JP4IN1 Pro

Jumper · 2.4 GHz 4-in-1 multi-protocol transmitter module
for JR module bays · user manual



Read this entire manual carefully before first use and keep it for future reference. Never switch the module on without the antenna attached.

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1. Safety instructions

1.1 Before you start

- The product is intended for users **aged 14 and over**. It is not a toy.
- The module is an accessory for an RC radio. Incorrect settings may cause the model not to respond, or to move or start its motors unexpectedly.
- Use the module only in a radio that has a JR-type module bay and supplies it with a voltage within the range given in Chapter 2.3.
- Insert and remove the module only with the **radio switched off**.
- Do not expose the module to moisture, dust, direct sunlight or temperatures that could damage it. Do not open its housing or modify it.

1.2 Radio transmission and antenna

Never switch the module on without the antenna attached. Transmitting without an antenna can permanently damage the module's transmitter circuits.

- Tighten the antenna by hand, without tools. Replace a damaged antenna or connector.
- Use the supplied antenna or an antenna with which you will not exceed the permitted transmit power in the country of use (Chapter 3.2).
- Do not touch the antenna during flight or cover it with your hand or body – this weakens the link to the model.
- Do not point the antenna tip directly at the model; an antenna radiates its weakest signal along its axis.

1.3 Safety of the controlled model

- When binding, setting up failsafe and testing the module, keep the **propellers removed** from the model – the motors may start unexpectedly.
- Some protocols bind with the receiver automatically every time they are switched on. For these, use the *Bind on Channel* option (Chapter 5.2).
- Before every flight, check that the model responds correctly to all controls and that failsafe is set up (Chapter 5.5).
- If the link is lost, the model behaves according to the receiver and failsafe settings. The user is responsible for safe settings.

2. Product description

Jumper JP4IN1 Pro is an external transmitter module for RC radios with a JR-type module bay. It contains four 2.4 GHz radio chips that allow a single radio to control models with receivers of different systems – for example FrSky, FlySky, Spektrum DSM2/DSMX or Futaba S-FHSS. The protocol is selected in the radio menu.

2.1 Package contents

- 1× JP4IN1 Pro transmitter module
- 1× antenna with SMA connector

2.2 Parts overview



JP4IN1 Pro module with the antenna attached

① 2.4 GHz antenna

② SMA antenna connector

③ Locking latches securing the module in the module bay

2.3 Specifications

Parameter	Value
Type	Jumper JP4IN1-PRO
Module bay	JR (standard size)
Supply voltage	6–8.4 V (from the radio's module bay)
Current draw	≤ 100 mA
Frequency band	2.4 GHz (ISM band)
Transmit power	+20 dBm (100 mW)
RF chips	CC2500, CYRF6936, A7105, nRF24L01+
Main processor	STM32F103CBT6
Number of protocols	more than 40
Antenna connector	SMA

2.4 RF chips and protocols

Each protocol uses one of the four radio chips. Example protocols by chip:

RF chip	Example protocols
CC2500	FrSky (D8, D16), Futaba S-FHSS
CYRF6936	Spektrum DSM2/DSMX, Walkera Devo, J6Pro
A7105	FlySky, FlySky AFHDS 2A, Hubsan
nRF24L01+	HiSky, Syma, ASSAN and many other models

※ The complete and current list of protocols and their sub-protocols is available in the MULTI-Module project documentation at www.multi-module.org. The availability of a particular protocol depends on the module's firmware version.

3. Legal conditions of use

3.1 The law of the country of use applies

The rules for radio equipment and for operating models are based on European Union legislation, but national implementing regulations differ from country to country – permitted frequency bands, maximum transmit power and the rules for flying models. The information in this chapter describes the situation in the Czech Republic. If you use the product in another country, you must comply with the regulations of the country in which you use it.

3.2 Frequency band and transmit power

Item	Value
Frequency band	2400–2483.5 MHz (2.4 GHz ISM band)
Max. transmit power (manufacturer's data)	+20 dBm (100 mW)
Limit in the Czech Republic	100 mW e.i.r.p. (ČTÚ general authorisation VO-R/12)

- The e.i.r.p. limit applies to the **combination of the transmitter power and the gain of the antenna used**. An antenna with a higher gain than the supplied one may result in the permitted power being exceeded – in that case reduce the power (e.g. with *Low power mode*) or use the supplied antenna.
- Connecting additional RF amplifiers to the module is prohibited.
- The 2.4 GHz band is shared by many other devices (Wi-Fi, Bluetooth). Operation must not interfere with other devices and is not protected against interference from them.
- The user is responsible for complying with the permitted transmit power in the country of use.

4. Installation

4.1 What else you need

- An RC radio with a JR-type module bay running **EdgeTX** or **OpenTX** that can control a multi-protocol module (*MULTI* mode).
- A receiver in the model that uses one of the supported protocols.

EdgeTX user manual: manual.edgetx.org. Official project website: edgetx.org.

Documentation for multi-protocol modules (protocols, options, firmware): www.multi-module.org.

4.2 Fitting the antenna

- Always fit and remove the antenna with the radio switched off.
- Screw the antenna onto the SMA connector and tighten it by hand.
- Orient the antenna so that during flight its side, not its tip, faces the model.

4.3 Inserting and removing the module

① Switch the radio off.

② If the module bay is covered by a lid, remove it.

③ Place the module in the bay so that its connector seats on the bay pins, and press it in until both locking latches (③ in the figure in Chapter 2.2) click into place.

④ Do not force the module in. If it does not slide in, check its orientation and the condition of the pins in the bay – a bent pin can damage both the module and the radio.

⑤ To remove the module, switch the radio off, press both latches and pull the module out.

5. Setup and binding

The module is set up separately for each model in the radio menu.

5.1 Activating the module in the radio

① With the antenna attached, switch the radio on and select or create a model.

② In the model settings (*Model Setup*), find *External RF* and set *Mode* to **MULTI**.

③ Within a few seconds, the module's firmware version appears on the *Module Status* line. If it does not, check that the module is seated correctly in the bay.

④ If you do not want to transmit with the radio's internal module at the same time, switch off *Internal RF* in the same menu.

Set the channel order in the radio to AETR (Aileron, Elevator, Throttle, Rudder). This applies to all protocols, including DSM.

5.2 Protocol selection and options

Next to MULTI, select the **protocol** and, if needed, its **sub-protocol** (not all protocols have one). Depending on the protocol, the following options are available:

Option	Meaning
RF Freq. Tuning	frequency fine tuning (Chapter 5.4)
Receiver No.	receiver number 0–63; the model responds only to its own
Bind on Channel	binding is started by channel 16 (going from −100 % to +100 %) and binding at power-on is disabled
Disable Telemetry	disables telemetry for this model
Disable Ch. map	the module does not remap channels for the protocol
Low power mode	reduces transmit power to approximately 1/10

※ If you change the receiver number (*Receiver No.*), the receiver must be bound again. *Bind on Channel* is strongly recommended for protocols with automatic binding.

5.3 Binding the receiver

Protocols with manual binding are bound once; protocols with automatic binding (typically small "toy" models) bind every time they are switched on.

① Remove the propellers from the model. Switch on the radio with the protocol set.

② Put the receiver into bind mode – hold its bind button or fit the bind jumper and connect power to it.

③ In the model settings, start the **Bind** action.

④ After binding, restart the receiver and check that the model responds to the controls.

If binding fails and the protocol offers *RF Freq. Tuning*, set the value to −40 or +40 and try binding again. If that does not help either, keep trying further values in steps of 40 in both directions.

5.4 Frequency fine tuning

Protocols using the CC2500 chip (e.g. FrSky D8/D16, FrSky V, S-FHSS, Hitec, HoTT, Corona) require frequency tuning with genuine receivers. If the protocol offers the *RF Freq. Tuning* option, you **must** perform the tuning:

① Bind the receiver and check the link.

② Lower the *Freq* value until the radio loses the link with the receiver. Note the value.

③ Raise the value until the link is restored, then continue until it is lost again. Note this value too.

④ Set the midpoint of the two values. Example: the link is lost at −73 and +35, the midpoint is −19.

⑤ After changing the value, bind the receiver again. A variation of ±5 between receivers is fine.

5.5 Failsafe and range check

Failsafe determines what the receiver does when the signal is lost. Setting it via the module is supported only by some protocols (AFHDS 2A, Devo, FrSky X (D16), Hisky HK310, HoTT, S-FHSS and WK2x01); for the others, failsafe is set in the receiver or in the model's flight controller (FC).

- Always set up and test failsafe **with the propellers removed**.
- After setting it up, switch the radio off and check that the model enters a safe state – the motors stop or the throttle drops to minimum.
- Carry out a range check with the *Range* function in the model settings, during which the module transmits at reduced power. The model must respond reliably at a sufficient distance.

5.6 Firmware update

The module firmware is updated separately from the radio firmware; receiver bindings are kept. In EdgeTX or OpenTX:

Before updating, check with the retailer (info@rotorama.cz) which firmware file is correct for the module. Unsuitable firmware can put the module out of service.

① Download the firmware file intended for this module (www.multi-module.org).

② Copy it to the **FIRMWARE** folder on the radio's SD card. Radios with small screens do not display files with names longer than 32 characters.

③ Switch the radio on, select the file in the SD card browser and confirm.

④ Choose *Flash external module* and wait for it to finish.

6. Operation

- Before switching on the radio, check that the antenna is attached and tightened and that the module is firmly secured by the latches.
- Always switch on the radio first and only then the model. After the flight, disconnect the model first, then switch off the radio.
- Check that the correct model is selected and that the *Module Status* line reports a running module.
- Before flying, check the response of all controls and the direction of the control movements.
- During flight, keep the side of the antenna towards the model and do not cover it.

7. Maintenance and troubleshooting

- Clean the module with a dry soft cloth, without solvents.
- Check that the pins in the bay are not bent and that the antenna connector is not damaged.
- Store the module in a dry place out of the reach of children, preferably removed from the radio.

Problem	Cause and solution
Module Status does not show the firmware version	The module is not inserted correctly, or *External RF* is not set to MULTI. Switch the radio off, reseat the module and check the settings.
The receiver does not bind	Check the protocol and sub-protocol, the receiver's bind mode and frequency tuning (Chapters 5.3 and 5.4).
Short range or dropouts	Check the antenna and that it is tightened. For protocols using the CC2500 chip, perform frequency tuning. Switch off *Low power mode*.
Control axes are swapped	Set the channel order to AETR; check the *Disable Ch. map* option.
The model binds every time it is switched on	This is a protocol with automatic binding. Enable *Bind on Channel*.
Failsafe does not work	The protocol does not support failsafe via the module. Set failsafe in the receiver or in the flight controller (FC).
"No Sync" error during update	The module has no bootloader for updating from the radio. Contact the retailer.

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 (JP4IN1-PRO) is given on the product or its packaging; the radio shows the module firmware version on the *Module Status* line in the model settings.

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.