FrSky TW R6

FrSky TW R6 Receiver Instruction Manual

Model: TW R6
Brand: FrSky

1. Introduction

The FrSky TW R6 receiver is a key component in the TWIN series, designed for advanced radio control applications. It utilizes the innovative TW protocol, which simultaneously integrates dual active 2.4G frequency bands. This differs from traditional active-standby redundancy systems by ensuring both 2.4G bands are actively transmitting and receiving data concurrently, providing enhanced signal resilience and reliability.
The TW R6 is engineered to offer ultra-low latency and extended control range, making it ideal for demanding scenarios such as FPV racing and long-range flights. Its robust design and advanced features contribute to a stable and secure radio communication link.

2. Key Features

- **Dual Active 2.4G TW Mode:** Simultaneous operation of two 2.4G frequency bands for superior signal resilience and stability.
- **Ultra-Low Latency 4ms Race Mode:** Provides rapid response times critical for high-performance applications.
- **Extended Control Range:** Capable of achieving long-distance communication, varying based on RF power settings.
- **Multiple Output Channels:** Features 6 PWM output channels and one SBUS output channel (supports 16CH / 24CH mode).
- **Telemetry Support:** Integrated FBUS / S.Port for comprehensive telemetry data transmission.
- **Simplified Wiring with FBUS:** When used with the ETHOS system, FBUS protocol allows for bidirectional transmission over a single wire, simplifying model builds.
- **Inverted S.Port:** Facilitates easy connection to flight controllers.
- **Black-Box Function:** Records flight data for analysis and diagnostics.
- **Dual Antennas:** Equipped with two 2.4G antennas for optimal signal reception.
- **IPEX4 Antenna Connector:** Standard connector for secure antenna attachment.
- **Compatibility:** Designed for use with FrSky TWIN series Radios and RF modules in TW mode.

3. Specifications

Parameter	Value
Model	TW R6
Dimensions	Approximately 2 x 2 x 2 inches
Weight	Approximately 1.44 ounces
Operating Frequency	2.4GHz (Dual Active TW Mode)
Channels	6 PWM, 1 SBUS (16/24CH)
Telemetry	FBUS / S.Port
Antenna Connector	IPEX4
Compatibility	FrSky TWIN series Radio & RF module in TW mode

4. Setup and Installation

4.1. Receiver Overview



Figure 1: Top view of the FrSky TW R6 receiver. This image displays the receiver's main body, showing the PWM output ports labeled 1 through 6, the LED indicator, and the FBUS/S.Port and SBUS connections. The dual antenna wires extend from the right side.



Figure 2: Angled view of the FrSky TW R6 receiver. This perspective provides a clearer look at the pin headers for the PWM channels and the dedicated ports for SBUS and FBUS/S.Port, along with the antenna connections.

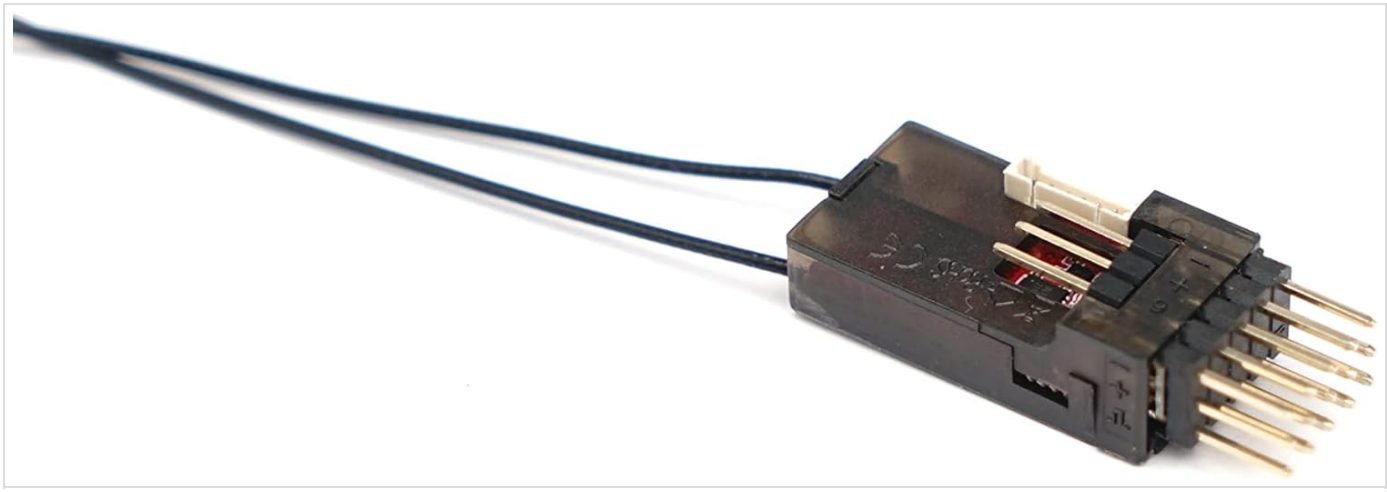


Figure 3: Close-up view of the FrSky TW R6 receiver. This image offers a detailed look at the receiver's compact form factor and the arrangement of its connection points, including the two antenna wires.

4.2. Binding Procedure

To establish a communication link between your FrSky TWIN series radio transmitter and the TW R6 receiver, follow these steps:

1. Power on your FrSky TWIN series radio transmitter and navigate to the Model Setup menu.
2. Select the TWIN protocol and choose the 'Bind' option.
3. While holding the F/S (Fail-Safe) button on the TW R6 receiver, connect power to the receiver. The LED on the receiver should flash rapidly, indicating it is in bind mode.
4. On your transmitter, confirm the bind process. The LED on the receiver should change to a solid green, indicating a successful bind.
5. Disconnect power from the receiver, then reconnect it normally (without holding the F/S button). The LED should remain solid green.
6. Verify control of your model's surfaces via the transmitter.

For detailed binding instructions specific to your transmitter model, refer to your transmitter's user manual.

4.3. Connections

The TW R6 receiver offers various connection options:

- **PWM Outputs (1-6):** Connect your servos, ESCs, or other PWM-controlled devices to these ports. Ensure correct polarity (Signal, Positive, Negative).
- **SBUS Out:** Provides a single wire connection for up to 16 or 24 channels (depending on mode) to compatible flight controllers or devices.
- **FBUS / S.Port:** This port supports both FBUS and S.Port protocols for telemetry and configuration. Use FBUS for simplified wiring with compatible ETHOS systems.
- **Inverted S.Port:** Specifically designed for direct connection to flight controllers that require an inverted S.Port signal.
- **Antennas:** Connect the two 2.4G antennas to the IPEX4 connectors. Ensure antennas are mounted at 90-degree angles to each other and away from carbon fiber or metal objects for optimal signal reception.

5. Operating Instructions

5.1. TW Mode Operation

The TW R6 operates in FrSky's TW mode, which utilizes dual active 2.4G frequency bands simultaneously. This provides a highly robust and redundant communication link. The receiver continuously monitors both bands, seamlessly switching or combining data streams to maintain the strongest possible signal, even in noisy RF environments.

5.2. 4ms Race Mode

For competitive racing and applications requiring minimal latency, the TW R6 supports a 4ms race mode. This mode significantly reduces the time delay between transmitter input and receiver output, providing a more direct and responsive control feel. To activate and configure 4ms race mode, refer to your FrSky TWIN series transmitter's system settings.

5.3. Telemetry and FBUS/S.Port

The TW R6 supports telemetry, allowing real-time flight data (e.g., battery voltage, RSSI, speed) to be transmitted back to your transmitter. This is facilitated through the FBUS or S.Port. When using the FBUS protocol with an ETHOS system, telemetry and control signals can be managed via a single wire, simplifying wiring and reducing clutter in your model.
To configure telemetry sensors and data display, consult your transmitter's ETHOS suite or OpenTX/EdgeTX documentation.

5.4. Black-Box Function

The integrated Black-Box function allows the receiver to record critical flight data. This data can be invaluable for post-flight analysis, troubleshooting, and performance optimization. Accessing and downloading Black-Box data typically requires connecting

the receiver to a computer via a compatible FrSky tool and software.

6. Maintenance

- **Keep Clean:** Regularly inspect the receiver for dirt, dust, or debris. Use a soft, dry brush or compressed air to gently clean the casing and ports. Avoid using liquids or solvents.
- **Antenna Care:** Ensure antennas are not kinked, cut, or damaged. Properly secure them to prevent movement during flight, which can affect signal quality. Replace damaged antennas immediately.
- **Environmental Protection:** Protect the receiver from moisture, extreme temperatures, and direct sunlight. If operating in humid environments, consider conformal coating for added protection.
- **Firmware Updates:** Periodically check the official FrSky website for firmware updates. Keeping your receiver's firmware up-to-date can improve performance, add new features, and resolve potential issues.

7. Troubleshooting

Problem	Possible Cause	Solution
Receiver LED not solid green after binding	Binding failed; incorrect binding procedure; incompatible firmware.	Re-attempt binding procedure carefully. Ensure transmitter and receiver firmware are compatible.
No control signal / Intermittent signal loss	Antenna damage or poor placement; excessive interference; receiver too far from transmitter.	Check antenna condition and orientation. Ensure antennas are clear of obstructions. Fly within recommended range. Check for local RF interference.
Telemetry data not displayed	Incorrect FBUS/S.Port connection; telemetry disabled in transmitter; sensor not configured.	Verify FBUS/S.Port wiring. Enable telemetry in your transmitter settings. Configure sensors in your transmitter.
Receiver not powering on	Incorrect power connection; power source issue; damaged receiver.	Check power polarity and voltage. Test power source. If issues persist, contact FrSky support.

8. Warranty and Support

FrSky products are covered by a limited warranty against defects in materials and workmanship. The specific warranty period and terms may vary by region and product. Please retain your proof of purchase for warranty claims.
For technical support, firmware updates, and detailed product information, please visit the official FrSky website or contact your local authorized FrSky dealer. Online resources often include FAQs, troubleshooting guides, and community forums that can provide additional assistance.
Official FrSky Website: www.frsky-rc.com

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Question

Example: How do I reset this device or fix this error?

Details

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

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