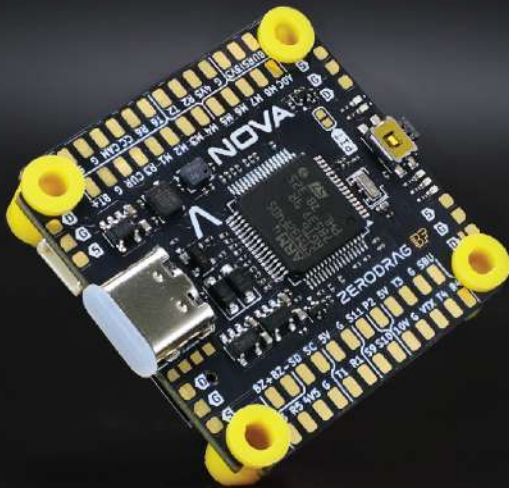


ZERODRAG NOVA F4



USER MANUAL

VERSION 1.0
21/05/2025

NOVA F4

INDEX		
CONTENT		PAGE NO.
1	Product Description	3
2	Specifications	3
3	In The Box	4
4	Layout	5
5	Connections	7
6	Pit Mode	22
7	USB Extension	23
8	Firmware	24
9	Contact	24

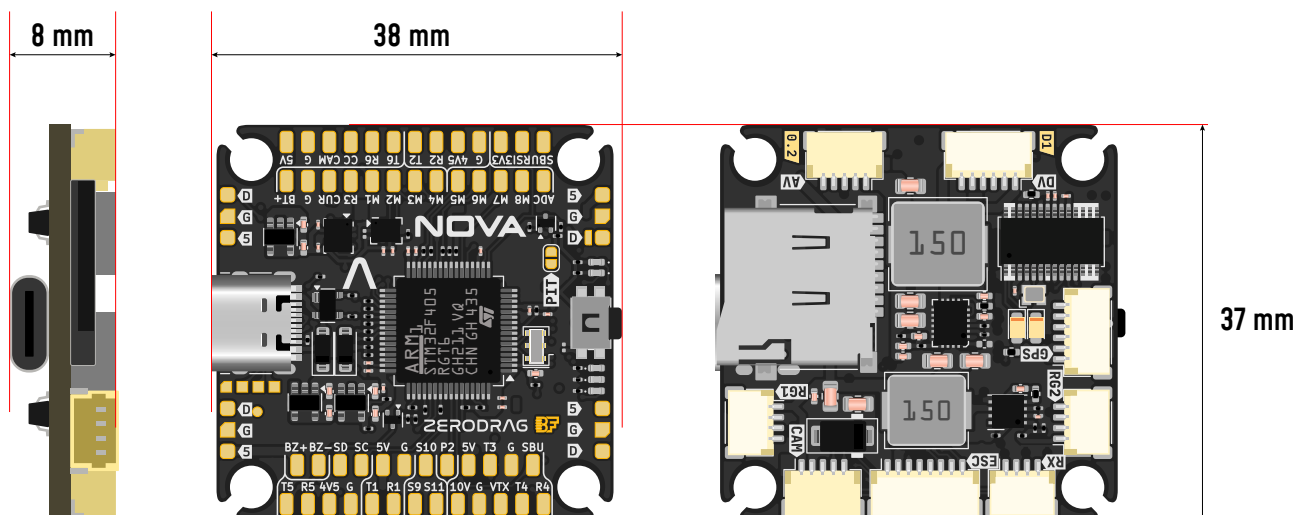
1. Product Description

The **ZERODRAG NOVA F405** is a high-performance flight controller designed for UAVs, providing robust flight stability and seamless integration with multiple firmware options. Powered by the **STM32F405** microcontroller, it features an **ICM42688P gyro**, **Infineon DPS310 barometer**, and an **AT7456E OSD chip**. The controller supports **2-6S LiPo input**, dual BEC outputs (**5V 3A & 10V 4A**), and a **MicroSD card slot** for BlackBox logging.

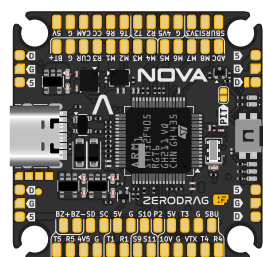
The Nova F405 supports **Betaflight, iNav, and ArduPilot**, making it highly versatile for various UAV applications. Its **compact 38mm x 37mm form factor**, standard **30.5mm x 30.5mm mounting pattern**, and multiple UARTs enable easy installation and connectivity.

2. Specification

- **Microcontroller:** STM32F405
- **Power Input:** 2S - 6S LiPo
- **Mounting Pattern:** 30.5mm x 30.5mm (4mm hole size)
- **Dimension:** 38mm x 37mm x 8.75mm
- **Weight:** 10g
- **Gyro (IMU):** ICM42688P
- **Barometer:** Infineon DPS310
- **OSD Chip:** AT7456E
- **BlackBox:** MicroSD Card Slot
- **BEC Outputs:** 5V 3A, 10V 5A
- **USB Port:** Type-C
- **UARTs:** 6 UARTs
- **ESC Signal Pads:** M1 - M8
- **I2C Pads:** SDA & SCL for additional sensors
- **Buzzer:** 5V Buzzer support
- **LED Pads:** 2 LED connectors
- **Supported Firmware:** Betaflight, iNav, ArduPilot
- **Boot Mode:** BOOT button for DFU flashing



3. In The Box



1 x ZERODRAG NOVA F4 Flight Controller



5 x M3 Silicone Spacers



5 x M3*8mm Silicone Grommets



1 x Type-C Silicone Protector



1 x 8-Pin SH1.0 to 8-Pin SH1.0 4-in-1 ESC Cable (30 mm)



1 x 4-Pin SH1.0 Radio Receiver Cable (100mm)



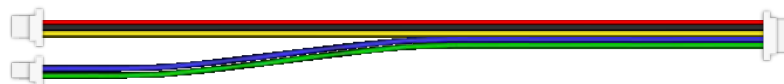
1 x 6-Pin SH1.0 to 6-Pin SH1.0 DJI Cable (30 mm)



2 x 4-Pin SH1.0 to 4-Pin SH1.0 LED Cable (30 mm)



1 x 6-Pin SH1.0 to 6-Pin SH1.0 GPS Module Cable (100mm)

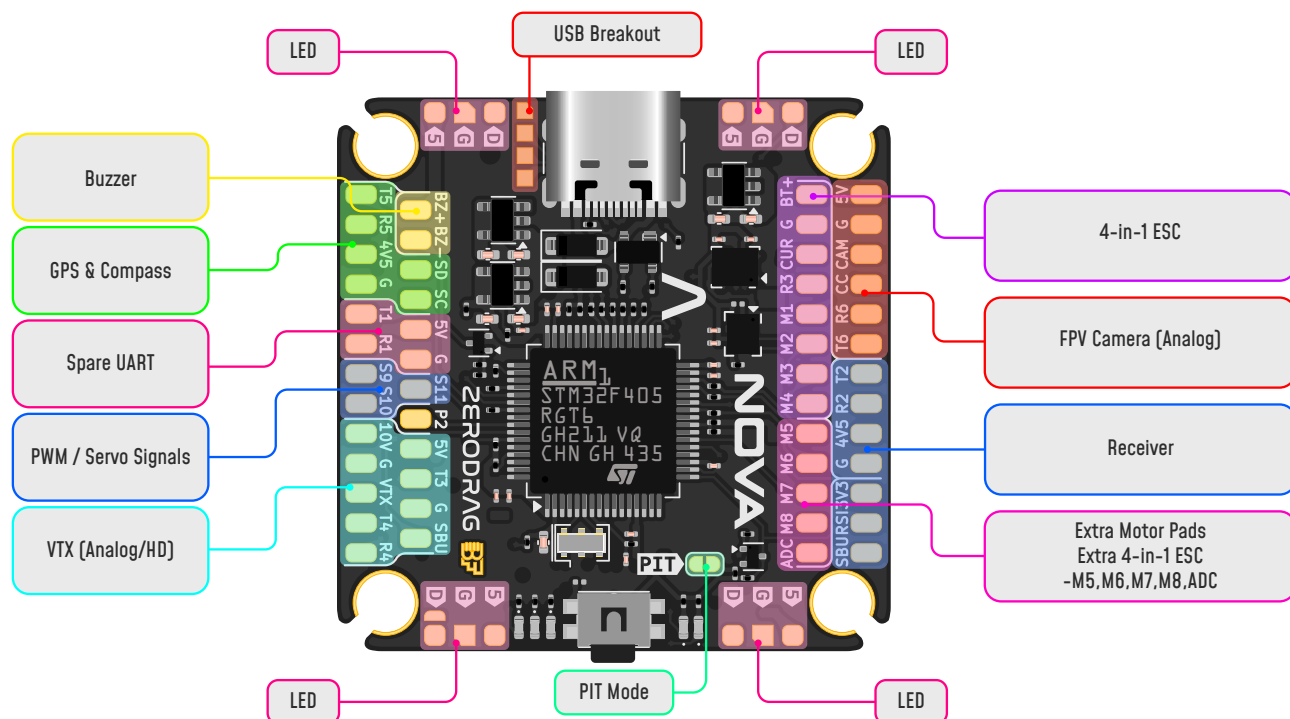
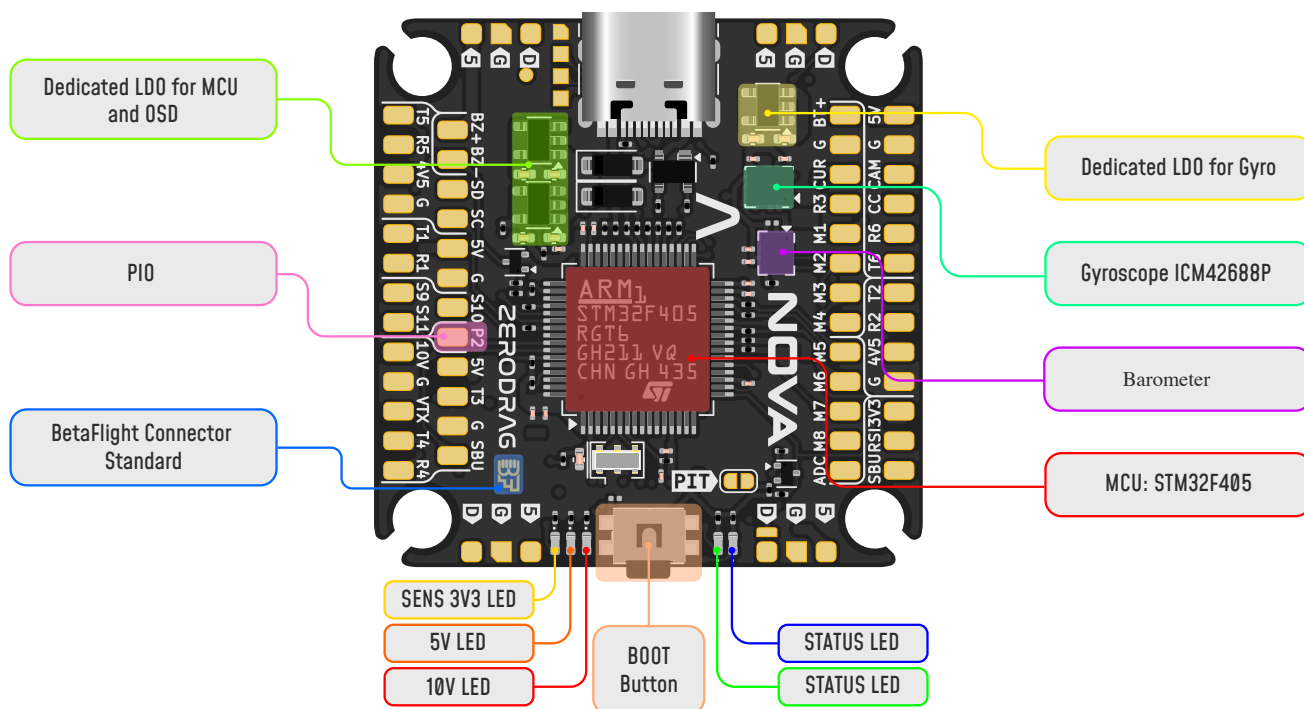


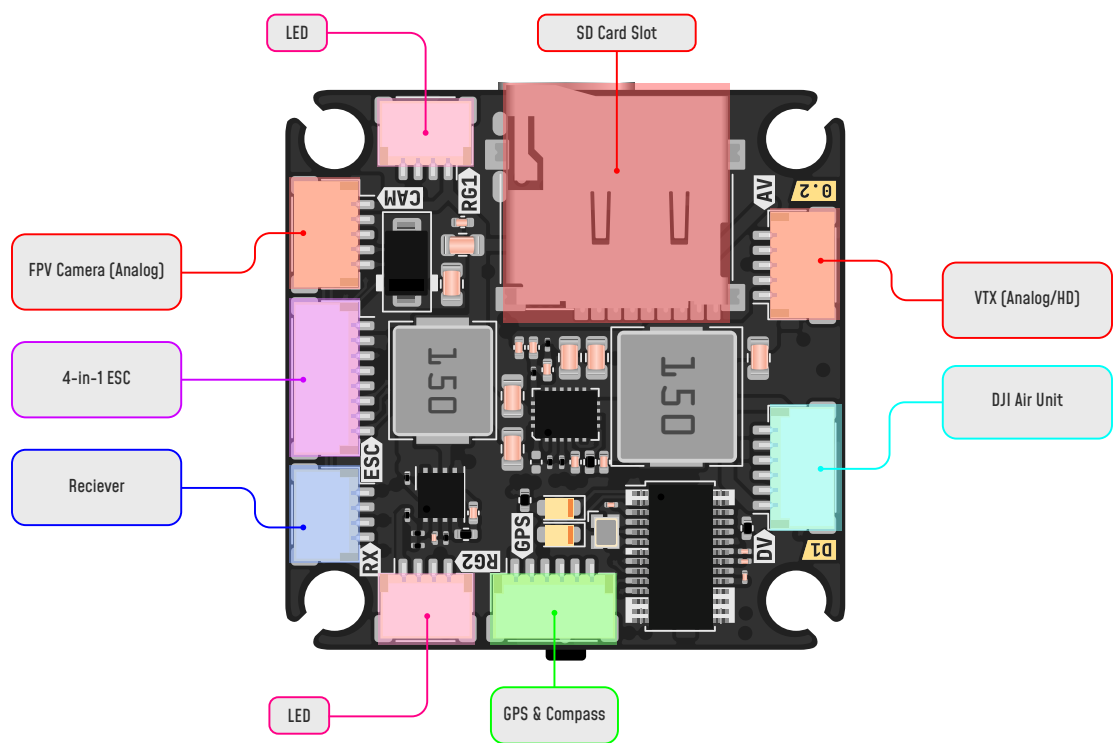
1 x 5-Pin SH1.0 to 3-Pin SH1.0 + 2-Pin SI 4-in-1 FPV Cam Cable (60mm)



1 x 5-Pin SH1.0 to 5-Pin SH1.0 Analog VT. Connector (60 mm)

4. Layout





LED Indication

ORANGE LED 1 - Sensor 3.3 Voltage indication

BLUE LED - FC Status Light.

Unlit: USB disconnected and disarmed,

Lit: USB disconnected and armed,

Flashing: USB connected and disarmed,

5x Rapid Flash then Flashing: USB connected and arming command prevented

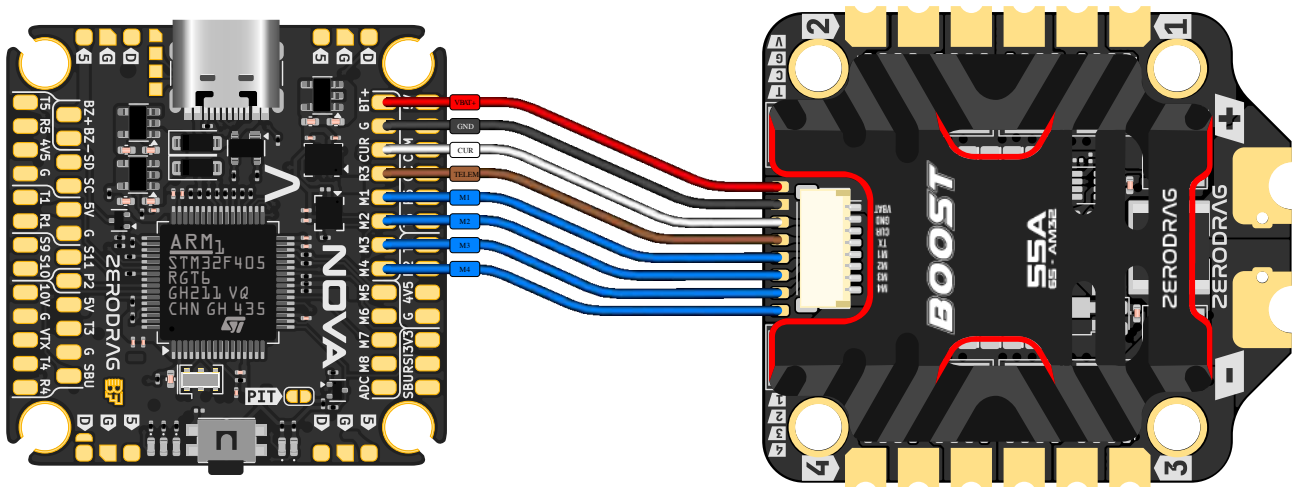
GREEN LED - FC Status Light

ORANGE LED 2 - 5V Power Indicator.

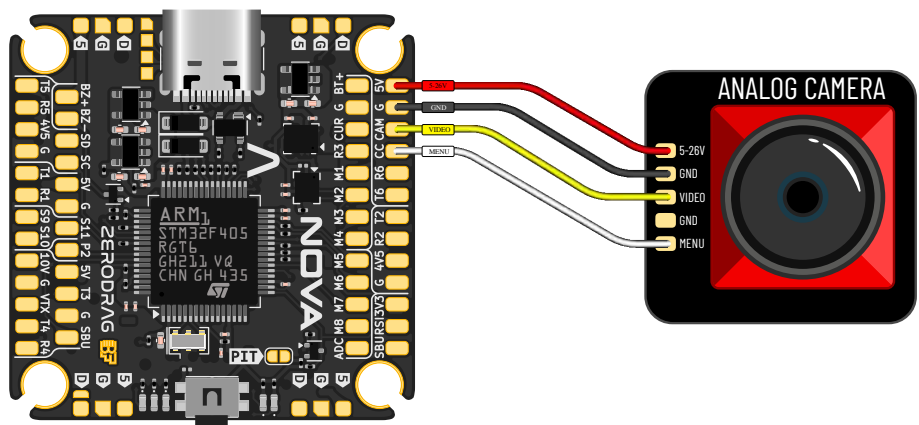
RED LED - 10V Power Indicator.

5. Connections

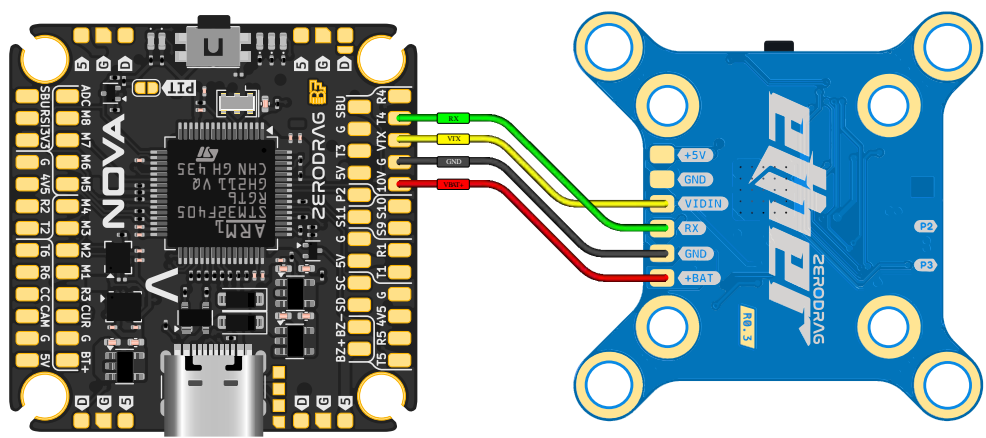
Method 1 - Direct Soldering



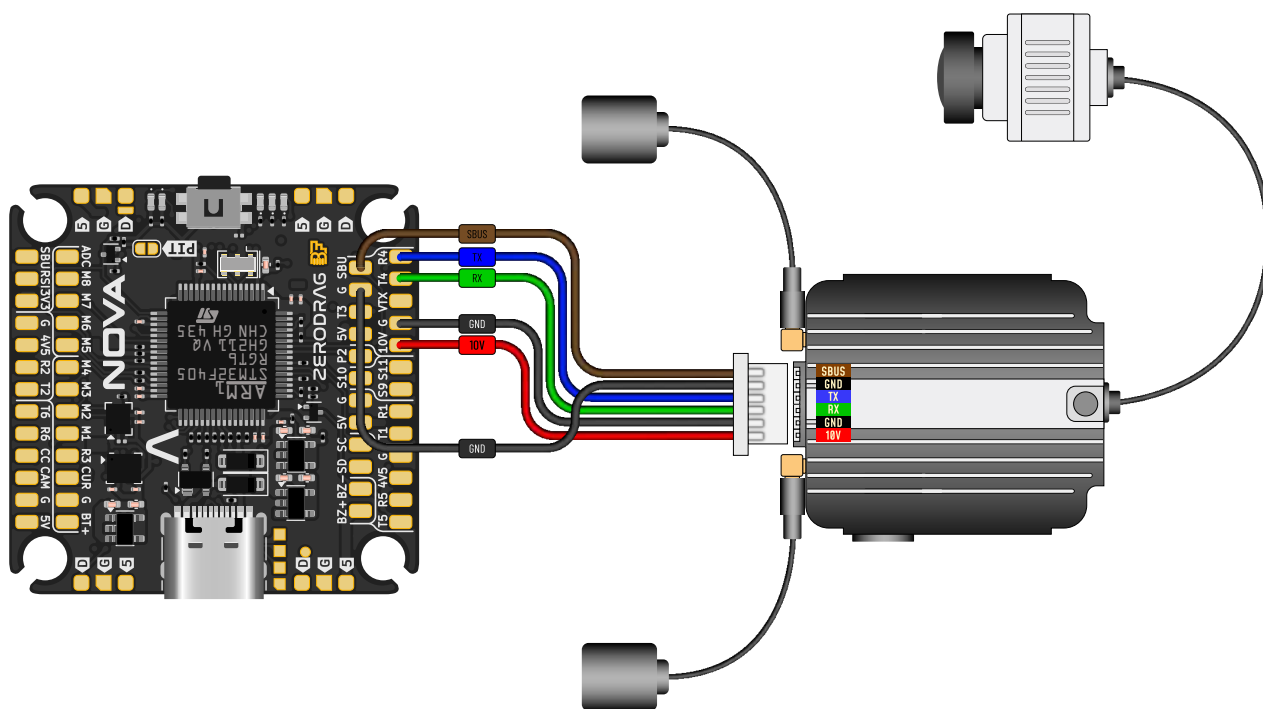
FC-ESC



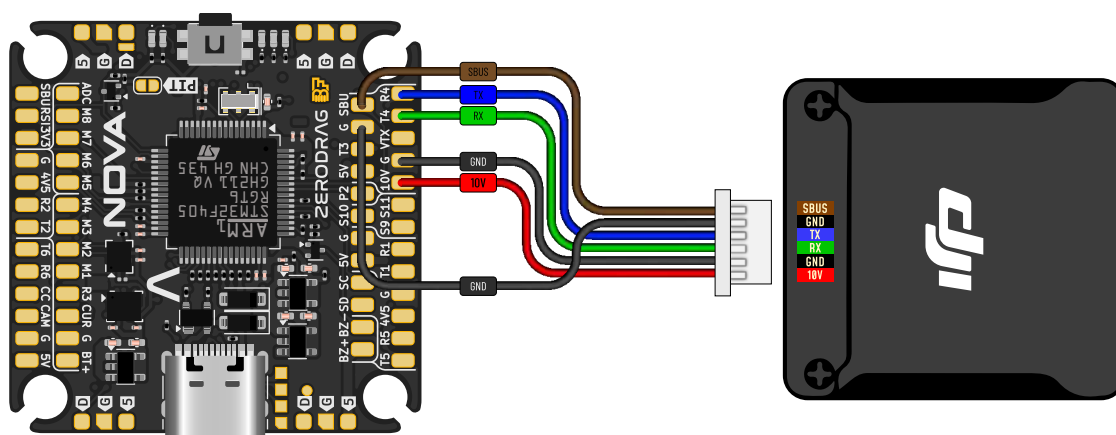
FC-CAM



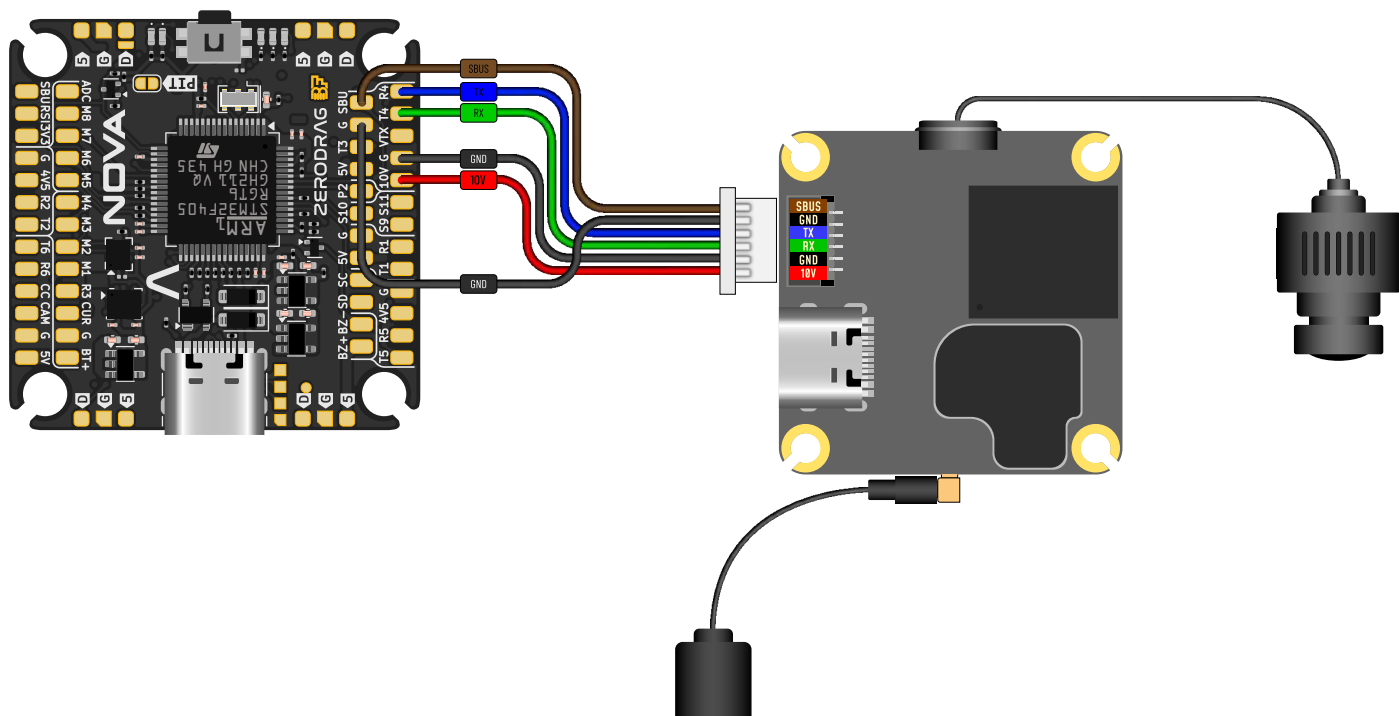
FC-VTX



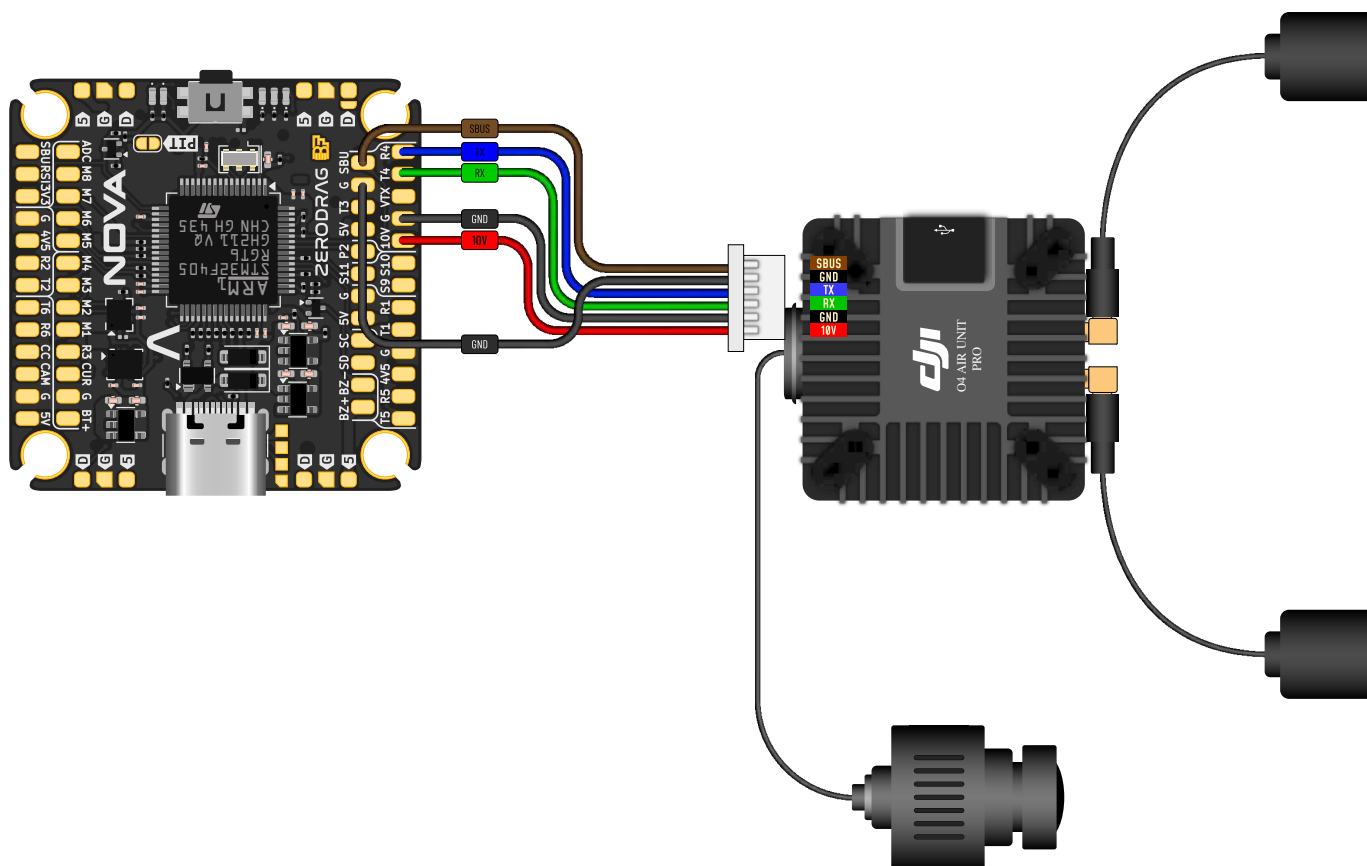
FC-DJI AirUnit



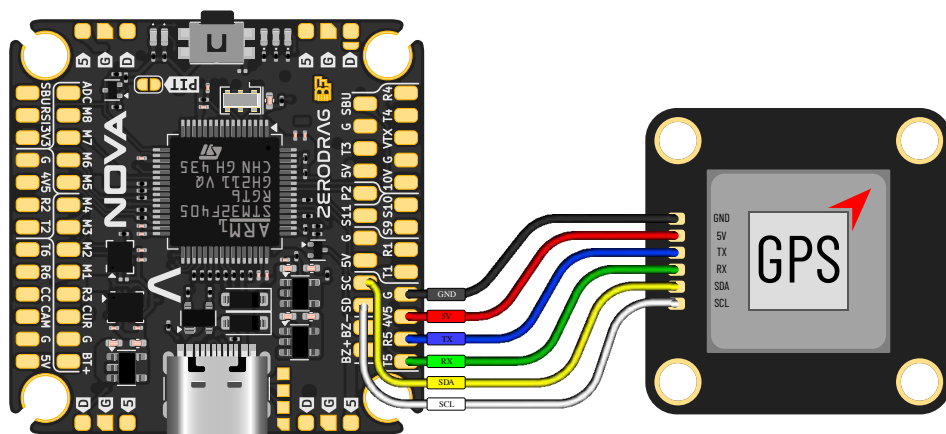
FC-DJI 03



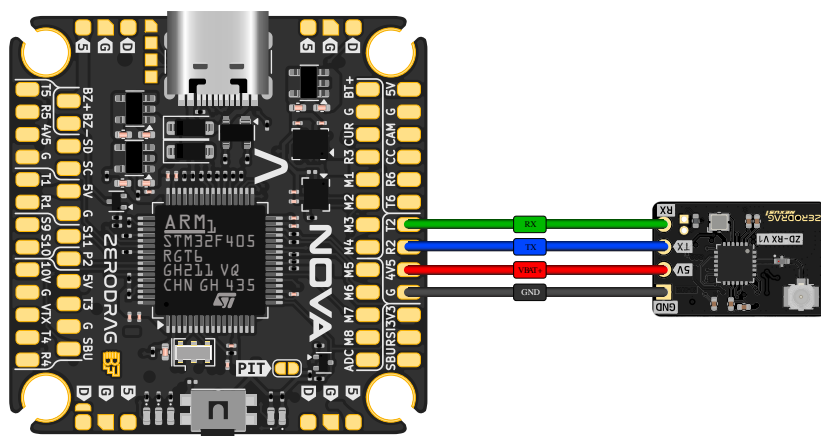
FC-DJI 04



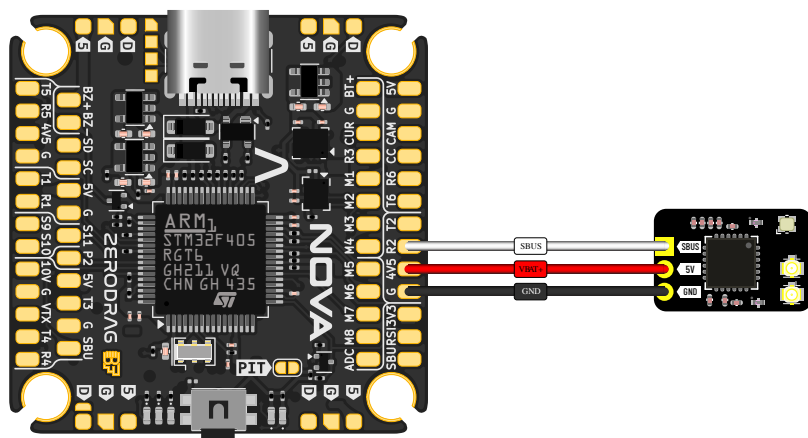
FC-DJI 04 PRO



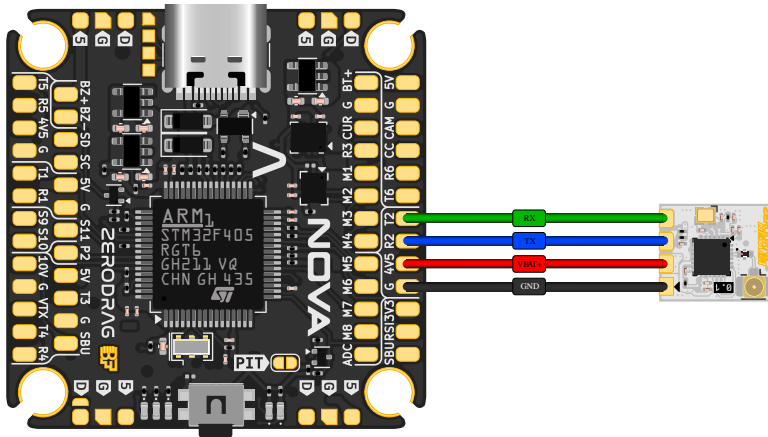
FC-GPS



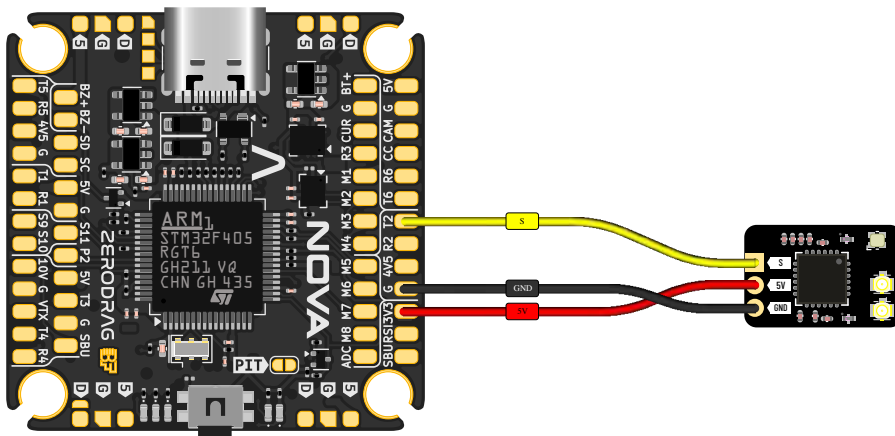
FC-ELRS/CRSF Receiver



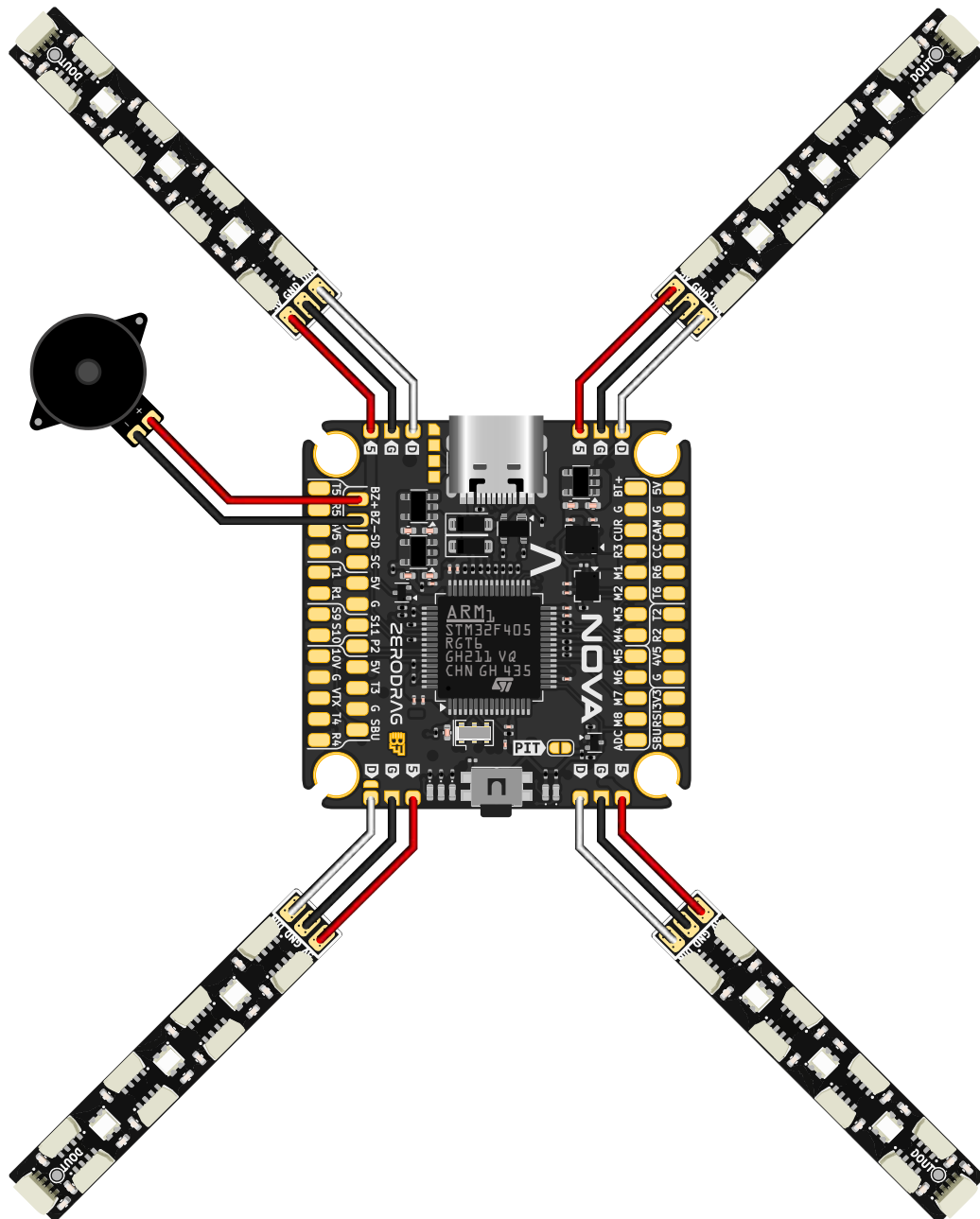
FC-SBUS



FC-CRSF

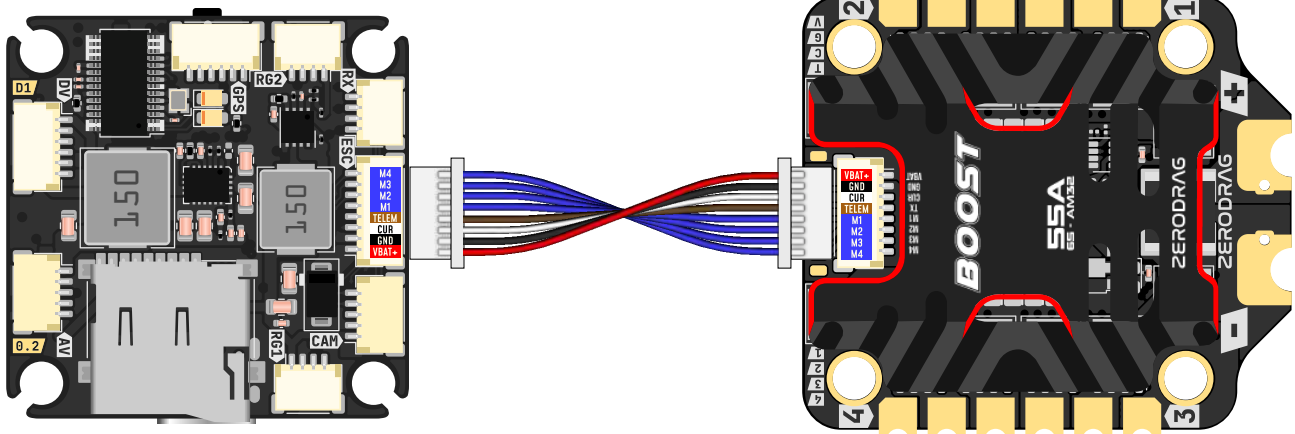


FC-Spectrum

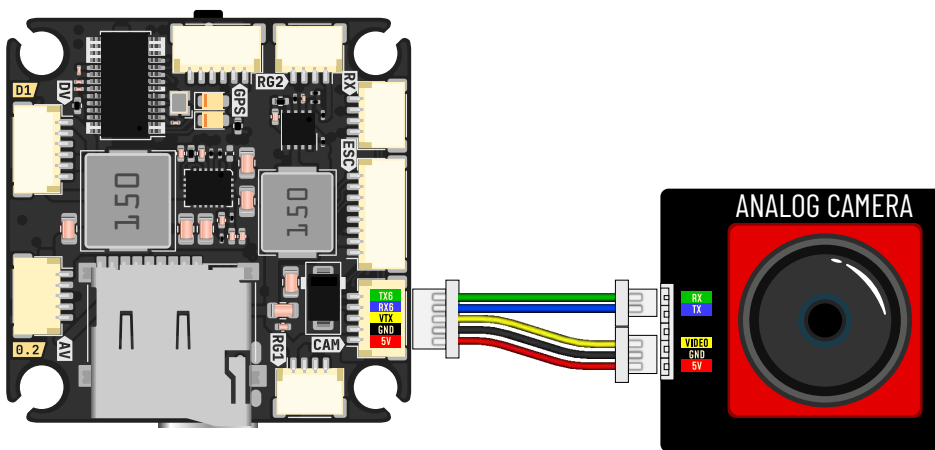


FC-LED's/Buzzer

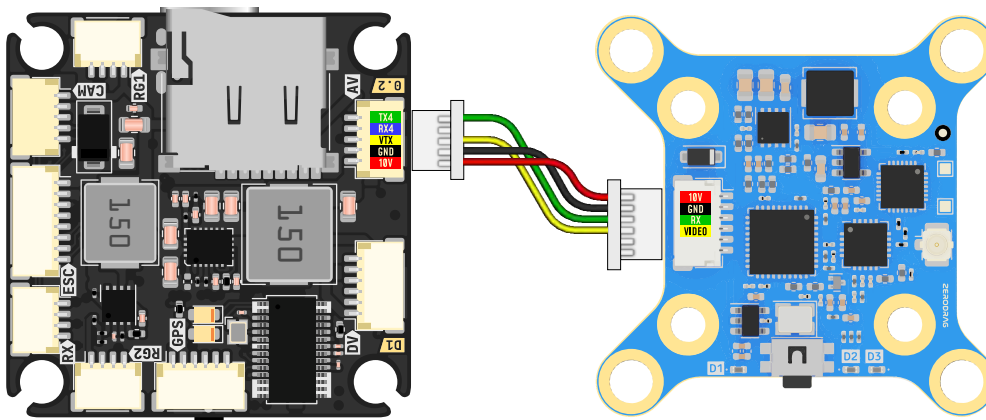
Method 2 - Direct Connector wiring.



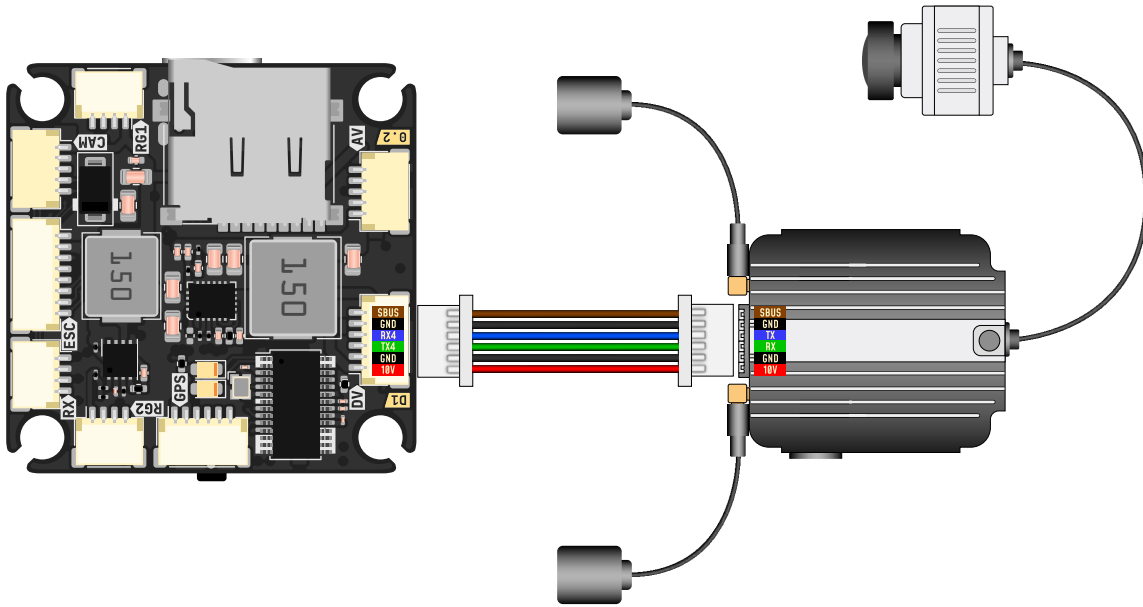
FC-ESC



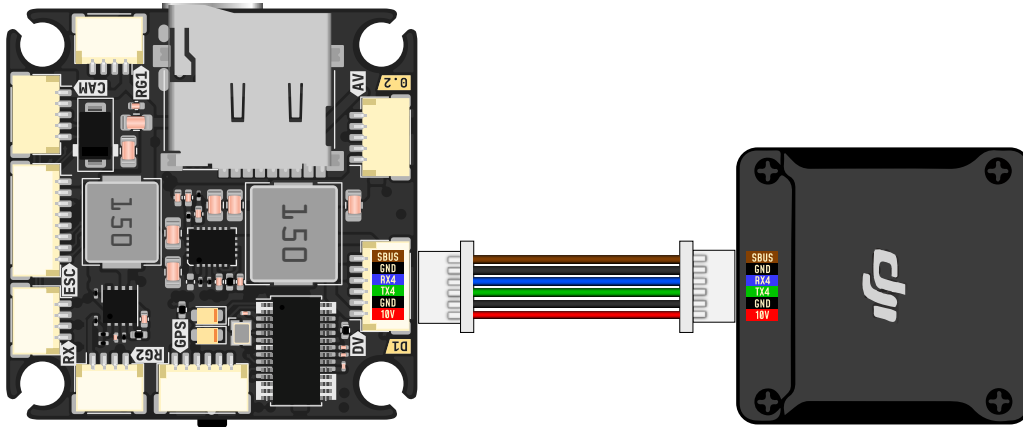
FC-CAM



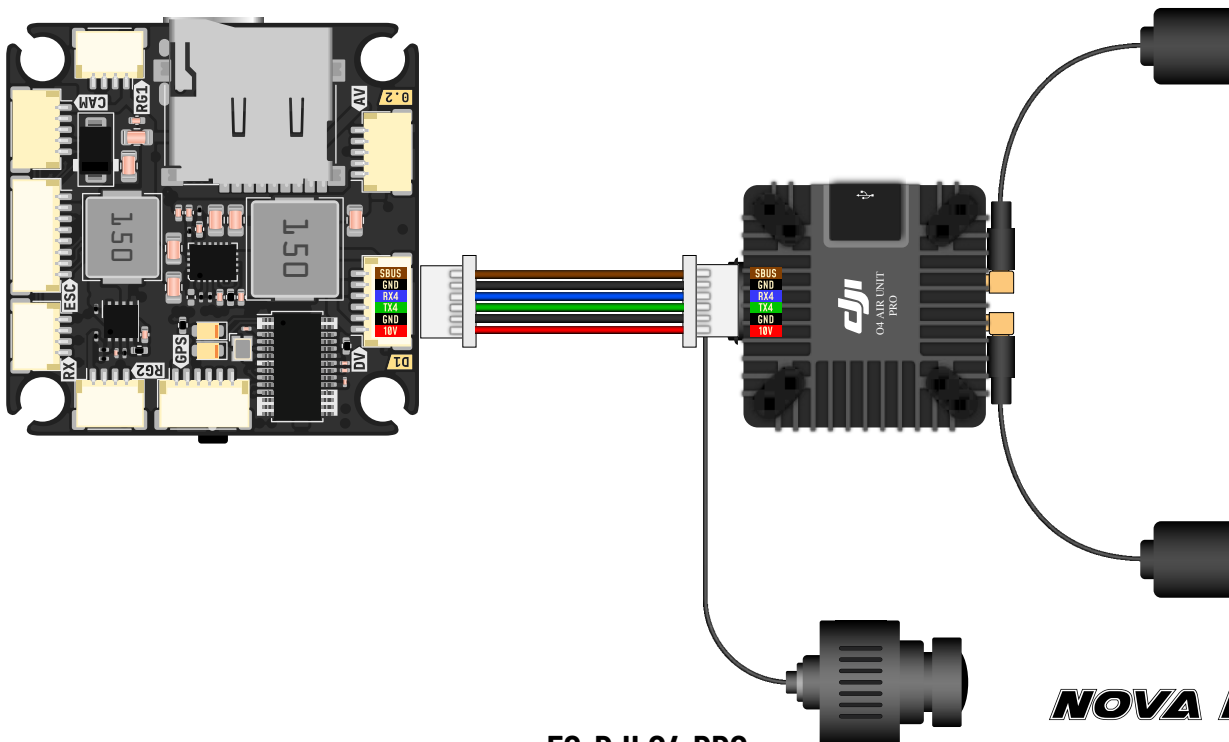
FC-VTX



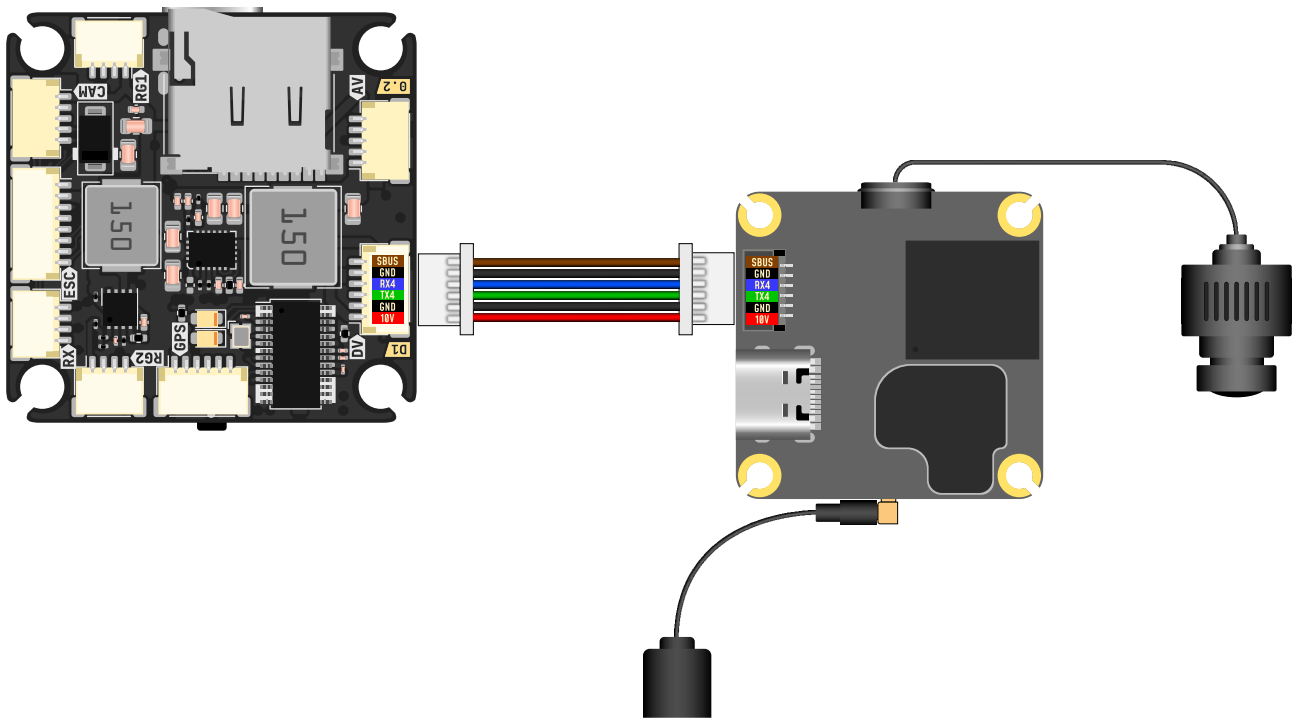
FC-DJI AirUnit



FC-DJI 03

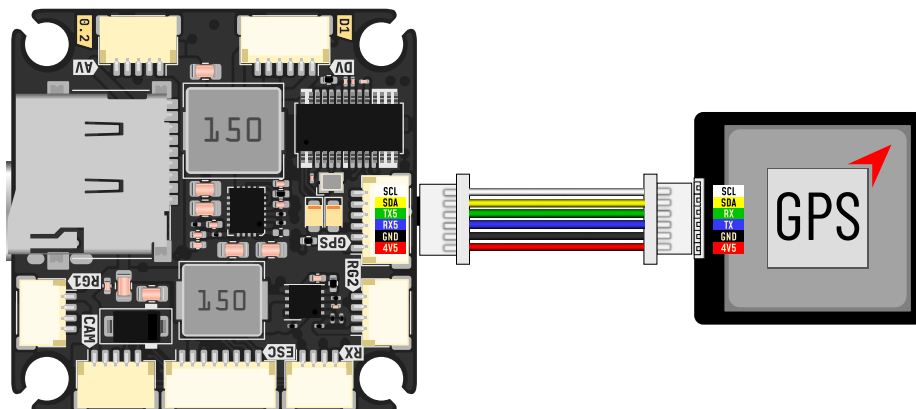


FC-DJI 04 PRO

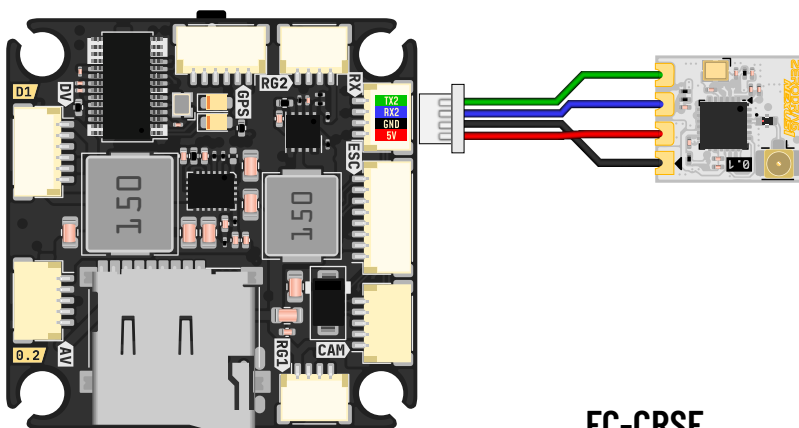


+

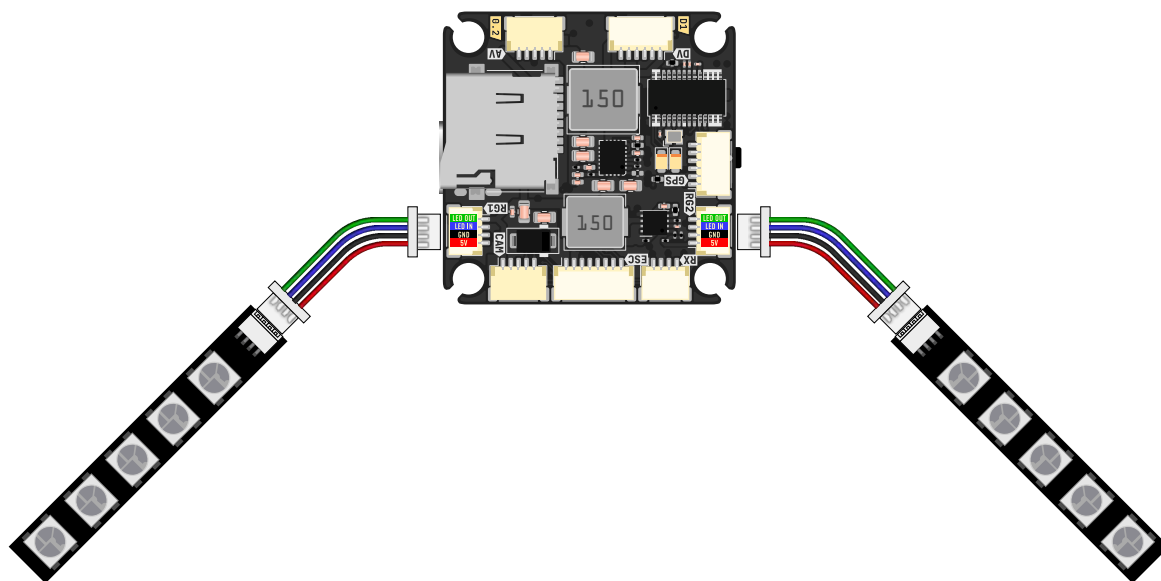
FC-DJI 04



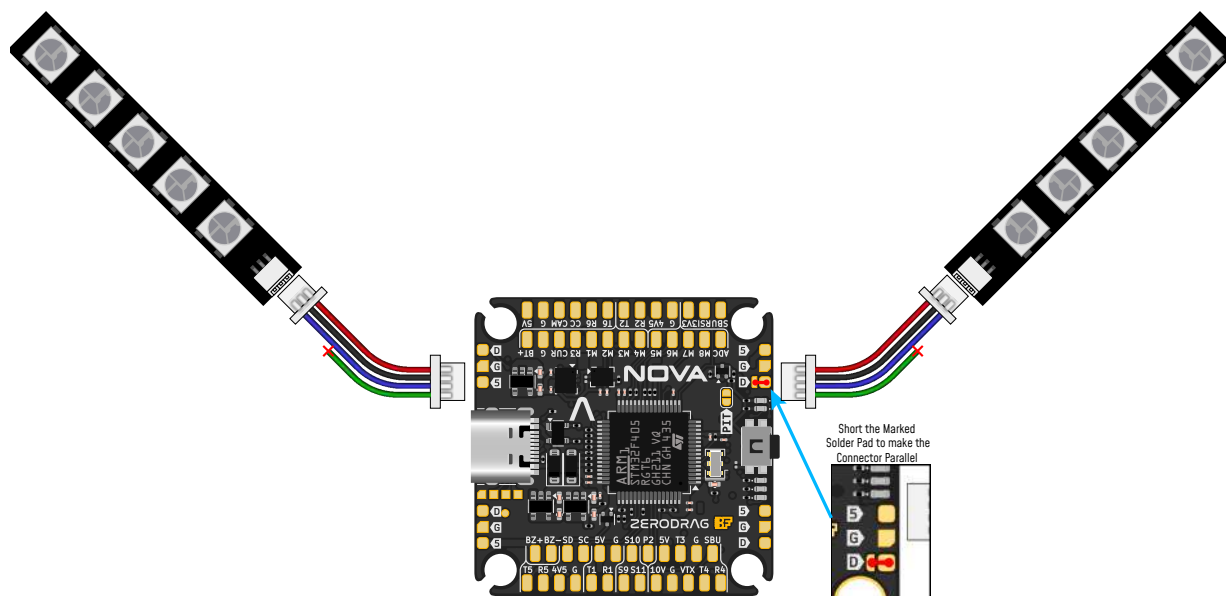
FC-GPS



FC-CRSF



FC-4pin LED



FC-3pin LED

LED Connection Options:

You have two options for connecting LEDs to your flight controller:

1. Soldering:

- Use the three solder pads: 5V, Ground, and Signal.

2. Connector:

- Use the 4-pin connector with pins for 5V, Ground, Signal In, and Signal Out.

Daisy Chain Feature:

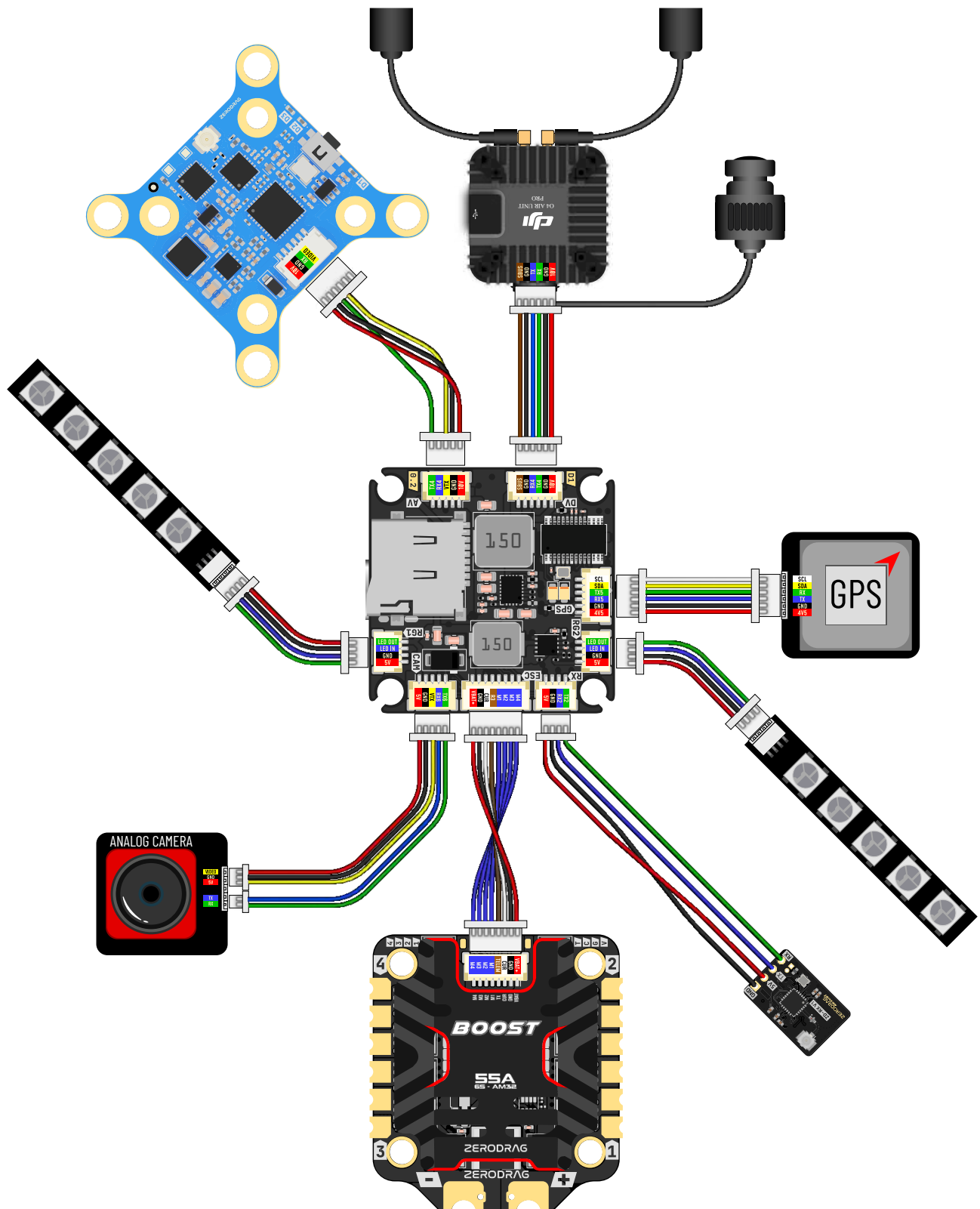
- By default, the connectors are daisy-chained, meaning each connector can control LEDs independently.
- If you prefer to use standard LEDs and control all connectors simultaneously, follow these steps:

Steps to Use Standard LEDs in Parallel:

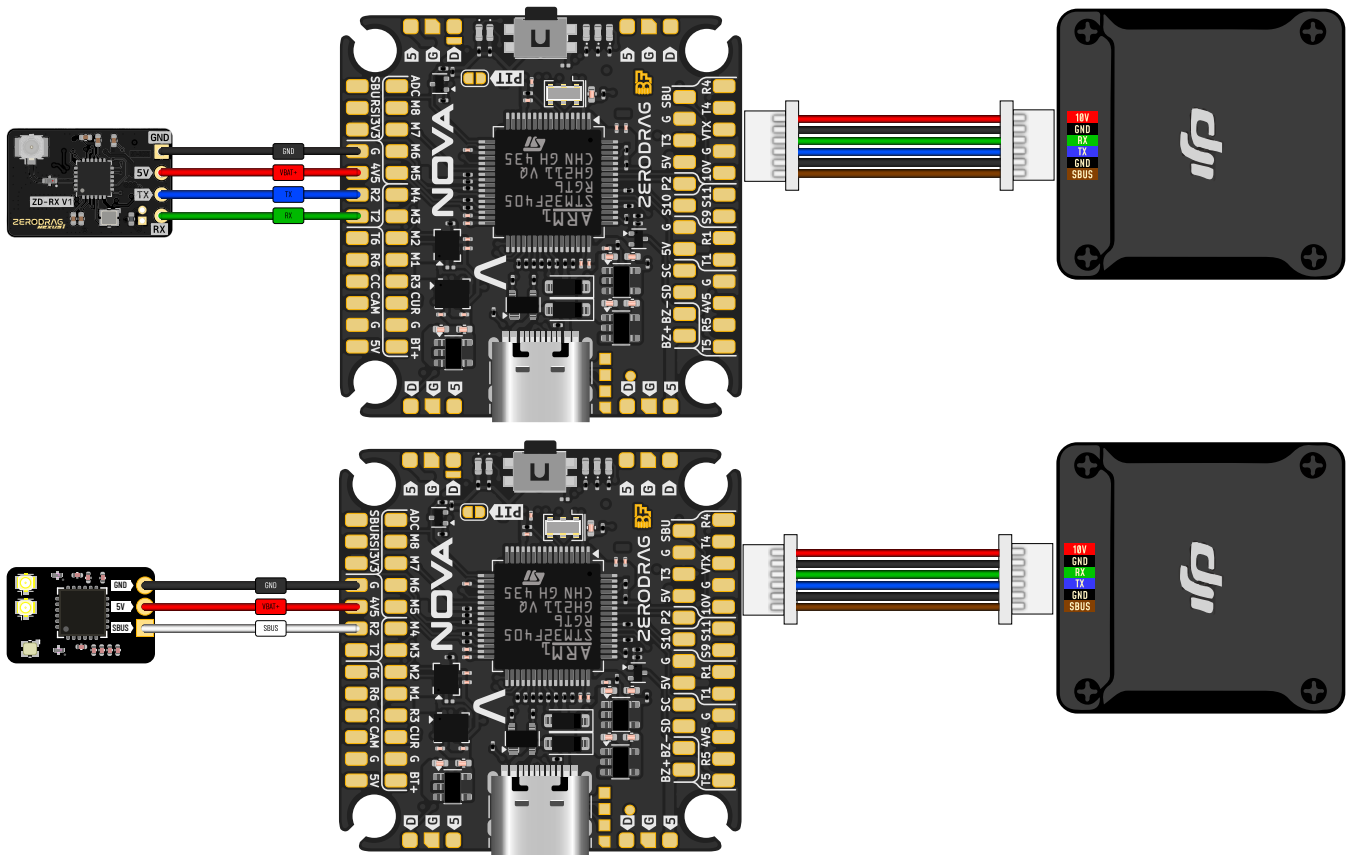
1. On each of the three connectors (except the first one), cut the Signal Out wire.
2. Bridge the small pad next to the Signal pad on the flight controller.
3. This will set all connectors to use the same signal, allowing them to operate in parallel.

Important:

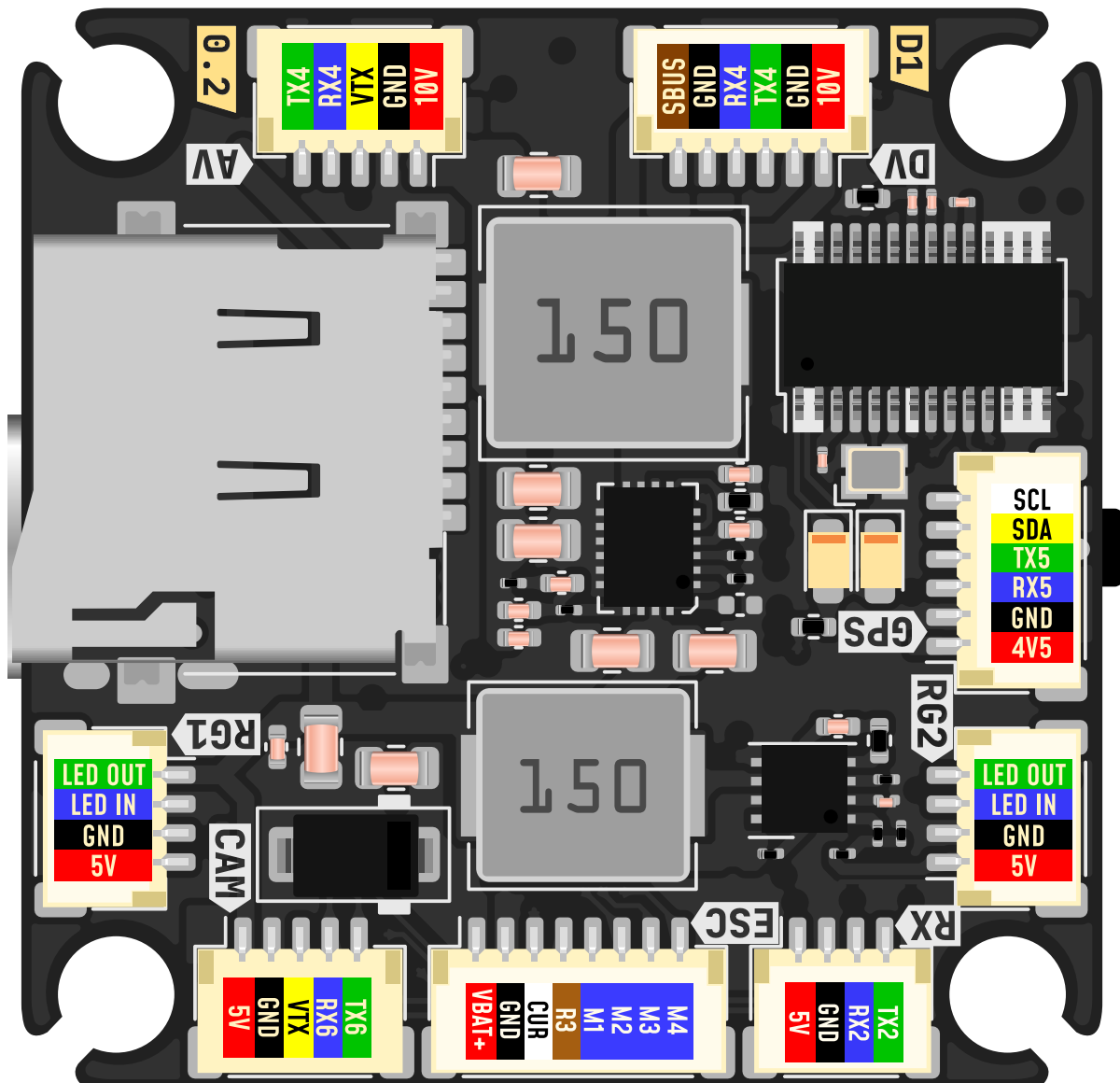
- You only need to do this on the **second** connector, as the first connector already provides the signal.



Avoid Sbus or RX use with DJI or Vice versa.



When using an SBus receiver, connect its SBus signal wire to the SBus pad on the front side of the flight controller, utilising UART2 internally. If employing the DJI Air Unit (04/03/Link/Vista/Air Unit V1), disconnect the SBus signal wire from the Air Unit harness to ensure proper recognition by the flight controller. Use tweezers to remove or cut this wire from the 6-pin harness connector, and insulate the exposed part meticulously. Similarly, when utilising ELRS receivers, connect their TX and RX to the T2 and R2 pads on the flight controller. However, in case of recognition issues with ELRS receivers when using the DJI Air Unit simultaneously, repeat the process of disconnecting the SBus signal wire from the Air Unit harness to resolve the issue.



6. Configure Pit Mode

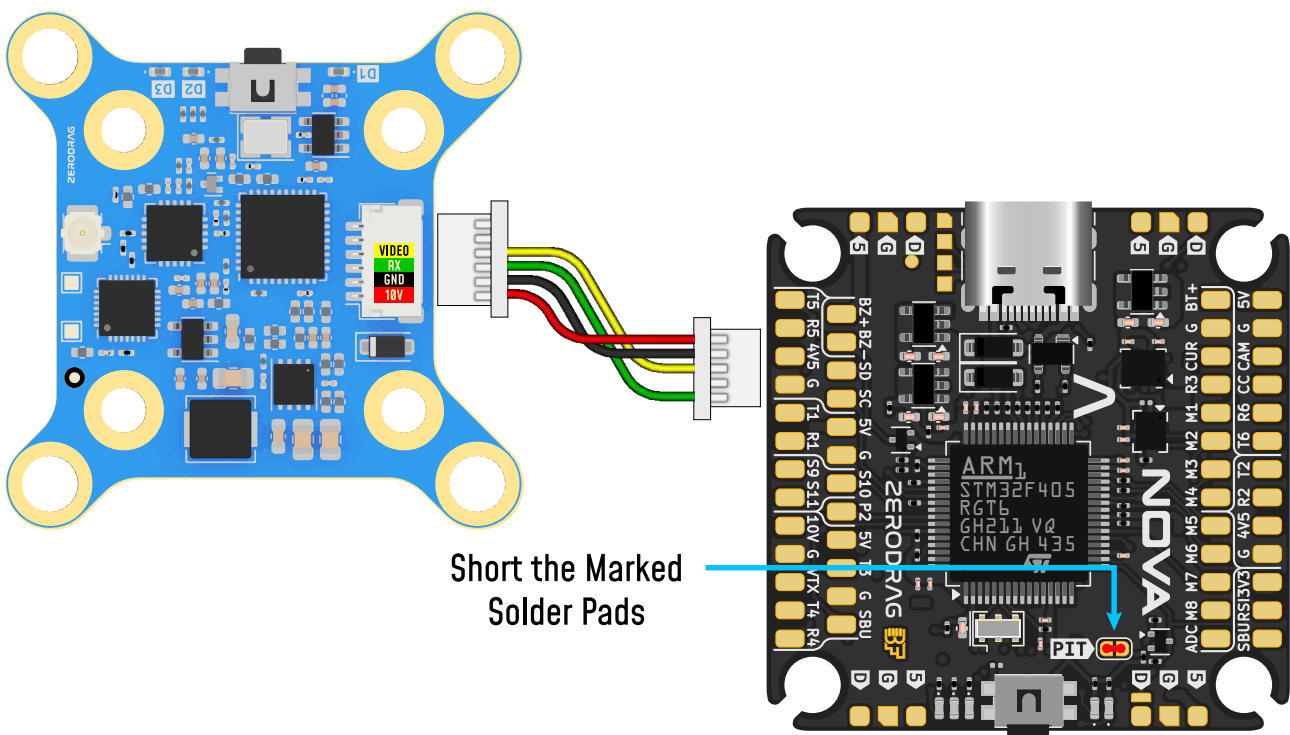
Connecting the Video Transmitter:

1. Connection Options:

- Refer to the connection options described in **Step 5: Connections**, where the two methods for connecting peripherals were outlined. Choose the connection method that best suits your setup:
 - Connector Method:** Connect your video transmitter (VTX) to the designated connector on the NOVA F4 flight controller.
 - Soldering Method:** Alternatively, solder the VTX power wires to the 10V, Ground, and Signal pads on the flight controller.

2. Enable Pit Mode:

- Locate the **Pit Mode solder pad** on the NOVA F4.
- Solder/bridge this pad to enable Pit Mode.



7. Using USB Breakout Pads for Extended USB Connectivity

In certain situations, such as when dealing with large builds or a broken USB connector on the flight controller, the NOVA F4 offers USB breakout pads as an alternative way to connect your flight controller to a computer for updates and configuration changes.

How to Use USB Breakout Pads:

1. Locate the USB Breakout Pads:

- The NOVA F4 flight controller features dedicated USB breakout pads on the board.

2. Connecting to USB Breakout Pads:

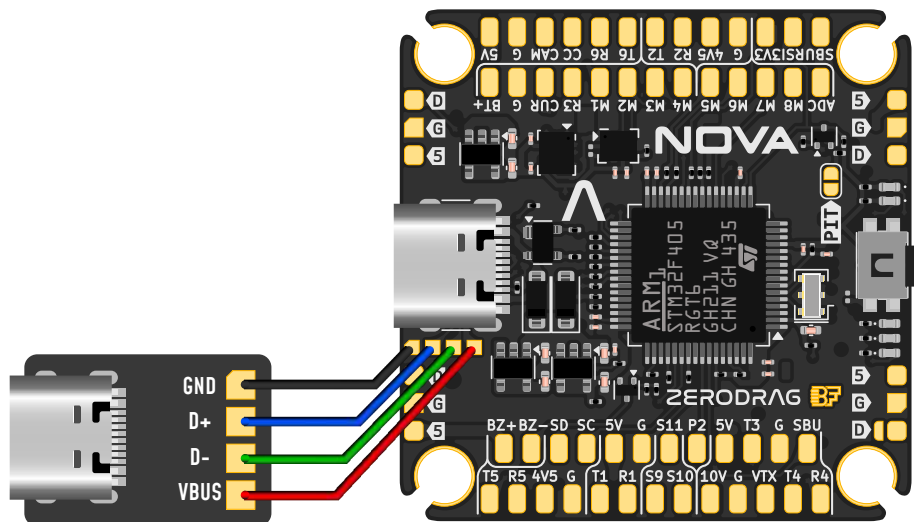
- **Soldering:** Carefully solder a USB cable's corresponding wires to the breakout pads (D+, D-, 5V, and GND).
 - D+ and D-: Data lines for USB communication.
 - 5V: Power supply line.
 - GND: Ground line.

3. Using the Extended USB Connection:

- Once connected, use this extended USB setup to link the flight controller to your computer, just like you would with the onboard USB connector.
- This setup allows you to access Betaflight Configurator for firmware updates and configuration changes.

Important Considerations:

- Ensure secure and accurate soldering to avoid shorts or connectivity issues.
- Double-check the USB wiring connections to the breakout pads to prevent damage to the flight controller or connected devices.



8. Firmware

<https://zerodrag.in/Nova/Firmware>

9. Contact

- 🌐 Website: <https://zerodrag.in/>
- 📷 Instagram: <https://www.instagram.com/zerodrag.in/>
- 🌐 LinkedIn: <https://www.linkedin.com/company/zerodrag/>
- 📞 WhatsApp: <https://wa.me/9821734544>