

RadioMaster RP1

RadioMaster RP1 ELRS FPV Receiver User Manual

Model: RP1 | Brand: RadioMaster

1. INTRODUCTION

The RadioMaster RP1 2.4GHz ELRS Nano receiver is an advanced open-source receiver designed for FPV (First Person View) applications. It is built upon the ExpressLRS platform, utilizing an ESP8285 MCU and SX1280 RF chip, ensuring reliable and high-performance radio communication.

This receiver is engineered for ultra-lightweight and compact dimensions, making it an ideal choice for space-constrained models such as racing drones, whoops, and fixed-wing aircraft. Its design prioritizes low latency and high refresh rates, which are critical for responsive control in demanding flight scenarios, including FPV racing and long-range operations.

A key feature of the RP1 is its integrated Wi-Fi capability, which simplifies firmware updates and configuration. Users can easily update the receiver's firmware and adjust settings via a built-in WebUI accessible from a PC or mobile device, eliminating the need for complex wiring or dedicated programming tools.

RADIOMASTER

ELRS SERIAL RX

RP1



ExpressLRS



Low latency



High refresh rate

FOR WHOOPS | DRONES | FIXED WING



Image 1.1: The RadioMaster RP1 ELRS Serial Receiver, highlighting its suitability for whoops, drones, and fixed-wing aircraft, along with its low latency and high refresh rate capabilities.

2. WHAT'S IN THE BOX

Upon opening the package, please verify that all components are present and undamaged:

- RadioMaster RP1 ExpressLRS 2.4GHz Nano Receiver (1 unit)
- 65mm UFL 2.4GHz T Antenna (1 unit)
- User Manual (1 unit)



Image 2.1: The complete package contents, showing the RP1 receiver, the 65mm UFL T antenna, and a piece of heat shrink tubing.



Image 2.2: The retail packaging for the RadioMaster RP1 receiver, displaying the receiver, antenna, and the included user manual.

3. SPECIFICATIONS

The following table outlines the key technical specifications of the RadioMaster RP1 ELRS Nano Receiver:

Feature	Specification
Product Dimensions	0.5 x 0.4 x 0.1 inches (approximately 13mm x 11mm x 3mm)
Item Weight (Receiver only)	0.317 ounces (approximately 0.54g)
Item Weight (Receiver with Antenna)	Approximately 2.20g
Country of Origin	China
ASIN	B0BZY2M4BS
Manufacturer	RadioMaster
RF Chip	SX1280
MCU	ESP8285
Antenna Type	65mm UFL T Antenna (External, high-sensitivity)
Connectivity	Built-in Wi-Fi for firmware updates and configuration

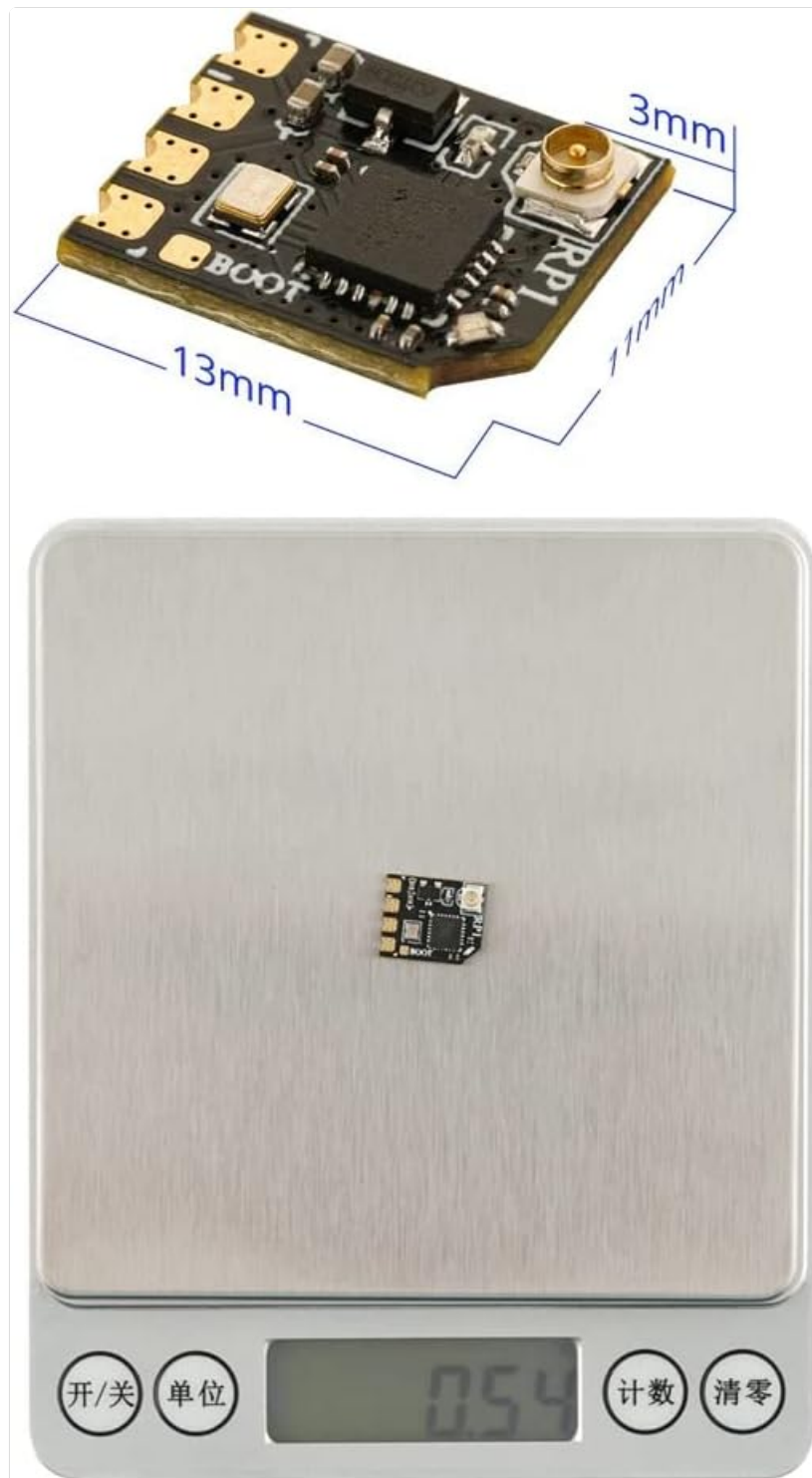


Image 3.1: Detailed dimensions of the RP1 receiver, showing its compact size of approximately 13mm x 11mm x 3mm.



Image 3.2: The RP1 receiver with its T antenna, demonstrating a combined weight of approximately 2.20 grams on a digital scale.

4. SETUP AND INSTALLATION

Proper installation and setup are crucial for optimal performance of your RP1 receiver. Follow these steps carefully:

4.1. Physical Installation and Soldering

1. **Identify Solder Pads:** Locate the 5V, TX, and RX solder pads on the RP1 receiver board. These pads are designed for hassle-free soldering.

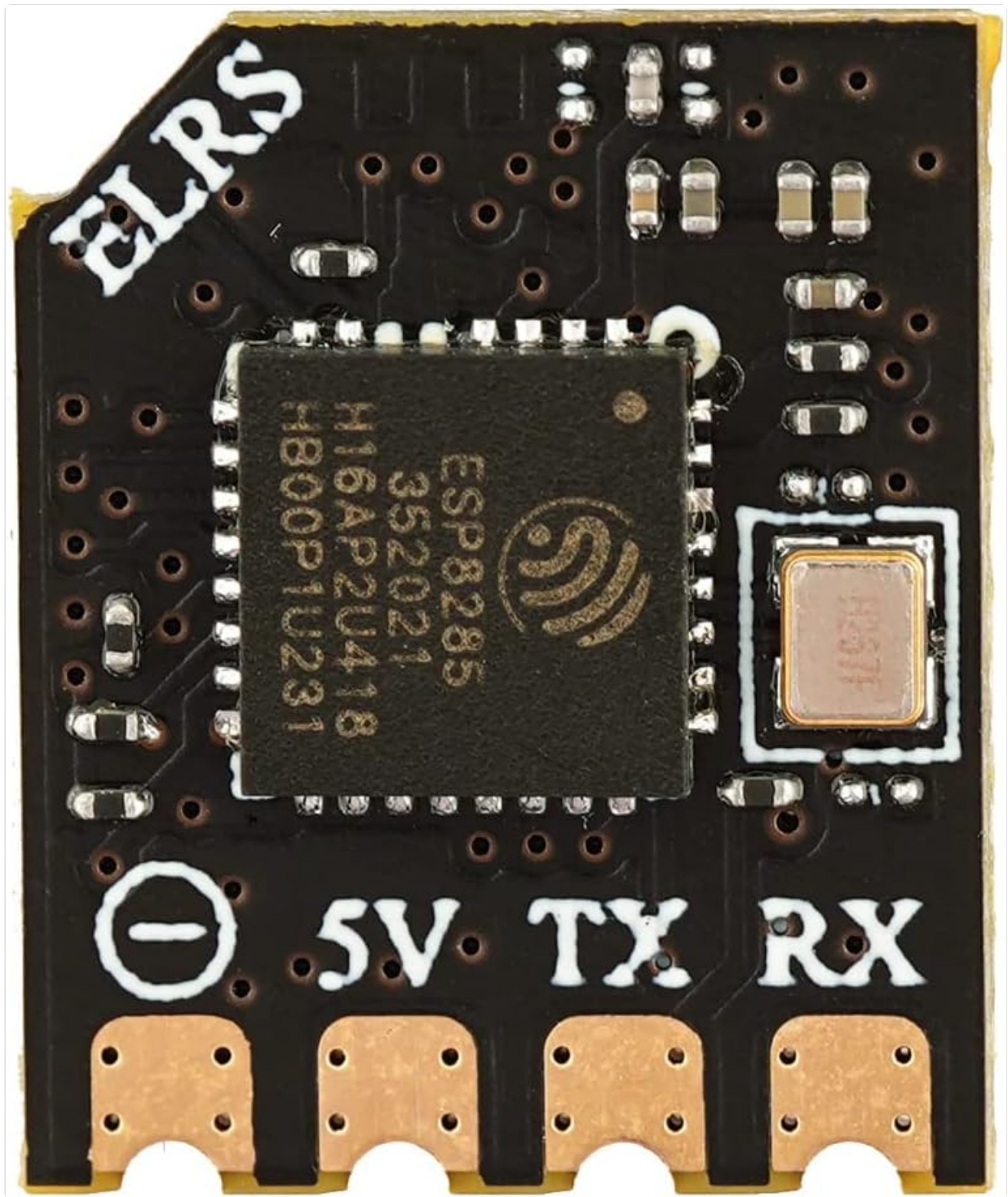


Image 4.1: A detailed view of the RP1 receiver board, clearly showing the 5V power input, TX (transmit), and RX (receive) solder pads.

2. **Solder Connections:** Carefully solder the appropriate wires from your flight controller or power distribution board to the corresponding pads on the RP1 receiver. Ensure clean solder joints to prevent shorts or poor connections.

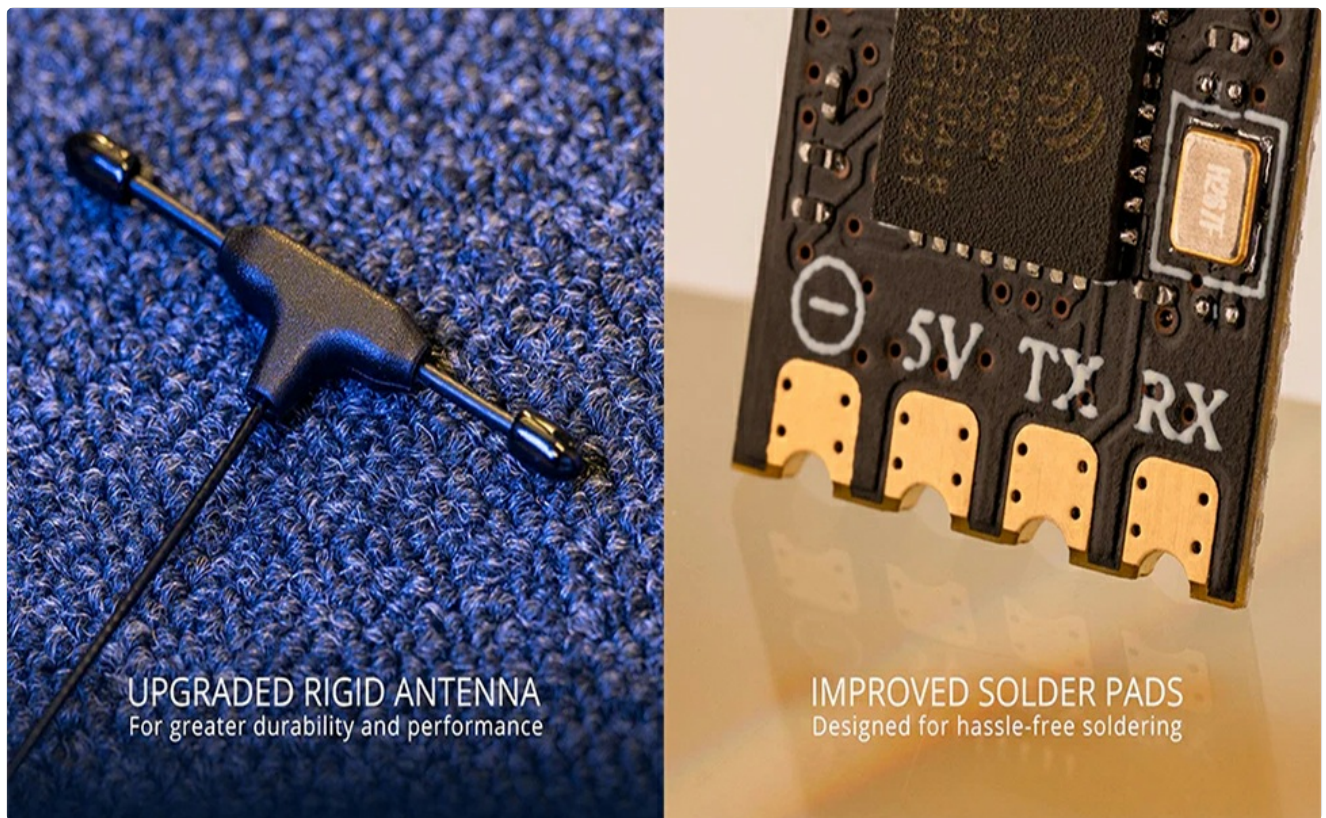


Image 4.2: The RP1 receiver showcasing its improved solder pads, designed for easier and more reliable connections, alongside the upgraded rigid antenna.

3. **Antenna Connection:** Connect the 65mm UFL T antenna to the UFL antenna socket on the receiver board. Ensure it clicks securely into place. Position the antenna away from carbon fiber or metal parts of your model for optimal signal reception.

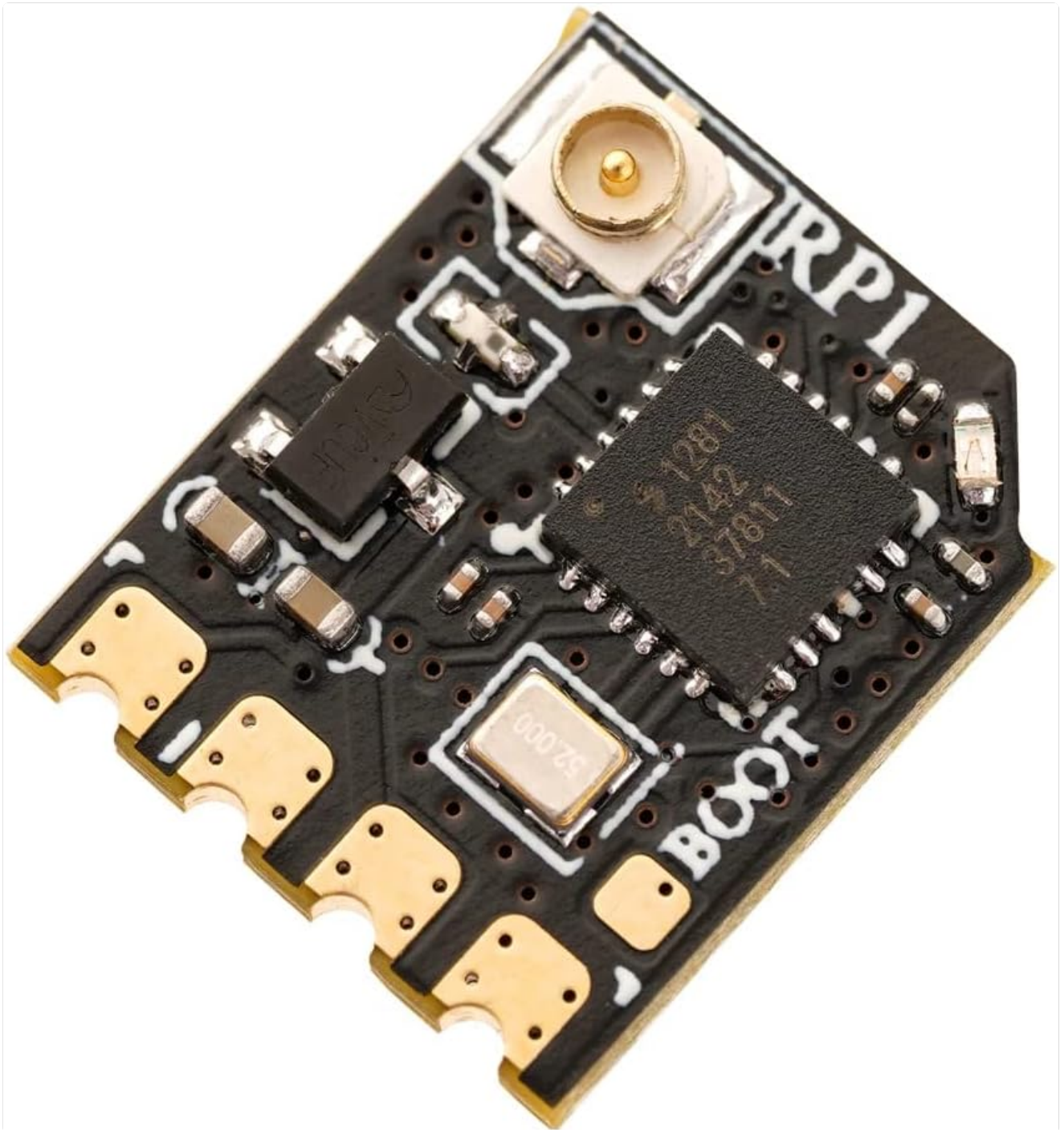


Image 4.3: An angled perspective of the RP1 receiver, highlighting the UFL antenna connector for attaching the external T antenna.



Image 4.4: The RP1 receiver with the 65mm UFL T antenna properly connected, ready for installation into a model.

4. **Secure Installation:** Once soldered, use the included heat shrink tubing or other suitable methods to insulate and secure the receiver within your model. Ensure it is protected from vibrations and potential short circuits.

4.2. Firmware Update and Binding

The RP1 receiver features built-in Wi-Fi for convenient firmware management and binding. It is recommended to ensure your receiver's firmware matches your transmitter's ExpressLRS version (e.g., TX16S, TX12, Zorro ELRS RC Transmitters) for optimal compatibility and performance.

1. **Power On in Binding Mode:** Power on the RP1 receiver three times in quick succession. The LED on the receiver should flash rapidly, indicating it is in binding mode.
2. **Connect via Wi-Fi:** On your PC or mobile device, search for Wi-Fi networks. An access point named "ExpressLRS RX" (or similar) should appear. Connect to this network. The default password is "expresslrs".
3. **Access WebUI:** Open a web browser and navigate to <http://10.0.0.1>. This will open the ExpressLRS WebUI.
4. **Update Firmware (if necessary):**
 - From the WebUI, you can upload new firmware files (.bin) to update your receiver. Ensure you download the

correct firmware version for your RP1 receiver and desired ExpressLRS version from the official ExpressLRS GitHub repository or RadioMaster support page.

- *Note: Some users have reported receiving units with ELRS V3 firmware, even if product listings indicate V2.4. Always verify your receiver's firmware version and update or downgrade as needed to match your transmitter.*

5. **Binding Phrase:** In the WebUI, enter your unique ExpressLRS binding phrase. This phrase must exactly match the binding phrase configured on your ExpressLRS transmitter module.
6. **Save and Reboot:** Save the changes in the WebUI. The receiver will reboot and attempt to bind with your transmitter. A solid LED on the receiver indicates a successful bind.

5. OPERATING THE RP1 RECEIVER

Once successfully installed and bound, the RP1 receiver operates seamlessly with your ExpressLRS compatible transmitter. Its core benefits include:

- **Low Latency:** The RP1 is designed for minimal signal delay, providing immediate response to control inputs, which is crucial for precision flying in FPV racing.
- **High Refresh Rate:** Supports high packet rates, ensuring a constant and smooth flow of control data from your transmitter to your model.
- **Versatile Application:** Ideal for a wide range of RC models, including:
 - **Whoops:** Its nano size allows for easy integration into small, lightweight indoor drones.
 - **Drones:** Suitable for various FPV drone builds, from freestyle to long-range.
 - **Fixed Wing Models:** Provides reliable control for traditional RC airplanes.
- **Long Range Capability:** With its efficient RF design and external T antenna, the RP1 is capable of maintaining a strong link over significant distances, making it suitable for long-range FPV flights.

Always ensure your transmitter and receiver are powered on in the correct sequence (transmitter first, then receiver) to establish a stable connection before flight.

6. MAINTENANCE

To ensure the longevity and reliable performance of your RadioMaster RP1 receiver, consider the following maintenance guidelines:

- **Keep Clean and Dry:** Protect the receiver from dust, dirt, and moisture. Avoid exposing it to extreme temperatures.
- **Inspect Connections:** Periodically check solder joints and antenna connections for any signs of wear, corrosion, or looseness. Re-solder or re-secure as necessary.
- **Antenna Care:** Ensure the antenna is not bent sharply or damaged. A damaged antenna can significantly reduce range and signal quality. The included 65mm UFL T antenna is designed for durability.
- **Firmware Updates:** Regularly check the official ExpressLRS GitHub repository or RadioMaster's support channels for new firmware releases. Updating your receiver's firmware can provide performance improvements, bug fixes, and new features. Use the built-in Wi-Fi for convenient updates.
- **Storage:** When not in use, store the receiver in a dry, cool place, ideally in an anti-static bag.

7. TROUBLESHOOTING

If you encounter issues with your RP1 receiver, refer to the common problems and solutions below:

Problem	Possible Cause / Solution
Receiver not binding / No solid LED	• Incorrect Binding Phrase: Ensure the binding phrase on your transmitter exactly matches the one configured in the receiver's WebUI. • Firmware Mismatch: The firmware version on the receiver must be compatible with your transmitter's ExpressLRS firmware. Update or downgrade the receiver's firmware via Wi-Fi to match. • Binding Mode Not Activated: Ensure you power cycle the receiver three times quickly to enter binding mode (rapid LED flash). • Power Issue: Verify the receiver is receiving stable 5V power. Check solder joints.
Poor Range or Signal Loss	• Antenna Placement: Ensure the antenna is not obstructed by carbon fiber, metal, or other electronic components. Position it optimally for clear line-of-sight. • Damaged Antenna: Inspect the UFL T antenna for any physical damage. Replace if necessary. • RF Interference: Keep the receiver away from noisy electronic components (e.g., ESCs, VTXs). • Transmitter Power: Ensure your transmitter's ExpressLRS module is set to an appropriate power level for your flying environment.
Cannot connect to Wi-Fi WebUI	• Receiver Not in Wi-Fi Mode: Ensure the receiver is powered on and has been put into Wi-Fi mode (usually after a few seconds of no binding activity, or specific power cycles). • Incorrect IP Address: Confirm you are navigating to http://10.0.0.1. • Firewall/Antivirus: Temporarily disable any firewall or antivirus software on your PC that might block the connection. • Device Compatibility: Try connecting from a different device (e.g., another phone or computer).

8. WARRANTY AND SUPPORT

For specific warranty terms and conditions related to your RadioMaster RP1 ELRS Nano Receiver, please refer to the documentation provided with your purchase or visit the official RadioMaster website. Warranty coverage typically addresses manufacturing defects.

For technical support, firmware downloads, and additional resources, please visit the official RadioMaster support page or the ExpressLRS project's official documentation. These resources provide comprehensive guides and community forums

that can assist with advanced configurations and troubleshooting.

Official ExpressLRS Project: <https://www.expresslrs.org/>

RadioMaster Official Website: <https://www.radiomasterrc.com/>

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