

KOMBINI DSHOT VERSION

Flight Controller

USER MANUAL VERSION 1.2



Please contact us if you need further assistance: Tech support: <u>tech@furiousfpv.com</u> Sales support: <u>sales@furiousfpv.com</u> Website: <u>http://furiousfpv.com/</u>





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Change Log

v1.1

- Add guideline configuration OSD with TRUE VISION CONFIGURATOR V1.0
- New OSD Menu Index

v1.2

Update diagram connect with TBS Crossfire Micro Receiver



Introduction

Designed nothing short of revolutionary, the Furious KOMBINI Flight Controller steps up the competition with feature packed insanity that is ready to alter your FPV world.

Unlike any other system available today, the Furious KOMBINI provides an all in one solution that brings forth the ultimate in simplified sophistication. This all-encompassing FC solution utilizes industry leading technology that has never been seen in a system this compact and powerful - the ultimate end game for high powered FPV flight.

Cluttered & complex wiring? Never again. With an industry 1st gold plated PDB that is integrated within, the KOMBINI FC provides the ultimate in soldering ease with the highest grade of connectivity, allowing direct soldering points for motors, VTx, Receiver and FPV Camera. Rated with 150A of current protection @ 5S 18.5V input power, the KOMBINI is ready to push the boundaries of aggressive FPV flight.

Utilizing the very latest F3 chip processor with built in BetaFlight firmware, the Furious KOMBINI utilizes industry leading components with an included LC filter for the very best in signal reception. Add the 1A 5V BEC with a built in SBUS inverter & Spektrum Satellite port, and the KOMBINI FC stand alone amongst all the rest with a potent blend of race ready madness.

Sized at 36mm x 36mm, the compact footprint of the KOMBINI FC is the perfect application of race ready aggression, providing a Flight Controller experience second to none. This adhesion of performance, capability & simplicity is the apex of FPV flight, providing the end user with a flight experience that brings everything to the table in a zero compromise design.

For the pinnacle in simplicity, performance and cutting edge capability, the Furious KOMBINI is the feature packed FC system that is ready and waiting to dominate. Get yours today, and change the way you FPV.

WHAT'S NEW KOMBINI DSHOT VERSION?

- Remove PPM pin and add TX3 pin for the pinnacle in simplicity, performance
- Ready support Dshot protocol
- New component for BEC better
- New red color for PCB

Features

- Latest Generation F3 Processor Chip
- Simplicity Defined with Built In PDB
- Massive 150A PDB Current Protection
- LC Filter & 12V
- 800mA BEC for VTX







- 5S 18.5V Ready
- Heavy Duty 1.5A BEC @ 5V and 0.8A BEC @12V Output
- Ultra Compact Design for Ease of Installation
- Gold Plated Pads for the Very Best Connectivity
- Firmware Perfection via BetaFlight
- BLHeli Pass Through Setup
- Compact Sizing w/ 30.5mm x 30.5mm Mounting Holes
- Included Spektrum Satellite Port
- FrSky Telemetry, Ready & Waiting
- Full USB Support
- MPU6000 SPI Chip
- Weight: 7gr

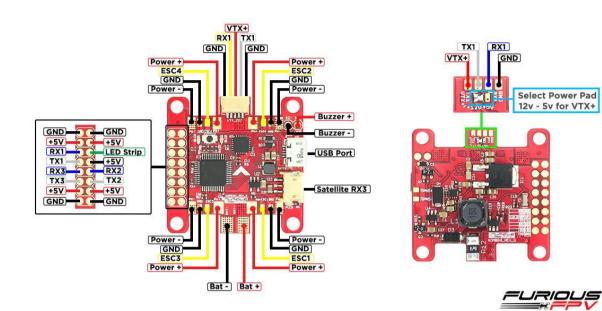




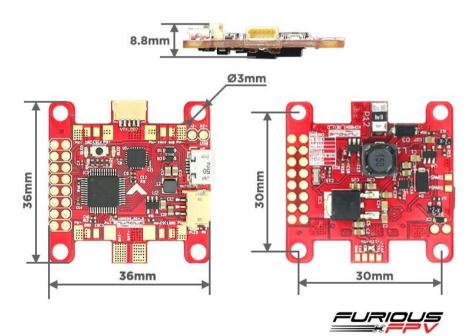


*

Board Layout



Dimensions





Connections

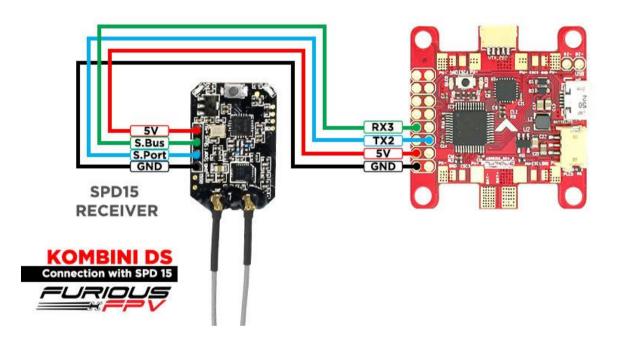
***WARNING:** Kombini DShot Version can support up to 5s Lipo battery but make sure other

devices also support it.

Connect with Receiver:

Using SPD15 Receiver:

Port Identifier	Configuration	Serial Rx	Telemetry Output	Sensor Input
USB VCP	MSP 115200 V	Serial RX	Disabled • AUTO •	Disabled V AUTO V
UART1	MSP 115200 •	Serial RX	Disabled • AUTO •	Disabled • AUTO •
UART2	MSP 115200 •	Serial RX	SmartPort • AUTO •	Disabled • AUTO •
UART3	MSP 115200 *	Serial RX	Disabled • AUTO •	Disabled • AUTO •

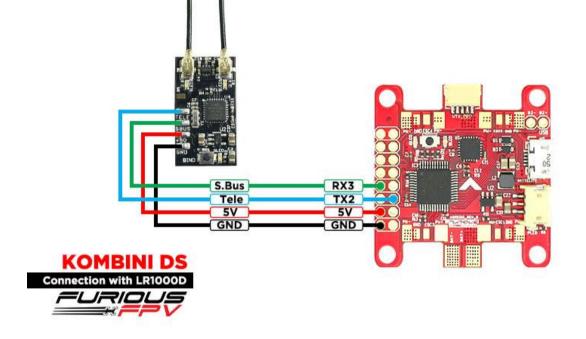


You can buy SPD15 Receiver right here: <u>https://goo.gl/FTnrpR</u>



Using LR1000D Receiver:

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 •
UART2	MSP 115200 V	Serial RX	SmartPort • AUTO •	Disabled • AUTO •
UART3	MSP 115200 T	Serial RX	Disabled • AUTO •	Disabled • AUTO •



You can buy LR1000D Receiver right here: <u>https://goo.gl/4Cr0Hl</u>

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

<mark>set sbus_inversion = OFF</mark>

<mark>save</mark>

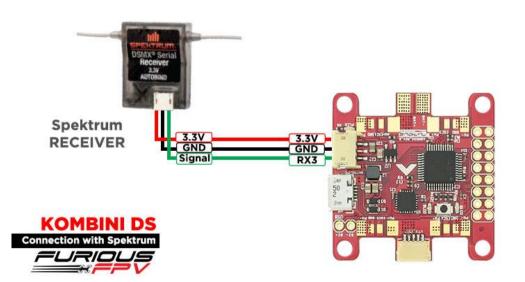


Using XSR FrSky Receiver:

Port Identifier	Configuration	Serial Rx	Telemetry Output	Sensor Input
JSB VCP	MSP 115200 🔻	Serial RX	Disabled • AUTO •	Disabled • AUTO •
JART1	MSP 115200 •	Serial RX	Disabled • AUTO •	Disabled • AUTO •
JART2	MSP 115200 V	Serial RX	SmartPort • AUTO •	Disabled • AUTO •
JART3	MSP 115200 •	Serial RX	Disabled • AUTO •	Disabled • AUTO •
XSR R	ECEIVER			
		S.Bus S.Port SV GND		

Using Spektrum Satellite Receiver:

Port Identifier	Configuration	Serial Rx	Telemetry Output	Sensor Input
USB VCP	MSP 115200 ▼	Serial RX	Disabled • AUTO •	Disabled • AUTO •
UART1	MSP 115200 V	Serial RX	Disabled • AUTO •	Disabled • AUTO •
UART2	MSP 115200 •	Serial RX	Disabled • AUTO •	Disabled • AUTO •
UART3	MSP 115200 •	Serial RX	Disabled • AUTO •	Disabled • AUTO •



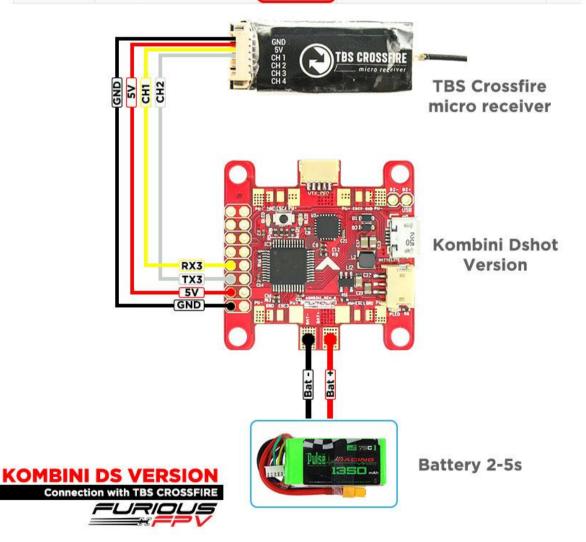


Using TBS Crossfire Micro Receiver:

Ports

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.

ldentifier	Configuration/MSP	Serial Rx	Telemetry Output
USB VCP	115200 🔻		Disabled V AUTO V
UART1	115200 •		Disabled v AUTO v
UART2	115200 •		Disabled v AUTO v
UART3	115200 •		Disabled V AUTO V

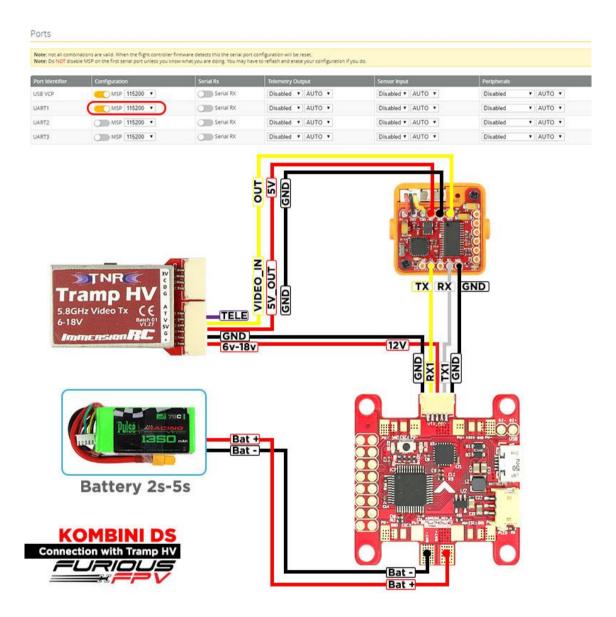




Connect with Video Transmitter:

Using Tramp HV:

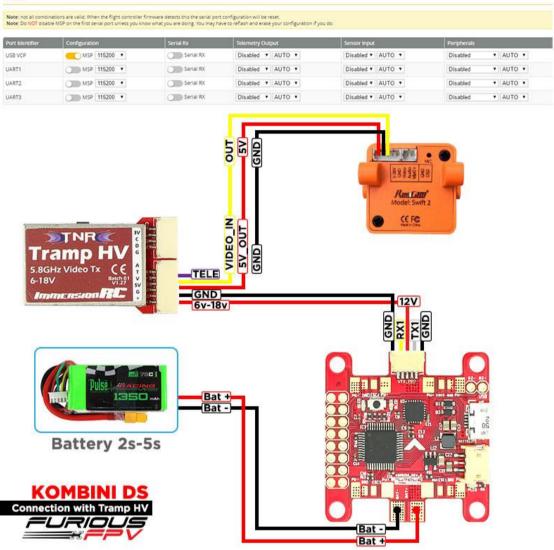
• With Piggy V2 OSD





• With Only Camera

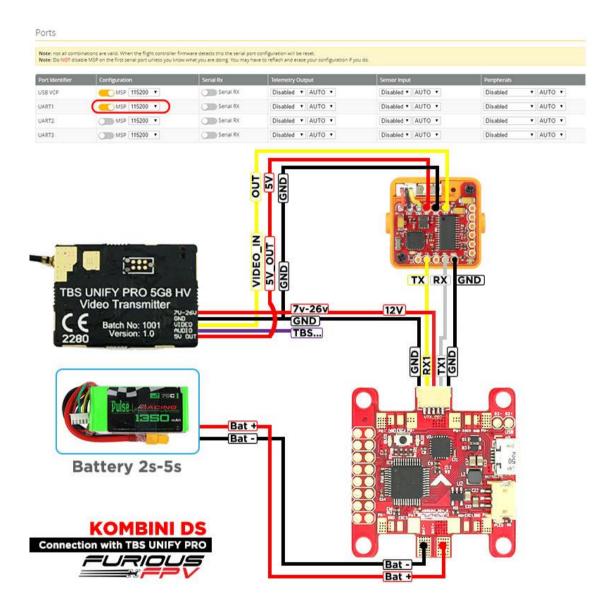
Ports





Using TBS Unify Pro:

• With Piggy V2 OSD





• With Only Camera

Ports

nt Identifier	Configuration	Serial Rx	Telemetry Output	Sensor Input	Peripherals
B VCP	MSP 115200 •	Serial RX	Disabled • AUTO •	Disabled • AUTO •	Disabled • AUTO •
RTI	MSP 115200 •	Serial RX	Disabled • AUTO •	Disabled • AUTO •	Disabled • AUTO •
RT2	MSP 115200 •	Serial RX	Disabled • AUTO •	Disabled • AUTO •	Disabled • AUTO •
RT3	MSP 115200 •	Serial RX	Disabled • AUTO •	Disabled • AUTO •	Disabled • AUTO •
at i			VIDEO_IN SV_OUT GND	Model: Swift : • CEPC • Mathione	
TBS	UNIFY PRO 5G8 Video Transmitter		7v-26v		
твз С 228	Video Transmitter				
C	Video Transmitter		TBS		
228	Video Transmitter Batch No: 1001 Version: 1.0	No con No con No con Electronic No con Bat Bat	TBS		



Using FX FX799T:

• With Piggy V2 OSD

lote: Do NOT disab	nations are valid. When the flight controller f ie MSP on the first serial port unless you kn	firmware detects this the serial po- ow what you are doing. You may h	rt configuration will be reset. ave to reflash and erase your configuration if y	ou do.		
ort identifier	Configuration	Serial Rx	Telemetry Output	Sensor Input	Peripherals	
8 VCP	MSP 115200 ¥	Serial RX	Disabled • AUTO •	Disabled • AUTO •	Disabled • AUTO •	
RT1	(MSP 115200 •)	Serial RX	Disabled • AUTO •	Disabled • AUTO •	Disabled • AUTO •	
RT2	MSP 115200 •	Serial RX	Disabled • AUTO •	Disabled • AUTO •	Disabled • AUTO •	
RT3	MSP 115200 •	Serial RX	Disabled • AUTO •	Disabled • AUTO •	Disabled • AUTO •	
	Real Provide Action of the second sec	SV OUT GND VIDEO_II GND 7v-20v Bat + Bat -		12V		
	MBINI DS					



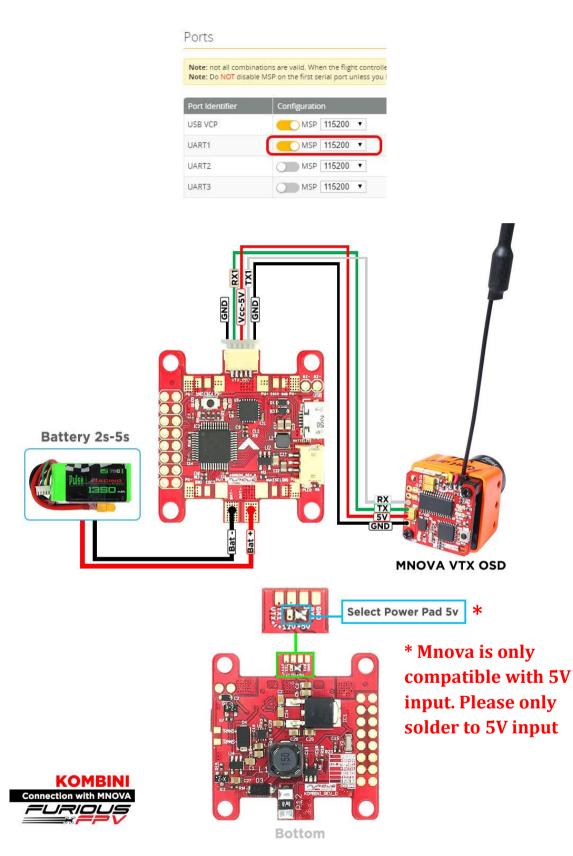
• With Only Camera

Ports

Port Identifier	Configuration	Serial Rx	Telemetry Output	Sensor Input	Peripherals
SB VCP	MSP 115200 •	Serial RX	Disabled • AUTO •	Disabled • AUTO •	Disabled • AUTO •
ART1	MSP 115200 •	Serial RX	Disabled • AUTO •	Disabled • AUTO •	Disabled • AUTO •
ART2	MSP 115200 •	Serial RX	Disabled • AUTO •	Disabled • AUTO •	Disabled • AUTO •
IART3	MSP 115200 •	Serial RX	Disabled • AUTO •	Disabled • AUTO •	Disabled • AUTO •
	Battery 2s-5	SV OUT GND VIDEO_I GND 7v-20v			



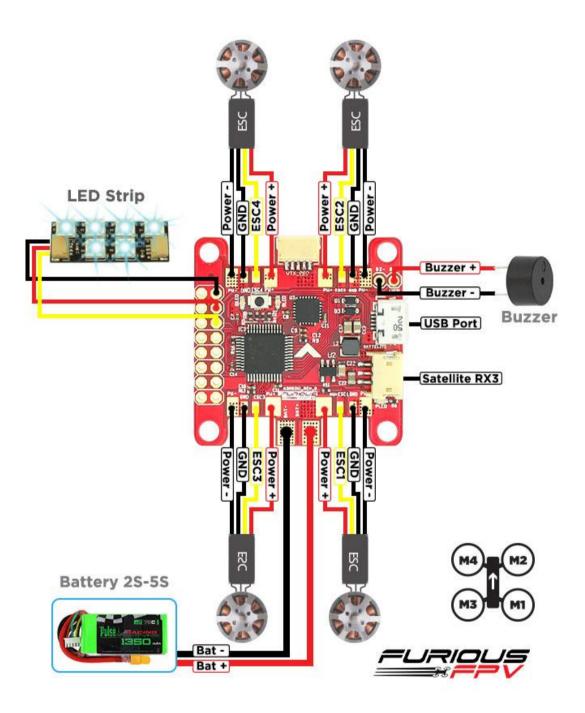
Connect with stack Mnova and Runcam :



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



Connect with other devices:

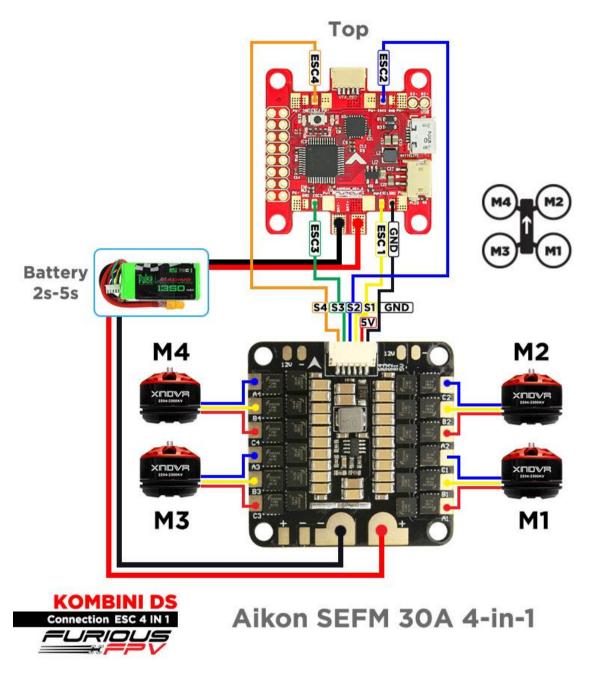


You can buy LED STRIP right here: <u>https://goo.gl/TXwSwI</u>



Connect with ESC 4 in 1:

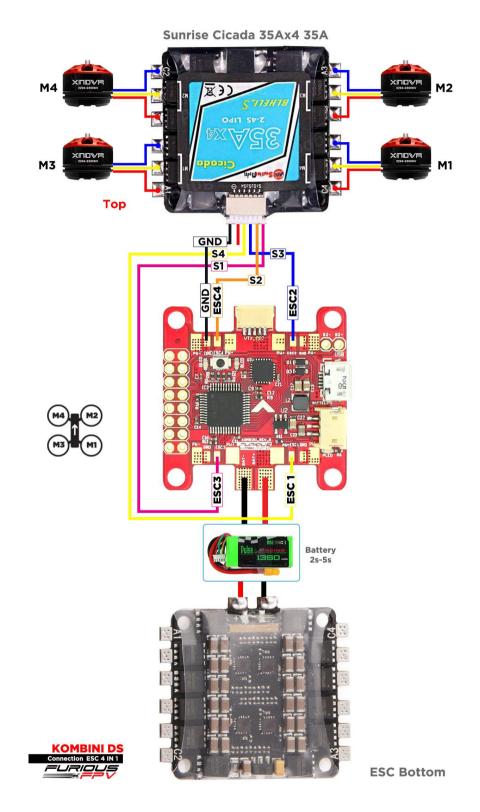
Using Aikon SEFM 30A:



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



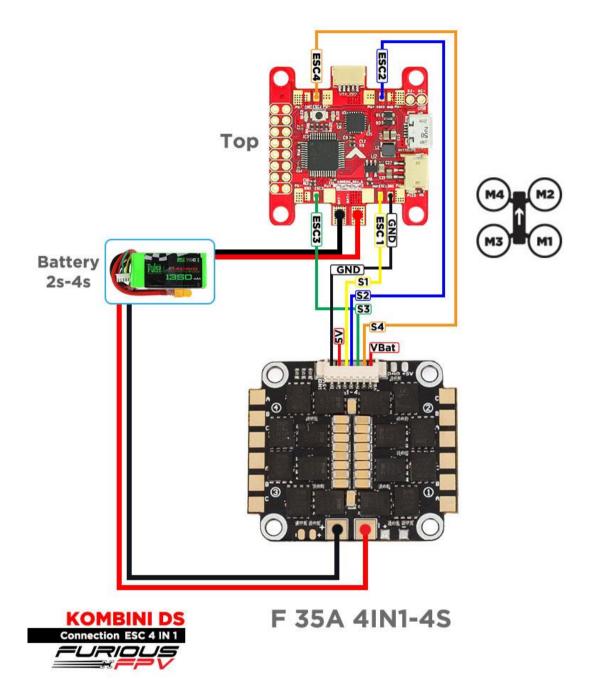
Using Cicada 35x4 35A:



You can buy ESC Sunrise Cicada 35x4 35A right here: <u>https://goo.gl/s080al</u>



Using T-Motor F 35A 4IN1-4S:



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



Basic setup

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

STEP 1: Connect Kombini DS with the 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 2 to use S.Port of Receiver.

Ports					WIK
	ations are valid. When the flight controller fi e MSP on the first serial port unless you kno		: configuration will be reset. we 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 v AUTO v	Disabled V AUTO V	Disabled • AUTO •
UART1	MSP 115200 •	Serial R	Disabled • AUTO •	Disabled • AUTO •	Disabled • AUTO •
UART2	MSP 115200 T	Serial F	SmartPort 🔻 AUTO 🔻	Disabled V AUTO V	Disabled • AUTO •
UART3	MSP 115200 V	Serial RX	Disabled V AUTO V	Disabled V AUTO V	Disabled V AUTO V

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

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

lete: Not all combinations of features are valid. When the flight controller firmware detects invalid feature combinat dete: Configure serial ports before enabling the features that will use the ports.	ions conflicting features will be disab	led.		
vere: compute servar ports detore envolving the reactives that will use the ports.	ESC/Motor Featur			
Quad X •	DSHOT600 • PWM ONESHOT125 ONESHOT42 MULTISHOT	ESC/M	tor protocol Don't spin the motors when armed gardless of throttle value (When arming via AUX channe)	6
	BRUSHED DSHOT150 DSHOT300 DSHOT500	e Throtte	Value (percent)	6

STEP 4: Select Serial- base	d receiver in	Receiver Mode
-----------------------------	---------------	----------------------

	1					
	Board and Sensor Alignment	Board and Sensor Alignment			Accelerometer Trim	
 Configuration 	0 CRoll Degrees	GYRO Alignment	Default	•	0	Accelerometer Roll
	0 0 Pitch Degrees	ACCEL Alignment	Default		0	Accelerometer Pitch
	0 🔹 🖨 Yaw Degrees	MAG Alignment	Default	•		
B Receiver					_	
🕈 Modes	Receiver				Batter	y Voltage
	Serial-based receiver (SPEKSAT, S • Receiver Mode			-	VBAT Battery voltag	
r Servos	Note: Remember to configure a Serial Port ((a Ports tab) and choose a Serial Receive	er Provider when using RX_S	ERIAL	Onboa	erd ADC . Ba
	feature.				3,3	Cell Volta
	SBUS	Serial Receiver Provider			4,3	Maximum Cell Volta
Tethered Logging	RSSI (Signal Strength)			0	3,5	Warning Cell Voltag
				Θ	110	Voltage Scale
	RSSI_ADC Analog RSSI Input					



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

RX Туре	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

	ations are valid. When the flight controller fi				
Note: Do NOT disab	e MSP on the first serial port unless you kno	ow what you are doing. You may h	ave to reflash and erase your configuration if yo	ou do.	
Port Identifier	Configuration	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	──── MSP 115200 ▼	Serial RX	Disabled 🔻 AUTO 🔻	Disabled V AUTO V	Disabled • AUTO •
UART1	MSP 115200 V	Serial RX	Disabled v AUTO v	Disabled V AUTO V	Disabled • AUTO •
UART2	MSP 115200 •	Serial RX	Disabled • AUTO •	Disabled V AUTO V	Disabled • AUTO •
UART3	MSP 115200 T	Serial RX	Disabled V AUTO V	Disabled V AUTO V	Disabled V AUTO V

Click "Save".



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

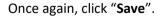
RX Туре	Serial Receiver Provider
DSM2 1024bit/22ms	SPEKTRUM1024
DSM2 2048bit/11ms	SPEKTRUM2048
DSMX 1024bit/22ms	SPEKTRUM1024
DSMX 2048bit/11ms	SPEKTRUM2048

	Board and Sensor Alignme	ent	6
Configuration	0 🗘 🗘 Roll Degrees	GYRO Alignment	Default 🔻
	0 🗘 🥊 Pitch Degrees	ACCEL Alignment	Default 🔻
d Receiver	0 🛟 🖨 Yaw Degrees	MAG Alignment	Default •
2 Modes			
🛔 Motors	Receiver		
	Serial-based receiver (SPE	KSAT, S Receiver Mode	
	Note: Remember to configure feature. SPEKTRUM2048	e a Serial Port (via Ports tab) and choose a Serial Receiv	er Provider when using RX_SERIAL
	RSSI (Signal Strength)		6
	RSSI_ADC Analog	RSSI input	

Click "Save".

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

					-
ease read receiver chapter of the o ~2000. Set midpoint (default 1500	locumentation. Configure serial port (if required), receiver modi), trim channels to 1500, configure stick deadband, verify behav	e (serial/ppm/pwm), provider (for serial receivers), bind receiver, set channel map, configur jour when TK is off or out of range.	e channel endpoints/range on T	K so that all channels go fi	rom ~1000
PORTANT: Before flying read fails	fe chapter of documentation and configure failsafe.				
Roll	1 <u>5</u> 00	Channel Map		ISSI Channel	
Pitch	1 <u>E</u> 00	TAER1234		Disabled	
Yaw	1500	Default	1		
ottle	885	Futaba / Hitec		Yaw Deadband	
UX 1	1500	JR / Spektrum / Graupner		Taw Deadband	
JX 2	1500	1600 (- II.	0
JX 3	1200	6	6	3	6
UX 4	1,00				
UX 5	1500	RC Interpolation			
UX 6	1500	Auto RC Interpolation			6
UX 7	1E00				
UX 8	1500				_
JX 9	1500	Preview			
JX 10	1500				





How to turn on bind mode

NOTE: Plug battery to the quad during setup.

Connect quadcopter to the computer and go to Command-line interface (CLI) tab.

🖌 Setup	
💅 Ports	Note: Leaving CLI tab or pressing Disconnect will automatically send "exit" to the board. With the latest firmware this will make the co
Configuration	ar
슈 PID Tuning	# set spektrum_sat_bind=9
🗄 Receiver	spektrum_sat_bind_set_to_9 # set_spektrum_sat_bind_autorst=0
🖀 Modes	spektrum_sat_bind_autorst set to 0 #
🛓 Motors	
🖂 CU	

Remember to type "save" and hit enter after these commands have been executed.

Type in the commands as pictured above, or copy and paste them from below:

```
set spektrum_sat_bind=9
```

```
set spektrum_sat_bind_autorst=0
```

save

NOTE – if you are using a DSM2 receiver, change "set spektrum_sat_bind=9" to

"set spektrum_sat_bind=5"

Reboot your Flight Controller by unplugging the Flight Controller from your PC then plugging it back in.

Your RX should go into bind mode by now as the LED on the RX will be blinking rapidly.



Guideline configuration OSD with TRUE VISION CONFIGURATOR V1.0

Serial Pass Through don't need CLI in Betaflight

DOWNLOAD: Guideline install and configuration TRUE VISION CONFIGURATOR

- **STEP 1: Connect** Kombini DS (**connected** with VTX/OSD) with PC via USB cable. Then plug battery for FC.
- STEP 2: Open True Vision Configurator on google chrome.
- **STEP 3:** Please select **Port COM (1)** correlative with your device, then select **UART 1 (2)** using for OSD.



STEP 4: Plug Battery for Kombini DS, then click **Connect icon** on True Vision interface to connect and configuration OSD layout and setting.



STEP 5: After configuration device please click **WRITE** to save your configuration.



How to open VTX/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:	
-----------------	--

WARNING	PID CONFIG/PROFILE	1
	P 1	D
INNOVA-V4 IS LOCKED, ENTER	ROLL 44 40	30
CALLSIGN TO UNLOCK,	PITCH 58 50	35
VTX POWER CAN ONLY BE Changed once unlocked	YAW 70 45	20
CHANGED ONCE ONLOCKED	VTX CONFIG	
	PIT MODE	ON
	VTX POWER	25
	VTX SHUTDOWN	NONE
	VTX BAND	A
10 Products of Table 1998.	VTX CHANNEL	1
 Substantia de la secolaria 	EXIT SAVE+EXIT> < PAG	E>

- PID Config/Profile 1/2 or 3:
 - Roll/Pitch/Yaw PID for many flight modes
- VTx Config:
 - Pit mode: On/Off
 - VTx Power: 25/200
 - VTx Shutdown: None/AUX1/AUX2/AUX3/AUX4
 - VTx Band: A/B/E/F/C/U/O/L/H
 - VTx Channel: 1/2/3/4/5/6/7/8
- RC Tuning (RC Rate, RC Expo, Pitch/Roll Rate, Yaw Rate, TPA (Throttle PID Att), Throttle Mid, Throttle Expo, TPA Breakpoint, Yaw RC Expo)
- OSD Config (Display Main Volts, Display Amps, Display mAH, Display RSSI, Horizon, Main Volts Alarm, mAH X100, Callsign)
- Statsistics (Fly Time, mAH Used, Max Amps, Voltage)





Thanks for using our product