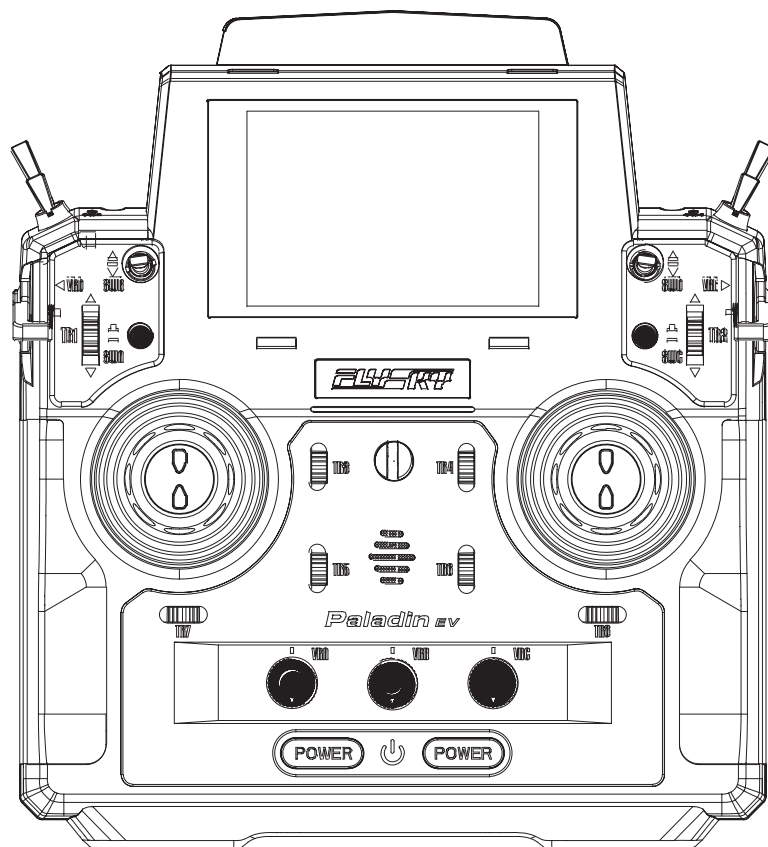


Paladin **PL18 EV**

User Manual



FLYSKY

Touching Infinity

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15+

WARNING:

This product is only for 15 years old or above

2.4GHz
AFHDS 3



Thank you for purchasing our product, an ideal radio system for beginners or experienced users alike.

Read this manual carefully before operation in order to ensure your safety, and the safety of others or the safe operation of your system.

If you encounter any problem during use, refer to this manual first. If the problem persists, contact your local dealer or visit our service and support website for help:

<http://www.flysky-cn.com>

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1. Safety

1.1 Safety Icons

Pay attention to the following icons and their meanings. Failure to follow these guidelines can result in equipment damage or personal injury.

 WARNING	• Not following these instructions may lead to minor injuries.
 CAUTION	• Not following these instructions may lead to major injuries.
 DANGER	• Not following these instructions may lead to serious injuries or death.

1.2 Safety Guide



Prohibited



Mandatory













- Do not fly at night or in bad weather like rain or thunderstorm. It can cause erratic operation or loss of control.
- Do not use the product when the visibility is limited.
- Do not use the product on rainy or snowy days. Should any type of moisture (water or snow) enter any component of the system, erratic operation and loss of control may occur.
- Interference could cause loss of control. To ensure the safety of you and others, do not operate in the following places:
 - Near any site where other radio control activity may occur.
 - Near high voltage power lines or communication broadcasting antennas.
 - Near water with passenger boats nearby.
 - Near high voltage wires or communication/broadcast antennas.
- Do not use this product if you are tired, uncomfortable or when using substances that may impair your ability to use the product safely.
- The 2.4GHz frequency band requires line of sight from the transmitter to receiver at all times. Avoid large obstacles that could block or interfere with the signal.
- In order to ensure good signal quality, do not hold the transmitters antenna during use.
- Parts of the model, such as motors or ESC's may remain hot for a period of time after use and can cause severe burns.









- Improper use of this product may lead to serious injury or death to the user and others. To ensure the safety of yourself and others read and follow the instructions set out in the user manual.
- To avoid damage to the model, make sure that the product and model are installed correctly before use.
- Always power off the receiver before the transmitter. Powering off the receiver before the transmitter could lead to loss of control.
- Before use make sure that all the servos and motors are moving in the correct direction.
- Make sure to remain within range to prevent loss of control.

2. Battery Safety Instructions

Danger

-  This products battery is rechargeable and non-removable. Do not remove the battery from the product.
-  Do not expose the battery to liquids.
 - Do not use a damp battery. Keep your hands dry during use and do not leave batteries in areas with lots of moisture.
-  Do not solder, repair, modify or disassemble the battery.
-  Do not charge the battery in direct sunlight, in a hot car or near anything hot such as cookers etc.
-  Do not use near flammable liquids or gasses.
-  Do not charge batteries that show any evidence of damage, aging, leakage or exposure to liquids.
-  Do not touch the positive and negative terminals of the battery together.
-  Do not throw the battery into a fire.
-  Do not charge without ventilation.
-  Charge before use.
 - Failure to charge the battery before use may lead to a crash.

WARNING

-  Do not touch the charger or battery during charging.
 - May cause burns
-  Keep the battery away from any heat source if it is leaking or causing strange smells.
 - May catch fire or explode.
-  Do not store the battery in dusty or humid environments.
 - Remove dust from the power connector before plugging in.
-  Do not throw or impact the battery.
 - May cause fire or an explosion.
-  Put some tape on the battery's terminals before recycling.
 - If the short circuit causes fire, heat, rupture, etc.
-  Do not charge the battery when exposed to extreme heat or cold.
 - May lead to a drop in battery performance. To ensure maximum performance always charge the battery within the temperature range of 10°C ~30°C .

3. Product Description

PL18EV is an 18-channel transmitter dedicated to engineering vehicles, equipped with 2.4GHz AFHDS 3 (third-generation automatic frequency hopping digital system). The standard configuration is an FGr12B receiver!

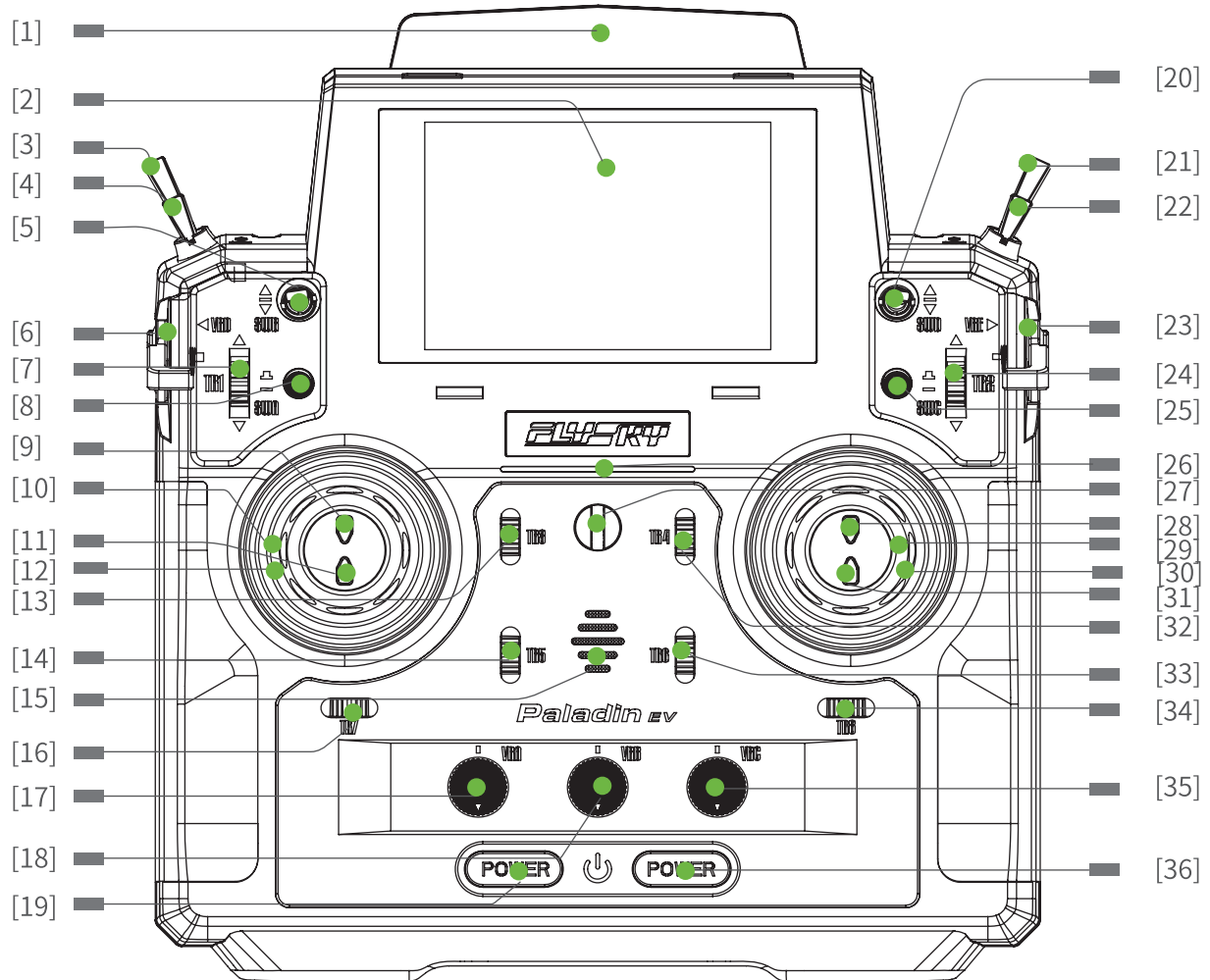
3.1 System Features

AFHDS3 (third-generation automatic frequency hopping digital system) is a newly developed digital wireless system. It is compatible with single antenna bidirectional real-time data packet transmission and data stream transmission. With the advantages that come with the WS2A wireless system and the new 2.4GHz chip, the system can dynamically set: number of channels, channel resolution, range, anti-interference requirements and latency to meet the needs of different users.

Single Antenna Bidirectional Real-time Data Transmission	The receiver can receive data from the transmitter and the transmitter can receive data from the receiver, this includes data from sensors, such as temperature and speed and support the i-BUS. This gives more control over the aircraft and constant information on its current status.
Uncorrected Data Transmission	The independent uncorrected data transmission module is built into RF system; it can send many different types of data including flight control data.
Intelligent RF configuration	Depending on hardware, certification, the amount of data to be transmitted, anti-interference, latency and distance requirements, the system intelligently adapts the corresponding RF configuration to meet the requirements of the user.
Multi-channel Frequency Hopping	This systems bandwidth ranges from 2.402GHz to 2.480GHz. This band is divided in 140 channels. Each transmitter hops between 16 channels (32 for Japanese and Korean versions) in order to reduce interference from other transmitters.
Unique ID Recognition System	Each transmitter and receiver has it's own unique ID. Once the transmitter and receiver have been paired, they will only communicate with each other, preventing other systems accidentally connecting to or interfering with the systems operation.
Low Power Consumption	The system is built using highly sensitive low power consumption components, maintaining high receiver sensitivity, while consuming as little as one tenth the power of a standard FM system, dramatically extending battery life.

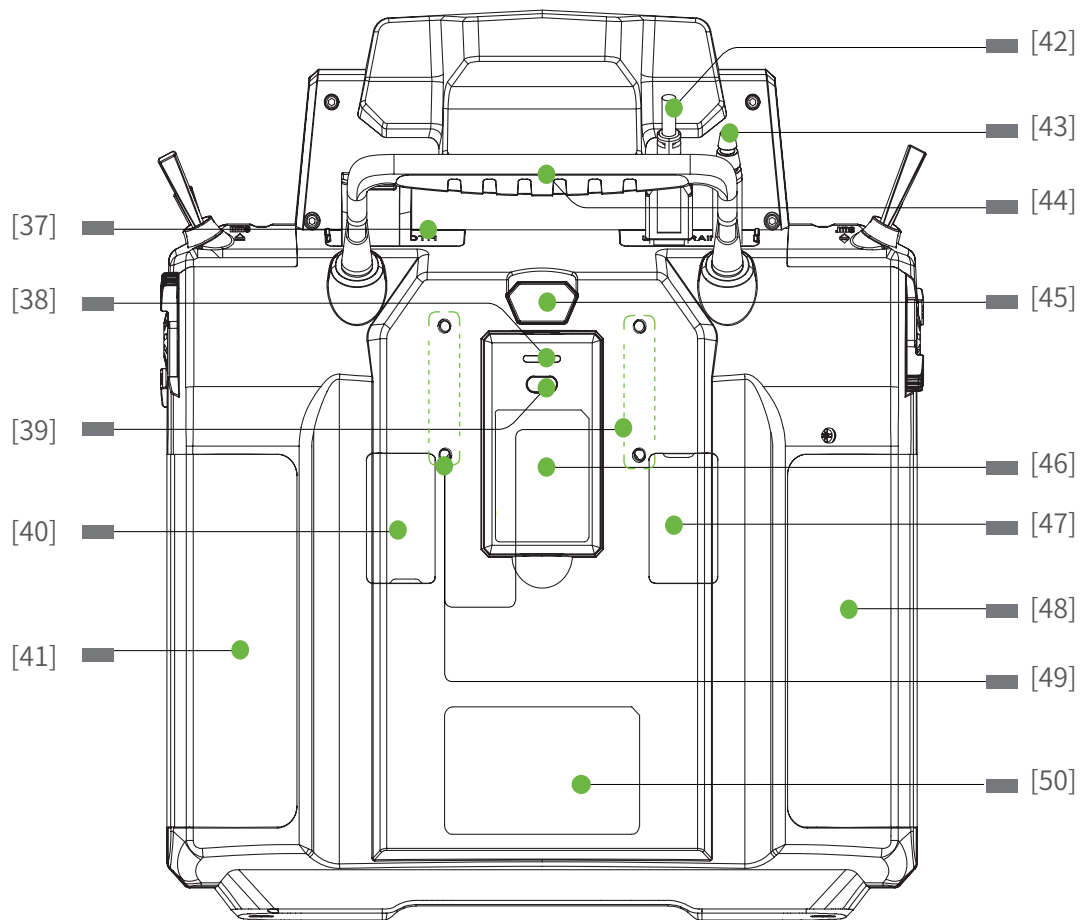
3.2 Transmitter Overview

Front View:



[1]	Antenna	[16]	TR7 Trim
[2]	320*480px Screen	[17]	VRA Knob
[3]	SWF 2 Position Switch	[18]	VRB Knob
[4]	SWE 3 position switch	[19]	Power Button
[5]	SWB 3 Position Switch with Self-return	[20]	SWD 3 Position Switch with Self-return
[6]	VRD Knob	[21]	SWH 3 Position Switch with Self-return
[7]	TR1 Trim	[22]	SWG 3 Position Switch with Self-return
[8]	SWA Button	[23]	VRE Knob
[9]	SWJ Button	[24]	TR2 Trim
[10]	Left Gimbal	[25]	SWC Button
[11]	SWI Button	[26]	Transmitter Status Indicator
[12]	VRF Knob	[27]	Lanyard Eye
[13]	TR3 Trim	[28]	SWL Button
[14]	TR5 Trim	[29]	VRG Knob
[15]	Speaker	[30]	Right Gimbal

Back View:



[31]	SWK Button	[41]	Grip
[32]	TR4 Trim	[42]	Micro USB Port
[33]	TR6 Trim	[43]	Trainer Port
[34]	TR8 Trim	[44]	Grip
[35]	VRC Knob	[45]	FRM301 Press to release FRM301
[36]	Power Button	[46]	FRM301 RF Module
[37]	Bluetooth Module Port	[47]	Gimbal Tension Adjustment
[38]	FRM301 Status Indicator	[48]	Grip
[39]	FRM301 Button	[49]	RF Module Port
[40]	Gimble Tension Adjustment	[50]	Wireless Charging Area

3.2.1 Transmitter Antenna

PL18 EV transmitter has a built-in antenna. When the transmitter starts the work, the antenna operates automatically, without being operated separately!

 Note	<ul style="list-style-type: none"> To ensure a good signal do not cover or block the antenna.
---	--

3.2.2 Status Indicator

The status indicator displays the transmitter's power and operating status.

When the screen is on:

- If RF is enabled without connecting the receiver (one-way bind receiver), the blue indicator is on.
- If RF is disabled, the yellow indicator is on.
- If the receiver is connected bi-directionally, the green indicator is on.

When the screen is off:

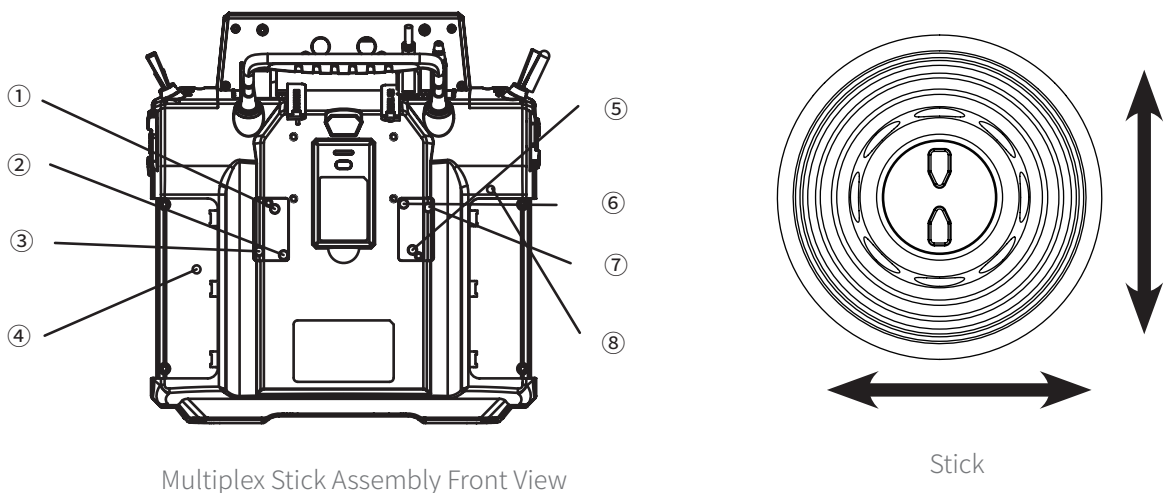
- If RF is enabled without connecting the receiver (one-way bind receiver), the breathing indicator can change to cyan, magenta, and yellow.
- If RF is disabled, the breathing indicator is yellow.
- If the receiver is connected bi-directionally, the breathing indicator can change to red, green, and blue:
 - in case of bind: the green indicator is on (fast flashing).
 - in case of an alarm: the red indicator is on (slow flashing).
 - in case of power-on: the blue is on until the power-on is successful.
 - in case of power-off: the current color is not changed until the product is shut down successfully and the LED is off.

3.2.3 Trim Switch

There are 8 groups of trims in the transmitter for adjusting the center point of the device. Each toggle of the trim corresponds to a change in value that can be set to 5 units by default. If you keep pressing, the trim position starts to change rapidly.

3.2.4 Adjustment of Multiplex Stick Assembly

Used to adjust the centering state and resilience of the 5D multiplex stick.



Function Settings:

By adjusting the tension screws on the back of the radio, gimbal stick can be either self-centering or non self-centering, as well as changing stick tension preference.

Available options:	① . ⑤	left & right side gimbal sticks automatic self centering	② . ⑥	left & right side gimbal stick vertical tension
	③ . ⑦	left & right side gimbal stick horizontal tension	④ . ⑧	throttle stick vertical friction

Left gimbal as example:

Non Self-returning

1. Use a Phillips screwdriver to adjust the screw ① counterclockwise until the gimbal reaches its center point.
2. Adjust screw ④ counterclockwise to adjust the Frictional strength.
3. If you need to adjust the strength of the return, adjust screw ② to the middle, and strengthen the clockwise force, and vice versa as needed.

Self-return and Non self-return

1. Use a Phillips screwdriver to adjust the screw ① clockwise so that the gimbal is no longer at its center point.
2. Adjust the screw ④ clockwise to strengthen or reduce the Frictional strength.
3. If you need to adjust the strength of the return, adjust screw ② to the middle, and strengthen the clockwise force, and vice versa as needed.

- After adjusting clockwise to the tightest, the counterclockwise adjustment range should be controlled under 5 rounds. Over-adjustment will cause the screw to come out.

3.2.5 Power Buttons

To prevent false triggering, there are two switches on the lower part of the transmitter. The power-on/-off is triggered when both switches are pressed.

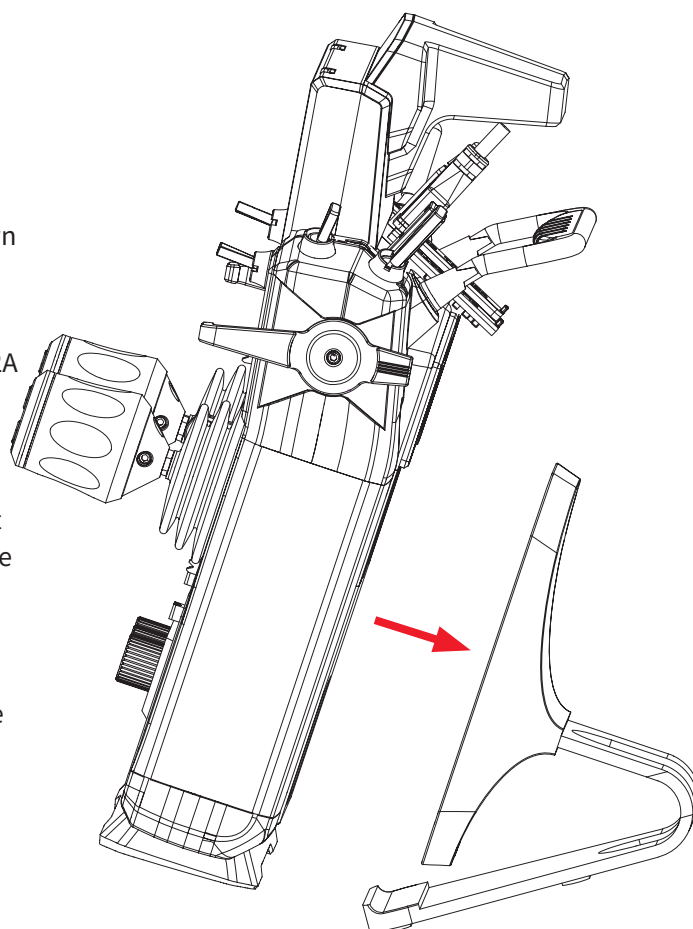
3.2.6 Charging Modes

PL18EV can be charged in two ways:

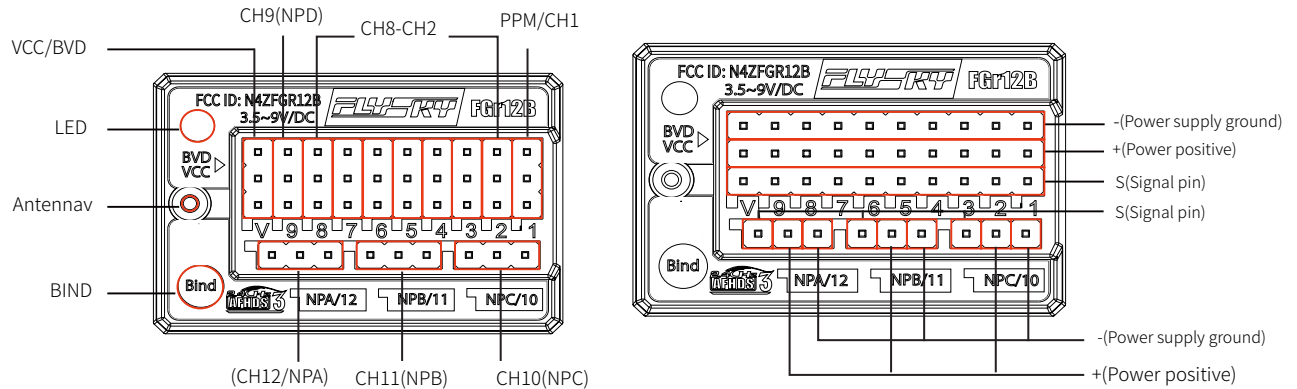
1. Plug the standard USB cable into the charging port for charging
2. Use the wireless charging dock to charge it (as shown in the figure)

Notes:

- Charge it within the safe range [4h@5V*2A/7h@5V*2A (wireless charging)]. Overcharging may lead to battery damage;
- To prolong the service life of the battery, properly discharge if you want to store it for a long time (that is, not fully charged). In addition, you need to charge it regularly to prevent damage due to not-operation for long term;
- Please use the standard charging cable of this transmitter. Improper use may cause damage to the battery and affect its service life.



3.3 Receiver Overview (Take FGR12B as an example)



3.3.1 Receiver Antenna

The FGR12B uses AFHDS 3 (third generation automatic frequency hopping digital system), which enables bi-directional transmission.

CAUTION	<ul style="list-style-type: none"> Do not pull, bend or tie the receivers antenna or connect it to a servo.
CAUTION	<ul style="list-style-type: none"> Keep the receivers antenna away from conductive materials such as carbon or metal. To ensure normal function make sure there is a gap of at least 1cm between the antenna and the conductive material.

3.3.2 Status Indicator

The status indicator is used to indicate the power and operating status of the receiver.

- Off: The receiver power is not connected.
- Steady red: The receiver is connected to the power supply and is working properly.
- Fast flashing: The receiver is in bind mode.
- Slow flashing: The paired transmitter is powered off or signal is lost.

3.3.3 Ports

These ports are used to connect the receiver to the various components of the model.

- PPM/CH1: Connect to the servo, or output the PPM signal.
- CH1 - CH12: Can be connected to the servo, power supply or other components.
- BVD/VCC: Used to detect the battery voltage and connect the power cable.
- i-BUS in sensor interface (SENS/CH12/NPA): Used to connect each sensor.
- bind button: Used to realize the bind between receiver and transmitter.
- i-BUS out serial bus interface (SERVO/CH12/NPA): Connects i-BUS module to extend the channel and output i-BUS or S-BUS signal.
- For definition of the NPA~NPD interface, see the receiver's manual.

Note:

- BVD function and NPA~NPD function will be implemented in the next version of firmware;
- For this transmitter matched with the receiver, see the matching table on the official website. For specific operation mode matched with other receivers, refer to the above contents.

4. Pre-operation Setup

Follow the instructions and guidelines in this chapter before use.

4.1 Receiver and Servo Installation

Make sure that the receiver is mounted in an appropriate location within the model, to ensure a stable signal, maximum range and to mitigate external interference, follow these guidelines:

Pay attention to the following when installing the receiver:

1. Make sure the receiver is not installed near ESCs or other sources of electrical noise.
2. Keep the receivers antenna away from conductive materials such as carbon or metal. To ensure normal function make sure there is a gap of at least 1cm between the antenna and the conductive material.



Note

- To prevent damage do not power on the receiver during installation.

5. Operation Guidelines

Follow these guidelines to set up the transmitter and receiver.

5.1 Power On

Follow the steps below to power on:

1. Check to make sure the receiver is installed correctly and that the receiver is powered off.
2. Press and hold both power buttons until the screen lights up.
3. Power on the receiver.



Note

- **The system is now active, be cautious to not cause damage or personal injury.**

5.2 Binding

The transmitter and receiver have been pre-bound at the factory.

If you need to rebind or bind a new receiver follow the steps below:




1. Power on the transmitter, touch the function menu icon then enter the RX setup menu.
 - If you want to change the RF standard, please select [RF standard] in [RF setup] menu. The system default standard is AFHDS3 2-way (for more information about RF, see [9. RF Setup]).
2. Make the receiver enter bind state; (For the specific bind modes, see the manual of different models of receivers).
3. Touch [Bind with a receiver], to enter bind mode.
4. Difference of successful bind under two specific RF standards:
 - If you choose [AFHDS3 2-way], when the receiver indicator is on, indicating a successful bind. The transmitter automatically exits the bind interface.
 - If you choose [AFHDS3 1-way], when the receiver indicator is slow flashing, the transmitter manually exits the bind interface, and the receiver indicator is on, indicating a successful bind.
5. Check that the transmitter, receiver and model are all working as expected. If there are any abnormal movements, repeat the steps above.



5.3 Pre-operation Checks

Always perform the following steps before each operating:

1. Inspect the entire system to make sure that everything is working as expected.
2. Perform a range test as outlined in the [8.3 Range Test] section of the user manual.

 DANGER	• Do not use the model if there are any abnormal behaviors during the test.
 DANGER	• Do not exceed the maximum rated range during use.
 CAUTION	• Interference from other transmitting devices may reduce signal quality.

5.4 Power Off

Follow these steps to power off the system:

1. Power off the receiver.
2. Press and hold both of the transmitters power buttons until the screen powers off.

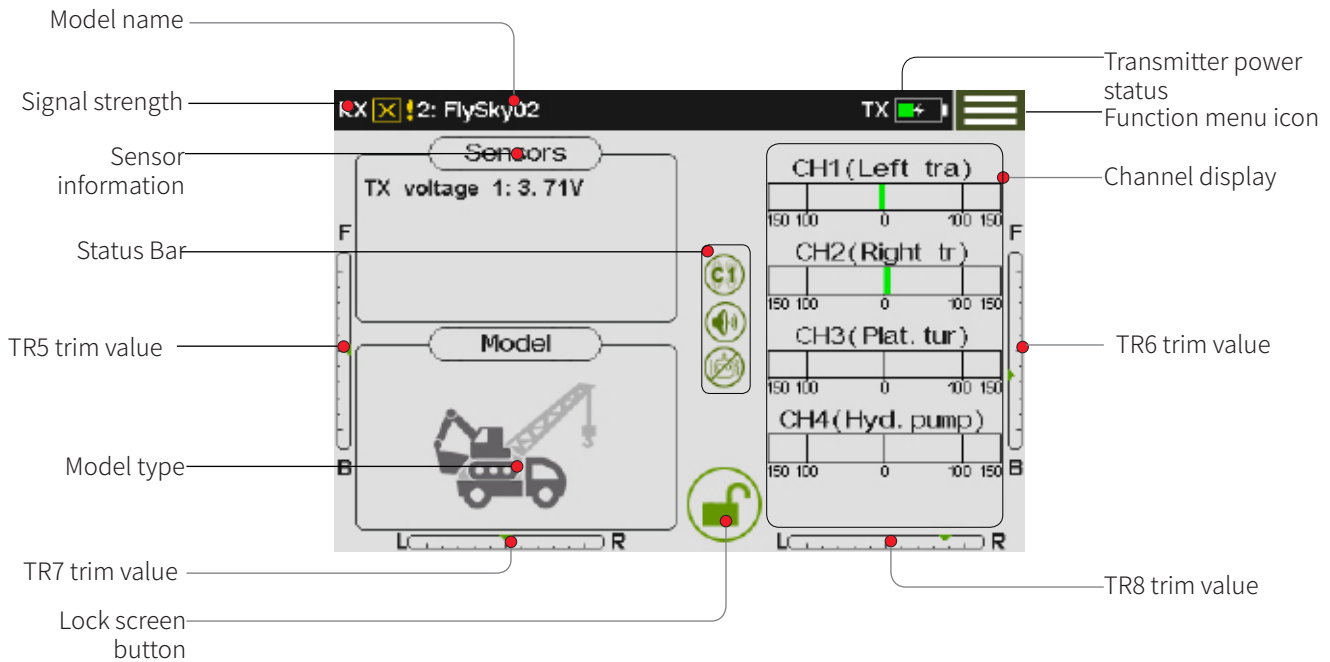
 DANGER	• To avoid any risk of loosing control of the model, always power off the receiver before powering off the transmitter.
---	---

6. UI

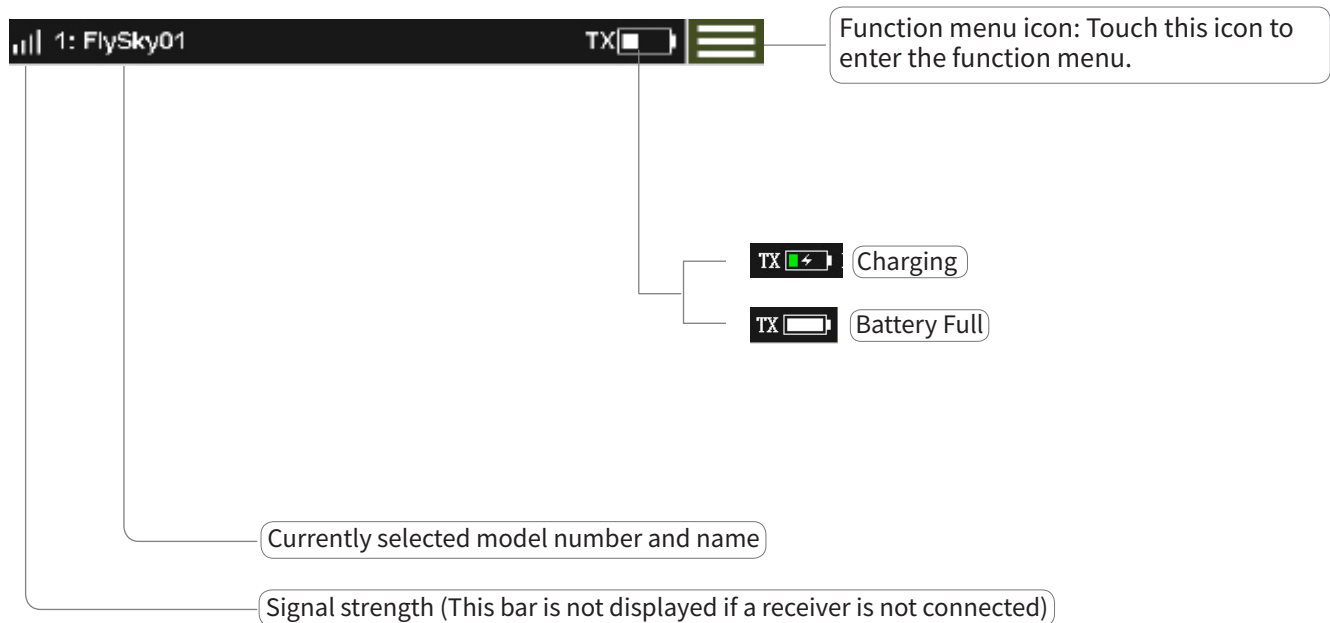
This is an introduction to the transmitter's UI.

6.1 UI Overview

The main interface displays information related to the model such as sensor information and function status.



6.1.1 Status Bar (Top)



6.1.2 Quick Access

Touch this area to access the [Display selection] menu. Up to 4 sensors can be displayed. For more information refer to section [7.18] of this manual.

Touch this area to select any four channels for display.

Touch this area to quickly access the [Models] setting interface.

6.2 Menu UI

This section is a quick introduction on how to use the UI.

6.2.1 Function Icons

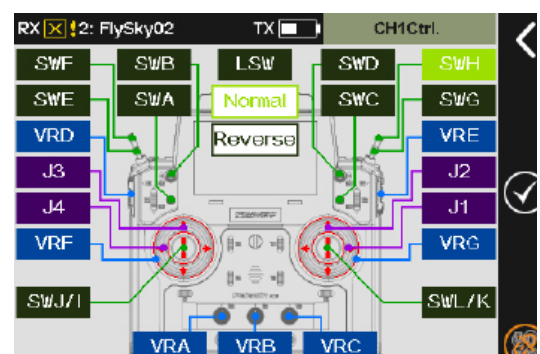
	Screen Lock		Screen unlocked
	Function Disabled		Function active
	Restore to default		Function select
	Assign switches		Set curve type
	For all operating modes.		For current operating mode.

6.3 Gimbal, Knob and Switch Assignment

This interface can be used to assign the functions of all multiplex sticks, knobs, switches and keys of the transmitter.

Path: [Func assign]-[click any channel, such as channel 1]-[Control] to access the interface. For details, see [Func assign].

- Switches (SWA-SWK) define turn-on/-off. You can define the downward/central/upward switch as turn-on.
- The stick can be used to simulate a linear change of the stick data.
- The knob (VRA-VRG) can be used to adjust data. The knob data can be simulated as a linear change.
- Assign Logic Switch (LSW) to define function turn-on/-off.



7. Function Settings

This chapter introduces the main system functions.

7.1 Reverse

This function reverses the direction of motion for each channel.

Function Settings:

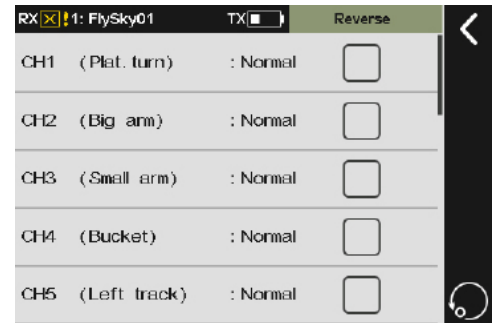
This function can reverse the direction of travel for all 18 channels.

[Normal]: indicates that this channel output is the default direction;

[Reverse]: indicates that the channel's direction of travel has been reversed.

- If a new model is connected make sure that all the servos are moving in the right direction.
- Move each stick to make sure that the control surfaces are moving in the correct directions.

Touch the box to the right of the channel name to toggle reverse for that channel. If there is a tick in the box it means that the channel is reversed.



7.2 End Points

This function changes the max range of movement for each channel.

Every model is different, as such many have different requirements when it comes to how far a control surface should move, if a control surface moves too far it may damage the model. The End points function limits the range of movement for each channel to prevent this.

Note: If the channels center point is not in the right position it will be impossible to set the outer limits of the channel movement properly. If this is an issue use the Subtrim function to move the center point first.

Function Settings:

This function can be used to adjust the maximum servo volume of 18-channel servos, with the adjustment ranging from 0 to 150%.

[Up side]: range of movement above the channel center point.

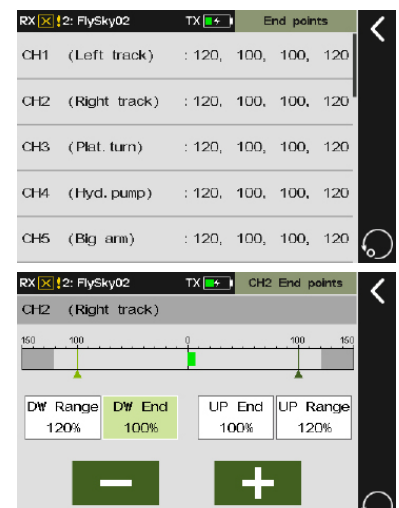
[Down side]: range of movement below the channel center point.

Green box indicates the currently selected object.

Green progress bar indicates current real-time output of servo position.

Steps:

1. Select the channel to be adjusted to enter the submenu.
2. Click the icon or toggle the sticker (switch/knob) corresponding to the channel to select [High End] or [Low End].
3. Use the + and – icons to change the servo volume ratio.



7.3 Subtrim

This function is used to adjust the center point of each channel.

Due to the structure of some models the servos center point may need to be adjusted so that when at rest all the control surfaces line up properly.

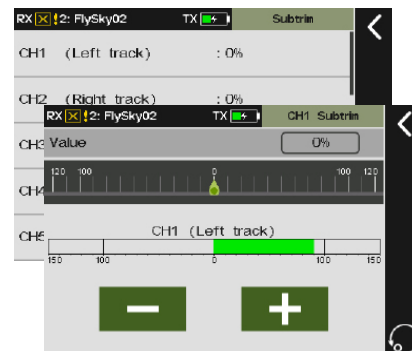
When using this function make sure that the stick, knob etc. is at its center position.

Function Settings:

This function adjusts the subtrim of the 18 channels in a range from -120% to 120%, corresponding to a channel ratio of -24% to 24%.

Steps:

1. Select a channel.
2. Use the + and – icons to adjust the channels center point.



7.4 Conditions

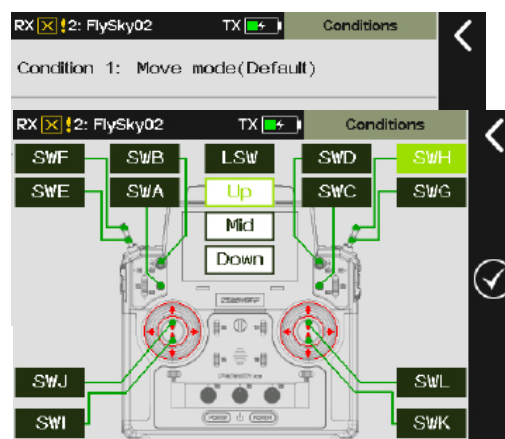
Conditions is divided into move mode and work mode. The two modes can be done with different settings to achieve the same operation in different modes corresponding to different effects. When the same stick is used to control the mobile mode or arm, this function can be used to assign the control mode in two working modes for achieving the menu switch. The title shows the current conditions state. You can set the function parameters to save the current conditions.

Function Settings:

Click on the conditions to select the move mode and work mode. The move mode is the system default mode.

Steps:

1. Select the work mode, and click to enter the submenu;
2. Enable this function, and toggle the corresponding button or switch. Click Return to save setting;
3. Toggle this switch to change the work mode.



7.5 Trims

Under this menu, you can adjust the center position of the model function.

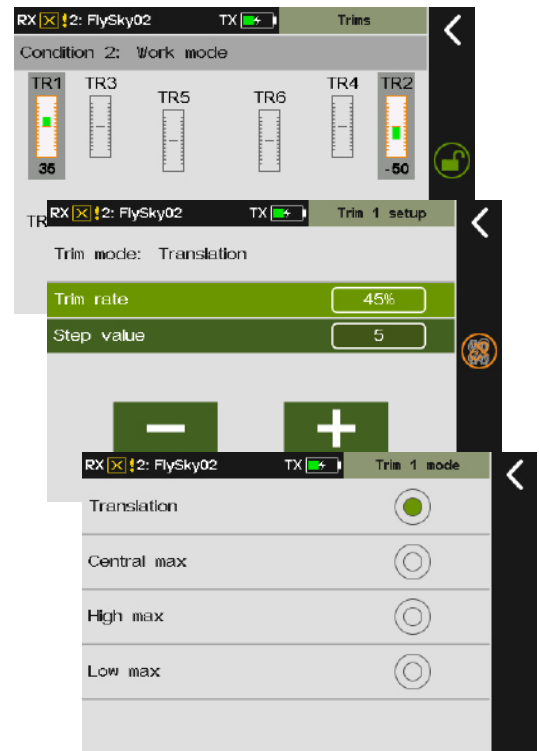
This function can be used to correct the model pose when the stick is shifted to the center position. The correction ability of this function is limited. Please re-adjust the model because the overall excessive offset of the model cannot be corrected.

Function Settings:

Different trim modes can be selected under different trim buttons, mainly including horizontal movement (the trim value is limited by the range of channel travel, the size of the trim value within the range does not change with the channel value), center maximum (maximum at the midpoint, positive and negative respectively weakened to the maximum/minimum value of travel when the trim is 0), high-end maximum (the highest point of travel is the normal value of trim, go to the low end with the trim weakened, the other is similar to horizontal movement), and low-end maximum (opposite of high end maximum). Under the different trim modes, you can set different [Trim rate] and [Step value]. The range of [Trim rate] is between -150% and 150% and the default value is 45%. The range of [Step value] is 1-100 and the default value is 5.

Steps:

1. Enter the trim menu to activate this function;
 2. Toggle the corresponding trim button on the transmitter for adjustment. Toggle the trim key. The current channel data change value is the step value. Hold the trim key for seconds to quickly adjust the value;
 3. Adjust until the model posture is balanced. Release the button to finish the adjustment.
- This function is mainly used in the process of model operation.
Please remember operation steps before you start to use it;



7.6 Rate and EXP (Exponential Function)

This function allows you to set the relation curve between the input and output of each stick/knob and set different ratios to switch the servo function.

You can adjust the curve/ratio to change the control sensitivity according to your skill level of stick/knob control or application scenario.

The curve function is usually set after adjusting the maximum servo travel range.

Function Settings:

This function can allow you to set the ratio and curve of all channels. You can set respectively in different states.

[Rate] indicates the tilt of the curve. The range is between 0-100%. The larger the value, the more tilted the curve;

[EXP] indicates the curvature of the curve. The range is between -100% and 100%. The larger the value, the lower the sensitivity near the midpoint of the curve.

- Green box indicates the currently selected object;
- The horizontal axis of the coordinate indicates the input value of this channel stick (or knob);
- The vertical axis of the coordinate indicates the output value of this channel after adjustment;
- The red line indicates the linear relationship between the input value and the output value;

Steps:

1. Select the channel to be set, enter the submenu and activate this function;

2. Select [Rate] or [EXP];
3. Click "+" "-" on the screen to adjust the tilt and curvature of the curve.



Switches, knobs etc. can be assigned to control the function by touching the icon.

[Dual switch]: A switch (or logical switch) can be selected to switch between two groups of Rates and Exponents.

- Touch the icon to enable. Then select a switch and switch position.
- Use the back icon to go back to the functions Rate and EXP menu and set the parameters as needed.
- Toggle the switch (or logical switch) (SWB to the down position) to switch to the second group of rates and exponent parameters, and set the parameter of the second group of rates and exponents;
- Toggle the switch again to check whether the first and second groups of rate and exponent parameters are set successfully.

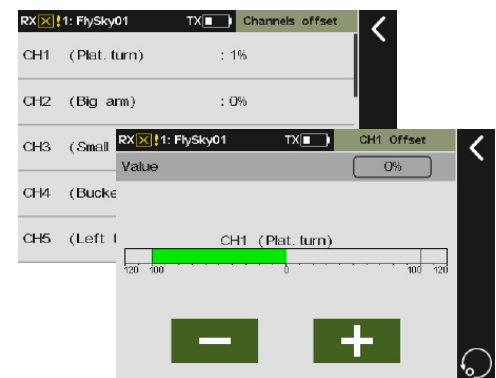
7.7 Channels Offset

This function allows you to adjust the overall offset of each channel data. The offset caused by the model can be corrected using this function. If the offset is set too much, the control amount of one end of the channel is reduced. If the model deviation is large, please try to adjust the model first.

Function Settings

This function can be used for all 18 channels and has a range of -150% and 150%.

1. Select a channel.
2. Use the + and – icons to adjust the offset.



7.8 Channels Delay

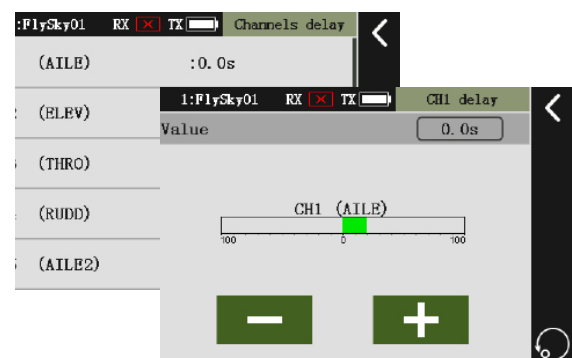
This function is generally used to prevent the model structure from being damaged by the instantaneous large speed of the servo, or to achieve a certain effect by limiting the speed of activity.

Function Settings:

This function allows you to set the delay time for 18 channels.

Steps:

1. Select the channel to be set and access the submenu;
[Value] indicates the delay time of the whole process from the lowest to the highest value of the current channel. The adjustment range is between 0-10 seconds (every 0.1s is a unit). The green in the coordinates indicates the real-time position of the stick.
2. Use the + and – icons to change the delay time.



7.9 Mixs

This function is used to set the linear mixes between channels. You can create 20 groups of mixing relationships.

Function Settings:

This function can be set in different states.

[Master] indicates the control role in the current mixing relationship;

[Slave] indicates the affected object in the current mixing relationship;

[Down side] indicates the mixing ratio of the low end of the mixing channel to the low end of the mixed channel. The adjustment range is from -100% to 100%;

[Up side] indicates the mixing ratio of the high end of the mixing channel to the high end of the mixed channel. The adjustment range is from -100% and 100%;

[Offset] indicates the offset of the mixed channel. The adjustment range is from -100% and 100%.

Note: Click + and - icons to adjust the ratio in the corresponding interface.

Click  to enter the setting interface.

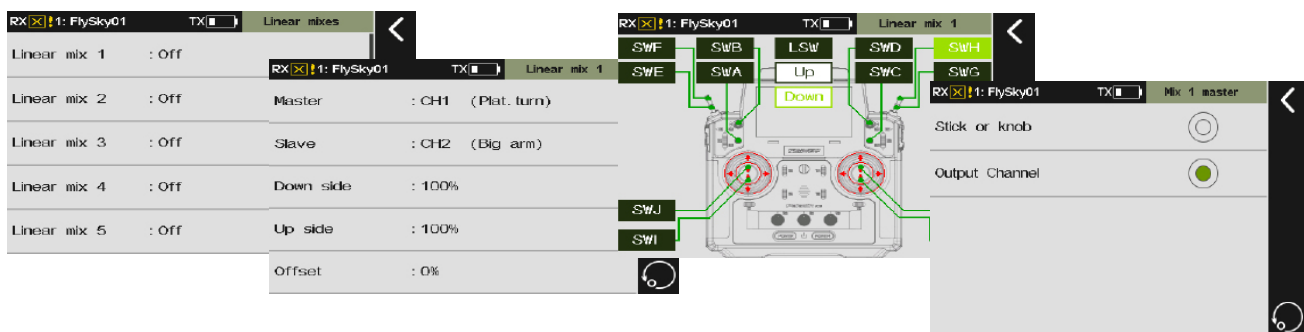
Steps:

1. Select a group of linear mix, to enter the mix setting interface. Activate this function;
2. Select the mixing channel and the mixed channel respectively;
 - a. Select [Stick or knob] or [Output Channel] for the mixing channel;

In [Stick or knob], select four sticks or seven VRA-VRG knobs. Select this item as the mixing channel, indicating this Stick or knob is used as the input end of the linear mix. Data is not affected by any other function of the system;

In [Output Channel], you can select 1-18 channels. Select this as the mixing channel, indicating that the final output of this channel will be used as the input end of linear mix.
 - b. Select [Output Channel] for the mixed channel;

In [Output channel], you can select 1-18 channels. Select this as the mixed channel, indicating that the mixed object is the final output of this channel.
3. Select [Down side], [Up side] and [Offset] to enter submenu;
4. Click "+" and "-" on the screen to modify the mix ratio and offset ratio.



7.10 Track mixing

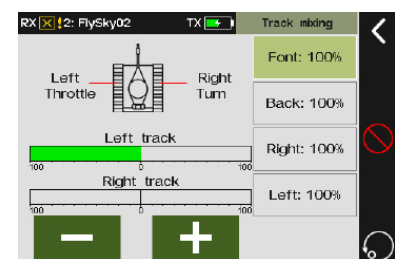
In the model structure, select the left and right track function. In the model function menu, add the [Track mixing] function interface.

You can control the left and right tracks with one stick to move forward or steer differently at the same time.

Function Settings:

Under this function, the left track can control the forward and backward of the model, and the right track can control the left and right steering of the model.

1. The adjustment range of front, back, left and right is 0%-100%.
2. Click to select the corresponding adjustment box. The adjustment box is highlighted. Click "+" "-" to modify the corresponding adjustment ratio.



7.11 A.B.S.

Check the throttle function in the model structure, and add [A.B.S.] function interface in the model function menu. This function helps prevent brake lock and improve brake performance by pulse braking, to achieve the best braking effect and cornering control effect without drifting and under-turning.

Function Settings:

In the anti-lock brake menu, you can set five functions: [Return], [Delay], [Cycle], [Point] and [Duty]. In the submenu, the brake pulse is displayed by a square wave. The peak indicates maximum brake pressure and the trough indicates reduction of brake pressure.

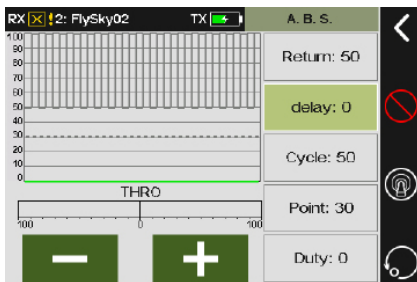
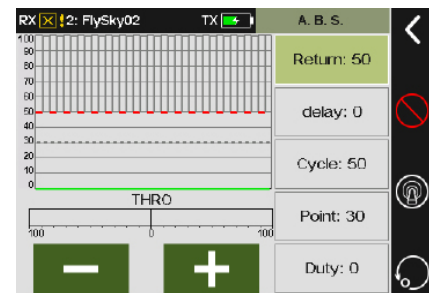
When the value changes, the square wave pattern also changes to indicate the current setting of the function.

The trigger point is the gray horizontal dashed line in the diagram.

The lower progress bar shows real-time brake position. When the function is on, touch the brake to view the green progress bar to see status of the automatic brake.

Return

Set the amount of brake pressure to be reduced by each impulse. The setting range is 0% to 100%. The default value is 50%. If the value is set to 60%, the system will reduce the pressure by 60% from each brake impulse when the brake is triggered.

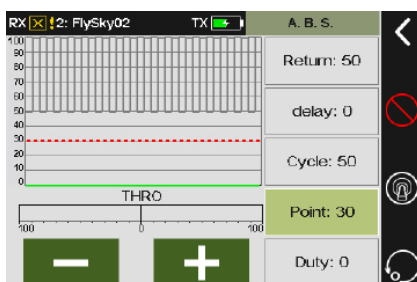
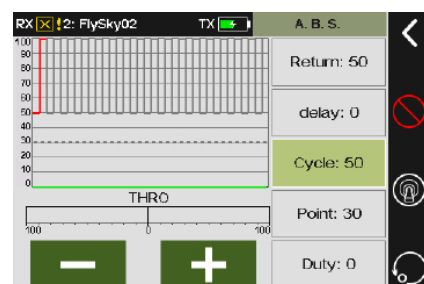


Delay

It is used to set the delay time for the automatic brake function to take effect. The range is 0% to 100%. The default value is 0%. The higher the value, the slower the automatic brake function will take effect. When the value is set to 0%, there is no delay, i.e. the auto brake function takes effect immediately when the brake is triggered. When the value is set to 100%, the delay is 2S.

Cycle

It is used to set the interval between pulses. The setting range is 20% to 100%. The default value is 50%. The larger the value, the longer the interval time between pulses. The value 100% indicates the interval is 0.5S.



Point

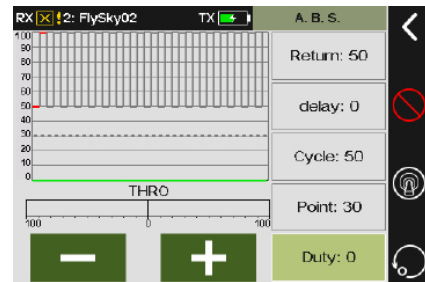
It is used to set the start position of auto-brake function. The setting range is 20% to 100%. The default value is 30%. The higher the value, the closer the stick position that triggers the automatic brake function is to the full brake position. 0%-100% is the entire travel amount of the brake end of the trigger.

Duty

It is used to set the ratio between brake application time and brake release time. The adjustment range is -4 to +4 duty cycles. The default value is 0. When the value changes, the peak and trough length of the brake pulse square wave will be changed.

Adjust the ratio of brake to release:

- The ratio is 1:1 when the cycle is set to "0";
- The ratio is 1:2 when the cycle is set to "1";
- The ratio is 2:1 when the cycle is set to "-1".



Steps:

1. Click the icon at the bottom of the interface to enable this function;
2. Click to select the option you want to set;
3. Click on "+" or "-" to change the setting value;
4. Repeat the above steps to set as needed;
5. Carry out a test to ensure that settings are completed as expected.

7.12 Logic Switches

A logic switch is a virtual switch connected to 2 physical switches which activates or deactivates according to a mathematical relationship between the two.

Example: Logic switch, "and" gate. If only switch one or switch 2 is active, the logic switch will remain off, however if switches 1 and 2 are active at the same time, then the logic switch will activate.

A logic switch can be used in any function that can assign switches.

Function Settings:

There are 3 logic switches.

[Select Sw.]: Touch here to select a switch from the switch selection menu.

[AND]: If switches 1 and 2 are active, then the logic switch will be on.

[OR]: If switches 1 or 2 are active, or switches 1 and 2 are both on, the logic switch will be on.

[XOR]: If switches 1 or 2 are active, then the logic switch will be on, but if switches 1 and 2 are both active the logic switch will be off.

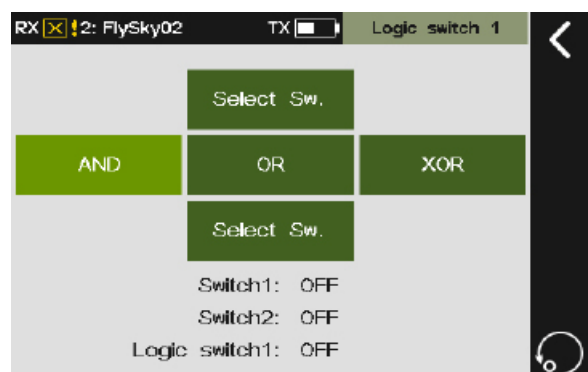
[Switch1]: Displays the status of switch 1.

[Switch2]: Displays the status of switch 2.

[Logic switch1]: Shows the status of logic switch.

Steps:

1. Select a logic switch.
2. Touch the top Select Sw, then select a switch and position.
3. Touch the bottom Select Sw, then select a switch and position.
 - The logic switch will not function without 2 physical switches assigned.
4. Select a logic gate, [AND], [OR] or [XOR] as needed
 - Refer to the table below for more information on logic gates and their function.
5. Toggle the switches to make sure everything is working as expected.



Switch		Gate		
Switch 1	Switch 2	AND	OR	XOR
off	off	off	off	off
off	on	off	on	on
on	off	off	on	on
on	on	on	on	off


7.13 Timers

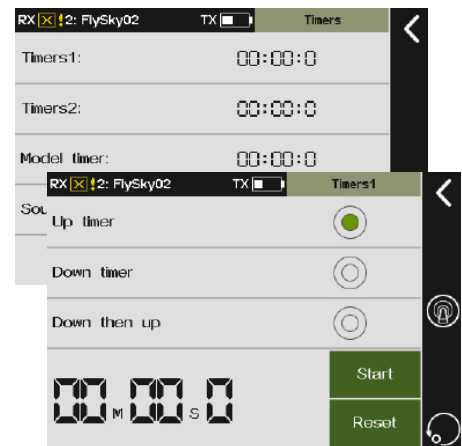
This function allows you to set various timers, which are generally used to calculate the total model running time, competition specific time spent or transmitter running time, etc.

[Timers 1/2]: indicates that the system has 2 sets of timers.

- [Timers 1] and [Timers 2] have the same function. Only one timer setting method is introduced below.

Function Settings:

1. Select [Multipurpose Timer 1/2].
2. Select the timer type.
3. If you select [down timer] or [down then up], you need to use the "+" "-" to set the timer, the system defaults to 5 minutes; if you select [up timer], you can omit this step.
4. Touch [Start] to start the timer.
Touch [Stop], to pause the timer.
Touch [Reset] to reset the timer.
Touch the  icon to assign a switch to control the timer.



[Model timer] is used to calculate total working time of the model.

Function Settings:

1. Select [Model timer], enter the submenu, and select Enable switch to activate this function;
2. [Reset]: Click to reset accumulated time.



[Sound prompt]

This function can be selected according to the needs of the voice prompt [Timers 1] or [Timers 2].

7.14 Throttle curve

This function changes the output curve for the throttle channel. A curve can be created using 3 – 11 different points so that the user has much better control of the aircraft's engine.

A curve can also be set in the EXP function.


Function settings:

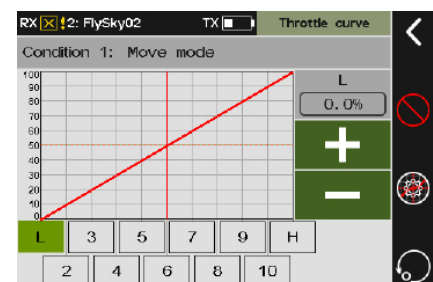
This function can be used to adjust the curve of the throttle channel. It can be set separately in different states. The system supports 10 types of curves, that is, 5 types of "/" curves and 5 types of "v" curves respectively. The adjustment range of each point is 0-100%. The horizontal axis represents the input value of the throttle stick. The vertical axis represents the output value of the throttle after adjustment.

The red line is the linear relationship between the input value and the output value.

The "L" icon below the coordinates indicates the first point on the curve.

The box highlighted in light green is the currently selected setting.

1. Touch the  icon to enter the curve selection.
Every time the curve type is changed the previous curve settings will be lost. The system will ask for conformation before changing the curve type.
2. Choose a curve type from the list. Once a curve is selected the system will automatically return to the curve chart.
3. Touch a point to select it, then use the + and – icons to change the points value. Repeat with other points as needed.



7.15 Function assignment

This function allows you to reassign the functions, controls and trims of the 18 channels according to the current model structure or operation habits.

Function Settings:

1. Go to the function assignment interface;
2. [Function]: Select the function channel to be reassigned, and enter submenu. Select the channel to be assigned with the function.

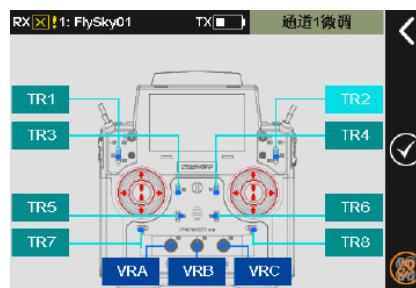
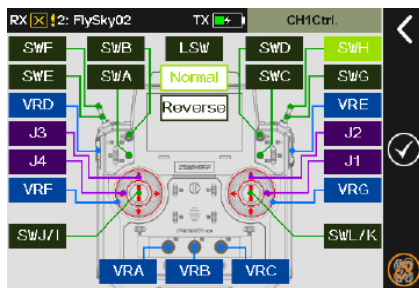
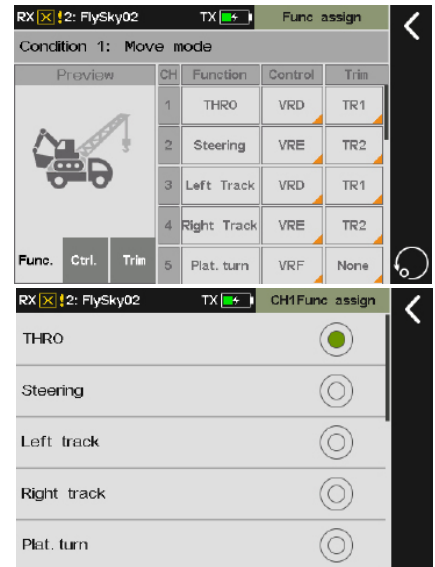
[Control]: Click [Control] corresponding to [Function]. Select the control you want to assign. The selected controls are highlighted. Click return.

The control is successfully assigned;

[Trim]: Click the [Trim] box corresponding to the channel. Select the button or knob you want to assign. The selected controls are highlighted. Click return.

The assignment is successful.


The system provides 18 optional channels. A channel cannot be assigned repeatedly.

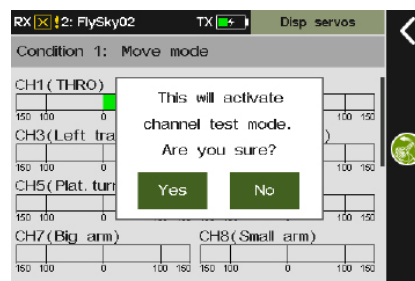
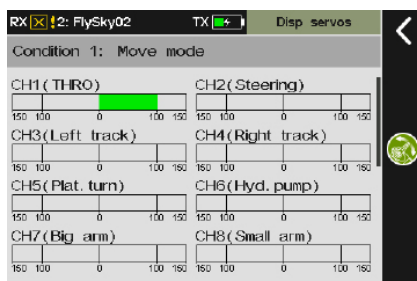


7.16 Display Servos

For all function settings that affect the channel output, the servo actions can be confirmed through graphs. This function can be used to automatically detect the servos. When automatic detection of servos is enabled, servos of all channel servos will oscillate slowly and repeatedly. Be cautious.

Test Mode:

1. Touch the  icon to activate test mode. When test mode is active all channels will slowly move through their entire range of motion.
2. Touch the icon again to exit test mode.



7.17 Model setting

This functions allow you to operate related settings of models, including model name, switch model, model structure, model combination, custom main-menu, restore the current model, copy model, and import or export model.

[Model name]:

Click this function to enter the soft keyboard and name the model.

Function Settings:

1. Use the keyboard on the screen to enter a new name for the model and click the return icon. The setting is saved.

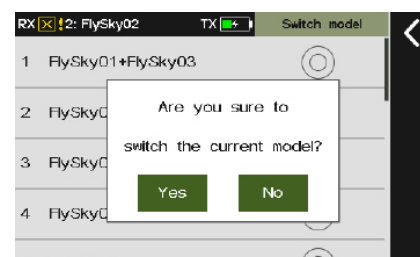
- The length of the model name is limited by the display range of the top status bar.



[Switch model]:

This function allows you to switch models. The system can store 20 groups of model data, including all setting data except system settings.

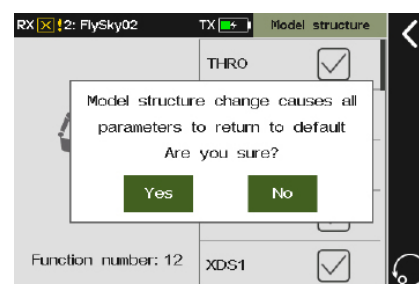
You can directly select the model to be used in the list, and select [Yes] in the pop-up dialog box to switch the model.



[Model structure]:

Select the corresponding model structure function for the currently configured model type function.

Note: When you modify model structure, the model data is reset.



[Model combination]:

This function allows you to select a group of models to establish a model combination with the current model. The combined model can be switched with the use of one button by a preset switch.

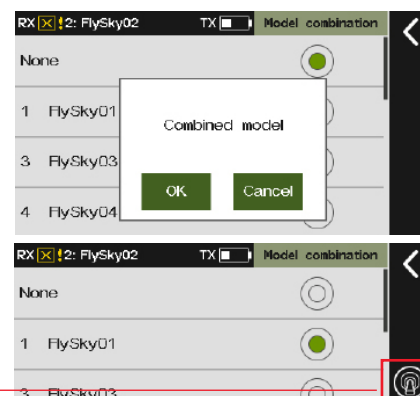
Function Settings:

1. Enter the [Model combination] menu;

Click the models to be combined. Dialog box is displayed, as shown in the figure. Click "OK". The switch assignment button [Ⓢ] will be displayed on the right side of the system;

3. Click this button to assign a switch for model switching. Click return. The setting is saved.

4. You can also select [None]. It means the model combination is not created.



The switch assignment button

[Custom main menu]:

You can customize the sorting and hiding functions of the main menu. Click the small box. Select it to display the menu. Deselect it to hide the menu;

To adjust menu order, select menu to be moved (highlighted items are selected). Click [Move up] and [Move down] below to change menu order.



[Restore the current model]:

This function allows you to restore corresponding model data to the factory default value (to avoid user's mis-operation, system displays a dialog box for reconfirmation after clicking).

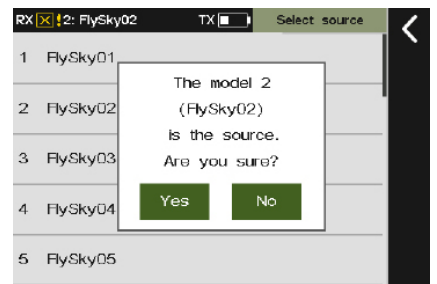
[Copy model]:

This function allows you to copy the data of one model to another model.

When setting up a new model, you can use this function to copy existing model data and then modify different parts without repeating settings. It is very convenient.

Function Settings:

1. Enter [Copy model]. Select the copy object;
2. Select the purpose of copying and confirm it in the pop-up box;
 - After copying, the model data of the destination will be overwritten by the model data of the copied object.
 - Please be careful when copying the model. Model data can not be restored after it is overwritten.



[Import or Export model]:

Click to import/export the model. You need to log in to the flysky official website to download the software (Flysky Assistant) and then operate it on a PC!

7.18 Sensors

This function allows you to set the transmitter, internal receiver and data returned by the external sensor.

7.18.1 Display Sensor

This list shows all sensors connected to the receiver, including sensor type, number and real-time data. This list can also be accessed quickly from the home screen.

[Type] shows the sensor type.

[number] display sensor's number.

- The first sensor in the list by default is the TX Voltage sensor, however receiver, signal strength indication, RSSI, noise, signal to noise ratio can also take this slot.
- No. 2 is the first external sensor connected to the receiver; the receiver supports up to 15 sensors.

This list data is displayed in real time. When the receiver is connected to a sensor, this list will be refreshed to display the new sensor's data.

[Value] displays the data returned by a sensor.

[TX Voltage]: Displays the voltage for the transmitter's battery.

[RX Voltage]: Displays the power supply voltage for the receiver.

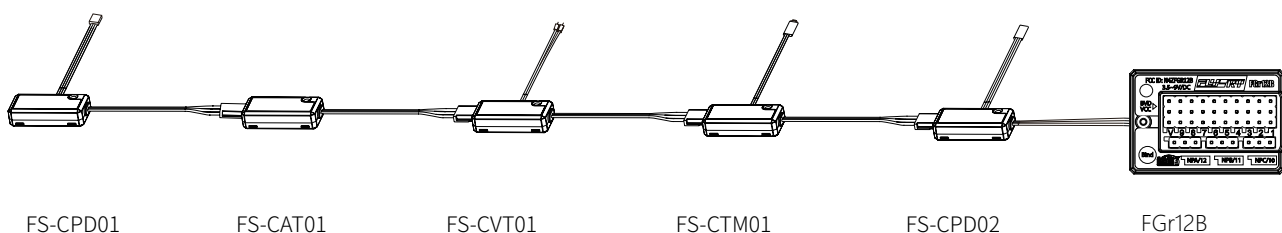
[Signal strength]: refers to the strength between the transmitter and the receiver. It is calculated by using SNR. The signal strength will be displayed as a value between 0 and 10. If the signal strength drops to 4 or below the system will alert the user.

[Signal to Noise Ratio]: The signal-to-noise ratio refers to the decibel difference between the signal and the noise received by the receiver. The signal-to-noise ratio = RSSI-noise, which is a decisive parameter in the overall quality of the signal. If the SNR drops below 11 reduce the range quickly to prevent loss of control.

[RSSI]: RSSI is used to measure signal strength between the receiver and the transmitter.

[Noise]: Noise is generated due to interference from other nearby transmitters such as Wi-Fi. In places where there are too many transmitters, excessive noise will affect the maximum range for a flight.

Type	ID	Value
TX voltage	1	3.93V
RX voltage	1	5.15V
Signal strength	1	100
RSSI	1	-29dBm
SNR	1	74dB
Noise	1	-103dBm
Motor speed	2	0rpm
Temperature	3	26.5°C
Motor speed	4	0rpm
Air pressure	5	1001.7hPa
Altitude	5	96m



FGr12B sensor connection diagram

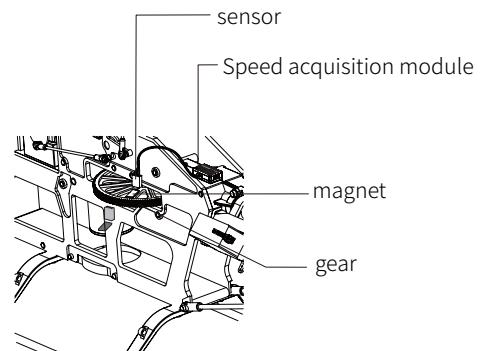
Note: Select [RX Protocol] as the sensor on the transmitter, and the CH12/NPA of FGR12B is the SENS interface. Refer to the above (3.3.3Ports) for the specific interface definition.

FS-CPD01: Magnetic induction speed acquisition module

Used to measure the speed of the motor. To use this sensor connect it through the i-BUS interface or connect to the SENSE port on the receiver directly.

Function Settings:

1. Connect the FS-CPD01 sensor to the receiver's SENS port.
2. Place the sensor next to the magnet, which is fixed to the spinning part of a model such as the blades of a plane rotor.
 - Make sure that the sensor is within 2mm of the magnet and that the north pole of the magnet is parallel to the sensor.
3. Turn on the transmitter, enter the transmitter [Sensor] menu, select it from the [Sensor List], then turn the rotating element, if the speed value changes then the installation is successful, otherwise repeat the above steps.
 - "Motor speed" is the speed sensors name. "6" is the sensor ID and refers to the sixth sensor. "rpm" is the speed measurement value.

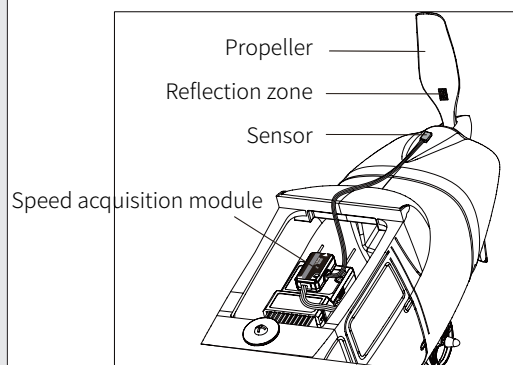


FS-CPD02: Optical Induction Speed Acquisition Module

Used to measure the speed of the motor. To use this sensor connect it through the i-BUS interface or connect to the SENSE port on the receiver directly.

Function Settings:

1. Connect the FS-CPD02 sensor to the receiver's SENS port.
2. Mount the sensor with a view of the sticker that has been affixed to the rotating element.
 - Keep the sticker flat and perpendicular to the sensor, and the sensor. Make sure the distance to the sticker is not more than 1 or 2 mm.
3. Turn on the transmitter, enter the transmitter [Sensor] menu, select it from the [Sensor List], then turn the rotating element, if speed value changes then the installation is successful, otherwise repeat the above steps.
 - "Motor speed" is the speed sensors name; "2" is the sensor ID and refers to the sixth sensor. "rpm" is the speed measurement value.



FS-CTM01: Temperature Acquisition Module

This sensor is used to monitor the temperature of a chosen part of the model. To use this sensor connect it through the i-BUS interface or connect to the SENSE port on the receiver directly.

Function Settings:

1. Connect the FS-CTM01 sensor to the receiver's SENS port.
2. Use soft double-sided tape to attach the FS-CTM01 receiver to element you want to measure (e.g., motor, battery). Make sure the sensor is pressed against the surface snugly for the best readings.
3. Turn on the transmitter, enter the transmitter [Sensor] menu and select it from the [Sensor List].
 - "Temperature" means the sensor is the test temperature; "3" is the receiver ID. "26.4° C" is the measured value.

FS-CVT01 voltage acquisition module

The FS-CVT01 function is used to monitor the model battery voltage. To use this sensor connect it through the i-BUS interface or connect to the SENSE port on the receiver directly.

Function Settings:

1. Connect the FS-CVT01 sensor to the receiver's SENS port.
2. Turn on the transmitter, enter the transmitter [Sensor] menu and select it from the [Sensor List]. If the sensor displays External Voltage 12.4V then installation is complete.
3. Insert the red and black wire pins into the port on the battery. Red is positive and black is negative.

FS-CAT01 altitude pressure module

The FS-CAT01 detects the altitude of the model using air pressure.

Function Settings:


1. Connect the FS-CAT01 sensor to the receivers SENSE port.
2. Use double sided soft tape to snugly fix the FS-CAT01 receiver in place.
3. Turn on the transmitter, enter the transmitter [Sensor] menu and select it from the [Sensor List].
 - "Air pressure" is the name, "height" is the receiver type; "5" is the receiver ID, referring to the fifth receiver. "1001.0hPa", "-14m" is the actual measured height value.
 - The actual air pressure and altitude can be calibrated in the Air pressure sensor] menu.

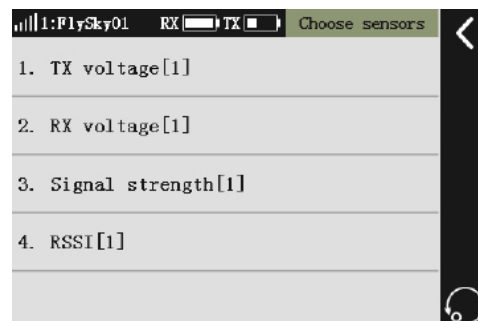
7.18.2 Choose Sensors

This function is used to set the sensor data displayed on main interface, and to enable setting the current sensor alarm threshold.

Function Settings:

The home screen can display up to 4 sensors.

1. Select a slot from the list. The slots will already have sensors assigned to them and will have their names displayed.
 2. [Sensor: name]: name being either non or a sensor name, is the currently selected sensor. To select a sensor touch [Sensor: name] then select a new sensor from the list.
 3. Click  to enable the sensor alarm function and customize the alarm value;
 4. The receivers sensors will also be displayed in the list and can be chosen as needed.
- Once any sensor is set, the system will clear the default sensor and sensor data, showing only the current sensor and sensor data.

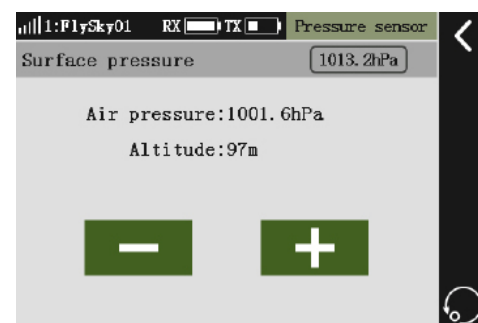


7.18.3 Air Pressure Sensor

Calibrates ground pressure.

Function Settings:

1. Connect an altitude pressure module then place the model on the ground.
2. Use the + and – keys to adjust the altitude to 0.
 - Make sure your model is always at a level ground level during setup.



7.19 Help Center

This menu can allow you to obtain PL18EV instructions and records of software version updates.

8. RX Setup

This section is an introduction to receiver functions.

8.1 Bind with a receiver

This function is for binding with a new receiver.

For specific binding instructions, please refer to [5.2 Binding].

8.2 Failsafe

This function can allow you to preset the position kept for receiver output when the receiver cannot receive signals or the receiver is uncontrollable.

Once failsafe is set, when the receiver and transmitter are out of control, the receiver will output a preset failsafe value.

Function Settings:

a. Failsafe time:

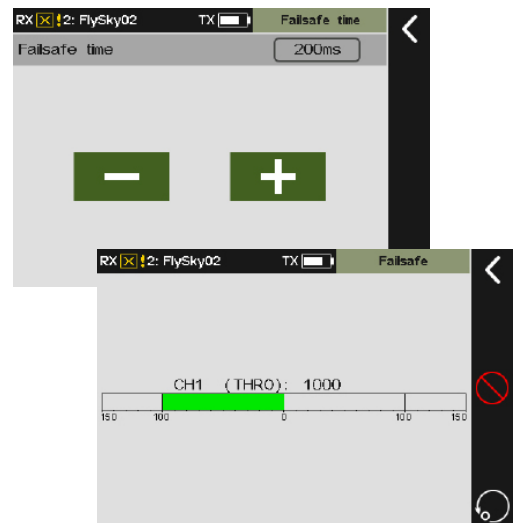
How long it takes the failsafe to kick in after losing signal. The range is 100-1000ms

b. Failsafe value

[CH1 : Off]: indicates that the first channel will remain in its last known position after losing signal.

[Channel 2: 2000]: indicates that after the receiver gets out of control, the servo of the second channel will output 2000.

1. Select the channel to be set (18 channels can be set) and access the submenu.
2. Turn on the failsafe of this channel, then turn the multiplex stick (switch, knob or logic switch) to the required position and hold it, and select the return icon at the same time. You can also set failsafe values for multiple channels at the same time.

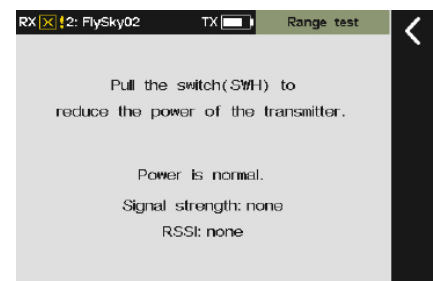


8.3 Range test

This function is used to test whether the transmitter and receiver RF are working properly. As the actual remote control distance between the transmitter and receiver is far, in practice, it is difficult to pull the transmitter and receiver far enough away to verify whether the RF is normal. Therefore, when this function is enabled, it can test whether the transmitter and receiver are normal at a close distance. Test time is saved.

Function Settings:

1. Make sure the transmitter and receiver are bound.
2. When in the Range test menu press and hold SwH.
3. One person stands in place with the transmitter in hand and the other person's model gradually moves away from the transmitter;
 - Keep the transmitters antenna unobstructed and make sure that the receiver antenna is at 90 degrees to the transmitter.
4. Observe the signal strength of the transmitter. If the signal strength is high and stable, it means that everything is functioning normally.



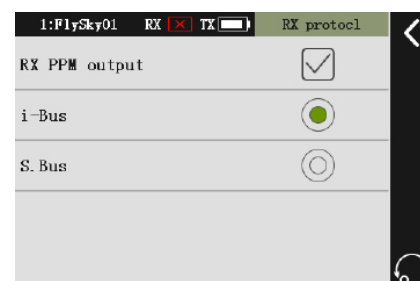
8.4 RX protocol

Set the receiver PPM output, select i-Bus or S.Bus (For specific i-BUS settings please refer to [8.6 i-BUS Settings]).

When "RX PPM Output" is selected, it means that the receiver CH1 outputs PPM signals. When it is not selected, by default, the receiver CH1 outputs PWM signal. When i-Bus is selected, the corresponding channel outputs i-Bus signal. When S. Bus is selected, the corresponding channel outputs S. Bus signal.

Function Settings:

1. Touch RX protocol in the RX setup menu.
2. Touch RX PPM output to check or uncheck the box.
3. When this function is checked, the receiver CH1 outputs the PPM signal, and the other channels have no output.



8.5 Set to PWM conv

This function can be used to configure FTR10 and FGR12B receivers as PWM converters (hereinafter referred to as slaves). After configuring as slaves, the SERVO/I-BUS OUT interface of the master receiver and the SENS / I-BUS IN interface of the slave receiver can be connected through the channel extension line, to be used as an extension receiver channel. The "servo response speed" and "start channel" of the slave receiver can be set. In case of re-binding, the parameters of the slave receiver are invalid. The reconfiguration is required when it is used as a slave again.

FTR10 configured as PWM converter:

1. In the slave receiver, enter the bind mode. Click the transmitter's [bind with a RX] to complete the binding;
2. Enter [conf.FTR10 as I-BUS to PWM conv.]. Set the servo response speed for it;
3. Set the slave's "Start channel". The start channel value is the channel output from the slave's CH1 interface. Click the screen "+" or "-" to modify the start channel. After the settings are complete, click [Config];
4. The slow flash of the receiver indicator indicates that the configuration of the slave receiver is complete.
5. Complete the bind of the master receiver. Through the channel extension line, connect the SERVO interface of the master receiver and SENS interface of the slave receiver to use as an extension receiver channel.

Note: After FTR10 is configured as a PWM converter, it can only be used with the main receiver for FTR10.

FGR12B configured as PWM converter:

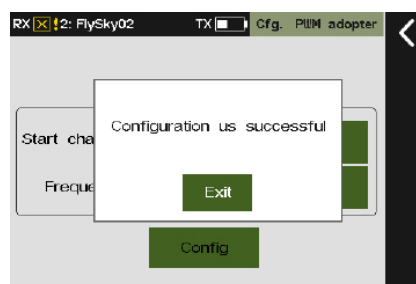
1. On the receiver pre-configured as a PWM converter, enter the bind mode. Click the transmitter [bind with a RX] to finish the bind;
2. Enter the [conf.FGR12B as I-BUS to PWM conv.]. If the pre-configured FGR12B receiver indicator flashes twice and turns off once, it indicates that the configuration of FGR12B as a PWM converter is successful.
3. Bind the master receiver;
4. Set the master receiver interface protocol to I-BUS on the transmitter;
5. Use the channel extension cable to connect the interface of the main receiver [see note (1) below] and the NPA interface of the FGR12B configured as a PWM converter.

Note:(1) • If the main receiver is FTR10/FGR4, connect the SERVO interface and the NPA interface of the PWM converter;

• If the main receiver is FTR4/FGR4S/FGR4P, connect the I-BUS interface and the NPA interface of the PWM converter;

• If the main receiver is FTR8B/FTR12B/FGR12B/FTR12B, connect the NPA interface and the NPA interface of the PWM converter.

(2) • After the FGR12B receiver is configured as a PWM converter, the code cannot bind with the transmitter, and the firmware needs to be refreshed.



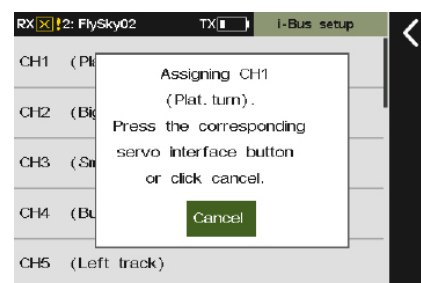
8.6 i-BUS setup

This function can set up the i-BUS expander.

The i-BUS is mainly used for the servo extension. When the servo line is short or there are too many servos to completely connect all of them to the receiver port, the i-bus extender can be used to solve this problem. When this function is used, it is convenient to control the model to achieve more operations. When the i-BUS extender is used, please supply separate power to it to prevent the servos from not working properly due to insufficient power supply.

Function Settings:

1. Make sure the transmitter and receiver are bound.
2. Connect the i-BUS **expander** to the SERVO port on the receiver.
3. Connect the servos to the C1-C4 ports on the i-BUS module.
4. Power on the transmitter and navigate to the i-BUS setup menu located in the RX setup function.
5. Select a channel, then press the corresponding port's button on the i-BUS **expander** to assign that channel to it.
 - If the channel allocation is successful, the prompt box will display the channel name, servo number and interface number. In the definition of the interface number, the main receiver is defined as 1, and the serial bus receiver is defined as 2. When multiple channels are connected in series, they will be numbered in turn.
6. Repeat the above steps for all channels as needed.
 - If there are too many peripherals attached to the i-BUS expander power it separately.



8.7 Low voltage voice alarm

This function is used to monitor voltage status of the receiver battery, for viewing voltage of the current receiver. It is also used to set the low voltage alarm value to avoid model voltage too low with the occurrence of out of control.

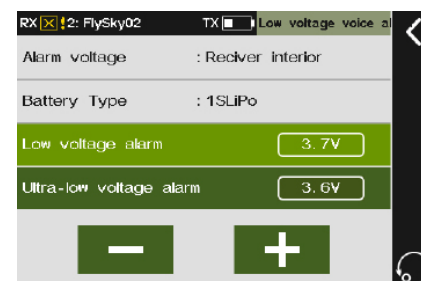
Function Settings:

[External sensor]: Indicates use of the external sensor to detect voltage status of the battery.

[Low voltage alarm]: Sets the low voltage value of the battery. By default, the value is 3.7V.

[Ultra-low voltage alarm]: Sets the low voltage alarm limit. By default, the value is 3.6V.

1. The alarm voltage contains [Receiver interior] and [External sensor]. By default, it is the receiver voltage; When [Receiver interior] is selected, voltage of receiver is detected; When [External sensor] is selected, voltage of the external sensor is detected.
2. Select the voltage value to be modified and enter submenu;
 - Please follow the manual of receiver battery to set it
3. Click "+" "-" on screen to modify voltage value.
 - After setting alarm voltage, the system will automatically report an alarm if battery voltage is detected to be below the range.



8.8 Low signal voice alarm

This function allows you to enable or disable low signal alarm function.

Function Settings:

Click the [Low signal voice alarm] box to enable or disable the function.



- After selecting this function, when receiver signal strength is less than or equal to 4, the transmitter indicator flashes and an audible alarm is given.

8.9 Servo frequency

This function is used to adjust the channel output control servo frequency. This function includes analog servo (50 Hz), digital servo (380 Hz), custom frequency. You can select or set the correct output frequency value according to the servo used. By default, the system adopts the analog servo. The custom frequency adjustment range is from 50 Hz to 400 Hz.

Some servos may operate at a frequency different from the default frequency. In order to make the servos operate properly, you can change the servo frequency by using this function.

Function Settings:

- Click to enter [Servo frequency];
- Click  on right side to select the corresponding function as needed. Click  to return;
 - If you select [AFHDS3 1-way] for transmitter RF setting, modify the servo response speed and press the Exit button. The system displays "It will take effect after binding or re-binding. Are you sure to bind?"
- If [Custom] is selected, click "+" or "-" on the screen to adjust the frequency.

Note: 50Hz (analog servo) and 380Hz (digital servo) are the common servo frequency values on the market; therefore, they are set separately to allow users to perform quick operations. For details, see the operation manual of the servo to confirm the correct frequency. Then, change the servo frequency value through this function.



8.10 Servo midpoint

This function sets the value of the servos center point. The default is 1500, which is suitable for most servos.

When using standard S-BUS with a device such as the Vbar gyro fight controller it can be set to 1520.



8.11 RX update

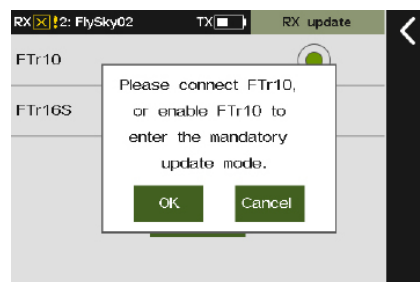
When a new version of firmware is released and the receiver needs to be updated, enter this screen to update receiver firmware.

Function Settings:

- Bind the transmitter and the receiver normally.
- Click [RX update]. The system will automatically display a confirmation box, and click [OK] to update immediately.
- If the receiver firmware is the latest version, the system will display [Current firmware is the latest version]; If the receiver firmware is not the latest version, the system will start to update and display an update progress bar. After update is completed, the system directly exits the menu.

Note: If the transmitter is unable to bind with the receiver after updating, it is required to update the receiver.

- After the receiver enters the forced update mode, select [RX update] in the [RX setup] function. Select corresponding receiver and click [Update] to complete update.



To perform update, proceed as follows:

1. Press the bind button on the receiver. After power-on for 10 seconds, the indicator flashes three times and lights out once.
2. Release the bind button; Select the receiver update at the transmitter side and enter the update state;
3. The indicator flashes slowly after update is completed.

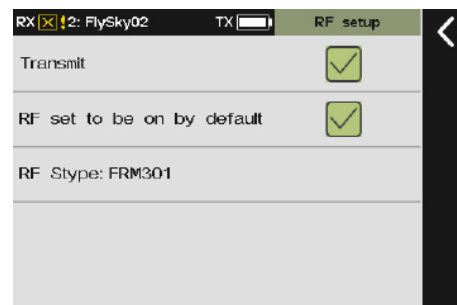
Note: above is the FGr12B forced update mode. For the forced update modes of other related receivers, see the manual of each receiver.

8.12 About Receiver

View system information, including product name, software version, and receiver ID.

9. RF setup

This section is used to set and display some parameters and information related to high frequency, such as RF standard, high frequency module firmware upgrade, high frequency module version information related content.



Function Introduction

[Transmit]

Select this option to enable the RF function. By default, it is enabled;

[RF set to be on by default]

If this option is not selected, the system displays a message, indicating whether to enable the transmitting function when the transmitter is turned on. If this option is selected, the RF function is enabled by default, without the pop-up message in case of power-on;

[RF Type]

In this menu, you can select RF type, including FRM301, FRM302, PPM and CRSF. By default, it is FRM301.

If you need to change the RF option, you can select it as required. In the switching of RF, the system displays a message "Are you sure you want to change the RF type?". Click "Yes".



a. Select FRM301.

The system displays the next-level menu:

1. [RF standard]: you can select [AFHDS3 2-way] or [AFHDS3 1-way];
2. [RF firmware update]: A confirmation box automatically pops up. Select [Yes] to update immediately. Once the update is completed, the system directly exits the menu.
 - If the RF module firmware is the latest version, the system will prompt [The current firmware is the latest version]. If the RF module firmware is not the latest version, the system will start to update and display an update progress bar.
3. [RF Version]: Click to display RF name, version number, and ID information of this RF.

b. Select FRM302.

The system displays the next-level menu:

1. [RF standard]: You can select [AFHDS3 2-way] or [AFHDS3 1-way];
2. [RF Version]: Click to display RF name, version number, and ID information of this RF.

c. Select PPM.

The system displays the next-level menu:

On this interface, you can select signal polarity (positive or negative. The default value is "positive"), channel number (4-18 channels. The default value is 8 channels), period (12.5ms-45ms. The default value is 20ms), and start tag (100us-800us. The default value is 400us).

Function Settings:

Select item to be modified (it is highlighted in green after selection), and click "+" and "-" below to change the value (if signal polarity is selected, it will be "positive", and if signal polarity is deselected, it will be "negative").

d. CRSF

CRSF is the Black Sheep RF Protocol. You can select this option to communicate with Black Sheep RF module by serial port protocol in one direction.

10. System

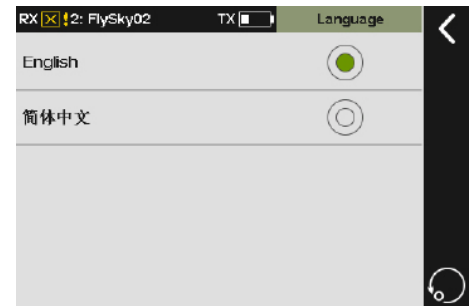
The system menu content is mainly used to set various functions of the transmitter, such as screen settings, sound settings, and so on.

10.1 Language

The system can display both [English] and [Chinese].

To change the system language go to language menu in the System menu.

- The system defaults to the official language of the target sales area.
- For actual languages, see the transmitter language list.



10.2 Units

Choose what units to use for length and temperature.

[Length] can select metric and imperial system. The default is metric.

[Temperature] can be selected in Celsius and Fahrenheit. The default is Celsius.

The box highlighted in light green is the currently selected setting.



10.3 Sound

Turn on or off system sounds.

- This function is enabled by default. If it is enabled the box will have a check in it, to disable it touch it.
- Use the + and – icons to change the volume.



10.4 Vibration

This function enables or disables vibration for various actions.

Status or function that can be set for vibration: power on, Shut down, Safety, Standby Timeout, Voltage alarm, Weak signal, RX connection, RX disconnection, Timer count down, Timer over, sensors.

The settable states is are: No vibration, Weak vibration, Strong vibration, the system default is off.



10.5 Backlight Timeout

Changes how long the screen takes to turn off when not in use. The default is 30 seconds. Touch a time from the selection and press the back icon to save and exit.

- Leaving the screen on for longer will use more power and as such may lead to reduced battery time.



10.6 Backlight Brightness

Adjusts the brightness of the screens backlight. The default is 50%.

- Turning the brightness up will use more power and as such will lead to reduced battery life.



10.7 Standby timeout

This function can be used to set the idle alarm time of the transmitter. If the transmitter does not bind the receiver and the transmitter does not operate at all, an alarm will be sent within 3 minutes by default. Select "None" to disable this function.



10.8 Auto Shutdown

Turns the transmitter off if not connected to a receiver and is not in use. This function is enabled by default. To disable the function touch the box and make sure there is no check in it.

Touch auto shutdown to go into the time select menu. The default is 5 min. Use the + and – keys to change the time and press the back icon to save and exit. The time can be set up to 60 min.

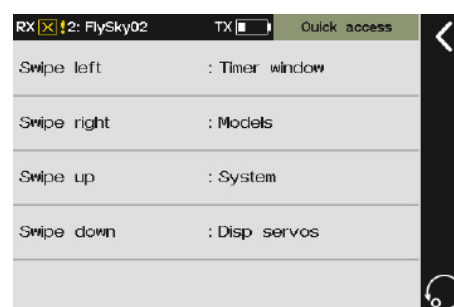


10.9 Screen quick access

This function is used to set up the up, down, left and right shortcut screen sliding functions of the main interface. Users can customize the screen sliding interface according to their requirements.

Function Settings:

- Access the function interface, click the corresponding function option to select it, and select "None", that is, no shortcut operation is set;
- Click return to save the settings.



10.10 Switches setup

This function is used to set the gear of the shift switch SWE-SWH, and the 2nd and 3rd gears can be selected. Click to switch gears.



10.11 Calibration

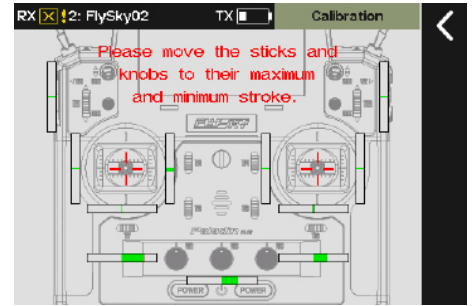
This function is used to calibrate the multiplex sticks and knobs. The multiplex sticks, 3 knobs and 2 shift levers can be calibrated.

Function Settings:

Click [Multiplex Stick Calibration] to access the calibration interface, and a calibration prompt will pop up. You can operate according to the prompt:

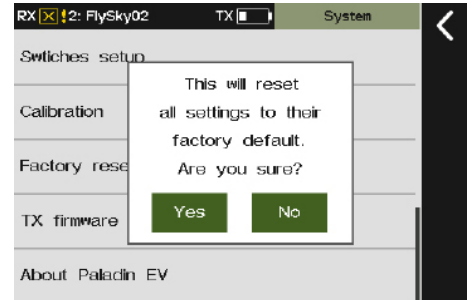
Click [OK] to access the next calibration after the calibration is successful, and click on the upper right corner to return;

If calibration fails, click OK to pop up a prompt, click [Yes] to re-calibrate, and click [No] to return automatically.



10.12 Factory Reset

Resets the transmitter to its factory default state. This deletes all data including all model data and system settings.

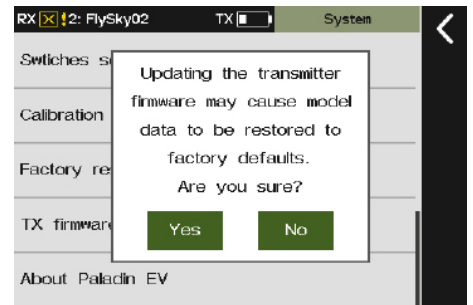


10.13 TX Firmware Update

Updates the transmitters firmware.

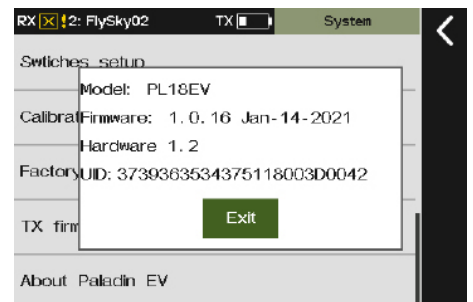
How to update:

- 1.Touch TX firmware update in the System menu.
- 2.Connect the transmitter to a computer using a USB wire. Then open the flysky PL18EV update software and click update.
- 3.The transmitter will show a progress bar. Once the update is complete it will restart automatically.
 - If you need to cancel the update, cancel it from the computer.



10.14 About Paladin EV

View system information, including product name, software version, software release date, and hardware version.



11. Product Specification

This section describes the PL18EV transmitter, FGr12B receiver, and sensor type receiver.

11.1 Transmitter Specifications (PL18 EV)

Product Model	PL 18 EV
Product Name	Paladin EV
Channels	18
Adaptable receivers	all AFHDS 3 receivers
Model Type	engineering vehicles, simulation ship etc.
RF	2.4GHz
RF Power	< 20 dBm
2.4GHz Protocol	AFHDS 3
Distance	>300m (open without interference ground)
Channel Resolution	4096
Battery	1S (3.7V) * 4300mAh (built-in)
Charging Interface	Micro USB/wireless charging
Charging Time	4h@5V*2A/7h@5V*2A (wireless charging)
Life time	>5.5h (standard accessories)
Low Voltage Warning	< 3.65V
Antenna Type	Dual antenna
Display	HVGA 3.5 TFT, 320*480
Language	Chinese and English
Simulator	USB Simulator
Data Interface	USB、Non-standard interface (USART) 、PHJACK (PPM)
Temperature Range	-10°C—+60°C
Humidity Range	20%-95%
Online Update	Yes
Color	black
Size	120mm*195mm*213 mm
Weight	1012g
Certification	CE, FCC ID:N4ZFT1800

11.2 Receiver Specifications (FGr12B)

FGr12B

Model Type	FGr12B
PWM Channels	12
RF	2.4GHz ISM
2.4GHz Protocol	AFHDS 3
Distance	>500m (open without interference ground)
Antenna Type	Single antenna
Power	3.5v-9V
RSSI	Yes
Data Interface	i-BUS/S.BUS/PPM/PWM
Temperature Range	-10°C—+60°C
Humidity Range	20%-95%
Online Update	Yes
Size	37mm*25mm*17.5mm
Weight	11.2g
Certification	CE, FCC ID:N4ZFGR12B

12. Package Contents

number	name	Quantity	Configuration	Remarks
1	PL18 EV Transmitter	1	Standard	
2	QUICK START GUIDE	1	Standard	
3	FGr12B Receiver	1	Standard	
4	FRM301 RF Module	1	Standard	
5	Thin grip	1	Standard	
6	RF fixed plate			
7	USB	1	Standard	
8	LOGO sticker 1	1	Standard	
9	LOGO sticker 2	1	Standard	
10	Fuselage stickers for PL18 EV	1	Standard	
11	Button switch rubber cover	1	Standard	1 in orange, 1 in yellow, 1 in blue, 3 groups in total
12	FS-CEV04, FS-CAT01(height), FS-CPD01(speed/Magnetic sense), FS-CPD02(speed/Light-sensitive), FS-CVT01(Voltage), FS-CTM01(temperature)	1	optional	
13	FRM302 RF Module	1	optional	
14	Bracket	1	optional	
15	JR module adapter	1	optional	
16	Trainer USB	1	optional	
17	FGr8B Receiver	1	Standard	Only the flagship version has standard configuration. For the standard version, users need to purchase it separately.
18	Wireless charging base	1	Standard	
19	Tray (with hand rest)	1	Standard	
20	Tray strap	1	Standard	

13. Certification

13.1 DoC

Hereby, [Flysky Technology co., ltd] declares that the Radio Equipment [Paladin(PL18 EV),FT18 EV] is in compliance with RED 2014/53/EU.

The full text of the EU DoC is available at the following internet address: www.flysky-cn.com

13.2 CE Warning

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance

13.3 Appendix 1 FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example use only shielded interface cables when connecting to computer or peripheral devices).

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Caution!

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user authority to operate the equipment.

1. Move all your channels to the desired position.
2. Select [All channels] and then [Yes] in the confirmation box.

14. Environmentally friendly disposal

Old electrical appliances must not be disposed of together with the residual waste, but have to be disposed of separately. The disposal at the communal collecting point via private persons is for free. The owner of old appliances is responsible to bring the appliances to these collecting points or to similar collection points. With this little personal effort, you contribute to recycle valuable raw materials and the treatment of toxic substances.





<http://www.flysky-cn.com>

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CE, FCC ID:N4ZFT1800