FORTINI F4

Flight Controller

USER MANUAL VERSION 1.0

Please contact us if you need further assistance:
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Sales support: sales@furiousfpv.com
Website: http://furiousfpv.com/

Contents

Introduction

After a full year of study & experience with the Radiance & KOMBINI Flight Controllers, we've gathered every aspect of customer feedback in an ultimate effort to produce the single most cutting edge Flight Controller the FPV market has ever seen. Hold on - you don't want to miss this.

Enter the all new Fortini F4 - the culmination of years of research and application as we push forward into the outer limits of FPV. With a new high performance, low noise 32kHz Invensense 20602 gyro that features ultra-high sensitivity, this FC is designed for outright performance, offering ultra-crisp flight characteristics that will be felt in every move you make. Want more? Don't worry - just look below.

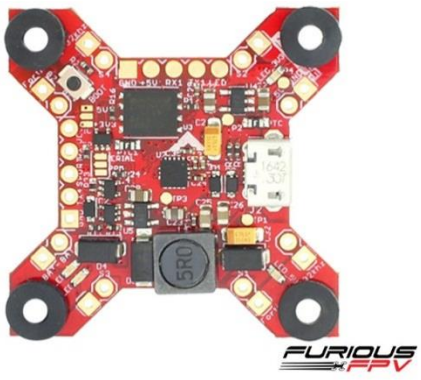
With a massive array of (5) UARTS, the Fortini F4 allows simultaneous connection of SBUS, S.PORT, OSD, USB and either a TBS Smart Audio System or Immersion RC Tramp. Furthering this, the Fortini F4 is the very first Flight Controller that offers built in input & output Inrush Voltage Protection to protect the BEC and other electronic components in the case of extreme voltage spikes.

Soft mounted for the ultimate in vibration protection, the Fortini F4 features 16MB of integrated flash memory, allowing BlackBox functionality to review all data after your flight. The Fortini F4 is also the very first FC to allow S.PORT direct connection with the receiver without any aspect of receiver modification.

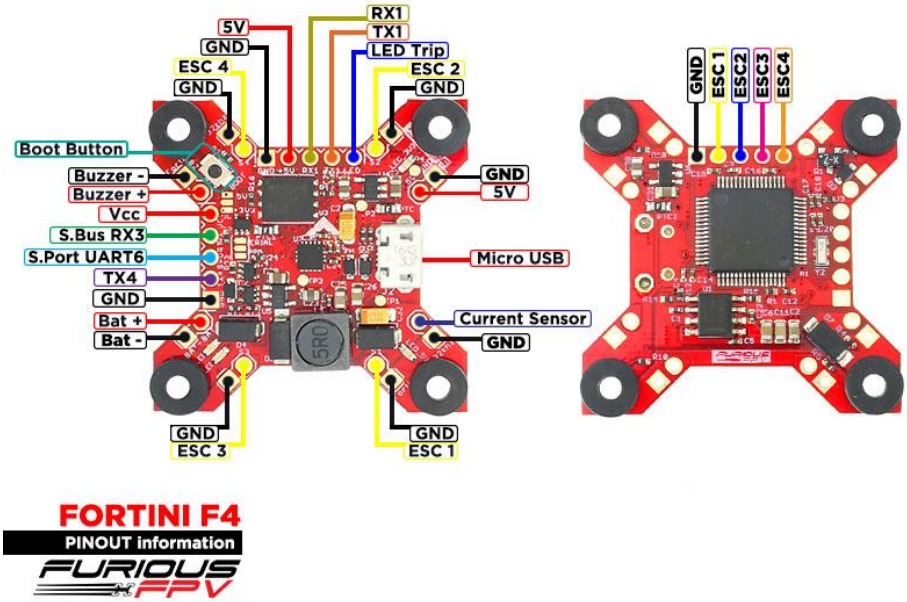
The Fortini F4 is the full up package, breaking new ground in true FC brilliance. Toss compromise out the window and open your FPV world to the most functional and feature packed FC you have ever seen before.

Features

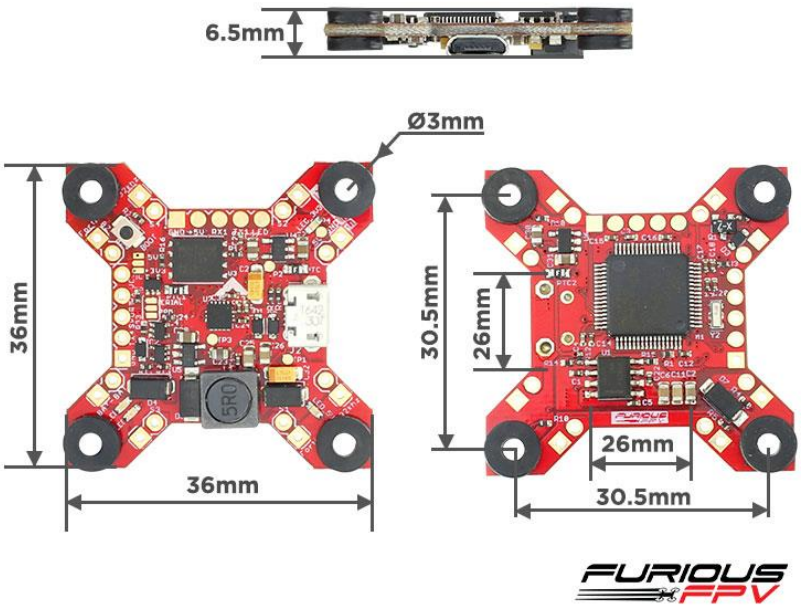
- Invensense 20602 gyro for high speed 32khz, lowest noise floor and highest sensitivity
- Gyro located as close as possible to the center
- Integrated vibration dampening dummies
- Separate power supply for gyro with LDO
  low noise and high accuracy
- Built in driver inverter for S-bus
- Built in driver inverter for Smartport
  connection directly to FC
- MCU: STM32F405
- Voltage and current ADC pins, for full
  voltage and current monitoring
- 16MB of flash memory Blackbox
- 5x Serial UARTs for USB, OSD, SMART AUDIO or TRAMP, SPORT, SBUS
- RX powered via USB
- Selectable 3.3V or 5V for RX



- LED Driver for WS2812b programmable LED
- Integrated buzzer driver
- Built-in BEC 5V-2A supports direct 2-6S Lipo connection
- Inrush Voltage Protection Input and Output by Transient Voltage SuppressorBoard Layout
- Weight: 5.5gr



Dimensions



Connections

Connect with Receiver:

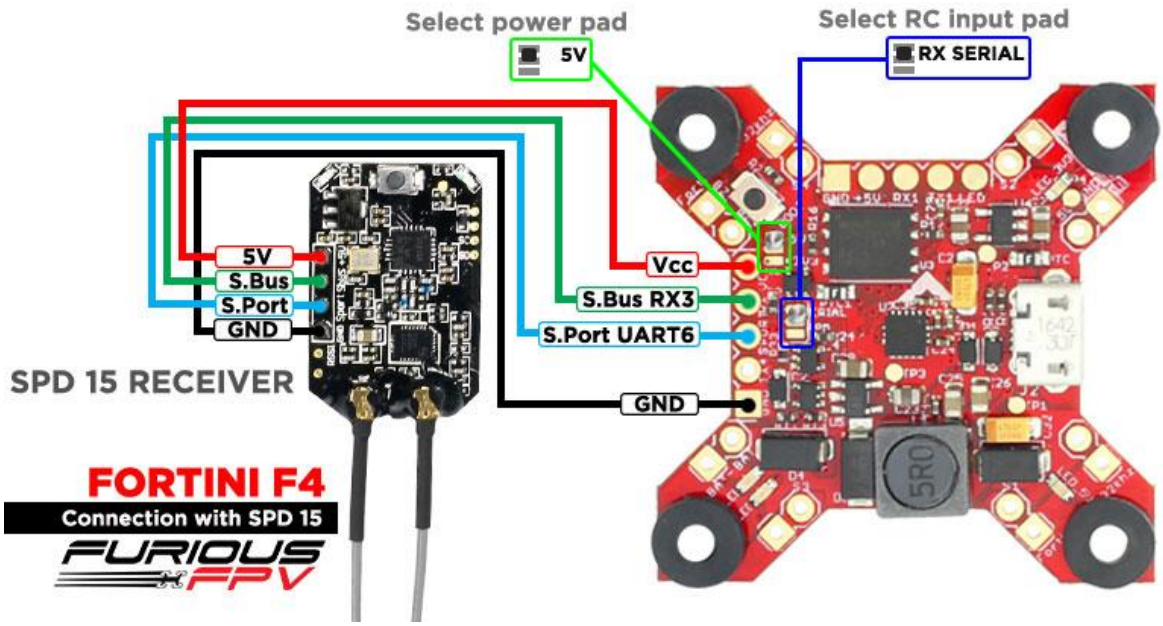
***WARNING:** Fortini F4 can support up to 6s Lipo battery but make sure other devices also support it.

❖ Using SPD15 Receiver:

*** NOTE:** If you are using S.Port with firmware 3.1.7, please enter CLI mode and type the following commands:

set sport_halfduplex = OFF
save

Port Identifier	Configuration	Serial Rx	Telemetry Output	Sensor Input
USB VCP	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO
UART1	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO
UART3	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO
UART4	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO
UART6	MSP 115200	Serial RX	SmartPort AUTO	Disabled AUTO



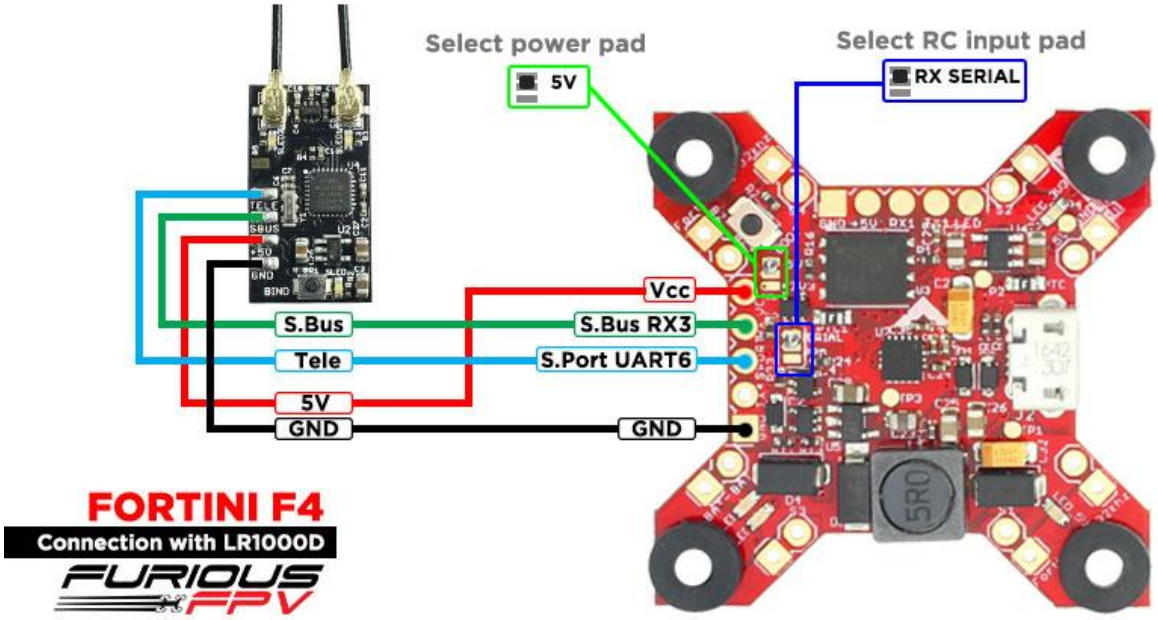
You can buy SPD15 Receiver right here: https://goo.gl/FTnrpR

❖ Using LR1000D Receiver:

*** NOTE:** If you are using S.Port with firmware 3.1.7, please enter CLI mode and type the following commands:

set sport_halfduplex = OFF
save

Port Identifier	Configuration	Serial Rx	Telemetry Output	Sensor Input
USB VCP	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO
UART1	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO
UART3	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO
UART4	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO
UART6	MSP 115200	Serial RX	SmartPort AUTO	Disabled AUTO



You can buy LR1000D Receiver right here: https://goo.gl/4Cr0HI

*** NOTE:** If you use **LR1000D** Receiver please go to **CLI** and type the following commands:

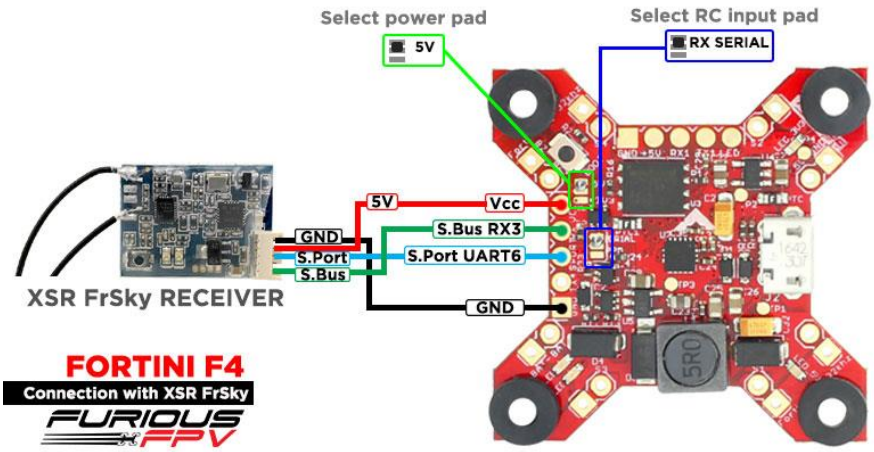
set sbus_inversion = OFF
save

❖ Using XSR FrSky Receiver:

*** NOTE:** If you are using S.Port with firmware 3.1.7, please enter CLI mode and type the following commands:

set sport_halfduplex = OFF
save

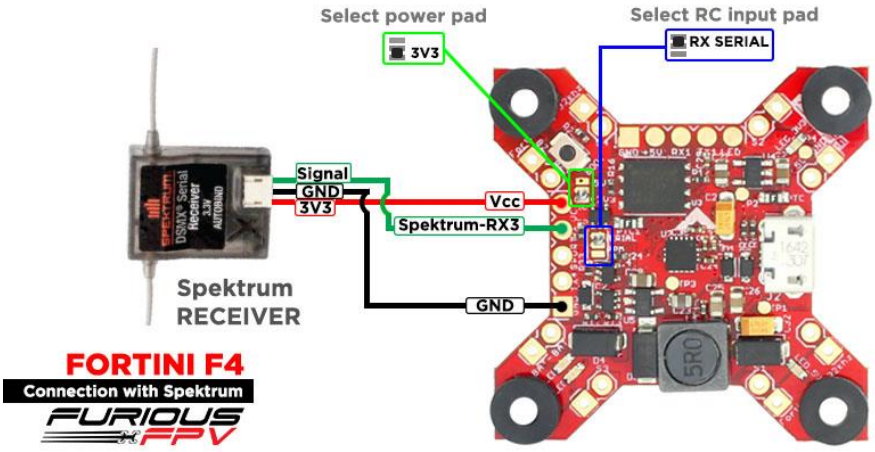
Port Identifier	Configuration	Serial Rx	Telemetry Output	Sensor Input
USB VCP	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO
UART1	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO
UART3	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO
UART4	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO
UART6	MSP 115200	Serial RX	SmartPort AUTO	Disabled AUTO



❖ Using Spektrum Satellite Receiver:

Port Identifier	Configuration	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART1	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART3	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART4	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART6	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO

NOTE: When use Spektrum Satellite for Fortini F4, you must use battery for FC's power



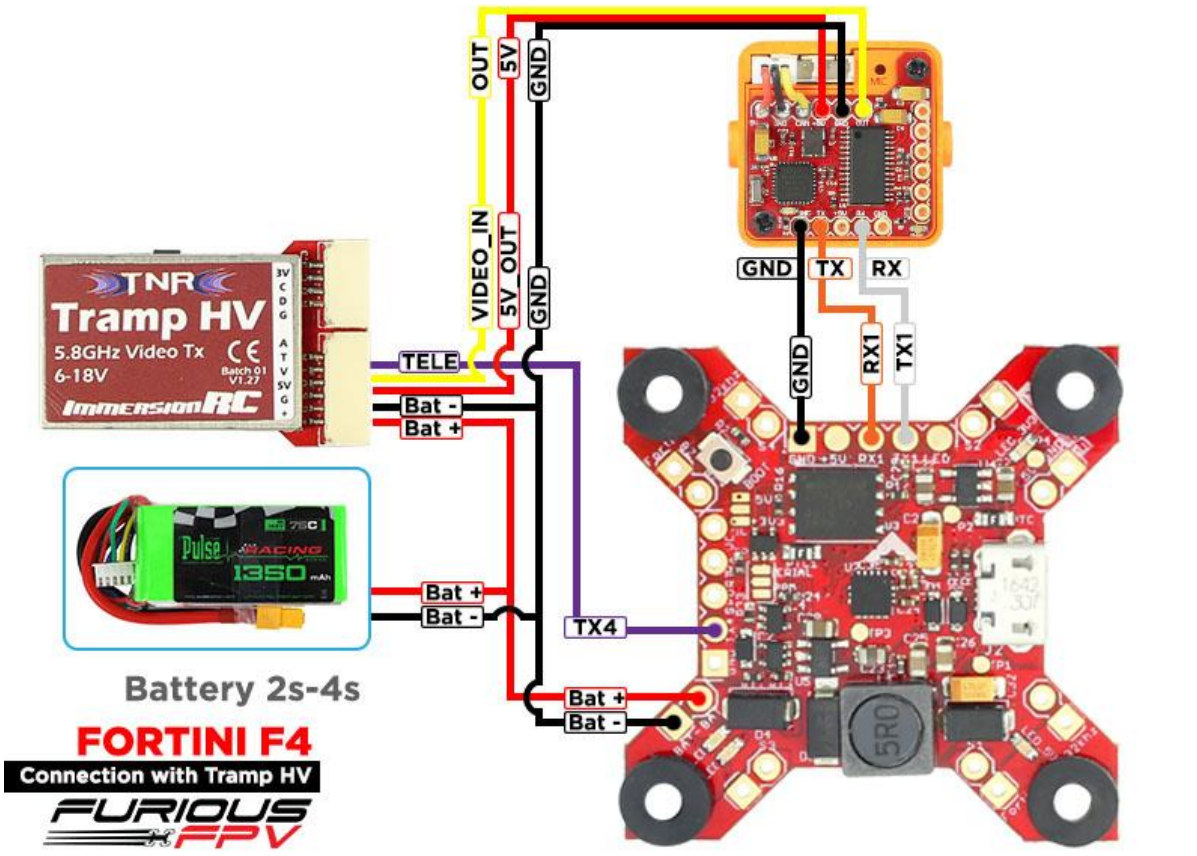
Connect with Video Transmitter:

❖ Using Tramp HV:

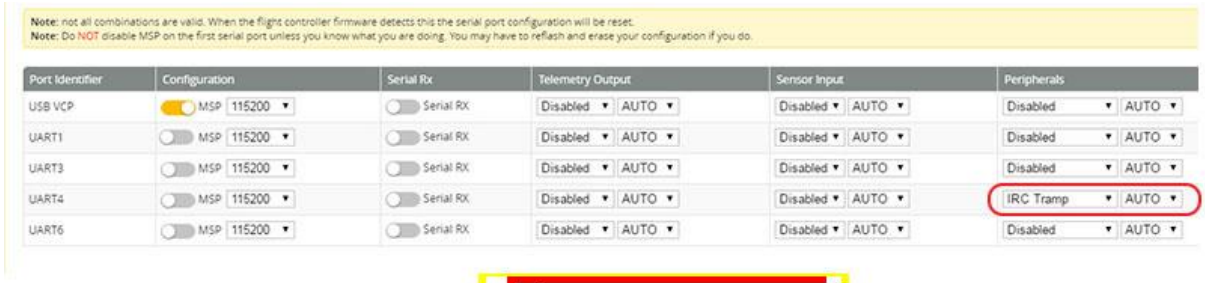
• With Piggy V2 OSD

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.

Port Identifier	Configuration	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART1	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART3	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART4	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	IRC Tramp AUTO
UART6	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO

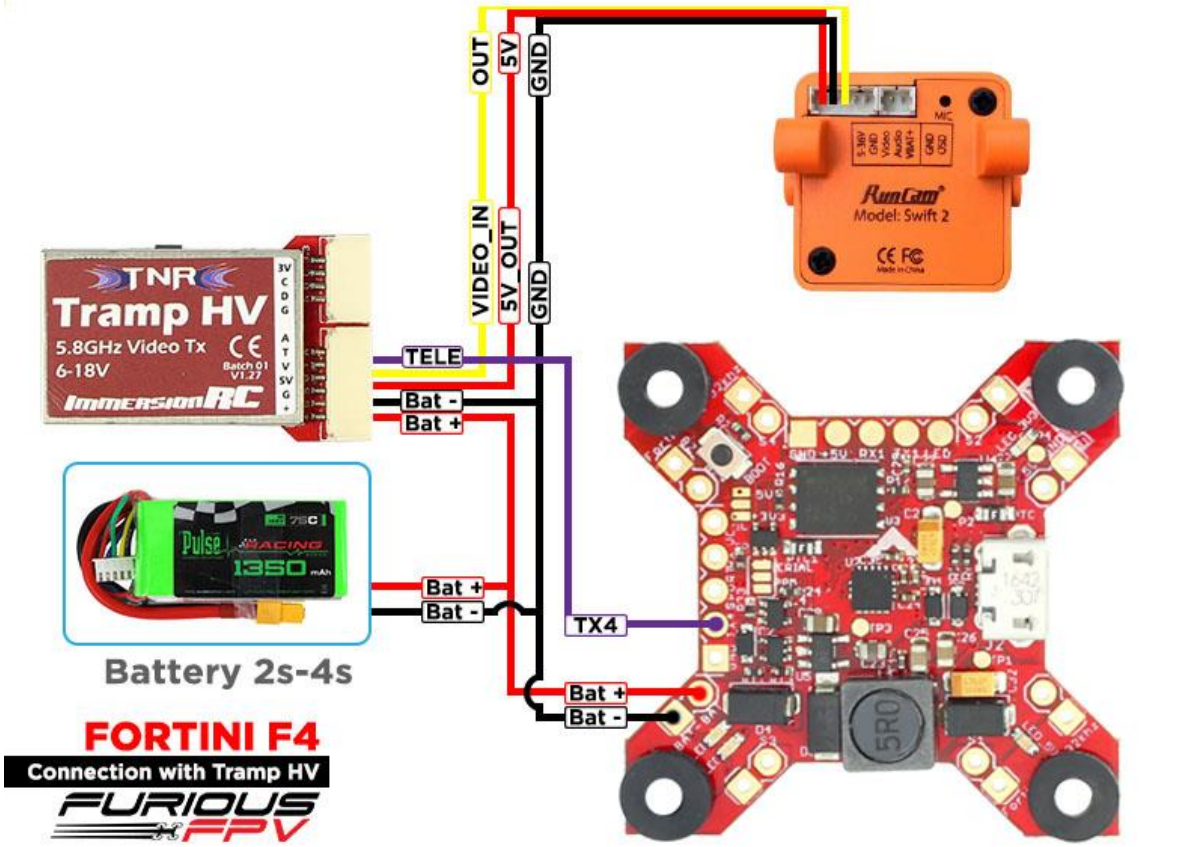


- **With Only Camera**



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.

Port Identifier	Configuration	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART1	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART3	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART4	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	IRC Tramp AUTO
UART6	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO

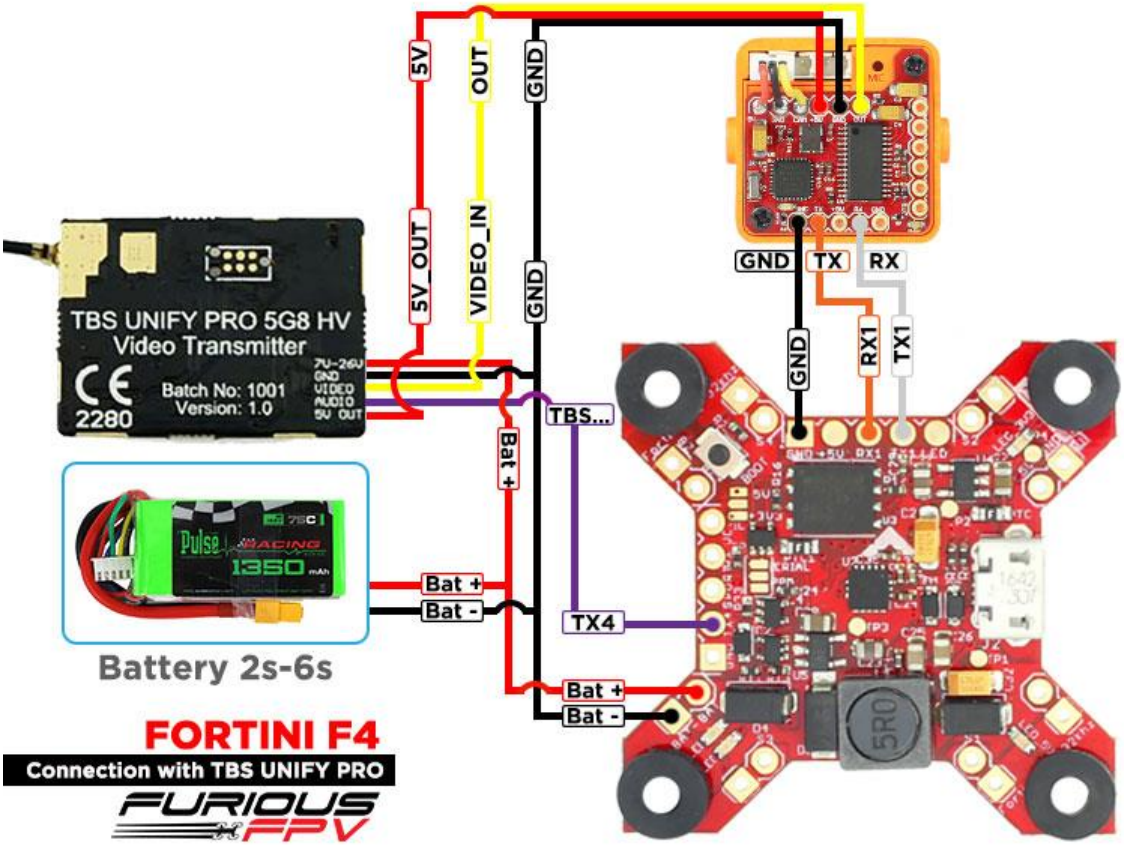


❖ Using TBS Unify Pro:

- **With Piggy V2 OSD**

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.

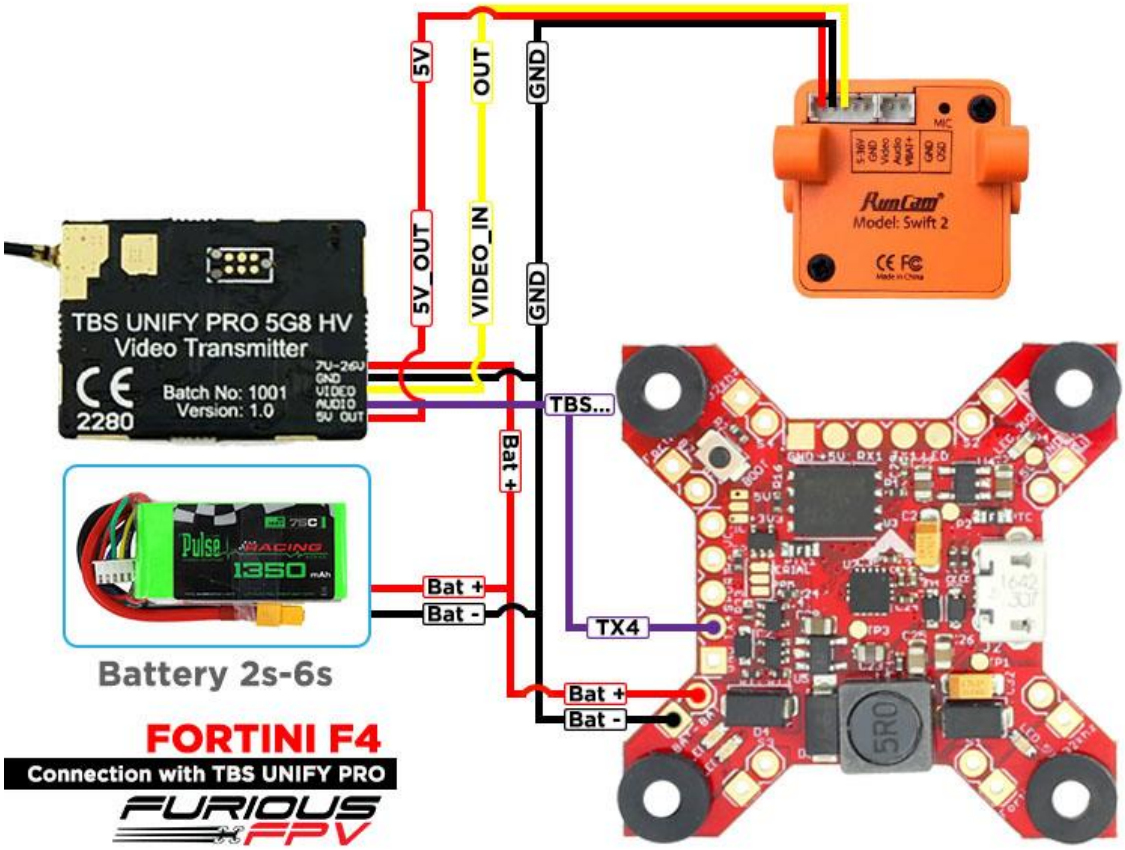
Port Identifier	Configuration	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART1	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART3	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART4	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	TBS SmartAudio AUTO
UART6	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO



- **With Only Camera**

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.

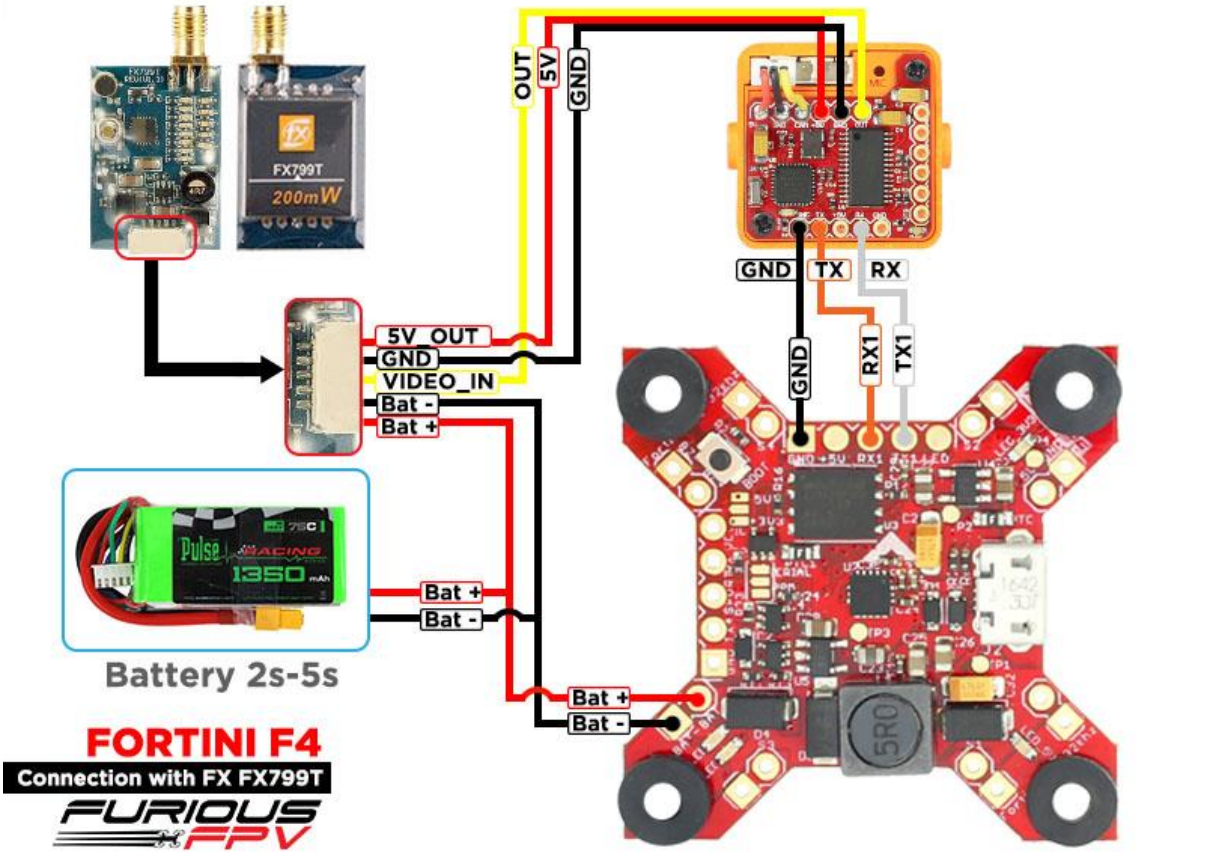
Port Identifier	Configuration	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART1	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART3	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART4	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	TBS SmartAudio AUTO
UART6	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO



❖ Using FX FX799T:

- **With Piggy V2 OSD**

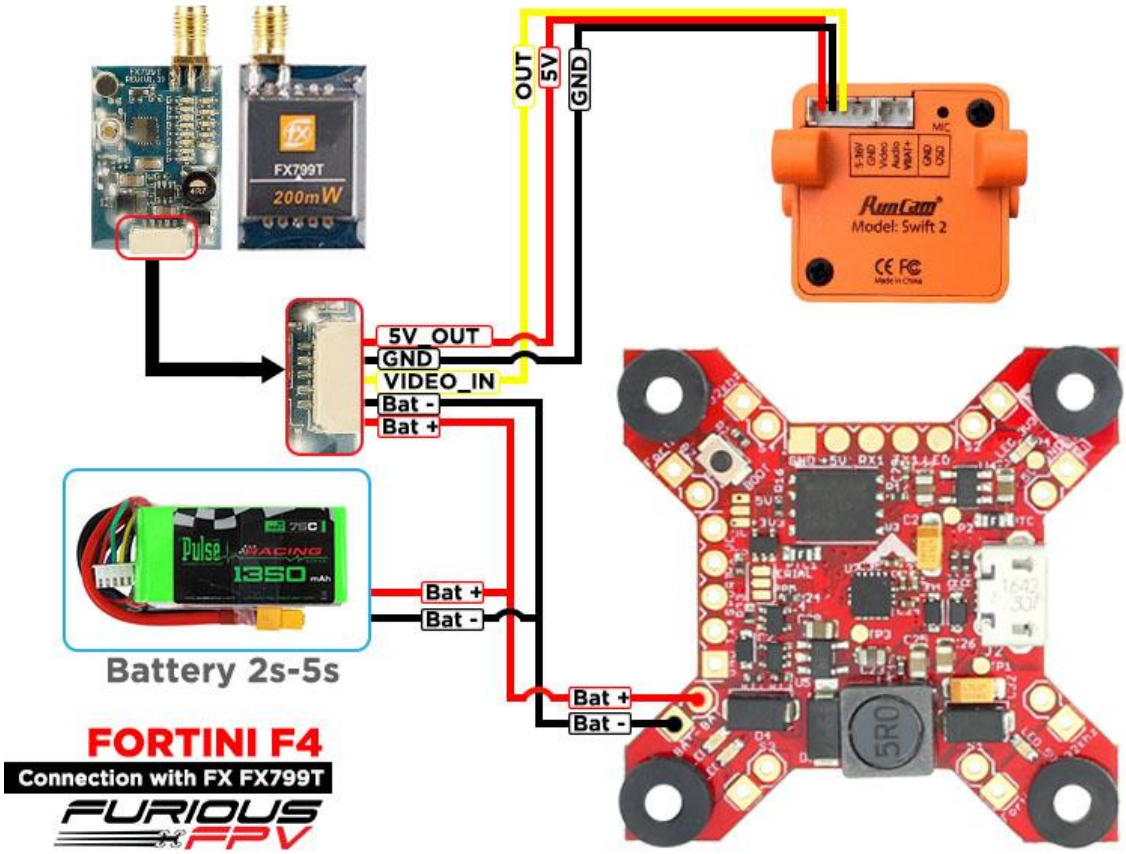
Port Identifier	Configuration	Serial Rx	Telemetry Output	Sensor Input
USB VCP	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO
UART1	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO
UART3	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO
UART4	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO
UART6	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO



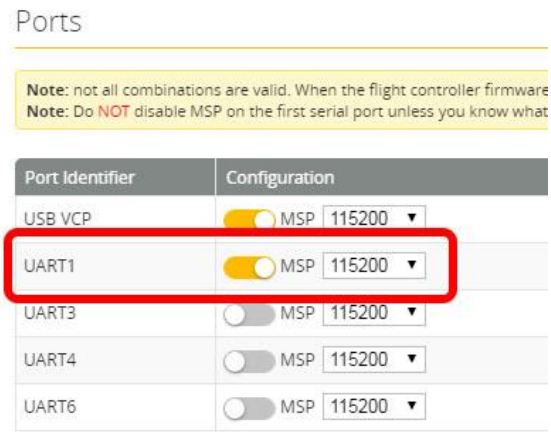
- **With Only Camera**

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.

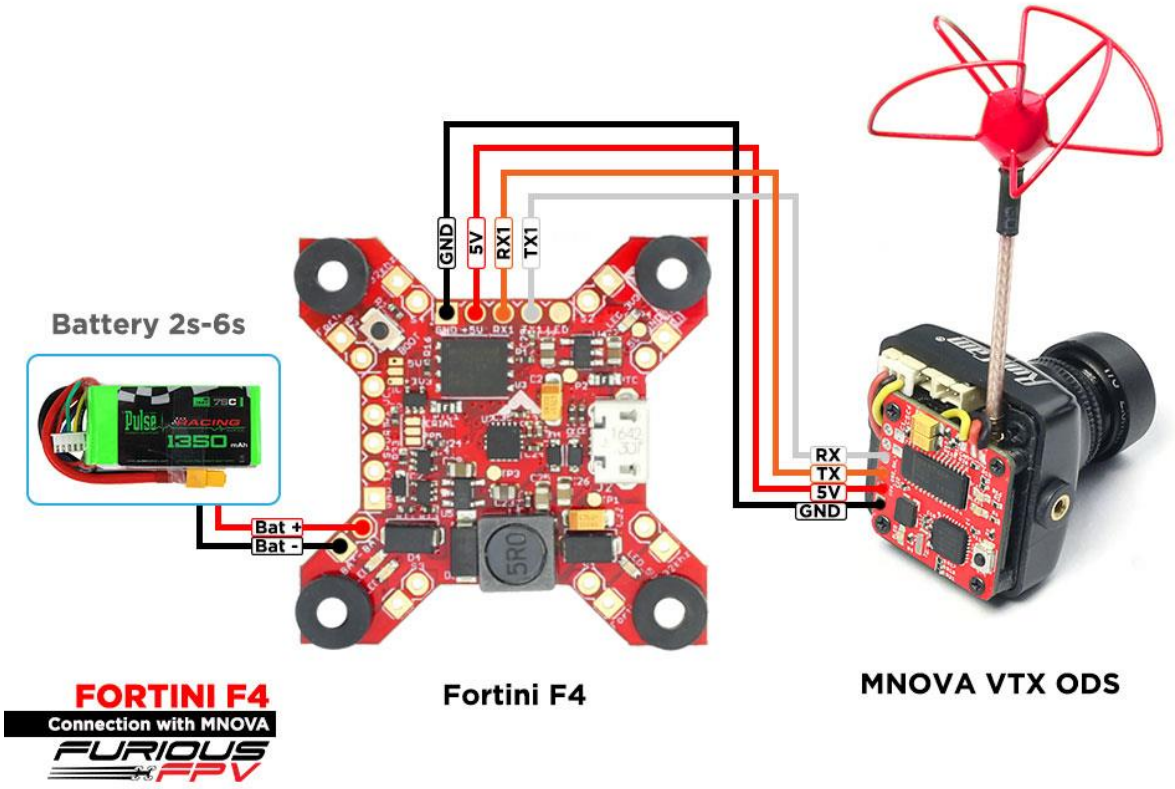
Port Identifier	Configuration	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART1	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART3	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART4	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled AUTO
UART6	MSP 115200	Serial RX	Disabled AUTO	Disabled AUTO	Disabled



Connect with stack Mnova and Runcam :

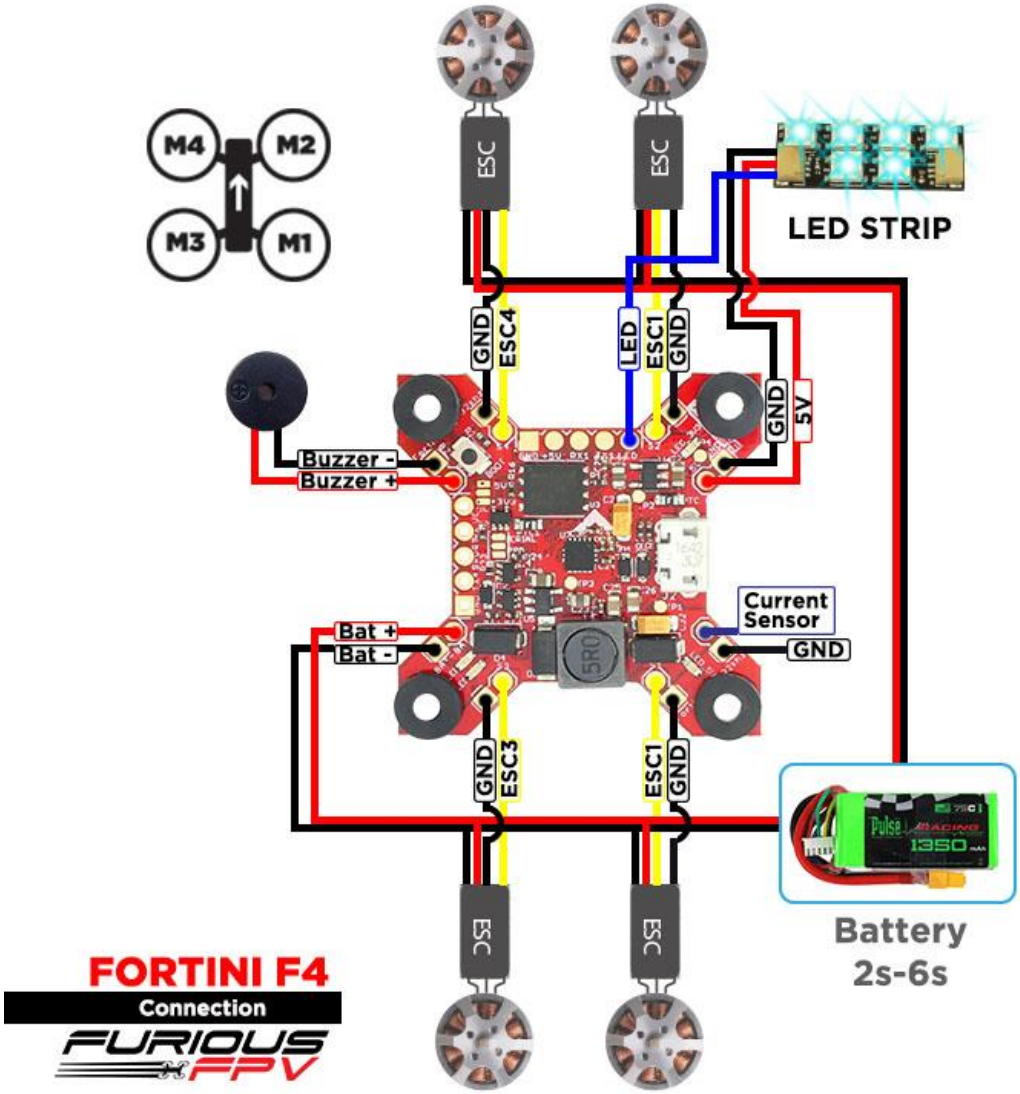


*** WARNING: Mnova is only compatible with 5V. Please solder only to 5V pad if using Mnova**



You can buy Mnova right here: https://goo.gl/JyQnds

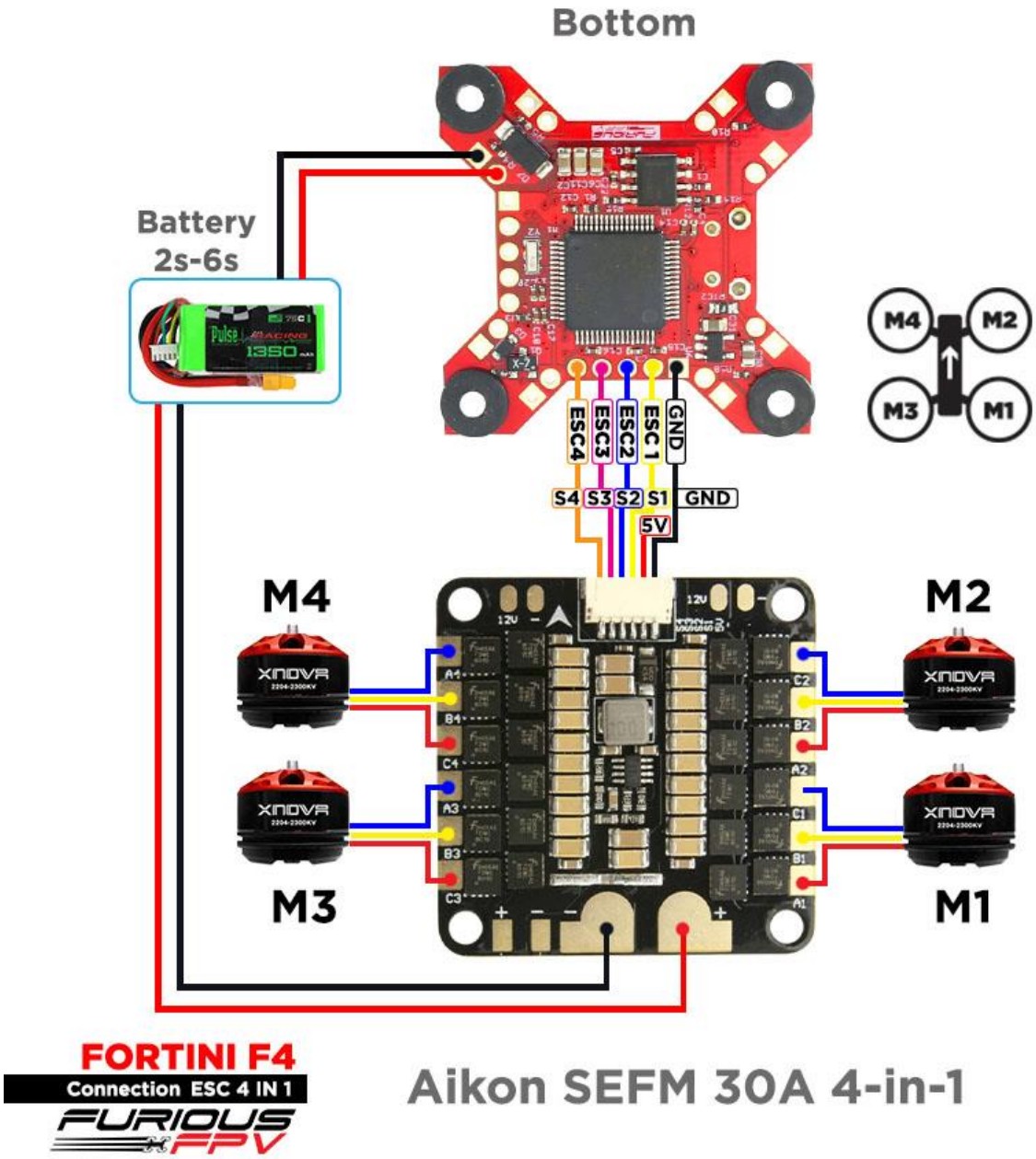
Connect with other devices:



You can buy LED STRIP right here: https://goo.gl/TXwSwI

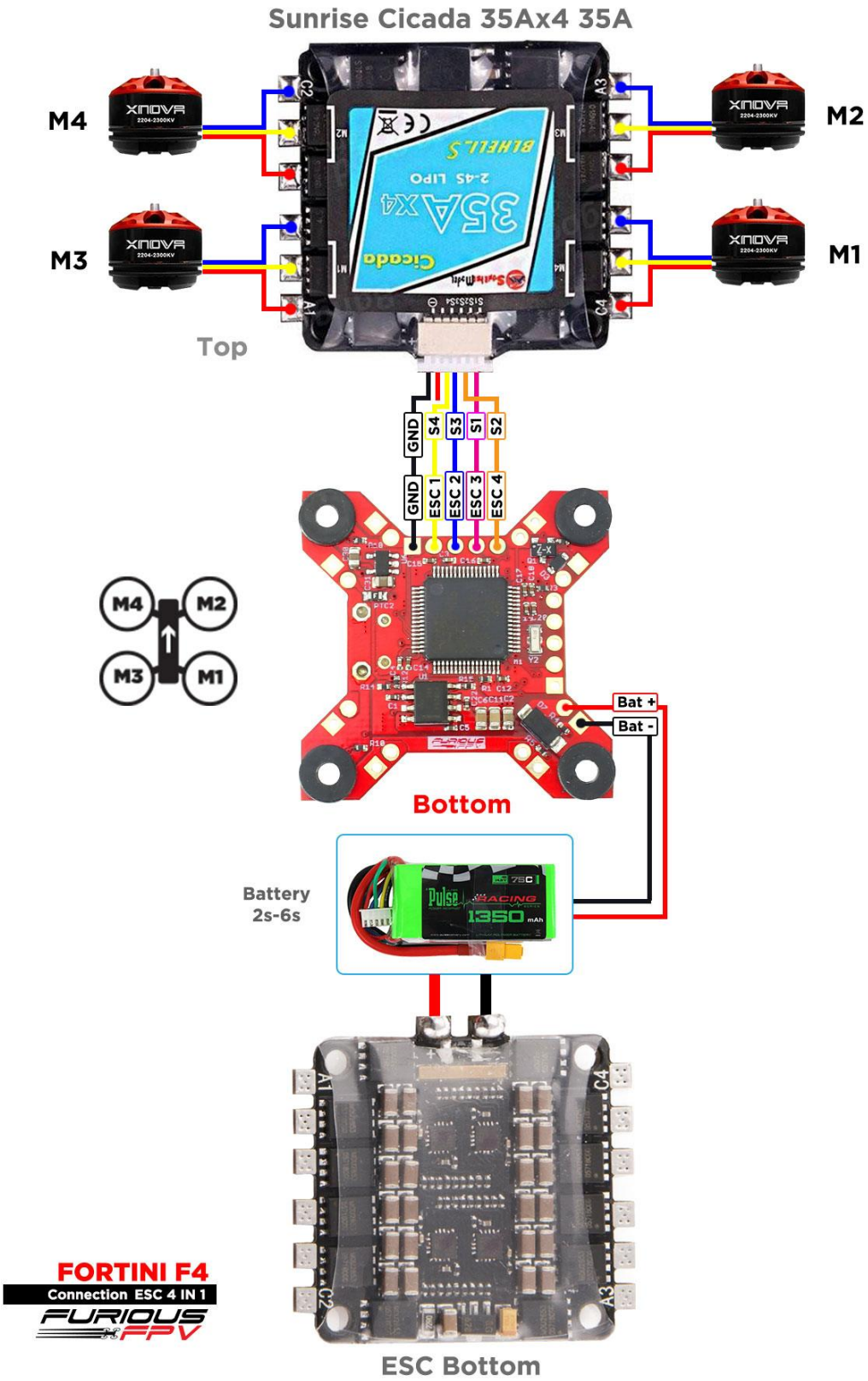
Connect with ESC 4 in 1:

❖ Using Aikon SEFM 30A:



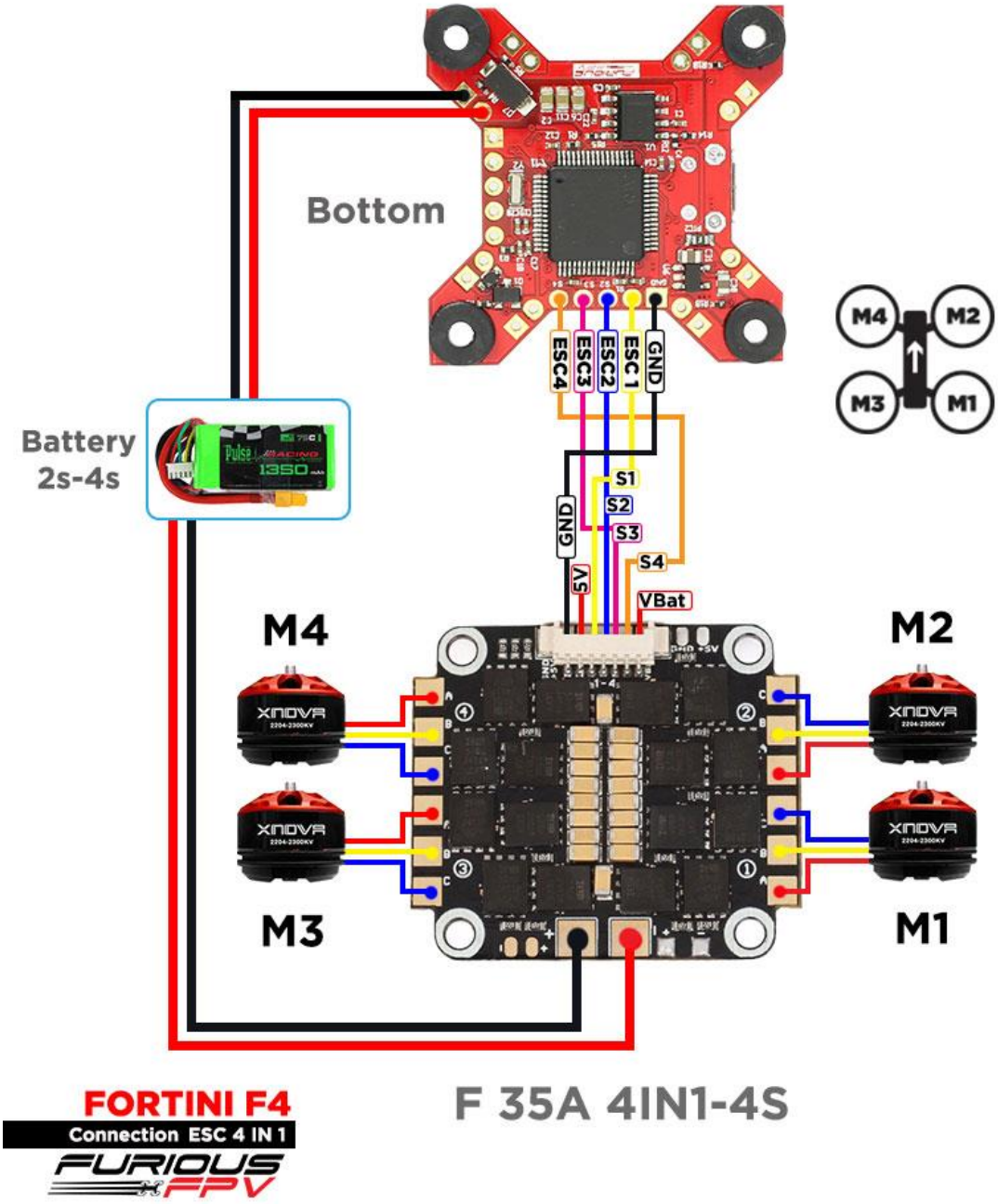
You can buy ESC Aikon SEFM 30 4 in 1 right here: https://goo.gl/IOYBEr

❖ Using Cicada 35x4 35A:



You can buy ESC Sunrise Cicada 35x4 35A right here: https://goo.gl/s08OaI

❖ Using T-Motor F 35A 4IN1-4S:



You can buy ESC F 35A 4in1-4S right hexre: https://goo.gl/QyM3eh

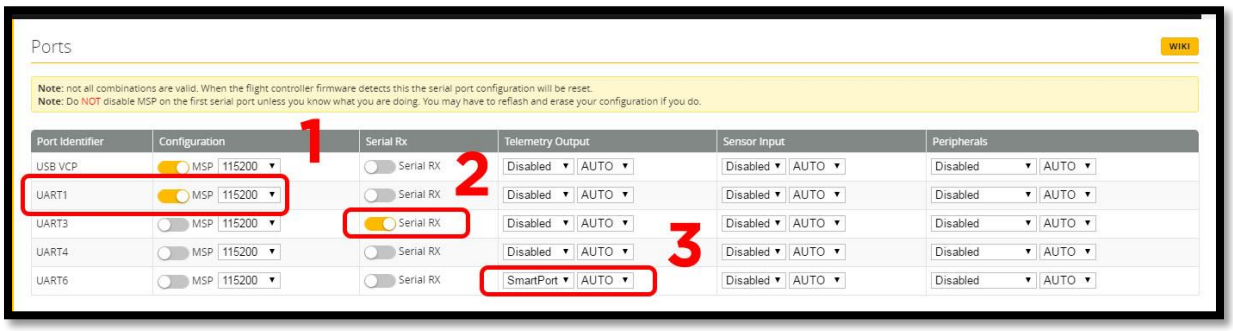
Basic setup

Please, follow carefully these next steps, and always **remove** your propellers when you're configuring your quad

STEP 1: Connect Fortini F4 with computer via **USB** cable and then **open** BetaFlight

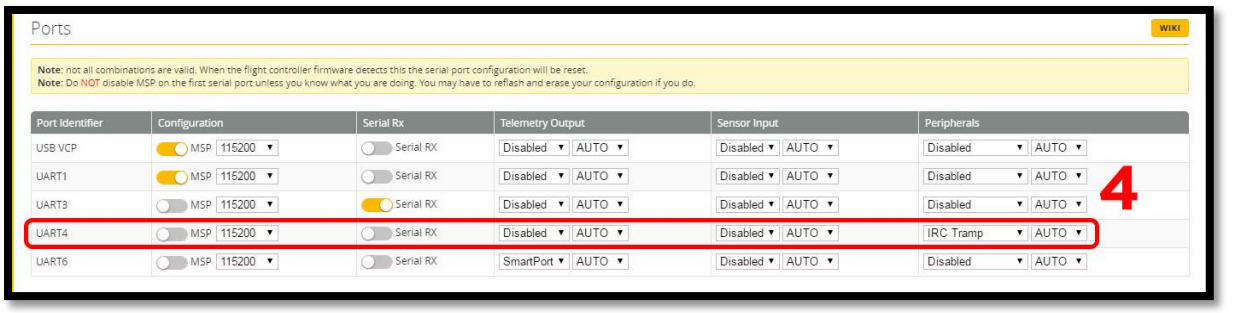
STEP 2: Configure **Ports.**

(1) Turn on **MSP** of **UART 1** to use OSD.
(2) Turn on **Serial Rx** of **UART 3** to use **Receiver Mode**
(3) Select **SmartPort** of **UART 6** to use S.Port **UART 6**

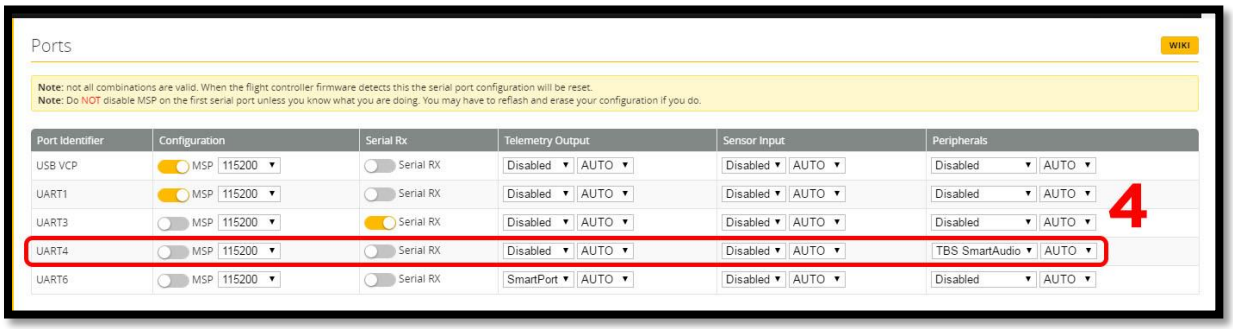


(4) In Peripherals of **UART 4:**

- Select **IRC Tramp** for **Tramp HV VTX**

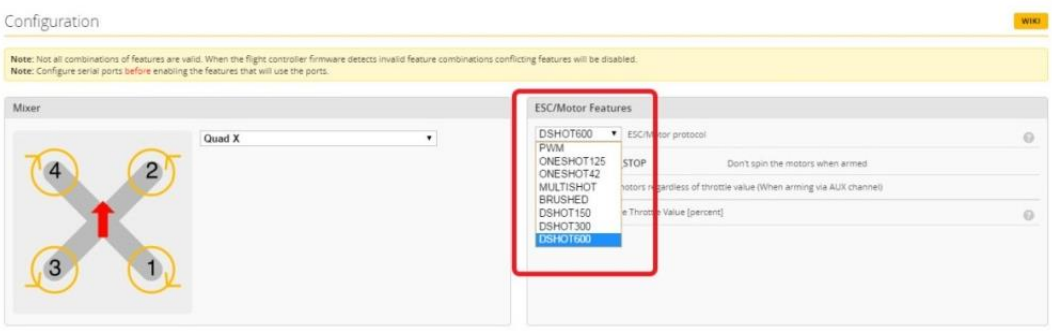


- Select **TBS Smartaudio** for **TBS Unify Pro VTX**

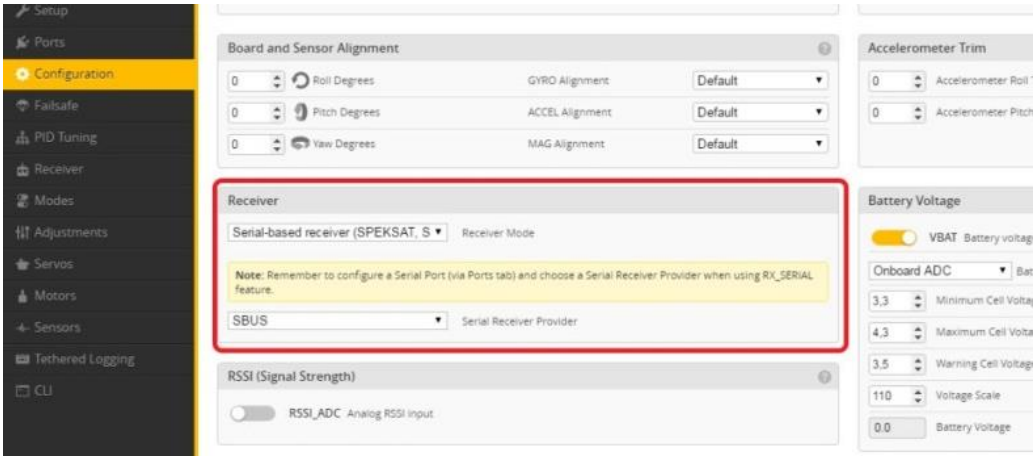


*** NOTE:** Please make sure that all the connections are correct.

STEP 3: Go to **Configuration** tab and choose **ESC/Motor** protocol in **ESC/Motor Features**



STEP 4: Select **Serial- based receiver** in **Receiver Mode**



If you are using SBus, iBus or a Spektrum Satellite, you will need to pick your Serial Receiver Provider. Follow below table:

RX Type	Serial Receiver Provider
DSM2 1024bit/22ms	SPEKTRUM1024
DSM2 2048bit/11ms	SPEKTRUM2048
DSMX 1024bit/22ms	SPEKTRUM1024
DSMX 2048bit/11ms	SPEKTRUM2048
FrSky RX	SBUS
Futaba RX	SBUS
FlySky RX	IBUS
Turnigy RX	IBUS

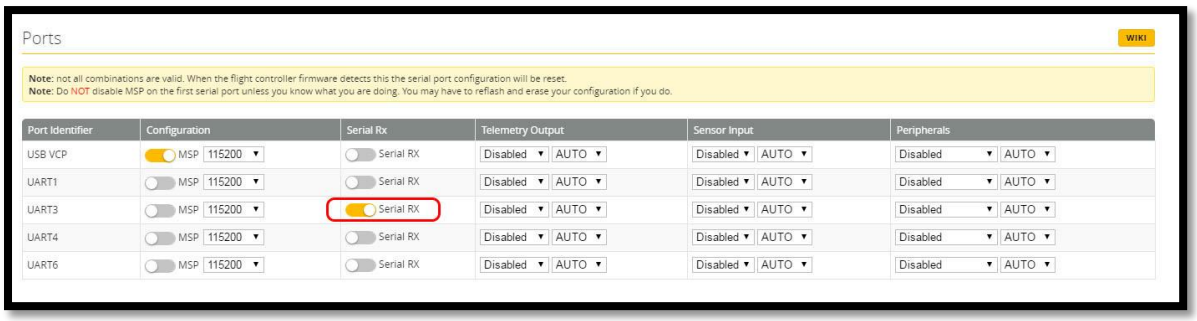
Click "**Save and Reboot**".

Tips

How to configure your Spektrum RX with your Flight Controller

In Betaflight Configurator:

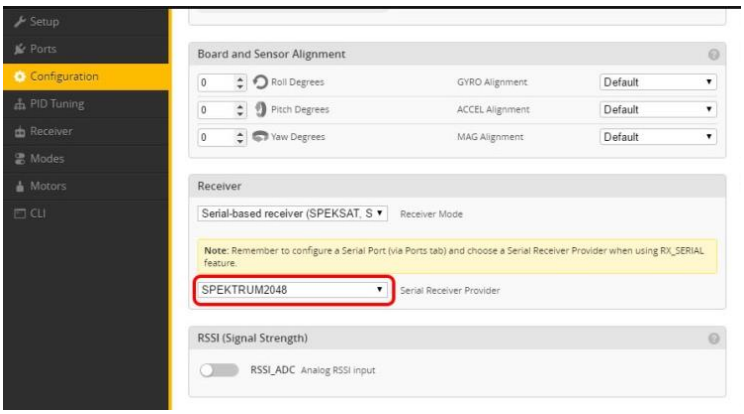
- Go to the **Ports** tab
- Enable "**Serial RX**" on the UART 3



Click "**Save**".

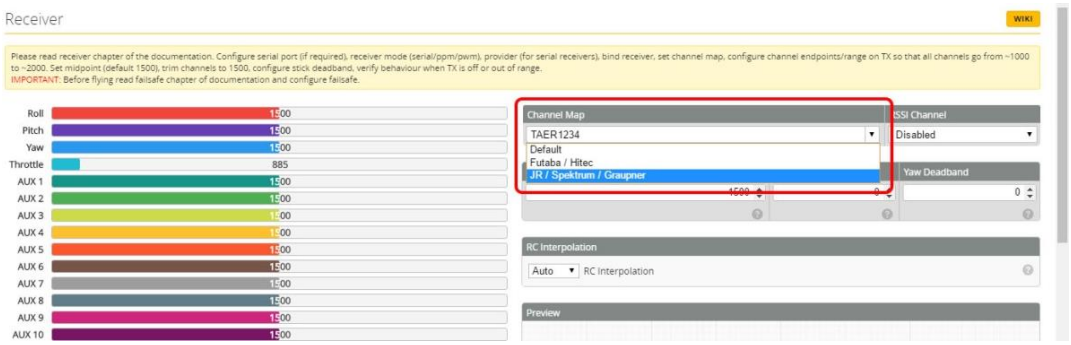
Then go to the **Configuration** tab. Under the section labeled "**Receiver**", pick **Serial Receiver Provider** compare with your **RX Type**.

RX Type	Serial Receiver Provider
DSM2 1024bit/22ms	SPEKTRUM1024
DSM2 2048bit/11ms	SPEKTRUM2048
DSMX 1024bit/22ms	SPEKTRUM1024
DSMX 2048bit/11ms	SPEKTRUM2048



Click “**Save**”.

Finally, go to the **Receiver** tab. Pull down the drop down that says “**Channel Map**” and select the “**JR / Spektrum / Graupner**” option.

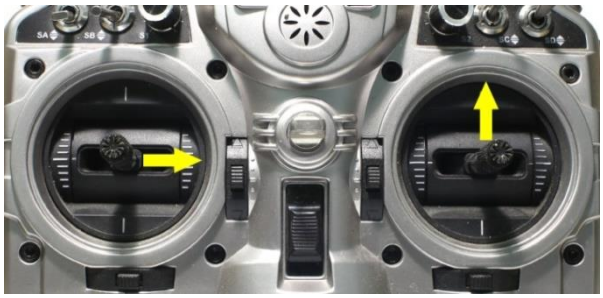


Once again, click “**Save**”.

How to open Piggy OSD menu by Transmitter

To access the in-built OSD menu in MW-OSD, disarm your quadcopter first.

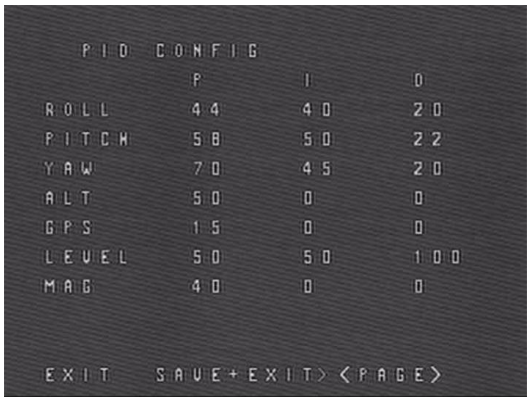
- THROTTLE MIDDLE
- YAW RIGHT
- PITCH FULL



To navigate through menu in the OSD:

- **PITCH/ROLL** sticks are used to navigate
- **YAW** stick is used to **adjust / change** values

OSD Menu Index:



- PID Config (Roll/Pitch/Yaw PID for many flight modes)
- RC Tuning (RC Rate, RC Expo, Pitch/Roll Rate, Yaw Rate, TPA (Throttle PID Att)
- Access all settings
- Voltage (Display voltage on/off, Adjust Voltage, Voltage alarm, Cells)
- RSSI (Display RSSI on/off etc)
- Current (Display Amp on/off, Adjust Amps)
- Advanced (Unit – Metric or Imperial, Signal – Pal or NTSC, Mag Calibration)
- Display (On/Off switches for Horizon, Sidebars, Scrolling bars, Throttle, GPS Coordinates, Sensors, Gimbal, Map Mode)
- Advanced (Unit, VREF, etc.)
- Alarms (Distance, altitude, timer …)
- Advance tuning (Profile, PID controller)
- Statistics (Fly time, Maximum Distance, Max Altitude, Max Speed, Flying time)

Thanks for using our product