

Link do produktu: <https://dronexpert.eu/kontroler-lotu-betafpv-toothpick-f405-2-4s-aio-brushless-flight-controller-20a-blheli-32-v4-p-15267.html>



Kontroler lotu BetaFPV Toothpick F405 2-4S AIO Brushless Flight Controller 20A (BLHELI_32) V4

Cena brutto	399,00 zł
Cena netto	324,39 zł
Dostępność	Aktualnie niedostępny
Kod producenta	01040008_2
Producent	BetaFPV

Opis produktu

The new ultralight Toothpick F405 2-4S AIO 20A FC is finally released! Compared with the V3 version, the new V4 board updates the F411 chip to F405. It can handle 20A of continuous current and up to 4S! Strong performance lets you break through the limits of your quad and explore more possibilities in the flight. Highly recommend using it on Beta95X V3 and Beta95X V3 HD Digital VTX to get a smooth flight.

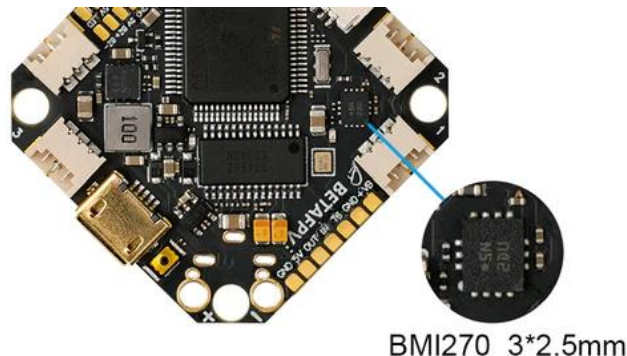
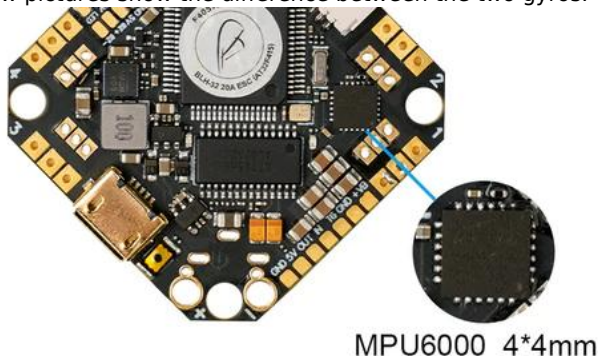
Note: The MPU6000 gyro is not available due to rising prices and lack of stock. We decide to change the gyro to **BMI270** for the Toothpick series flight controller to continuously provide the product service.



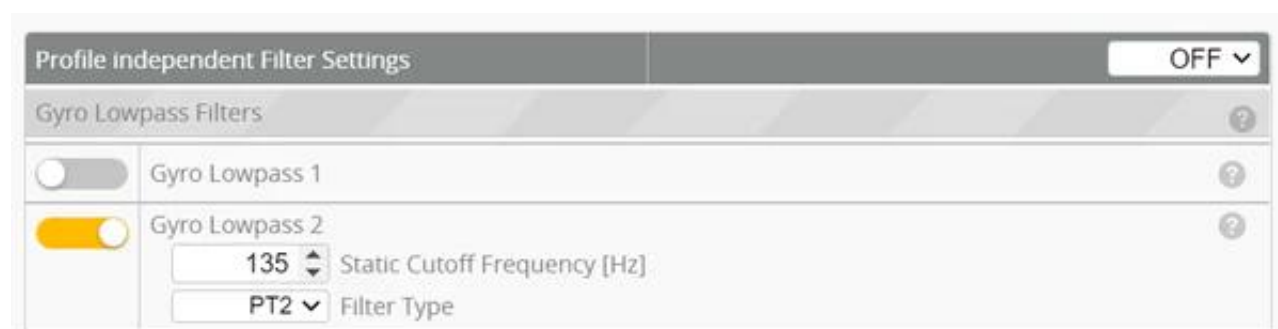
Know More About BMI270

BMI270 gyro works great in most cases, especially in low frequency. But it will need more software filters and is sensitive in

high frequency. This can be solved by adjusting filter settings in PID tuning. You can flash our CLI file or set gyro lowpass 2 at 135Hz and choose filter type at PT2 in settings. This will help BMI270 gyro to get a similar performance as MPU6000 gyro. Below pictures show the difference between the two gyros.

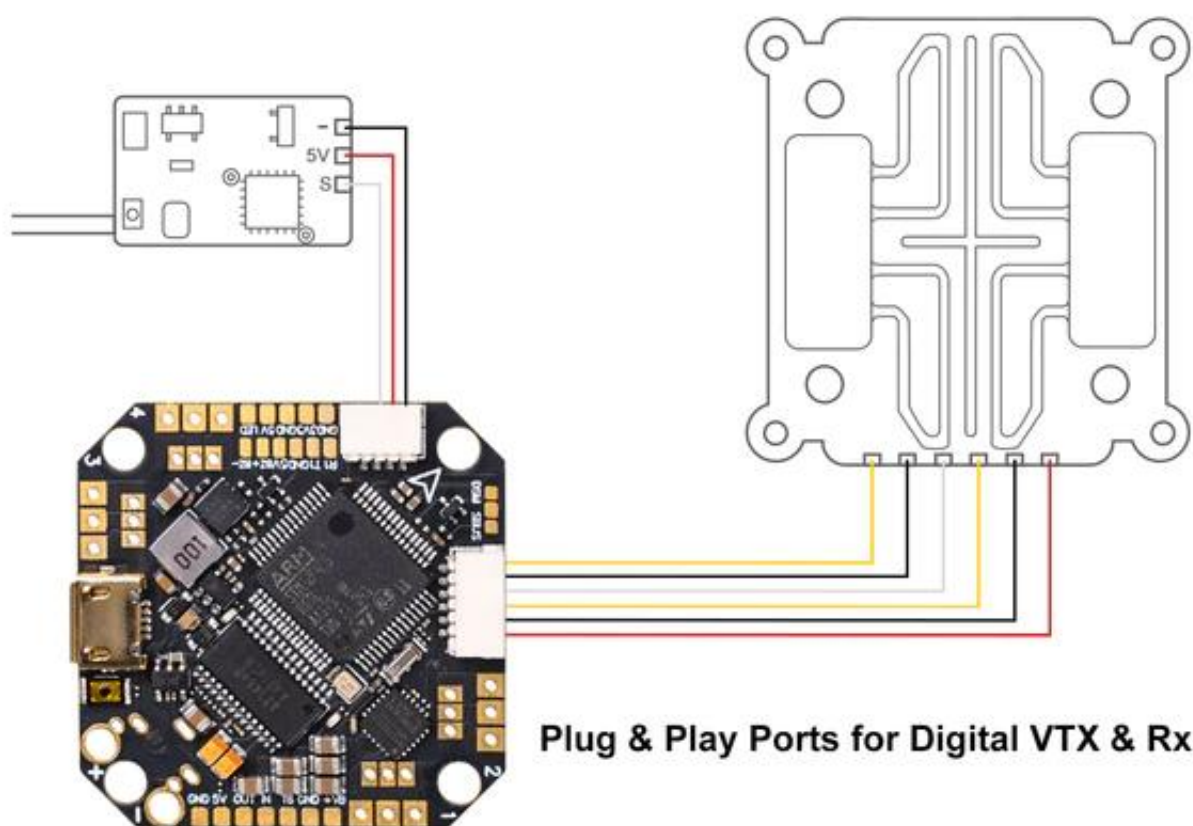


[Download CLI File & FC Firmware here.](#)

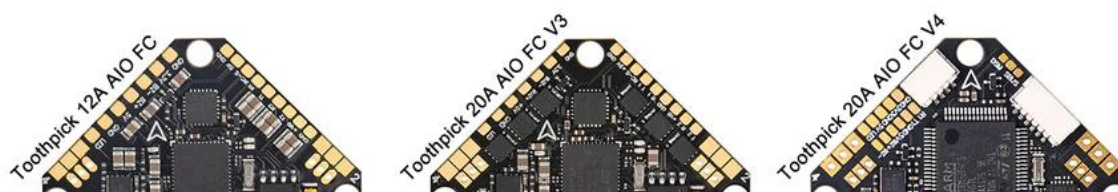


Bullet Point

- Updated the F411 chip to F405, this new 20A AIO board handles a continuous current of 20A and a burst current of 22A, bringing pilots a more stable flight.
- BETA FPV 12A/20A AIO flight controller reserves the same UART ports layout, UART3 for Rx, UART4 for DJI, UART6 for SmartAudio and the Spare UART1, more convenient for pilots to solder.
- Come with 2 integrated Plug & Play Ports for both digital VTX and Rx, less solder work needed, easy to install.
- Come with a 26mm x 26mm whoop mounting pattern, this board can be added to both the toothpick drone and the cinematic whoop quadcopter like Beta95X V3 and Beta95X V3 HD Digital VTX.



Comparison of Toothpick 12A AIO FC, Toothpick 20A AIO FC and Toothpick F405 20A AIO FC V4



Firmware:	F411 Chip	F411 Chip	F405 Chip
Weight:	6.20g	6.63g	5.76g
Continue current:	12A	20A	20A
Peak current:	15A	25A	22A
VTX & RX Pad:	Solder Needed	Solder Needed	Plug & Play
Motor:	080X,110X,120X	120X,130X,140X	11XX,12XX,14XX

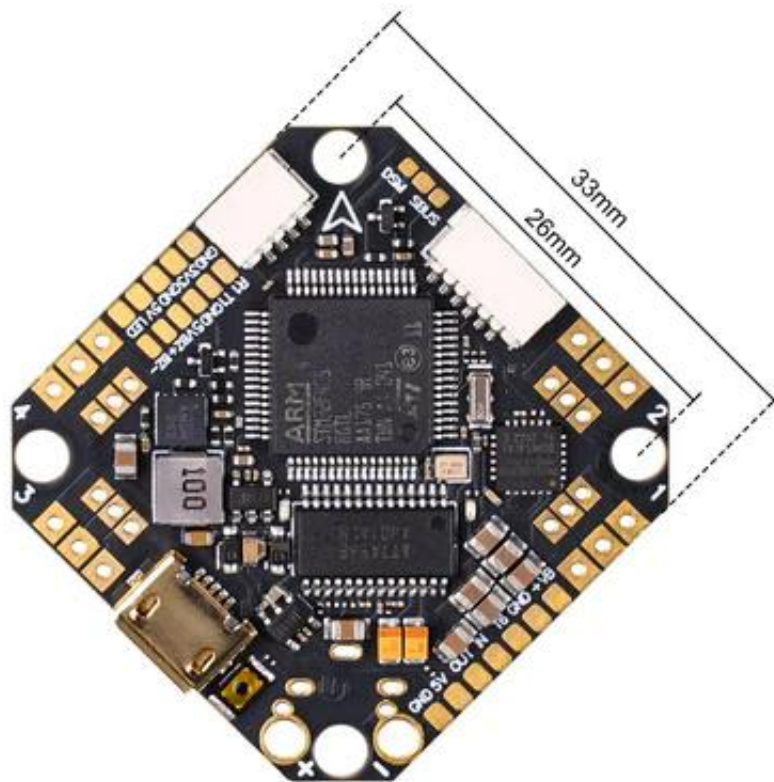
Specifications of FC

- CPU: STM32F405RGT6
- Six-Axis: BMI270
- Size: 26mm x 26mm, whoop mounting pattern
- Firmware version: Batefight-BETAFPV405-4.2.X
- OSD: Built-in BetaFlight OSD (STM32 controls OSD chip over SPI in DMA mode)
- Receiver: Support Frsky XM/XM+ Receiver/ Futaba Receiver/ Flysky Receiver/ TBS Crossfire Receiver/DSMX Receiver
- Connector: XT30, it also can be changed to XT60 if pilots need it.

- Weight: 5.76g

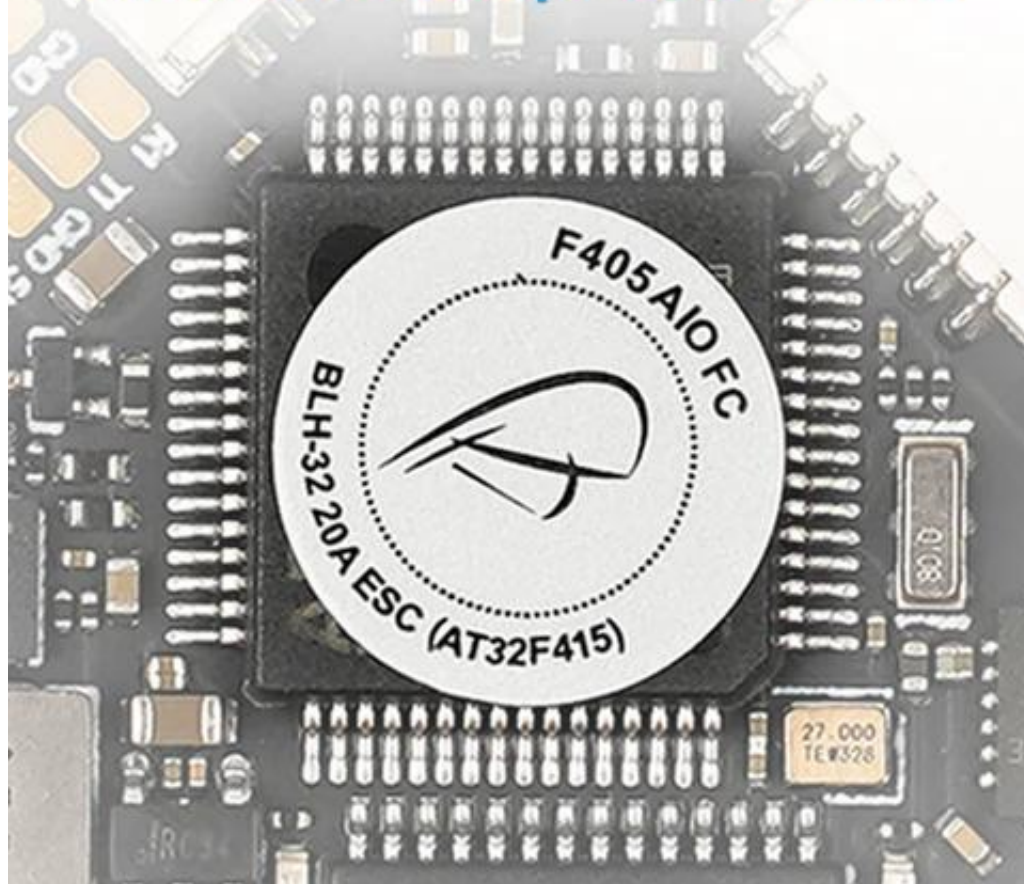
Specifications of ESC

- Support PWM, Oneshot125, Oneshot42, Multishot, Dshot150, Dshot300, Dshot600
- Input voltage: 2S-4S Lipo
- Continuous current: 20A
- Peak current: 22A
- Firmware: BLHELI-32



Please Note: The chip of F405 V4 flight controller's ESC has changed to AT32F415 from STM32F105 due to shortage. While the AT32F415 is applicable to the ESC firmware version BETA FPV_20A_AT32.

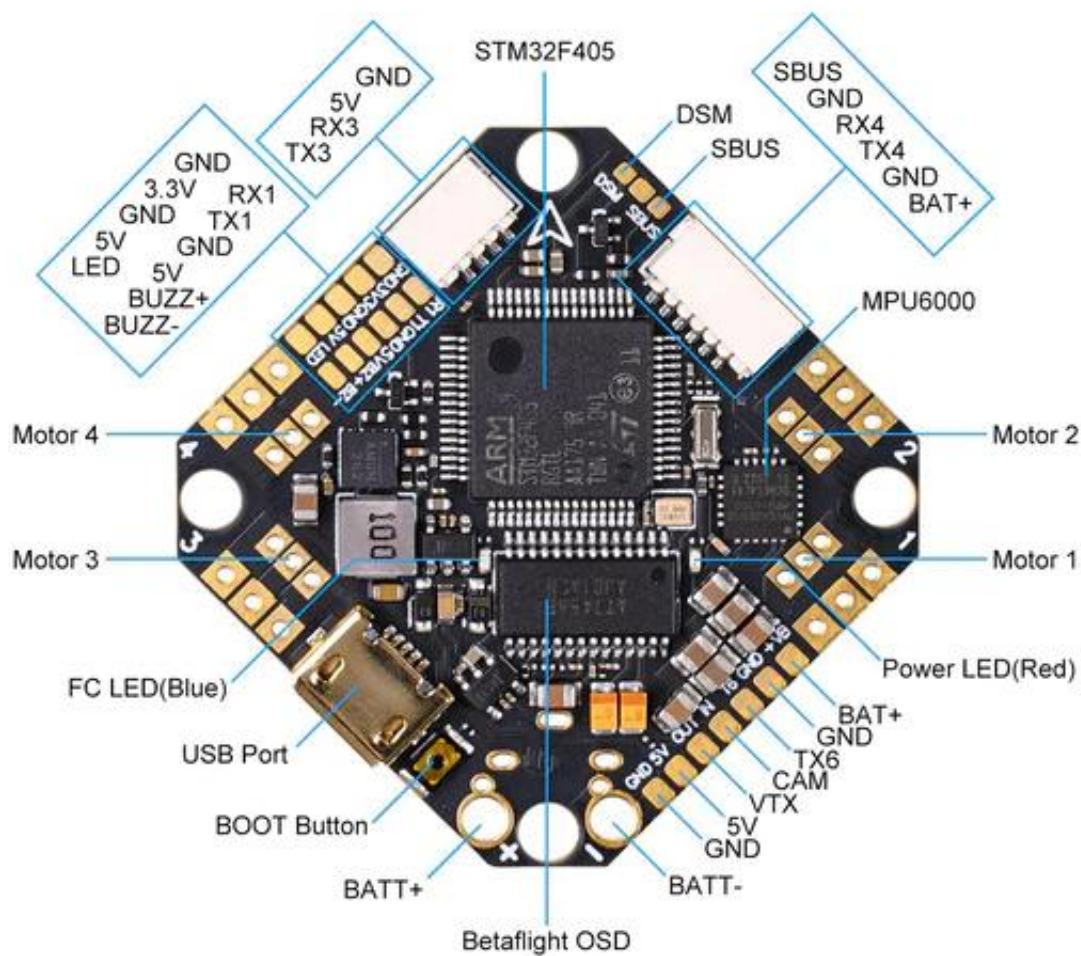
New ESC Chip: AT32F415



Recommended Parts

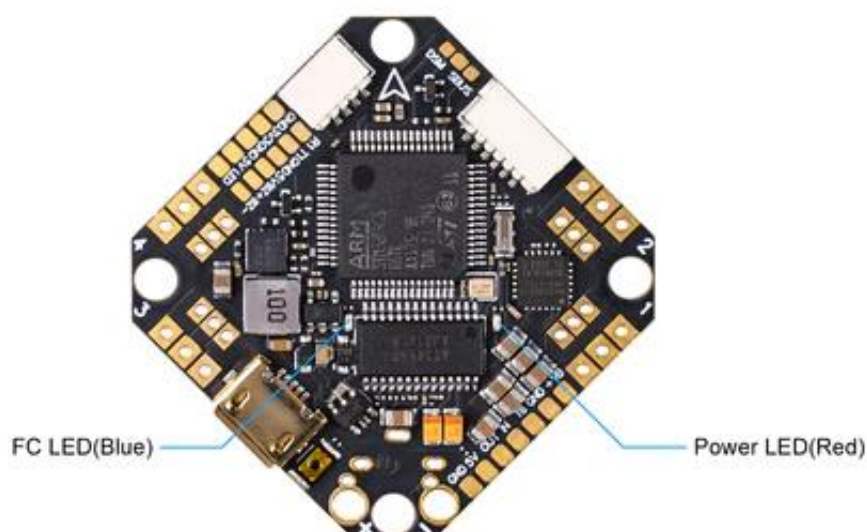
- Frame: Beta95X V3 Frame Kit
- Motors: 1106 3800KV Brushless Motor
- Props: Gemfan D63 5-Blades Props
- VTX: M02 25-250mW 5.8G VTX
- Antenna: Air 5.8GHz Antenna
- Battery: 450mAh 4S battery

Diagram for Toothpick F405 20A AIO FC V4



Status LED

There are 2 LEDs on the bottom of the board to indicate the status, including the Power LED (Red), FC LED(Blue).



LED	Status	Description
Power LED (Red)	Solid	Power on

FC LED (Blue)

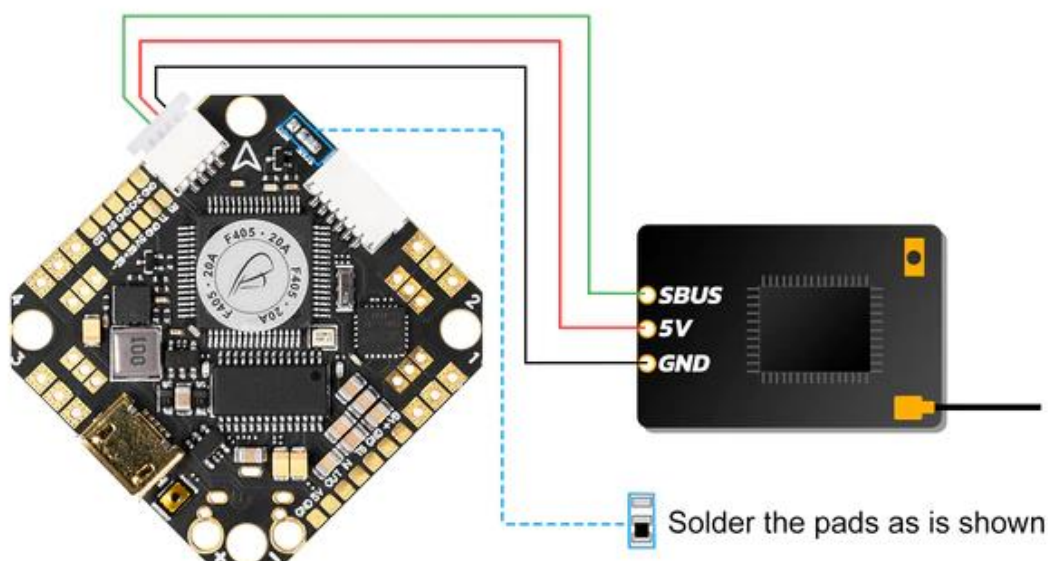
Solid

Motor Armed

How to Connect the External Rx to Toothpick F405 20A AIO FC V4

The new AIO board has integrated the Plug & Play Port for the external Rx, and there will be a 4-Pin connector for Rx in the package. Thus, we highly recommend pilots to use pin-connect to save the solder work.

SBUS Protocol RX



In the Ports tab, you need to set UART3 as the Serial RX, make sure no other options are enabled for that UART.

Identifier	Configuration/MSP	Serial Rx
USB VCP	<input checked="" type="checkbox"/> 115200 ▼	<input type="checkbox"/>
UART1	<input type="checkbox"/> 115200 ▼	<input type="checkbox"/>
UART3	<input type="checkbox"/> 115200 ▼	<input checked="" type="checkbox"/>

In Configuration tab, set "Serial-based Receiver" as the Receiver Mode, and set "SBUS" as the Serial Receiver Provider.

Receiver

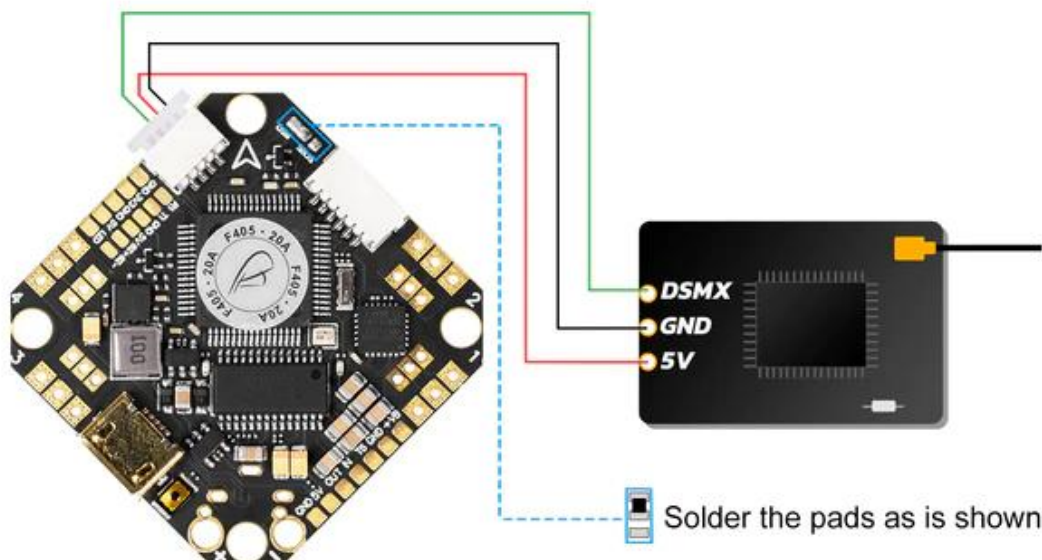
Serial-based receiver (SPEKSAT, §) Receiver Mode

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

SBUS Serial Receiver Provider

* SBUS Protocol RX: Frsky XM+ / Futaba AC900 / Flysky RX2A Pro

DSMX Protocol RX



In the Ports tab, you need to set UART3 as the Serial RX, make sure no other options are enabled for that UART.

Identifier	Configuration/MSP	Serial Rx
USB VCP	<input checked="" type="checkbox"/> 115200 ▼	<input type="checkbox"/>
UART1	<input type="checkbox"/> 115200 ▼	<input type="checkbox"/>
UART3	<input type="checkbox"/> 115200 ▼	<input checked="" type="checkbox"/>

In Configuration tab, set "Serial-based Receiver" as the Receiver Mode, and set "SPEKTRUM2048" as the Serial Receiver Provider.

Receiver

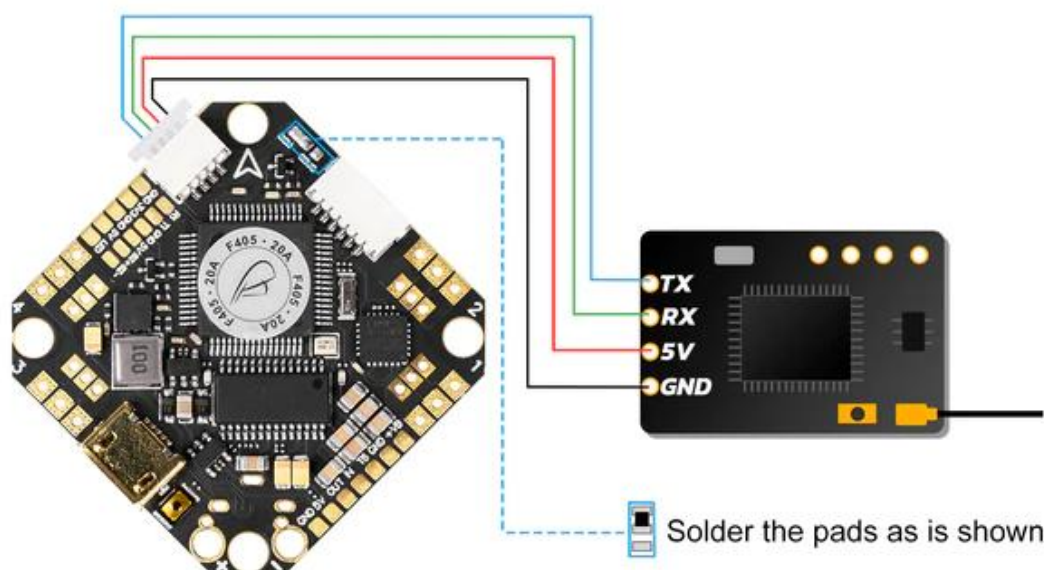
Serial-based receiver (SPEKSAT, S) Receiver Mode

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

SPEKTRUM2048 Serial Receiver Provider

* DSMX Protocol RX: DSMX

CRSF Protocol RX



In the Ports tab, you need to set UART3 as the Serial RX, make sure no other options are enabled for that UART.

Identifier	Configuration/MSP	Serial Rx
USB VCP	<input checked="" type="checkbox"/> 115200 ▼	<input type="checkbox"/>
UART1	<input type="checkbox"/> 115200 ▼	<input type="checkbox"/>
UART3	<input type="checkbox"/> 115200 ▼	<input checked="" type="checkbox"/>

In Configuration tab, set "Serial-based Receiver" as the Receiver Mode, and set "CRSF" as the Serial Receiver Provider.

Receiver


Serial-based receiver (SPEKSAT, S) Receiver Mode

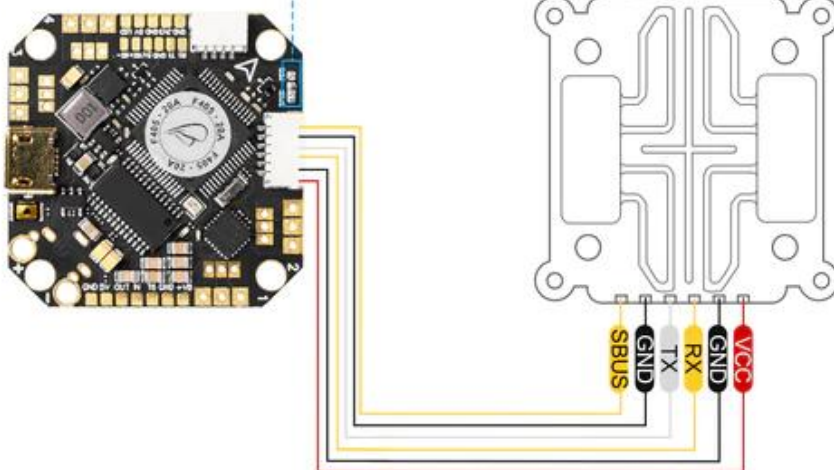
Note: Remember to configure a Serial Port (via Ports tab) and choose a Serial Receiver Provider when using RX_SERIAL feature.

CRSF Serial Receiver Provider

* CRSF Protocol RX: TBS Nano

Digital HD Camera

 Solder the pads as is shown



In the Ports tab, you need to set UART4 as the Configuration/MSP, and set UART3 as the Serial RX. Make sure no other options are enabled for that UART.

Identifier	Configuration/MSP	Serial Rx
USB VCP	<input checked="" type="checkbox"/> 115200 ▼	<input type="checkbox"/>
UART1	<input type="checkbox"/> 115200 ▼	<input type="checkbox"/>
UART3	<input type="checkbox"/> 115200 ▼	<input checked="" type="checkbox"/>
UART4	<input checked="" type="checkbox"/> 115200 ▼	<input type="checkbox"/>

In Configuration tab, set "Serial-based Receiver" as the Receiver Mode, and set "SBUS" as the Serial Receiver Provider.

Receiver

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

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

SBUS ▼ Serial Receiver Provider

Note: The HD digital VTX has an integrated SBUS receiver which works with the DJI radio. If you are using an external receiver, then you do not need to wire SBUS to the digital VTX. Instead, connect the external receiver as indicated above.

Package

- 1 * Toothpick F405 20A AIO FC V4
- 1 * Cable Pigtail (XT30)
- 4 * M2x10mm screws
- 4 * M2 nuts
- 4 * Anti-vibration rubber dampers
- 4 * Motor Pluggable Pins
- 1 * 6-Pin Connector for Digital VTX
- 1 * 4-Pin Connector for Rx

