T16

18-Channel Digital Proportional R/C System

MULTI

JUMPER

ATTENTION

- Please read this manual carefully before use.
- Please keep this manual in a sufe piease after reading.

Introduction

Thank you for purchasing the Jumper JumerTX - 2.4GHz System T18 Remote Control. The system is versatile and can be used by beginners and proessionals. Please read this instruction manual carefully before use to ensure correct and safe use. Due to version upgrades, there have been changes. The information contained in this manual is subject to change without notice.

This T18 transmltter is suitable for all types of models of models of models of fixed wings, gliders, helicopters and multi-rotors. The model type can be selected according to the body used, and various mixing functions can be used.

Relevant precautions for use, export,etc.:

1. This product can be used in unmanned aerial vehicles.

2. It dose not apply to any application other than unmanned aerial vehicle control.

3. Precautions when exporting

   A. This product is subject to regulations in to the country of manudacture. Users or companies importing this product must ensure the product meets regulatory requirements in their respective country.

   B. This product may have restrictions on applications and use specific to your region.

   C. Please ensure you comply with local regulations when operating.

   D. This product is intended only for user with RC Models.

Flight Safety:

We recommend that you fiy in a dedicated model airspace, paying special attention to the rules of the area, as well as the location, wind direction and any obstacies on the field.

Be very careful in areas fiying around wires, high-rise buildings or communication facilities, as nearby there may be radio interference.

The contents of this manual are subject to change without notice.

If there are any errors or omissions in this manual, piease contact us, we will correct them as soon as possible, and indicate your corrections.
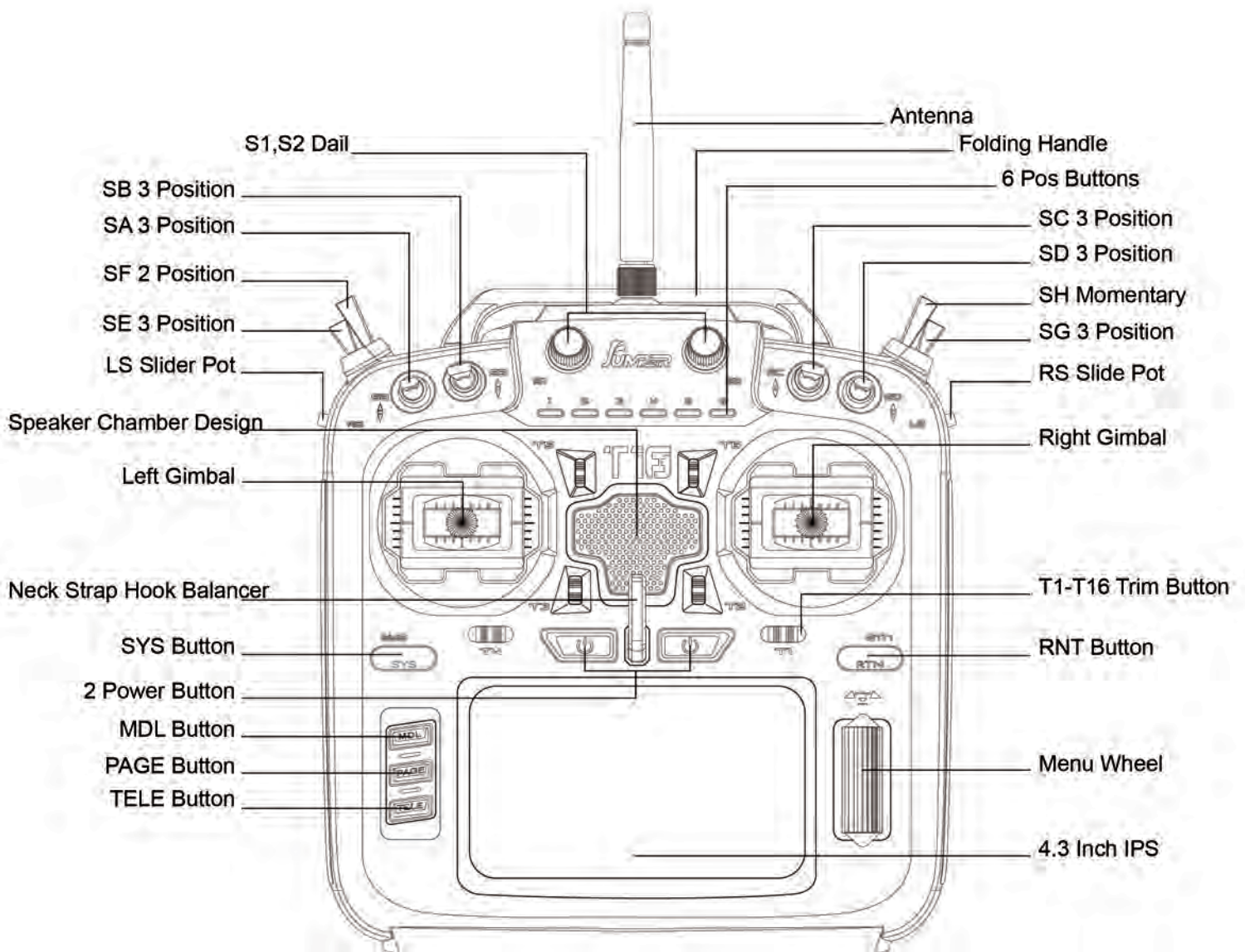
Components

T16

S1,S2 Dail	Antenna
SB 3 Position	Folding Handle
SA 3 Position	6 Pos Buttons
SF 2 Position	SC 3 Position
SE 3 Position	SD 3 Position
LS Slider Pot	SH Momentary
Speaker Chamber Design	SG 3 Position
Left Gimbal	RS Slide Pot
Neck Strap Hook Balancer	Right Gimbal
SYS Button	T1-T16 Trim Button
2 Power Button	RNT Button
MDL Button	Menu Wheel
PAGE Button	
TELE Button	4.3 Inch IPS

Table of Contents

1. Overview

JumperTX is a firmware that runs on the T16. Its main purpose is to support the receiver of more protocols, thus developing all the potential of the remote control. The core of the JumperTX firmware is based on the modified Er9x firmware system of the Turnigy/Flysky9xTM remote.

JumperTX also has USB file management, making it easier to manage the remote via PC software.

The display of the main interface of JumperTX can be modified according to your needs. You can display any input, switch, channel data and timer at random on the main interface, and you can set each model separately.

JumperTX can connect to the flight simulator via a DSC line (PPM) or USB cable (USBHID).

JumperTX also supports coaching and FPV settings.

JumperTX has been internationalized and has been translated into English (EN), Czech (CZ), Finnish (FI), Dutch (NL), Spanish (ES), French (FR), German (DE), Polish (PL)), Italian (IT), Portugal (PT), Sweden (SE).

1.1. Disclaimer

JumperTX is an experimental firmware. No warranty or implied warranty is given as to the quality and reliability of this firmware. The RC model can cause serious injury or even death if not handled properly. If you decide to use JumperTX firmware, you will be solely responsible for your model. Any injury or damage caused by the use of JumperTX firmware,The author of JumperTX is not responsible for it. Please use it with caution.

1.2. Legal status and copyright

This project is free software: you may redistribute and/or modify it in compliance with the GNU General Public License, the V3 version of the agreement, or (optionally) the updated version of the agreement issued by the Free Software Foundation. You should receive a copy of the GNU General Public License Agreement for the JumperTX project. If not, see www.gnu.org/licenses.
The JumperTX firmware has been released and is expected to benefit the public, but it does not have any warranty; it does not even include an implied commercial license or applicability for a particular purpose. For more details, see the GNU General Public License.

JumperTX source files, etc. can be found at https://github.com/jumperXYZ.

2. installation

Users can choose between two methods to install the JumperTX firmware.

1. Use the JumperTX firmware upgrade tool (Companion)
2. Upgrade the remote controller firmware using the SD card.

If you don't have a WindowsTM operating system, choose the second method, "Upgrade Remote Controller Firmware with SD Card." This is a BOOTLOADER application designed by the JumperTX developer team. It is efficient and simple. The upgrade requires two steps. First, you need to copy the downloaded firmware to the FIRMWARE directory of the SD card, then pinch the horizontal fine-tuning button and turn it on again (as shown below).
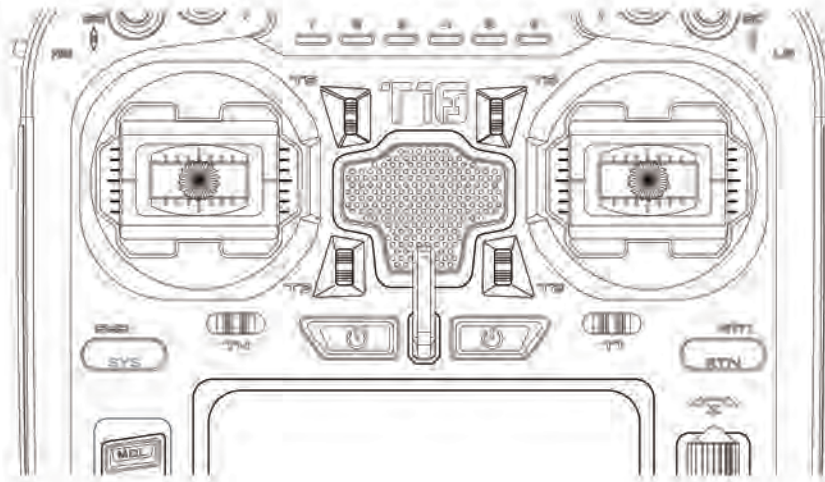
Select the Write Firmware option after booting and select the appropriate firmware upgrade

JumperTX BOOTLOADER

⊘ Write Firmare

← Exit

Or plug in a USB cable
for mass storage

Current Firmware: JumperTX-16-2.2.3(7B00024E)

In BOOTLOADER mode, you can also use USB to connect to a computer. You can use your computer to access the T16 disk data. After plugging in the USB, the display is as follows.

USB Connected

The preparation section describes what you need to do before you start installing the firmware. Then, depending on the tool you are using, the installation steps will overwrite the original program. These steps apply to version upgrades or installations of different versions and developer versions.

2.1. Ready

First, make sure your remote is fully charged before you start installing firmware.

Download T16 firmware (JumperTX 2.2.3 English) at https://www.jumper.xyz/downloads, where English is the menu language for the remote control. 2.2.3 refers to the version number of the JumperTX firmware. Note: Do not use the DfuSe tool downloaded from STMicroelectronics!

You can download the firmware upgrade tool here:https://www.jumper.xyz/downloads

If you are using WindowsTM, you will need to install the appropriate USB driver. See the Windows Driver Installation section.

Unzip and install the downloaded tool.

If you are upgrading an older version of JumperTX firmware, it is highly recommended that you back up your remote's configuration file to make sure you don't lose any model or remote control configuration.

Windows driver installation.

The T16 uses the STM32 Bootloader driver. Can be downloaded here:https://zadig.akeo.ie/
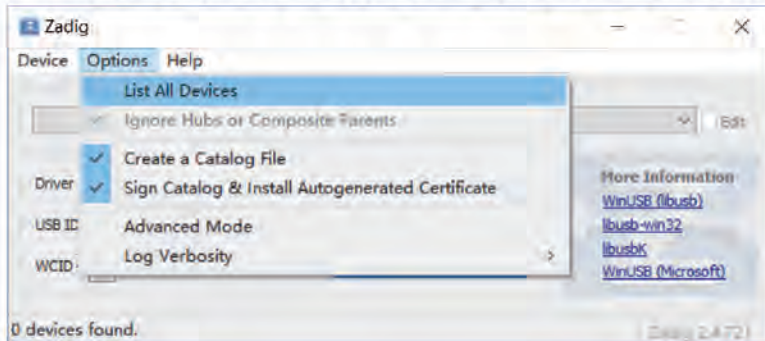
Download

Updated 2018.07.26:

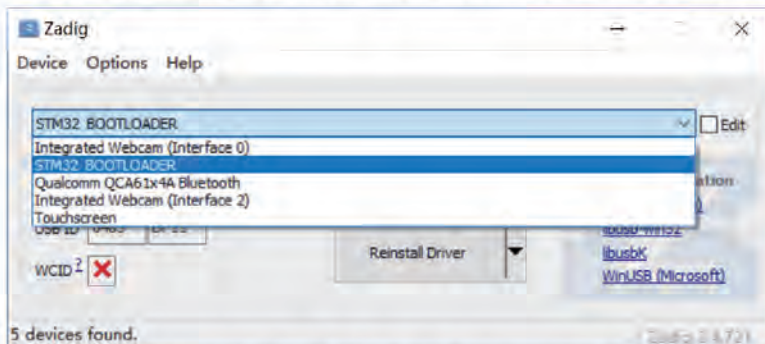- **Zadig 2.4** (4.9 MB)
- Other versions

Turn off the T16 and connect to the computer using the USB cable.

Open the downloaded Zadig software (some systems need to run in administrator mode, you can use right click and select to run as administrator)
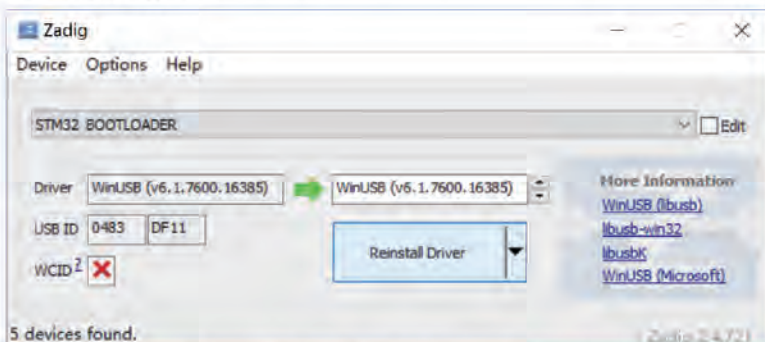
Click Options and select List All Devices. (as shown below)

Click on the drop-down list to select STM32 BOOTLOADER (as shown below)

Click Install Driver. (If you have previously installed the STM32 driver, this button will display Reinstall Driver, as shown below)

After the installation is complete, the following devices in the Computer Device Manager indicate that the installation is complete.

2.2. Backup remote firmware

Before upgrading the remote control firmware, it is recommended to back up the firmware and model configuration file of the current remote control to prevent loss.
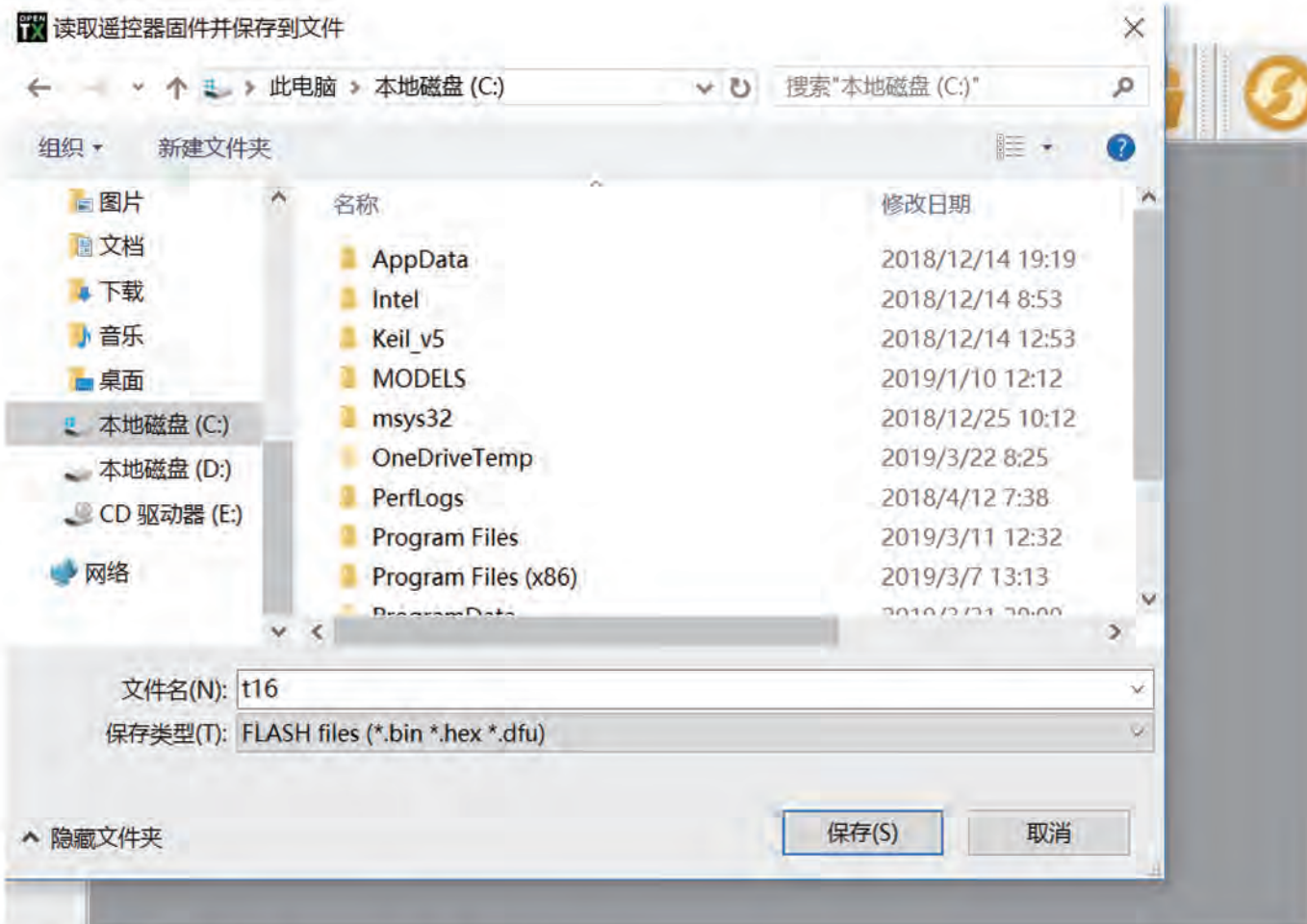
Open the Companion software and set the remote control model to T16 in the setup menu.

Turn off the remote control or enter BOOTLOADER mode, connect the computer with a USB cable.
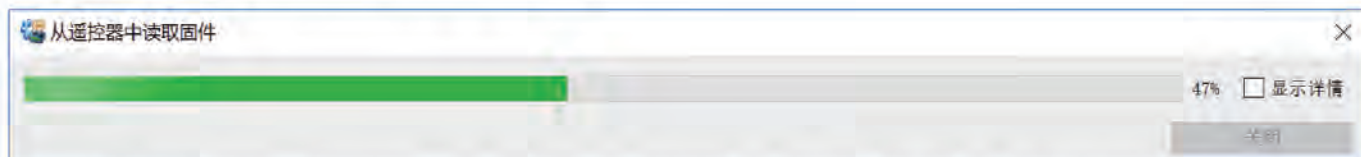
Click the read/write menu and select to read the firmware from the remote control (as shown below)

In the pop-up dialog box, you can choose where to save the backup firmware and the file name you want to save.
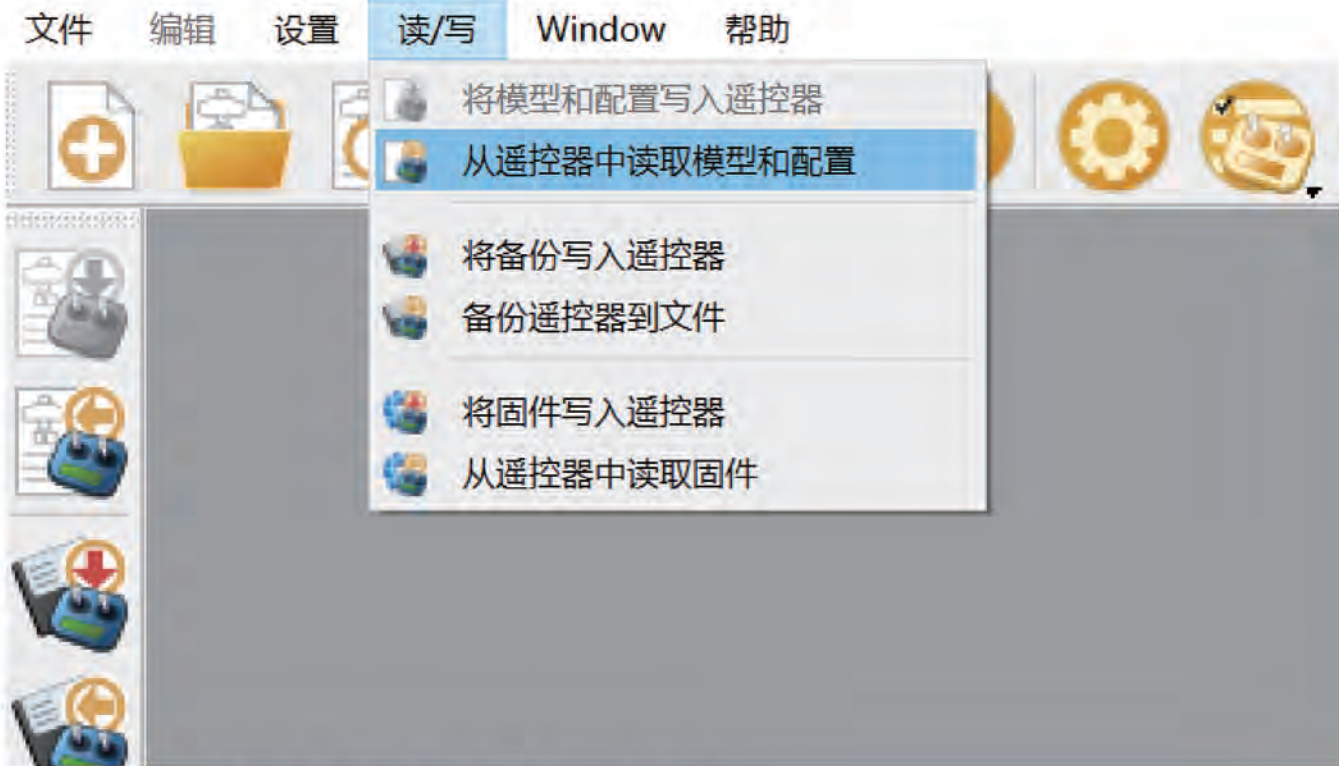
Click Save to start backing up the firmware.

After the backup is complete, you can see the backup file under the path you just selected.
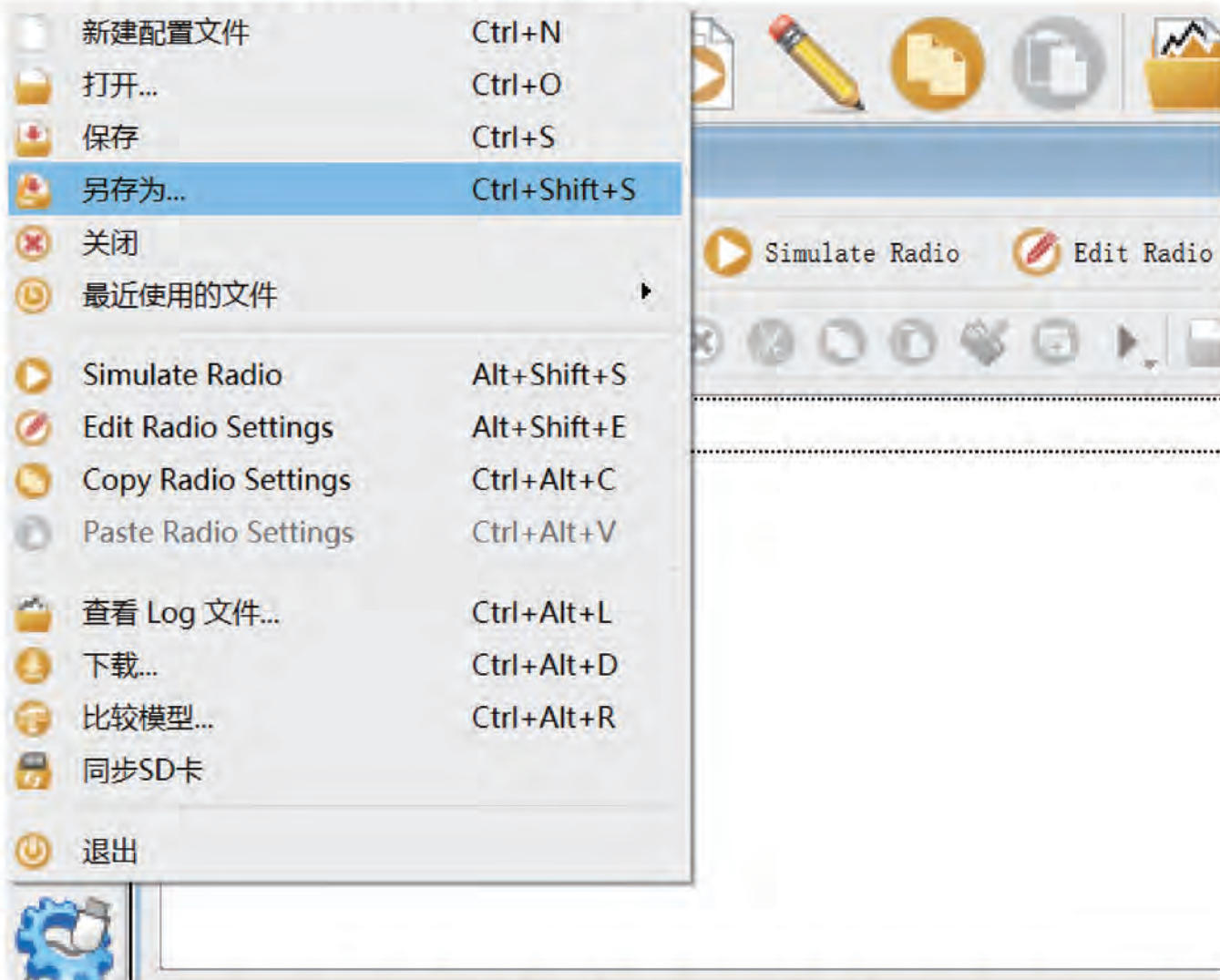
2.3. Backup models and settings

Open the Companion software and set the remote control model to T16 in the setup menu.

Put the remote control into BOOTLOADER mode and connect the computer with a USB cable.

Click the read/write menu and select to read the model and configuration from the remote control (as shown below)

Click on the file and select Save As (as shown below)

新建配置文件	Ctrl+N	
打开...	Ctrl+O	
保存	Ctrl+S	
另存为...	Ctrl+Shift+S	
关闭		
最近使用的文件	▶	
Simulate Radio	Alt+Shift+S	
Edit Radio Settings	Alt+Shift+E	
Copy Radio Settings	Ctrl+Alt+C	
Paste Radio Settings	Ctrl+Alt+V	
查看 Log 文件...	Ctrl+Alt+L	
下载...	Ctrl+Alt+D	
比较模型...	Ctrl+Alt+R	
同步SD卡		
退出		

In the pop-up dialog box, you can choose where to save the backup file and the file name you want to save. Click Save to start the backup (as shown below)
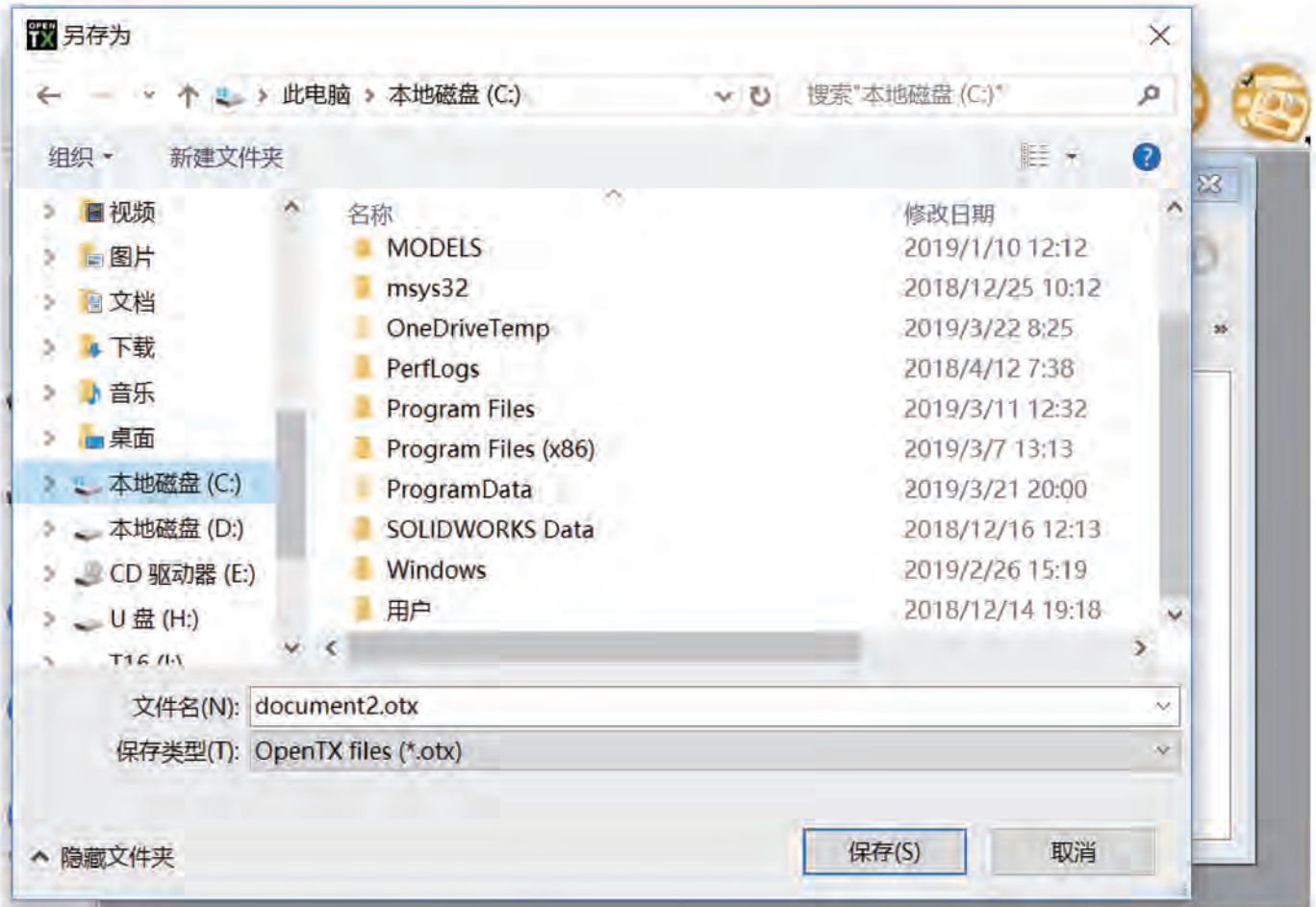
Note: Before disconnecting the USB connection, remember to eject the device and then disconnect it to prevent damage to the contents of the SD card file.

2.4. Upgrade remote firmware using Companion software

Too be added, not currently supported

2.5. Companion Software Introduction

Too be added, not currently supported

2.6. First boot

Press and hold the power button to turn on the machine. Before entering the main interface, the system will check the position of the throttle stick and switch and other starting conditions. If the starting condition is not met, there will be a corresponding error prompt, which requires user operation to clear or press any key to jump. Over.

Throttle warning: This is a warning that the throttle is not at the lowest position when starting. You can put the throttle stick to the lowest position or press any key to skip, or you can close it in the Throttle state option in the MODEL SETUP. Throttle alarm.

Switch Warning: This is a warning that the remote-control switch is not in the default position. (The default setting is that all switches default backwards to the end)

Out of control protection is not set Warning: This is a warning that the remote control's runaway protection is not set.

Alarm Off Warning: A similar warning will appear if the sound mode of the Remote Control Settings page is set to Mute.
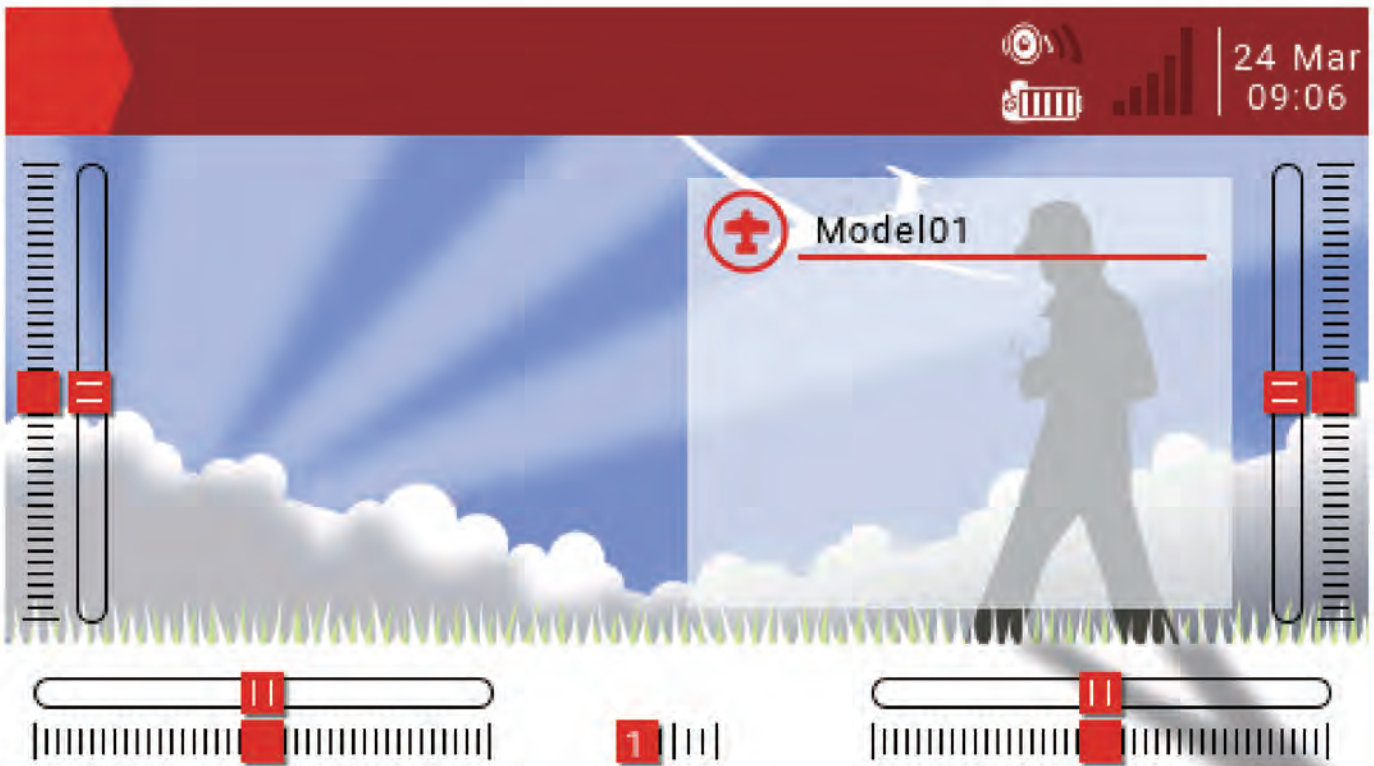

SD card warning: This warning will appear if the version of the SD card file used does not match the firmware version. (Update the firmware and also need to update the SD card content)

2.7. Main interface

The default boot screen is as follows; the user can add the content to be displayed to customize the main interface.

Top menu bar: The default top menu bar displays speaker volume, remote battery level, receiver signal strength (RSSI), and time and date. Users can also add other display information.

Model menu bar: The model menu bar on the right shows the model name and model image currently in use.

Model sub-menu: Press and hold the ENT key to enter the model submenu.
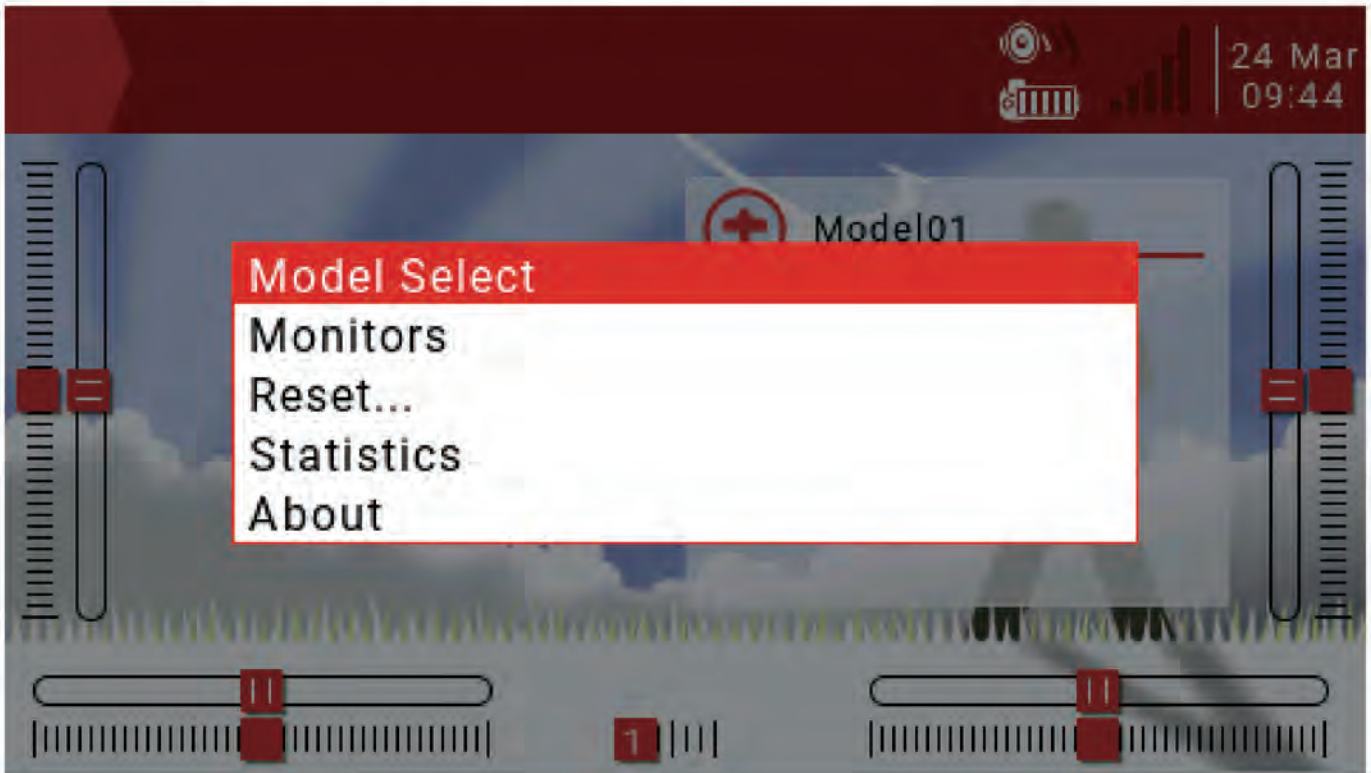
Model Select: The Model Selection menu is used to create new, select to switch, delete andcopy models.

Monitors: Used to display the monitoring interface of channel output, mixed output and logic switch.
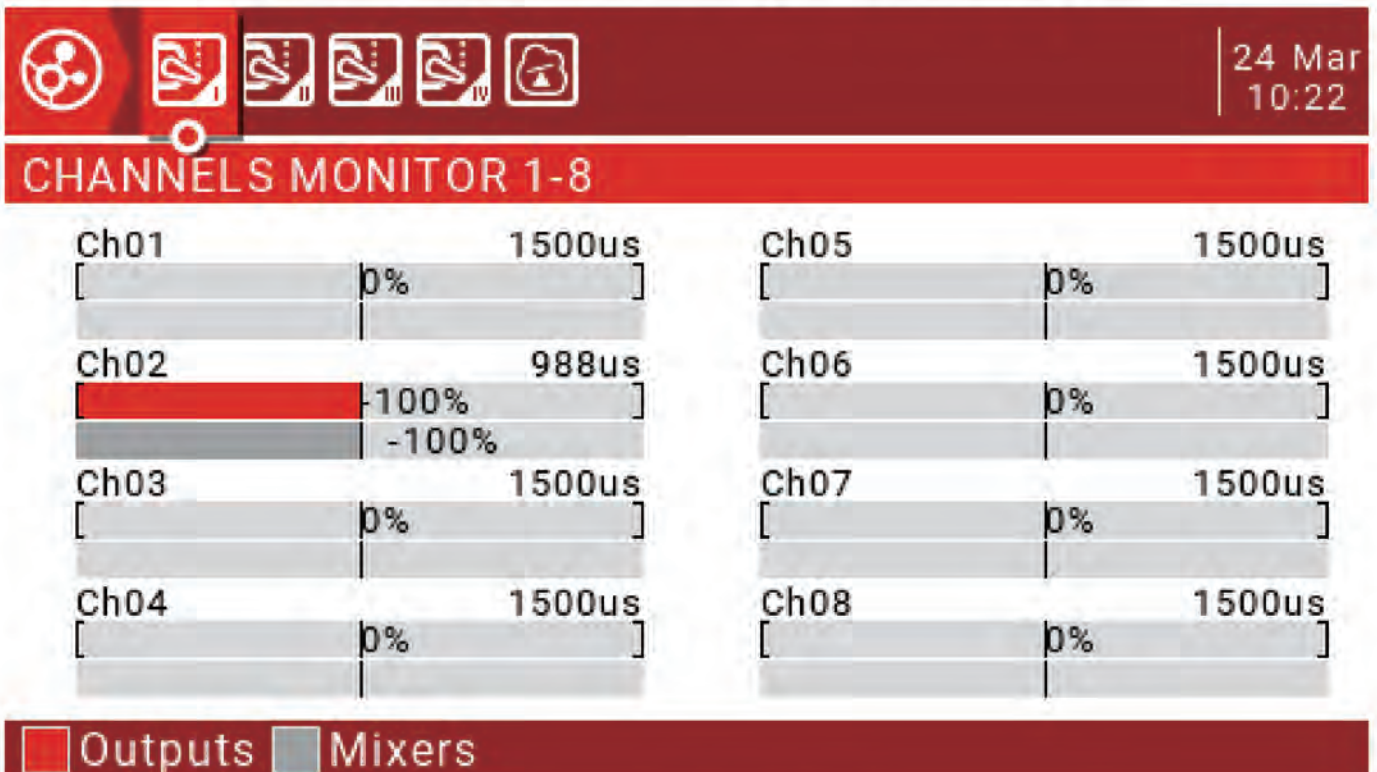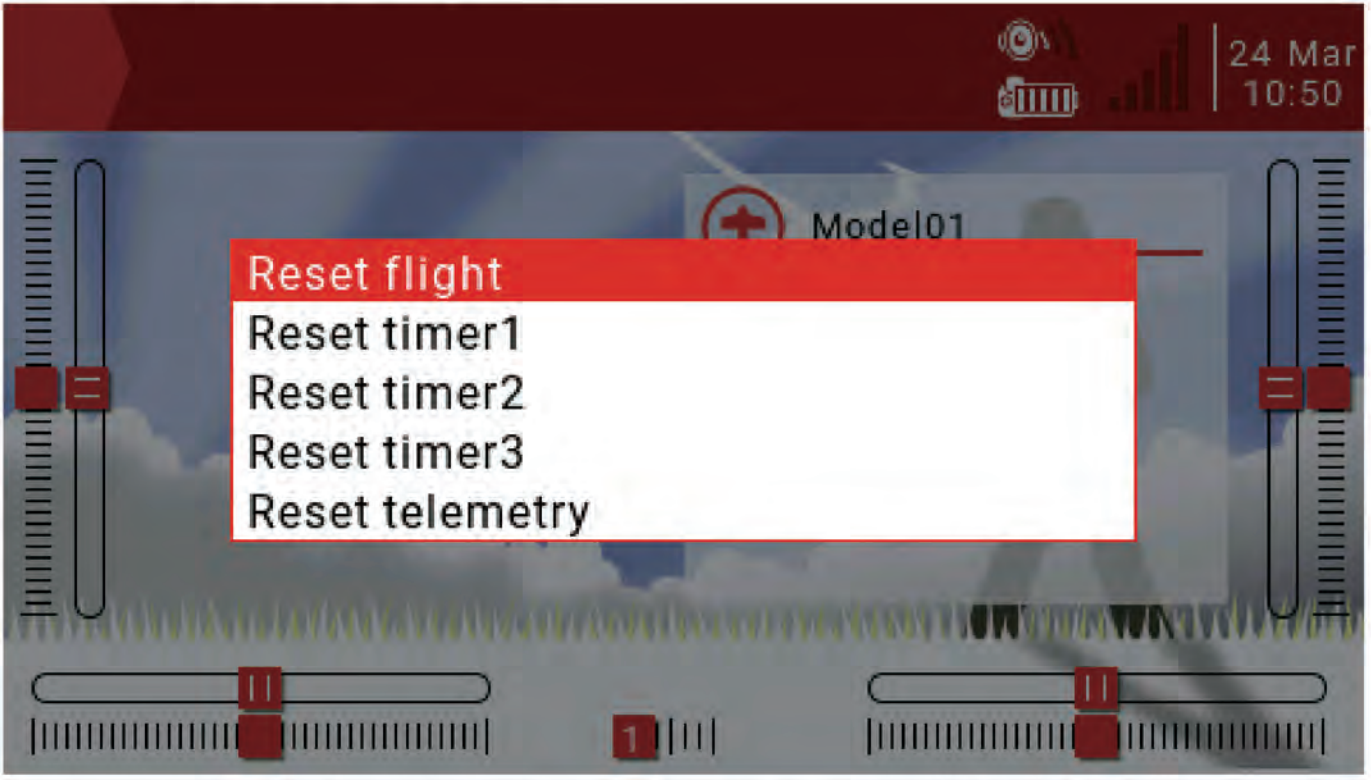

You can use the page up button (PAGE) to switch other interfaces.
The logic switch page can display the status of 64 logic switches.
The default is that the active state is gray and black is active.

LOGICAL SWITCHES MONITOR

L01	L02	L03	L04	L05	L06	L07	L08
L09	L10	L11	L12	L13	L14	L15	L16
L17	L18	L19	L20	L21	L22	L23	L24
L25	L26	L27	L28	L29	L30	L31	L32
L33	L34	L35	L36	L37	L38	L39	L40
L41	L42	L43	L44	L45	L46	L47	L48
L49	L50	L51	L52	L53	L54	L55	L56
L57	L58	L59	L60	L61	L62	L63	L64

Reset...: Used to call up various reset options.

24 Mar
10:50

Model01

Reset flight
Reset timer1
Reset timer2
Reset timer3
Reset telemetry

Reset flight: reset all timers and digital values (if there is an alarm when booting, it will reappear)
Reset timer1, 2, 3: Reset a single timer.
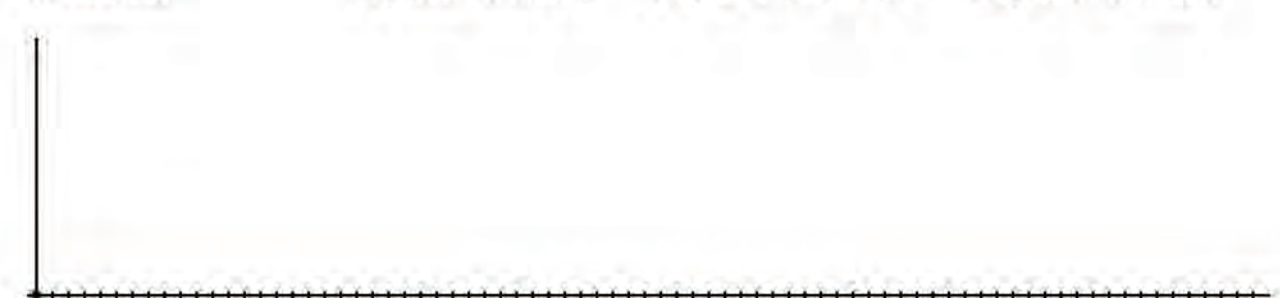**Reset telemetry:** Reset the number of values.

Statistics: Show some statistics.

Statistics			**24 Mar 13:10**
Session	00:00:11	Battery	00:00:27
Throttle	00:00:00	Throttle %	00:00:00
Timers	[1] 00:00:00	[2] 00:00:00	[3] 00:00:00

[ENTER] to reset

This page displays flight statistics and throttle usage charts.

Session: Current session time.

Battery: Time since the last charge.

Throttle, Throttle%: Throttle statistics, Throttle% set the time to run according to the throttle setting. The graph shows the value of the throttle channel as a function of time.

Timers1, 2, 3: Timer statistics.

Press and hold the ENT key to reset this page and press the PAGE key to turn the page.

			24 Mar 13:31
Debug			
Free Mem	1000b		
Tmix max	2.61ms		
Free Stack	[Menus] 0	[Mix] 0	[Audio] 0
SD cache hits	0.0%		
Lua duration	10ms		
Lua interval	80ms		
Lua memory	[S] 2521	[W] 38538	[B] 0
Tlm RX Errs	0		

[ENTER] to reset

This page shows system debugging information, primarily for developers and debugging lua scripts.

Analogs

01:	0000	0	02:	0000	0
03:	FC00	-100	04:	0000	0
05:	0000	0	06:	0332	-20
07:	FE17	-47	08:	0000	0
09:	0000	0	10:	0571	
11:	0000	0	12:	0000	0

This page shows the raw data readings from the radio analog input device, with raw data on the left and -100 to 100 values on the right side of the analog input.

The TELE key function is used to set user interface options, including top bar settings and main view screen layouts, which are very flexible due to the use of widgets.

User Interface:

User interface options allow selection of themes as well as custom foreground and background colors. This page also applies to the top bar settings. The top bar is displayed at the top of the main view, and the right side includes status indicators for sound, battery and RSSI levels, as well as time and date.

Main view:

Up to 5 main views can be defined to display various widgets that can display images, radio information and all telemetry. Five different layout options can be selected between fullscreen or up to 8 widget areas.

Main view settings:

Press and hold the TELE button to enter the telemetry and user interface settings page.

Main view 1

Layout

Setup widgets

Top bar ■
Flight mode ■
Sliders ■
Trims ■

Layout:

There are 2 medium-sized widget areas on the left side of the default layout and 1 large area on the right side. The active layout is highlighted in white. There are 5 options, from 1 large area to 8 small areas. Press the ENT key to enter the edit mode (the icon changes from the currently selected white to red), then use the scroll wheel to select the layout option (or use the [TELE] and [SYS] buttons) to confirm the selection by pressing the ENT key. Press the RTN button to exit the edit mode.

Setup widgets:

Once you have selected the main view layout, you can set up the small window next. Scroll down to "Setup widgets" and press ENT to enter edit mode.
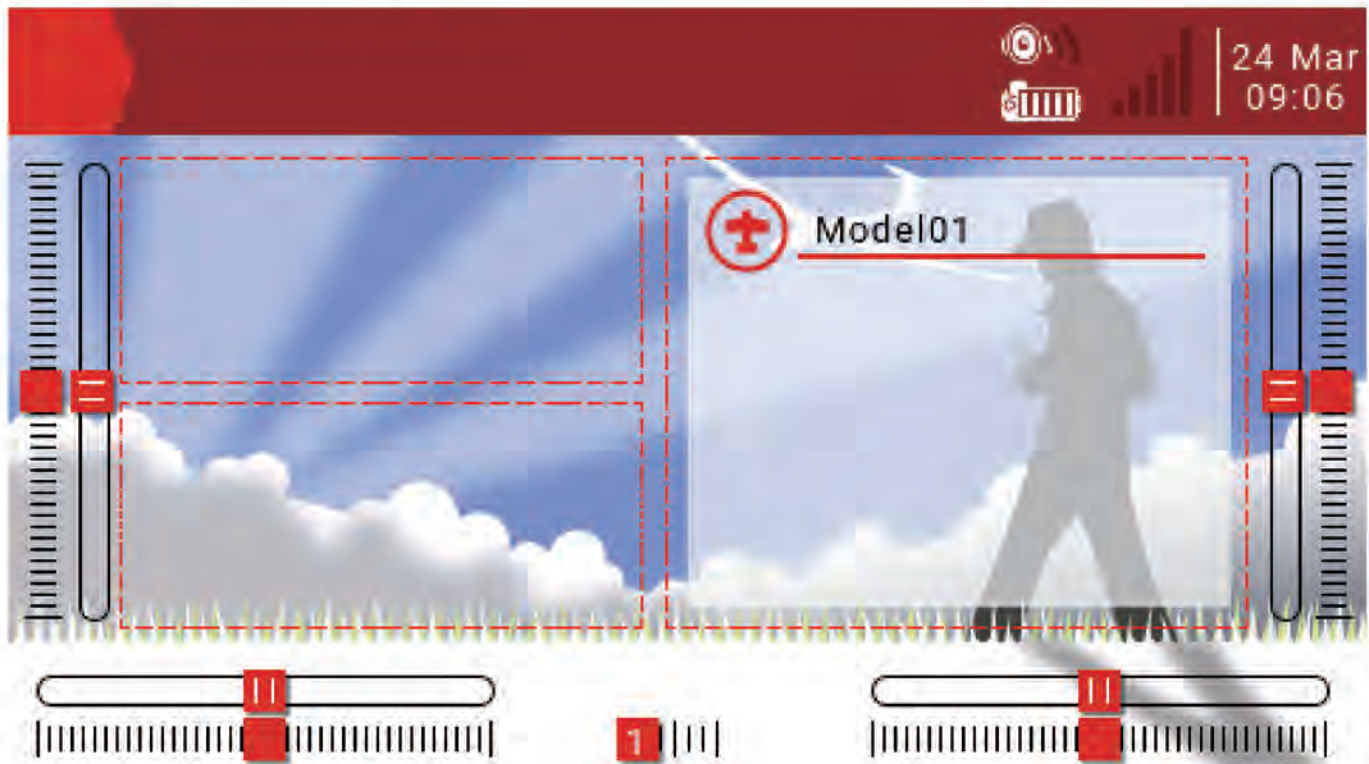
Use the scroll wheel to select the area and press the ENT key. A list of available widgets will pop up and a scroll arrow will appear on the right. Scroll through the options until you find the part you want, then press the ENT key to enter edit mode.

Standard widget:

Outputs: Displays multiple channel outputs.

First channel: Select the first channel number to display.

Fill Background: If selected, the background fill color will be used.

BG Color: Sets the RGB value of the background color.

Value: Displays the value of the source.

Source: Select the source to display.

Color: Sets the RGB value of the text.

Shadow: Add a shadow to the text.

Model Bmp: Displays the model image set in the Model Setup page.

Text: Displays the specified text in the widget.

Text: The text to display.

Color: Sets the RGB value of the text.

Size: Determine the size of the text, from Standard, Tiny, Small, Mid to Double.

Shadow: Add a shadow to the text.

Gauge: The bar shows the selected source.

Source: Press and hold the ENT key to enter the submenu for selecting the input source by category. Scroll up/down to the desired category and press ENT, it willreturn to the widget settings page with the cursor on the first item in the selected category. Then you can scroll up/down from there and press ENT to select the source.

Min, Max: The range allowed to be set.

Color: Allows custom colors.

Timer: Displays the timer value.

Timer1/2/3.

Batt Check: Displays battery parameters.

Sensor: Select the battery sensor.

Color: Sets the RGB value of the text.

Shadow: Add a shadow to the text.

Counter: Display a counter.

Option 1: Select Enable Source.

Option 2: Select the XXXX source.

Option 3: Select the RGB value of the text.

Shadow: Add a shadow to the text.

Edit widget:

Once the widget is created, it can be edited using the widget edit menu as follows:

Press the TELE button on the main interface and select Setup widgets to enter the settings interface. Select the widget you want to edit and press the ENT key. If the widget area is empty, the widget selection menu pops up. If the widget already exists, the widget edit menu pops up. Press and hold the ENT key to bring up the edit submenu.
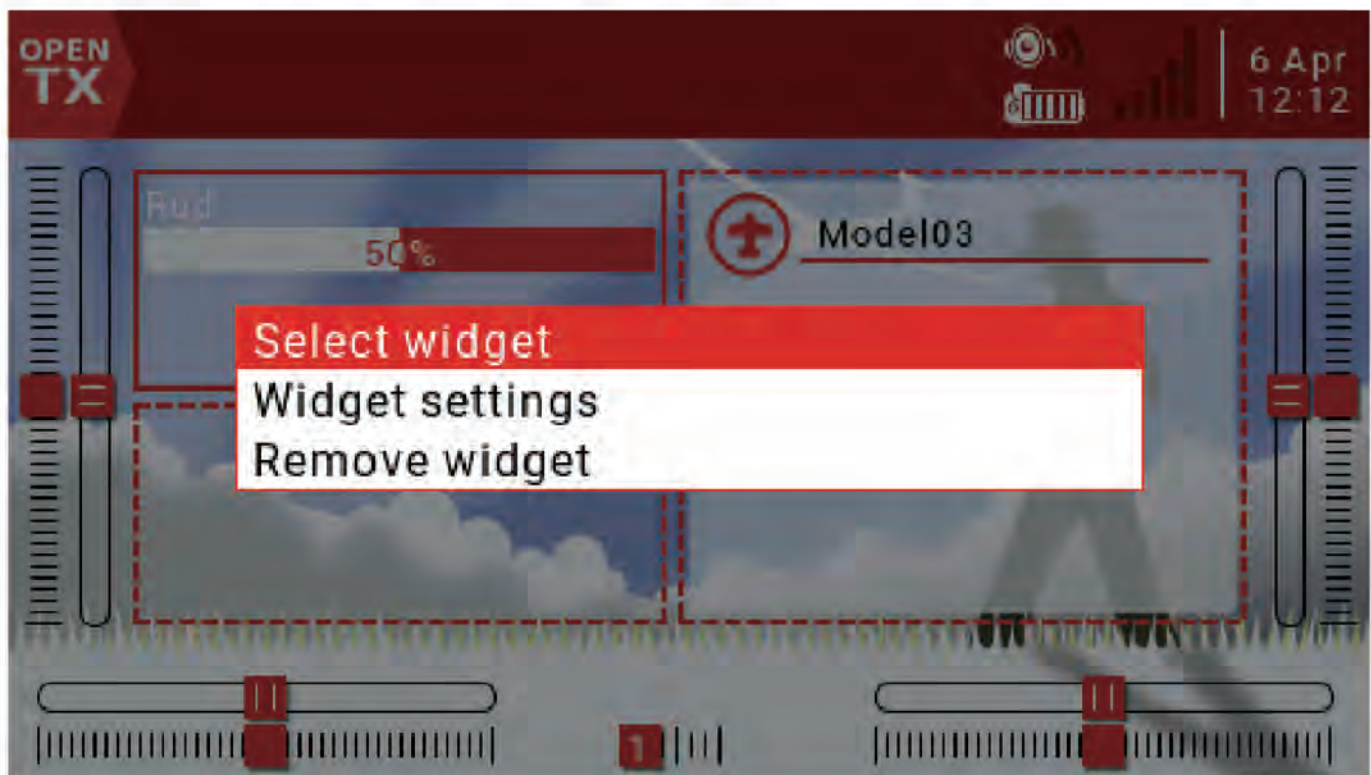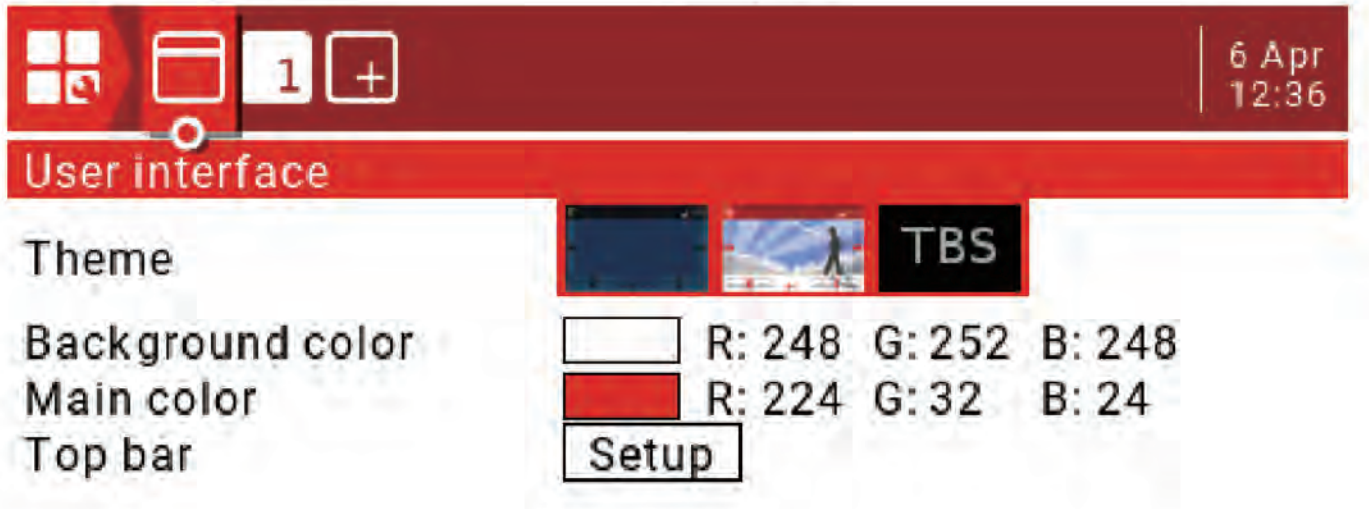

Add another main view:

Up to 5 main views can be defined. Press PAGE to select Add.

Add main view

按 PAGE 键进入 User Interface 设置页面。

User interface

|		
Theme		
Background color	R: 248 G: 252 B: 248	
Main color	R: 224 G: 32 B: 24	
Top bar	Setup	

Theme: theme selection.

Background color: Sets the RGB value of the background color. The default is R:248, G:252,B:248.

**Main color:** Sets the RGB value of the foreground color. The default is R:224, G:32,:B:24.

Top Bar: There are 4 small areas that can be used to add widgets to the Top Bar. Select Setup and press the ENT key to enter the settings.
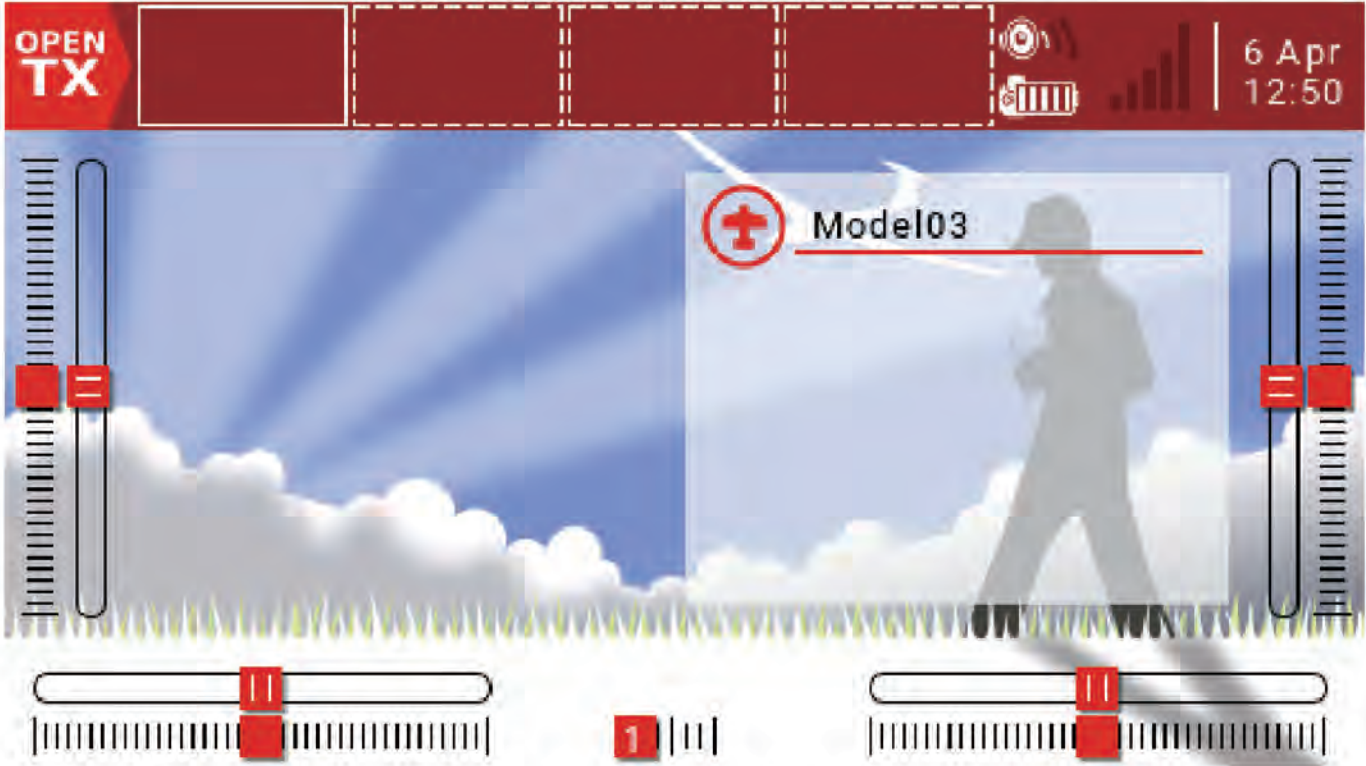
Press the ENT key to enter the setting and use the scroll wheel to select the part to be set.

2.8. RADIO SETUP

The System Setup menu is used to configure the remote hardware section and set global features for all models.
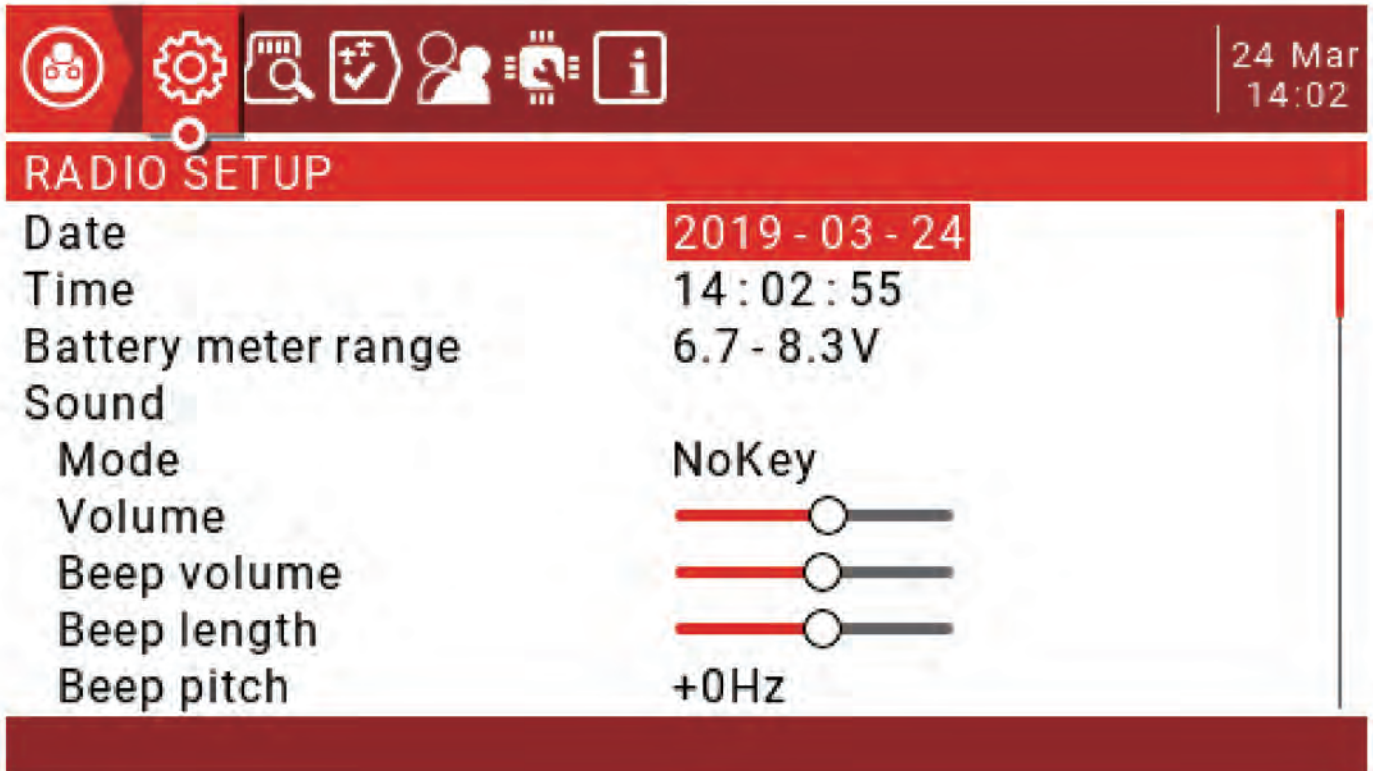
RADIO SETUP: The remote control settings page is used to configure settings common to all models. Press and hold the SYS button to enter.

Date/Time: The date and time of the remote.

Battery meter range: The battery voltage range. If the range is set incorrectly, it will affect the display of the battery icon on the main interface.

Sound Mode:

All: A beep will sound and the button will sound.

No Key: Beep, no sound when the button is pressed.

Alarm: A beep will only sound when an alarm occurs, such as a battery voltage alarm.

Quiet: Silent mode, no alarm sound will be emitted (set this mode, there will be an alarm off warning every time you turn it on)

Volume: Master volume.

Beep volume: The amount of sound.

Beep length: The duration of the beep.

Beep pitch: beep sound tone, range 0-300Hz.

Wav volume: The volume of the Wav file.

Background Volume: The volume of the background music.

Variometer:

Volume:

Pitch at zero:

Pitch at max:

Repeat at zero:

Haptic: Vibration settings.

Mode: Similar to the alarm sound setting.

Length: Similar to the alarm sound setting.

Strength: Set the amplitude of the vibration.

Alarms:

Battery low: Battery alarm voltage.

Inactivity: No action alarm for a long time. When set to 0, the alarm is turned off.

Sound off: Check to turn off the sound.

Check RSSI on Shutdown: Check to enable this alarm, which will be triggered if the remote is turned off without the aircraft being powered off.

Backlight Mode:

ON: The backlight is always on.

Both: The backlight will illuminate when the remote control is in operation.

Controls: The backlight will illuminate when the remote control is in operation, but the button will not light.

Keys: The backlight will illuminate when any key is pressed.

OFF: The backlight will not light when the remote control is operating.

Duration: Backlight duration.

ON brightness: Controls the brightness when the display is turned on.

OFF brightness: Controls the brightness when the display is off.

Alarm: The backlight flashes when the alarm is activated.

GPS:

Time zone: Adjust the time according to UTC, which can be set between -12 and +12.

Adjust RTC: If enabled, the remote time will synchronize the GPS time on the model by post back.

Coordinate format: coordinate format (DMS= Degrees, Minutes, Seconds=degrees, minutes, seconds)

Country code: If you live in the US, Europe or Japan, you must select your country to ensure that the remote control meets the requirements of your region.

Voice language: The language of the alarm voice.

Units: The number of values will be displayed in metric or imperial format depending on this setting.

FAI Mode: Disables all digital display except RSSI and RxBt to comply with the game regulations (requires Companion software check function).

Play delay: This delay is the delay that does not report the midpoint of the switch when the midpoint of the 3-segment switch is reached. The default value is 150ms.

USB Mode: You can set the default mode for plugging in USB. There are Joystick and Mass Storage options. If you set it to "Ask", you will have a pop-up menu to select the mode to usewhen you plug in the USB.

Default Channel Order: Sets the order of 4 basic channels (the new model takes effect after the setting is completed). The default is TAER (Spektrum/JR channel order), and AETR is the channel order of Futa ba/Hitec.

Mode: Set the remote joystick mode (Mode 1 Japanese hand, Mode 2 American hand)

2.9. SD Card

This page has access to SD Card content.
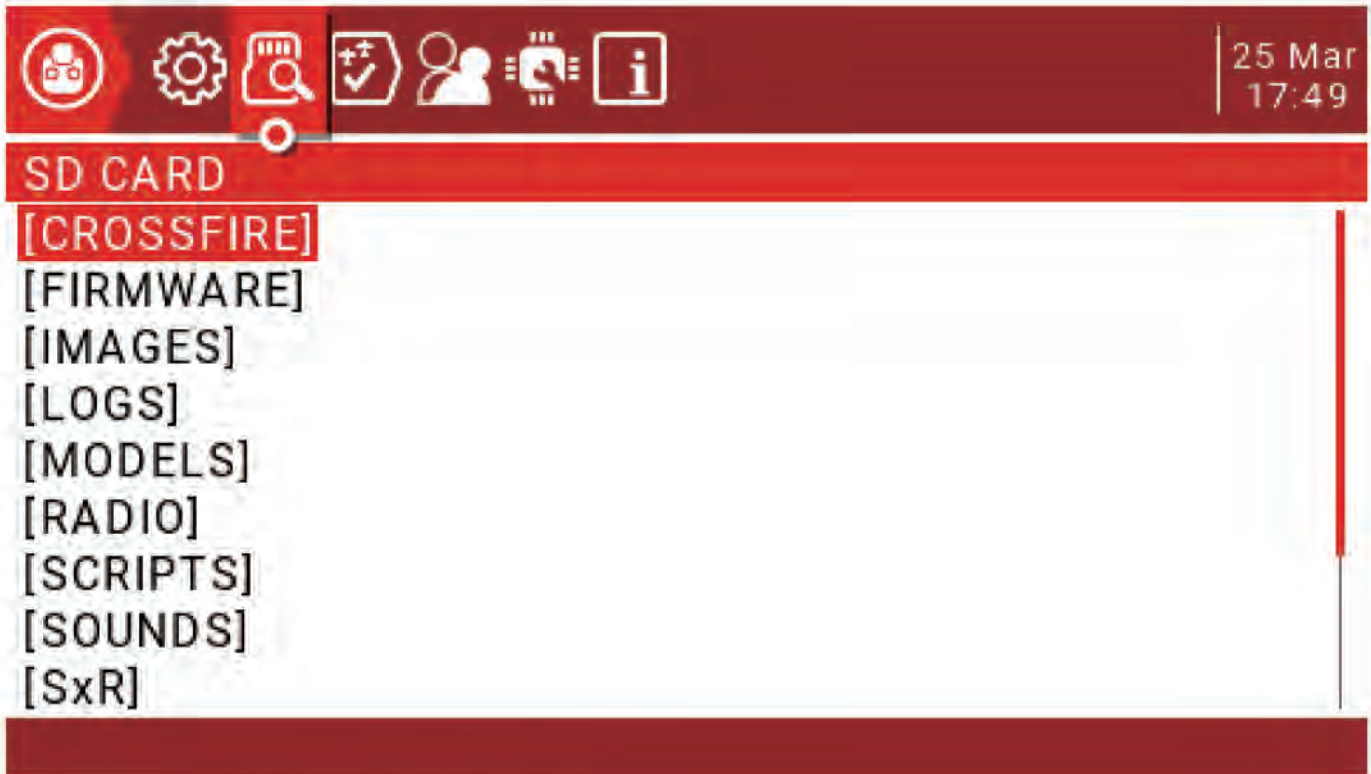
CROSSFIRE: LUA script for Black Sheep tuner.

FIRMWARE: Remote controller firmware upgrade directory (downloaded remote controller firmware is added to this folder to upgrade)

IMAGES: Model image folder.

LOGS: Log folder.

MODELS: This folder contains model information.

RADIO:

SCRIPTS: lua script folder.

SOUNDS: Voice folder.

SxR: FrskySxR series receiver setup script.

THEMES: Remote control interface theme folder.

**WIDGETS:** Some gadget scripts.

3.0. Global Functions

The global functions GF1 to GF64 allow you to define standardized functions available for all modes, such as specific switches, potentiometers, sliders or settings, which avoids having to set the same function on each model, model-specific functions in "model settings (MODEL SETUP)) in the "SPECIAL FUNCTIONS" page of the section.

The following figure shows the system volume display using the right slider (RS).
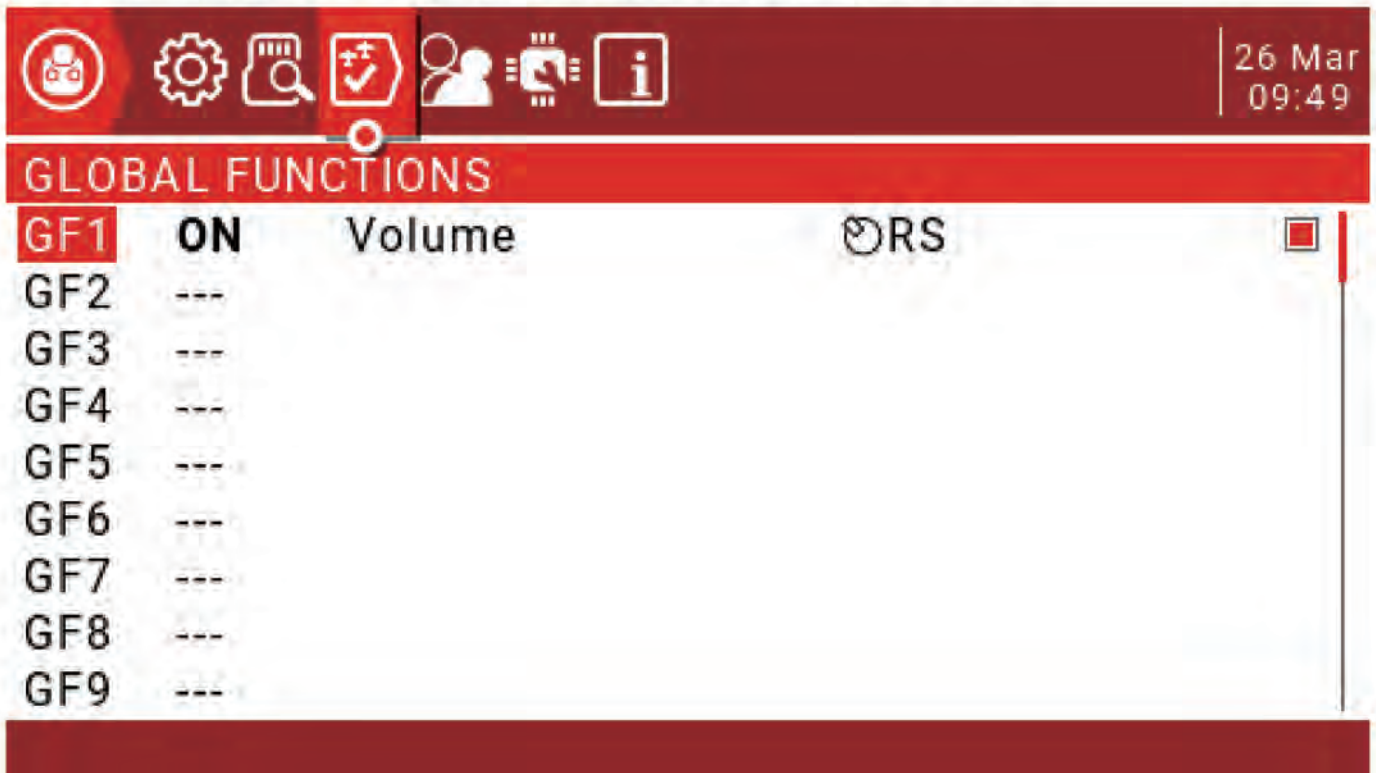
Source: The source determines the content of the special function enabled (short press the ENT key and then long press the selection source)
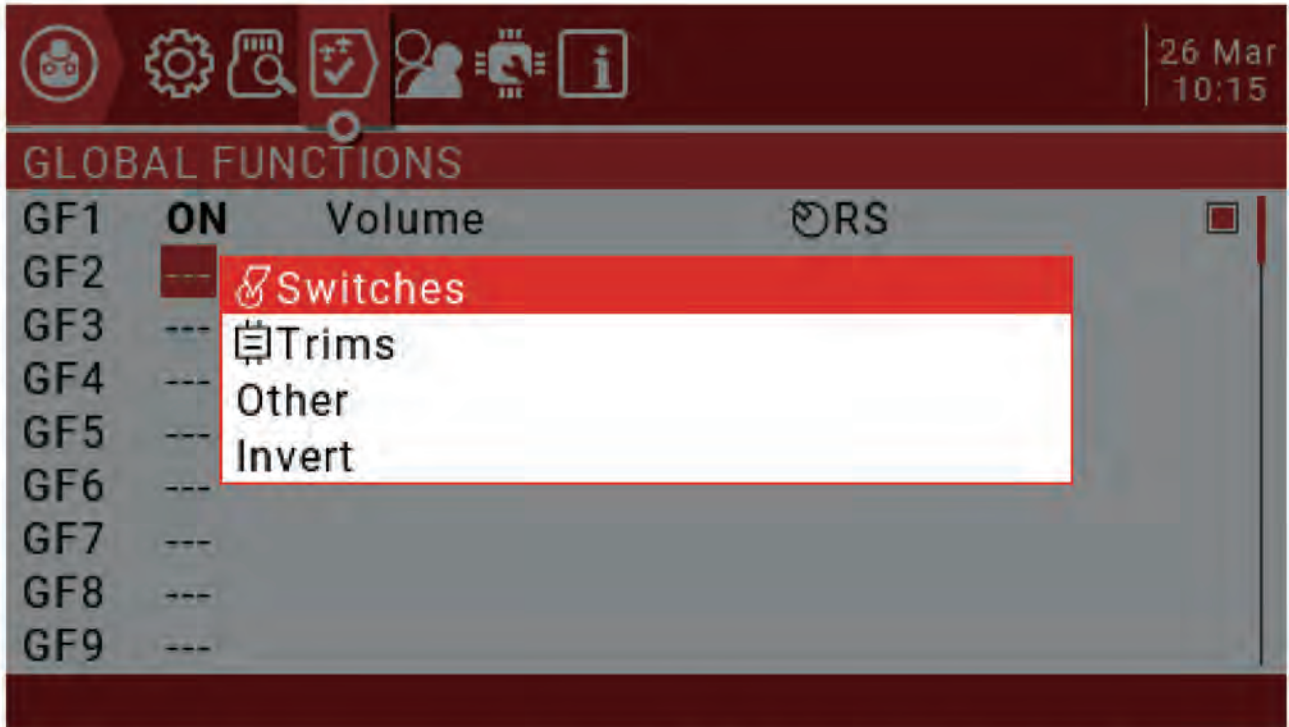
Use the scroll wheel to select up and down, then press the ENT key to confirm, then select the source to be set and press the ENT key to confirm (the front with the "!" symbol is reversed, such as SA and !SA, where !SA is the reverse SA)

Next select the function in the list of available functions (some features have a second parameter setting available)
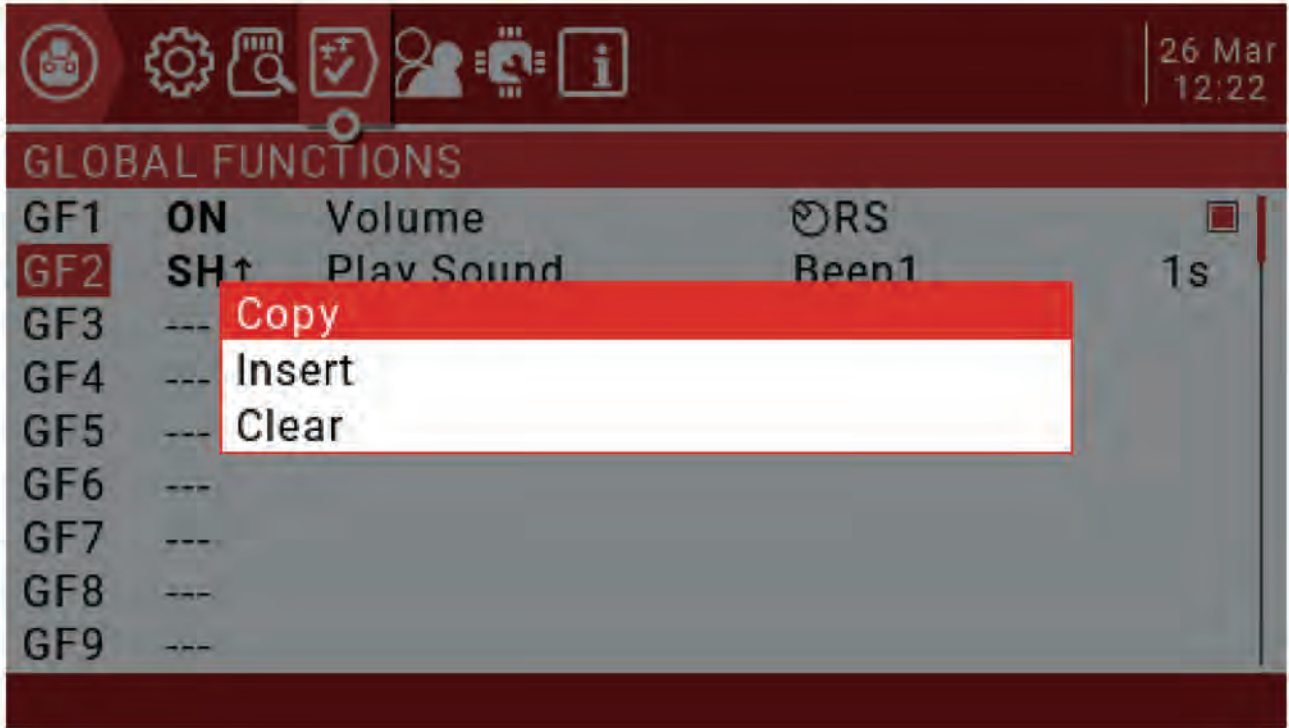
!1X: Play this function once (do not play when booting)

1X: Play this function once

1s-60s: Set the interval to repeat this function.

If a check box is displayed at the end, you can simply disable the feature by un-checking the box.

Press and hold the ENT key on the global function you have defined, you can display an edit menu to copy, insert, and clear the function.

3.1. Trainer

This page is used to configure the master remote control settings for the coach mode, which are activated by setting the Trainer Mode to Master in the MODEL SETUP page.

The mode can be set for 4 basic channels.

OFF: Channels that do not use the coach mode.

+=: Select the add mode, the coach and the student can operate the channel.

:=: Set the mode to Replace so the student has full control. This is the normal usage mode.

Usually set to 100%, can be used to scale the input of the slave, the latter CH is the channel map.

These settings are the global settings available for each model. For each model that wants to use the coaching function, you must specify a switch in the Special Functions page.

In the Model Setup page, set the Trainer Mode to Master / Jack.

In the "Special Functions" page, add a special function as shown below.

SPECIAL FUNCTIONS

SF1	SA↓	Trainer ---	☐
SF2	---		
SF3	---		
SF4	---		
SF5	---		
SF6	---		
SF7	---		
SF8	---		
SF9	---		

Set an enable switch, such as SA on the graph (the arrow represents the enabled switch position)

Select Trainer and set the parameter to "---".

Finally check to enable this feature.

Add the following settings to the slave.

In the Model Setup page, set the Trainer Mode to Slave / Jack.

Turn off the internal and external tuner modules.

Before using the coaching function, it is recommended to test whether the coaching function is available on the ground and the control direction is correct. Check that the Cal value at the bottom of the screen is not close to 100%, and you can adjust it up and down by the Multiplier value.

TRAINER

Rud	:=	100%	CH1	
Ele	:=	100%	CH2	
Thr	:=	100%	CH3	
Ail	:=	100%	CH4	
Multiplier	1.0			
Cal	0.0	0.0	0.0	0.0

Then the slave will centre the joystick, select Cal and press the ENT key to calibrate the input. After calibration, the 4 values should be close to 0.0.

3.2. Hardware

This page lists the hardware physical input device types. A short three-character name can be given for identification on the setup page. The calibration of the joystick and knob is also on this page.100%, and you can adjust it up and down by the Multiplier value.

Calibration: Joystick calibration interface..

Press the ENT key to start the calibration process, then center all the joysticks and potentiometers (physical neutral point) by pressing the ENT key, move the potentiometer and joystick to the maximum and then press the ENT key to end the calibration. (The 6-speed switch also needs to be pressed from 1 to 6 in order.) Note: Do not use too much force to push during the joystick calibration, which will affect the maximum and minimum values..

Sticks: 4 basic channel control joysticks.

Pots: S1, 6P, S2, they can be configured to:

None.

Pot.

Multipos Switch.

Pot with detent.

Max Bauds: The maximum baud rate of the external module can be switched between 115200 and 400000.

Bluetooth: Can be set to Bluetooth Telemetry or Bluetooth Trainer mode, the default is off.

Name: Enter the name of the Bluetooth connection.

ADC filter: This setting can be used to turn the analog to digital converter's filter on/off.

Battery calibration: If you have a multi-meter, you can enter the measured battery voltage to calibrate the value displayed on the remote.

3.3. Version

This page displays firmware related information. The screen displays the JumperTX version number, the release date and time, and the firmware version number.

3.4. Model Select

The Model Select menu allows you to select an active model and also allows users to create, copy, move or delete models. Selecting the "Create model" option will launch the "New Model Wizard", which will guide the user through the process. Basic control settings, if you choose not to use the wizard, simply press the RTN button to manually set the model. (Because the model is stored on the SD card, there is no limit to the number of models you can set)
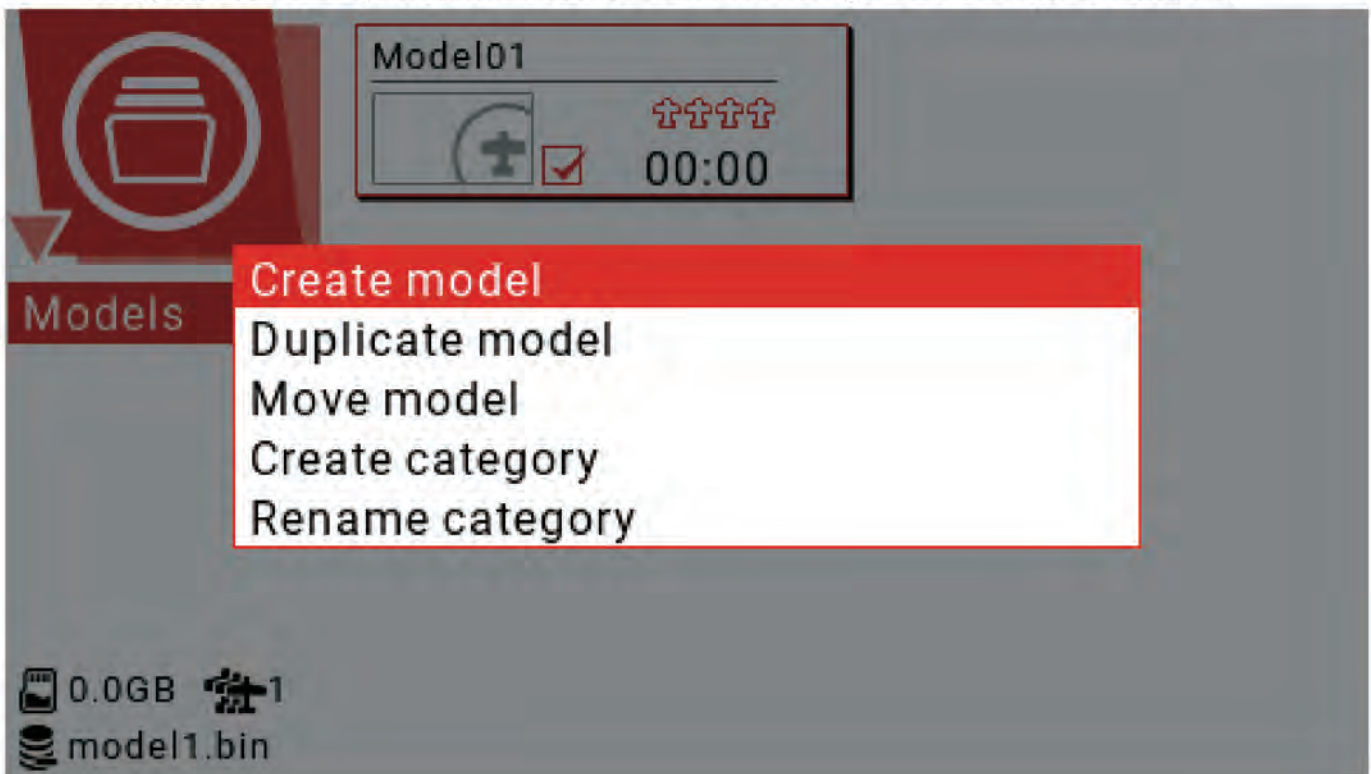
Model Select
Monitors
Reset...
Statistics
About
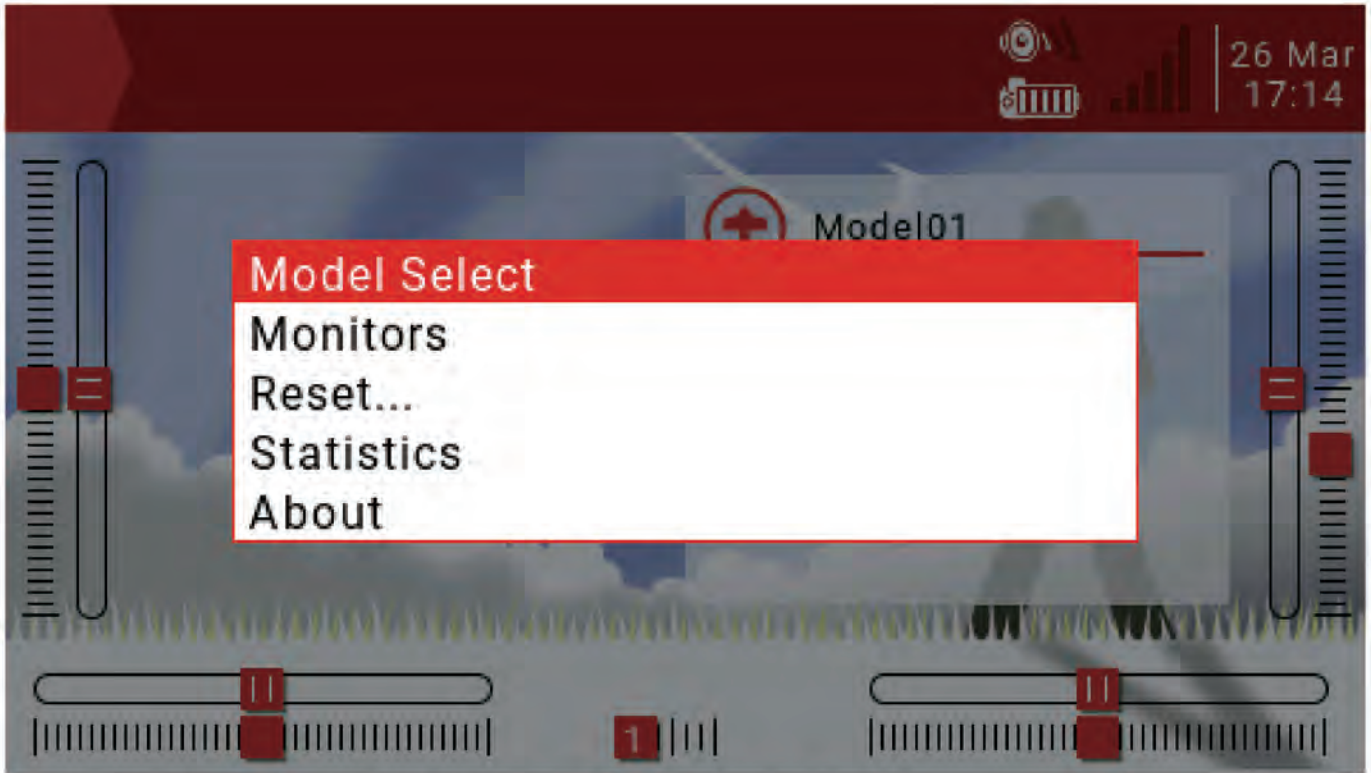
Boot the main interface Long press the ENT key to select the Model Select menu, then press the ENT key (as shown below)
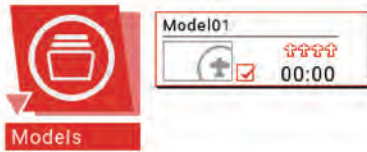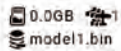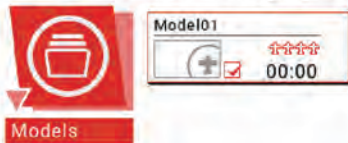

Long press the ENT key to open the new model and other management menus (as shown below)

Model01

Create model
Duplicate model
Move model
Create category
Rename category

0.0GB 1
model1.bin

Select "Rename" category and press ENT to modify the category name (as shown below)

To edit the category name, use the scroll wheel to select alphanumeric characters and characters, press the ENT key to select, while the cursor is selected to move to the next letter, long press the ENT key to switch between upper and lower case, short press the SYS button to move the cursor to the left, short press TELE Move the cursor to the right and press RTN to exit the edit mode.

To add more categories, select Create category to create a new category.

Select Create model to create a new model and enter the model wizard.
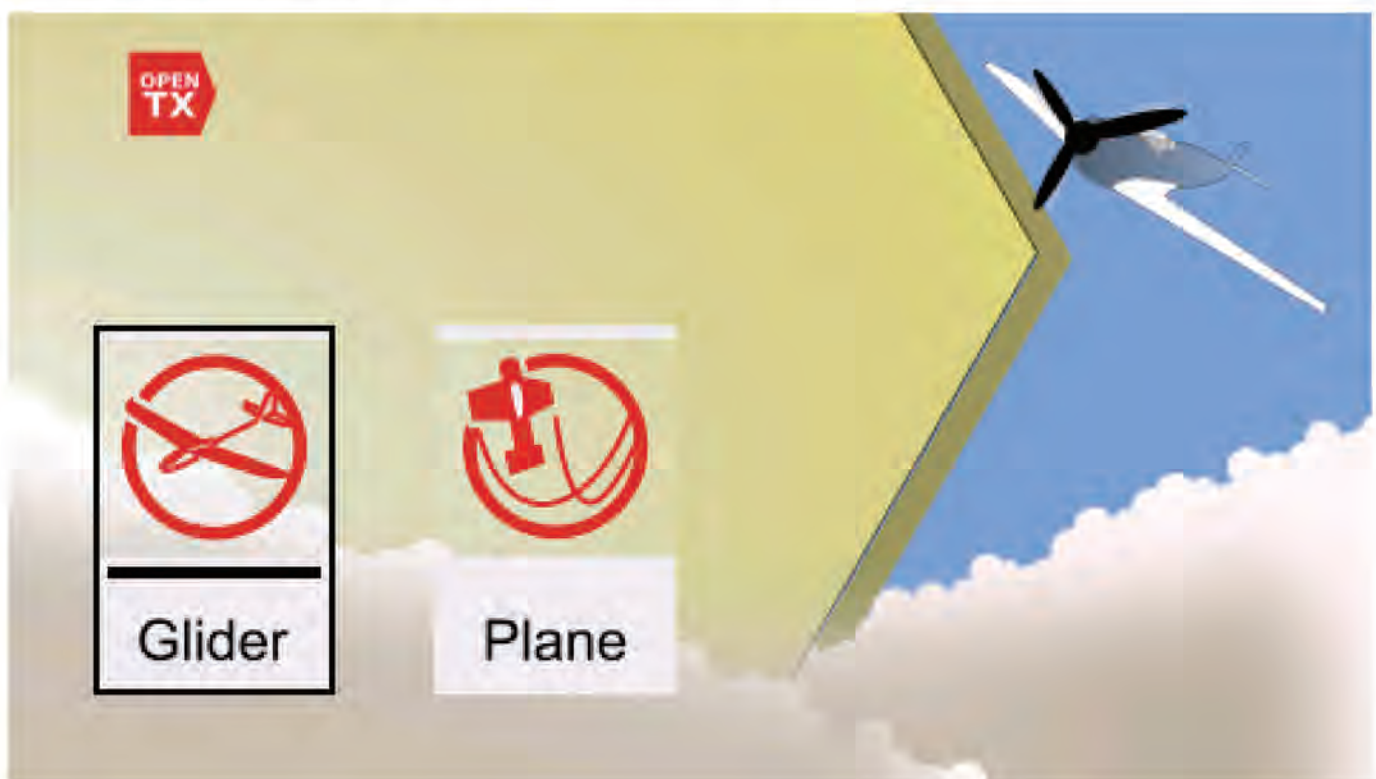
With glider and fixed-wing aircraft options, the wizard will ask you questions aboutmodel configuration and make basic settings for you.

The final step of the wizard confirms the channel assignment of the model. If youprefer to set it manually, press RTN to exit the wizard.
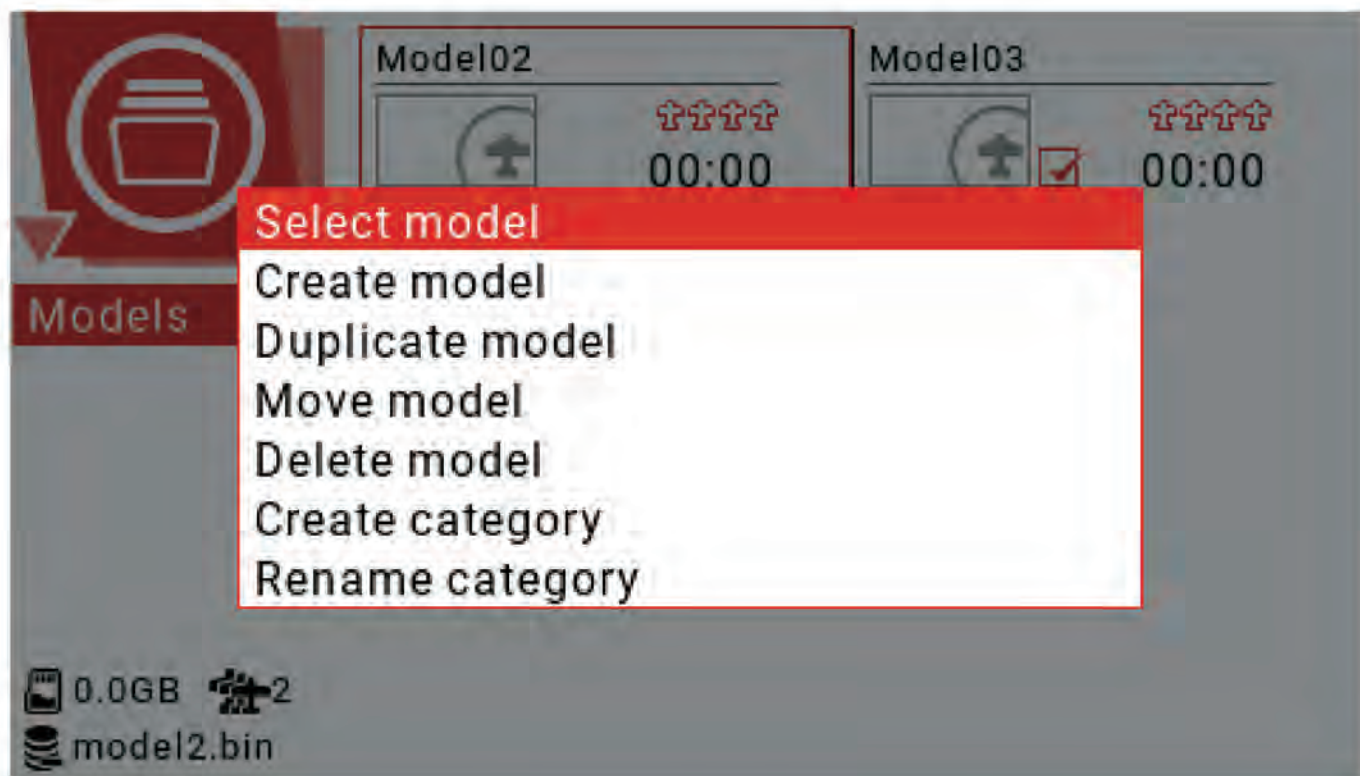
Use the scroll wheel to select the model you want to use, long press the ENT key to select Select model to switch the model.

3.5. Model Setup

The model settings cover all the initial settings required.

The Model Setup Model Setup page contains the following features:

1. Define the model name.

2. Set the model picture.

3. Set 3 timers.

4. Enable extended servo limit.

5. Enable extended fine tuning.

6. Set the fine adjustment step accuracy.

7. Open the throttle reverse.

8. Set the throttle source to trigger the time.

9. Enable throttle adjustment for idle only.

10. Set up pre-flight inspection.

11. Set the display checklist.

12. Enable the center beep on the selected control.

13. Set up the internal RF module.

14. Set up the external RF module.

15. Set the coach mode.

Press and hold the MDL button to enter the Model Setup page.
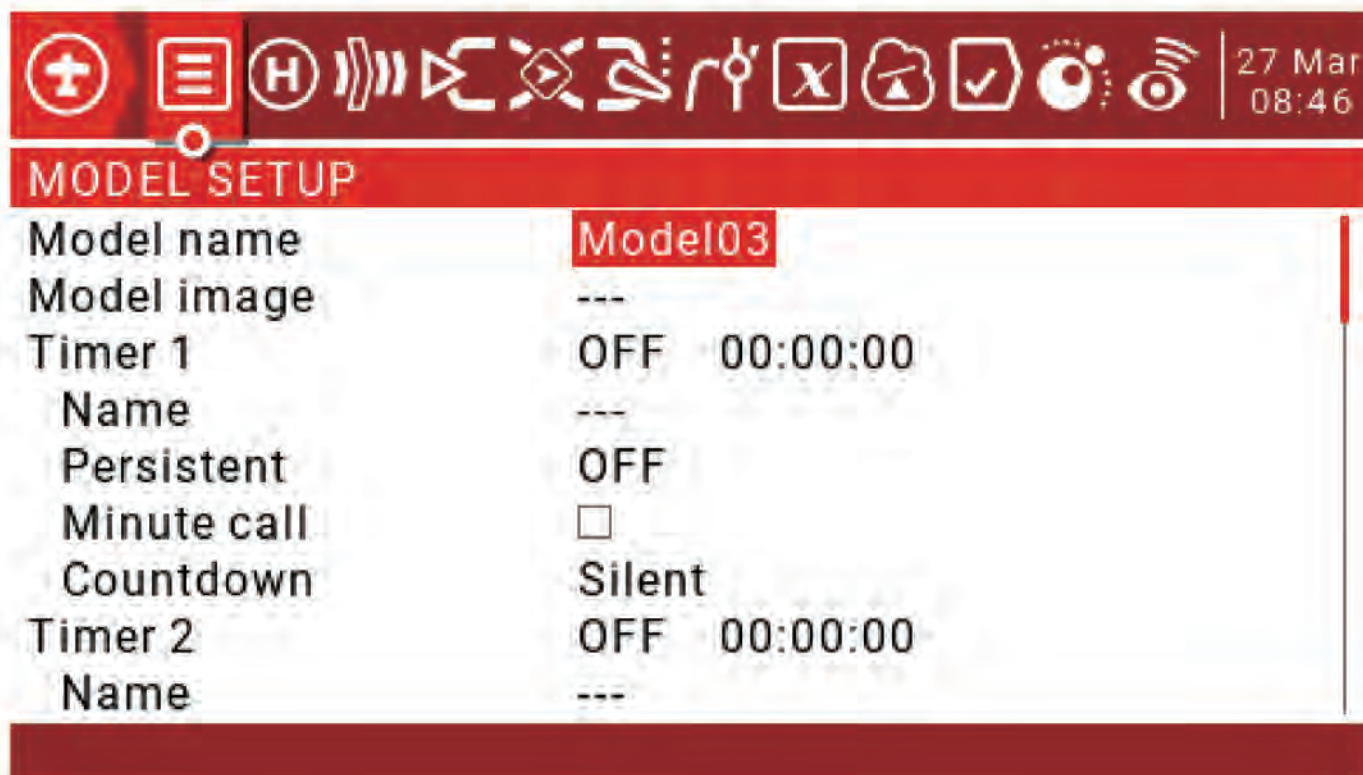
Model name: use the scroll wheel to select letters or numbers, long press the ENT key to switch between upper and lower case, short press the ENT key to set the next one, short press the SYS key to move the cursor to the left, short press the TELE key to move the cursor to the right, the longest name Up to 15 characters.

Model image: Model icon, model icon file is stored in the SD card IMAGES folder, you can preview these images in the system settings SD card page, the image format is 155*100 RGB JPG or PNG.

Timers: There are 3 timers that can be set to count up or down. If set to 00:00:00, they will start from 0, otherwise they will count down.

Source: Set how to trigger the timer. When set to ON, it will always count. When set to THs, the throttle will start timing. When the throttle is at the lowest, stop timing. Set to THt to push the throttle to start timing. The throttle minimum timing will not stop. Set to TH%. It is based on the throttle percentage, and can also be set to use the switch, joystick or flight mode to trigger.

Name: Set the timer name.

Persistent: Allows the value of the timer to be stored in memory when the remote is shut down or when the model is changed, and reloaded the next time the model is used. If set to Flight, select Reset Flight and the timer will be reset. If it is set to Manual Reset, you need to manually select the corresponding Reset time to reset the timer (for example, Timer 1 is set to Manual Reset, you need to manually select Reset. Time1 to reset the timer)

Minute call: If you check it, you will beep or say every minute for every minute.

Countdown: Can be set to Silent, Beeps, Voice or Haptic. If set to Silent, the timer will remain muted until 0, and a voice prompt will appear as soon as it reaches zero. If set to Beeps, the beep will be prompted when there is 30 seconds left in the countdown (set to 10s, every 10 seconds when the countdown is left, every second will be prompted, when set to 20s, the remaining 20 seconds will start every One second prompt, when set to 30s, it will be prompted every second for the remaining 30 seconds). If set to Voice, the effect is the same as Beeps, except that the beep is replaced with a voice prompt. If set to Haptic, the effect is the same as Beeps, except that the beep is replaced with a vibrating alert.

Extended limits: Check to expand the channel travel to 150%.

Extended trims: Check to expand the fine-tuning range. This option must be used with care because keeping the spinner label too long may add too much fine-tuning to make your model unusable. Reset will reset all fine adjustments (for all flight modes)

Display Trims: Can be set to "No", "Change" or "Yes". If set to "Change", the fine-tuning value will be displayed briefly after changing the fine-tuning and then disappear.

Trim Step: Set the fine adjustment step precision. Set to "Exponential" to indicate that the trimming value is very fine near the neutral point of the channel, and the farther away from the neutral point, the worse the step accuracy.

Throttle Reverse: Check to reverse the throttle.

Throttle Source: Defines the joystick that triggers the THx option, typically set to throttle.

Throttle Trim Idle Only: IC engine mode.

Preflight Checks: A set of security features that take effect when the remote is powered on or when the model is loaded from the model list. Display checklist: If a text file with the same name as the model is placed in the MODELS folder of the SD card, the remote will recognize it as a model check list. If this option is checked, the file will be displayed automatically.

Throttle State: Check to check if the throttle stick is idle. Switch Positions: Defines the position of the switch for remote control check. You can select the settings separately, or you can first switch the switch to the position you want to define, then select all the switches and then press and hold the ENT key to set.

Pots &Sliders: This also applies to analog control. There are 2 modes when enabled. When "Auto" and "Man". are set to "Auto", the potentiometer and slider position will be automatically stored when the remote is turned off or other models are loaded. When set to "Man", you need to press and hold the ENT key on the potentiometer and slider icon to be saved.

Center beep: Set the channel through the neutral point prompt, select the channel to be set and press and hold the ENT key (default gray, indicating no prompt, black means enable, there will be sound and vibration prompt when the corresponding channel passes the neutral point)

Use Global Functions: Check if the global function is used. By default, it is checked when the model is created.

Internal RF:

Mode: The transmission mode of the internal RF module. It must match the type supported by the receiver, otherwise it will not be able to match the frequency.

OFF: Turn off the internal RF module.

D16: For the current 16ch bidirectional full duplex transmission, also known as "X" mode. For "X" series receivers.

D8: Applies to the older 8ch bidirectional mode.

LR12: Applicable to the current 12ch one-way long distance.

Channel Range: Set the channel range. (D16 mode sends data every 9ms, 8 channels at a time, 16 channels need to send once every 18ms, so removing unnecessary channels can reduce the delay)

Receiver No.: Only for the D16/LR12 protocol. By default, this is the model receiver number. It can be changed manually and will not change if you move or copy the model. If the manual setting or copy/move operation causes the receiver of the same number to have 2 or more models, a warning window will pop up. It is up to the user to decide whether or not to modify.

Bind: The remote control enters the frequency mode switch. The wheel selects "Bind" and short presses the ENT key. A menu pops up, allowing you to select the mode used by the receiver and whether to enable the backhaul. (This function requires receiver firmware support. If the firmware does not support it, it will have no effect.) When using two receivers It is useful when redundant or using two receivers to connect more than 8 servos.

Range: The wheel selects "Range" and short presses the "ENT" key to use the built-in tuner remote distance test. A new interface with RSSI values will open to show the quality of the connection. When using the distance test mode, it will reduce the remote control's transmit power and narrow the range. Under ideal conditions, one meter above the ground and 30 meters away will alarm.

Failsafe Mode: Out of control protection settings. (D16/LR12 protocol only)

Hold: Holds the last output value. (For example, 50% throttle is out of control, the receiving opportunity keeps 50% throttle until the signal is restored)

| FAILSAFE Module1		27 Mar 16:07
CH1	0.0	CH9	0.0
CH2	0.0	CH10	0.0
CH3	0.0	CH11	0.0
CH4	0.0	CH12	0.0
CH5	0.0	CH13	0.0
CH6	0.0	CH14	0.0
CH7	0.0	CH15	0.0
CH8	0.0	CH16	0.0

Outputs => Failsafe

Custom: Customize the runaway protection receiver output value. Select Set to enter the runaway protection custom settings page, and you can set the runaway protection value separately for each channel. Scroll to the channel you want to set, press ENT to enter the edit mode, set the value and press the ENT key to save. You can also press and hold the ENT keyto set the HOLD and NONE values.

No Pulses: Turn off the pulse. (For flight control with GPS can automatically return to the flight, it is recommended to use the custom settings to trigger the flight control return mode, instead of the flight control to automatically return to the air after detecting the loss of control)

Receiver: Use the receiver's runaway protection settings.

Note: You must carefully test the selected runaway protection settings for proper operation before taking off.

Antenna selection: Allows selection of two internal antennas or an external antenna and reminds you to ensure that an external antenna is connected when this option is selected.
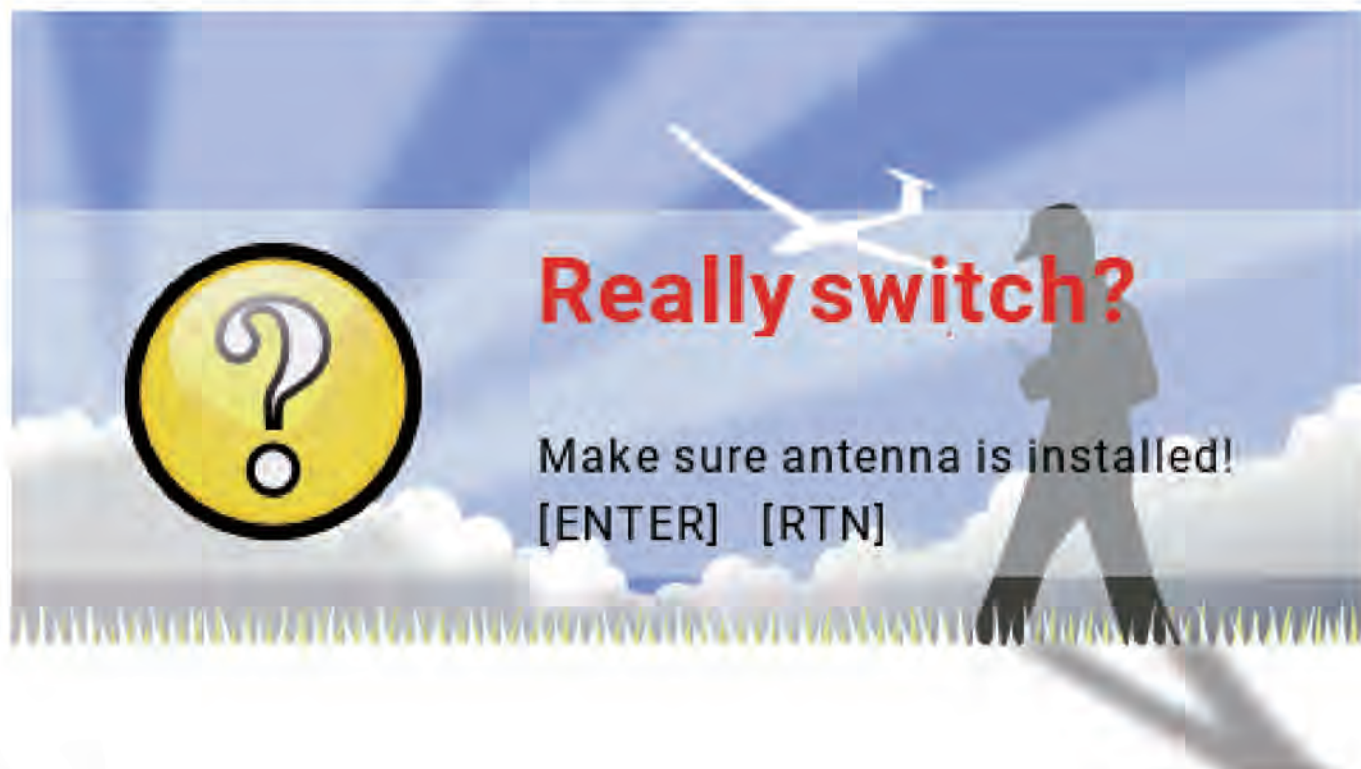
External RF:

    Mode: PPM is used for general purpose tuner modules that use PPM signals.

    PPM Frame: Allows you to set the frame length and pulse length. When the number of channels transmitted changes, the frame length is automatically adjusted to a safe value. Advanced users can still adjust it if necessary.

    XJT: Same operation as the built-in high frequency module.

    DSM2, DSMX and LP45: Horizon tuner module.

    CRSF: TBS Black Sheep Crossfire tuner module.

    MULT: Multi-protocol tuner module.

    Module Status: Displays the current version number of the tuner and some other information.

    Bind on power-up: The remote control is switched on when the power is turned on, and some protocols are optional.

    Low power mode: Some protocol optional features.

    R9M: Frsky 900MHZ tuner module.

    RF Power: Set the R9M module transmit power.

SBUS: Turn on the external tuner SBUS output.

Refresh rate: Can be selected between 6 and 40 milliseconds, the default is 7 milliseconds. Set to normal to normal or set to not inverted.

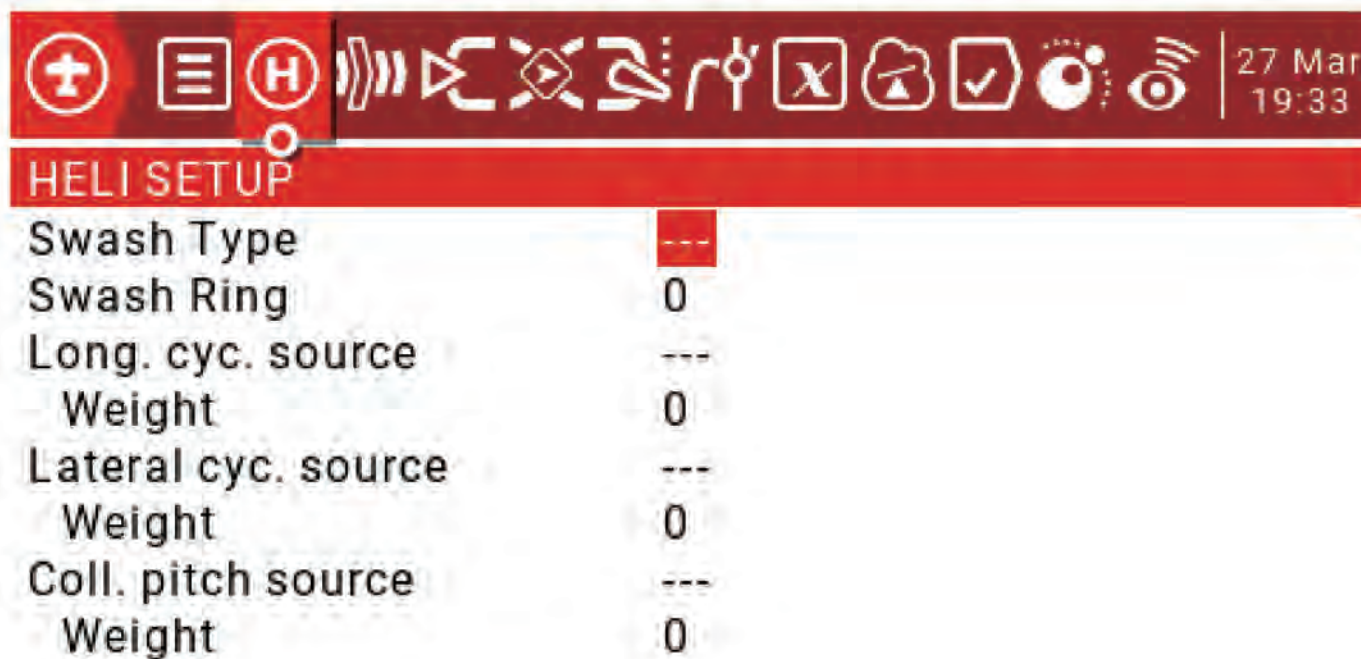Warning: output level is VBAT: Displays the output battery voltage.

Trainer Mode: Set the master-slave mode of the coaching port.

Master/Jack: Master mode, coach.

Slave/Jack: From mode, the student (using the emulator with dongle also sets this option) can set the frame length and pulse length in slave mode. (Set as the extended PPM high frequency module)

3.6. Heli Setup

This page allows you to select the type of swash-plate, set control limits via Swash Ring, and assign CCPM channels (check "noheli" when downloading firmware to omit this page) This section is used to set up CCPM (Cyclic/Collective Pitch Mixing) for helicopters.

The output of the CCPM mixer is CYC1, CYC2 and CYC3, and the servo channel needs to be assigned on the MIXER page.

Swash Type: Swash-plate type selection (90, 120.120X, 140). 120X means that cyc1 is rotated by 90 degrees.

Swash Ring: The value is 0-100.

Longitudinal cyc.source: ELE is usually selected from the Inputs.

Weight: 0-100.