

How to Connect F4 2S AIO Brushless FC with External RX on Beta85 Pro 2 / Beta75 Pro 2 / Beta65 Pro 2 / Beta75 Pro / Beta65 Pro

Created by: Technical Support

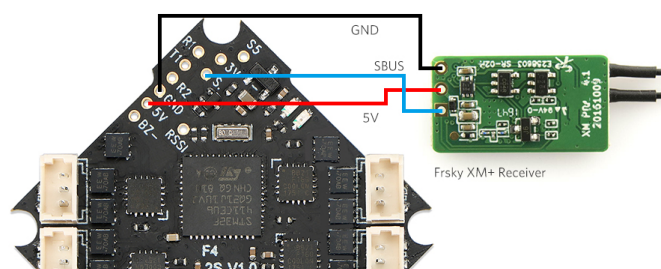
Modified on: Sat, 12 Oct, 2019 at 5:52 PM

Note: ONLY F4 2S AIO Brushless FC(No RX) (<https://betafpv.com/collections/brushless-flight-controller/products/f4-2s-aio-brushless-flight-controller-frsky-rx-osd-esc?variant=13327259598892>) **can connect Frsky R-XSR. When you connect the receiver to FC, please don't forget to plug the battery, otherwise the reciver will not work at all because if you don't plug the battery, the reciver doesn't have any power to work.**

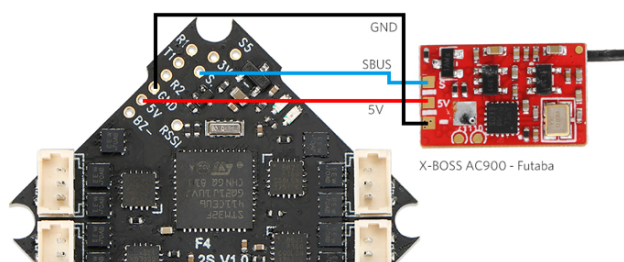
Receiver Connection

1) How to connect a receiver with SBUS signal output (Frsky XM+ (<https://betafpv.com/collections/rx-tx/products/frsky-xm-sbus-mini-receiver>) / AC900 Dual Mode Receiver (FrSky & FUTABA) (<https://betafpv.com/collections/rx-tx/products/x-boss-ac900-dual-mode-receiver-frsky-rx-futaba-rx>) for example).

Here are the connection diagrams with XM+ receiver and AC900 Dual Mode Receiver (FrSky & FUTABA)



We use the AUX12 channel as the RSSI signal channel in XM+ receiver.



Step 1, on Betaflight GUI, configure the UART1 port to serial port in Ports tab. Then click the Save and Reboot button in the lower right corner.

Setup

Ports

Configuration

Power & Battery

PID Tuning

Receiver

Modes

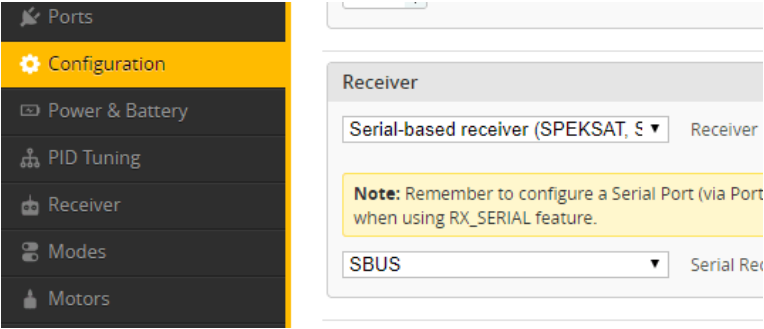
Ports

Note: not all combinations are valid. When the flight controller is booted, the first serial port will be used for the first receiver.

Note: Do NOT disable MSP on the first serial port unless you are using a custom firmware.

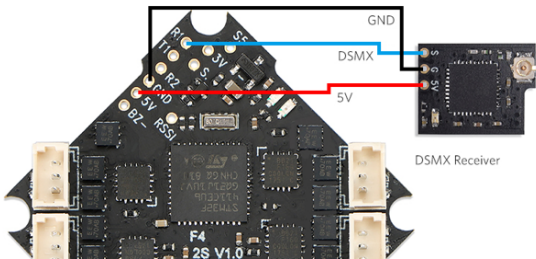
Identifier	Configuration/MSP	Serial Rx
USB VCP	<div><div></div>115200</div>	<div><div></div></div>
UART1	<div><div></div>115200</div>	<div><div></div></div>

Step 2, in the Configuration tab, for Receiver Mode, choose Serial_based receiver (SPEKSAT, SBUS, SUMD); Serial Receiver Provider, choose SBUS. And click the Save and Reboot button in the lower right corner.

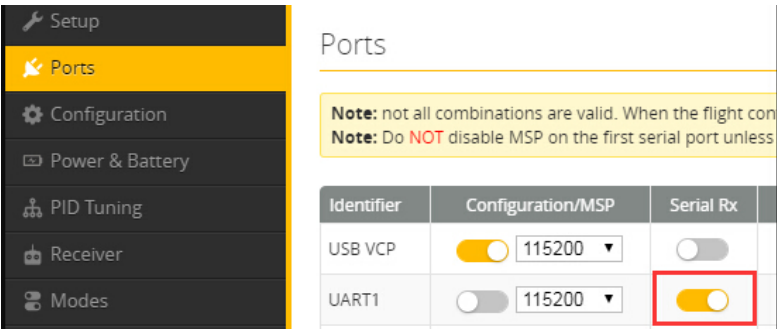


2) How to connect a receiver with DSMX signal output.

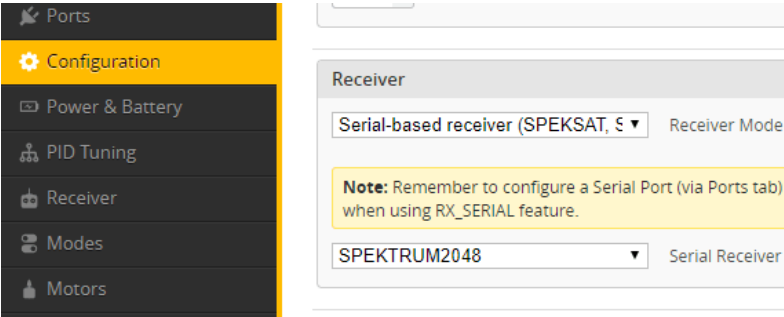
Here is the connection diagram with micro DSMX receiver.



Step 1, on Betaflight GUI, configure the UART1 port to serial port in Ports tab. Then click the Save and Reboot button in the lower right corner.

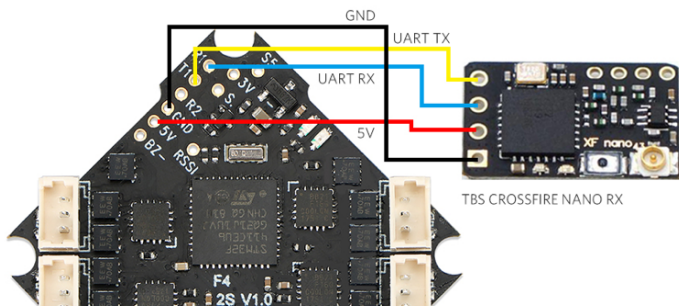


Step 2, in the Configuration tab, for Receiver Mode, choose Serial_based receiver (SPEKSAT, SBUS, SUMD); Serial Receiver Provider, choose SPEKTRUM2048. And click the Save and Reboot button in the lower right corner.

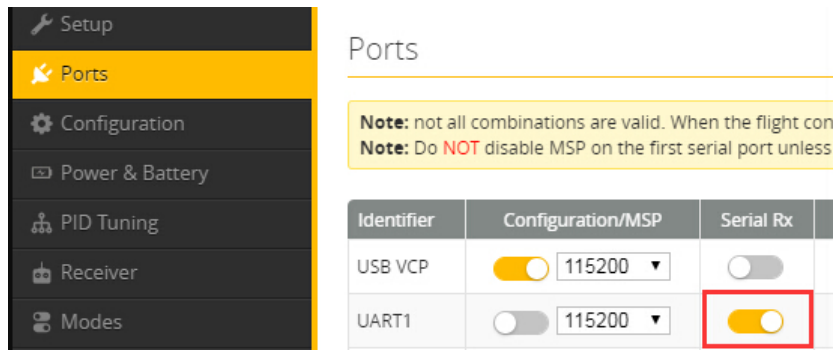


3) How to connect a receiver with TBS Crossfire signal output (TBS Crossfire Nano Rx for example).

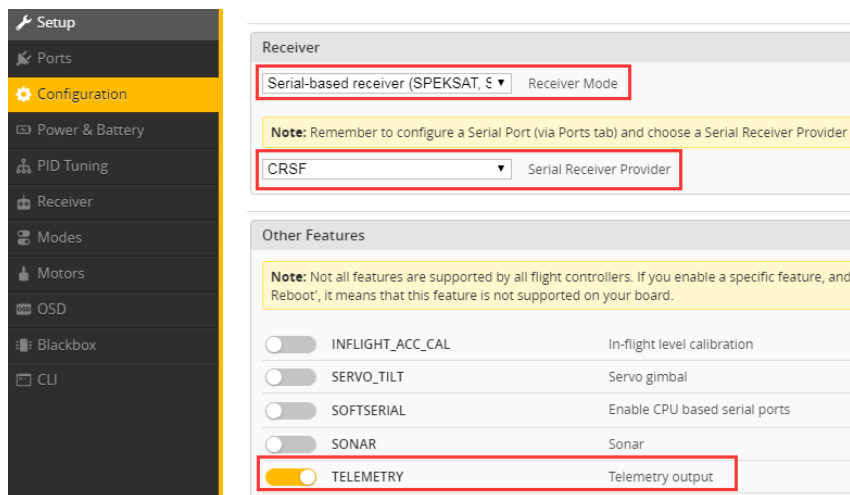
Here is the connection diagram with Crossfire Nano receiver. Using the UART1 on the FC board on the diagram below.



On Betaflight GUI, configure the UART1 port to recognise the Crossfire protocol. First, configure the UART1 port to serial port in Ports tab. Then click the Save and Reboot button in the lower right corner.



Second, go to the “Configuration” tab, under the “Receiver” Section, select “Serial-based receiver“, and select “CRSF” in the second option. Don’t forget to enable “Telemetry” feature too before pressing “Save”.



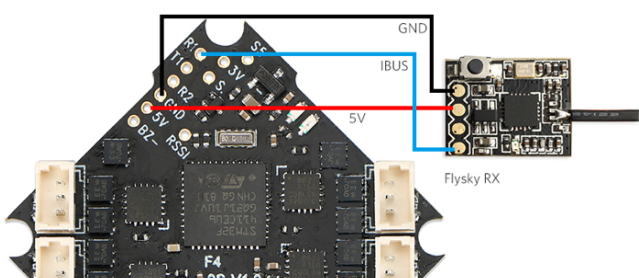
(<https://s3.amazonaws.com/cdn.freshdesk.com/data/helpdesk/attachments/production/27008419240/original/Xq6dVrxHMBDLxUXLNAqZf0b-veHwtvYJBg.png?1532423240>)

For more details about how to use TBS crossfire receiver, check [TBS CROSSFIRE SETUP WITH BETAFLIGHT](https://oscarliang.com/crossfire-betaflight/) on OscarLiang.

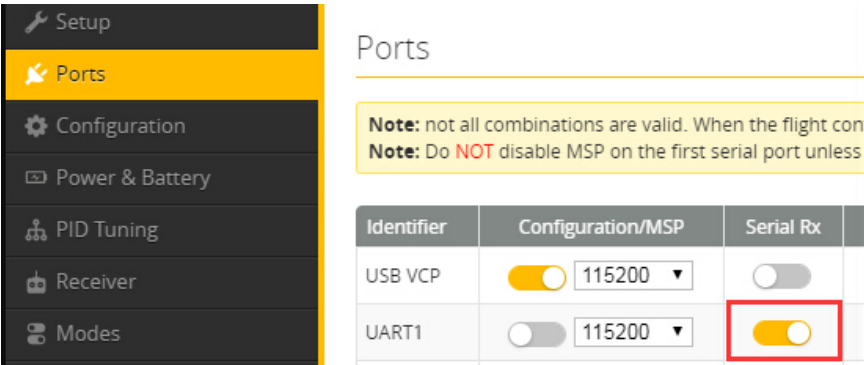
4) How to connect a receiver with Flysky IBUS signal output (Flysky FS-RX2A

(<https://betafpv.com/collections/rx-tx/products/flysky-rx2a-pro-receiver-for-micro-drone>) for example).

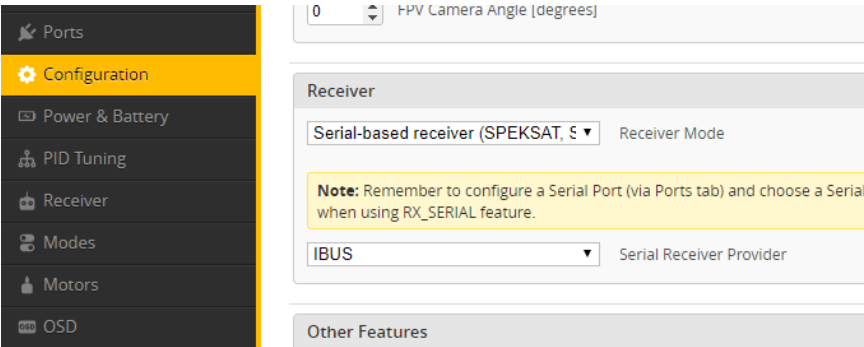
Here is the connection diagram with FS-RX2A receiver.



Step 1, on Betaflight GUI, configure the UART1 port to serial port in Ports tab. Then click the Save and Reboot button in the lower right corner.

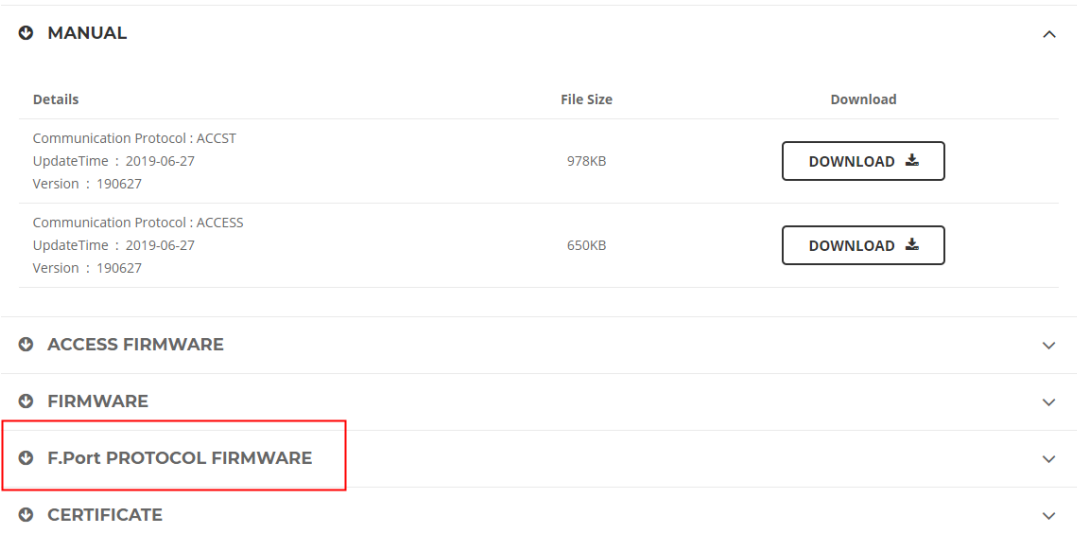


Step 2, in the Configuration tab, for Receiver Mode, choose Serial_based receiver (SPEKSAT, SBUS, SUMD); Serial Receiver Provider, choose IBUS. And click the Save and Reboot button in the lower right corner.

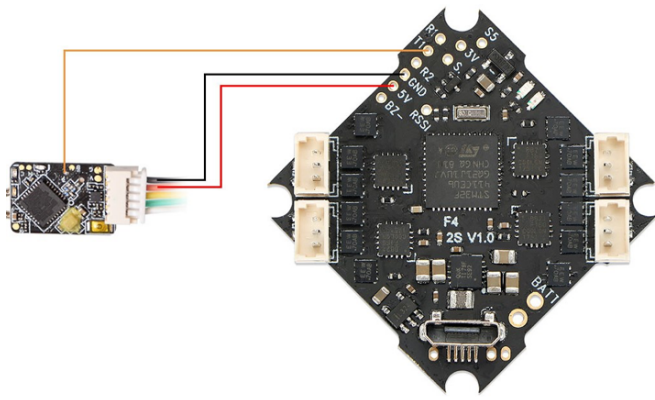


5) How to connect a receiver with Frsky R-XSR signal output

1 Please use the F-port function. Before using it, upgrade the receiver firmware to support Fport. Click here (<https://www.frsky-rc.com/r-xsr/>) to download the firmware.



2 Here are the connection diagrams of Frsky R-XSR receiver with F4 2S AIO Brushless FC.



3 How to set BETAFLIGHT

Step 1. On the Betaflight GUI, configure the UART1 port as a serial port in the Ports tab. Then click the "Save and Restart" button in the lower right corner.

Ports Wiki

Note: not all combinations are valid. When the flight controller firmware detects this the serial port configuration will be reset.
Note: Do NOT disable MSP on the first serial port unless you know what you are doing. You may have to reflash and erase your configuration if you do.

Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	<input checked="" type="checkbox"/> 115200 ▾	<input type="checkbox"/>	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾
UART1	<input type="checkbox"/> 115200 ▾	<input checked="" type="checkbox"/>	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾
UART2	<input type="checkbox"/> 115200 ▾	<input type="checkbox"/>	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾	VTX (TBS Sm. ▾) AUTO ▾
SOFTSERIAL1	<input type="checkbox"/> 115200 ▾	<input type="checkbox"/>	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾	Disabled ▾ AUTO ▾

Step 2. On the "Configuration" tab, " for Receiver Mode, choose Serial_based receiver (SPEKSAT, SBUS, SUMD); For Serial Receiver Provider, choose Frsky FPort. Then turn on TELEMETRY. And click the Save and Reboot button in the lower right corner.

Receiver

Serial-based receiver (SPEKSAT, S ▾) Receiver Mode

Note: Remember to configure a Serial Port (via Ports tab) and choose a Serial Receiver Provider

FrSky FPort ▾ Serial Receiver Provider

Other Features

Note: Not all features are supported by all flight controllers. If you enable a specific feature, an Reboot', it means that this feature is not supported on your board.

☐ INFLIGHT_ACC_CAL In-flight level calibration

☐ SERVO_TILT Servo gimbal

☒ SOFTSERIAL Enable CPU based serial ports

☐ SONAR Sonar

☒ TELEMETRY Telemetry output

☐ LED_STRIP Multi-color RGB LED strip support

Step 3. On the "Receiver" tab, choose "Disabled" for RSSI Channel. And click the Save and Reboot button in the lower right corner.

Channel Map		RSSI Channel
TAER1234		Disabled

'Stick Low' Threshold	Stick Center	'Stick High' Threshold
1050	1500	1900

RC Deadband	Yaw Deadband	3D Throttle Deadband
0	0	50

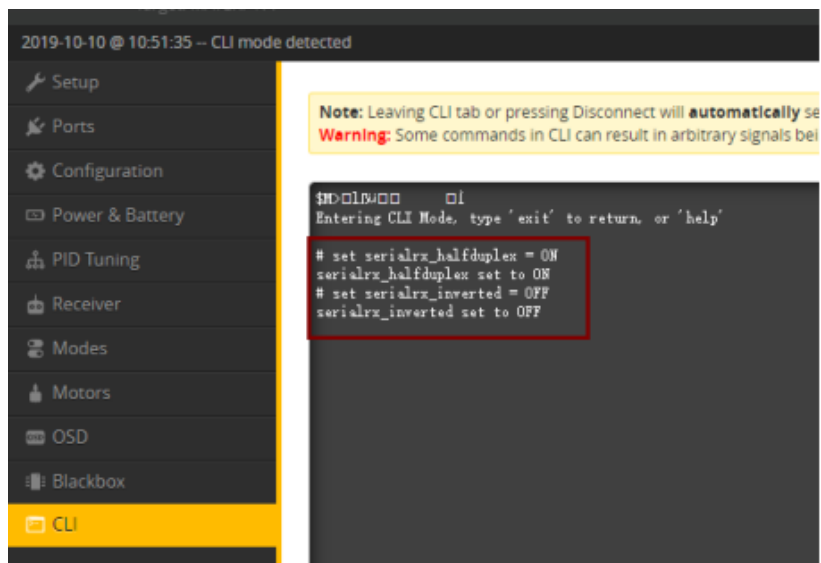
RC Smoothing	
Filter	Smoothing Type
RPYT	Channels Smoothed
Auto	Input Cutoff Type
BIQUAD	Input Filter Type
Auto	Derivative Cutoff Type
BIQUAD	Derivative Filter Type

Step 4 In the CLI tab, input command:

```
set serialrx_halfduplex = ON
```

```
set serialrx_inverted = OFF
```

save



Note: The RSSI signal cannot be seen on the BETAFLIGHT, it can be seen on the OSD info. If you cannot see it on OSD info, please set an channel on your transmitter, such as : AUX12.

T Technical is the author of this solution article.