



SuperP 14CH Diversity Receiver

User Manual



Welcome to ExpressLRS!

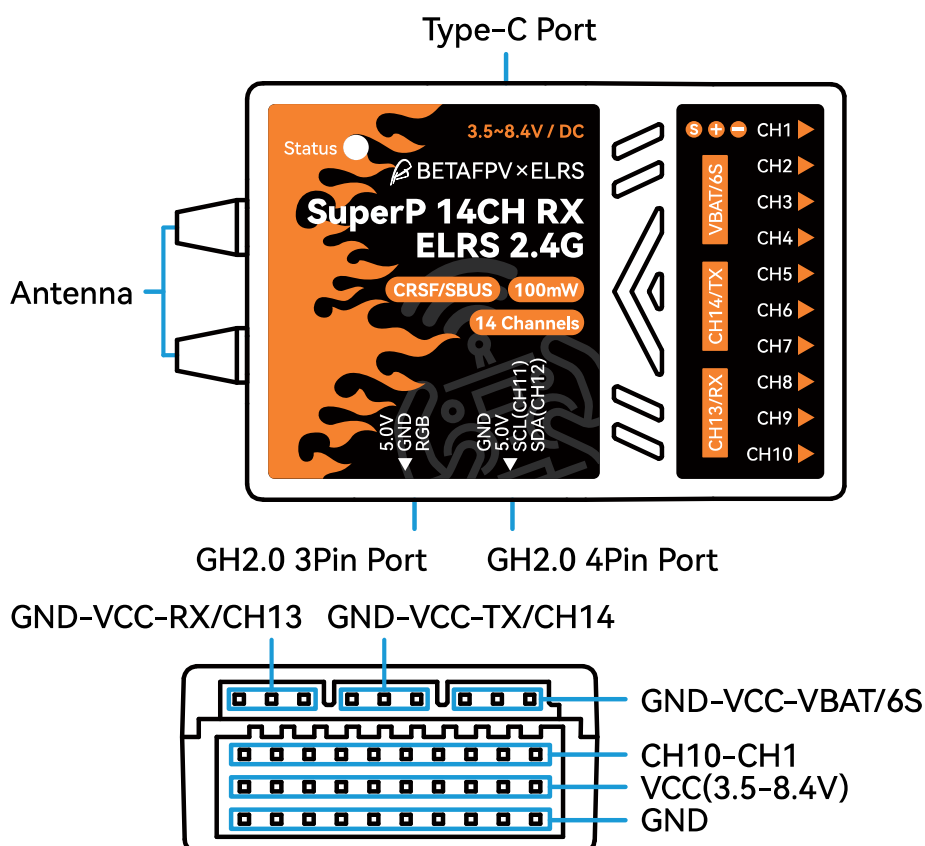
BETA FPV SuperP 14CH Diversity Receiver is a new generation wireless remote system product developed based on the open-source ExpressLRS project. ExpressLRS features Long-range, stable, low latency, and high packet rate for link performance.

Link to ExpressLRS GitHub Project: <https://github.com/ExpressLRS>

SuperP 14CH Diversity Receiver 2.4G Version has the below specifications:

- Weight: 15.6g
- Dimension: 46.9mm*32.7mm*14.6mm
- TLM Power: 100mW (20dBm)
- Frequency Band: 2.4GHz ISM
- Working Voltage: 3.5V~8.4V
- Rate Current: 180mA@5V
- Antenna Port: 2*IPEX MHF 1
- Antenna Length: 150mm
- Signal Supported: PWM/CRSF/SBUS
- PWM Channel number: 14

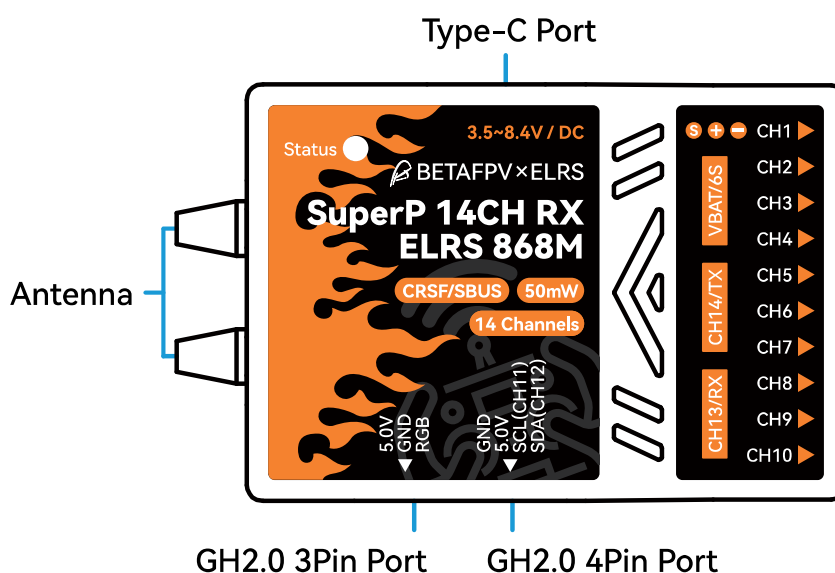
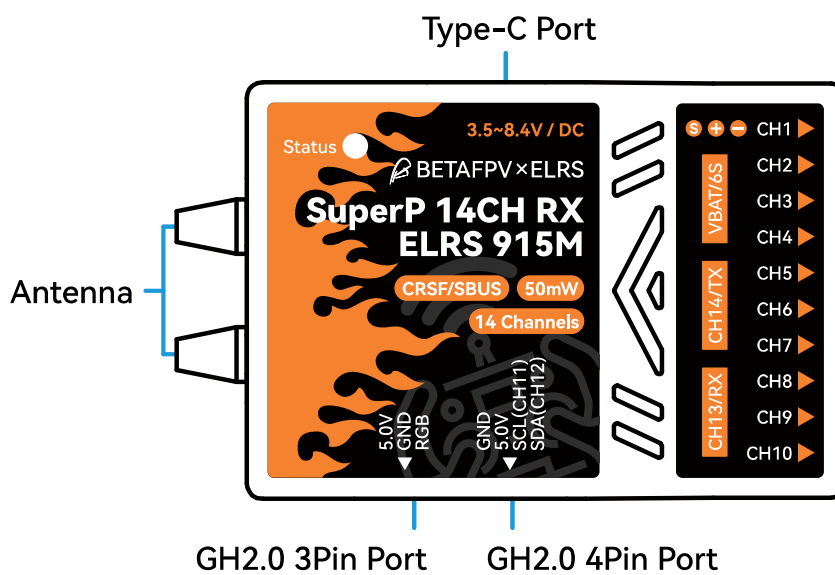
Schematic Diagram of SuperP 14CH Diversity Receiver 2.4G is shown below:

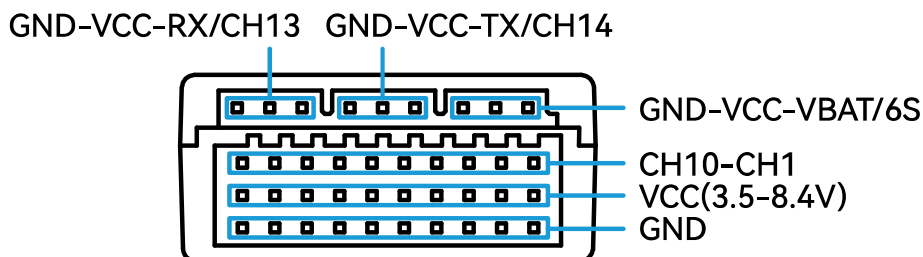


SuperP 14CH Diversity Receiver 915M/868M Version has the below specifications:

- Weight: 15.9g
- Dimension: 46.9mm*32.7mm*14.6mm
- TLM Power: 50mW (17dBm)
- Frequency Band: 868MHz EU/915MHz FCC
- Working Voltage: 3.5V~8.4V
- Rate Current: 140mA@5V
- Antenna Port: 2*IPEX MHF 1
- Antenna Length: 150mm
- Signal Supported: PWM/CRSF/SBUS
- PWM Channel number: 14

Schematic Diagram of SuperP 14CH Diversity Receiver 915M/868M is shown below:





Note:

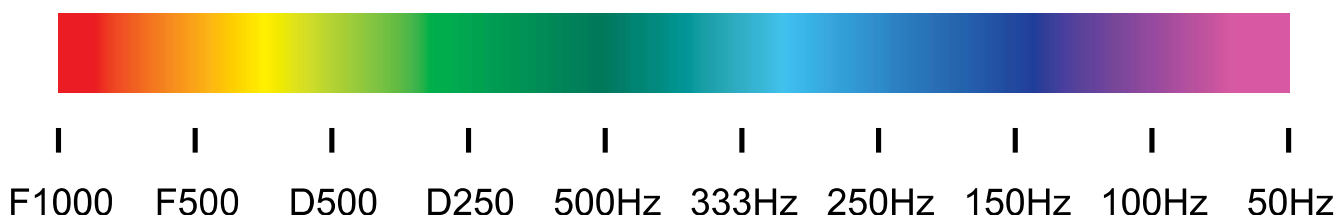
The voltage detector port for battery is set up at VBAT, which supports detecting 1~6S battery Voltage.
 When configuring CRSF output, CH13 becomes RX, and CH14 becomes TX;
 When configuring SBUS output, CH13 has no output, CH14 becomes SBUS;
 The receiver's CH11 and CH12 are set on I2C output by default, here CH13 becomes CH11, and CH14 becomes CH12;
 Channel Configuration Page: <http://10.0.0.1/hardware.html>

Receiver status RGB indications are shown as below.

RGB Color	Status	Implication
Rainbow	Fade effect	Power on
Green	Slow flash	WiFi upgrading mode
Red	Quick flash	No RF chip was detected
Orange	Double flash	Binding mode
Orange	Triple flash	Connected but mismatched model-match configuration
Orange	Slow flash	Waiting for the connection
	Solid on	Connected and color indicates packet rate

The packet rate correspond to the RGB indicator color as shown below:

2.4G:



915M/868M:



I I I I I I
D50 200Hz 100Hz Full 100Hz 50Hz 25Hz

F1000 and F500 are the only packet rates supported by ELRS 2.4G under FLRC mode. Per mode features a lower latency rate and faster configuration. However, the receiving distance would be shorter than Lora standard mode. It's better suited for racing purposes.

D500 and D520 is packet rate under DVDA (Déjà Vu Diversity Aid) mode. Works under F1000 rate of FLRC mode. It repeatedly sends multiple identical packets under a complex environment, ensuring a safer radio link connection. D500 and D250 respectively send the same packet twice and four times repeatedly.

D50 is an exclusive mode under ELRS Team900. It will send packets four times repeatedly under 200Hz Lora Mode. Its receiving distance is equivalent to 200Hz.

100Hz Full is the mode that can achieve 16-channel full resolution output at the 200Hz packet rates of Lora mode. Its receiving distance is equivalent to 200Hz.

Bind

Stock firmware used for SuperP 14CH Diversity Receiver is ExpressLRS version 3.3.0. There is no Binding Phrase pre-set. Hence Binding with transmitters has to ensure that the module is using V3.0.0 above with no binding phrase being set up.

1. Power on and off the receiver 3 times, each step pausing 2 seconds to enter binding mode;
2. When the indicator starts fast blink with orange twice, the receiving is at binding mode;
3. Enter the radio or transmitter module's binding mode to bind with the receiver; if the Indicator has turned solid, it indicates that the device has been bound successfully.

Note: After the device has been successfully bound, the receiver will record the device, and future binding will be automatic. There would be no need to go through the binding process again.

If the receiver has been flashed with firmware on the configurator and is set with a binding phrase, then using the above binding method will not let the receiver be bound to other devices. Please set the same binding phrase to the transmitter module to perform an auto-bind with the receiver. It is recommended to separate the two antennas as far as possible to achieve better-receiving performance.

■ Failsafe and Channel Output Mode Setup

When the connection or signal is lost between the radio transmitter and receiver, failsafe function will adjust all the channels to the failsafe values you have set. All channels will maintain working with the preset value to keep the device continuously functioning to ensure device and personal safety. It's necessary to set up failsafe values properly if you are not using a flight controller, such as an RC plane or fixed-wing. The receiver's CH11-14 not only can be used as PWM signal output port, it could also be configured as Serial Port. For example, CH11 and CH12 can be configured as SCL and SDA to connect to External Barometer or other sensors that uses I2C port. CH13 and CH14 can be configured as CRSF or SBUS to connect to flight controller or other component.

Configuration for setting up is shown as below steps:

- Power on the receiver and wait for 60 seconds without binding to any transmitted equipment;
- Once the RGB indicator is in slow green flashing, the receiver's WiFi has been activated;
- Connect WiFi via cellphone or PC (WiFi name: ExpressLRS RX, password: `expresslrs`) ;
- Open the website address: <http://10.0.0.1>, you can find the model page for failsafe values and channel output setup.

Output	Mode	Input	Invert?	750us?	Failsafe
1	50Hz ▼	CH1 ▼	<input type="checkbox"/>	<input type="checkbox"/>	1500 ▼
2	50Hz ▼	CH2 ▼	<input type="checkbox"/>	<input type="checkbox"/>	1500 ▼
⋮	⋮	⋮	⋮	⋮	⋮
13	50Hz ▼	CH13 ▼	<input type="checkbox"/>	<input type="checkbox"/>	1500 ▼
14	50Hz ▼	CH14 ▼	<input type="checkbox"/>	<input type="checkbox"/>	1500 ▼

Failsafe Value Setup

Enter the 988~2012 failsafe value of servo into failsafe.

Note:

- Do not use "invert" flag.
- Value will be halved if "750us" flag is set.
- When failsafe value is above 1500, Mode will automatically change to "on/off" mode.

Channel Output Mode Setup

- 50-400Hz: PWM frequency;
- 10KHzDuty: Used to directly drive micro motors;
- ON/OFF: Outputting High or Low power level;
- Serial TX/RX: Serial Port.

CRSF/SBUS Output setup

1. Set CH 13 to Serial RX or set CH14 to Serial TX

13	Serial RX ▼	CH13(AUX9) ▼
14	Serial TX ▼	CH14(AUX10) ▼

2. Select SBUS in Serial Protocol and click "SAVE";

Serial Protocol

Set the protocol used to communicate with the flight controller.

Serial Protocol
SBUS

3. In options page, enter value into UART baud. (SBUS port does not support configuring UART baud value);

UART baud
420000

4. Click "SAVE&REBOOT" to finish configuring CRSF/SBUS port.

Note:

When configuring CRSF output, CH13 becomes RX, and CH14 becomes TX;
When configuring SBUS output, CH13 has no output, CH14 becomes SBUS.

I2C Port Setup

Page to configure I2C: <http://10.0.0.1/hardware.html> method to enter is as same as above mentioned.

1. Delete 19 and 22 from PWM output pins value;

PWM

PWM output pins

13,15,2,0,4,9,10,5,18,23,3,1

Comma-separated list of pins used for PWM output

2. Enter 19 and 22 into I2C's SCL Pin and SDA pin respectively;

I2C

SCL pin



19

I2C clock pin used to communicate with I2C devices

SDA pin



22

I2C data pin used to communicate with I2C devices

3. Click "SAVE TARGET CONFIGURATION" to finish configuring I2C port setup.

Note: Receiver's CH11 and CH12 has been set to I2C port by default, which CH13 becomes CH11, and CH14 becomes CH12.

More Information

As ExpressLRS project is still in frequent updates, please check BETA FPV Support (Technical Support -> ExpressLRS Radio Link) for more details, common issues and the newest manual.

<https://support.betafpv.com/hc/en-us>

- Latest user manual;
- How to upgrade the firmware;
- FAQ and troubleshooting.