

# **EdgeTX User Manual**

## **Jumper T15**

**Version 2.10.0**

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# 1. Overview

EdgeTX is an open-source firmware running on the T15. Its main purpose is to support more radio functions, thereby developing all the potential of the remote control. The core of EdgeTX firmware is based on modifications of the Er9x firmware system from the Turnigy/Flysky9x™ controllers.

EdgeTX also features USB file management, making it more convenient to manage the remote controller through PC software.

The display of the EdgeTX main interface can be customized as needed, allowing any input, switch, channel data, and timers to be freely combined and displayed on the main screen. Each model can be individually configured.

EdgeTX can connect to flight simulators via a DSC line (PPM) or USB cable (USBHID).

EdgeTX also supports trainer and FPV settings.

EdgeTX is internationalized and has been translated into Chinese (CN), Danish (DA), Hebrew (HE), Japanese (JP), Russian (RU), English (EN), Czech (CZ), Finnish (FI), Dutch (NL), Spanish (ES), French (FR), German (DE), Polish (PL), Italian (IT), Portuguese (PT), and Swedish (SE).

## 1.0.1 Disclaimer

EdgeTX is experimental firmware. No guarantees or implications are made regarding its quality and reliability of this firmware. Improper operation of RC models may result in serious injury or even death. If you choose to use the EdgeTX firmware, you are fully responsible for your models.

The authors of EdgeTX assume no liability for any injury or damage caused by the use of the firmware. Please use it cautiously.

## 1.0.2 Legal status and copyright

This project is free software: you can redistribute and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version. You should have received a copy of the GNU General Public License along with this project. If not, see [GNU licenses](#).

EdgeTX firmware is released in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY

or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

EdgeTX source files can be found at [EdgeTX GitHub](#).

### 1.0.3 First boot

Press and hold the power button to turn on the device. Before entering the main interface, the system will check the positions of the throttle stick and switches, as well as other startup conditions. If the startup conditions are not met, corresponding error prompts will appear, requiring the user to clear them or press any key to skip.

Storage Warning: Incorrect remote controller data. Update the new SD card files or copy the factory card files. This warning will appear during the first startup. Press any key to let the remote controller automatically create new data files.



Throttle Warning: This warning appears if the throttle is not in the lowest position during startup. Move the throttle stick to the lowest position or press any key to skip. You can also disable the throttle warning in the Pre-start Checks menu under the Model Setup menu.



Switch Warning: This warning appears if the remote controller switches are not in the default positions (default setting is all switches to the back).



Failsafe Not Set Warning: This warning indicates that the failsafe has not been set on the remote controller.



Sound Off Warning: This warning appears if the sound mode in the remote controller settings is set to mute.



Telemetry Alarm Off Warning: This warning appears if the Disable telemetry alarms option is checked in the telemetry page.



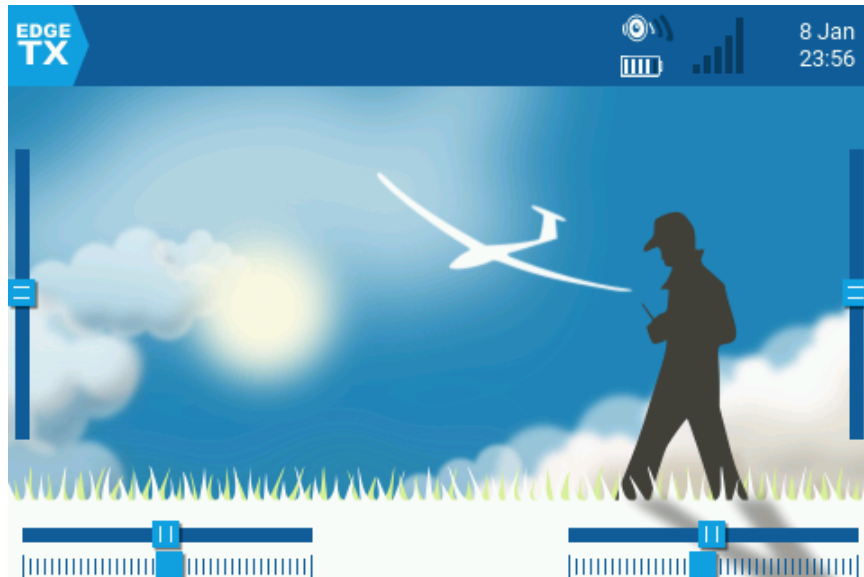
SD Card Warning: This warning appears if the SD card file version does not match the firmware version. Update the SD card content when upgrading the firmware.





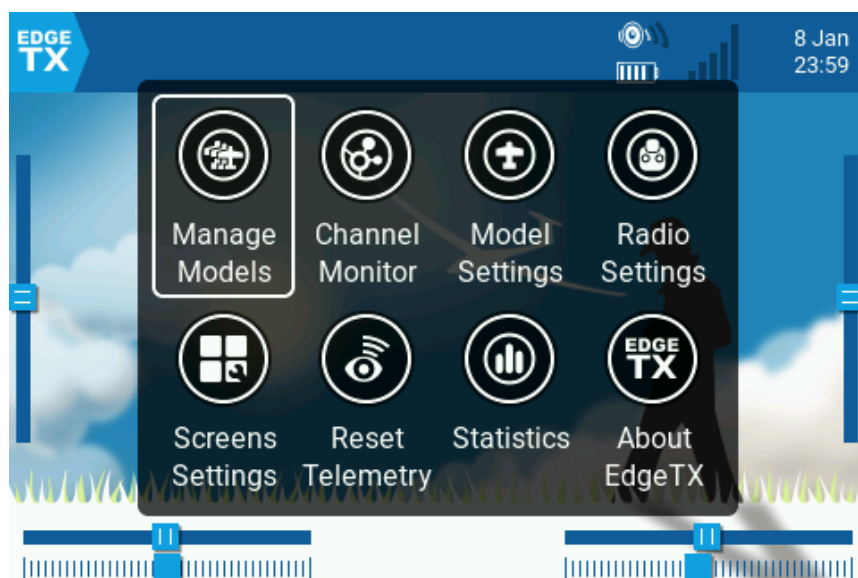
## 1.0.4 Main Interface

The default boot screen is shown below. Users can add the content they need to customize the main interface.



**Top Menu Bar:** Displays speaker volume, remote controller battery level, receiver signal strength (RSSI), time, and date.

**Touch Interface:** Click on blank screen areas or press the ENT key to enter the menu.



Menu options include:

**Manage Models:** Create, switch, delete, and copy models, or add model groups.

**Channel Monitor:** Displays channel outputs, mix outputs, and logical switch statuses.

**Model Settings:** Covers all initial setup requirements.

**Radio Settings:** Configures settings common to all models.

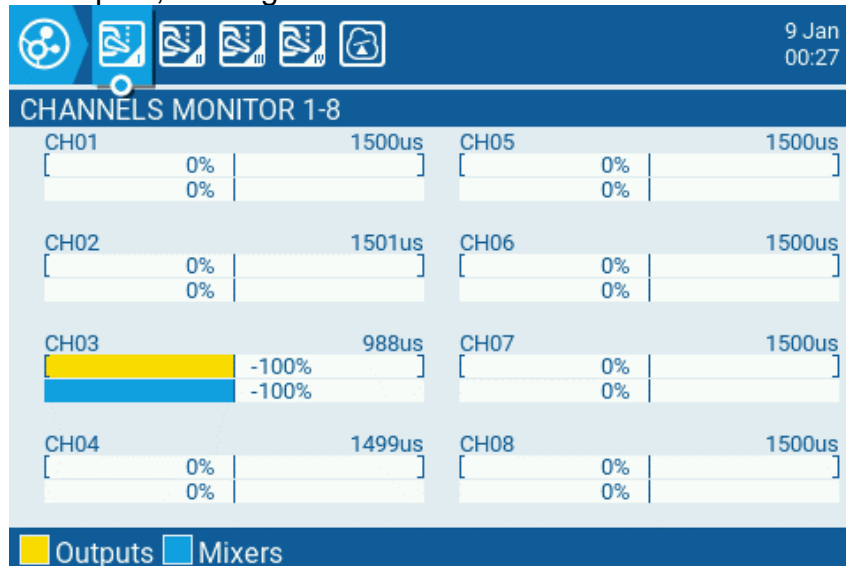
**Screens Settings:** Allows selection of themes and customization of foreground and background colors. Includes the top bar settings.

**Reset Telemetry:** Resets timers and telemetry values.

**Statistics:** Displays statistical information.

**About EdgeTX:** Provides information about the EdgeTX official QR code and system version numbers.

**Channel Monitor:** Used to display the monitoring interface for channel outputs, mixer outputs, and logical switches.

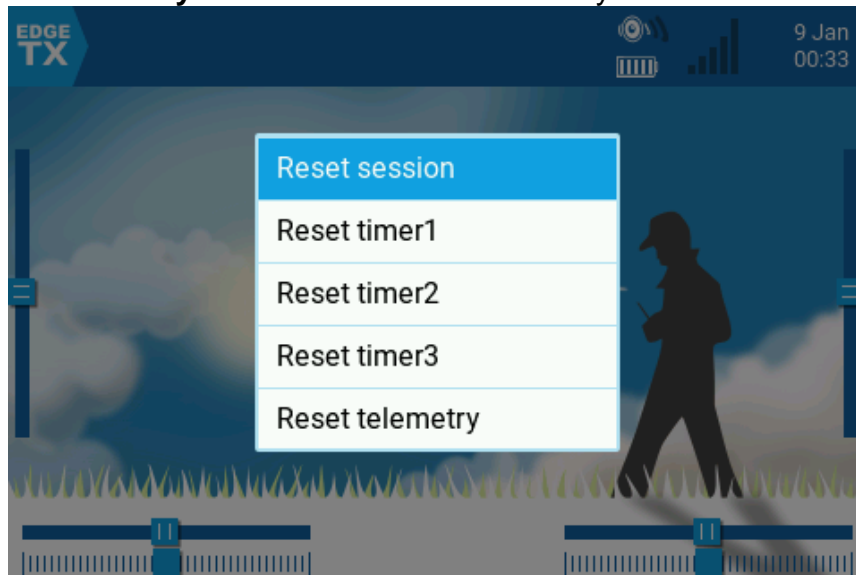


You can use the PAGE key to switch between different interfaces, or click on the top icons to switch to the corresponding interface.

The last page is the logical switches page, which can display the status of 64 logical switches. By default, the inactive state is shown in gray, and the active state is shown in black.

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 Telemetry:** Resets timers and telemetry values.

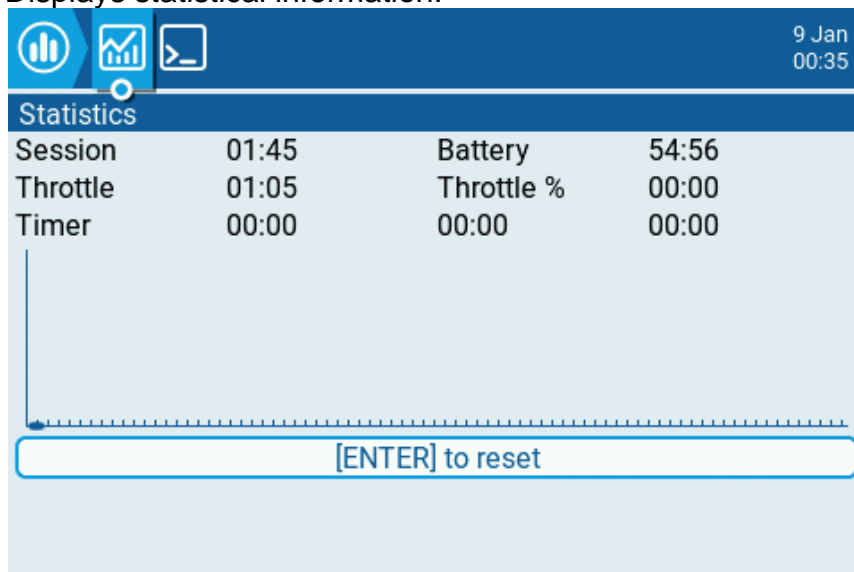


**Reset session:** Resets all timers and telemetry values (if there are alarm prompts at startup, they will be displayed again).

**Reset timer1,2,3:** Resets individual timers.

**Reset telemetry:** Resets telemetry values.

**Statistics:** Displays statistical information.



This page displays flight statistics and throttle usage graphs.

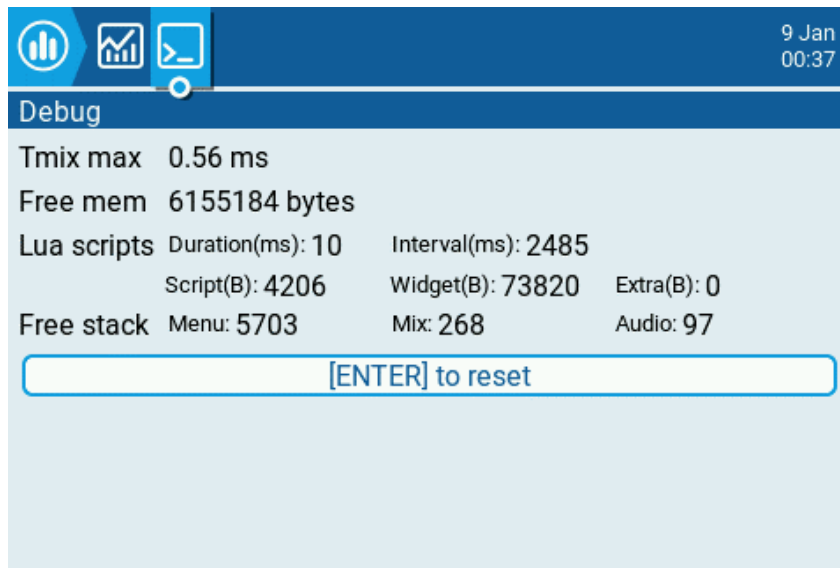
**Session:** Current session time.

**Battery:** Time since the last charge.

**Throttle, Throttle%:** Throttle statistics. The Throttle% indicates the speed of operation based on the throttle setting. The graph shows the throttle channel values over time.

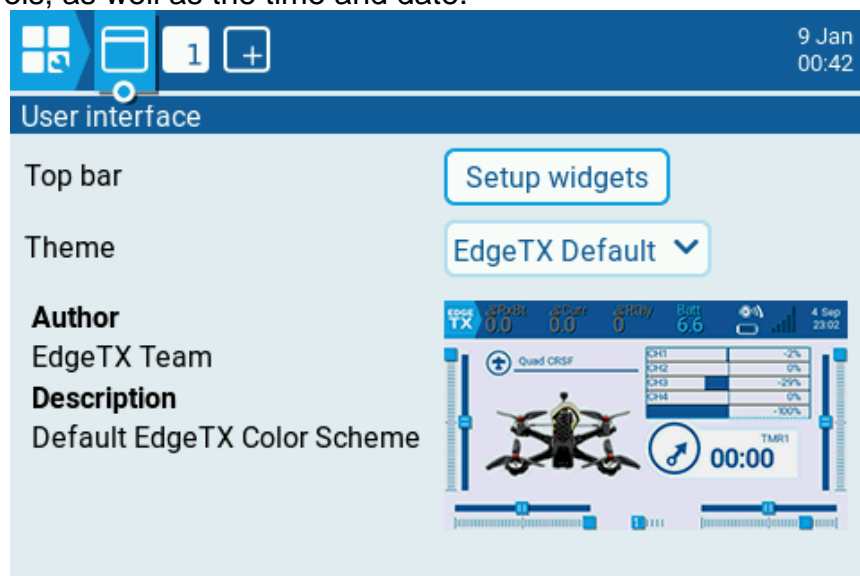
### Timers1,2,3:Timer statistics.

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



### User interface:

The User Interface options allow for theme selection. This page is also used for setting up the top bar. The top bar is displayed at the top of the main view and includes status indicators on the right side, which show sound, battery, and RSSI levels, as well as the time and date.

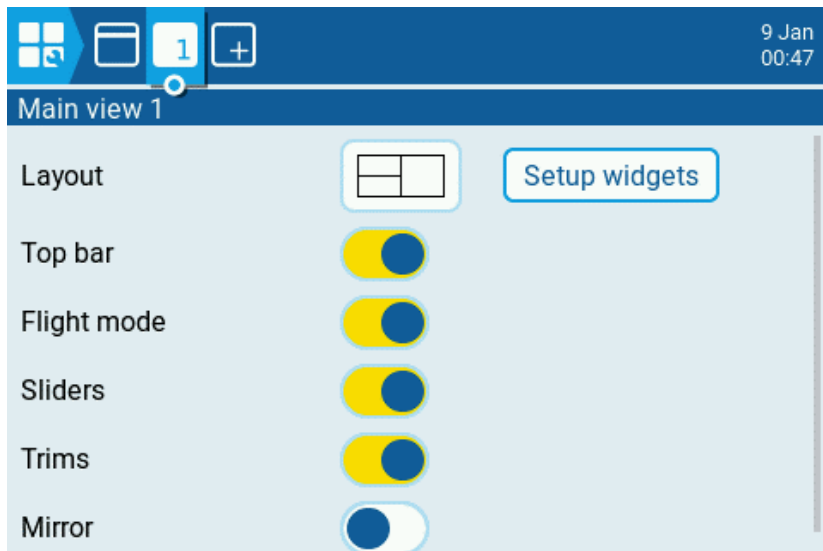


### Main View:

Up to 10 main views can be defined to display various widgets. These widgets can show images, radio information, and all telemetry data. There are 5 different layout options available, ranging from full screen to a maximum of 8 widget areas.

### Main View Setup:

Long press the TELE key to enter the telemetry and user interface settings page.

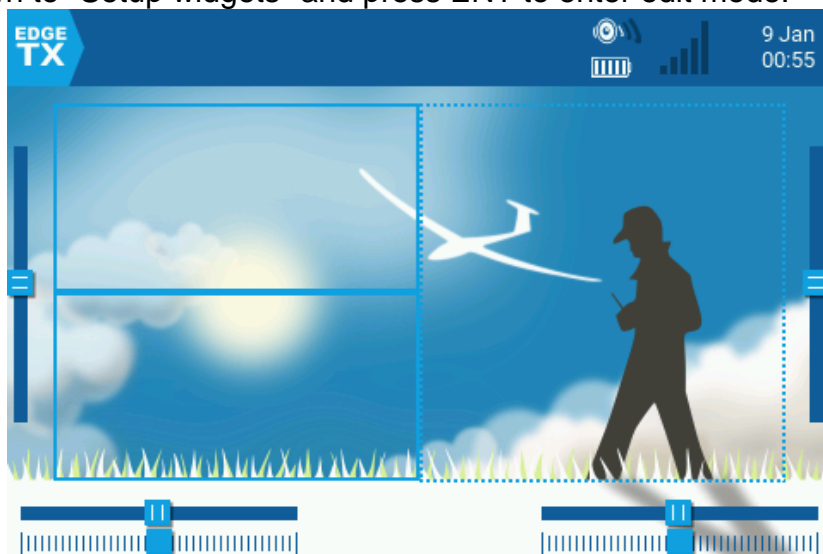


**Layout:**

By default, there are 2 medium-sized widget areas on the left and 1 large area on the right. Use the scroll wheel or touch to select the layout.

**Setup widgets:**

After selecting the main view layout, you can proceed to set up the widgets. Scroll down to "Setup widgets" and press ENT to enter edit mode.



**Using the Scroll Wheel to Select and Press ENT:**

Press ENT after selecting a region using the scroll wheel. A list of available widgets will pop up, with scroll arrows on the right. Scroll through the options until you find the desired widget, then press ENT to enter edit mode.

**Standard Widgets:**

**Outputs:** Displays multiple channel outputs.

**First channel:** Selects the first channel number to display.

**Fill Background?:** If selected, fills with background color.

**BG Color:** Sets the RGB value for the background color.

**Value:** Displays the value of the source.

**Source:** Selects the source to display.

**Color:** Sets the RGB value for the text.

**Shadow:** Adds shadow to the text.

**ModelBmp:** Displays the model image set in the "Model Setup" page.

**Text:** Displays specified text in the widget.

**Text:** Text to be displayed.

**Color:** Sets the RGB value for the text.

**Size:** Determines the size of the text, ranging from Standard, Tiny, Small, Mid to Double.

**Shadow:** Adds shadow to the text.

**Gauge:** Displays a bar representing the selected source.

**Source:** Long press ENT to enter a submenu for selecting input sources by category. Scroll up/down to the desired category and press ENT, it will return 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 signal source.

**Min, Max:** Allows setting of the range.

**Color:** Allows customizing color.

**Timer:** Displays the timer value.

**Timer1/2/3.**

**BattCheck:** Displays battery parameters.

**Sensor:** Selects battery sensor.

**Color:** Sets the RGB value for the text.

**Shadow:** Adds shadow to the text.

**Counter:** Displays a counter.

**Option 1:** Selects the enabled source.

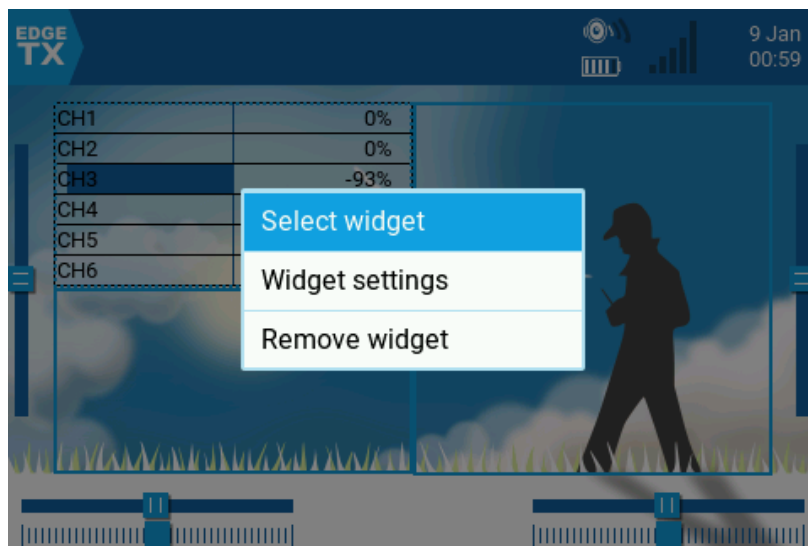
**Option 2:** Selects XXXX source.

**Option 3:** Sets the RGB value for the text.

**Shadow:** Adds shadow to the text.

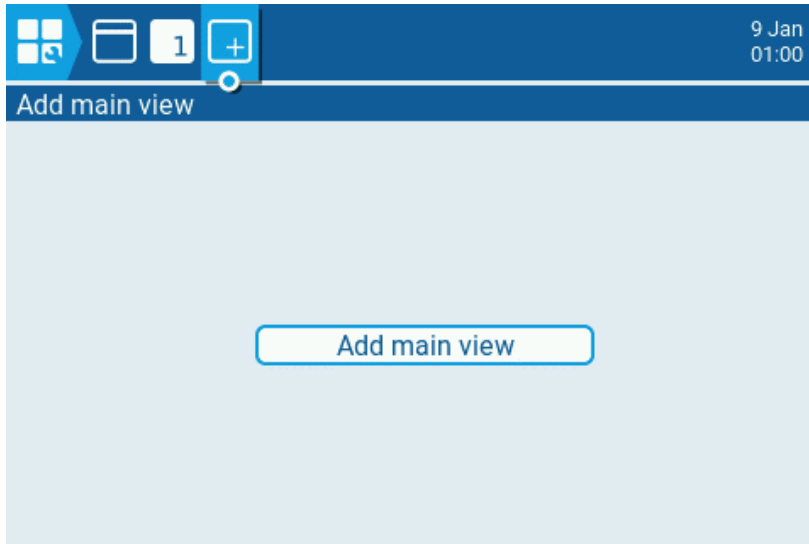
**Editing Widgets:** After creating a widget, you can edit it using the widget editing menu, accessed as follows:

Long press TELE on the main interface, select Setup widgets, enter the setup interface. Select the widget to edit, then press ENT. If the widget area is empty, the widget selection menu will pop up. If the widget already exists, the widget editing menu will pop up. Long press ENT to bring up the editing submenu.

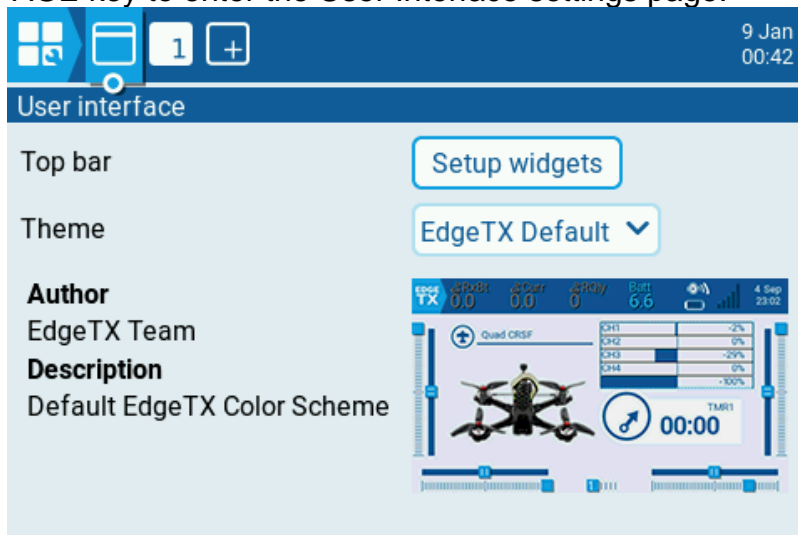


**Adding Additional Main Views:**

You can define up to 10 main views. Press the PAGE key to select "Add".

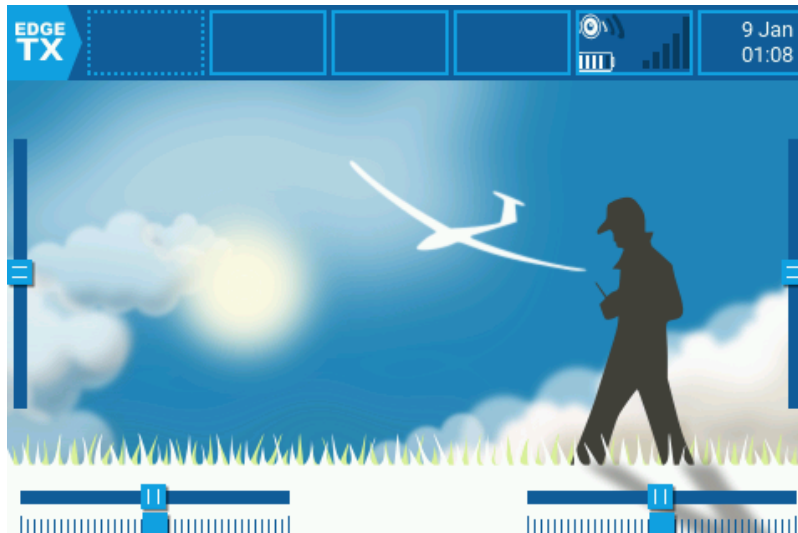


Press the PAGE key to enter the User Interface settings page.



**Top Bar:** There are 6 small areas available for adding widgets to the Top Bar. Select "Setup widgets" and press ENT to enter setup.

**Theme:** Select a theme.



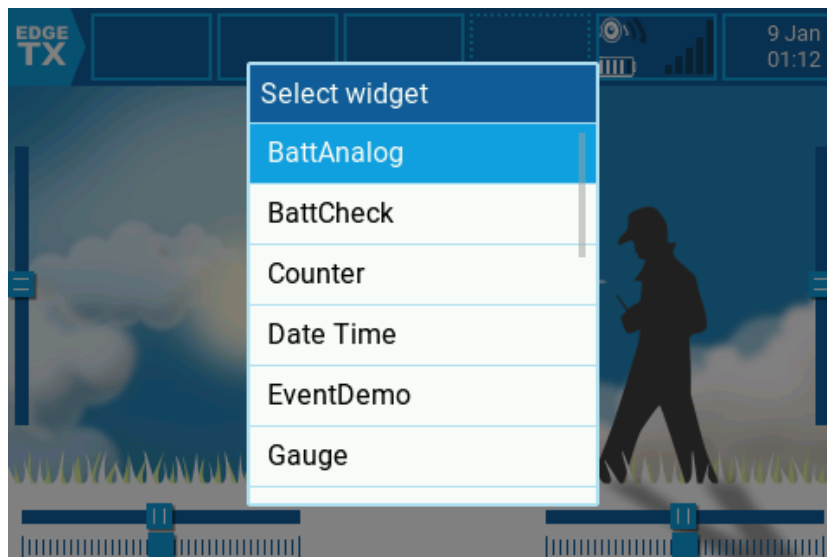


Press ENT to enter setup, use the scroll wheel to select the component to be set.

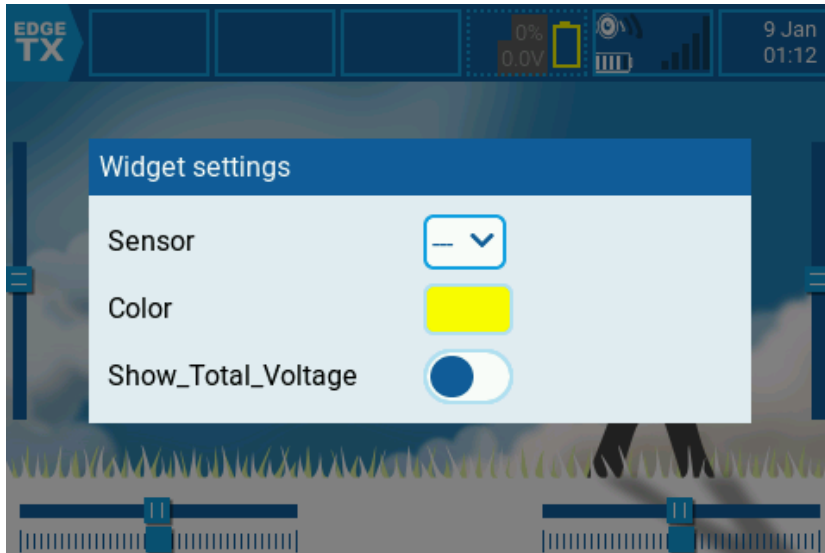
**Example of Displaying Battery Voltage on the Main Interface:**  
Enter the top widget settings, short press ENT to enter edit mode.



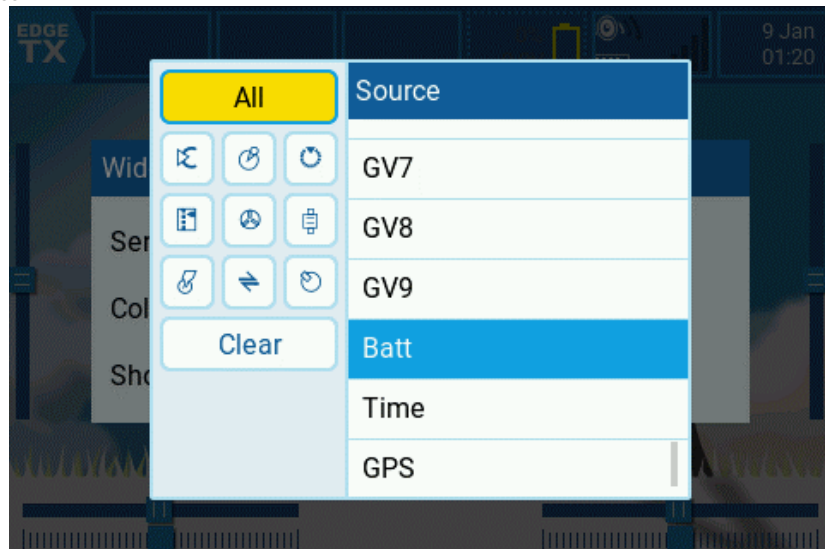
BattAnalog: Select BattAnalog.



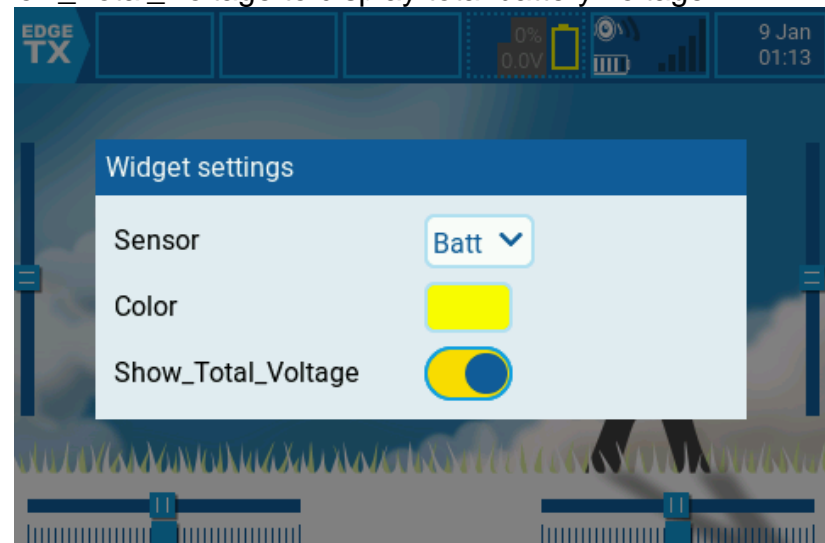
Set the **Sensor**



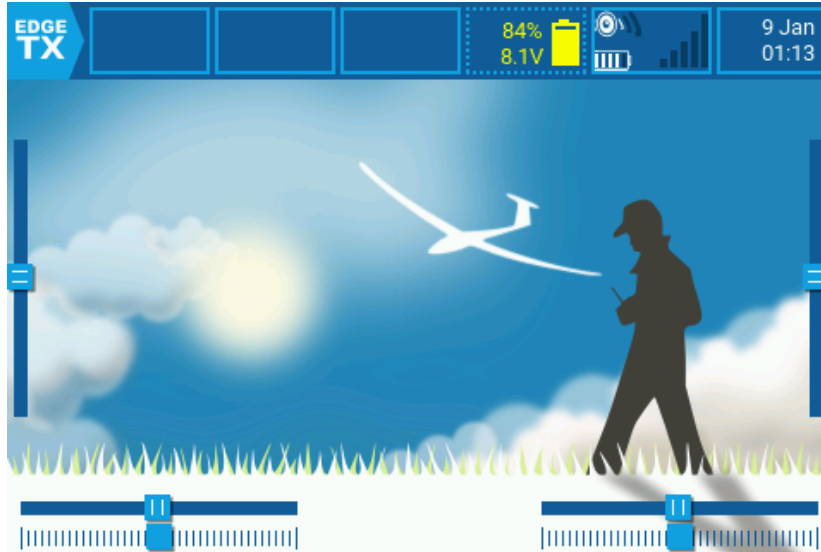
Select **Batt**.



Turn on **Show\_Total\_Voltage** to display total battery voltage

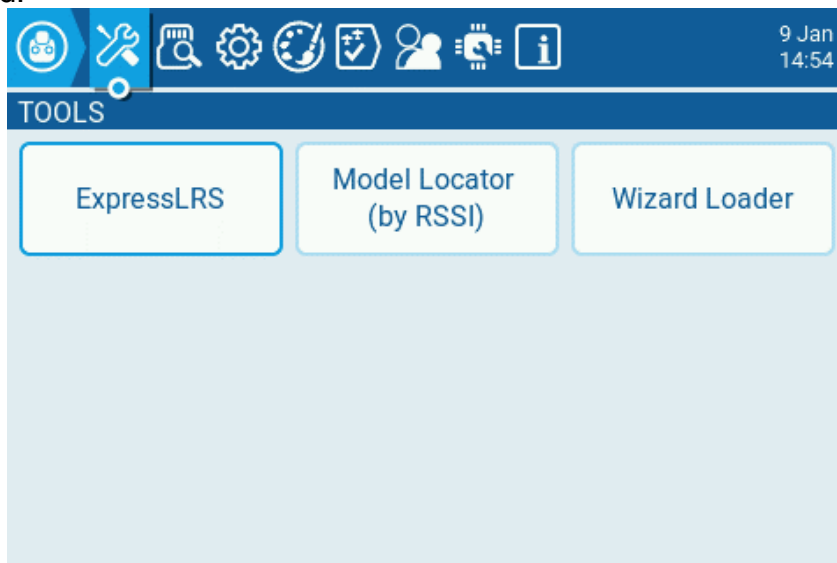


Then press EXIT to return.



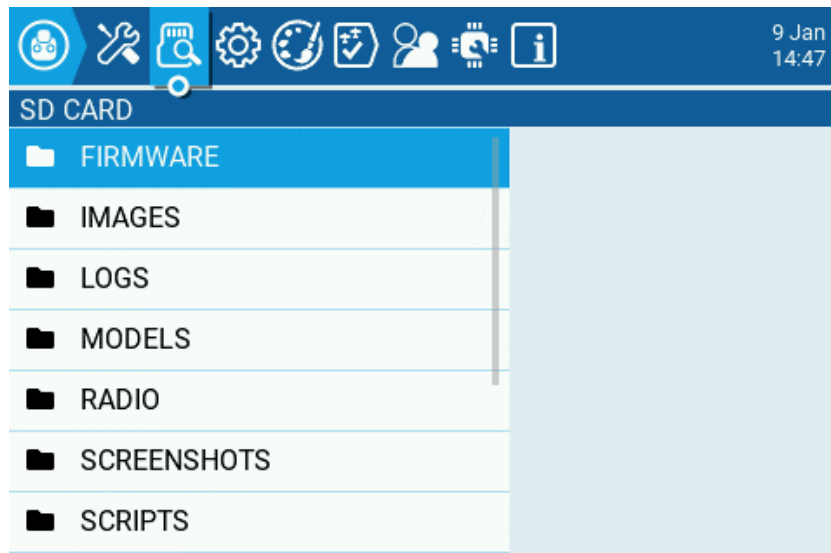
## 1.0.5 TOOLS

In the Radio Settings Tools page, you can select tools based on Lua scripts to execute. Lua scripts located in the Tools folder on the SD card will be listed here. Select a tool to execute it in full-screen mode. EdgeTX comes with multiple tools by default. Additional tools can also be downloaded and added to the SD card.



## 1.0.6 SD Card

This page provides access to the contents of the SD card.



**FIRMWARE:** Directory for radio firmware upgrades (place downloaded radio firmware here for upgrades).

**IMAGES:** Folder for model images.

**LOGS:** Folder for log files.

**MODELS:** This folder contains model information

**RADIO:** This folder contains radio settings information.

**SCREENSHOTS:** Folder for saving screenshots.

**SCRIPTS:** Lua script folder.

**SOUNDS:** Folder for voice files

**TEMPLATES:** Template folder.

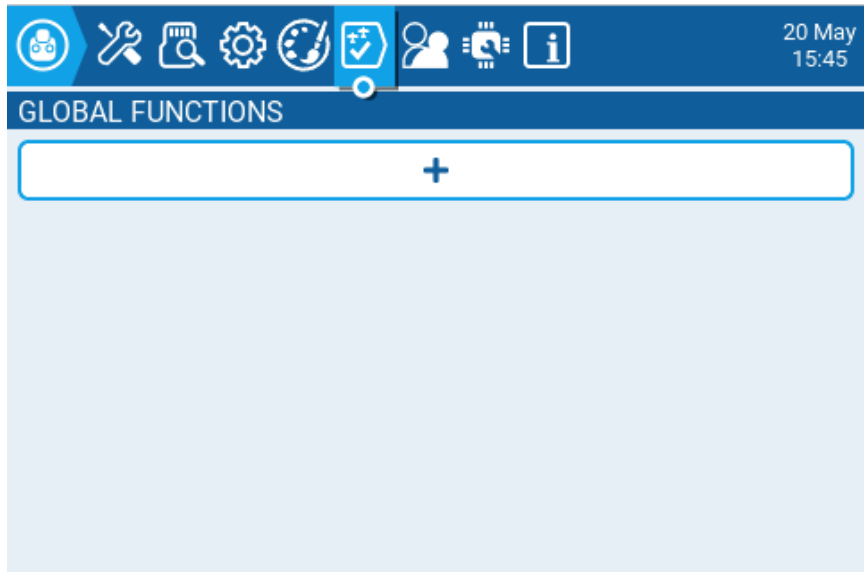
**THEMES:** Folder for radio interface themes.

**WIDGETS:** Scripts for some widgets.

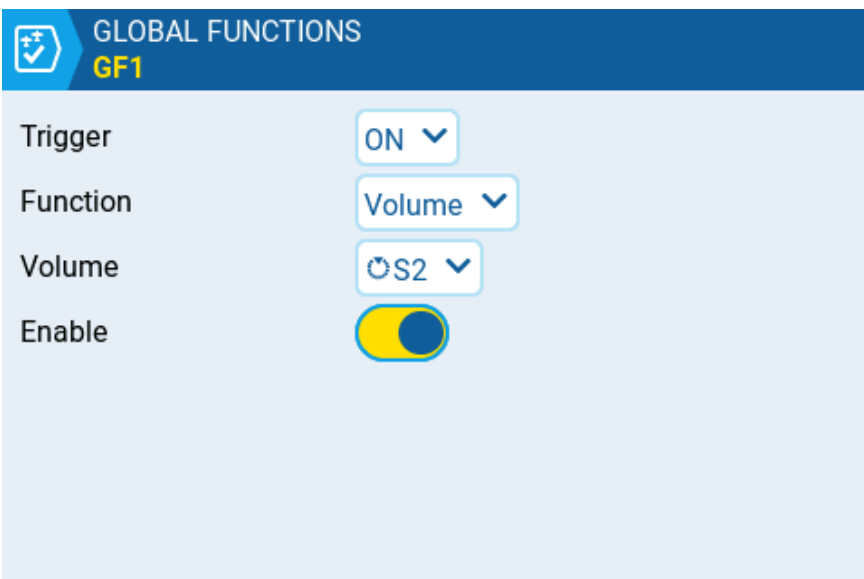
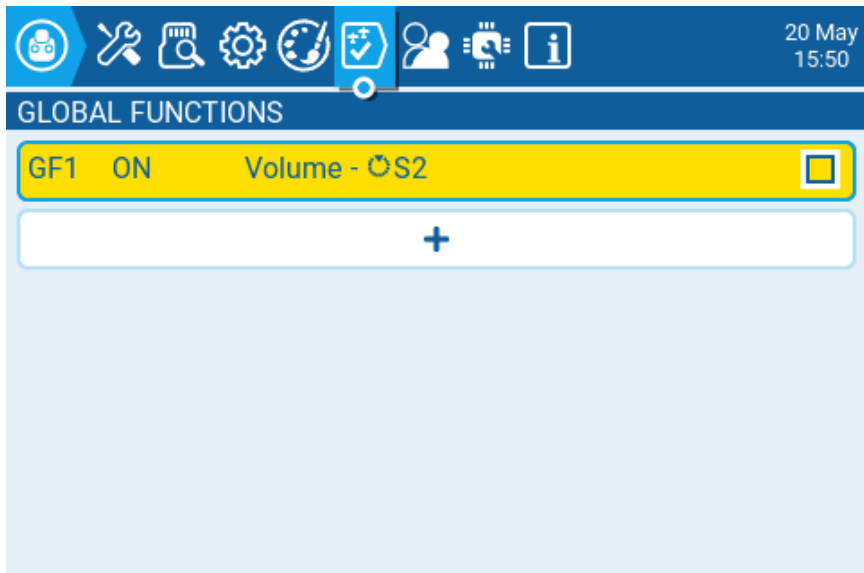
## 1.0.9 Global Functions

Global Functions GF1 to GF64 allow defining standardized functions available to all models, such as specific switches, potentiometers, sliders, or settings.

This avoids the need to set the same functions on each model. Model-specific functions are set in the "Special Functions" page under "Model Setup."



The diagram below illustrates setting the system volume using the right slider (RS):



**Trigger:** Switch to activate special function.

**Function:** Select the function to be used. (See descriptions below)

**Enable:** Turn on/off to activate the function. To activate a special function via a switch, it must be enabled.

Function Descriptions:

**Trainer:** Enable training mode.

**Value:** Specify which controls to hand over to the student. Options include Sticks (all sticks), Rud (rudder), Ele (elevator), Thr (throttle), Ail (aileron), and Chans (all channels).

**Inst. Trim:** Set all trims to their respective stick's current values.

**Reset:** Reset specified timer or telemetry back to its initial value.

**Reset:** Options include Timer 1, Timer 2, Timer 3, Flight, and Telemetry.

**Set:** Set specified timer to a designated value.

**Timer:** Options are Timer 1, Timer 2, Timer 3.

**Value:** Range from 00:00:00 to 08:59:59

**Volume:** Adjust radio volume. Change source specified in the "Volume" dropdown list.

**SetFailsafe:** Set custom failsafe value for selected module (internal/external) to current stick positions when activated. For this option to work, RF module's failsafe mode must be set to custom.

**Play Sound:** Play selected sound.

**Value:** Sound to play. Optional values are Beep1/2/3, Warn1/2, Cheep, Ratata, Tick, Siren, Ring, SciFi, Robot, Chirp, Tada, Crickt, AlmClk. Note: No SD card sound pack required.

**Repeat:** Frequency of sound repetition. Options include !1x (play once (not played during boot)), 1x (play once), 1s to 60s (play every x seconds).

**Value:** Play selected .wav sound file from SD card.

**Repeat:** Frequency of sound repetition. Options include !1x (play once (not played during boot)), 1x (play once), 1s to 60s (play every x seconds).

**Play Value:** Play value of selected parameter.

**Value:** Source of value to play. It can be input, stick, pot, slider, trim, logical switch, coach input channel value, global variable, telemetry sensor, or channel.

**Repeat:** Frequency of sound repetition. Options include !1x (play once (not played during boot)), 1x (play once), 1s to 60s (play every x seconds).

**Lua Script:** Execute defined Lua script. Lua script must be located in /SCRIPTS/FUNCTIONS/ folder on SD card. Lua script displaying information on the screen cannot be executed with this special function.

**Value:** Select LUA script file from SD card.

**Repeat:** Frequency of Lua script repetition. Options: ON (repeats indefinitely as long as switch is active) or 1x (once)

**BgMusic:** Loop play selected .wav file. File should be in SOUNDS/(language)/ folder on SD card.

**BgMusic II:** : Temporarily pause playback of .wav file specified in BgMusic.

**Vario:** Enable variometer beep for model ascent and descent.

**Haptic:** Vibration.

**Value:** Type of vibration pattern. Options: 0 - 3.

**Repeat:** Frequency of vibration pattern. Options include !1x (play once (not played during boot)), 1x (play once), 1s to 60s (play every x seconds).

**SD Logs:** Create log .csv file for radio and telemetry values in LOGS folder on SD card. Radio will create a new log file in log folder according to configured frequency in intervals setting. Value options are 0.1s to 25.5s. Radio will create new log file each time this function is activated as long as the time it was activated for is at least as long as value set. Note: Logging will not begin if less than 50MB of SD card space is available.

**Backlight:** Adjust brightness of radio screen from sources defined in list.

Brightness is limited to values configured in Radio Setup -> Backlight setting.

**Screenshot:** Take screen capture. Saved in SCREENSHOT folder on SD card as .bmp file.

**RacingMode:** Enable racing mode (low latency) for FrSky Archer RS receiver. Racing mode must be enabled in external RF module settings.

**No Touch:** Disable touch.

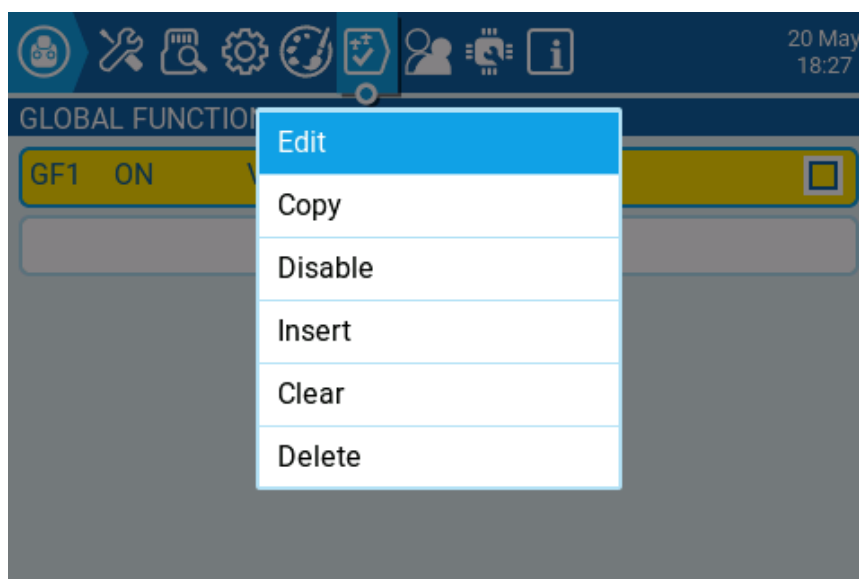
**Set Main Screen:** Change current visible screen to specified screen number.

**Value:** Screen number defined in screen settings.

**Repeat:** Frequency of screen change to defined screen when switch is on. Options include !1x (no change even if switch is on, not changed during boot), 1x (change once), 1s to 60s (change every xx seconds). This is useful as user can still manually switch screens while switch is enabled and it will revert back to defined screen after defined duration.

**Audio Amp Off:** Disable audio amplifier, preventing speaker from emitting sound, including annoying feedback or interference.

Pressing ENT key on existing global function settings will bring up the following menu.



**Edit:** Open selected global function configuration page.

**Copy:** Copy selected global function.

**Paste:** Paste copied global function onto selected global function. **Note:** This will overwrite values of selected global function with copied global function. (Paste option only appears in menu after Copy has been selected)

**Enable:** Enable global function.

**Disable:** Disable global function. (Disable menu appears when global function is enabled, and vice versa)

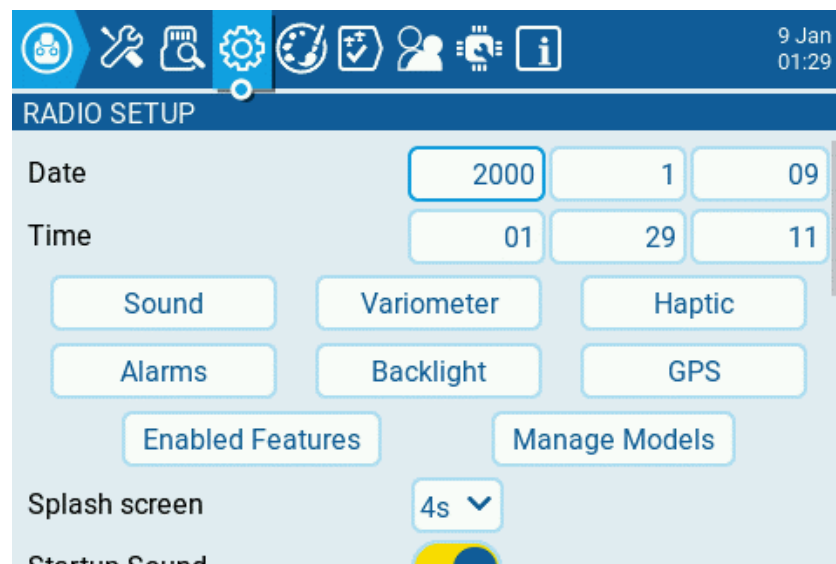
**Insert:** Insert blank global function above selected global function.

**Clear:** Clear all configuration options in selected global function.

**Delete:** Delete selected global function.

## 1.0.7 RADIO SETUP

The Radio Setup menu is used to configure the hardware part of the remote controller and set global functions applicable to all models.



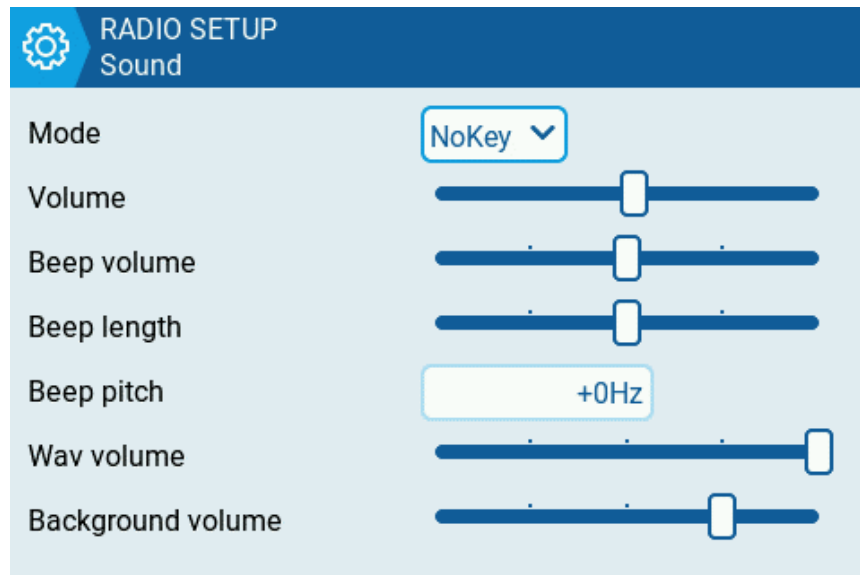
**RADIO SETUP:** Radio settings page for configuring settings common to all models, accessed by long pressing SYS key.

**Date:** Set the date of the remote controller.

**Time:** Set the time of the remote controller.

**Sound:** Volume settings





## Mode

**All:** Beep sound and key tone enabled.

**NoKey:** Beep sound enabled, no key tone.

**Alarm:** Beep sound only on alarm, e.g., low battery voltage alarm.

**Quiet:** Silent mode, no alarm sound (setting this mode will show a warning every boot to remind that alarms are disabled)

**Volume:** Master volume.

**Beep volume:** Beep volume.

**Beep length:** Duration of beep sound.

**Beep pitch:** Pitch of beep sound, range 0-300Hz.

**Wav volume:** Volume of .wav files.

**Background Volume:** Volume of background music.

## Variometer:



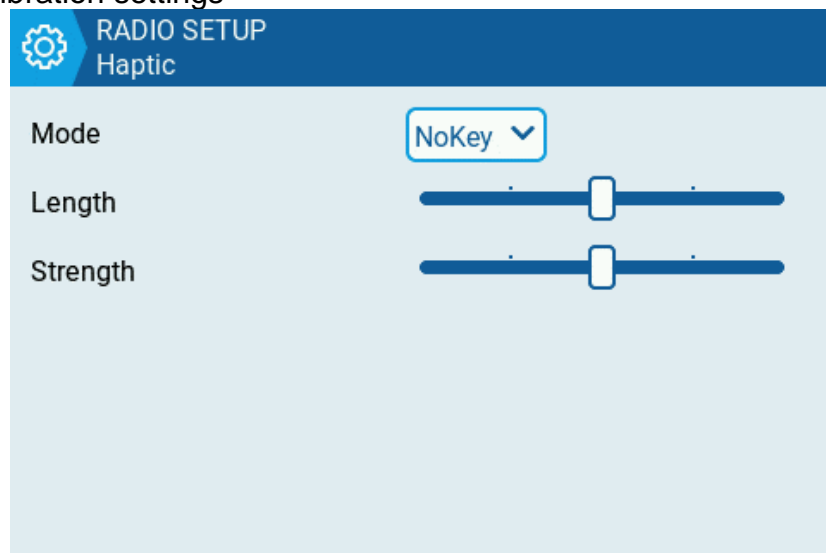
**Volume:**

**Pitch at zero:**

**Pitch at max:**

**Repeat at zero:**

**Haptic:** Vibration settings

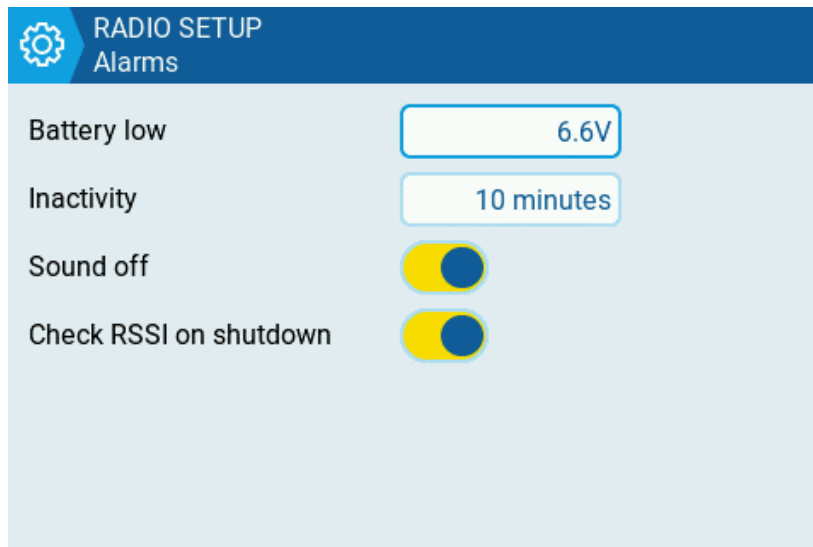


**Mode:** Similar to alarm sound settings.

**Length:** Similar to alarm sound settings.

**Strength:** Setting the intensity of the vibration.

**Alarms:** Alarm Settings



**Battery low:** Battery voltage alarm.

**Inactivity:** Alarm for prolonged inactivity. Setting it to 0 will disable the alarm.

**Sound off:** Check this to disable sound.

**Check RSSI on Shutdown:** Check to enable this alarm, which triggers if the radio is turned off while the aircraft is still powered on.

#### Backlight Backlight Settings



#### Mode:

**ON:** Backlight is always on.

**Both:** Backlight turns on with any operation.

**Controls:** Backlight turns on with any control operation, but not button presses.

**Keys:** Backlight turns on with any button press.

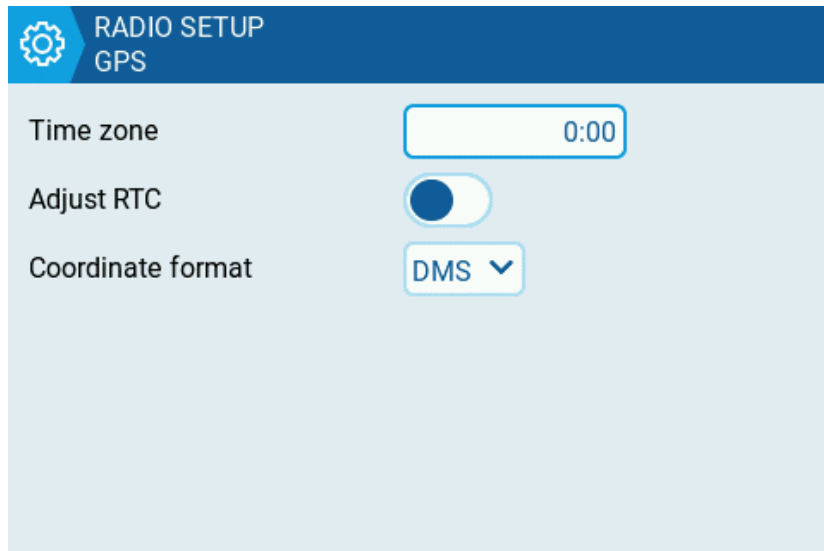
**Inactivity timeout:** Time to turn off the backlight after inactivity (in seconds). Minimum value is 5 seconds, maximum is 600 seconds.

**ON brightness:** Controls the brightness of the display when on.

**OFF brightness:** Controls the brightness of the display when off.

**Alarm:** Backlight flashes when an alarm is active.

## GPS:



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

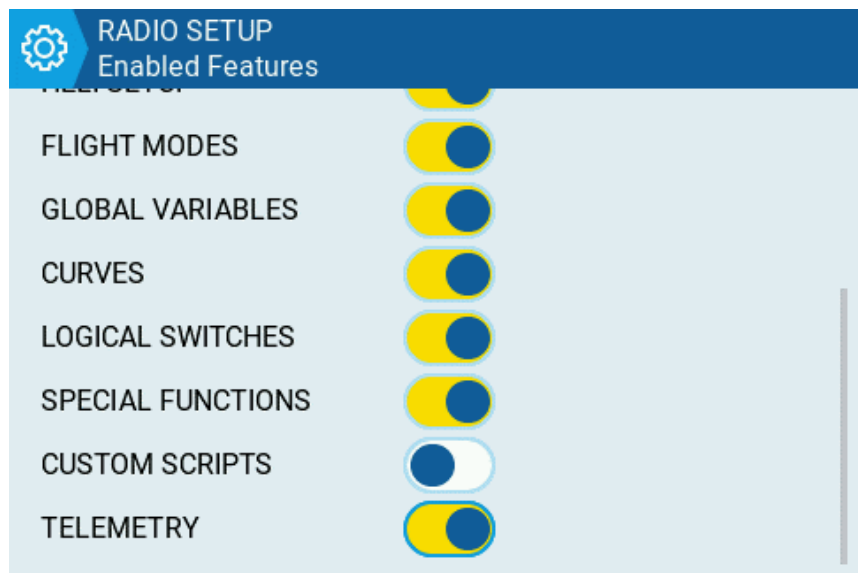
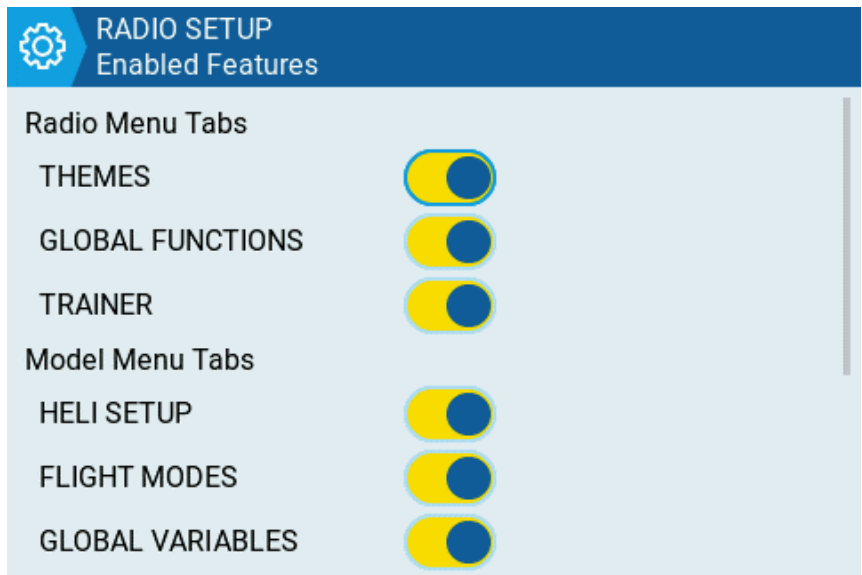
**Adjust RTC:** If enabled, the radio's time will sync with the GPS time from the model.

**Coordinate format:** Coordinate format (DMS = Degrees, Minutes, Seconds).

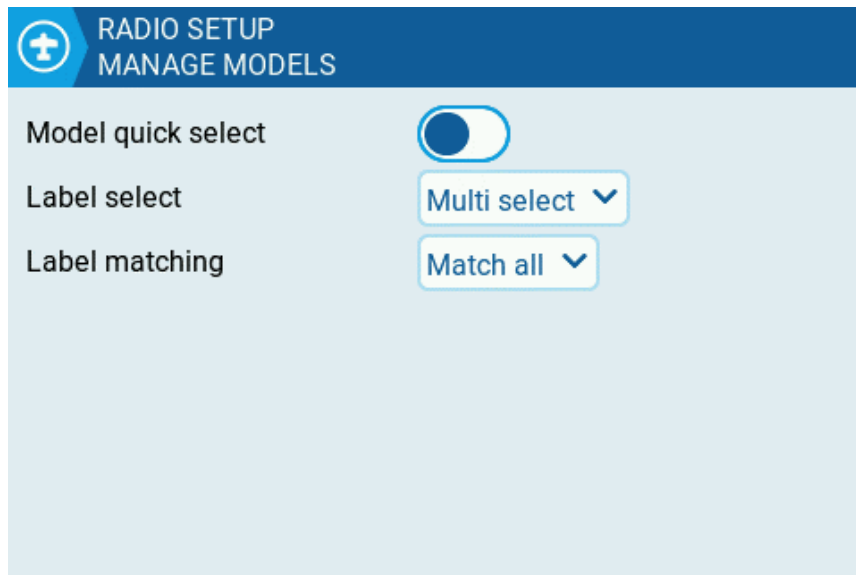
### Enabled Features: Feature Switches

You can choose which menus to enable or disable.

Note: Disabling a tab will only hide it and will not change the configured items within that tab.



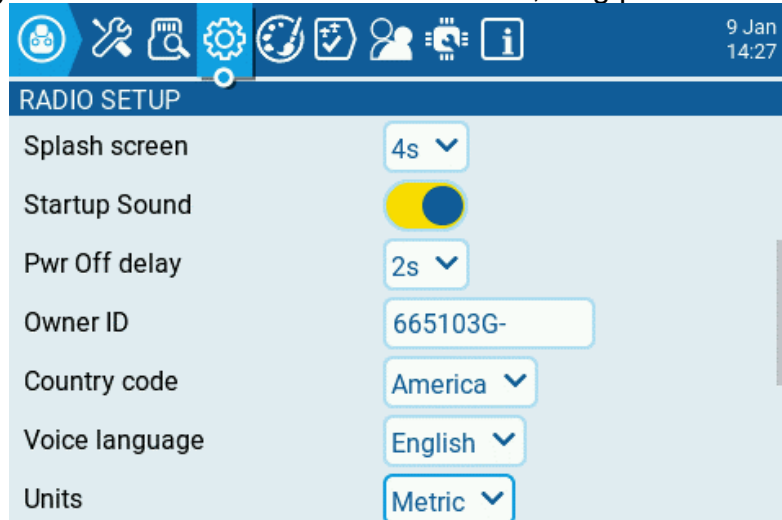
**Manage Models:**



**Model quick select:** Affects the model management screen. These two options require you to first use the scroll wheel or a short press to select the desired model.

**When off:** A short/long press on the selected model (short/long ENTER) will display a menu where you can "Select Model" to make it active.

**When on:** A short press (short ENTER) on the selected model will immediately make it active. To activate the menu, long press or long ENTER.



**Splash Screen:** Display time for the startup screen.

**Startup Sound:** Enable/disable startup sound.

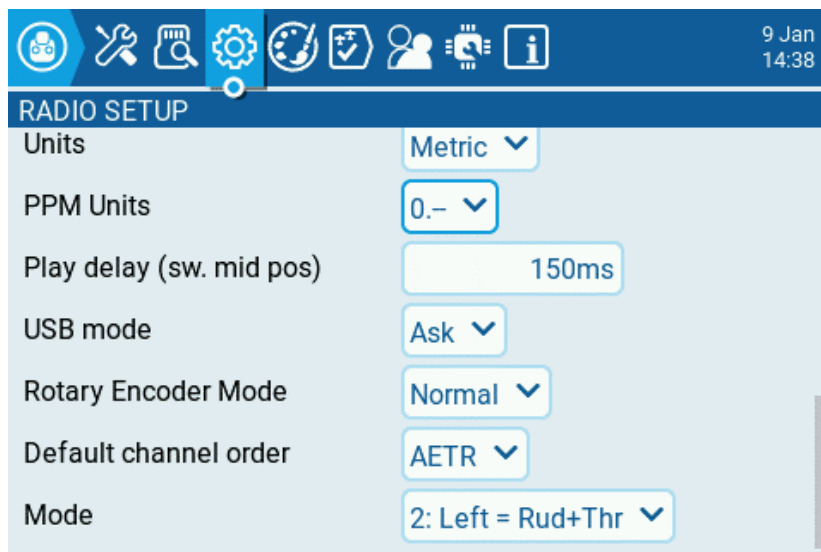
**Pwr Off delay:** Delay between pressing the power-off button and the radio turning off. Options: 0s, 1s, 2s, 3s, 4s. It is recommended to set at least a 1-second delay to prevent accidental shutdowns.

**Owner ID:** Custom registration ID for users with ISRM modules.

**Country code:** If you live in the USA, Europe, or Japan, you must select your country to ensure the radio complies with local regulations.

**Voice language:** Language for alarm voice prompts.

**Units:** Choose whether telemetry values are displayed in Metric or Imperial units.



**PPM Units:** Accuracy level for displaying PPM values. Options: 0.- or 0.0

**Play delay (sw. mid pos):** (Switch middle position) - The minimum time the switch must be in the middle position before activating a special function (in milliseconds). This prevents activating the middle position when moving a three-position switch from low to high.

**USB Mode:** Set the default mode when plugging in USB. Options include Joystick, Storage, and Serial. If set to Ask, a menu will pop up to select the mode upon USB insertion.

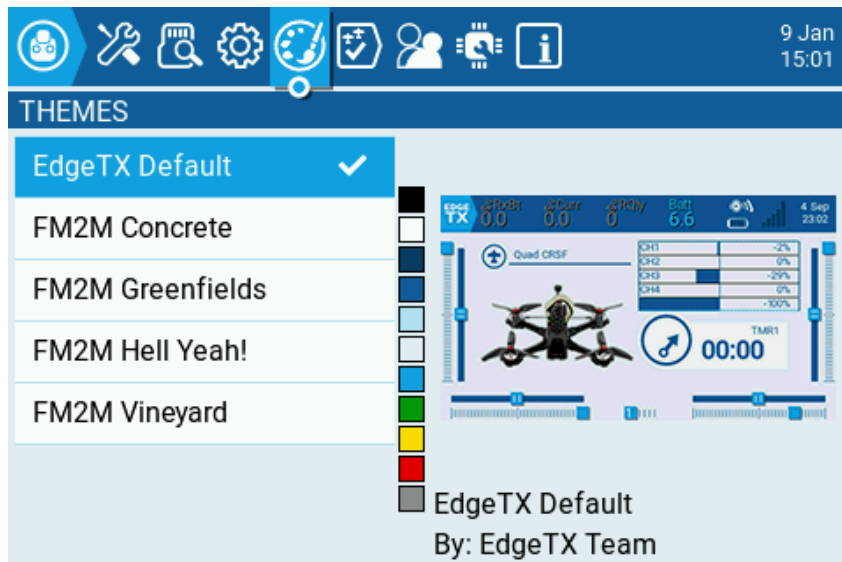
**Rotary Encoder Mode:** Default is "Normal." The "Inverted" option can reverse the direction of the scroll wheel.

**Default Channel Order:** Set the order of the four basic channels (effective for new models created after setting). Default is TAER (channel order for Spektrum/JR), AETR is the channel order for Futaba/Hitec.

**Mode:** Set the stick mode of the transmitter (Mode 1 Japanese style, Mode 2 American style).

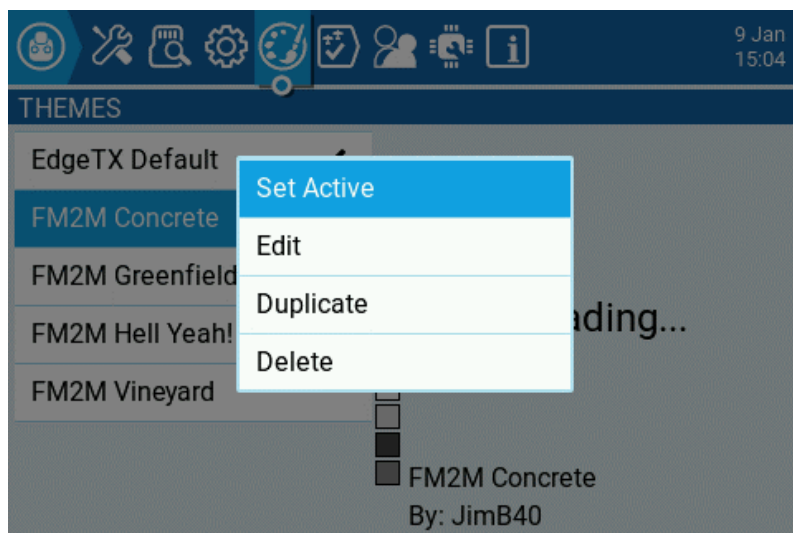
## 1.0.8 Themes

Themes allow you to apply different color schemes to your transmitter. By default, the EdgeTX SD card comes with the themes shown below.



Long press ENT on the selected theme to display the following menu:

- 



**Set Active:** Set the selected theme as the current theme.

**Edit:** Open the theme editor to edit the selected theme.

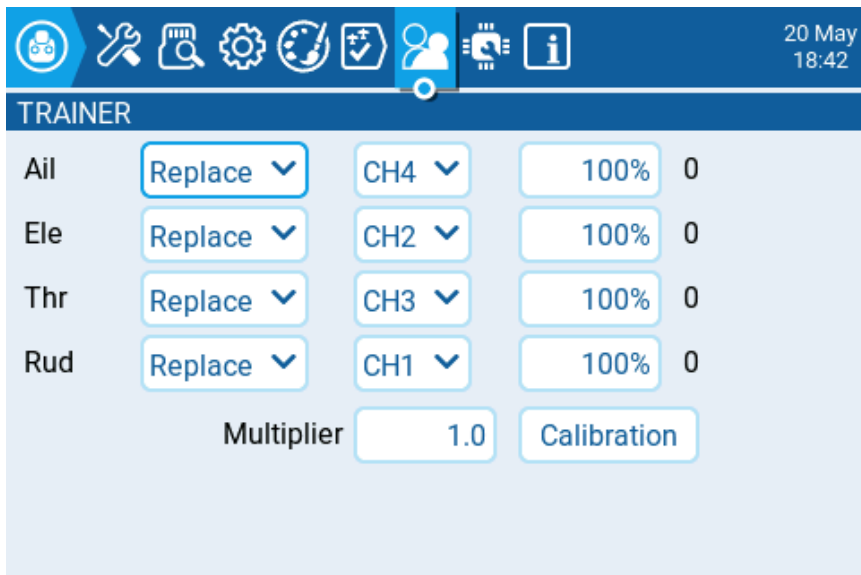
**Duplicate:** Duplicate the selected theme.

**Delete:** Delete the selected theme.

## 1.1.0 Trainer

This page is used to configure the master transmitter settings for trainer mode. It is displayed by setting Trainer Mode to Master in the MODEL SETUP page.





### Mode Settings for the Four Basic Channels

**OFF:** Channel is not used in Trainer mode.

**Add:** Choose to add mode, allowing both the instructor and student to operate the channel.

**Replace:** Set to replace mode, giving full control to the student. This is the normal operating mode.

Stick travel percentage when using the remote in slave mode. Use negative values to reverse the stick direction. Typically set to 100%, it can be used to scale the input from the slave radio. The preceding CH numbers are channel mappings.

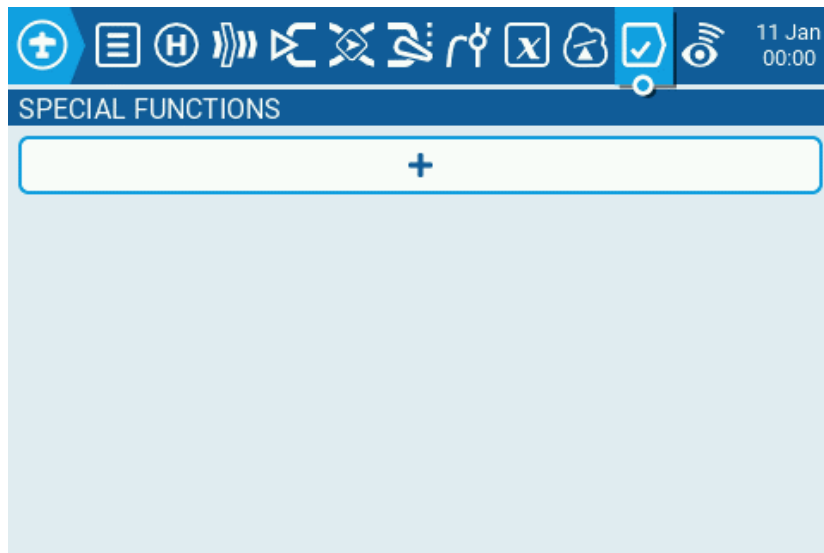
### **Calibration:** Calibration Settings

Set the center values for the slave radio.

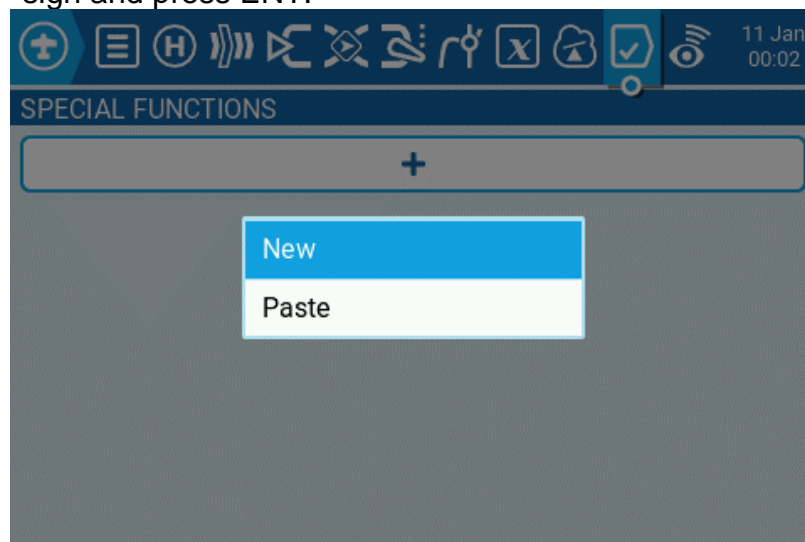
These settings are global for each model. For models using the trainer function (i.e., not setting global functions), a switch must be specified on the Special Functions page.

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

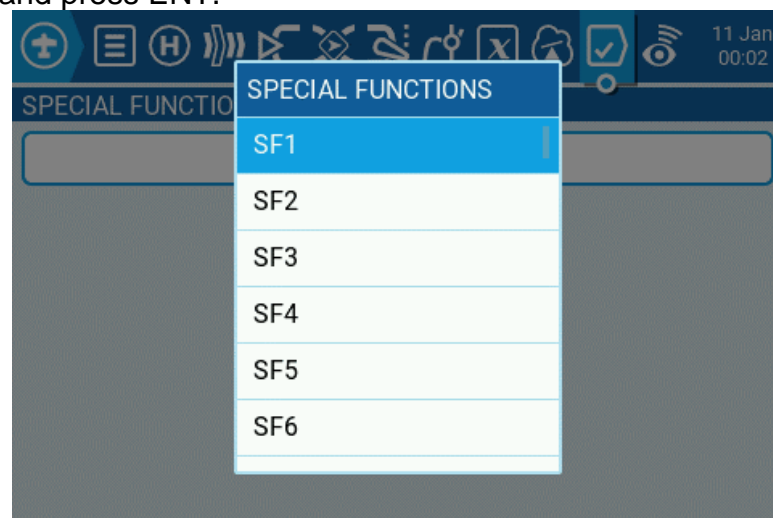
On the Special Functions page, add a special function as shown below.



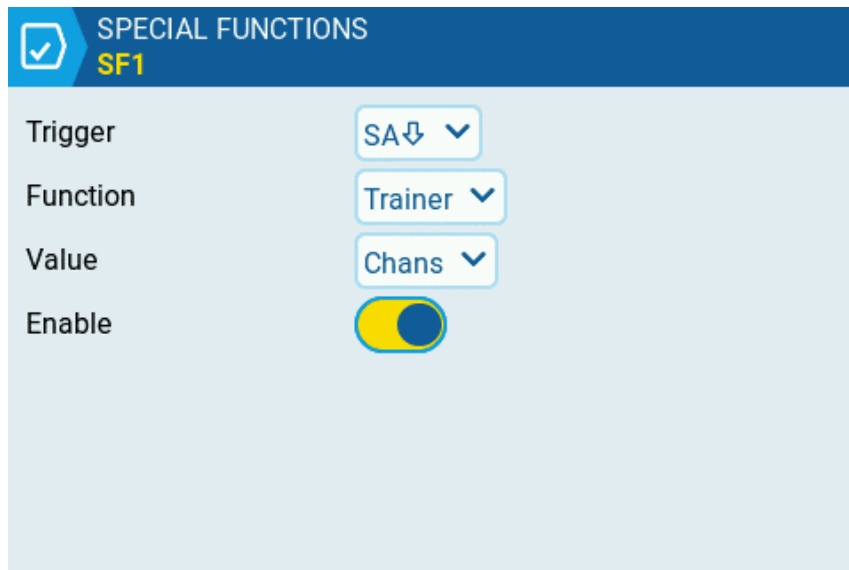
Select the "+" sign and press ENT.



Select "New" and press ENT.



Choose SF1 (or another according to your needs) and press ENT.

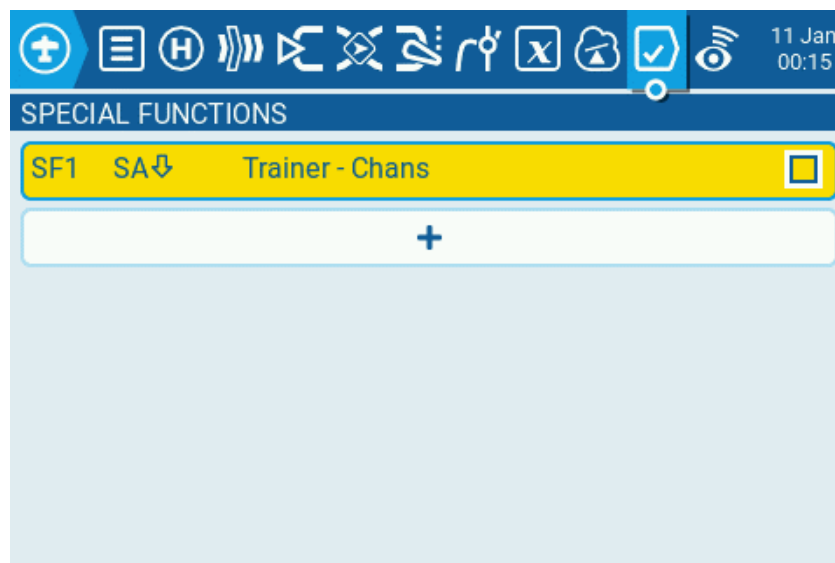


Set an enable switch, such as SA in the illustration (the arrow represents the switch position).

Choose Trainer.

**Chans** indicates all channels.

Finally, enable this function and press Exit to return.

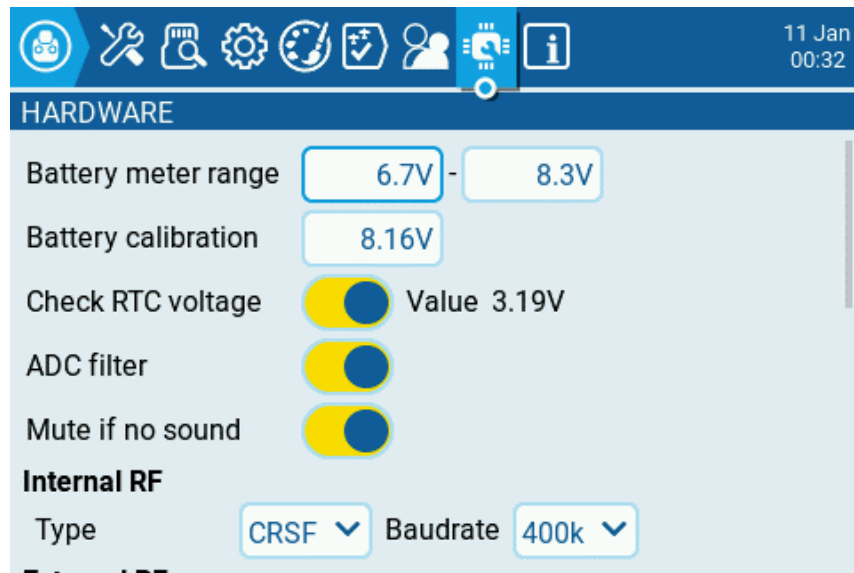


For the slave radio:

1. In the Model Setup page, set Trainer Mode to Slave/Jack.
2. Turn off the internal and external RF modules.
3. Before using the trainer function, it's recommended to test on the ground to ensure functionality and correct control direction. Check if the Cal value is close to 100% on the screen, and adjust with the Multiplier value if needed.

- Center the sticks on the slave radio, select Calibration, and press ENT to calibrate the input. After calibration, the four values should be close to 0.

## 1.1.1 Hardware



You can configure specific hardware settings in the Hardware menu. It includes the following configuration options:

**Battery meter range:** Set the maximum and minimum battery voltage values. This should be set according to the battery type you are using.

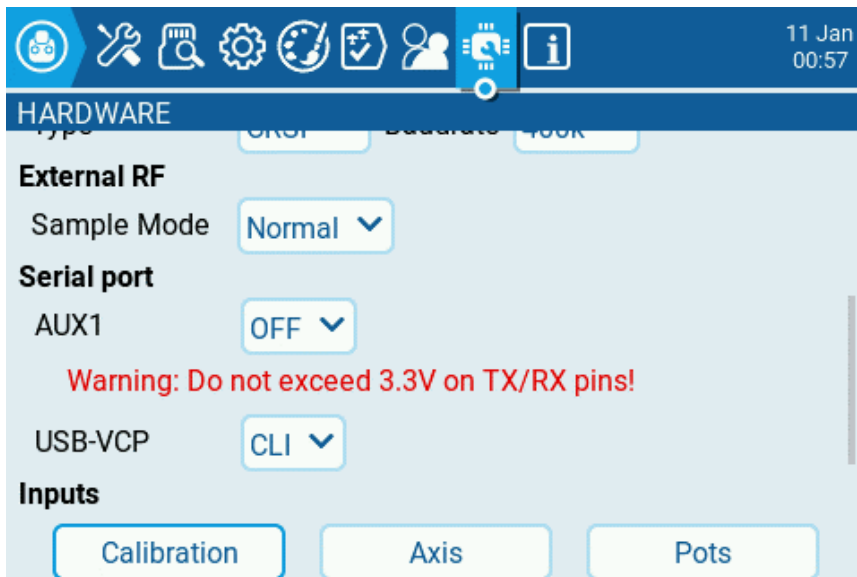
**Battery Calibration:** If you have a multimeter, you can input the measured battery voltage value to calibrate the displayed value on the radio.

**Check RTC voltage:** When enabled, the radio will check the RTC battery voltage at startup and warn you if the voltage is too low.

**ADC Filter:** Enable or disable ADC filtering. It can also be enabled/disabled per model in the model settings.

**Mute if no sound:** When enabled, the radio will be in mute mode until a sound needs to be played. This prevents interference noise from high-power TX modules from coming through the radio speakers.

**Internal RF Type:** Choose the type of internal module. Options are Multi, XJT, ISRM, and CRSF. When CRSF is selected, you can also choose the baud rate. The baud rate is the communication speed between the transmission module and the radio. Common baud rates include 115200bps (sometimes shown as 115K) and 400000bps (sometimes shown as 400K). A higher baud rate means faster communication, reducing system end-to-end latency.



**External RF Sample Mode: Options:** Normal and OneBit. Most users should use the default setting, Normal.

**Serial Port:** Lists the available auxiliary serial ports that can be configured and used. The listed ports are based on the available ports in the specific radio hardware.

**AUX1:** The first available auxiliary serial port can be configured with the following options:

**OFF:** Turn off the port.

**Telem Mirror:** The same telemetry data sent to the external module will be sent to the serial port.

**Telemetry In:** Receive telemetry data through the serial port.

**SBUS Trainer:** Connect the trainer and student radios via the serial port.

**LUA:** Send/receive data from Lua scripts.

**GPS:** Receive GPS telemetry data through the serial port.

**CLI:** Send commands to the radio via the command line.

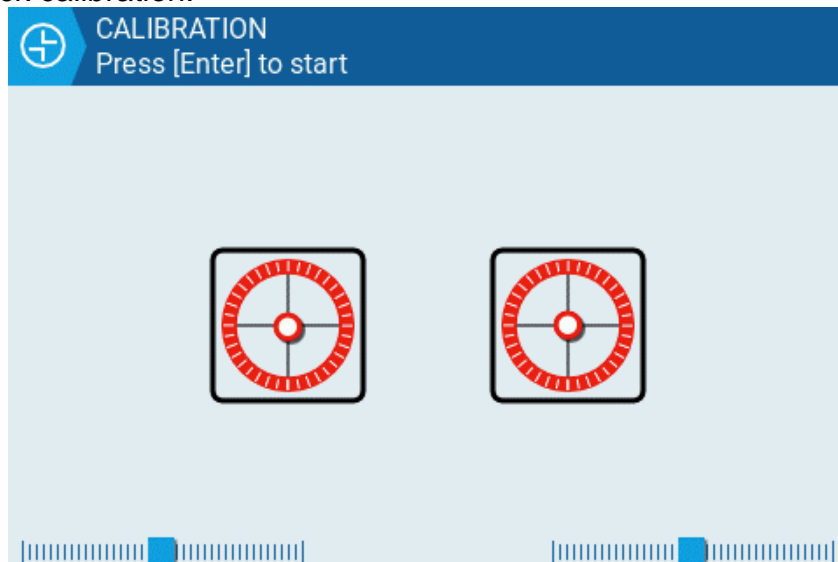
**External Module:** This allows external access mode to be configured at runtime instead of through compile options.

**USB-VCP:** Virtual COM port. This is one of the options that appears when most radios are connected to a PC. For radios with an internal ExpressLRS RF module, it is usually set to CLI for firmware updates.

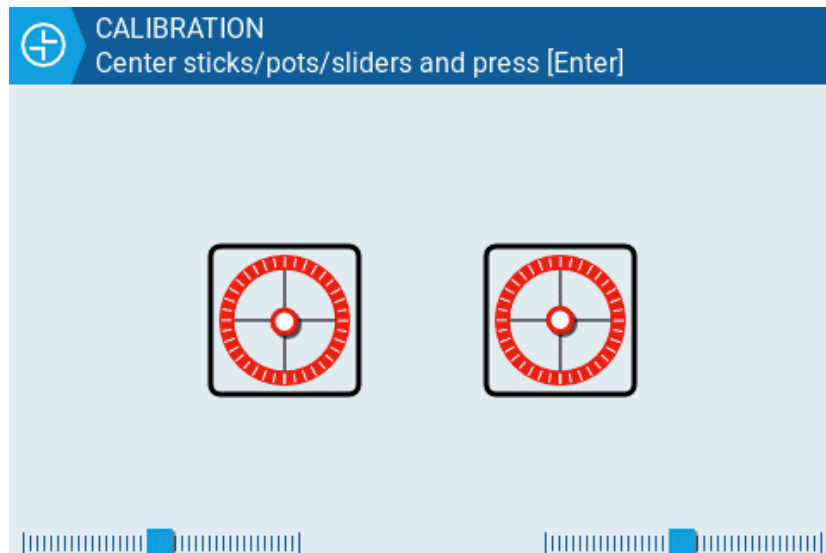
## Inputs:



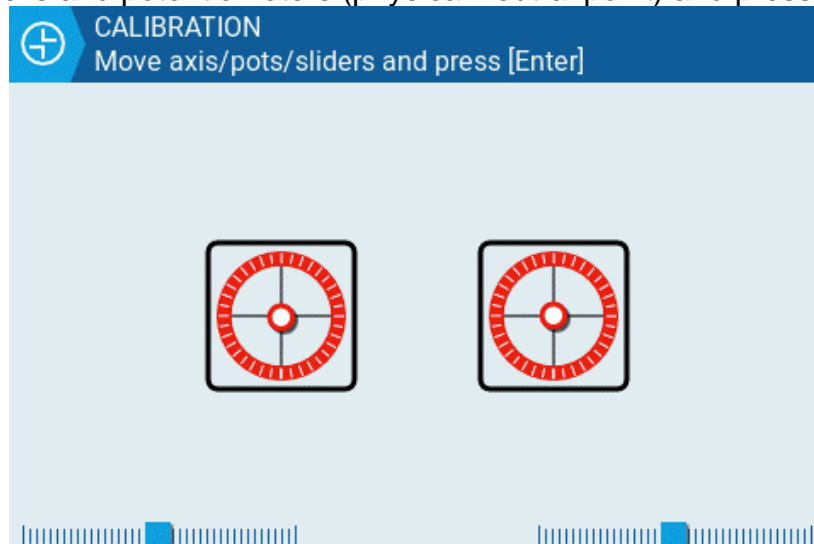
**Calibration:** Stick calibration interface. Used to calibrate the physical controls (sticks, knobs, sliders) of the radio. The radio will prompt you to complete the calibration steps. For stick calibration, move the sticks from left to right and top to bottom, rather than in a circular motion (drawing circles). Use normal pressure at the endpoints. Excessive pressure at the endpoints can lead to incorrect stick calibration.



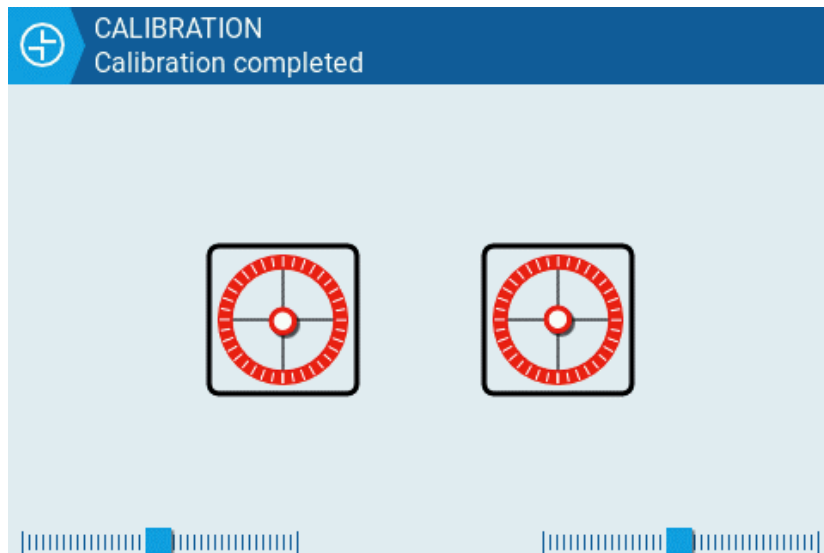
Press ENT to start the calibration process.



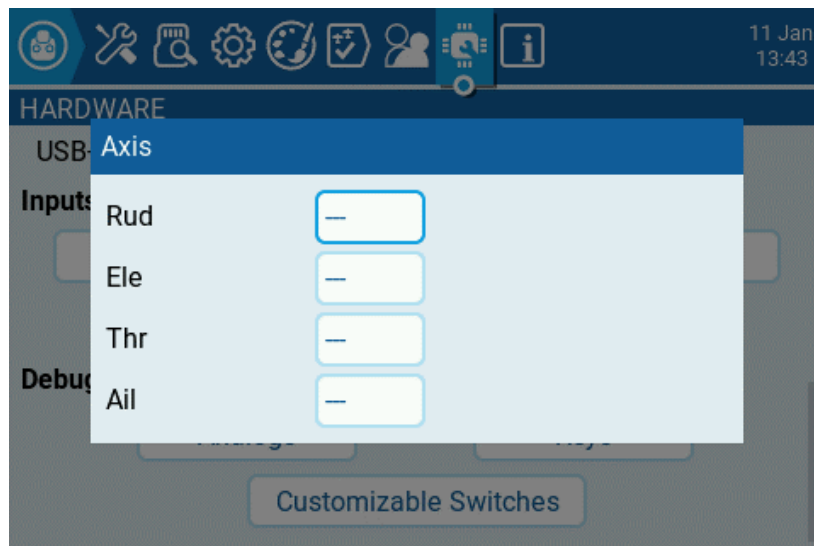
Center all sticks and potentiometers (physical neutral point) and press ENT.



Move the potentiometers and sticks to their maximum and minimum positions, then press ENT to end the calibration. After the display shows the following screen, press ENT to complete the calibration.

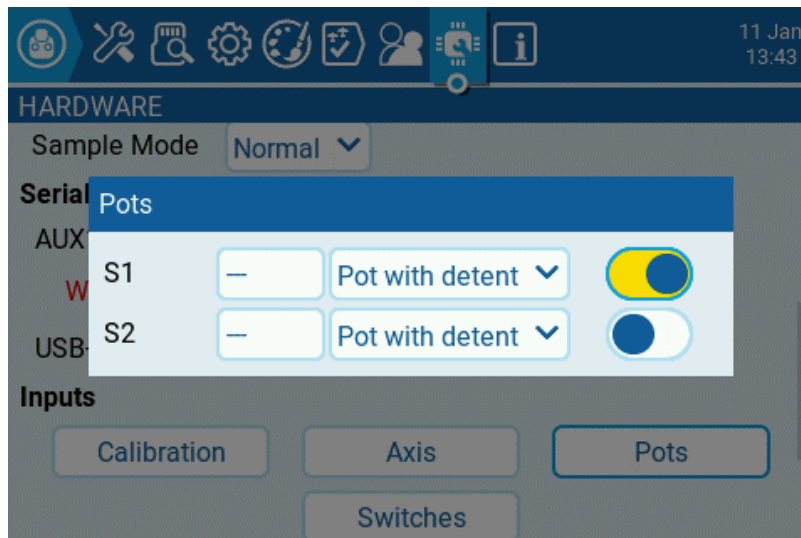


**Axis:** Selecting Axis opens the configuration screen. Here, you will see EdgeTX predefined physical controls. You can add a 3-character label to the controls and change the control type as needed.

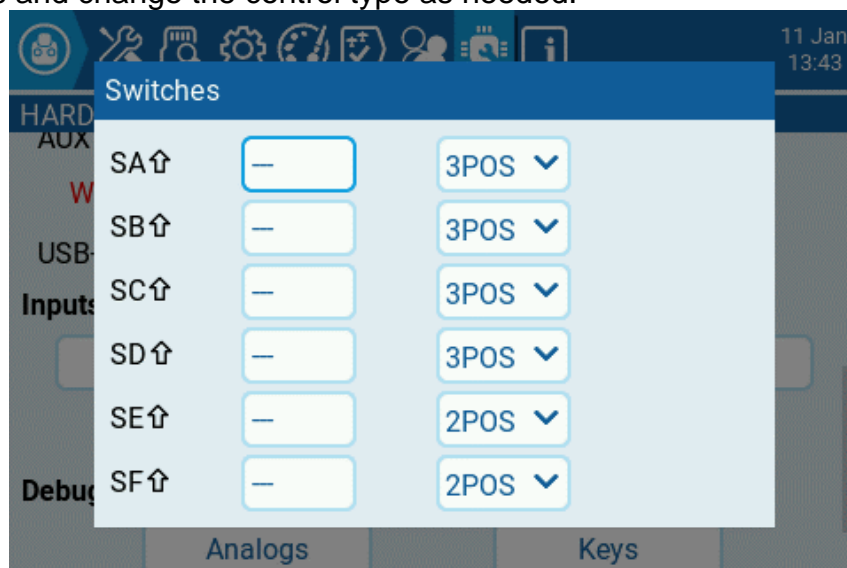


**Pots:** Selecting Pots opens the configuration screen. Here, you will see EdgeTX predefined physical controls. You can add a 3-character label to the controls and change the control type as needed. The direction of the knobs can be reversed, as shown in the image below.



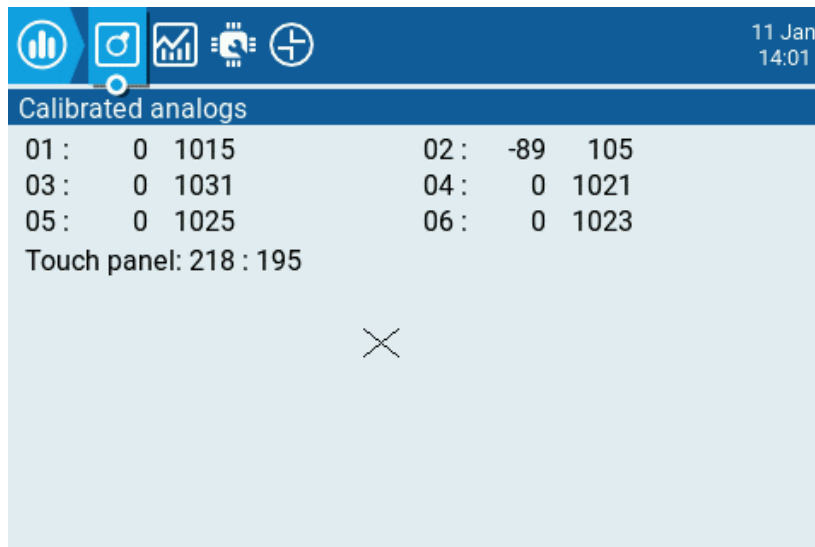


**Switches:** Selecting Switches opens the configuration screen. Here, you will see EdgeTX predefined physical controls. You can add a 3-character label to the controls and change the control type as needed.



**Debug:** The Debug section allows for testing and debugging the hardware.

**Analogs:** These pages display data for analog controls (sticks, sliders, potentiometers) and the radio's touchscreen. There are four views: Calibrated Analogs, Filtered Raw Analogs with Bias, Unfiltered Raw Analogs, and Min/Max and Range.



**Keys:** This page displays the digital data for keys, switches, trims, and rotary encoders (scroll wheels).

RADIO SETUP SWITCHES TEST					
Exit	0	SA↑	Trims	-	+
Enter	0	SB↑	T1	0	0
PgDn	0	SC↑	T2	0	0
MDL	0	SD↑	T3	0	0
TELE	0	SE↑	T4	0	0
SYS	0	SF↑			
R.E.	30				

**Customizable Switches:** This page shows the data for six independent buttons and the status of the LEDs.

RADIO SETUP CUSTOMIZABLE SWITCHES			
	Phys	Log	Led
SW1	0	0	0
SW2	0	0	0
SW3	0	0	0
SW4	0	0	0
SW5	0	0	0
SW6	0	0	0

## 1.1.2 Version

This page displays firmware-related information, including:

11 Jan  
14:09

**VERSION**

FW: edgetx-t15  
 VERS: Factory firmware (39cbe707)  
 DATE: 2024-05-13  
 TIME: 08:58:41  
 OPTS: crossfire, ghost, afhds3, internalmulti, internalaccess,  
 multimodule, lua, luac, cli, passthrough

Modules / RX version

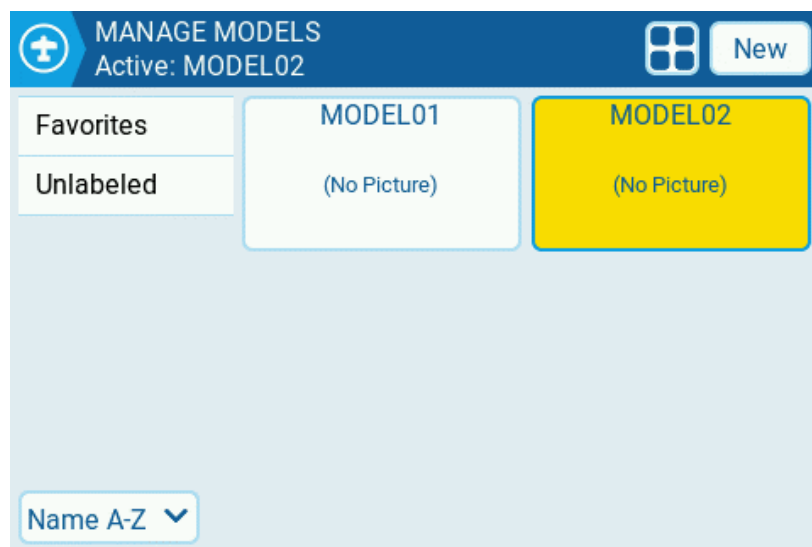
**FW:** Firmware name.

**VERS:** Firmware version.

**DATE:** Firmware compile date.  
**TIME:** Firmware compile time.  
**OPTS:** Build options enabled during compilation.

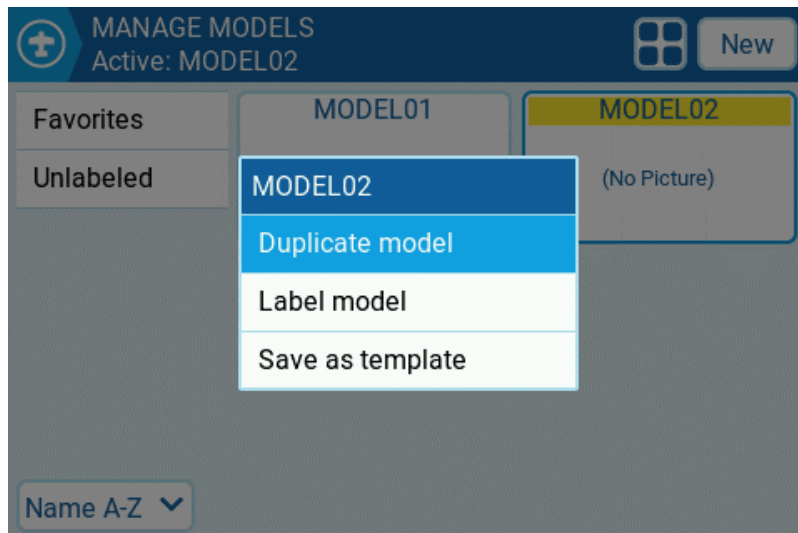
### 1.1.3 Manage Models

The Manage Models menu allows you to create new models, select the active model, create and apply model labels, and create model templates. Selecting the "New" option will start the New Model Wizard, which guides users through basic control setup. (Since models are stored on the SD card, there is no limit to the number of models you can set.)



#### Selecting and Managing Existing Models

The active model's name will be highlighted (in this example, yellow) and displayed at the top of the screen. Double-clicking (or using the scroll wheel to select and press the ENT key) the active model provides the following options:

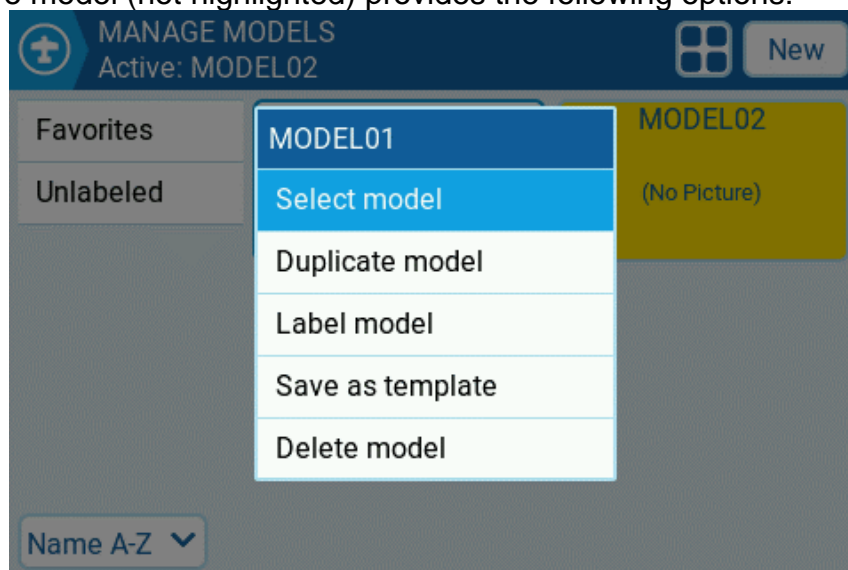


**Duplicate Model:** Creates an exact copy of the model with the same name. You will need to change the model name or other settings in the model setup tab.

**Label Model:** Displays all configured labels, allowing you to select labels for this model. More information about model labels is provided below.

**Save as Template:** Saves a copy of the model as a model template. (Changes to the saved template do not update the template itself.)

Double-clicking (or using the scroll wheel to select and press the ENT key) a non-active model (not highlighted) provides the following options:



**Select Model:** Selects the model as the active model.

**Duplicate Model:** Creates an exact copy of the model with the same name. You will need to change the model name or other settings in the model setup tab.

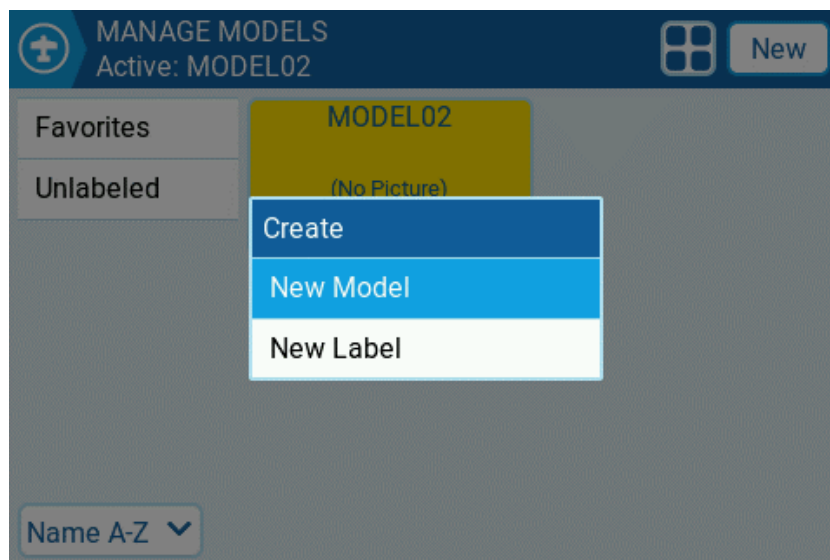
**Label Model:** Displays all configured labels, allowing you to select labels for this model. More information about model labels is provided below.

**Save as Template:** Saves a copy of the model as a model template. (Changes to the saved template do not update the template itself.)

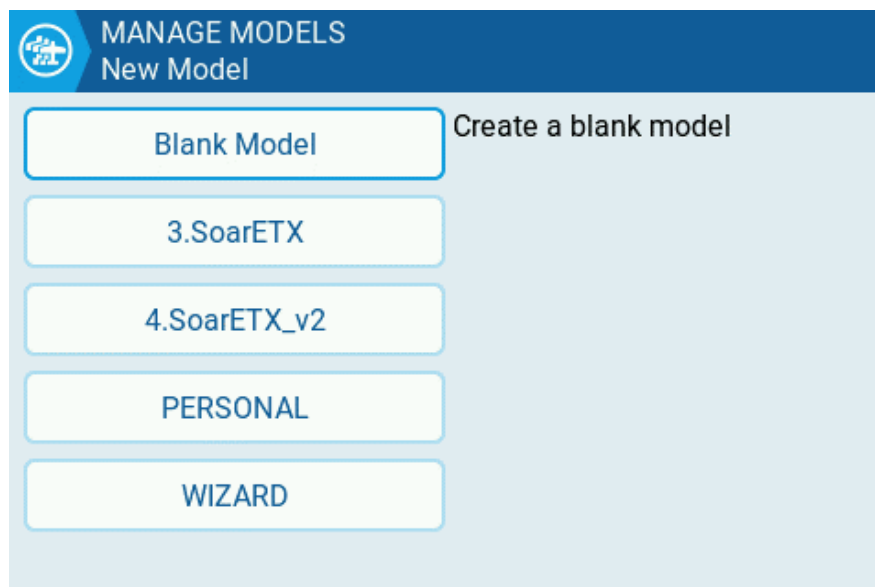
**Delete Model:** Deletes the model. Only non-active (not currently in use) models can be deleted.

## Creating a New Model

To create a new model, select the "New" button in the top right corner. You will then see the following options:



New Model: Choose New Model



**Blank Model:** Creates a blank model with only the default options configured.

**SoarETX and SoarETXv2:** Displays pre-configured model templates for gliders.

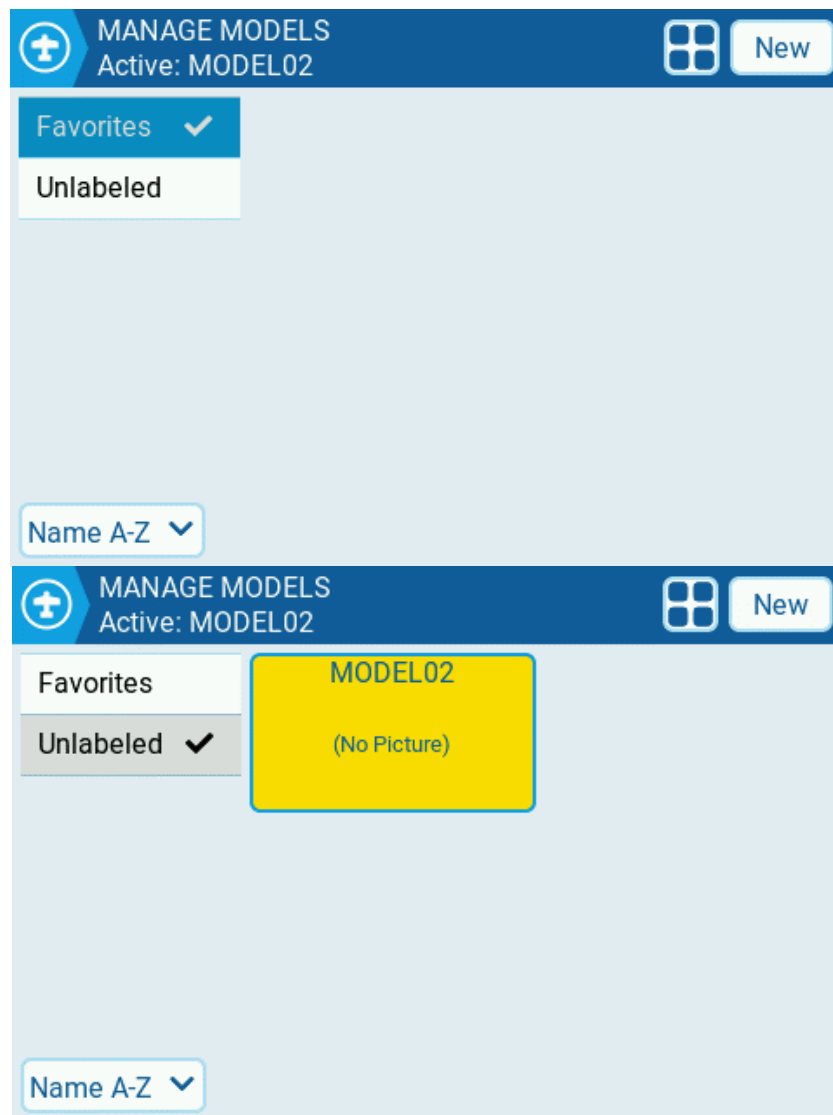
**PERSONAL:** Allows you to choose a saved model template and create its copy as a new model.

**WIZARD:** Starts the New Model Wizard and creates a model based on the wizard configuration.

**Labels:** Model labels allow you to assign one or more labels to each model. You can then filter the models displayed on the Manage Models screen based on your chosen labels. This makes it easier for those with many configured models to find them. By default, "Favorites" and "Unlabeled" labels are automatically created. All models are considered unlabeled until a label is applied to them.

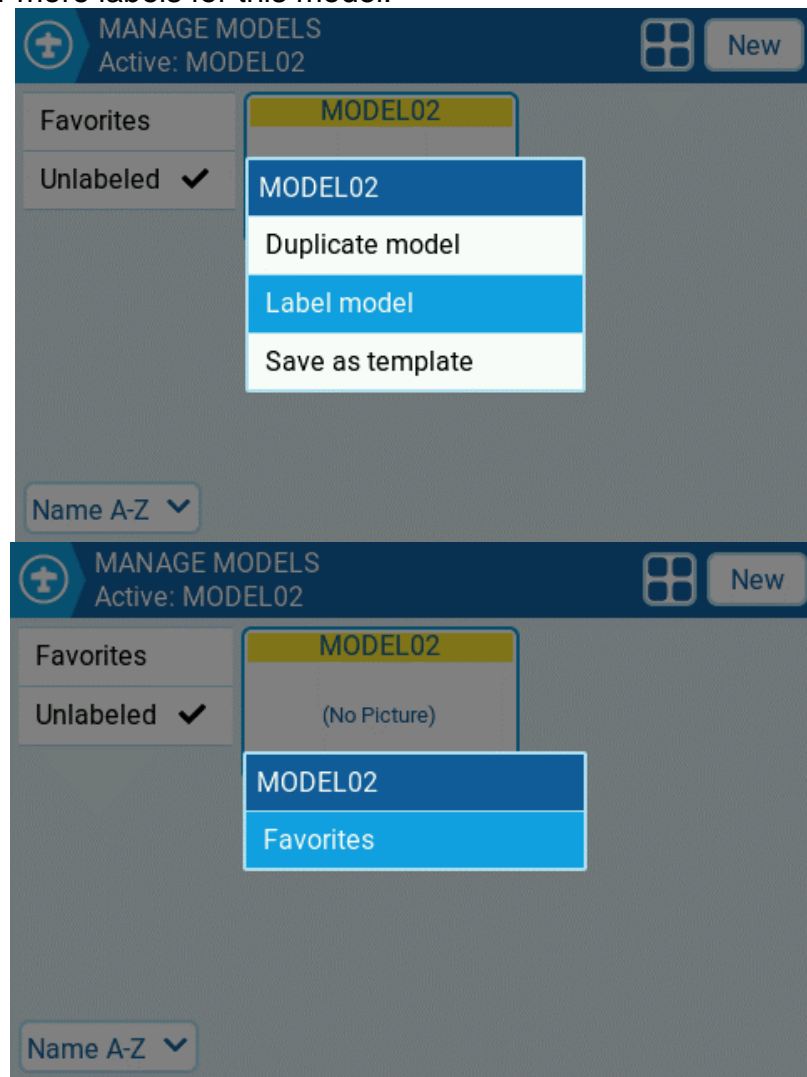
### Filtering Models by Labels

To filter visible models based on labels, select one or more filters from the left column. It will automatically filter out models that do not have these labels.



**Assigning Labels to Models:** To assign labels to a model, double-click the model or press [ENT] after selecting the model, and then choose "Label

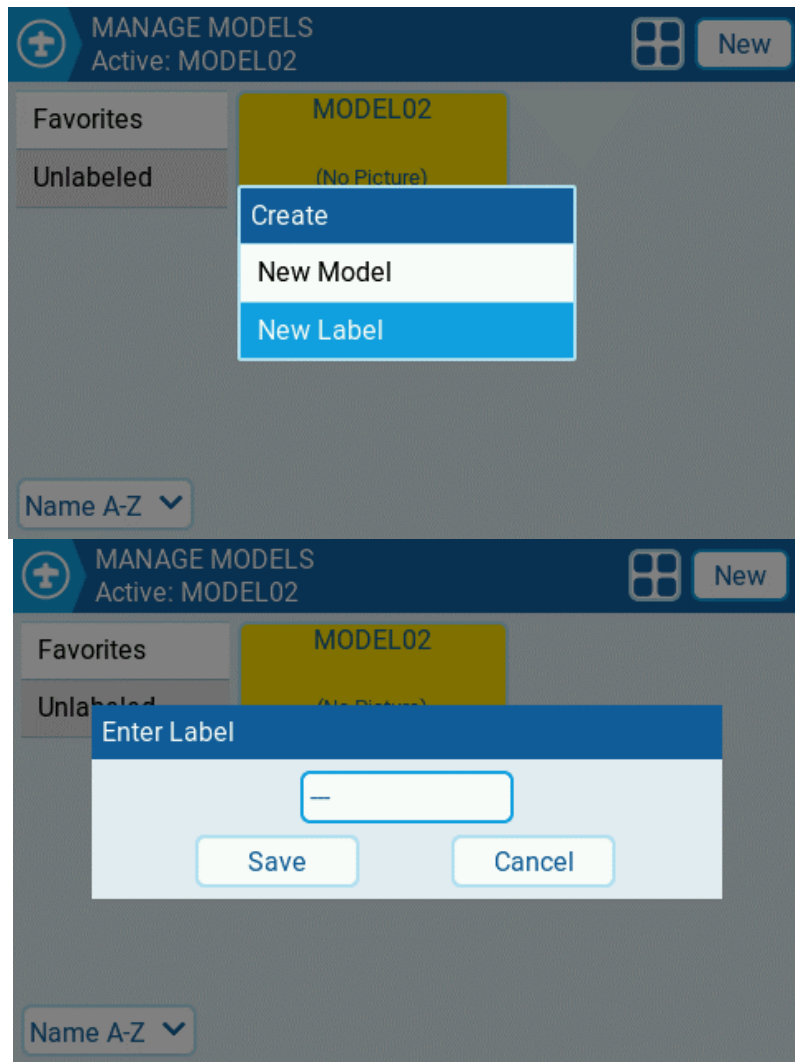
Models." After selection, all configured labels will be displayed, and you can choose one or more labels for this model.



### Creating New Model Labels

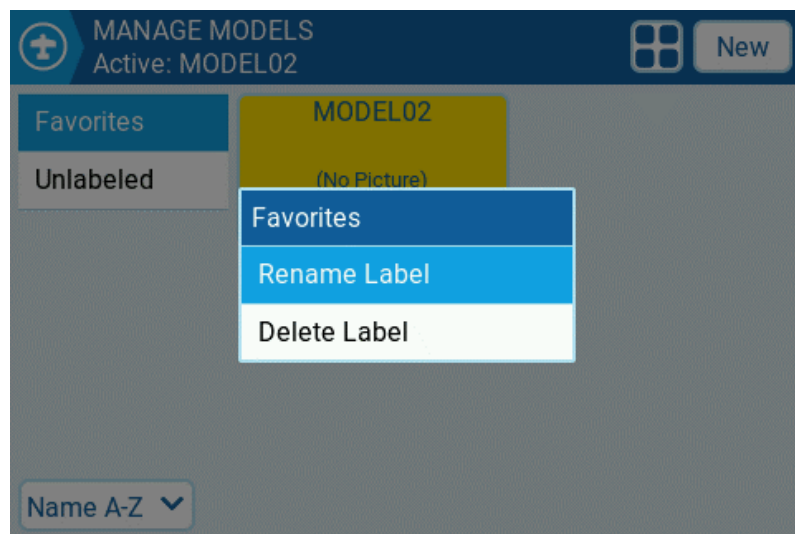
To create a new model label, select the "New" button in the top right corner of the screen. A new label popup will appear, allowing you to enter the desired label name. Select "Save" to save the new label.





### Editing Model Labels

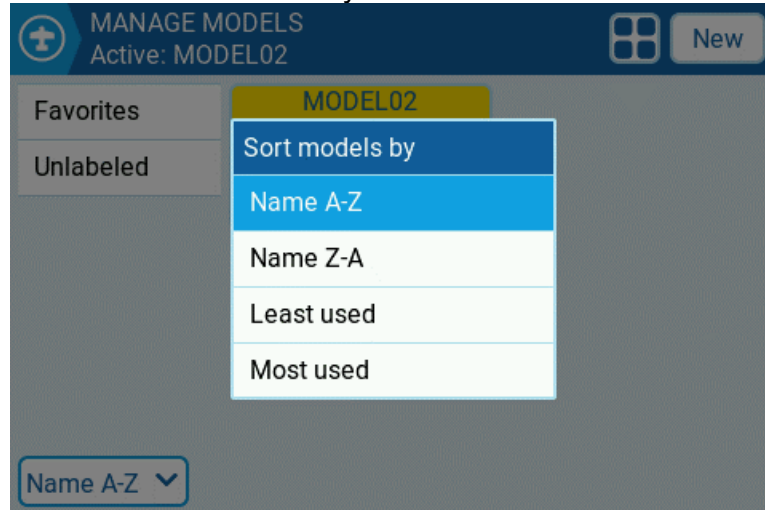
After selecting the model label you need to change, long press [ENT] or long press the desired label to see a menu with the following options:



**Rename Label:** Change the label's name.

**Delete Label:** Remove the label from the list and from all models assigned to it.

**Sort Models:** The dropdown menu below the label list is used to sort the filtered models. Models can be sorted by:



**Name A-Z:** Model names in alphabetical order (A-Z).

**Name Z-A:** Model names in reverse alphabetical order (Z-A).

**Least Used:** Least used models.

**Most Used:** Most used models.

### Choose Model List Layout

Selecting the icon to the left of the "New" button in the top right corner allows you to toggle between four list layouts.

## 1.1.4 Model Setup

The Model Setup covers all the initial settings needed. The "Model Setup" page includes the following features:

Define model name.

Set model image.

Configure three timers.

Set trim step precision.

Enable throttle reverse.

Set throttle source to trigger time.

Enable throttle trim for idle only.

Set pre-flight check.

Display checklist.

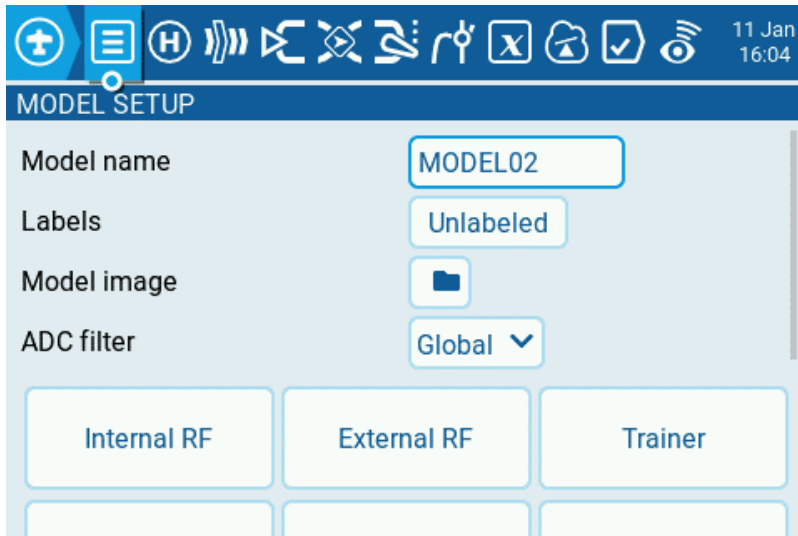
Enable center beep on selected controls.

Configure internal RF module.

Configure external RF module.

Set up trainer mode.

Press the MDL button briefly to enter the Model Setup page.



#### Model Setup Options

Model Name: The name of the model, up to 15 characters long.

Labels: Assign labels from the defined label list here. By default, the model label will be "Unlabeled."

Model Image: The model icon. Model icon files are stored in the IMAGES folder on the SD card. These images can be previewed in the SD card page of the system setup. The image format should be 155\*100 RGB JPG or PNG.

ADC Filter: Enable/disable the ADC filter for this model. The global option will use the value specified in the transmitter settings, enabled by default.

Internal RF: When the button is yellow, the internal RF module is "enabled" for the model; when the button is white, the internal RF module is "disabled."



Mode: Transmission mode for the internal RF module. This must match the type supported by the internal RF module, or binding will

fail (supported types can be selected in the Hardware menu of the system settings).

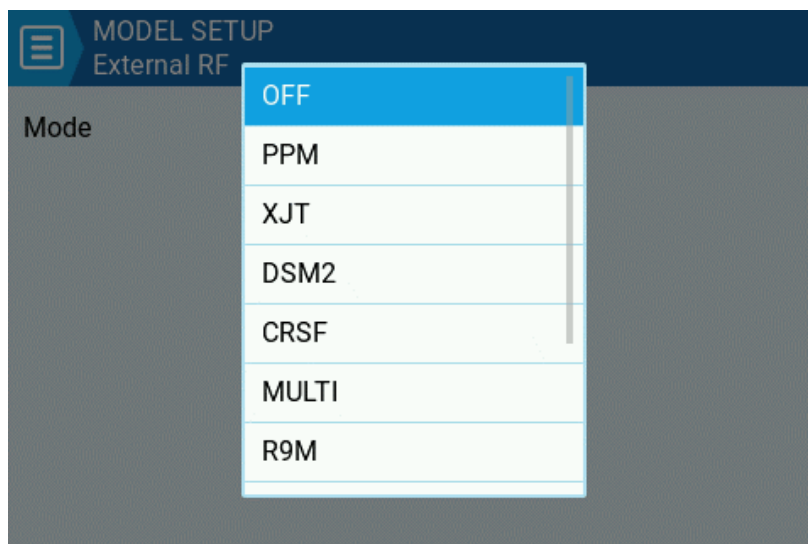
OFF: Turns off the internal RF module.

Channel Range: Sets the channel range. Reducing unused channels can help minimize latency.

Receiver: The receiver number assigned to the model, sent to the receiver during binding.

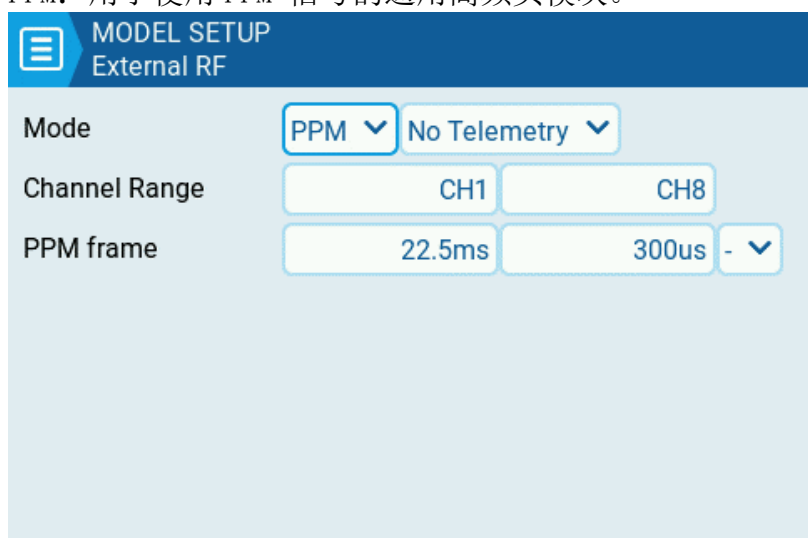
External RF: When the button is yellow, the external RF module is "enabled" for the model; when the button is white, the external RF module is "disabled."

Mode: Transmission mode for the external RF module. This must match the type supported by the external RF module, or binding will fail.



OFF: 关闭外部 RF 射频模块。

PPM: 用于使用 PPM 信号的通用高频头模块。



Telemetry: Choose between "No telemetry" or "MLink" for telemetry options.

Channel Range: Sets the range of channels to be used.

PPM Frame: Adjusts the frame length, pulse length, and polarity of the PPM frame.

Frame Length: The duration of the entire PPM frame.

Pulse Length: The duration of each pulse within the PPM frame.

Polarity: The signal polarity, either positive or negative.

The frame length will automatically adjust to the correct value when the number of transmission channels changes. However, you can manually change this auto-assigned value as needed.

XJT:

The screenshot shows a menu titled "MODEL SETUP External RF" with a hamburger menu icon on the left. The settings are as follows:

- Mode:** XJT (dropdown) and D16 (dropdown)
- Channel Range:** CH1 (input field) and CH16 (input field)
- Failsafe mode:** Not set (dropdown)
- ID is unique:** (checkbox)
- Receiver:** 0 (input field), Bind (button), and Range (button)

Protocol: Choose between D16, D8, or LR12.

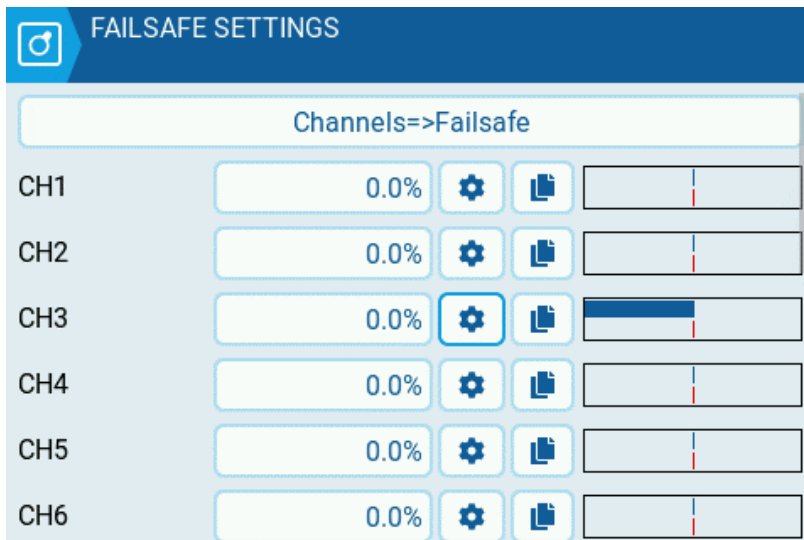
Channel Range: Sets the range of channels to be used.

Failsafe Mode: Configures the failsafe behavior when no signal is received from the transmitter (available in D16 protocol).

Not Set: Failsafe mode is not set.

Hold: The receiver holds the last received channel values.

Custom: Customizes the failsafe values for each channel. Select "Set" to enter the custom failsafe settings page, where you can set the failsafe value for each channel individually. Scroll to the desired channel, press ENT to enter edit mode, set the value, and press ENT again to save. You can also select the gear icon to set HOLD and NONE values.



No pulses: Disables pulses (used for flight controllers with GPS return-to-home functions, commonly used with open-source flight controllers like PIX and INAV).

Receiver: Uses the receiver's failsafe settings.

Receiver: Assigns a receiver number to the model, which is sent to the receiver during binding.

Bind: Puts the transmitter into bind mode, emitting a beep every 2.5 seconds.

Range: Enters range check mode, displaying the RSSI value and emitting a sound every 5 seconds.

DSM2:



Protocol: Choose between LP45, DSM2, or DSMX.

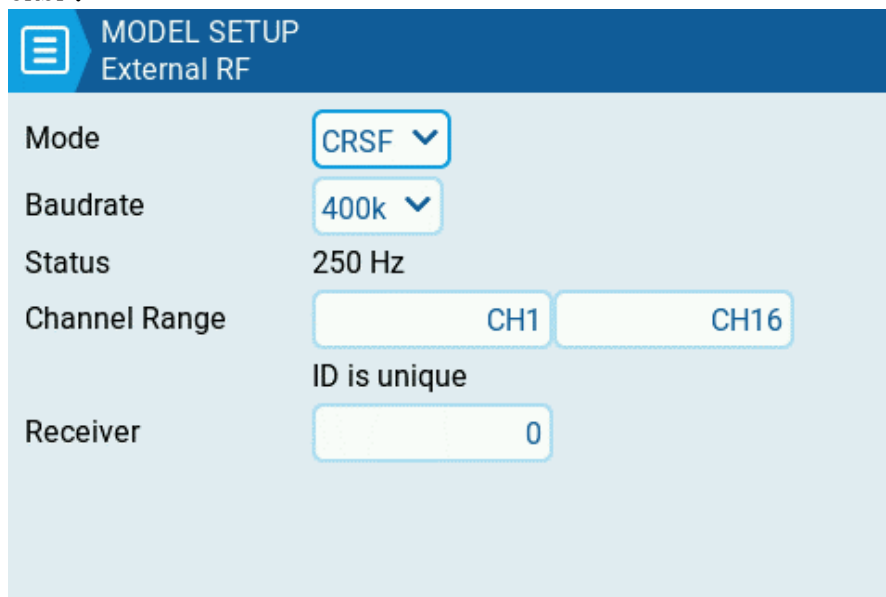
Channel Range: Sets the range of channels to be used.

Receiver: Assigns a receiver number to the model, which is sent to the receiver during binding.

Bind: Puts the transmitter into bind mode, emitting a beep every 2.5 seconds.

Range: Enters range check mode, displaying the RSSI value and emitting a sound every 5 seconds.

CRSF:



The screenshot shows a software interface for 'MODEL SETUP External RF'. The 'Mode' is set to 'CRSF'. The 'Baudrate' is set to '400k'. The 'Status' is '250 Hz'. The 'Channel Range' is set from 'CH1' to 'CH16'. Below this, it says 'ID is unique'. The 'Receiver' is set to '0'.

Setting	Value
Mode	CRSF
Baudrate	400k
Status	250 Hz
Channel Range	CH1 - CH16
Receiver	0

Baudrate: Sets the communication speed between the RF module and the transmitter.

Status: Displays the status of the module.

Channel Range: Sets the range of channels to be used.

Receiver: Assigns a receiver number to the model, which is sent to the receiver during binding.

Multi: Multi-protocol module.

R9M:

Mode: FCC, EU, 868MHz, 915 MHz

Channel Range: Sets the range of channels to be used.

Failsafe Mode: The mode activated when the receiver loses signal from the remote control.

Not Set: No failsafe mode set.

Hold: The receiver will hold the last received channel values from the remote control.

Custom: Custom failsafe receiver output values. Select "Set" to enter the custom failsafe setup page where you can set failsafe values for each channel individually. Scroll to the desired channel, short press ENT to enter edit mode, set the value, and short press ENT to save.

You can also select the gear icon to set HOLD and NONE values.

No pulses: Turn off pulses (used for flight controllers with GPS that can return home automatically, mostly used in open-source flight controllers like PIX and INAV).

Receiver: Use the receiver's failsafe settings.

Receiver: The receiver number assigned to the model, sent to the receiver during binding.

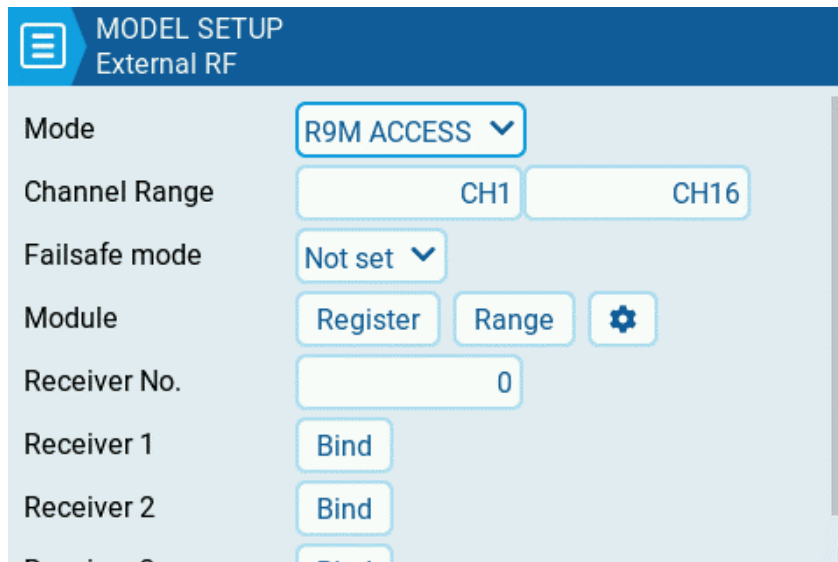
Bind: Binding mode. In this mode, the transmitter beeps every 2.5 seconds.

Range: This puts the remote control into range mode. In this mode, the RSSI value is displayed and a sound is emitted every 5 seconds.

RF Power: The output power of the RF module.

R9M Access: Note: To make the R9M ACCESS mode visible in the mode dropdown list, the AUX1 serial port on the hardware page must be configured as an external module.





Channel Range: Channel range.

Failsafe Mode: The mode activated when the receiver loses signal from the remote control.

Not Set: No failsafe mode set.

Hold: The receiver will hold the last received channel values from the remote control.

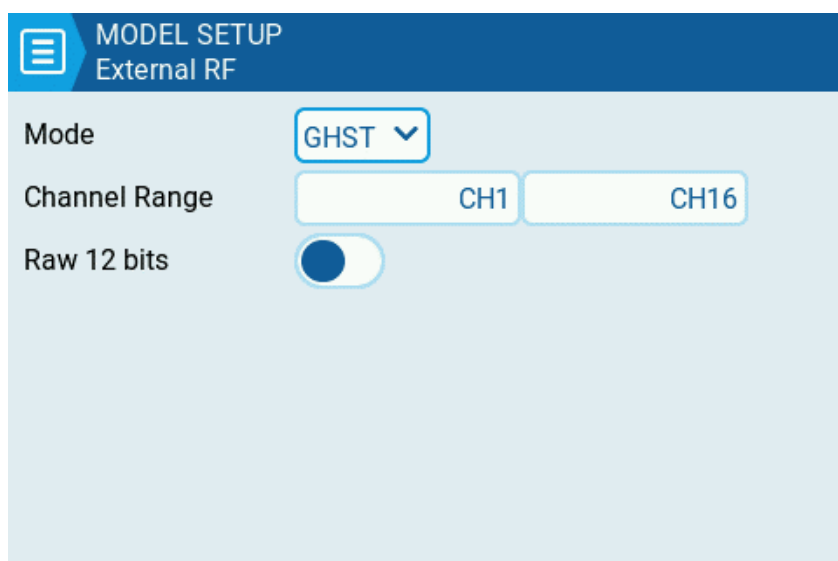
Custom: Custom failsafe receiver output values. Select "Set" to enter the custom failsafe setup page where you can set failsafe values for each channel individually. Scroll to the desired channel, short press ENT to enter edit mode, set the value, and short press ENT to save.

You can also select the gear icon to set HOLD and NONE values.

No pulses: Turn off pulses (used for flight controllers with GPS that can return home automatically, mostly used in open-source flight controllers like PIX and INAV).

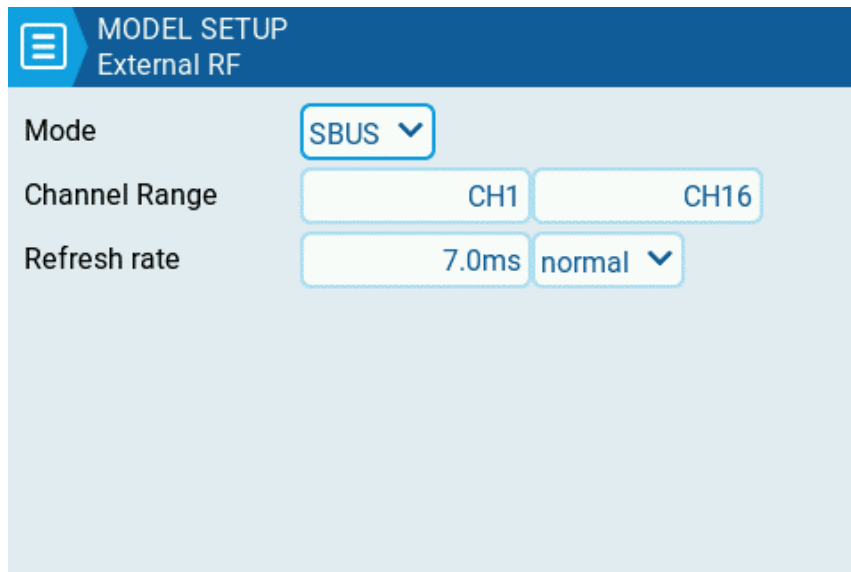
Receiver: Use the receiver's failsafe settings.

GHST: ImmersionRC Ghost module



Channel Range: Channel range  
Raw 12 bits: Enable 12-bit mode

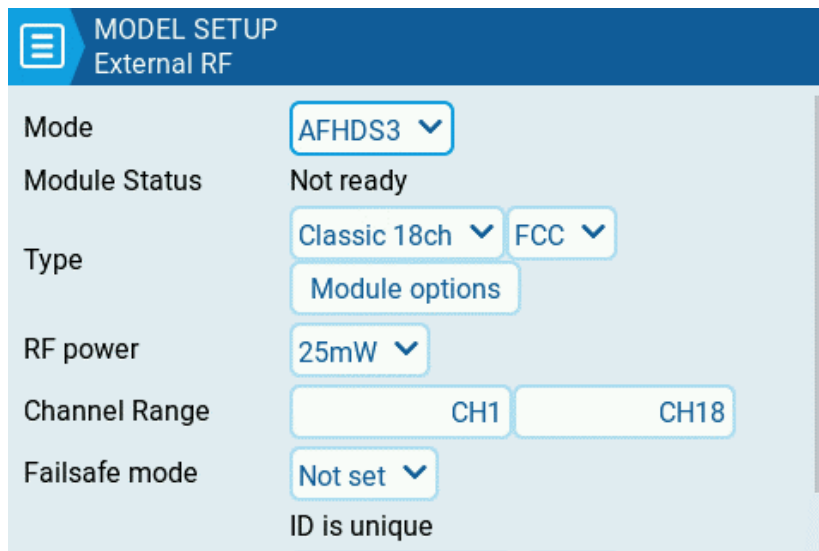
SBUS:



The screenshot shows the 'MODEL SETUP External RF' interface for SBUS. It features a blue header with a menu icon and the text 'MODEL SETUP External RF'. Below the header, there are three rows of configuration options: 'Mode' with a dropdown menu set to 'SBUS', 'Channel Range' with two input fields containing 'CH1' and 'CH16', and 'Refresh rate' with an input field containing '7.0ms' and a dropdown menu set to 'normal'.

Channel Range: Channel range.  
Refresh Rate: Refresh rate (in milliseconds).  
Inversion: Normal, Non-inverted.

AFHDS3:



The screenshot shows the 'MODEL SETUP External RF' interface for AFHDS3. It features a blue header with a menu icon and the text 'MODEL SETUP External RF'. Below the header, there are several rows of configuration options: 'Mode' with a dropdown menu set to 'AFHDS3', 'Module Status' with the text 'Not ready', 'Type' with two dropdown menus set to 'Classic 18ch' and 'FCC', a 'Module options' button, 'RF power' with a dropdown menu set to '25mW', 'Channel Range' with two input fields containing 'CH1' and 'CH18', and 'Failsafe mode' with a dropdown menu set to 'Not set'. At the bottom, there is a status indicator 'ID is unique'.

Module Status: Module status.  
RF Power: The output power of the RF module.  
Channel Range: Channel range.

LemonRx DSMP:



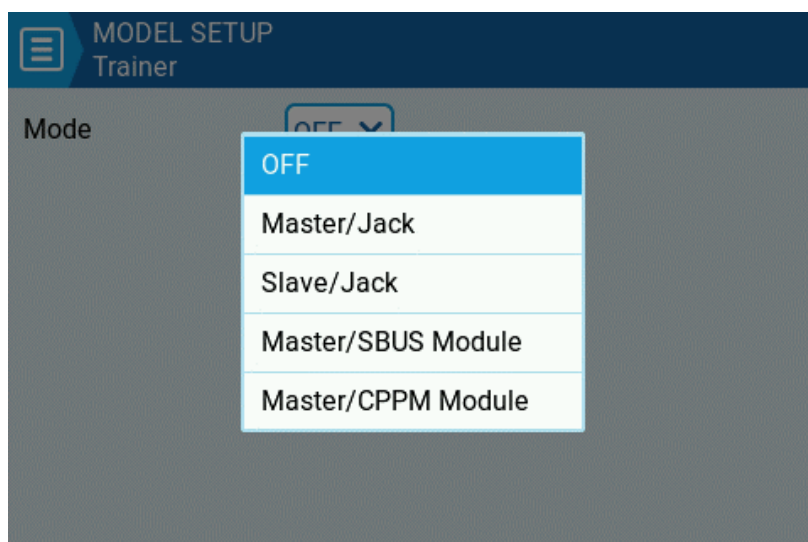
Channel Range: Channel range.

Receiver: The receiver number assigned to the model, sent to the receiver during binding.

Bind: Binding mode. In this mode, the transmitter beeps every 2.5 seconds.

Range: This puts the remote control into range mode. In this mode, the RSSI value is displayed and a sound is emitted every 5 seconds.

Trainer: Set the master-slave mode of the trainer port.



Off: This model does not use trainer mode.

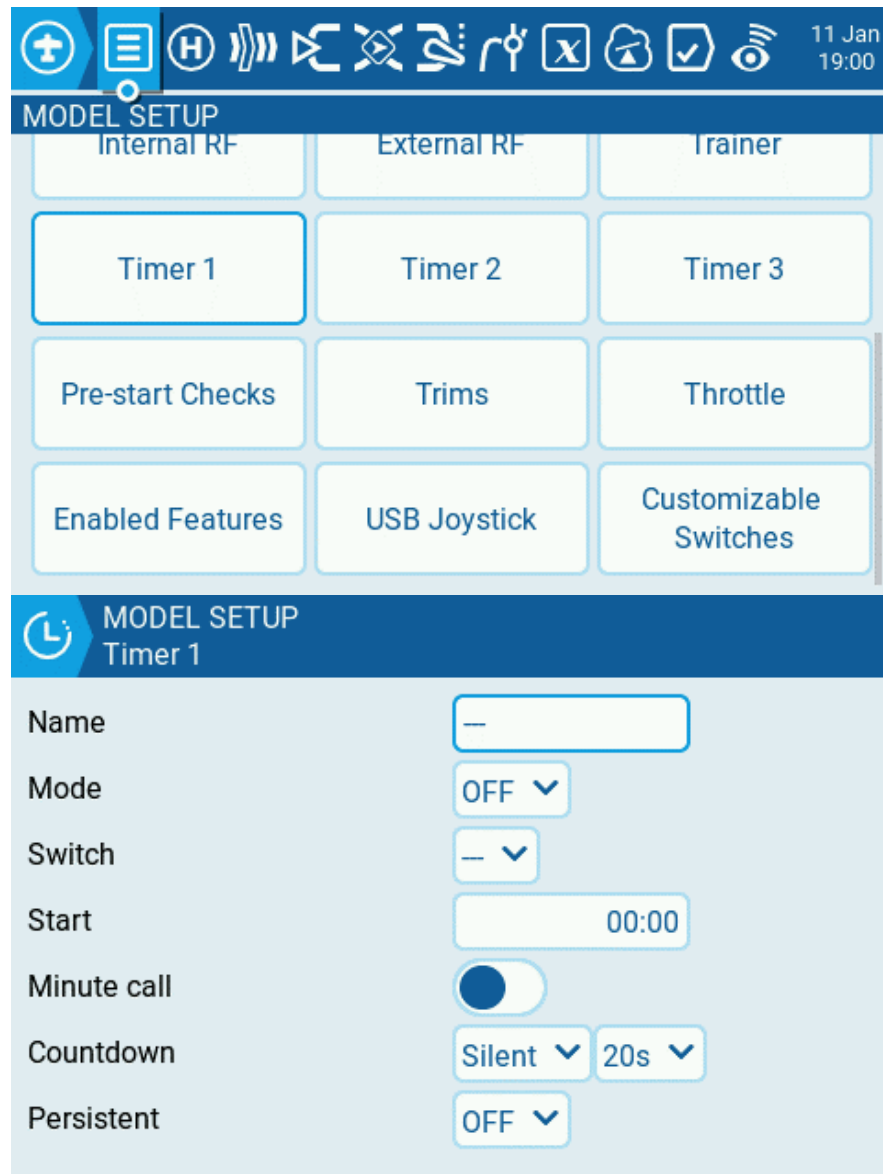
Master/Jack: Master mode, trainer.

Slave/Jack: Slave mode, student (also used for simulators with dongles, set this option). In slave mode, frame length and pulse length can be set (similar to setting extended PPM high-frequency modules).

Timer 1/2/3: EdgeTX provides three customizable programmable timers.

窗体顶端

窗体底端



Name: Timer name

Mode:

OFF: Timer is not used.

ON: Timer runs continuously.

Start: Timer starts once the configured switch is activated. Once timing starts, the timer ignores the switch position

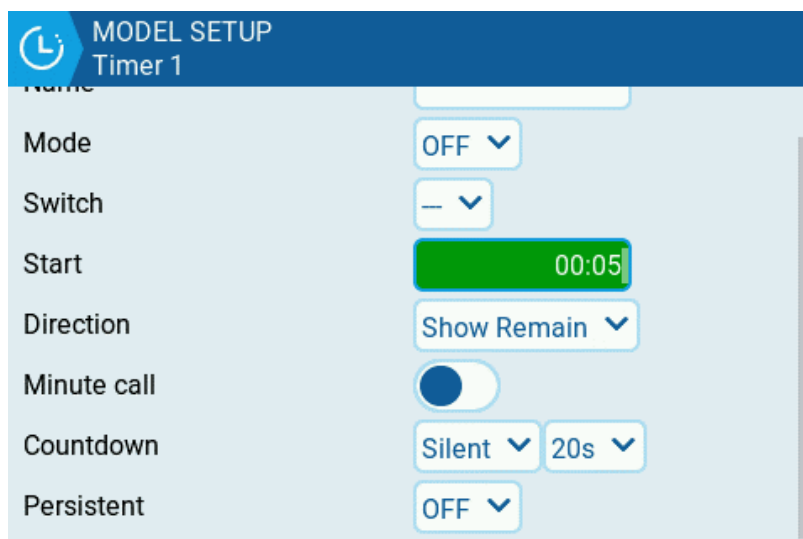
**Throttle:** Timer starts once the throttle is raised and the configured switch is activated. If the throttle position is lowered back to the minimum value or the configured switch is deactivated, the timer stops counting

**Throttle %:** Timing based on throttle percentage

**Throttle Start:** Timer starts once the throttle is raised and the configured switch is activated. After starting, the timer ignores the throttle position and continues counting (the lowest throttle does not stop the timer) unless the switch is deactivated

**Switch:** Select the switch that triggers the timer start. If no switch is selected, the timer will only trigger based on the configured mode. In addition to switches, you can also select trim, telemetry sources (triggered when telemetry data is received from this source). Items with "!" in front of the trigger name indicate opposite conditions. For example, "!SA-" means "when the SA switch is not in the middle/central position (up or down)."

**Start:** Timer start time. The default is 00:00. If this remains, the timer runs like a stopwatch, counting up until stopped. If a different time is entered in this box, additional direction dropdown menu options appear



**Direction:** If set to "Show Remaining," the counter functions like a countdown timer - counting down from the specified time to zero, then alerting the user. If set to "Show Elapsed," the timer functions like

an alarm clock, counting up from zero to the specified time, then alerting the user.

Minute Call: If selected, a beep or voice will indicate each elapsed minute.

Count Down:

Silent: No notification before the timer reaches zero. A beep sounds when it reaches zero.

Beeps: The remote control beeps every second starting from the specified time.

Voice: The remote control counts down by seconds starting from the specified time.

Haptic: The remote control vibrates every second starting from the specified time.

Beeps & Haptic: The remote control beeps and vibrates every second starting from the specified time.

Voice & Haptic: The remote control counts down by seconds and vibrates every second starting from the specified time.

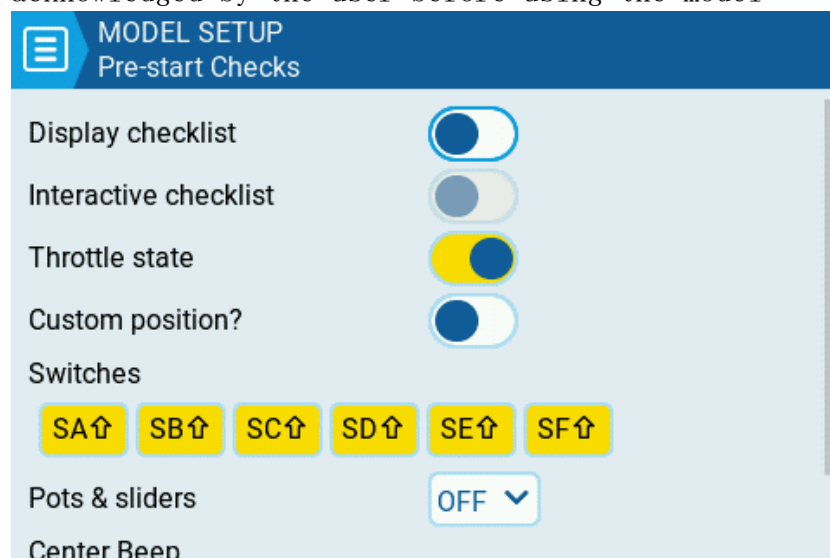
Persistent

Off: Timer values reset when switching models or turning the remote control on/off.

Flight: Timer values do not reset when switching models or turning the remote control on/off. Timer values reset only when "Reset flight" is selected in the reset telemetry menu.

Manual Reset: Timer values reset only when individually selected in the reset telemetry menu (e.g., "Reset timer1").

Pre-start Checks: Whenever a new model is loaded, EdgeTX performs pre-flight checks based on the checks configured on this page. If any check fails, EdgeTX provides audio and visual warnings which must be acknowledged by the user before using the model



Display checklist: When selected, the model note file is displayed when the model is loaded. A valid model note file must be located in

the Models folder on the SD card. The model note file must be a .txt file with the same name as its associated model, e.g., Model01.txt. The text in the file is determined by the user.

**Interactive checklist:** This option works with the "Display checklist" option. When selected, any line of text in the checklist file that begins with = will display as a checkbox. All displayed checkboxes must be checked to close the checklist.

**Throttle state:** When selected, the remote control checks whether the throttle is at the minimum range value of the throttle source configured in the throttle menu.

**Custom Position?:** When selected, a numeric box appears where a user-defined value for the throttle state check can be configured.

**Switches:** This section shows all the switches configured on the remote control and allows you to select which position is the correct position for the switch state check. Selecting a switch cycles through available switch positions or completely disables the switch check.

Yellow indicates the switch position check is activated. White indicates the switch position check is deactivated.

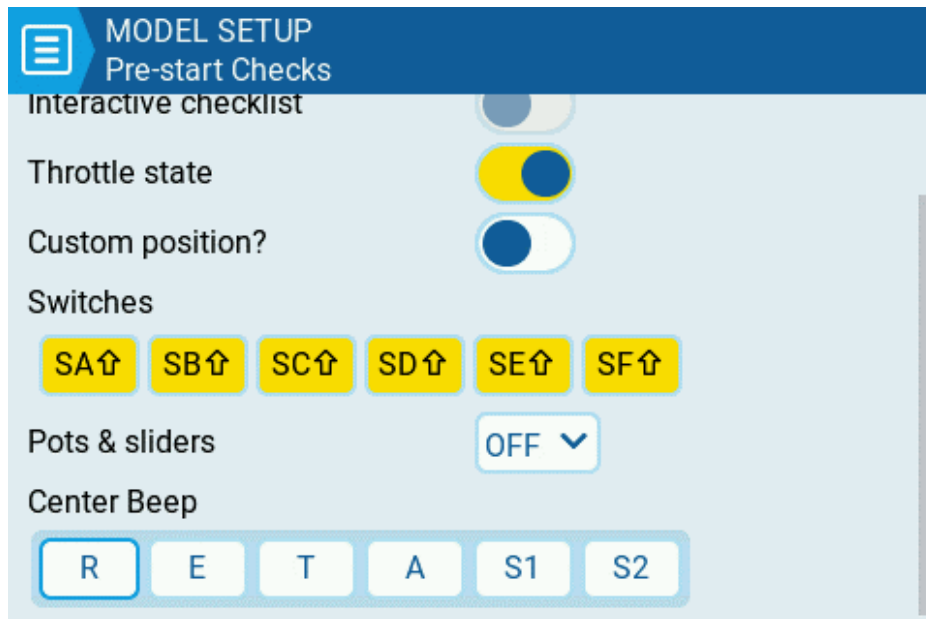
**Pots & Sliders:** When activated, this option checks the positions of potentiometers and sliders. There are three options - OFF, ON, and AUTO. When "ON" or "AUTO" is selected from the dropdown menu, buttons for available knobs and sliders appear.

**OFF:** Potentiometer and slider positions are not checked.

**ON:** Manual check position setup. When enabled, the check position is displayed in yellow. To manually set the check position, select "ON" from the dropdown menu, place the potentiometer and sliders in the desired position, then activate them by selecting them (yellow).

**AUTO:** Checks the positions of activated potentiometers and sliders and compares them to the last automatically saved positions before turning off the remote control or changing models.

**Center Beep:** Set the channels for center point prompts. Select the channels to set by pressing the ENT key (default is white, indicating no prompt. Yellow indicates enabled, with sound and vibration prompts when the corresponding channel passes the center point)



Trims: Trims are used to adjust the center position of the sticks



Reset: This will reset all trim values to zero.

Trim Step: Defines the increment/decrement of the trim when the trim switch is pressed.

Course = 1.6%

Medium = 0.8%

Fine = 0.4%

Extra Fine = 0.2%

Exponential = 0.2% near the center, the step value increases exponentially as the distance from the center increases.

Extended Trims: Increases the maximum trim adjustment value from  $\pm 25\%$  to  $\pm 100\%$ . When switching from extended trims to normal trims, the extended trim values remain until adjusted, then jump to the maximum/minimum normal trim value.



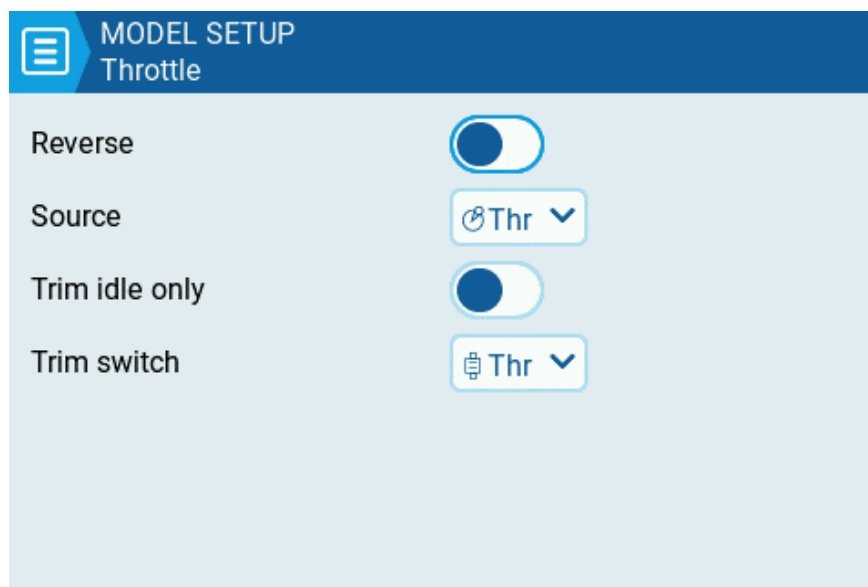
Display trims: Option to display numeric trim values on the trim bar. Options are:

No: Do not display numeric trim values on the trim bar.

Yes: If the trim is not zero, the trim value is displayed on the trim bar.

Change: If the trim is not zero, the numeric trim value is displayed on the trim bar immediately (for 2 seconds).

Throttle: EdgeTX allows you to select specific sources and trims for the model throttle and offers the following configuration options



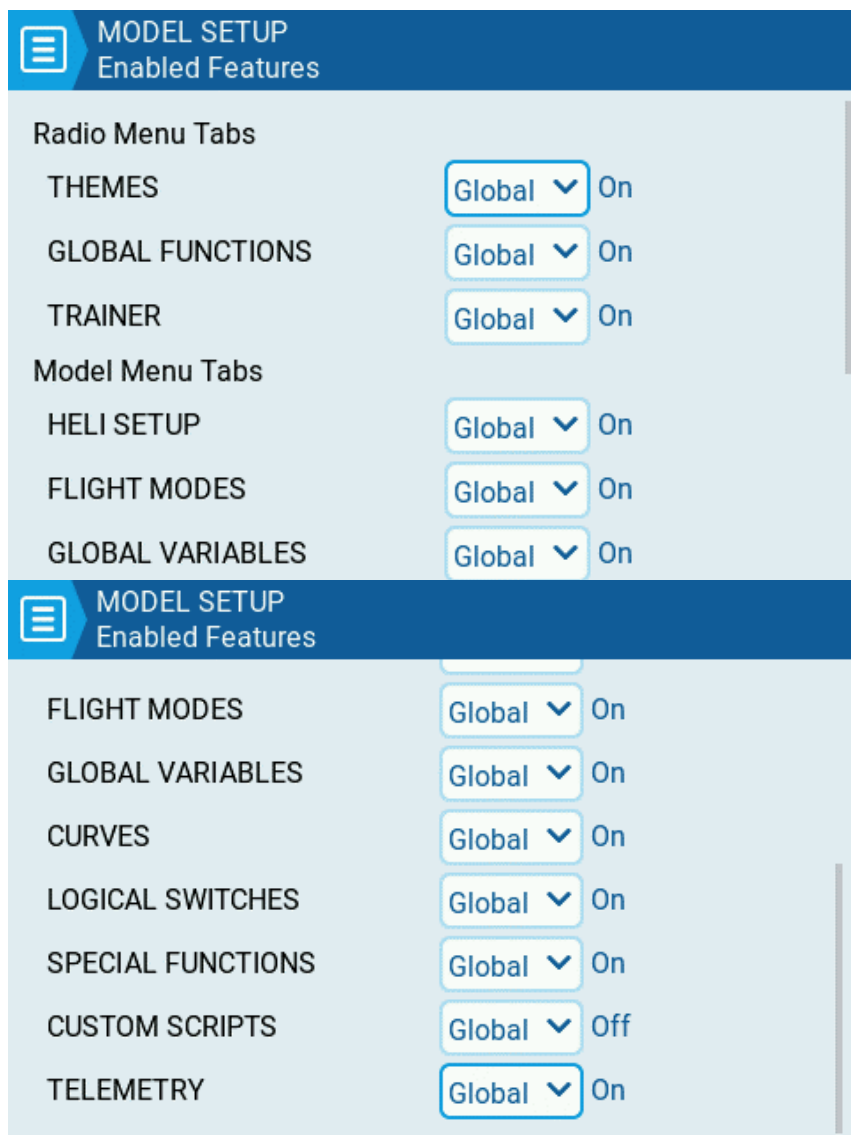
Reverse: When enabled, this option reverses the output direction of the configured throttle channel.

Source: The input source for the throttle.

Trim idle only: When enabled, the throttle trim only affects the bottom portion of the throttle. For example, with Trim idle only enabled, the throttle stick value at the lowest point might be -80, the center point remains 0, and the highest point is 100. Without this feature enabled, the throttle stick value at the lowest point might be -80, but the center point would be 20, and the highest point 100.

Trim switch: Set the trim switch used for throttle trimming. Aileron, rudder, or elevator trim switches can be used instead of the throttle trim switch.

**Enabled Features:** The Enabled Features section in the model setup allows you to configure which tabs are visible in the remote control settings and EdgeTX model setup area for the selected model. You can choose the following options:



**Global:** When selected, the tab will use the global value configured in the enabled features area of the remote control settings. The configured global value will be shown next to the option.

**On:** When this option is selected, the tab will be visible when this model is loaded.

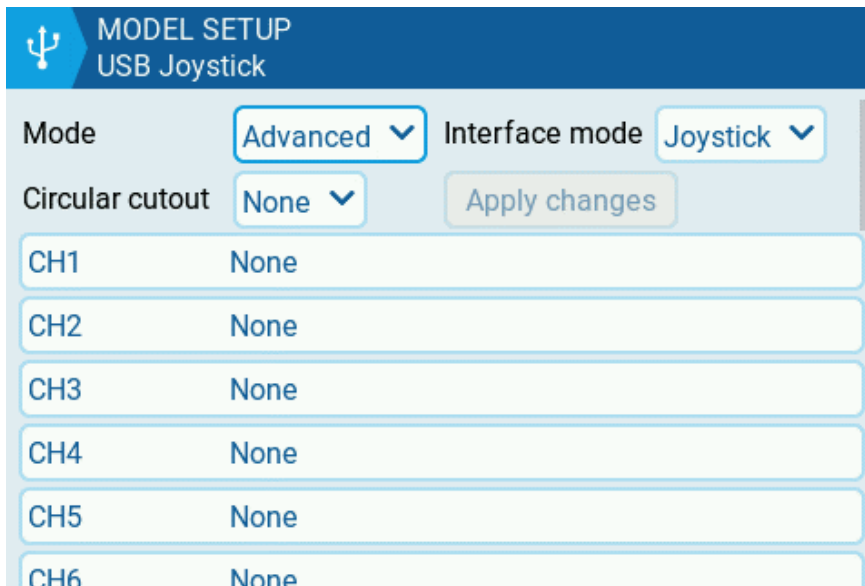
**Off:** When this option is selected, the tab will not be visible when this model is loaded. Note: Turning off a tab only hides it, it does not change the items configured in that tab. Exception: Turning off the Global/Special Functions tab will disable the global/special functions configured for that model.

USB Joystick: USB Joystick has two possible modes: Classic and Advanced.



In Classic mode, the configuration output channels of the remote control are sent in numerical order to the target device and mapped to the device's pre-configured USB controller joystick and buttons. Below is the default channel mapping for Microsoft Windows. (If using the remote control as a USB joystick, internal and external RF modules should be turned off. When configured this way, the mixer will run at 1000Hz in joystick mode (required for F.Sim competitors). Additionally, it displays the mixer runtime on the statistics/debug screen. When connected to a computer via USB, this will enhance performance.)

- Ch 1 - X Axis
- Ch 2 - Y Axis
- Ch 3 - Z Axis
- Ch 4 - X Rotation
- Ch 5 - Y Rotation
- Ch 6 - Z Rotation
- Ch 7 - Dial
- Ch 8 - Slider
- CH 9 - Ch 32 - Buttons 1 - 24



In Advanced mode, you can configure the following options:

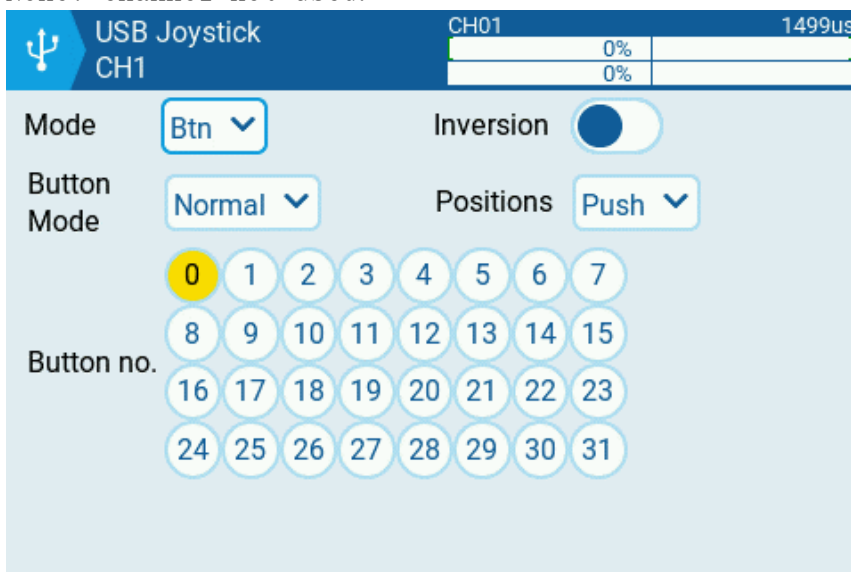
**Interface mode:** This indicates to the target device (the device you are connecting the remote control to) the type of device you are connecting. Options are Joystick, Gamepad, MultiAxis. Note: There is currently a limitation in Microsoft Windows that may limit your remote control to being detected only as a Joystick, regardless of what is selected in this option. This feature works correctly in MacOS, Linux, and Android.

**Circular cutout:** For axis pairs (XY, Z-rX): By default, the range of the axis pair is a rectangular area. With this option, the axes will be restricted to a circular area (similar to usual gamepad controllers). Options are: None or XY, Z-rX or XY, rX-rY or XY, Z-rZ.

**Output channels 1-26:**

**Mode:** For each output channel, you can select the mode to be used for that channel. Available options are None, Btn, Axis, Sim.

**None:** Channel not used.



Btn: Channel used to simulate buttons. Configuration options include:

Inversion: Invert the output channel signal. Options are On/Off.

Button Mode:

Normal: Each position of a multi-position switch is represented by a button. The current switch state is represented by continuously pressing the button.

Pulse: Similar to "Normal" mode, but instead of continuously pressing the button, it is briefly pressed.

SWEmu: Toggle switch simulates a button. First press turns on the virtual button, second press turns off the virtual button.

Delta: Changes in the output channel are represented by 2 buttons. When the output value decreases, the first button is pressed. When the output value increases, the second button is pressed. If there is no change, no button is pressed.

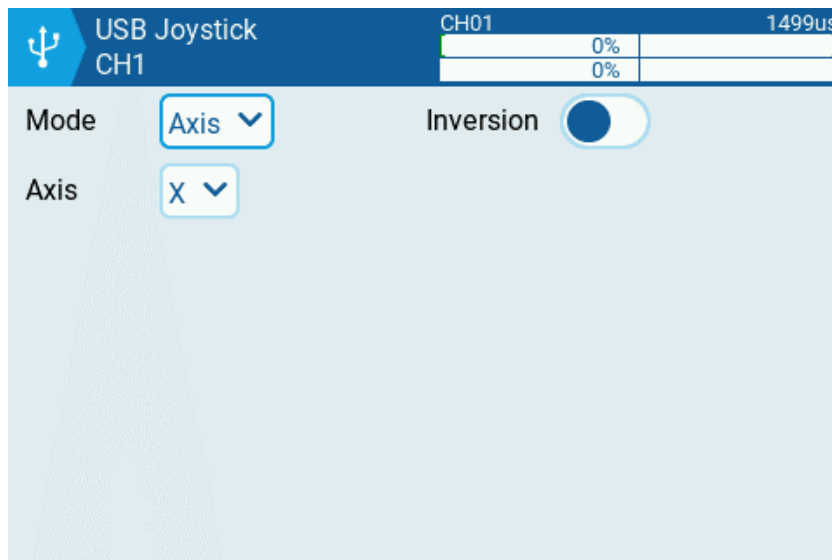
Companion: Select this option when using the remote control to operate a simulator in EdgeTX Companion. It allows multi-position switches to work correctly in the simulator.

Positions: Simulated button type.

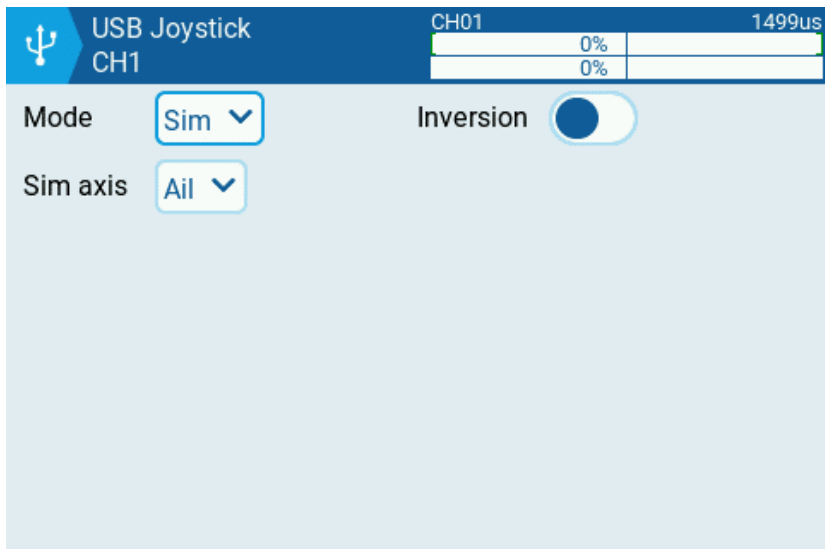
Push: Maps to a single button.

2POS - 8 POS: Maps to the number of buttons the switch has (e.g., 3POS maps to 3 buttons).

Button No: The button number the output will map to and send to the target device.

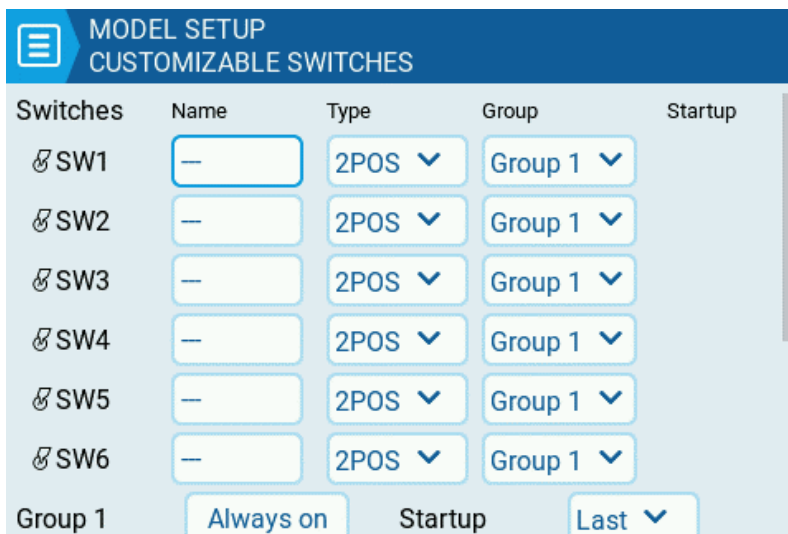


Axis: Channel used to simulate joystick axes and will map to one of the target device's default joysticks. Options are: X, Y, Z, rotX (rotation x), rotY, rotZ.



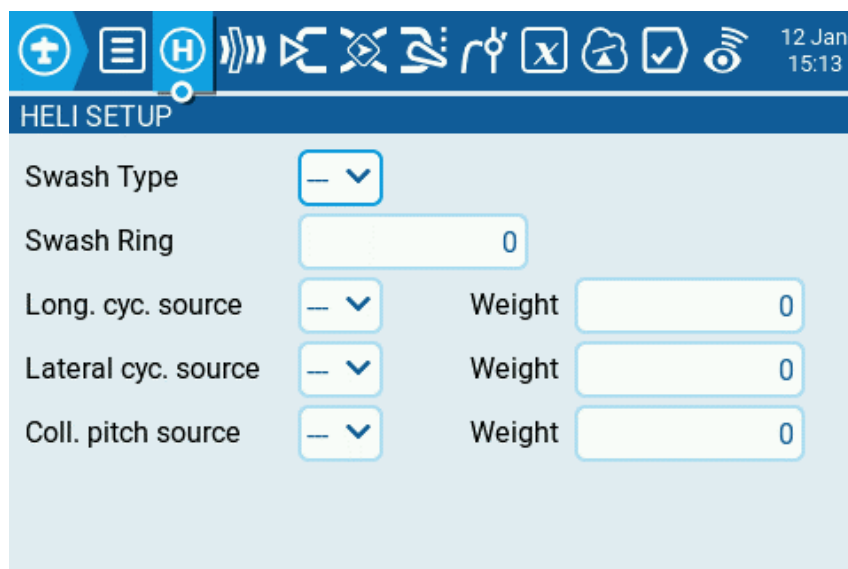
Sim: This channel is used to simulate common sim joysticks, which will appear as the selected option on the target device (e.g., Thr). Simulated joystick options are: Ail, Ele, Rud, Thr, Acc, Brk, Steer, Dpad.

Customizable Switches:



## 1.1.5 Heli Setup

The Heli Setup page in model settings is an optional page available in custom builds of EdgeTX. The Heli Setup page is typically used for collective pitch mixing (CCPM) in flybarred helicopters, where the receiver directly controls the swashplate servos. Most flybarless helicopters do not require this page to be configured. The output for CCPM mixing is CYC1, CYC2, and CYC3, which need to be assigned to outputs (servo channels) in the Mixes.



Swash Type: Swashplate type selection (90, 120, 120X, 140). 120X means cyc1 rotated by 90 degrees.

Swash Ring: Value from 0-100. 1 = maximum limit -> 100 or 0 = no limit.

Long. cyc. Source: Typically chosen from Inputs (ELE).

- Weight: 0-100.

Lateral cyc. Source: Typically chosen from Inputs (AIL).

- Weight: 0-100.

Coll. pitch source: Typically defined by one or more pitch curves.

- Weight: 0-100.

## 1.1.6 Flight Modes

Flight Modes allow models to be set up for specific tasks or flying behaviors. Fixed-wing planes might have flight modes for normal precise flying,

performing slow rolls, and roll loops. Helicopters have modes like Normal for ascent and descent/landing, 1 for aerobatics, and 2 for 3D

Mode	Trim 1	Trim 2	Trim 3	Trim 4	Time 1	Time 2
FM0	=0 0	=0 0	=0 -2	=0 0	0.0s	0.0s
FM1	=0	=0	=0	=0	0.0s	0.0s
FM2	=0	=0	=0	=0	0.0s	0.0s
FM3	=0	=0	=0	=0	0.0s	0.0s
FM4	=0	=0	=0	=0	0.0s	0.0s
FM5	=0	=0	=0	=0	0.0s	0.0s

There are 8 flight modes plus a default FM0 available. The first switch of FM1-8 is active. When no switches are on, the default FM0 is active. This explains why FM0 does not have a switch.

Yellow indicates the current active flight mode. Press ENT after selecting a flight mode to enter the configuration page for that flight mode.

**Check FM Trims:** When the Check FM Trims button is pressed, the trims for the current flight mode are temporarily disabled. This is used to test the effect of the current flight mode's trims on the output.

Mode	Trim 1	Trim 2	Trim 3	Trim 4	Time 1	Time 2
FM4	=0	=0	=0	=0	0.0s	0.0s
FM5	=0	=0	=0	=0	0.0s	0.0s
FM6	=0	=0	=0	=0	0.0s	0.0s
FM7	=0	=0	=0	=0	0.0s	0.0s
FM8	=0	=0	=0	=0	0.0s	0.0s

Check FM Trims



**Name:** Each flight mode can have a name with up to 10 characters.

**Switch:** Each flight mode has an optional activation switch (physical or logical).

**Fade in:** Gradually change trim values when this flight mode is enabled. Specify the time before the value change is completed (in seconds) (0.0 - 25.0).

**Fade out:** Gradually change trim values when this flight mode is disabled. Specify the time before the value change is completed (in seconds, 0.0 - 25.0).

**Trims:** To configure trims, select the trim to ensure it is turned on (yellow). Then, select the flight mode (0-8) that will provide the initial trim value and modifier (= or +). When 3P is selected instead of a flight mode (0-8), the trim will act as a 3-position momentary switch.

There are two possible value modifiers, = and +. The = modifier directly uses the trim value from the selected flight mode. The + modifier uses the trim value from the selected flight mode and then adds the trim value of the flight mode being configured. Example 1: If configuring FM1 and setting the value to =0, FM1 will have the same trim value as the current value in FM0. In this case, changes made to the trim in FM1 will also affect the trim in FM0, and vice versa. Example 2: If configuring FM1 and setting the value to +0, FM1 will have the same trim value as in FM0 plus any trim changes made in FM1. In this case, changes made to the trim in FM1 will not affect FM0's trim. However, changes to the trim value in FM0 will affect the trim value in FM1. If a trim is turned off (white) on the Trims setup page, it cannot be adjusted on the main screen.

**Inputs->Mixer->Outputs:** These are the three core pages of the remote controller

Since EdgeTX is extremely flexible and powerful, there is no standard mixer setup, and the same effect can be achieved through various configurations. For this reason, the best approach is to describe the actual operations directly. This way, you can develop a logic and consistent method for programming all your models. This will help ensure you understand how your model programming works even after some time has passed.

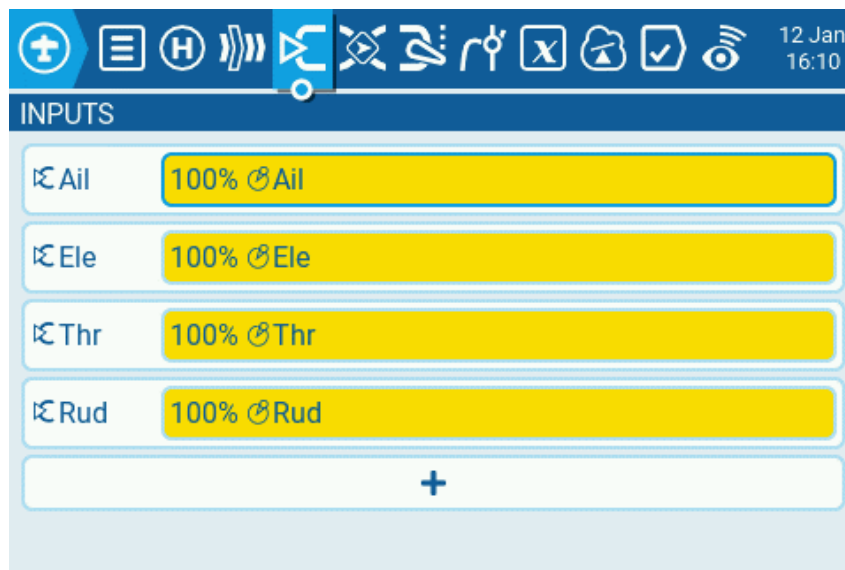
This method transitions from a physical model to a logical model and then back to a physical model again.

The Inputs section defines the conversion from physical inputs (sticks, switches, potentiometers, sliders, etc.) to logical inputs for the model (aileron, elevator, rudder, throttle, flaps, pitch, gyros, etc.). Input sources can also include basic mixing and advanced functions like logical switches. Physical inputs can be adjusted by defining weights/rates and adding curves (e.g., Expo).

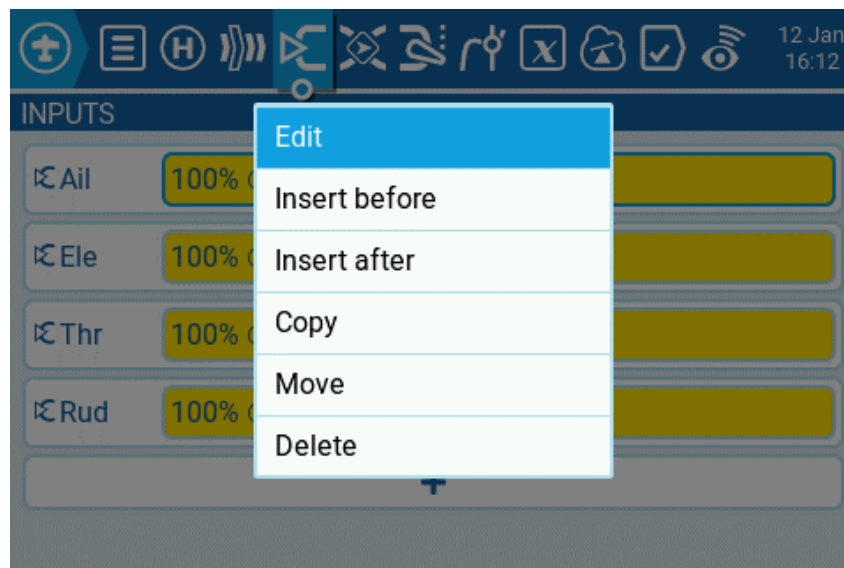
The Mixer section allows you to combine any number of input sources as needed and map them to any of the 32 output channels. There is no standard mixer setup, meaning you have complete flexibility in controlling the mix from any input to any output channel. You can design entirely new mixes to control unique model types.

The Outputs section allows pure logical outputs to accommodate the mechanical characteristics of the model. You can set minimum and maximum outputs, reverse channels, and adjust servo or channel centers using PPM center adjustment or add offsets with subtrim. You can also define curves to correct any real-world response issues.

## 1.1.7 Inputs



Pressing the + button will display a list of available configurable inputs.  
Press ENT to enter the submenu.



**Edit:** Opens the input configuration page for the selected input line.  
**Insert before:** Inserts a new input line before the selected input.  
**Insert after:** Inserts a new input line after the selected input.  
**Copy:** Copies the selected input line.  
**Move:** Selects an input line to move.  
**Delete:** Deletes the selected input line.

It is strongly recommended to always create a final input line that is not restricted by any switch or flight mode. This ensures that even if invalid logic or switch failures disable other lines, this line will remain active, preventing a channel from becoming uncontrollable.

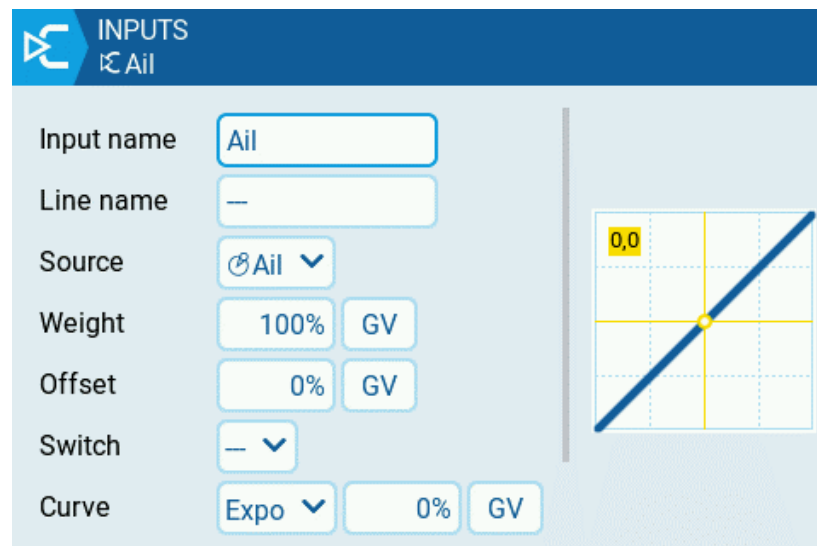
The rate sets the ratio of stick movement to channel movement. There are rate (weight) parameters at each of the three processing layers (Inputs, Mixer, and Outputs). These rates are applied cumulatively, so the final servo command is the product of all rates:

$OutputValue = SourceValue \times InputWeight \times MixerWeight \times OutputRate$  (Note: OutputRate is a function of Min/Max and curve settings.)

Initially, keep all input (Inputs), mixer (Mixer), and output (Outputs) rates at their default values (100%).

In the Outputs menu, adjust Min/Max to achieve maximum travel within mechanical limits, ensuring paired control surfaces have the same travel. Alternatively, use the Outputs curve to set these limits.

Press ENT to select Edit and enter the input setup page. The input setup page allows you to edit input setup parameters. On the right side of the setup parameters, you can see a real-time graph showing how your setup options will affect the input slope.

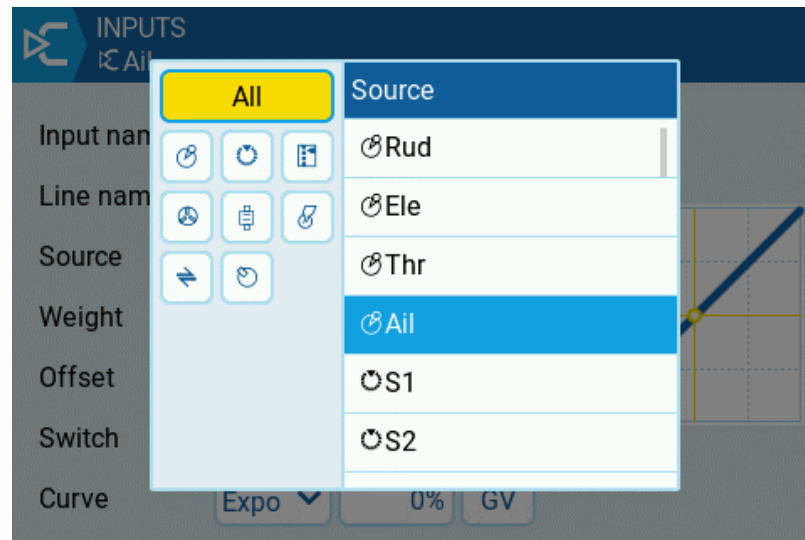


**Input name:** Name of the input.

**Line name:** Since multiple lines can configure an input, naming each line provides a label indicating the purpose of the line to avoid confusion.

**Source:** Press ENT to enter the input source selection menu. Scroll up or down to the desired category and press ENT. It will return to the input page

with the cursor on the first item in the selected category. Scroll up/down there and press ENT to select the source.



**Weight:** The normal range is -100 to +100. Values within -100 to +100 will scale the source signal by the source percentage. Negative values will invert the response. Note that servo reversal should not be done using negative values in the input; to reverse a channel, it should be done on the Outputs page.

**Offset:** An offset can be added to the input value, which can be positive or negative. A common use of offset in inputs is to convert a -100/+100 range to a 0-100 range.

$$(\text{SrcValue} \times \text{weight}) + \text{Offset} = \text{Result}$$

$$(100 \times -50/100) + 50 = 0$$

$$(0 \times -50/100) + 50 = 50$$

$$(-100 \times -50/100) + 50 = 100$$

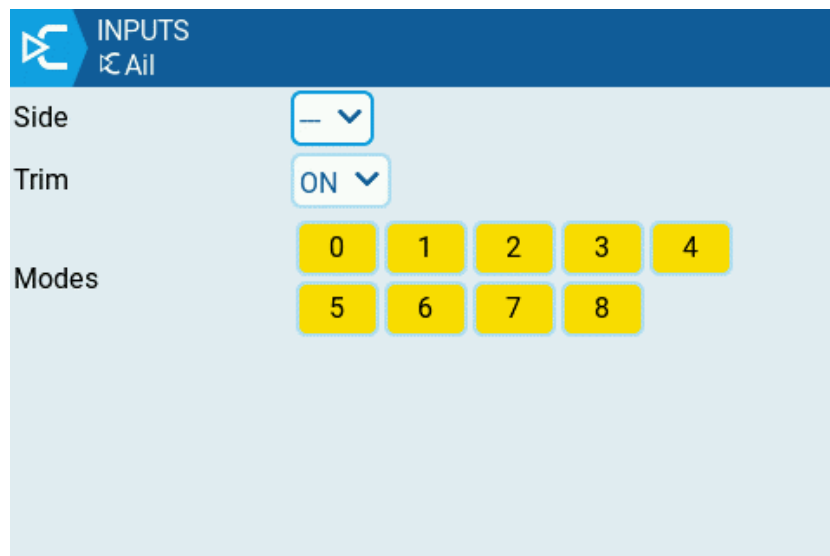
**Switch:** The switch position (physical or logical) can enable/disable this input. If no switch is set, it will always be enabled.

- **Curve:**

- **Diff:** A differential (typically more down travel for ailerons) is used to reduce adverse yaw and improve turn/handling characteristics. (Default = 0, range -100 to +100). Although available here, it's better to set it in the Mixer page.
- **Expo:** The default curve is Expo, with a default value of 0, meaning the response is linear (no curve). Positive values soften the response around 0, while negative values make it sharper around 0.
- **Func:** If changed to Func. (predefined function curve types):

- --- (Output always equals the source)
  - **X>0**: If the source > 0, the input follows the source. If the source < 0, then input = 0.
  - **X<0**: If the source < 0, the input follows the source. If the source > 0, then input = 0.
  - **|X|**: The input follows the source but is always positive (also known as "absolute value").
  - **f>0**: If the source > 0, the input = 100%. If the source < 0, then input = 0.
  - **f<0**: If the source < 0, the input = -100%. If the source > 0, then input = 0.
  - **|f|**: If the source > 0, then input = 100%. If the source < 0, then input = -100%.
- **Cstm**: Select a predefined custom curve numbered CV1 to CV32 (or their inverses, i.e., !CV1 to !CV32). After selecting the curve number, long-press ENT to open the curve page. After configuring the curve, press RTN to return.

When selecting the gear icon at the bottom of the screen, the following option window will appear:



**Side:** Specifies the effective input range for this line. If --- is selected, it will be effective over the entire source value range. If  $x>0$  is selected, it will be effective over the upper half of the source value. If  $x<0$  is selected, it will be effective over the lower half of the source value.

**Trim:** Specifies whether trims are included in this input. Additionally, you can select different trims for this input.

**Modes:** Specifies which flight modes this input applies to.

## 1.1.8 Mixer

The Mixer page allows you to combine any number of input sources as needed and map them to any of the 32 output channels. Then use the next page (Outputs) to adapt these pure logical outputs to the model's mechanical characteristics.

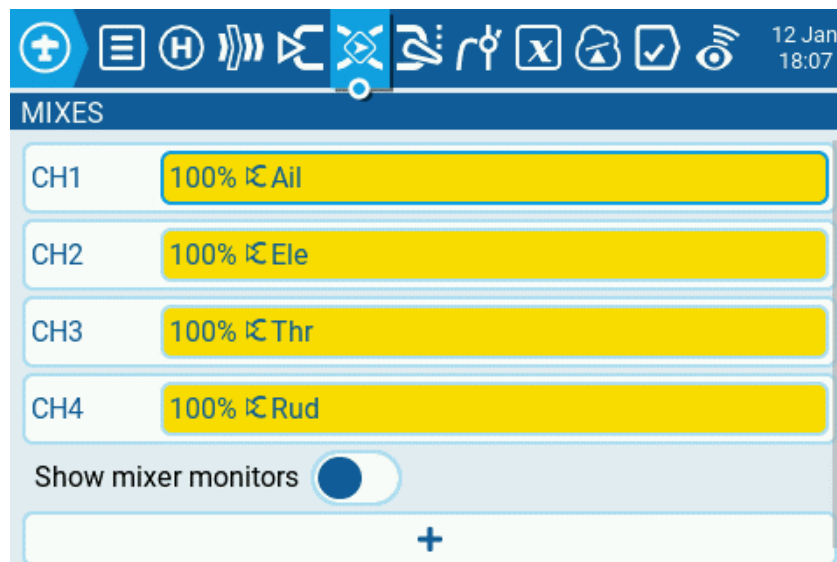
You have complete flexibility in controlling the mix from any input to any output channel.

A mixer line connects an input to its channel. Inputs are configured in the Inputs page, which defines the conversion from physical sources to logical inputs.

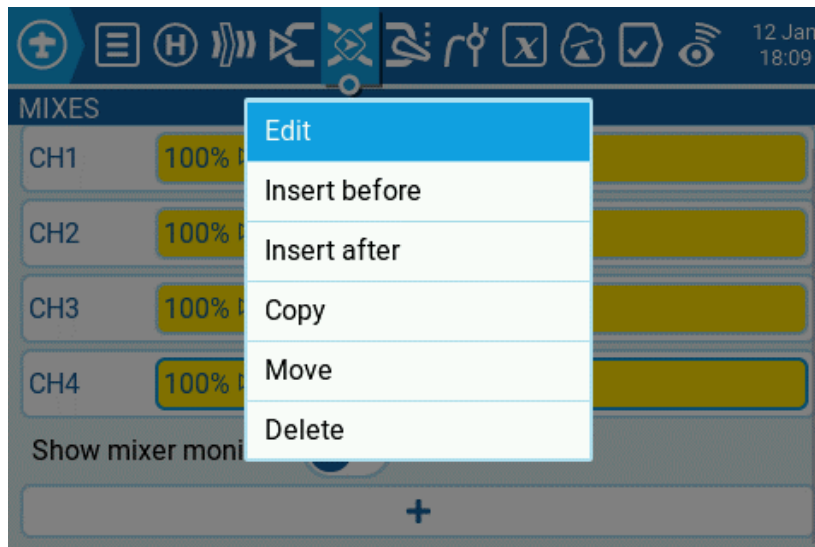
The Mixer page also allows some of the 32 channels of the remote to be used as virtual functions for a clean design (e.g., combining multiple inputs into one reusable function, which can then be assigned to one or more channels). Note that settings on the Outputs page are not considered in these functions.

All inputs range from -100% to +100%. Sticks, knobs, sliders, channels, CYC sources, and trainer inputs will vary proportionally within this range.

If you want a servo connected to receiver plug 2 to be controlled by the elevator (ELE), you simply create a mixer on CH2 and set the Ele input as the source.



Pressing the + button will create a new mixer and open the mixer configuration page.



**Edit:** Open the mixer configuration page.

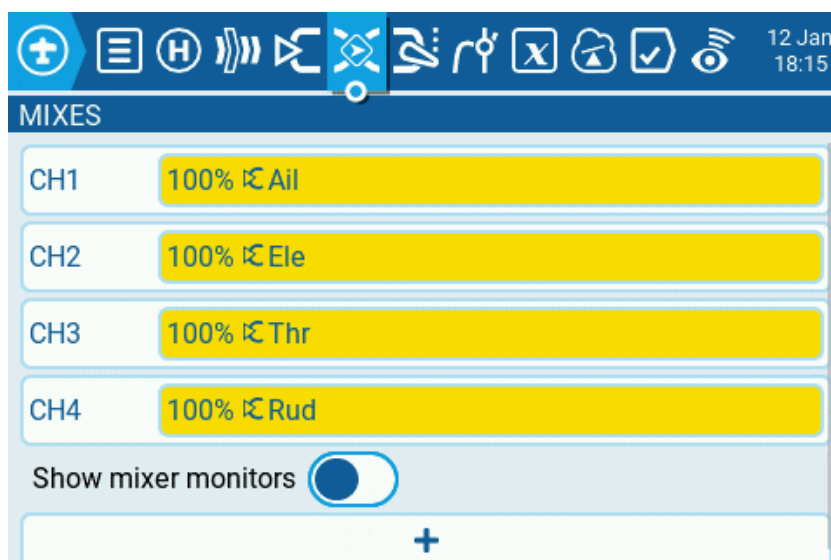
**Insert before:** Insert a new mixer before the selected mixer.

**Insert after:** Insert a new mixer after the selected mixer.

**Copy:** Duplicate the selected mixer.

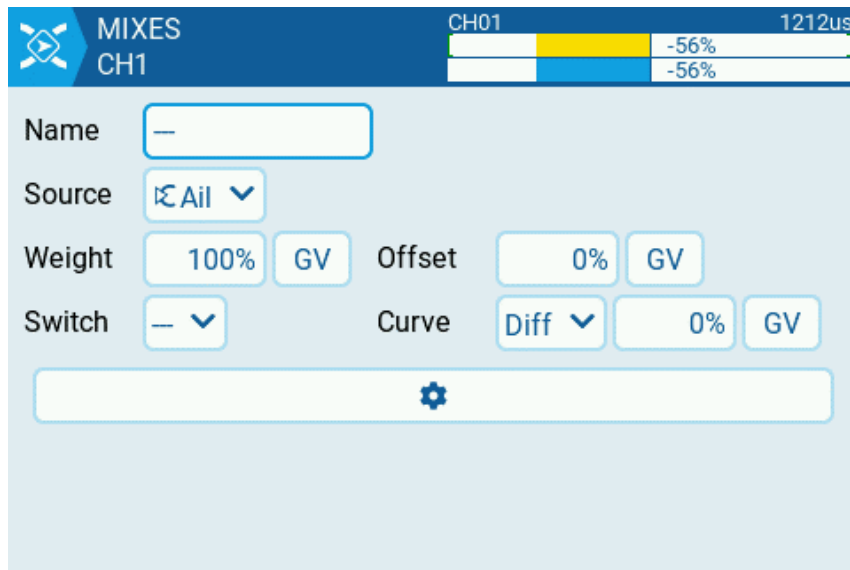
**Move:** Select the mixer to move.

**Delete:** Remove the selected mixer.



**Show mixer monitors:** Enable bar graphs on mixer channels to display current values.





The top-right section of the mixer configuration page includes channel monitors for the selected mixer. It displays output (yellow) and mixer (blue) values. You can also configure the following options:

- **Name:** Mixer name (optional).
- **Source:** Input source for the mixer.
- **Weight:** Range from -500 to +500, default is 100. Negative values reverse response.
- **Offset:** Adds offset to input value, positive or negative, range from -500 to +500.
- **Switch:** Configure switch position (physical or logical) to enable/disable this mixer.
- **Curve:**
  - **Diff:** Differential (typically less than aileron travel) to reduce adverse yaw and improve turning/maneuvering characteristics (default = 0, range -100 to +100). While Diff can be used in inputs, it's typically applied within mixers.
  - **Expo:** Default curve is Expo, default value is 0 (linear response). Positive values weaken response near center, negative values sharpen response. Although available here, Expo is typically applied to inputs to match the concept of transformation within inputs and use mixer stages to combine signals.
  - **Func:** Change setting to Func.

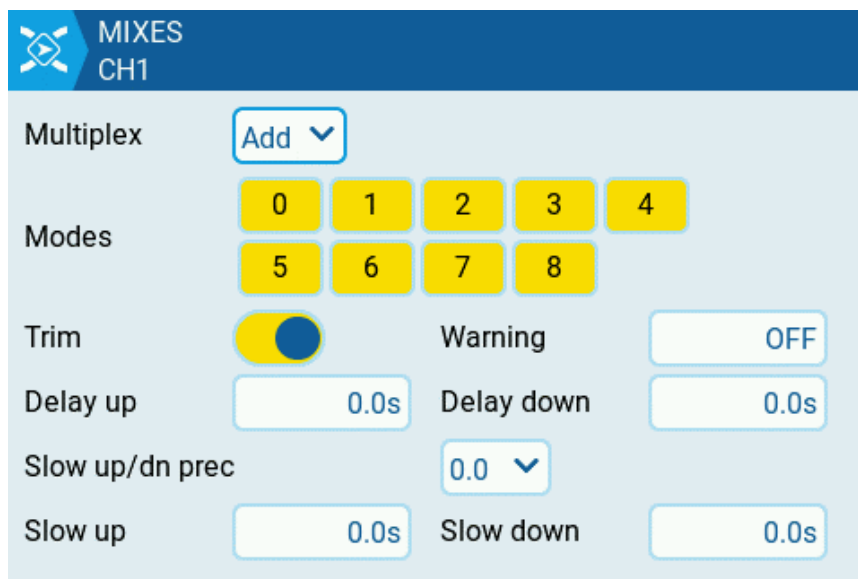
(Predefined function curve types:)

- --- (Mixer line always = Source)
- $X > 0$ : Mixer line follows source if source  $> 0$ , line = 0 if source  $< 0$ .
- $X < 0$ : Mixer line follows source if source  $< 0$ , line = 0 if source  $> 0$ .
- $|X|$ : Mixer line follows source but remains positive (also known as "absolute value").
- $f > 0$ : Mixer line = 100% if source  $> 0$ , line = 0 if source  $\leq 0$ .
- $f < 0$ : Mixer line = -100% if source  $< 0$ , line = 0 if source  $\geq 0$ .

- |f|: Mixer line = 100% if source > 0, line = -100% if source < 0.

**Cstm:** Select predefined custom curve from CV1 to CV32 (or their reverse, !CV1 to !CV32). Long press ENT to open curve page after selecting curve number. Configure curve and press RTN to return.

When selecting the gear button at the bottom of the screen, the following options window appears:



**Multiplex:** Define interaction of current mixer with other mixers on the same channel.

- **Add:** Add to output.
- **Multiply:** Multiply the result.
- **Replace:** Replace.

**Modes:** Allow selection of flight modes that can activate this line. By default, all flight modes are active, but if flight mode number is dimmed, the flight mode will not activate.

**Trim:** Specify whether trim values are included in this mixer. To include trim values, trim for relevant input must also be enabled in the input menu.

**Warning:** When active, transmitter will beep when this mixer is active. Choose OFF or beep modes 1, 2, 3.

**Delay up:** Create time delay in seconds between increasing source value and output.

**Delay down:** Create time delay in seconds between decreasing source value and output.

**Slow up/dn prec:** Change precision between 0.0 and 0.00 for Slow up/dn.

**Slow up:** Adjust transition speed for increasing source value. Specify time (in seconds) for transition from -100% to +100%. Range from 0.00 to 25.00 seconds.

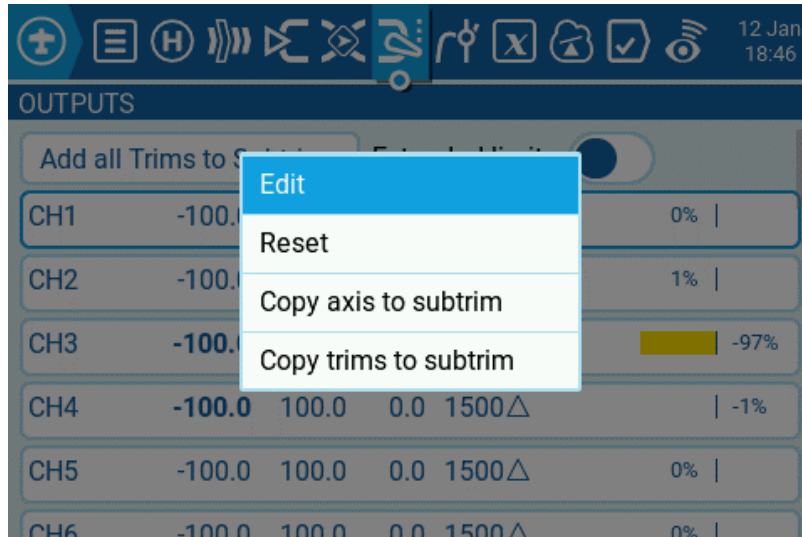
**Slow down:** Adjust transition speed for decreasing source value. Specify time (in seconds) for transition from -100% to +100%. Range from 0.0 to 25.0 seconds.

## 1.1.9 Outputs

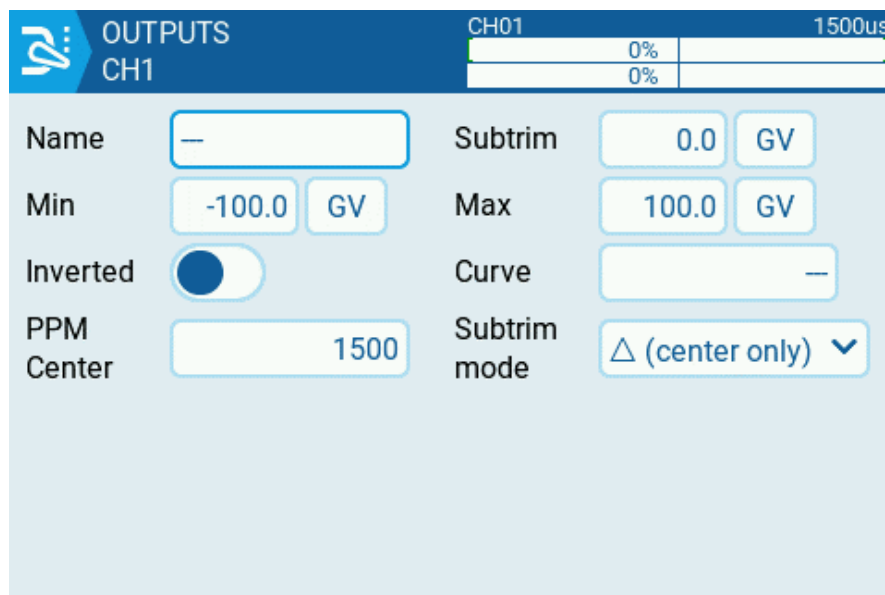
Channel	Min	Max	Subtrim	Center Point	Subtrim Mode	Channel Monitor
CH1	-100.0	100.0	0.0	1500Δ		0%
CH2	-100.0	100.0	0.0	1500Δ		1%
CH3	-100.0	100.0	0.0	1500Δ		-100%
CH4	-100.0	100.0	0.0	1500Δ		-1%
CH5	-100.0	100.0	0.0	1500Δ		0%
CH6	-100.0	100.0	0.0	1500Δ		0%

The outputs menu displays all configured output channels. For each output, it shows minimum and maximum limits, subtrim, center point, subtrim mode, and channel monitor values. The output page also provides the following two options:

- **Add all Trims to Subtrims:** Enable to add current trim values to subtrim values for each configured output. Adjusted values are reset to zero.
- **Extended Limits:** Enable to increase minimum and maximum range of output values to -150 and 150. Use if standard limits can't achieve full range of control surfaces. Select desired output for setup and press ENT to display the following options:



- **Edit:** Open output settings menu.
- **Reset:** Set subtrim values back to zero (trim values remain unchanged).
- **Copy Sticks to Subtrim:** Add current stick deflection values as subtrim.
- **Copy Trims to Subtrim:** Add current trim values to subtrim (trim values remain unchanged).



**Name:** Displayed on channel monitor and failsafe settings page.

**Subtrim:** (Maximum 100). Also set as global variable by pressing "GV" button and selecting desired global variable from dropdown.

**Min:** Minimum output limit. Typically used to prevent servo from jamming beyond range.

**Max:** Maximum output limit. Typically used to prevent servo from jamming beyond range.

**Inverted:** Invert servo or output direction.

**Curve:** Specify custom curve for this output.

**PPM Center:** Specify pulse width value (1000 - 2000) for output channel center value. Changing this setting alters entire output range, including upper and lower limits.

**Subtrim mode:** Define how adjustment values affect minimum/maximum output values. Two options:

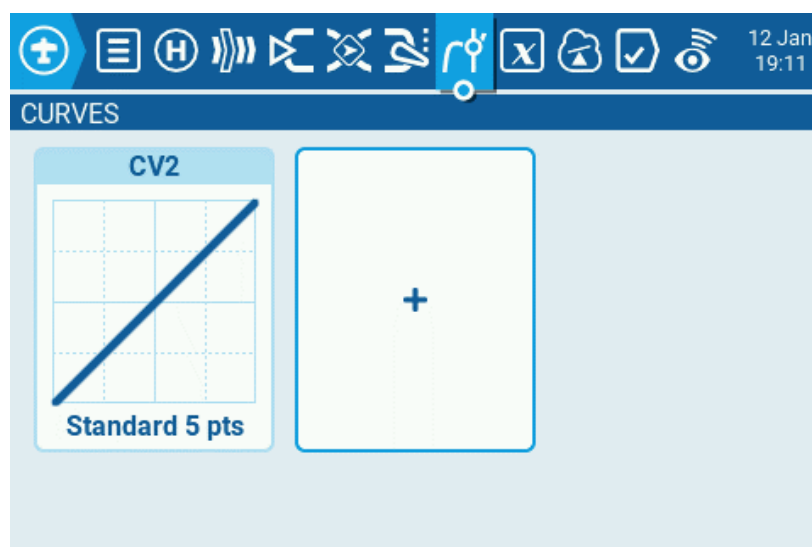
**Center Only:** Only center value moves, upper and lower limits unchanged. Response of stick to center varies in upper and lower halves.

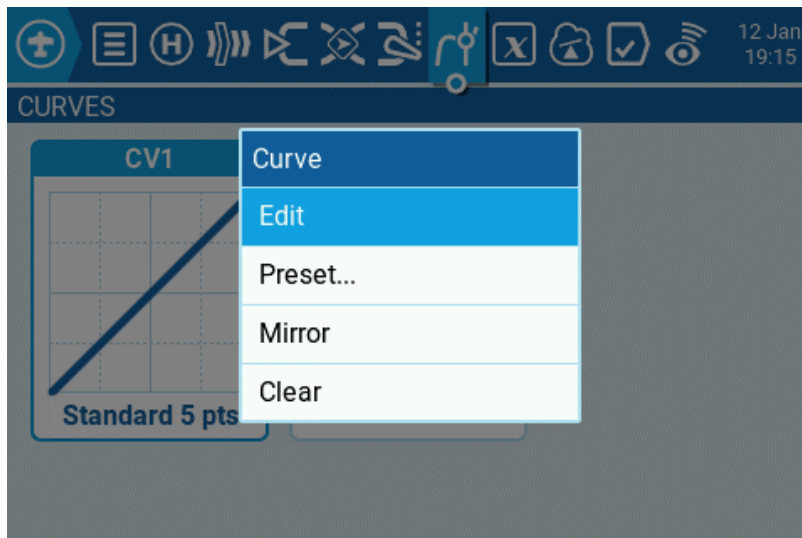
**Symmetrical:** Upper and lower limits vary according to center value change. Stick response is the same on either side of center.

## 1.2.0 Curves

Curves can modify control response in inputs, mixers, or output pages. This page defines any custom curves that may be needed.

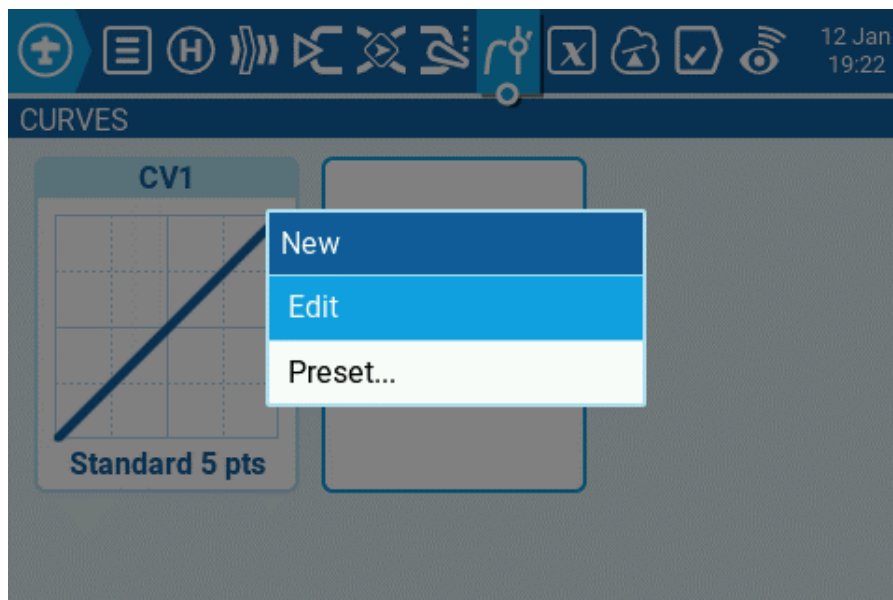
There are 32 curves available for selection.





- **Edit:** Open curve configuration page.
- **Preset:** Set curve to one of preset slope values (-45 to 45 degrees, increment 15 degrees). Curve has 5 points and is not smoothed by default.
- **Mirror:** Mirror selected curve.
- **Clear:** Clear all curve values of selected curve.

Select "+" button to create new curve and provide following options:



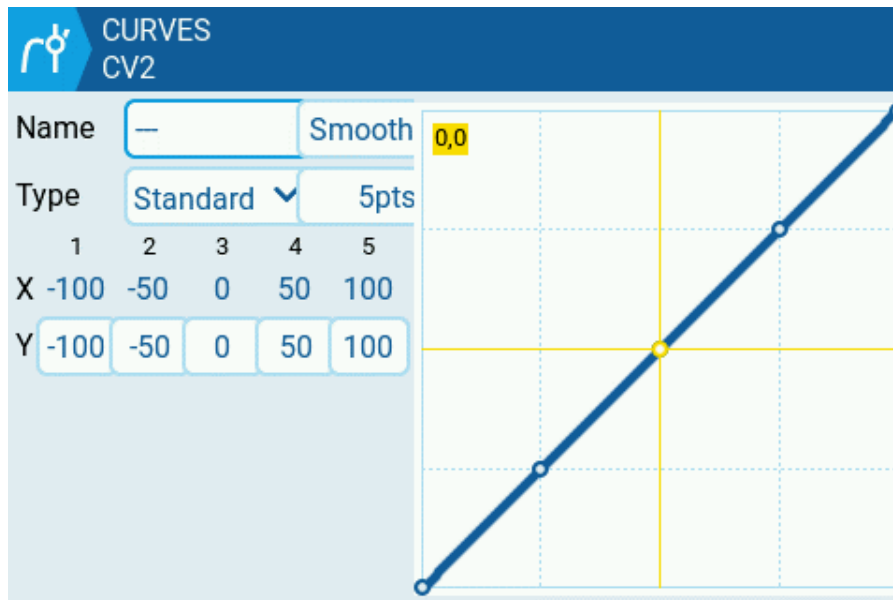
**Edit:** 打开曲线配置页面。

**Preset:** 允许您将曲线设置为预设斜率值之一（-45 到 45 度，增量为 15 度）。曲线将有 5 个点，并且默认情况下不启用平滑。

对已配置或未配置的曲线选择“编辑（**Edit**）”将打开曲线配置屏幕并显示以下选项：

- **Edit:** Open curve configuration page.
- **Preset:** Set curve to one of preset slope values (-45 to 45 degrees, increment 15 degrees). Curve has 5 points and is not smoothed by default.

Select "Edit" for configured or unconfigured curve to open curve configuration screen and display following options:



- **Name:** Curve name.
- **Type:** Curve type: Standard or Custom.
  - **Standard:** Only Y point editable, range -100 to 100.
  - **Custom:** Both X and Y points editable, range -100 to 100.
- **Number of Points:** Number of points on curve, between 2 and 17.
- **Smooth:** If selected, create smooth curve through all points.
- **Edit Coordinates:** Move cursor to X and Y coordinates.

Based on type selected above, this allows writing X coordinates for standard curve or X and Y coordinates for custom curve.

## 1.2.1 Global Variables

Global Variables are ideally adjusted values used in multiple places. For instance, gliders use the aileron as flaps during landing. Global Variables can replace normal numeric values in each Weight, Offset, Differential, or Expo setting. They are also specific to flight modes, which avoids the need for separate mix controls with different values for each flight mode. This greatly simplifies the mix control page and makes it easier to understand.

By using the "Adjust GVx" option in Special Functions, you can even adjust global variables during flight to quickly optimize settings like dual rates, expo, differential, and flap-to-elevator mix, among others. If pop-ups are enabled (indicated by the "!" next to GV labels), a pop-up window will appear on the main view showing the variable name and its new value when updated.

The term "global" indicates that global variables can be used across the entire model setup page but are not universal across all models. Each model has its own set of global variables available.

There are 9 global variables available.

	FM0	FM1	FM2	FM3	FM4	FM5	FM6	FM7	FM8
GV1	0	FM0	FM0	FM0	FM0	FM0	FM0	FM0	FM0
GV2	0	FM0	FM0	FM0	FM0	FM0	FM0	FM0	FM0
GV3	0	FM0	FM0	FM0	FM0	FM0	FM0	FM0	FM0
GV4	0	FM0	FM0	FM0	FM0	FM0	FM0	FM0	FM0
GV5	0	FM0	FM0	FM0	FM0	FM0	FM0	FM0	FM0
GV6	0	FM0	FM0	FM0	FM0	FM0	FM0	FM0	FM0

Selecting a global variable from the Global Variables screen and pressing ENT will provide you with the following options:

	FM0	FM1	FM2	FM3	FM4	FM5	FM6	FM7	FM8
GV1	0	FM0	FM0	FM0	FM0	FM0	FM0	FM0	FM0
GV2	0	FM0	FM0	FM0	FM0	FM0	FM0	FM0	FM0
GV3	0	FM0	FM0	FM0	FM0	FM0	FM0	FM0	FM0
GV4	0	FM0	FM0	FM0	FM0	FM0	FM0	FM0	FM0
GV5	0	FM0	FM0	FM0	FM0	FM0	FM0	FM0	FM0
GV6	0	FM0	FM0	FM0	FM0	FM0	FM0	FM0	FM0



- Edit: Opens the global variable configuration screen for the selected global variable.
- Clear: Clears the global variable values for all flight modes of the selected global variable.

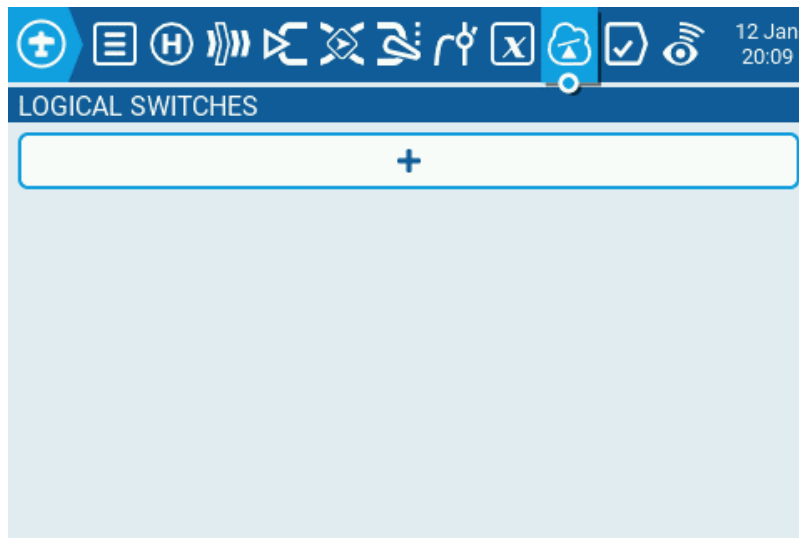
In the global variable configuration screen, you can assign values and other configuration options for global variables. Additionally, you can choose how to define the values for each flight mode of the global variable — either manually define the value or inherit it from another selected flight mode. Configuration options include:

Field	Value
Name	-
Unit	-
Precision	0.-
Min	-1024
Max	1024
Popup	Enabled
FM0	0
FM1	FM0

- Name: Set the name.
- Unit: (Optional) Allows adding a % label to displayed values. It does not affect the value's calculation.
- Precision: Allows choosing numeric precision options for integers (0.-) and decimals (0.0). Default is 0.-
- Min: Define the minimum value allowed for the global variable.
- Max: Define the maximum value allowed for the global variable.
- Popup: When enabled, a pop-up message will display when the GV value changes with the new GV value.
- FM0: Value of the global variable on Flight Mode 0.
- FM1 -> FM8: You can specify values for each flight mode or set it to be the same as another flight mode. A sliding switch allows toggling between input values and selecting flight modes. When editing values, it will increase/decrease by 1 or 0.1, depending on the "Precision" setting above.

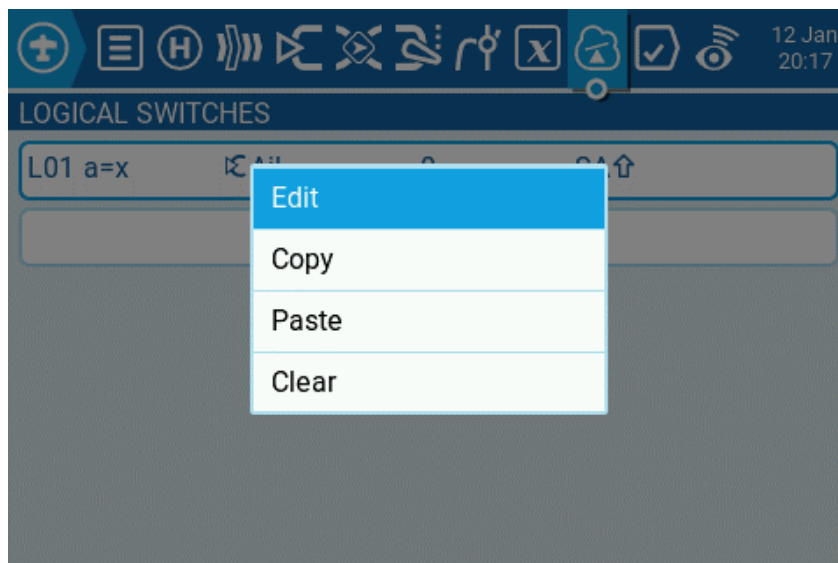
## 1.2.2 Logical Switches

Logical switches are user-programmed virtual switches. They do not physically flip from one position to another like physical switches but can serve as program triggers like any physical switch. By programming conditions against logical switches, they can be opened or closed (logically true or false). They can use various inputs such as physical controls and switches, other logical switches, as well as other sources like telemetry values, channel values, timer values, or global variables. They can even use values returned by LUA model scripts.



Selecting the + button allows you to configure an unused logical switch.

Selecting a configured logical switch will provide you with the following options:



- Edit: Opens the logical switch configuration page for the selected logical switch.
- Copy: Copies the selected logical switch.
- Paste: Pastes the copied logical switch onto the selected logical switch.  
Note: It will overwrite the selected logical switch.
- Clear: Deletes all configuration options for the selected logical switch.

The screenshot shows a configuration interface for a logical switch. The title bar is blue and contains a cloud icon and the text "LOGICAL SWITCHES L01". The main area is light blue and contains the following fields:

- Function:** A dropdown menu with a downward arrow.
- V1:** A dropdown menu with a downward arrow.
- V2:** A text input field containing the value "0".
- AND switch:** A dropdown menu with a downward arrow.
- Duration:** A text input field containing the value "0.0s".
- Delay:** A text input field containing a hyphen "-".

Up to 64 logical switches are available, each with three types of operators:

- Arithmetic Operations either compare two variables "a" and "b" or compare a variable "a" with a constant "x". Variables can be from any source such as hardware sources, logical inputs, mix control channels, 9 global variables, or telemetry values. The constant "x" is the value against which V2 is set.
- Logical Operations can be performed on binary inputs (such as hardware sources or logical inputs) and include logical AND, OR, and XOR functions.
- Differential Operations compare the change in variable "a" with another value "x".

## Functions

- **a=x:** True if the selected source "a" (V1) precisely equals "x" (V2) (programming value). Exercise caution when using the "exact equals" function. For instance, when setting a condition to test if voltage equals 8.4V, actual telemetry readings might jump from 8.5V to 8.35V, thus never meeting the condition, and the logic switch remains closed indefinitely.

- **a~x**: True if the selected source "a" (V1) is approximately equal to "x" (V2) (within approximately 10%). In most cases, it's preferable to use the approximate equals function rather than "exact equals".
- **a>x**: True if the selected source "a" (V1) is greater than "x" (V2), the programming value.
- **a<x**: True if the selected source "a" (V1) is less than "x" (V2), the programming value.
- **|a|>x**: True if the absolute value of the selected source "a" (V1) is greater than "x" (V2), the programming value (absolute meaning ignoring whether "a" is positive or negative).
- **|a|<x**: True if the absolute value of the selected source "a" (V1) is less than "x" (V2), the programming value (absolute meaning ignoring whether "a" is positive or negative).
- **AND**: True if both sources selected in V1 and V2 are true (ON).
- **OR**: True if either of the sources selected in V1 and V2 is true (ON).
- **XOR**: True if either source in V1 or V2 is true (ON), but not both.
- **Edge**: A momentary switch (lasting approximately 30 milliseconds) that becomes true when its V1 source triggers.
- **V1**: Value of the selected trigger source.
- **V2**: Divided into two parts [t1

], where t1 is the minimum value and t2 is the maximum duration of V1 being true. The logical switch only becomes true after V1 triggers for at least t1, and releases before t2. If t2 is specified as "---", only t1 is considered. When V1 transitions from True to False (falling edge), it triggers the logical switch, which remains TRUE for one processing cycle (~30ms). If t2 is set as "<<", it triggers the logical switch on the rising edge when V1 transitions from False to True.

- If using the AND Switch parameter, the AND switch must be true to trigger the Edge function. If the AND switch turns false during Edge activation, it won't reset LS but will cause it to time out.
- **a=b**: True if the value of the selected source "a" (V1) precisely equals the value of the second selected source "b" (V2). Exercise caution when using the "exact equals" function. For example, when comparing two voltages, actual telemetry readings might be 4.5V and 4.55V in one scan and then 4.54V and 4.45V in the next, thus never meeting the condition, and the logic switch remains closed indefinitely.
- **a>b**: True if the value of the selected source "a" (V1) is greater than the value of the second selected source "b" (V2).
- **a<b**: True if the value of the selected source "a" (V1) is less than the value of the second selected source "b" (V2).
- **Note**: The main difference between "b" and "x" in functions is the choice of "a" and "b" to define sources, whereas "x" is a programming value or constant.
- **d>x**: True if the change in value "d" of the selected source (V1) is greater than the programming value "x" (V2).
- **|d|>x**: True if the absolute change in value "|d|" is greater than the programming value "x" (V2) in the selected source (V1). (Absolute meaning regardless of whether "a" is positive or negative.)

- **Timer:** The logical switch continuously opens and closes. It remains open for V1 (ON time) and closes for V2 (OFF time).
- **Sticky:** When V1 switches from False to True, the Sticky function locks (becomes True) and maintains its value until forced False when V2 switches from False to True. This can be gated by an optional AND Switch parameter on the same line. This means if the AND Switch condition is True, the logical switch output follows the conditions of the Sticky function. However, if the AND Switch condition is False, the logical switch output also remains False.

Note that Sticky function continues to run even if its output is gated by an AND switch. Once the AND switch condition turns True, the Sticky function state switches to the LS output.

- **AND Switch:** AND Switch provides the final logical condition to be met. It evaluates the selected functions on V1 and V2 first, then applies the AND Switch condition on the result. If the AND Switch condition is False, the logical switch never opens. Conversely, LS can only open when all other switch conditions are True and the AND Switch condition is also True. This is crucial, especially for Sticky function.

Any physical, fine-tuning, or logical switch flight modes can be selected for AND Switch.

Note that if the AND switch condition subsequently turns False, it won't reset LS; LS remains open until other conditions cause it to close.

- **Duration:**
  - "----" or 0.0: The logical switch doesn't time out but remains open until conditions close it.
  - 0.1-25s: The logical switch remains open for the specified duration, after which it closes even if conditions are still true.
  - **Delay:** This is the delay time before the switch opens after conditions become true. Range is from 0.0 to 25 seconds.

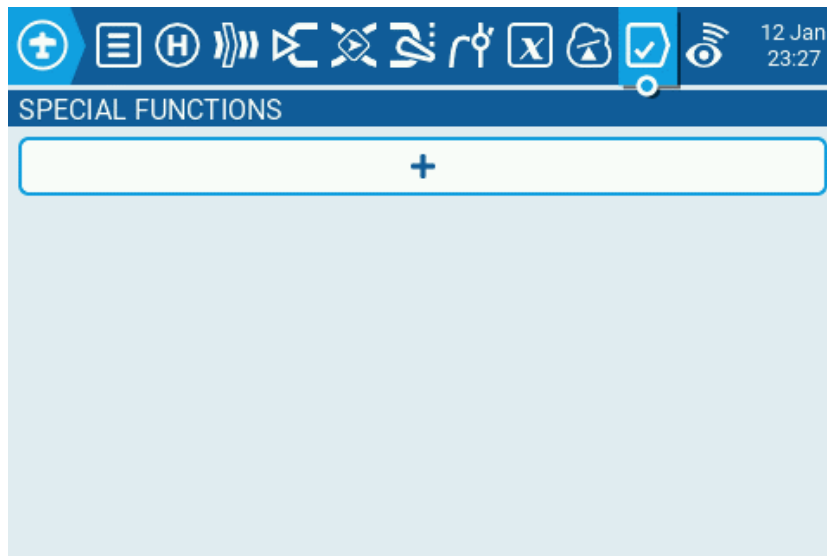
## 1.2.3 Special Functions

Combining logical switches with special functions and telemetry opens up a variety of exciting new features in EDGETX. For instance, changes in telemetry data such as receiver battery voltage from the returning model can trigger voice alerts. More complex applications, written in Lua scripts, include using GPS sensors as timers for drone races, capable of storing race and lap data for analysis on a computer.

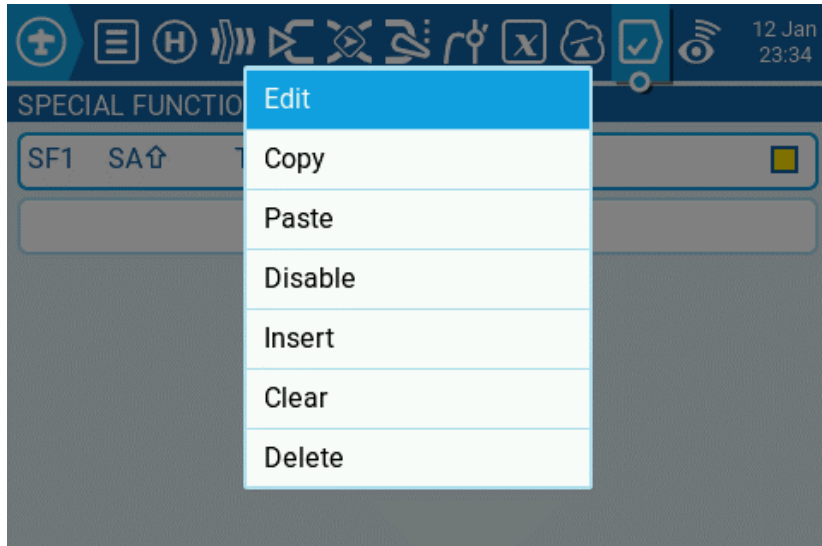
Special functions include:

- **Override:** Forces channel outputs to specific values.
- **Trainer:** Enables coach mode functionality.

- **Set and Reset Timers:** Configures and resets timers.
- **Reset Telemetry Values:** Resets specified telemetry values.
- **Adjust Global Variables:** Allows neat adjustments of settings during flight.
- **Adjust Volume:** Changes radio volume.
- **Play Sounds, Tracks, Background Music, and/or Haptic Feedback:** Provides audio and tactile feedback options.
- **Run Lua Scripts:** Executes predefined Lua scripts.
- **Adjust Screen Backlight:** Controls screen backlight intensity.
- **Save Screenshots to SD Card:** Captures and saves screenshots to the SD card.
- **Control Data Logging:** Manages data recording.
- **Record Stick Positions for Trim Settings:** Saves control stick positions as trim settings for your failsafe configurations.

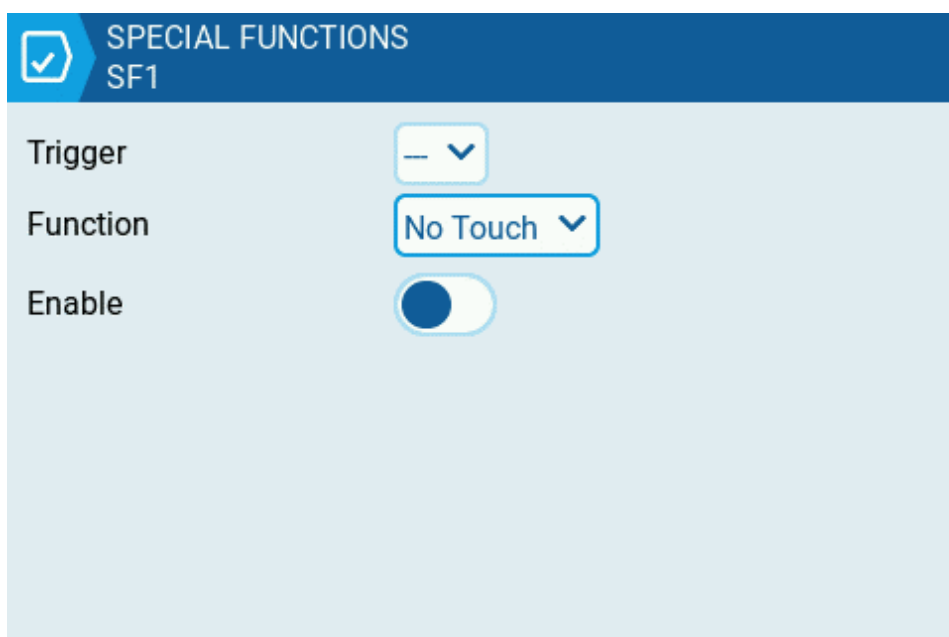


Each model can have up to 64 special functions. Additionally, there are 64 global functions available for standard functions across all models, accessible from the "Radio Setup" section. Clicking the + button allows you to configure unused special functions, opening the special function configuration window. Selecting a configured special function provides the following options:



- **Edit:** Opens the special function configuration page.
- **Copy:** Copies the selected special function.
- **Paste:** Pastes the copied special function onto the selected special function. Note: This overwrites the values of the selected special function with those copied.
- **Disable:** Disables the special function.
- **Insert:** Inserts a blank special function above the selected special function.
- **Clear:** Clears all configuration options within the selected special function.
- **Delete:** Deletes the selected special function.
- **Enable:** Enables the special function.

Configuring special functions, all of which have the following configuration options, additional options may be added depending on the selected function:



- **Trigger:** Switch that activates the special function.
- **Function:** Desired function to be used. See below for function descriptions.
- **Enable:** Toggles to enable/disable the function. To activate a special function via the switch, it must be enabled. A disabled special function does not operate regardless of switch configuration.

Functions available in EdgeTX and their specific additional configuration options:

- **Override:** (Channel Override) - Overrides specified channel with defined value.
  - **CH:** Channel to override.
  - **Value:** Value replacing normal channel value. (Range -100 to +100)
- **Trainer:** Enables coaching mode.
  - **Value:** Specifies which controls to pass to the student. Options include Sticks (all sticks), Rud (rudder), Ele (elevator), Thr (throttle), Ail (aileron), and Chans (all channels).
- **Inst. Trim:** Sets all trim settings to their respective current stick values.
- **Reset:** (Reset Timer) - Resets specified timer or telemetry value back to its initial value.
  - **Reset:** Options include Timer 1, Timer 2, Timer 3, Flight, and Telemetry.
- **Set:** (Set Timer) - Sets specified timer to defined value.
  - **Timer:** Options are Timer 1, Timer 2, Timer 3.
  - **Value:** Range from 00:00:00 to 08:59:59.
- **Adjust:** (Adjust Global Variable) - Changes value of specified global variable.
  - **Global var:** Select global variable to adjust.
  - **Mode:** Selects mode to change global variable. Options include Constant, Mixer Source, Global var, Inc/Decrement.
  - **Constant:** Sets specified global variable to defined constant value.
  - **Mixer Source:** Sets specified global variable to defined mixer source value.
  - **Global Var:** Sets specified global variable to defined global variable value.
  - **Inc/Decrement:** Increases/Decreases specified global variable by defined amount.
- **Volume:** Adjusts radio volume. Source changes are specified in the "Volume" dropdown list.
- **SetFailsafe:** Sets custom failsafe values for selected module (internal/external) to current stick positions when enabled. This option requires custom fail-safe mode to be set on RF module.
- **Play Sound:** Plays selected sound.



- **Value:** Sound to play. Optional values include Beep1/2/3, Warn1/2, Cheep, Ratata, Tick, Siren, Ring, SciFi, Robot, Chirp, Tada, Crickt, AlmClk. Note: No SD card sound pack required.
  - **Repeat:** Frequency to repeat sound. Options include!1x (play once, not played at startup), 1x (play once), 1s to 60s (play every xx seconds).
- **Play Track:** Plays selected .wav sound file.
  - **Value:** Plays selected .wav sound file from SD card.
  - **Repeat:** Frequency to repeat sound. Options include!1x (play once, not played at startup), 1x (play once), 1s to 60s (play every xx seconds).
- **Play Value:** Plays value of selected parameter.
  - **Value:** Source of value to play. It can be input (input), stick, knob (pot), slider, trim, physical and logical switch (logical switch), coach input channel value, global variable, telemetry sensor or channel.
  - **Repeat:** Frequency to repeat sound. Options include!1x (play once, not played at startup), 1x (play once), 1s to 60s (play every xx seconds).
- **Lua Script:** Executes defined Lua script. Lua scripts must be located in /SCRIPTS/FUNCTIONS/ folder on SD card. Lua scripts that display information on screen cannot use this special function for execution.
  - **Value:** Select LUA script file from SD card.
  - **Repeat:** Frequency to repeat Lua script. Options include: ON (repeats indefinitely as long as switch is active) or 1x (once).
- **BgMusic:** Loops selected .wav file. The file should be located in SOUNDS/(language) folder on SD card.
- **BgMusic II:** Temporarily pauses specified .wav file playback from BgMusic.
- **Vario:** Enables variometer buzz for model ascent and descent.
- **Haptic:** Vibration.
  - **Value:** Type of vibration mode. Options include: 0 - 3.
  - **Repeat:** Frequency to repeat vibration mode. Options include!1x (play once, not played at startup), 1x (play once), 1s to 60s (play every xx seconds).
- **SD Logs:** Creates .csv log files of remote control and telemetry values in LOGS folder on SD card. The radio creates a new log entry in the log file based on the interval set in configuration. Value options are 0.1s - 25.5s. Each time this function is activated, the radio creates a new log file, provided the duration of activation is at least equal to the value set. Note: Recording won't start if SD card available space is less than 50MB.
- **Backlight:** Adjusts brightness of radio screen based on sources defined in the list. Brightness settings are limited to values configured in Radio Setup -> Backlight Settings.
- **Screenshot:** Captures screen screenshot. Saves screenshot in .bmp file format to SCREENSHOT folder on SD card.
- **RacingMode:** Enables racing mode (low latency) for FrSky Archer RS receiver. Racing mode must be enabled in external RF module settings.
- **No Touch:** Disables touch function.

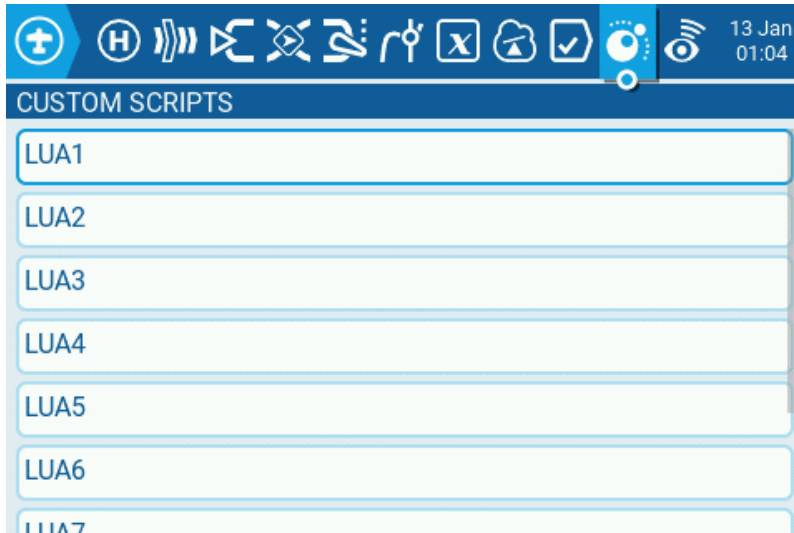
- **Set Main Screen:** Changes current visible screen to defined screen number.
  - **Value:** Screen number defined in screen settings.
  - **Repeat:** Frequency to change screen to defined screen when switch is on. Options include 1x (won't change at startup, even if switch is on), 1x (change once), 1s to 60s (change every xx seconds). Useful because users can still manually switch screens while switch is enabled, then return to defined screen after defined duration.
- **Audio Amp Off:** Disables audio amplifier, stopping speaker from emitting sound, including annoying feedback or interference.

## 1.2.4 Custom Scripts

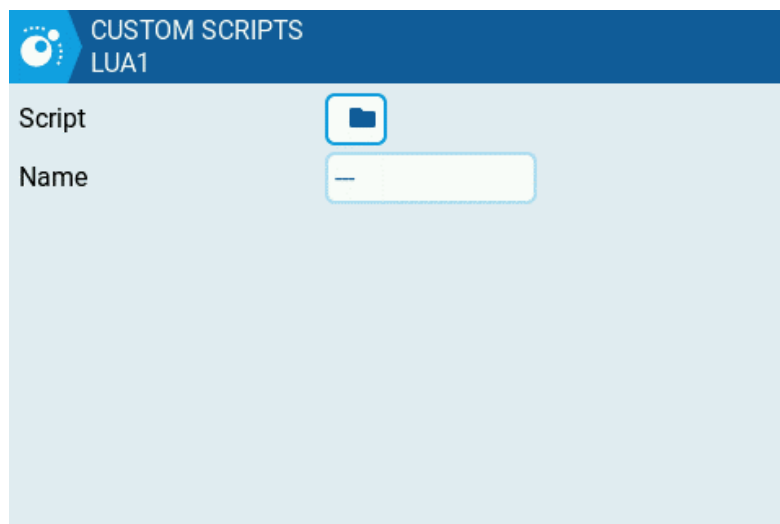
Custom scripts allow you to modify the behavior of the transmitter to add dedicated functions for custom tasks. (Custom Scripts are disabled by default and need to be enabled in the Enabled Features section of the model settings.) The scripting language used is Lua, a lightweight, embeddable scripting language designed for a variety of applications from games to web applications and image processing. In this case, it is used to implement custom functions in the transmitter. There are three basic types:

- **One-time:** The script runs only once and then terminates. Examples include receiver and flight controller setup scripts, and the new model creation wizard. These are executed from the /SCRIPTS/ folder on the SD card.
- **Mix:** The script becomes part of the control loop in the transmitter and runs repeatedly. These are set up using this Custom Scripts page. They typically read one or more values, perform some processing, and then output one or more values. These scripts should be as short as possible, as exceeding the script execution runtime limit will result in the script being forcibly stopped and disabled.
- **Function:** Scripts that run on demand using special functions, typically triggered by events or switches.

There are some caveats - you should never use Lua model scripts to control any aspect of the model that could lead to a crash if the script stops executing. The reason is that if the script attempts to use too much CPU time or memory, it will be shut down and will not run again when the model is selected.



The “Custom Scripts” page is used for continuously running mix-type scripts. These scripts should be placed in the /SCRIPTS/MIXES/ folder on the SD card. Up to 9 custom scripts can be used.



You can select a script on the first line and optionally define a custom name so you know what it does on the second line. The screen will also display the inputs and outputs used by the script.

### **Basic Layout of a Lua Script**

A user-written Lua script is essentially a subroutine called by the main loop of the transmitter code. A subroutine is a block of code that can be called when needed to perform a task and then return control to the calling code. Custom Lua scripts can contain four basic

subroutines (input, output, init, and run), three of which are optional. You must define these four subroutines in the return statement at the end of the script.

- **Input:** This is typically how the script receives information passed to it. The Input subroutine is optional and not required.
- **Output:** This subroutine defines the variables that the script will return. Up to seven values can be returned, which can only be numeric at this stage. Output is also optional and not required.
- **Init:** This subroutine is used to initialize the script. You should set initial values for variables and perform any setup work. This subroutine runs once each time the model is selected or the transmitter is turned on with the model active. This subroutine is also optional and not required.
- **Run:** This is where the work of the Lua script is done. It can be compared to main() in languages like C# or Java. Just like those languages, variables can be passed to it. This routine will return the variables defined in the Output subroutine.

## 1.2.5 Telemetry

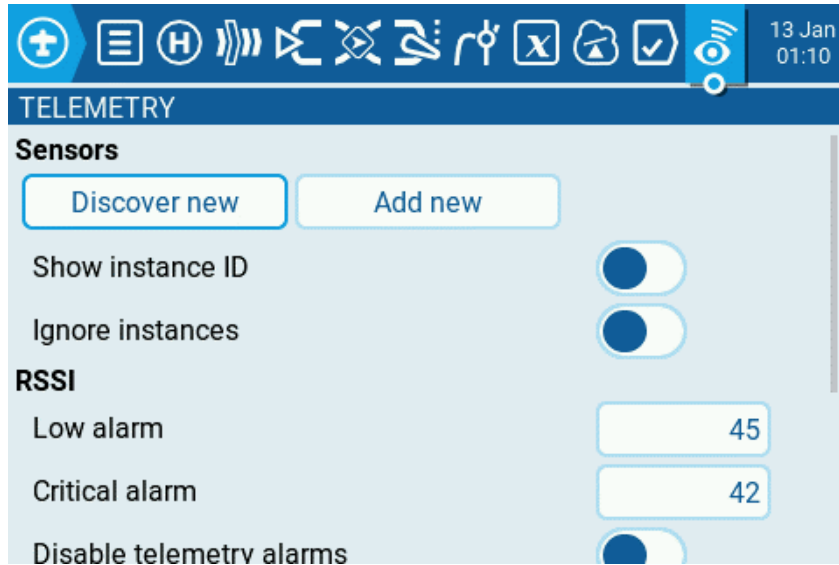
Telemetry data is the data received from various sensors on the model to the transmitter. These sensors may be included in the receiver or flight controller, or they may be separate sensors such as GPS, variometers, or magnetometers. EdgeTX can display received telemetry data in widgets or configure it in alerts or audio.

### **Main Features:**

- Each value received via telemetry is treated as a separate sensor with its own properties. Multiple sensors of the same type can be connected, but the physical ID must be changed. For example, sensors for each cell in a 2-6S LiPo battery, or monitoring individual motor currents in a multi-motor model. Each sensor can be reset individually via special functions.

Telemetry sensors can:

- Play values via voice.
- Be used for logical switches.
- Be used as inputs for proportional operations.
- Be displayed on custom telemetry screens.



## Sensors:

All previously configured sensors are listed here. Highlighted sensors have received data since the model was loaded or telemetry values were reset. A small circle icon to the left of the sensor value will flash when the sensor receives data updates. Black sensor values indicate sensors receiving regular updates. Red sensor values no longer receive regular updates.

Options listed below the sensor list include:

- **Discover New:** When selected, it will look for new sensors on the model and configure them automatically.
- **Add New:** When selected, it will create a new blank sensor that must be configured manually.
- **Delete All:** This option will delete all previously configured sensors. Note: This button is not visible if no sensors are configured.
- **Show instance ID:**
- **Ignore Instances:** This option prevents multiple sensors from reporting the same telemetry data.

## RSSI:

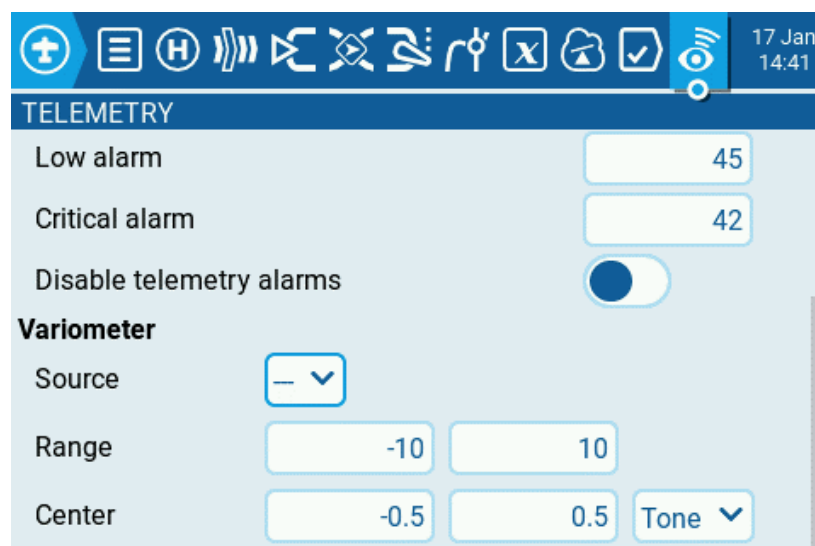
Receiver Signal Strength Indicator (RSSI): The value transmitted by the receiver in the model to the transmitter, indicating the strength of the received signal. Warnings can be set to alert you when the signal falls below a minimum value, indicating that you are in a

dangerous range to fly. Factors affecting signal quality include external interference, excessive distance, poor orientation, or damaged antennas.

It is not an absolute measurement but a number indicating the ratio of the signal to some initial "good" value. This number is relative but can indicate that the model may be approaching the range limit for controlling the aircraft.

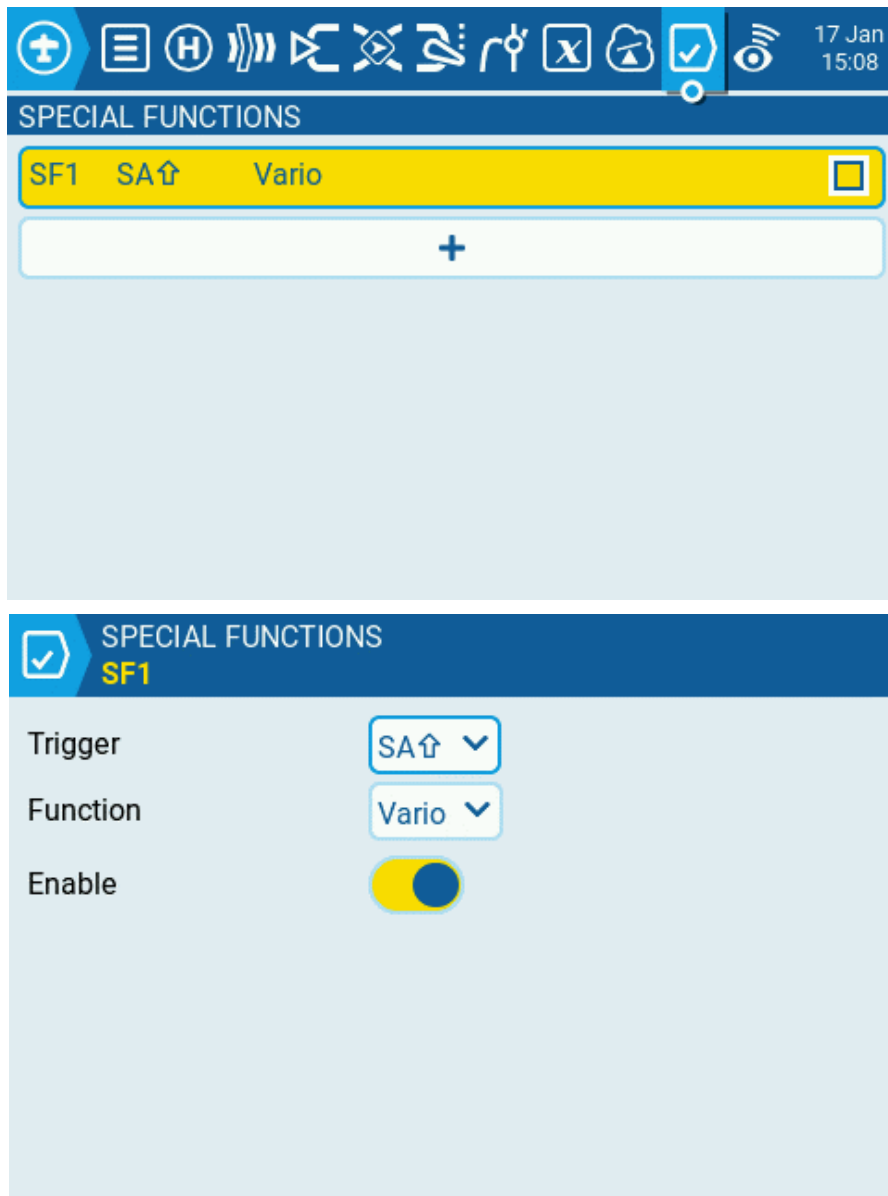
When the telemetry link is completely lost, the transmitter will have a "telemetry signal lost" prompt. Note that the transmitter can no longer warn you of RSSI or any other alarm conditions when the telemetry link fails, so no further alarms will sound.

- **Low Alarm:** Range 15-75, default 45.
- **Critical Alarm:** Range 12-72, default 42.
- **Disable telemetry alarms:** Turn off telemetry alarms.



## Variometer:

An altimeter that detects changes in the model's altitude. EdgeTX can alert users to these altitude changes with rising/lowering tones. The actual frequency and volume of the tones to be played are set in the "Altimeter" menu on the "Radio Setup" page. The following options are available to configure altimeter alerts. (Requires enabling this feature via Special Function or Global Function!)



- **Source:** Set the data source. It is selected from the telemetry sensors added in the "Sensors" section.
- **Range:** The range of climb/descent rate to trigger tone changes for the altimeter. If the climb/descent rate is within the range set here, the tone will vary based on this value. When outside the range set here, the tone will stop changing. The units are meters/second or feet/second, depending on the unit setting on the "Radio Setup" page.
- **Center:** The range of climb/descent rate changes to be ignored. When the climb/descent rate is within the range specified here, the tone will not change.
- **Tone/Silent:** Whether to emit a tone when the climb/descent rate is within the range specified by the center.

## Custom Sensor Settings:

- **Type:** Custom
- **ID:** Sport ID number (4-digit hexadecimal), typically read from the sensor. The second field is the physical ID number to be entered.
- **Unit:** V, A, mA, kts, m/s, f/s, kmh, mph, m, ft, degC, degF, %, mAh, W, dB, rpm, g, deg, ml, fOz
- **Precision:** Decimal places to 0, 0.0, or 0.00.
- **Ratio:** "-" 0-3000.0.
  - If the Ratio is "-", the telemetry value is calculated as follows: (received value / 10)
  - (received value / 10) + Offset = displayed value
  - Or, if the Ratio is not "-", the telemetry value is calculated as follows:
    - [(received value / 255) \* Ratio] + Offset = displayed value
    - The ratio allows the received sensor value to be corrected or converted, for example, between km/h or knots.
- **Offset:** Between -3000 and +3000.
- **Auto Offset:** When checked, it will auto-zero. For example, when the Vario sensor is at ground level when powered on, it will store the first received value after reset as zero. This provides an "Above Ground Level (AGL)" reading instead of an "Above Sea Level" reading.
- **Positive:** Limits any negative values to zero.
- **Filter:** When checked, it calculates a moving average of the past 4 values.
- **Logs:** If checked, it will be recorded to the SD card. Note that logging still must be started by a Special Function. This option only makes the data available for logging.

## Calculated Sensor Settings:

- **Type:** Calculated
- **Formula:**
  - **Add, Average, Multiply:** Values can be added, averaged, or multiplied.
  - **Min, Max:** Can extract the minimum or maximum of a set of up to 4 values.
  - **Totalize:** This function adds each value as it is received.
  - **Consumption:** The value is integrated over time.



- **Unit:** "-", V, A, mA, kts, m/s, f/s, kmh, mph, m, ft, degC, degF, %, mAh, W, dB, rpm, g, deg, ml, fOz
- **Precision:** Decimal places to 0, 0.0, or 0.00.
- **Source1-Source4:** Select from any active sensor.
- **Auto Offset:** When checked, it will auto-zero.
- **Positive:** Limits any negative values to zero.
- **Filter:** When checked, it calculates a moving average of the past 4 values.
- **Persistent:** When checked, this value is retained during power off and restored during power on. This is useful for functions like mAh consumption.
- **Logs:** If checked, it will be recorded to the SD card. Note that logging still must be started by a Special Function.

## Special Functions:

### Lipo Cell Voltage:

The Lipo voltage sensor FLVSS adds the following parameters to the list:

- **Cels:** Total battery voltage. To obtain individual cell voltage, define a new calculated sensor.
  - **Name:** Cmin or Cmax.
  - **Type:** Calculated
  - **Formula:** Cell
  - **Cell sensor:** Select from the active Lipo voltage sensor, e.g., Cels.
  - **Cell Index:** Lowest, 1, 2, 3, 4, 5, 6, Highest.
  - **Log:** If checked, it will be recorded to the SD card. Note that logging still must be started by a Special Function.

### Distance:

The GPS sensor adds the following parameters to the list:

- **GPS:** Longitude and latitude.
- **Galt:** Altitude.
- **GSpd:** Speed.
- **Date:** Date, time. To obtain the distance from the GPS power-on position to the current position, define a new calculated sensor.
  - **Name:** Dist
  - **Type:** Calculated

- **Formula:** Distance
- **Unit:** m
- **GPS sensor:** Set this to "---", we do not use the altitude value for this calculation.
- **Alt sensor:** Select the "Galt" entry from the active parameter list.
- **Logs:** If checked, it will be recorded to the SD card. Note that logging still must be started by a Special Function.

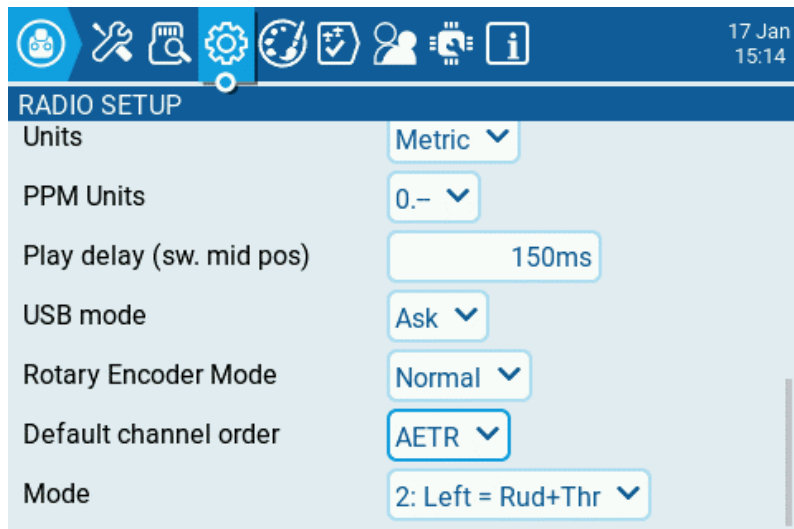
## 40A Current Sensor:

The 40A current sensor adds the following parameters to the list:

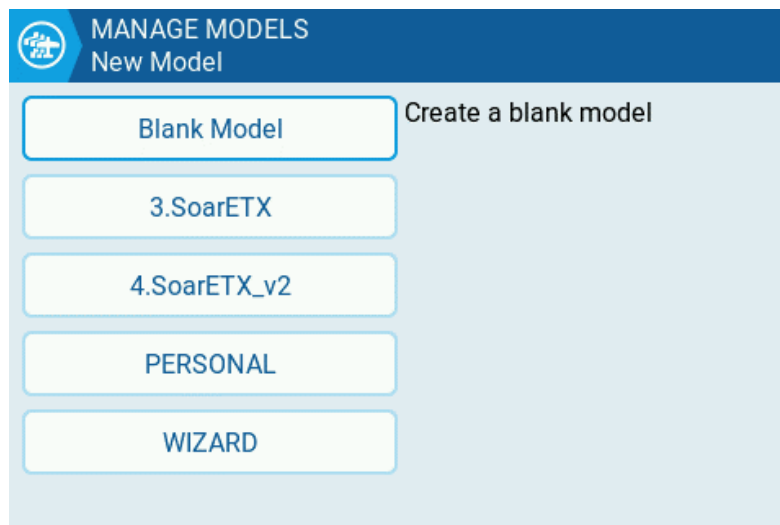
- **Curr:** Current To obtain consumption (battery capacity used in mAh), define another new calculated sensor:
  - **Name:** (your choice)
  - **Type:** Calculated
  - **Formula:** Consumpt
  - **Sensor:** Curr
  - **Unit:** mAh
  - **Persistent:** When checked, this value is retained during power off and restored during power on.
  - **Logs:** If checked, it will be recorded to the SD card. Note that logging still must be started by a Special Function.

## 1.2.6 Simple Delta Wing Setup Example

1. First, set the channel order (example: AETR):

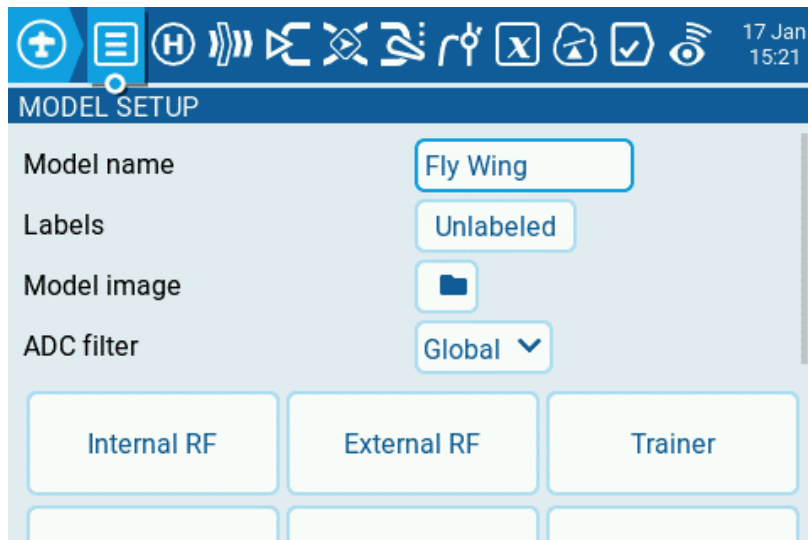


**2. Create a new blank model:**



**3. Model Setup:**

The model setup section includes all initial settings such as Inputs, Mixer, and Outputs.



**Model name:** Enter your model name.



- **Timers:** Set a timer (e.g., start timing when the throttle is pushed, stop timing when the throttle is pulled back).
  - **Name:** Name of the timer.
  - **Source:** Set this to Throttle.
  - **Persistent:** Generally, there is no need to store the timer value when turning off the device or switching models, so leave this as the default value, OFF.
- **Inputs/Mixer/Outputs:**
  - Determine the required outputs (servos/channels).
  - Determine the physical inputs to use (sticks, knobs, sliders).
  - Identify and configure the logical inputs that will map to physical inputs.

- Determine interactions between inputs and channels.
- Convert interactions into mixer definitions.
- Configure outputs.

#### 4. Determine the required servos/channels:

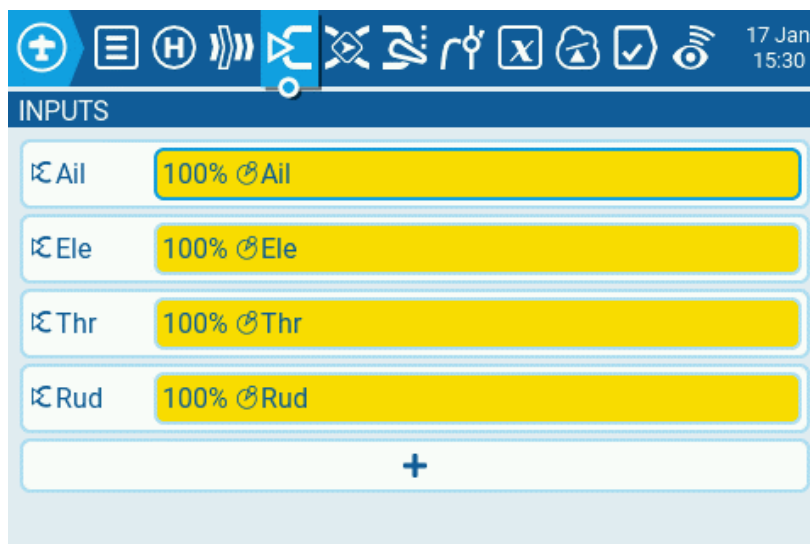
- There are 32 output channels available, and you can freely assign them. Typically, the channels with the smallest numbers are assigned to servos because channel numbers directly map to channels in the receiver.
  - CH1: Left Elevon
  - CH2: Right Elevon

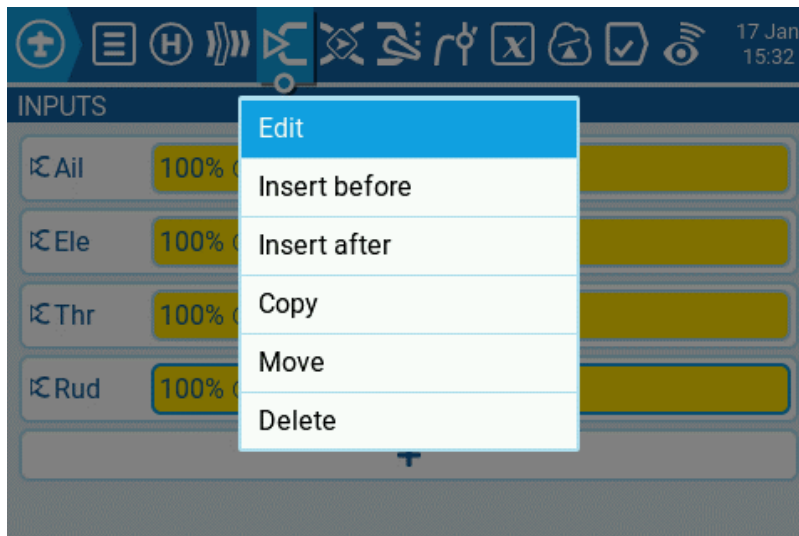
#### 5. Determine the physical inputs to use (sticks, knobs, sliders):

- Aileron Stick: Aileron
- Elevator Stick: Elevator

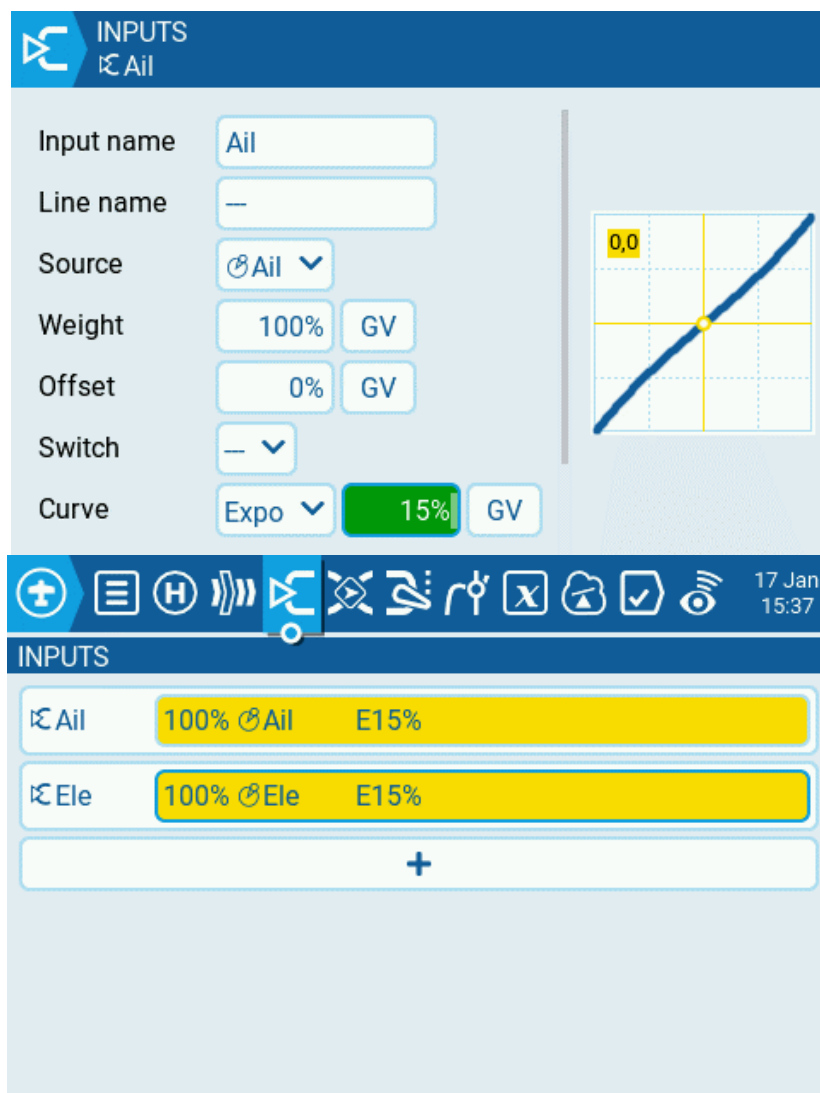
#### 6. Program Inputs:

- Go to the Inputs page.
- Since we only need two inputs for Aileron (Ail) and Elevator (Ele), we can delete the other two. Select the options you want to delete, press ENT to open the edit window, then select Delete and press ENT.

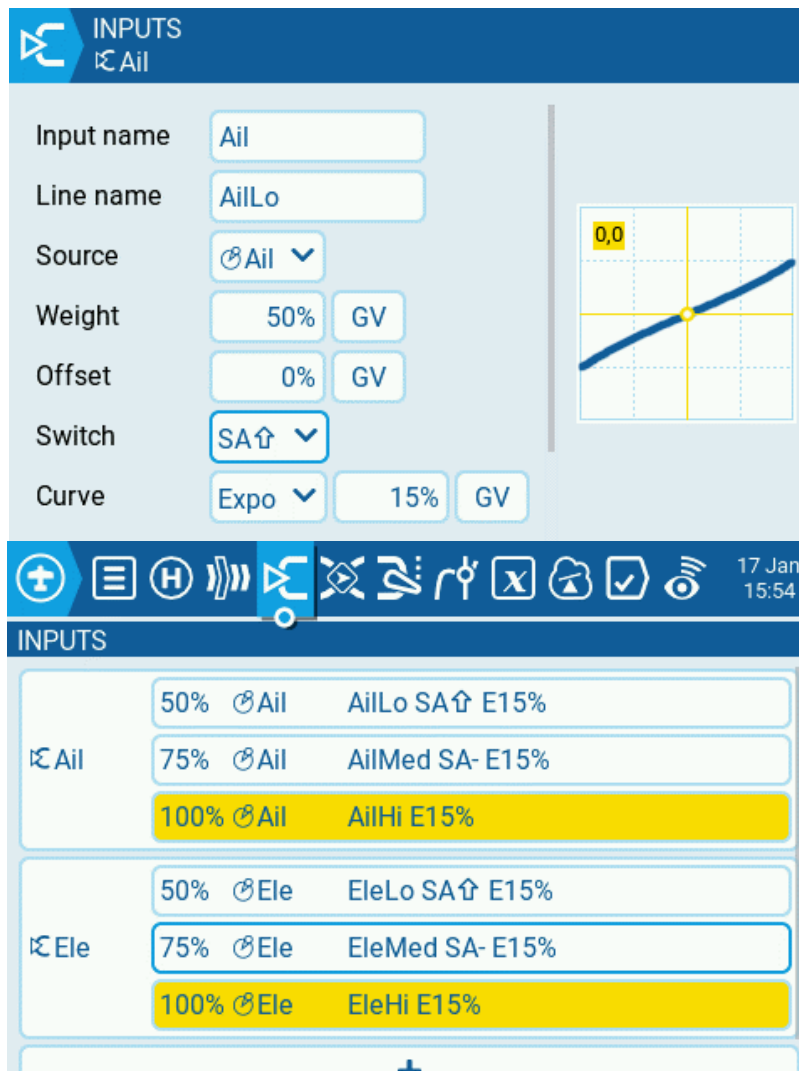




Move the cursor to Ail, press ENT to open the edit window, then select Edit and press ENT. We use a 15% Expo curve to soften the response around the neutral point (this can be adjusted according to your preference).



Select the row you want to add to insert a new input line, press ENT to open the edit menu. Choose “Insert Before” to insert a new line before the current input line.



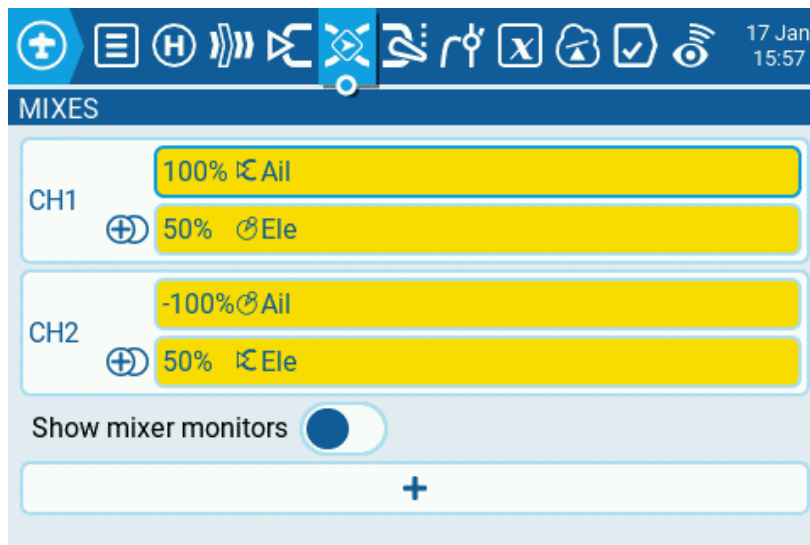
You can set a switch to toggle different throw rates. Only one input line is active at a time. If switch SA fails, the last line becomes True. If the Ail Hi and Ele Hi switch positions are set to SA↓, it might not be the case.

### 7. Determine interactions between inputs and channels:

- For example, **CH1**: Left Elevon
- **CH2**: Right Elevon

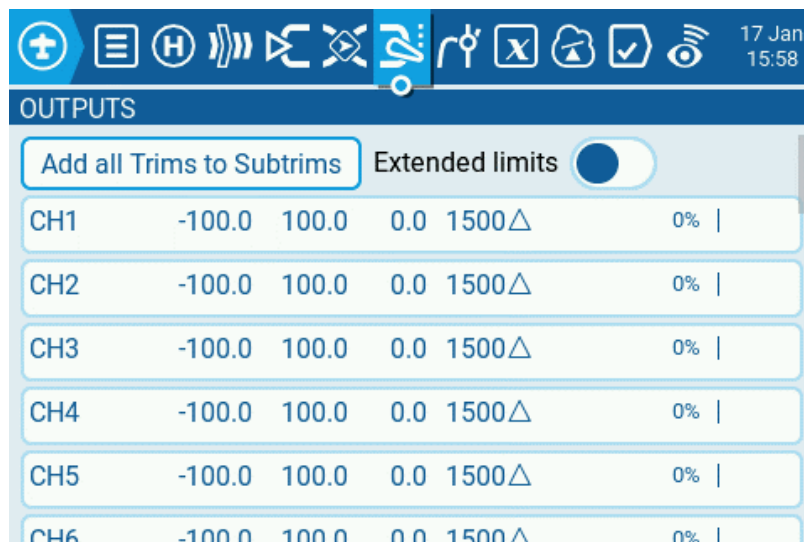
### 8. Convert interactions into mixer definitions:

- CH1 and CH2 will have two mixers, sources being “Ail” and “Ele” inputs.



## 9. Configure Outputs:

- The next step is to adapt the purely logical outputs from the mixer stage to the mechanical characteristics of the model. Here, you can configure minimum and maximum travel, channel inversion, and use PPM center adjustment to align the servo center points, or use subtrim to add an offset.



## Introduction to Global Variables:

- We can also use global variables to set the values for delta wing mixing.



GLOBAL VARIABLES									
AMx	FM0 100	FM1 FM0	FM2 FM0	FM3 FM0	FM4 FM0	FM5 FM0	FM6 FM0	FM7 FM0	FM8 FM0
EMx	FM0 50	FM1 FM0	FM2 FM0	FM3 FM0	FM4 FM0	FM5 FM0	FM6 FM0	FM7 FM0	FM8 FM0
GV3	FM0 0	FM1 FM0	FM2 FM0	FM3 FM0	FM4 FM0	FM5 FM0	FM6 FM0	FM7 FM0	FM8 FM0
GV4	FM0 0	FM1 FM0	FM2 FM0	FM3 FM0	FM4 FM0	FM5 FM0	FM6 FM0	FM7 FM0	FM8 FM0
GV5	FM0 0	FM1 FM0	FM2 FM0	FM3 FM0	FM4 FM0	FM5 FM0	FM6 FM0	FM7 FM0	FM8 FM0
GV6	FM0 0	FM1 FM0	FM2 FM0	FM3 FM0	FM4 FM0	FM5 FM0	FM6 FM0	FM7 FM0	FM8 FM0

MIXES
CH01 1501us

	0%	
	0%	

Name

Source

Weight   Offset

Switch  Curve

MIXES

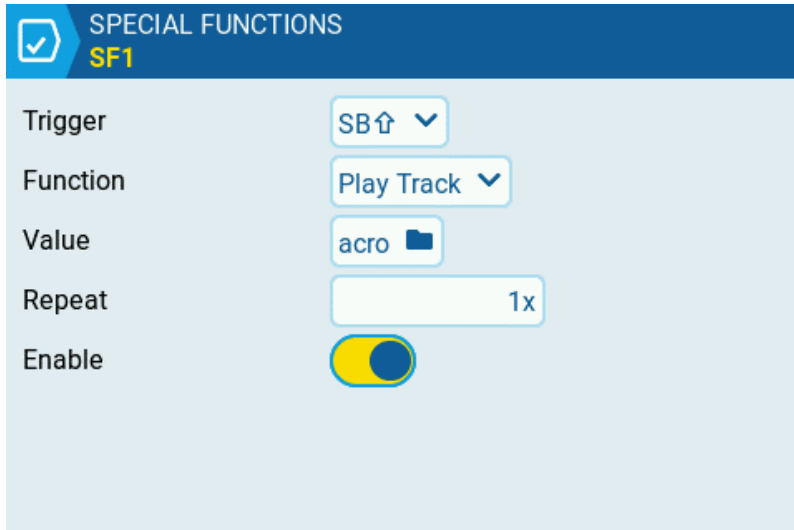
CH1

CH2

Show mixer monitors

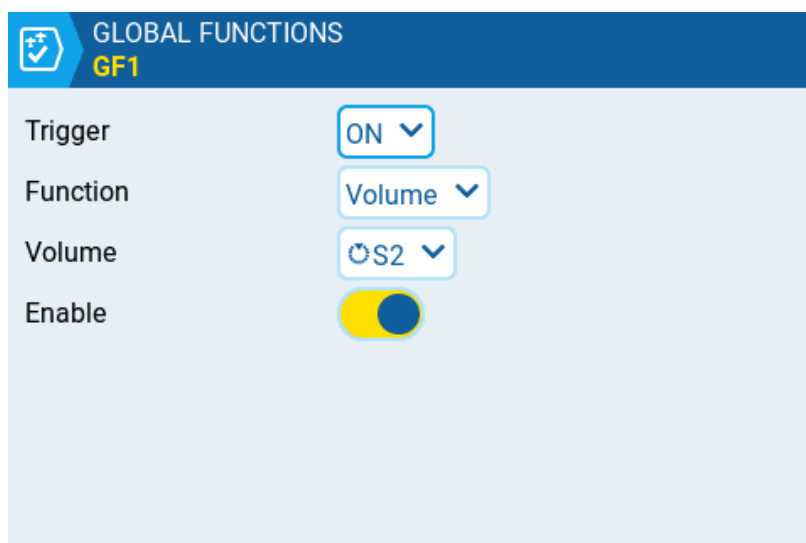
## Adding Voice Prompts:

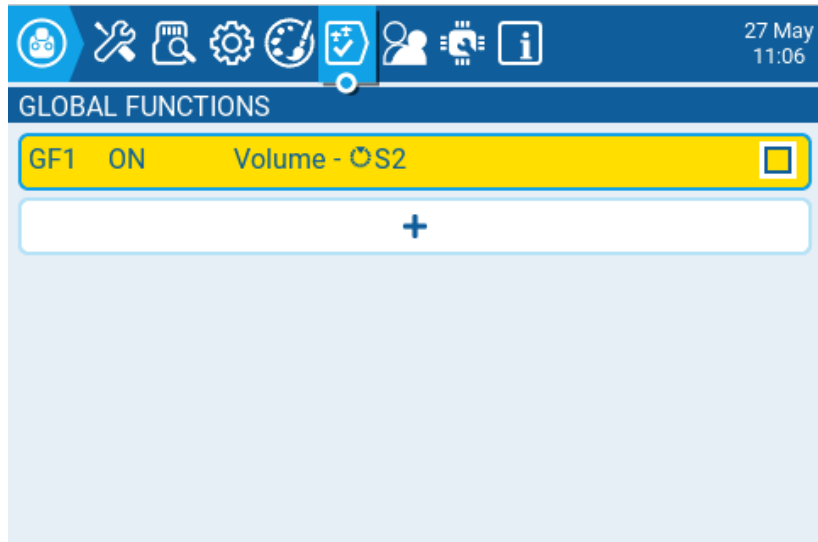
- You can set voice prompts for switches, playing when the switch is in the set position.



## Global Functions:

- Global functions can be used to set standardized functions available to all models. The following example will define a global function using the left slider (LS) as a volume control, eliminating the need to enter the "Radio Setup" menu to adjust the volume.

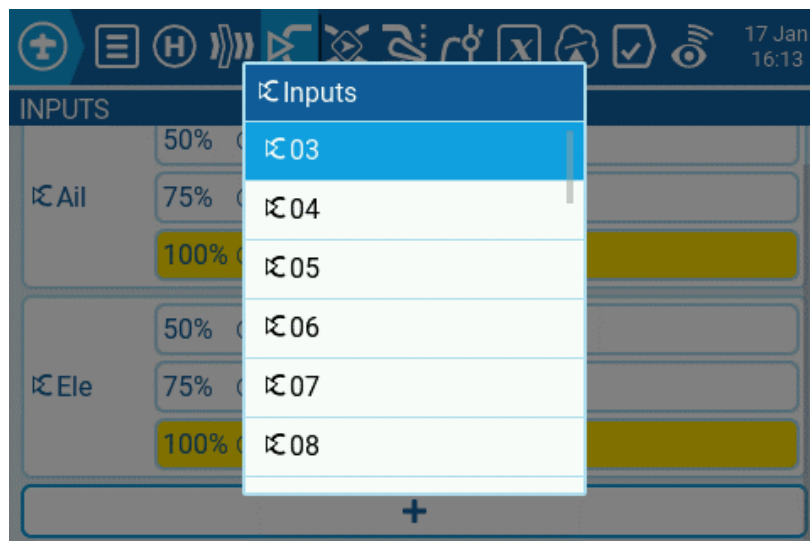


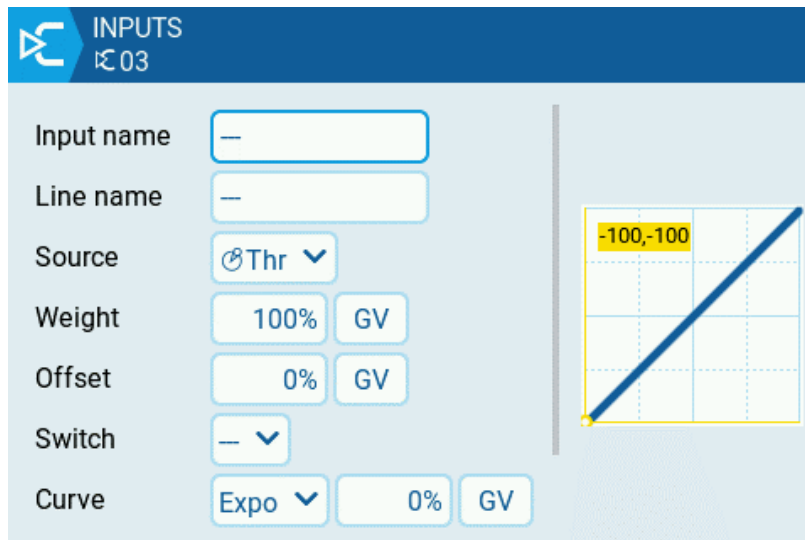


## Adding a Motor Channel to a Delta Wing:

### Add Motor Input:

- Go to the Inputs page, scroll down to 03, press ENT to open the edit menu, then add an input for the motor ESC or throttle servo.



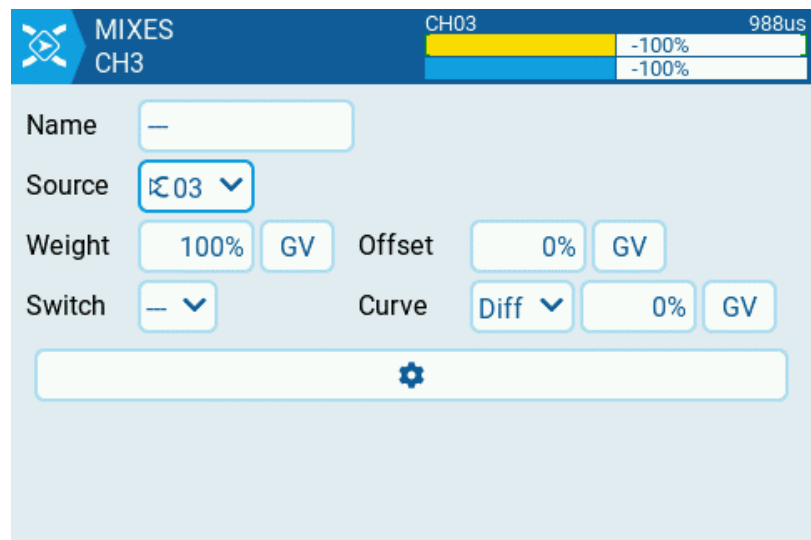
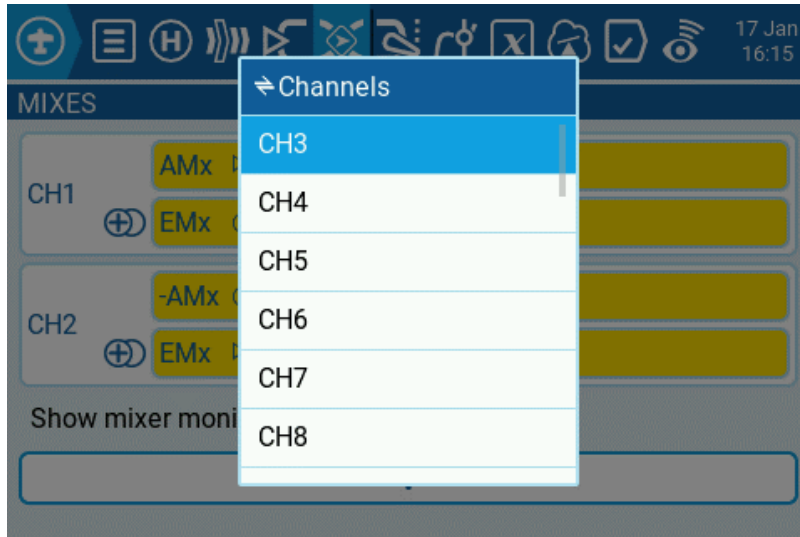


- ESC expect a full control signal range of -100 to +100, so the Weight and Offset for the Thr input can remain at default values. Press RTN to return to the Inputs page.

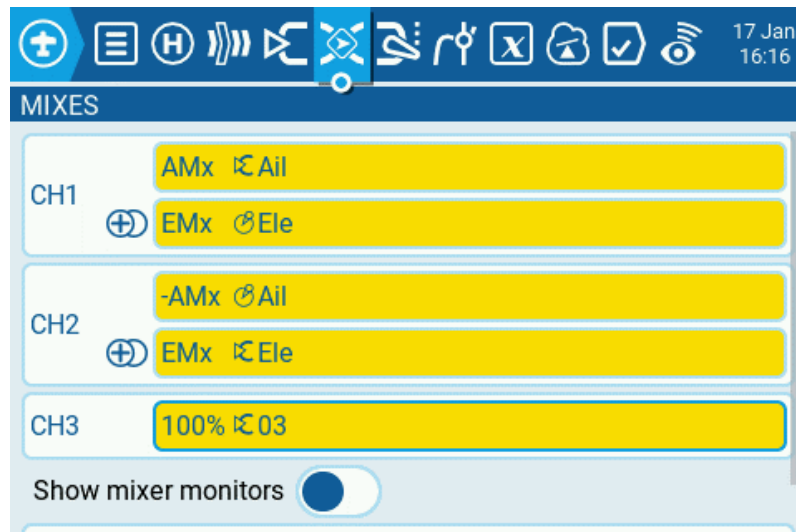


**Configure Mixer Page:**

- Go to the Mixer page, scroll down to CH3 and press ENT, assign Thr to CH3.

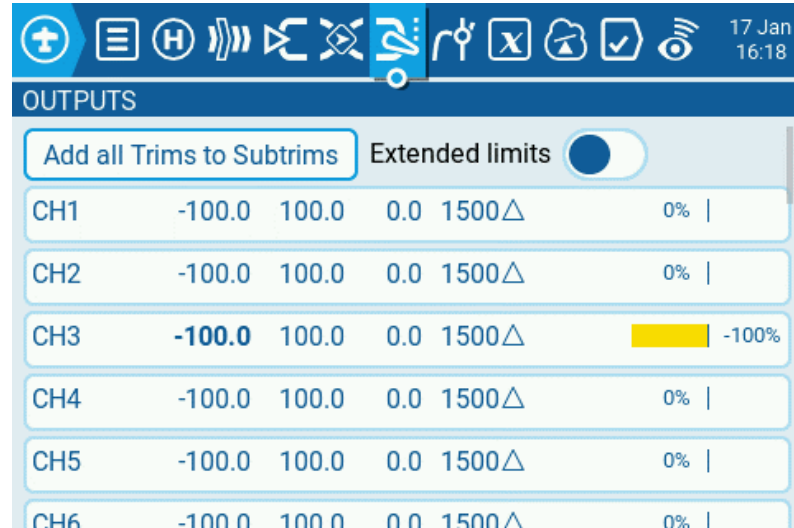


- Once set, the Mixer page should display as follows.



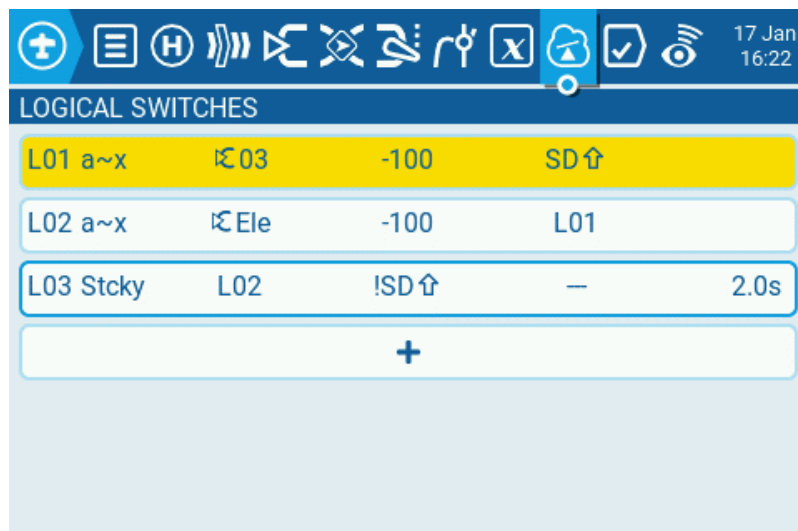
### Configure Outputs Page:

- Since settings depend on the actual characteristics of your model, exact settings cannot be provided.

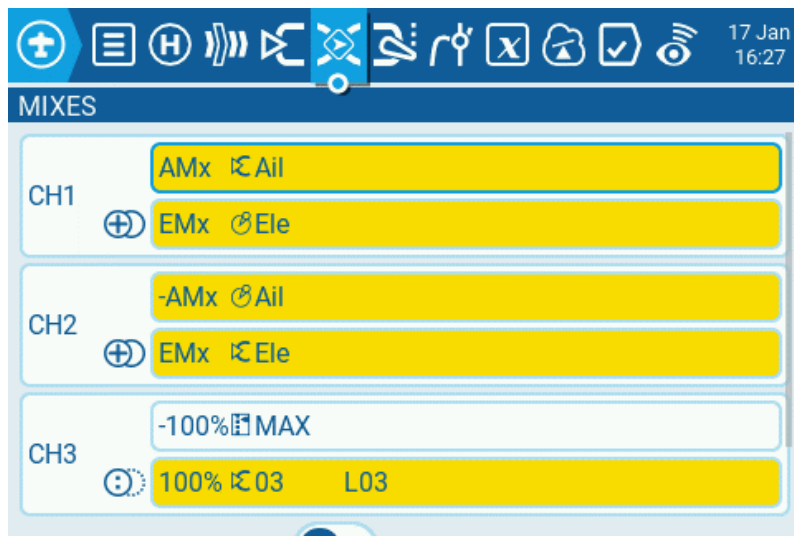


### Set Throttle Lock Function:

- The throttle lock function can set a switch to cut off the throttle channel to prevent accidental activation. A logical unlock switch can be set to unlock when conditions are met.
- If the throttle stick is very close to -100 and the SD switch is in the "up" position, L01 becomes true. If the elevator stick is very close to -100 and the logical switch L01 is true, L02 becomes true. If L02 remains true for at least 2 seconds, L03 locks ON, and when the SD switch is flipped up, L03 resets.



**Throttle Mix Setting:** We can now use the logical switch L03 to configure the lock function.



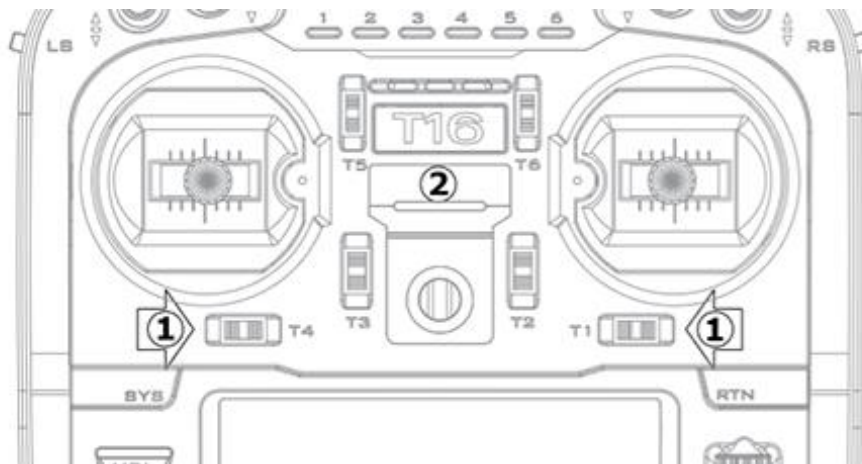
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## 2. Firmware Upgrade (Advanced)

Users can choose between two methods to upgrade the EdgeTX firmware:

1. Using the EdgeTX Companion firmware upgrade tool.
2. Upgrading the controller firmware using an SD card (recommended if the version jump is significant, use the first method).

If you don't have a Windows™ operating system, choose the second method, "Upgrading the Controller Firmware using an SD Card." This method uses a bootloader application designed by the EdgeTX developer team, making it efficient and straightforward. The upgrade involves two steps: first, copy the downloaded firmware to the FIRMWARE directory on the SD card, then turn off the controller. Next, hold the horizontal trim buttons inward and turn on the controller (as shown in the image).

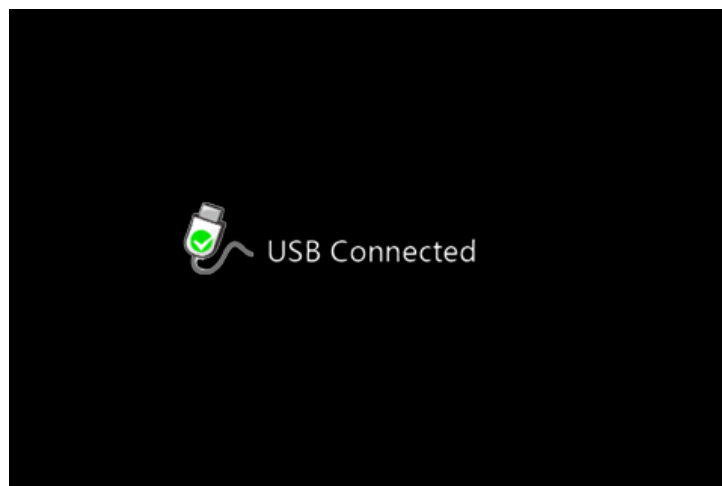


Once powered on, select the "Write Firmware" option and choose the appropriate firmware to upgrade.





In BOOTLOADER mode, you can also connect to a computer via USB to access the T15's disk data. Upon USB connection, the display will appear as shown.



## 2.0.1 Introduction to EdgeTX Companion

EdgeTX Companion is a PC-based configuration software for the EdgeTX firmware, available for Windows, Mac OS, and Linux. It allows you to back up, edit, and share your controller settings. You can also simulate model setups, enabling you to explore and configure models and experiment with various scenarios using the controller. Editing on a computer means you aren't limited to a small screen and a few

buttons, reducing the time needed for editing and increasing efficiency.

## 2.0.2 Basic Concepts of EdgeTX Companion

Companion performs three main tasks:

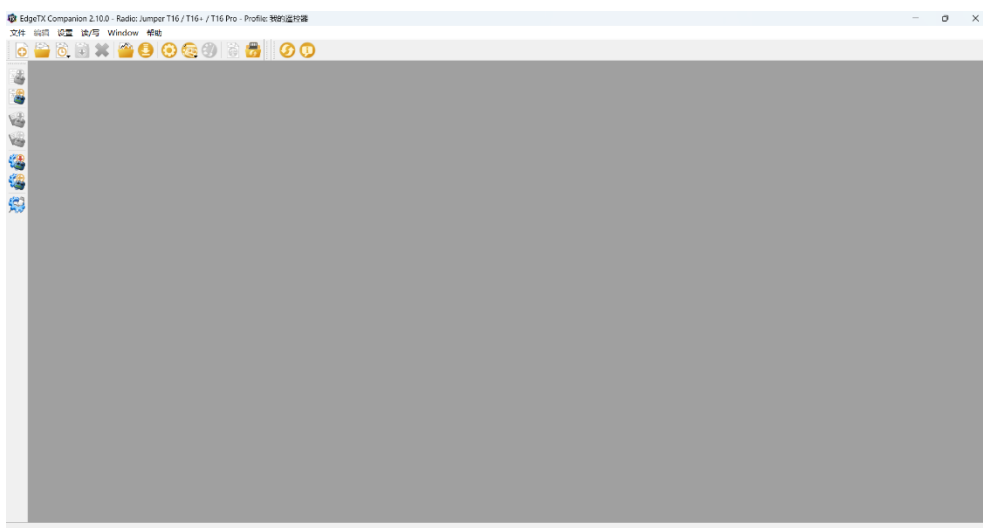
1. Manage and update radio firmware and audio files. Firmware options are managed through the "Settings" menu.
2. Manage all controller settings common to all models.
3. Create new models and maintain other model configurations.

## 2.0.3 Configuring EdgeTX Companion

The typical usage sequence is as follows:

1. Click the "Read Models and Settings from Radio" icon to load models from the controller.
2. Make the necessary changes.
3. Click the "Write Models and Settings to Radio" icon to write the modified models back to the controller.
4. Backup the changed .etx file by saving it on the computer

First, open <https://github.com/EdgeTX/edgetx/releases> to download EdgeTX Companion. After installing and running it, the main interface will appear as shown:



## Menu Overview

The top menu contains basic general operation functions:



1. Create new model and settings files.
2. Open model and configuration files.
3. Display recently used model settings files saved on the computer.
4. Save model and configuration files.
5. Close model and configuration files.



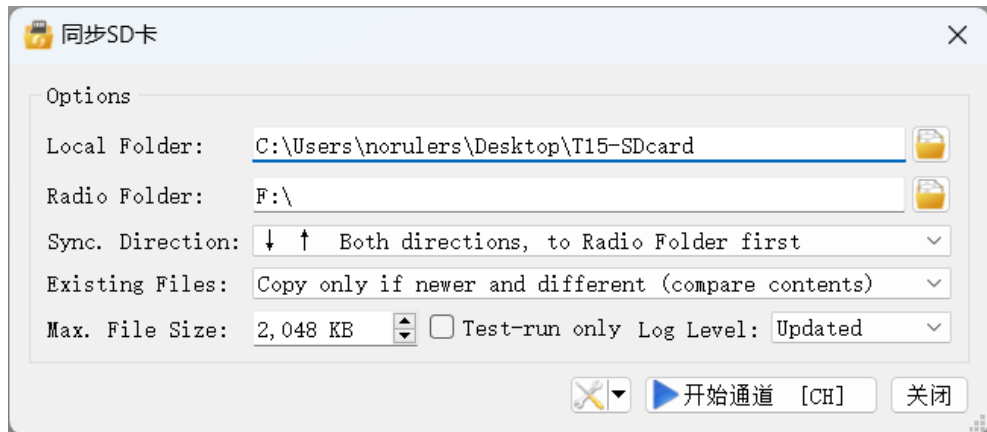
6. Open and view LOG (log) files.
7. Download firmware and SD card files.



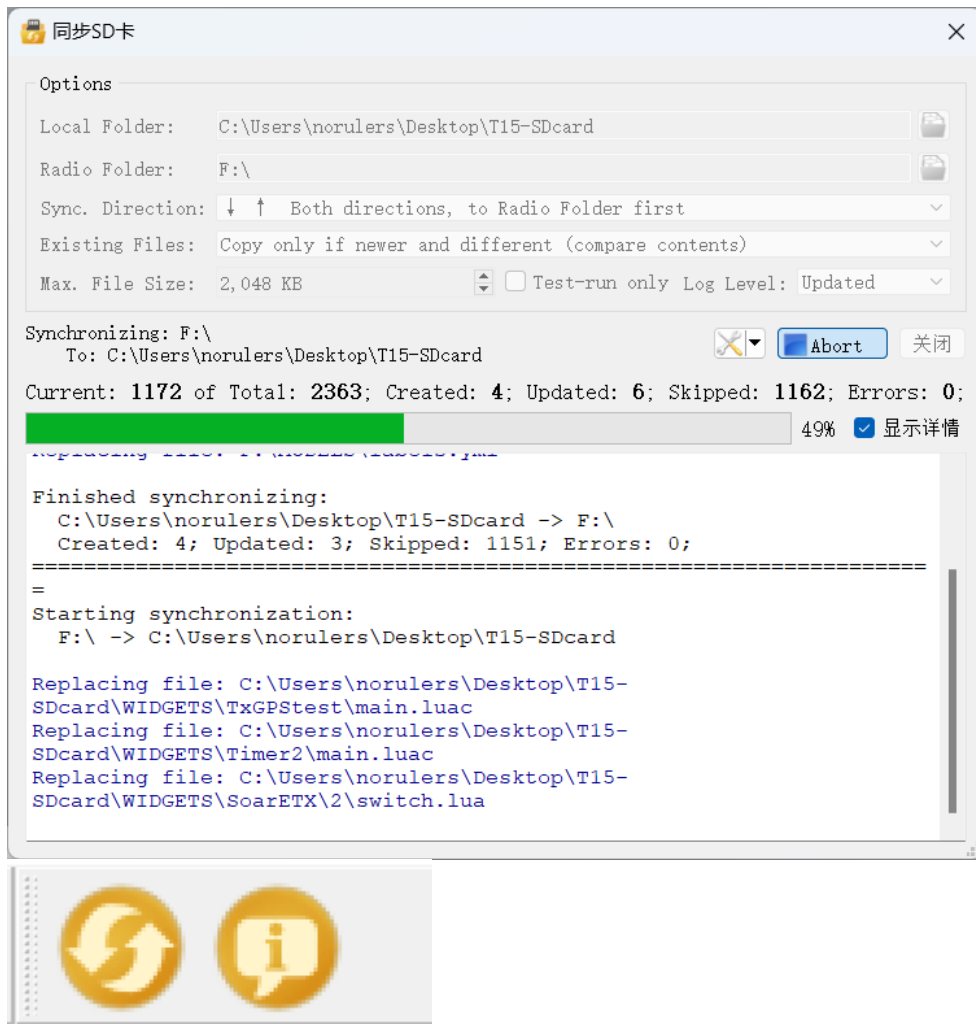
8. Edit controller configuration files, applications, and simulator settings.
9. Display a list of controller configuration files. If you have multiple controllers, this function allows you to set different profiles.
10. Edit the controller's startup screen.



11. Compare model parameters.
12. Synchronize the SD card. After connecting the controller, simply click this button to open the "SD Card Sync Options" dialog box.

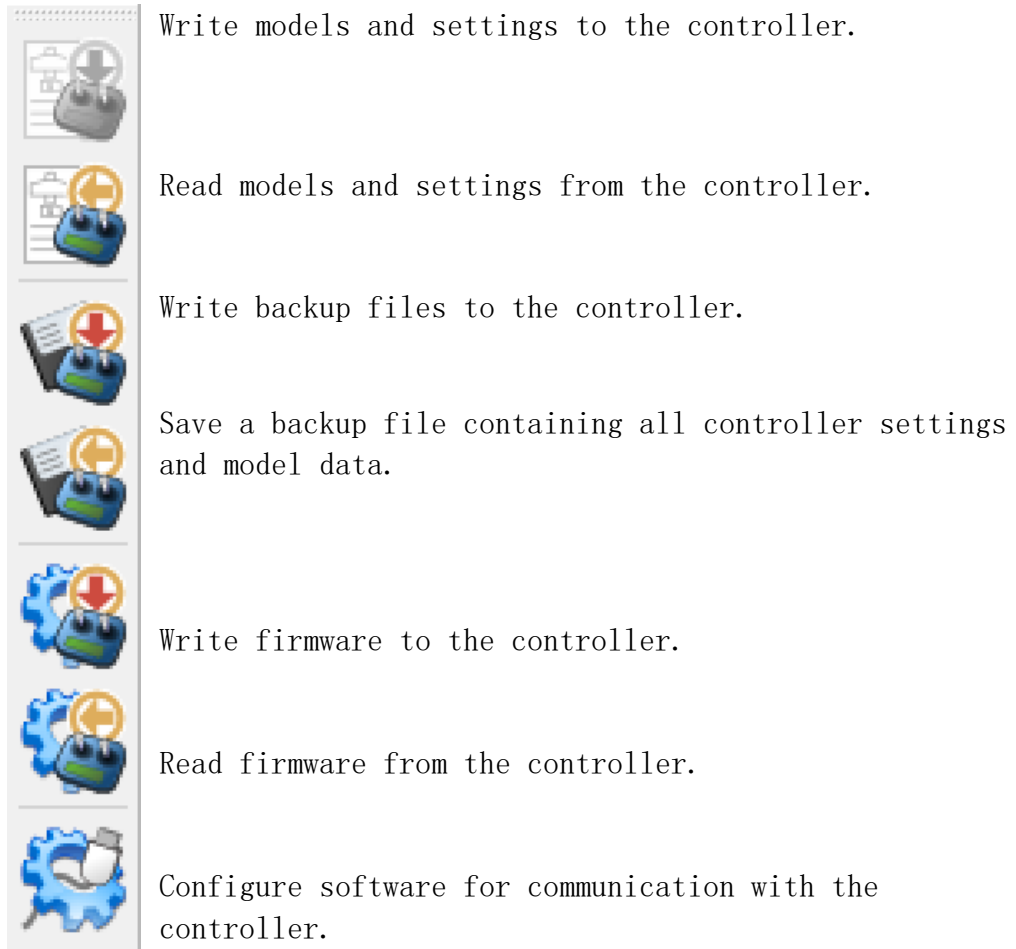


By default, you only need to set the local folder directory for the SD card files and the controller's SD card drive letter, then click the blue arrow icon to start syncing files. You can also modify the sync direction option to sync any two folders and check the test option.



13. Check for EdgeTX and Companion updates.
14. Display the About dialog for EdgeTX Companion.

The side menu bar contains controller memory operation functions (these functions require entering Bootloader mode and connecting to the computer via USB. Writing firmware to the controller requires connecting the controller to the computer via USB in a powered-off state):



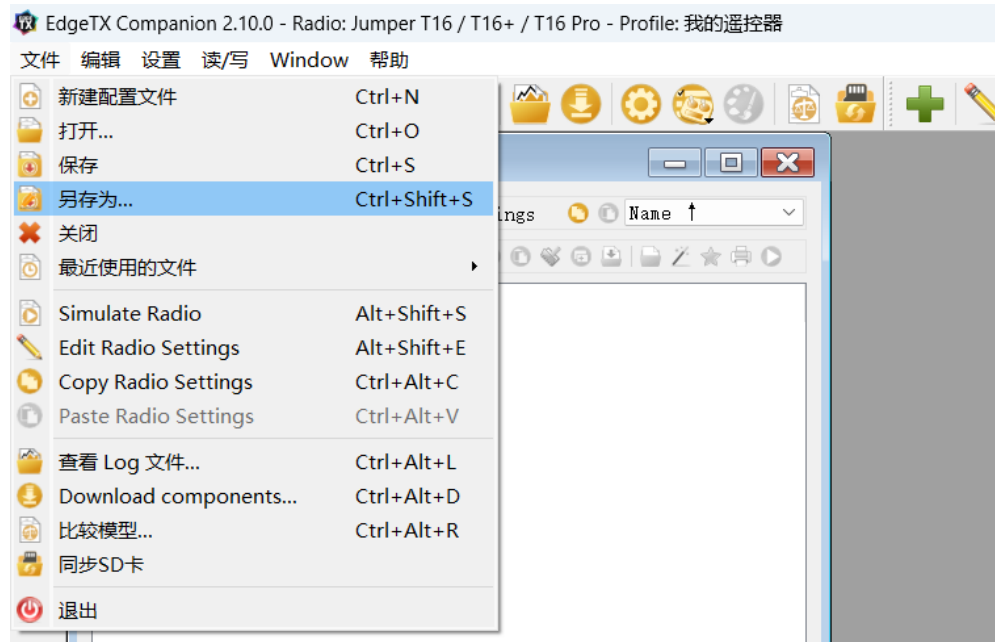
You can also operate through the main menu's "Read/Write" options.



- **Write Models and Settings to Controller:** Send the currently open and selected ETX document window to the controller (if you have

multiple open windows, make sure to click the window you want to transfer to select it).

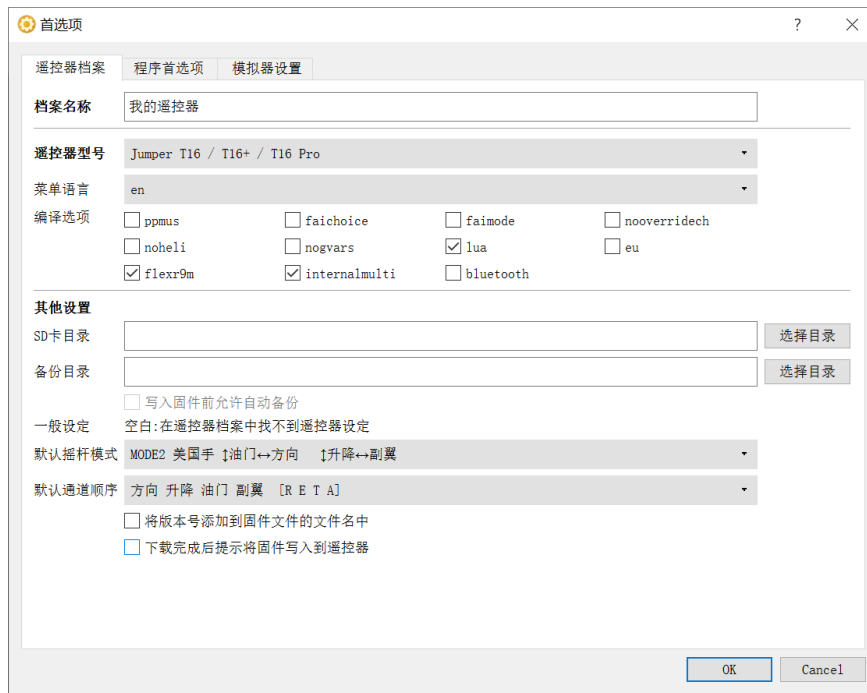
- **Read Models and Settings from Controller:** Load models and settings from the controller into a new OTX document window. Note that it will not automatically save to the disk. You can use the simple "File - Save As" operation to save models and settings to the disk.



- **Write Backup to Controller:** Write a backup file of all settings and model data to the controller.
- **Backup Controller to File:** Save all settings and model data from the current controller.
- **Write Firmware to Controller:** Upgrade the controller firmware.
- **Read Firmware from Controller:** Load firmware from the controller.

## 2. Configuring Controller Settings

Click "Settings" on the main menu to open the Preferences dialog.



- **Profile Name:** Set the name of the controller configuration file (default name: My Controller). Add additional profiles by clicking "Settings - Radio Profiles - Add Radio Profile" from the main menu.
- **Controller Model:** Select the controller model, e.g., Jumper T15.
- **Menu Language:** Choose the controller menu language (default: en).
- **Compile Options:**
  - "ppmus" Display PPM signals in microseconds instead of %.
  - "faichoice" Enable FAI mode (no telemetry).
  - "faimode" Always enable FAI mode (no telemetry).
  - "nooverrridech" Disable channel override function in the Special Functions menu.
  - "noheli" Disable helicopter menu and CCPM mixing menu.
  - "nogvars" Disable Global Variables feature.
  - "lua" Enable LUA script support.
  - "eu" Disable D8 protocol support.
  - "flexr9m" Enable non-certified firmware R9M support (after enabling, the original menu options FCC and EU will change to 868 and 915).
  - "internalmulti" Enable internal multi-protocol module support (if available).



- "bluetooth" Enable Bluetooth module support (if available).
  
- **SD Card Directory:** Default is empty; you can choose a folder on your computer for the SD card copy.
  
- **Backup Directory:** Path for backup files stored on the computer (recommended to check "Allow automatic backup before writing firmware").
  
- **Default Stick Mode:** Select the stick mode that matches the controller (Mode 1: Elevator and Rudder on the left, Throttle and Aileron on the right. Mode 2: Throttle and Rudder on the left, Elevator and Aileron on the right).
  - Note: Mode 1 is EdgeTX's default mode. If you prefer using Mode 2 (Throttle and Rudder on the left), you must change this setting! This setting must be configured every time you update the firmware.
  
- **Default Channel Order:** Set the default basic channel order. The default for Spektrum/JR is TAER, and for Futaba/Hitec, it is AETR. This can also be changed in the controller menu.
  - Recommended Options:
    1. Add version number to the firmware file name.
    2. Prompt to write the firmware to the controller after download.

## 2.0.4 Using EdgeTX Companion to Edit Radio and Model Settings

After configuring EdgeTX Companion, you can connect to the radio to read models and settings.

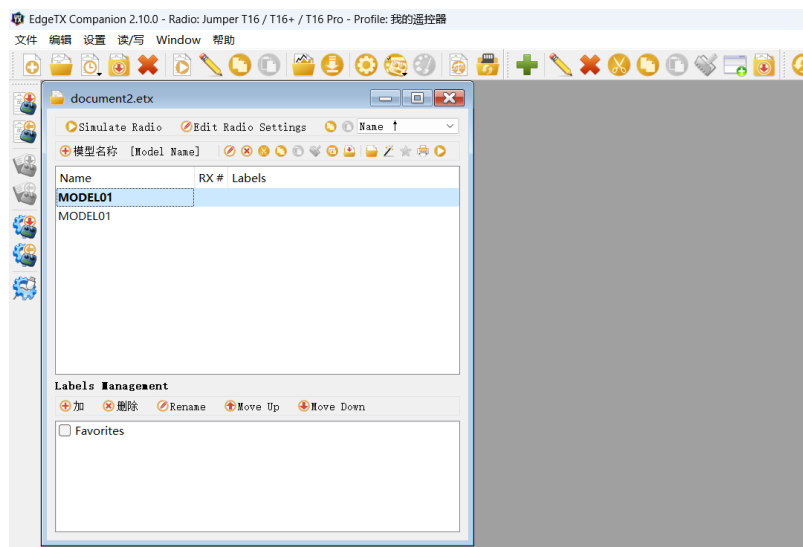
### 1. Preparation Before Connection

Open the installed EdgeTX Companion software and check if the radio model is set to the current radio model (click "Settings" in the main menu, open the Preferences dialog, and set the radio to Jumper T16/T16+/T16 Pro). Turn on the radio and navigate to the main interface. Then, connect it to your computer using a USB cable. Select the "USB Storage (SD)" option in the pop-up menu on the radio. The

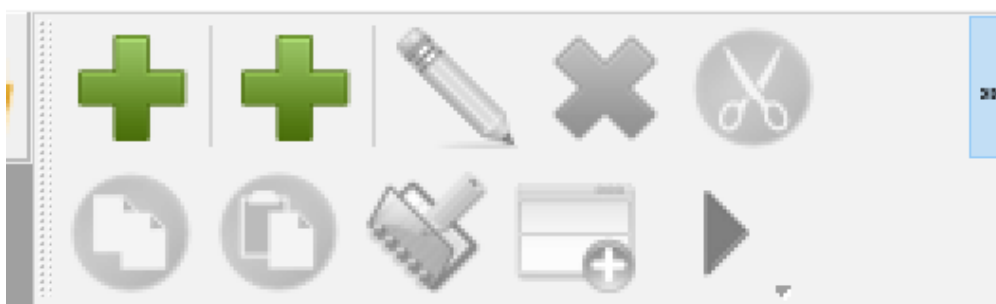
computer will recognize the T16, and a new drive containing the SD card contents will appear in Windows Explorer.

## 2. Reading Models and Settings from the Radio

From the menu, select "Read/Write - Read Models and Settings from Radio" (or click the icon to read models and settings from the radio on the left side) to read the models and settings from the radio. EdgeTX Companion will open a new window to display the radio's configuration files.



The menu bar will show additional icons for model management and editing operations.



### Model Operations:

1. Add New Category
2. Add New Model
3. Rename Category
4. Delete Category
5. Cut Current Model

6. Copy Current Model
7. Paste Cut or Copied Model
8. Insert Model
9. Duplicate Model to the Next Available Slot
10. Move to Category



1. • Simulate Current Model
2. • Edit Radio Settings
3. • Copy Radio Settings
4. • Paste Radio Settings

## OTX Document Window:

The top of the window has two rows of icons. The first row is for radio configuration file operations and simulation. The second row is for model operations, including the Model Wizard.

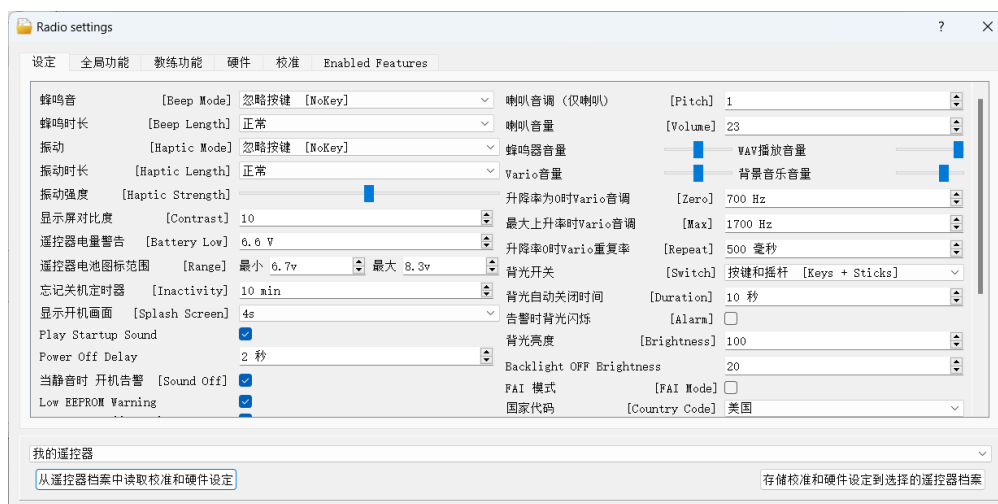
“Edit Radio Settings” corresponds to the system settings page on the radio. Click this icon to enter the system settings.

The model number list corresponds to the model selection page on the radio. The currently used model name will be displayed in bold. Right-click the model name you want to edit (or click the “Edit Model” icon) to open the model editor.

### 3. Editing Radio Settings

Click “Edit Radio Settings” to open the radio system settings editing window. This corresponds to the system settings page on the radio. For detailed information on all settings, refer to the system settings section on page 15 of the manual. These settings can be edited in this window.

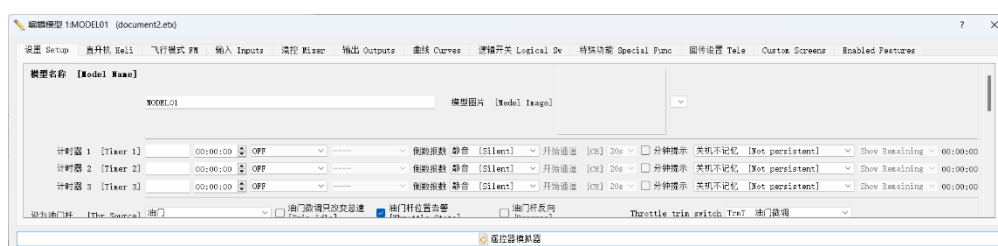
**Note:** It is recommended to back up before performing read/write operations.



## 4. Editing Model Settings

Double-click the model name you want to edit (or click the “Edit Model” icon, or right-click the model and select “Edit Model”) to open the model editing window. This corresponds to the model settings page on the radio. For detailed information on all settings, refer to the “Model Settings” section on page 28 of the manual. These settings can be edited in this window.

**Note:** It is recommended to back up before performing read/write operations.



### 1. 模拟模型设置

单击编辑窗口底部的“遥控器模拟器”按钮以模拟模型设置。

## 5. Simulating Model Settings

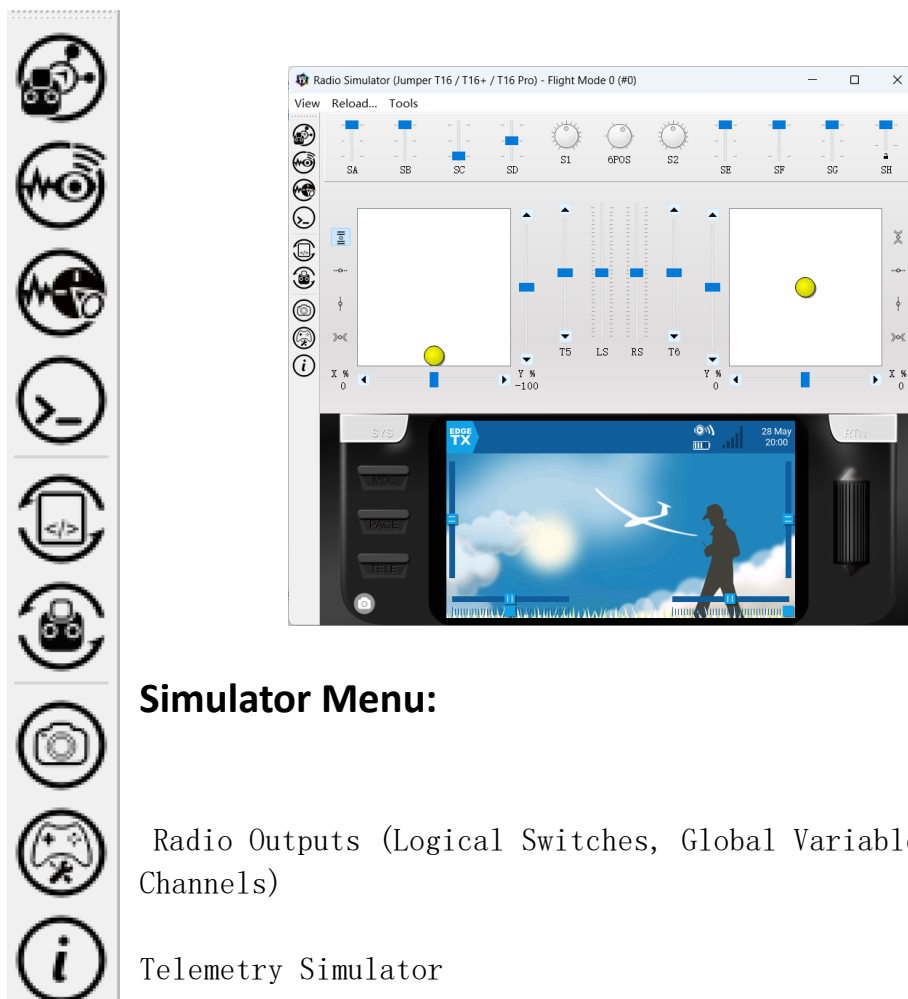
Click the “Radio Simulator” button at the bottom of the editing window to simulate the model settings.

Reload LUA environment on the simulator  
 Reload all radio data without restarting the simulator  
 Save a screenshot of the current simulator screen  
 Open game joystick configuration settings dialog  
 Show keyboard shortcut mapping reference

It must be emphasized that due to mechanical differences and installation techniques, the actions you see here may not be exactly the same as what you see on the model. Each model requires observation, adjustment, and modification on the model itself. Adjustments like servo travel direction and endpoints cannot be determined in the EdgeTX Companion software.

## Radio Outputs Simulation Window

Click the "Radio Outputs" icon to open a window displaying the values of simulated Logical Switches, Global Variables, and Channels:



### Simulator Menu:

Radio Outputs (Logical Switches, Global Variables, and Channels)

Telemetry Simulator

Trainer Simulator

Debug Output

Reload LUA environment on the simulator

Reload all radio data without restarting the simulator

Save a screenshot of the current simulator screen

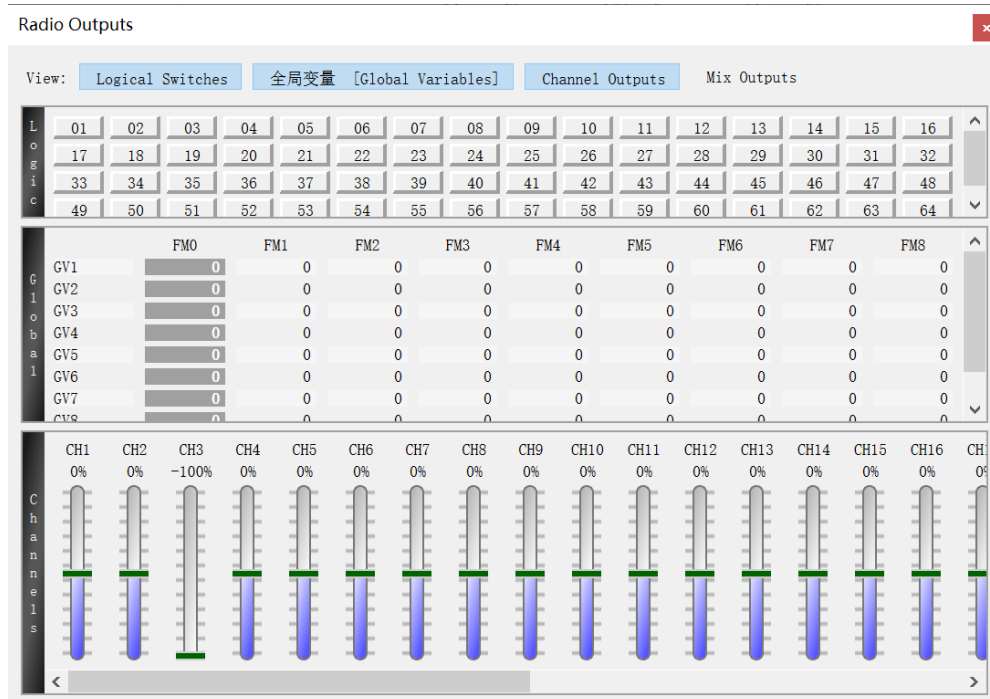
Open game joystick configuration settings dialog

Show keyboard shortcut mapping reference

It must be emphasized that due to mechanical differences and installation techniques, the actions you see here may not be exactly the same as what you see on the model. Each model requires observation, adjustment, and modification on the model itself. Adjustments like servo travel direction and endpoints cannot be determined in the EdgeTX Companion software.

## **Radio Outputs Simulation Window**

Click the "Radio Outputs" icon to open a window displaying the values of simulated Logical Switches, Global Variables, and Channels:

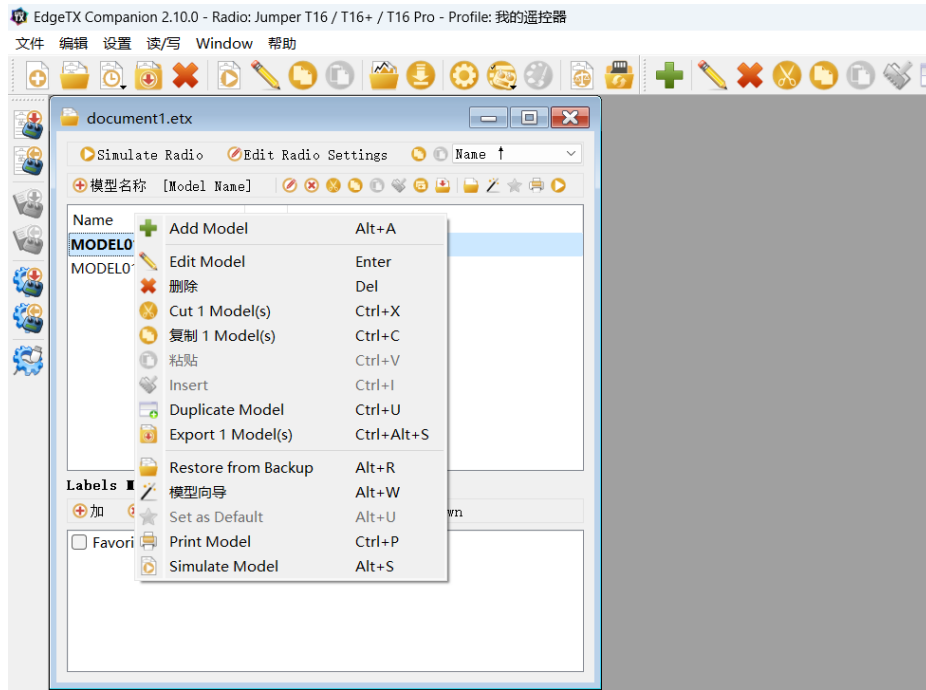


## 6. Saving Models and Settings to the Radio

From the menu bar, select "Read/Write - Write Models and Settings to Radio" (or click the "Write Models and Settings to Radio" icon) to save the models and settings to the radio.

### Managing Models

Right-click the model name you want to manage to display the options list (or click the relevant icon in the main menu bar):



In addition to the standard Add, Delete, Copy, Cut, Paste, Insert, Duplicate, and Restore from Backup functions, there are some additional options:

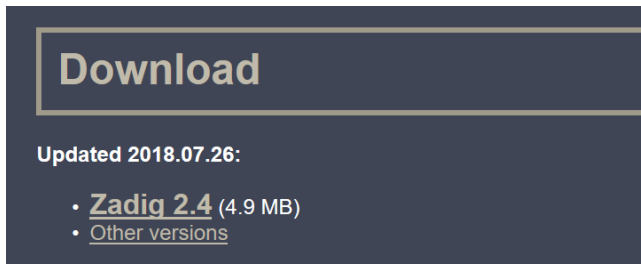
- **Edit Model:** Open the model editing window.
- **Set as Default:** Make the selected model the active model to be edited (displayed in bold).
- **Print Model:** Print the model settings (or print to file).
- **Model Wizard:** Open the new model wizard.

## 2.0.5 Using the EDGETX Firmware Update Tool (Companion)

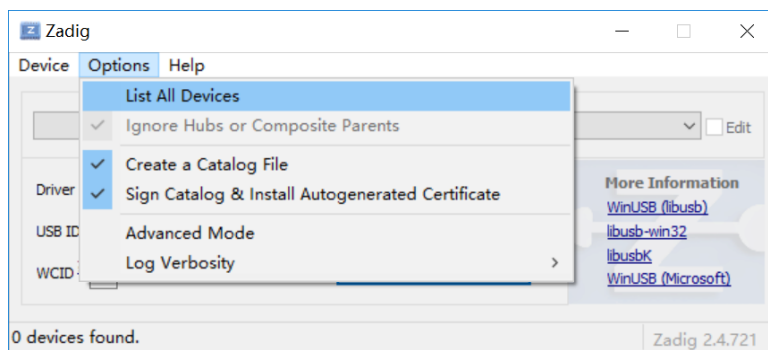
Before upgrading the firmware, it is strongly recommended to back up your radio's configuration files to ensure you do not lose any model or radio settings.

**Windows Driver Installation:** The T16 uses the STM32 Bootloader driver, which can be downloaded from: <https://zadig.akeo.ie/>

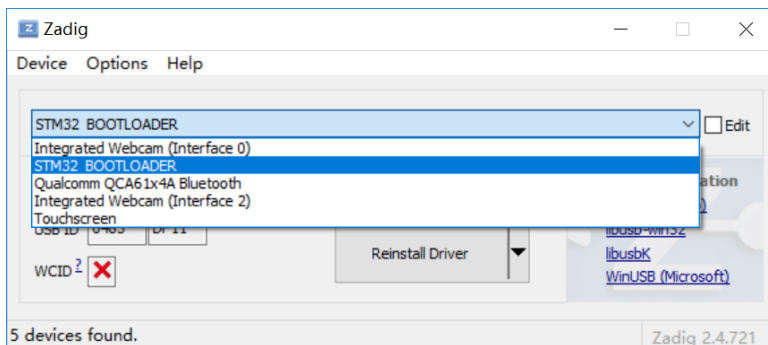




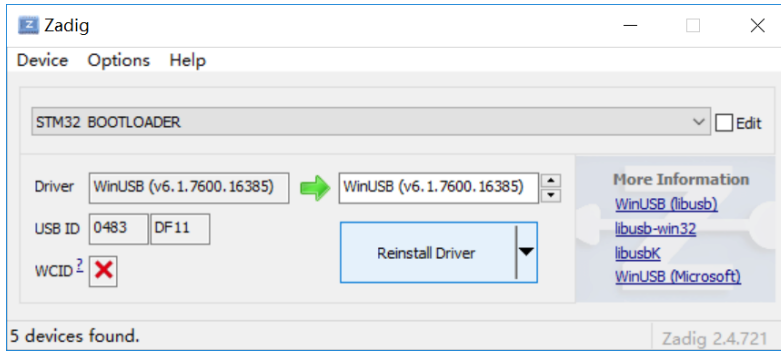
- Power off the T15 and connect it to your computer using a USB data cable.
- Open the downloaded Zadig software (some systems may require you to run it as an administrator. Right-click and select "Run as administrator").
- Click "Options" and select "List All Devices."



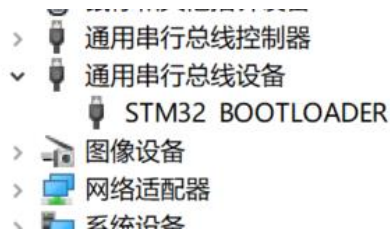
- In the dropdown list, select "STM32 BOOTLOADER."



- Click "Install Driver." If the STM32 driver was previously installed, the button will display "Reinstall Driver."



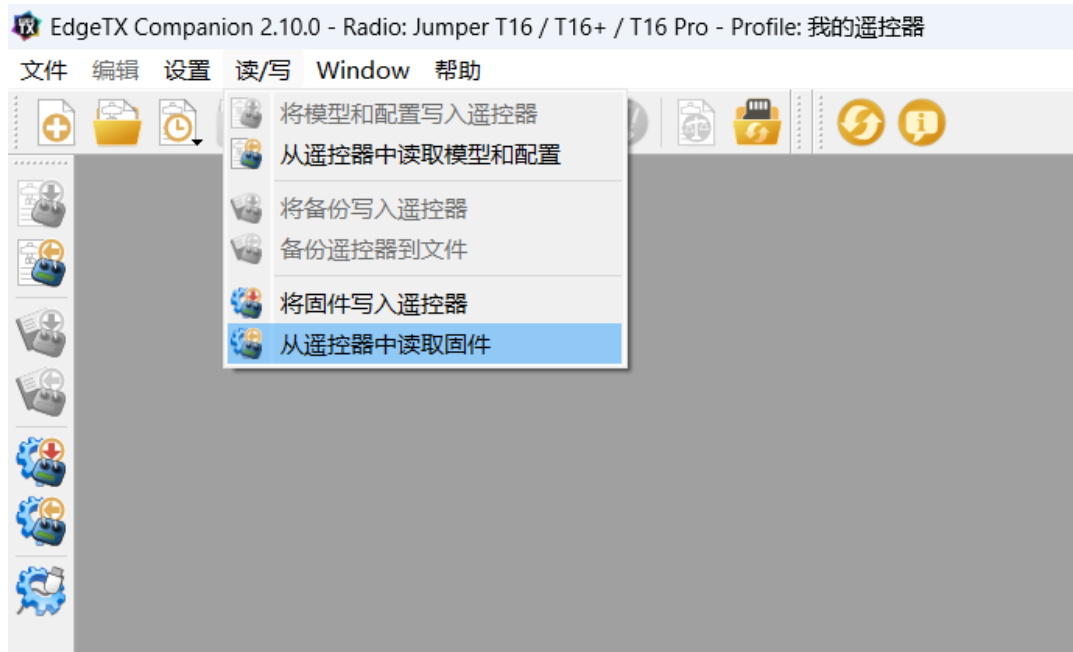
- After installation, you should see the device listed in the Device Manager, indicating successful installation.



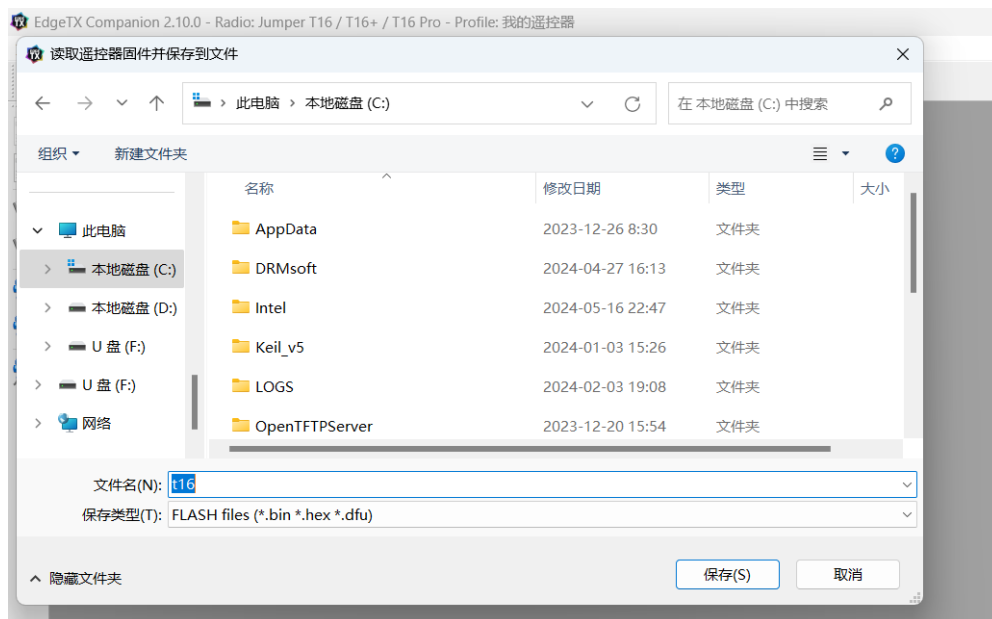
## 2.0.6 Backing Up Radio Firmware

Before upgrading the radio firmware, it is advisable to back up the current firmware and model configuration files to avoid data loss.

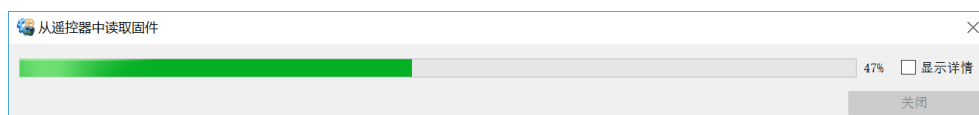
1. Open the Companion software and set the radio model to T15 in the settings menu.
2. Power off the radio or enter BOOTLOADER mode, then connect it to the computer via USB.
3. Click the "Read/Write" menu and select "Read Firmware from Radio."



4. In the dialog box, choose the location and filename for the backup.



5. Click "Save" to start the backup process.



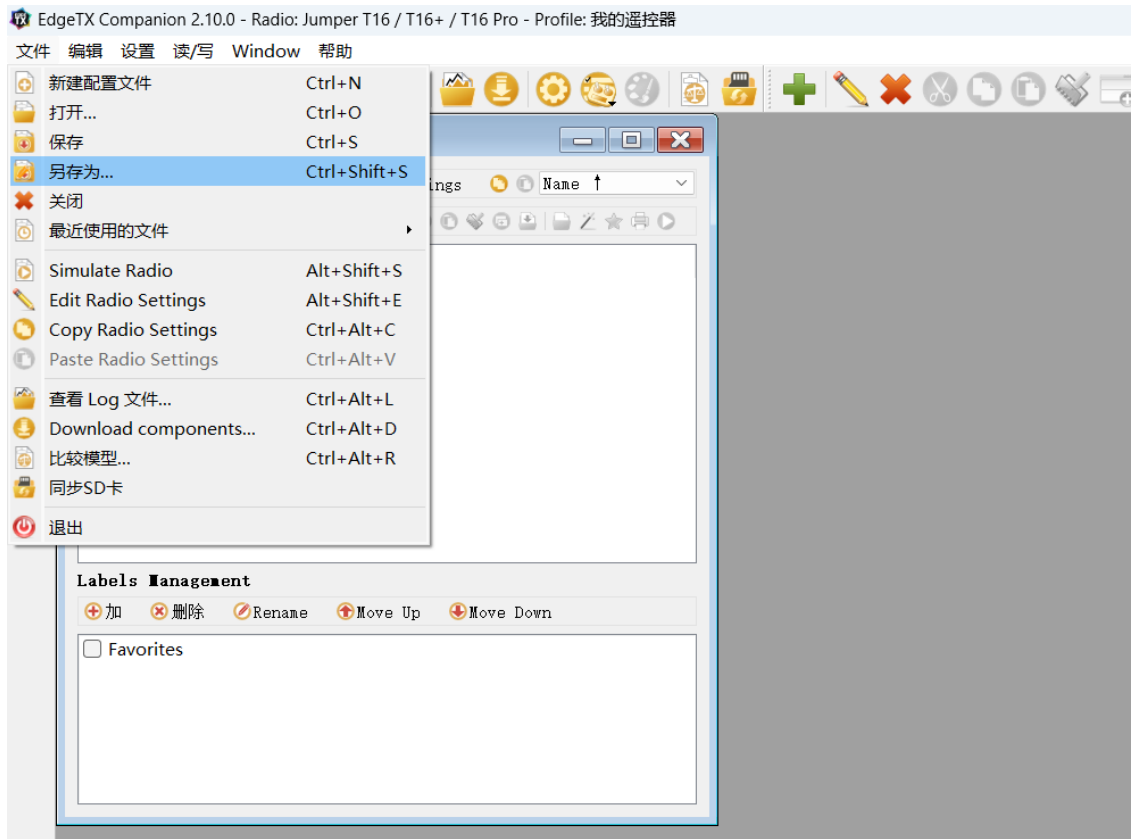
6. Once completed, you will find the backup file at the chosen location.

## 2.0.7 Backing Up Models and Settings

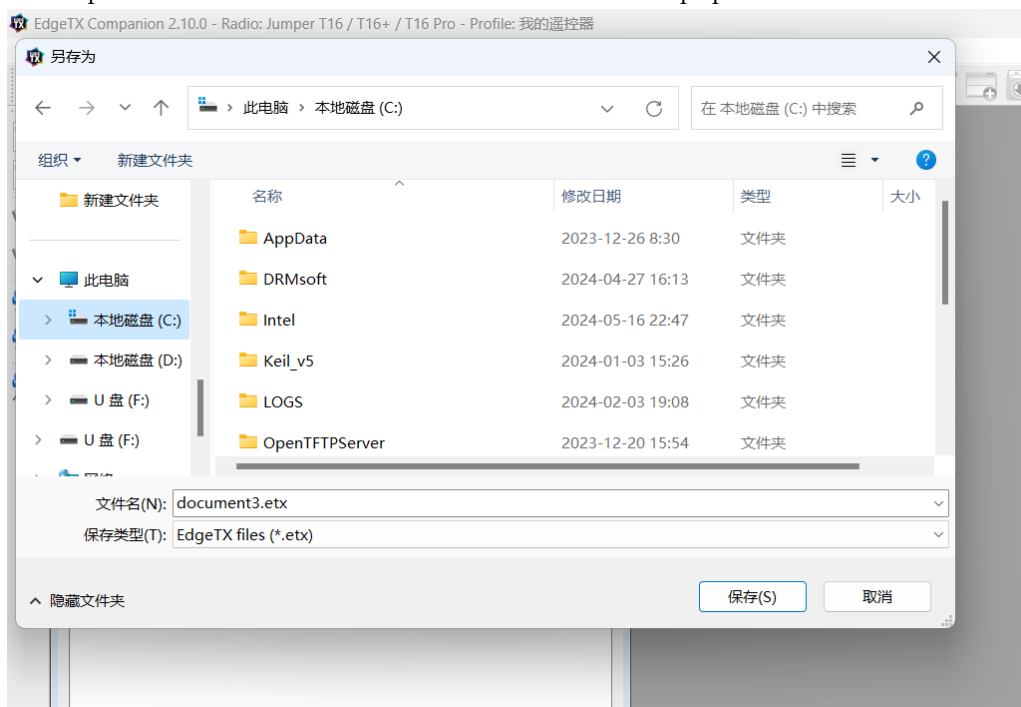
1. Open the Companion software and set the radio model to T16 in the settings menu.
2. Enter BOOTLOADER mode on the radio and connect it to the computer via USB.
3. Click the "Read/Write" menu and select "Read Models and Settings from Radio."



4. Click "File" and then "Save As."



5. In the dialog box, choose the location and filename for the backup and click "Save" to start the backup process.



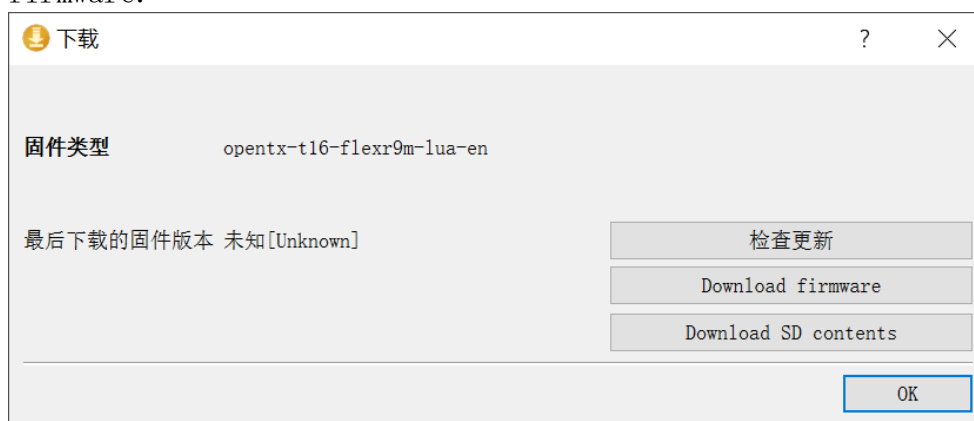
Note: Before disconnecting the USB, ensure you eject the device properly to avoid SD card file corruption.

## 2.0.8 Upgrading Radio Firmware Using Companion Software

1. Click the download icon to download the required firmware and SD card files.



2. The firmware type depends on the selected options during configuration. Click "Download Firmware" to download the firmware.



3. After downloading, click the "Write Firmware to Radio" icon.



4. Click "Write to Radio" to start the upgrade.

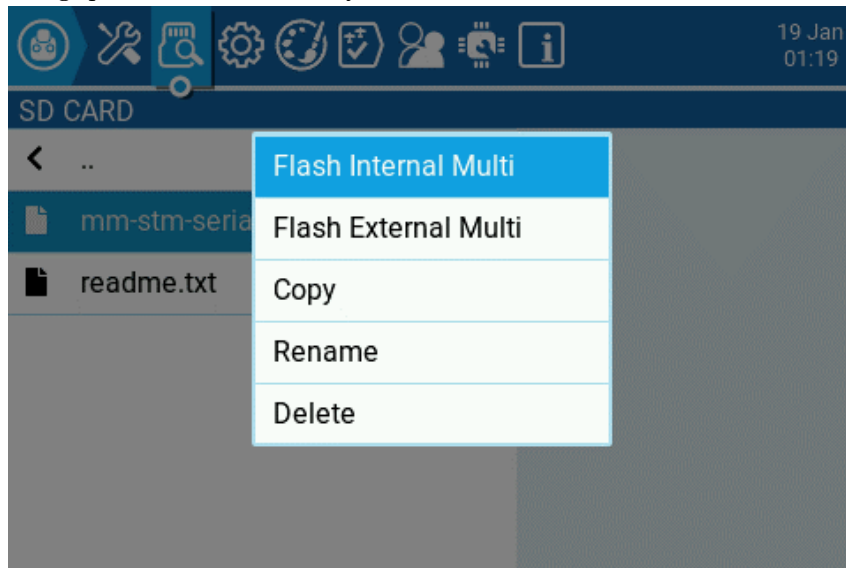


**Note:** By default, the newly downloaded firmware file will be selected automatically. If manually downloading or compiling firmware, click to load the custom file path.

## 2.0.9 Upgrading the RF Module Firmware Using the Radio

RF module firmware versions greater than or equal to 1.2.1.85 can be upgraded using the radio. Otherwise, a USB-to-TTL hardware connection is required.

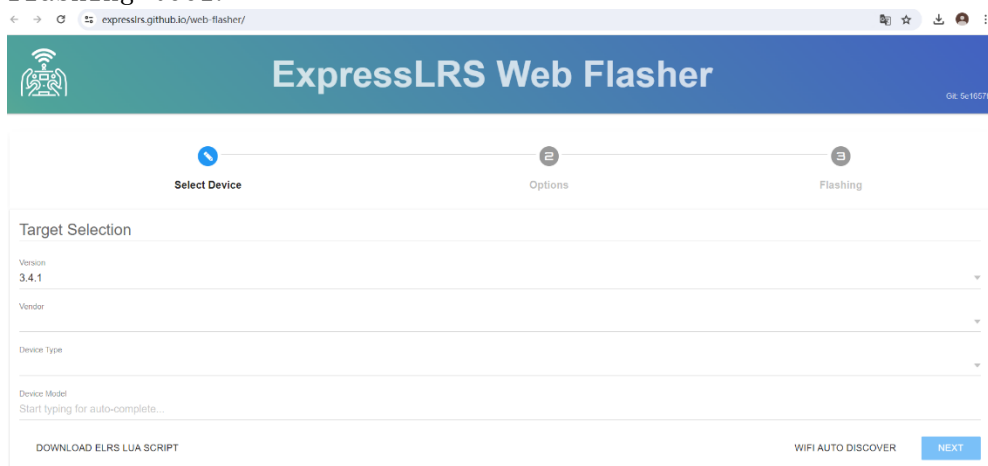
1. Copy the RF module firmware to the radio's FIRMWARE directory (the same directory as the radio firmware upgrade).
2. Disconnect the radio from the computer.
3. On the SD card access page (refer to page 18 of the manual), open the FIRMWARE directory, find the copied firmware file, and long press the ENT key.



4. Choose "Flash Internal Multi" (for internal RF module) or "Flash External Multi" (for external RF module).

## 2.1.0 Upgrading the Built-in ELRS (ExpressLRS) RF Module Firmware

1. Open <https://expresslrs.github.io/web-flasher/> to use the web flashing tool.



The screenshot shows the 'ExpressLRS Web Flasher' interface in a browser. The page title is 'ExpressLRS Web Flasher' with a version number '0.1.5e16571'. The interface has three main steps: 'Select Device', 'Options', and 'Flashing'. The 'Select Device' step is active. Under 'Target Selection', there are four dropdown menus: 'Version' (3.4.1), 'Vendor', 'Device Type', and 'Device Model'. At the bottom, there are three buttons: 'DOWNLOAD ELRS LUA SCRIPT', 'WIFI AUTO DISCOVER', and 'NEXT'.

2. Select the required firmware version under "Version."
3. Choose the hardware vendor under "Vendor."
4. Select the frequency used by the RF module (2.4GHz or 900MHz(915MHz)) and whether the device is a transmitter or receiver under "Device Type."
5. Choose the corresponding hardware model under "Device Model."

Example of upgrading the T15 built-in 2.4G RF module:



The screenshot shows the 'ExpressLRS Web Flasher' interface in a browser, similar to the previous one but with Chinese text. The page title is 'ExpressLRS Web Flasher' with a version number '0.1.5e16571'. The interface has three main steps: 'Select Device', 'Options', and 'Flashing'. The 'Select Device' step is active. Under 'Target Selection', there are four dropdown menus: 'Version' (3.4.1), 'Vendor' (Jumper), 'Device Type' (2.4GHz Transmitter), and 'Device Model' (Jumper AION T-15 2.4GHz TX). At the bottom, there are three buttons: 'DOWNLOAD ELRS LUA SCRIPT', 'WIFI AUTO DISCOVER', and 'NEXT'.



6. Click "NEXT."

ExpressLRS Web Flasher

Runtime Options

Jumper AION T-15 2.4GHz TX

Binding Phrase

UID (Auto updated by changing the bind-phrase above)

Region

FCC

WiFi SSID

WiFi Password

7. Set the binding phrase (enter your bind phrase or leave blank for default).
8. Select the region (or the appropriate regulatory standard).

Runtime Options

Jumper AION T-15 2.4GHz TX 确认硬件类型

Binding Phrase 对频码设置 (留空将使用默认对频方式)

UID (Auto updated by changing the bind-phrase above)

Region

FCC 2.4GHz有FCC和LBT可以选, 选择LBT将限制最大功率为100mw

WiFi SSID

WiFi Password

WiFi "auto on" interval (s)

60

TLM report interval (ms)

240

UART inverted

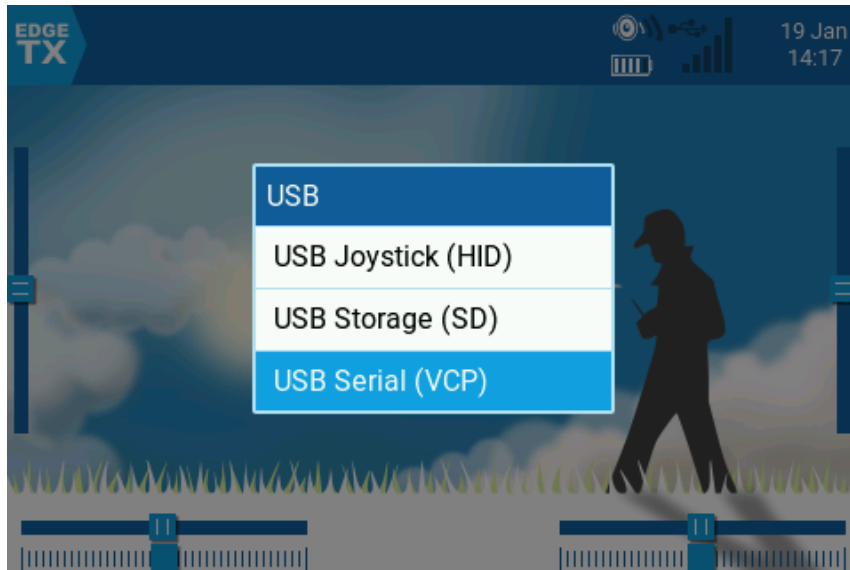
Flashing Method

EdgeTX Passthrough 升级方式选择EdgeTX直通升级

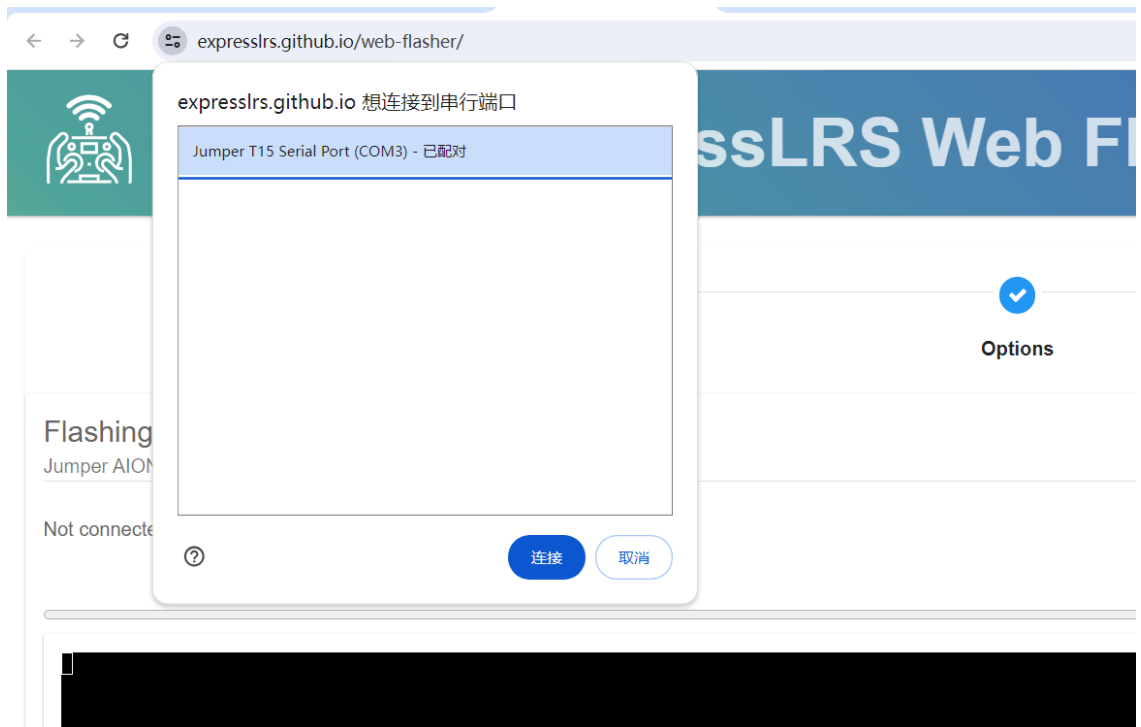
NEXT

9. Power on the radio, connect it to the USB, and select "USB Serial (VCP)."

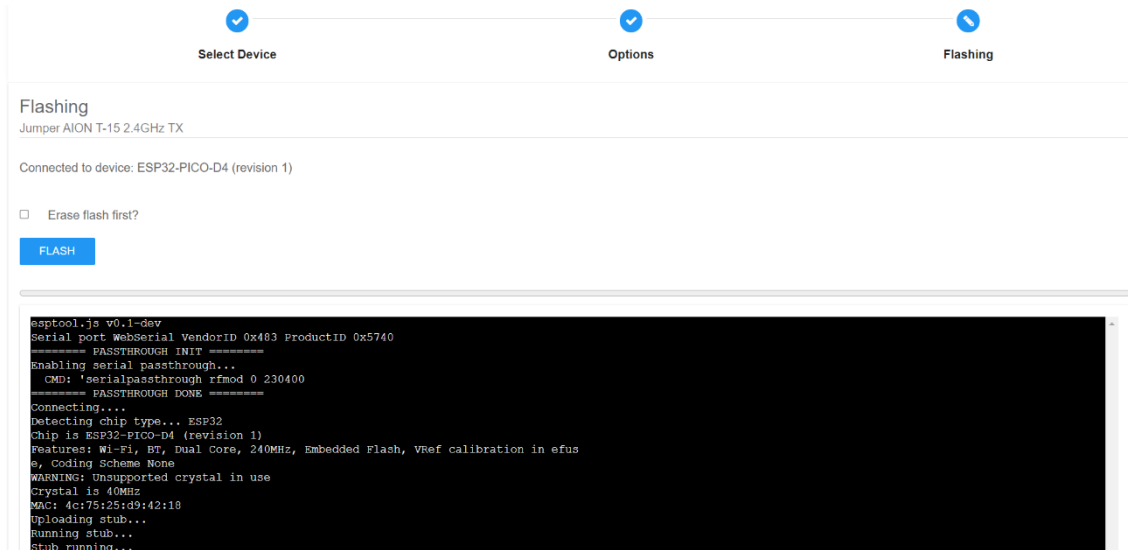
10. Return to the webpage and click "NEXT."



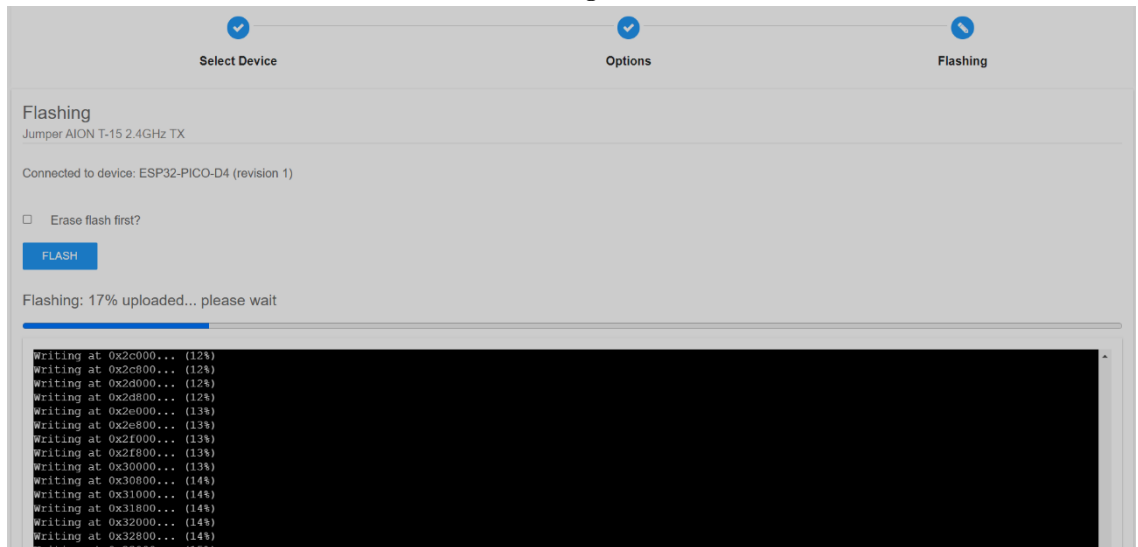
11. In the device selection dialog box, choose the corresponding device and click "Connect."



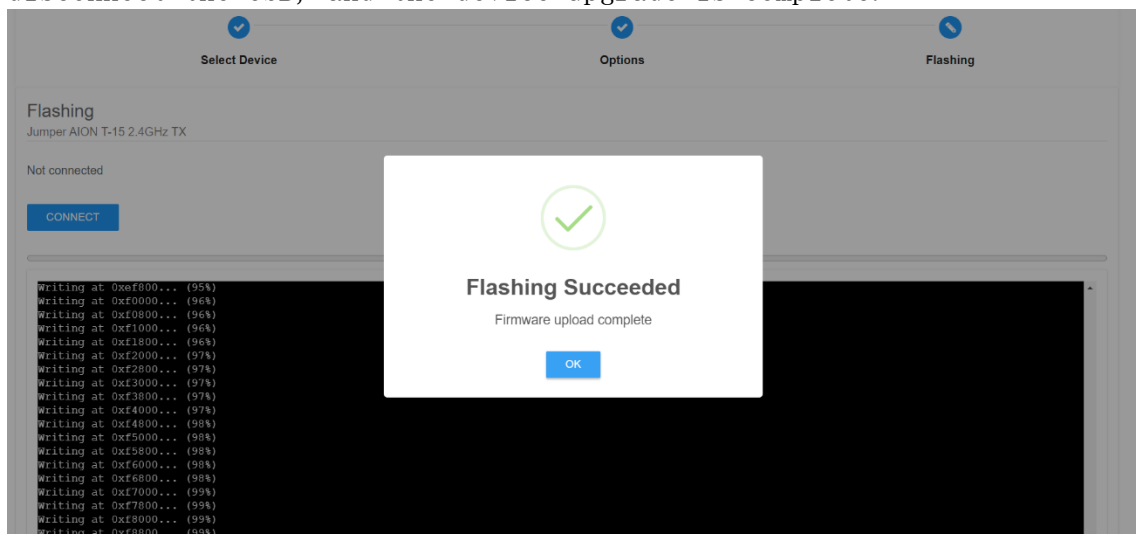
12. When connected, it will display as follows.



13. Click "FLASH" to update the hardware (you can also check "Erase flash first" to erase before flashing).



14. After completion, it will prompt as follows. Click "OK," disconnect the USB, and the device upgrade is complete.



FCC Warning:

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

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

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

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

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

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 0cm between the radiator and your body.