ELRS Nano PA500

ExpressLRS 868 MHz receiver
User manual



Read Chapter 3 before putting the product into operation. Transmit power in the 868 MHz band is restricted in the Czech Republic and the EU.

Manufacturer: GEPRC · Importer: Rotorama, s.r.o. · www.rotorama.com

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1. Safety instructions

1.1 General rules

- Read this entire manual before installation and first use, and keep it for future reference.
- Always install and connect the receiver **with the flight battery disconnected**. **Remove the propellers** when configuring and testing on the bench.
- Power the receiver with **5 V** only. Check the wiring of all leads before switching on for the first time – reversing power and ground can permanently damage both the receiver and the flight controller (FC).
- Do not power the receiver without the antenna connected. The telemetry transmitter could operate without a load and be damaged.
- The aluminium shell serves for heat dissipation. Do not cover it with materials that prevent cooling, and mount the receiver so that air can flow around it.
- Before every flight, check that the link with the radio works and that failsafe (the drone's behaviour on signal loss) is set correctly.
- This product is not a toy. Keep it out of the reach of children – small parts and the heat shrink tube can be swallowed.

1.2 Radio transmission

The receiver contains a telemetry transmitter with a power of up to 500 mW. Operation is subject to frequency and transmit power restrictions of the country in which you use the product. Therefore read **Chapter 3** before putting it into operation.

2. Product description

2.1 Product introduction

GEPRC ELRS Nano PA500 Receiver is a new generation receiver system based on ExpressLRS open source project. ExpressLRS features long range operation, low latency, and low price.

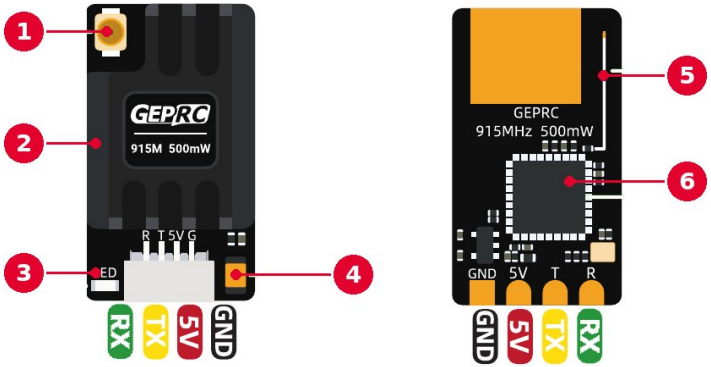
The ELRS Nano PA500 Receiver features a TCXO (temperature-compensated crystal oscillator) to prevent frequency shifts caused by temperature changes. It adopts an integrated high-power PA chip, boasting a telemetry power of up to 500 mW. It features a built-in WIFI antenna, facilitating firmware upgrades effortlessly via WIFI, and offers convenient installation with its SH1.0 connector.

2.2 Specifications

Parameter	Value
Size	13 × 23 × 5.5 mm
Weight	1.9 g (RX only)
Chips	ESP8285, SX1276
Crystal oscillator	TCXO
Frequency band	868 MHz EU (the hardware also supports 915 MHz FCC – must not be used in the EU, see Chapter 3)
Refresh rate	25–200 Hz
Input voltage	5 V
Antenna connector	IPEX1
TLM power	up to 500 mW
Connector	SH1.0, 4-pin
Firmware (target)	GEPRC Nano 915M PA500 RX

※ Data provided by the manufacturer GEPRC. The firmware target carries “915M” in its name for both frequency bands; the band is selected by the regulatory domain when the firmware is built (see Chapter 6).

2.3 Receiver diagram



Top view (left) and bottom view (right). Manufacturer's illustration; the printing may differ.

① IPEX1 antenna connector – for the supplied antenna.

② Aluminium shell – heat sink of the receiver.

③ Status LED – for the meaning of the indication see Chapter 4.

④ BOOT button.

⑤ Built-in WIFI antenna – for firmware upgrades via WIFI.

⑥ ESP8285 chip.

Pins: **R** = RX, **T** = TX, **5V** = power, **G** = GND (ground). They are available on the SH1.0 connector and on the solder pads on the bottom side.

2.4 Product list

- 1 × ELRS Nano PA500 receiver
- 1 × Antenna
- 1 × Heat shrink tube
- 1 × 4-pin silicone cable
- 1 × Manufacturer's user manual

Not included: radio or ExpressLRS 868 MHz transmitter module, flight controller (FC) or drone.

3. Radio frequencies and transmit power

3.1 The law of the country of operation applies

The allocation of radio frequencies and the maximum permitted transmit power differ between European countries. The information in this chapter describes the situation in the Czech Republic. If you operate the product in another country, you must comply with the regulations of the country in which you use it.

3.2 Frequency bands and power of this product

Band for the EU	868 MHz – ExpressLRS regulatory domain **EU868** (frequencies 863.275–869.575 MHz according to the ExpressLRS project)
915 MHz band (FCC)	**not permitted** in the Czech Republic and the EU – do not operate the receiver with the FCC915 domain in the EU
Max. transmitted power (telemetry)	500 mW (manufacturer's data)

3.3 Operating conditions in the Czech Republic

In the Czech Republic, the operation of short range devices is governed by the general authorisation of the Czech Telecommunication Office **VO-R/10/05.2025-5**. For non-specific short range devices in the 863–870 MHz band it generally sets a maximum power of **25 mW e.r.p.** with a limited duty cycle; a power of 500 mW e.r.p. is permitted only in the 869.4–869.65 MHz sub-band.

The user is responsible for setting the telemetry power of the receiver and the power of the transmitter module. The maximum power of 500 mW exceeds the general limit for the 863–870 MHz band – set the power so that it complies with the regulations of the country of operation.

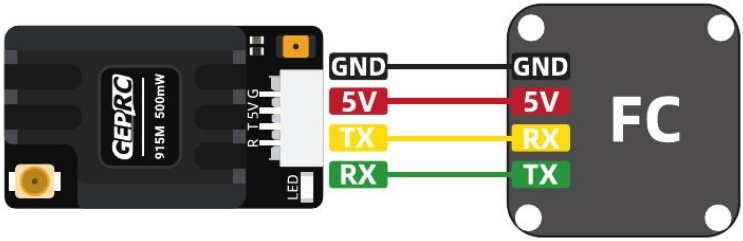
- For operation in the EU, use firmware with the **EU868** regulatory domain. The transmitter module and the receiver must use the same domain.
- The current wording of the authorisation is available on the CTU website ctu.gov.cz.

4. LED status indication

Status	Meaning
Solid on	Connection established
Flash slowly	No Tx signal
Flash quickly	WIFI mode
Double blink then pause	Binding status
Triple blink then pause	Connected to transmitter but mismatched *Model Match* configuration

5. Instructions

5.1 Connection to the flight controller (FC)



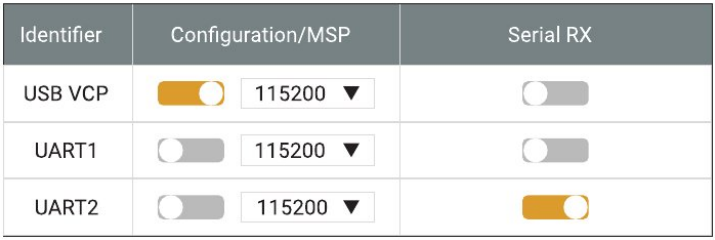
ELRS receiver and FC connection diagram

Receiver	Flight controller (FC)
GND	GND
5V	5V
TX	RX
RX	TX

※ The TX and RX wires are connected **crosswise**: receiver TX to RX of the selected FC UART, and receiver RX to TX of the same UART.

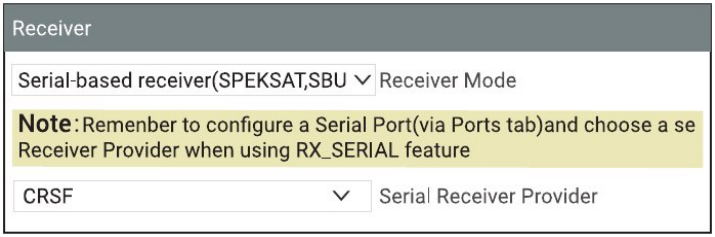
5.2 Setup in Betaflight Configurator

Open Betaflight Configurator, go to the *Ports* tab and enable the corresponding UART as a *Serial RX* (e.g. UART2 as shown below). Save and restart.



Ports tab – Serial RX enabled on UART2

On the *Configuration* tab, click on *Serial-based receiver* on the *Receiver* panel, and select **CRSF** as the *Serial Receiver Provider*.



Receiver panel – Serial-based receiver and CRSF protocol

5.3 Binding

① The receiver is powered on and off for three consecutive times (within an interval of 1 second).

② The receiver's LED is double flashing, indicating that the receiver has entered the binding mode.

③ Make the RF Tx module or radio transmitter enter binding status. Once the LED status changes to solid light, the binding is successful.

※ The transmitter and receiver must use the same regulatory domain (EU868). The receiver can also be bound using an identical binding phrase entered when flashing the firmware – the procedure is described in the ExpressLRS documentation.

6. Firmware and further guides

6.1 Firmware update

The receiver has a built-in WIFI antenna, and the firmware can be updated via WIFI. In WIFI mode the LED flashes quickly (see Chapter 4). Build the firmware in the ExpressLRS Configurator application for the target **GEPRC Nano 915M PA500 RX** with the **EU868** regulatory domain.

The BOOT button ④ is used to force the bootloader to start when recovering the firmware. The specific update procedures are described in the ExpressLRS documentation.

6.2 About ELRS

ExpressLRS project is being constantly updated – the contents of this manual cannot be kept up-to-date in time. For more information, please visit the official ExpressLRS website www.expresslrs.org and the project's GitHub page github.com/ExpressLRS/ExpressLRS.

ExpressLRS documentation

Binding, transmitter and receiver configuration and firmware updates are described in the official ExpressLRS documentation. Scan the QR code or open www.expresslrs.org.

7. Maintenance and troubleshooting

7.1 Maintenance

- The IPEX1 connector is mechanically delicate. Connect and disconnect the antenna perpendicularly, without levering, and secure the antenna cable against being pulled out.
- Route the antenna as far as possible from carbon frame parts, motors and other transmitters.
- After a crash, check the antenna, its cable and the wires to the flight controller. Replace a damaged antenna.
- Protect the receiver from moisture, dust and metal debris.

7.2 Troubleshooting

Problem	Possible cause and solution
LED flashes slowly, no link	The transmitter is off or the receiver is not bound. Bind again (Chapter 5.3) and check that transmitter and receiver use the same regulatory domain and compatible firmware versions.
LED triple blinks	*Model Match* configuration mismatch. Adjust it in the radio or disable the function.
Flight controller (FC) does not respond to the radio	Check the crossed TX/RX wiring, *Serial RX* enabled on the correct UART and the CRSF protocol (Chapter 5.2).
Short range	Check the antenna and its connector, the antenna position and the power settings.

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 (GEPRC ELRS Nano PA500, 868 MHz) is given in this manual; the receiver shell and board bear the manufacturer's GEPRC printing. The firmware version is shown by the receiver's web interface in WIFI mode.

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.