

# SIYI

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## FT24 RADIO SYSTEM USER MANUAL



SIYI Technology (Shenzhen) Co., Ltd.

[SIYI.biz/en](http://SIYI.biz/en)

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Thank you for purchasing SIYI Technology's products.

FT24 is based on SIYI Tech's industry-level radio-link technology, accumulated for years. SIYI's R&D team devoted themselves to making cool new features in FT24 remote controller specially for RC hobbyists, such as, super long transmission distance, fast and stable response, and highly explorable. With diverse model settings, advanced wireless communicating and interactive functions, FT24 users will have an unprecedented experience of manipulating their model craft and having fun.

To maintain a safe and orderly public space and to ensure you a good using experience of FT24 Radio System, please read this manual carefully. If you have any issues using the product, please consult the manual or check online pages of FT24 on SIYI official website (<http://en.siyi.biz/>). You can also send an email to SIYI official A/S center ([support@siyi.biz](mailto:support@siyi.biz)).

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Contact Us: **SIYI Official Website** (<https://SIYI.biz/en>)

SIYI User Group - Facebook	
Facebook	
LinkedIn	
YouTube	

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## Manual Version Update Record

<b>Version Number</b>	<b>Update Date</b>	<b>Update Content</b>
<b>1.0</b>	——	Original content
<b>1.1</b>	2025.04	Partial deletion
<b>1.2</b>	2026.3	Added precautions for trainer mode

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# 1 READ TIPS

## 1.1 Icons

Please pay more attention to content indicated with the following marks:

 **DANGER** Dangerous manipulation that probably leads to human injuries.

 **WARNING** Warnings on manipulation that possibly leads to human injuries.

 **CAUTION** Cautions on what manipulation may lead to property loss.


 **Prohibited**    **Mandatory**    **Mark**


## 1.2 Safety


FT24 Radio System is designed for hobbyists, users who approaches to the device should have at least the basic knowledge to operate it. Irregular or irresponsible manipulations to the device may cause damage, property loss, or human injuries. Users under 14 years' old should follow an experienced trainer's guide. Disassembling or modification to the system is prohibited without permission from its manufacturer, SIYI Technology.


To maintain a safe and orderly public space and to ensure you a good using experience of SIYI's products, please read the prohibited and mandatory terms carefully.


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 Do not use any SIYI radio system to operate your aircraft/vehicle/model at places with intensive crowd (a square, a park), or at places with many obstructions (a street, a parking lot), or in fields with strong magnetic or interference (an electricity plant, a radar station, railways), or in any other fields where an irregular flight/operation may cause property loss or human injuries.


 Do not hold or cover transmitter antenna or obstruct its transmission by any means in a flight or an operation.


 Never point your transmitter antenna's upper ends straightly to your aircraft/vehicle while it is working, they are the weakest parts for transmission.


 Do not start your aircraft/vehicle/model when you are tired, drunk, in sickness or any circumstances you are not feeling good.


 Do not fly an aircraft/model when it is rainy, windy or at night.

 Do not power off the transmitter while your aircraft's/vehicle's/model's engines and motors are still working.


 Please always try to operate your aircraft/vehicle/model within sight range.


 Do not forget to check battery level of the transmitter and the receiver before starting your aircraft/vehicle/model.

 Always power off your aircraft/vehicle/model first, FT24 transmitter the second.

 Before changing any settings on the transmitter, make sure your aircraft's/vehicle's/model's engines are powered off and their motor wires are off connection, in case of a sudden switch-on.


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 When you start your aircraft/vehicle for the first time, make sure that the fail-safe settings in your transmitter is activated.

 Always switch on the transmitter first and hold the throttle joystick at its bottom position, then power on your aircraft/vehicle/model.

## 1.3 Batteries


FT24 transmitter is powered by external batteries. Please do read the precautions below before selecting your battery models.


 Make sure that the battery power, voltage, and volume are compatible with FT24 transmitter's requirement:

2 x 18650 Li-on Batteries


or

1 x 2S LiPo Battery (XH 2.54 3-pin Port)

 Stop using the battery immediately if you found it smoking, overheat, or expanded.

 Stop using the transmitter immediately if there was a peculiar smell, smokes, or leaks.

In such cases you shall sent the transmitter back to your dealer for after-sales service.

 Do not use SIYI radio system when temperature is high, or battery temperature is over 60°C.

 **DANGER**



Keep SIYI radio system and its parts away from any places that babies or kids may reach

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easily.

The batteries should be taken out of transmitter for careful and safe storage if you are going to stop using the transmitter for more than 3 days.

## 1.4 SD Card

-  Do not disassemble, bend, press, abandon or damage SD card by any means.
-  Stop using the SD card if you find it soaked by water, oil or any other chemical liquid.

### CAUTION

A SD card is also an electronic product, keep it away from static electricity.

Keep the Micro-SD card slot clean in case of blocking by sand or dirt.

Keep the SD card in slot while you are downloading or uploading data; taking out it mistakenly, hitting it or shattering it may cause damage or data loss.

Keep the SD card away from places that a baby or a kid may reach in case that it was swallowed mistakenly by the baby/kid.

## 1.6 Storage/Carrying/Recycling

### CAUTION

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Always place your SIYI radio system and its parts at places where babies or kids do not reach.

 **DANGER**

SIYI radio system should be placed as below:

Not too hot (above 60°C) or too cold (under -20°C);

Not under direct sunshine or too dusty or too wet;

Not on an unstable holder which lacks of solid supports or may cause vibration;

Not nearby steam or other heat sources.

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## 2 INTRODUCTIONS

### 2.1 Features

#### **15KM Over-the-horizon Control**

Applied with lately developed technologies, such as super long distance, self-adaptive bandwidth, interference avoidance frequency hopping, and two-way telemetry, equipped with industry-level RF hardware which is capable to counter high power electromagnetic interference, FT24 remote controller's maximum control distance can reach up to 15 kilometers, which can effectively guarantee the low-altitude manipulating stability crossing among trees, through racing panels, in garage and other concrete buildings with many obstacles, shelters, and heavy interference.

#### **Free to Explore**

Extendable functions and reserved interface to peripheral devices support more possibility. FT24 users can add Bluetooth, Datalink, Digital FPV, and external multi-protocol high frequency tuner to the remote controller according to their requirement for upgrading functional playability.

#### **Wireless Communication and Interactivity**

Farewell to traditional wired communication and interactivity, all made for efficiency and convenience, SIYI's team made their effort to put a great many of advanced wireless functions into FT24 remote control system to promote user experience, such as, wireless

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binding, receiver OTA wireless upgrading and configuring. Besides, there are also wireless master-slave, wireless data copy, multi-model control, and RC relay, etc.

## **Multi-language Customizable Voice Broadcasting**

FT24 remote controller comes with built-in voice file, which real-time broadcasting in multi-language of key information, such as, RSSI signal quality, low voltage, manipulating settings, and system status, etc. FT24 users have access to personalize voices of powering-on/off, toggling switches, and data telemetry, so that they can master their model craft well without checking the monitor. All these can be done through TF memory card.

## **Receiver OTA Wireless Upgrading**

The way of upgrading receiver firmware wirelessly let users get rid of complex wire connection.

## **Data Telemetry**

Data Telemetry of RSSI signal quality, model power battery voltage, and receiver power supply voltage will improve the safety level while users are manipulating their model craft. Besides, FT24 also support data telemetry display and voice broadcasting of flight controller information based on Mavlink protocol and sensor information.

## **PC Software for Configuring and Upgrading**

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A professional PC software for basic functional configuring and firmware upgrading.

Through the software, users can also export FT24 remote controller setting data to a TF card as a configuring file, which can be batch-imported to many remote controllers. Fast and easy to share your model settings to more users.

## **Multi-model Control**

One remote controller to control multiple models simultaneously, switching easily between single and multiple control.

## **RC Relay**

Two or more remote controllers to relay control one model aircraft for flying over very long distance. Through coordination of two or more users, FT24 breaks the limit distance of single remote control.

## **USB Simulator**

FT24 remote controller comes with built-in simulator driver. Use a USB cable and connect remote controller to PC, then open the simulator software, users can start flying in the simulator immediately.

## **Diverse Model Settings**

**For Fixed-wings, Helicopters, Gliders, Multi-rotors, Cars, Boats, Robotics**

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Powerful programmable mix-control, various customized mix-control, and curve-control settings.

Fast to adjust complex curve settings through adjustable ratio, throttle curve and pitch curve editing.

Data copy in TF card, easy to share your model settings.

Master-slave function with full protection makes it simple and safe for experienced model users to teach the less-experienced ones in person. The master remote controller can take control of the slave remote controller through one switch.

## **FR Receiver**

Model power battery voltage and receiver power supply voltage real-time telemetry.

Add a Bluetooth module to the transmitter and connect the receiver to flight controller serial port, FT24 remote control system will be able to receive and analyze flight information telemetry based on Mavlink protocol.

Multiple signal output modes: 16CH S.Bus, 8CH PWM, 8CH PPM.

Firmware upgrading through PC USB port and OTA wireless upgrading from FT24 remote controller.

## **FR Mini Receiver**

Model power battery voltage and receiver power supply voltage real-time telemetry.

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Add a Bluetooth module to the transmitter and connect the receiver to flight controller serial port, FT24 remote control system will be able to receive and analyze flight information telemetry based on Mavlink protocol.

Multiple signal output modes: 16CH S.Bus, 8CH PWM.

OTA wireless firmware upgrading from FT24 remote controller.

## 2.2 Parts

### 2.2.1 At a Glance





🔴 Mark: Press and hold the power button three seconds to switch on FT24 transmitter.

## 2.2.2 Interface and Tuner Ports



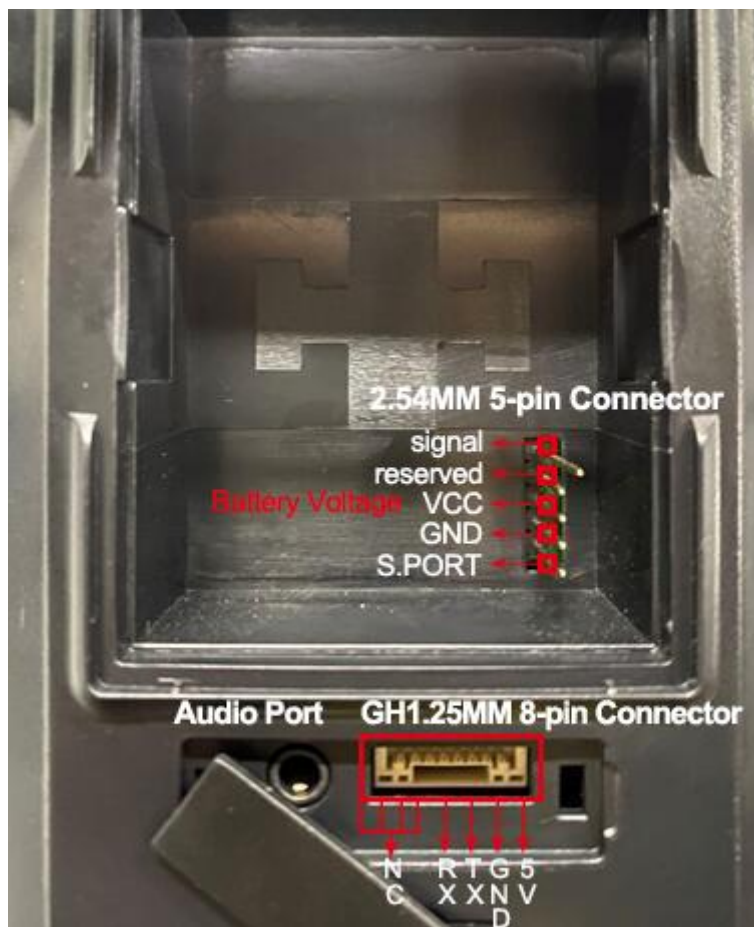
Bottom Shell

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## Port Function

SD Card Slot: Insert your SD card to read and storage files.

Micro-USB: Firmware upgrading



Back Shell

## Port Function

Audio Port: Trainer and simulator

GH1.25MM 8-pin Connector: Reserved serial port


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## 2.54MM 5-pin Connector: High-frequency tuner

### 2.2.3 Buttons and Switches

FT24 transmitter has 14 channels in total. Each channel is controlled by a joystick, a switch, or a button, some of them are mixed mapped to trim switches. Please refer to the form below for the default channel definitions from channel 1 to 14.


Channel No.	Joysticks / Buttons / Switches	Default Definition: <b>Mode 2</b>	Mixed-Control Buttons / Switches
1	Joystick J1	Aileron	Trim Switch T1
2	Joystick J2	Elevator	Trim Switch T2
3	Joystick J3	Throttle	Trim Switch T3
4	Joystick J4	Rudder	Trim Switch T4
5	3-Stage Switch SA	——	——
6	3-Stage Switch SB	——	——
7	3-Stage Switch SC	——	——
8	3-Stage Switch SD	——	——
9	3-Stage Switch SE	——	——
10	3-Stage Switch SF ( <b>Bounce Back</b> )	——	——
11	Left Knob LD	——	Trim Switch T5
12	Right Knob RD	——	Trim Switch T6

 Mark: FT24 transmitter supports customized channel mapping as well. Please refer to the chapter “Channel Mapping” in this manual for detail.

## 2.2.4 Digital Trim



- There are 6 digital trim switches on FT24 transmitter, which support continuous trimming of 6 channels.
- Each trim switch has two direction to go, left to right, or up to down, the same with their mapped channels.
- Every time you push the trim switch to one direction, the trimming position moves according to the pre-set stepping value. If you push and hold the trim switch, the trimming position will speed up to move. When the trimming position reaches the middle, there is a special sound.

 Mark: Please refer to the chapter “Trim Settings” in this manual for more detail.

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## 2.3 Technical Specification

### Overall

<b>Channels</b>	12 Channels
<b>Supported Models</b>	Multi-rotors, Planes, Gliders, Helicopters, Cars, Boats, Racing Drones
<b>Frequency Band</b>	2.400 ~ 2.483 GHz
<b>Max Transmission Distance</b>	15 km / 9.3 miles (unobstructed, free of interference)
<b>PC Software</b>	SIYI Assistant
<b>Supported Batteries</b>	2 x 18650 Li-on Batteries (22 hours) or 1 x 2S LiPo Battery (XH 2.54 3-pin Port)
<b>Packing Size</b>	23.5X14.5X25.5 CM
<b>Packing Weight</b>	0.85 kg (1.8 kg by volume)

### Transmitter

<b>Operating System</b>	SIYI RC
<b>Screen Display</b>	2.8-inch-High Brightness LCD Screen
<b>Antenna Gain</b>	2 dBi
<b>Working Current</b>	210 mA
<b>Dimensions</b>	191 x 175 x 64 mm (antennas folded)
<b>Net Weight</b>	586 g

### FR Receiver

<b>Signal Output</b>	S.Bus: 16 channels PPM: 8 channels PWM: 8 channels
<b>Data Port</b>	UART

<b>Antenna Gain</b>	2 dBi
<b>Working Voltage</b>	5 ~ 8.4 V
<b>Telemetry Voltage</b>	0 ~ 50 V
<b>Operating Temperature</b>	-10 ~ 55 °C
<b>Dimensions</b>	51.5 x 38 x 13 mm (antenna excluded)
<b>Net Weight</b>	20 g (antenna excluded)

### FR Mini Receiver

<b>Signal Output</b>	S.Bus: 16 channels PPM: 8 channels
<b>Data Port</b>	UART
<b>Antenna Gain</b>	2 dBi
<b>Working Voltage</b>	5 V
<b>Telemetry Voltage</b>	0 ~ 26 V
<b>Operating Temperature</b>	-10 ~ 55 °C
<b>Dimensions</b>	24 x 15 x 3 mm (antenna excluded)
<b>Net Weight</b>	1.5 g (antenna excluded)

## 2.4 LED Indicator

The LED indicator inside of the power button has three colors and different frequencies to indicate FT24 transmitter's different system status.

- Solid Red: Transmitter RF OFF.
- Fast Red Blinks: Transmitter is binding with receiver.
- Solid Green: Good communication.

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- Green Blinks: Blinking frequency indicates FT24 transmitter's RF signal strength. The faster it blinks, the worse the signal is.
  - Slow Red Blinks: Transmitter firmware does not match.
  - Triple Red Blinks: RF initialization failed.
  - Four Red Blinks: Joysticks require calibration.
  - Solid Yellow: No communication between transmitter and receiver.
  - Slow Yellow Blinks: System voltage abnormal.
  - ● ● Red-Green-Yellow Blinks in every 5 seconds: Receiver under wireless upgrading.

## 2.5 Packing List

### FT24 Transmitter

1 x FT24 Transmitter

1 x OTG Micro-USB Cable

### FT24 Radio System

1 x FT24 Transmitter

1 x FR Receiver

1 x OTG Micro-USB Cable

1 x Voltage Telemetry Cable

1 x Data Telemetry Cable


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## **FT24 Radio System Mini**

1 x FT24 Transmitter

1 x FR Mini Receiver

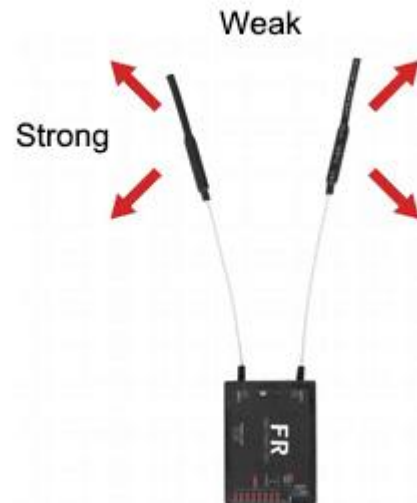
1 x OTG Micro-USB Cable

 **Mark:** Before using FT24 radio system, please confirm if the declared items are included in the coming package. If there were any missing items, please contact your dealer immediately.

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## 3 GET READY TO USE FT24

### 3.1 How to Place Transmitter Antenna Right

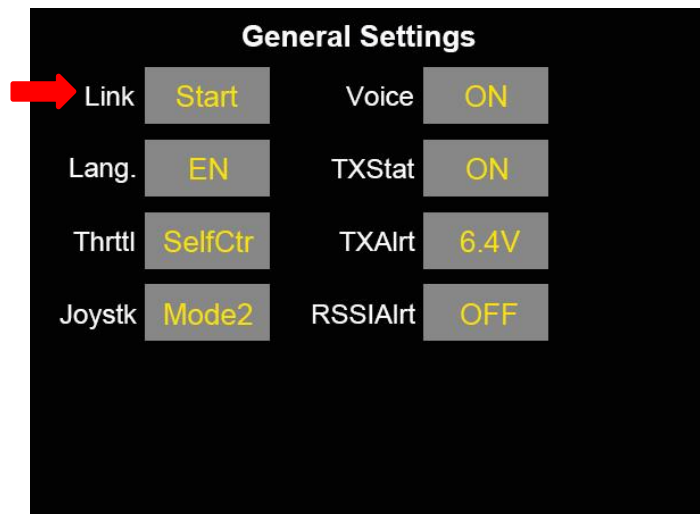


#### WARNING

Do not fold or cover antennas and avoid any obstruction between the transmitter and the aircraft in flight, otherwise there will be an obvious decrease to transmission signal quality.

### 3.2 How to Bind FT24 Transmitter with FR / FR Mini Receivers

Each unit of FT24 transmitter is assigned with a unique ID code. Before binding receiver to transmitter, receiver identifies the transmitter ID (*Binding*). When the first-time binding is done, transmitter ID will be stored in receiver so that you don't have to repeat binding before the next flight (except when your transmitter must be bond with a new receiver).



## Steps of Using Binding Button

### \*For FR Receiver

1. Power on the receiver. Press the binding button, receiver indicator turns to blink red fast, receiver ready for binding.
2. Go to “Transmitter Settings - System Settings - General – Bind (Start)”
3. Receiver/transmitter turns to blink green; communication is normal, binding is successful.

## Steps of Wireless Binding

### \*For FR / FR Mini Receiver

1. Power on the receiver. After 5 seconds, plug in and out power wire for 3 times (with power connected for

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at least 1 second each time). Receiver indicator turns to blink red fast, receiver ready for binding.

2. Go to “Transmitter Settings - System Settings - General – Bind (Start)”

3. Receiver/transmitter turns to blink green; communication is normal, binding is successful.

## **WARNING**

Before binding, please make sure motors are not powered (E.S.C are off connection).

Reboot receiver when binding is finished, and try to manipulate on transmitter to confirm if binding is successful.

### **3.3 Throttle Joystick Type**

FT24 transmitter supports both “Thumb-slide” and “Self-centering” throttle joysticks.

Users decide which type to use according to their preference. Generally, if your transmitter has been set up as “Thumb-slide” throttle joystick, then the throttle type in “System Settings” should be “Thumb-slide” as well.

#### **Thumb-slide Joystick**

While users are powering on the transmitter, it alerts with voice if the throttle joystick is not in its bottom position and disables RF transmission automatically (transmitter status

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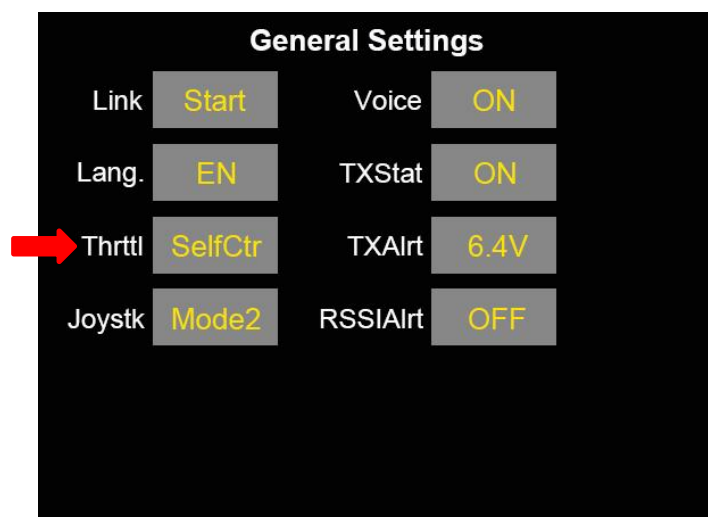
indicator is off). Transmitter will not enable RF transmitting until throttle joystick is back to the bottom position.

### Self-centering Joystick

No alert, the transmitter works normally.

### Steps

In “System Settings” menu, tap on “General Settings - Throttle – Thumb-slide / Self-centering” to choose your favorite throttle type.



## 3.4 Battery / Power Supply

FT24 transmitter supports two different types of power supply:

- a) 2 x 18650 Li-on Batteries
- b) 2S LiPo Battery (< 8.4 V)

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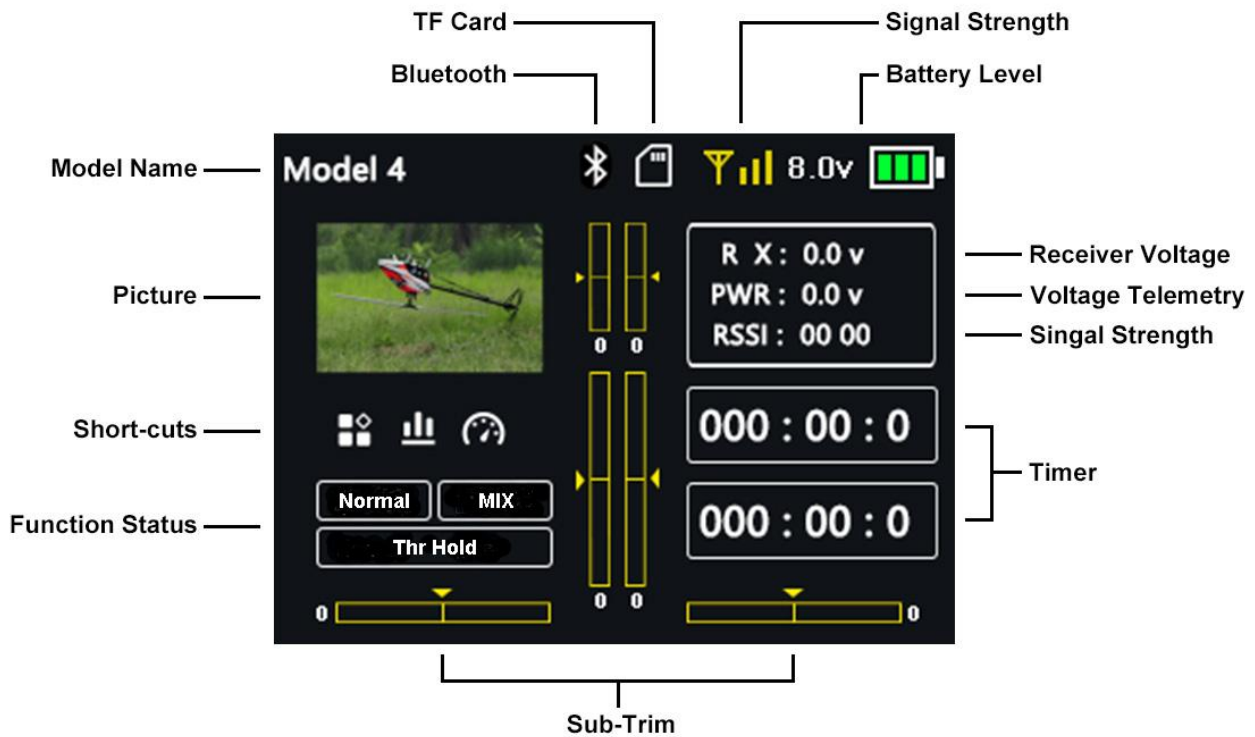
Connector: XH 2.54 3-pin

Battery Slot Size: 60 x 58 x 16 mm



**⦿** Mark: When you use a LiPo battery as power supply, please pay attention to the connector board and positive/negative definition. If the connector board is black, you can plug in 2S battery balancing connector directly for power supply. If the connector board is green, please follow the connector definition to make wiring.

# 4 MAIN MENUS



## About Main Menu

### Model Name

Displays the name of the selected model.

### Picture

Displays the selected model type in pictures.

### Battery Level

Real-time monitoring of FT24 transmitter's battery level.

### Receiver Voltage (RX)

Voltage telemetry of the receiver.

### Voltage Telemetry (PWR)

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Real-time monitoring of your model/aircraft's voltage level.

### **Signal Strength & RSSI**

Real-time monitoring of FT24 radio system's RF transmission signal strength.

### **Sub-Trim**

Displays the digital sub-trim value of all 4 channels.

### **TF Card**

A TF card is inserted in FT24 transmitter (the icon disappears when the TF card is out).

### **Timer**

Displays maximum two timers to assist users with their flight.

### **Bluetooth**

Transmitter Bluetooth is ON.

### **Function Status**

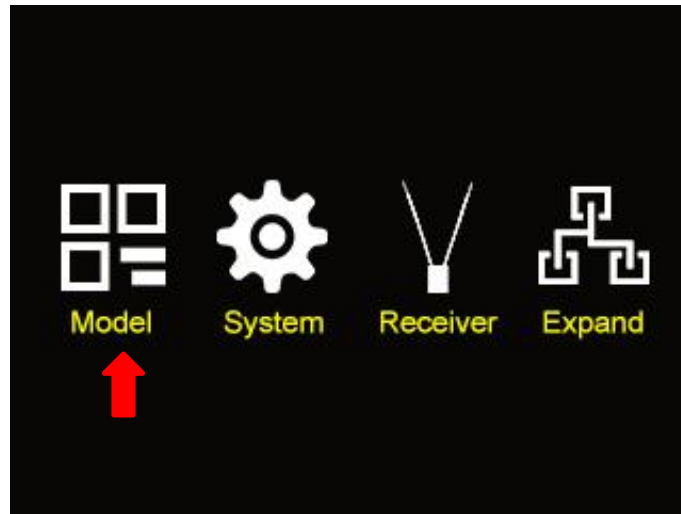
Displays activated functions and settings.

### **Short-cuts**

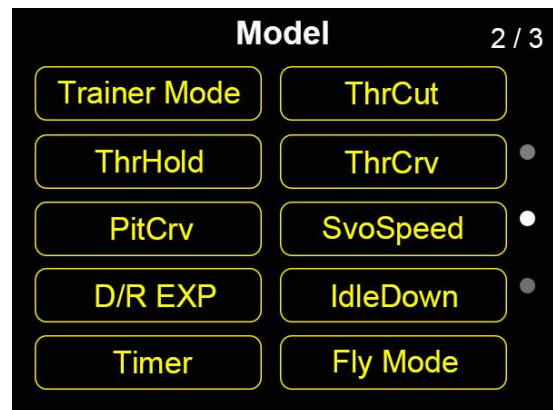
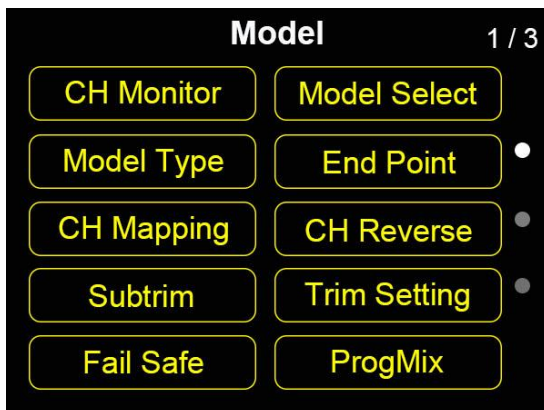
Displays short-cuts to Model Select, CH Monitor, End Point, and their icons.

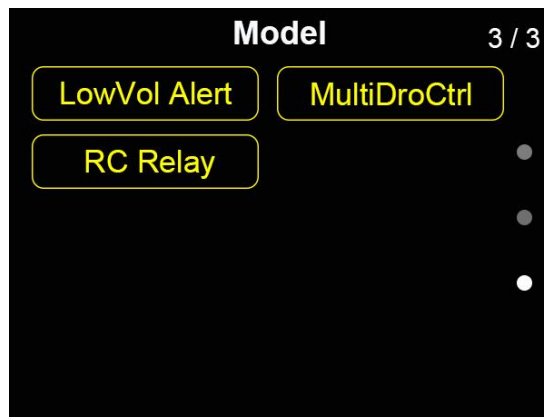
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## 5 MODEL SETTINGS



In FT24 transmitter, the “Model Settings” menu includes a series of useful functions, which support basic / advanced settings to different model types.





## About Model Settings

### CH Monitor (Channel Monitor)

Real-time display of all channels' output value.

### Model Select

Select / Save model data.

### Model Type

Choose the right type for your model.

### End Point

Set the output values of a channel and maximum / minimum limit.

### CH Mapping (Channel Mapping)

Set / Change the defined joystick/button/switch of a channel.

### CH Reverse (Channel Reverse)

Reverse a channel's output direction.

### Sub-trim

Do trimming adjustment to your model's flight attitude.

### Trim Setting

Adjust stepping value of the sub-trim function.

### Fail Safe

Adjust fail safe settings.

### ProgMix (Programming and Mixing)

Configuring for transmitter programming and mixing.

### Trainer Mode (Master-slave)

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One on one training with two FT24 transmitters.

### **ThrCut (Throttle Cut)**

Configuring for cutting throttle output.

### **ThrHold (Throttle Hold)**

Configuring for holding throttle output.

### **ThrCrv (Throttle Curve)**

Configuring the curve for throttle output.

### **PitCrv (Pitch Curve)**

Configuring pitch curve.

### **SvoSpeed (Servo Speed)**

Adjust servo's response speed.

### **D/R EXP (Dual Rate and Exponential)**

Adjust rate of Aileron, Elevator, and Rudder.

### **IdleDown**

Slow down throttle output.

### **Timer**

Turn on / off the timer.

### **Fly Mode (Flight Mode)**

Set up to six different flight modes through two 3-stage switches and channel output.

### **LowVol Alert (Low Voltage Alert)**

Low battery level alert of your model power supply.

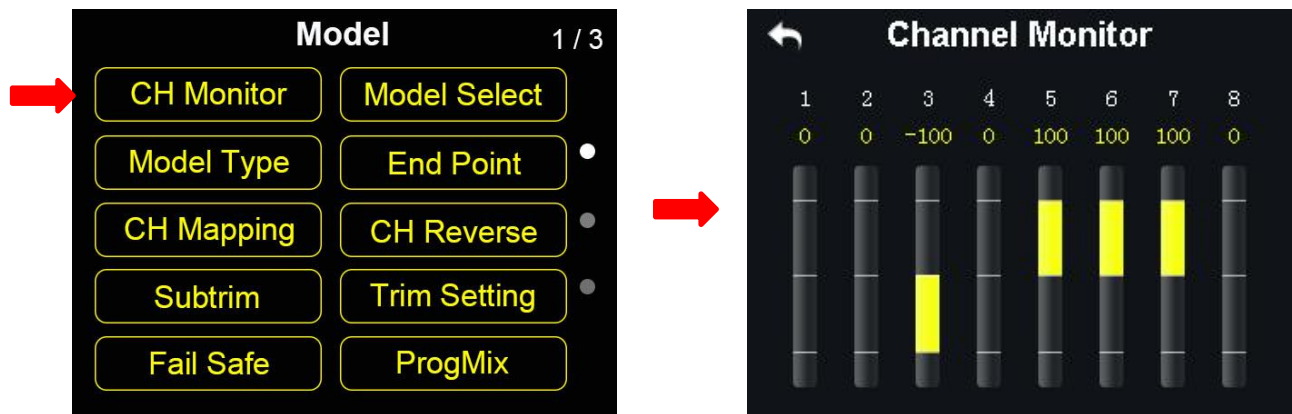
### **MultiDroCtrl (Multiple Drone/Model Control)**

Configuring to control multiple drones/models with one FT24 transmitter.

### **RC Relay**

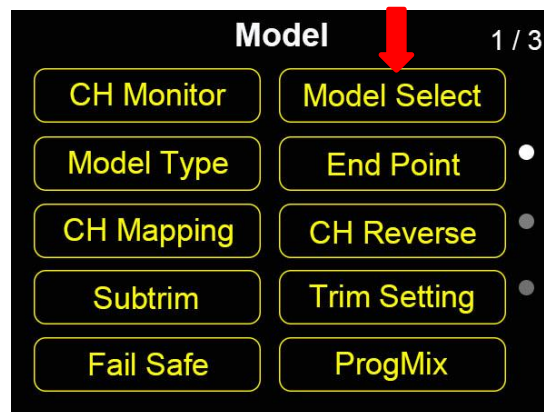
Configuring for drone/model relay control with two FT24 transmitters.

## 5.1 Channel Monitor



Channel Monitor page is for real-time monitoring and configuring output values of all 16 communicational channels.

## 5.2 Model Select



Model Select page is for users to select, rename, copy, and reset model data.

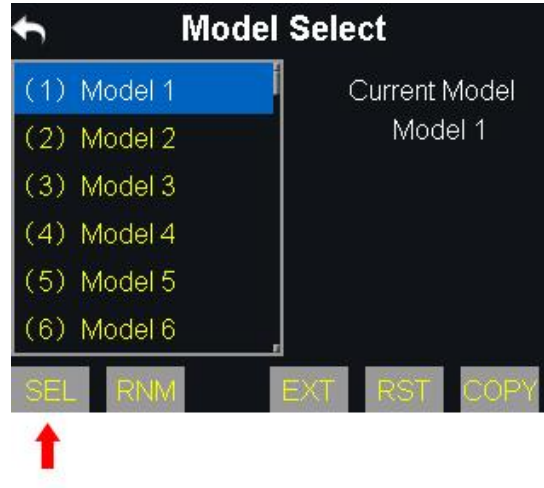
### 5.2.1 Select a Model

FT24 transmitter supports up to 32 storage groups for saving and selecting data.

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## Steps

1. Go to “Model Select” page.



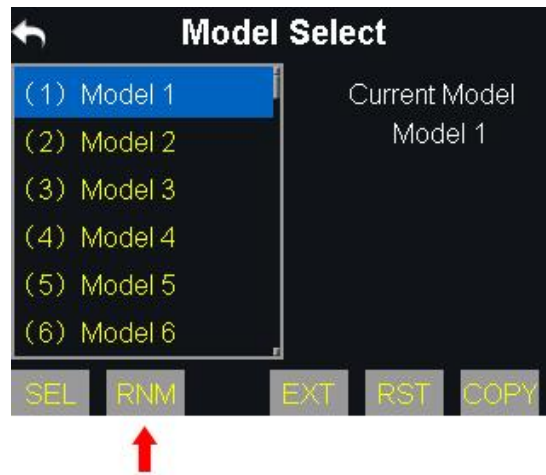
2. Use “ENT” “+” “-” buttons on transmitter to select a model, then “SEL(Select)”. It comes “Confirm your selection”. Then “Yes” to finish selecting.

### 5.2.2 Rename a Model

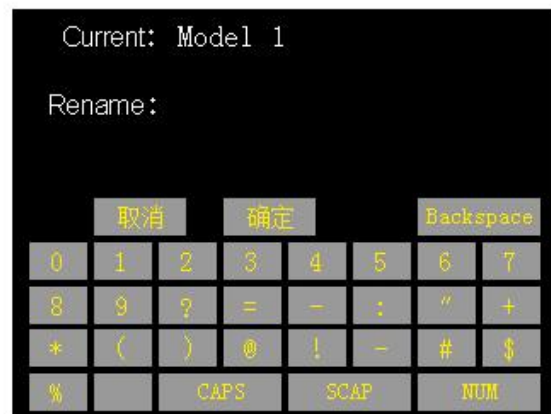
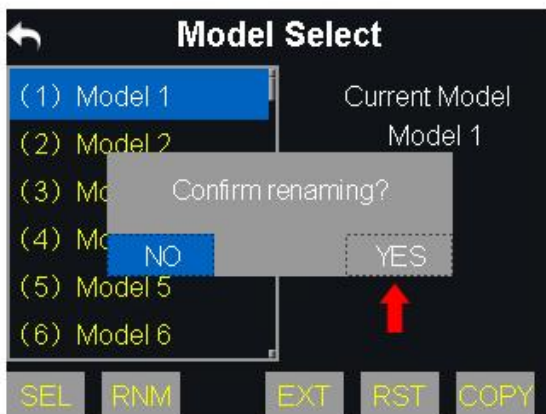
Users can rename a group of model data to make difference. And the selected model name displays in transmitter menu.

## Steps

1. Select a model name, then “RNM(Rename)”. It comes “Confirm renaming”. Then “Yes”, it displays a virtual keyboard menu.



2. Input a new name for the model by using the virtual keyboard, then “yes” to finish.



## About Virtual Keyboard

### CAPS

Switch keyboard to input capital letters.

### SCAP

Switch keyboard to input lower case letters.

### NUM

---

Switch keyboard to input numbers and punctuations.

### **Backspace**

Delete what is already input.

### **Cancel**

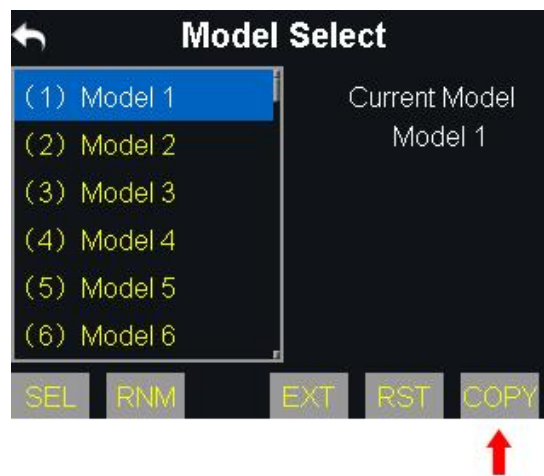
Cancel inputting, the transmitter will not save the input.

## **5.2.3 Copy a Model**

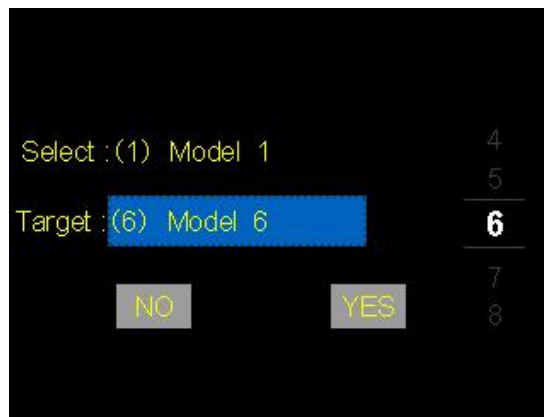
Users can copy a model data for backup and easy sharing.

### **Steps**

1. Select a model, then “Copy”. It displays the current channel and a target channel.



2. Select your target model, then “Yes” to finish.

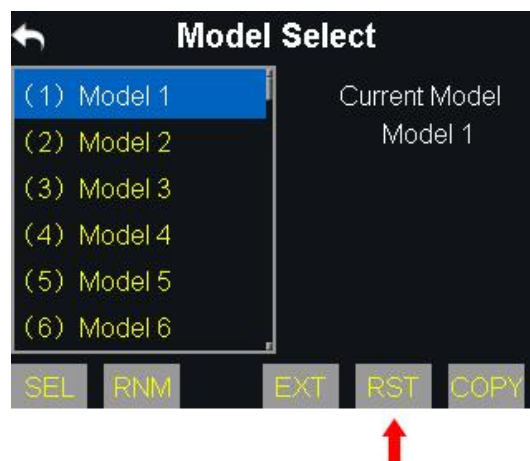


## 5.2.4 Reset all Models

Users can reset a selected group of configuring data.

### Steps

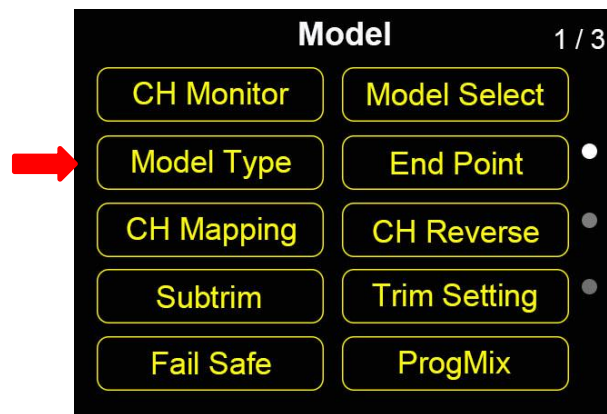
1. Enter “Reset”, it comes “Confirm to reset”;



2. Then “Yes” to finish.

---

## 5.3 Model Type



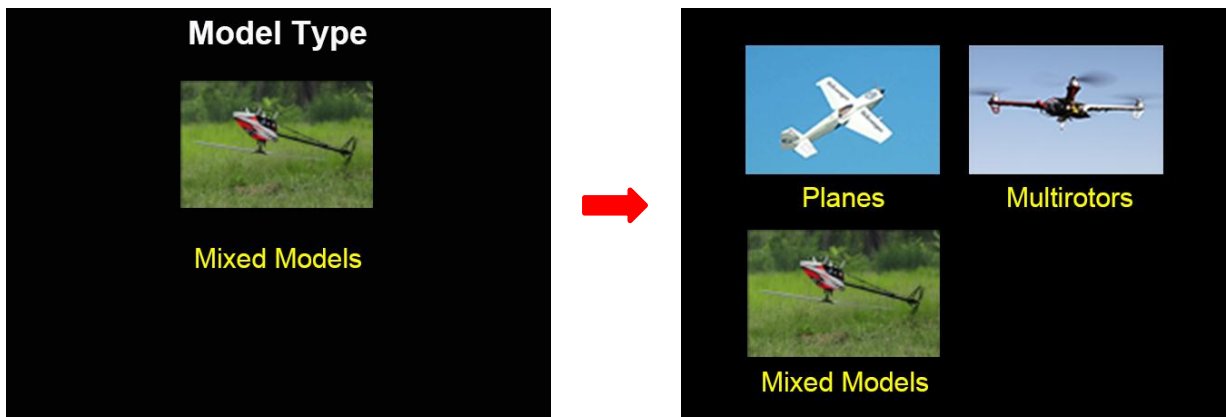
FT24 transmitter supports multiple model types. Planes, copters, gliders, multi-rotors (racing drones, agricultural drones, commercial drones), vehicles and boats, and robotics. Each model type has been configured in advance. Users can choose and make customized configuration.

### CAUTION

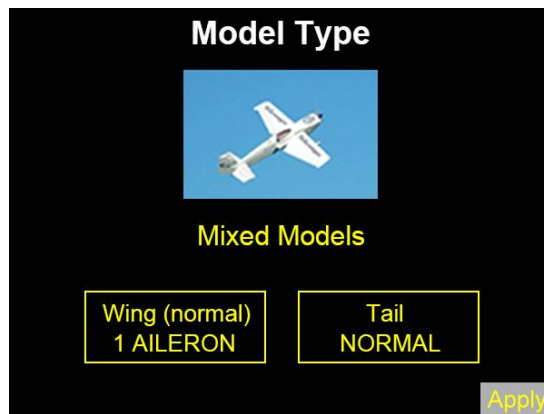
When you switch a model type, all configuring data of the selected model will be reset automatically. So please do not forget to save your configuring data before doing so.

#### 5.3.1 Steps to Select a Model Type

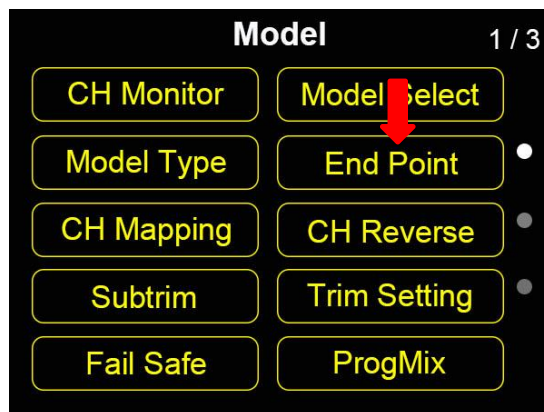
1. Go to “Model” page, enter “Model Type”.
2. The page displays the default or the last-selected model type. Enter it will lead you to all model types.



3. Select your model, then “Apply” to finish.



## 5.4 End Point

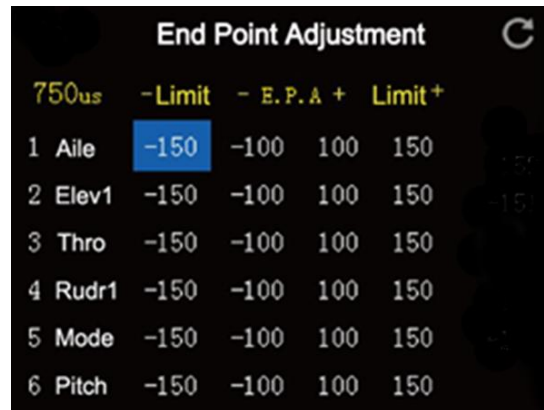


“End Point” page helps users configure channel output value and output limit.

### Steps


1. Go to “Model” page, enter “End Point”.

- 
2. The page displays information as in the picture below. “- E. P. A +” stands for the channel value, “-limit / limit+” stands for the minimum/maximum limit value);

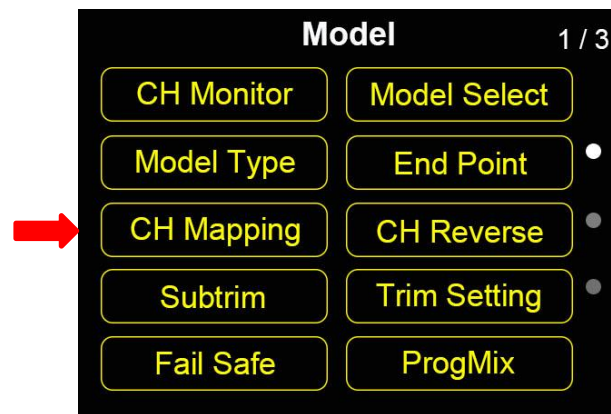


	750 <sub>us</sub>	-Limit	- E. P. A +	Limit +
1 Aile	-150	-100	100	150
2 Elev1	-150	-100	100	150
3 Thro	-150	-100	100	150
4 Rudr1	-150	-100	100	150
5 Mode	-150	-100	100	150
6 Pitch	-150	-100	100	150

3. Select a channel and its output value, press the “+” or “-” button on transmitter to adjust value or limit (-150 ~ 150).
4. After configuring, channel output value does exceed the limit even under “Programming and Mixing\*” mode, which protects servo and other external devices.

 **Mark:** In “End Point” page, the icon at up-right corner is for resetting all channel values.

## 5.5 Channel Mapping



All 16 channels in FT24 transmitter can be mapped freely to joysticks, switches, buttons, and dials.

### Steps

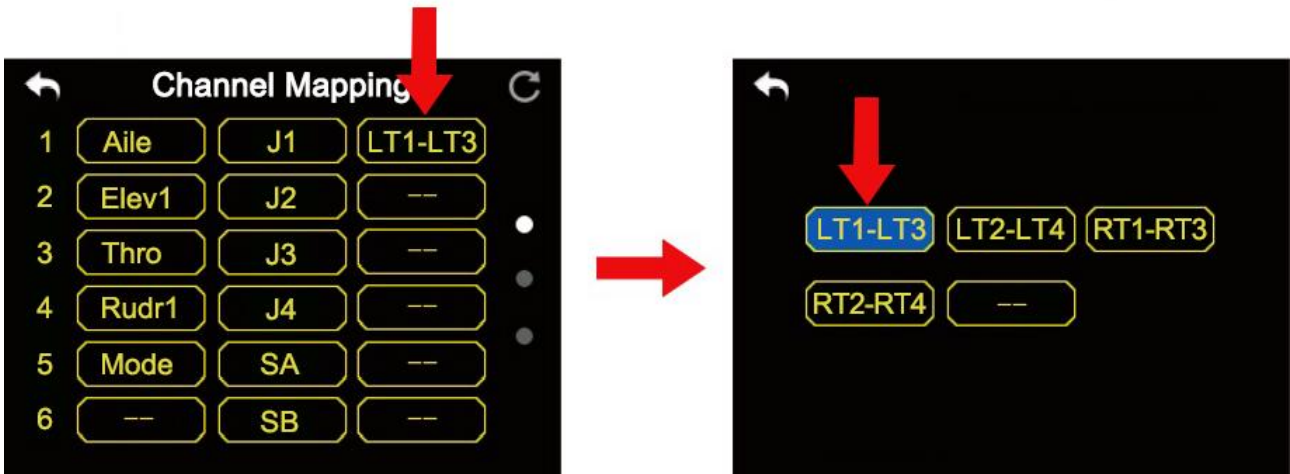
1. Go to “Model” page, enter “CH Mapping”.
2. The page displays information as in the picture below. Enter middle boxes will lead to a list of all joysticks, switches, buttons, and dials.



3. In default, channel 1-4 is to be Aileron, Elevator, Throttle, and Rudder.
4. Let's take example. If you are to re-map Channel 1 (Aileron), enter CH1's middle box

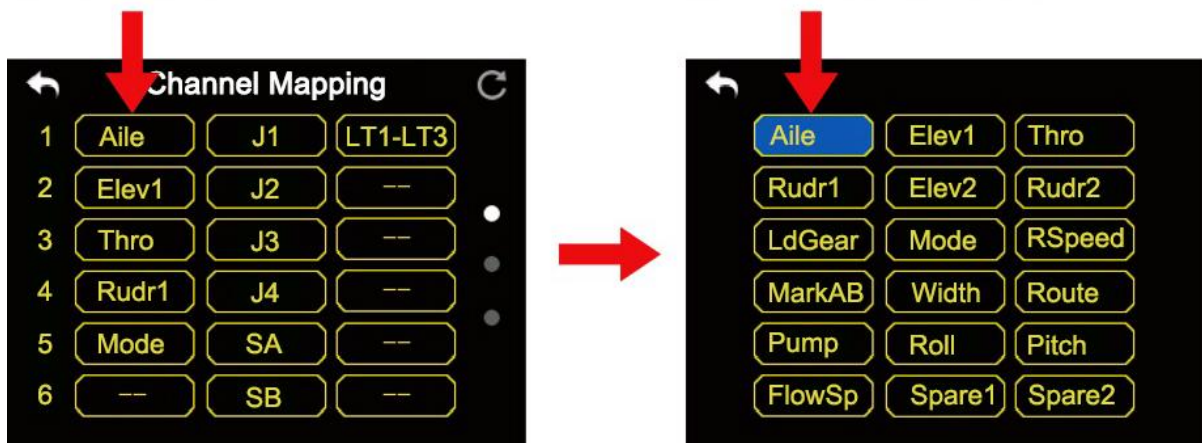
on and select a joystick/switch/button/dial.

5. Enter right boxes will lead to a list of trimming switches. Repeat step 4 to re-map a trimming switch.



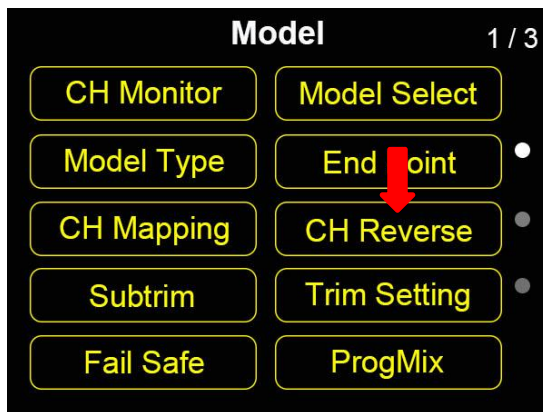
## ● Mark

- In “Channel Mapping” page, if you are to redefine a channel, enter the channel name, it comes a list of definition to all transmitter channels.
- Enters one definition to finish.



- 
- And enter “Reset” icon to rest all channel mapping settings.

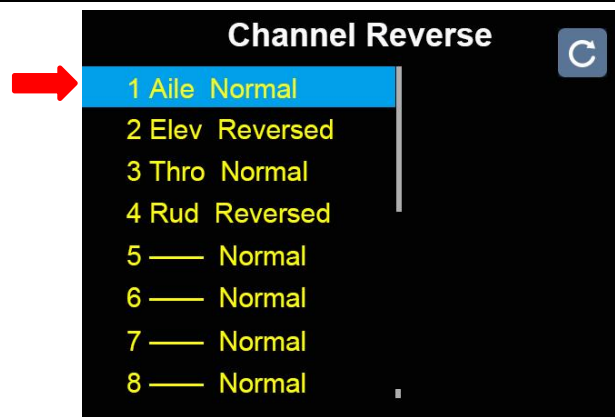
## 5.6 Channel Reverse




Users can reverse channel output in “Channel Reverse” page.

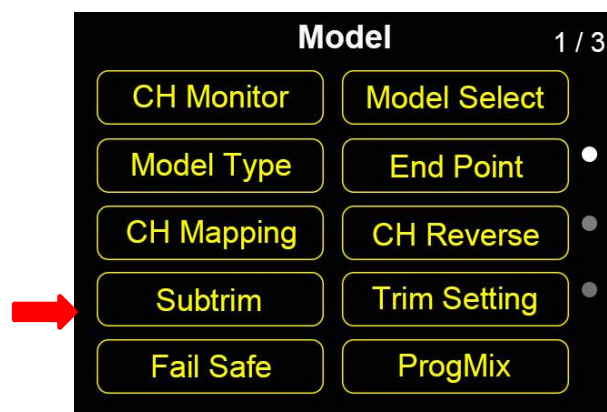
### Steps

1. When your FT24 transmitter is bond to a new receiver, please check and if all servos, buttons, and switches are mapped to correct channels as you need.
2. Please try to operate all joysticks, switches, and buttons on transmitter to check if channel output direction of each channel is normal or reversed.
3. Go to “Model” page, enter “Channel Reverse”.
4. The page displays information as in the picture below. Enter a channel once to select, twice to change it into “Normal” or “Reversed”.



 Mark: Enter “Reset” to reset all channels.

## 5.7 Sub-Trim




“Sub-Trim” page helps users set the middle position of channel output value and do trimming configuration to model/aircraft’s flight attitude. Please make sure your target channel output is in middle position before doing “Sub-Trim”.

### Steps

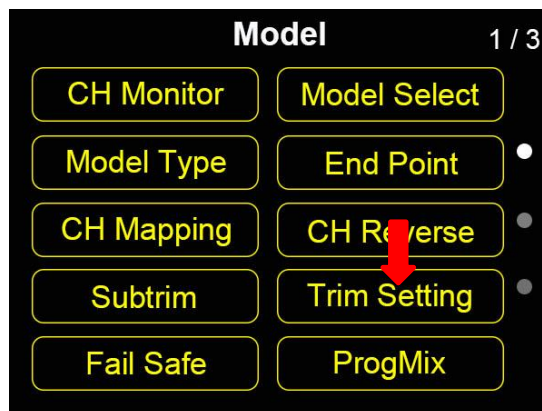
1. Go to “Model” page, enter “Sub-Trim”.
2. The page displays information as in the picture below.

Sub-Trim		
1	Aile	0
2	Elev	0
3	Thro	10
4	Rud	20
5	—	0
6	—	0
7	—	0
8	—	0

3. Enter a channel, it will turn green.
4. Use “+” and “-” buttons to input a target value.

 Mark: Enter “Reset” to reset all channels.

## 5.8 Trim Setting



“Trim Setting” page helps users configure “Sub-Trim” function’s stepping value.

### Equivalence Relationship between Sub-Trim and Trim Setting

5 Sub-Trim Value = 1 Trim Setting Value

---

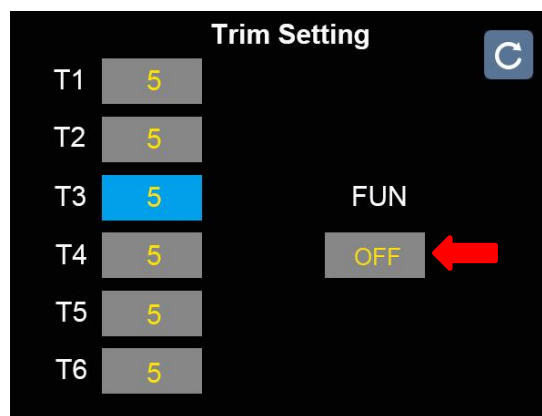
That is, when Sub-Trim value increases/decreases 5 units, Trim Setting value increases/decreases 1 unit.

FT24 transmitter's default Sub-Trim value is 5. Minimum limit is 0, maximum limit 100.


Minimum limit of Trim Setting value is 0, maximum limit is 20.

## Steps

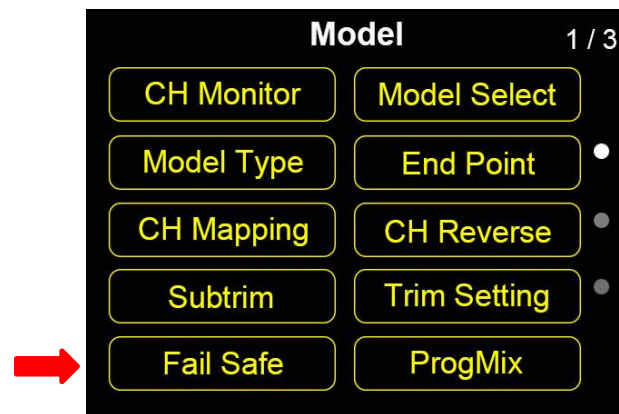
1. Go to "Model" page, enter "Trim Setting".
2. The page displays information as in the picture below.



3. Trim Setting configures all 4 Sub-Trim channels. Enter a channel to change its stepping value.

 Mark: Enter "Reset" to reset all channels. "FUN" is for turning on/off "Trim Setting" function.

## 5.9 Fail Safe



After binding FT24 transmitter to its receiver, do not forget to configure Fail-Safe and turn on the function. Then if your transmitter lost control to receiver, Fail-Safe function runs automatically and immediately to protect your model from a crash.

### Steps

1. Please make sure that FT24 transmitter is bond to receiver.
2. Go to “Model”, enter “Fail Safe”.
3. The page displays information as in the picture below.



4. In Fail-Safe page, the function is default to be “OFF” and it displays “HOLD” in each channel. Under this configuration, if transmitter lost control to receiver, the receiver

---

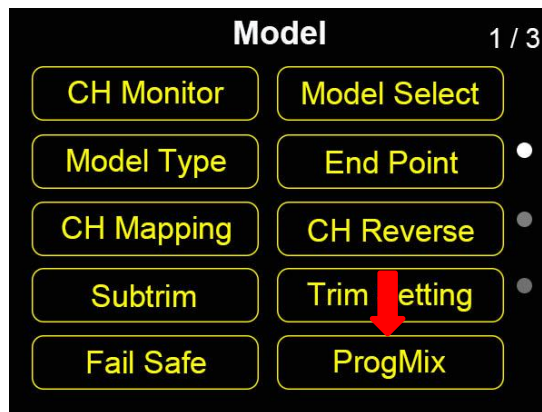
will output the last channel value before losing control.

5. Enter “OFF”, it turns to “ON”. Fail-Safe function is activated.
6. Then enter a channel, “HOLD” turns to “0”, then use “+” “-” button to input Fail-Safe value.
7. “ESC” to finish.

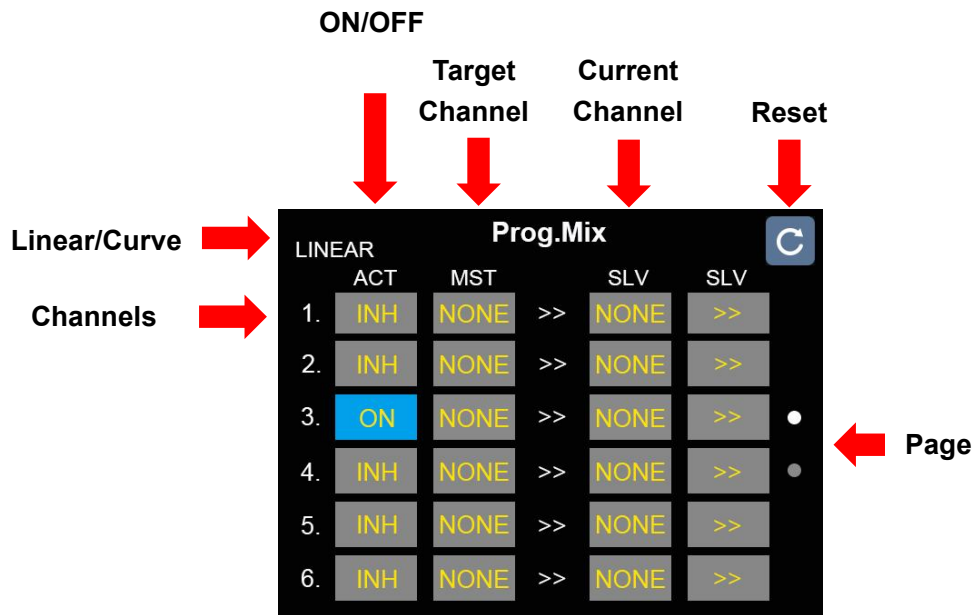
## **WARNING**

For flight safety, Fail-Safe configuration must be done and the function must stay “ON”.

## 5.10 ProgMix (Programming and Mixing)



For some complex requirement of operating models, mostly helicopters and planes, FT24 transmitter supports up to 10 groups of programming and mixing. Linear control from 1 to 6, curve control from 7 to 10.



## About Programming and Mixing

### ACT

INH means to turn off programming and mixing of current channel, ON to turn it on.

### MST

Select a target channel.

### SLV

Select a current channel.

### Reset

Reset all programming and mixing configuration.

### Linear/Curve

Programming and mixing type of current channel.

### Channels

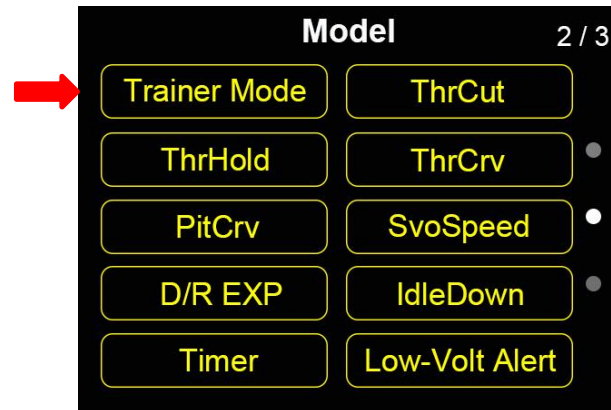
Selected and configured channels for programming and mixing.

### Page

Current page.

- 
- Mark: FT24 is already configured of some programming and mixing types for delta wing and differential cars/boats. Please refer to “Chapter 5.3 Model Type” for detail.

## 5.11 Trainer Mode (Master-Slave)



Trainer Mode (Master-Slave) helps experienced RC hobbyists train new talents. Under this mode, two FT24 transmitters can be linked through a trainer cable or be linked wirelessly. All channels are open for trainer mode, users decide which channel to use, and through a physical switch you can switch between master transmitter and slave transmitter.

- Mark: In wired mode, only channels 1-8 are available. To use all channels 1-16, please switch to wireless mode.



## About Trainer Mode

### **FUNC (Function)**

OFF to turn off.

Wired to use trainer cable. Wireless to use wireless trainer.

### **MODE**

Switch between master transmitter and slave transmitter.

### **CTL SW (Control Switch)**

Define a physical switch to switch between master transmitter and slave transmitter.

### **JOY CTL (Joystick Control)**

ON to take over control from slave transmitter on mater transmitter.

OFF to give back control to slave transmitter.

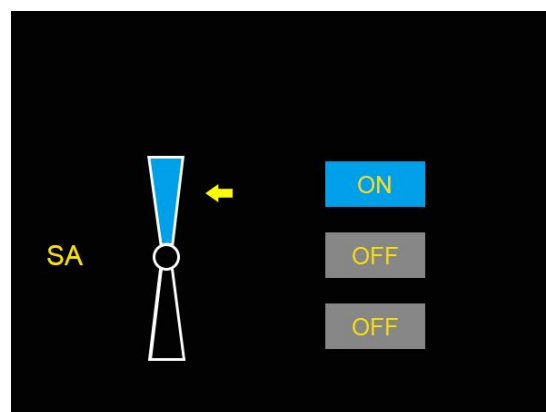
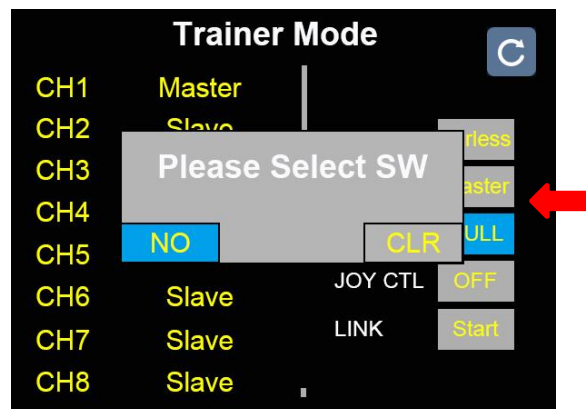
### **LINK**

Bind master transmitter to slave transmitter.

---

### 5.11.1 Steps through Using Trainer Cable

1. Use trainer cable to connect the two AUDIO ports of master transmitter and slave transmitter.
2. Go to “Trainer Mode” page. It displays a list of all 16 channels.
3. Turn FUNC to “Wired” and assign “Master” transmitter and “Slave” transmitter.
4. When you are to define a physical switch for trainer mode control, tap on “NULL”, it displays “select a switch by operating it”. Then operate a switch, it goes to switch status page for defining its stages.



5. After defining, the switch takes over control of turning on / off trainer mode, so that master transmitter can take over control from slave transmitter in emergency.

- 
6. If you turn on Joystick Control, master transmitter will take over control immediately by operating joysticks.

### 5.11.2 Steps of Wireless Trainer

1. Go to “Trainer Mode” page. It displays a list of all 16 channels.
2. Turn FUNC to “Wireless” and assign “Master” transmitter and “slave” transmitter.
3. When you are to define a physical switch for trainer mode control, tap on “NULL”, it displays “select a switch by operating it”. Then operate a switch, it goes to switch status page for defining its stages.
4. After defining, the switch takes over control of turning on / off trainer mode, so that master transmitter can take over control from slave transmitter in emergency.
5. If you turn on Joystick Control, master transmitter will take over control immediately by operating joysticks.
6. Start linking/binding master transmitter to slave transmitter by tapping on “LINK - Start”. Transmitter indicator turns to blink red fast. Then repeat the operation on slave transmitter, linking/binding is finished when transmitter indicator turns to green.
7. Wireless trainer setting is finished successfully.

 Mark:

Slave Transmitter Indicator Green: Master and slave transmitter in communication.

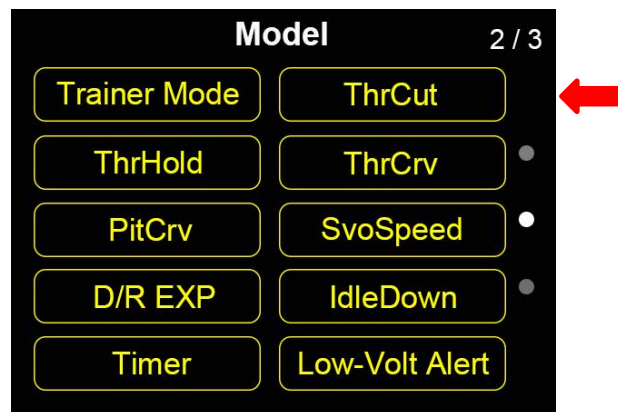
---

Slave Transmitter Indicator Yellow: Master and slave transmitter off communication.

Master Transmitter Indicator Green: Master transmitter and receiver in communication.

Master Transmitter Indicator Yellow: Master transmitter and receiver off communication.

## 5.12 Throttle Cut



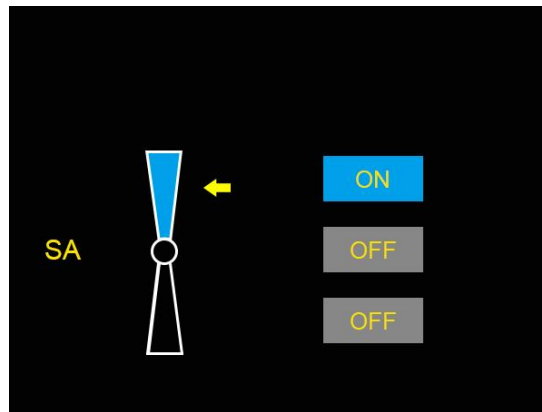
When Throttle Cut function is turned on, throttle channel outputs a fixed value. In this case, pushing on throttle stick does not output no value. Turn off the function to be back normal.



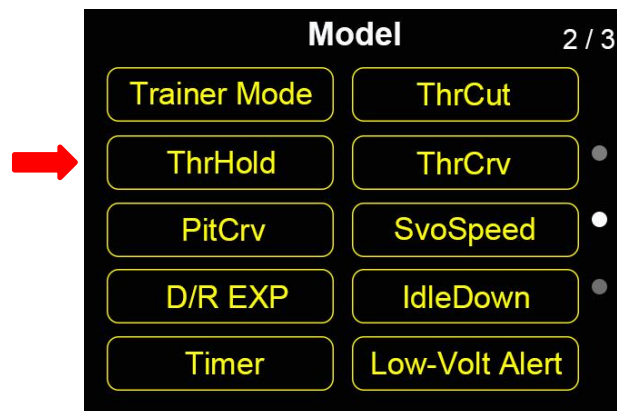
---

## Steps

1. Go to Throttle Cut page. Turn “Enable” to “ON”.
2. Use “+” and “-” buttons to set an output value for throttle channel.
3. Define a physical to turn on/off Throttle Cut function immediately.



## 5.13 Throttle Hold

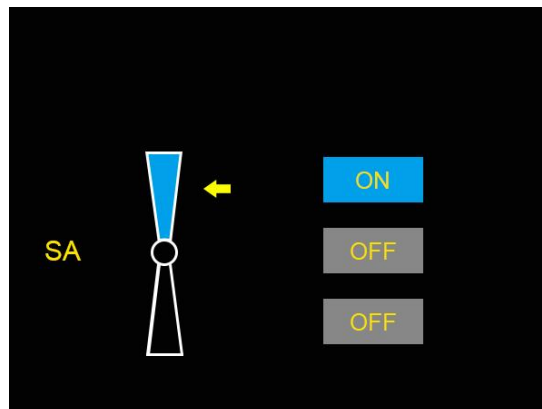


When Throttle Hold function is turned on, throttle channel is forced to output a fixed value. In this case, pushing on throttle stick does not output no value. Turn off the function to be back normal.

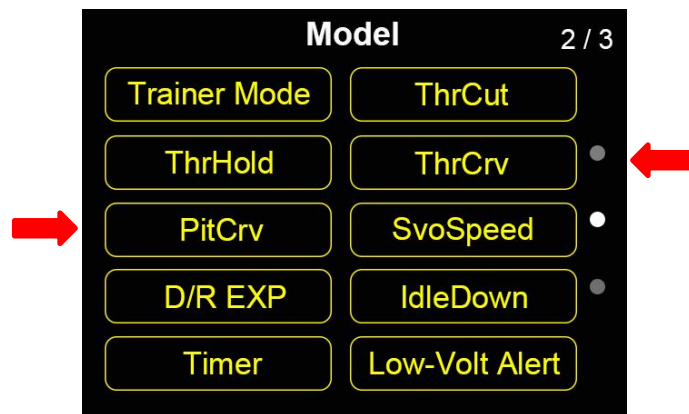


## Steps

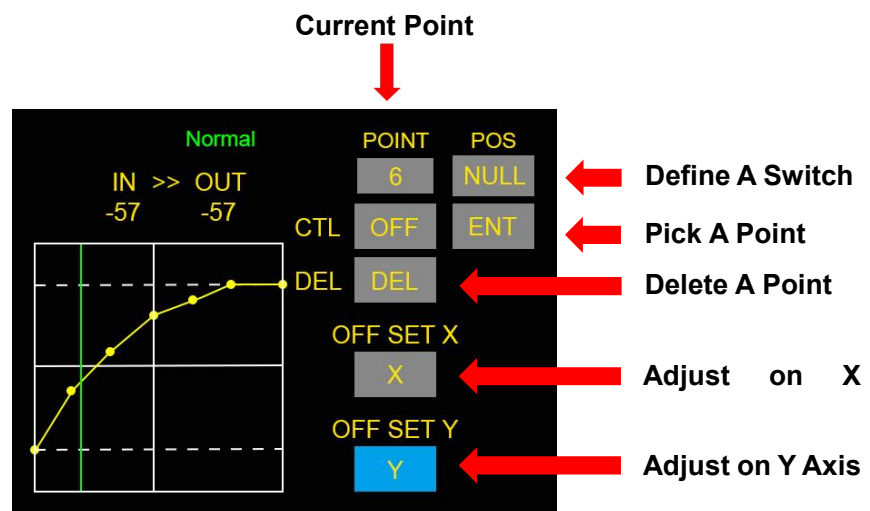
1. Go to Throttle Hold page. Turn “Enable” to “ON”.
2. Use “+” and “-” buttons to set an output value for throttle channel.
3. Define a physical to turn on/off Throttle Hold function immediately.



## 5.14-5.15 Throttle Curve / Pitch Curve



For smoother experience on operating throttle stick, FT24 supports up to 3 groups of curves, each group of which supports up to 6 points for adjusting.



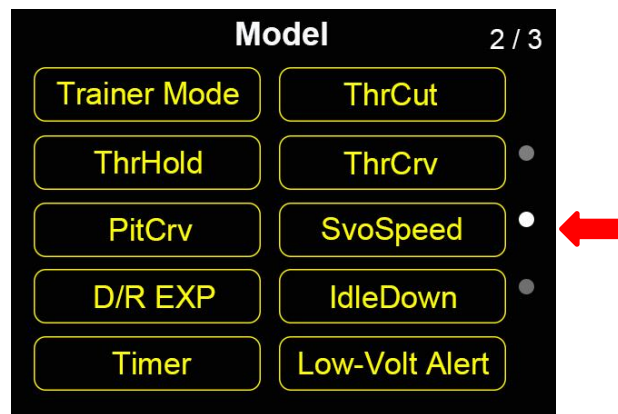
### Steps

1. Push throttle stick to a target position, then tap on “ENT” to pick a point.
2. Select a picked point, then use “+” or “-” button to adjust its position on X axis or Y axis.

3. Turn “CTL” to “ON” to turn on Throttle Curve function.
4. Tap on “NULL” to define a physical switch to switch curves. If no switch defined, curve mode stays in “Normal”.

**○** Mark: Pitch Curve function shares the same steps with Throttle Curve.

## 5.16 Servo Speed

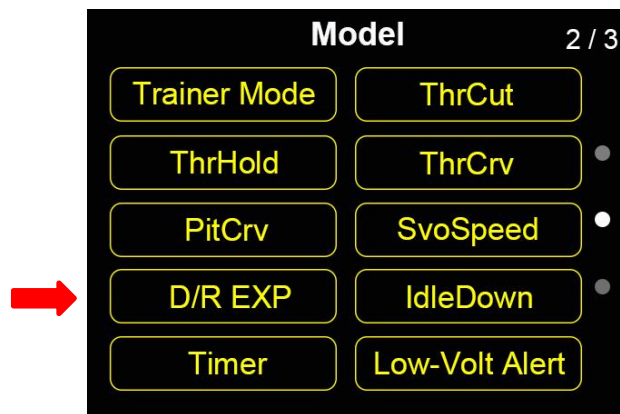


Servo speed function is designed to accomplish some special mission by adjust the changing ratio of an output channel. For example, it could be too fast to pack up or lay down landing gear in normal servo speed. So, we increase the channel’s output ratio. Larger the value is, slower the channel outputs.

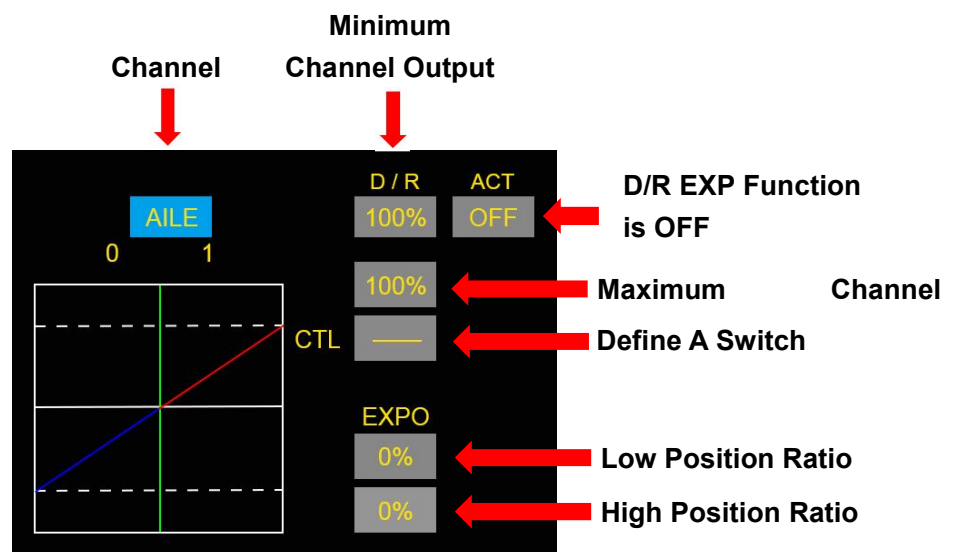
Servo Speed		
1	Aile	0
2	Elev	0
3	Thro	10
4	Rud	20
5	—	0
6	—	0
7	—	0
8	—	0

**○** Mark: 0 is the maximum speed, 100 is the minimum.

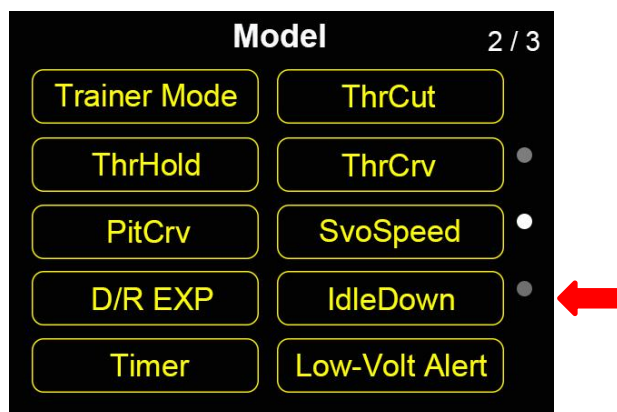
## 5.17 D/R EXP



On three channels, Aileron / Elevator / Rudder, FT24 transmitter supports increasing / decreasing channel output value by operating a physical switch for better operating experience. Users can also preset three ratios for the channels.



## 5.18 Idle Down



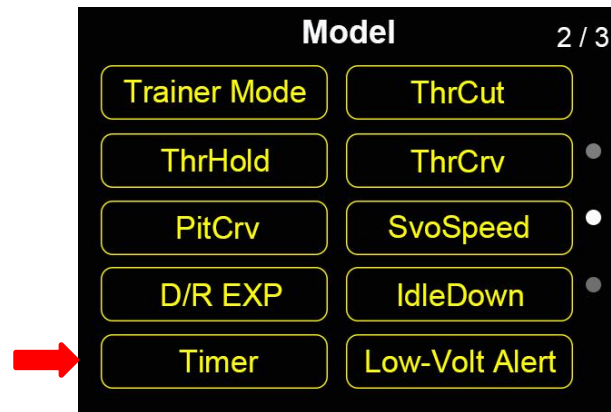
Idle Down function is designed for planes, helicopters, and other models powered by engines.



### Steps

1. Turn "Function" to "ON" to activate Idle Down function.
2. Use "+" and "-" buttons to set an output value for throttle channel.
3. Define a physical switch.
4. Test and confirm if channel output is normal.

## 5.19 Timer



FT24 transmitter supports up to 2 Timers which can be used simultaneously.

### Timing Mode

Up: Timing increases from 0, the timer alerts when it reaches the time.

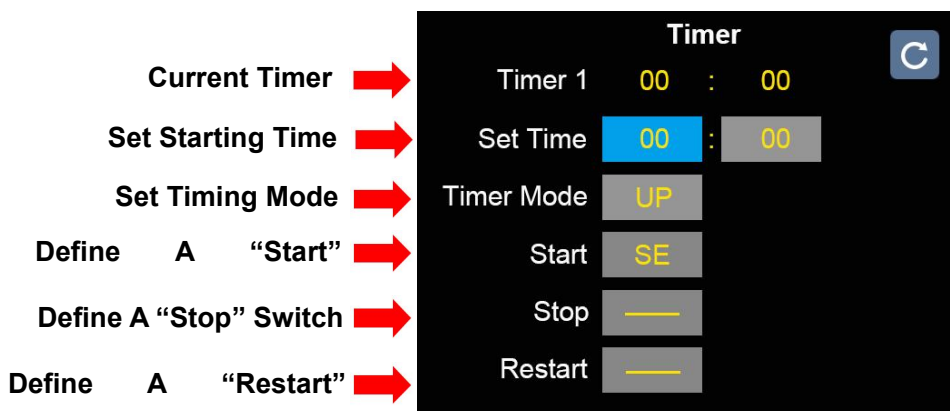
Down: Timing decreases from starting time, the timer alerts when it is back to 0.

### Define a Physical Switch

Start: Define a switch / button for “Start”.

Stop: Define a switch / button for “Stop”.

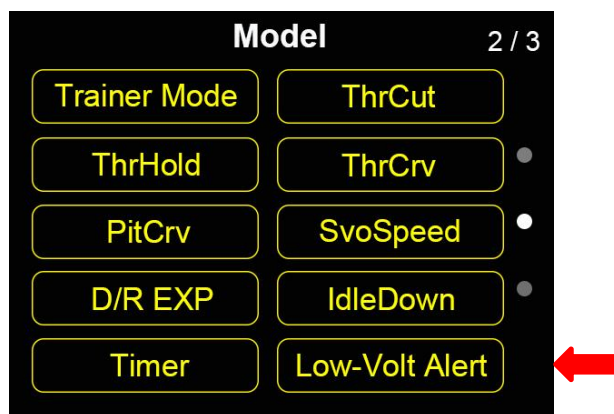
Reset: Define a switch / button for “Reset”.



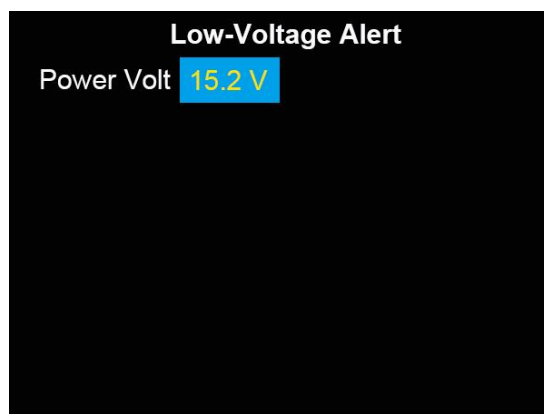
 Mark: You can define a joystick for starting and stopping timing.

---

## 5.20 Low-Voltage Alert



By using telemetry function, users can set a minimum voltage limit as safe level on FT24 transmitter, lower than which transmitter will send voice alert.

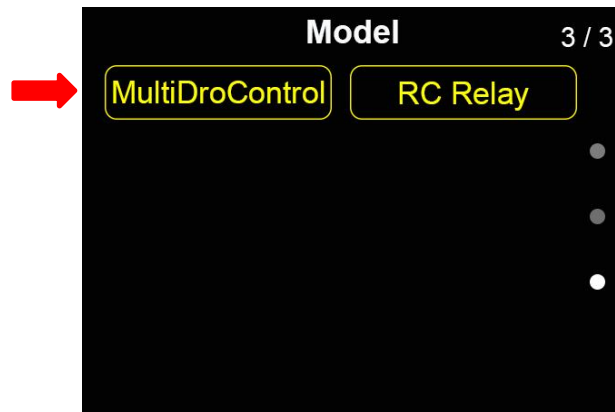


### Steps

1. Go to “Low-Voltage Alert” page.
2. Enter Power Voltage, then use “+” and “-” buttons to input your target voltage.
3. Test and confirm if the function works.

---

## 5.21 Multi-Drone Control



FT24 transmitter supports users to control up to three drones (receivers / aircrafts) simultaneously.

### To Switch Control Among Drones

The function is to switch control drones which are bond / linked with FT24 transmitter, from Drone No.1 to No.3.

When the “Syn-control” function is not activated, the transmitter controls only one drone. Under this circumstance, if you switch control from the current-in-control drone to another, for the not-in-control drones, their channel 1 to channel 4 stays in center (1500), while the other channels won’t change.

Only on the current-in-control drone, datalink is working.

### Syn-Control

When the “Syn-control” function is turned on, FT24 transmitter controls up to three drones simultaneously and outputs the same channel value to all of them. Under this circumstance, all drones fly in same pace.

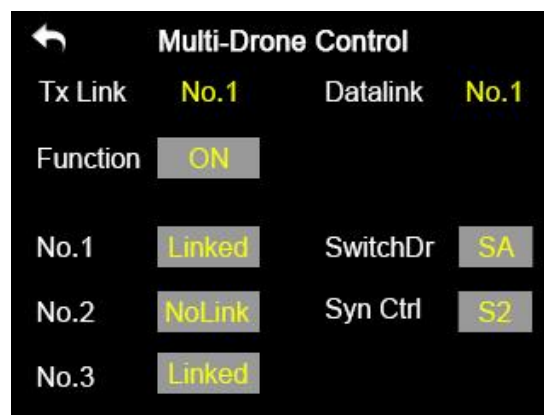
---

Datalink still works on one drone, which is the current-in-control drone before turning on “Syn-control”.



## CAUTION

Please make sure there is safe distance between each of your drones before turning on “Syn-Control”.

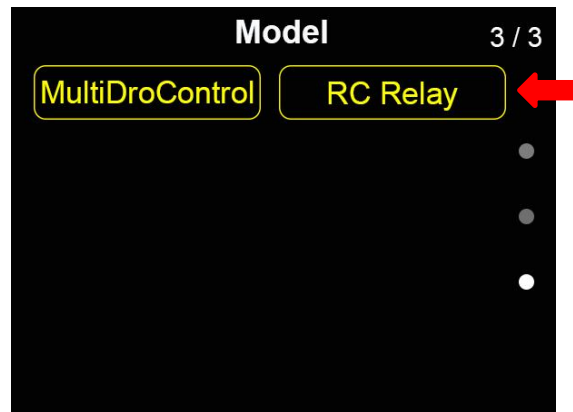


## Steps

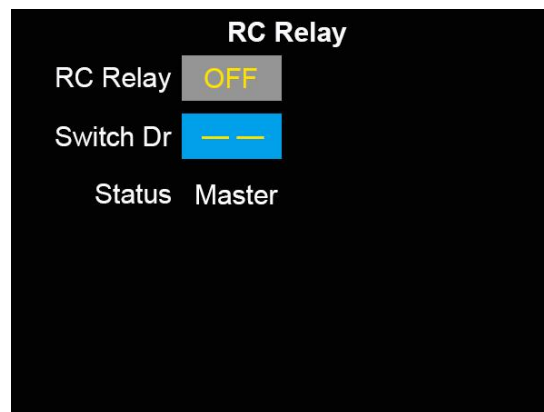
1. Go to “Multi-Drone Control” page.
2. Enter “Switch Drone” to define a switch for switching control among drones.
3. Enter “Syn-Control” to define a switch for turning on / off the function.
4. In this page, bind / link each drone to FT24 transmitter one by one.

---

## 5.22 RC Relay



RC Relay function is designed for long range flight which can only be done by relay control between two FT24 transmitters.

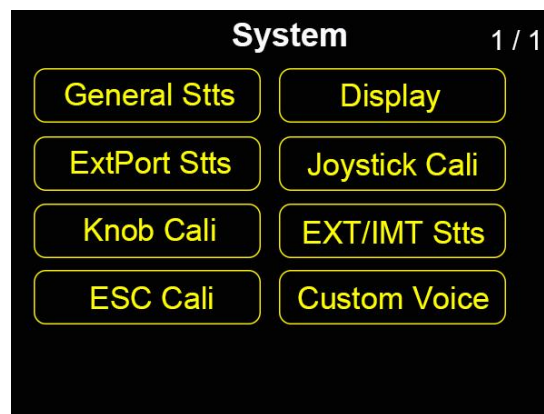
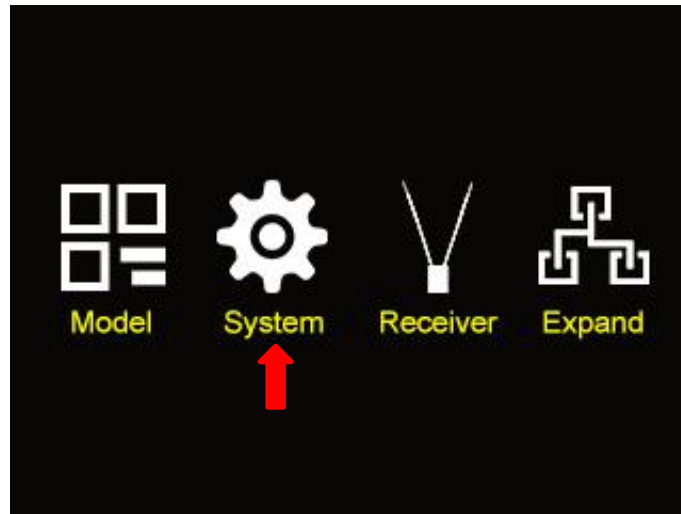


### Steps

1. Prepare two units of FT24 transmitters and one FR / FR Mini receiver. Mark the two transmitters as TX1 and TX2.
2. Bind TX1 with receiver, then turn on RC Relay function. TX1 is slave transmitter.
3. Bind TX2 with receiver. TX2 is master transmitter even if after restarted.
4. Define a physical switch for switching control from TX1 to TX2.

---

# 6 SYSTEM SETTINGS



## About System Settings

### General Stts (General Settings)

Set up basic functions for FT24 transmitter.

### Display

Set up brightness and sleep time for transmitter screen.

### ExtPort Stts (External Ports Settings)

Configure / Change hardware definition of some channels by software specs.

### Joystick Cali (Joystick Calibration)

Calibrate transmitter joysticks.

---

**Knob Cali (Knob Calibration)**

Calibrate transmitter knobs.

**EXT/IMT Settings (Export Import Setting Data)**

Export / Import data of transmitter settings or model settings.

**ESC Cali**

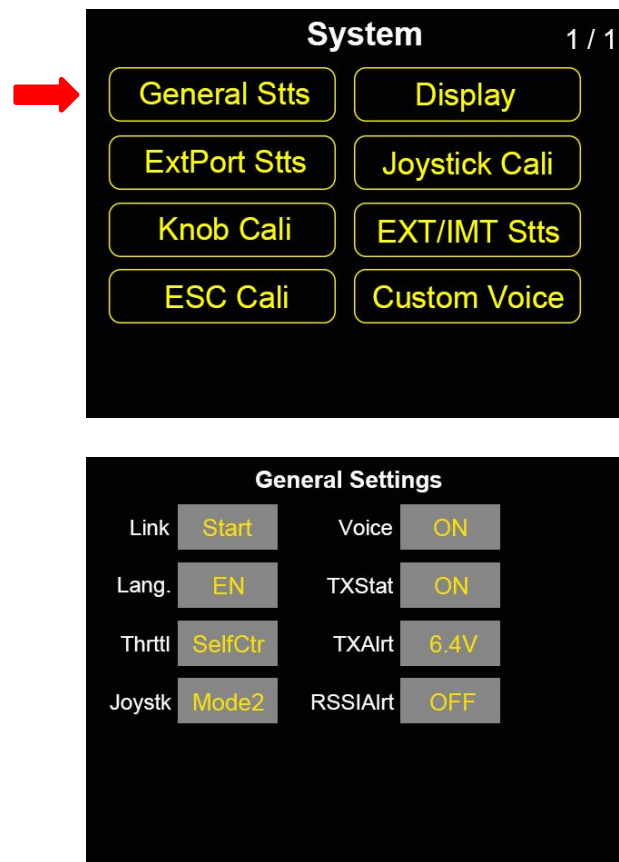
Calibrate ESC in one step.

**Custom Voice**

Customize transmitter voice broadcast.

---

## 6.1 General Settings



### About General Settings

#### Link (or Bind)

Bind FT24 transmitter to FR / FR Mini receiver.

#### Lang. (Language)

Switch system language between Chinese / English.

#### Thrttl (Throttle Type)

Switch throttle joystick type between “Self-Centering” and “Thumb-Slide”.

#### Joystk (Joystick Mode)

Switch joystick mode among Mode 1 / Mode 2 / Mode 3 / Custom.

#### Voice (Voice Broadcast)

Turn on / off the voice broadcast function.

---

## TxStat (Transmitting Status)

Turn on / off RF transmission.

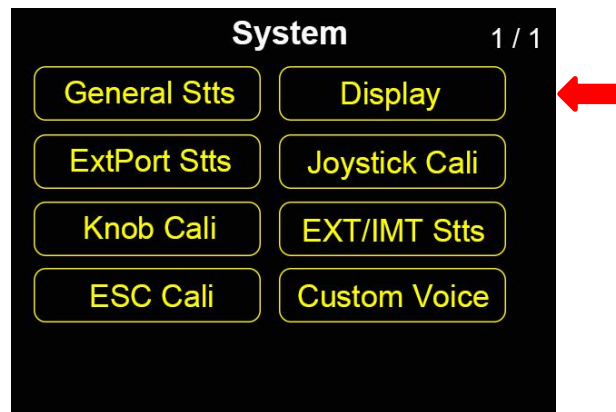
## TxAIrt (Transmitter Low-Battery-Level Alert)

Set a minimum voltage for transmitter battery level, lower than which transmitter will alert in voice.

## RSSIAIrt (RSSI Alert)

Set a minimum value for RSSI signal, lower than which transmitter will alert in voice.

## 6.2 Display



Display function is to adjust screen brightness and sleep time of FT24 transmitter screen.



## About Display

---

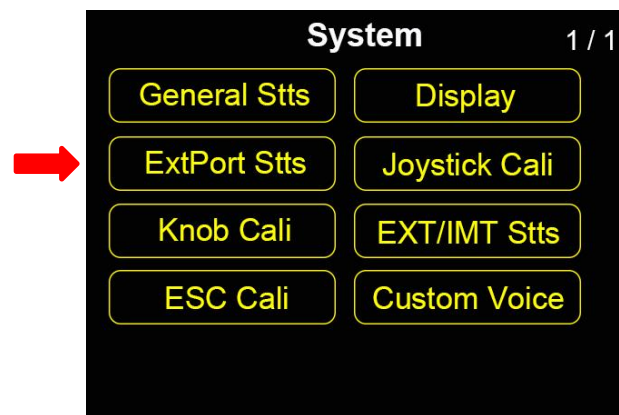
## Brightness

Adjust screen brightness level (range 1 - 20).

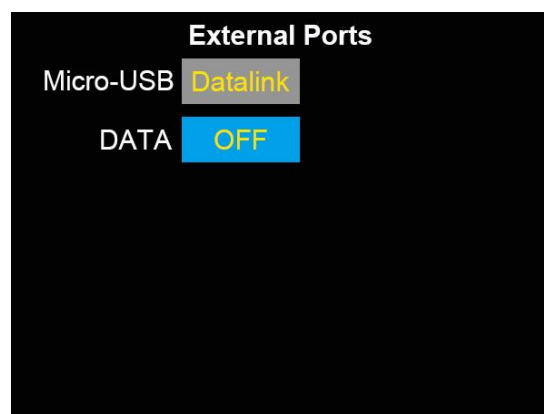
## Sleeping Time

Enable screen sleep function (screen display turns off automatically after a waiting time) and set waiting time. When it is set as “Never”, transmitter screen stays on.

## 6.3 External Ports



Expanding Ports function allows users to adjust FT24 transmitter outputting settings for supporting more external devices.



## About FT24 Transmitter Interface

---

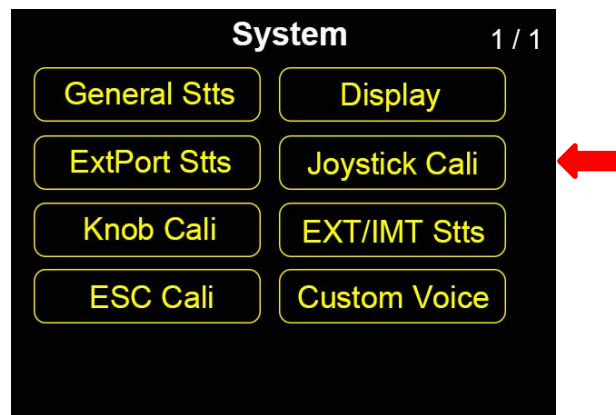
## Micro-USB

Transmitter settings and firmware upgrade on PC. Datalink / Telemetry to PC. USB simulator.

## DATA

External Bluetooth, etc.

## 6.4 Joystick Calibrating

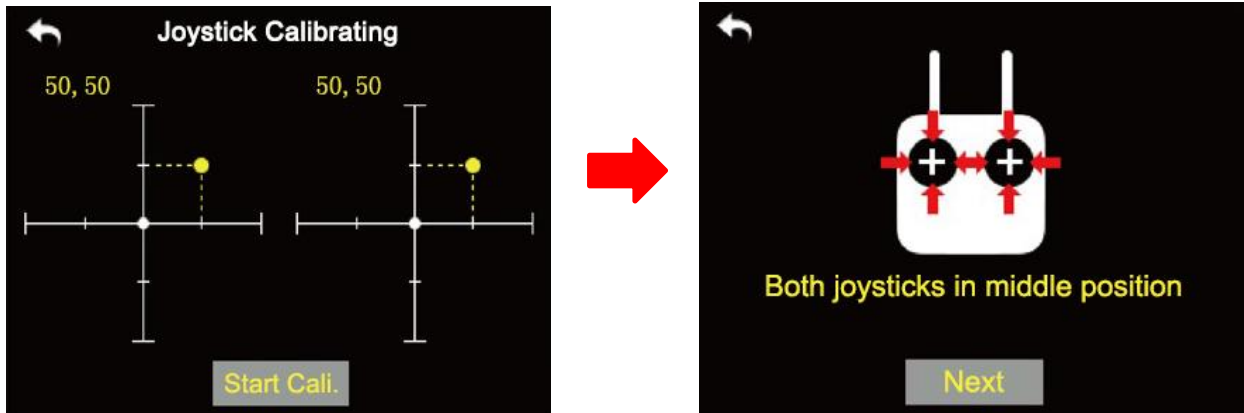


Joystick Calibration function help users calibrate both joysticks' middle position, especially when they don't stay in middle (Channel Output is not 0) or don't reach their maximum and minimum limits. Regular calibration helps maintain control accuracy of the joysticks.

### Steps

1. Go to "Joystick Calibration" page.
2. The cross-coordinate system displays the real-time positions of the joysticks.

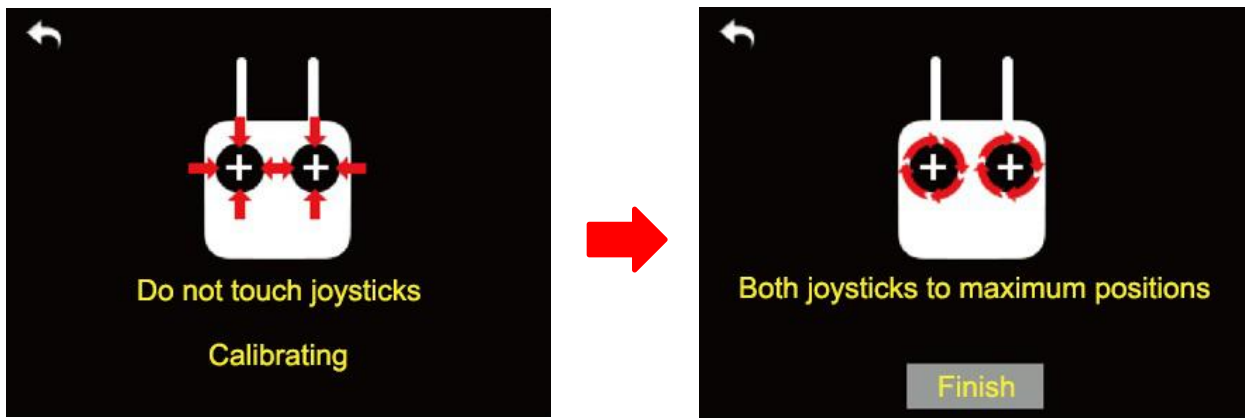
3. Enter “Start”, the page will ask you to confirm if “both joysticks are in middle positions”.



4. Hold / Adjust both joysticks to make them stay in middle positions (when joystick’s tick mark aligns with the transmitter’s tick mark), then enter “Next”.

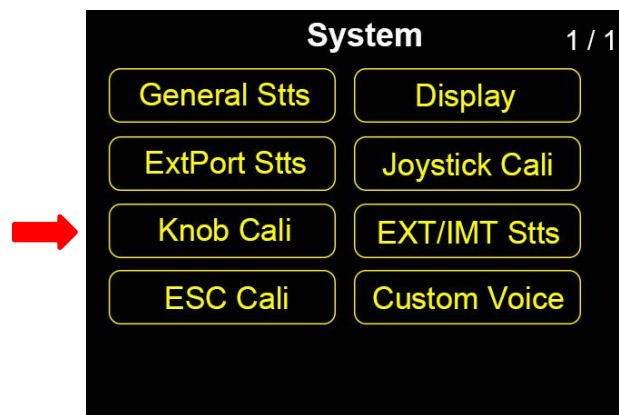


5. FT24 Transmitter starts detecting middle positions automatically, do not touch the joysticks while you are waiting;



6. After detecting, please push both joysticks their maximum positions and operate them in circle for several times.
7. Enter “Finish” when all steps are done.

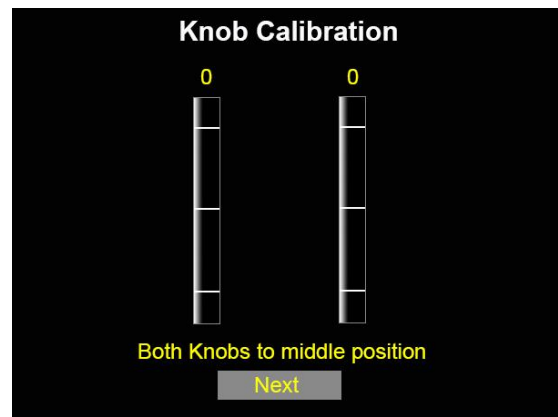
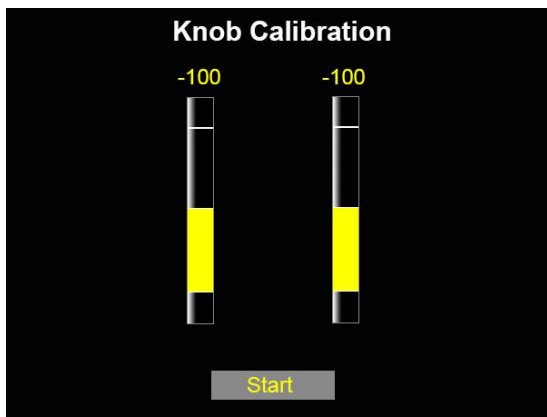
## 6.5 Knob Calibration



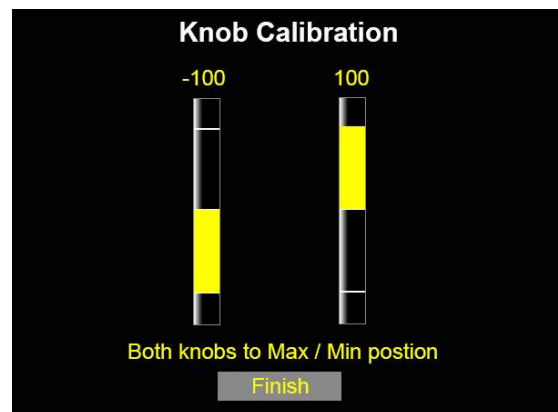
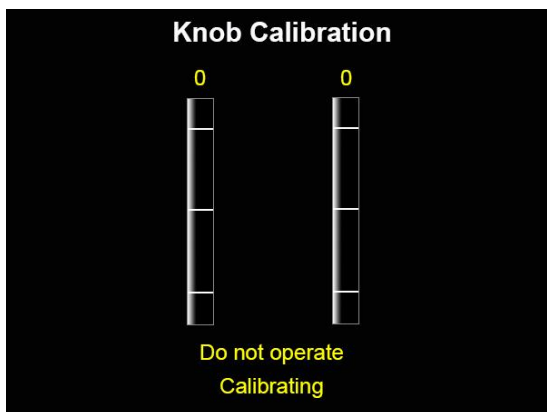
Knob Calibration help maintain both knobs’ output accuracy. Calibration is required when the knobs stay out of their middle position (channel value is not 0) or do not reach the maximum / minimum position.

### Steps

1. Go to “Knob Calibration” page.



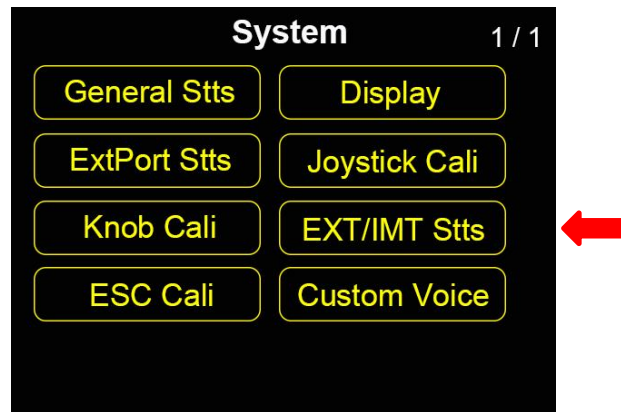
2. Enter "Start", the page will ask you to confirm if "both knobs are in middle position".
3. Adjust both knobs to make them stay in middle position (channel value is 0), then enter "Next". The page will show "Calibrating" and "Do not operate".
4. Do not operate on any knob until the page asks you to operate "both knobs to maximum and minimum position". Follow the hint and repeat it for several times.



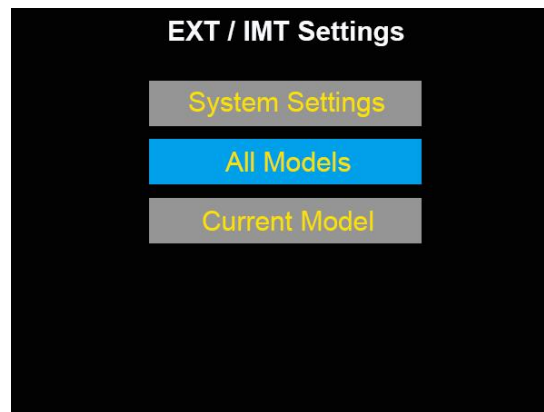
5. Enter "Finish" when all steps are done.

---

## 6.6 Export/Import Setting Data



The function supports users for exporting their FT24 transmitter settings to an SD card to be copied to other FT24 transmitters.



### Steps to Export

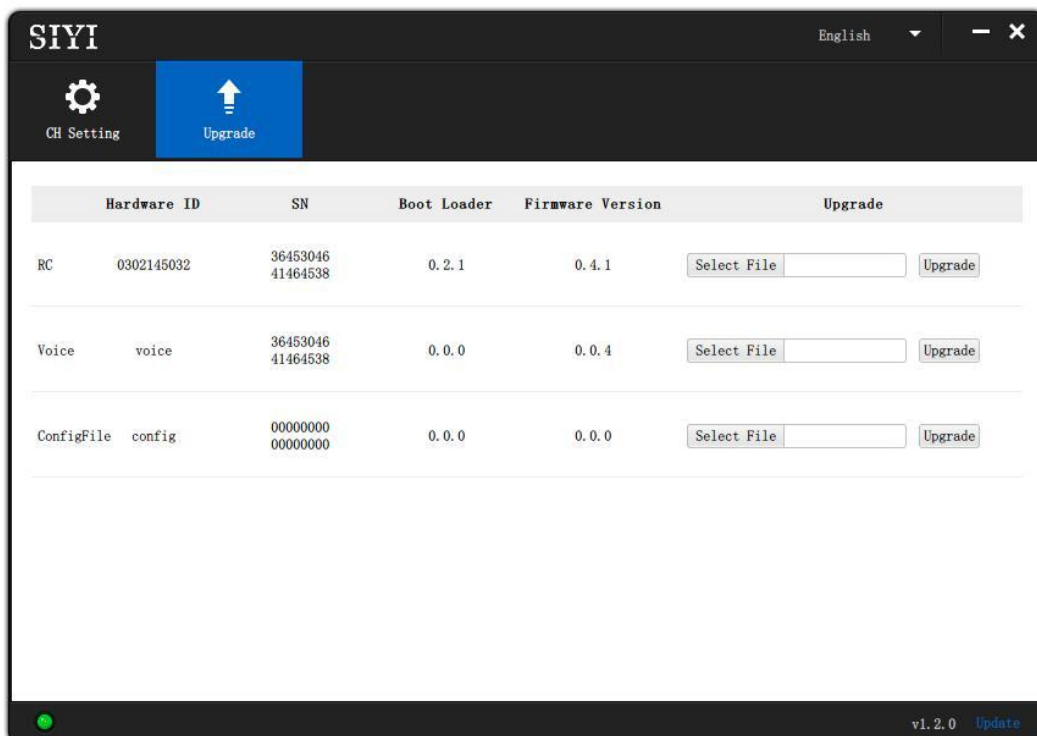
1. Insert an SD card into FT24 transmitter (ignore this step if an SD card was already there).
2. Go to “EXT/IMT Settings” page.
3. “System Settings” to export FT24 transmitter’s system setting data. “All Models” to export all model settings data saved in FT24 transmitter. “Current Model” to export setting data of the current model.

---

4. Enter to see “Confirm to export” dialog, then “Confirm” to finish.

## Steps to Import

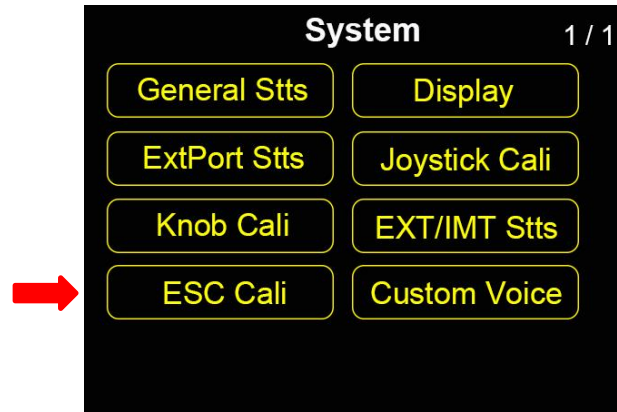
1. Connect FT24 transmitter to your PC through OTG Micro-USB cable and open “SIYI Assistant” software.
2. Use an SD card reader to import the setting data which is already saved in your SD card. File format is “.CFG”. Data of “System Settings” is named as “SYS.CFG”. Data of “All Model” is named as “ALL.CFG”. Data of the “Current Model” is named as “MODEL + X (model number).CFG”.
3. In “SIYI Assistant” software, go to page “Upgrade”. After “Config File”, click on “Select File” to load the file.



---

4. Tap on “Upgrade” to finish.

## 6.7 ESC Cali



FT24 transmitter simplified ESC calibration process. Users just wire their ESC with FR receiver’s PWM port 1 to 8, then follow what the transmitter guides in “ESC Calibration” page the steps below to do calibration.

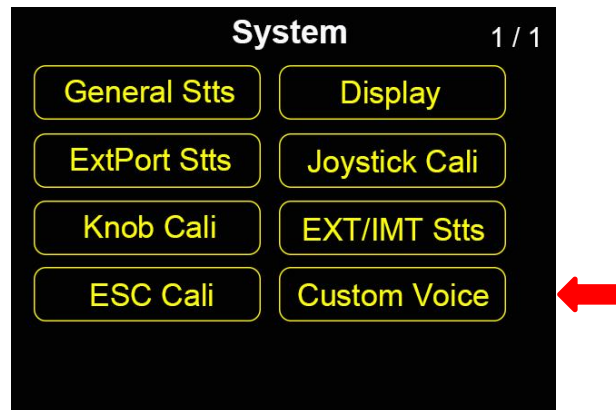


### Steps

1. Go to “ESC Cali” page.
2. Follow the guide and connect your ESC signal wires to FR Receiver’s PWM port 1 to 8, then enter “Start”.

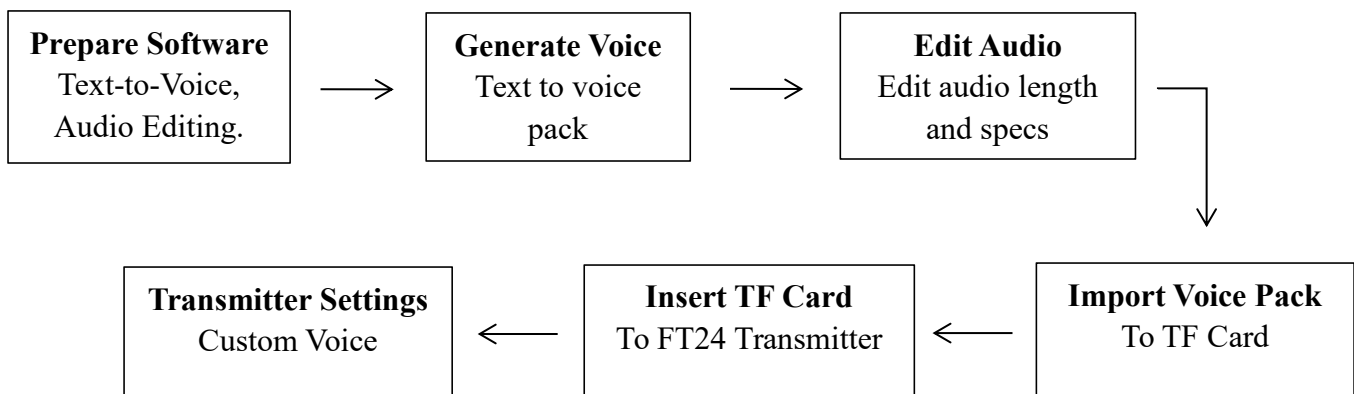
3. Do not operate. Under this circumstance, FT24 transmitter throttle outputs maximum channel value automatically. Power on your motors and wait for a confirming sound. Then enter “Next”, transmitter throttle will output minimum channel value automatically. Again, please wait for the confirming sound.
4. ESC calibrating is finished, you can power off motors.

## 6.8 Custom Voice



FT24 transmitter supports users to customize voices for switches and functions.

### Block Diagram



---

## Steps

1. Prepare tools and software.

- Text to Voice Converter

\*Please ignore this tool if you already got voice file.

- Audio Editing Software (demonstrated with CoolEditPro)

\*Please ignore

2. Covert text file to voice file. *\*Ignore this step if you already got voice file.*

- Open the tool / software.
- Select required voice.
- Output audio as “.WAV” format.
- Select an output folder.
- Click on “Start” to start converting and outputting.

3. Edit audio. *\*Ignore this step if you already got edited voice file.*

- Open the tool / software.
- Go to audio editing page.
- Drag your voice file into the software.

- 
- Delete unnecessary sounds.


4. Convert audio file format.

- Go to “Sampling Type” page.
- Set “Sampling Rate” as “16,000 Hz”.
- Select “Mono”.
- Cancel “Add Shaking”.
- Select “8-digit”.
- Confirm and save file.

5. Create a new folder, naming as “MUSIC”, in the root directory of your TF card. Copy the converted audio file into the folder and make sure the file format and file name are correct.

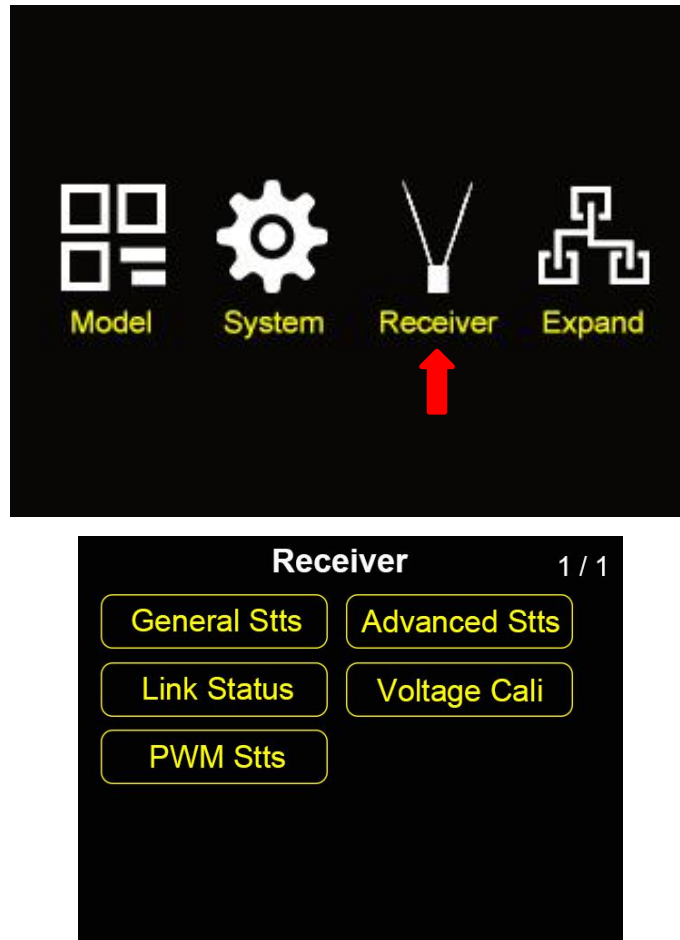
*\*Audio file name should be English only and not longer than 12 digits.*

6. Insert the TF card into FT24 transmitter. Go to “Custom Voice” page. Define a switch and select the audio file. Operate switch to play the audio file and confirm.

 Mark: If your prepared audio file cannot be converted, then please lower audio quality bit by bit and have a try.

---

# 7 RECEIVER SETTINGS



## About Receiver Settings

### General Stts (General Settings)

Set up basic functions for FR / FR Mini receivers.

### Advanced Stts (Advanced Settings)

Set up Baud Rate.

### Link Status

Displays FT24 Radio System's RF transmission status

### Voltage Cali (Voltage Calibration)

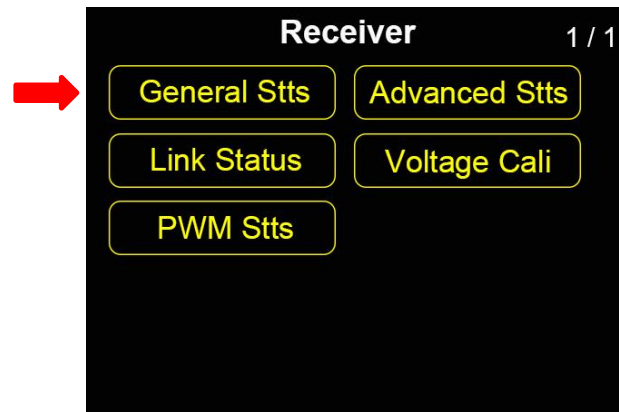
Calibrate receiver voltage telemetry.

### PWM Stts (PWM Settings)

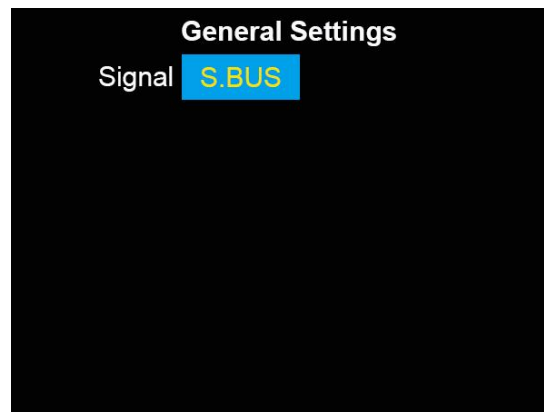
Change channel definition under PWM mode.

---

## 7.1 General Settings



General Settings is to setup different signal modes for FR receiver, according to its different output mode (S.BUS, PPM, and PWM).



### Steps

1. Go to “General Settings” page.
2. Enter “Signal”, select S.BUS / PPM / PWM to switch among different signal modes.
3. During switching, receiver status indicator blinks for different signal modes.

● Yellow Once: S.BUS

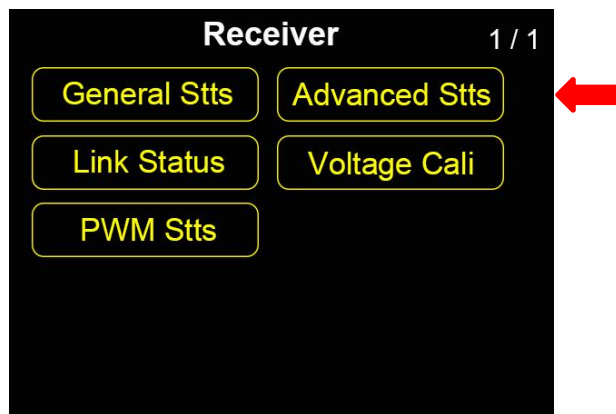
●● Yellow Twice: PPM

---

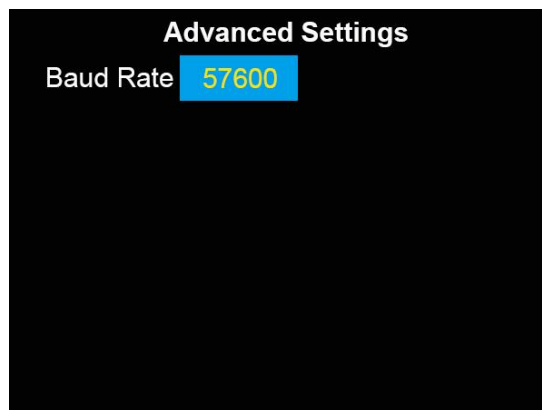
🟡🟡🟡 Yellow Triple: PWM

4. After switching, receiver status indicator is back green. Blinking frequency stands for signal strength. Faster it blinks, lower strength it is.

## 7.2 Advanced Settings

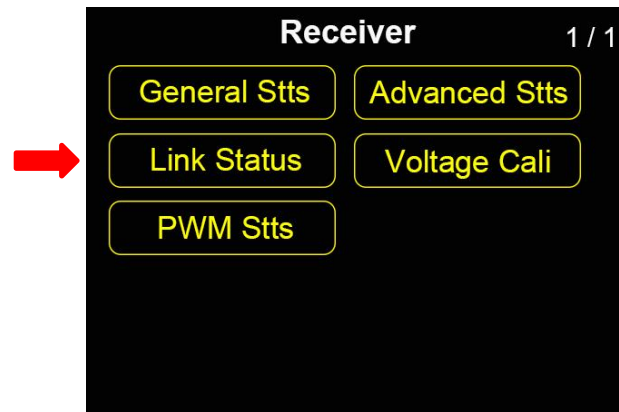


Advanced Settings is to setup baud rate for datalink/telemetry function. Range: 4800, 9600, 38400, 57600, 76800, 115200, 230400.



---

## 7.3 Link Status



Link Status page displays real-time working status of FT24 radio system's RF transmission.

Link Status		
Frequency	0	0
Loss Rate	0	
Upload	0	
Download	0	

### About Link Status

#### Frequency

Currently working frequency.

#### Loss Rate

Real-time package loss rate of RF transmission.

#### Upload

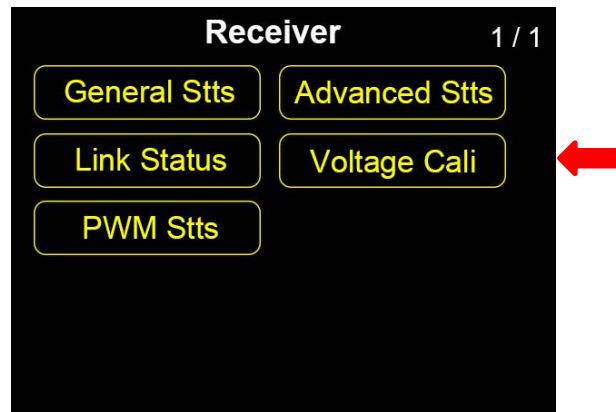
Real-time data upload status.

#### Download

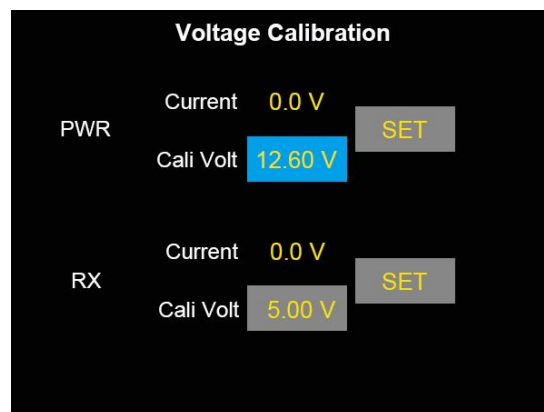
Real-time data download status.

---

## 7.4 Voltage Calibration



Before using FR receiver, SIYI suggests that user should manually calibrate receiver RX Voltage and PWR Voltage once.



### Preparation

1. Power on receiver, turn on both transmitter and receiver.
2. Bind transmitter with receiver and make sure the system is working well.

### Steps to Calibrate RX Voltage

1. Power on the receiver through any PWM port. Voltage range: 3.6 – 10 V.

- 
2. Let's take an example of 6.0 V.

Go to "Voltage Calibration - RX" page, enter "Cali Volt" and use "+" and "-" buttons to input "6.0 V" as a standard voltage to calibrate.

3. Enter "SET", receiver telemetry voltage calibration is done when the page displays the same information.

### **Steps to Calibrate PWR Voltage**

1. Power on the receiver through any PWM port. Voltage range: 0 – 50 V (FR Receiver).  
0 – 26 V (FR Mini Receiver).

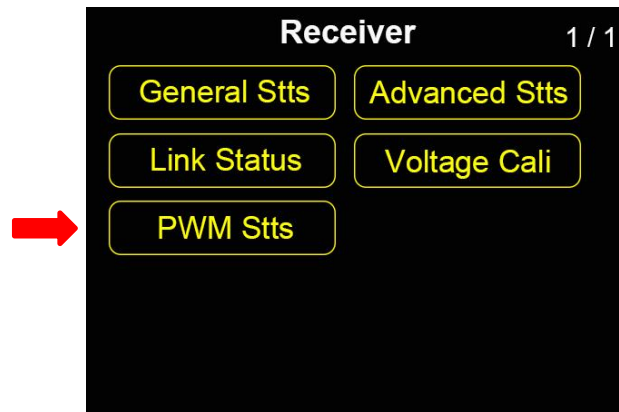
2. Let's take an example of 25.0 V.

Go to "Voltage Calibration - PWR" page, enter "Cali Volt" and use "+" and "-" buttons to input "25.0 V" as a standard voltage to calibrate.

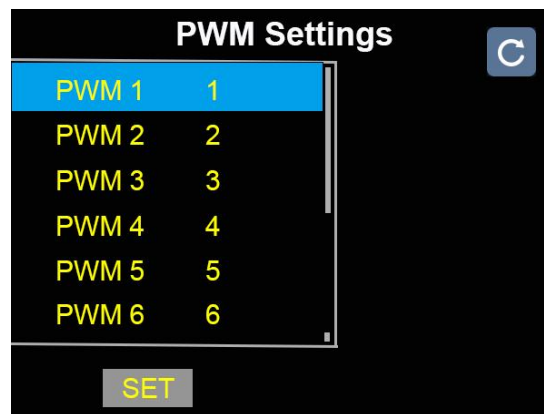
3. Enter "SET", aircraft voltage calibration is done when the page displays the same information.

---

## 7.5 PWM Settings



Users can re-define all 8 PWM channels on FR receiver through PWM settings. In default, PWM channels 1 to 8 are mapped with transmitter channel 1 to 8. They are free to be mapped with all 16 transmitter channels.



### Steps

1. Power on both FT24 transmitter and FR receiver. Make sure they are bond and working well.
2. The default PWM channel setup is like below.

PWM 1 = Receiver PWM 1

PWM 2 = Receiver PWM 2

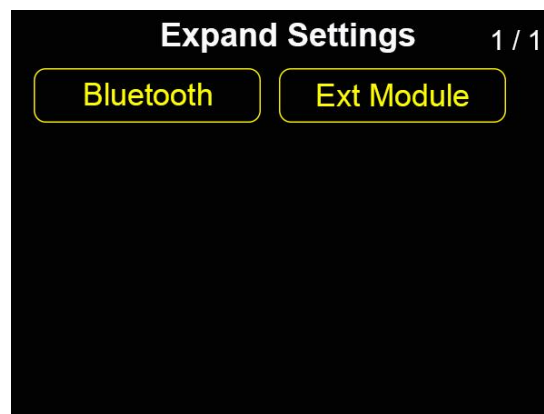
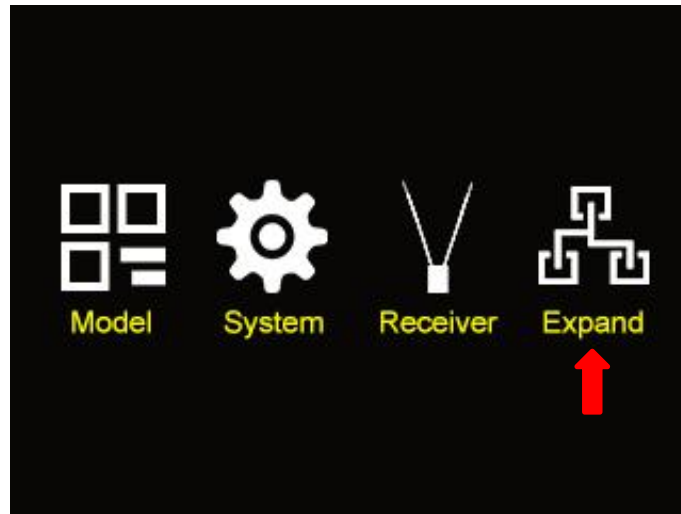
---

...

3. Go to “PWM Settings” page, select a target PWM channel and use “+” and “-” buttons to input a target transmitter channel.
4. Enter “SET”, PWM settings is finished when the page displays the same information.

---

## 8 EXPAND SETTINGS



### About Expand Settings

#### Bluetooth

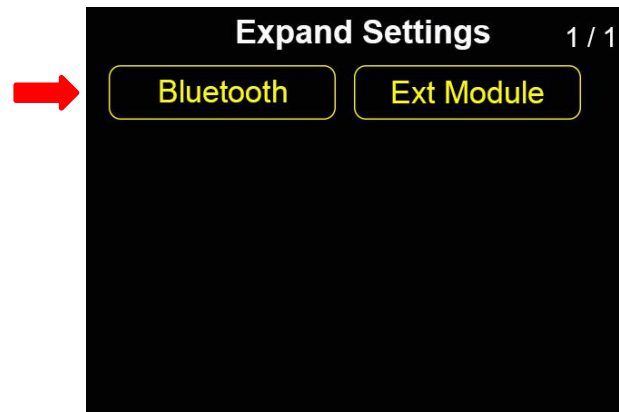
Setup the already linked Bluetooth module.

#### Ext Module (External Module)

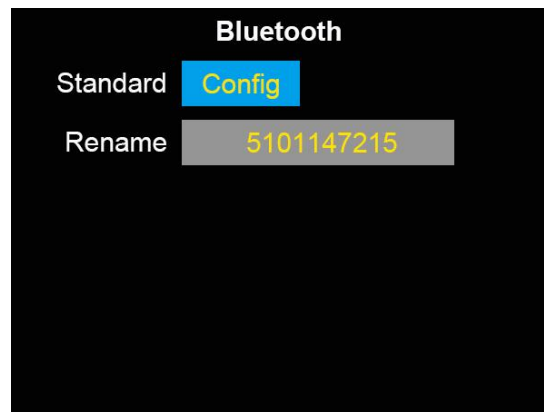
Configure relevant settings for external modules.

---

## 8.1 Bluetooth



General Settings is to setup different signal modes for FR receiver, according to its different output mode (S.BUS, PPM, and PWM).



### About Bluetooth

#### Standard

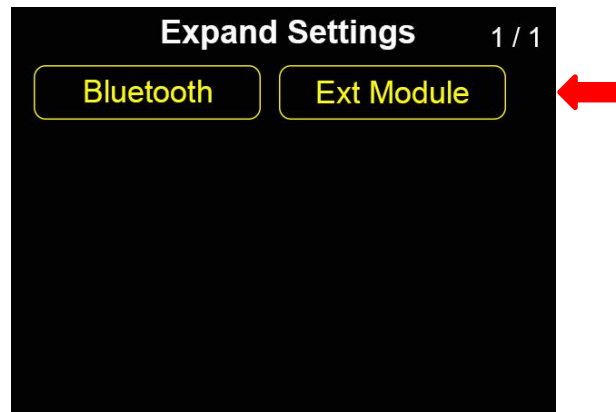
Reset FT24 transmitter's Bluetooth module name to the default 10-digit serial number.

#### Rename

Custom name for your Bluetooth module.

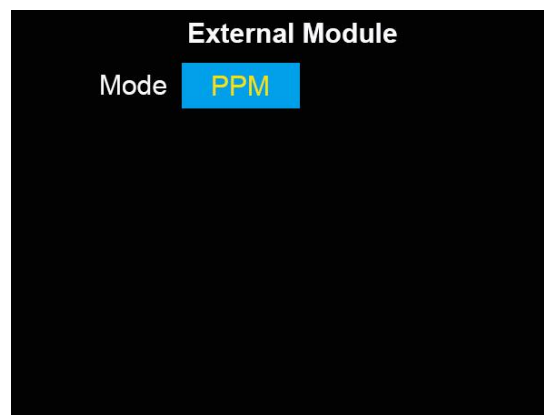
---

## 8.2 External (Radio) Module

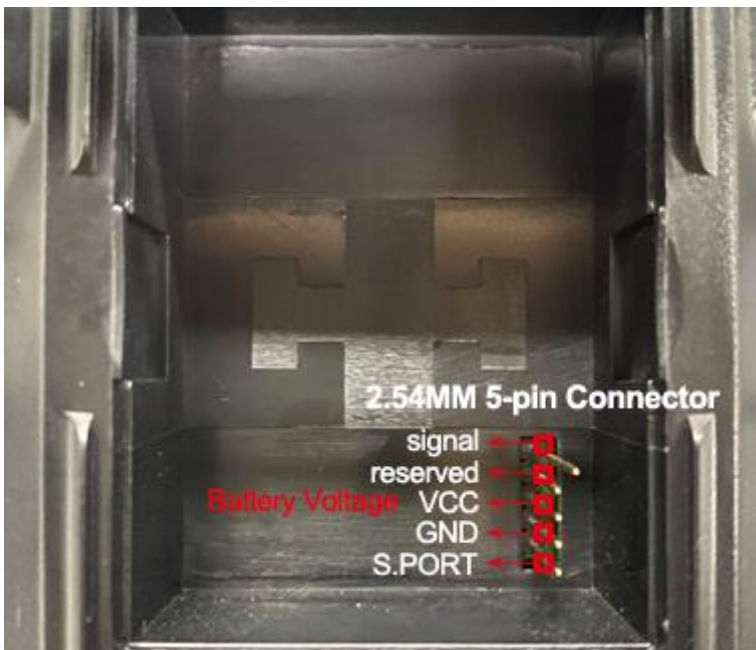


FT24 transmitter works with FM30 radio module and other external third-party radio modules. R9M protocol is pre-configured in FT24 transmitter. It supports adjusting settings, monitoring status. For third-party radio modules, please use PPM / S.BUS connection.

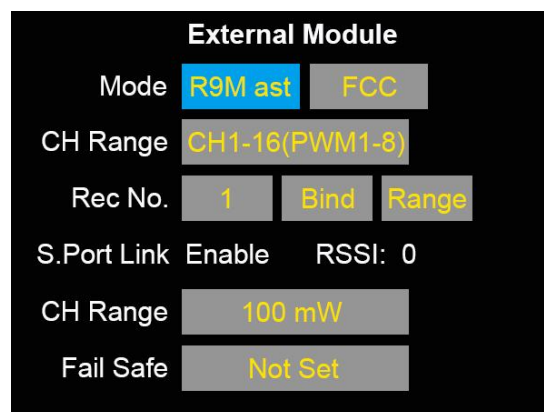
### 8.2.1 PPM / S.BUS Mode



Under S.BUS / PPM mode, external module outputs signal through the pins below.



## 8.2.2 R9M AST Mode



Plug R9M radio module into FT24 transmitter and switch the mode to “R9M ast”, transmitter will start to communicate with R9M. And you can monitor information such as signal strength, S.BUS / PPM signals, etc.



Mark: Among the external pins for radio module, pin VCC belongs to battery’s positive end. Please mind the voltage, in case the hardware is burnt.

---

## 9 Firmware and Voice Upgrading

FT24 transmitter with FR receiver supports both USB / OTA firmware upgrading. FT24 transmitter with FR Mini receiver supports OTA firmware upgrading only.

Before upgrading firmware for FT24 radio system, it is necessary to prepare the tools and software below.

- SIYI Assistant v1.2.7
- FT24 Transmitter Firmware
- FR / FR Mini Receiver Firmware

*\*All files can be downloaded from SIYI Official website (<http://en.siyi.biz/>) or SIYI Google Drive (<https://drive.google.com/drive/folders/1DUxOYszp7zNk7u3byXO3rH4UgD3K4PI4?usp=sharing>) or got from your dealer.*

- Micro-USB to USB Cable

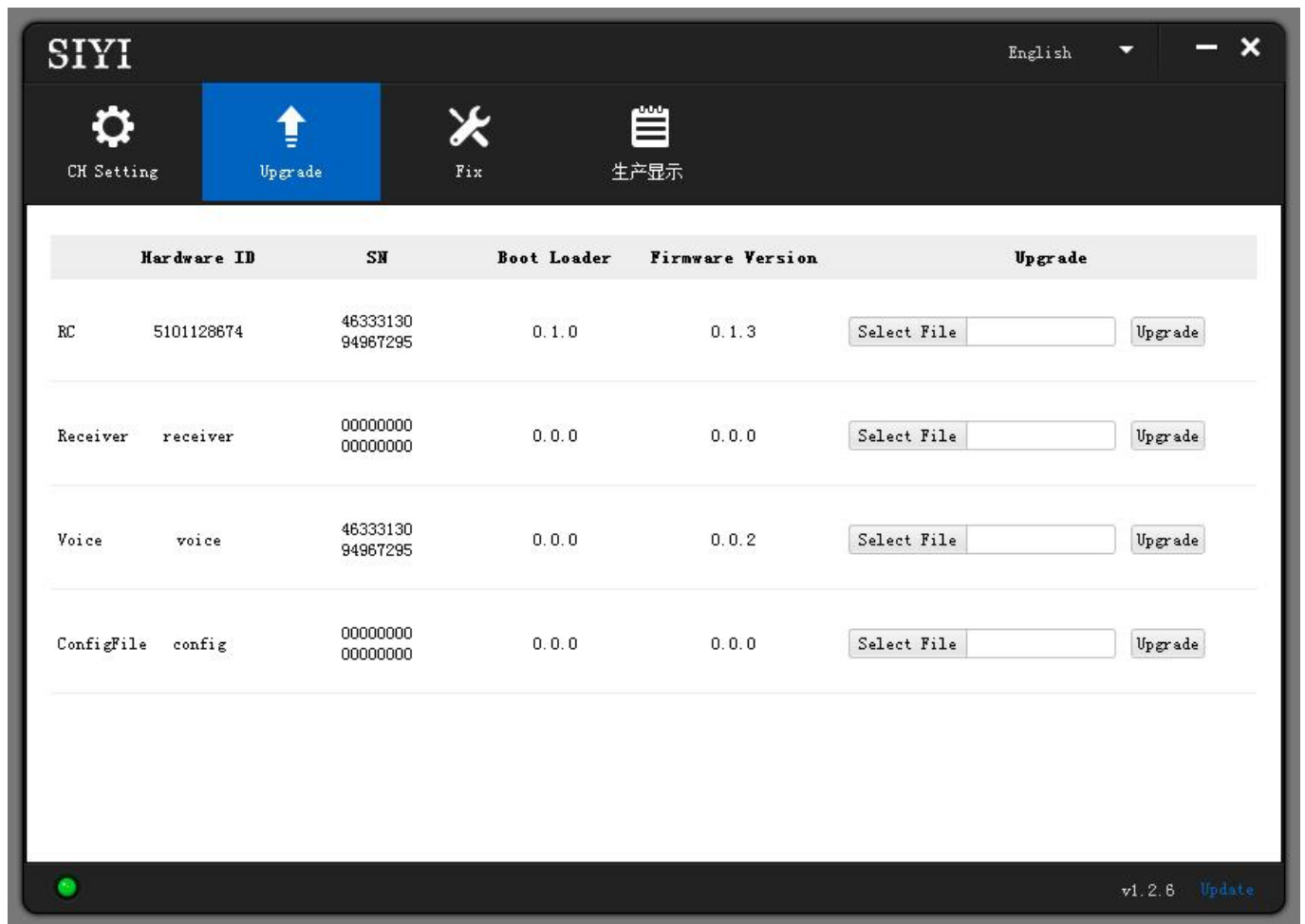
*\*Came with FT24 package*

### 9.1 USB Firmware Upgrading

#### Steps

1. Install “SIYI Assistant v1.2.7” in your computer.
2. Connect FT24 transmitter to your computer.

3. Run “SIYI Assistant v1.2.7” to check the transmitter’s current firmware version.



4. Upload the latest firmware files for FT24 transmitter (RC) and click on “Upgrade”. Then wait till the process is 100% finished.

5. Plug out FT24 transmitter and connect FR receiver to your computer. Then repeat Step 3 & 4 to upgrade receiver firmware.

## CAUTION

“Voice” and “ConfigFile” does not have to be upgraded for FT24 transmitter.

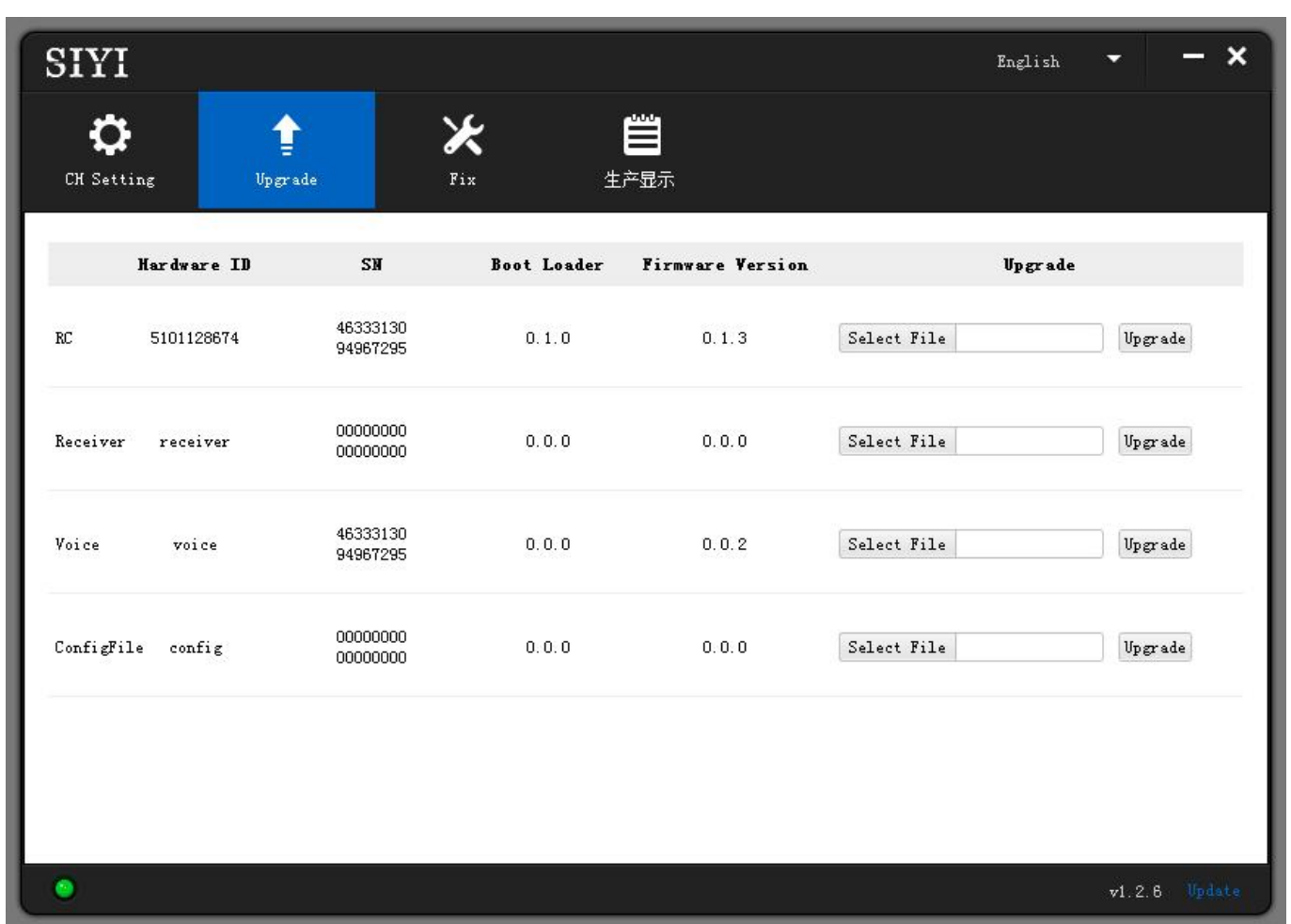
---

If your FT24 transmitter and FR receiver are bond and you can check receiver firmware when only the transmitter is connected to your computer, then FR receiver firmware can be upgraded right after upgrading FT24 Transmitter while the transmitter is still connected.

## **9.2 OTA Firmware Upgrading**

### **9.2.1 Receiver and transmitter bound.**

1. Connect FT24 transmitter to your computer.
2. Run “SIYI Assistant v1.2.7” to check the transmitter’s current firmware version.



3. Upload the latest firmware files for FR / FR Mini receiver and click on “Upgrade”.  
Then wait till the process is 100% finished.

## 9.2.2 Receiver and transmitter not bound.

1. Connect FT24 transmitter to your computer.
2. Power on FR / FR Mini receiver and wait for 5 seconds.

- 
3. Cut and connect receiver battery power for 6 times (1-second interval of each time). Receiver status indicator blinks red and green fast. Receiver is standby for firmware upgrade.
  4. Run “SIYI Assistant v1.2.7” to check the transmitter’s current firmware version.
  5. Upload the latest firmware files for FR / FR Mini receiver and click on “Upgrade”. Then wait till the process is 100% finished.

---

## 10 After-sale Service

Please visit the SIYI Technology support page at [Service and Support - SIYI Technology | Empowering and Building an Intelligent Robot Ecology](#) for the latest after-sales and warranty information.