FrSky TD MX

FrSky Tandem TD MX Dual-Band RC Receiver Instruction Manual

Model: TD MX

1. INTRODUCTION

This manual provides essential information for the proper installation, operation, and maintenance of your FrSky Tandem TD MX Dual-Band 2.4GHz/900MHz RC Receiver. Please read this manual thoroughly before using the receiver to ensure safe and efficient operation. This receiver is designed for use with Tandem series radios and TD protocol-capable RF modules.

2. PRODUCT OVERVIEW

The FrSky Tandem TD MX receiver is a compact, high-performance dual-band receiver offering simultaneous 2.4GHz and 900MHz operation. It features a triple antenna design for enhanced signal reception and redundancy. Key features include:

- Simultaneous working dual-band TD mode (2.4GHz & 900MHz)
- Triple antenna design for multi-directional coverage
- Black Box function for flight data recording
- 4ms Race Mode with Telemetry support
- Long control range (up to 50KM – 100KM, depending on environment and transmitter)
- Over-The-Air (OTA) firmware update capability
- 4 PWM channels
- S.Port & Inverted S.Port
- FBUS / SBUS Out / SBUS In (Redundancy Function)

Figure 2.1: FrSky Tandem TD MX Dual-Band RC Receiver. This image shows the compact receiver board connected to its three antennas, two for 2.4GHz and one for 900MHz, designed for optimal signal reception.

3. SPECIFICATIONS

Feature	Specification
Brand	FrSky
Model	TD MX
Connectivity Technology	RF
Wireless Technology	2.4GHz & 900MHz (Dual-Band)
Number of Channels	4 PWM Channels
Dimensions (L x W x H)	1.57" x 0.83" x 0.16" (40mm x 21mm x 4mm)
Weight	0.03 Kilograms (approx. 3g)

Feature	Specification
Connector Type	IPEX1 (for 2.4G antennas), SMA (for 900M antenna)
Compatibility	FrSky Tandem series radio & TD protocol capable RF module

4. SETUP

4.1 Receiver Layout and Pinout

Familiarize yourself with the receiver's physical layout and connection points before installation.
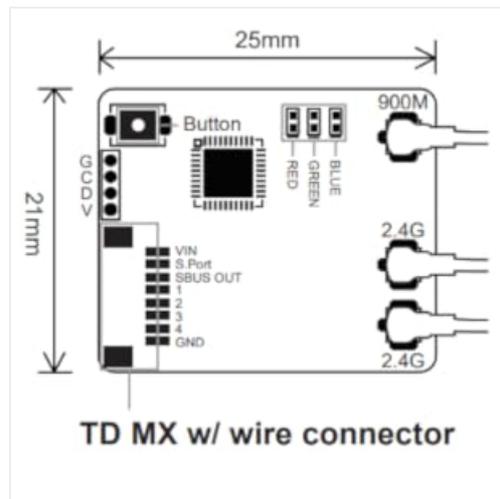

Figure 4.1: TD MX Receiver Layout with Wire Connector. This diagram illustrates the dimensions (25mm x 21mm) and pin assignments for VIN, S.Port, SBUS OUT, PWM channels (1-4), and GND, along with the button and LED indicators.

Connections:

- **VIN:** Voltage Input
- **S.Port:** Smart Port for telemetry and sensor connections
- **SBUS OUT:** SBUS signal output
- **1-4:** PWM Channel outputs
- **GND:** Ground connection
- **Button:** Used for binding and other functions
- **LEDs:** Green, Blue, Red indicators for status
- **2.4G Antennas:** Two IPEX1 connectors for 2.4GHz antennas
- **900M Antenna:** One connector for 900MHz antenna

4.2 Antenna Installation and Orientation

Proper antenna placement is critical for optimal signal reception and range. Ensure antennas are mounted away from conductive materials and at appropriate angles.
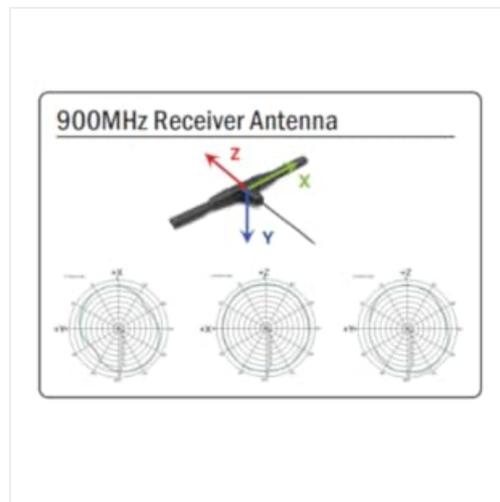
Figure 4.2: 900MHz Receiver Antenna Orientation. This diagram illustrates the recommended orientation for the 900MHz antenna to achieve multi-directional coverage, showing X, Y, and Z axes for optimal signal pattern.

- Mount the 2.4GHz antennas at a 90-degree angle to each other for diversity.
- Position the 900MHz antenna to provide the best possible omnidirectional coverage, ideally perpendicular to the 2.4GHz antennas if space allows.
- Ensure the active part of the antenna (the last 31mm for 2.4GHz, and the full length for 900MHz) is clear of carbon fiber, metal, or other signal-blocking materials.

4.3 Binding Procedure

To establish communication between your FrSky Tandem series transmitter and the TD MX receiver, follow these binding steps:

1. Power on your transmitter and navigate to the RF System menu.
2. Select the TD protocol and choose the 'Bind' option.
3. Press and hold the F/S (Fail-Safe) button on the TD MX receiver while powering it on.
4. Release the F/S button. The Red and Green LEDs on the receiver will flash, indicating it is in binding mode.
5. On your transmitter, select 'Bind' again. The receiver's LEDs will change to indicate successful binding (refer to LED Status Indicators section).
6. Power cycle both the receiver and transmitter. The receiver should now show a solid Green LED, indicating normal operation.

Figure 4.3: RF System Menu. This screenshot shows the RF System menu on a FrSky transmitter, where users can select channel range, racing mode, and initiate the bind process for receivers like the TD MX.

5. OPERATING INSTRUCTIONS

5.1 LED Status Indicators

The TD MX receiver uses a combination of Green, Blue, and Red LEDs to indicate its current status. Understanding these indicators is crucial for proper operation and troubleshooting.

Green LED	Blue LED	Red LED	Status
On	Off	On	Register
Flash	Off	Flash	Register successfully
On	Off	On	Bind
On	Flash	Off	Bind successfully
On	Flash	Off	Working normally
Off	Off	On	Failsafe

Figure 5.1: LED Status Table. This table details the meaning of different LED combinations (Green, Blue, Red: On, Flash, Off) to indicate receiver states such as Register, Register successfully, Bind, Bind successfully, Working normally, and Failsafe.

5.2 Range Check

Before each flight, especially with a new setup or after modifications, perform a range check to ensure adequate signal strength. This procedure helps verify the integrity of your radio link.

1. Place your model at least 1 meter (3 feet) off the ground.
2. On your transmitter, activate the 'Range Check' mode (usually found in the RF System menu). This typically reduces the transmitter's power output.
3. Walk away from the model while observing the receiver's LED status and control response.
4. Ensure reliable control and telemetry feedback at a distance of at least 30 meters (100 feet).
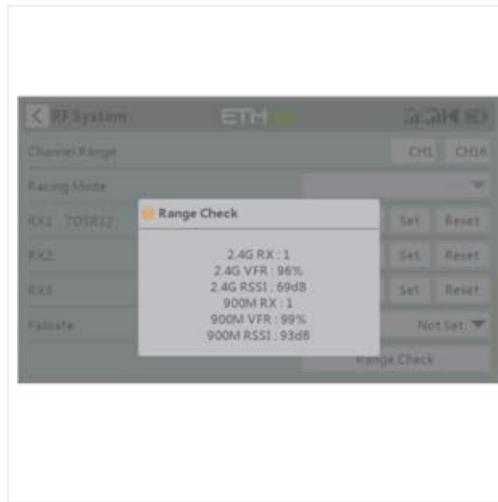5. Exit Range Check mode on your transmitter before flying.

Figure 5.2: Range Check Results. This screenshot displays the results of a range check, showing signal strength (VFR, RSSI) for both 2.4G and 900M bands, indicating the health of the radio link.

5.3 OTA Firmware Update

The TD MX receiver supports Over-The-Air (OTA) firmware updates directly from your compatible FrSky transmitter. This allows for convenient updates without physical connection to a computer.

- Ensure your transmitter has the latest firmware and the desired receiver firmware file loaded onto its SD card.
- Follow the specific OTA update procedure outlined in your transmitter's manual.
- During the update process, keep the transmitter and receiver close to each other and avoid interruptions.

5.4 Black Box Function

The Black Box function records flight data, which can be invaluable for analyzing flight performance or diagnosing issues. This data can typically be accessed and reviewed via your transmitter or companion software.
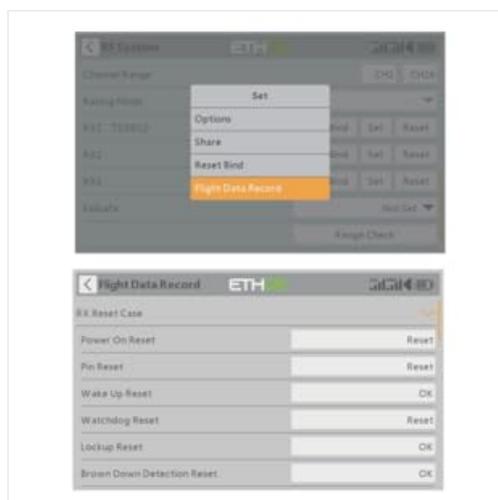

Figure 5.3: Flight Data Record Menu. This screenshot shows the 'Flight Data Record' menu on a FrSky transmitter, providing options to reset various counters and logs related to receiver performance and events like power on, pin reset, and brown down detection.

6. MAINTENANCE

To ensure the longevity and reliable performance of your TD MX receiver, observe the following maintenance guidelines:

- Keep the receiver clean and free from dust, dirt, and moisture.
- Avoid exposing the receiver to extreme temperatures or direct sunlight for extended periods.

- Regularly inspect antenna connections for damage or loose contacts.
- Ensure all wiring is secure and free from abrasion.
- Periodically check for and install the latest firmware updates to benefit from performance improvements and bug fixes.

7. TROUBLESHOOTING

If you encounter issues with your TD MX receiver, consider the following common problems and solutions:

- **No Signal / Receiver Not Responding:**
  - Check power supply to the receiver.
  - Verify that the receiver is correctly bound to the transmitter (refer to LED status).
  - Ensure the transmitter is powered on and operating on the correct model memory.
  - Perform a range check to rule out signal interference or antenna issues.

- **Intermittent Signal Loss:**
  - Inspect antenna placement and orientation for obstructions or damage.
  - Check for potential sources of interference near the receiver (e.g., ESC, motors, carbon fiber).
  - Ensure the receiver's firmware is up to date.

- **Incorrect Channel Output:**
  - Verify channel mapping in your transmitter settings.
  - Ensure the correct receiver type is selected in the transmitter.

- **Receiver Not Entering Bind Mode:**
  - Ensure the F/S button is pressed correctly before powering on.
  - Check power supply.

8. WARRANTY INFORMATION

The FrSky Tandem TD MX receiver is covered by a limited warranty against defects in materials and workmanship for a period of **90 days** from the date of purchase. This warranty does not cover damage caused by misuse, accident, modification, or improper installation. Please retain your proof of purchase for warranty claims.

9. CUSTOMER SUPPORT

For technical assistance, firmware updates, or further information regarding your FrSky Tandem TD MX receiver, please visit the official FrSky website or contact FrSky customer support. You can also find resources and community support through the FrSky store page:

Visit the FrSky Store on Amazon