move the Rudder knob to the opposite side (from Centre) if the servo movement is incorrect.
- Adjust Rudder gain according to your aircraft requirement (lowest gain nearest to centre, highest gain further away from centre).



Throttle

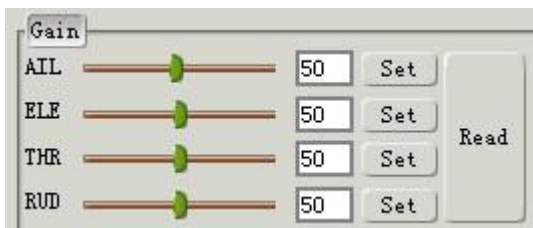
Push throttle from light to strong, if the remote control steering gear chart (-100 to 100) is set in the rudder reverse Settings throttle reverse option not to choose, if from big to small (100 to -100) set in the rudder reverse settings the throttle reverse option, select reverse.

The general ESC throttle control (ESC) use the default settings (NOR), without ESC reverse set.



Auto control gain setting

1. It's for servo(AIL,ELE,THR,RUD) control movement Gain, Set Range:0-99.
2. Min:0, equivalent shut down auto balance function. Max:99.
 - If the pitch, roll and orientation rapid shaking, or flight speed increases appear sloshing, you need reduce corresponding control channel gain; If recover to balance is too slow, the poor control ability is require you to increase control gain.
 - General condition,we just suggest you use the default parameters(50).Please do not set control gain to a very large number at your first flight.
 - After you input your settings do not forget to click in “Set” button.



Cruising Speed Setting

During **Navigation Mode** (autonomous flight) the FY-41AP will control its cruising speed via throttle control. This speed follows the Cruising Speed Setting.

By default, the Cruising Speed Setting is 60 km/h.

You can adjust this cruising speed as per your model's requirement. Fly the plane in at speeds most comfortable for cruising and Set that value via the Setting Software.

Record Attitude

This function is used to eliminate any installation deviation from the default '0' (zero) horizontal angle. A non horizontal level can cause Auto Balance Mode flight deviation.

Gyroscope reset

After the installation is complete, you can do a gyro reset, must pay attention to keep the aircraft is stationary.

Other settings can temporarily use the default settings, the following can be flown for the first time. After each set and do not forget the "Save parameters"



FY-41AP first flight test checklist

Take off

Take off in manual mode. If you are confident, after completing the basic check, you can take off in ABM, This is more suitable for the remote control skills are not enough skilled operator.

Adjustment of the aircraft

Fine-tuning adjustment after take-off in balanced mode, leveling the aircraft the throttle placed into cruise throttle position. If the manual mode level flight trimming, and the level of the balanced mode fly to fine-tune a lot of difference, it is recommended that the new record level flight attitude. If the manual mode leveling switch to balance mode, the aircraft bow, you need to elevate the head record level flight attitude, and vice versa pad low head re-recorded.

Auto balance mode test

- a) This paragraph explains the interactions between pilot input, Auto Balance Mode (ABM) and autonomous flight (Navigation Mode).
- b) In ABM, the FY41AP will constantly want to keep the aircraft flying level and straight. Any pilot input will go against this stabilizing action, in order for you to change the course, altitude or angle as you fly the plane.
- c) The higher the Gain setting AIL, ELE & RUD, the more you will feel the aircraft fly 'less flexible'. This is normal. The higher the Gain, the **stronger** will be the leveling action of the FY41AP. And the smaller the RC input you have on the aircraft.
To counter this, reduce the Gain until you feel the plane's flying attitude is comfortable for your flying style.
- d) Alternately, if the Gain setting is too low, the aircraft self leveling will be weak and the greater the pilot manual control will be.

Cruising speed setting

You can adjust this cruising speed as per your model's requirement. Fly the plane in at speeds most comfortable for cruising and Set that value via the Setting Software.

Return to launch test

Switch SW2 to Return To Launch (RTL) mode to watch the aircraft automated return to home or not. Upon reaching the home point it will automatically engage auto circling, while it waits for your further instructions.

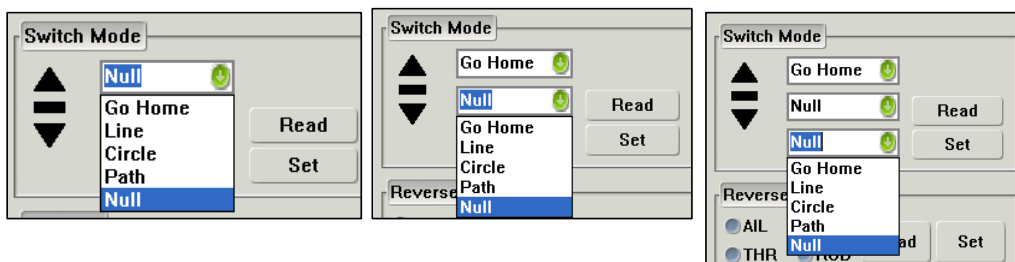
Landing

Now that we have completed the basic test, landing or other features of the test.



Other functions and settings

'Switch Mode' SW2 Function setting



The Switch Mode setting allows you to select the function of each 3-Way switch position that controls the SW-2 channel.

For the other two SW-2 switch positions, you can select any of the following Navigation functions:

SW2 Mode	Function	Remark
Null	SW-2 Deactivated	SW-2 set to NULL, Flying mode is controlled by SW-1.
Go Home	Auto Return To Launch	On activation, plane will automatically return to launch (RTL) point.
Line	Fixed altitude & Heading lock flight Mode	With no controlling input from the pilot, the plane will automatically lock current heading & maintain altitude.
Circle	Auto Circling Mode (ACM)	Automatically fly, circling a fixed point. Centre is at point of ACM activation.

Max distance setting

The FY41AP has a Maximum Distance Setting function, which you can adjust via the Setting Software.

The Max Distance Setting **will not allow** the plane to fly beyond the distance you have set. Upon reaching this distance, the FY41AP will automatically engage RTL and fly back to you.

The default Max Distance Setting programmed into the FY41AP is 4000 meters.

This function adds a second level of 'Fail Safe' for your plane with FY41AP on board. This will ensure your plane will not 'fly away' in case of RC failure or pilot error.

Circling Radius Setting

The FY41AP can fly over a set GPS point upon activation of Auto Circling Mode via switch SW-2.

The default circling radius is 80 meters. You may adjust this circling radius using this Setting Software function. Press 'Set' to confirm and save your updated circling radius.

The altitude of Return To Launch instructions

When activated in this mode, the FY-41AP will automatically fly the plane back to the take-off point, while maintaining altitude. (FY-41AP has 50m altitude protection limited,if the switch point altitude below 50m,FY-41AP will automatic climb to 50m.)Upon reaching the launch area, the unit will automatically fly the plane in a circle at a default circling radius of 80 meters.

FAIL-SAFE setting

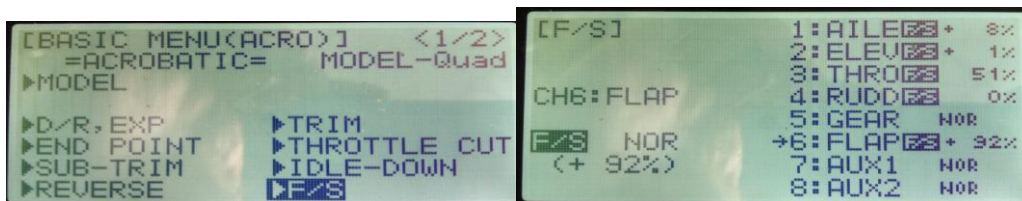
The RC receiver remote control mode uncontrolled return of function, you need to use with runaway protection function remote and the receiver.

Failsafe remote control receiver when no signal is received, output a default set of rudder. Various models of remote control set runaway protection have said, the reference to the remote control manual.

Return channel CH6 need to set connected to SW2 is out of control out of control protection switch to the status of the return. Aileron, elevator, rudder channel is set to loose rod status, throttle setting to cruise throttle position.

If debugging balanced mode, the following Futaba remote control T10CHG example set runaway protection. **Settings, turn off the power to the aircraft, to avoid setting the motor starts.**

First enter the remote control setup menu to find the set of "F / S"; into the F / S menu, the lever into the neutral position, rudder trimming to maintain the status adjusted, the throttle lever to the cruise throttle position, the CH6 cut to return mode . Then in all open channel F / S, and often set by the "PUSH" button, set successfully as shown.



After setting the aircraft is powered off control check has successfully entered the return mode. **Pay attention to safety, to prevent the Failsafe motor rotation, met items cause damage.**



Fixed altitude & Heading lock Mode instruction

Fixed altitude & Heading lock Mode – this mode maintains aircraft flight course & holds the altitude on activation. By using GPS data, the system automatically corrects flight course deviation & maintains straight-line flight.

Attention: Please make sure the RC stick is released when you switch into Fixed altitude & Heading lock Mode. The FY-41AP can record current RC stick position and lock the flight course and altitude when your RC stick released.



3D Mode instruction

3D Mode – if no input is given by the pilot (all sticks in the middle position), 3D mode will lock the current aircraft attitude. Therefore the aircraft can be easily maneuvered to complete a variety of 3D flight with added stability & smoothness.

Attention: Please make sure the RC stick is released when you switch into 3D Mode. The FY-41AP can record current RC stick position and lock the flight attitude when your RC stick released.



Auto Circling Mode instruction

Auto Circling Mode –On activation, the plane will maintain altitude and flight speed, while initiating a counterclockwise circle. The centre of the circle is the point of activation at a default radius of 80 meters (can be changed via FY GCS).



Waypoint Navigation Flight Mode instruction

Waypoint Navigation Flight Mode - enable you to fly fully autonomous, with up to 20 waypoint settings via the FY Ground Control Station (GCS) software.

Link Mode(RC receiver control mode/Data radio control mode)

FY-41AP there are two remote control mode, the default setting for the RC receiver mode. Directly connected to an RC receiver RC mode, selected data transmission with a remote control adapter plate and several transmission radio remote control radio remote control mode (you need to buy another ground station upgrade package).

----- **END** -----

Note: We reserve the right to change this manual at any time! And the newest edition will be shown on our website www.feiyudz.cn.