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FrSky TD R12

FrSky TD R12 Receiver User Manual

12-Channel Dual-Band 2.4Ghz & 900Mhz Receiver

1. Introduction

The FrSky TD R12 Receiver is a cutting-edge dual-band receiver designed for advanced radio control applications. Unlike traditional receivers, the TD R12 operates simultaneously on both 900MHz and 2.4GHz frequencies, offering unparalleled reliability and performance. This innovative Tandem (TD) technology ensures low latency signal transmission, extended control range, and superior anti-interference capabilities, making it an ideal choice for demanding RC enthusiasts.

2. Product Overview

The TD R12 receiver features a robust design with multiple configurable ports and a triple antenna system for optimal signal reception. Familiarize yourself with the receiver's components and layout.



Figure 2.1: Top view of the FrSky TD R12 Receiver, highlighting the various channel ports (CP1-CP12), LED indicator, and antenna connections. This view provides a clear layout of all accessible interfaces.

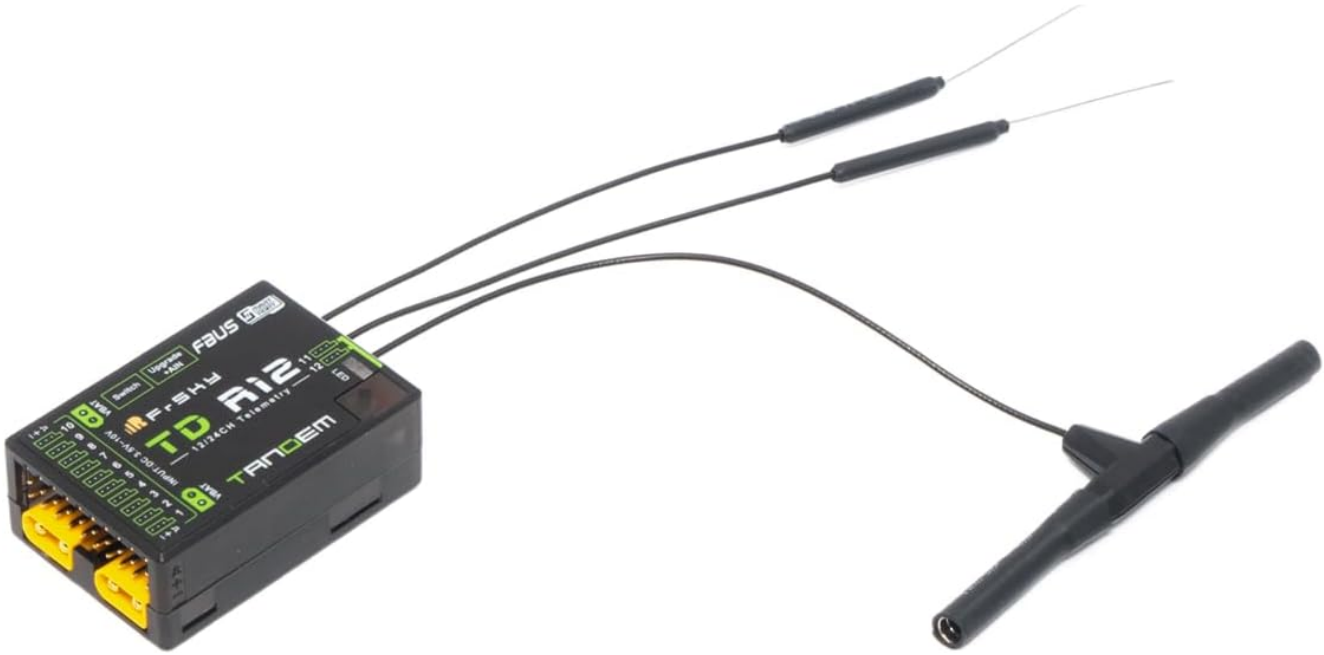


Figure 2.2: Angled view of the TD R12 Receiver, showcasing the dual XT30 power input connectors. These connectors ensure a reliable and redundant power supply for the receiver.



Figure 2.3: Side view of the TD R12 Receiver, illustrating the connection point for one of the external antennas. The triple antenna design enhances signal diversity and reliability.

3. Key Features

- **Simultaneous Working Dual-Band (900MHz/2.4GHz) TD Mode:** Operates on both frequencies concurrently for enhanced reliability.
- **Dual Power Balancing Consumption:** Efficient power management for stable operation.
- **Basic Black-Box Data Record Function:** Records flight data for analysis.
- **Built-in Power Switch Function:** Allows for integration with external switches (optional).
- **4ms Race Mode with Telemetry:** Provides ultra-low latency control with real-time data feedback.
- **Long Control Range:** Offers extended operational distance (range varies based on RF power settings).
- **12 Configurable Channel Ports:**
  - CP1: PWM / SBUS Out / FBUS / S.Port / SBUS In (Redundancy Function)
  - CP2-12: PWM / SBUS Out / FBUS / S.Port
- **FBUS / S.Port SBUS Out Port:** Supports 16CH / 24CH mode.
- **SBUS In Port:** Supports signal redundancy.
- **Over-The-Air (OTA) FW Update:** Convenient wireless firmware updates.

4. Specifications

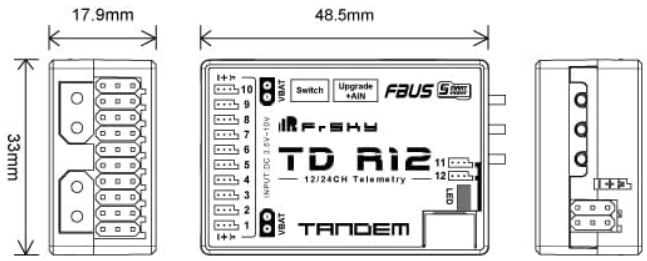


Figure 4.1: Dimensional drawing of the FrSky TD R12 Receiver, showing its length, width, and height.

Parameter	Value
Frequency	900MHz & 2.4GHz
Dimensions (L*W*H)	48.5mm * 33mm * 17.9mm
Weight	23g
Operating Voltage	3.5-10V (Recommended 2S Li Batteries)
Operating Current	≤170mA
Continuous Current (power device)	≤20A
Instantaneous Current (power device)	≤40A
Voltage Measurement Range via AIN (External device)	0-35V (Battery Voltage Divider Ratio: 1:10)
Compatibility	Tandem series radio & TD protocol capable RF module
Antenna Design	Triple Antenna (2×2.4G & 1×900M antennas)
Product Dimensions (Shipping)	3 x 3 x 3 inches
Item Weight (Shipping)	1.6 ounces

5. Setup

5.1. Initial Inspection

Upon unboxing, inspect the receiver for any visible damage. Ensure all components, including the receiver unit and antennas, are present and intact. The package typically includes the TD R12 receiver unit.



Figure 5.1: The FrSky TD R12 Receiver as typically found in its packaging, alongside its instruction manual and included accessories.

5.2. Antenna Installation and Placement

The TD R12 features a triple antenna design (two 2.4GHz and one 900MHz). Proper antenna placement is crucial for optimal signal reception and range. Ensure antennas are mounted at 90-degree angles to each other, away from carbon fiber or metal components that can shield the signal. Avoid bending the active part of the antenna.

5.3. Power Connection

Connect your power source (recommended 2S Li battery, 3.5-10V) to the dual XT30 power input connectors. The dual inputs provide redundancy and stable power delivery.

5.4. Channel Port Configuration

The receiver offers 12 configurable channel ports. Refer to your flight controller or servo setup for correct connections. CP1 is versatile, supporting PWM, SBUS Out, FBUS, S.Port, and SBUS In for redundancy. CP2-12 support PWM, SBUS Out, FBUS, and S.Port.

5.5. Binding Procedure

To establish communication between the TD R12 receiver and your FrSky Tandem series radio, follow the binding procedure outlined in your radio's manual. Generally, this involves putting the radio into bind mode and then powering on the receiver while holding its bind button (if applicable) or initiating bind via the radio's menu for OTA binding.

6. Operating Instructions

6.1. Powering On and Status Indicators

Once connected to power, the receiver's LED indicator will show its status. A solid green LED typically indicates a successful bind and stable signal. Consult your radio's manual for specific LED patterns and their meanings.

6.2. Telemetry Functionality

The TD R12 supports telemetry, allowing real-time feedback of various parameters (e.g., receiver voltage, signal strength) to

your compatible FrSky Tandem radio. Ensure telemetry is enabled and configured on your radio.

6.3. FBUS and S.Port Usage

The FBUS and S.Port protocols allow for advanced communication with other FrSky devices and sensors. Connect compatible devices to the designated ports on the receiver. FBUS simplifies wiring by carrying both control signals and telemetry data over a single wire.

6.4. Over-The-Air (OTA) Firmware Updates

The TD R12 supports OTA firmware updates directly from your compatible FrSky Tandem radio. This eliminates the need for physical connection to a computer for updates. Refer to your radio's manual for the specific steps to perform an OTA update.

7. Maintenance

- **Keep Clean and Dry:** Regularly inspect the receiver for dirt, dust, or moisture. Clean with a soft, dry brush if necessary. Avoid exposure to water or excessive humidity.
- **Antenna Integrity:** Periodically check antenna wires for cuts, kinks, or damage. Ensure they are securely connected and properly positioned.
- **Firmware Updates:** Keep the receiver's firmware updated to the latest version to ensure optimal performance, compatibility, and access to new features. Use the OTA update feature for convenience.
- **Connection Checks:** Before each use, verify all connections (power, servos, sensors) are secure and free from corrosion.

8. Troubleshooting

Problem	Possible Cause	Solution
Receiver not binding	Incorrect binding procedure; incompatible firmware; radio not in bind mode.	Ensure radio is in bind mode. Follow binding steps precisely. Update receiver and radio firmware to compatible versions.
No signal/intermittent signal	Poor antenna placement; damaged antenna; interference; low receiver voltage.	Check antenna orientation and ensure they are clear of obstructions. Inspect antennas for damage. Avoid operating near strong interference sources. Verify receiver power supply.
No telemetry data	Telemetry not enabled on radio; incorrect S.Port/FBUS connection; sensor not connected.	Enable telemetry on your radio. Verify S.Port/FBUS wiring. Ensure external sensors are properly connected and configured.
Servos not responding	Receiver not powered; not bound; incorrect channel mapping; damaged servo.	Confirm receiver is powered and bound. Check channel mapping on your radio. Test servos individually.

9. Warranty Information

FrSky products are typically covered by a limited warranty against defects in materials and workmanship. The specific terms and duration of the warranty may vary by region and product. Please retain your proof of purchase. For detailed warranty information, refer to the official FrSky website or contact your local distributor.

10. Support

For technical assistance, troubleshooting, or further inquiries regarding your FrSky TD R12 Receiver, please visit the official FrSky website for FAQs, firmware downloads, and support forums. You may also contact FrSky customer support directly or reach out to your authorized dealer for assistance.

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Model number, symptoms, what you tried, or the section of the manual you are using.

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