

Introduction

DUAL 2.4G RADIO SYSTEM

The TWIN X Lite / X Lite S is a powerful radio system that features dual 2.4G frequencies simultaneously on the same receiver in TW mode. The TW active-active protocol is different from the general active-standby redundancy solutions, with this protocol, dual 2.4G frequency bands are active on the TWIN series RF module and receiver at the same time. It has two 2.4G internal RF antennas mounted to provide multi-directional and wider coverage for transmitting signals compared to a single antenna design. Taking advantage of these features, the TWIN system can provide less latency and higher reliability at a faster data rate with confidence.

In addition to the TW mode, TWIN X Lite / X Lite S also supports ACCST D16, ACCESS, and ELRS 2.4G (Compatible) modes, this means users can benefit from a wide range of compatible receiver options to choose from and bind to when building the RC model.

SLIDE SCREEN & UPGRADED ERGONOMIC COMPACT DESIGN

The TWIN X Lite / X Lite S size and shape have been designed to make the radio compact, lightweight, and easy to carry. It adopts a 3.5-inch color touch slide screen, the sliding function saves space and ensures the comfort of using other functional trims, buttons, etc. By sliding out the screen, the hidden foldable tab will be exposed and can be used to attach the strap or other potentially more flexible uses.

In addition, TWIN X Lite S provides a high-brightness matte touch screen, which greatly enhances the visibility of users in strong outdoor sunlight.

The power button and 4 standard trims (for adjusting gimbal sticks) are positioned under the screen. The TWIN X Lite / X Lite S includes an additional 2 trims and 4 customizable buttons placed in a convenient location on the radio panel for real-time and frequent operation. For example, when flying an RC glider, you can use the extra trims to adjust the angle of the flaps/surface to adapt to the real-time air environment. The momentary buttons, sliders, and switches on the top are easier to reach. In addition, the momentary buttons have been redesigned and improved to withstand larger pressure, and the button cap areas are now more comfortable to press.

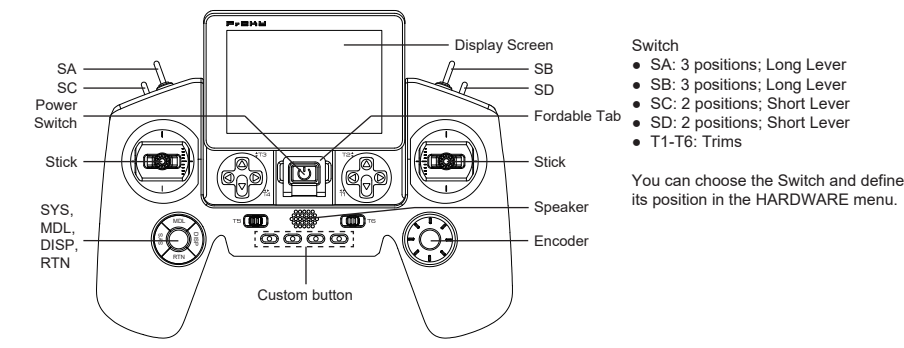
GYROSCOPE SENSOR

With the integrated 6-axis sensor unit, users can use the TWIN X Lite S as a motion-sensing controller to control the inputs of a model during flight or use it to point a camera in the desired direction.

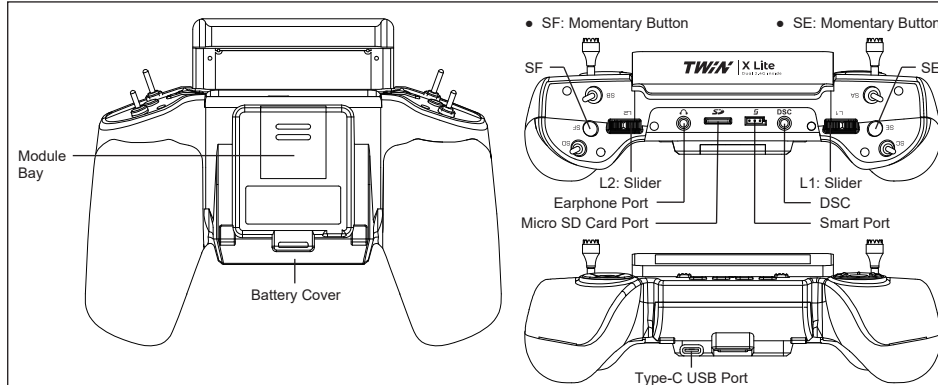
BUILT-IN MASS STORAGE & BATTERY CAPACITY

In order to save the user the trouble of deciding the storage capacity, TWIN X Lite / X Lite S comes with a built-in 128MB / 512MB flash storage that offers plenty of file storage to meet all of your radio's storage needs. And TWIN X Lite / X Lite S included a 2100mAh Li battery, its battery bay is easy to access for replacing the battery and also offers a Type-C port for recharging the battery.

Overview



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1. USB port is for upgrading, reading / writing Micro SD cards and internal memory of radio contents and charging. (Micro SD card is not provided with shipment.)
2. Smart Port is for firmware upgrade for all FrSky S.Port devices.

Specifications

- Dimension: 197*131*68mm (L*W*H)
- Weight: 392g (Battery Excl.) / 459g (Battery Incl.)
- Operating System: ETHOS
- Internal RF Module: TW-ISRM
- Number of Channels: 24 channels
- Operating Voltage Range: 6.5 ~ 8.4V (2S Li-battery)
- Operating Current: 330mA@7.4V (typ.)
- Operating Temperature: -10°C~60°C (14°F~140°F)
- Battery Bay Size: 68*44.5*13mm (L*W*H)
- Data Transmission & Charging Interface: USB Type-C
- USB Adaptor Voltage and Current: 5V+0.2V, >2.0A
- Built-in Flash Storage: 128MB (TWIN X Lite) / 512MB (TWIN X Lite S)
- LCD Touch-Screen Display Resolution: 480*320
- Compatibility: ACCST D16 / ACCESS / ELRS (Compatible) / TW modes

Features

- Ergonomic and Compact Lightweight design
- Slide Screen Design
- 3.5" Color Touch-Screen Displays (TWIN X Lite)
- ★ 3.5" High Bright Matte Touch Screen (TWIN X Lite S)
- 6 Trims & 4 Quick-Mode Custom Buttons
- 2 Momentary Buttons & 2 Sliders & 4 Switches on the Top
- Lite Type External Module Bay
- Fordable Tab for Attaching Radio Strap
- CNC Metal Gimbals with Integrated High-Precision Hall Sensor
- ★ Upgraded Gimbal Stick Ends (TWIN X Lite S)
- ★ Built-in 6-Axis Gyroscope Sensor (TWIN X Lite S)
- Less Latency with More Range and Higher Reliability at a Faster Data Rate

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- Built-in Dual 2.4G Band Internal RF Module
 - Supports 4 RF protocols: ACCST D16 / ACCESS / ELRS (Compatible) / TW Mode
 - TW Mode
 - Highly resilient RF module providing dual 2.4G signals working simultaneously
 - Long-range control (Tens of kilometers, range varies based on the RF Power settings.)
 - Low-latency (<4ms) supporting full telemetry
- Built-in 128MB (TWIN X Lite) / 512MB (TWIN X Lite S) Flash Storage
- External TF card slot for storage extension
- Haptic Vibration Alerts and Voice Speech Outputs
- Supports Recharge System for 2S Li Battery
- High-Speed PARA Wireless Training System
- ETHOS Operating System
- Multiple Optional Colors

2S Li-battery balance charging via USB-C

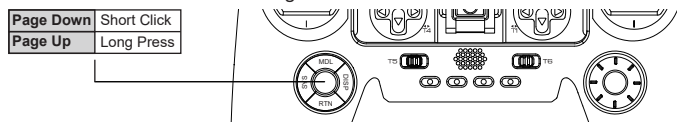
The Green LED indicator states:

Led on: in charging / **Led off:** end of charge / **Flash:** charge fault
Battery compartment size: 68*44.5*13mm (L*W*H)

- Note:**
1. Charge the battery with the USB adapter (Voltage: 5V+0.2V Current: >2.0A) when you use the USB charging function.
 2. The lower the initial charging voltage, the better the charging effect is when the voltage difference cells exceed 50 mV between the two.

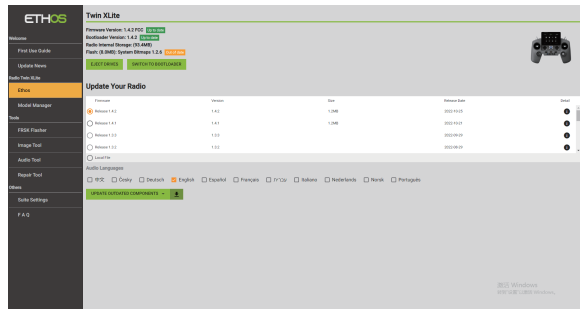
Navigation Controls

The left navigation control does RTN, SYS, MDL, DISP, and Page UP/Down. The right navigation control does scroll and enter. Both navigation controls and touch screen can be used to control the system.



ETHOS Suite

With ETHOS Suite you can update the radio bootloader, firmware, SD card, flash, and also convert image format and audio format. Find the latest information and download the ETHOS Suite at ethos.frsky-rc.com/.



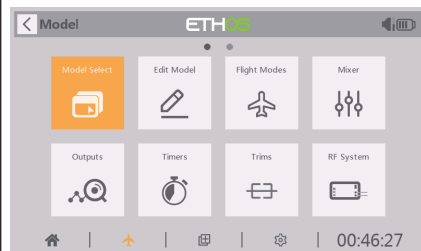
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Note: To use the ETHOS Suite application with a FrSky radio, please always keep the radio bootloader with the latest version.

ETHOS Operating System

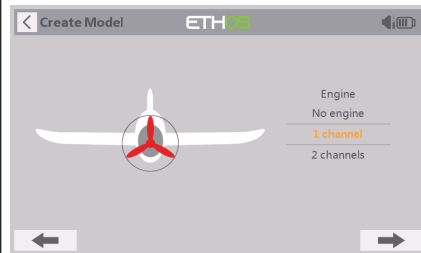
Create the model

STEP 1:



Enter into Model Select, then select the model type.

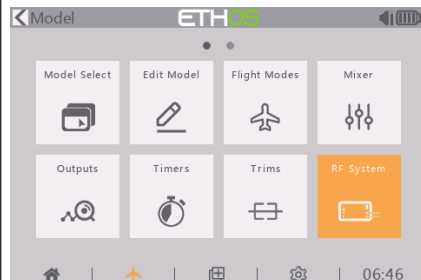
STEP 2:



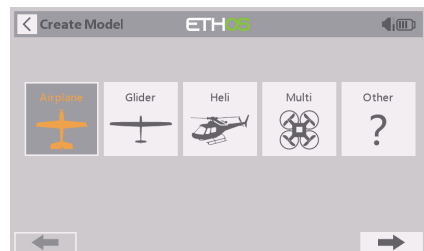
Configure the model channel.

Model Setup Procedure - Internal Module

STEP1: Enable RF Module



Enter the RF system menu by the touch-screen or use the navigation encoder key.



Create a new model.

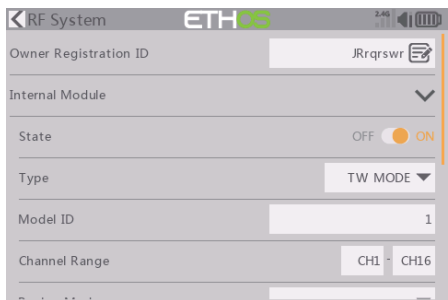


Name the model and set the model picture.



Choose the Internal Module.

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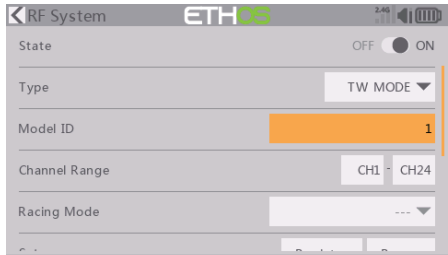
Then turn the state of Internal RF to On. Set the binding mode for the Internal RF module corresponding to the receiver (ACCST D16, ACCESS, TW MODE.etc).

STEP2: Channel Range Setting



TWIN X Lite / X Lite S Internal RF module supports 24 channels (CH1-8 / CH1-16 / CH1-24).

STEP3: Model ID Setting

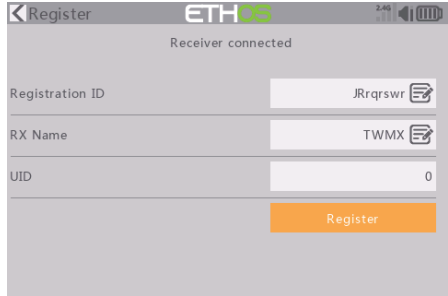


The system assigns the receiver a number for the receiver (Model ID) automatically while creating a new model. (The Model ID can be set from 00 to 63, with the default ID being 1.)

STEP4: Registration

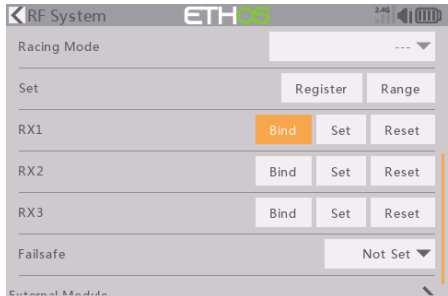


For TW Mode as an example, select the Set [Register] for getting the radio into Registration status in the RF System-Internal Module tool, then press the F/S button on the receiver and power the receiver on.

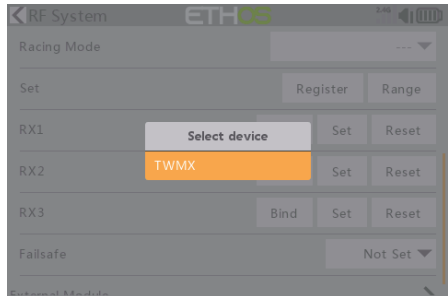


When the "RX Connected" page pops up, press the [REGISTER] to complete the Registration procedure and then power the receiver off. (The system automatically assigns the receiver a UID differently in the same model when you have several receivers to bind at the same time.)

STEP5: Automatic Binding (Smart Match)



Move the cursor to RX1 [BIND], press it and repower the receiver.



Click the RX to complete the binding after the receiver window pops up, the system will confirm "Bind succeed".

Reset: Registration procedure is not required to repeat anymore after the receiver was once registered even though the receiver is deleted. Pressing the [Reset] and repower the receiver can have the bound recovered.

How to bind the receiver in the ELRS mode

STEP1:



Change the binding mode to [ELRS] under the [TW Lite] module menu.

STEP2:



Power the ELRS receiver on and off 3 times, and the LED on the receiver will do a quick flash twice that indicating the receiver is in the binding mode.



And press [Config] to enter the binding menu.

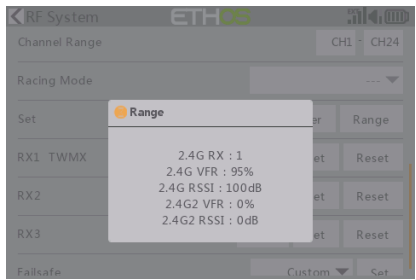
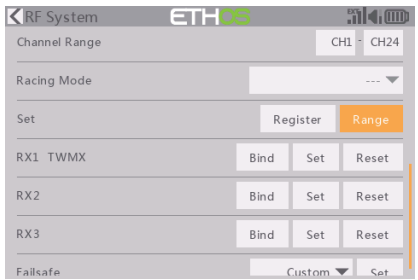


Click the [Bind] and if the receiver LED keeps lit, it means the receiver is bound successfully.

Range Check

A pre-flight range check should be done before every flight, in case the signal loss is caused by the reflection of the signal by the nearby metal fence or concrete, and the shading of the signal by buildings or trees during the actual flight. Under normal circumstances, in Range Check mode, the RSSI at 150m is about 45-50.

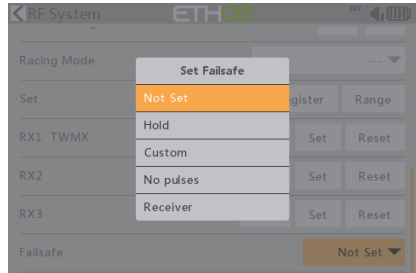
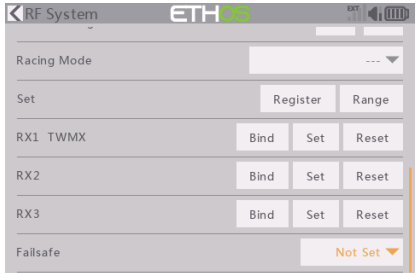
- Place the model at least 60 cm (2 feet) above the non-metal contaminated ground (such as on a wooden bench). The receiving antenna should be in a vertical position.
- Enter the ETHOS system, move to the "RF System", scroll the Encoder to select "RANGE" mode and press Encoder. In range check mode, the effective distance will be decreased to 1/30.



How to set Failsafe

There are 3 failsafe modes when the setting is enabled: No Pulse, Hold, and Custom mode.

- No Pulses Mode: On loss of signal, the receiver produces no pulses on any channel. To use this mode, select it in the menu and wait 9 seconds for the failsafe to take effect.
- Hold Mode: The receiver continues to output the last positions before the signal was lost. To use this mode, select it in the menu and wait 9 seconds for the failsafe to take effect.
- Custom Mode: Pre-set to required positions on the lost signal. Move the cursor to the failsafe mode of the channel and press Encoder, then choose the Custom mode. Move the cursor to the channel you want to set failsafe On and press Encoder. Then rotate the Encoder to set your failsafe for each channel and short-press the Encoder to finish the setting. Wait 9 seconds for the failsafe to take effect.



Note:

- If the failsafe is not set, the model will always work with the last working status before the signal is lost. That could cause potential damage.
- When the failsafe is disabled on the RF module side, the failsafe set on the receiver side will be applied.
- SBUS port does not support the failsafe setting in No Pulses mode and always outputs signal. Please set "Hold" or "Custom" mode for the SBUS port.

FCC

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

CE

The product may be used freely in these countries: Germany, UK, Italy, Spain, Belgium, Netherlands, Portugal, Greece, Ireland, Denmark, Luxembourg, Austria, Finland, Sweden, Norway, France and Iceland.

FLYING SAFETY

⚠ Warning:

To ensure the safety of yourself and others, please observe the following precautions.

① **Have regular maintenance performed.** Although your TANDEM X20 HD protects the model memories with non-volatile EEPROM memory (which does not require periodic replacement) and of a battery, it still should have regular check-ups for wear and tear. We recommend sending your system to your FrSky Service Center annually during your non-flying-season for a complete check-up and service.

Battery

① Using a fully charged battery (DC 6.5~8.4V). A low battery will soon die, causing loss of control and a crash. When you begin your flying session, reset your transmitter's built-in timer, and during the session pay attention to the duration of usage. Also, if your model used a separate receiver battery, make sure it is fully charged before each flying session.

① **Stop flying long before your batteries become over discharged. Do not rely on your radio's low battery warning systems, intended only as a precaution, to tell you when to recharge. Always check your transmitter and receiver batteries prior to each flight.**

Where to Fly

We recommend that you fly at a recognized model airplane flying field. You can find model clubs and fields by asking your nearest hobby dealer.

① **Always pay particular attention to the flying field's rules**, as well as the presence and location of spectators, the wind direction, and any obstacles on the field. Be very careful flying in areas near power lines, tall buildings, or communication facilities as there may be radio interference in their vicinity.

At the flying field

- ① To prevent possible damage to your radio gear, turn the power switches on and off in the proper sequence:
1. Pull throttle stick to idle position, or otherwise disarm your motor/engine.
 2. Turn on the transmitter power and allow your transmitter to reach its home screen.
 3. Confirm the proper model memory has been selected.
 4. Turn on your receiver power.
 5. Test all controls. If a servo operates abnormally, don't attempt to fly until you determine the cause of the problem.
 6. Start your engine.
 7. Complete a full range check.
 8. After flying, bring the throttle stick to idle position, engage any kill switches or otherwise disarm your motor/engine.

If you do not turn on your system on and off in this order, you may damage your servos or control surfaces, flood your engine, or in the case of electric-powered or gasoline-powered models, the engine may unexpectedly turn on and cause a severe injury.

① **Make sure your transmitter can't tip it over.** If it is knocked over, the throttle stick may be accidentally moved, causing the engine to speed up. Also, damage to your transmitter may occur.

① In order to maintain complete control of your aircraft it is important that it remains visible at all times. Flying behind large objects such as buildings, grain bins, etc. must be avoided. Doing so may interrupt the radio frequency link to the model, resulting in loss of control.

⚠ Do not grasp the transmitter's antenna during flight. Doing so may degrade the quality of the radio frequency transmission and could result in loss of control.

⚠ As with all radio frequency transmissions, the strongest area of signal transmission is from the sides of the transmitter's antenna. As such, the antenna should not be pointed directly at the model. If your flying style creates this situation, easily move the antenna to correct this situation.

① **Don't fly in the rain!** Water or moisture may enter the transmitter through the antenna or stick openings and cause erratic operation or loss of control. If you must fly in wet weather during a contest, be sure to cover your transmitter with a plastic bag or waterproof barrier. Never fly if lightning is expected.

Updates

FrSky is continuously adding features and improvements to our radio systems. Updating (via USB Port or the Micro SD card) is easy and free. To get the most from your new transmitter, please check the download section of the FrSky website for the latest update firmware and guide for adjusting your sticks. (www.frsky-rc.com)