

## RadioMaster RP2

# RadioMaster RP2 ExpressLRS 2.4GHz Nano Receiver User Manual

Model: RP2

## 1. INTRODUCTION

The RadioMaster RP2 ExpressLRS 2.4GHz Nano Receiver is designed for remote control applications, prioritizing compact size, ease of use, and reliable range. This receiver utilizes open-source ExpressLRS 2.4GHz firmware, providing advanced features and performance expected by modern pilots.

Developed around the ESP8285 MCU and SX1280IMLTRT RF Chip, the RP2 offers both LoRa and FLRC 2.4GHz RF links, ensuring excellent range and minimal latency. Its integrated WiFi capability allows for convenient firmware updates without needing to remove the receiver from your craft. Binding is simplified through a bind phrase, eliminating the need for physical bind plugs or complex button sequences during power-up.

## 2. KEY FEATURES

- Utilizes ExpressLRS 2.4GHz open-source firmware.
- Equipped with ESP8285 MCU and SX1280IMLTRT RF Module.
- Supports LoRa and FLRC 2.4GHz RF links for extended range and low latency.
- Integrated WiFi for convenient firmware updates.
- Simplified binding process using a bind phrase.
- Compact and lightweight design.
- Improved PCB design for enhanced heat dissipation.
- Optimized solder pads for easier connection.
- Top-mounted LED indicator for clear status visibility.

## 3. SETUP GUIDE

### 3.1 Physical Installation and Wiring

The RP2 receiver requires soldering to your flight controller or power distribution board. Ensure correct polarity and connections to avoid damage.

- **5V:** Connect to a 5V power source on your flight controller.
- **GND:** Connect to a ground pad on your flight controller.
- **RX:** Connect to a TX pad (e.g., TX2) on your flight controller.
- **TX:** Connect to an RX pad (e.g., RX2) on your flight controller.

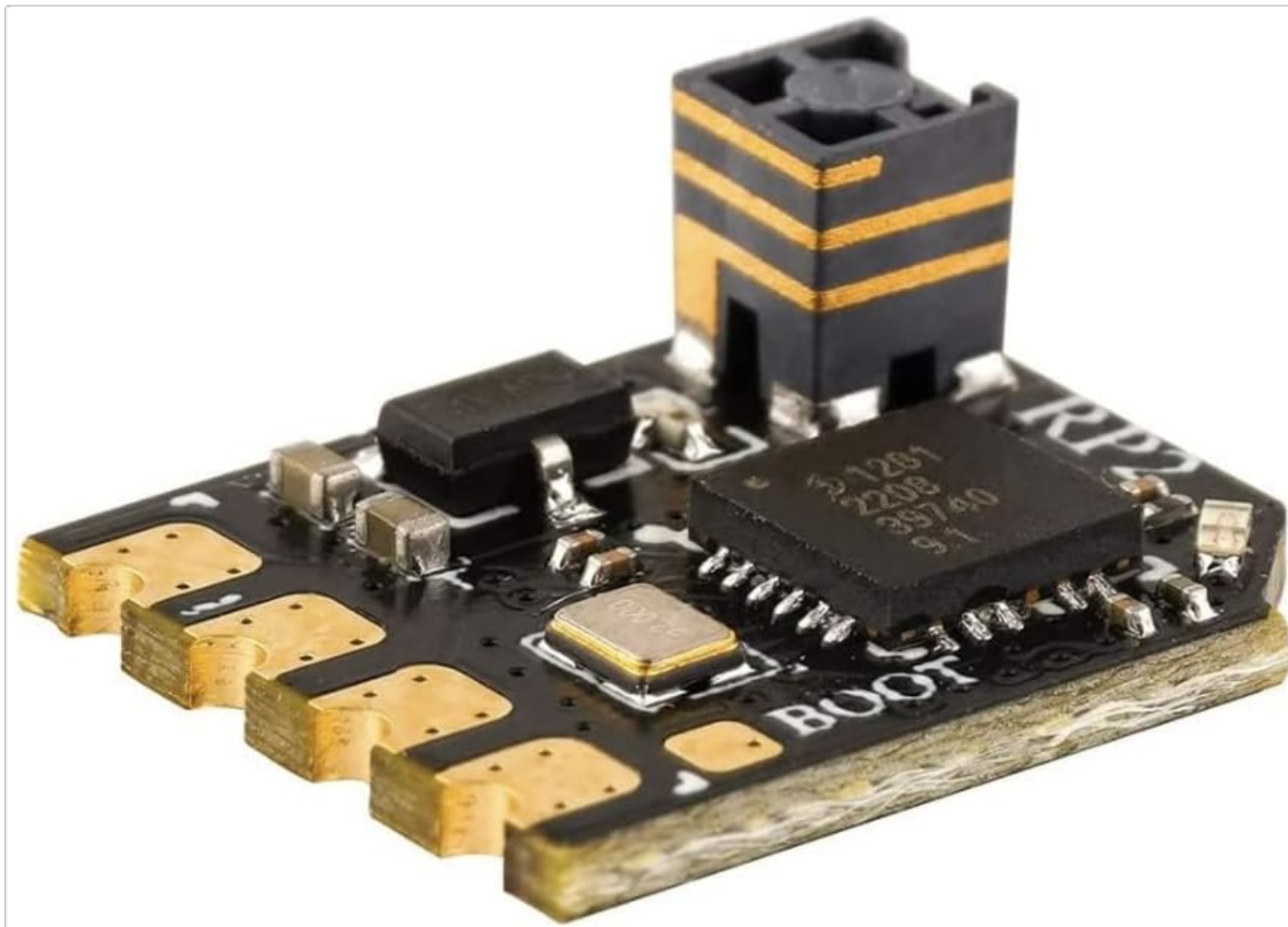


Image: Angled view of the RadioMaster RP2 receiver, highlighting the compact form factor and component layout, including the solder pads for connection.

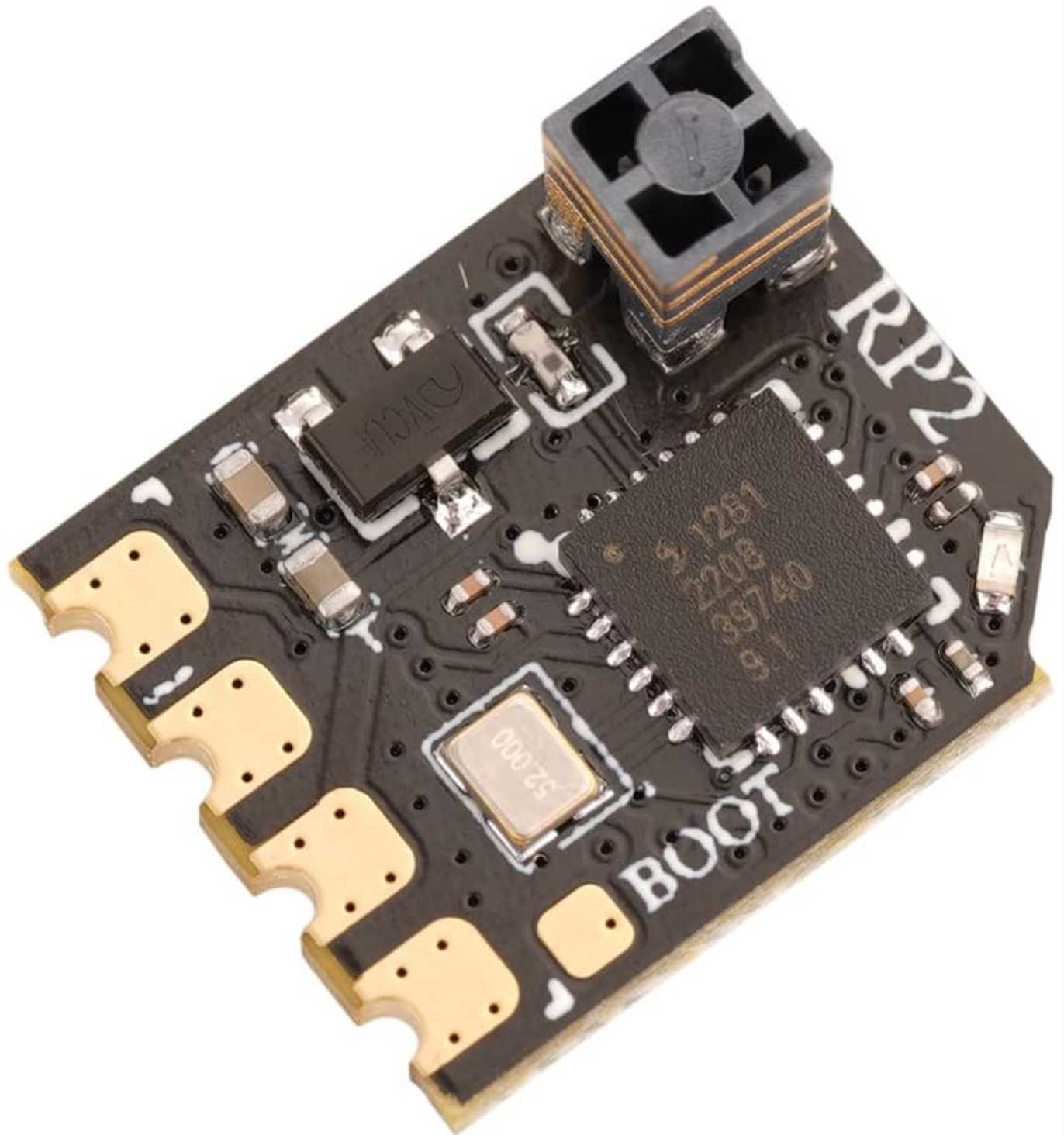


Image: Top-down view of the RP2 receiver, showing the main chip, SMT antenna, and clearly labeled solder pads for wiring.

### 3.2 Firmware Update (Optional)

The RP2 receiver features built-in WiFi for firmware updates. To update:

1. Power on the receiver.
2. The receiver will enter WiFi mode if it is not bound or if it is powered on three times in quick succession.
3. Connect to the receiver's WiFi network (SSID typically 'ExpressLRS\_RX').
4. Navigate to 10.0.0.1 in your web browser.
5. Upload the desired ExpressLRS firmware file.

### 3.3 Binding Process

The RP2 uses a bind phrase for secure and convenient binding with your ExpressLRS transmitter module.

1. Ensure your transmitter module is configured with the same ExpressLRS firmware version and bind phrase as the receiver.
2. Power on the RP2 receiver.
3. If the receiver is not already bound, its LED will flash slowly, indicating it is ready for binding.
4. On your transmitter, initiate the binding process (usually through the ExpressLRS Lua script or menu).
5. The receiver's LED will turn solid once successfully bound.

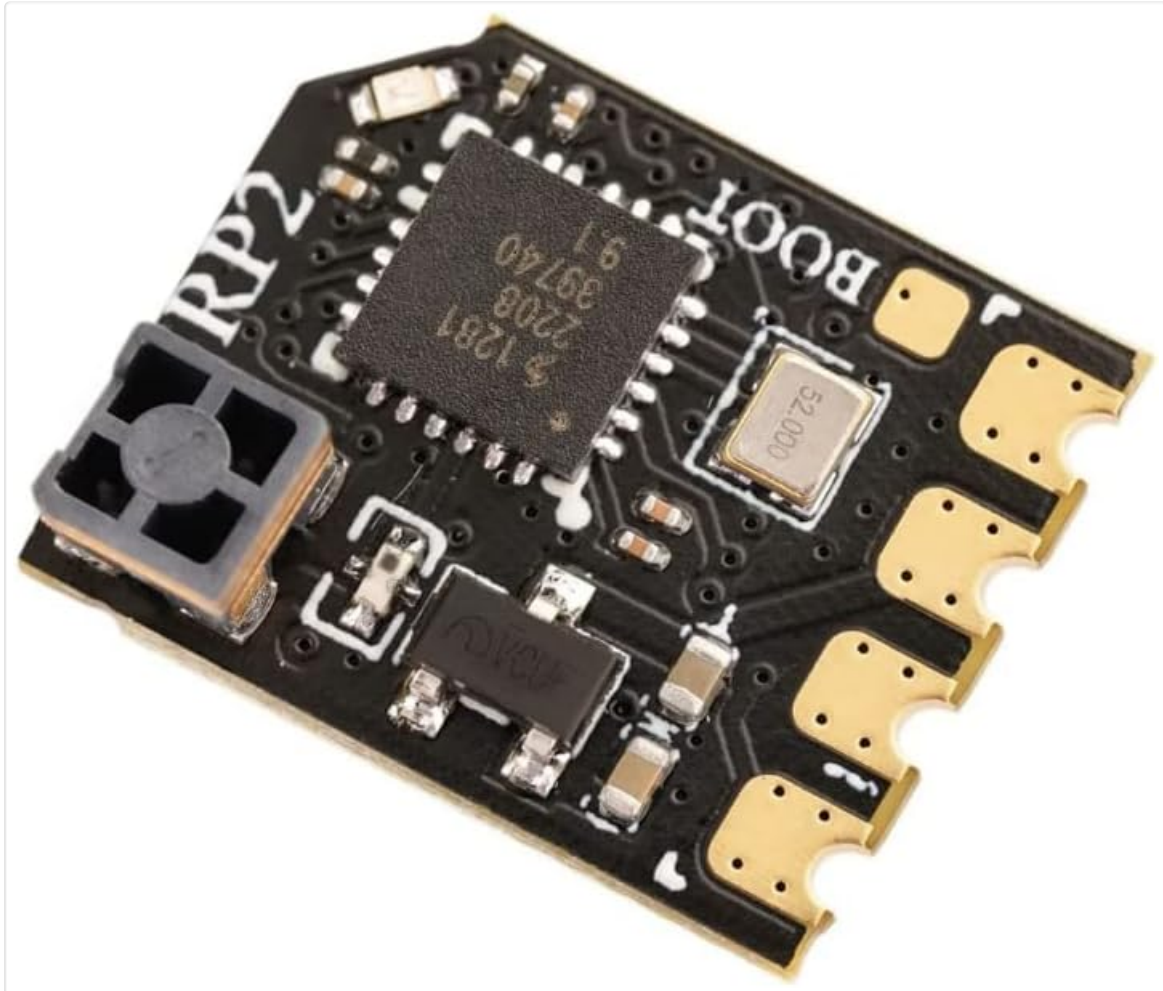


Image: Another top-down view of the RP2 receiver, emphasizing the 'BOOT' pad, which can be used for specific firmware flashing procedures if WiFi is not accessible.

## 4. OPERATION

Once the RP2 receiver is successfully bound to your transmitter, it will automatically establish a connection upon power-up. The LED indicator provides status information:

- **Solid LED:** Indicates a successful connection to the transmitter.
- **Slow Flashing LED:** Indicates the receiver is waiting for a connection or is in bind mode.
- **Fast Flashing LED:** May indicate a firmware update mode or an error state.

Ensure your flight controller is configured to receive control signals via the serial port connected to the receiver (e.g., CRSF protocol for ExpressLRS).

## 5. MAINTENANCE

The RadioMaster RP2 receiver is a robust electronic component, but proper care ensures its longevity and reliable performance:

- **Keep Clean:** Avoid dust, dirt, and moisture accumulation. Use a soft, dry brush or compressed air for cleaning if necessary.
- **Physical Protection:** While compact, protect the receiver from physical impacts. Consider using heat shrink tubing or a protective case if exposed.
- **Wiring Integrity:** Periodically inspect solder joints and wiring for any signs of wear, corrosion, or damage.
- **Temperature:** Operate the receiver within its specified temperature range. Ensure adequate airflow if installed in an enclosed space.

## 6. TROUBLESHOOTING

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- **Receiver LED not lighting up:** Check power connections (5V and GND). Ensure correct polarity.
- **Receiver LED flashing slowly, not binding:**
  - Verify the bind phrase on your transmitter matches the receiver.
  - Ensure both receiver and transmitter are running compatible ExpressLRS firmware versions.
  - Confirm the transmitter module is powered on and transmitting.
- **No control input on flight controller:**
  - Check RX and TX wiring to the flight controller.
  - Verify the UART port on the flight controller is correctly configured for serial RX and the CRSF protocol in your flight controller firmware (e.g., Betaflight, ArduPilot).
  - Ensure the receiver is successfully bound (solid LED).
- **Short range or signal loss:**
  - Ensure the receiver's SMT antenna is not obstructed by carbon fiber or other conductive materials.
  - Check for sources of interference near the receiver.
  - Verify the transmitter's power output settings.

## 7. SPECIFICATIONS

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Image: Bottom-up angled view of the RP2 receiver, showing the ESP8285 chip and additional components on the underside.

| Specification                 | Detail               |
|-------------------------------|----------------------|
| Item Name                     | RP2 Nano Receiver    |
| Type                          | ISM                  |
| MCU                           | ESP8285              |
| RF Module                     | SX1280IMLTRT         |
| Antenna                       | On Board SMT Antenna |
| Frequency Range               | 2400 MHz to 2480 MHz |
| Maximum Receive Refresh Rate  | 500Hz / F1000Hz      |
| Minimum Receiver Refresh Rate | 25Hz                 |
| Working Voltage               | 5V                   |
| Weight                        | 0.55g                |
| Dimension                     | 13mm x 11mm x 7mm    |

## 8. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the official RadioMaster website or contact your authorized dealer. Keep your proof of purchase for any warranty claims.

**ASK A QUESTION ABOUT THIS MANUAL**

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question and use this page’s manual context to help answer it.

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Anonymous

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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.

Submit question