JUMPER JP4IN1 Multiprotocol Module

Brief Introduction:

The JP4IN1 integrates the CC2500, NRF24L01, A7105 and CYRF6936 RF chips into one PCB. The JP4IN1 is an OpenTX original accessory which can do serial digital signal communication with the Frsky series radios. Recognizing PPM signal from radio output, then converted to the corresponding radio protocol to achieve control of the fixed wing and drone aircraft. Supported protocols such as: Walkera DEVO, Spectrum DSM2/DSMX, Flysky, Esky, Frsky, WLtoys, Hubsan, Hisky, Futaba SFHSS Assan etc are built in..

The JP4IN1 module offers greater flexibility with the ability to control most protocals and popular brands in the market today. It also gives the user the ability to use a real RC radio for more precise control and a better flying experience than the small radios often included with ready to fly products.

Note: due to the copyright of the protocol, JP4IN1 only provides hardware, please refer following link to download the firmware:
https://github.com/pascallanger/DIY-Multiprotocol-TX-Module

Parameters:

Weight: 42g (include antenna)

Dimension: 64*49*23mm (exclude antenna)

Shell shape compatible with: Frsky, JR radio etc.

MCU: STM32F103CBT6 (128K ROM, 20K RAM)

Working voltage: 4.5-7.0v

Working current: <=100mA

Working frequency: 2.4G ISM band

RF power: +22dBm

Two working modes: Serial Port mode & PPM mode.

1. Normal operation in Serial Port mode (Bi-directional digital signal communication between radio and JP4IN1.)

Rotate the encoder knob to"0" to enter the serial port mode, all existing protocols can be used in this mode, the protocol switching and bind operation can be achieved by the radio menu, but only radio using er9X/erSky9X or OpenTX open source firmware can use serial port mode, Frsky all series radio are compatible with this mode. In addition, radio firmware also needs to be upgraded to the newest version V2.2 and above.

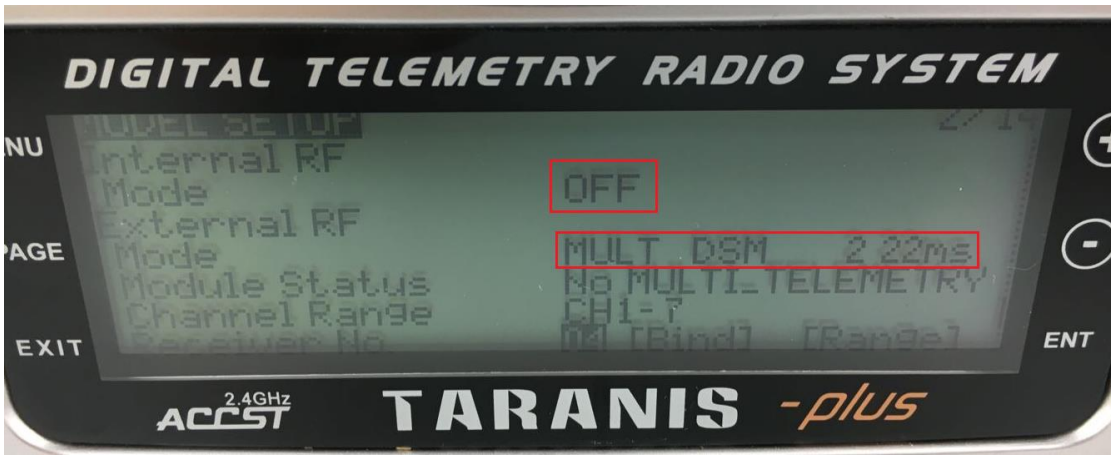
Let’s take Frsky X9D as an example:

Download V2.2 and above version firmware from official website, Copy firmware to a SD card, insert to Frsky X9D radio SD card slot, push the roll trim button and yaw trim button to the center, then power on the radio, radio will upgrade the firmware automatically. (If you have already finished upgrade, Please ignore this operation.)

Once X9D finished upgrade: power off radio, insert JP4IN1 module, then power on again. (Note: please make sure JP4IN1 antenna is assembled before powering on radio).

As shown in below Fig:

Enter the “MOEL SET UP” menu, close Internal RF and open External RF, the red and green led both are on. Select the protocols and sub protocols you need for bind in External RF menu, and then "bind".



Support Protocol List

Protocol	Sub protocol or Option	Supplementary Specification
FLYSKY	Nil	Flysky first generation protocol
HUBSAN	Nil	Hubsan
FRSKYD	Nil	Frsky D series protocol
HISKY	Hisky	Hisky
	HK310	Hisky
V2X2	Nil	
DSM	DSM2_22	DSM2 protocol, frame rate 22mS
	DSM2_11	DSM2 protocol, frame rate 11mS
	DSMX_22	DSMX protocol, frame rate 22mS
	DSMX_11	DSMX protocol, frame rate 11mS
DEVO	None	Walkera DEVO
YD717	YD717	YD717
	SKYWLKR	
	SYMAX4	SymaX4
	XINXUN	
	NIHUI	Nihui
KN	WLTOYS	Wltoys V977 series protocol
	FEILUN	Feilun
SYMAX	SYMAX	Symax
	SYMAX5C	Symax 5C
SLT	Nil	
CX10	CX10_GREEN	Cheerson series protocol
	CX10_BLUE	
	DM007	
	Q282	
	JC3015_1	
	JC3015_2	
	MK33041	
	Q242	

CG023	CG023	
	YD829	
	H8_3D	
BAYANG	Nil	Jumper X68T
FRSKYX	CH_16	Frsky protocol, D16 mode
	CH_8	Frsky protocol, D8 mode
ESKY	Nil	Esky protocol
MT99XX	MT99	
	H7	
	YZ	
	LS	
MJXQ	WLH08	
	X600	
	X800	MJX series protocol
	H26D	
	E010	E010 and JJR H36 protocol
SHENQI	Nil	
FY326	Nil	
S-FHSS	Nil	Futaba S-FHSS protocol(updating)
J6PRO	Nil	Nine Eagle J6PRO protocol
FQ777	Nil	
ASSAN	Nil	
FRSKYV	Nil	Frsky V series protocol
HONTAI	FORMAT_HONTAI	
	FORMAT_JJRCX1	
	FORMAT_X5C1	

More details, please refer to::
https://github.com/pascallanger/DIY-Multiprotocol-TX-Module

2. Normal operation in PPM mode (JP4IN1 only receives one-way analog coded signal from radio.)

PPM mode is used for PPM signal output, and the mounting slot of radio is compatible with JP4IN1 (F.E. JR). There are total 31 different protocols that correspond to the 16 positions of the encoder knob in the PPM mode (“0” position is reserved for serial mode). Check the list on the last page of the manual for corresponding relationship between them.

Turn on or turn off the green light procedures are as following：

Turn off radio, rotate the encoder knob switch to "0" position, then press and hold the black bind button, power on the radio meanwhile, release the button after 3 seconds, the green light will flash, optional protocols switch simultaneously.

Normal use and operation in PPM mode:

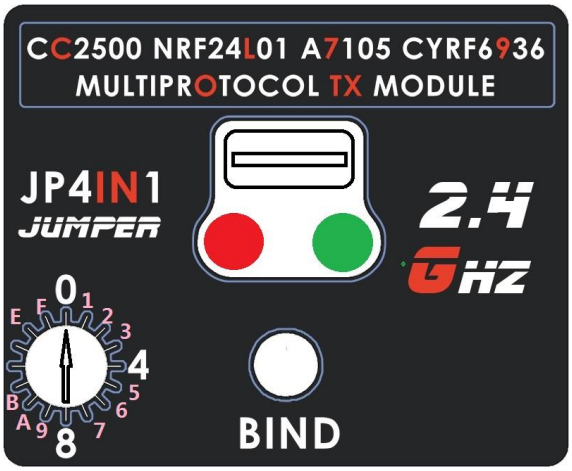
1. Fix JP4IN1 with antenna on the radio, open PPM signal output of radio.
2. Turn the encoder knob (The current position i.e. encoder knob slot direction) to the corresponding position according to the default protocol list and your receiver type.
3. The JP4IN1 red light will be on when turn on the radio in the condition of completing bind before, the JP4IN1 works properly now, then power on your drone or fixed wing.
4. Do not switch protocol when it is in use, if need to switch protocol, please power off radio, then rotate the encoder knob and choose the protocol and power on radio again.
5. The red light flashes slowly when there is no available PPM signal input.

Bind operation in PPM mode：

1. Power on your fixed wing or drone, then enter the receiver bind mode according to receiver manual.
2. Press and hold the bind button, power on the radio until system working, release the button after 3 seconds, the red light flashes quickly, means JP4IN1 is in bind mode, JP4IN1 red light will be on after completion of bind.
3. Partial protocols are already bound and no need to bind again (F.E. S-FHSS protocol), some other protocols (F.E. Hubsan, e010), the bind operation will be automatically processed when power on radio.

Please set the encoder knob according to PPM bind sheet.

Note: JP4IN1 knob dial only shows “0”, “4”, “8”, user need to calculate the other scale.



Default protocols table

NO.	Dial	Green light	Protocol	Sub_protocol	Option	RF Chip
0	0	Off	Serial	-	-	ALL
1	1	Off	FLYSKY	FLYSKY	0	A7105
2	2	Off	AFHDS2A	PWM_SBUS	0	A7105
3	3	Off	HUBSAN	-	0	A7105
4	4	Off	FRSKYD	-	-10	CC2500
5	5	Off	FRSKYX	CH_8	-10	CC2500
6	6	Off	S-FHSS	-	10	CC2500
7	7	Off	DSM2	DSM2_22	7	CYRF6936
8	8	Off	DSMX	DSMX_22	7	CYRF6936
9	9	Off	DEVO	-	0	CYRF6936
10	A	Off	J6PRO	-	0	CYRF6936
11	B	Off	ESKY	-	0	NRF24L01+
12	C	Off	HISKY	Hisky	0	NRF24L01+
13	D	Off	KN	WLTOYS	0	NRF24L01+
14	E	Off	V2X2	V2X2	0	NRF24L01+
15	F	Off	ASSAN	-	0	NRF24L01+
16	0	Off	MJXQ	E010	0	NRF24L01+
17	1	Off	FRSKYV	-	-10	CC2500
18	2	On	AFHDS2A	PPM_IBUS	0	A7105
19	3	On	MJXQ	X800	0	NRF24L01+
20	4	On	YD717	YD717	0	NRF24L01+
21	5	On	SYMAX	SYMAX	0	NRF24L01+
22	6	On	SLT	-	0	NRF24L01+
23	7	On	CX10	CX10_BLUE	0	NRF24L01+
24	8	On	CG023	CX10	0	NRF24L01+
25	9	On	BAYANG	BAYANG	0	NRF24L01+
26	A	On	MT99XX	MT99	0	NRF24L01+
27	B	On	SHENQI	-	0	NRF24L01+
28	C	On	FY326	FY326	0	NRF24L01+
29	D	On	FQ777	-	0	NRF24L01+
30	E	On	HONTAI	HONTAI	0	NRF24L01+
31	F	On	Q2X2	Q222	0	NRF24L01+

Firmware update, please refer to: https://github.com/pascallanger/DIY-Multiprotocol-TX-Module