ELRS TX Module
User Manual

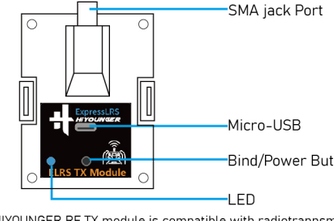
Welcome to **ExpressLRS!**

HIYOUNGER ELRS TX Module is based on ExpressLRS project,open source RC applications. ExpressLRS aims to achieve the best possible link preformance in both speed,latency and range. This makes ExpressLRS one of the fastest RC link available while still offering long-range preformance.

Github Project Link:https://github.com/ExpressLRS
Facebook Group:https://www.facebook.com/groups/636441730280366

Specifications

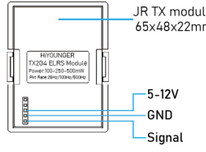
- Packet refresh rate:25Hz/100Hz/500Hz
- RF output power:100mW/250mW/500mW
- Frequency bands(TX2G4 2.4G version):2.4GHz ISM
- Frequency bands(TX915/TX868MHz version):915MHz FCC/868MHz EU
- Input voltage:5V~12V
- USB port:Micro-USB
- Dimensions:65x48x22mm(JR Module size)



HIYOUNGER RF TX module is compatible with radiotrannsmitter which has JR modul size,e.g.Frsky X9D ,RadioMaster T16 or similar radios.

Basic Configuration

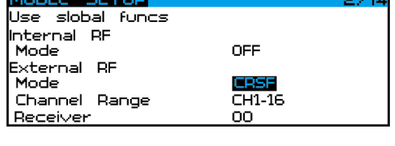
ExpressLRS uses the Crossfire serial protocol(AKA CRSF protocol) to communicate between the radio transmitter and the RF TX module.So make sure your radio transmitter support the CRSF serial protocol.Next, we use the radio transmitter with OpenTX system to show how to setup the CRSF protocol and LUA script.



Note:Please assemble the antenna before power on.Otherwise,the PA chip in the TX module will be damaged permanently.

CRSF Protocol

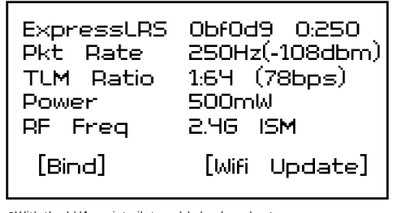
ExpressLRS uses the CRSF serial protocol to communicate between the radio transmitter and the RF TX module. To set this up, in OpenTXsystem, enter into model settings, and on the "MODEL SETUP"tab, turn off the "Internal RF". Next enable "External RF" and select "CRSF" as the protocol.



LUA Script

ExpressLRS use the OpenTX script to control the TX module, like bind or setup.

- Save the ELRS.lua script files onto the radio transmitter's SD Card in the Scripts/Tools folder ;
- Long press the "SYS"button(for RadioMaster T16 or similar radios) or the "Menu"button (for Frsky Taranis X9D or similar radios"toaccess the Tools Menu where you can find ELRS script ready to run with only one click;
- Below image show the LUAscript run successfully;



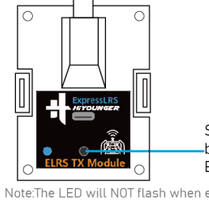
- With the LUA script,pilot could check and setup some configurations of the RF TX module.

0:250	On the top right.Indicator which tells how many bad UART packets and how many packets it's getting from the radio per second. It can be used to confirm the communication between the radio transmitter and the RF TX module is working properly,e.g.0:200 means 0 bad packets and 200 good packets per second.
Pkt. Rate	RF transmitter packet rate.
TLM Ratio	Receiver telemetry ratio.
Power	RF TX module output power.
RF Freq	Frequency bands.
Bind	Set the RF TX module into binding status.
Wifi Update	Open the WIFI function for firmware update.

Note:The latest ELRS.lua script file can be obtained from the ELRS project website at:http://github.com/ExpressLRS

Bind

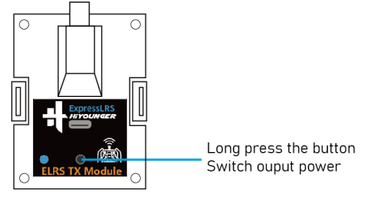
HIYOUNGER RF TX module could enter bingding status via ELRS.lua script,as description in "LUA Script"chapter:Besides, short press the button 3 times on the module could also enter bingding status.



Note:The LED will NOT flash when enter binding status.The module will exit from bingding status 5 seconds later auto.

Output Power Switch

HIYOUNGER RF TX module oould switch the output power via ELRS.lua script,as description in "LUA Script"chapter. Besides,long press the button on the module could switch the output power.



The RF TX module output power LED indication as show below.

LED Color	RF output power
Blue	100mW
Purple	250mW
Red	500mW

More Information

As ExpressLRS project is still frequency update,Please check the project website http://github.com/ExpressLRS for the latest news.
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