HR8E

ExpressLRS 2.4 GHz receiver, 9 PWM channels
User manual



Read this entire manual carefully before first use, especially the safety instructions in Chapter 1, and keep it for future reference. This product is not a toy – it is intended for persons aged 14 and over.

Manufacturer: Shenzhen HelloRadioSky Technology Co., Ltd. · Importer: Rotorama, s.r.o., www.rotorama.cz

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1. Safety instructions

The receiver is part of the model's control chain. Incorrect wiring, setup or installation may result in loss of control of the model and endanger people, animals and property.

- This product is **not a toy**. It is intended for persons aged 14 and over with experience in operating radio-controlled models.
- Do not exceed the permitted supply voltage of the receiver or the maximum voltage at the EXT-BAT input (Chapter 6). Reverse polarity or overvoltage will permanently damage the receiver.
- When binding, setting up or bench testing, **remove the propeller** or otherwise secure the power system. The motor may start unexpectedly.
- Before the first flight, set up the behaviour of the outputs on signal loss (failsafe) and verify it on the ground – the motor must stop and the control surfaces must move to a safe position.
- Before each flying day, perform a **range check** on the ground and check the travel and direction of all control surfaces.
- Do not shorten, bend or pinch the antennas. Route them away from metal and carbon parts and as far as possible from the electronic speed controller (ESC), the motor and the power leads; position the ends of the two antennas at an angle to each other.
- Mount the receiver so that it is protected from vibration, moisture, dust and impact. Make sure the servo connectors cannot come loose in flight.
- Size the power source (BEC, UBEC or battery) according to the current draw of the servos used – an insufficient source causes voltage drops and receiver brownouts (Chapter 5).
- Do not open the receiver case or modify the product. Do not use a damaged receiver.
- When operating the product, observe the regulations for radio equipment and for operating model aircraft (Chapter 7).

2. Receiver description

2.1 Introduction

Thank you for purchasing the HelloRadioSky HR8E ELRS receiver. The HR8E 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 HelloRadioSky HR8E 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 HR8E features a dual antenna with telemetry power up to 100 mW.

2.2 Overview

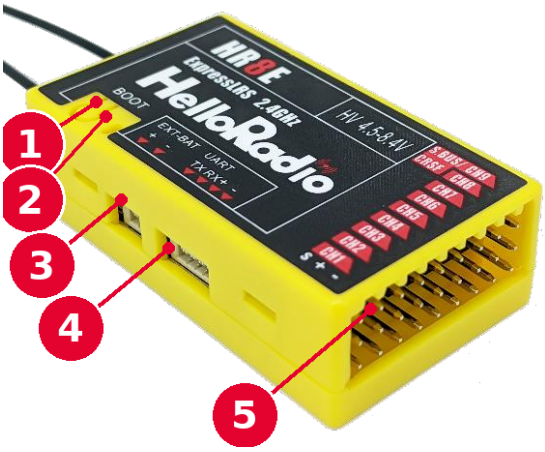


Fig. 1 – HR8E receiver overview

① **BOOT** – BOOT button

② **LED** – status LED

③ **EXT-BAT** – telemetry: external voltage input for the flight battery (2-pin JST-GH connector)

④ **UART** – CRSF interface (TX, RX, +, −) for telemetry sensors

⑤ **Pin header CH1–CH9** – servo outputs; each column has the pins **S** (signal), **+** (power) and **−** (ground)

2.3 Outputs and LED indication



Fig. 2 – Receiver label with output and connector markings

Output	Function
CH1–CH8	servo outputs (PWM)
CH9	servo output (PWM), or CRSF / S.BUS bus

LED behaviour	Meaning
on after power-up	the receiver is powered
double blink	the receiver is in bind mode
rapid blinking	the receiver is in Wi-Fi mode

3. Binding with the radio

Before first use, the receiver must be bound to the ExpressLRS RF module of your radio. Two methods are available.

3.1 Traditional method

① Power on the receiver, its LED will turn on. Then power off the receiver.

② Repeat step ① twice.

③ Power on the receiver for the third time, its LED will double blink. This indicates that the receiver is in bind mode.

④ Select **[BIND]** on the radio, then confirm.

3.2 Binding with a bind phrase

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

① Open the **ExpressLRS Lua** script 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 on **http://10.0.0.1/**) and input a unique bind phrase of yours. *Save* and *Reboot*.

② Power up the receiver and wait **60 s** 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 (**http://10.0.0.1/**) and enter the matching bind phrase previously entered on your radio. Save and Reboot.

※ Bind phrases are not secret and can be read – they do not provide any security.

Wi-Fi	Transmitter (TX)	Receiver (RX)
Network name	ExpressLRS TX	ExpressLRS RX
Password	expresslrs	expresslrs
URL (open in browser)	http://10.0.0.1/	http://10.0.0.1/

4. ELRS Lua settings on the radio

Recommended settings of the RF module in the ExpressLRS Lua script depending on the servos used:

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

5. Connection and other important notices

▶ EXT-BAT input

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

The EXT-BAT input (external voltage input) is accessed via the 2-pin JST-GH connector. The red wire must be soldered to the positive of the battery or the electronic speed controller (ESC).

▶ Servo power supply

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, the manufacturer recommends a 2S battery for direct power supply or a suitable high-current UBEC.

▶ 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.

※ For best results, calibrate using a fully charged battery of the correct cell count intended for use in the model.

▶ Arm 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.

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

6. Specifications

Parameter	Value
Power supply	DC 4.5–7.4 V
Antennas	2× high-sensitivity antenna, 18 cm
Wireless protocol	ExpressLRS 2.4 GHz (pre-installed)
Outputs	9 PWM channels
Telemetry power	max. 100 mW (adjustable in Lua)
Flight battery voltage detection range	DC 4.0–35 V
Bus interface	CRSF
Weight	13.7 g
Dimensions	48 × 27 × 15 mm

▶ Firmware selection in the ExpressLRS Configurator

Device Category	HelloRadioSky 2.4GHz
Device	HelloRadioSky HR8E 2400 PWM RX

For operation in the European Union, use firmware with the EU regulatory domain (*Regulatory_Domain_EU_CE_2400*, with LBT). Firmware marked FCC is intended for other markets.

7. Radio parameters and operation

7.1 Frequency band and transmit power

Frequency band	2400–2483.5 MHz
Max. transmit power (telemetry)	100 mW (adjustable in Lua)

7.2 Operation in the Czech Republic and other countries

European Union regulations for radio equipment and for operating model aircraft apply in all Member States, but national implementing rules differ from country to country – permitted frequency bands, maximum transmit powers, operator registration and geographical zones. 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, the receiver is operated without an individual licence under the general authorisation of the Czech Telecommunication Office (ČTÚ) No. **VO-R/12/11.2021-11**. For the 2400–2483.5 MHz band it sets a maximum radiated power of **100 mW e.i.r.p.**, including antenna gain.
- The use of additional amplifiers, or of antennas with which the limit would be exceeded, is prohibited.
- The user is responsible for setting the transmit power of the radio and of the receiver telemetry.

7.3 Operating model aircraft

The receiver is intended for radio-controlled model aircraft. Under Commission Implementing Regulation (EU) 2019/947, a model aircraft is an unmanned aircraft. Before flying, check whether you are required to register as an operator with the Civil Aviation Authority (in the Czech Republic: dron.caa.cz) and observe the rules of the open category, geographical zones and, where applicable, the conditions of your model aircraft club.

7.4 Manufacturer

Manufacturer	Shenzhen HelloRadioSky Technology Co., Ltd.
Address	3F, Building B, No. 7, Tongfu Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, China
E-mail	info@helloradiorc.com
Web	www.helloradiosky.com

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.cz

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 (HR8E) is given on the top of the receiver case.

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.