RadioMaster Bandit

ExpressLRS 900 MHz RF Module
User Manual



Read the entire manual before first use. Never switch the module on without an antenna attached. Before use in the EU, select the EU868 regulatory domain (Chapter 3.2).

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1. Safety instructions

1.1 Before you start

The RadioMaster Bandit RF module is intended for radio remote control of RC models (drones, aircraft, vehicles) using the ExpressLRS system. This product is not a toy and must be kept out of the reach of children. Read this entire manual before first use and keep it for future reference.

- **Never transmit without an antenna attached.** Always attach the antenna before switching the module on – operating without an antenna may damage the RF section.
- While transmitting, keep the antenna **at least 20 cm away from people**. This distance is specified by the manufacturer in the radio certification documents of the module.
- Use only the antennas supplied by the manufacturer or antennas specified by the manufacturer for this module. Do not connect any additional RF amplifiers.
- Do not cover the module or obstruct the airflow through the air vents and the fan. The aluminium case acts as a heat sink and may become noticeably warm at higher power levels.
- Connect external power via the XT30 connector only within the range of **DC 6–16.8 V** and observe the correct polarity.
- Do not expose the module to water, moisture, dust or direct sunlight in a closed car. Do not open the case or tamper with the electronics.

1.2 Safe operation of the model

- Before each use, check that the model is linked to the radio and responds correctly to all commands.
- Before the first flight, set up and test the **failsafe** – the behaviour of the model when the signal is lost (for a drone, typically motors off).
- **Never change module settings during flight.** Changing the packet rate forces a disconnect between the module and the receiver. Change parameters only while the model is disarmed (Disarm – motors off).
- While the model is armed (Arm – motors on), the buttons and the navigation key of the module are locked to prevent accidental changes.
- The user is responsible for operating the model in compliance with regulations and for the choice of regulatory domain and transmit power (Chapter 3).

2. Product description

Featuring an OLED display, a directional menu key and two assignable shortcut keys, the RadioMaster Bandit is the pinnacle of ExpressLRS module design. Built with a rugged CNC machined aluminum case that aids the high-efficiency cooling system as a heat sink. The module has a built-in ExpressLRS Backpack, WiFi and Bluetooth, an accelerometer and RGB lights, and can be configured directly on the module without a Lua script.

2.1 Parts overview



Front of the module

① RP-SMA antenna connector

② OLED display

③ 5-direction navigation key (up, down, left, right, press)

④ ⑤ Shortcut buttons with assignable functions (Chapter 5.2)

⑥ RGB indicator – status indication (Chapter 5.5)

⑦ Fan and air vents of the cooling system



Bottom of the module – connectors

- **USB** – USB-C connector for connection to a computer (firmware update via UART, Chapter 5.6).
- **CRSF** – connector for the supplied Futaba CRSF cable (Chapter 4.3).
- **RT** – UART connector for the supplied UART cable.
- **XT30 (DC 6–16.8 V)** – external power input (Chapter 4.4).

On the back there is the connector for the module bay adapter and holes for the adapter mounting screws. A removable clear plastic cover is included.

2.2 Specifications

Parameter	Value
Manufacturer	Shenzhen Radiomaster Co., Ltd, 4F Yangtian Building, Xin'an Street, Bao'an District, Shenzhen, Guangdong, 518101, China
Regulatory Domain (factory)	FCC915 – change before use in the EU (Chapter 3.2)
MCU	ESP32 (main), ESP8285 (aux, as ESP backpack)
RF chip	SEMTECH SX1276
Refresh rate (min./max.)	25 Hz / 200 Hz
Module bay adapters	JR (Micro) standard 5-pin socket; Nano standard 8-pin socket
OLED screen	128 × 64 px
WiFi & Bluetooth support	yes
G-sensor support	yes
Built-in RGB light strip	yes
XT30 power supply voltage	DC 6–16.8 V
Antenna connector	RP-SMA

Parameter	Value
Weight	172 g (with Moxon antenna) 150 g (with T antenna) 126 g (without antenna)
Dimensions	95 × 51 × 25 mm (without antenna)
Firmware (pre-installed)	ExpressLRS, target *RadioMaster Bandit 900MHz TX*
Power levels (according to ExpressLRS)	100 mW, 250 mW, 500 mW, 1000 mW

The power levels are taken from the hardware definition of the module in the ExpressLRS project. The available settings depend on the firmware and the selected regulatory domain.

▶ Antennas included (manufacturer data)

Antenna	Type	Band	Gain
Moxon	directional, beam width 145° (−3 dB)	860–930 MHz	4.6 dBi
T antenna	omnidirectional	860–930 MHz	2.7 dBi

2.3 Package contents



Package contents

- 1× Bandit ExpressLRS RF Module
- 1× Moxon Antenna, 1× T-Antenna
- 1× Micro (JR) Adapter, 1× Nano Adapter
- 1× Futaba CRSF socket cable, 1× UART Cable
- 1× clear protective cover
- 1× 1.55 mm Allen key, 6× M2 × 6 screws, 1× manufacturer manual

※ The radio (RC transmitter), a receiver and a battery for external power are not included.

3. Radio frequencies and operating conditions

3.1 The law of the country of operation applies

Radio frequency rules are based on EU legislation, but the permitted bands, maximum transmit power and other conditions are set by each country. The information in this chapter describes the situation in the Czech Republic. In another country, follow the regulations of the country in which you use the module.

3.2 Regulatory Domain

The regulatory domain determines the frequency range used by the ExpressLRS 900 MHz firmware. The manufacturer states that the module is factory-set to the **FCC915** domain (902–928 MHz band, intended for the USA).

The 902–928 MHz band (FCC915 domain) is not permitted for this type of equipment in the Czech Republic. Before first use in the EU, check the setting and select the EU868 domain.

The domain (*Regulatory Domain*) is selected in ExpressLRS Configurator or in the module web interface (Chapter 5.6); the Lua script also shows it. **The module and the receiver must be set to the same domain**, otherwise they will not connect.

3.3 Frequencies and transmit power in the Czech Republic

The module transmits at 900 MHz (ExpressLRS) and 2.4 GHz (WiFi, Bluetooth). In the Czech Republic, operation is governed by ČTÚ general authorisations VO-R/10 and VO-R/12:

Band	Max. power	Conditions
863–870 MHz	25 mW e.r.p.	duty cycle 0.1 % or 1 % (by sub-band) or spectrum access technique (LBT)
869.40–869.65 MHz	500 mW e.r.p.	duty cycle 10 % or spectrum access technique
2400–2483.5 MHz (WiFi, Bluetooth)	100 mW e.i.r.p.	VO-R/12

Source: ČTÚ, VO-R/10/05.2025-5 (effective 15 June 2025), VO-R/12/11.2021-11; see www.ctu.gov.cz.

- The power is set with *TX Power → Max Power* in the module menu or in the ExpressLRS Lua script. The lowest power level of the module is 100 mW (Chapter 2.2). The user is responsible for selecting the domain and power in compliance with the regulations of the country of operation.
- The maximum transmitted power according to the EU declaration of conformity is available from the importer on request (Chapter 8). The equipment must not be modified or cause interference.

4. Installation and connection

4.1 Antennas

Screw the antenna onto the RP-SMA connector by hand, without tools, always **before switching the module on**.

- The **T antenna** is an omnidirectional antenna. It is intended for short to medium range and is suitable for most conditions.
- The **Moxon antenna** is directional and provides a stronger, more reliable link in a specific direction. Keep the Moxon antenna oriented toward the area where your device will be operating.
- Antenna polarization: vertical/horizontal (manufacturer data).

4.2 Adapter and installation in the module bay

① Choose the adapter that matches the module bay of your radio: **Micro (JR)** for a JR / Micro bay, **Nano** for a Nano (Lite) bay.

② Attach the adapter to the back of the module with the supplied M2 screws using the 1.55 mm Allen key. Tighten the screws gently.

③ Switch off the radio and slide the module with the adapter into the bay until it clicks into place.

④ On an EdgeTX radio, set the external module to **CRSF** in *Model Setup*. The module supports up to 3.75 Mbaud; use the highest rate your radio supports.

⑤ Switch on the radio. After the module starts, the display shows the link status.

4.3 Futaba radios – CRSF cable

The module can be connected to Futaba radios whose firmware supports CRSF. Procedure according to the manufacturer:

① Please make sure your Futaba radio firmware supports the CRSF function (information and software are available from Futaba).

② Follow the Futaba manual to set the *servo test* port to CRSF.

③ Connect the Bandit to the radio with the supplied Futaba CRSF cable.

④ Connect a 2S–4S Li-Po battery to the Bandit via the XT30 connector.

4.4 External power – XT30

The XT30 connector is used for external power, for example when the module is connected by cable without a module bay. The supply voltage must be within **DC 6–16.8 V**, which corresponds to a 2S–4S Li-Po battery. A fully charged Li-Po cell has 4.20 V, so a fully charged 4S pack has 16.8 V. A 4S LiHV pack (4.35 V/cell) would exceed the upper limit of the supply voltage – do not use it.

5. Operation and settings

The module is supplied with ExpressLRS firmware; functions and menu names may differ between firmware versions. This chapter is based on the ExpressLRS project documentation.

5.1 Display and navigation key

Action	Function
long press centre or long press right	opens the main menu
up / down (on the home screen)	shows link statistics
up / down (in the menu)	previous / next item
press or right	enter the item
left	back one level
press when selecting a value	save the value

The main menu includes, among others, *Packet Rate*, *Switch Mode*, *TX Power* (*Max Power*, *Dynamic Power*), *Telem Ratio*, *Motion Detect*, *Fan Control*, *BLE Gamepad*, *Bind Mode*, *WiFi Admin* and *VTX Admin*. Without further input the menu closes automatically after a while.

While the model is armed, the navigation key and the shortcut buttons are locked.

5.2 Shortcut buttons

The function of both shortcut buttons and the colour of their illumination are set in the web interface of the module on the *Buttons* tab. The following actions can be assigned:

- *None* – the button does nothing,
- *Increase Power* – increases the transmit power by one level,
- *Go to VTX Band Menu* / *Go to VTX Channel Menu* – jumps directly to the video transmitter (VTX) band / channel menu on the display,
- *Send VTX Settings* – sends the VTX settings to the flight controller (FC) or the Backpack,
- *Start WiFi* – immediately starts WiFi mode,
- *Enter Binding Mode* – starts the binding mode.

5.3 Link settings

- **Packet Rate** – for the 900 MHz band the modes 25 Hz, 50 Hz, 100 Hz, 100 Hz Full, 200 Hz and D50 (redundant transmit mode) are available. A higher rate means lower latency at the expense of sensitivity and range.

- **Telem Ratio** – telemetry ratio (*Off*, *1:128* to *1:2*, *Std*, *Race*). *Std* selects the ratio according to the packet rate, *Race* additionally disables telemetry while armed.
- **Max Power** – the maximum power the module transmits at (Chapter 3.3).
- **Dynamic Power** – dynamic power control according to link quality. It relies on telemetry; if no telemetry is received while armed, the power is raised to the configured maximum.
- **Fan Control** – fan control (*Auto*, *On*, *Off*). In *Auto* mode the fan switches on from 250 mW according to the ExpressLRS default setting.

Never change the packet rate during flight – it forces a disconnect.

5.4 Binding to a receiver

The module binds to any ExpressLRS 900 MHz receiver. The module and the receiver must have the same first number of the firmware version and the same regulatory domain.

▶ Binding phrase (recommended)

When flashing the firmware or in the web interface, enter the same *Binding Phrase* on the module and the receiver – at least 8 alphanumeric characters are recommended. Devices with the same phrase connect automatically. The phrase is not a password or encryption key.

▶ Traditional binding

① Power-cycle the receiver three times until its LED shows a quick double blink – the receiver is in binding mode.

② Start binding on the module – with *Bind Mode* in the menu, with a shortcut button set to *Enter Binding Mode*, or with the *[Bind]* button in the ExpressLRS Lua script.

③ When the receiver LED turns solid, the receiver is bound. The ExpressLRS Lua script shows a *C* (Connected) in the top-right corner.

5.5 RGB LED status indication

LED	Meaning
rainbow fade effect	starting up
green heartbeat	WiFi (update) mode enabled
blue heartbeat	Bluetooth joystick enabled
one orange flash every second	no connection to the radio (handset)
solid single colour	connected to receiver, colour indicates packet rate
fading single colour	no connection to receiver

Colour by packet rate: red 200 Hz, yellow-green 100 Hz Full, green 100 Hz, light blue 50 Hz, blue 25 Hz, purple D50.

5.6 Web interface and firmware update

The module comes pre-installed with ExpressLRS and does not need to be reflashed. The web interface lets you change the binding phrase, regulatory domain and other parameters and upload new firmware.

▶ Connecting via WiFi

① Enable WiFi in the module menu (*WiFi Admin*) or in the ExpressLRS Lua script (*WiFi Connectivity → Enable WiFi*). The LED shows a green heartbeat.

② Connect your computer or phone to the *ExpressLRS TX* network, password **expresslrs**.

③ Open **10.0.0.1** in your browser. If you have entered your home WiFi credentials on the module, the interface is also available at **http://elrs_tx.local**.

▶ Firmware update

① In ExpressLRS Configurator, select the category *RadioMaster 900MHz* and the device *RadioMaster Bandit 900MHz TX*.

② Set the regulatory domain (*Regulatory Domain* – mandatory, **EU868** in the EU), the binding phrase and optionally your home WiFi credentials.

③ Upload the firmware either via WiFi (on the *Update* tab of the web interface, drag and drop the *firmware.bin* file and click *Update*) or via USB-C cable using the UART method. When using a cable, remove the module from the radio; if the computer does not detect it, install the CP210x driver.

④ Do not disconnect or switch off the module during the update and wait for the success message.

※ According to the manufacturer, the module is also compatible with mLRS. Other firmware than ExpressLRS changes the functions described here.

5.7 Bluetooth joystick for simulators

The *BLE Gamepad* function (*BLE Joystick* in the Lua script) switches the module to Bluetooth joystick mode, allowing you to connect the radio to a computer with a simulator wirelessly. To exit this mode, reboot or change the model on the radio. The LED shows a blue heartbeat in this mode.

5.8 Further documentation

Detailed documentation is available on the official project websites:

ExpressLRS
www.expresslrs.org

EdgeTX
edgetx.org

6. Maintenance and storage

- Keep the air vents and the fan clean. Remove dust with a dry brush or compressed air.
- Regularly check the antenna connector and the antenna cables. Replace a damaged antenna.
- Clean the case with a dry or slightly damp cloth, without solvents.
- Store the module in a dry place, out of the reach of children, with the external battery disconnected. Use the supplied protective cover for transport.
- Store the battery for external power at 3.8 V/cell (2S 7.6 V, 3S 11.4 V, 4S 15.2 V).

7. Troubleshooting

Problem	Possible cause and solution
The module does not bind to the receiver	Different binding phrase, different first number of the firmware version or different regulatory domain on the module and receiver. Align the settings (Chapters 3.2 and 5.4).
The LED flashes orange every second	The module has no connection to the radio. Check that the adapter is seated in the bay and that the external module is set to CRSF (Chapter 4.2).
The navigation key and shortcut buttons do not respond	The model is armed – the module controls are locked in this state. Disarm the model.
The web interface does not open	Check that the module WiFi is enabled (green heartbeat) and that you are connected to the *ExpressLRS TX* network. Enter the address 10.0.0.1.
The computer does not detect the module via USB	Use a USB-C data cable and install the CP210x driver.
The module overheats	Clear the air vents, check the fan setting (*Fan Control*) and reduce the transmit power if necessary.
Short range, signal dropouts	Check the antenna connection and orientation, the packet rate and the power setting.

If the problem persists, contact the seller (Chapter 8.1).

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 (RadioMaster Bandit ExpressLRS RF Module) is given on the product and its packaging; the firmware version is shown in the ExpressLRS web interface or the ExpressLRS Lua script.

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.