

F4 Flight controller Specifications:

-STM32 F405 MCU, Runs Inav 1.9 firmware

-SBUS/PPM AND Spektrum DSMX Ports

-Input voltage Lipo(2-6S)

-Drag and Drop OSD configured via INAV Configurator

-On-board Video Filter(only can supply 5V to VTX and Camera)

-MPU6000 6 axis SPI Gyro & Accelerometer

-Only 36x36mm, mount holes 30.5x30.5mm

-Barometer BMP280

-SD Card slot

-5v3a SBEC

-Uart 1 for GPS, Uart 3 for compass, Uart 6 for Receiver,

-Soft serial 1 for S.Port telemetry **(Need to flash special firmware, see below)**

GPS Specifications:

-Quick satellite searching, only need 15s to find 7 satellite in open space

-Built-in compass

-Support GPS+BD+SBAS, or GPS+GLONASS+SBAS

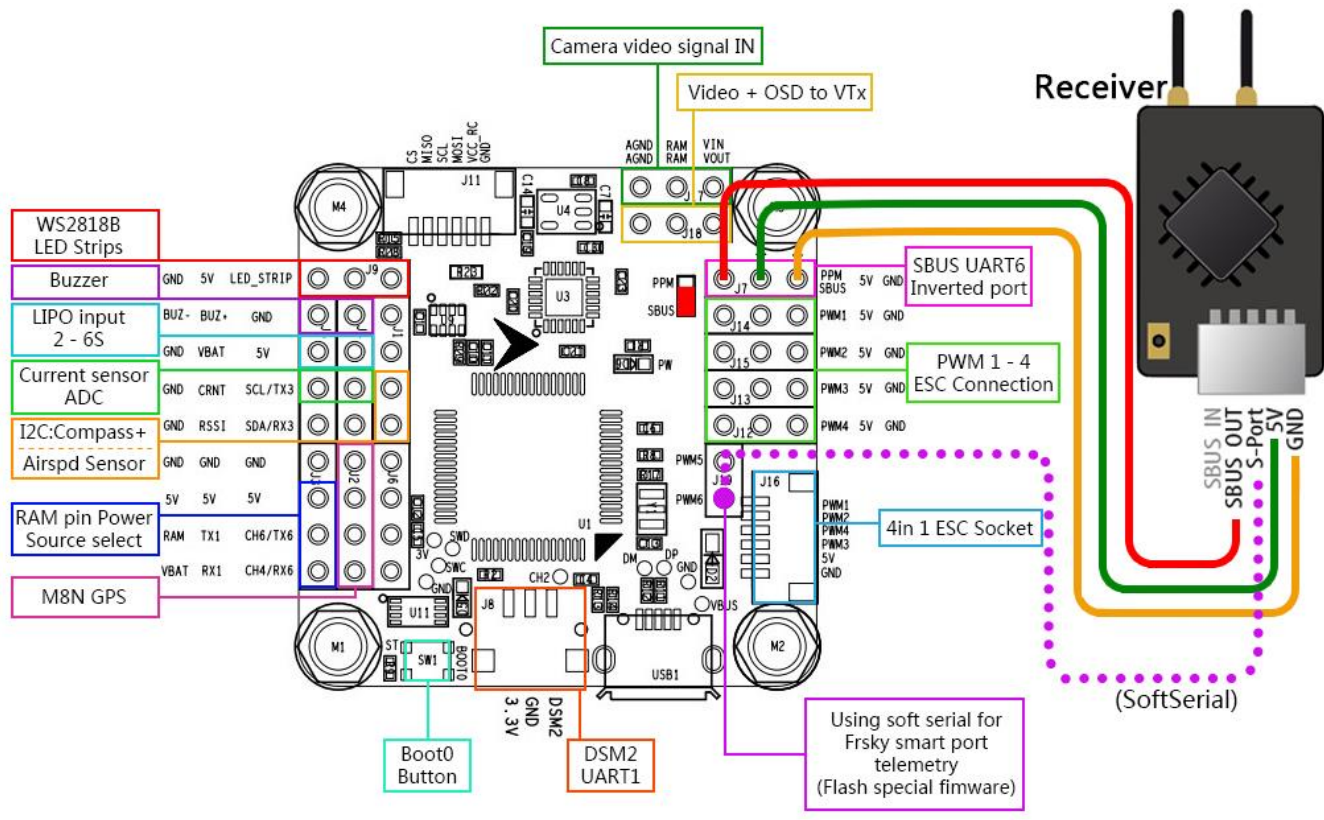
-Wire order: Black(GND), Red(+5V), Green(TX), Yellow(RX), Orange(SCL), White(SDA)

-Size ϕ 55mm*14mm

-Weight 35g

-Number of satellites : Up to 26

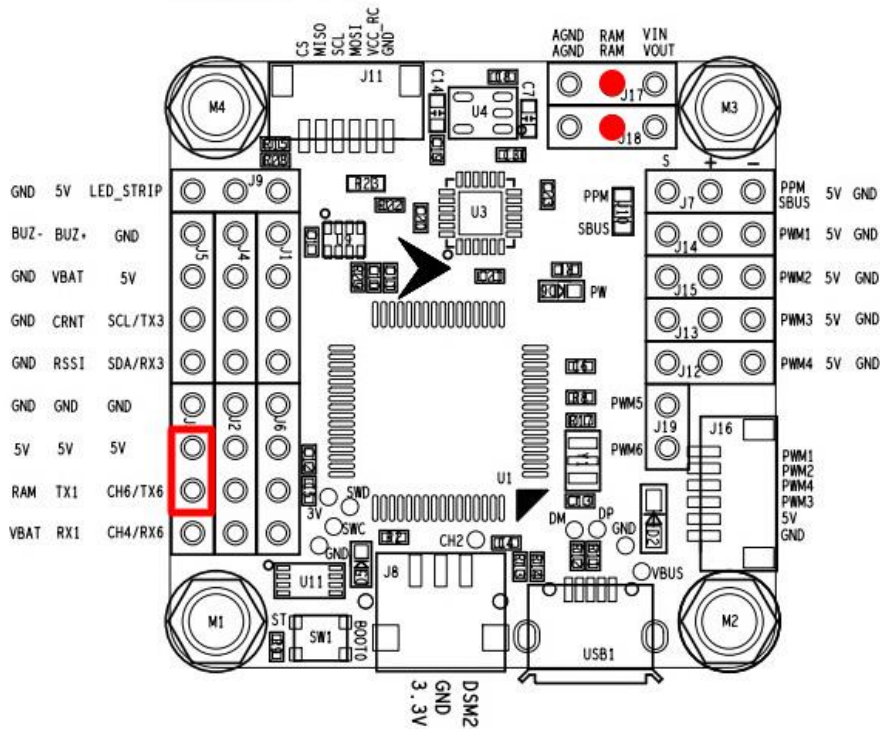
Flight controller connection diagram:



RAM/Power source for VTX and Camera jumper

The RAM pin, was connect to nothing, just the 3 RAM pin are passthrough.

There are 3 pin jumper next to UART1, which you could power the RAM pins by 5V, short bridge “RAM” & ”5v” pins, don’t select “VBAT” Pin.



Ports setting:

Ports
DOCUMENTATION FOR INAV

Note: not all combinations are valid. When the flight controller firmware detects this the serial port configuration will be reset.

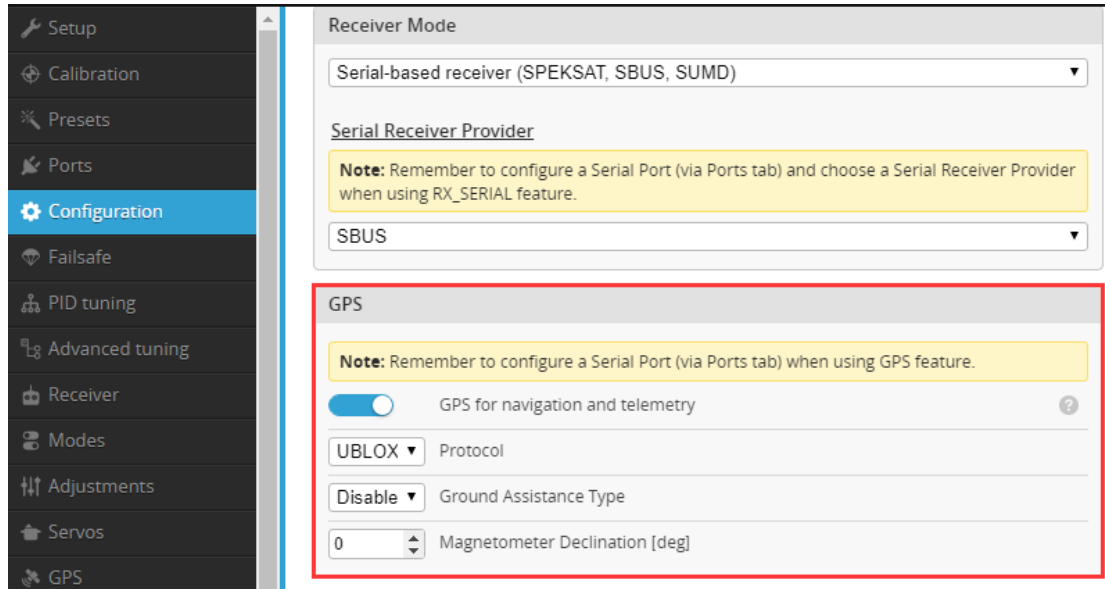
Note: Do **NOT** disable MSP on the first serial port unless you know what you are doing. You may have to reflash and erase your configuration if you do.

Identifier	Data	Telemetry	RX	Sensors	Peripherals
USB VCP	<input checked="" type="checkbox"/> MSP 115200	Disabled AUTO	<input type="checkbox"/> Serial RX	Disabled 38400	Disabled 115200
UART1	<input type="checkbox"/> MSP 115200	Disabled AUTO	<input type="checkbox"/> Serial RX	GPS 38400	Disabled 115200
UART3	<input type="checkbox"/> MSP 115200	Disabled AUTO	<input type="checkbox"/> Serial RX	Disabled 38400	Disabled 115200
UART6	<input type="checkbox"/> MSP 115200	Disabled AUTO	<input checked="" type="checkbox"/> Serial RX	Disabled 38400	Disabled 115200

UART 1 for GPS
 UART 3 for Compass
 UART 6 for Serial Rx

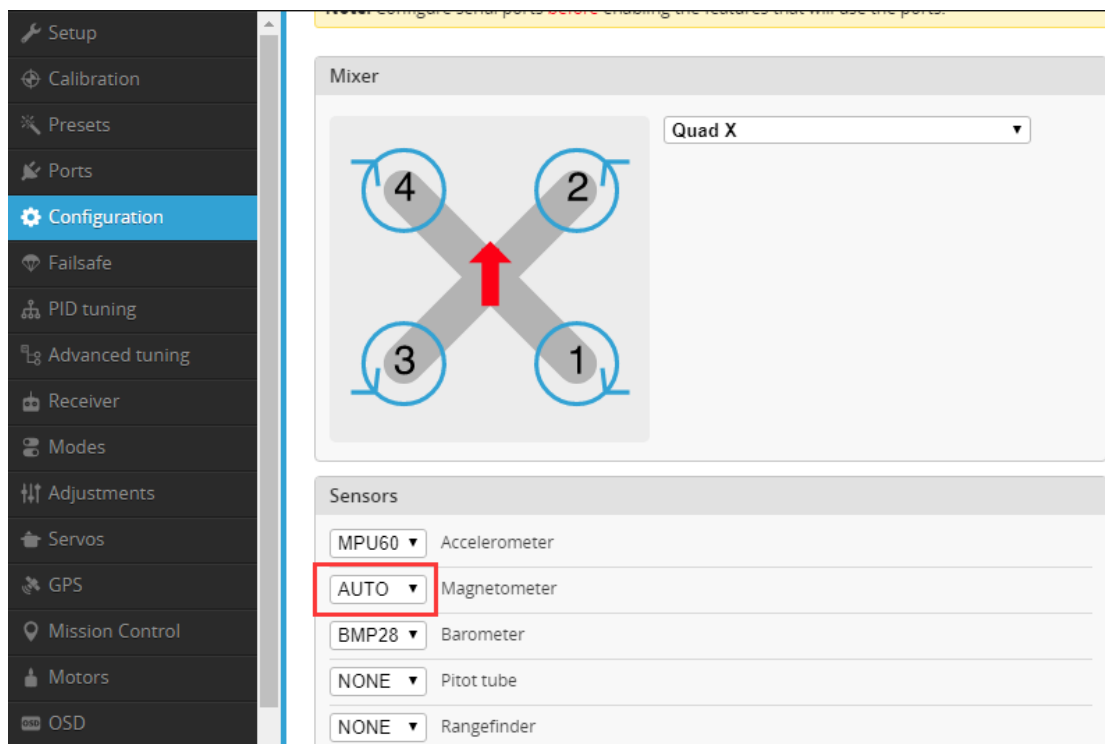
GPS is pre-solder to UART 1, Compass is pre-solder to UART 3, please enable GPS for UART 1.

GPS Setting:



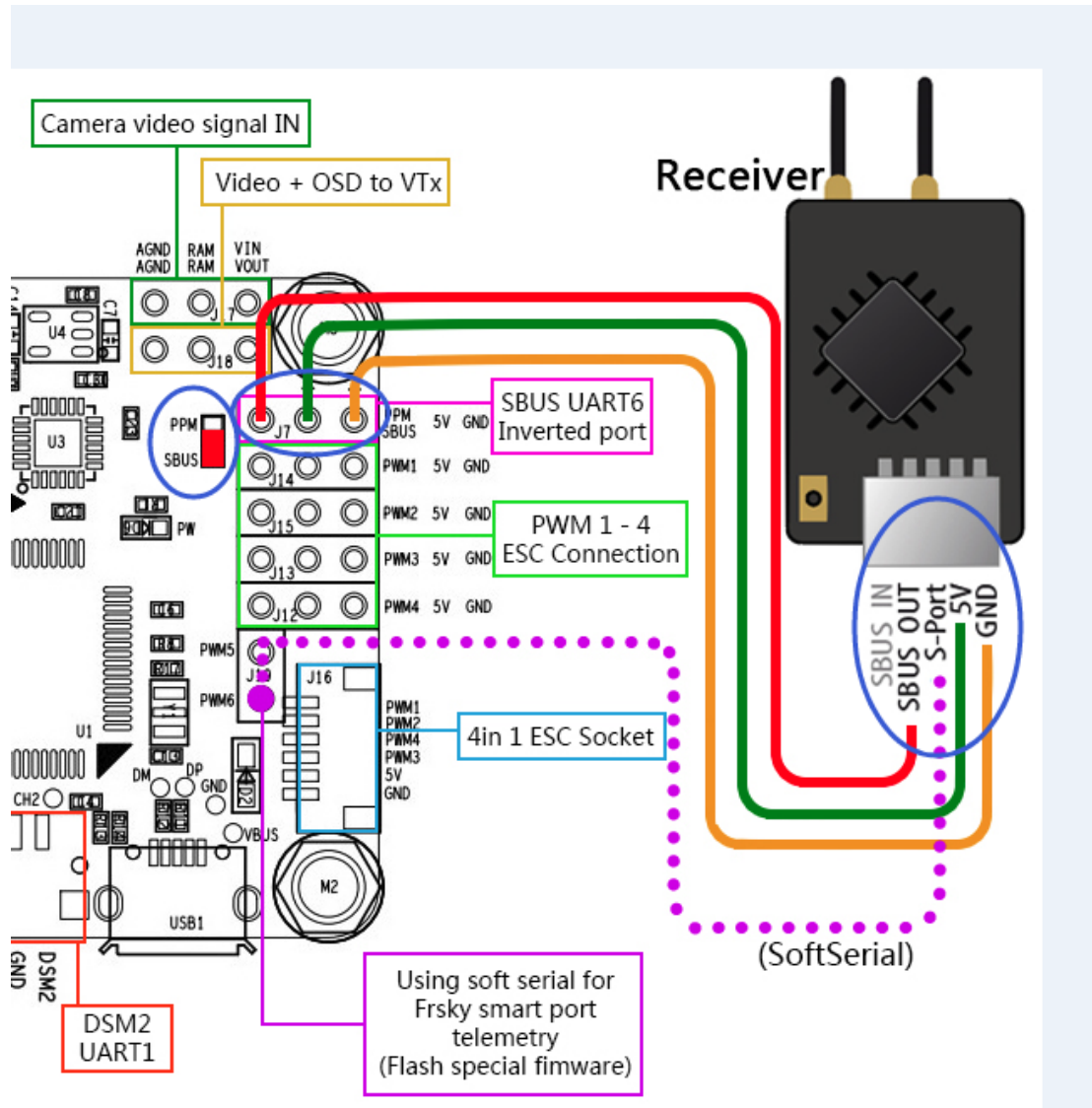
Compass Setting:

Select “AUTO” for your magnetometer, then Save and Reboot.

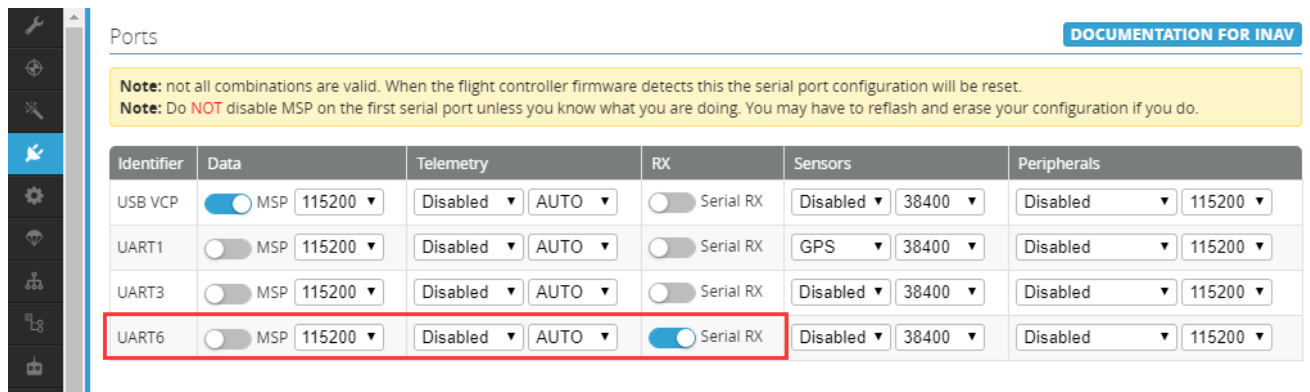


Receiver setting:

Connecting your receiver to the FC is not much different from any other flight controller. You connect your serial receivers (SBUS, IBUS) and PPM receivers to the pin on J7 which corresponds to UART6. To connect a Spektrum receiver this connects to the dedicated Spektrum satellite connector on J8 (corresponds to UART1)



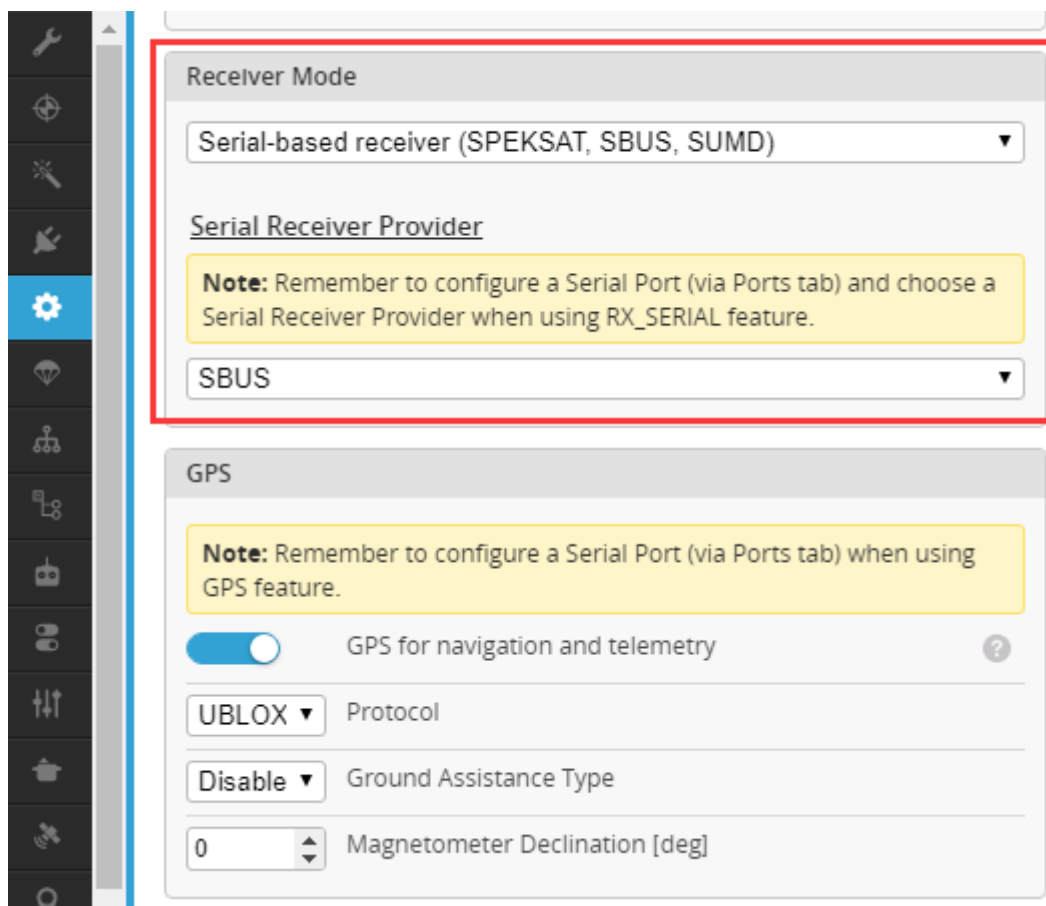
Sbus receiver/Ibus receiver/PPM receiver please enable Serial RX for UART6



Ports DOCUMENTATION FOR INAV

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	Data	Telemetry	RX	Sensors	Peripherals
USB VCP	<input checked="" type="checkbox"/> MSP 115200 ▼	Disabled ▼ AUTO ▼	<input checked="" type="checkbox"/> Serial RX	Disabled ▼ 38400 ▼	Disabled ▼ 115200 ▼
UART1	<input type="checkbox"/> MSP 115200 ▼	Disabled ▼ AUTO ▼	<input type="checkbox"/> Serial RX	GPS ▼ 38400 ▼	Disabled ▼ 115200 ▼
UART3	<input type="checkbox"/> MSP 115200 ▼	Disabled ▼ AUTO ▼	<input type="checkbox"/> Serial RX	Disabled ▼ 38400 ▼	Disabled ▼ 115200 ▼
UART6	<input type="checkbox"/> MSP 115200 ▼	Disabled ▼ AUTO ▼	<input checked="" type="checkbox"/> Serial RX	Disabled ▼ 38400 ▼	Disabled ▼ 115200 ▼



Receiver Mode

Serial-based receiver (SPEKSAT, SBUS, SUMD) ▼

Serial Receiver Provider

Note: Remember to configure a Serial Port (via Ports tab) and choose a Serial Receiver Provider when using RX_SERIAL feature.

SBUS ▼

GPS

Note: Remember to configure a Serial Port (via Ports tab) when using GPS feature.

GPS for navigation and telemetry ?

UBLOX ▼ Protocol

Disable ▼ Ground Assistance Type

0 ▼ Magnetometer Declination [deg]

Using FrSky Smart Port telemetry via softserial

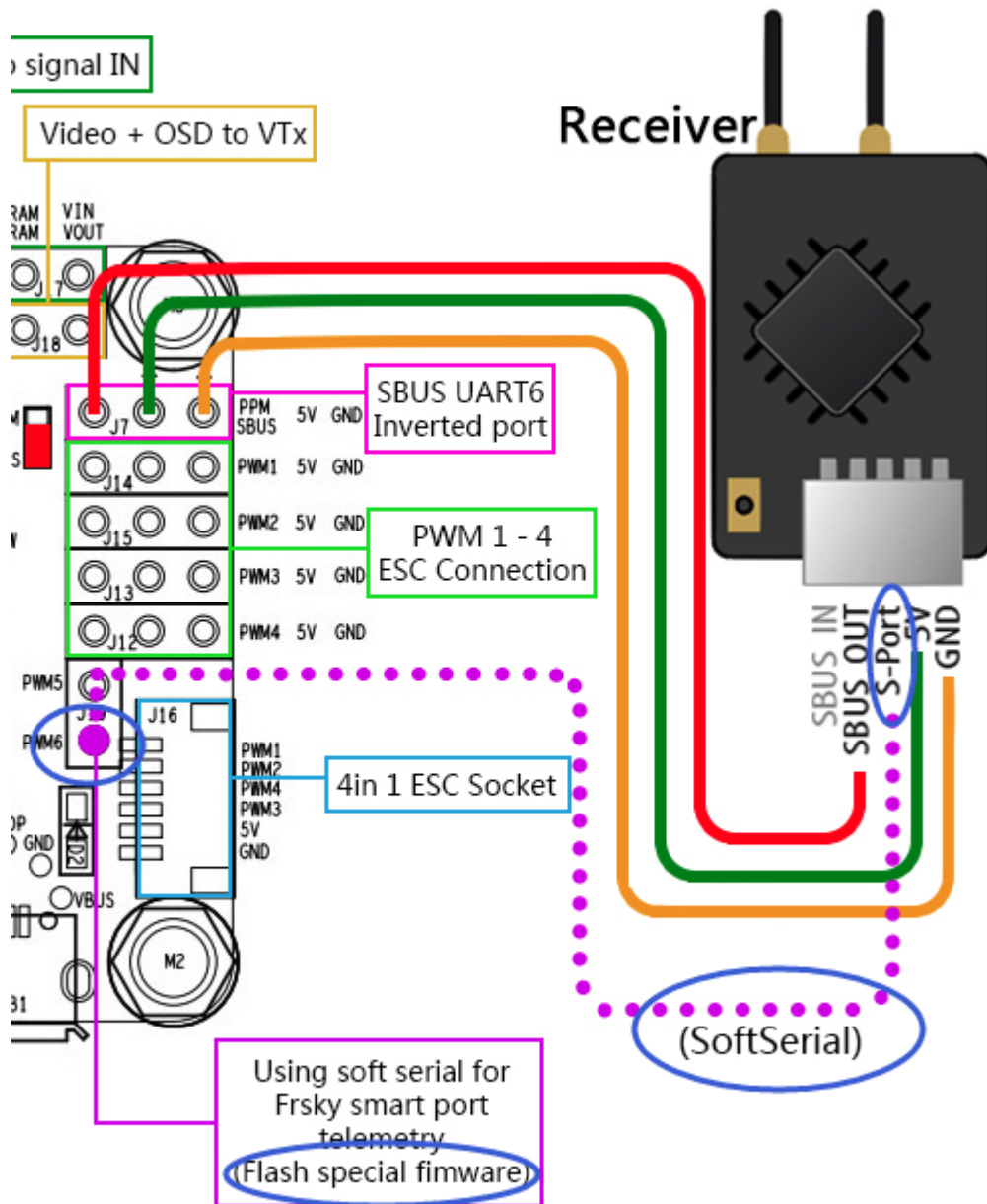
Smart port telemetry as shown in the connection diagram (violet wire) will let you send telemetry data back to your Taranis radio. However, the problem on the FC is that there's no other serial port for connection. To overcome this you simply need to use soft serial PWM6 port.

If you want to use this function, please flash the below special firmware, because the official inav firmware does not support this function for this FC.

Firmware Link:

https://www.dropbox.com/s/y972v0ywp8dqnkp/inav_1.9.1_F4_for%20S.Port.hex?dl=0

After successfully flashing the firmware, connect S.Port of receiver to the PWM6 port of FC.



Then enable the softserial feature on the configuration tab.

The screenshot shows the configuration interface for INAV. On the left, there are three 3D Deadband settings: 3D Deadband Low (1406), 3D Deadband High (1514), and 3D Neutral (1460). Below these is a Personalization section with a Craft Name field. On the right, the Other Features section is visible, with two features highlighted by red boxes: 'Enable CPU based serial ports' and 'Telemetry output', both of which are turned on.

The screenshot shows the 'Ports' configuration page in INAV. A yellow warning box at the top states: '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.' Below this is a table of serial port configurations. The 'SOFTSERIAL1' row is highlighted with a red box, and its 'Telemetry' dropdown is set to 'SmartPort', also highlighted with a red box. A red arrow points to the 'SmartPort' dropdown with the text 'For FrSky Receiver S.Port Telemetry'.

Identifier	Data	Telemetry	RX	Sensors	Peripherals
USB VCP	<input checked="" type="checkbox"/> MSP 115200	Disabled AUTO	<input type="checkbox"/> Serial RX	Disabled 38400	Disabled 115200
UART1	<input type="checkbox"/> MSP 115200	Disabled AUTO	<input type="checkbox"/> Serial RX	GPS 38400	Disabled 115200
UART3	<input type="checkbox"/> MSP 115200	Disabled AUTO	<input type="checkbox"/> Serial RX	Disabled 38400	Disabled 115200
UART6	<input type="checkbox"/> MSP 115200	Disabled AUTO	<input checked="" type="checkbox"/> Serial RX	Disabled 38400	Disabled 115200
SOFTSERIAL1	<input type="checkbox"/> MSP 115200	SmartPort AUTO	<input type="checkbox"/> Serial RX	Disabled 38400	Disabled 115200

Sensor calibration and more setting guide:

<https://github.com/iNavFlight/inav/wiki/Sensor-calibration>

<https://github.com/iNavFlight/inav/blob/master/docs/Board%20-%20Omnibus%20F4.md>