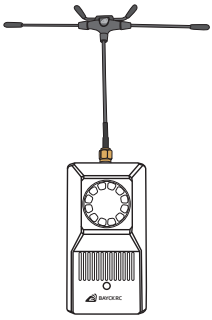
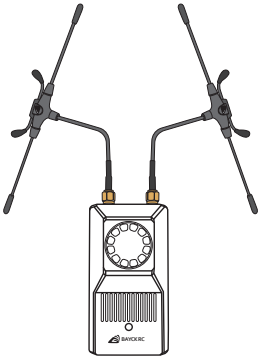
BAYCKRC Dual Band Transmitter

Instructions

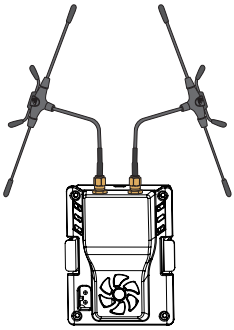
V1.0 2024.12



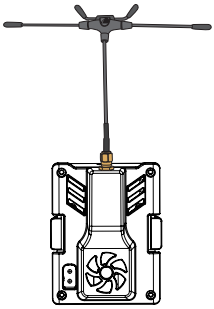
BAYCKRC 900/2400 Dual Band Nano TX



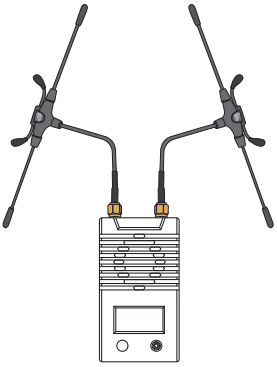
BAYCKRC 900/2400 Dual Band Nano Gemini TX



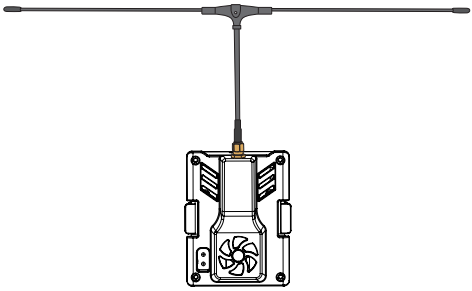
BAYCKRC 900/2400 Dual Band Micro Gemini TX



BAYCKRC 900/2400 Dual Band Micro TX



BAYCKRC 900/2400 Dual Band OLED Gemini TX



BAYCKRC 433/2400 Dual Band Micro TX

四川西联智控科技有限公司

Catalog

Instructions before use

When using the BAYCKRC ® Dual Band transmitter module, please be sure to comply with local laws and regulations and radio control laws.

Do not use the transmitter to control your model aircraft in low visibility environments.

Please do not use the transmitter to control model aircraft in public places such as government offices, schools, parks, squares, stadiums,etc.

Do not use the transmitter to control the aircraft model in environments with severe electromagnetic interference such as base stations, power stations, t ransformer stations, and electric towers.

Do not use a transmitter to control model aircraft over a crowd.

Do not use the transmitter to control your device in rainy or humid environments to avoid short circuit and loss of control.

Do not use the transmitter in a high temperature or dusty environment to avoid heat dissipation failure causing damage or shortening the service life.

Do not use the transmitter to control your device when you are in a bad mental state, so as to avoid unnecessary losses due to operational errors.

Do not block the transmitter's heat dissipation holes and the cooling fan's exhaust vents.

Minors under the age of 18 must be accompanied by a guardian when using this series of transmitter modules.

Please place the product out of reach of infants and young children to avoid accidental swallowing.

When using the transmitter to control remote control car models or aircraft models, be sure to keep them away from children,animals and plants to avoid unnecessary injuries and losses.

Please use this series of transmitter modules for legitimate purposes. You will be responsible for any damage, loss, or dispute caused by improper use.

Please always follow the principle of turning on the remote controller and transmitter first, then the model aircraft; turning off the model aircraft first, then the remote controller and transmitter, so as to avoid the debugged aircraft triggering the fail-safe protection and causing the motor to rotate.Causing unnecessary damage and loss.

When using the transmitter to debug the model aircraft, remote control boat, or aircraft, please be sure to remove the propeller blades to avoid the debugging process triggering the blades to rotate.

Using this module assumes that you understand local laws and regulations and are familiar with the above preca utions and operating specifications.

The transmitter is an independent module. You need to equip it with a remote controller compatible with the ELRS wireless system for adaptation. The package does not include the remote controller and receiver(except the transmitter + receiver set) shown in the document diagram.

The function of changing the image transmission frequency band/channel of the backpack requires you to prepare your own flight control, analog image transmission transmitter, analog image transmission receiver, analog camera and other accessories. The schematic diagram in the document is for refere nce only, and the package does not include related accessories.

The accessories for converting the transmitter to a signal repeater are for reference only, and the package does not include the accessories shown in the example picture.

This document is based on the 900/2400 Dual Band Micro Gemini TX* and 900/2400 Dual Band Nano Gemini RX*.

This is a demonstration operation, and other transmitters can be used as a reference.

The blue fonts in the document are hyperlinks. You can click on the blue fonts to jump.

The contents of this document (including hyperlinks) and the specifications of this series of products are subject to change without prior notice.

*** ⓘ Tip:** TX stands for transmitter, RX stands for receiver.

introduction

Thank you for purchasing the BAYCKRC® Dual Band Transmitter.

BAYCKRC® Dual Band transmitter is a wireless remote control system optimized and developed based on the ExpressLRS open source project. It uses LR1121 (Semtech's third-generation transceiver) and can be configured with433MHz/868MHz/915MHz/2400MHz frequencies. It uses the 868MHz/915MHz/2400MHz tri-band antenna jointly developed by BAYCKRC® and Maple Leaf Wireless. It can communicate with any ELRS RX receiver without changing the transmitter antenna*. However, if you choose the MICRO TX-433MHz single antenna version, you need to choose an antenna with the corresponding frequency (if you choose a 433-frequency receiver, the transmitter also needs to choose a 433-frequency antenna; if you use a 2400MHz receiver, the transmitter also needs to choose a 2400MHz antenna).

The advantage of the 900/2400 Dual Band series transmitters is that they can transmit dual frequencies simultaneously (except MICRO TX-433MHz). The probability of both 900/2400 MHz frequencies being interfered with at the same time will be greatly reduced, making them more resistant to interference than traditional transmitters.

The example remote control used with the Document Micro transmitter is the FATFISHFPV® F16 remote control.

BAYCKRC® is a registered trademark of Sichuan Xilian Intelligent Control Technology Co., Ltd.
Maple Leaf Wireless® is a registered trademark of Quanzhou Maple Leaf Electronic Technology Co., Ltd.

FATFISHFPV® is a registered trademark of Shenzhen Dayu Internet Technology Co., Ltd.

ExpressLRS official website: https://www.expresslrs.org/

The remote control system is EDGE TX open source firmware. You can learn more usage tips or download the corresponding manual at:https://manual.edgetx.org/

Dual frequency transmitter parameter table

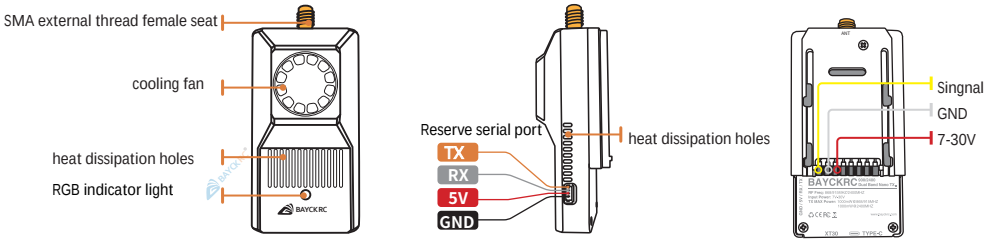
Model	NANO TX	NANO GEMINI TX	MICRO TX	MICRO TX-433MHZ	MICRO GEMINI TX	OLED GEMINI TX
Optional frequency (MHz) Combination	868(ANT) 915(ANT) 2400(ANT)	868(ANT1 or ANT2) 915(ANT1 or ANT2) 2400(ANT1 or ANT2) 868(ANT1)&868(ANT2) 915(ANT1)&915(ANT2) 2400(ANT1)&2400(ANT2) 868(ANT1)&2400(ANT2) 915(ANT1)&2400(ANT2)	868(ANT) 915(ANT) 2400(ANT)	433(ANT) 2400(ANT)	868(ANT1 or ANT2) 915(ANT1 or ANT2) 2400(ANT1 or ANT2) 868(ANT1)&868(ANT2) 915(ANT1)&915(ANT2) 2400(ANT1)&2400(ANT2) 868(ANT1)&2400(ANT2) 915(ANT1)&2400(ANT2)	868(ANT1 or ANT2) 915(ANT1 or ANT2) 2400(ANT1 or ANT2) 868(ANT1)&868(ANT2) 915(ANT1)&915(ANT2) 2400(ANT1)&2400(ANT2) 868(ANT1)&2400(ANT2) 915(ANT1)&2400(ANT2)
Number of antennas	single	dual	single	single	dual	dual
maximum output power	1W@868MHz/915MHz 1W@2400MHz	2*1W@868MHz/915MHz 2*1W@2400MHz	1W@868MHz/915MHz 1W@2400MHz	1W@433MHz 1W@2400MHz	2*1W@868MHz/915MHz 2*1W@2400MHz	2*1W@868MHz/915MHz 2*1W@2400MHz
input voltage	DC:7-30V	DC:7-30V	DC:7-30V	DC:7-30V	DC:7-30V	DC:7-30V
Adapted remote control	NANO ware house	NANO ware house	JR warehouse	JR warehouse	JR warehouse	NANO&JR warehouse
Backpack	Support	Support	Support	Support	Support	Support
USB upgrade port	TYPE-C	TYPE-C	TYPE-C	TYPE-C	TYPE-C	TYPE-C
WIFI upgrade	Support	Support	Support	Support	Support	Support
Output Power	50mW/100mW/ 250mW/500mW 1000mW	50mW/100mW/ 250mW/500mW 1000mW	50mW/100mW/ 250mW/500mW 1000mW	50mW/100mW/ 250mW/500mW 1000mW	50mW/100mW/ 250mW/500mW 1000mW	50mW/100mW/ 250mW/500mW 1000mW
weight	52g	53g	43g	43g	46g	NC

The full name of ExpressLRS is: Express Long Range System.

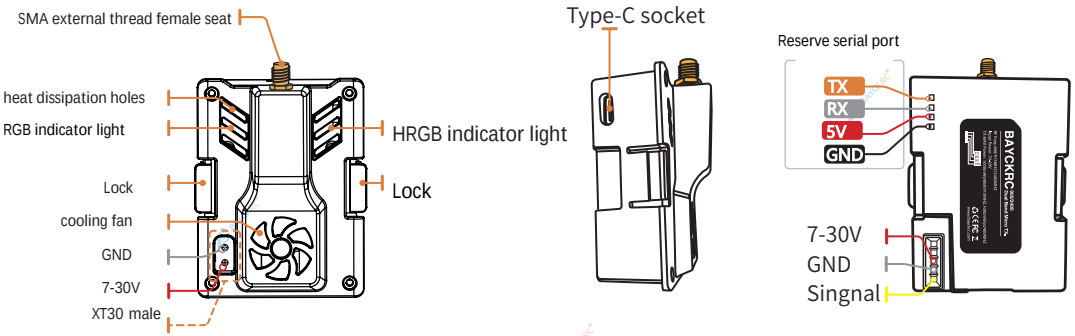
* ⓘTip: When the transmitter and receiver are linked, the corresponding Packet Rate needs to be set. For details, see the tables on pages P8, P9, P10, P11, and P12.

BAYCKRC 900/2400 Dual Band Series Interface and Component Definitions

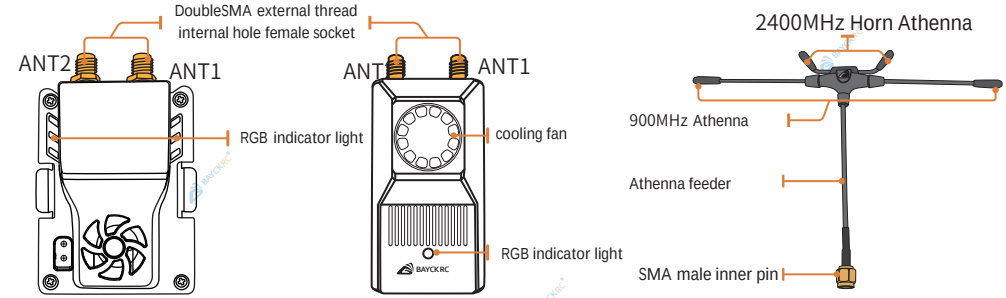
Nano single antenna TX



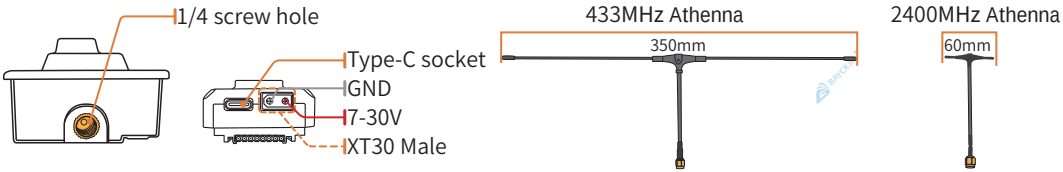
Micro Single Anthenna TX(433/2400 Micro TX)



Gemini Micro/Nano Dual Antenna TX*

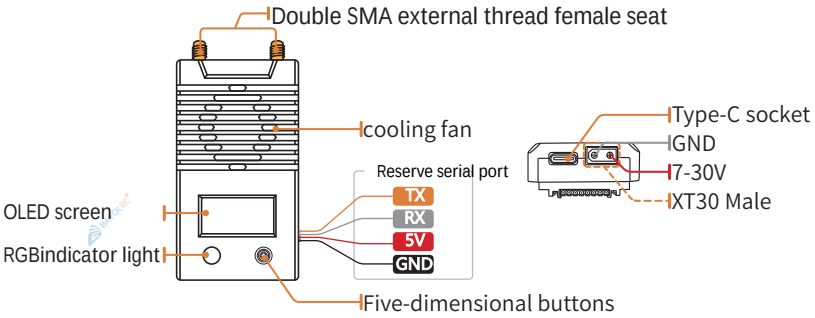


The Micro transmitter has a 1/4 screw hole and can be adapted to a regular tripod.



* ⓘ Tip: The size and interface definition of the dual-antenna Micro/Nano and single-antenna Micro/Nano, as well as the 433/2400 Micro are the same.

BAYCKRC.900/2400..OLED.Gemini.TX Interface and Component Definition



Transmitter RGB Indicator

RGB LED Indication (RGB LED Indicator light)	Status
Blue heartbeat flashing	Bluetooth joystick enabled
Solid single color (Single color always on)	Connected to receiver, color indicates packet rate
Fading single color	No connection to receiver, color indicates packet rate
One Orange flash every second	No handset connection
Red flashing 100ms on/off	Radio chip not detected
Rainbow fade effect	Starting Up
Green heartbeat flashing	Web update mode enabled

① Tip: The RGB indicators of the BAYCKRC Dual Band series transmitters are all the same.

*If the red lightappears, you can try restarting the transmitter/receiver. If it still cannot be solved, please contact Shell Model Technical Support.

RGB light rate color

Packet Rate		RGB Color		
Serial Number	Numerical Value	2.4GHz Packet rate (Hz)	915/868MHz Packet rate (Hz)	Dual 2.4GHz/900MHz GEMX
1	50 Low Band			
2	100 Low Band			
3	100 Full Low Band			
4	200 Low Band			
5	250 Low Band			
6	200 Full Low Band			
7	50 2.4G			
8	100 Full 2.4G			
9	150 2.4G			
10	250 2.4G			
11	333 Full 2.4G			
12	500 2.4G			
13	DK500 2.4G			
14	X100 Full (This item is not included for single antenna)			
15	X150 Full (This item is not included for single antenna)			
16	K1000 Full Low Band			

Via content of 《Packet Rate and Telemetry Ratio》 from https://www.expresslrs.org/quick-start/transmitters/lua-howto/?h=k1000#packet-rate-and-telemetry-ratio for more detailed information.

Refresh rate Packet Rate and return ratio Telem Ratio

These are displayed as Packet Rate and Telem Ratio in the Lua script, allowing you to change performance parameters.

The data refresh rate is used to adjust the speed at which data packets are sent. A higher rate means that data packets are se nt more frequently and with lower latency(generally speaking, the higher the refresh rate, the faster the stick response and th e more the aircraft follows your hand).

Note: Before binding with your receiver, the transmitter must be set to a refresh rate that corresponds to the receiver freque ncy, otherwise binding will not be possible. The receiver used in the document example is the BAYCKRC 900/400 Dual Band G emini RX, which is compatible with all packet rates.

The following options are available: 2.4GH

- 50Hz, 150Hz, 250Hz and 500Hz: LoRa-based options. The higher the value, the lower the latency, but the sensitivity will be re duced.
- F500 and F1000: Pure FLRC with the lowest latency, reduced range compared to Lora, 500Hz and 1000Hz.
- D250 & D500: Redundant Transmit FLRC mode. Represents 250Hz and 500Hz. Higher latency, reduced packet jitter and higher LQ. Same range as other FLRC modes.
- 100Hz Full &333Hz Full: Based on Lora's 10-bit full resolution, with 8CH/12CH/16 switch mode options.
- K1000 NEM: K-mode at 2.4GHz is FSK+FEC (Forward Error Correction aka Self-Healing Packet), available only on LR1121 hardwar e. K-mode is very similar to FLRC in air characteristics and is designed for high noise environments such as racing events. FSK Detai ls / FEC
- DK250 & DK500: These modes offer the same redundancy as D-mode, but with K-mode (FSK+FEC).

The following options are available: 900MHz

- 25Hz, 50Hz, 100Hz and 200Hz: Lora-based options. Higher means lower latency at the expense of lower latency. Since v1.0.
- 100Hz Full: 10-bit full resolution based on Lora, with 8CH/12CH/16 switch mode options.

- D50Hz: Lora-based redundant send mode via DVDA.
- 250Hz: Only available for GEMX devices.
- 200Hz Full NEW: Only available on GEMX devices.
- K1000 Full NEW: Subghz K mode is FSK, only available on LR1121 hardware. This mode is designed for the highest data throughput when using protocols such as MAVLINK.

The following options are available for:GEMX

- X150HZ: Cross-band mode, combining 900MHz and 2.4GHz in Gemini mode.
- X100Hz Full : Cross-band mode, combining 900MHz and 2.4GHz in Gemini mode, with 8CH/12CH/16 switch mode option for full resolution.

GemX is a 3.4.0 feature

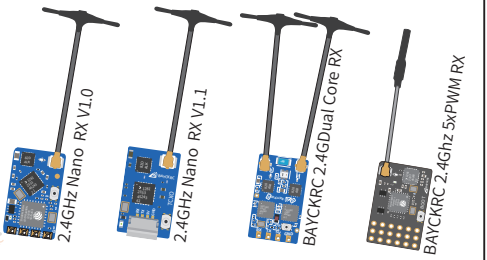
LAYCKRO Gemini Crossband (GemX) is available on specific hardware and requires the LR1121 RF chip. GemX is an ExpressLRS 3.4.0 feature.

The number after the rate in parentheses (e.g. -105 dBm for 500 Hz) is the sensitivity limit for that rate, which is the minimum RS SI dBm value at which a packet will still be received. For information on sensitivity limits, refer Signal Health.

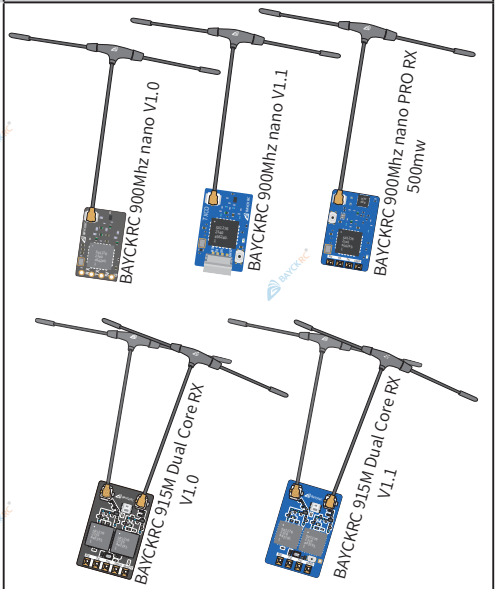
Telem Ratio Sets the telemetry ratio, which is the rate of packets used to send telemetry data. The options are listed in increasing order of telemetry ratio: Off, 1:128, 1:64, 1:32, 1:16, 1:8, 1:4, 1:2. A Telem Ratio of 1:64 means that one out of every 64 packets is used for telemetry data.

- v3.0 comes with Std and Race options. Std changes the rate based on the packet rate, Race is the same as Std but will disable telemetry and sync when armed. Refer First Flight / Telemetry and Telemetry Bandwidth for information on telemetry settings.

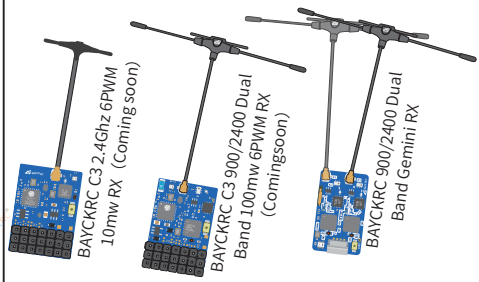
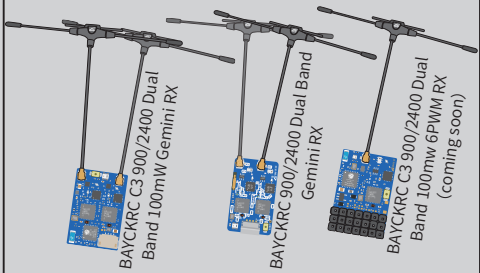
Nano and Micro Single antenna TX and SX1281receiver frequency matching

Packet Rate	Single antenna SX1281 receiver	Dual-core dual-antenna SX1281 receiver	Such as the following BAYCKRC receiver
50 2.4G、100 Full 2.4G、150 2.4G、250 2.4G、333 Full 2.4G、500 2.4G	Working frequency 2400MHz single antenna mode	Working frequency 2400MHz Dual antenna true diversity mode	

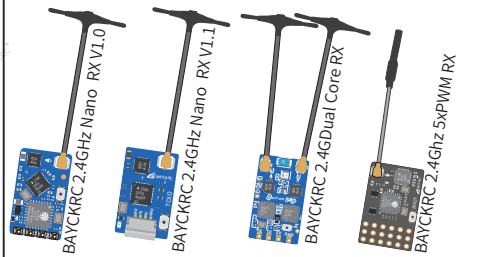
Nano and Micro single antenna TX and SX1276 receiver frequency binding

Packet Rate	Single Antenna SX1276 Receiver	Dual-core dual-antenna SX1276 receiver	Such as the following BAYCKRC receiver
50 Low Band、100 Low Band、100 Full Low Band、200 Low Band	Working frequency 868/915Mhz single antenna mode	Working frequency 868/915Mhz dual antenna true diversity mode	

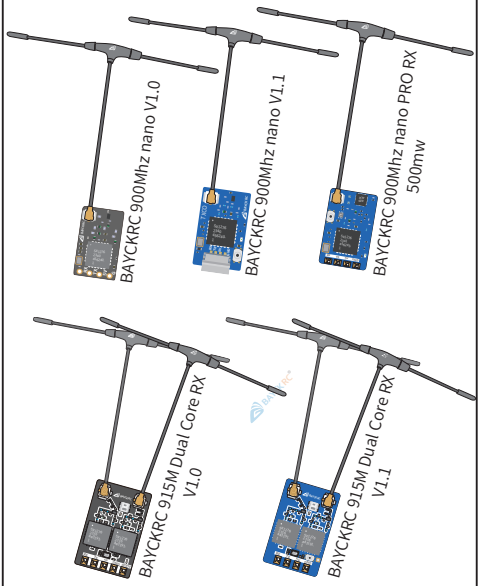
Nano and Micro single antenna TX and LR1121 receiver frequency

Packet Rate	Single Antenna LR1121 receiver	Dual core dual antenna LR1121 receiver	Such as the following BAYCKRC receiver
50 2.4G、100 Full 2.4G、150 2.4G、250 2.4G、333 Full 2.4G、500 2.4G	2400MHz single antenna mode	Working frequency 2400MHz Dual antenna true diversity mode	
50 Low Band、100 Low Band、100 Full Low Band、200 Low Band	868/915Mhz single antenna mode	Working frequency 868/915MHz Dual antenna True diversity mode	

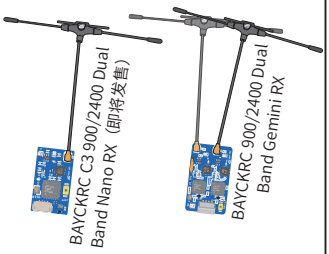
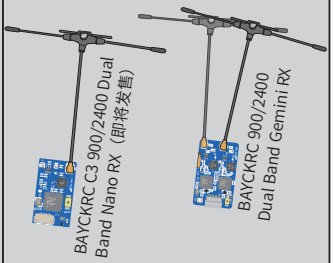
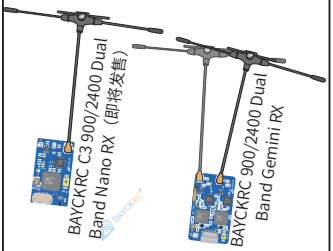
Nano and Micro dual antenna TX and SX1281 receiver frequency matching

Packet Rate	Single Antenna SX1281 receiver	Dual-core dual-antenna SX1281 receiver	Such as the following BAYCKRC receiver
50 2.4G、100 Full 2.4G、150 2.4G、250 2.4G、333 Full 2.4G、500 2.4G	Working frequeny 2400MHz Single antenna mode	Working frequency 2400MHz Dual antenna true diversity or GEMINI MODE	

Nano and Micro dual antenna TX and SX1276 receiver frequency matching

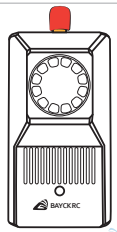
Packet Rate	Single antenna SX1276 receiver	Dual-core dual-antenna SX1276 receiver	Such as the following BAYCKRC receiver
50 2.4G、100 Full 2.4G、150 2.4G、250 2.4G、333 Full 2.4G、500 2.4G	Working frequeny 868/915Mhz single antenna mode	Working frequency 868/915Mhz Dual antenna true diversity or GEMINI MODE	

Nano and Micro dual antenna TX and LR1121 receiver frequency matching

Packet Rate	Single Antenna LR1121 Receiver	Dual-core dual-antenna LR1121 receiver	Such as the following BAYCKRC receiver
50 2.4G、100 Full 2.4G、150 2.4G、250 2.4G、333 Full 2.4G、500 2.4G	Working frequency 2400MHz Single antenna mode	Working frequency 2400MHz Dual antenna true diversity or GEMINI mode	
50Hz Low Band/100Hz Low Band etc.	Working frequency 868/915MHz Single antenna mode	Working frequency 868/915Mhz Dual antenna true diversity or GEMINI MODE	
X100 Full/X150 etc.	There is no such working mode.	GEMINI X mde with ANT1@868/915MHz, ANT2@2400MHz	

* ⓘ **Note:** Single antenna transmitters do not support X100 Full and X150.

BAYCKRC 900/2400 Dual Band Series Packing List


Nano TX×1

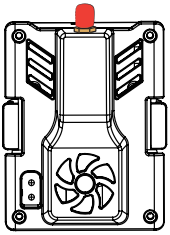

Triple-band horn antenna ×1


Type-C ×1


Service card×1


Rubber sleeve×1

Nano TX list


Micro TX×1

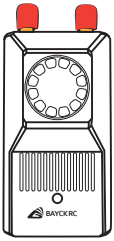

Triple-band horn antenna × 1

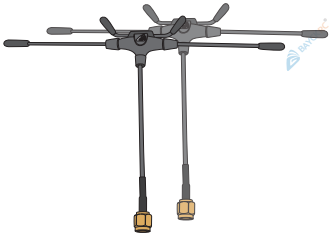

Type-C ×1


Service card×1


Rubber sleeve×1

Micro TX list


Nano Gemini TX×1

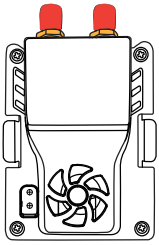

Triple-band horn antenna × 2


Type-C ×1


Service card×1


Rubber sleeve×2

Nano Gemini TX list


Micro Gemini TX×1


Triple-band horn antenna×2


Type-C ×1

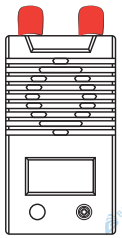

Service card×1


Rubber sleeve×2

Micro Gemini TX list


*Please keep the product out of reach of infants and young children.

BAYCKRC 900/2400 OLED Gemini TX Packing List


OLED Gemini TX×1


Triple-band horn antenna × 2

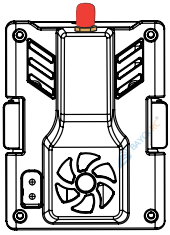

Type-C ×1


Service card×1


Rubber sleeve×2

OLED Gemini TX list

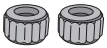
BAYCKRC 433/2400 Dual Band Packing List


433/2400 Dual Band Micro TX×1


2400 antenna×1 433 antenna×1


Type-C ×1


Service card×1


leathercase ×2

433/2400 Dual Band Micro TX List

* Please keep the product out of reach of infants and young children.

This document only shows the packaging list of transmitters of different models/categories. Please refer to the actual model you purchased for details.

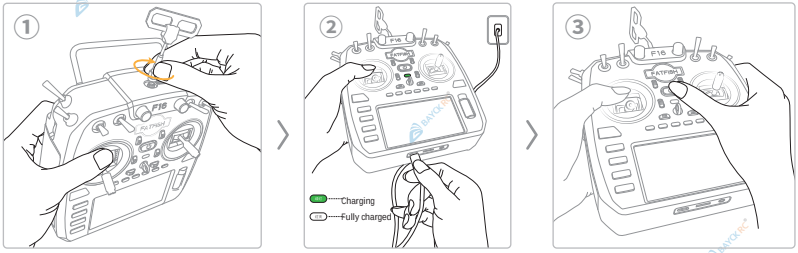
How to use?

To use the transmitter module, you need to bring your own remote control compatible with the ELRS wireless remote control system.

In order to ensure that the transmitter module can be fully functional, you need to upgrade the ELRS scriptin the SD memory card of the remote control to the latest, so you need to bring your own computer.

The use demonstration of the Micro version transmitter takes FATFISH's F16 remote control as an example. You can learn more about the product through the FATFISH official website product page: https://www.fatfishfpv.com/product/upgraded-controller/

Prepare your remote control

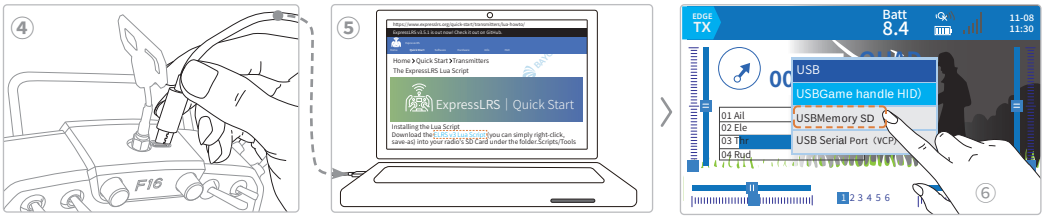


If the original antenna of your remote control is detachable, be sure to install the antenna before turning on the remote control.

①Install the original antenna of your remote control;

②Charge your remote control to ensure that the remote control battery is [100%] fully charged;

③Press and hold the button to turn on your remote control;



④Use a data cable to connect the remote control to the Type-C port on the top of the remote control;

⑤Connect the data cable to your computer for instructions on LUA script (click ELRS v3 Lua Script to download the latest script) https://www.expresslrs.org/quick-start/transmitters/lua-howto/;

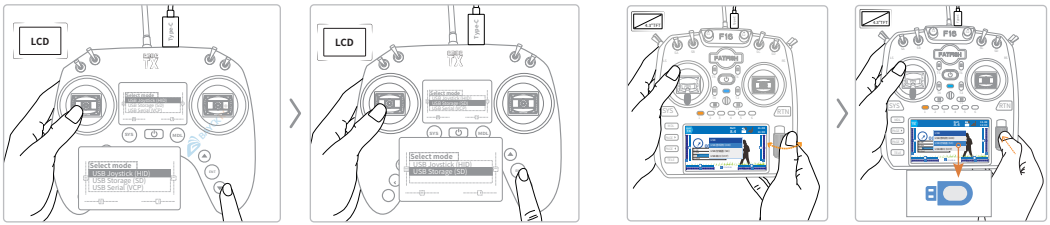
⑥When the USB option pops up on the remote control, please select USB storage(SD) F16 The remote control supports touch control;

⑦Check whether the ELRS script in the SCRIPTS〉TOOLS folder of the remote control SD card is ELRSV3.lua;
⑧If it is not ELRSV3, you can go to https://raw.githubusercontent.com/ExpressLRS/ExpressLRS/ refs/heads/3.x.x-maintenance/src/lua/ELRSV3.lua Download the latest script file to replace it, or go to https://expresslrs.baykrc.com/, select and click“DOWNLOAD ELRS LUA SCRIPT” to download.

LCD display remote control* and non-touch screen connected to the computer operation:

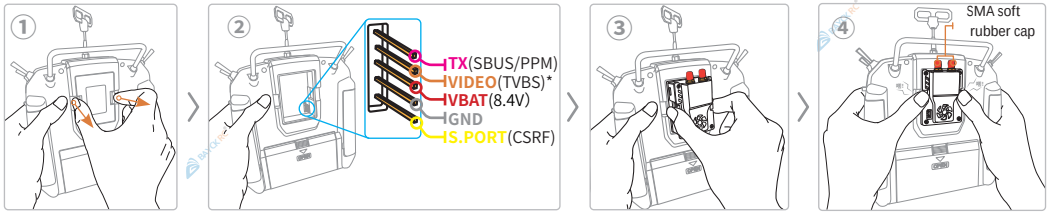
When connected to the computer you can confirm by pressing the button of remote control or pressing the wheel button or wheel to select the corresponding menu.

・When F16 enters [USB Storage (SD)] mode, the interface switches to the icon and the computer can recognize the remote controller SD card.



*Tip: The appearance and button layout of the Nano Warehouse remote control are fictitious. Please refer to your actual remote control for specific operations

Micro version installation and external transmitter activation

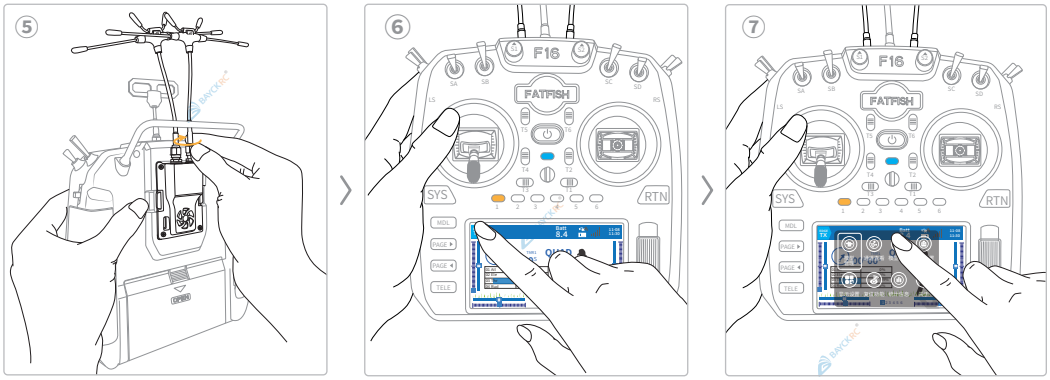


①Remove the JR compartment cover of the remote control [West] (please keep the compartment cover properly. When the external transmitter is not in use, installing the compartment cover can prevent the pins from oxidation);

②Remote controller JR compartment wiring definition (*F16 remote controller VIDEO(TVBS) supports external analog video receiver);

③Push your transmitter into the JR compartment and press the lock button;

④When installed in place, the lock will make a sound.

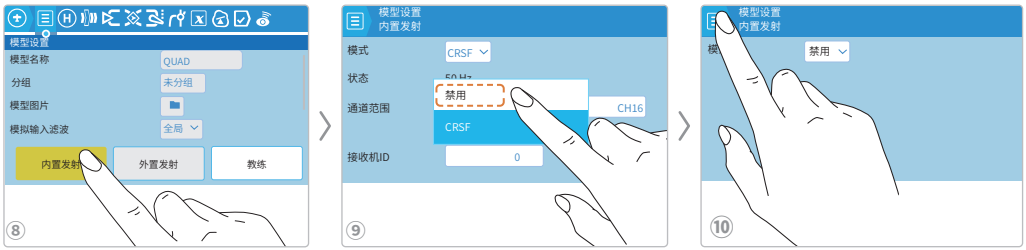


⑤Install the antenna* (please keep the red SMA soft rubber cap properly. When the external transmitter is not in use, it can be put into the transmitter antenna base to prevent oxidation);

⑥Press and hold to turn on the remote control , then click the icon in the upper left corner of the screen;

⑦Select the [Model Settings] icon and the interface will pop up.

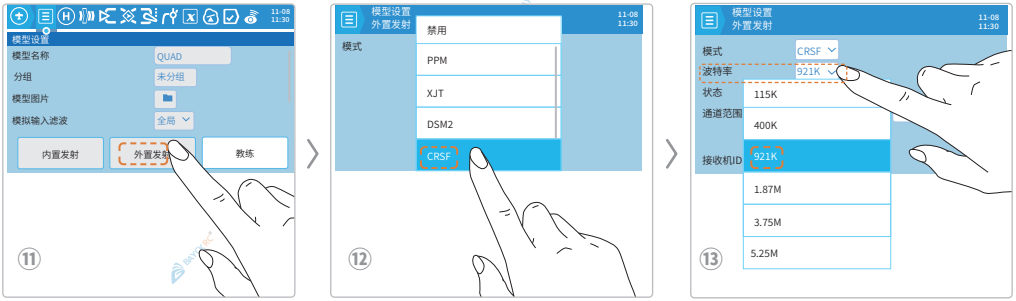
*Note: Before turning on the external transmitter or the remote control, be sure to install the antenna.



⑧Click the[Built-in Launcher] option;

⑨Click [CRSF∨] in the mode option, and when the dialog box pops up, click

⑩Click in the upper left corner to return to the ;Model Settings home page.



⑪Click the[External Transmitter] option;

⑫Click [Disable] in the mode option, and when the drop-down menu pops up, click ;

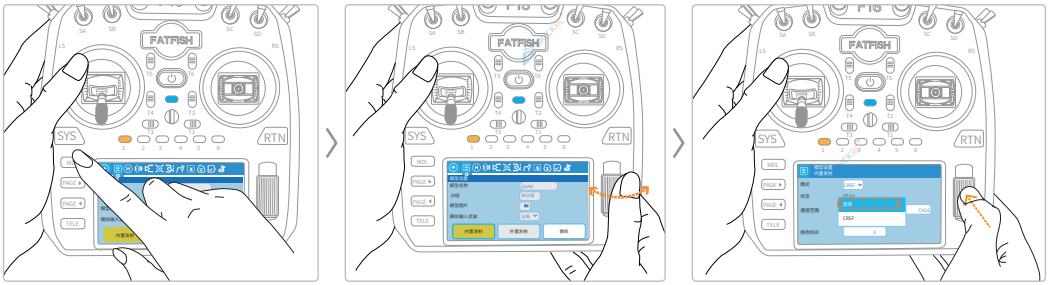
⑬When you need to set the transmitter's [Packet Rate] to K1000 Full Low Band, the baud rate value needs to be

It should be set to [921K] or above, otherwise the remote controller will prompt an error message Baud rate too

Click [Picture]→[] in the upper left corner to return to the remote control home page.

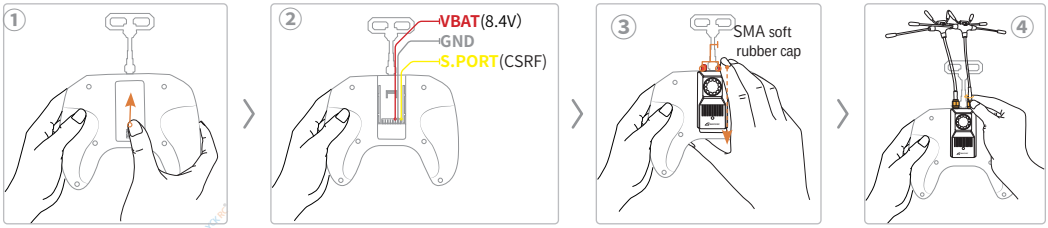
How to turn off the built-in transmitter on a non-touch display:

- Press [MDL] on the remote control to enter the[Model Settings] page;
- Slide the scroll wheel [■] left or right to select the corresponding menu;
- Press the scroll wheel [] to confirm your selection;
- Press [RTN] on the remote control to return to the previous level or exit the menu and return to the home page.



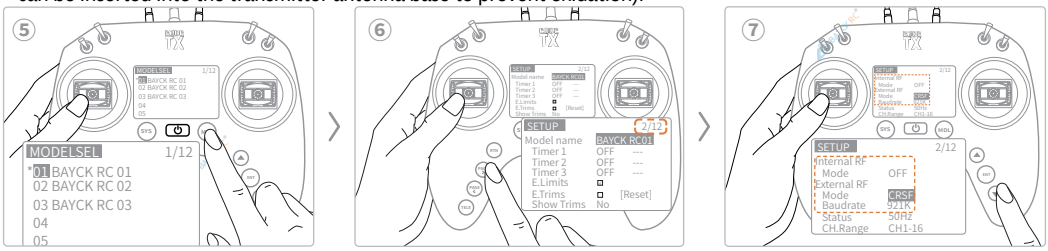
* ⚠Warning: Turn off the built-in transmitter before removing the original antenna of the remote control.

Nano version install and turn on the external transmitter



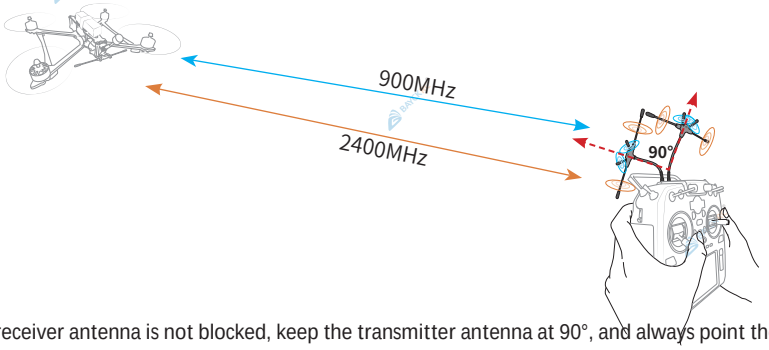
Take the dual-antenna Nano transmitter as an example:

①Push down the Nano remote control [] compartment cover (please keep the compartment cover properly. When the external transmitter is not in use, installing the compartment cover can prevent the pins from oxidation);
②Nano warehouse wiring definition;
③After installing the transmitter against the fixing buckle, press it firmly into place;
④Install the antenna (please keep the red SMA soft rubber cap properly. When the external transmitter is not in use, it can be inserted into the transmitter antenna base to prevent oxidation).



⑤Press the [MDL] button on the remote control;
⑥Press[PAGE>] to scroll down to the second page menu;
⑦Press the[▼] button to select [Internal RF] (internal transmission) [Mode] and set it to [OFF], and set [External RF] (external transmission) [Mode] to [CRSF]. When you need to set the transmitter's [Packet Rate] to K1000 Full Low Band, the [Baudrate] value needs to be set to [921K] or above, otherwise the remote control will pop up an error message & Error: Baud rate too low

External transmitter antenna orientation



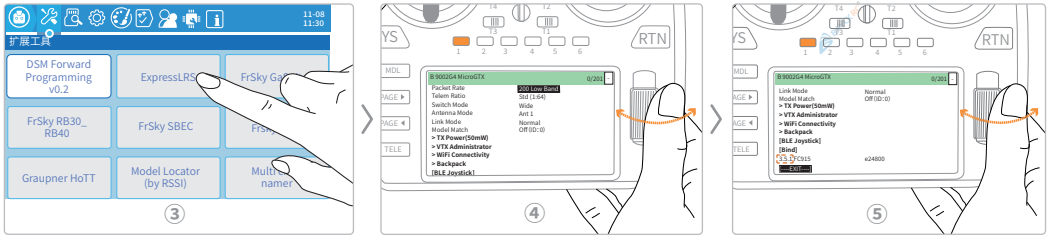
Make sure the receiver antenna is not blocked, keep the transmitter antenna at 90°, and always point the transmitter antenna towards the direction of the aircraft. When the signal is weak, please adjust the antenna angle in time.

Note: The product package does not include the sample aircraft!

How to check the firmware version of an external transmitter

①Click the [] icon in the upper left corner of the screen;

②Select the [System Settings] icon (or press the [] button) to directly pop up the Expand Tools interface;



③Click the [ExpressLRS] icon to enter the ELRS script;

④The ELRS script page cannot be touched. You can slide the [■] wheel to the right and slide the options down;

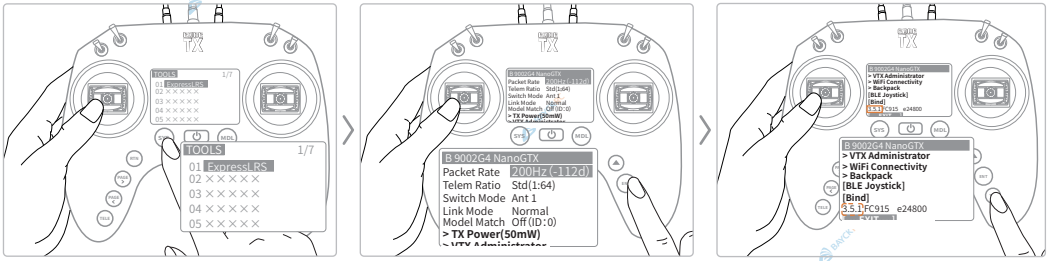
⑤Pull down to the bottom and you will see “3.5.1” which is the firmware version of the current transmitter.

LCD display remote control to check the external transmitter firmware version:

•Press the[] button to pop up the “TOOLS” page;

•Select the[ExpressLRS] option and press [ENT] to enter the script;

•Press the[▼] button to slide the options downwards, and 3.5.1 is the firmware version of the current transmitter.



Transmitter Lua Script Menu	Meaning	Options
Packet Rate	refresh rate	K1000 Full Low Band、DK500 2.4G、200Full Low Band、250 Low Band、X100Full*、X150*、50 2.4G、100 Full 2.4G、150 2.4G、250 2.4G、333 Full 2.4G、500 2.4G、50 Low Band、100 Low Band、100 Full Low Band、200 Low Band
Telem Ratio	return ratio	The return is other than the normal return flight control sensor parameters, such as GPS coordinates, the default standard mode of the drone is OK. Std (1:128) Standard mode, according to the refresh rate conversion ratio you set, 1:128, 1:64, 1:32, 1:16, 1:8, 1:4, 1:2, 1:1, Race, OFF (the meaning of the value: for example, 1:128 means that the receiver will send back one remote sensing data packet for every 128 remote control data packets received)
Switch Mode	Switch Mode	Wide/Hybrid Configuration instructions:https://www.expresslrs.org/software/switch-config/
Antenna Mode	Antenna Mode (Not supported by single antenna transmitter)	Gemini（Gemini mode）：Ant1，Ant2，send and receive data at the same time Switch：Ant1 and Ant2 send and receive data alternately Ant1：Ant1 sends and receives data, Ant2 does not work Ant2：Ant2 sends and receives data, Ant1 does not work
Link Mode	Linked mode	Normal、MAVLink
Model Match	model matching	The default setting is OFF (turn off this function)Off(ID:0)/On(ID:0) Model matching instructions:https://www.expresslrs.org/software/model-confg-match/?h=model+match
> TX Power(50mW)	Transmit power (current power)	Max Power (maximum power)/Dynamic (dynamic power)/Fan Thresh (set the power of fan rotation)
> VTX Administrator	Image transmission management	Band, Channel, Pwr Lv1, Pitmode, Send [VTx], BACK
> WiFi Connectivity	Turn on WIFI	[Enable WiFi]Enable the transmitter's WiFi mode [Enable Rx WiFi]Enable the receiver's WiFi mode [Enable Backpack WiFi]Enable backpack WiFi mode [Enable VRx WiFi]Enable VRx WiFi mode，more details：https://www.expresslrs.org/hardware/backpack/backpack-vrx-setup/
> Backpack	Backpack	Backpack、DVR Rec、DVR Srt Dly、DVR Stp Dly、HT Enable、HT Start ChannelTelemetry、Version
[BLE Joystick]	BLE joystick mode	Computer Bluetooth connection remote control for simulator practice
[Bind]	Binding	Use this option to enter the transmitter binding mode
3.5.1 FC915	Transmitter firmware version/frequency band	Find out the current firmware version of your transmitter
Other Device	Other Device	Other devices, this option appears after your transmitter communicates with the receiver

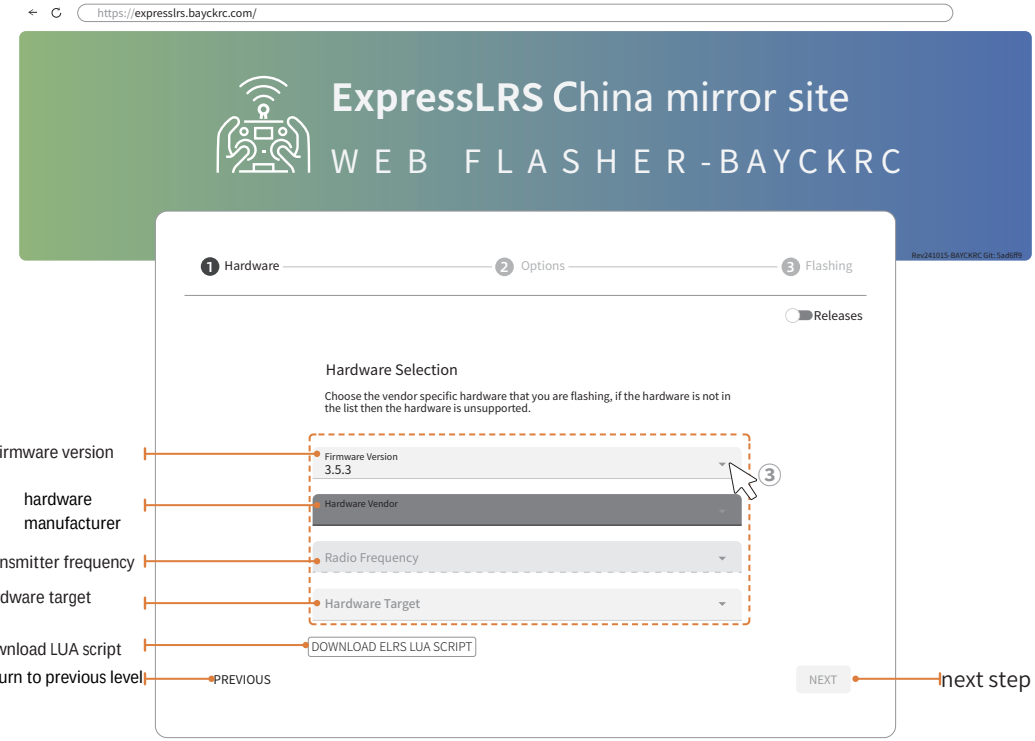
* ⓘTip: Single antenna transmitters do not support X100 Full and X150.

How to Upgrade Your External Transmitter Firmware?

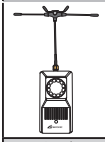
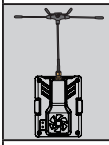
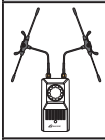
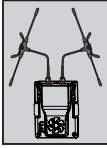
You need to bring your own computer with Internet access In order to ensure the smooth flashing of the transmitter firmware, it is recommended to use WEB FLASHER:https://expresslrs.github.io/web-fasher/ Domestic users are recommended to use the China mirror site built by BAYCKRC (to improve your flashing efficiency)：https://expresslrs.bayckrc.com/ （The document is demonstrated using a mirror site）

①Enter the URL：https://expresslrs.bayckrc.com/（or click the link to jump）。

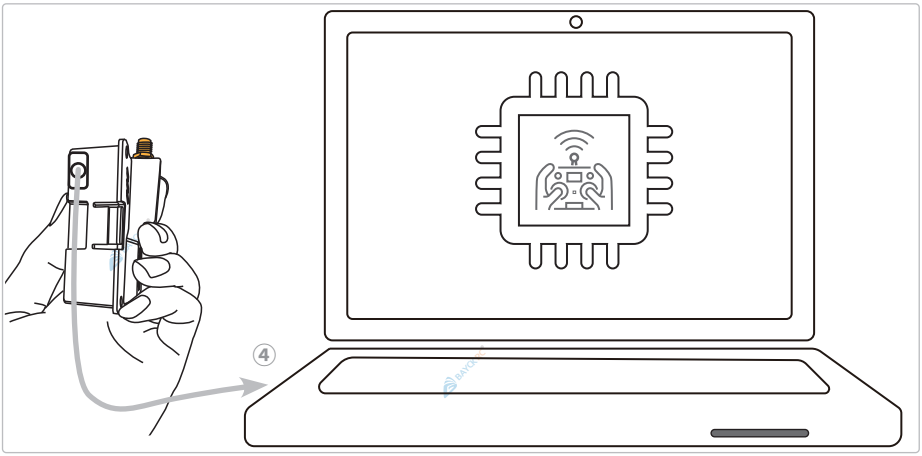
②Click the[ ] icon to enter the transmitter's Selection"page



① Select the latest firmware and the brand and model of the transmitter, and click the [▼] symbol after the corresponding menu to get the drop-down menu for selection. Transmitter and corresponding hardware settings list:

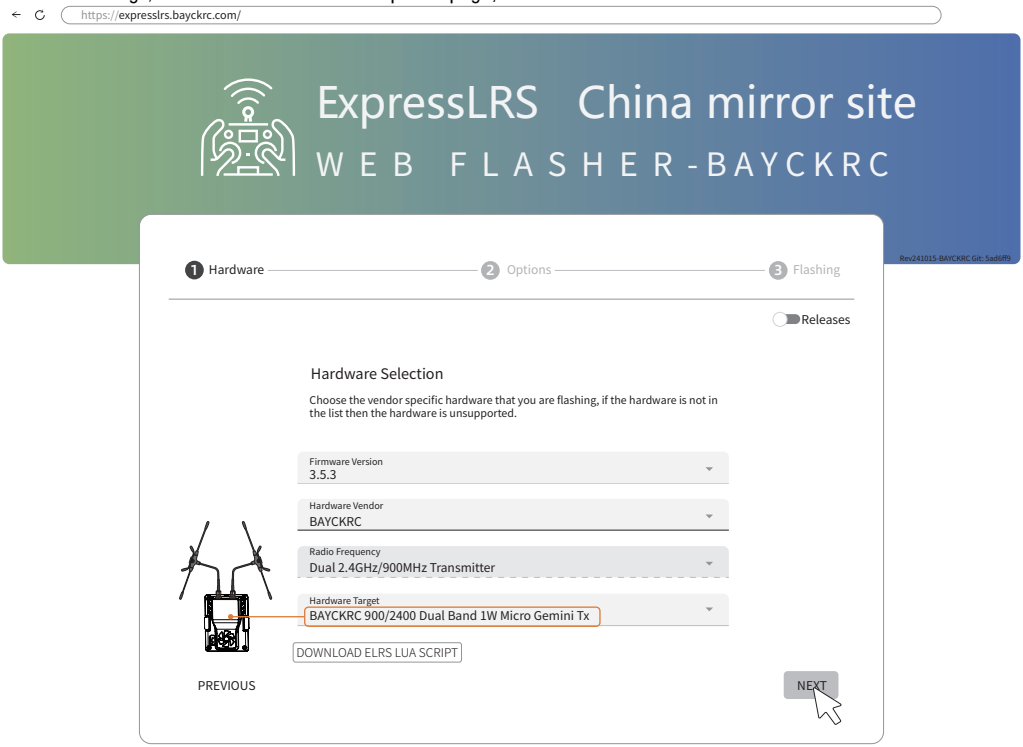
BACYKRC transmitter	Firmware Version	Hardware Vendor	Radio Frequency	Hardware Target
	3.5.3（currently the latest）	BAYCKRC	Dual2.4GHz/900MHz Transmitter	BAYCKRC 900/2400 Dual Band 1W Nano TX
	3.5.3（currently the latest）	BAYCKRC	Dual2.4GHz/900MHz Transmitter	BAYCKRC 900/2400 Dual Band 1W Micro TX
	3.5.3（currently the latest）	BAYCKRC	Dual2.4GHz/900MHz Transmitter	BAYCKRC 900/2400 Dual Band 1W Nano Gemini TX
	3.5.3（currently the latest）	BAYCKRC	Dual2.4GHz/900MHz Transmitter	BAYCKRC 900/2400 Dual Band 1W Micro Gemini TX

Take BAYCKRC 900/2400 Dual Band 1W Micro Gemini TX as an example. Demonstration of the firmware flashing process:



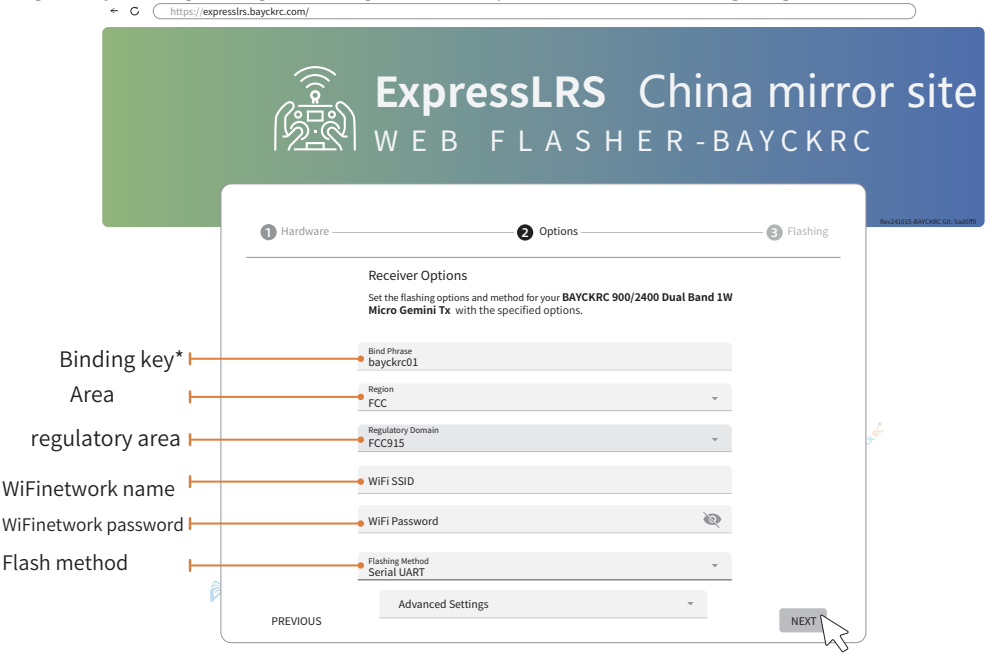
Connect the transmitter to your computer using a Type-C cable

The options corresponding to the Micro dual antenna transmitter are shown in the figure below. After completing the settings, click "NEXT" to enter the Options page;

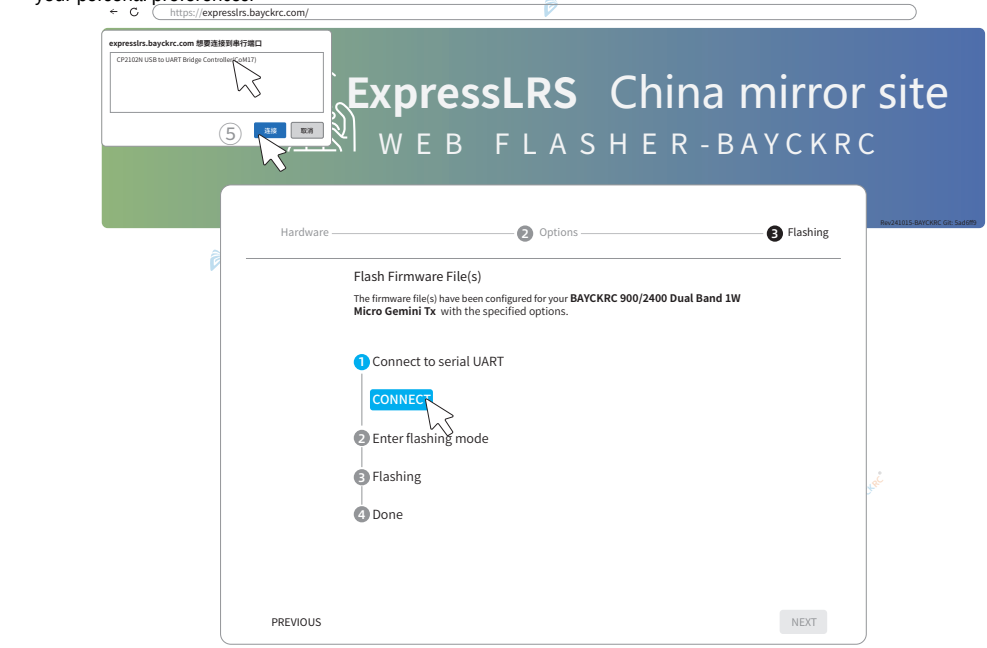


• It is recommended to set the Bind Phrase (binding key) between thetransmitter and the receiver to achieve fast communication between the transmitter and the receiver;

•[Flashing Method], select [Serial UART], leave other options as default, and click [NEXT]:

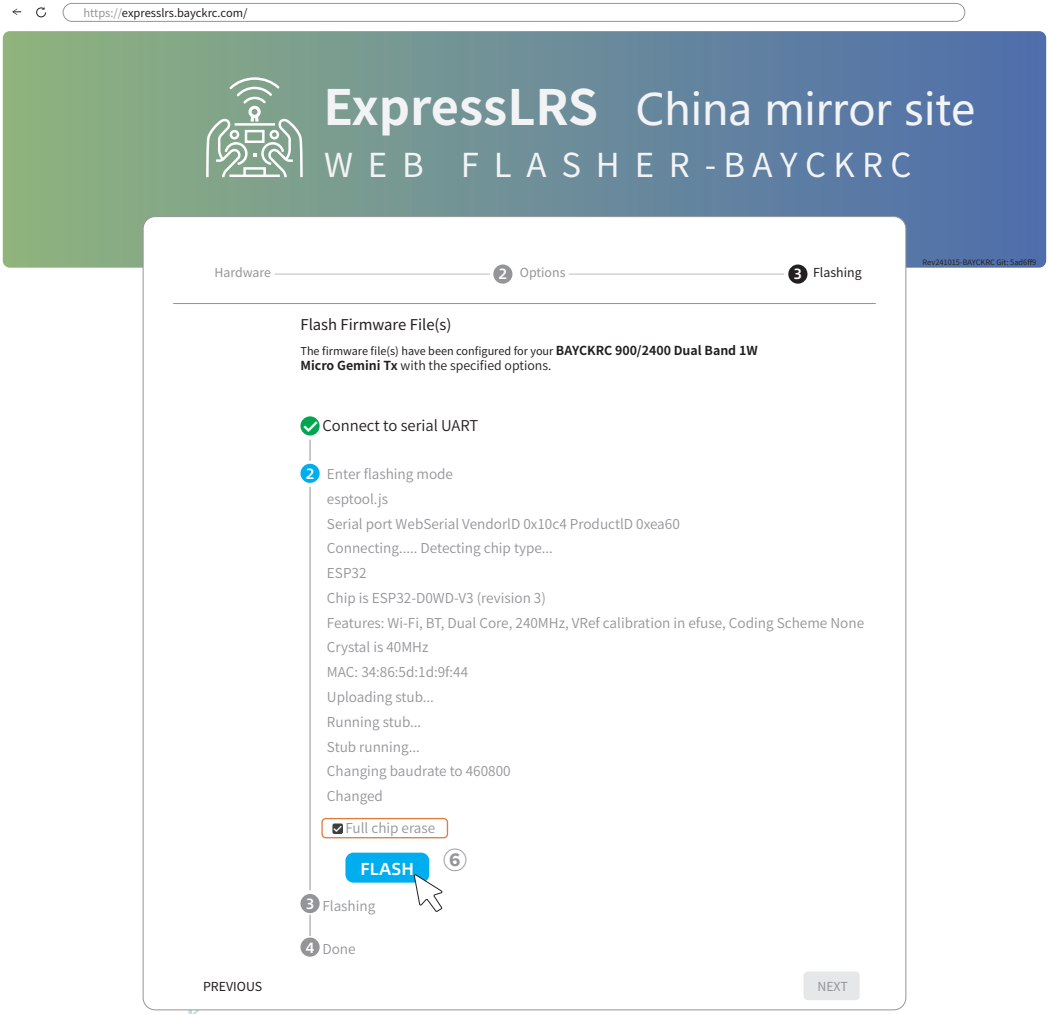


* ⓘ.Tip: The Bind Phrase (binding key) in the diagram is a sample key. You can set the corresponding characters according to your personal preferences.

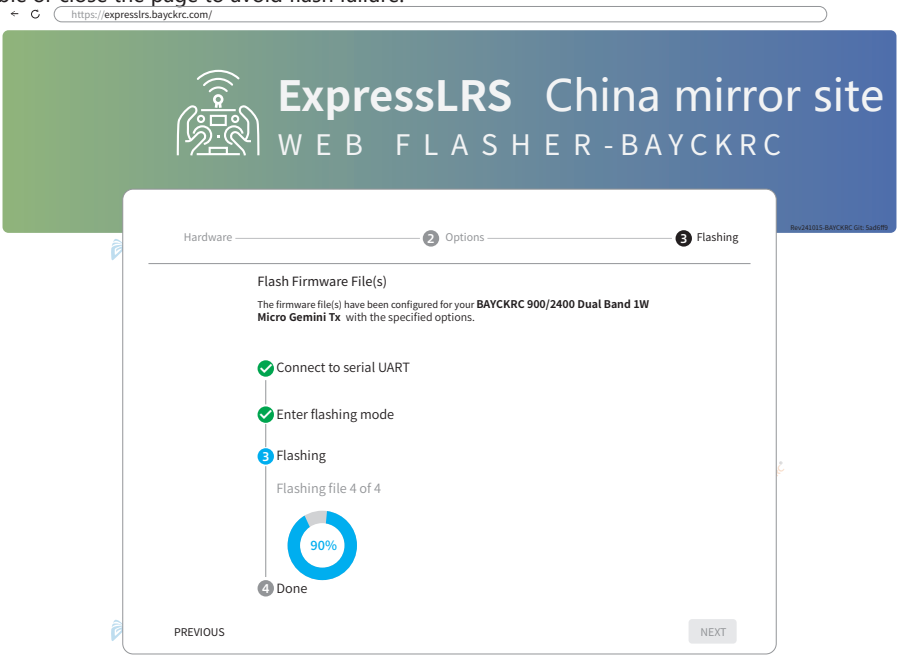


⑤Click[CONNECT], After selecting[CP2102N USB to UART Bridge Controller(CoM17)click[连接]

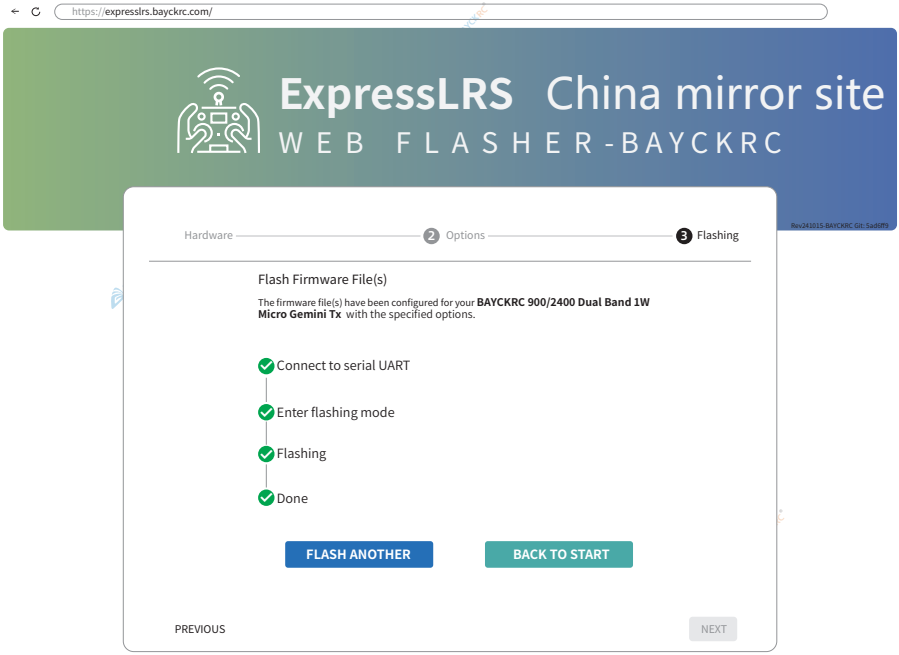
⑥Check“Full chip erase”and click [FLASH] to flash the firmware.



When the flash progress percentage is displayed, please wait patiently and do not disconnect the data cable or close the page to avoid flash failure.

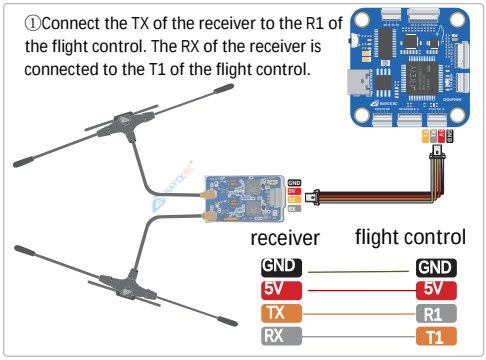


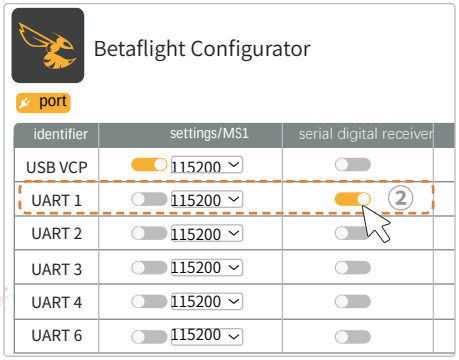
After the firmware is flashed, the transmitter RGB flashes normally.



⚠**Note:** During the firmware flashing process, please do not disconnect the USB or close the flashing page.

How to bind the receiver Binding the receiver for the first time?

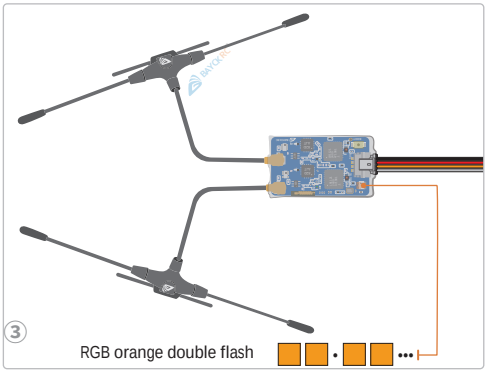


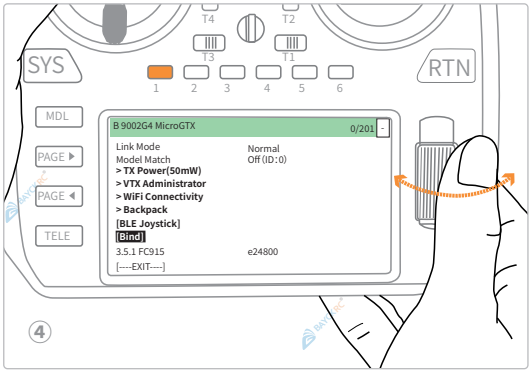


①You need to bring your own receiver and flight controller, and ensure that the receiver and flight controller are connected correctly (the example is a dual-band receiver and Dolphin flight controller*);

②Set up your receiver through the BF parameter assistant software on the computer [ ] The corresponding port (R1/T1 of the flight control corresponds to UART1);

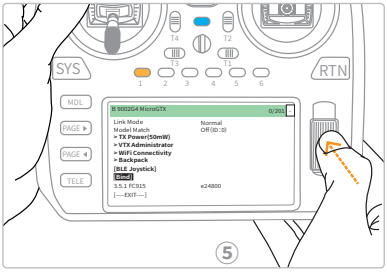
Note: The product package does not include the example flight controller and receiver!

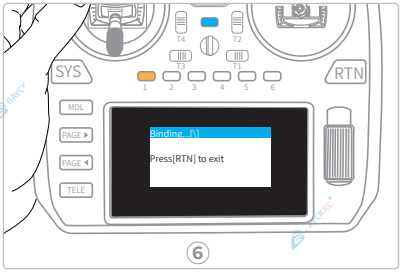




③When the receiver is powered on for the first time, it will automatically enter the binding mode by default. If the receiver has a binding record, it will no longer enter the binding mode.

④After pressing the [sys] button, the" Extension Tools" will pop up, click the[ExpressLRS] icon, enter the script, slide [ ] to select [Bind];



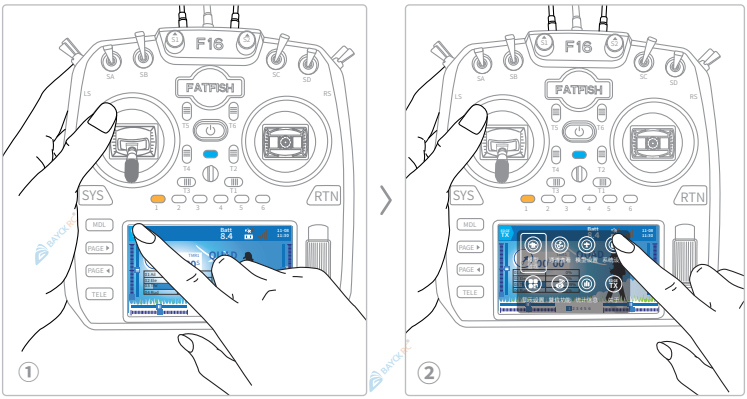


⑤Press[ ] to enter the binding mode;

⑥Binding. After the binding is completed, you can refer to the Shell Flight Controller manual to set the protocol and verify whether the stick operation is normal.

Tips: Shell Dolphin Flight Controller Instructions and Parameters https://www.bayckrc.com/productinfo/1197951.html

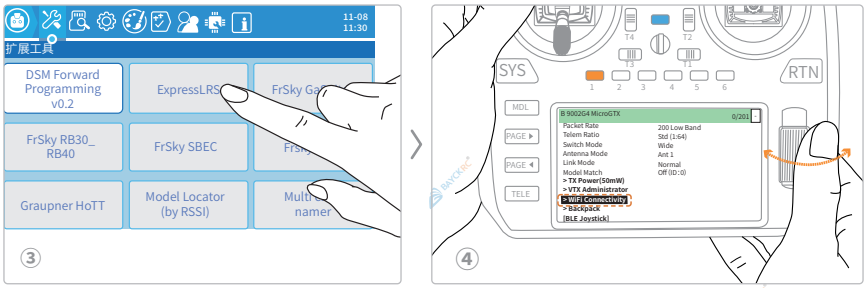
Set the binding key for the transmitter (recommended)



You need to bring your own computer or mobile device[] that can use wireless network.

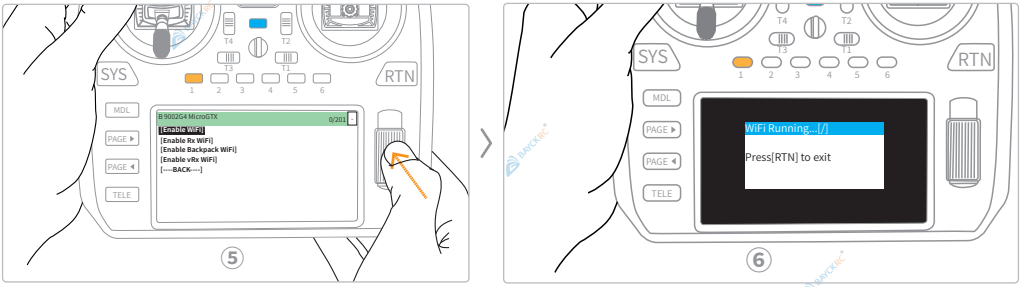
①Turn on the remote control and click the ' TX icon;

②Select the [System Settings] icon, and the "Expansion Tools "interface will pop up;



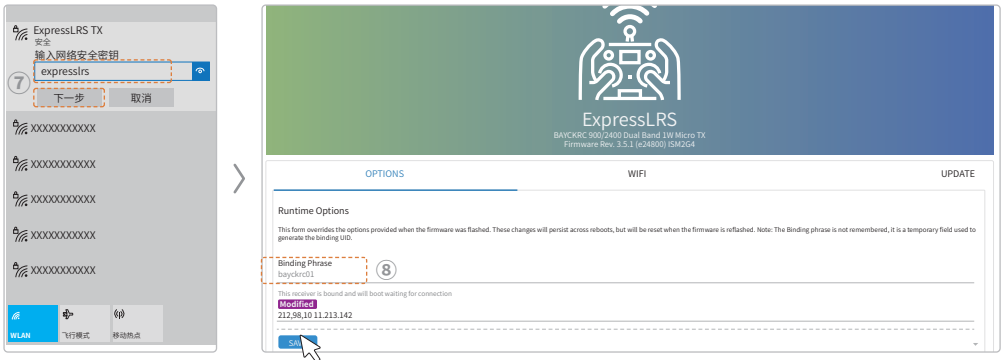
③Select the [ExpressLRS] icon to enter the ELRS script;

④Slide the wheel[ ], select the [WiFi Connectivity] option, and press [ ] to open the transmitter's WiFi page



⑤Select[Enable WiFi];

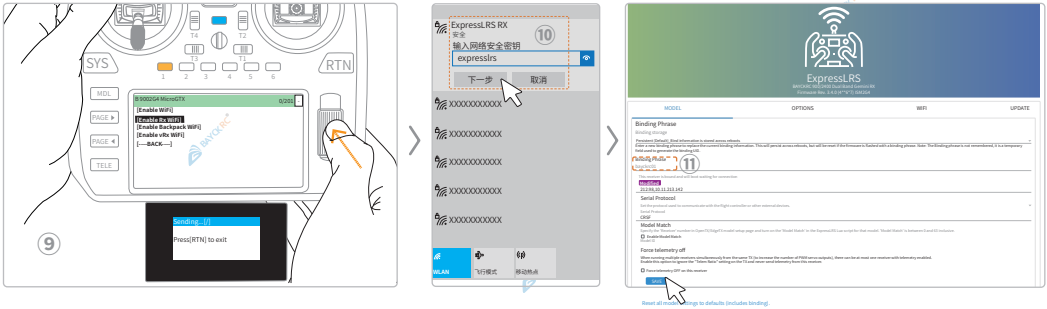
⑥Entering this interface indicates that the transmitter has turned on WiFi mode;



⑦Turn on the computer WiFi and connect [ExpressLRS TX] WiFi, the default password is: expresslrs (default lowercase);

Open the web page http://10.0.0.1/, enter your binding key in the [Binding Phrase] box, and click[SAVE].

Set the pairing key for the receiver (recommended)



⑨If the transmitter has been linked, select [Enable RX WiFi] (enter the receiver WiFi mode,F16 remote control prompt: return loss)

The receiver will automatically enter WiFi mode after being powered on for 60 seconds without communicating with the transmitter.

⑩Connect [ExpressLRS TX] WiFi, the default password is: expresslrs(default is all lowercase);

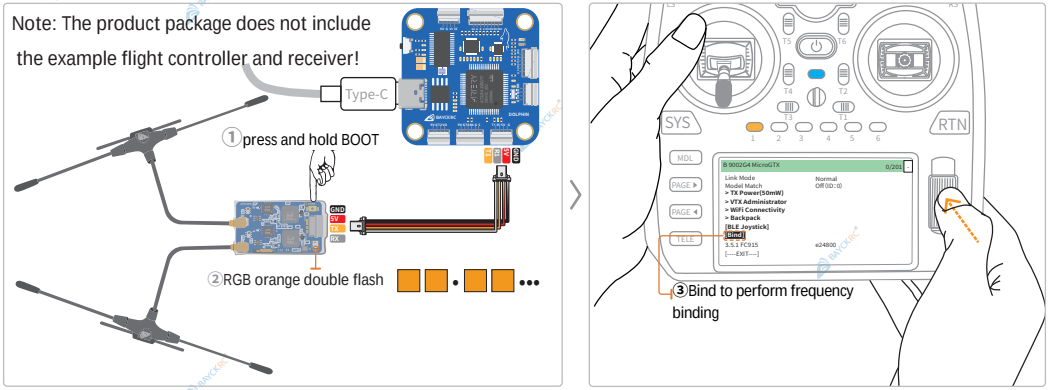
⑪Open the web page http://10.0.0.1/, enter the binding key corresponding to your transmitter (e.g. bayckrc01) in the [Binding Phrase] box, and click [SAVE].

⚠Note: To ensure safety, it is recommended to use USB power supply, disconnect the aircraft's lithium battery or remove the propellers to avoid triggering the fail-safe protection and causing the motor to rotate!

How to set the transmitter/receiver key using a mobile device

Use your mobile device to connect to the [ExpressLRS TX] WiFi, set your binding key in [Binding Phrase], and swipe up the screen to click [SAVE] to save. Both the transmitter and the receiver can set the binding key through the mobile device.

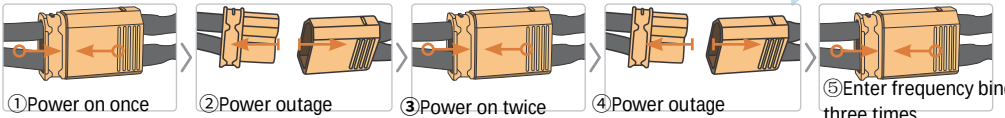
Long press the receiver's Boot button to re-enter the binding mode.



①After the flight controller is powered on, press and hold the [BOOT] button without turning on the remote controller (the receiver is not communicating);
②When RGB flashes orange twice, release the button and the system will enter the binding mode (a transmitter with a key can bind with a receiver without a key);
③Turn on the remote control [], select the [ExpressLRS] icon, enter the ELRS script, and select [Bind] to perform the binding operation.

The receiver enters the frequency binding mode after three turns on and off.

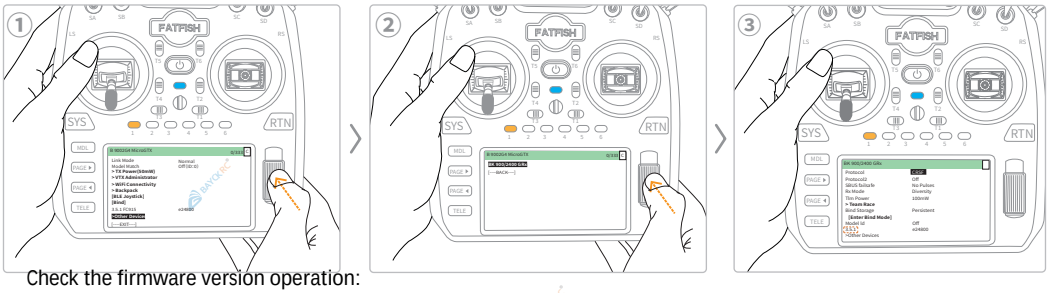
After you have completed the model assembly, but do not set the binding key and it is inconvenient to press the BOOT button to reset the receiver, you can enter the binding mode by powering on and off three times, as shown in the following figure. When the RGB double flashes, operate the remote control to bind:



⚠Note: It is recommended to use a low-voltage battery for frequency matching operations to avoid damage to electronic components caused by continuous plugging and unplugging under high voltage.

How to check the receiver firmware version and upgrade the firmware?

The following receiver is BAYCKRC 900/2400 Dual Band Gemini RX



Check the firmware version operation:

①Turn on the remote control, after communicating with the receiver, enter the ELRSscript, select [>Other Devices], and press [ ];

②Select [BK900/2400 GRx], press [ ];

③3.5.1under the receiver menu is the current receiver firmware version. To ensure the normal use of all functions, it is recommended to upgrade the firmware to the latest version.

Receiver menu	meaning	option
Protocol	Receiver Protocol	CRSF、Inverted CRSF、SBUS、Inverted SBUS、SUMD、DJI RS Pro、HoTT Telemetry、MAVLINK
Protocol2	Receiver Protocol2	In higher version firmware, this function will be hidden.Enter the receiver WIFI and enter http//10.0.0.1/hardware.html on the webpage
SBUS failsafe	SBUS failsafe	No Pulses、Last Pos
Rx Mode	receiver mode	Diversity：It will find a channel with better signal for single transmission and single reception Gemini：Double send and double receive
Tlm Power	return power	10mW、25mW、50mW、100mW、MatchTX mW
> Team Race	team game	Channel：AUX7、Position：Disabled
Bind Storage	bind frequency storage	Persistent、Volatile、Returable
[Enter Bind Mode]	enter binding mode	Trigger the receiver to rebind
Model Id	model ID	Default Off
3.5.1	current firmware version of the receiver	Understanding the current receiver firmware
>Other Devices	other options	[B 900 2G4 Micro GTX]：You can return to the transmitter script page,[--BACK--]Return

Receiver Firmware Upgrade

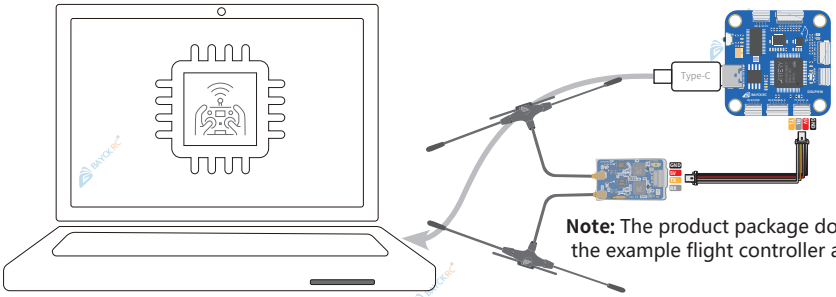
Use a computer to enter on the webpage:https://expresslrs.bayckrc.com/ (or click the link to jump)

②Click the[ ]icon to enter the transmitter's"Hardware Selection"page.

③Take BAYCKRC900/2400 Dual Band Gemini RX* as an example to demonstrate the firmware flashing process:

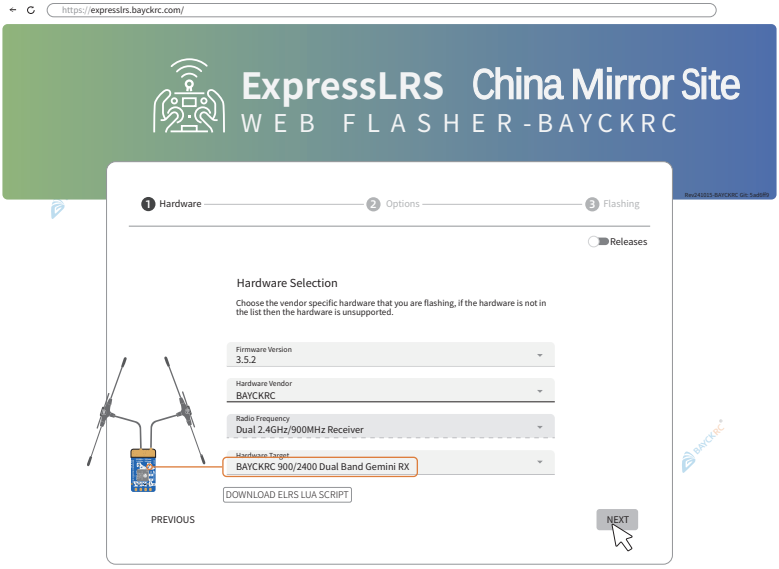
•The receiver is correctly connected to the flight controller(taking Dolphin AT32 flight controller as an example), you need to set the corresponding port, refer to P27;

•Connect the flight controller to your computer using a Type-C cable;



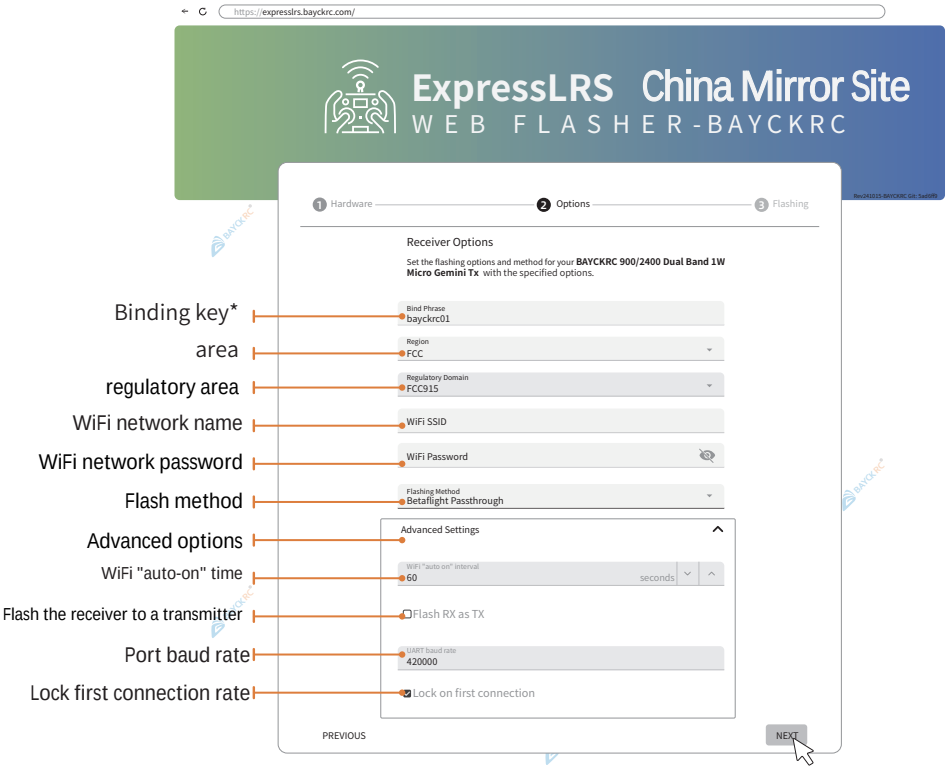
Note: The product package does not include the example flight controller and receiver!

•Select the corresponding option according to your receiver and click [NEXT] to proceed to the next step.



* ⓘ **Tip:** RX stands for receiver.

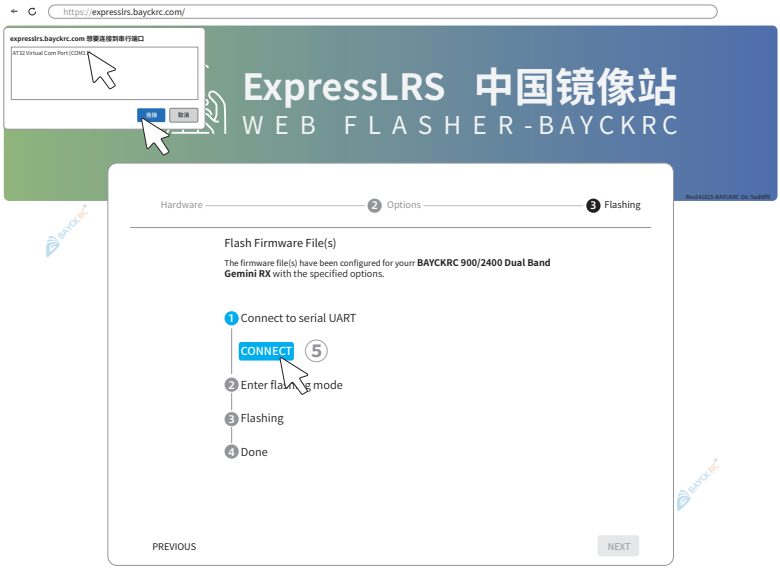
④Select [Betaflight Passthrough] in [Flashing Method] andclick [NEXT].



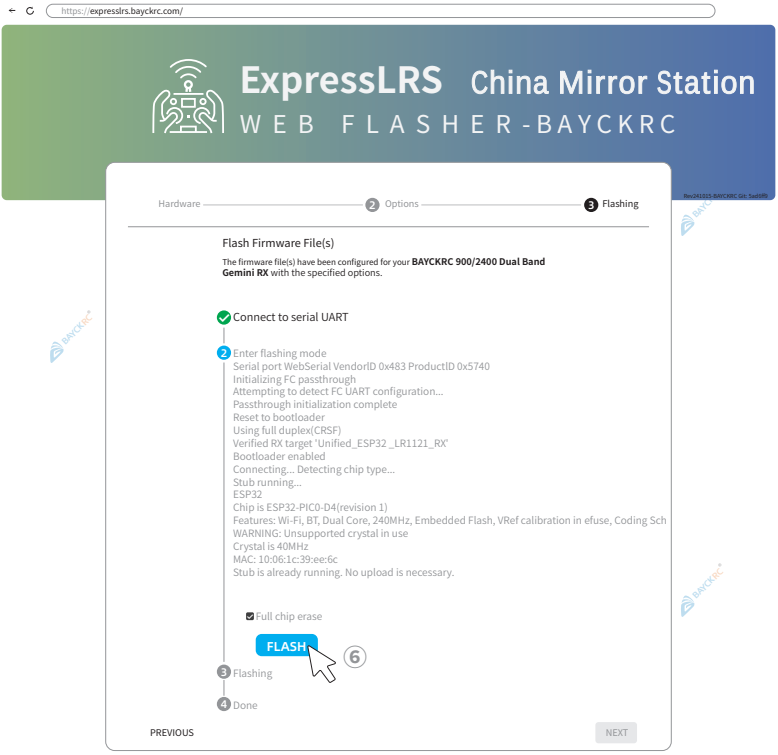
* ⓘ Tip: The [Bind Phrase] in the diagram is a sample key. You can set the corresponding characters according to your personal preferences.

Page menu	MEANING	Function
Bind Phrase	Binding key	After the transmitter and receiver are set with the same frequency binding key, fast communication can be achieved.
Region	area	default
Regulatory Domain	regulatory area	default
WiFi SSID	WiFi network name	You can modify the receiver's network name according to your preference (default: ExpressLRS RX)
WiFi Password	WiFi network password	You can modify the receiver's network password according to your preference (default: expresslrs
Flashing Method	Flashing Method	Four methods: Local Download (download firmware)/Serial UART (port flash)/Betaflight Pass through (directly flash through the flight controller of BF firmware)/WiFi (WiFi flash)
Advanced Settings	Advanced Settings	Drop-down menu available
WiFi "auto on" interval	WiFi "auto on" time	Change the receiver's WiFi on time (in seconds)
Flash RX as TX	Flash the receiver to a transmitter	You can flash the receiver to a transmitter (requires receiver support)
UART baud rate	Port baud rate	Just leave it as default
Lock on first connection	Lock first connection rate	Checking this option increases the speed of reconnection, as it ensures that the receiver and transmitter can quickly resynchronize on the same rate after a disconnect. This is useful for maintaining a stable connection and reducing connection issues caused by rate mismatches. However, it also means that if the transmitter needs to switch to a lower rate to increase range to reestablish a connection, and the receiver is locked on a higher rate, this will not be possible without manually changing the setting or restarting the receiver.

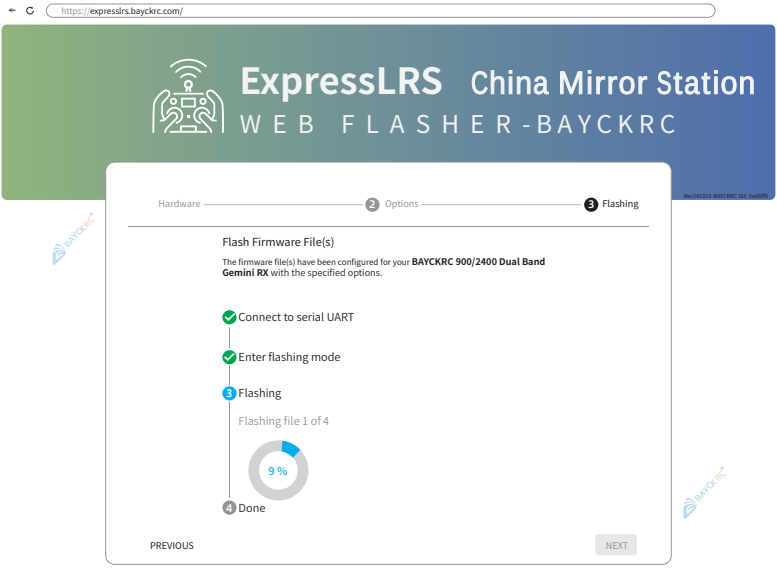
⑤Click[CONNECT], after selecting[AT32 Virtual Com Port (COM11)]，click[连接]



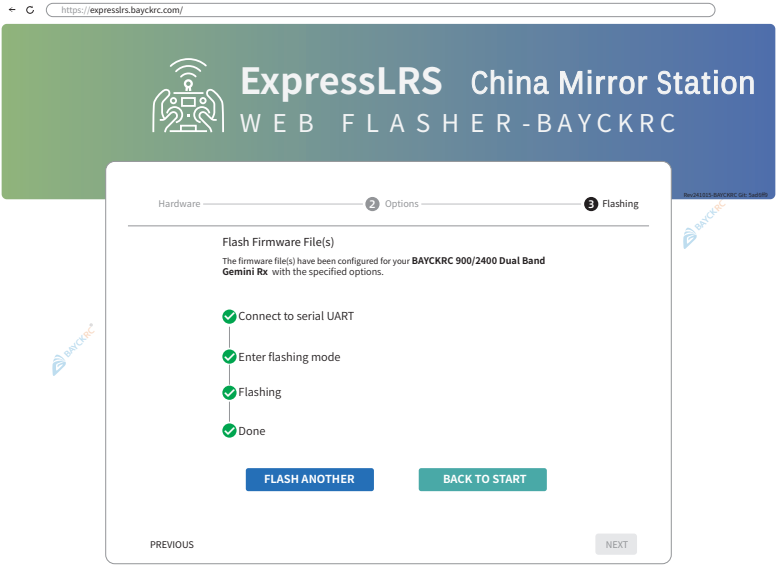
⑥Check“Full chip erase”and click [FLASH] to flash the firmware.



When the flashing progress is displayed, please wait patiently and do not disconnect the data cable or close the page to avoid flashing failure.



After the firmware is flashed, the receiver RGB flashes normally.

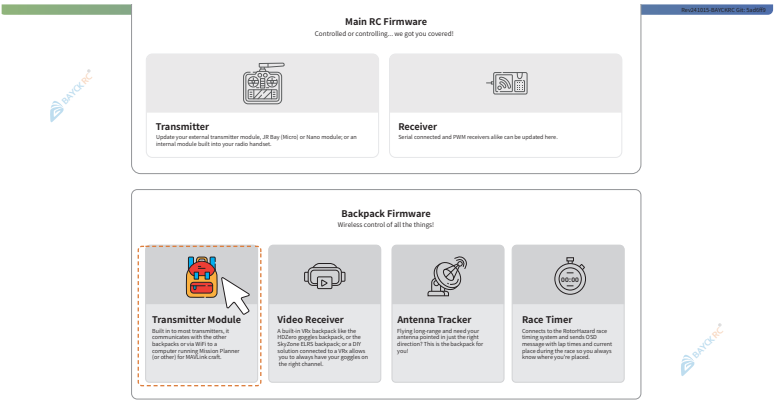


⚠**Note:** During the firmware flashing process,please do not disconnect the USB or close the flashing page.

Changing analog video transmission frequency band/channel via backpack

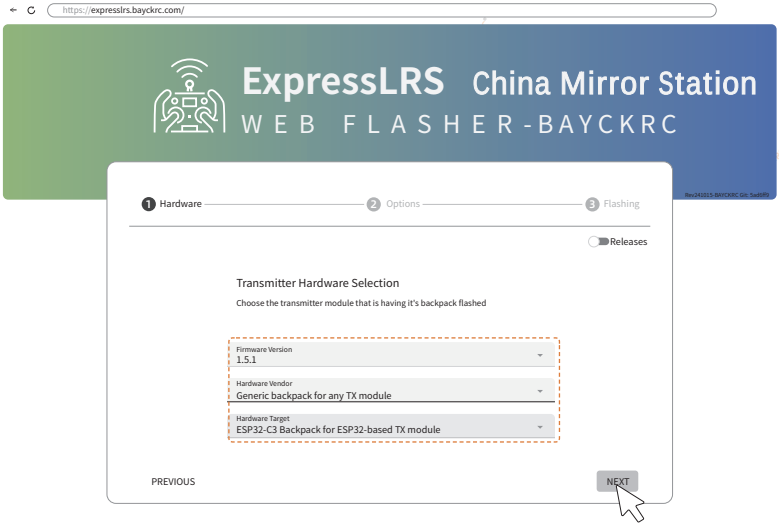
Backpack WiKi：https://github.com/ExpressLRS/Backpack/wiki

ELRS HardwareBackpack Instructions: https://www.expresslrs.org/hardware/backpack/esp-backpack/



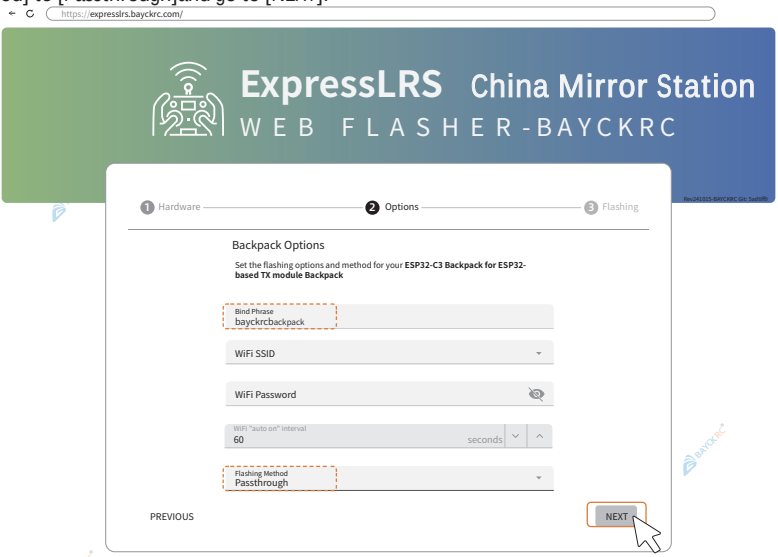
You need to bring your own computer with internet access and enter: https://expresslrs.bayckrc.com/ in your browser.

Click [ ] to enter the backpack refresh interface.

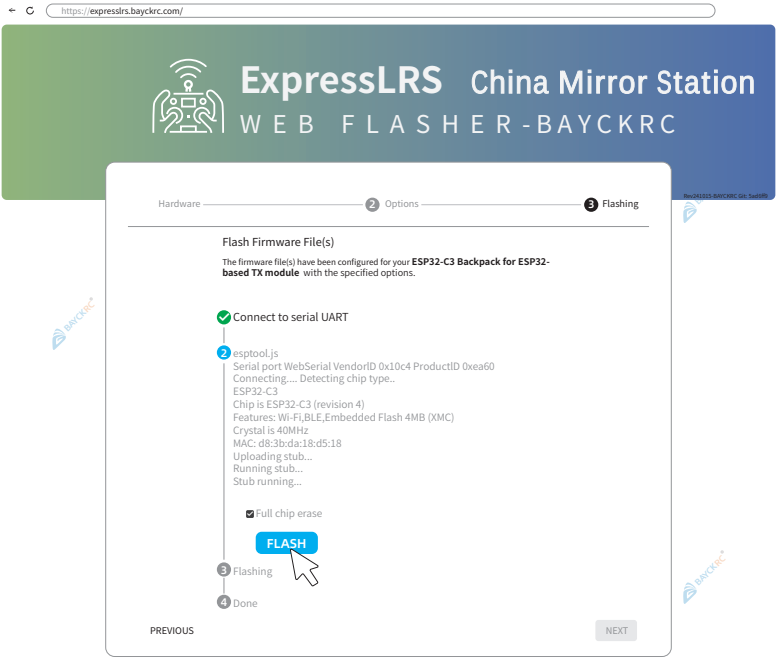


Select the corresponding option (the BAYCKRC® Dual Band transmitter backpack options are all the same), and click [NEXT] to proceed to the next step.

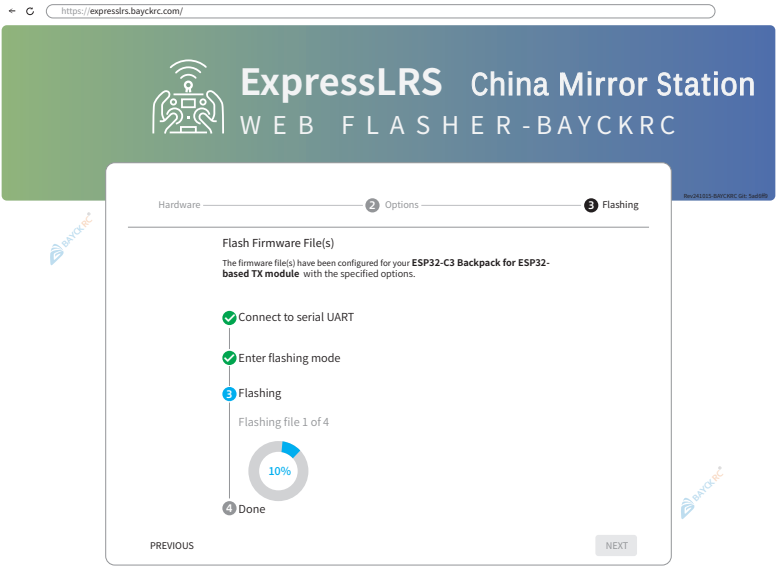
The simulated image transmission receiver backpack function in the document example only supports key pairing. You can set it according to your image transmission receiver situation or personal preference. Set [Bind Phrase], set [Flashing Method] to [Passthrough]and go to [NEXT].



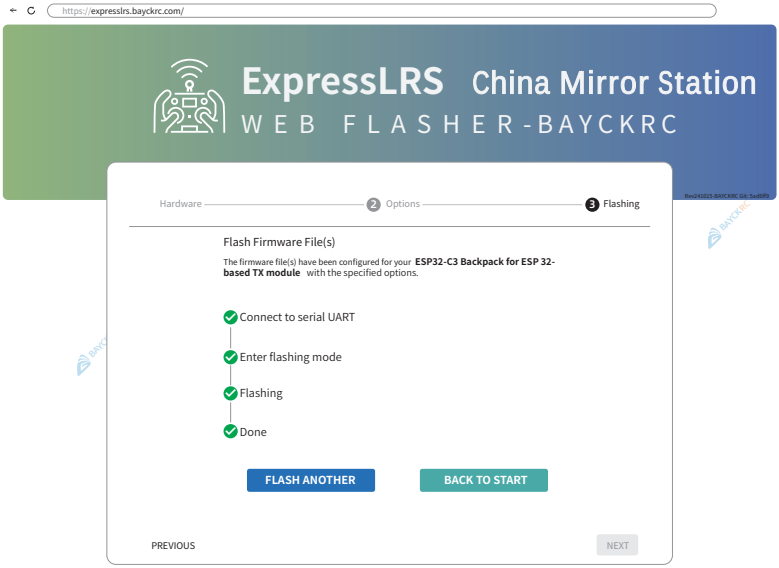
Check [Full chip erase] and click [FLASH].



During the flashing process, please wait patiently and do not interrupt it forcibly



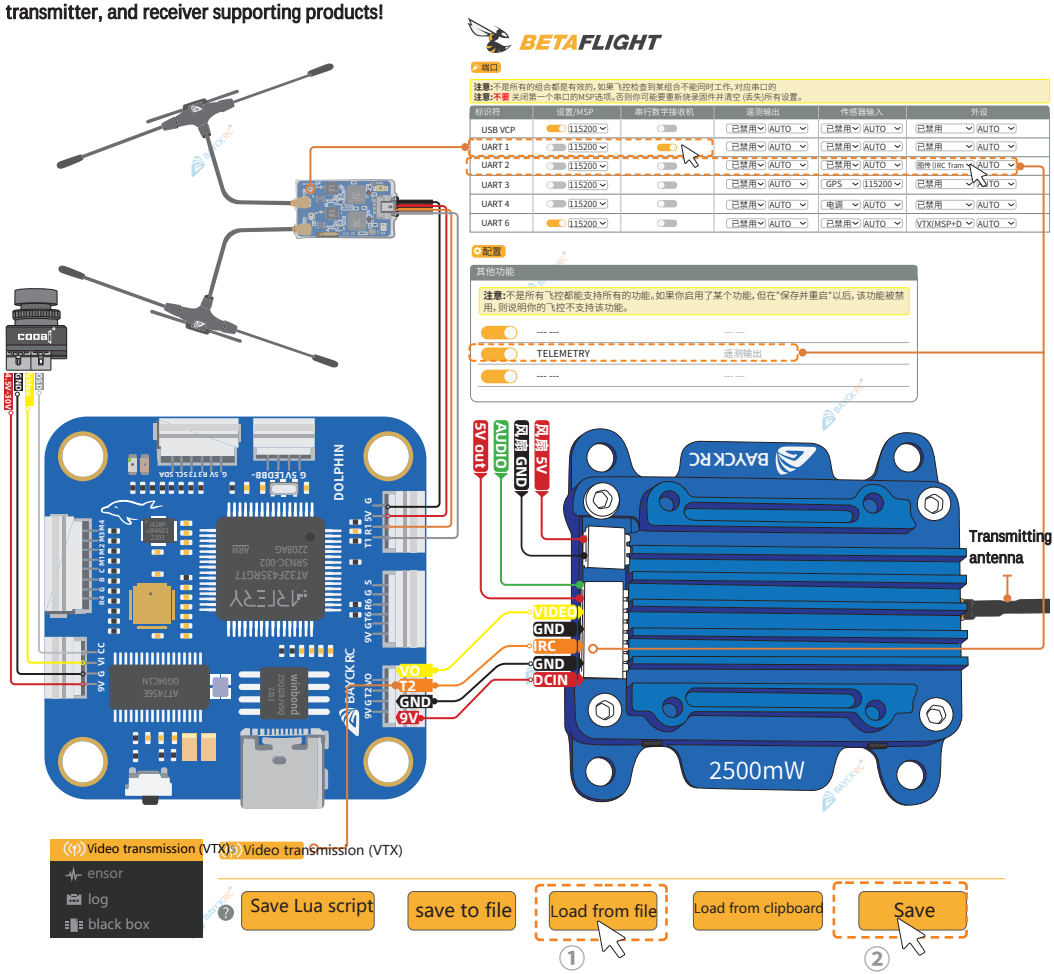
After the firmware is flashed, the indicator light flashes normally.



Analog video transmitter wiring and parameter setting

In order to ensure the normal use of the functional backpack, you need to correctly connect your device and enable the corresp onding port and function (taking the Dolphin flight control*as an example).

Note: The product package does not include the following examples of flight control, analog camera, analog image transmission transmitter, and receiver supporting products!



You can contact the image transmission manufacturer to obtain the JSON file. Install [BETAFLIGH] on your computer [ ] and open it, click the [图传(VTX)] page, select "Load from file", and save it.

*ⓘTip: Download the Dolphin Flight Controller Tuning Document https://www.bayckrc.com/productinfo/1197951.html

⚠**Note:** Be sure to install the antenna on the analog imagetransmission transmitter before powering on.

Selection of analog image transmission receiver

List of ELRS transmitters and VRX receivers that support backpack function (refer to Supported TX-Backpack Targets and Supported VRX-Backpack Targets tables):

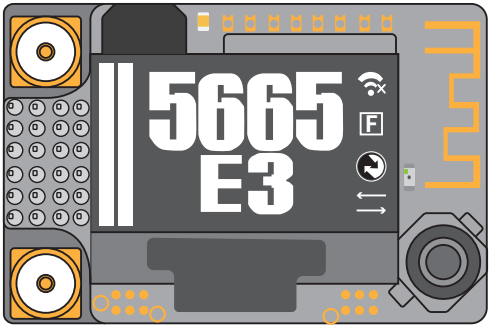
https://www.expresslrs.org/hardware/backpack/esp-backpack/#supported-tx-backpack-targets

The document takes an analog image transmission receiver that directly supports the backpack function as an example.

Prepare the computer [picture] to download T*S Agent to update the receiver.

Latest firmware: https://www.team-bl*cksh*ep.com/download/

Note: The product package does not include the analog video transmission receiver in the following example!



Update the firmware of the analog video transmission receiver

① Use USB to connect the analog receiver to the computer, open T*S Agent, and select [Fusion Module].

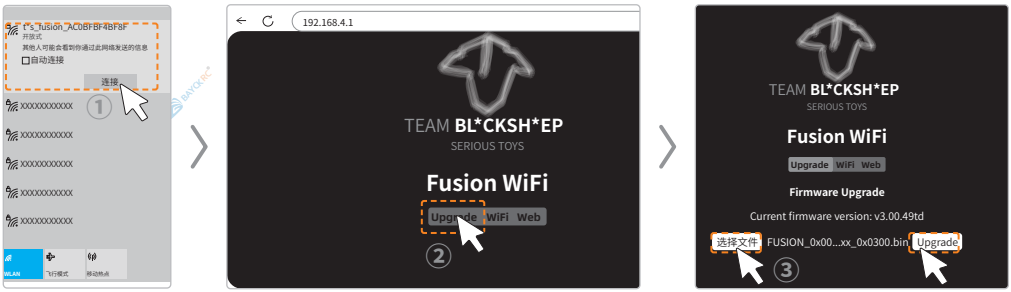
②Click[FIRMWARE] Upgrade the analog receiver to the latest firmware [V2.39].

Update the WiFi firmware of the analog video transmission receiver Download the WiFi firmware [T*S Cloud - Wifi Firmware] in Downloads on the product details page.

https://www.team-bl*cksh*ep.com/products/prod:t*s_fusion

Download [t*s-cloud-activation] on your computer, unzip it, and open the [V3.00] folder.

The fusion receiver The firmware is: [FUSION_0x000350xx_0x0300]

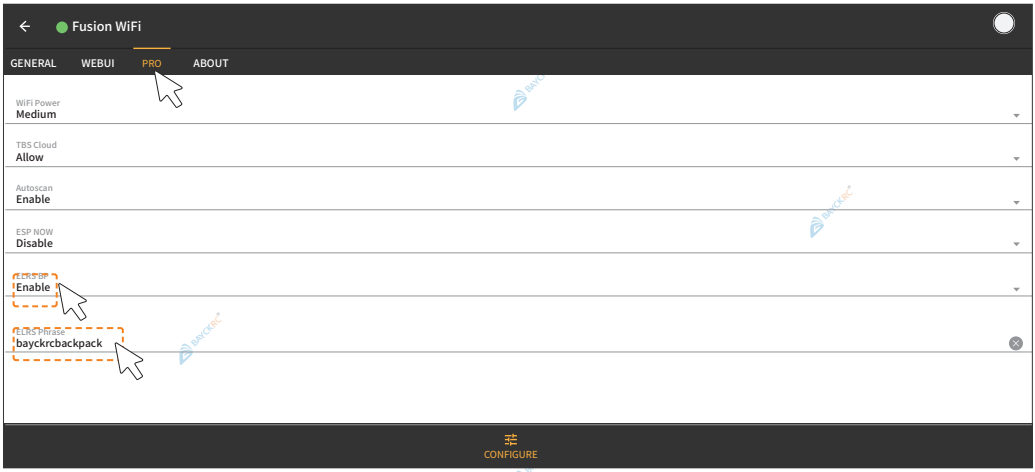


①Turn on your analog image transmission receiver and connect to the WiFi of the analog image transmission receiver through the computer (no password).

②Enter [192.168.4.1] on the web page and select[Upgrade].

③Click [Select File]→Open [t*s-cloud-activation]→Open [V3.00]→Select [FUSION_0x000350xx_0x0300] and click [Upgrade]. Please wait patiently for the WiFi upgrade to complete.

Turn on the analog video receiver [ELRS BP] and set [ELRS Phrase]



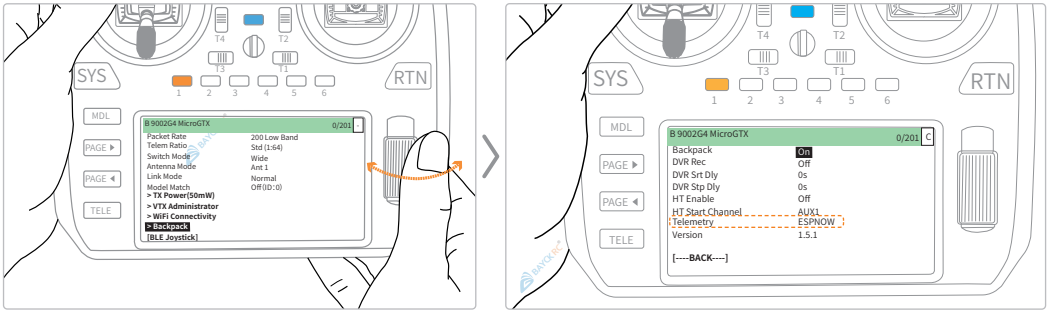
①Use [Micro USB] to connect to your computer [ ].

②Open T*S Agent, click [Fusion WiFi], and open the [PRO] page.

③Set [ELRS BP] to[Enable]; and set [ELRS Phrase] to the same key as the transmitter backpack.

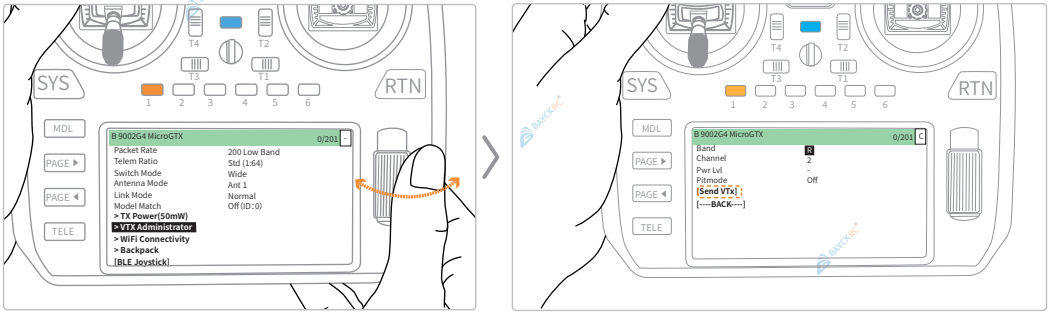
Backpack script settings

- Turn on the remote control [ ], enter the [ELRS] script, and select [> Backpack].
- Set [Telemetry] to [ESPNOW].



How to change the band/channel of both the transmitter and receiver

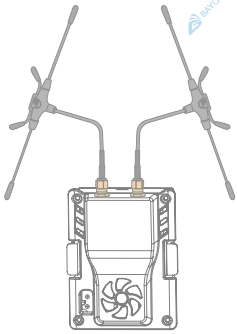
- Open the remotecontrol [ ], enter the [ELRS] script, and select [> VTX Administrator].
- After setting the Band/Channel of your video transmission, select [Send VTx] to synchronize to the analog video transmission transmitter and analog video transmission receiver.



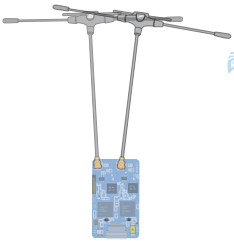
Convert a transmitter to a signal repeater rquired accessories and preparation before setup

The function of signal relay is to expand the coverage of your remote control signal. Before modifying the parameters and settings, you need to prepare two sets of transmitters and receivers, a model aircraft lithium battery with XT30 plug (2S-6S, voltage within 7-30V), a tripod, and some cable ties. Example accessories are: BAYCKRC 900/2400 Dual Band Gemini Micro TX Transmitter, BAYCKRC 900/2400 Dual Band Gemini RX receiver.

Note: The product package does not include the following example accessories!

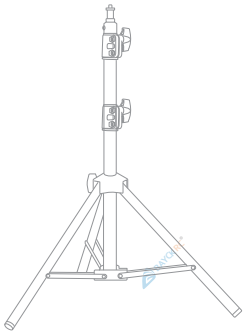


Transmitter×2

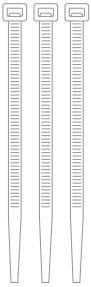


Receiver×2

Lithium battery×1



Tripod×1

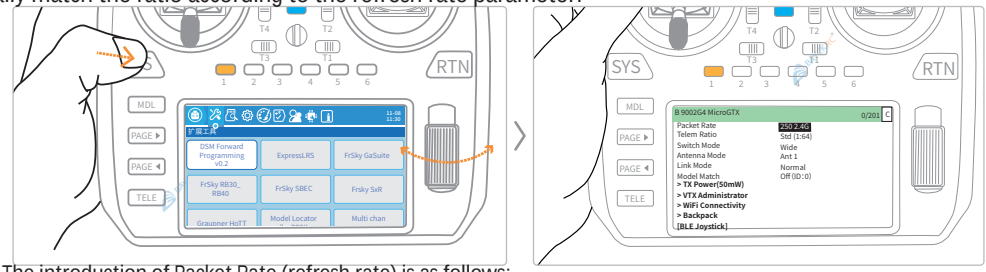


Ties

Set the same Packet Rate for both transmitters and receivers:

• Use the remote control [ ] to set the Packet Rate (refresh rate) and Telem Ratio (return ratio) of the two transmitters to be the same.

• The Packet Rate(refresh rate) of the two transmitters and receivers in the diagram is: 250 2.4G, Telem Ratio: Std (1:64).Telem Ratio is the ratio of the sensor parameters other than the flight control, such as GPS coordinates. For racing aircraft, just select the default standard parameter[Sta], and it will automatically match the ratio according to the refresh rate parameter.



The introduction of Packet Rate (refresh rate) is as follows:

The more frequently you press the stick, the higher the refresh rate should be, the lower the delay is, the shorter the communication distance is, and vice versa.

Racing: The higher the refresh rate, the recommended value is 500Hz/1000Hz;

Fancy flying: In most cases, the default value is 500hz at 2.4GHz and 200Hz at 900MHz;

Aerial photography/long-distance navigation: The lower the refresh rate, the recommended value is 50Hz/25Hz;

Gemini: The best match for racing.

Diversity/Dual band: Dual-band fusion is suitable for environments with very complex electromagnetic environments.

The above values are for reference only. Please determine the specific parameters based on your flight environment and needs.

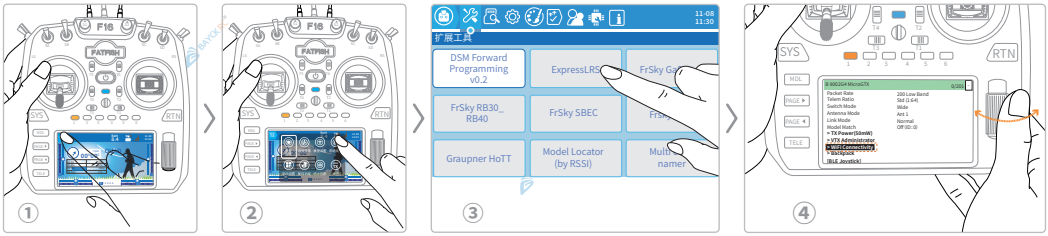
⚠Note: Never change the packet rate while flying,as this will force the transmitter TX and receiver RX to disconnect.

Set the binding key for both transmitters and receivers:

• Set the link key between transmitter 01 and receiver 01 to: bayck01 (the document is for reference only, the specific key should be set according to your preference);

• Set the link key between transmitter 02 and receiver 02 to: bayck02 (the document is for reference only, the specific key is set according to your preference).

Modify the RX/TXpin of the relay transmitter

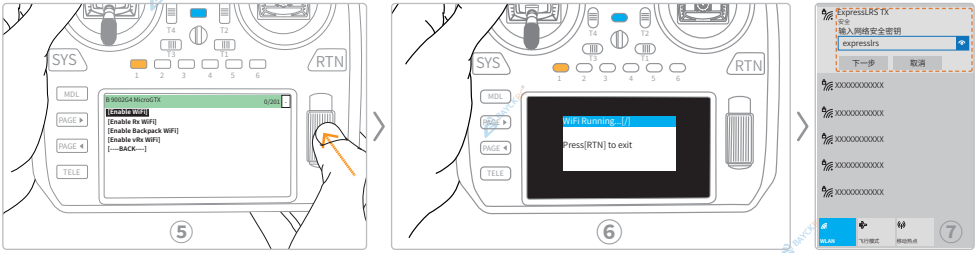


①Turn on the remote control[ ] and click the [ ] icon;

②Select the [ ]icon to pop up the "Expansion Tools" interface;

③Select the[ExpressLRS] icon to enter the ELRS script;

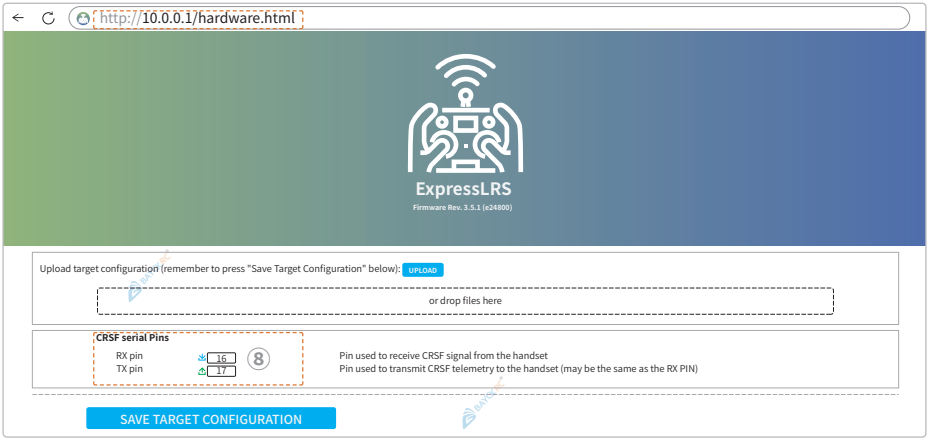
④Slide [ ], select the [WiFi Connectivity] option, and press [ ] to open the transmitter's WiFi page.



⑤ Select [Enable WiFi];

⑥ Entering this interface indicates that the transmitter has turned on WiFi mode;

⑦ Connect to[ExpressLRS TX] WiFi, the default password is: expresslrs (default is all lowercase);



⑧Open the webpage http://10.0.0.1/hardware.html, change the RX pin to 16, the TX pin to 17, After changing the menu, Scroll down to the bottom and click [SAVE TARGET CONFIGURATION]。

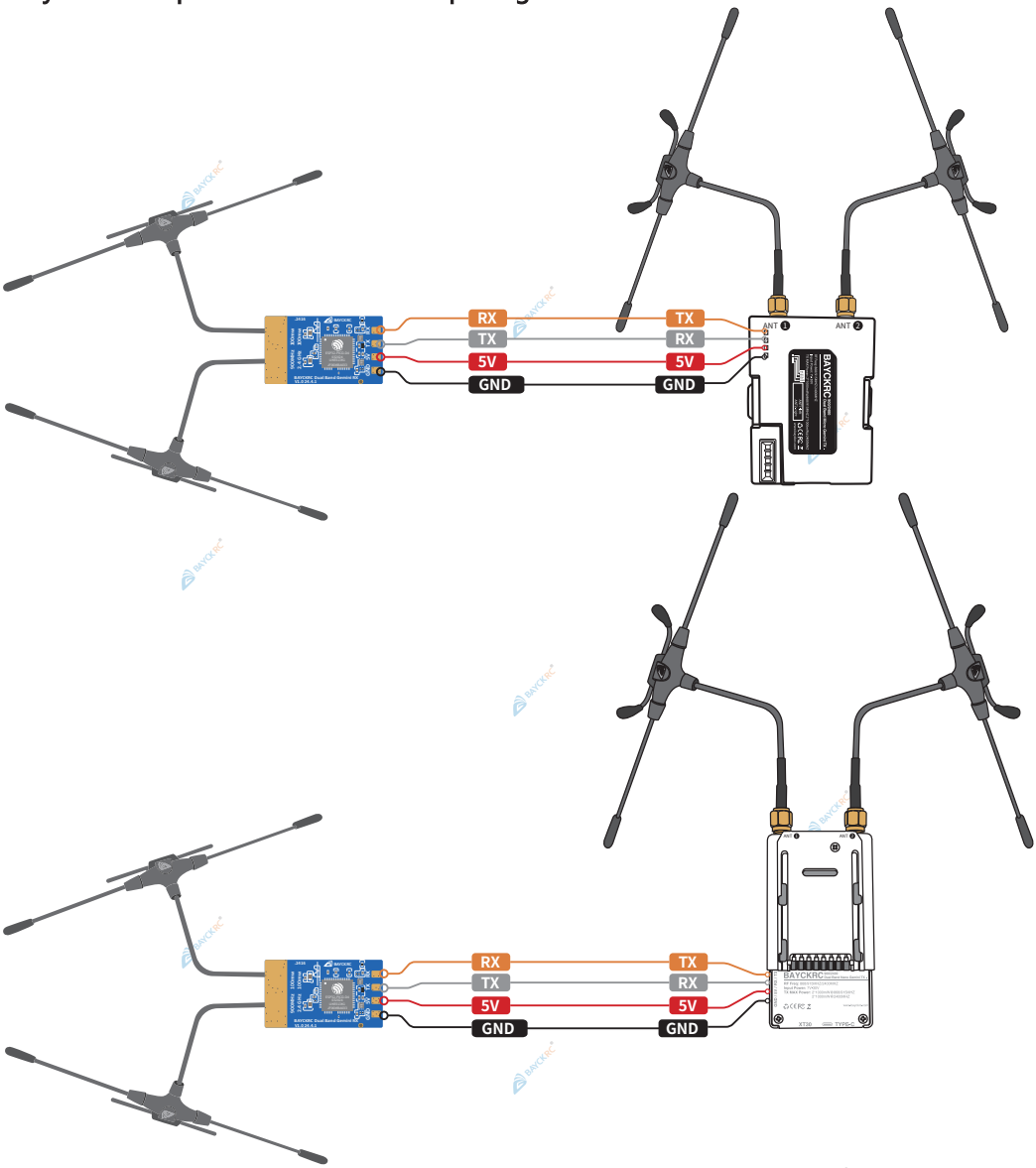
ⓘTip: Change the value of the transmitter's RX pin and TX pin back to 13 before normal use, otherwise the remote control will not be able to enter the transmitter script.
All ELRS transmitters can become signal repeaters by modifying the RX pin and TX pin parameters.

How to restore to normal transmitter:

①Disconnect the connection between the transmitter and the receiver, and then power on the transmitter, otherwise the transmitter will not be able to enter WiFi mode;
②After entering WiFi mode, use your computer to connect to [ExpressLRS TX] WiFi;
③Open http://10.0.0.1/hardware.html on the web page, change RX pin to 13 and TX pin to 13.

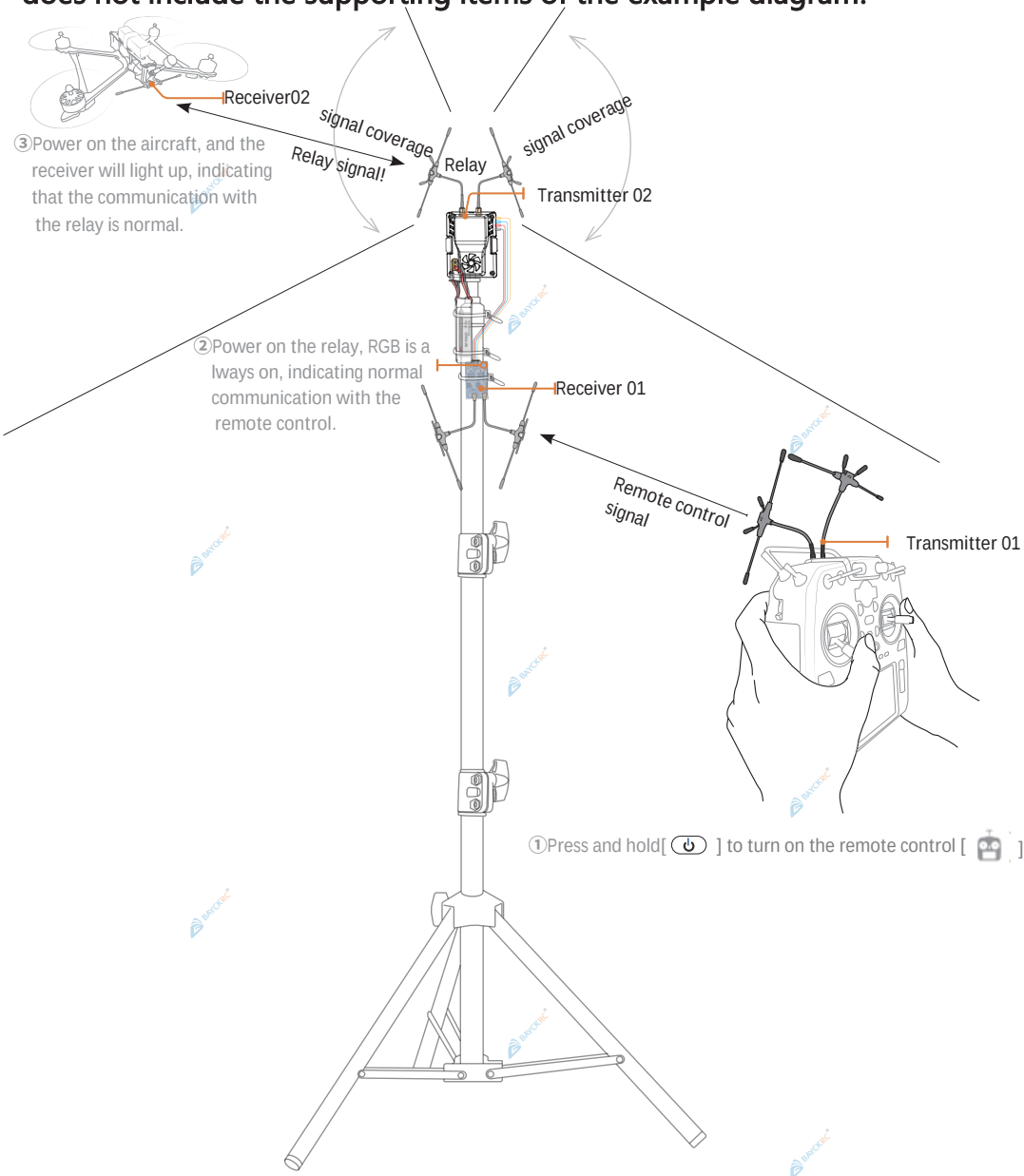
Relay transmitter and receiver wiring diagram

Note: The wiring definition of other BAYCKRC® Dual Band series is the same. Please refer to your actual product for details. The package does not include the receiver!



* ⓘ **Tip:** The reserved serial port definitions for single and dual antennas are consistent.

Relay link working diagram and power-on sequence The product package does not include the supporting items of the example diagram!



Power off operation sequence

①Disconnect the power of the aircraft first;

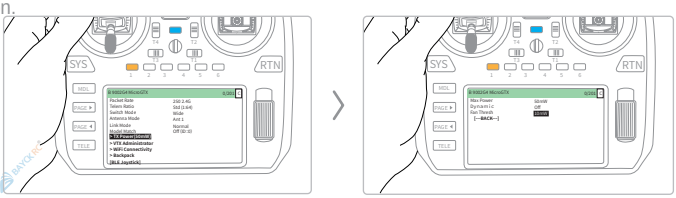
②Turn off the relay transmitter;

③Turn off the remote control.

Frequently Asked Questions and Solutions

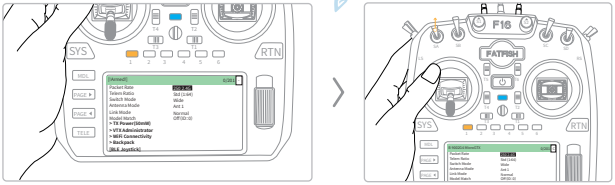
Why is my transmitter fan not working?

Enter the ELRS script, change the [Fan Thresh] of the transmitter fan, set the value to [10mW], and the fan will start when the transmitter is turned on.



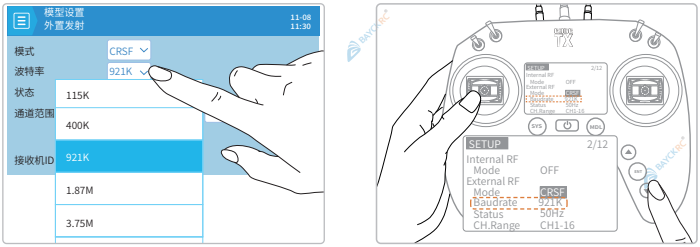
Why does my transmitter say "[!Armed!]" when entering script?

If you have enabled the 5th channel before communicating with the receiver, you can reset the 5th channel. For example, if your 5th channel is SA, just move the lever to the top.



Enter the transmitter script, set the Packet Rate, there is no F1000 option, or the value is: F1000 (-104dBm), prompt: "Error:Baud rate too low"?

Change the baud rate (F16 remote control) or Baudrate (Nano remote control) to: 921K or higher.Refer to P17, P18

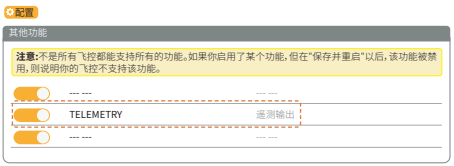


Why can't I connect to the transmitter or receiver's WiFi?

Do not turn on two transmitters or two receivers at the same time. When two transmitters or receivers enter WiFi mode at the same time and have the same name and password, they will not be able to connect normally.

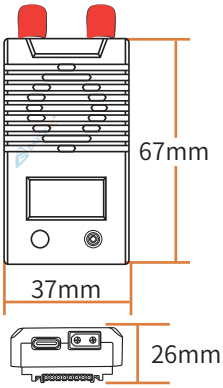
Why can't I sync to the analog video transmitter after changing the parameters using the Backpack function?

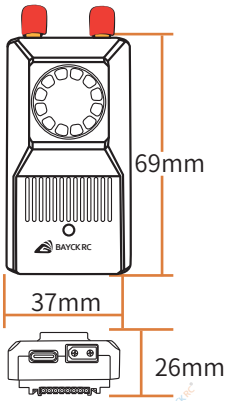
The TELEMETRY(telemetry output) on the flight control may not be turned on. Please refer to P39 for wiring.

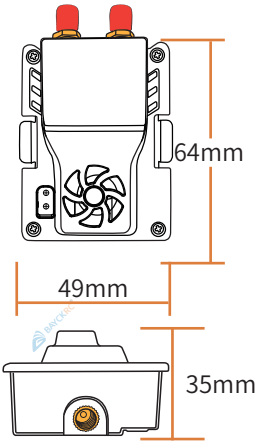


Specification

BAYCKRC 433/900/2400 TX Dimensions







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Bilibili APP Scan the QR code to follow the official account of BAYCKRC

Scan QQ to join the official communication group

⚠Note: When using this product, be sure to comply with local laws and regulations.

The product is subject to the actual product