ER6

RadioMaster ER6 ELRS PWM
2.4 GHz ExpressLRS receiver with 6 PWM channels



Read this entire manual carefully before first use and keep it for future reference.

www.rotorama.com

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1. Safety instructions

The receiver is part of the model's control chain. Incorrect wiring or settings may result in loss of control of the model and in injury to persons or damage to property. Therefore, observe the following rules:

- Power the receiver only within the range of **DC 4.5–8.4 V**. Do not exceed the maximum supply voltage.
- Never apply a voltage higher than **35 V** to the EXT-V input – the receiver would be damaged.
- Always disconnect the model's flight battery when wiring and soldering. Observe the correct polarity of all connectors.
- When working on a model with the flight battery connected, remove the propeller – the motor may start unexpectedly.
- Do not cut, shorten or sharply bend the antennas. Route the antenna ends as far as possible from metal and carbon parts and from high-current cables.
- Protect the receiver from moisture, water, dust, impacts and vibration.
- Before every flight, check the function of all control surfaces and the failsafe settings, and perform a range check.
- Operate the model in accordance with the regulations of the country in which you fly. This product is not a toy and must be kept away from children.

2. Product description

2.1 Introduction

Thank you for purchasing the Radiomaster ER6 ELRS receiver. The ER6 receiver is based on the revolutionary ExpressLRS system. It offers high performance, high reliability, flexible configuration, fast response speed and ultra-long range.

The Radiomaster ER6 ELRS receiver has been specially designed for fixed-wing users. It can drive up to 6 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 ER6 features a dual antenna with telemetry power up to 100 mW. The receiver shell adopts a one-piece molding process with high structural strength.

2.2 Specifications

Parameter	Value
Power supply	DC 4.5–8.4 V
Antenna type	2 × 20 cm, high sensitivity
Wireless protocol	ExpressLRS 2.4 GHz (pre-installed)
Output channels	6 × PWM
Serial output	CRSF / SBUS
Telemetry power	max. 100 mW (adjustable in ELRS LUA)
Telemetry battery voltage detection range	DC 4.0–35 V
Bus interface	CRSF
Weight	14.5 g
Dimensions	43 × 25 × 15 mm
Firmware – device category	Radiomaster 2.4Ghz
Firmware – device	Radiomaster ER6

※ The CRSF / SBUS serial output is stated by the manufacturer on the product page. We do not state the specific pre-installed firmware version – it varies between production batches.

2.3 Package contents

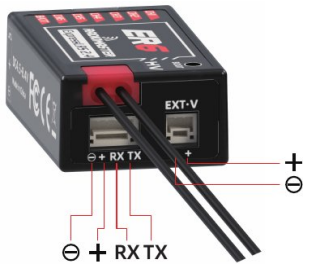
The package contains (servos, battery, BEC and radio are not included):

- 1 × RadioMaster ER6 2.4GHz ELRS PWM receiver
- 1 × voltage telemetry wire (Type-B)
- 1 × CRSF wire
- 1 × ELRS-RX-SBUS wire
- 1 × user card

2.4 Receiver overview



Servo outputs CH1–CH6 and BATT input (signal / + / −), BOOT button and antenna leads



Rear side: CRSF connector (− + RX TX) and EXT-V input (+ −)

- **CH1–CH6** – PWM servo outputs (2.54 mm connectors). Each output has signal, + and − pins in the order marked on the housing (figure above).
- **BATT** – receiver power input 4.5–8.4 V (from the ESC BEC, a UBEC or directly from a 2S battery).
- **BOOT** – button for resetting the receiver and entering bind mode (see Chapter 4).
- **EXT-V** – 2-pin JST-GH connector for flight battery voltage telemetry (see Chapter 3.3).
- **RX TX** – 4-pin CRSF port for connecting telemetry sensors and other accessories (see Chapter 3.4).

2.5 Radio parameters and operation

Frequency band	2.4 GHz (ISM, 2400–2483.5 MHz)
Max. transmitted power	100 mW (telemetry, manufacturer's figure; adjustable in ELRS LUA)

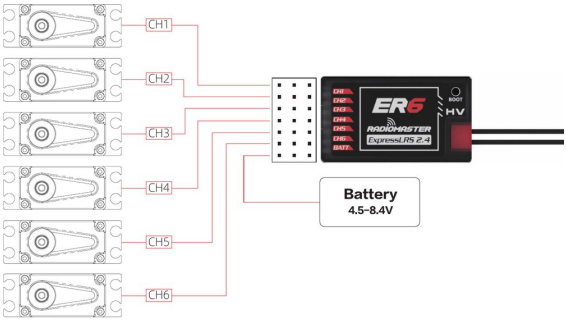
EU regulations apply in all member states, but the permitted frequency bands and maximum transmitting powers are set by national regulations and differ from country to country. The information in this chapter describes the situation in the Czech Republic. If you operate the model in another country, you must comply with the regulations of the country in which you operate it.

- In the Czech Republic, frequency-hopping (FHSS) equipment in the 2400–2483.5 MHz band may be operated without an individual licence under the CTU general authorisation **VO-R/12** with a maximum radiated power of **100 mW e.i.r.p.**
- In the EU, use ExpressLRS firmware with the **EU (LBT)** regulatory domain.
- The user is responsible for the transmitting power setting. Do not use additional RF amplifiers.

3. Wiring

3.1 Connecting servos and power

Connect the servos to outputs CH1–CH6 and the receiver power supply (marked *Battery 4.5–8.4V* in the figure) to the BATT input. Observe the correct orientation of the connectors – signal, + and − as marked on the housing (Chapter 2.4).



Wiring diagram of servos CH1–CH6 and the 4.5–8.4 V power supply

3.2 Power supply and BEC sizing

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.

The receiver supply voltage must not exceed 8.4 V. Also check that the servos used can withstand the voltage with which you power the receiver.

3.3 Flight battery voltage telemetry (EXT-V)

The EXT-V (external voltage input) of the ER6 is accessed via the EXT-V 2-pin JST-GH connector. The wires must be soldered to the positive and negative of the battery or ESC – **the RED wire to the positive**. If no EXT-V power source is found, the ER6 will default to reading the voltage on the receiver pins. Only one voltage input can be used at any given time.

The maximum input voltage for the EXT-V telemetry reading is 35 V. Do not exceed 35 V or the receiver will be damaged.

3.4 CRSF port (RX TX)

The 4-wire CRSF port (− + RX TX) is provided to facilitate later expansion of telemetry sensors. The CRSF wire and the ELRS-RX-SBUS wire are included in the package.

4. Binding

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 ExpressLRS LUA

※ 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 enter bind mode with the 3 power cycle method, hold down the BOOT button for 10 seconds to reset the receiver to bind mode, or use the passphrase method (Chapter 4.2).

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

4.2 Binding method (Passphrase)

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 (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. Select *Save and Reboot*.

② Power up the receiver and wait 60 seconds for the LED to blink rapidly to indicate Wi-Fi mode. Connect 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.

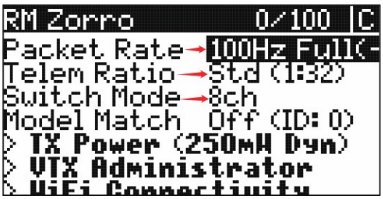
Wi-Fi	Radio (TX)	Receiver (RX)
Default network name	ExpressLRS TX	ExpressLRS RX
Default password	expresslrs	expresslrs
Default URL (in browser)	http://10.0.0.1/	http://10.0.0.1/

5. Settings

5.1 Recommended ELRS LUA settings

The recommended ELRS LUA settings on the radio are:

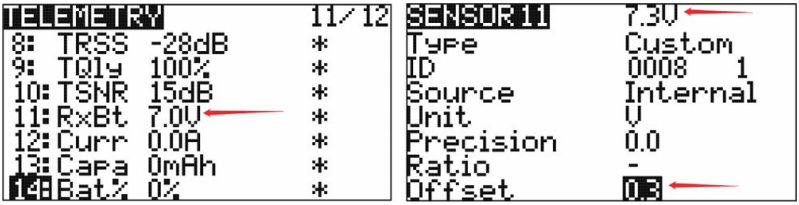
Parameter	Standard servos	Performance servos
Packet Rate	100Hz Full	333Hz Full
Telem Ratio	Std (1:32) – default if unsure	Std (1:128)
Switch Mode	8ch	8ch



Packet Rate, Telem Ratio and Switch Mode settings 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* until the displayed reading matches the actual voltage of the battery in the model. If there is a large difference, adjustment of the *Ratio* may also be required.



RxBt sensor on the telemetry page (left) and Offset adjustment in the sensor settings (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.

5.3 Channel 5 and arming

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. Example:

Receiver output	Radio channel
CH1	CH1
CH2	CH2
CH3	CH3
CH4	CH4
CH5	CH7
CH6	CH6

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

6. Firmware and further guides

The receiver comes with ExpressLRS firmware pre-installed. The firmware supports Wi-Fi updates and WebUI configuration. When updating (e.g. with ExpressLRS Configurator), select:

Device Category	Radiomaster 2.4Ghz
Device	Radiomaster ER6

Detailed documentation for ExpressLRS and EdgeTX is available on the official websites:

ExpressLRS documentation – binding, settings, firmware updates.
www.expresslrs.org

EdgeTX documentation – radio setup, telemetry and sensors.
edgetx.org

Official documentation: www.expresslrs.org and edgetx.org.

7. Maintenance and troubleshooting

- Regularly check the condition of the antennas, connectors and servo leads. Replace a damaged antenna.
- Clean the receiver with a dry soft cloth; do not use solvents.
- **The receiver does not bind:** check that the transmitter module and the receiver use compatible ExpressLRS firmware and the same regulatory domain; put the receiver into bind mode as described in Chapter 4.
- **Telemetry shows an incorrect voltage:** calibrate the RxBt sensor as described in Chapter 5.2 and check the EXT-V wiring.
- **The servos do not move:** check the power supply at the BATT input, the orientation of the servo connectors and the channel assignment (Chapter 5.3).

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 (ER6) is given on the top of the receiver housing.

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.