

Ironcore F4 Autopilot Flight Controller - Made in India

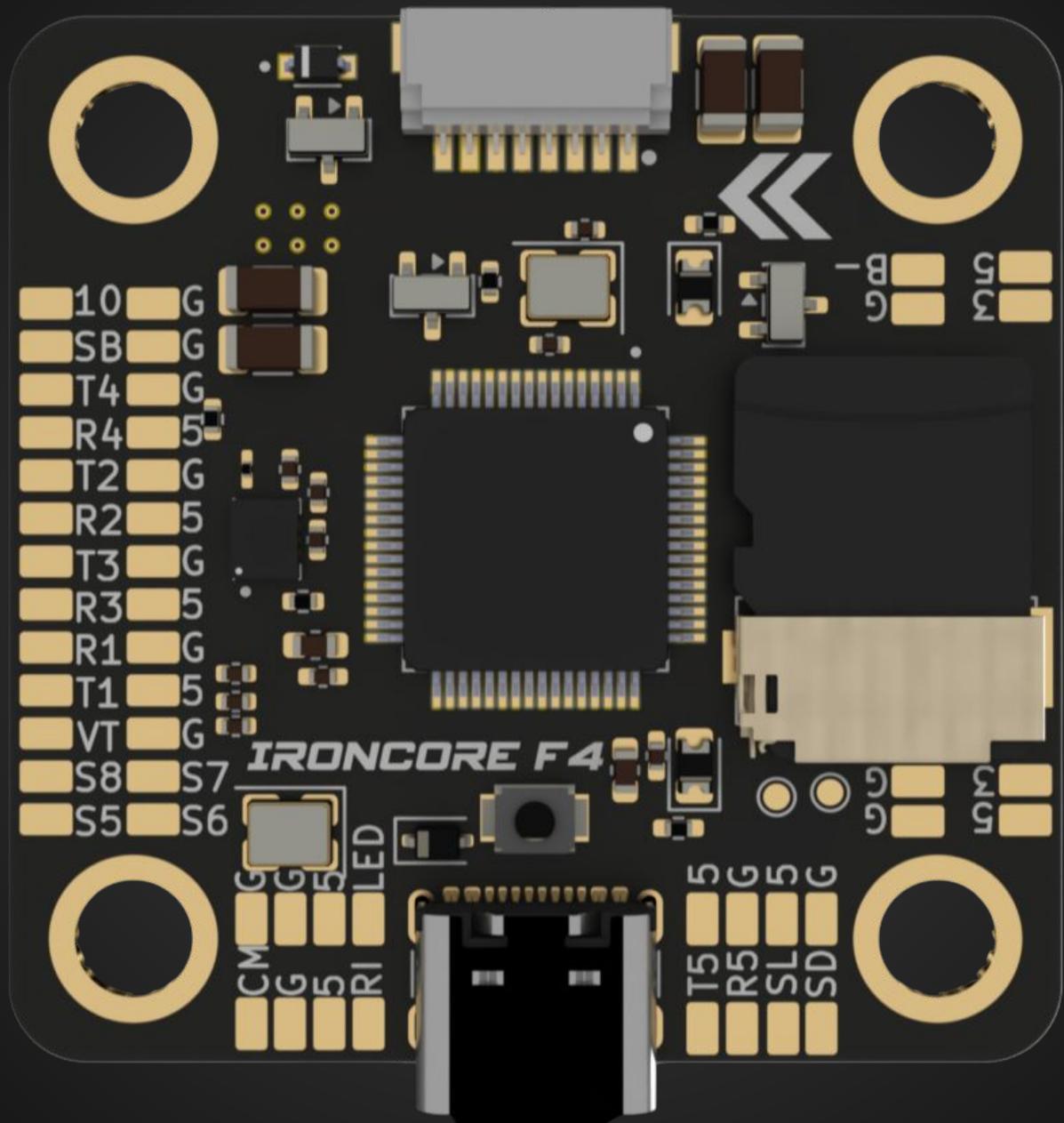
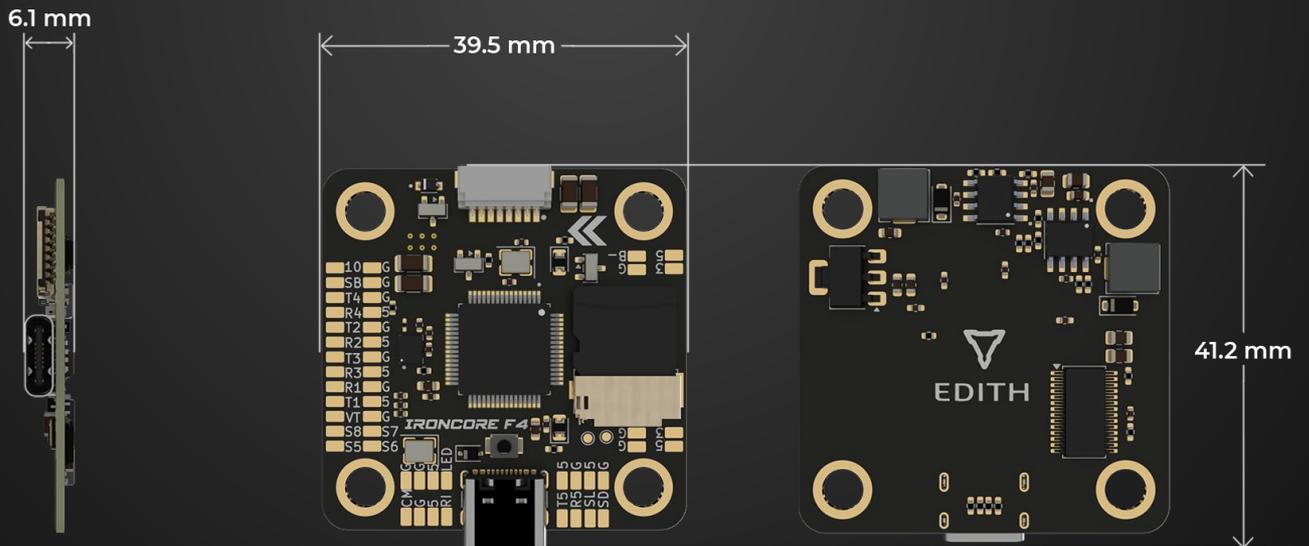


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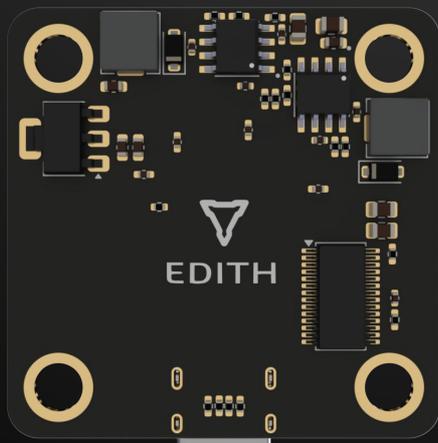
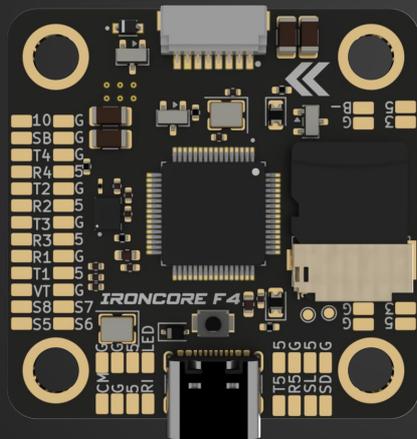
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ABOUT

The Ironcore F4 AutoPilot Flight Controller, proudly made in India, is built for reliable UAV and FPV applications. Powered by STM32F405 MCU, it delivered fast processing and stable flight control with BMP270 IMU, BMP280 barometer, and AT7456E OSD for accurate sensing and real-time flight data.

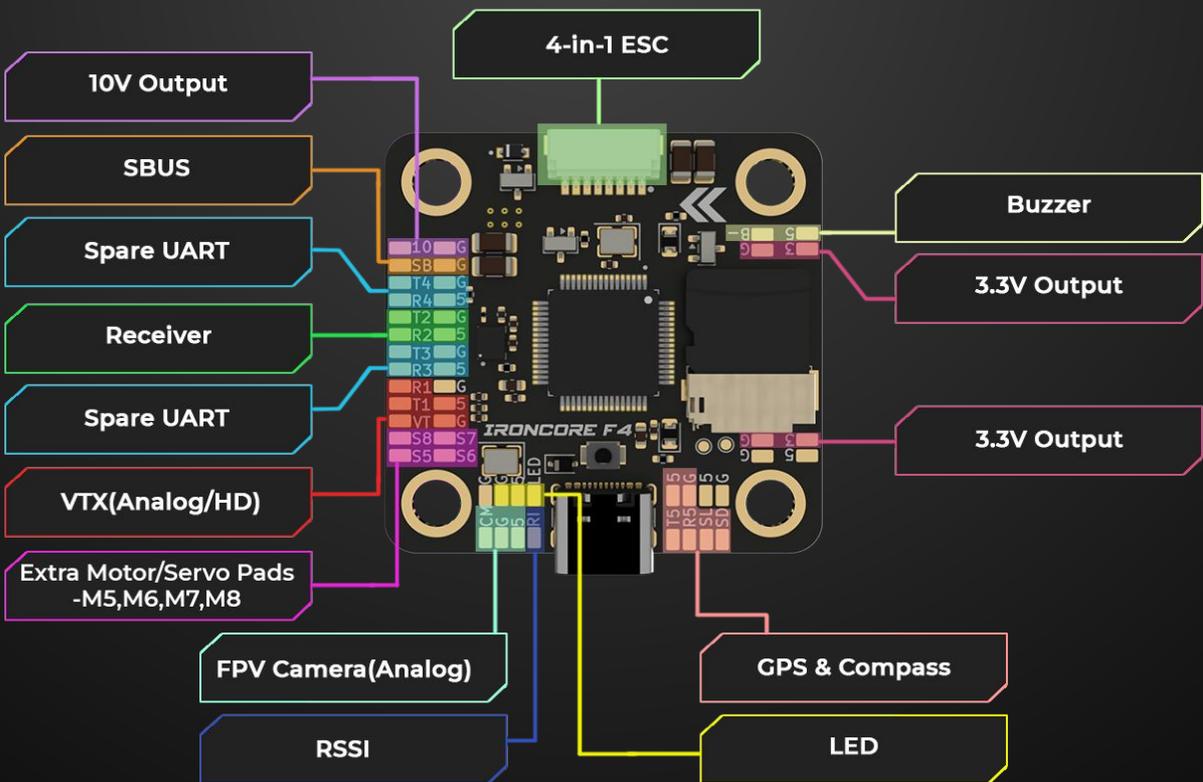
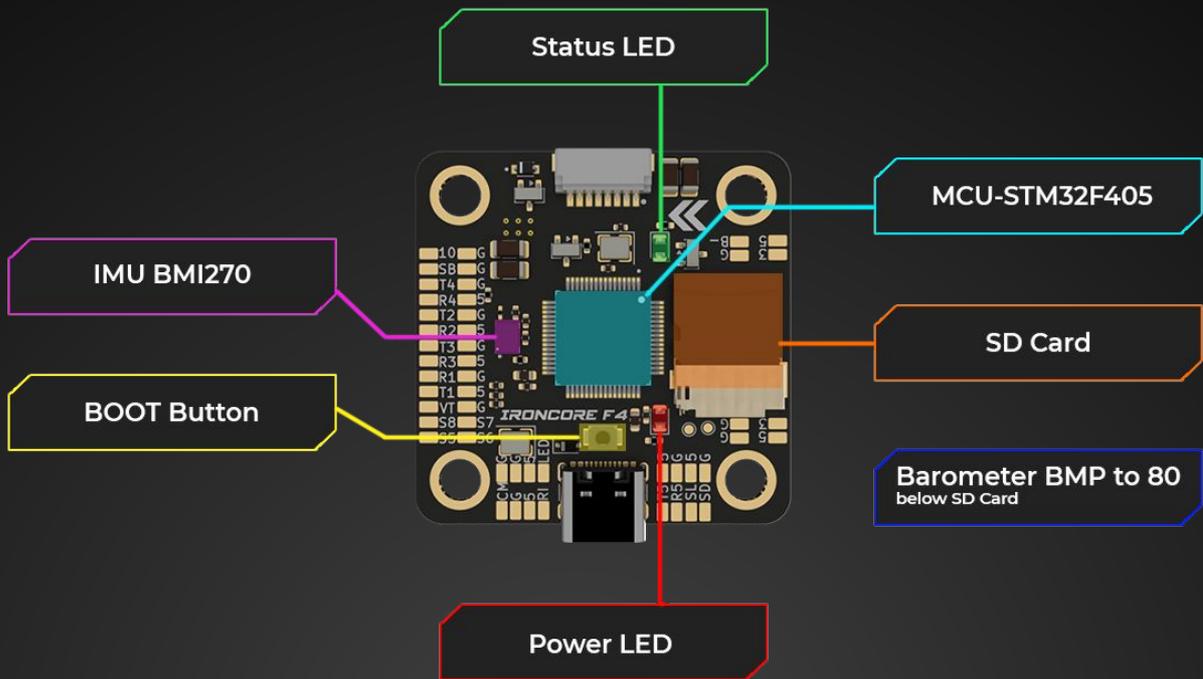
Supporting ArduPilot and BetaFlight, along with 4GB external BlackBox logging, 6 UARTs, 8 motor/servo outputs and 3-6S LiPo input, Ironcore F4 is designed for versatile and high-performance drone builds.



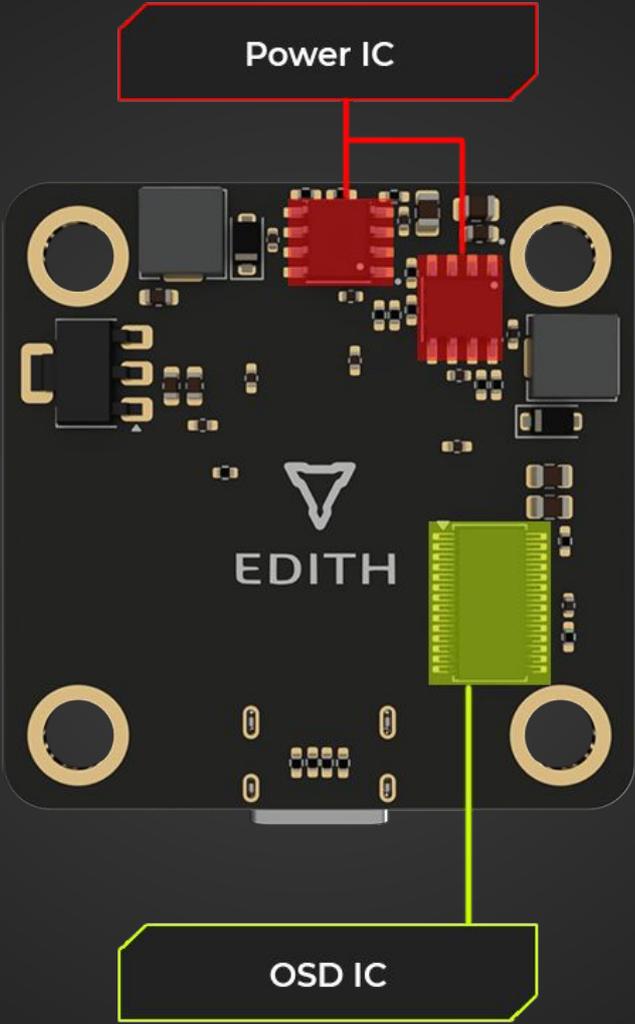
SPECIFICATIONS

MCU	STM32F405
GYRO (IMU)	BMP270
Barometer	BMP280
Power Input	3-6S LiPo
Motors Outputs	8 Motors
On Screen Display (OSD)	AT7456E
i2C	Available
RSSI	Available
UARTs	6 UART Ports are Available
Firmware Compatibility	Ardupilot, Betaflight
Mounting	30.5 x 30.5mm (M4)
Dimension	40 x 40mm
Weight	9g

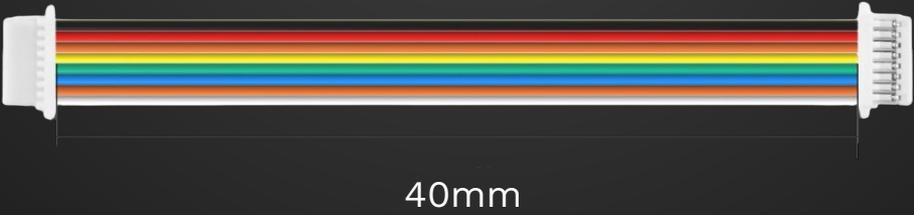
LAYOUT



BACK LAYOUT

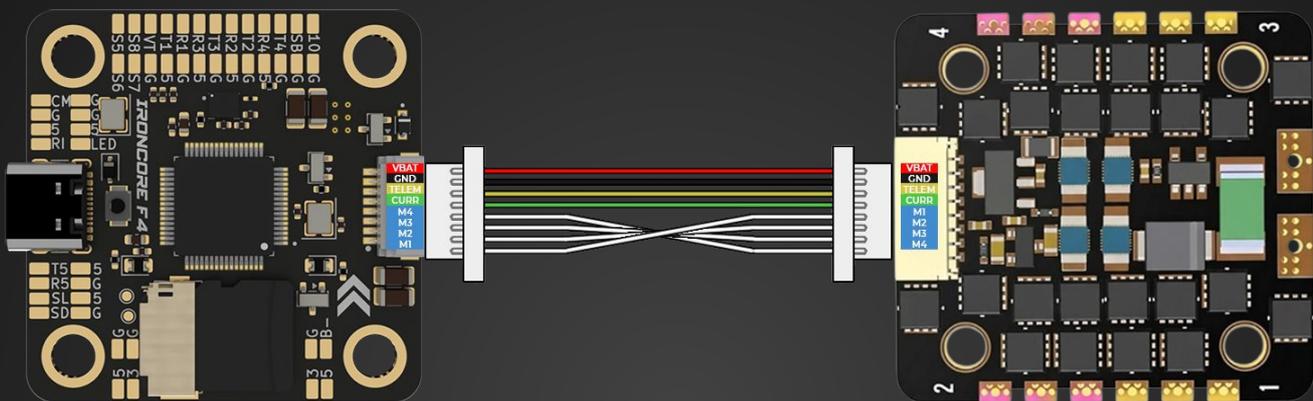


PACKAGE INCLUDE



CONNECTIONS

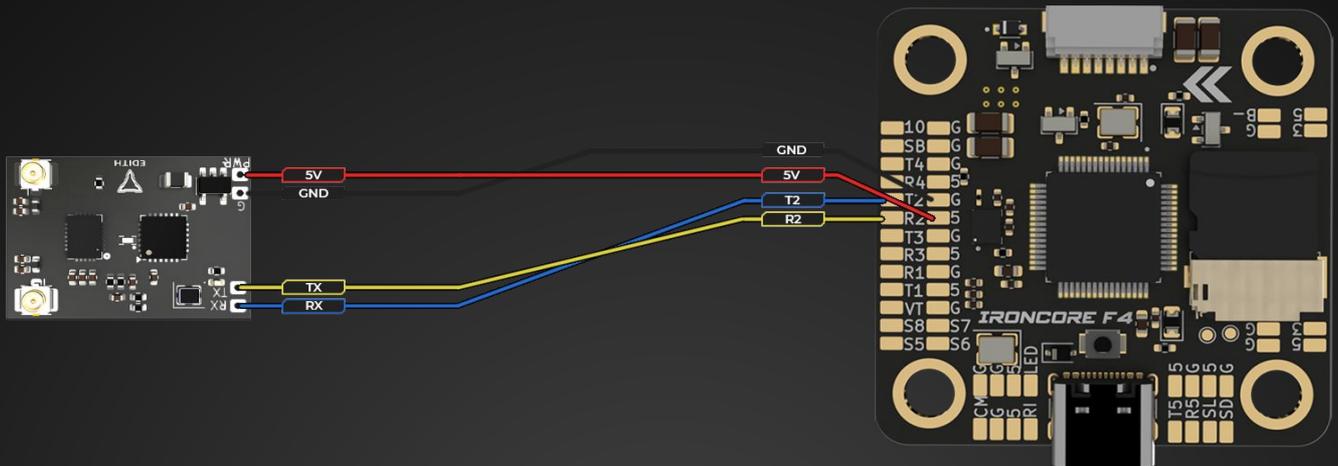
FLIGHT CONTROLLER TO ESC CONNECTIONS USING CONNECTOR



Connect the flight controller to the ESC using the provided multi-wire connector. This link carries throttle signals, telemetry, and power (if supported), ensuring clean and reliable communication between the FC and ESC.

Note: Ensure correct connector orientation and secure fit before powering the system.

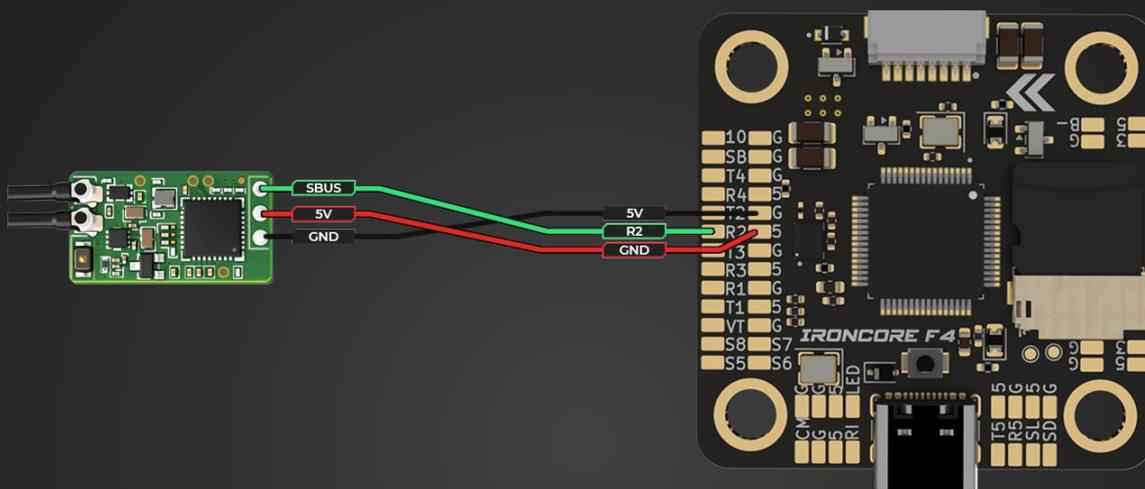
FLIGHT CONTROLLER TO ELRS CONNECTIONS



Connect the ELRS receiver to the flight controller using UART interface: 5V and GND for power, TX (receiver) to RX (FC), and RX (receiver) to TX (FC). This enables reliable control signal communication.

Note: Always cross TX ↔ RX lines and verify the correct UART port in firmware configuration.

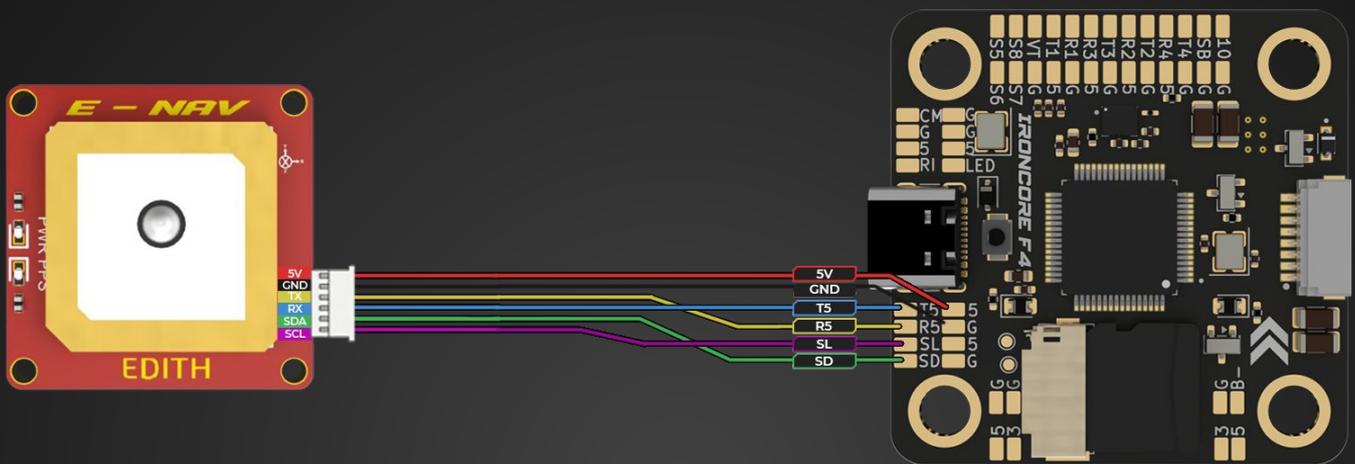
FLIGHT CONTROLLER SBUS CONNECTIONS



Connect the SBUS receiver to the dedicated SBUS input pin on the flight controller, along with 5V and GND for power. SBUS provides a single-wire digital signal for all control channels.

Note: Ensure the receiver signal wire is connected to the SBUS/RC input pad, not a standard UART RX pin (unless configured for SBUS).

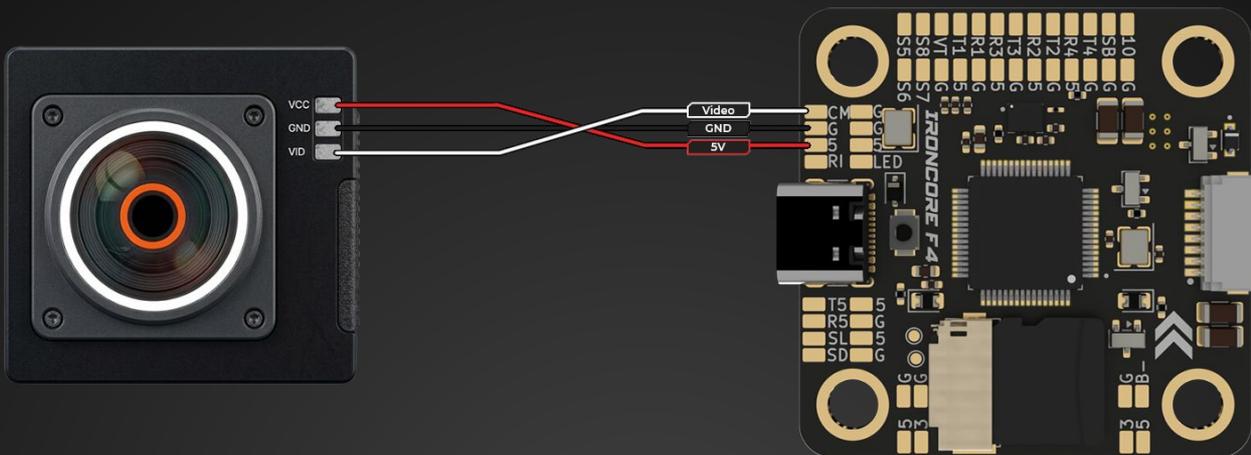
FLIGHT CONTROLLER GPS CONNECTIONS



Connect the GPS module to the flight controller using UART: 5V and GND for power, TX (GPS) to RX (FC), and RX (GPS) to TX (FC). Additional SDA/SCL lines are used for compass (I2C) communication if available.

Note: Mount the GPS module away from power electronics and ensure correct UART and I2C configuration in firmware.

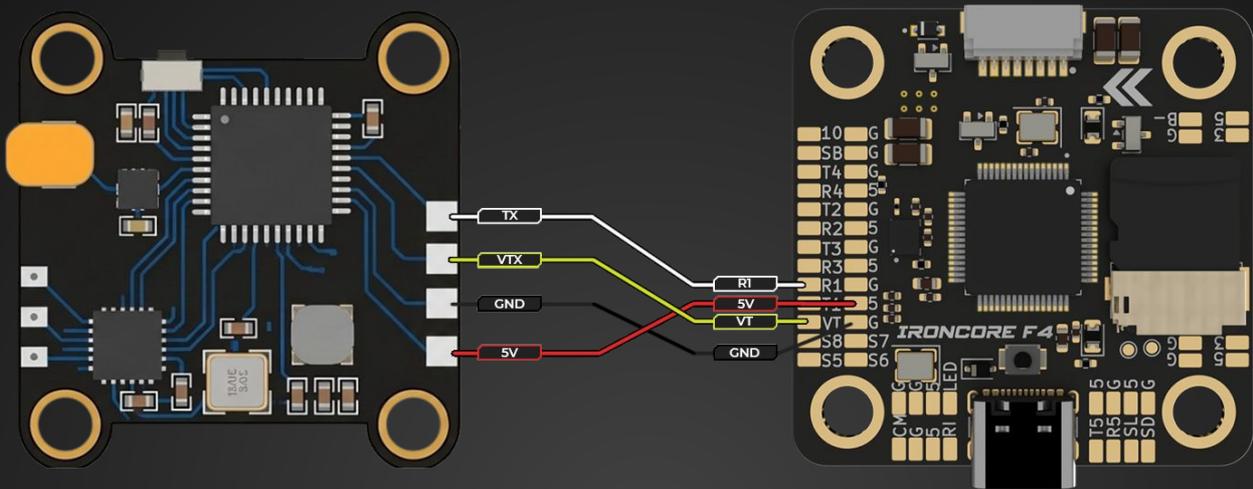
FLIGHT CONTROLLER CAM CONNECTIONS



To enable the FPV feed and On-Screen Display (OSD), connect the camera to the flight controller using the following three-wire configuration:

- VCC (Red): Connect to the 5V pad on the flight controller to provide power to the camera.
- GND (Black): Connect to the GND pad to complete the circuit.
- VID (White/Yellow): Connect to the CAM (Video In) pad. This allows the flight controller to overlay flight data onto your video signal before sending it to the VTX.

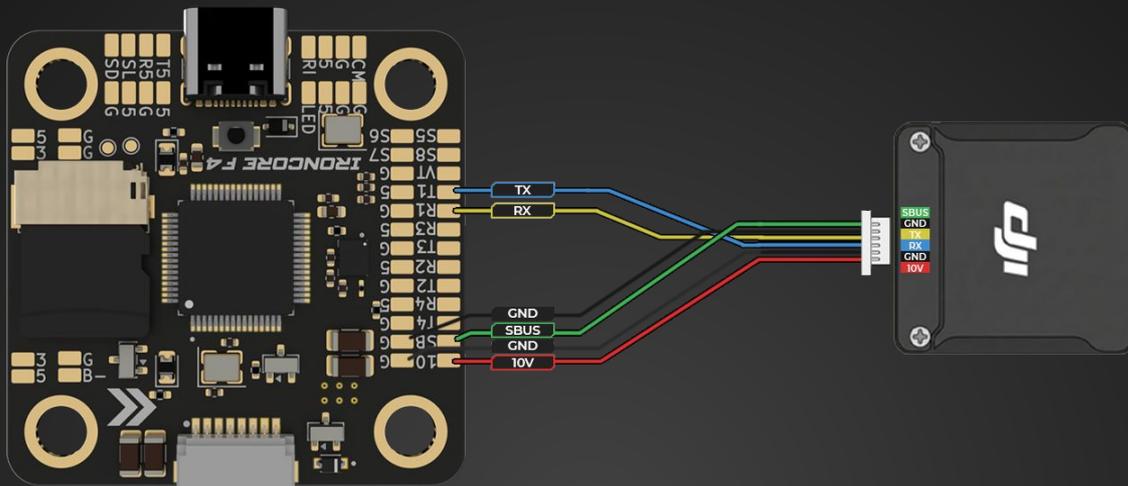
FLIGHT CONTROLLER VTX CONNECTIONS



This connection transmits the processed video signal (with OSD) from the flight controller to your Video Transmitter (VTX) for wireless broadcast.

- 5V (Red): Powers the VTX from the flight controller's 5V pad.
- GND (Black): Connects to the GND pad to complete the power circuit.
- VT (Yellow): Connects the VTX video input to the VT (Video Out) pad on the flight controller.
- TX (White): Connects to the R1 (UART1 Receive) pad. This enables SmartAudio or Tramp protocols, allowing you to change VTX channels and power levels via your radio sticks.

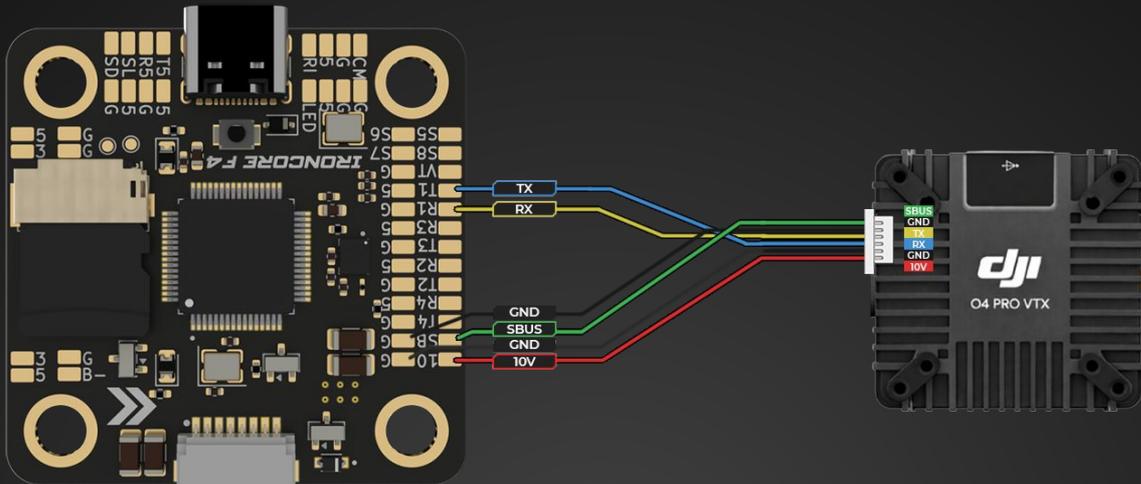
FLIGHT CONTROLLER DJI O3 CONNECTIONS



Connect the DJI O3 Air Unit to the flight controller via UART: power (5V/VBAT as required), GND, TX (FC) to RX (O3), and RX (FC) to TX (O3). The SBUS wire from the O3 can be connected to the FC's SBUS/RC input for direct receiver signal output.

Note: Enable MSP/OSD on the selected UART and configure SBUS input in firmware if using the O3's built-in receiver output.

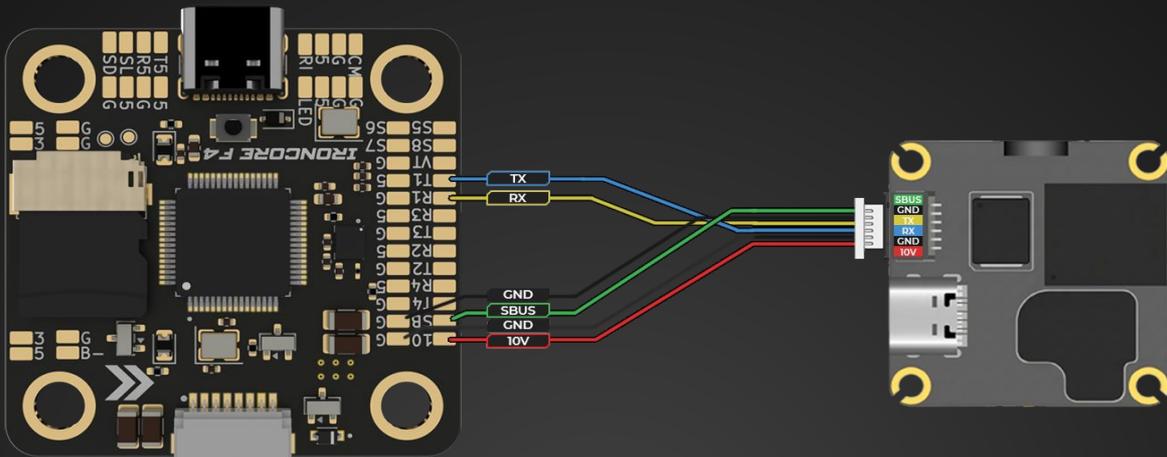
FLIGHT CONTROLLER DJI O4 PRO CONNECTIONS



Connect the DJI O4 Pro Air Unit to the flight controller via UART: power (5V/VBAT as required), GND, TX (FC) to RX (O4), and RX (FC) to TX (O4). The SBUS wire from the O4 Pro can be connected to the FC's SBUS/RC input for direct receiver signal output.

Note: Enable MSP/OSD on the selected UART and configure SBUS input in firmware if using the O4 Pro built-in receiver output.

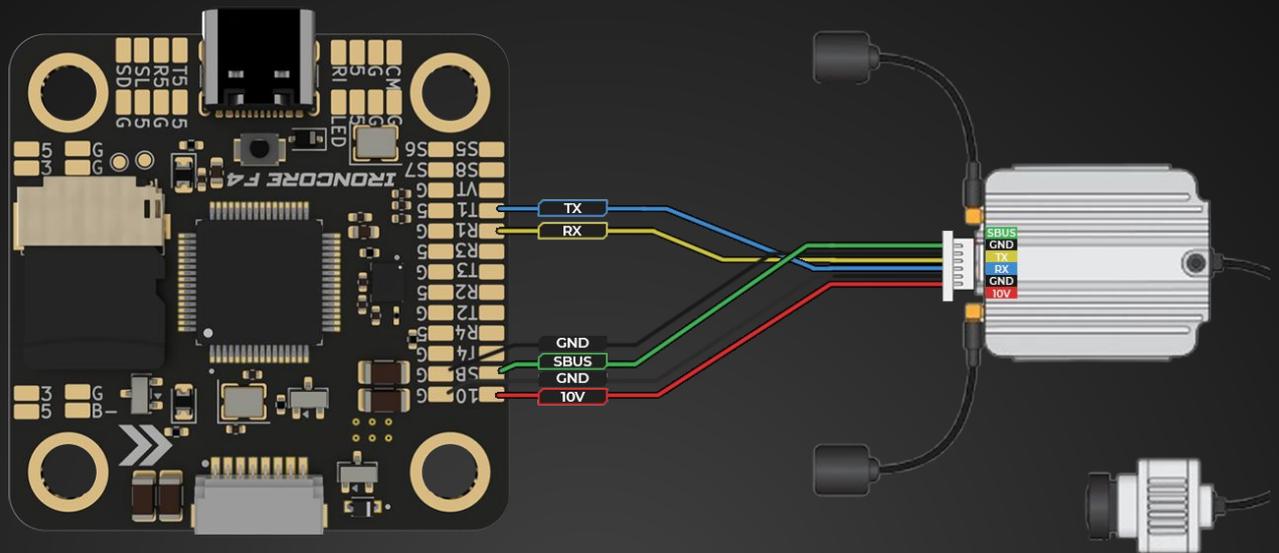
FLIGHT CONTROLLER DJI O4 LITE CONNECTIONS



Connect the DJI O4 Lite Air Unit to the flight controller via UART: power (5V/VBAT as required), GND, TX (FC) to RX (O4), and RX (FC) to TX (O4). The SBUS wire from the O4 Lite can be connected to the FC's SBUS/RC input for direct receiver signal output.

Note: Enable MSP/OSD on the selected UART and configure SBUS input in firmware if using the O4 Lite built-in receiver output.

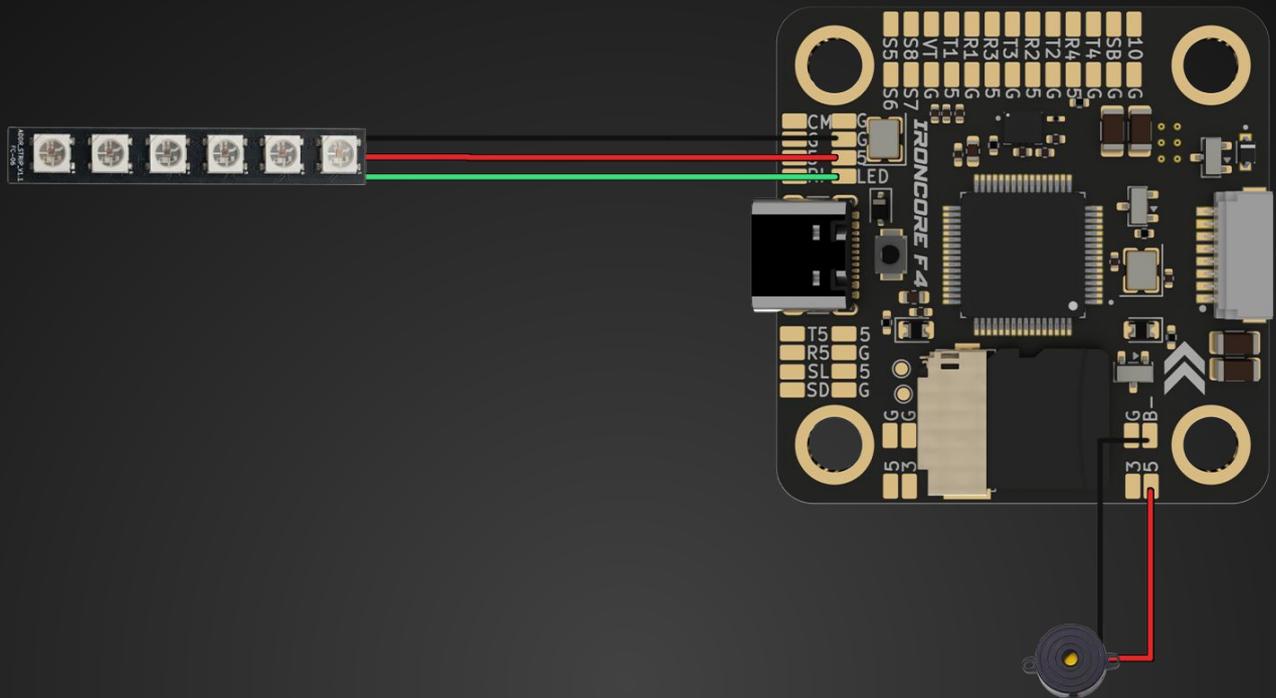
FLIGHT CONTROLLER DJI AIR UNIT CONNECTIONS



Connect the DJI Air Unit to the flight controller via UART: power (5V/VBAT as required), GND, TX (FC) to RX (Air Unit), and RX (FC) to TX (Air Unit). The SBUS wire from the Air Unit can be connected to the FC's SBUS/RC input for direct receiver signal output.

Note: Enable MSP/OSD on the selected UART and configure SBUS input in firmware if using the Air Unit built-in receiver output.

FLIGHT CONTROLLER LED CONNECTIONS



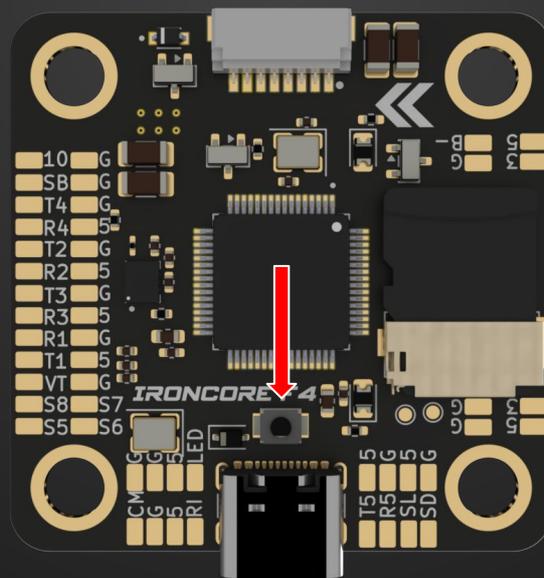
These components provide visual and audible feedback for flight status, battery warnings, and lost-model recovery.

- **LED Strip:**
 - **5V (Red)** : Connects to the 5V pad for power.
 - **GND (Black)**: Connects to the G (Ground) pad.
 - **LD (Green)**: Connects to the LED pad on the flight controller to control color and patterns.
- **Buzzer:**
 - **B+ (Red)**: Connects to the 5V pad.
 - **B- (Black)** : Connects to the B- pad. The flight controller toggles this ground connection to trigger the alarm.

ARDUPILOT FIRMWARE FLASHING

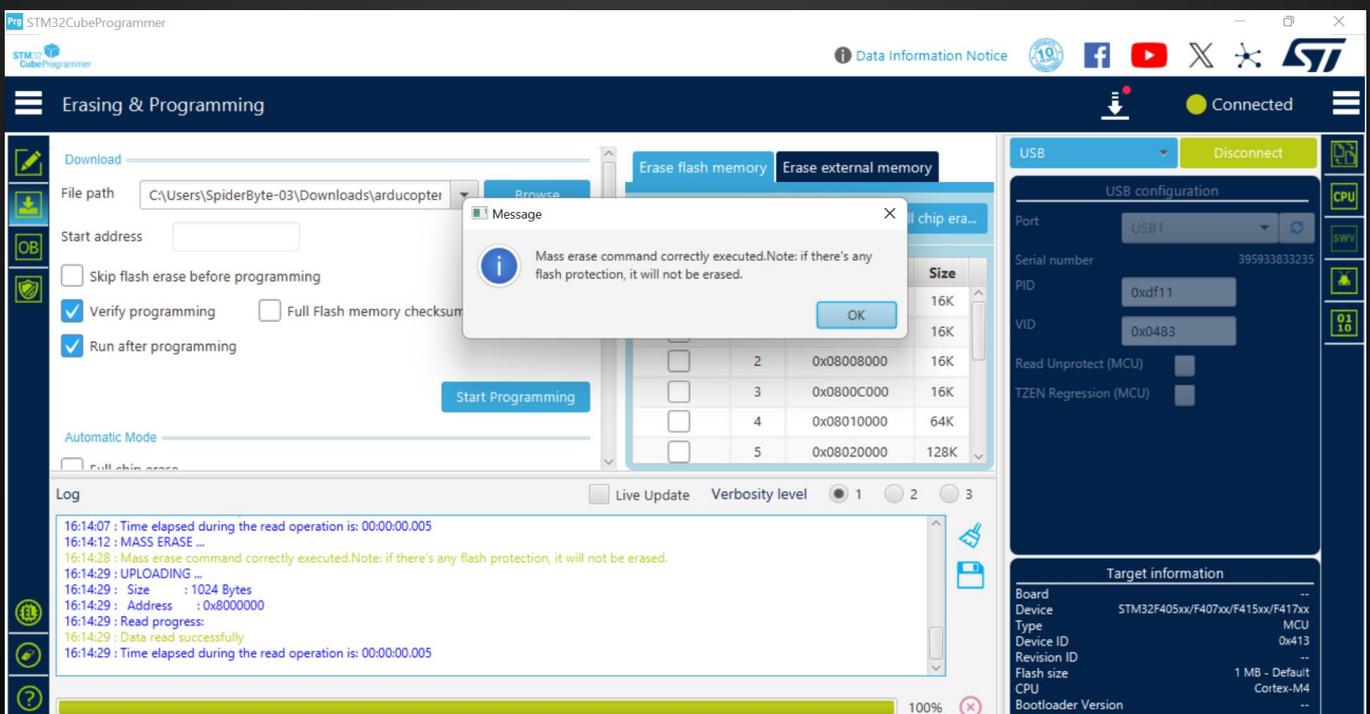
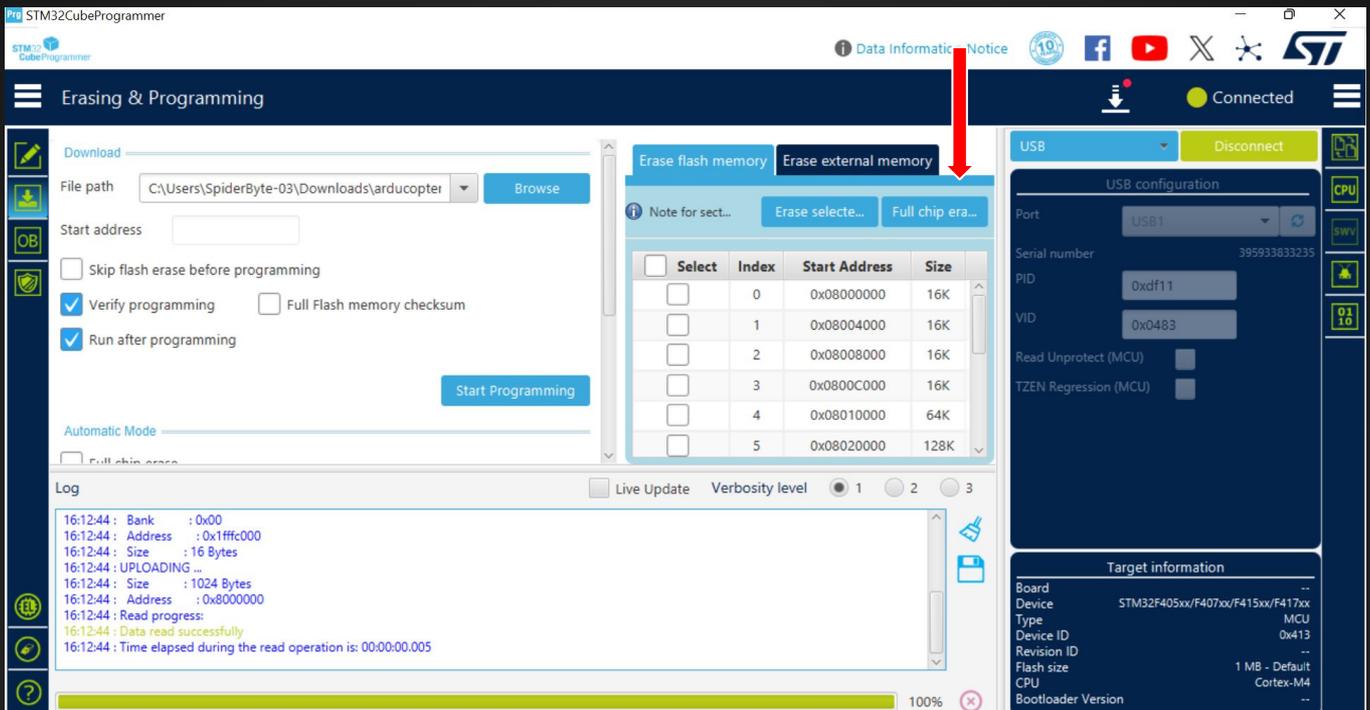
Step 1: Enter Bootloader (DFU) Mode

- Press and hold the physical **BOOT** button on the flight controller.
- While holding the button, connect the FC to your PC via a **USB Data Cable** (avoid "charge-only" cables).
- Release the button once connected; the board is now in Device Firmware Update (DFU) mode.



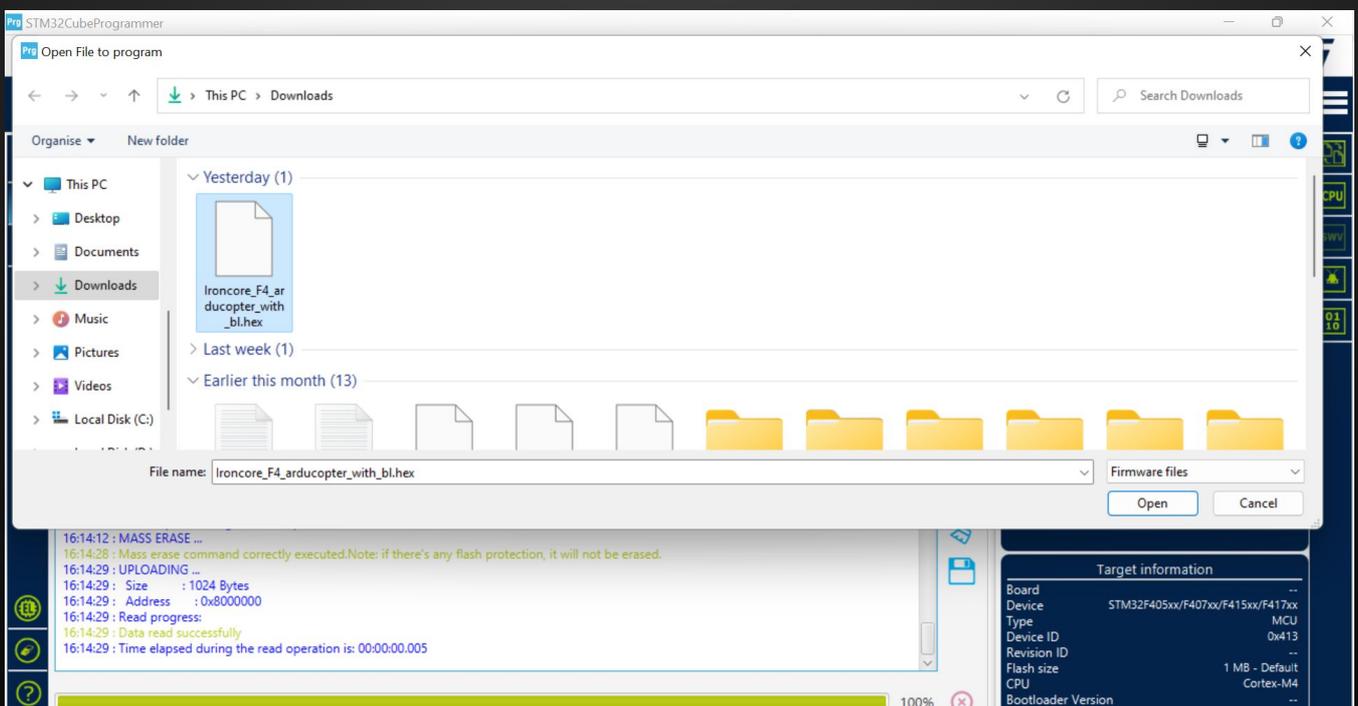
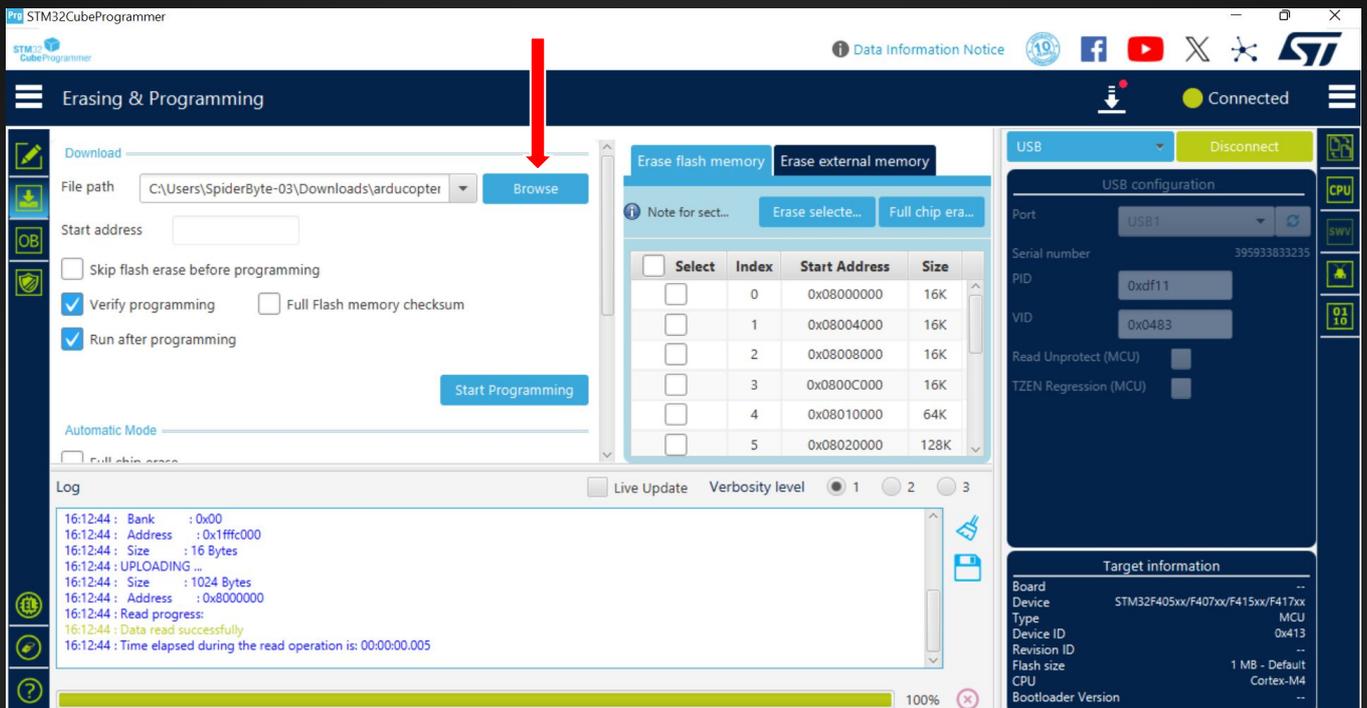
Step 4: Full Chip Erase

Before flashing new firmware, it is critical to wipe the existing data. Click **Full chip erase** and wait for the confirmation log to appear. Do not disconnect the device during this process.



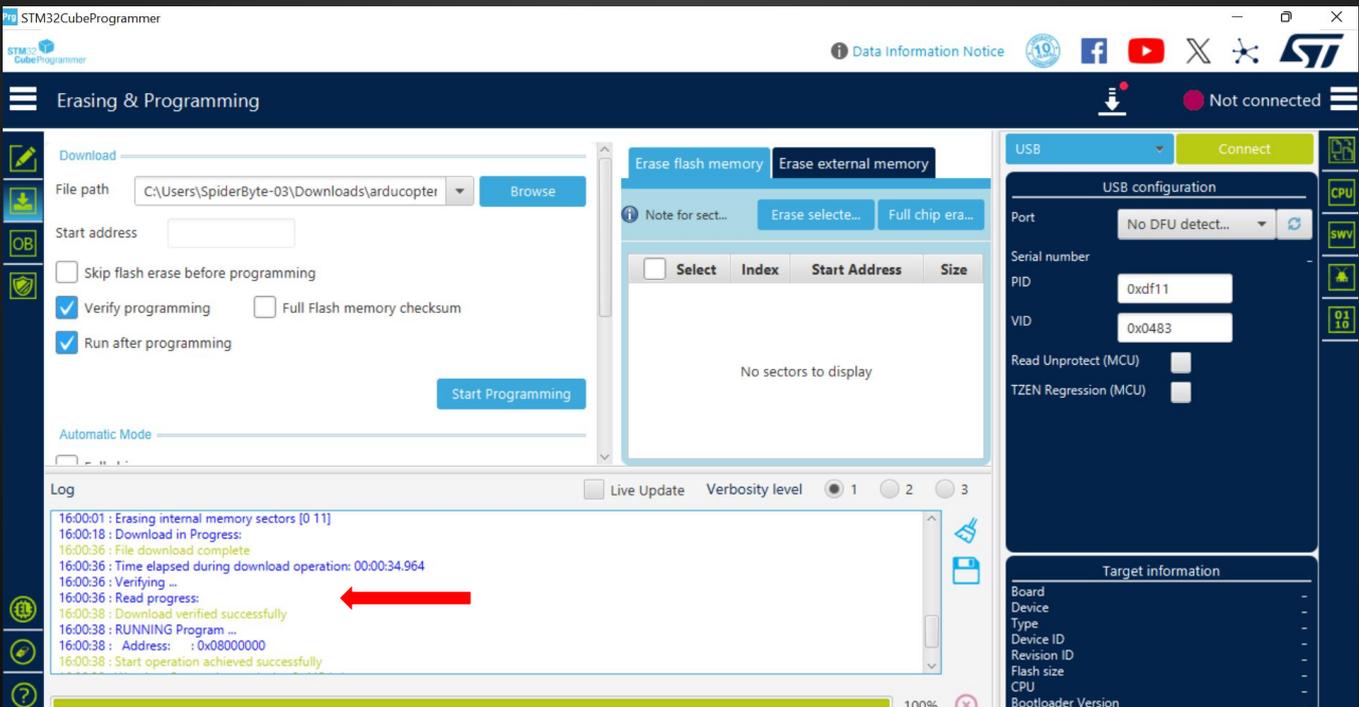
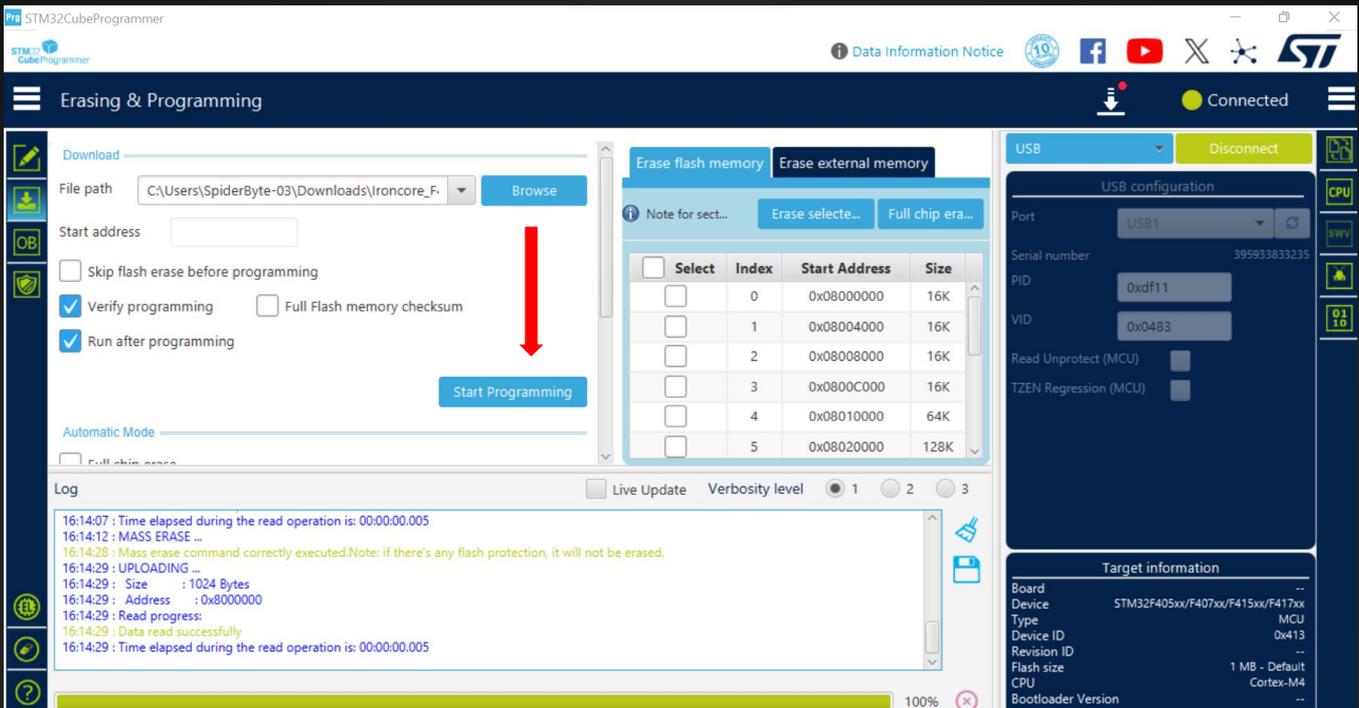
Step 6: Load Firmware File

Now click **Browse**. Browse your computer to select the firmware file you downloaded and click on open button (Please find the link below to download the latest Arducopter firmware)



Step 7: Execute Download

Once the file path is loaded, click the **Start Programming** button. Monitor the progress bar at the bottom and wait for the "File download complete" message before disconnecting your flight controller.



Now after powering cycle the Flight controller and can connect the FC with GCS software (Mission Planner, QGroundControl)

FLASHING BETAFLIGHT FIRMWARE

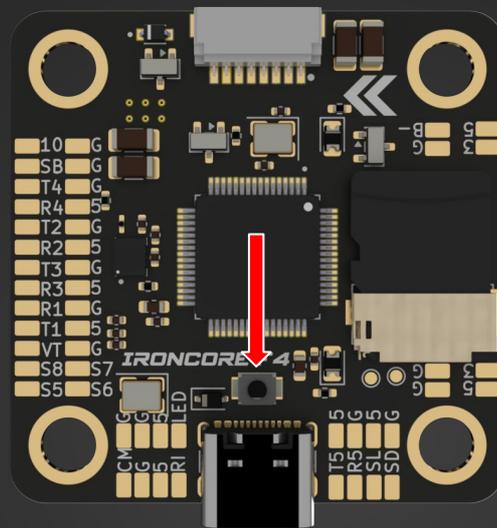
Step 1: Install Betaflight Configurator

- Download the latest version of Betaflight Configurator from the official Betaflight GitHub repository.
- Install the appropriate version based on your operating system (Windows, macOS, or Linux).

The screenshot shows the Betaflight Configurator web interface in a browser window. The title bar reads "Betaflight Configurator". The interface includes a top navigation bar with the Betaflight logo, a port selection dropdown set to "/dev/ttyUSB0", a "Manual Selection" dropdown, and buttons for "Auto-Connect" (checked), "Update Firmware", and "Connect". Below the navigation bar, a status bar shows the date and time "2026-03-18 @16:32:17" and a message "Build server failure: https://build.betaflight.com/api/configurator/releases/Stable HTTP 404". The main content area features a large Betaflight logo and the text "Welcome to Betaflight - Configurator, a utility designed to simplify updating, configuring and tuning of your flight controller." Below this, logos for RadioLink, Aikon Electronics, Radiomaster, and Skystars are displayed. The interface is divided into several sections: "Hardware" with a link to "Download Betaflight Blackbox Log Viewer", "Contributing" with a list of ways to help (e.g., using knowledge on the Wiki, contributing code, testing new features), and "Open Source / Donation Notice" with a "Donate" button. A footer at the bottom shows system statistics: "Port utilization: D: 0 % U: 0 % Packet error: 0 I2C error: 0 Cycle Time: 0 CPU Load: 0 %" and "Configurator: 10.10.0 (c97deaf)".

Step 2: Enter Bootloader (DFU) Mode

- Press and hold the physical **BOOT** button on the flight controller.
- While holding the button, connect the FC to your PC via a **USB Data Cable** (avoid "charge-only" cables).
- Release the button once connected; the board is now in Device Firmware Update (DFU) mode.



Betaflight Configurator

BETAFLIGHT
Configurator: 10.10.0 (c97deaf)

DFU - STM32 BOOTLOADER

Update Firmware

Connect

2026-03-18 @16:32:17 - Build server failure: <https://build.betaflight.com/api/configurator/releases/Stable> HTTP 404

Show Log

Welcome

Privacy Policy

Documentation & Support

Options

Firmware Flasher

BETAFLIGHT

Welcome to **Betaflight - Configurator**, a utility designed to simplify updating, configuring and tuning of your flight controller.

Raspberry Pi SpeedyBee MEPSKING EMAX

Hardware

The application supports all hardware that can run Betaflight. Check flash tab for full list of hardware.

Download Betaflight Blackbox Log Viewer

Download Betaflight TX Lua Scripts

The firmware source code can be downloaded from [here](#)

For legacy hardware using a CP210x USB to serial chip:
The latest **CP210x Drivers** can be downloaded from [here](#)

Contributing

If you would like to help make Betaflight even better you can help in many ways, including:

- using your knowledge of Betaflight to create or update content on our [Wiki](#), or answering other users' questions in online forums;
- **contributing code** to the firmware and Configurator - new features, fixes, improvements;
- testing **new features and fixes** and providing feedback;
- helping other users solve the problems they report in our [issue tracker](#), and participating in discussions on feature requests;
- [translation](#) Betaflight Configurator into a new language, or helping

Open Source / Donation Notice

Betaflight is a flight controller software that is **open source** and is available free of charge **without warranty** to all users. If you found the Betaflight or Betaflight Configurator useful, please consider **supporting** its development by donating.

[Donate](#)

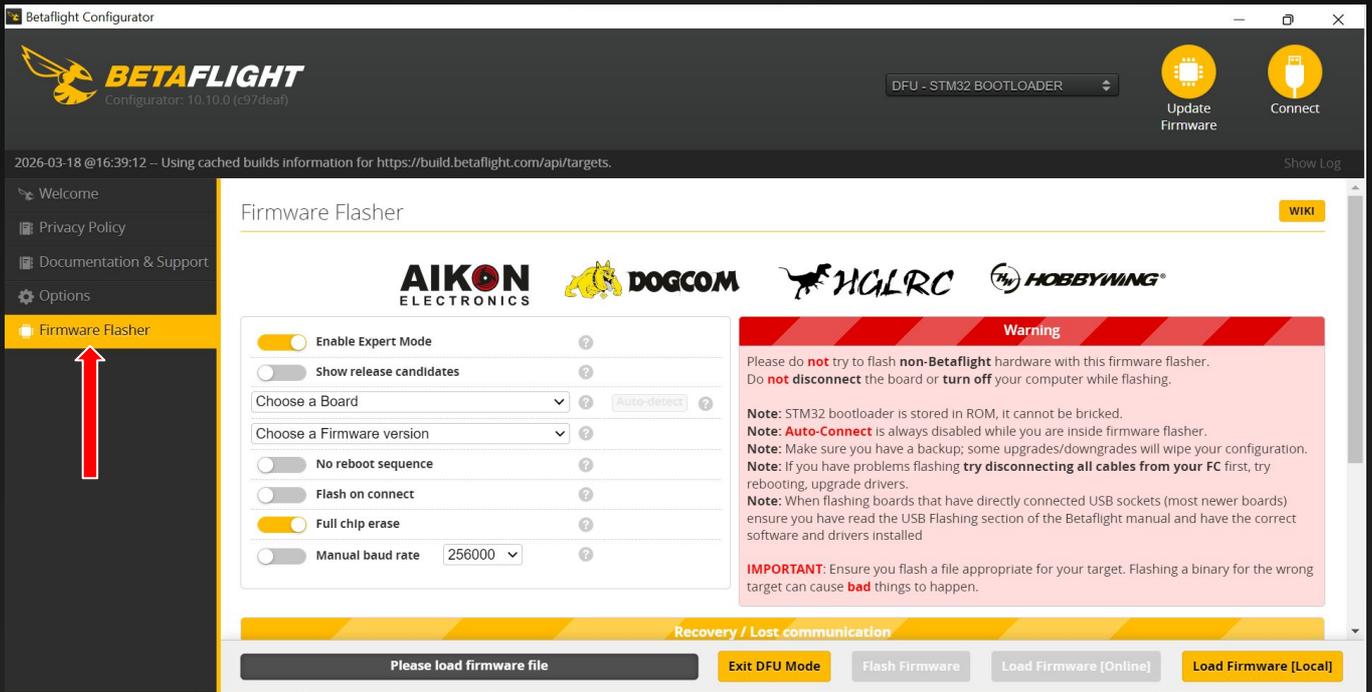
If you want to contribute financially on an ongoing basis, you should consider becoming a patron for us on [Patreon](#).

Port utilization: D: 0 % U: 0 % Packet error: 0 I2C error: 0 Cycle Time: 0 CPU Load: 0 %

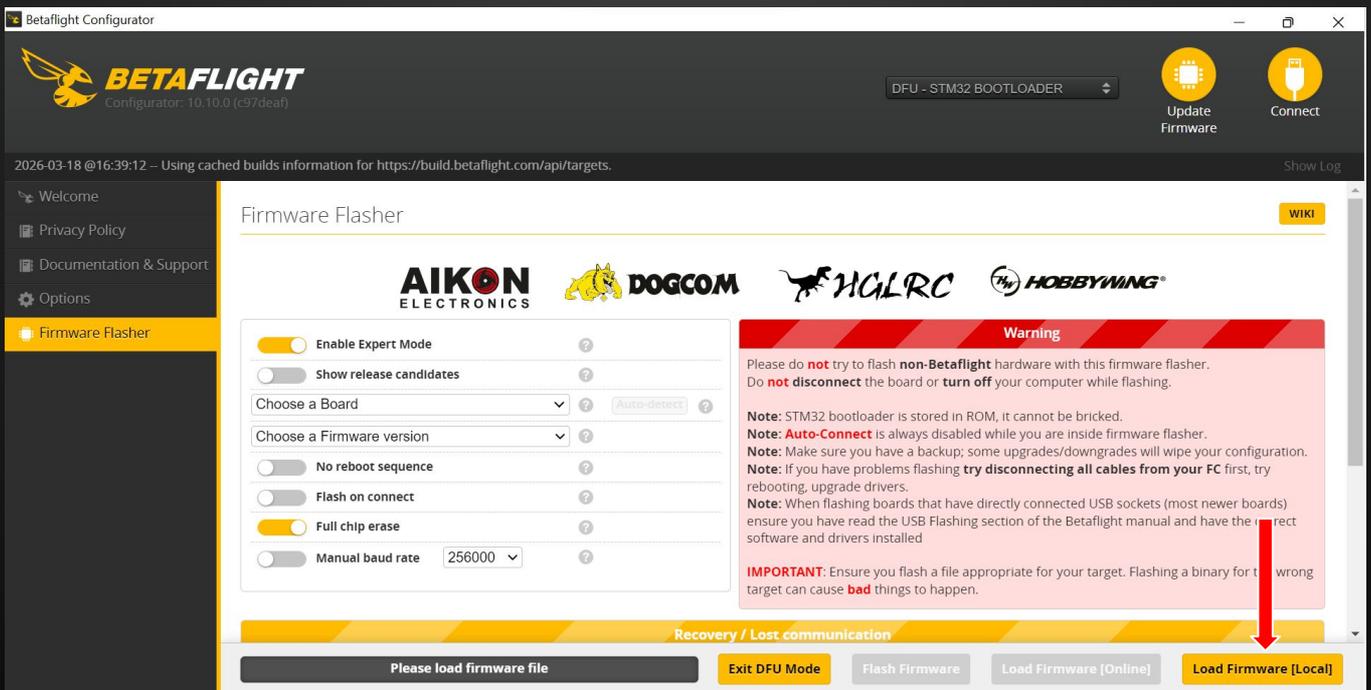
Configurator: 10.10.0 (c97deaf)

Step 3: Flashing Firmware

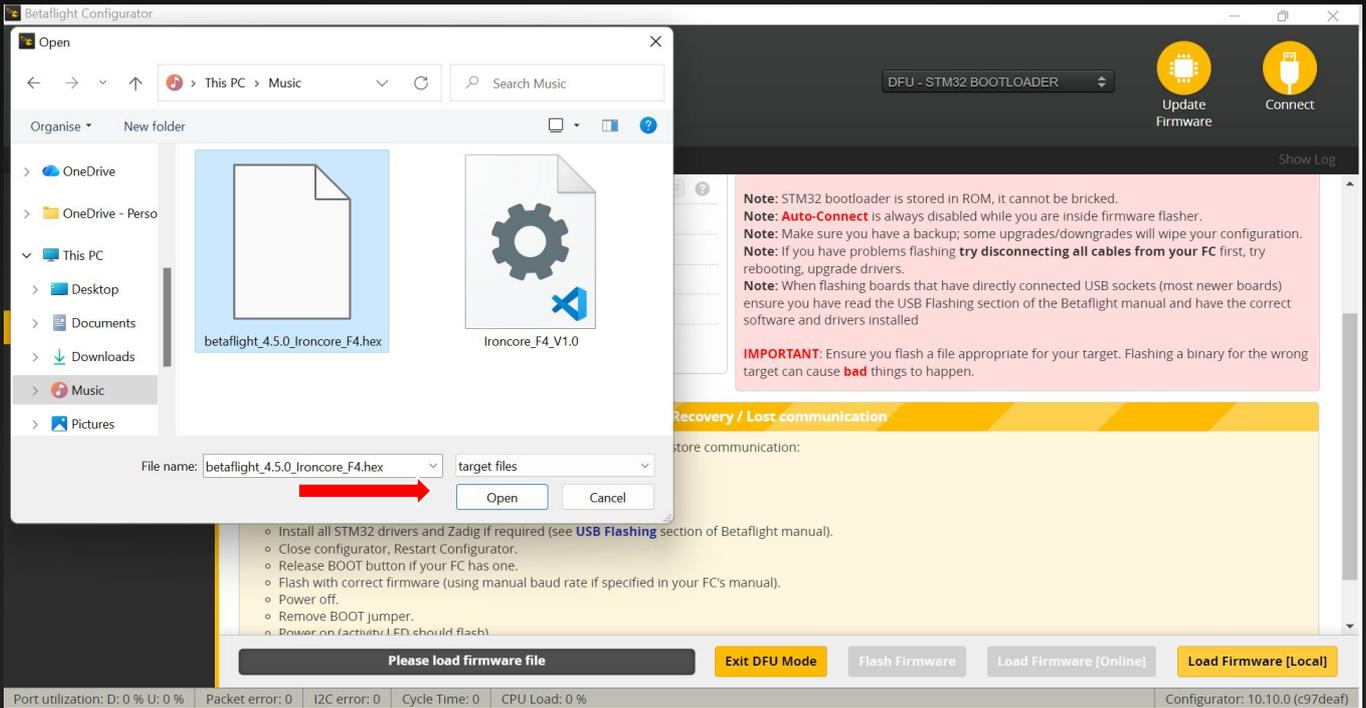
- Now click on **Firmware Flasher** in left side menu



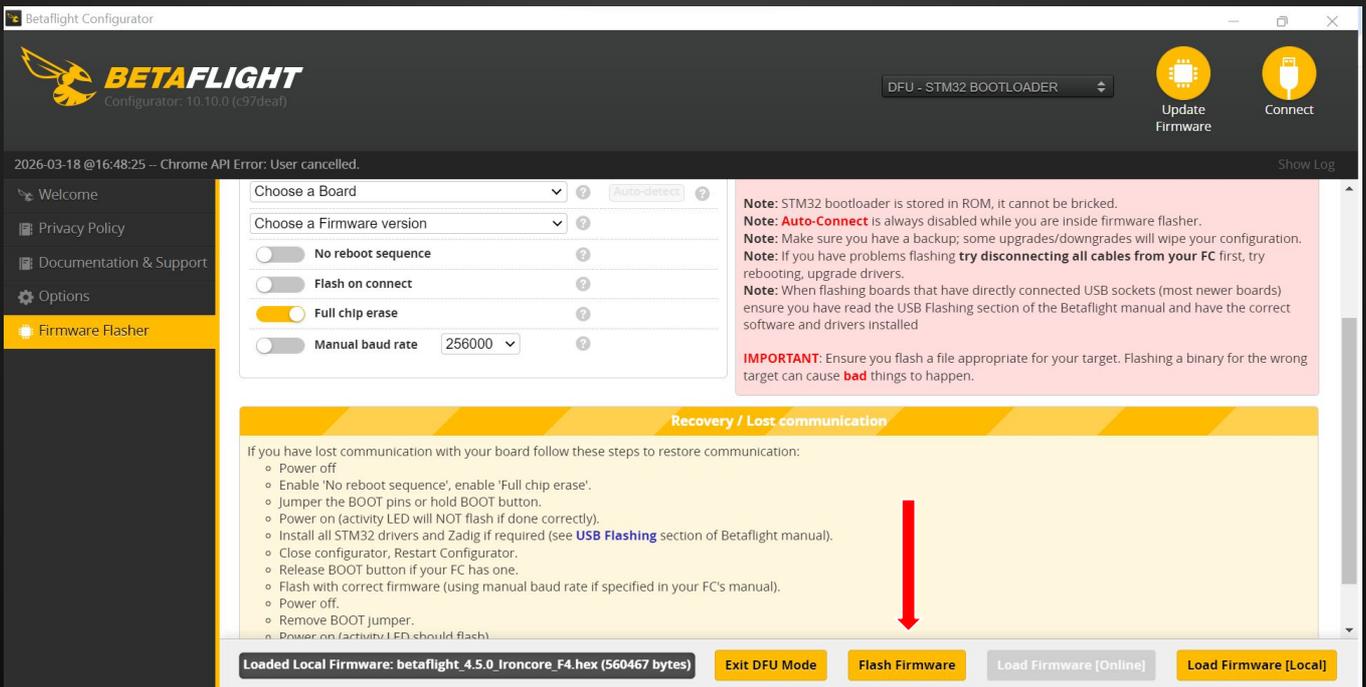
- Now click on **Load Firmware (Local)** in right bottom side



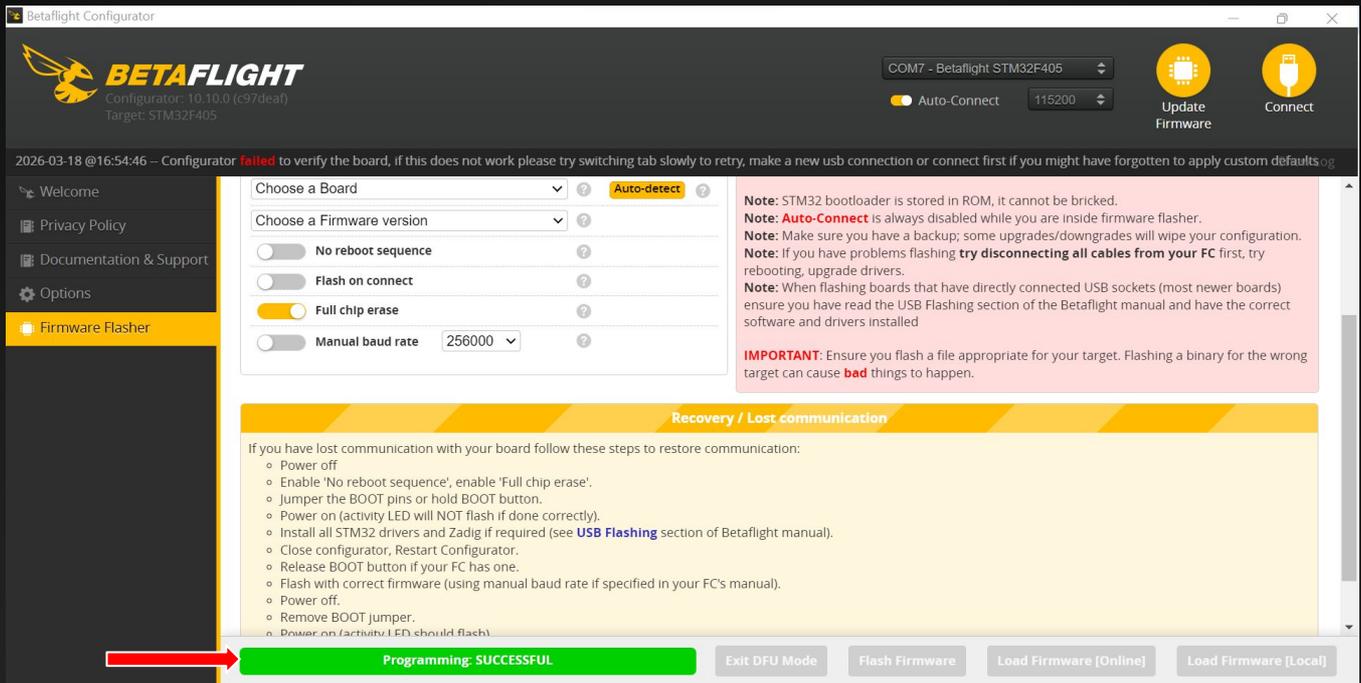
- Now select the betaflight firmware which you downloaded (please find the link below to download the betaflight firmware) and click on open.



- Now click on **Flash Firmware**

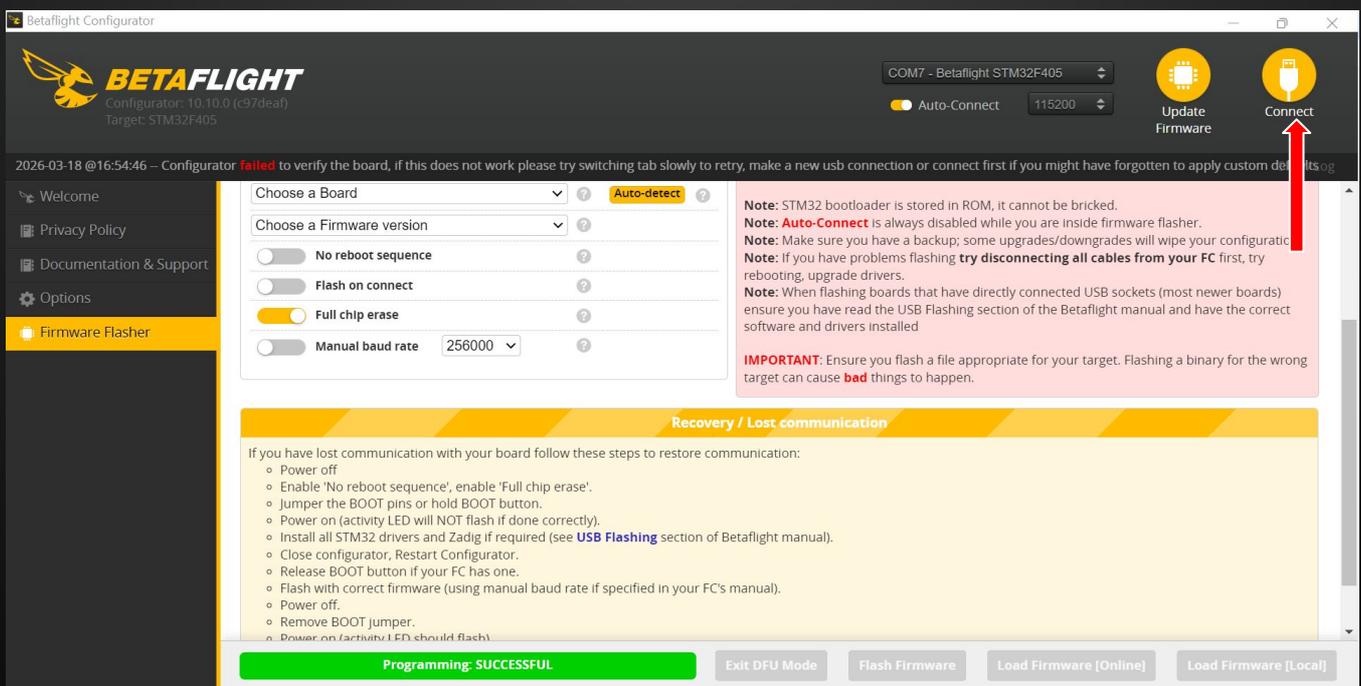


- After flashing is successful you should see **Programming: SUCCESSFUL**

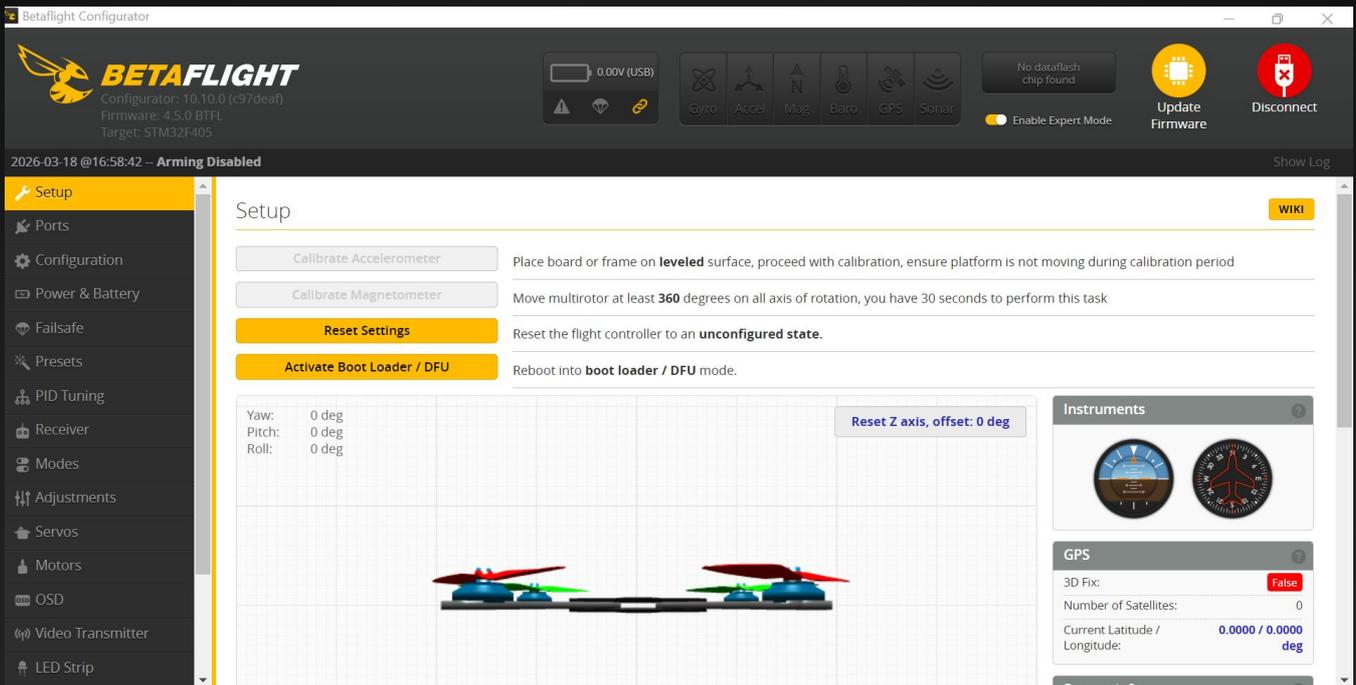


Step 4: Loading Configuration File

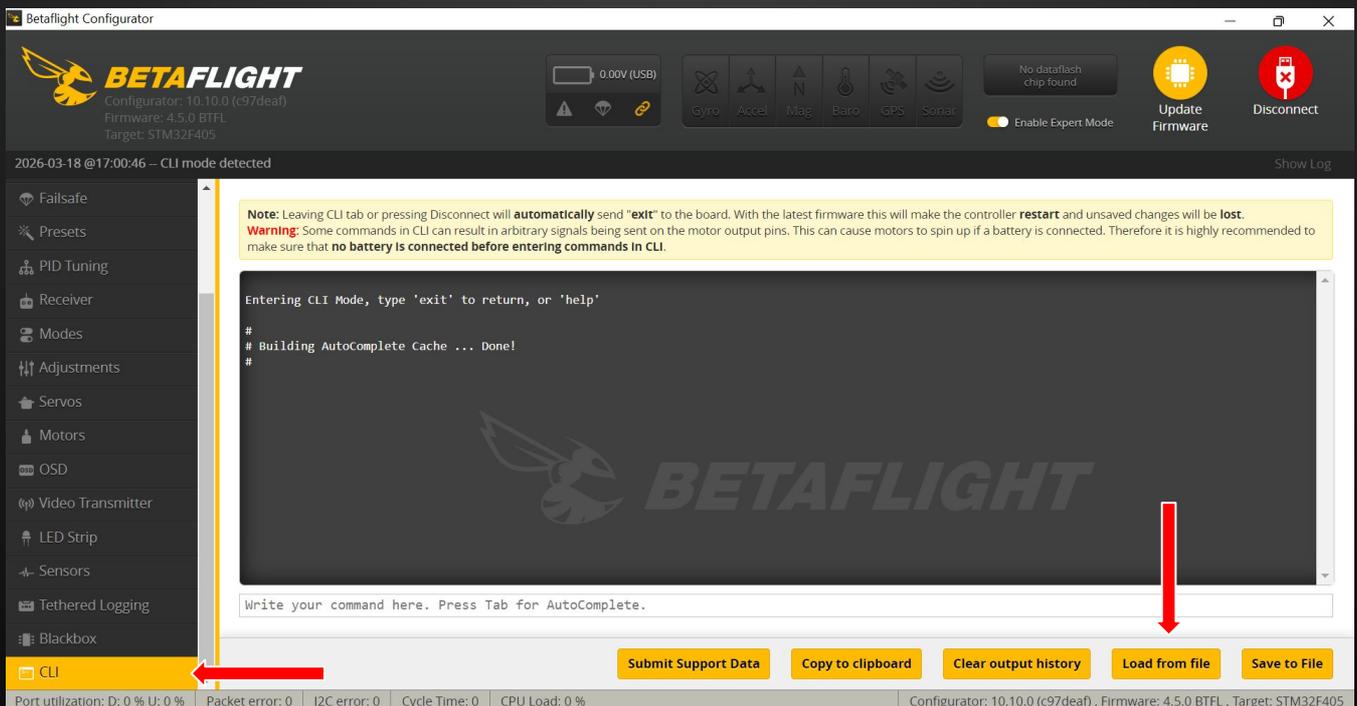
- Now Click on **Connect** Button on top right corner



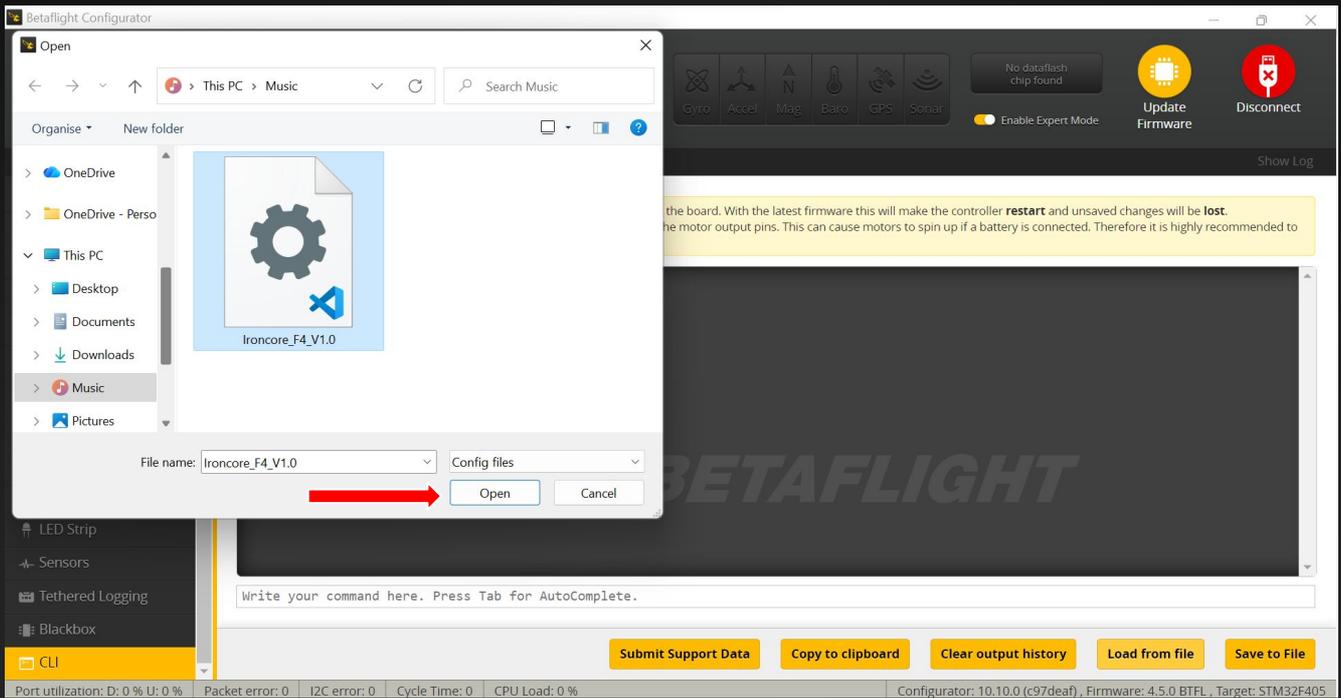
- Now you can see the Betaflight Dashboard, shows FC is connected with software.



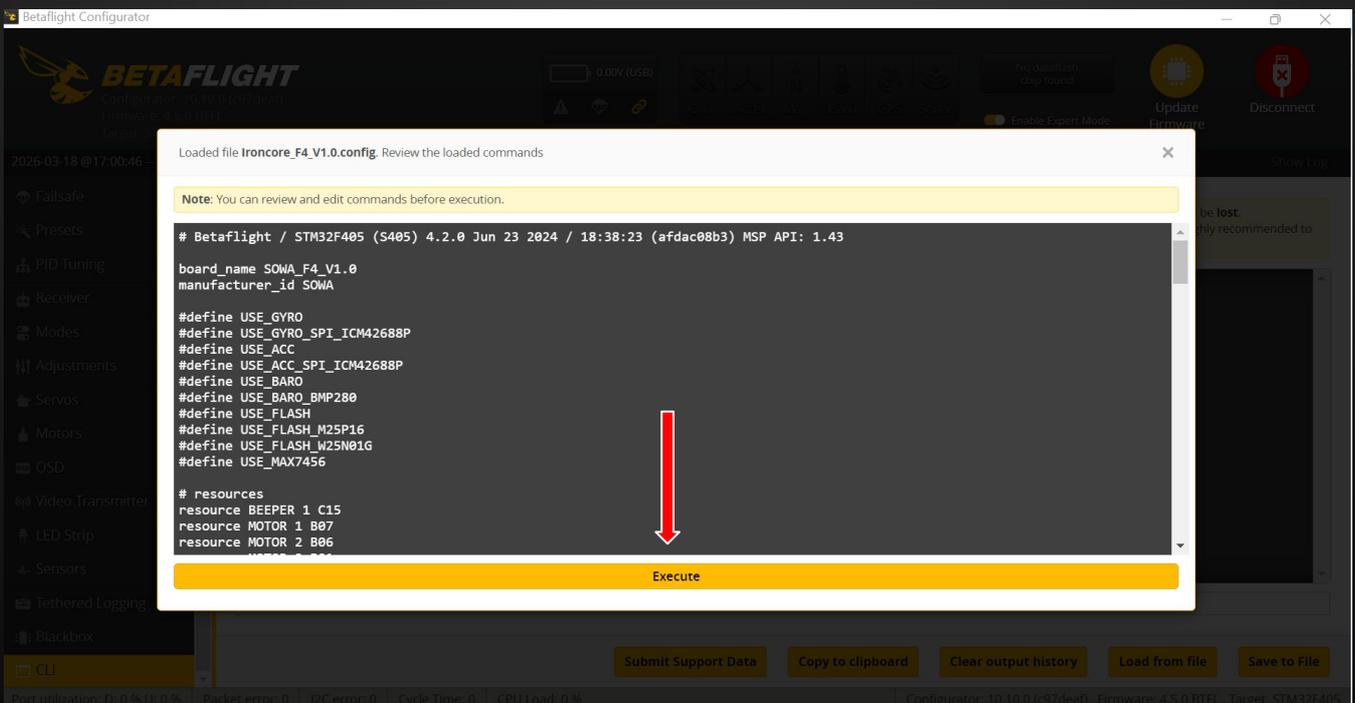
- Now on **CLI** tab in left side menu then click on **Load From File** in bottom left side menu



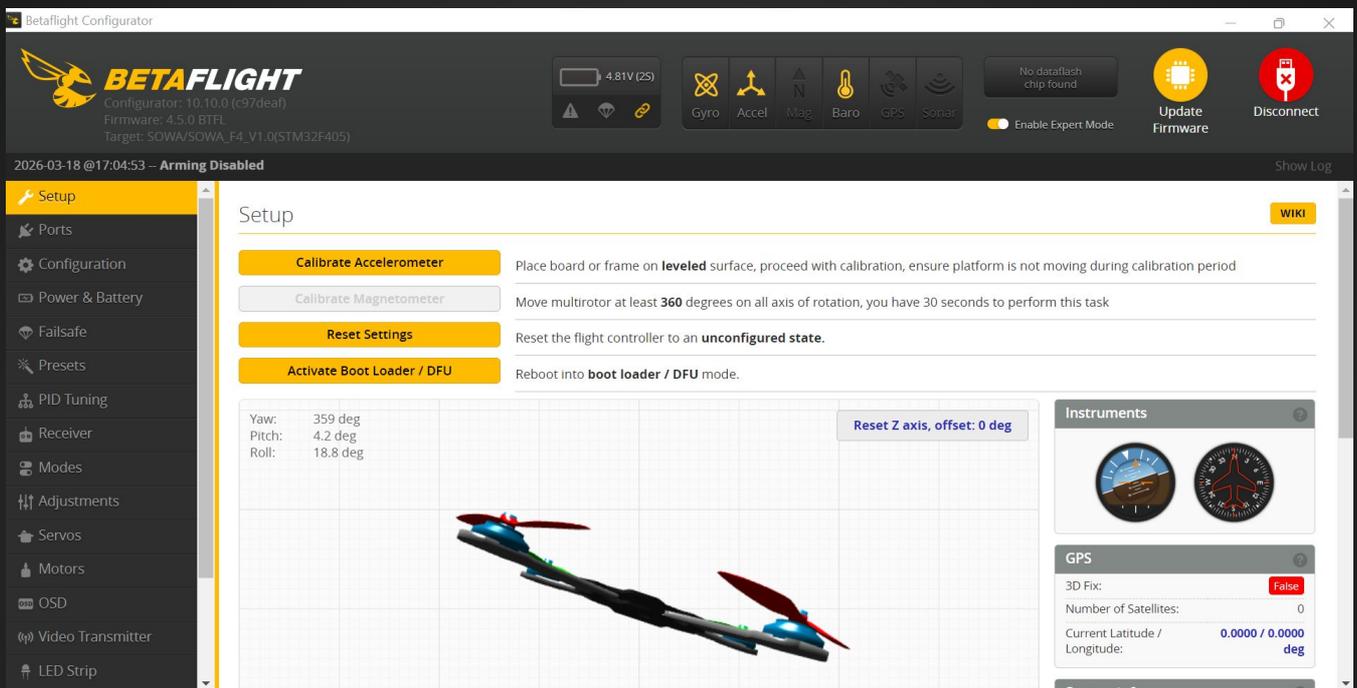
- Now load the downloaded config file (please find the link below to download the config file) and click on open.



- Once config file is loaded lick on **Execute**



- Once file is executed now you can connect the FC with software and can do the setup as required normally.



Let's Connect

Email us at: contact@edsystems.in

Website: www.edsystems.in