



ExpressLRS

PR02 Receiver User Manual



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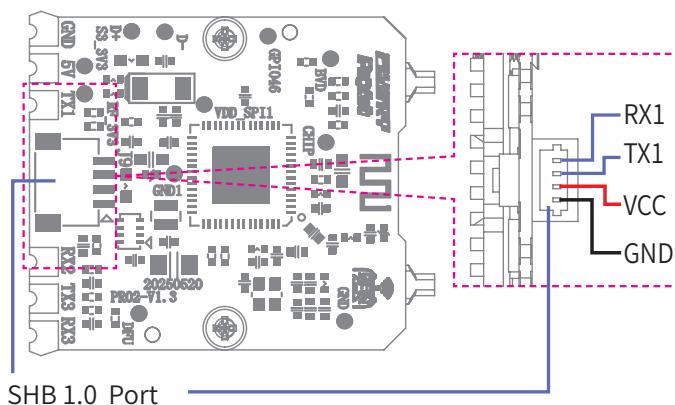
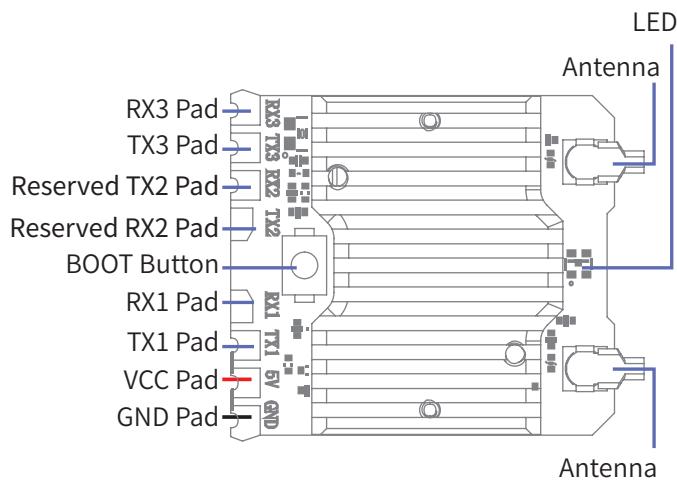
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1. Receiver Introduction

The PR02 is a 16-channel ExpressLRS micro receiver featuring two T-shaped button antennas. It supports True Diversity and Gemini modes, and offers bidirectional communication. Outputting either CRSF or S.BUS signals, it includes two TCXOs and is designed for fixed-wing aircraft, racing drones, and other RC models. Additionally, it can be configured as a RF module.

2. Receiver Overview



3. Installation

Note: For optimal signal reception: Point the receiver antenna directly toward the transmitter and keep it away from conductive materials (such as metal rods, carbon materials, etc.). Additionally, maintain a minimum 1 cm gap between the antenna and conductive objects to prevent interference.

After soldering wires to the receiver pads, cover the receiver with heat shrink tubing to ensure electrical insulation.

Secure the receiver to a suitable location (e.g., carbon fiber plate on an racing drone) using 3M tape for vibration-resistant attachment. Alternatively, you can use a cable tie to fasten it to the model, ensure that the force applied is controlled to avoid damaging the receiver or the model.

4. LED Status

The status LED indicates power and operational states of the receiver:

- Off: The receiver is not powered on.
- Two-flash-one-off in Orange: The receiver is in the binding mode.
- Solid On: The receiver is connected to a transmitter.
- Slow Flashing: The receiver is attempting to establish a connection with the transmitter.
- Fast Flashing in Red : The receiver detects no RF chip.
- Alternating Rapid Flashing Between Green and Orange: The receiver enters Wi-Fi mode.
- Three-flash-one-off in Orange: The receiver is connected to a transmitter but has a mismatched model-match configuration.



5. Binding

5.1 Binding

Binding the PR02 receiver to an ExpressLRS transmitter or RF module:

1. Turn off the transmitter (for example, using PA01 with ELRS firmware).

2. Put the receiver into binding mode.

Power cycle the receiver 3 times rapidly (each cycle \leqslant 1 second):

- Power on the receiver (LED lights up).
- Power it off within 1 second.
- Repeat the above cycle two more times, for a total of three cycles, each interval \leqslant 1 second.
- Once the LED operates in an orange two-flash-one-off state repeatedly, the receiver will enter the binding mode.

3. Turn on the transmitter and put it into binding mode.

- Main interface > [System Setup] > [Hardware] > [Internal RF] > set mode to CRSF.
- [System Setup] > [Tools] > [ExpressLRS] > select Bind

4. When the receiver LED turns solid on, binding is successful.

5. Confirm that the transmitter and the receiver are operating correctly; if not, repeat the steps above.



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5.2 Binding Phrase Binding

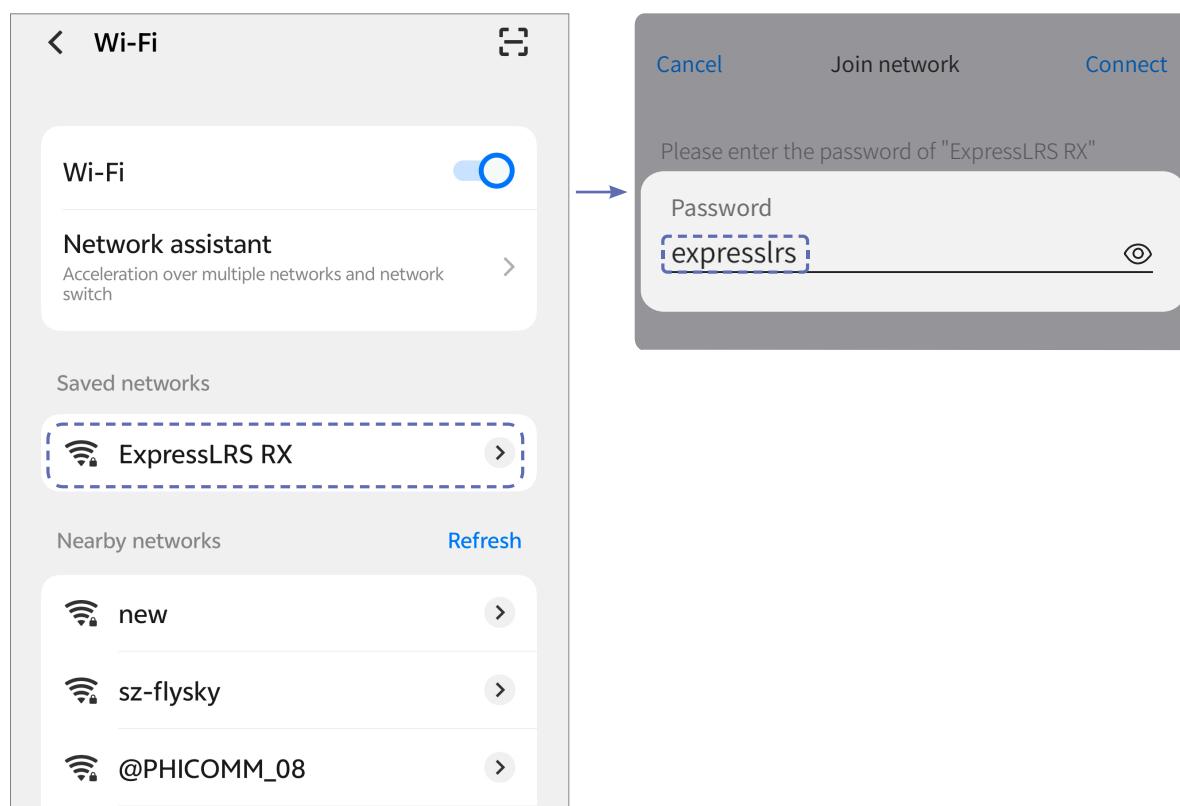
The PR02 receiver also supports BINDING PHRASE binding. When the receiver enters Wi-Fi mode and connects to the ELRS web interface, the BINDING PHRASE can be set through it. It can be any combination of 8 characters, but you must ensure that the BINDING PHRASE on the transmitter /RF module and the receiver are the same.

Note: It is recommended to use BINDING PHRASE binding way for the transmitter and the receiver. All receivers with the same BINDING PHRASE will automatically connect to the transmitter with the same BINDING PHRASE upon power-on. Do not power on multiple receivers with the same BINDING PHRASE at the same time to avoid potential hazards.

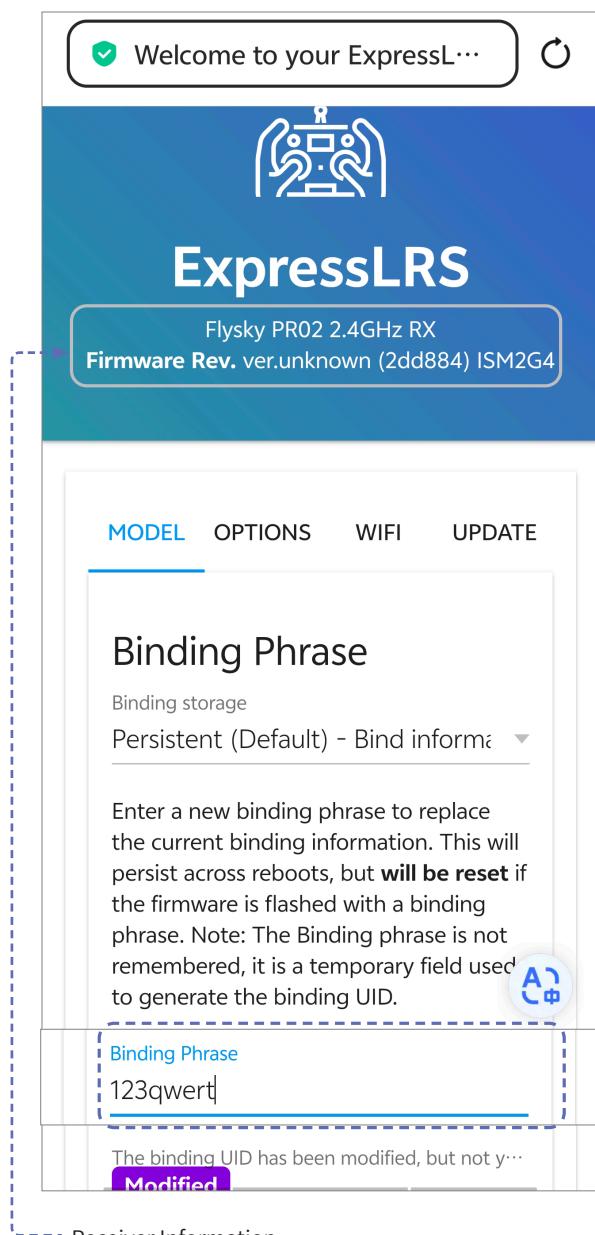
Here are the steps for setting up a BINDING PHRASE via Wi-Fi (for more methods, please refer to the ELRS official website).

1. Setting the Receiver BINDING PHRASE:

- With the receiver powered on and left unconnected from the transmitter for 60 seconds. The LED will change from slow flashing to alternating rapid flashing between green and orange, indicating that the receiver has entered Wi-Fi mode.
- On your smartphone, connect to the Wi-Fi network named "ExpressLRS RX" with the password "expresslrs".



- After a successful connection, the webpage will automatically redirect. Select "MODEL", and then enter the desired BINDING PHRASE in the "Binding Phrase" field.



Receiver Information
(Note: The following is for illustrative purposes only.
Please refer to the actual device display.)



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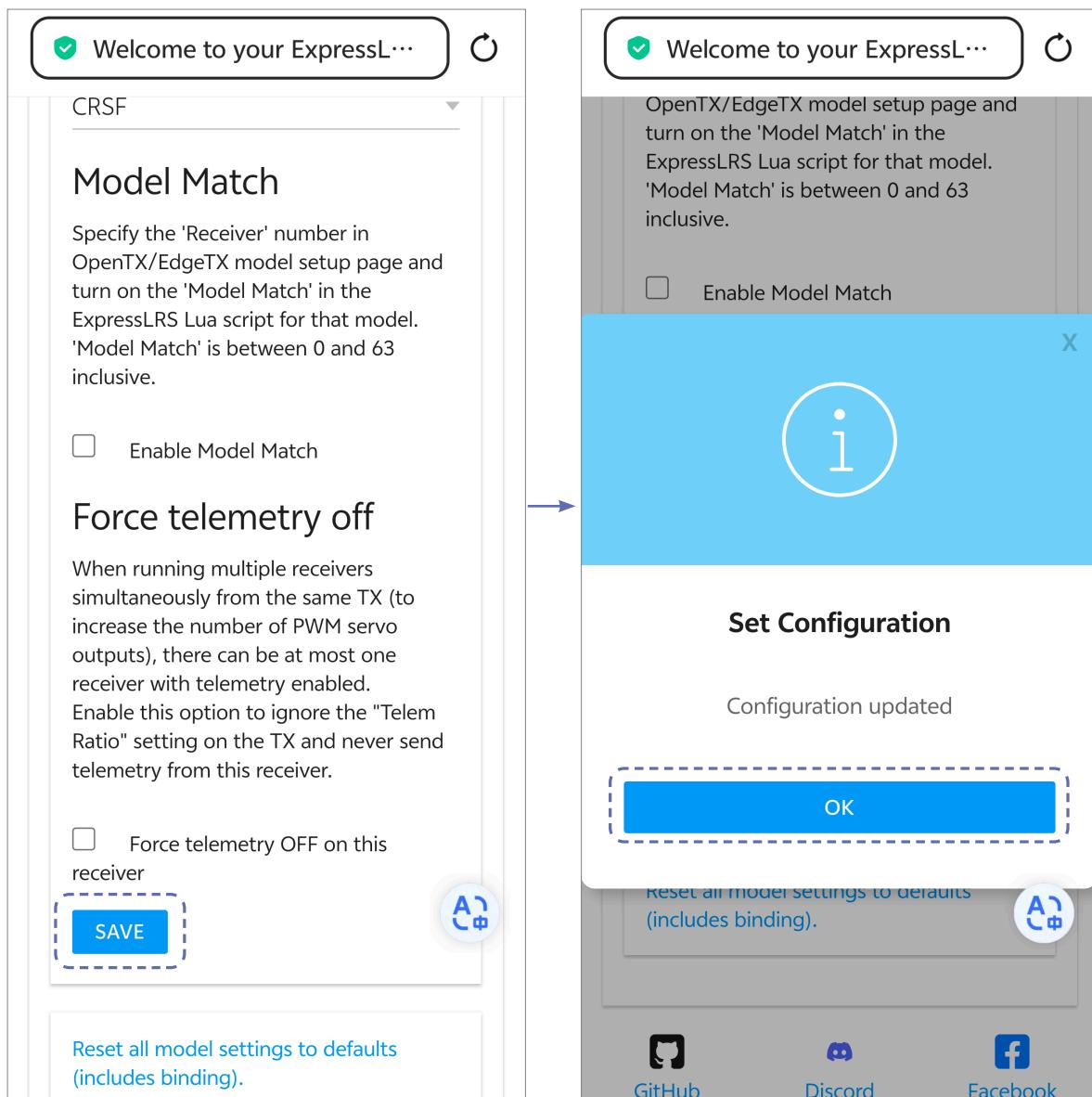


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- Click "SAVE". A prompt will appear; follow the instructions and click "OK".

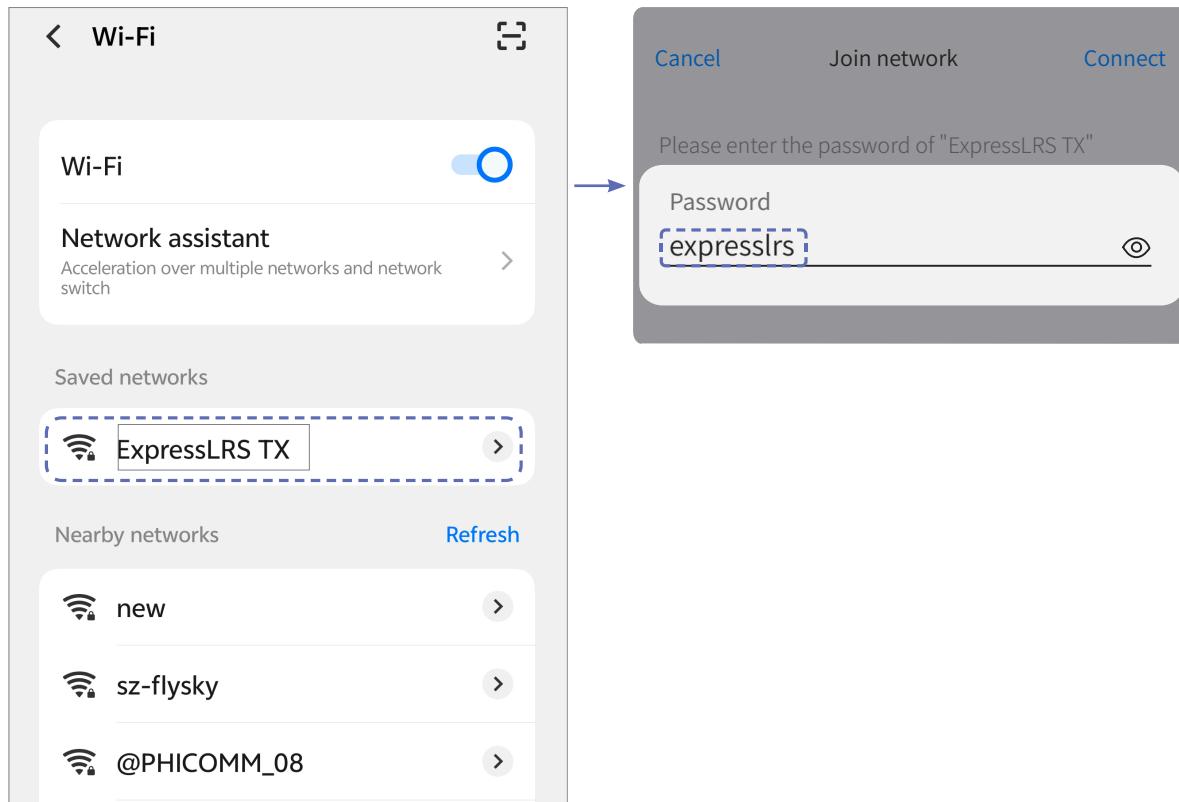


- Restart the receiver to exit Wi-Fi mode.



2. Setting the Transmitter BINDING PHRASE, (for example, using PA01 with ELRS firmware):

- On the transmitter, navigate to [System Setup] > [Tools] > [ExpressLRS] > [WiFi Connectivity] and select [Enable WiFi] to put the transmitter into Wi-Fi mode.
- On your smartphone, reconnect to the transmitter's Wi-Fi network named "ExpressLRS TX" with the password "expresslrs".



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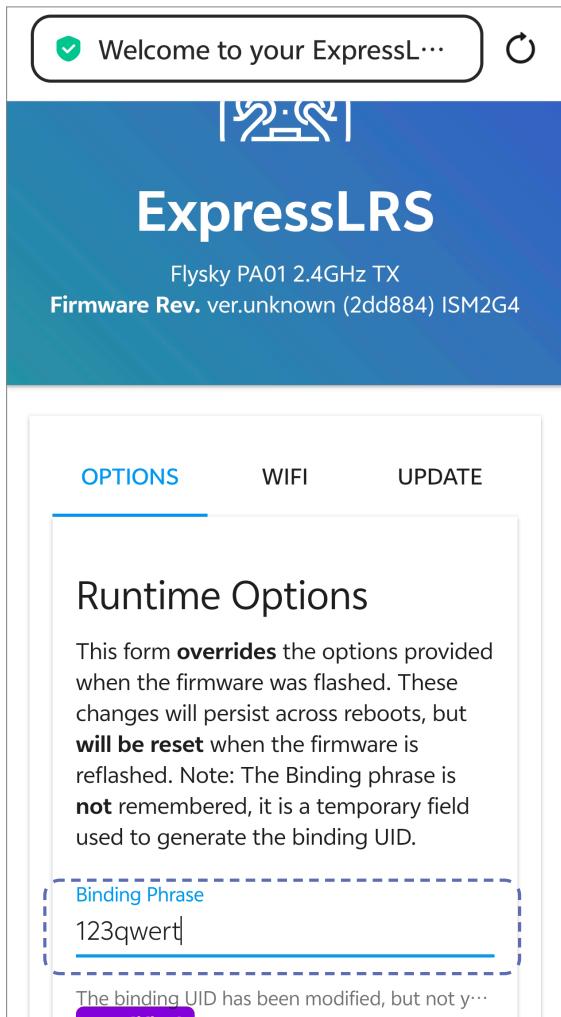


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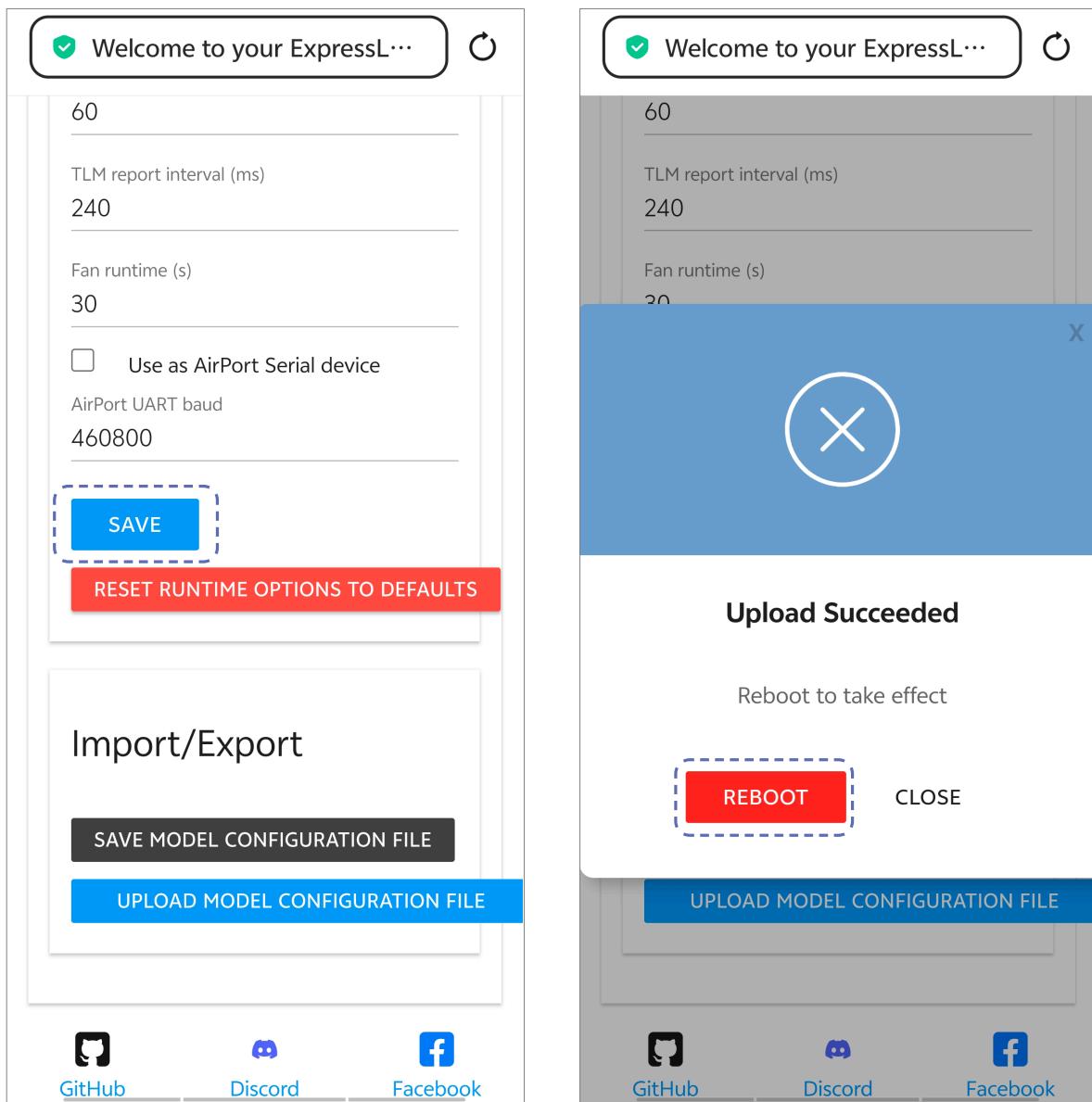


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- After a successful connection, the webpage will automatically redirect. Select "MODEL", and then enter the same BINDING PHRASE in the "Binding Phrase" field.



- Click "SAVE". A prompt will appear; follow the instructions and click "REBOOT". The transmitter will then exit Wi-Fi mode.



3. Then the transmitter and the receiver will automatically connect. At this point, the receiver's LED will remain solid on.



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6. Firmware Update

The receiver's firmware supports multiple update methods. For the detailed, please visit the ELRS official website. This manual covers only the following two: wireless update via Wi-Fi mode and wired update via a serial port.

6.1 Update via Wi-Fi mode

After powering on the receiver, if it fails to establish communication with the transmitter or if the transmitter is turned off, the receiver will automatically enter Wi-Fi flashing mode after approximately 60 seconds, indicated by a rapidly flashing LED. The default waiting time is 60 seconds, which can be adjusted by compiling the firmware in the ExpressLRS Configurator. Download the ExpressLRS Configurator here: <https://github.com/ExpressLRS/ExpressLRS-Configurator/releases>

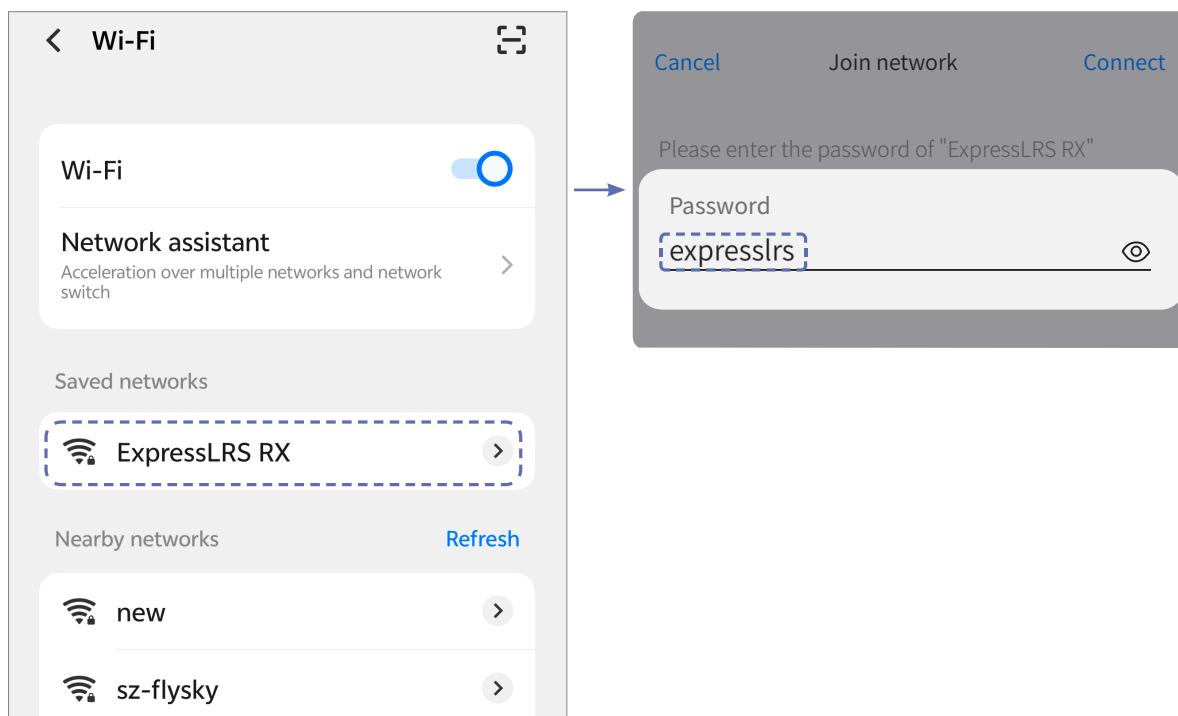
Once the receiver enters Wi-Fi mode, firmware updates can be performed using a computer or smartphone equipped with a Wi-Fi module.

6.1.1 Update via Smartphone Wi-Fi

Note: Do not power-cycle or interrupt the process while flashing.

Update Steps via Smartphone:

1. Download the latest firmware file (.bin) from the ELRS official website and save it to the phone.
2. Power on the receiver and wait for 60 seconds. The LED will change from slow flashing to fast flashing, indicating it has entered Wi-Fi mode.
3. On your phone, connect to the Wi-Fi network: Wi-Fi Name: ExpressLRS RX; Wi-Fi Password: expresslrs



4. Once connected, the browser will automatically redirect to a page. Then select "UPDATE".

Welcome to your ExpressL...

ExpressLRS

Flysky PR01 2.4GHz RX
Firmware Rev. ver.unknown (2dd884) ISM2G4

MODEL OPTIONS WIFI **UPDATE**

Binding Phrase

Binding storage
Persistent (Default) - Bind informa... ▾

Enter a new binding phrase to replace the current binding information. This will persist across reboots, but **will be reset** if the firmware is flashed with a binding phrase. Note: The Binding phrase is not remembered, it is a temporary field used to generate the binding UID.

Welcome to your ExpressL...

ExpressLRS

Flysky PR01 2.4GHz RX
Firmware Rev. ver.unknown (2dd884) ISM2G4

MODEL OPTIONS WIFI **UPDATE**

Firmware Update

Select the correct **firmware.bin** for Unified_ESP32C3_2400_RX otherwise a bad flash may occur. If this happens you will need to recover via USB/Serial. You may also download the [currently running firmware](#).

SELECT FIRMWARE FILE

or drop firmware file here



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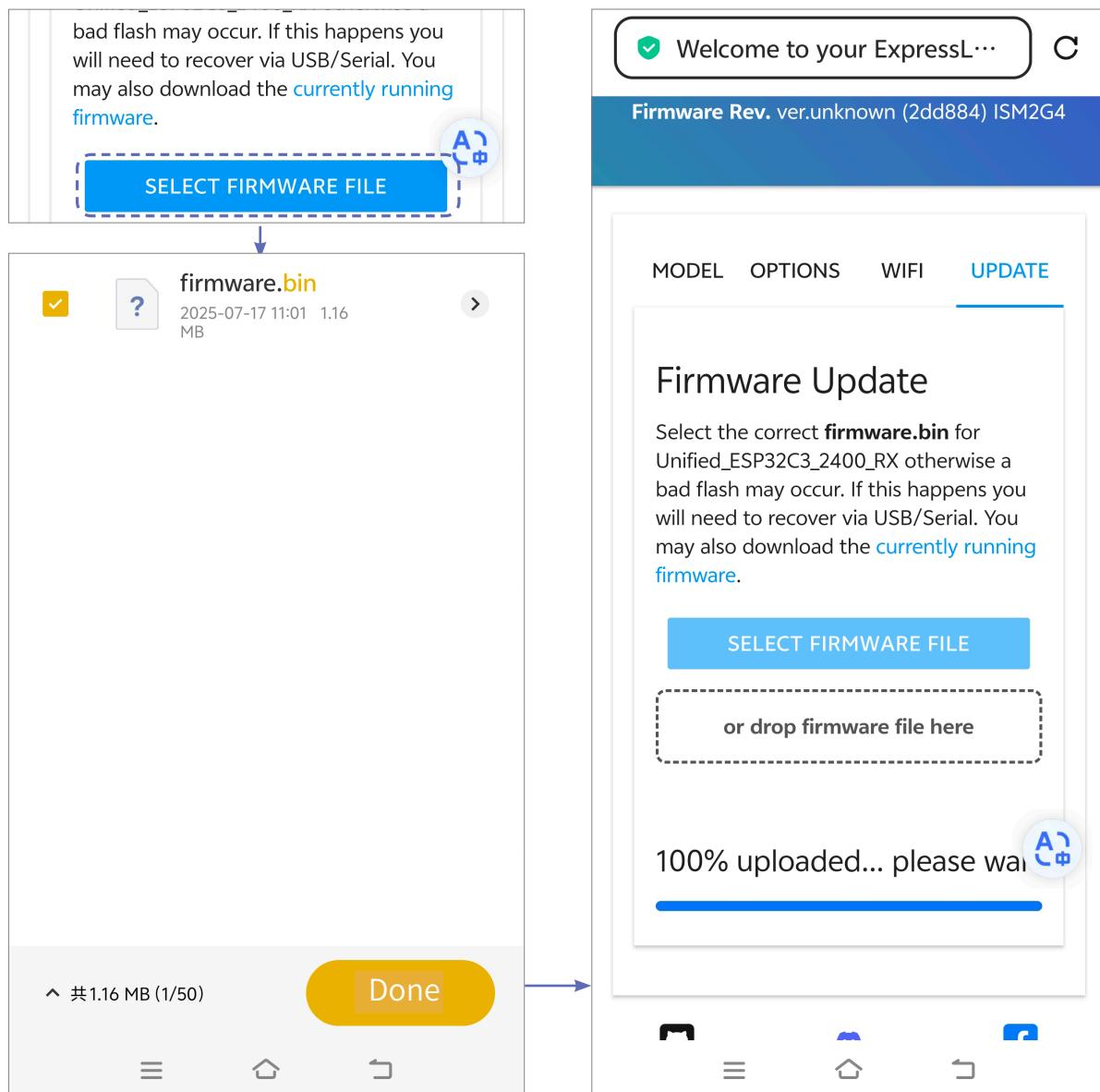


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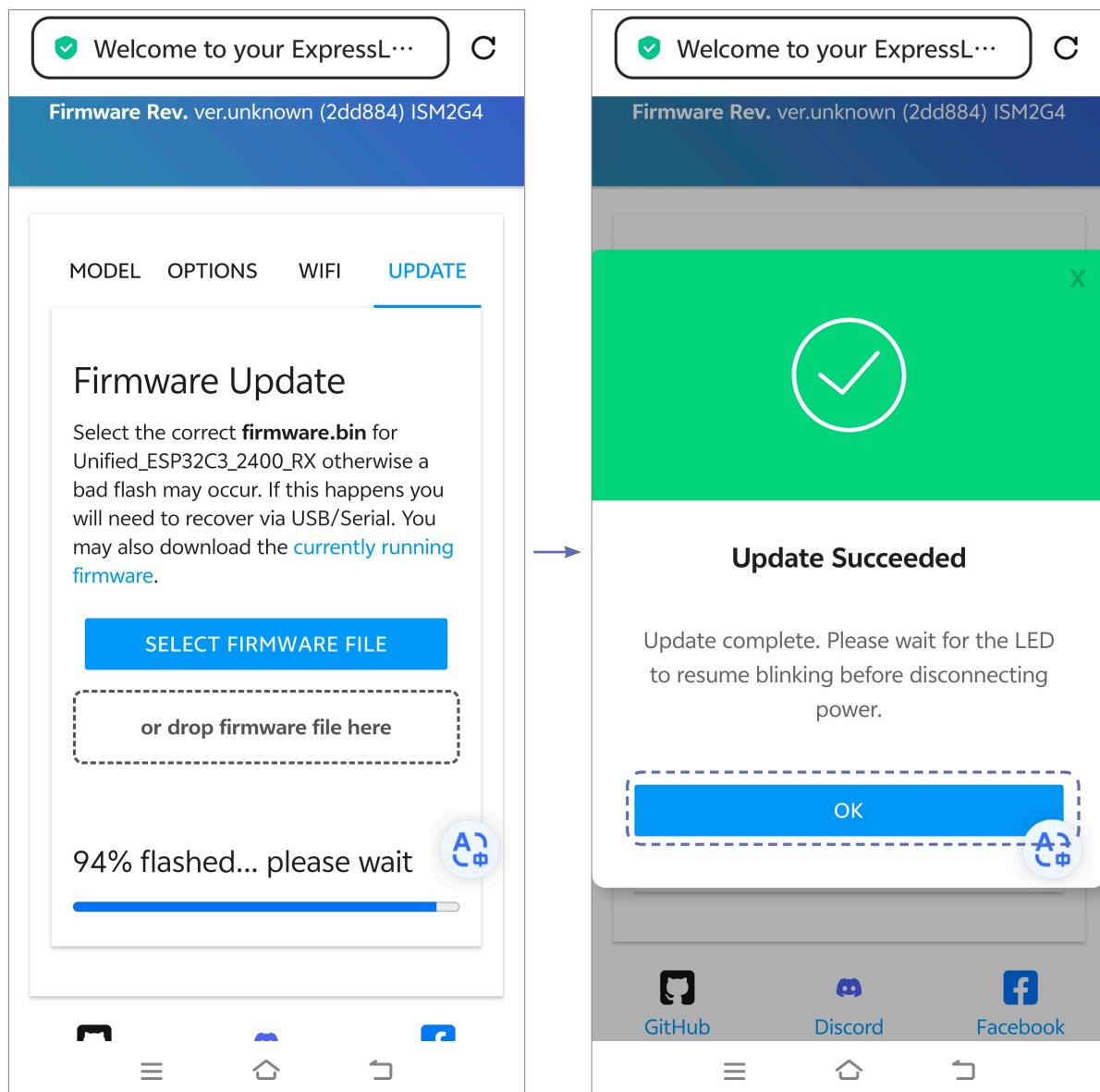


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5. Click "SELECT FIRMWARE FILE", locate the firmware file, and tap "Done" to start the firmware upload and flashing process (automatic).



6. After a successful update, the message "Update Succeeded" will appear. Click "OK" to complete the process. The receiver will then reboot automatically (the LED is in slow flashing mode).



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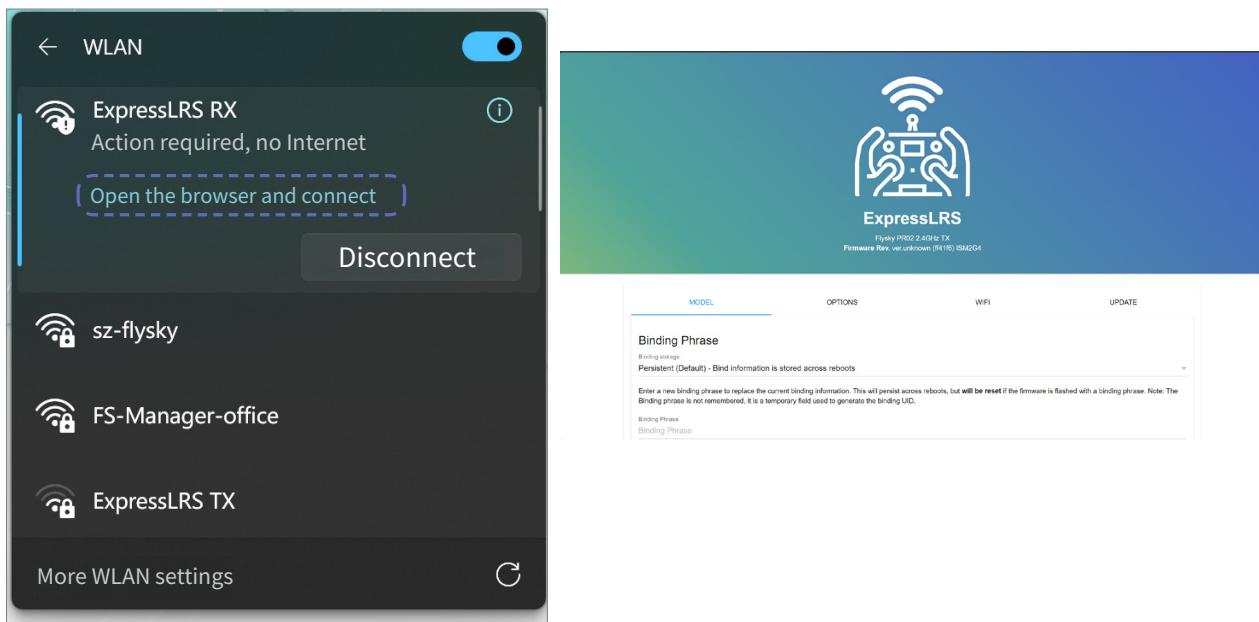
6.1.2 Update via Computer Wi-Fi

The firmware can also be updated using a computer equipped with a Wi-Fi module.

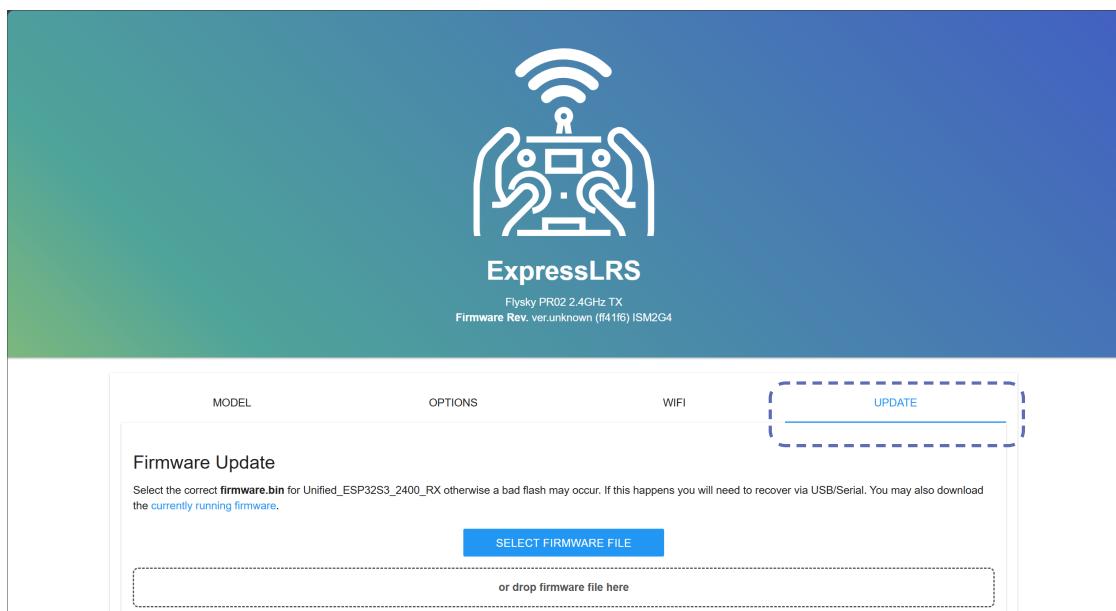
Note: Do not power-cycle or interrupt the process while flashing.

Update Steps:

1. Download the latest firmware file (.bin) from the ELRS official website and save it to the computer.
2. Follow the previous instructions to ensure the receiver enters Wi-Fi mode.
3. Connect via Computer: Wi-Fi Name: ExpressLRS RX, Password: expresslrs; After connecting, click "Open the browser and connect" to automatically access the ExpressLRS page (<http://10.0.0.1>).



4. Select "UPDATE";



5. Click "SELECT FIRMWARE FILE", locate the firmware file, and tap "Done" to start the firmware upload and flashing process (automatic).



Firmware Update

Select the correct [firmware.bin](#) for Unified_ESP32S3_2400_RX otherwise a bad flash may occur. If this happens you will need to recover via USB/Serial. You may also download the [currently running firmware](#).

[SELECT FIRMWARE FILE](#)

or drop firmware file here

82% uploaded... please wait



Firmware Update

Select the correct [firmware.bin](#) for Unified_ESP32S3_2400_RX otherwise a bad flash may occur. If this happens you will need to recover via USB/Serial. You may also download the [currently running firmware](#).

[SELECT FIRMWARE FILE](#)

or drop firmware file here

22% flashed... please wait



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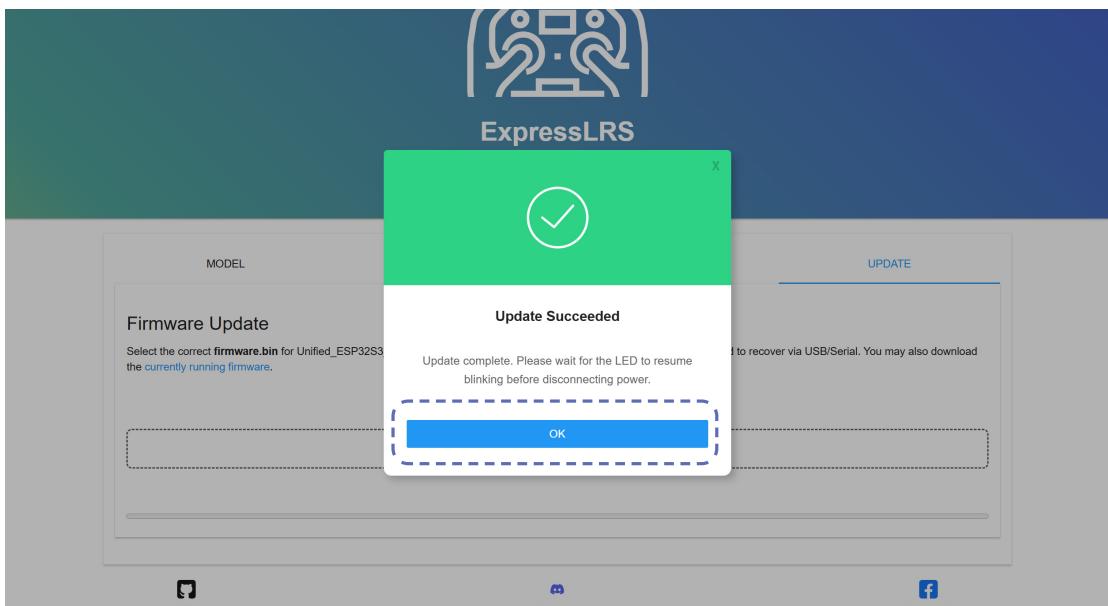


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6. After a successful update, the message "Update Succeeded" will appear. Click "OK" to complete the process. The receiver will then reboot automatically (the LED is in slow flashing mode).



6.2 Update via wired serial port

This receiver firmware also supports wired updates via serial connection. Connect the receiver to a computer using a USB-TTL adapter or a flight controller, and then update the firmware through the ExpressLRS Configurator tool.

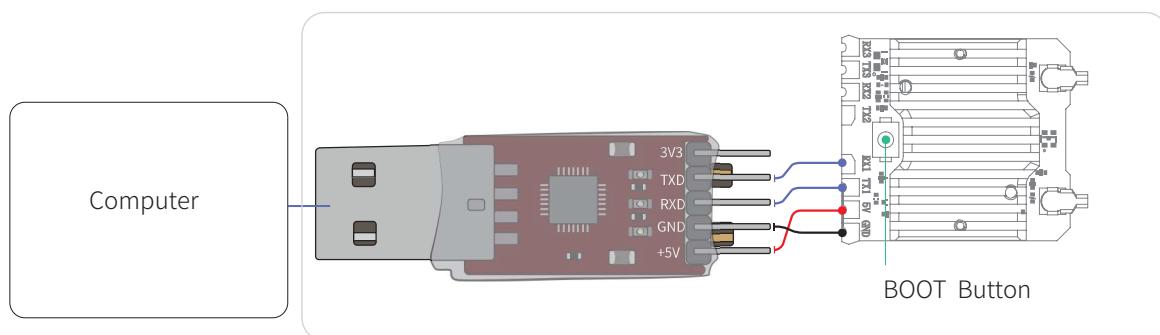
6.2.1 Update via USB-TTL Tool

Note: Do not power-cycle or interrupt the process while flashing.

Update Steps:

1. Enter Serial Update Mode and Connect:

- Enter Update Mode: Connect the BOOT pad to the GND pad. This forces the receiver into serial update mode.
- Connect Hardware: Refer to the connection diagram below. Connect the receiver to a USB-to-Serial (USB-TTL) adapter. Then connect the adapter to a USB port on your computer. Note: The receiver's LED will turn off at this stage.



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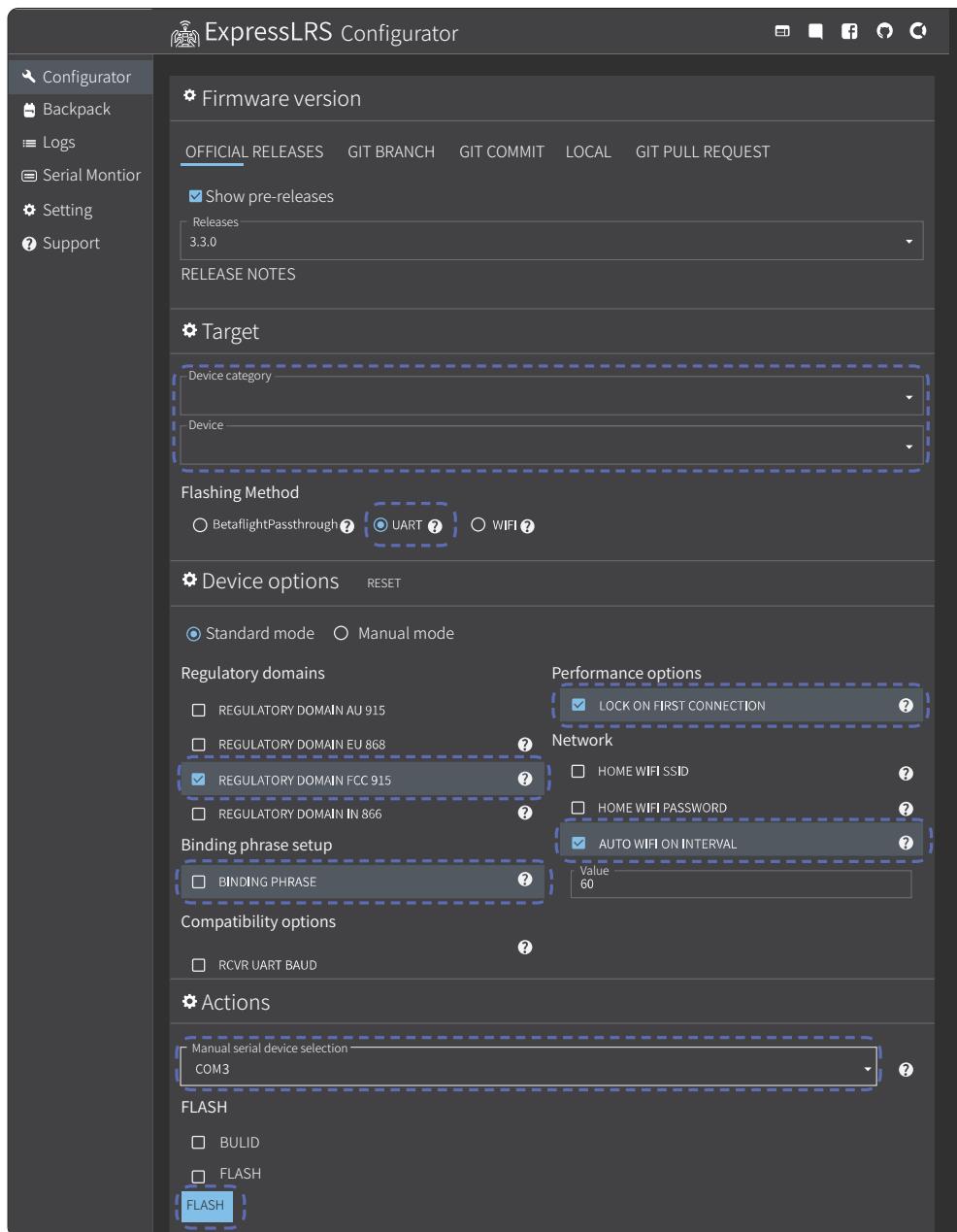


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2. Open the ExpressLRS Configurator (downloaded from the ELRS official website) on your computer.
3. Configure the parameters by setting the device category and device type, select "UART" as the flashing method, adjust the firmware version, and choose the corresponding COM port recognized by your computer. Then, click "FLASH" to initiate the process. Upon completion, the ExpressLRS Configurator will display a successful message, and the receiver will automatically reboot with its LED in slow flashing mode.

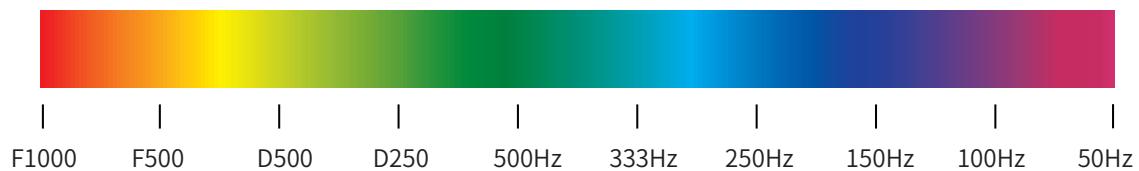


Note: When using the Web Flasher for firmware updates, the receiver can be configured as a RF module, which is described in Section 9: Function Description.



7. RF PACKET RATE

The status LED of the PR02 receiver indicates the transmitter's Packet rate configured via color codes, as shown in the figure.



8. Description of the TX Interface

Default factory settings: TX1 outputs CRSF; TX3 has no output by default; the SHB1.0 interface shares the RX1/TX1 serial port. TX2 is reserved for data output.

It can be set to output S.BUS. After the transmitter and receiver binding is completed, navigate to [System Setup] > [Tools] > [ExpressLRS] > [Other Devices] > [Protocol] / [Protocol2] to configure it.



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9. Function Description

For more information on the functionality, such as configuring parameters via Lua scripts or setting up the device as a RF module using Web Flasher.

9.1 Lua Script Parameters Related

After the receiver is successfully bound to the transmitter, its functional parameters can be configured via the Lua script menu on the transmitter.

After the receiver and the transmitter are bound, you can configure receiver's parameters via the Lua script menu on the transmitter. Available settings include: [Packet Rate], [Telem Ratio], [Switch Mode], [RX Mode], [Link Mode], [Model Match], [>VTX Administrator], [Other Device] (Serial Protocol), etc.

This receiver supports True Diversity mode and Gemini mode.

- True Diversity Mode: The receiver's dual RF chips operate on the same frequency. It intelligently selects the best signal quality for transmission, ensuring optimal reception. The dual-antenna, dual-chip configuration effectively avoids antenna dead zones and provides stable and reliable signal reception.
- Gemini Mode: The dual RF chips in the receiver and transmitter (RF module) operate on different frequencies. Data packets are transmitted simultaneously over these two independent frequencies, significantly enhancing resistance to interference and improving overall connection quality. This mode provides a more stable and reliable communication link. Note: Gemini mode requires a transmitter module that also supports Gemini.

When the packet rate is set to D250 or D500, the system automatically enables DVDA mode. In this mode, data packets are transmitted multiple times for redundancy. When DVDA is used in conjunction with Gemini mode, packet redundancy is doubled, as packets are repeated across two different frequencies. This combination maximizes the reliability and stability of the data link.

Flysky PA01		0/10
Packet Rate	F1000(-104dBm)	
Telem Ratio	Std (1:128)	
Switch Mode	Wide	
Link Mode	Normal	
Model Match	Off (ID: 0)	
> TX Power (100mW)		
> VTX Administrator		
> WiFi Connectivity		
> Backpack		
[BLE Joystick]		
[Bind]		
ver.unknown ISM2G4	2dd884	
> Other Devices		
[---EXIT---]		

Flysky PR02	
Protocol	CRSF
Protocol2	Inverted SBUS
SBUS failsafe	No Pulses
Rx Mode	Diversity
TIm Power	100mW
> Team Race	
Bind Storage	Persistent
[Enter Bind Mode]	
Model Id	Off

Disclaimer: The factory preset transmission power of this product is ≤ 20dBm. Please adjust it in accordance your local laws. The consequences of damage caused by improper adjustments shall be borne by the user.

The following table lists only the options related to the receiver available in the transmitter's Lua script menu. For the most detailed and up-to-date information, please always refer to the official ExpressLRS website.

Transmitter Lua Script Menu	Note	option
Packet Rate	Sets how fast data packets are sent, higher rates send packets more frequently and have lower latency.	50Hz, 150Hz, 250Hz & 500Hz, F500 & F1000, D250 & D500, 100Hz Full & 333Hz Full, K1000, DK250 & DK500
Telem Ratio	Telemetry typically transmits flight controller data by default; for external sensors like GPS coordinates, manual configuration is required, though standard mode suffices for most FPV drones.	Off, 1:128, 1:64, 1:32, 1:16, 1:8, 1:4, 1:2
Switch Mode	The Switch Mode setting controls how channels AUX1-AUX8 are sent to the receiver (the 4 main channels are always 10-bit).	Hybrid, Wide
Link Mode	/	Normal, MAVLink
Model Match	Default: OFF (Function Disabled)	Off, On
>VTX Administrator	VTX Administrator allows you to change your VTX settings directly from your radio, and have those VTX settings be applied to any receiver you connect to.	Band(VTX band), Channel(VTX channel), PwrLv1(VTX power), Pitmode, Send [VTx](sends the configured settings to the receiver and on to the VTX), BACK
>WiFi Connectivity	/	[Enable WiFi] To activate the TX module WiFi mode. [Enable Rx WiFi] To activate the RX module WiFi mode . [Enable Backpack WiFi] To put the TX Backpack into WiFi mode. [Enable VRx WiFi] To activate the VRx Wi-Fi Mode, for details, see: https://www.expresslrs.org/hardware/backpack/backpack-vrx-setup/
[Bind]	Enter Binding Mode on Transmitter and Bind with Receiver.	/
Other Device	These receiver configuration options (e.g., serial output protocol, failsafe, and transmit power regulation settings) become accessible in the transmitter's Lua script menu only after successful binding with the transmitter.	Protocol/Protocol2: The serial output protocol can be set to options such as CRSF, Inverted CRSF, SBUS, or Inverted SBUS, though this receiver only supports CRSF and SBUS. SBUS failsafe: It is used to set the behavior of a receiver using SBUS protocol for output. The following options are available: No Pulses and Last Pos. RX Mode: The RX mode can be set to Diversity or Gemini. Tlm Power: It is used to adjust the telemetry transmit power of the receiver. This receiver supports a maximum configurable power of 250mW. Team Race: The receiver monitors the designated channel signal to determine which model should be activated. Models not selected will automatically enter failsafe mode. The Team Race can be set to Channel or Position. Bind Storage: Persistent - Binding info is kept across power-cycles. Volatile - Binding info is forgotten after a power-cycle. Returnable-Binding info is kept across power-cycles. Enter Bind Mode command: This will put the receiver into Bind Mode. Model ID: This line shows the currently set Model ID for the receiver when Model Matching is enabled. Note: The receiver's Model ID can be configured during firmware flashing via the ExpressLRS Configurator tool.



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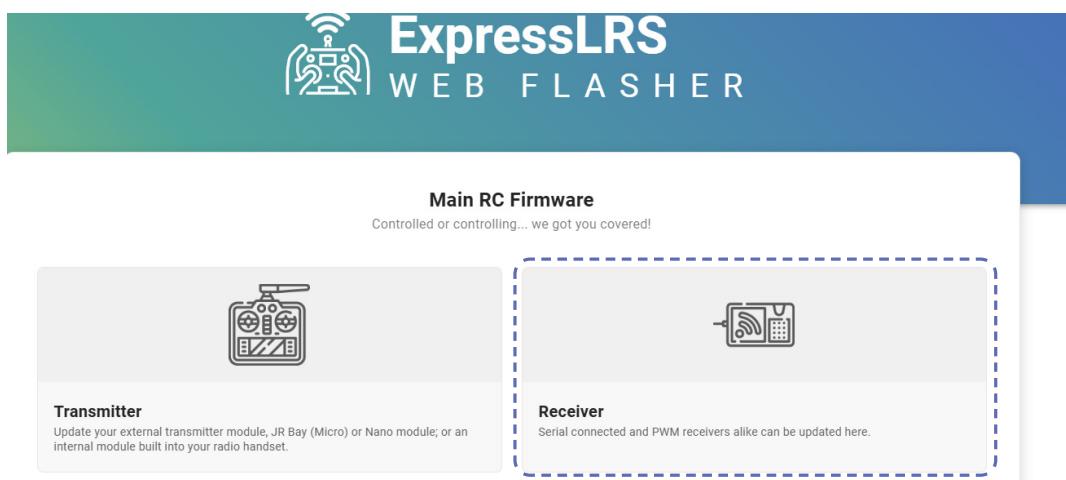


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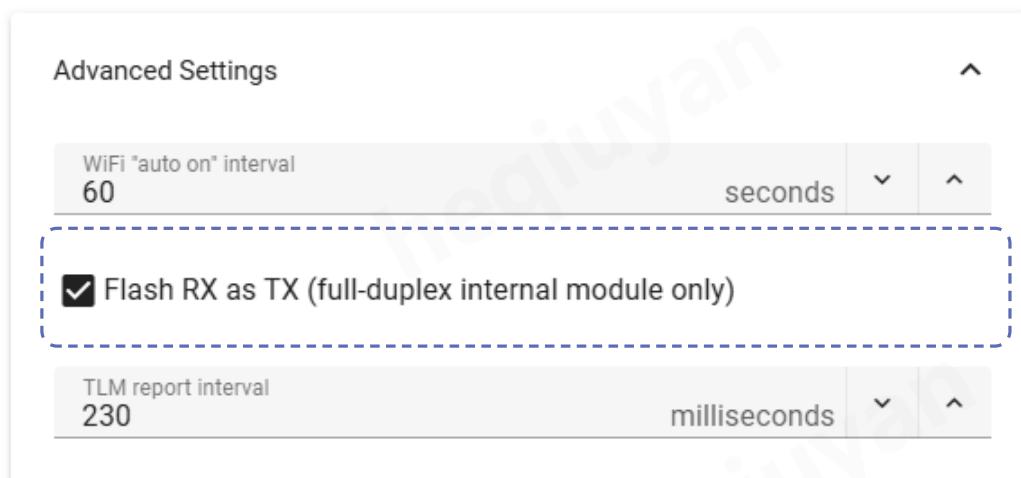
9.2 Setting RX to TX

This receiver also supports being configured as a RF module. The steps are the following.

1. Log in to the ExpressLRS website on your computer (<https://expresslrs.github.io/web-flasher/>), and click on "Receiver."



2. Navigate to Hardware > Options > Advanced settings, then check Flash RX as TX (full-duplex internal module only);



3. Using a serial port tool, connect the receiver to your computer and follow the web prompts to flash the firmware, converting it from an RX to a TX.

Note: If you configure the PR02 as a RF module using the steps above, consider adding a cooling fan based on your use case. Note that the fan is not included and must be purchased separately.



10. Product Specifications

- Product Model: PR02
- Compatible Transmitters: Compatible with all ELRS protocol transmitters and RF modules
- Compatible RC Models: Racing drones, fixed-wing aircraft, helicopters, cars, boats, robots
- Number of Channels: 16
- Maximum Power: $\leq 20\text{dBm}$ (Adjustable, up to 24dBm)
- RF: 2.4GHz ISM
- RF Protocol: ExpressLRS
- Transmission Mode: Antenna Diversity, True Diversity, Gemini
- Antenna: Two T-shaped Antennas
- Operating Voltage: 4.5-12.6V/DC
- Data: CRSF/S.BUS
- Max Refresh Rate: 500Hz / F1000Hz/D500Hz
- Min Refresh Rate: 50Hz
- Temperature Range: -10°C ~ +60°C
- Humidity Range: 20% ~ 95%
- Firmware Update: Supports Wi-Fi update or wired serial update
- Dimensions: 23.0*26.0*8.2mm
- Weight: 4.55g (without antennas)
- Certification: CE, FCC ID: 2A2UNPR020

11. Attention

- Make sure the product is installed and calibrated correctly, failure to do so may result in serious injury.
- Normally, you must power on the transmitter and then receiver, and power off the receiver and then the transmitter.
- Make sure the receiver is mounted away from motors, electronic speed controllers or any device that emits excessive electrical noise.
- Keep the receiver's antenna at least 1cm away from conductive materials such as carbon or metal.
- Do not power on the receiver during the setup process to prevent loss of control.



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12. Certification

FCC Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Warning: changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

EU DoC Declaration

Hereby, [ShenZhen FLYSKY Technology Co., Ltd.] declares that the Radio Equipment [PR02] is in compliance with RED 2014/53/EU.

The full text of the EU DoC is available at the following internet address: www.flyskytech.com/info_detail/10.html

RF Exposure Compliance

This equipment complies with FCC/ISED RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

Environmentally friendly disposal

Old electrical appliances must not be disposed of together with the residual waste, but have to be disposed of separately. The disposal at the communal collecting point via private persons is for free. The owner of old appliances is responsible to bring the appliances to these collecting points or to similar collection points. With this little personal effort, you contribute to recycle valuable raw materials and the treatment of toxic substances.





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<http://www.flyskyttech.com>

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Release date: 2025-11-06



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CE, FCC ID:2A2UNPR020

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