Flywoo CP2102

USB–UART converter for flashing ExpressLRS receiver firmware

User manual



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

Rotorama, s.r.o. · www.rotorama.com

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1. Product description

1.1 Purpose

The Flywoo CP2102 is a USB–UART converter: when plugged into a USB port of a computer, it creates a serial port (COM) through which you can communicate with devices that have a UART interface. The main purpose of the module is **flashing and recovering the firmware of ExpressLRS (ELRS) receivers** directly from a computer, without the flight controller (FC).

Flywoo recommends the module especially for cases where a receiver update via Betaflight Passthrough or via Wi-Fi is interrupted and the receiver then stops working – after power-on its LED stays solid and the receiver cannot be bound. By connecting the receiver via the CP2102 and flashing the firmware using the UART method, the receiver can usually be recovered. The module is, however, universal – it can be used wherever you need a serial connection to a computer.



Flywoo CP2102 module with USB-A connector and 6-pin header

1.2 Specifications and package contents

Manufacturer	Flywoo
Product name	CP2102 programmer module for ELRS receiver
Manufacturer code (SKU)	FW19001067
Type	USB–UART converter, CP2102 chip (per manufacturer)
Computer connection	USB-A connector (plug), inserted directly into the port
Pins (6-pin header)	DTR, RXD, TXD, +5V, GND, 3V3
Indicator LEDs	POWER (power), TXD and RXD (data transfer)
Package contents	1× Flywoo CP2102 module
Not included	connecting wires, receiver, USB extension cable; driver and software (download)
Not stated	dimensions, weight, electrical parameters of the pins

2. Use

2.1 Safety and general rules

- Connect a receiver or any other device to the module only while the module is **not plugged into the computer**. Always change the wiring with the power off.
- A receiver being flashed via the CP2102 must be **disconnected from the flight controller (FC)**, and the drone must not have a flight battery connected.
- Do not short-circuit the +5V, 3V3 and GND pins. Metal parts of the module must not come into contact with conductive objects.
- Power a device only from a pin whose voltage its input can tolerate – check this in the documentation of the connected device. The Flywoo procedure for ELRS receivers uses the **+5V** pin.
- The module has no housing. Protect it from moisture, dust and static electricity; do not touch the components on the board.
- The module is not a toy. Keep it out of the reach of children.

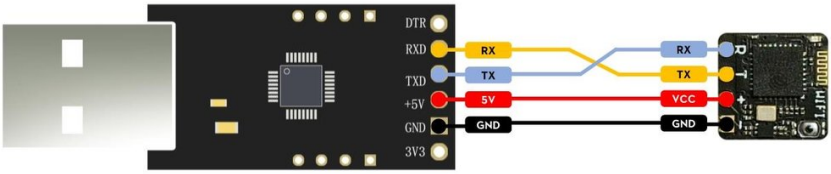
2.2 Driver installation

The computer needs the driver for Silicon Labs CP210x chips (*CP210x USB to UART Bridge VCP Drivers*). Download it from the chip manufacturer's website www.silabs.com/developers/usb-to-uart-bridge-vcp-drivers (available for Windows, macOS, Linux and Android; on Linux the driver is part of the system kernel).

- Plug the module into a USB port – the **POWER** LED lights up.
- On Windows, open *Device Manager* and the *Ports (COM & LPT)* group. The module appears as a serial port with a COM number; make a note of it.
- A yellow warning triangle next to the device means that the driver is missing or not installed correctly.

2.3 Connecting to an ELRS receiver

Connect the receiver to the module with four wires. The data wires are **crossed** – the output of one device goes to the input of the other:



Wiring an ELRS receiver to the CP2102 module (source: Flywoo)

CP2102 pin	Receiver pad	Note
RXD	TX (T)	data receive
TXD	RX (R)	data transmit
+5V	VCC (+)	power
GND	GND (−)	ground
DTR, 3V3	—	not connected

2.4 Flashing firmware to an ELRS receiver

The procedure is based on the official ExpressLRS documentation (UART method) and the Flywoo instructions. It also applies to recovering a receiver whose LED stays solid after a failed update – even in that case the receiver must be put into bootloader mode manually (step ②).

① Disconnect the receiver from the flight controller (FC) and connect it to the module as described in Chapter 2.3. Do not plug the module into the computer yet.

② If the receiver has a (boot) button, press and hold it. If it has boot pads instead of a button, bridge them with solder; if it has only one boot pad, connect it to ground (GND).

③ Plug the module into a USB port of the computer. The receiver LED must light up **solid**; if it blinks, unplug the module and repeat step ②. Once it is solid, release the button.

④ Check that the computer has recognised the module as a serial port (Chapter 2.2).

⑤ Launch **ExpressLRS Configurator**, select the *Official Releases* tab and choose the firmware version.

⑥ In the *Target* section, select the *Device category* and *Device* exactly matching your receiver and set the *Flashing Method* to **UART**.

⑦ Set the firmware options: *Regulatory domain* (mandatory – according to the country where you will fly), *Binding phrase* (recommended – must match the

transmitter module) and, optionally, the Wi-Fi credentials.

⑧ Select the serial port of the CP2102 module and start flashing with the *Flash* button (*Build & Flash* in older versions).

⑨ Wait for the green *Success* bar. If you bridged the boot pads, remove the bridge. After a few seconds the receiver LED returns to slow blinking.

⑩ Unplug the module from the computer, disconnect the receiver, reconnect it to the flight controller and bind it with the transmitter module.

※ Select only a regulatory domain and frequency band permitted in the country of operation. The user is responsible for the receiver settings.

2.5 Other uses

The module can also be used as an ordinary USB–UART converter for other devices – always in accordance with the documentation of the device concerned. Check the supply voltage and the voltage levels of the data signals there; the module manufacturer does not state these parameters.

3. Troubleshooting and further guides

3.1 Troubleshooting

Problem	Cause and solution
The POWER LED on the module is off	The module is not inserted properly or the USB port does not supply power. Try another port, without a hub.
The module does not appear as a COM port	The CP210x driver is missing – install it (Chapter 2.2). Try another USB port.
The receiver LED blinks instead of staying solid	The receiver is not in bootloader mode. Unplug the module, hold the boot button (or bridge the pads) and plug the module in again.
The receiver does not light up at all	Check the +5V → VCC and GND → GND wires and the quality of the solder joints.
Flashing ends with an error	Check that TX and RX are crossed, that the correct COM port and the correct receiver type (*Device*) are selected. Repeat steps ②–③.
The receiver does not bind after flashing	The *Binding phrase* and *Regulatory domain* must match the transmitter module; use mutually compatible firmware versions.

3.2 Further guides

Official ExpressLRS documentation – setup, binding and updating of the ExpressLRS system. Scan the QR code or open www.expresslrs.org.

- Flashing via UART in the ExpressLRS documentation: www.expresslrs.org (*Quick Start → Receivers → Updating*).
- Flywoo guide for ELRS receivers, including firmware recovery via the CP2102: flywoo.tawk.help/article/expresslrs-elrs-rx-manual.
- CP210x driver: www.silabs.com.

4. Information for the EU and Czech Market

4.1 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

4.2 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.

5. 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 4.1.
- 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.