Bandit Micro

ExpressLRS 868 MHz transmitter module
User manual



Read the entire manual before first use. Operate the module only with the EU868 regulatory domain and the output power permitted in the country of use.

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1. Safety instructions

Read the entire manual before first use and keep it for future reference. If you pass the product on to another user, hand over this manual as well.

1.1 General rules

- The module is intended for remote control of RC models and drones. Do not use it for any other purpose.
- This product is not a toy. Keep it away from children unless supervised by an adult.
- Do not open or modify the module. Tampering with the electronics or the antenna may result in loss of the link to the model and in a breach of the conditions for operating radio equipment.
- Protect the module from moisture, dust, drops and direct sunlight. Do not use a wet or damaged module.
- The link to the model may be interrupted (interference, obstacles, distance, flat radio battery). Always fly so that a loss of link does not endanger anyone, and have failsafe configured on the receiver.

1.2 Radio transmission and antenna

- Always screw on the antenna before switching on the radio with the module installed. Use only the supplied antenna or an antenna specified by the manufacturer for the 868/915 MHz band.
- Operate the equipment only with the regulatory domain and output power permitted in the country of use (chapter 3).
- Do not hold the antenna in your hand during operation and do not point it at people at close range.
- Do not switch the module on where the use of radio equipment is prohibited (aircraft, hospitals, explosive atmospheres).

1.3 Power supply and heat

- Connect only a **6–16.8 V DC** power source with correct polarity to the XT30 connector.
- The module heats up at higher output power. Do not cover the heat sink or the vents and do not block the fan.
- Insert the module into the radio and remove it only with the radio switched off and the external power supply disconnected.

2. Product description

2.1 What the module is for

Featuring maximum 200 Hz packet rates and an innovative convection cooling system, the RadioMaster Bandit Micro 900 MHz (868/915 MHz) ExpressLRS (ELRS) module represents the cutting edge in ELRS technology. Attach the module to the module bay of a compatible radio (TX16S MKII, Boxer, TX12 MKII and more) to enjoy all that ELRS has to offer; it provides the radio link to an ExpressLRS 900 MHz receiver in the model.

The included T-shape antenna is designed for general purpose flying. An optional MOXON antenna is available separately for directional applications.

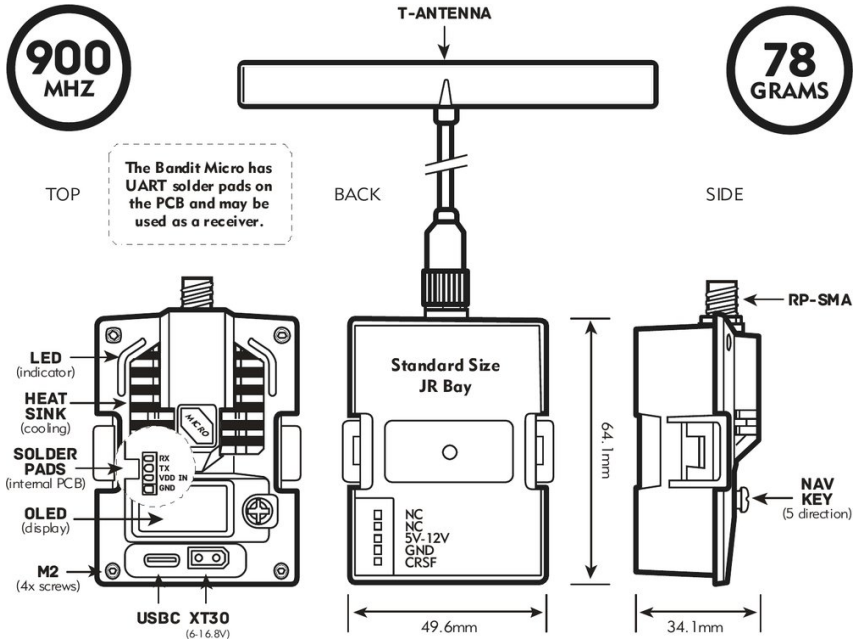
❊ The Bandit Micro fits JR style micro module bays. For Nano connectors, please consider the Bandit and the Bandit Nano modules.

2.2 Package contents

- 1× Bandit Micro module
- 1× 900 MHz T-antenna
- 1× manufacturer's manual

The package does **not** include a radio, a receiver, an external power supply or USB-C and XT30 cables.

2.3 Parts overview



Top, back and side view – manufacturer's drawing

Label in the drawing	Meaning
T-ANTENNA	T-shape antenna
RP-SMA	RP-SMA antenna connector
LED (indicator)	status LED
HEAT SINK (cooling)	heat sink
SOLDER PADS (internal PCB)	UART solder pads inside the module: RX, TX, VDD IN, GND (chapter 6.4)
OLED (display)	OLED display
NAV KEY (5 direction)	5-direction navigation key
M2 (4x screws)	4 M2 screws
USBC	USB-C connector
XT30 (6-16.8V)	XT30 connector for external power supply, 6–16.8 V
NC / NC / 5V-12V / GND / CRSF	module bay pins: not connected, not connected, 5–12 V supply, ground, CRSF signal
900 MHz / 78 GRAMS	900 MHz band / weight 78 g

2.4 Specifications

Parameter	Value
Model	RadioMaster Bandit Micro
Band	900 MHz (868/915 MHz)
MCU	ESP32 (main), ESP8285 (aux, as ESP backpack)
RF chip	SEMTECH SX1276
Refresh rate	25 Hz / 200 Hz (min./max.)
Module bay	Micro standard (JR style micro)
Display	built-in OLED
XT30 power supply voltage	6–16.8 V DC
Weight	78 g (with antenna)
Dimensions	64.1 × 49.6 × 34.1 mm (without antenna)
Antenna connector	RP-SMA
Firmware	ExpressLRS (pre-installed)

※ The manufacturer lists the FCC915 regulatory domain for this model. For use in the EU the module must be set to the **EU868** domain (chapters 3 and 6.1).

2.5 Features

- packet rates up to 200 Hz
- optimized circuitry for ultra-low power consumption
- built-in TCXO oscillator
- low noise, high comfort
- high contrast OLED display
- innovative convection cooling design with built-in fan
- WiFi and Bluetooth support
- built-in ExpressLRS backpack
- 5-direction navigation key
- 915/868 MHz T-antenna included
- supports TX16S MKII, Boxer and TX12 MKII radios

3. Radio frequencies and conditions of use

3.1 The law of the country of use applies

Radio equipment is subject to Directive 2014/53/EU (RED) throughout the European Union, but the permitted frequency bands, maximum output powers and other conditions of use are set by each country individually and differ. The information in this chapter describes the situation in the Czech Republic. If you operate the module in another country, you must follow the regulations of the country in which you use it.

3.2 Frequency bands and output power

Radio part	Frequency band	Output power
ExpressLRS (SX1276), EU868 domain	863–870 MHz	adjustable; the manufacturer states up to 1000 mW
WiFi and Bluetooth (ESP32, ESP8285)	2400–2483.5 MHz	see EU declaration of conformity (chapter 8.2)

3.3 Conditions of use in the Czech Republic

In the Czech Republic the module is operated in the 868 MHz band under the general authorisation of the Czech Telecommunication Office (ČTÚ) **VO-R/10/05.2025-5** (short range devices). There is no dedicated band for remote control of models at 868 MHz in the Czech Republic.

Band	Max. power	Regulation
863.0–870.0 MHz	25 mW e.r.p.	VO-R/10/05.2025-5, Art. 3
2400–2483.5 MHz	100 mW e.i.r.p.	VO-R/12/11.2021-11

- In the Czech Republic the module may transmit with a radiated power of no more than **25 mW e.r.p.** Set the power level under *TX Power → Max Power* (chapter 5.2) and take the gain of the antenna used into account.
- Do **not** use power levels above this limit (100 mW to 1000 mW) in the 868 MHz band in the Czech Republic.
- The module must operate in the **EU868** regulatory domain. The FCC915 domain is intended for the USA and must not be used in the EU.
- Use only the supplied antenna or an antenna specified by the manufacturer. Additional amplifiers are prohibited.
- The operator is responsible for the setting of the regulatory domain and the output power.

If the module cannot be set to a power within the permitted limit, it must not be operated in the 868 MHz band in the Czech Republic.

4. Installation and radio setup

4.1 What else you need

- a radio with a Micro size module bay running EdgeTX or OpenTX firmware (ExpressLRS recommends EdgeTX),
- an ExpressLRS 900 MHz receiver with the same major firmware version and the same regulatory domain (EU868),
- the ExpressLRS Lua script on the radio's SD card (chapter 4.5),
- for firmware updates, a computer or phone with WiFi, or a USB-C data cable.

4.2 Fitting the antenna and inserting the module

① Switch the radio off.

② Screw the antenna onto the RP-SMA connector and tighten it by hand.

③ Insert the module into the module bay of the radio, making sure no pins are bent or missing. An external ExpressLRS module requires three pins to work: power, ground and signal (CRSF).

④ Switch the radio on and continue with the setup in chapter 4.4.

4.3 Power supply

The module is normally powered by the radio through the module bay pins (5–12 V). Alternatively it can be powered by an external source through the **XT30 connector (6–16.8 V DC)**. Outside the radio the module can also be powered via USB-C, for example for a firmware update.

4.4 Radio setup (EdgeTX)

ExpressLRS uses the CRSF serial protocol to communicate between the radio and the module. For full support of high packet rates, use a current version of EdgeTX or OpenTX.

① Press the **MDL** key and open the *Model Setup* page.

② Set *Internal RF* to **Off**.

③ Under *External RF*, set *Mode* to **CRSF**.

④ Set the *Baudrate*: 400K is sufficient for packet rates of 250 Hz and lower, and therefore for all packet rates of the Bandit Micro.

⑤ Optionally set a unique receiver number (*Receiver*) – it is used by the Model Match function (chapter 5.4).

⑥ After changing the baud rate, switch the radio off and on again.

※ For models with a flight controller (FC) that smooths the channel data itself (e.g. Betaflight), ExpressLRS recommends turning the *ADC filter* off in the radio. With PWM receivers it must stay on.

4.5 ExpressLRS Lua script

Most module settings can be changed with the ExpressLRS Lua script on the radio. Download the script from www.expresslrs.org and save it to the *SCRIPTS/TOOLS* folder on the radio's SD card. Start it with the **SYS** key → *Tools* → *ExpressLRS*.

- The top right corner of the script shows the link status: a dash (-) = not connected to a receiver, **C** = connected.
- If the script stays on “Loading…”, check the settings in chapter 4.4 (Internal RF Off, External RF CRSF, baud rate).
- The script shows only the functions the module supports.

5. Operation and settings

5.1 OLED display and navigation key

The home screen of the OLED display shows the parameters currently configured on the module and its firmware version. Using the 5-direction navigation key, the module can be configured directly without the Lua script – useful especially with radios whose firmware does not support Lua scripts.

- Enter the menu with a long press on the centre of the navigation key.
- Move up and down to select items, press the centre or move right to open an item, move left to go back.
- Change a value by moving up and down and confirm it by pressing the centre.
- The menu contains the same main items as the Lua script (Packet Rate, Telem Ratio, Switch Mode, TX Power, Bind, WiFi, VTX Admin and others). The available items depend on the firmware version.

After Arm (motors enabled), the navigation key of the module is locked for safety reasons.

5.2 Main parameters

Parameter	Meaning
Packet Rate	refresh rate: 25, 50, 100, 100 Full, 200 Hz and D50. A higher rate means lower latency at the expense of sensitivity and range. 100 Hz Full transmits all channels in full resolution.
Telem Ratio	share of packets used for telemetry: Off, 1:128 … 1:2, Std (depends on Packet Rate) and Race (as Std, but disables telemetry while armed).
Switch Mode	how channels AUX1–AUX8 are sent: Hybrid or Wide. Can only be changed when not connected to a receiver.
Model Match	the receiver connects only to a model with the same receiver number (chapter 5.4).
TX Power – Max Power	maximum output power. Only the levels supported by the module are offered. Observe the limit of the country of use (chapter 3.3).
TX Power – Dynamic	Off = always Max Power; Dyn = the module lowers power when it is not needed; AUX9–AUX12 = switching with a switch. Requires telemetry to be enabled.
TX Power – Fan Thresh	power level at which the fan switches on (default 250 mW).

Do not change parameters while the model is armed. Changing the Packet Rate in flight always forces a disconnect from the receiver and triggers failsafe.

5.3 Binding with a receiver

The module and the receiver connect only if they have the same major firmware version (e.g. 3.x) and the same regulatory domain. ExpressLRS offers two binding methods:

▶ Binding phrase (recommended)

Enter the same binding phrase in the module and the receiver – in ExpressLRS Configurator when flashing, or in the web interface (chapter 6.2). The devices connect automatically on power-up. A unique phrase of at least 8 characters of the Latin alphabet is recommended, e.g. your pilot handle.

▶ Traditional binding

① Switch the radio off.

② Put the receiver into bind mode (e.g. power-cycle the receiver three times). The receiver LED shows a quick double blink.

③ Switch the radio on and select **[Bind]** in the Lua script or in the module menu.

④ When the receiver LED is solid, binding is complete.

5.4 Model Match

Model Match prevents taking off with the wrong model accidentally selected in the radio. Setting it to **On** while a receiver is connected makes that receiver connect only with the current receiver number (*Model Setup → External RF → Receiver*). Off allows a connection with any bound receiver. In case of a mismatch, the Lua script shows “Model Mismatch”.

5.5 Backpack and VTX Administrator

The built-in backpack (ESP8285) communicates wirelessly (ESP-NOW) with other devices, for example with a backpack in the goggles' video receiver. The *VTX Administrator* function lets you set the channel and power of the video transmitter (VTX) from the radio; the settings are sent to the model when a connection is established, and with a backpack in the goggles the video receiver is retuned automatically as well. In the Lua script the backpack can be switched off, and DVR recording and head tracking can be configured.

5.6 Bluetooth joystick for simulators

Selecting **[BLE Joystick]** in the Lua script switches the module to Bluetooth LE joystick mode. You can then pair the radio with a computer and use it to control a simulator. Reboot or change models to exit this mode.

5.7 Flight safety and failsafe

- Assign Arm (motors enabled) to channel AUX1: low position (~1000 µs) = Disarm (motors disabled), high position (~2000 µs) = Arm.

- While armed, the buttons and the navigation key of the module are locked and the VTX and some other settings cannot be changed.
- If the link is lost, the receiver enters failsafe. Configure the failsafe behaviour in the flight controller (FC) or in the receiver and test it before the first flight with the propellers removed.
- Before the first flight, check the link on the ground with the lowest module power.

6. Firmware and further documentation

The module comes with ExpressLRS firmware pre-installed. The firmware can be updated via WiFi or USB-C using ExpressLRS Configurator; select the device **RadioMaster Bandit Micro 900MHz TX** (category Radiomaster 900MHz).

6.1 Checking the regulatory domain and firmware version

The firmware version and the regulatory domain are shown on the module display and in the bottom line of the Lua script. Before first use in the EU, check that the **EU868** domain is set. On 900 MHz devices it can be changed in the module's web interface (*Options* → *Regulatory Domain* tab) or selected when flashing. The module and the receiver must use the same domain.

6.2 Updating and configuring via WiFi

① In ExpressLRS Configurator select the device, the *WiFi* flashing method, the regulatory domain (mandatory) and the binding phrase, and press *Build*. A *firmware.bin* file is created.

② In the Lua script select *WiFi Connectivity* → *Enable WiFi*. The module switches to WiFi mode.

③ Connect your phone or computer to the **ExpressLRS TX** WiFi network (password **expresslrs**).

④ Open the address **10.0.0.1** in a browser. The ExpressLRS web interface loads.

⑤ On the *Update* tab upload the *firmware.bin* file and press *Update*. Wait for the success message.

⑥ Exit and restart the Lua script and check the firmware version.

※ Outside the radio, the module enters WiFi mode on its own if it is powered via USB-C or an external source and receives no data from the radio for about 60 s; the display indicates this. If the module is configured for your home WiFi network, the web interface is available at *http://elrs_tx.local*.

6.3 Updating via USB-C

① Remove the module from the radio and connect it to a computer with a USB-C data cable.

② Check that the computer detects it as a serial port (USB-UART). On Windows, install the CP210x driver if necessary.

③ In ExpressLRS Configurator select the *UART* method, set the firmware options and press *Flash*.

④ When the green success bar appears, unplug the module, reinsert it into the radio and check the version in the Lua script.

6.4 Use as a receiver

The Bandit Micro has UART solder pads (RX, TX, VDD IN, GND) on the internal PCB and may also be used as a telemetry receiver. ExpressLRS Configurator provides a separate target for this purpose: *RadioMaster Bandit Nano/Micro 900MHz RX*.

※ Use as a receiver requires opening the module and soldering. You carry out such work at your own risk; damage caused by improper work is not a product defect.

6.5 Official documentation

Detailed documentation of the ExpressLRS system and of the EdgeTX radio firmware is available on the official websites:

- ExpressLRS: www.expresslrs.org
- EdgeTX: www.edgetx.org

7. Maintenance and troubleshooting

7.1 Maintenance and storage

- Keep the module clean and dry. Do not clean it with solvents.
- Check that the antenna is tight and its cable undamaged.
- Regularly check that the fan and the heat sink are not clogged with dust.
- Store the module outside the radio in a dry place, with the antenna protected against bending.

7.2 Troubleshooting

Problem	Possible cause and solution
The Lua script stays on “Loading...”	Check *Internal RF Off*, *External RF Mode CRSF* and the baud rate; restart the radio after changing the baud rate.
The module does not bind with the receiver	Check that the major firmware version, the regulatory domain (EU868) and the binding phrase match on both sides.
The Lua script shows “Model Mismatch”	The receiver number does not match – set Model Match to Off and back to On, or switch it off.
Short range, unstable link	Check that the antenna is tight and undamaged. Check the connector type (RP-SMA). Select a lower Packet Rate.
The “ExpressLRS TX” WiFi network is not visible	The module is configured for your home WiFi – use *http://elrs_tx.local*. Check that your device supports 2.4 GHz WiFi and move closer to the module.
10.0.0.1 opens the router page	Disconnect your device from the home network and connect to the ExpressLRS TX network.
The navigation key does not respond	The model is armed – Disarm it.

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 (Bandit Micro) and the serial number are shown on the module label or on the packaging; the firmware version is shown on the module display or in 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.