Micro TX V2 Module--User Manual

ExpressLRS is a new generation of open-source wireless remote control system, dedicated to providing the best wireless link for FPV Racing. It is based on the fantastic Semtech SX127x/SX1280 LoRa hardware combined with Espressif or STM32 processor, with characteristics such as long remote control distance, stable connection, low latency, high refresh rate, and flexible configuration.

BETAFPV Micro TX V2 Module is a high-performance wireless remote control product based on ExpressLRS V3.3, with strong anti-interference performance and stable signal link. It improves its RF transmission power to 2W based on the previous Micro RF TX Module, and redesigns the heat dissipation structure. All the updates make the Micro TX V2 Module get better performance and more suitable for applications such as racing, long-range flights, and aerial photography, which require high signal stability and low latency.

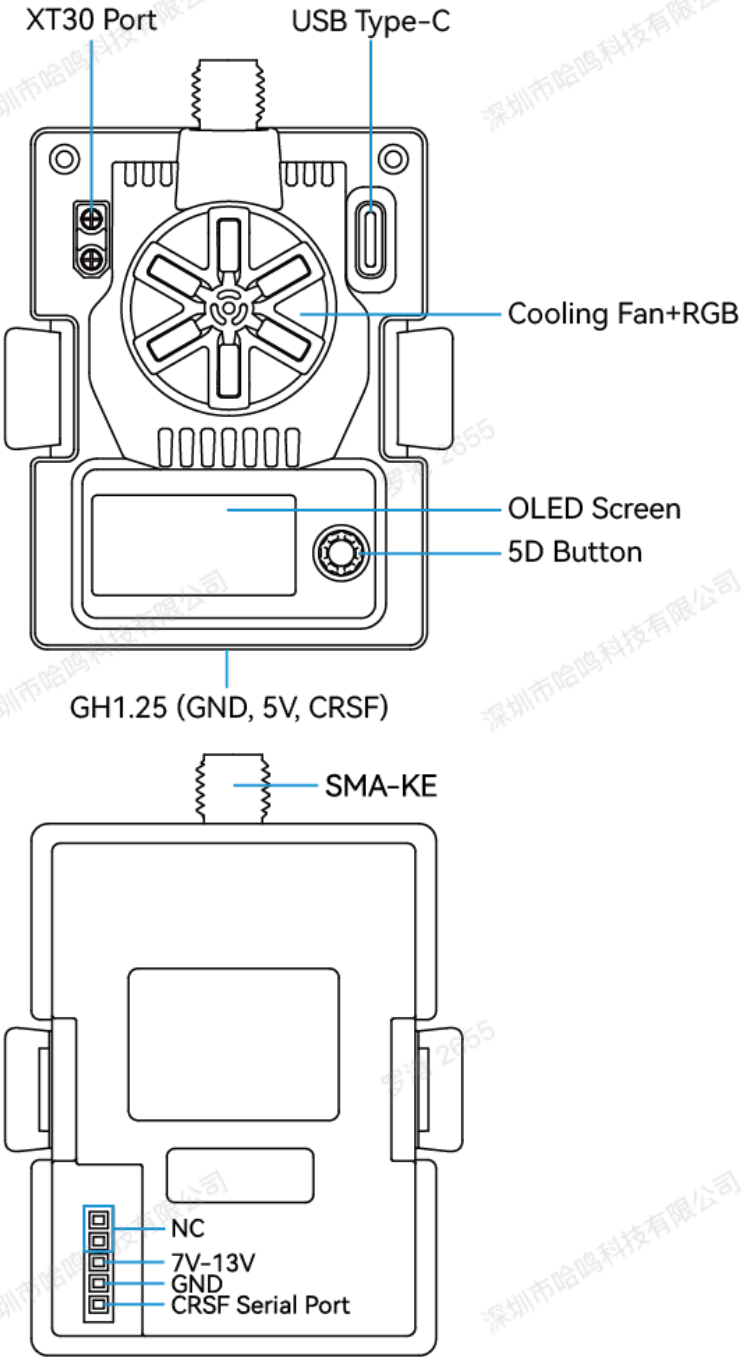
Github Project Link: https://github.com/ExpressLRS

Specifications:

915MHz&868MHz Version

- Packet Rate: 25Hz/50Hz/100Hz/100Hz Full/200Hz/D50
- RF output Power: 10mW/25mW/50mW/100mW/250mW/500mW/1000mW/2000mW chg
- Frequency: 915MHz FCC/868MHz EU
- Power Consumption: 10V,1A@2000mW,200Hz,1:128
- Antenna Port: SMA-KEchg

- Input Voltage: 7V~13V
- USB Port: Type-C
- XT30 Power Supply Range: 7-25V(2-6S) chg
- Built-in Fan Voltage: 5V



Note: Please assemble the antenna before powering on. Otherwise, the PA chip will be damaged permanently.

Note: Please DO NOT use 6S or above battery to power up the TX module. Otherwise, the power supply chip in the TX module will be damaged permanently.

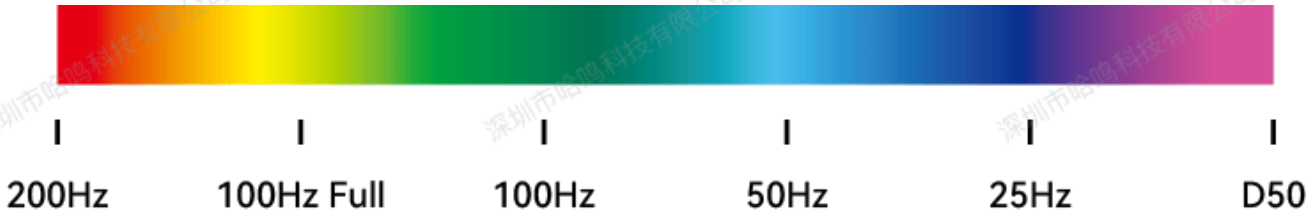
BETAFPV Micro TX V2 Module is compatible with all the radio transmitter which has the Micro module bay (AKA JR bay, SLIM bay)

Indicator Status

Receiver Indicator Status Includes:

Indicator Color	Status	Indicating
Rainbow	Fade Effect	Power On
Green	Slow Flash	WiFi Update Mode
Blue	Slow Flash	Bluetooth Joystick Mode
Red	Fast Flash	RF Chip Not Detected
Orange	Slow Flash	Waiting For Connection
	Solid On	Connected And The Color Indicates Packet Rate
	Slow Flash	No Connection And The Color Indicates Packet Rate

The packet rate corresponding to the RGB indicator color is shown below:



D50 is an exclusive mode under ELRS Team900. It will send the same packets four times repeatedly under 200Hz Lora mode, with a remote control distance equivalent to 200Hz.

100Hz Full is the mode that achieves 16-channel full resolution output at the 200Hz packet rates of Lora mode, with a remote control distance equivalent to 200Hz.

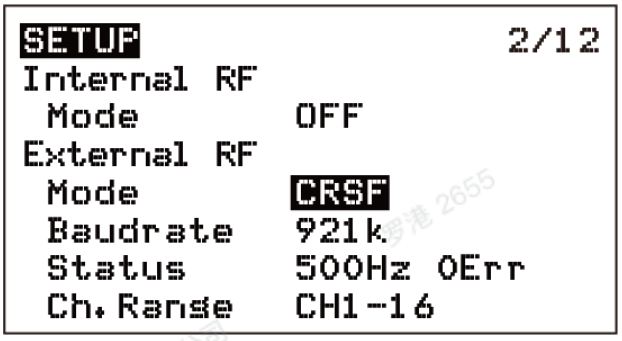
Transmitter Configuration

The Micro TX V2 Module defaults to receive signals in the Crossfire serial data protocol (CRSF), so the TX module interface of the remote control needs to support CRSF signal output. Taking the EdgeTX remote control system as an example, the following explains how to configure the remote control to output CRSF signals and control the TX module using Lua scripts.

CRSF Protocol

In the EdgeTX system, select "MODEL SEL" and enter the "SETUP" interface. In this interface, turn off Internal RF (set to "OFF"), turn on External RF, and set the mode to CRSF. Connect the module correctly and then the module will function properly.

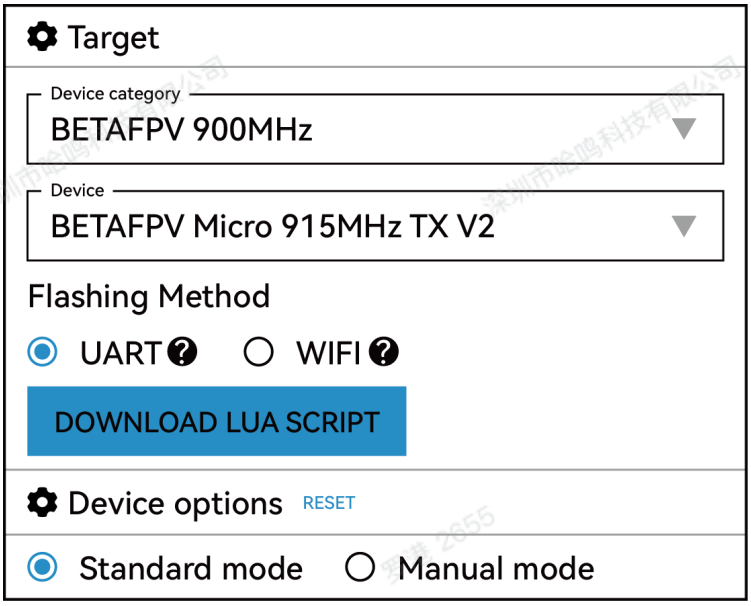
Settings are shown below:



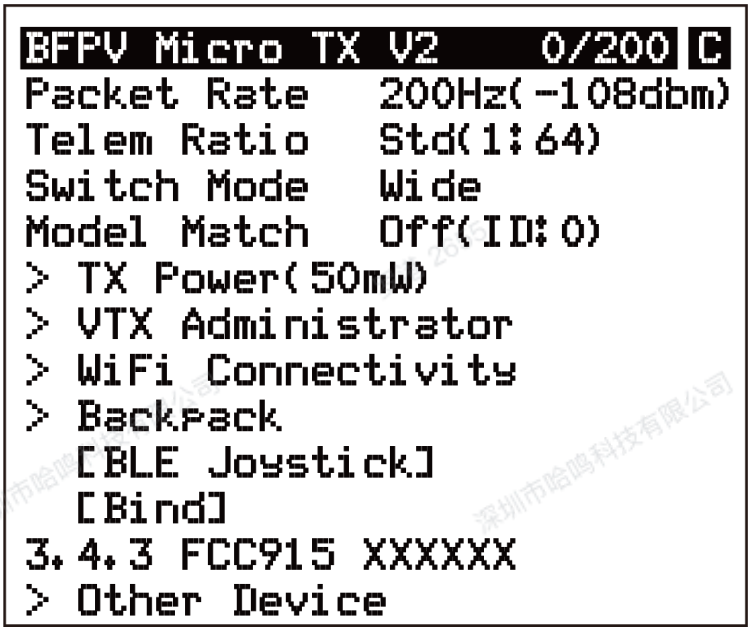
Lua Script

Lua is a lightweight and compact script language. It can be used by being embedded in radio transmitters and easily reading and modifying the parameter set of the TX module. The directions for using Lua are as below.

- Download the elrsV3.lua on BETAFPV official website or ExpressLRS configurator.



- Save the elrsV3.lua files onto the radio transmitter's SD Card in the Scripts/Tools folder;
- Press the "SYS" button or the "Menu" button on the EdgeTX system to access the "Tools" interface where you can choose "ExpressLRS" and run it;
- The below images show the Lua script if it runs successfully.



- With the Lua script, users could configure the set of parameters, such as Packet Rate, Telem Ratio, TX Power , and the like. The main functions of Lua script are shown in the table below. All function introductions can be viewed on the technical support page of the official website.

Parameter	Note
BFPV Micro TX V2	Product Name, up to 15 characters.
0/200	Drop ratio of the communication between radio control and the TX module. i.e. the TX module received 200 packets and lost 0 packets.
C/-	C: Connected. -: Unconnected.
Packet Rate	Packet rate of communication between the TX module and receiver. The higher the frequency, the shorter the interval between remote control packets sent by the TX module, the more precise the control is.
Telem Ratio	Receiver telemetry ratio. e.g.,1:64 means that the receiver will send one telemetry packet back for every 64 remote control packets it receives.
TX Power	Configure the RF transmission power of the TX module, dynamic power, and the threshold for the cooling fan.
WiFi Connectivity	Enable the WiFi of the TX module/receiver/backpack of VRX.
Bind	Enter the binding mode.
3.4.3 FCC915 xxxxxx	Firmware version, frequency band, and serial number. The factory firmware version and serial number may vary.

Note: Learn more details of ExpressLRS Lua here: https://www.expresslrs.org/quick-start/transmitters/lua-howto/ .

Button and OLED

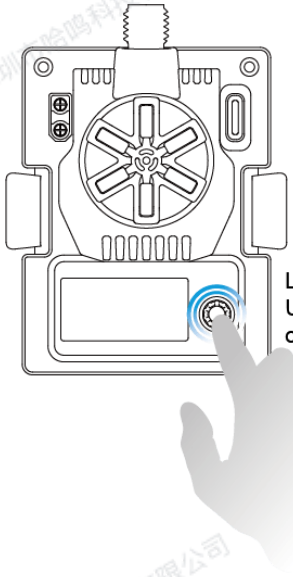
There is a 5D button on the Micro TX V2 module. Below is the basic operation of the button and OLED.

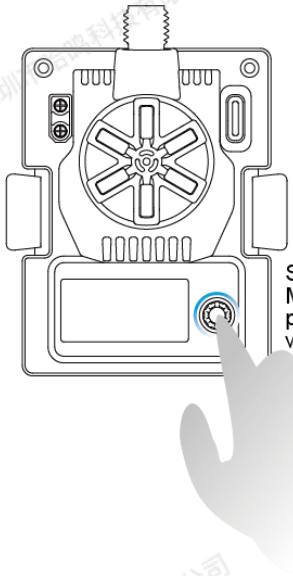
Long Press: Unlock and enter the menu page, or apply current settings in the menu page.

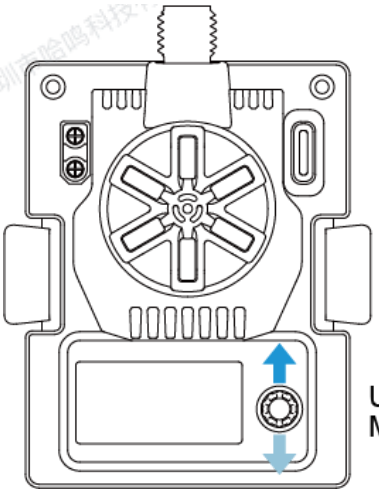
Up/Down: Move to the last/next row.

Left/Right: Change the value of this row.

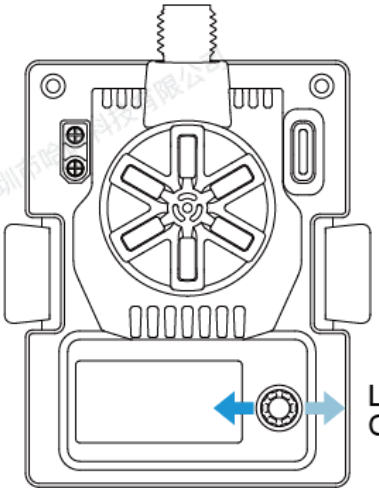
Short Press: Move to the Bind position and short press the button. Then the RF module will enter binding status.







Up/Down:
Move to the last/next row.



Left/Right:
Change the value of this row.

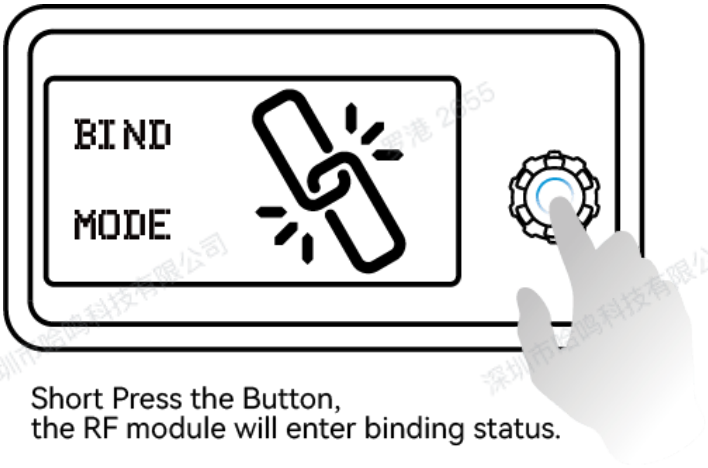
Note: When the RF TX module enters WiFi Upgrade status, the button will be invalid. Please re-power the RF TX module after the firmware update via WiFi.

Bind

The Micro TX V2 Module comes with offical major release ExpressLRS V3.4.3 protocol and no Binding Phrase included. So please make sure the receiver works on offical major release ExpressLRS V3.0.0 protocol. And no Binding Phrase set.

1. Put the receiver into binding mode and wait for the connection；

2. Using the button and OLED, move to the Bind position and short press the button. Then the RF module will enter binding status. Or you can enter binding mode by clicking 'Bind' in the Lua script. If the Indicator of the receiver and the module turned solid. It indicates that they bound successfully.

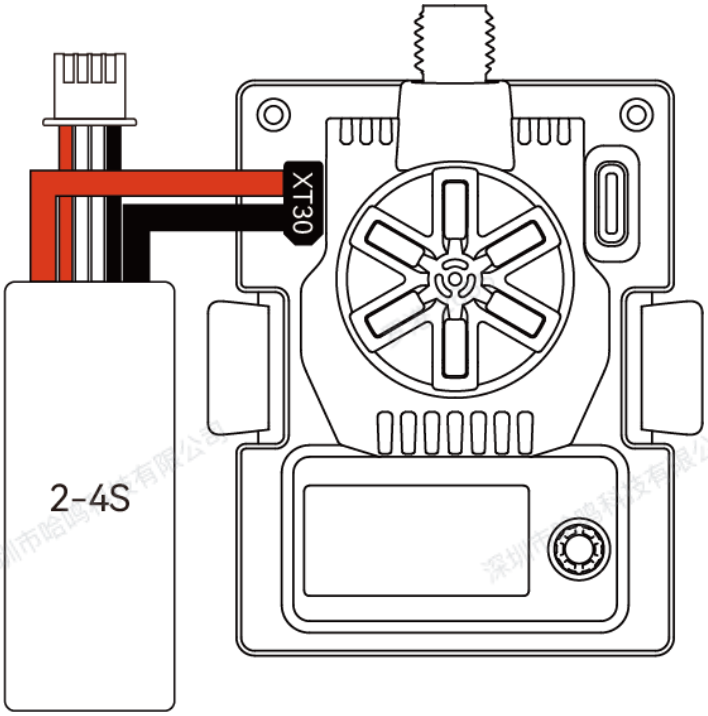


Short Press the Button,
the RF module will enter binding status.

Note: If the TX module has been reflashed firmware with a binding phrase, then using the above binding method will not be bound to other devices. Please set the same binding phrase for the receiver to perform automatic binding.

External Power

The power consumption of the Micro TX V2 Module when using a transmission power of 500mW or above is relatively high, which will shorten the usage time of the remote control. Users can connect an external battery to the TX module through the XT30 port. The usage method is shown in the following figure.



Note: Please check the battery level before inserting the TX module to ensure that the battery is fully charged. Otherwise the TX module will be rebooted due to insufficient power supply, resulting in disconnection and loss of control.

Q&A

[Q1] Unable to enter LUA script.

Possible reasons are as follows：

1. The TX module is not well connected to the remote control, need to check whether the JR pin of the remote control and the TX module socket are in good contact;

2. The version of ELRS LUA script is too low, and needs to be upgraded to elrsV3.lua;

3. The baud rate of the remote control is too low, please set it to 400K or above (if there is no option to set the baud rate of the remote control, you need to upgrade the firmware of the remote control, e.g., the EdgeTX needs to be V2.8.0 or above).

More Information

As the ExpressLRS project is still frequently updated, please check BETAFPV Support (Technical Support -> ExpressLRS Radio Link) for more details and the latest manual.

https://support.betafpv.com/hc/zh-cn

- Latest manual
- How to upgrade the firmware
- FAQ