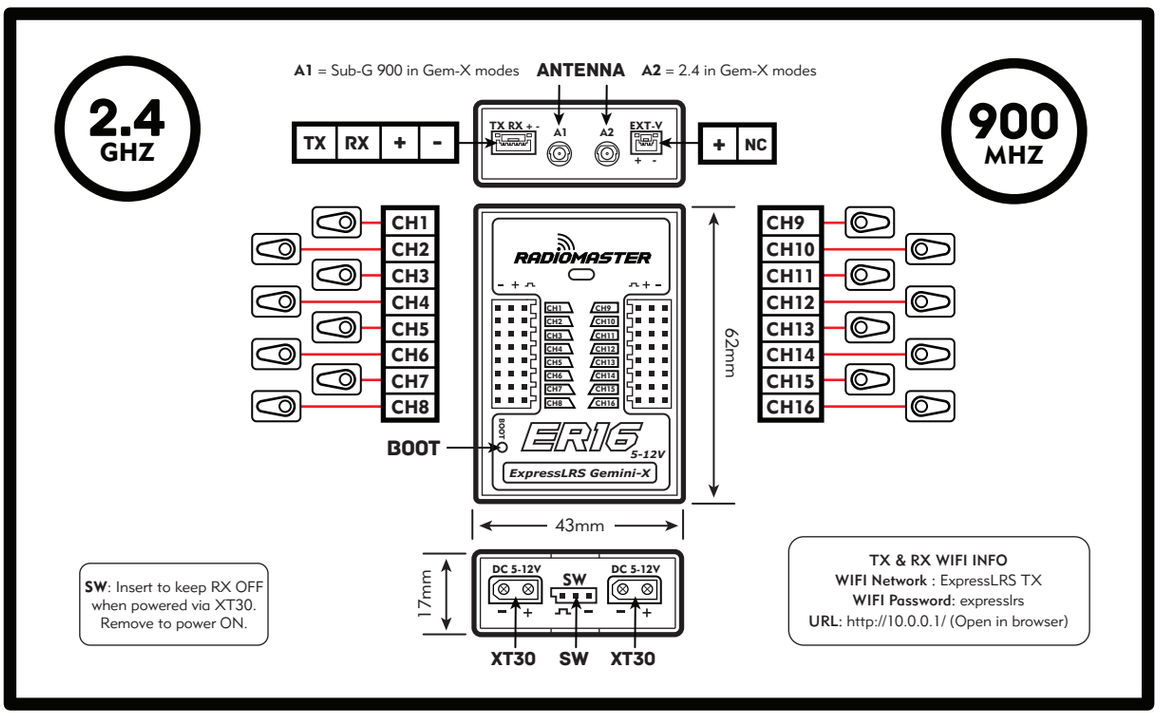
ER16 Receiver User Manual



The Radiomaster ER16 ExpressLRS receiver is designed specifically for fixed-wing aircraft. It supports up to 16 PWM servo outputs and features built-in receiver-voltage telemetry and external flight-battery-voltage telemetry. A 4-wire CRSF interface is provided for connection to additional telemetry sensors. The ER16 features dual antennas, telemetry transmission power up to 100 mW, and a high-strength unibody enclosure.

SET-UP

1 The recommended ELRS LUA settings on the remote-control end are:

IMPORTANT

Standard servos:	Performance servos:
Packet Rate: 100Hz Full	Packet Rate: 333Hz Full
Telem Ratio: Std (1:32) (default)	Telem Ratio: Std (1:128)
Switch Mode: 16ch / Full	Switch Mode: 16ch / Full

2. **External Voltage (EXT-V) Input**: The maximum input voltage for the EXT-V (external voltage telemetry) input is 70 V. Do not exceed 70 V, or permanent damage to the receiver may occur.

3. **EXT-V Connection**: The EXT-V input is accessed via the 2-pin JST-GH connector. Connect the wires directly to the battery's positive and negative terminals, or to the ESC's power pads.

4. **Servo Power Requirements**: Ensure the ESC BEC current capacity matches the requirements of the installed servos. For high-voltage or high-torque servos, use a 2S (7.4 V) direct power supply or a suitable high-current UBEC.

5. **Telemetry Voltage Calibration**: Telemetry voltage calibration is required on the transmitter: Navigate to the TELEMETRY page on your radio. Locate the RxBt sensor. Adjust the offset until the displayed voltage matches the actual battery voltage. If the difference is large, adjust the ratio as needed. For best results, calibrate using a fully charged battery of the intended cell count.

6: **ExpressLRS Arming**: ExpressLRS requires an arming channel to operate fully. Assign Channel 5 on your transmitter to a switch (commonly throttle cut). This enables RF arming and features such as dynamic power control.
For more information, visit: https://www.expresslrs.org/

CRSF / SBUS OUTPUT

The ER16 supports CRSF or SBUS output

To switch protocols:
1. **BIND** the receiver to the transmitter.
2. **OPEN** the ExpressLRS WebUI using a browser.
3. On the **MODEL** page, select the desired serial protocol. Alternatively, the protocol can be changed using the ExpressLRS LUA script on the transmitter.

XT30 POWER INPUT

IMPORTANT

XT30 provides direct battery voltage to the receiver and PWM rail. Output matches input voltage.

USE only servos rated for the applied voltage. High-voltage systems (2S LiPo/Li-ion) require HV servos. Standard 5V servos must be powered via a regulated 5V supply or through the standard servo power input pins. When using the XT30 input to power the receiver and servos, the ESC's 5V/BEC wire must be **DISCONNECTED** to avoid back-feeding and possible damage.

SPECIFICATIONS

• Size:	62*43*17mm
• Weight:	33.5g
• Power Supply:	DC 5~12V
• Main MCU:	ESP32-S3
• RF Chip:	LR1121 ×2
• Operating Frequency:	ISM 2.4 GHz / FCC 915 MHz
• Antenna Connector:	MMCX
• Antenna Type:	25 cm high-sensitivity 2.4 GHz antenna ×2 25 cm high-sensitivity dual-band antenna ×2
• Output Channel:	16-channel PWM
• Serial Output:	CRSF / SBUS
• Telemetry Power:	Up to 100 mW (LUA adjustable)
• Voltage Detection:	DC 4.0~70V (monitor main flight battery)
• Bus interface:	CRSF
• Version:	ExpressLRS 4.1.0 or Higher

FIRMWARE

Device Category: Radiomaster Dual 2.4 G / 900 M Receiver
Device: RadioMaster ER16 PWM RX

PASSPHRASE BINDING

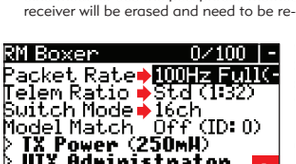
(***Note**: Bind phrases are not secret and can be read.)

1. **OPEN** the ExpressLRS LUA and navigate to the Wifi Connectivity page. Select the **Enable WIFI** option and connect to your radios wifi with a mobile phone, tablet or PC (See TX WIFI info above). **OPEN** the ExpressLRS web page at (http://10.0.0.1/) and choose a unique bind phrase. **Save and Reboot**.
2 Power **ON** the receiver and wait 60 seconds for the LED to blink rapidly to indicate WIFI mode. Connect your phone, tablet or PC to the receivers WIFI (See RX WIFI info above). **OPEN** the ExpressLRS web page at (http://10.0.0.1/) and enter the matching bind phrase previously entered on your radio. **Save and Reboot**. Once both radio and receiver have the same bind phrase set they will automatically bind.

TRADITIONAL BINDING

1. The first time you power on your receiver, the LED is doing a quick **double blink**, which indicates the receiver is in bind mode. If this is not the case, hold down the boot button for 10 seconds to reset the receiver.
2 Power **ON** your transmitter/radio and use the **[BIND]** button on the ExpressLRS Lua script, which sends out a binding pulse.
3. If the receiver has a **solid light**, it's bound!

*Note: To bind receiver a second time or to another radio, power cycle the receiver 3 times. On the third power cycle, the LED will double blink indicating bind mode. If you cannot successfully enter bind mode with the 3 power cycle method, you can hold down the boot button for 10 seconds to reset the receiver to bind mode or use the passphrase method. WARNING: All previous settings in the receiver will be erased and need to be re-entered when using the reset button.

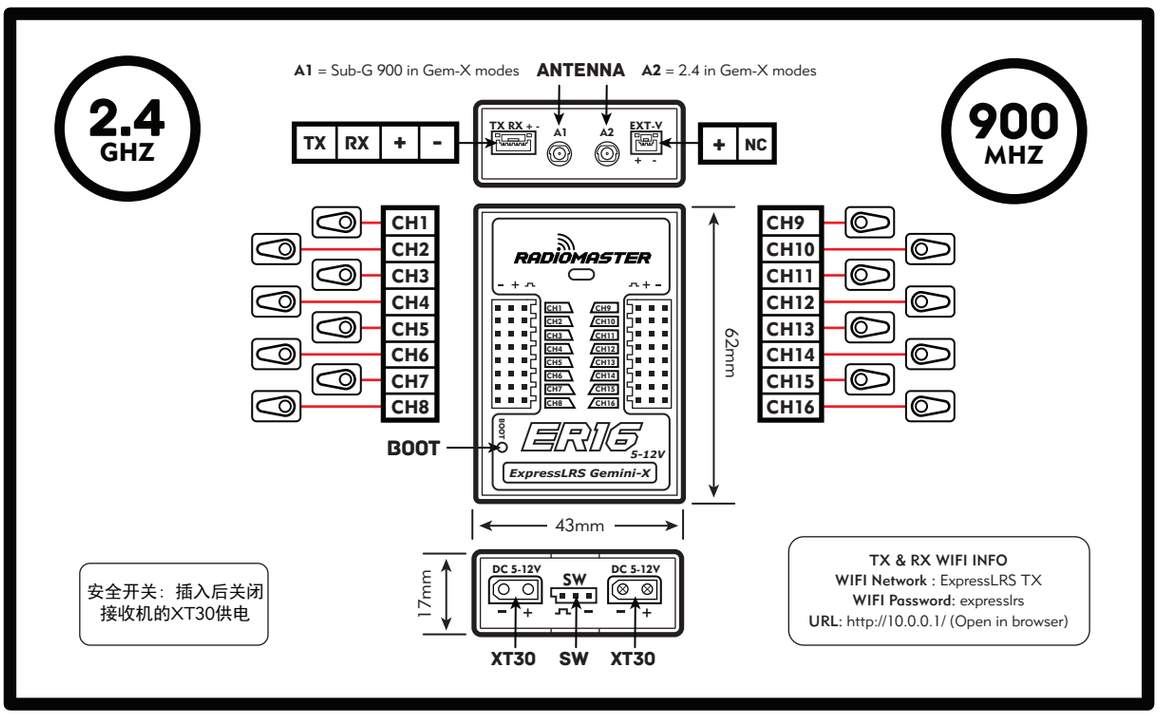




EXT-V POWER INPUT

The **EXT-V** input on the **ER16** is accessed through the 2-pin JST-GH connector. Solder the red wire to the positive (+) terminal of the battery or ESC. The ER16 features multiple independent ADC channels and can monitor voltage from V-EXT, and V-XT30, allowing it to accurately detect and report the appropriate input voltage for your installation.

ER16 接收机用户手册



RadioMaster ER16 ExpressLRS 接收机专为固定翼飞机设计。它支持最多 16 路 PWM 舵机输出，并内置接收机电压遥测和外置飞行电池电压遥测。提供 4 线 CRSF 接口，可用于连接额外的遥测传感器。ER16 配备双天线、遥测发射功率最高 100 mW，以及高强度一体式外壳。

注意事项

1. 1. 推荐的遥控器端 ELRS LUA 设置如下：

IMPORTANT

标准舵机：	高性能舵机：
Packet Rate: 100Hz Full	Packet Rate: 333Hz Full
Telem Ratio: Std (1:32) (default)	Telem Ratio: Std (1:128)
Switch Mode: 16ch / Full	Switch Mode: 16ch / Full

2. 外部电压（**EXT-V**）输入: **EXT-V**（外部电压遥测）输入的最大输入电压为 **70V**。请勿超过 **70V**，否则可能对接收机造成永久损坏。

3. **EXT-V** 连接: **EXT-V** 输入通过 **2-pin JST-GH** 连接器接入。将线缆直接连接到电池的正负极，或 **ESC** 的电源焊盘。

4. 舵机电源要求: 请确保 **ESC BEC** 的电流容量满足所安装舵机的需求。对于高压或高扭矩舵机，请使用 **2S**（**7.4V**）直接供电或合适的大电流 **UBEC**。

5. 遥测电压校准: 需要在发射机上进行遥测电压校准：进入遥控器的 TELEMETRY 页面，找到 **RxBt** 传感器。调整 **offset**，使显示的电压与电池实际电压一致。如果差异较大，还需要调整 **ratio**。为了获得最佳效果，请使用充满电的、节数符合使用意图的电池进行校准。

6: **ExpressLRS** 武装: **ExpressLRS** 需要一个锁定通道才能完全工作。
在你的发射机上将通道 **5** 分配给一个开关（通常为油门切断开关）。
这会启用 无线锁定以及动态功率控制等功能。
更多信息请访问：**https://www.expresslrs.org/**

CRSF / SBUS 输出

ER16支持 CRSF 或 SBUS输出

切换协议的方法：

1. 将接收机与发射机 BIND（绑定）。
2. 使用浏览器打开 ExpressLRS WebUI。
3. 在 MODEL 页面选择需要的串行协议。也可以通过发射机上的 ExpressLRS LUA 脚本切换协议。

IMPORTANT

XT30 电源输入

XT30 直接将电池电压供给接收机和 PWM 正极。输出与输入电压相同。

只能使用与所加电压匹配的舵机。高压系统（2S LiPo/Li-ion）需要使用高压舵机。标准 5V 舵机必须通过稳压的 5V 电源，或通过标准舵机电源输入引脚供电。当使用 XT30 输入为接收机和舵机供电时，必须 断开 ESC 的 5V/BEC 线，以避免反向馈电和可能的损坏。

规格参数

• 尺寸:	62*43*17mm
• 重量:	33.5g(不含天线)
• 输入电压:	DC 5~12V (接收机供电电压)
• 主控芯片:	ESP32-S3
• 射频芯片:	LR1121 ×2
• 天线接口:	MMCX
• 天线类型:	25 cm high-sensitivity 2.4 GHz antenna ×2 25 cm high-sensitivity dual-band antenna ×2
• 输出通道:	16-channel PWM
• 串口输出:	CRSF / SBUS
• 功率:	最高 100 mW (LUA 可调)
• 电压检测范围:	DC 4.0~70V (监测主电池)
• 总线类型:	CRSF
• 固件版本:	ExpressLRS 4.1.0 or Higher

固件下载

Device Category: Radiomaster Dual 2.4 G / 900 M Receiver
Device: RadioMaster ER16 PWM RX

密码绑定

（*注：**Bind phrase** 并不保密，可以被读取。）

1. 打开 ExpressLRS LUA 脚本，进入 Wifi Connectivity 页面。选择 Enable WIFI，用手机、平板或电脑连接你遥控器的 WIFI（参见上方的 TX WIFI 信息）。在浏览器中打开 ExpressLRS 网页（http://10.0.0.1/），设置一个唯一的 bind phrase，Save and Reboot。

2 打开接收机电源，等待 60 秒，LED 快速闪烁表示已进入 WIFI 模式。将手机、平板或电脑连接至接收机的 WIFI（参见上方的 RX WIFI 信息）。在浏览器中打开 ExpressLRS 网页（http://10.0.0.1/），输入与遥控器一致的 bind phrase，Save and Reboot。当遥控器和接收机设置的 bind phrase 一致时，将自动完成绑定。

传统绑定

1. 首次给接收机上电时，LED 会快速 双闪，表示接收机处于绑定模式。如果不是此状态，请长按 boot 按键 10 秒以复位接收机。
2 打开你的遥控器/发射机电源，使用 ExpressLRS Lua 脚本中的［BIND］按钮，发送绑定脉冲。
3. 如果接收机 LED 变为 常亮，即表示绑定成功！

*注：要对接收机进行二次绑定，或绑定到另一台遥控器，请对接收机进行 3 次断电上电循环。第三次上电时，LED 双闪表示进入绑定模式。如果 3 次断电上电的方式无法成功进入绑定模式，也可以长按 boot 按键 10 秒将接收机复位到绑定模式，或使用 passphrase 方式。警告：使用复位按键时，接收机内所有先前的设置都会被擦除，需要重新设置。





EXT-V 电源输入

ER16 上的 EXT-V 输入通过 2-pin JST-GH 连接器接入。将红线焊到电池或 ESC 的正极（+）端。ER16 具有多路相互独立的 ADC 通道，可以监测 V-EXT 和 V-XT30 上的电压，从而在你的安装中准确地检测并上报合适的输入电压。