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RadioMaster TX16S MK3

RadioMaster TX16S MK3 ELRS Gemini Remote Controller User Manual

Model: TX16S MK3

1. Introduction

This manual provides essential information for the safe and efficient operation of your RadioMaster TX16S MK3 ELRS 2.4GHz/900MHz Dual Band 16Ch Gemini Remote Controller. Please read this manual thoroughly before using the device. The TX16S MK3 is a high-performance remote controller powered by an STM32H7 chip, featuring a 5-inch 480x800 IPS touchscreen and a Gemini-X dual-band ExpressLRS system for reliable control across 2.4GHz and 900MHz bands. It includes V6 quad-bearing Hall-effect gimbals and programmable LED gimbal light rings.

2. Safety Information

Important: Always read the instructions before use. Failure to follow safety guidelines can result in injury or damage to the product.

- Ensure the device is used in a safe environment, away from obstacles and people.
- Always perform pre-flight checks before operating any remote-controlled aircraft or vehicle.
- Keep the device away from water and extreme temperatures.
- Use only approved batteries and charging methods.
- Recommended age for use is 17 years and up.

3. What's in the Box

Upon unpacking, verify that all items listed below are present:

- TX16S MK3 Radio Controller
- Carry Case
- 18650 Battery Tray Only (Batteries not included)
- Replacement Shoulder Panels
- Type-C Cable
- Screen Protector

- 1.5mm Hex Wrench
- Low Tension Gimbals Springs
- Gimbal Stick Set Screws
- Nylon Neck Strap (Lanyard)
- RadioMaster Sticker Set



Image: The RadioMaster TX16S MK3 Remote Controller shown alongside its included carrying case.

4. Setup

4.1 Battery Installation

1. Open the battery compartment cover on the back of the controller.
2. Insert two 18650 Lithium-ion cells or a 2S 7.4V 6200mAh Lipo battery into the battery tray. Ensure correct polarity. (Batteries not included)
3. Close the battery compartment cover securely.



Image: Rear view of the TX16S MK3, highlighting the battery compartment and shoulder sliders (RS, LS).

4.2 Initial Power On and Screen Protector Application

1. Press and hold the power button located between the gimbals to turn on the controller.
2. Follow any on-screen prompts for initial setup.
3. Carefully apply the included screen protector to the 5-inch IPS touchscreen.



Image: Front view of the TX16S MK3, displaying the gimbals, switches, and the 5-inch color touchscreen.

4.3 Gimbal Adjustment

The V6 quad-bearing Hall-effect gimbals offer external adjustments for travel, centering, and tension. Use the included 1.5mm Hex Wrench and Gimbal Stick Set Screws to fine-tune the feel to your preference. Low Tension Gimbals Springs are also included for customization.



Image: A detailed view of the TX16S MK3's gimbals, switches, and dials, illustrating the control layout.

5. Operating Instructions

5.1 Basic Controls Overview

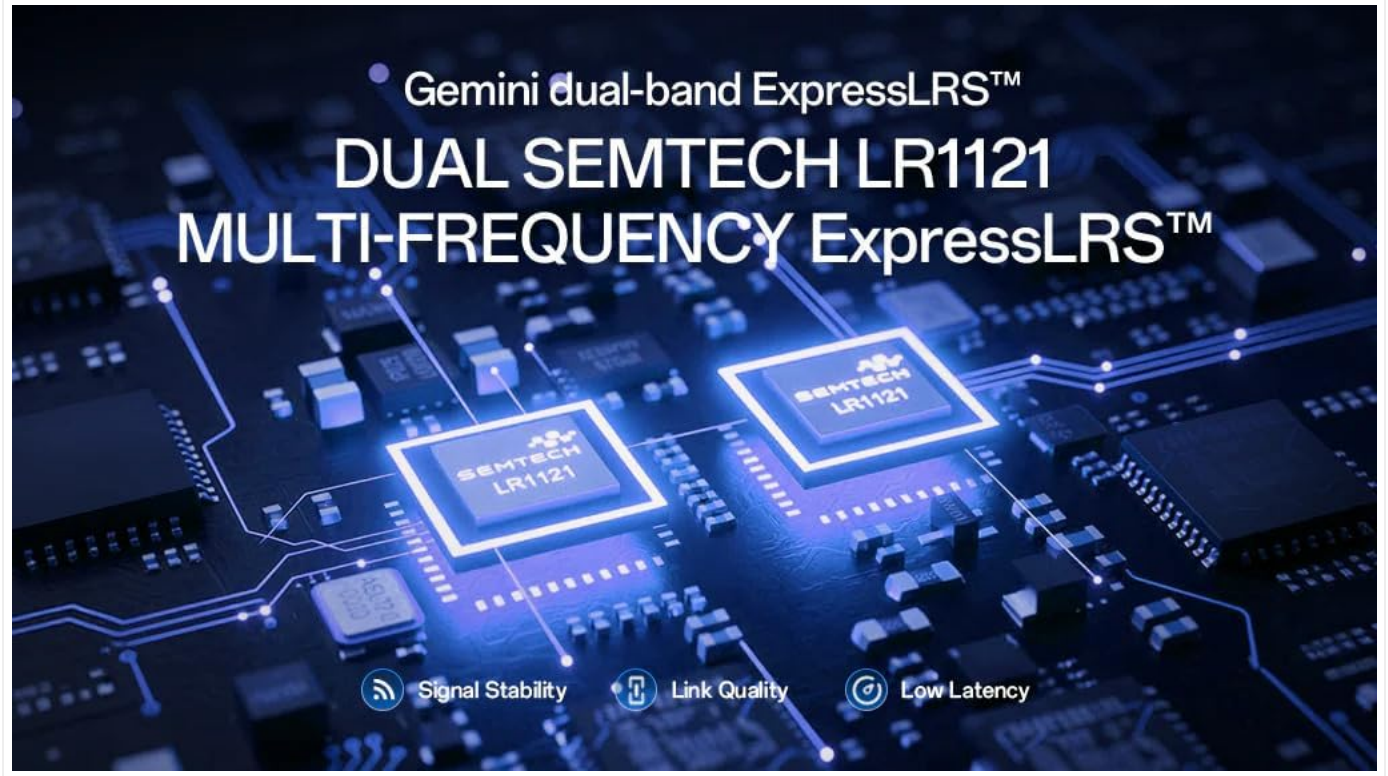


Image: An annotated diagram showing the location and function of all switches, dials, gimbals, and buttons on the TX16S MK3 controller.

The TX16S MK3 features a classic control layout with intuitive placement of switches, sliders, and potentiometers. Refer to the diagram above for a detailed overview of each control element.

- **Gimbals:** Control primary flight surfaces (e.g., aileron, elevator, rudder, throttle).
- **Switches (SA, SB, SC, SD, SE, SF, SH):** Assignable for various functions like flight modes, gear, or auxiliary channels. SH is a momentary switch.
- **Dials (S1, S2):** Assignable proportional controls.
- **Sliders (RS, LS):** Rear-mounted proportional controls.
- **Buttons (RTN, PAGE>, PAGE<, TELE, SYS, MDL):**Navigation and menu access.
- **Scroll Wheel:** For menu navigation and value adjustment.

5.2 Using the Touchscreen Display

SPECIFICATIONS

Item	TX16S MK3 Radio Controller
Color	Black / Transparent Charcoal
Voltage Range	6.6 - 8.4V DC
Working Current	1.10A (at max RF output power)
Radio Firmware	EdgeTX
Built-in RF Module	ExpressLRS 2 x LR1121
Frequency	ISM 2.4GHz and Sub-G 900MHz
Number of Channels	Up to 16ch
Gimbal	V6 Hall sensor gimbals (standard)
MicroSD Card Slot	Yes (card not included)
Internal Storage	Integrated 4GB of onboard flash memory
Display	5-inch IPS touchscreen (800 X 480 resolution)
Battery	Two 3.7V 18650 Lithium-Ion cells / 21700 5000mAh Battery / 2S 7.4V 6200mAh Lipo (batteries not included)
Upgrade Method	USB / EdgeTX Companion PC software
Module Bay	JR-compatible module bay for additional modules
Dimensions	200*178*88mm
Weight	813g (without battery)

Image: A user interacting with the 5-inch high-visibility color touchscreen of the TX16S MK3, showing various widgets and telemetry data.

The 5-inch 800x480 IPS touchscreen provides a clear and responsive interface for navigation and programming.

- Tap icons and menu items to select.
- Swipe to navigate between pages or lists.
- Use the scroll wheel for fine adjustments or to scroll through long lists.
- The automatic backlight adjustment optimizes screen visibility in various lighting conditions.

5.3 ExpressLRS Gemini System



Image: A conceptual diagram highlighting the Gemini dual-band ExpressLRS system with dual Semtech LR1121 chips, emphasizing signal stability, link quality, and low latency.

The integrated Gemini-X dual-band ExpressLRS system utilizes dual LR1121 transceivers for ultra-reliable, low-latency control across both 2.4GHz and 900MHz bands. This ensures exceptional signal stability and link quality.
For detailed binding and configuration of the ExpressLRS system, refer to the official ExpressLRS documentation or the RadioMaster support website.

Video: A demonstration of the TX16S MK3 and XR4 Receiver Bench Setup, showing the process of connecting and configuring the remote controller with a receiver. This video is provided by AITone, a seller.

5.4 Motion Sensor Functionality



Image: A visual representation of the TX16S MK3's built-in motion sensor, showing how tilting the radio along X and Y axes can trigger functions.

The built-in motion sensor allows you to trigger switches, pan/tilt cameras, or telemetry callouts by simply tilting your radio. This feature can be configured within the radio's settings.

6. Maintenance

- **Cleaning:** Use a soft, dry cloth to clean the exterior of the controller. Avoid abrasive cleaners or solvents.
- **Storage:** Store the controller in its carry case in a cool, dry place when not in use.
- **Battery Care:** For optimal battery life, avoid fully discharging the batteries. If storing for extended periods, charge batteries to approximately 50%. The Smart Balance Battery Circuit helps maximize efficiency.
- **Firmware Updates:** Regularly check the RadioMaster website for firmware updates. Updates can be performed via USB or EdgeTX Companion PC software.
- **Cooling System:** The powerful cooling system with low-noise, high-output fans and an aluminum heat sink is designed for efficient heat dissipation. Ensure vents are not obstructed.

7. Troubleshooting

Controller does not power on:

- Check battery installation and ensure batteries are charged.
- Verify battery polarity is correct.

No signal or poor link quality:

- Ensure antennas are properly unfolded and positioned.
- Verify the receiver is correctly bound to the controller.
- Check for obstructions or interference in the operating environment.
- Confirm the internal RF module settings are correct for your receiver.

Touchscreen unresponsive:

- Restart the controller.
- Ensure the screen is clean and free of debris.
- If a screen protector is installed, ensure it is applied correctly and not interfering with touch input.

Gimbal issues (stick drift, incorrect response):

- Recalibrate gimbals through the radio's settings menu.
- Check for physical obstructions or damage to the gimbals.
- Adjust gimbal tension if sticks feel too loose or too stiff.

8. Specifications



Image: A detailed table outlining the technical specifications of the TX16S MK3 Radio Controller.

Feature	Detail

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Battery	Two 3.7V 18650 Lithium-ion cells / 21700 5000mAh Battery / 2S 7.4V 6200mAh Lipo (batteries not included)
Upgrade Method	USB / EdgeTX Companion PC software
Module Bay	JR-compatible module bay for additional modules
Dimensions	200*178*88mm (7.9 x 7.1 x 3.5 inches)
Weight	813g (without battery) / 1.8 pounds

9. Warranty and Support

For warranty information, please refer to the official RadioMaster website or contact your point of purchase.
For technical support, firmware downloads, and additional resources, visit the official RadioMaster support page.

- **Manufacturer:** RadioMaster
- **Online Resources:** RadioMaster Official Website

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