



hobby porter

# JP4INI

## JP4IN1 Multi-protocol Module

CC2500 / NRF24L01 / A7105 / CYRF6936

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## Overview:

The JP4IN1 tuner module integrates four RF chips, CC2500, NRF24L01, A7105 and CYRF6936, on a single circuit board. The module itself is an openTX native accessory. It can communicate with the frsky series remote control for serial digital signals. It can also recognize the PPM signal output by the remote control and then convert it into a corresponding remote control protocol to control the receiver or aircraft. Currently supported agreements include: Huake DEVO, Horizon DSM2, Fusi, Yi Sikai, Rui Sikai, Weili, Habosen, Chiyuan, Futaba SFHSS Assan and other agreements. (Note: Considering the copyright of the agreement itself, the JP4IN1 module only provides the hardware circuit, and the firmware needs to be downloaded by the user.

For related information, see: <https://github.com/pascallanger/DIY-Multiprotocol-TX-Module>.

This tuner allows for more flexible and convenient control of multiple different brands of four-axis, helicopter and fixed wing. Due to the continued use of the remote control you are familiar with, the operational feel and flight experience are even greater.

## Working parameters:

Working voltage: 4.5-7V

Working frequency: 2.4G ISM band

Main control chip: STM32F103CBT6 (128K ROM, 20K RAM)

Size: 64\*49\*33 (without antenna)

Working current: <=100mA

RF power: +22dBm

Shell: compatible with frsky, JR, etc.

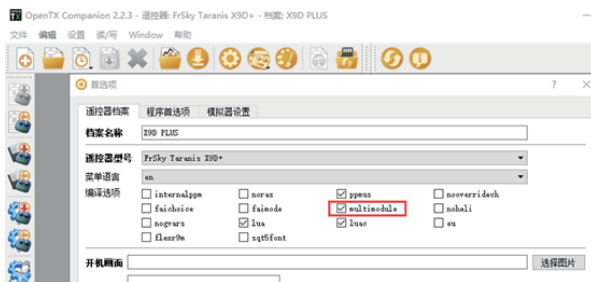
Net weight: 42 (including antenna)

The tuner has two modes of operation: serial mode and PPM mode.

Operation in serial mode: (Two-way digital signal communication between remote control and JP4IN1 module)

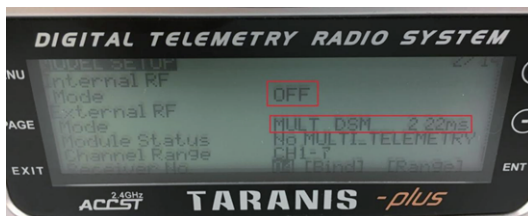
When the knob on the high frequency head points to "0", the high frequency head can enter the serial port mode. In the serial port mode, all the existing protocols can be used. The high frequency head protocol switching and the frequency operation can be realized through the remote control menu, but only Serial mode can be used with the er9X/erSky9X or OpenTX open source firmware remote control (frsky full range). In addition, your remote firmware needs to be upgraded to at least V2.2 (recommended to use the latest version of openTX firmware to ensure full

Take the frsky X9D series as an example:



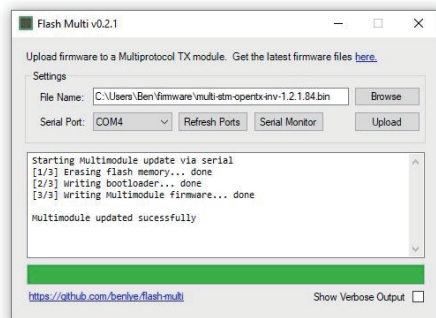
Before upgrading the remote firmware, please make sure that multimodule is selected in the firmware download option, and the multi-prototer tuner control option will be available on the remote.

After the X9D upgrade is completed, shut down, insert the JP4IN1 module (note: the module must be installed before the boot), boot (as shown) into the menu, turn off the built-in tuner, open the external tuner, At this time, the high-frequency head indicator light is red and the green light is always on. In the external tuner menu, select the protocol and sub-protocol you need for the frequency, then "bind".



## Firmware upgrade

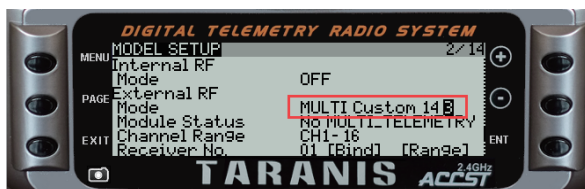
- Download the latest firmware version
- Use the dedicated upgrade software Flash Multi to refresh the firmware to the tuner, as shown below
- Flash Multi upgrade tool download address: <https://github.com/benlye/flash-multi/releases>
- In the new firmware of the subsequent remote control, the function of refreshing the multi-protocol tuner firmware using the remote control will be added, so stay tuned.



## Protocol list and detailed information

(this list corresponds to V1.2.1.85 firmware released by 2019-10-02)

- Support for extended limits: When the remote control turns on the extended limit, it will provide a -125%.. + 125% rudder range. Otherwise, the default is -100%.. + 100%.
- Channel sequence: the default 1234 channel order of the tuner is AETR
- Protocol name, protocol number and sub-protocol number: If the firmware of the multi-protocol tuner is not updated after the firmware update, there will be no option to add a new protocol in the remote control menu. Define options, select them in the custom options by the protocol number and sub-protocol number in the list.
- Automatic frequency: The Y in the list indicates that the current protocol needs to be automatically matched. In the current protocol option on the remote control, tick Autobind to achieve
- The table lists the brands, receivers, and aircraft types for all the protocols, and details the various aircraft operating channel functions. You can easily find the model of your receiver or aircraft and use it easily according to the instructions in the list. ,As shown below:



As shown in the figure, according to the protocol list, the IRDRONE aircraft protocol number is 14 and the sub-protocol number is 3. You can enter the number in the high-frequency head Custom option to use the protocol.

Protocol Name	Protocol Number	Sub_Prot 0	Sub_Prot 1	Sub_Prot 2	Sub_Prot 3	Sub_Prot 4	Sub_Prot 5	Sub_Prot 6	Sub_Prot 7	RF Module	Emulation
Assan	24	ASSAN								NRF24L01	
Bayang	14	Bayang	H8S3D	X16_AH	IRDRONE	DHD_D4				NRF24L01	XN297
Bugs	41	BUGS								A7105	
BugsMini	42	BUGSMINI	BUGS3H							NRF24L01	XN297
Cabell	34	Cabell_V3	C_TELEM					F_SAFE	UNBIND	NRF24L01	
CFile	38	CFile								NRF24L01	
CG023	13	CG023	YD829							NRF24L01	XN297
Corona	37	COR_V1	COR_V2	FD_V3						CC2500	
CX10	12	GREEN	BLUE	DM007		J3015_1	J3015_2	MK33041		NRF24L01	XN297
Devo	7	Devo	8CH	10CH	12CH	6CH	7CH			CYRF6936	
DM002	33	DM002								NRF24L01	XN297
DSM	6	DSM2-22	DSM2-11	DSMX-22	DSMX-11	AUTO				CYRF6936	
E01X	45	E012	E015	E016H						NRF24L01	XN297 HS6200
ESky	16	ESky								NRF24L01	
ESky150	35	ESKY150								NRF24L01	
Flysky	1	Flysky	V9x9	V6x6	V912	CX20				A7105	
Flysky AFHDS2A	28	PWM_IBUS	PPM_IBUS	PWM_SBUS	PPM_SBUS					A7105	
Flyzone	53	FZ410								A7105	
FQ777	23	FQ777								NRF24L01	SSV7241
FrskyD	3	FrskyD								CC2500	
FrskyV	25	FrskyV								CC2500	
FrskyX	15	CH_16	CH_8	EU_16	EU_8					CC2500	
FrskyX RX	55	FCC	EU_LBT					CC2500			
FY326	20	FY326	FY319							NRF24L01	
GD00X	47	GD_V1*	GD_V2*							NRF24L01	
GW008	32	GW008								NRF24L01	XN297
H8_3D	36	H8_3D	H20H	H20Mini	H30Mini					NRF24L01	XN297
Hisky	4	Hisky	HK310							NRF24L01	
Hitec	39	OPT_FW	OPT_HUB	MINIMA						CC2500	
Hontai	26	HONTAI	JJRCX1	X5C1	FQ777_951					NRF24L01	XN297
Hubsan	2	H107	H301	H501						A7105	
J6Pro	22	J6PRO								CYRF6936	
KF606	49	KF606*								NRF24L01	XN297
KN	9	WLT0YS	FEILUN							NRF24L01	
MJXq	18	WLH08	X600	X800	H26D	E010*	H26WH	PHOENIX*		NRF24L01	XN297
MT99xx	17	MT	H7	YZ	LS	FY805				NRF24L01	XN297
NCC1701	44	NCC1701								NRF24L01	
OpenLRS	27									None	
Potensic	51	A20								NRF24L01	XN297
Q2X2	29	Q222	Q242	Q282						NRF24L01	
Q303	31	Q303	CX35	CX10D	CX10WD					NRF24L01	XN297
Redpine	50	FAST	SLOW							NRF24L01	
Scanner	54									CC2500	
SFHSS	21	SFHSS								CC2500	
Shenqi	19	Shenqi								NRF24L01	LT8900
SLT	11	SLT_V1	SLT_V2	Q100	Q200	MR100				NRF24L01	
SymaX	10	SYMAX	SYMAX5C							NRF24L01	
Traxxas	43	RX6519								CYRF6936	
V2x2	5	V2x2	JXD506							NRF24L01	
V761	48	V761								NRF24L01	XN297
V911S	46	V911S*								NRF24L01	XN297
WFLy	40	WFLY								CYRF6936	
WK2x01	30	WK2801	WK2401	W6_5_1	W6_6_1	W6_HEL	W6_HEL_I			CYRF6936	
YD717	8	YD717	SKYWLR	SYMAX4	XINXUN	NIHUI				NRF24L01	
ZSX	52	280								NRF24L01	XN297

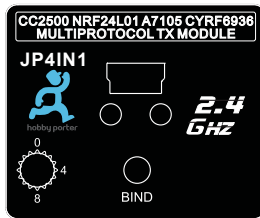
Complete protocol selection process:

1. Turn the knob position to 15
2. Power on the tuner
3. The frequency of the high frequency head is displayed by the number of times the LED flashes, and the current packet number is displayed 1 to 5 times.
4. Short press the tuner button and the LED will light for 1 second to indicate that the system has been replaced.
5. Repeat steps 3 and 4 until the desired group number is reached.
6. Power off
7. Turn the rotary switch to the desired position (1-14)
8. Open

## PPM Protocol grouping list in mode

First group		Second Group		Third group		Fourth group		Fifth group	
Protocol	Sub-Protocol	Protocol	Sub-Protocol	Protocol	Sub-Protocol	Protocol	Sub-Protocol	Sub-Protocol	Protocol
1 FLYSKY	Flysky	DSM	DSM2_11	ESKY	NONE	MJXQ	WLH08	CX10	CX10_GREEN
2 AFHDS2A	PWM_IBUS	DSM	DSM2_22	ESKY150	NONE	MJXQ	X600	CX10	CX10_BLUE
3 AFHDS2A	PWM_IBUS	DSM	DSMX_11	ASSAN	NONE	MJXQ	X800	CX10	DM007
4 AFHDS2A	PWM_IBUS	DSM	DSMX_22	CORONA	COR_V2	MJXQ	H26D	CX10	JC3015_1
5 AFHDS2A	PWM_IBUS	DSM	DSM2_11	SYMAX	SYMAX	MJXQ	E010	CX10	JC3015_2
6 AFHDS2A	PWM_IBUS	DSM	DSM2_22	KN	WLT0YS	MJXQ	H26WH	CX10	MK33041
7 AFHDS2A	PWM_IBUS	DSM	DSMX_11	BAYANG	BAYANG	HONTA1	HONTA1	Q2X2	Q222
8 SFHSS	H107	DSM	DSMX_22	BAYANG	HBS3D	HONTA1	JJRCX1	Q2X2	Q242
9 FRSKYV	NONE	SLT	SLT_V1	BAYANG	X16_AH	HONTA1	X5C1	Q2X2	Q282
10 FRSKYD	NONE	HUBSAN	H107	BAYANG	IRDRONE	HONTA1	FQ777_951	C6023	C6023
11 FRSKYX	CH_16	HUBSAN	H301	H8_3D	H8_3D	Q303	Q303	C6023	YD829
12 FRSKYX	EU_16	HUBSAN	H501	H8_3D	H20H	Q303	CX35	FQ777	NONE
13 DEV0	NONE	HISKY	Hisky	H8_3D	H20MINI	Q303	CX10D	YD717	YD717
14 WK2x01	WK2801	V2X2	NONE	H8_3D	H30MINI	Q303	CX10WD	MT99XX	MT99

For related information, please see: <https://github.com/pascallanger/DIY-Multiprotocol-TX-Module>



Please refer to the PPM group list to set the JP4IN1 rotary switch.

Note: The knob scale of JP4IN1 only displays "0", "4", "8",  
Other scales require user calculations!

About the tuner firmware upgrade:

Please refer to the official website: <https://github.com/pascallanger/DIY-Multiprotocol-TX-Module>

Credit for the design of this project to Pascallanger.