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HAPPYMODEL EP1 RX

Happymodel ELRS PP 2.4GHz SX1280 EXPRESSLRS Nano Long Range Receiver (EP1 RX) User Manual

1. INTRODUCTION

The Happymodel 2.4GHz ELRS nano series receiver is an open-source program based on ExpressLRS. This manual specifically covers the EP1 RX model, which utilizes an STM32L432KBU6 MCU and SX1280 RF chip. It features a built-in ceramic antenna, contributing to its ultra-light and small size. The EP1 receiver is designed for low-latency and high-refresh-rate radio frequency communication, making it suitable for FPV racing and long-range FPV applications, especially for tiny whoops.

The EP1 receiver is an ESP8285 version of the Nano 2.4GHz receiver, sharing the same RF module as the PP RX and using an ESP8285 MCU. Firmware upgrades can be performed via Wi-Fi.



Figure 1: Happymodel ELRS EP1 RX receiver module with two dipole antennas. This image displays the compact receiver and its two attached antennas, illustrating the complete unit.

2. SETUP: BINDING PROCEDURE

Follow these steps to bind your EP1 receiver to your radio transmitter:

1. **Power Cycle for Binding Mode:** Supply power to the EP1 receiver. Wait until the LED on the receiver turns off, then immediately disconnect the power. Repeat this power cycle process two more times. On the third power-up, the LED light will begin to double-flash, indicating that the receiver has entered binding mode.
2. **Transmitter Configuration:** Insert the ES24TX module or another compatible DIY 2.4G ELRS TX module into your radio transmitter. Configure the External RF mode to CRSF protocol.
3. **Access ELRS Menu:** Access the ELRS menu from your radio's system settings. (Note: You may need to copy the ELRS.LUA file to the SD-Card tools first).
4. **Initiate Binding:** Within the ELRS menu, select and press the [Bind] option. If the binding is successful, the LED on the receiver module will become solid.

EP1 RX connection diagram

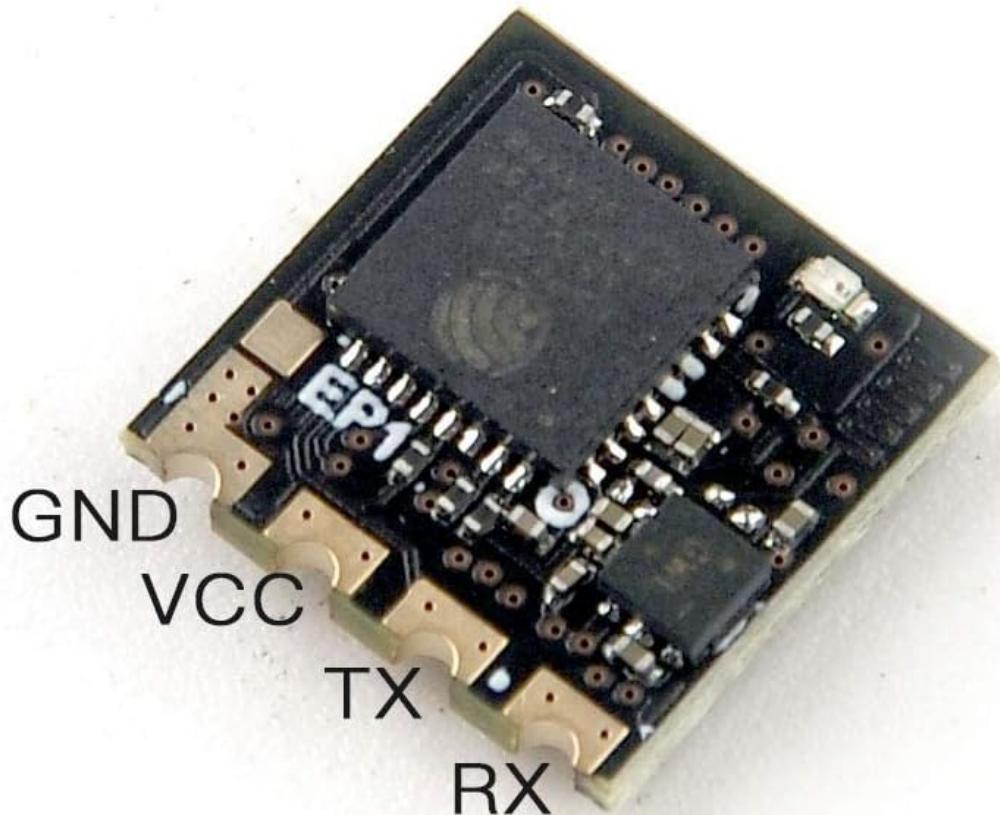


Figure 2: EP1 RX connection diagram. This image clearly labels the Ground (GND), Voltage Common Collector (VCC), Transmit (TX), and Receive (RX) pads on the EP1 receiver, indicating where to solder connection wires.

3. OPERATING: LED STATUS INDICATORS

The LED on the EP1 receiver provides important status information:

- **Solid LED:** Indicates successful binding or an established connection with the transmitter.
- **Double-Flash LED:** Indicates the receiver is in binding mode, awaiting a connection from the transmitter.
- **Slow Flash LED:** Indicates no signal connection from the transmitter module.
- **Fast Flash LED:** Indicates the receiver is in Wi-Fi hotspot mode. In this mode, you can connect to the receiver's Wi-Fi network and upgrade its firmware by visiting 10.0.0.1 (password: expresslrs) in a web browser.

4. SPECIFICATIONS

- **Type:** ISM
- **MCU:** ESP8285
- **RF Module:** SX1280IMLTRT
- **Antenna:** Omnidirectional, built-in ceramic
- **Frequency Range:** 2400 MHz to 2500 MHz
- **Maximum Receive Refresh Rate:** 500Hz
- **Minimum Receiver Refresh Rate:** 25Hz
- **Working Voltage:** 5V
- **Weight:** 0.42 grams (without external antenna, if applicable)
- **Dimension:** 10mm x 10mm x 6mm
- **Peak Gain:** 2.23dB



Figure 3: Happymodel ELRS EP1 RX receiver on a digital scale. This image demonstrates the ultra-light weight of the receiver, measuring 0.42 grams.

IPEX/IPX/U.FL

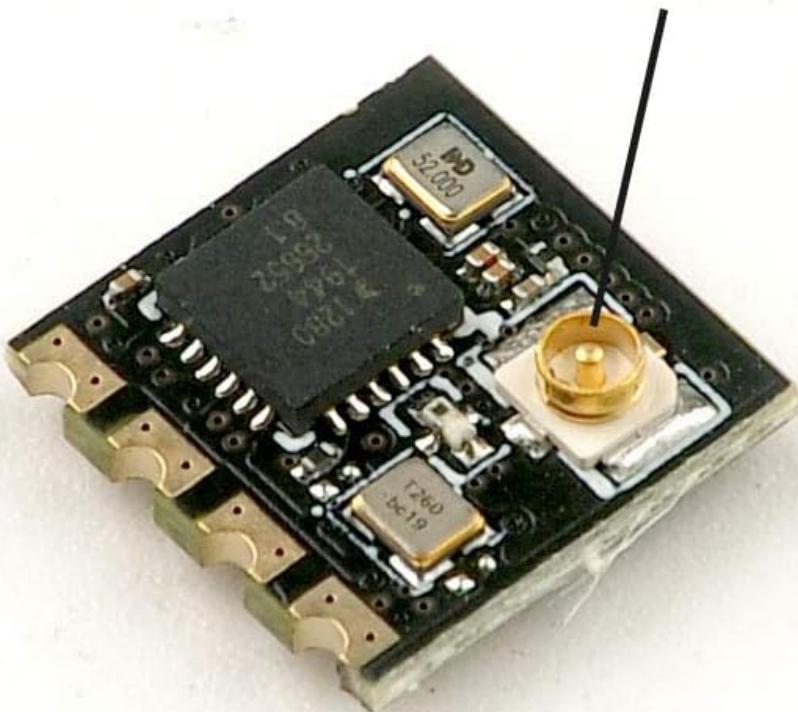


Figure 4: Close-up of the IPEX/IPX/U.FL antenna connector. This detailed view highlights the small connector used for attaching external antennas to the receiver.

5. MAINTENANCE: FIRMWARE UPGRADE

The EP1 receiver supports firmware upgrades via Wi-Fi. To perform an upgrade:

1. Ensure the receiver is powered on and its LED is flashing fast, indicating Wi-Fi hotspot mode.
2. Connect your computer or mobile device to the Wi-Fi network broadcast by the receiver.
3. Open a web browser and navigate to <http://10.0.0.1>.
4. Enter the password "expresslrs" when prompted.
5. Follow the on-screen instructions to upload and flash the new firmware.

6. TROUBLESHOOTING

Most common issues can be diagnosed by observing the receiver's LED status. Refer to the "Operating: LED Status Indicators" section (Section 3) for detailed explanations of each LED pattern. If the receiver does not enter binding mode or fails to connect, re-verify the power cycling steps and transmitter configuration.

7. SUPPORT

For additional support, product information, or to explore other products, please visit the official Happymodel store:

[Visit the HAPPYMODEL Store on Amazon](#)

