RadioMaster ER8

ExpressLRS 2.4 GHz receiver with 8 PWM outputs
User manual



Read this entire manual carefully before first use, especially the safety instructions in Chapter 1. Keep the manual for future reference.

Rotorama, s.r.o. · www.rotorama.com

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1. Safety instructions

The RadioMaster ER8 receiver is part of the control chain of an RC model. Incorrect wiring or setup may result in loss of control of the model and thus in damage to property or injury to persons.

- The receiver supply voltage is **DC 4.5–8.4 V**. A higher voltage will destroy the receiver. A 2S Li-Po battery (8.40 V fully charged, i.e. 4.20 V/cell) may be connected directly. A **2S LiHV** battery (8.70 V fully charged, i.e. 4.35 V/cell) exceeds the maximum supply voltage – do not connect it directly.
- Do not apply more than **35 V** to the **EXT-V** input for flight battery voltage measurement, or the receiver will be damaged.
- Observe the correct polarity of all connectors. Reverse polarity may permanently damage the receiver and the connected servos.
- The power source (ESC BEC, UBEC or battery) must supply a current matching the consumption of all connected servos.
- Keep the model secured while wiring and setting it up; on an electric model, remove the propeller or disconnect the motor.
- Before every flight, check the direction of all control surface movements, the Arm/Disarm function and the behaviour of the model on signal loss (failsafe). Perform a range check.
- Do not cut the antennas, do not bend them sharply and do not route them along metal or carbon parts. Do not connect other antennas or amplifiers.
- Protect the receiver from moisture, dust, vibration and impacts. Do not use a damaged receiver or damaged cables.
- This product is not a toy. Keep it out of the reach of children – small parts may be swallowed.
- The operation of RC models is governed by the regulations of the country in which you operate the model. The user is responsible for compliance with the operating rules and for the transmitter power setting.

2. Product description

2.1 Introduction

Thank you for purchasing the Radiomaster ER8 ELRS receiver. The ER8 receiver is based on the revolutionary **ExpressLRS** system. It offers high performance, high reliability, flexible configuration, fast response speed and ultra-long range, bringing you a brand new experience with your hobby.

The Radiomaster ER8 receiver has been specially designed for fixed-wing users. It can drive up to **8 servos** and has built-in receiver voltage telemetry and flight battery telemetry with the ability to automatically detect which voltage input to use. A 4-wire CRSF interface is provided to facilitate later expansion of telemetry sensors. The ER8 features a dual antenna with telemetry power up to 100 mW. The receiver shell adopts a one-piece moulding process with high structural strength.

2.2 Specifications

Parameter	Value
Designation	RadioMaster ER8
Radio system	ExpressLRS 2.4 GHz (pre-installed)
Power supply	DC 4.5–8.4 V
Output channels	8× PWM
Serial output	CRSF / SBUS
Bus interface	CRSF (4-pin port)
Battery voltage detection (EXT-V)	DC 4.0–35 V
Telemetry power	max. 100 mW (adjustable in LUA)
Antennas	2× 20 cm high sensitivity antenna
Output connectors	2.54 mm pitch
Size	43 × 30 × 15 mm
Weight	16.5 g

The frequency bands and maximum transmitted power pursuant to Directive 2014/53/EU are given in Chapter 7.1.

2.3 Package contents

- 1× RadioMaster ER8 receiver
- 1× voltage telemetry wire (Type-B)
- 1× CRSF wire
- 1× ELRS-RX-SBUS wire
- 1× manufacturer's user card

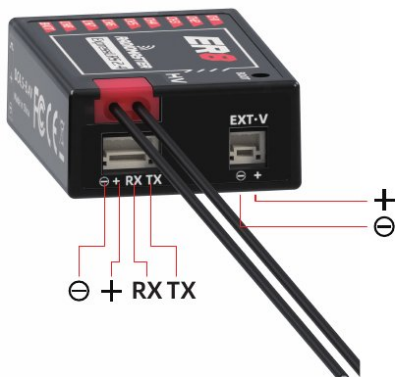
Not included: a radio with an ExpressLRS 2.4 GHz module, servos, battery, electronic speed controller (ESC) or BEC/UBEC.

2.4 Receiver overview



Outputs CH1–CH8 and BATT, BOOT button. Each output has three pins: signal, + and −.

- **CH1–CH8** – PWM outputs for servos (2.54 mm pitch connectors).
- **BATT** – receiver power input DC 4.5–8.4 V.
- **BOOT** – button for reset and entering bind mode (Chapter 4.2).
- **HV** – marking on the housing next to the antenna exit.

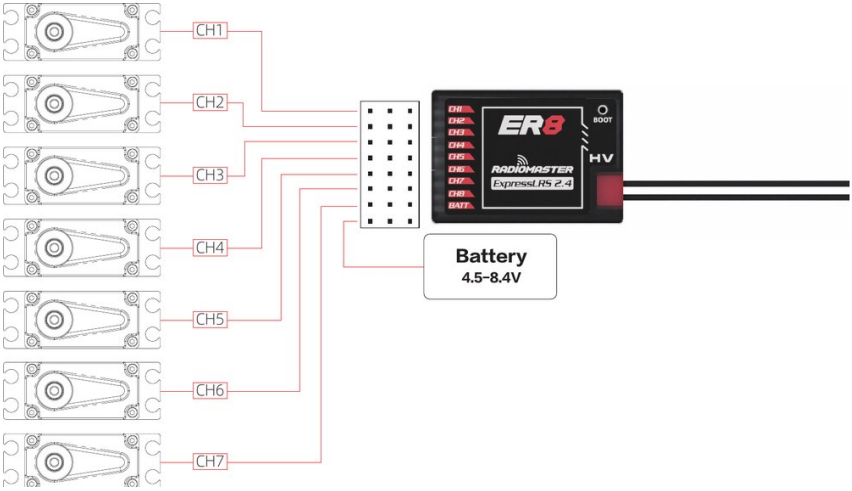


Side view: CRSF port (− + RX TX) and EXT-V input (− +).

- **RX TX** – 4-wire CRSF port (−, +, RX, TX) for telemetry sensors and serial output.
- **EXT-V** – 2-pin JST-GH connector for flight battery voltage measurement (Chapter 3.2).

3. Wiring

3.1 Servos and power supply



Wiring example: servos on outputs CH1–CH7, 4.5–8.4 V power supply to the BATT input ("Battery").

① Connect the servos to outputs CH1–CH8. Observe the connector orientation: signal, + and −.

② Connect the power supply for the receiver and servos to the BATT input (or from the ESC BEC). The voltage must be within DC 4.5–8.4 V.

③ Please ensure that the power supply current of the ESC BEC matches the power consumption requirements of the servos used. If using high-voltage and high-torque servos, it is recommended to use a 2S 7.4 V battery for direct power supply or a suitable high-current UBEC.

※ A fully charged 2S LiHV battery (8.70 V) exceeds the maximum supply voltage of 8.4 V. Connect only a 2S Li-Po directly.

3.2 Flight battery voltage measurement (EXT-V)

- The EXT-V (external voltage input) of the ER8 is accessed via the EXT-V 2-pin JST-GH connector. Use the supplied voltage telemetry wire.
- The **red wire** must be soldered to the positive (+) of the battery or ESC, the black wire to the negative (−).
- The maximum input voltage for the EXT-V telemetry reading is **35 V**. Do not exceed 35 V or the receiver will be damaged.
- If no EXT-V power source is found, the ER8 will default to reading the voltage on the receiver pins. Only one voltage input can be used at any given time.

3.3 CRSF port

The 4-wire CRSF port (− + RX TX) is provided to facilitate later expansion of telemetry sensors. The receiver supports CRSF / SBUS serial output; use the supplied CRSF and ELRS-RX-SBUS wires for the connection.

4. Binding to the radio

4.1 Binding method (traditional)

① The first time you power on your receiver, the LED will double blink. This indicates that 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 Open the ExpressLRS LUA on your radio, select *[Bind]* and confirm.

③ A successful bind is indicated by the LED being steady on.



The [Bind] item in the ExpressLRS LUA script.

4.2 Binding again and reset

To bind the 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 bind phrase method (Chapter 4.3).

WARNING: All previous settings in the receiver will be erased and need to be set again when using the BOOT button reset.

4.3 Binding method (bind phrase)

	TX Wi-Fi	RX Wi-Fi
Network name	ExpressLRS TX	ExpressLRS RX
Password	expresslrs	expresslrs

① Open the ExpressLRS LUA and navigate to the *WiFi Connectivity* page. Select the *Enable WiFi* option and connect to your radio's Wi-Fi with a mobile phone, tablet or PC (see the table below). Open the WebUI (ExpressLRS web page at http://10.0.0.1/) and choose a unique bind phrase. Note: bind phrases are not secret and can be read. Save and Reboot.

② Power up the receiver and wait 60 seconds for the LED to blink rapidly to indicate Wi-Fi mode. Connect your phone, tablet or PC to the receiver's Wi-Fi, open the WebUI at http://10.0.0.1/ and enter the matching bind phrase previously entered on your radio. Save and Reboot.

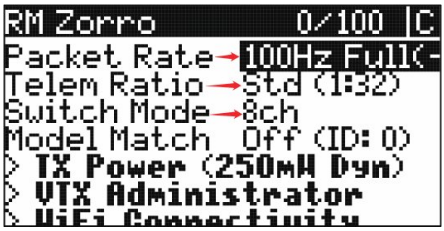
③ Once a radio and a receiver have the same bind phrase set, they will bind automatically.

5. Settings

5.1 Recommended ExpressLRS settings

The recommended ELRS LUA settings on the radio side are:

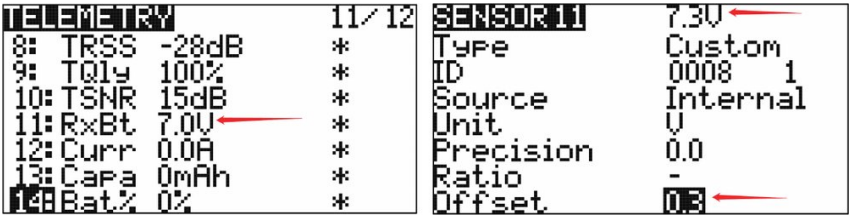
LUA item	Standard servos	Performance servos
Packet Rate	100Hz Full	333Hz Full
Telem Ratio	Std (1:32) (default if unsure)	Std (1:128)
Switch Mode	8ch	8ch



Packet Rate, Telem Ratio and Switch Mode in the ExpressLRS LUA.

5.2 Telemetry voltage calibration

Calibration of the telemetry voltage will be required on your radio. Navigate to the telemetry page on your radio and locate the **RxBt** sensor. Edit the sensor settings and adjust the offset (*Offset*) until the displayed reading matches the actual voltage of the battery in the model. If there is a large difference, adjustment of the ratio (*Ratio*) may also be required.

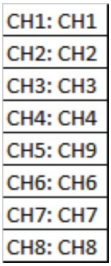


The RxBt sensor on the telemetry page (left) and its Offset setting (right).

※ For best results, calibrate the voltage on your radio using a fully charged battery of the correct cell count intended for use in the model (Li-Po 4.20 V/cell, i.e. 8.40 V for 2S).

5.3 Arming and channel CH5

CH5 is required by ExpressLRS to set the Arm state of the RF module in your radio. It is recommended to assign **CH5** to a switch such as your throttle cut switch, as this will provide benefits such as dynamic power. Using the ExpressLRS LUA or the Wi-Fi WebUI, you can assign different channels to the CH5 output of your receiver – see the example on the right, where channel CH9 is assigned to output CH5.



Output mapping example: outputs CH1–CH4 and CH6–CH8 correspond to the channels of the same name, output CH5 is remapped to channel CH9. Channel CH5 thus remains reserved for arming, and the servo on output CH5 is controlled by another channel of the radio.

Please visit www.expresslrs.org to learn more about the importance of setting up arming.

6. Firmware and further documentation

The receiver comes with ExpressLRS firmware pre-installed. It supports Wi-Fi updates and WebUI configuration. When updating the firmware, select the following in the ExpressLRS Configurator:

Device Category	Radiomaster 2.4Ghz
Device	RadioMaster ER8 2400 PWM RX

※ On the manufacturer's product page, the target device is also listed as *RadioMaster ER8 2.4GHz Diversity+8xPWM RX*. Select the item offered by your version of the ExpressLRS Configurator.

Official documentation

ExpressLRS – binding, configuration, WebUI and firmware updates.
www.expresslrs.org

EdgeTX – radio setup, LUA scripts and telemetry sensors.
edgetx.org

7. Radio parameters, troubleshooting and maintenance

7.1 Frequency bands and transmitted power

Frequency bands and maximum transmitted power according to the EU-type examination certificate SHEA1538-EU (notified body MiCOM Labs, No. 2280):

Radio part	Frequency band	Max. power (e.i.r.p.)
ExpressLRS (SRD)	2404–2474 MHz	2.29 dBm
Wi-Fi	2412–2472 MHz	17.48 dBm
Bluetooth	2402–2480 MHz	5.26 dBm

- The manufacturer states that the telemetry power can be set in the ExpressLRS LUA up to 100 mW. The user is responsible for ensuring that the power setting complies with the regulations of the country of operation.
- In the Czech Republic, the 2400–2483.5 MHz band is covered by the ČTÚ general authorisations VO-R/10 (short-range devices, 25 mW e.i.r.p.) and VO-R/12 (wideband data transmission, 100 mW e.i.r.p.). In other countries, the limits of that country apply.
- Use only the antennas supplied by the manufacturer. Do not connect amplifiers and do not modify the radio part.

▶ Simplified EU declaration of conformity

Hereby, Shenzhen RadioMaster Co., Ltd declares that the radio equipment type ER8 is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address:
https://radiomasterrc.com/pages/certificatiion

Manufacturer: Shenzhen RadioMaster Co., Ltd, 3rd Floor, Yutian Building, Yangtian Road, District 72, Xin'an Street, Bao'an District, Shenzhen, Guangdong, China · radiomasterrc.com

7.2 Troubleshooting

Symptom	Possible cause and solution
LED double blinks	The receiver is in bind mode. Bind it as described in Chapter 4.
LED blinks rapidly	The receiver is in Wi-Fi mode (after 60 s without a link). Check that the radio is switched on and bound with the same bind phrase.
Receiver does not bind	Make sure the RF module operates on 2.4 GHz with ExpressLRS. Reset with the BOOT button (10 s) or use a bind phrase.

Symptom	Possible cause and solution
Servo does not respond	Check the connector orientation, the channel mapping (Chapter 5.3) and the receiver power supply.
Servo stalls or receiver restarts	The power source cannot supply enough current for the servos. Use a more powerful BEC/UBEC or a 2S battery supply.
Voltage telemetry incorrect	Calibrate the RxBt sensor (Chapter 5.2). Check the EXT-V wiring.
Short range	Check the antennas for damage and their routing. Do not route the antennas along metal or carbon parts.

7.3 Maintenance and storage

- Regularly check the connectors, cables and antennas. Replace damaged parts.
- Keep the receiver dry and clean; do not clean it with solvents.
- After a crash, check the receiver function and perform a range check before the next flight.
- Store in a dry place, away from direct sunlight and heat sources.

8. Information for the EU and Czech Market

8.1 Importer and responsible person in the EU

The product is placed on the European Union market by the importer stated below, who is at the same time the responsible person within the meaning of Article 16 of Regulation (EU) 2023/988 of the European Parliament and of the Council on general product safety (GPSR).

Importer / responsible person in the EU	Rotorama, s.r.o.
Company ID (IČO)	051 57 692
VAT ID (DIČ)	CZ05157692
Registered office	Okrajová 1351, 674 01 Třebíč, Czech Republic
E-mail	info@rotorama.cz
Phone	+420 252 252 098
Website	www.rotorama.com

8.2 Product conformity

CE

- The product bears the **CE** marking and complies with the requirements of the applicable European Union harmonisation legislation.
- A copy of the **EU Declaration of Conformity** is available from the importer at the address stated above or at the e-mail address info@rotorama.cz.
- **Product identification:** the type designation (ER8) is printed on the receiver housing; the firmware version can be found in the *ExpressLRS LUA* script or in the WebUI.

8.3 Disposal of electrical equipment



- The crossed-out wheeled bin symbol on the product, its packaging or in the documentation means that at the end of its service life the product **must not be disposed of together with mixed municipal waste**.
- Hand it over at a take-back point for electrical equipment – at a collection yard, at a take-back point of a collective system, or at the retailer when purchasing a new equivalent product. Take-back is free of charge for the end user.
- The obligations under Act No. 542/2020 Coll., on end-of-life products, are fulfilled by the importer through a collective take-back system.
- Proper disposal helps prevent negative impacts on the environment and human health and contributes to the reuse of secondary raw materials.

Through its contractual partner **ASEKOL a.s.**, the company ensures the take-back of waste electrical equipment from households and the separate collection of waste electrical equipment, batteries and accumulators in accordance with the applicable legislation. The customer is entitled to hand over old electrical equipment or a battery or accumulator at any collection point of the above contractual partner. The addresses of these take-back points are listed at www.asekol.cz, www.ecobat.cz and also https://visoh2.mzp.cz/RegistrMistZO/RegistrMistZOPublic/MapaMistZpetOdberu.

9. Warranty and rights arising from defective performance

The rights and obligations of the contracting parties are governed by Czech law, in particular by Act No. 89/2012 Coll., the Civil Code, and Act No. 634/1992 Coll., on consumer protection.

- The seller is liable to the buyer for the product being free of defects on receipt. If the buyer is a consumer, a defect may be notified **within two years of receipt** of the product (Section 2165 of the Civil Code).
- If a defect appears within **one year** of receipt, the product is deemed to have been defective already at the time of receipt (Section 2161(5) of the Civil Code).
- When purchasing online, a consumer has the right to **withdraw from the contract within 14 days** of receiving the goods without giving a reason (Section 1829 of the Civil Code).
- Claims should be made with the retailer from whom you purchased the product. The importer's contact details are given in Chapter 8.1.
- The competent body for out-of-court settlement of consumer disputes is the **Czech Trade Inspection Authority**, Štěpánská 796/44, 110 00 Prague 1, www.coi.cz.

※ The law of the country in which the product is operated is decisive. If you operate the product outside the Czech Republic, follow the regulations of that country.