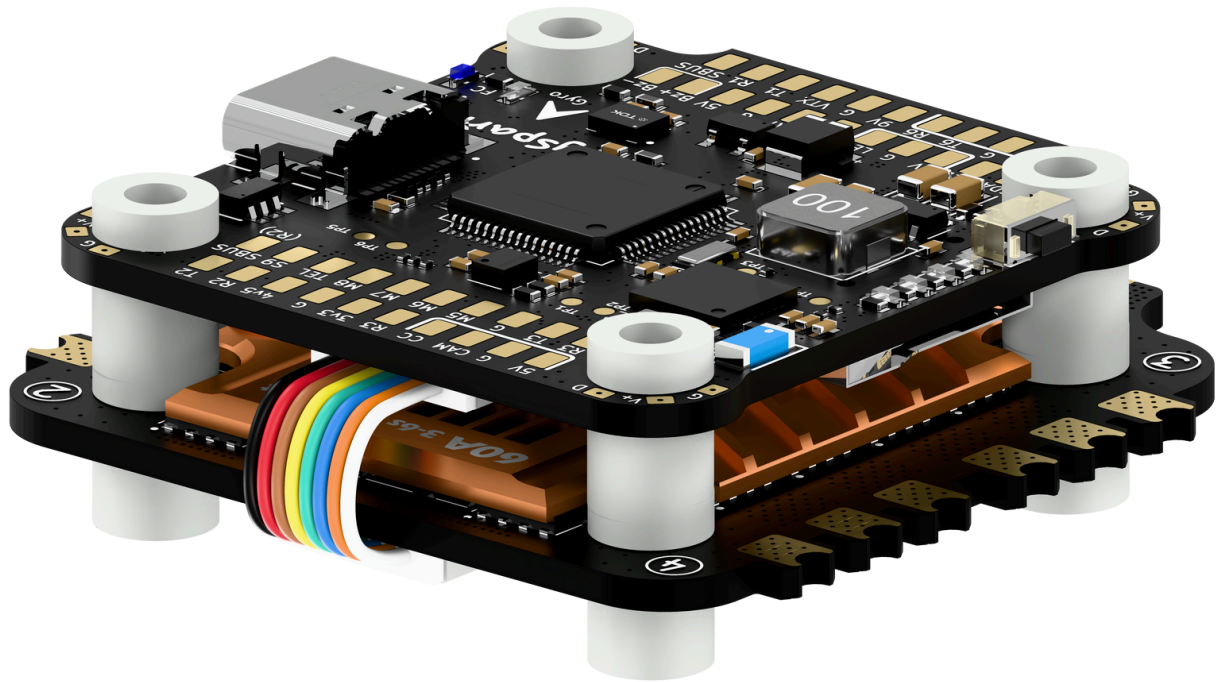


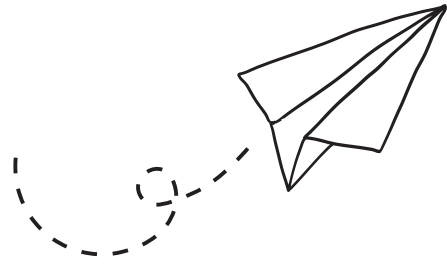


# FlySpark F4 V1 BLS 60A Stack



User Manual V1.0

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## FLYSPARK F4 V1 FLIGHT CONTROLLER

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## FLYSPARK BLS 60A 4-IN-1 ESC

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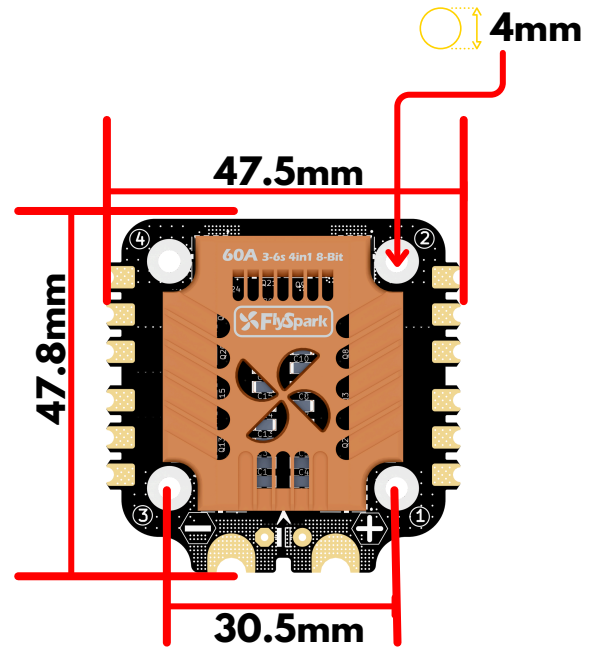
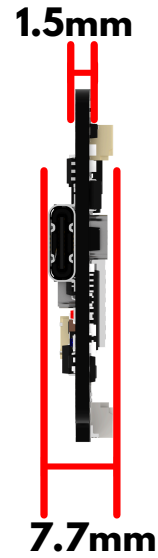
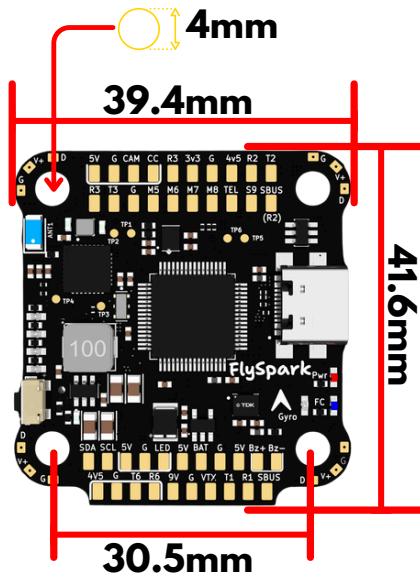
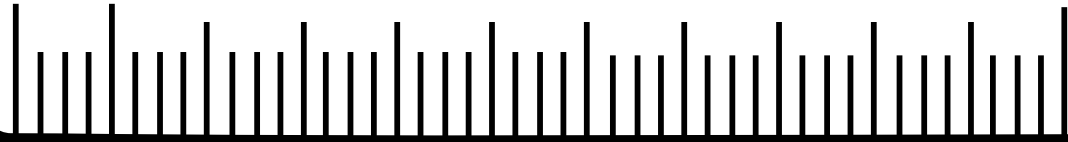
# Specs Overview

|                   |   |
|-------------------|---|
| Product Name      | FlySpark F4 V1 BLS 60A Stack                      |
| AI Features       | Sensor Fusion, Adaptive Filtering                 |
| Software Support  | Betaflight, INAV, Ardupilot, EMU-flight, SkyBrush |
| ESC Communication | BLHeli_S  |
| Connectivity      | Bluetooth & USB-C                                 |
| Power Input       | 3-6S LiPo   |
| Dimension         | 47.8mm(L) x 47.5mm(W) x 18.3mm(H)                 |
| Mounting          | 30.5 x 30.5mm (4mm hole size )                    |
| Weight            | 34g   |



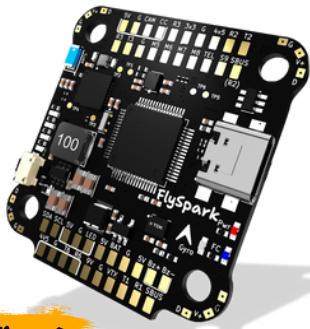
**1 Year Warranty**

# Dimensions

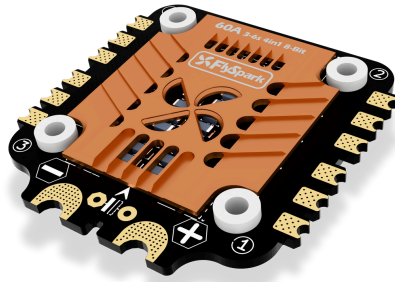




# Package



#1



#2



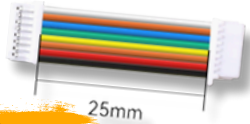
#6



#7



#3



#8



#5



#4



#10



#9



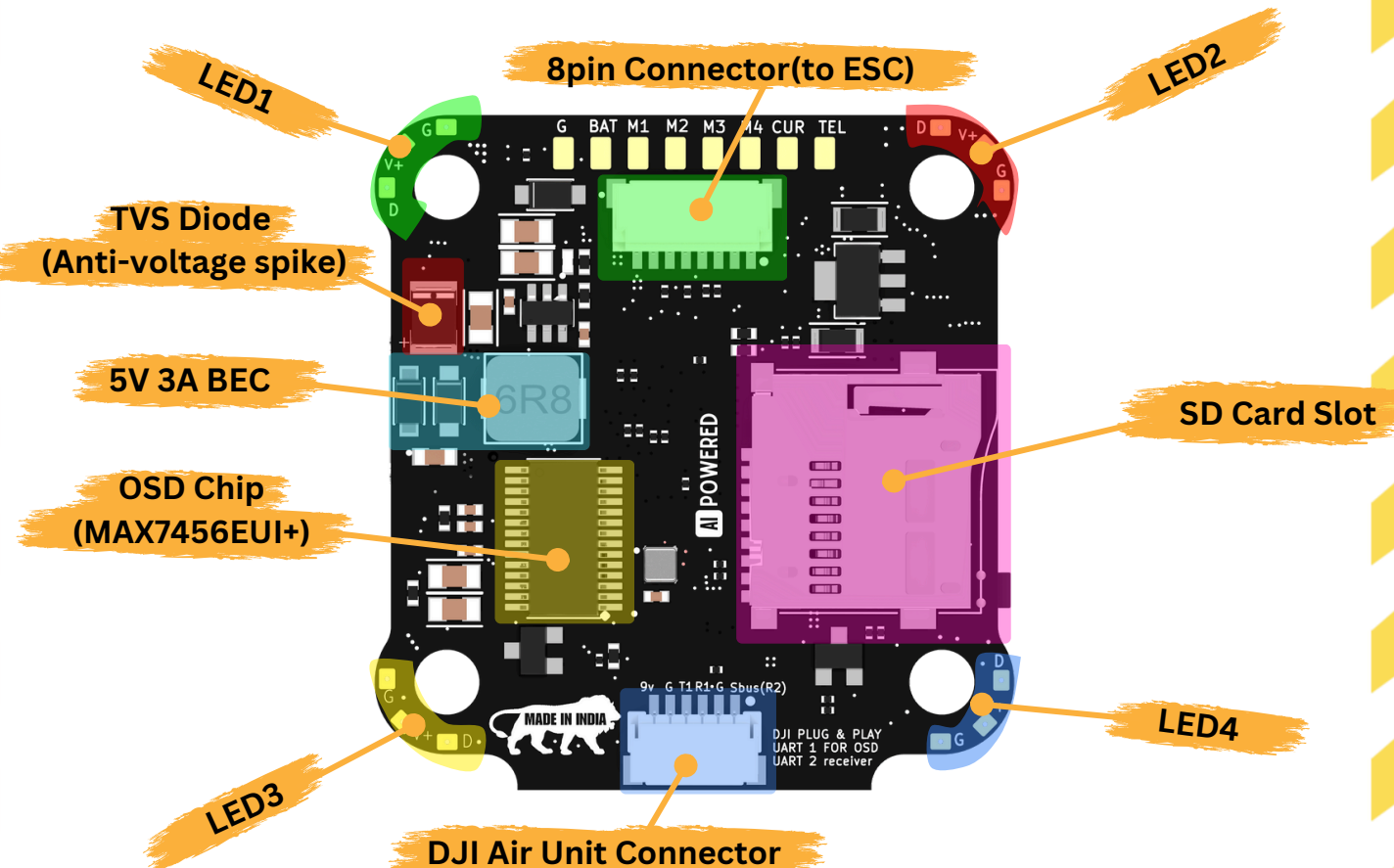
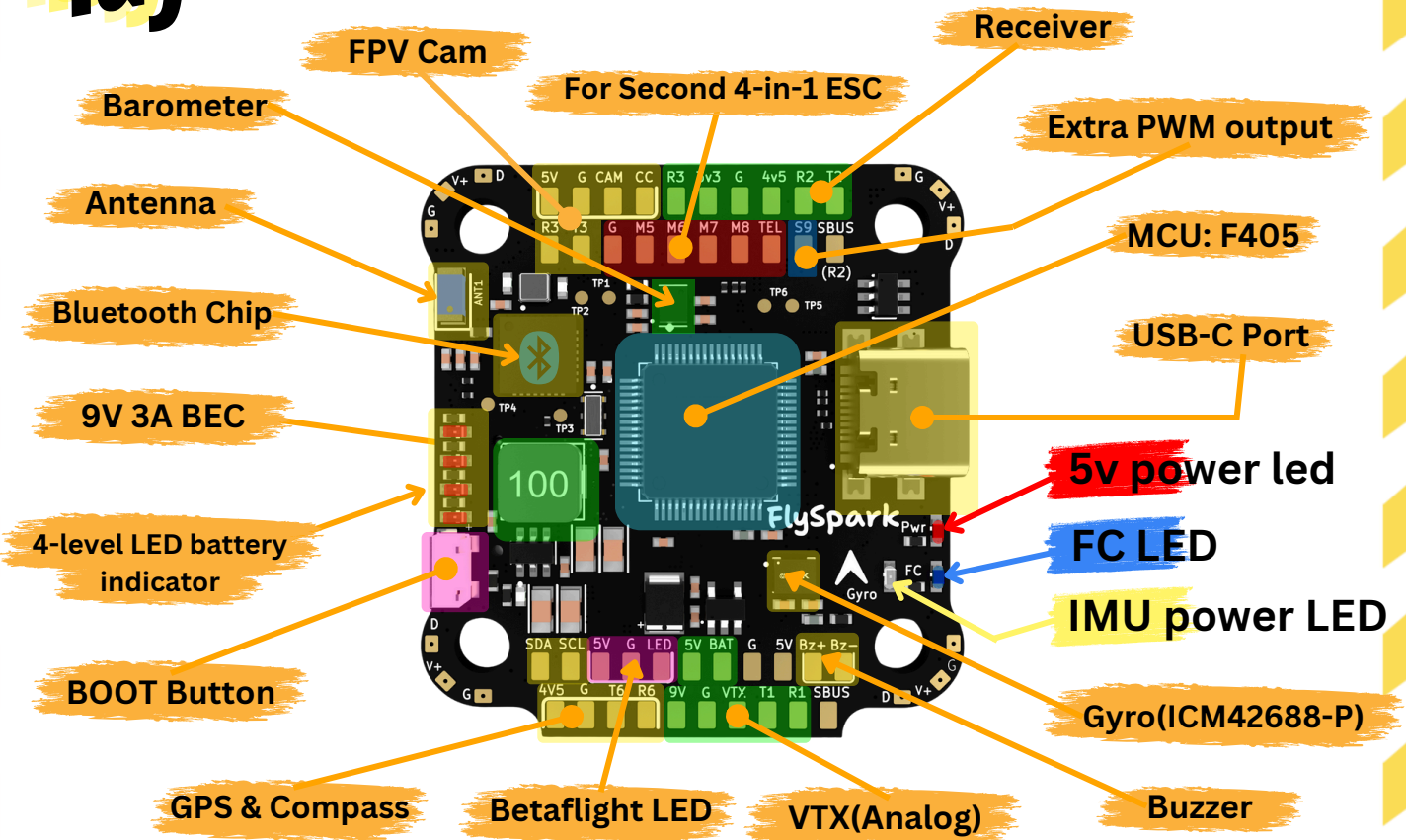
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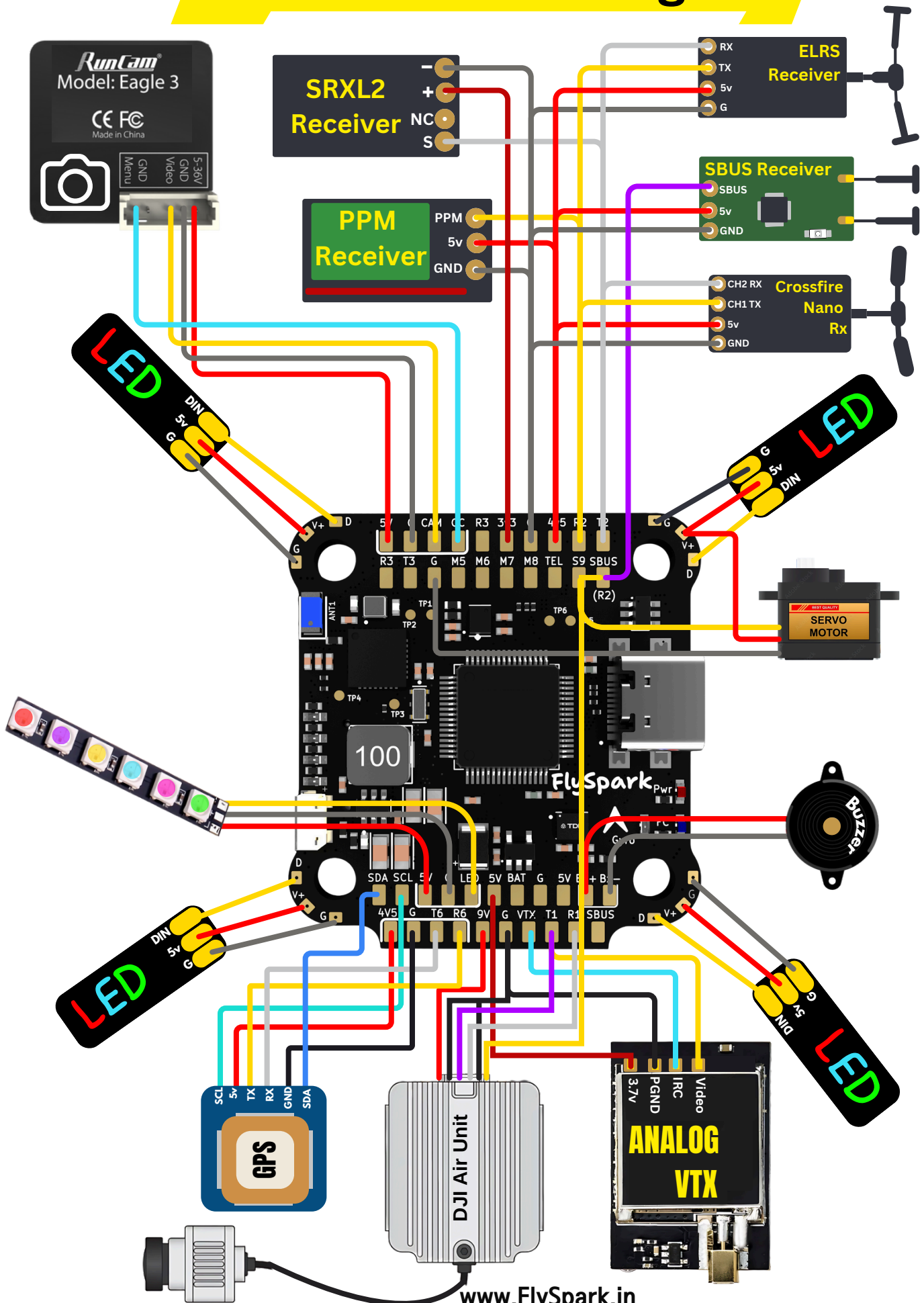
#12

- 1 FlySpark F4 V1 Flight Controller x 1
- 2 FlySpark BLS 60A 4-in-1 ESC x 1
- 3 35V 1000uF Low ESR Capacitor x 1
- 4 M3 Nylon Nut x 4
- 5 M3 silicone O Ring x 4
- 6 M3\*8mm Silicone Grommets(for FC) x 4
- 7 M3\*8.1mm Silicone Grommets(for ESC) x 4
- 8 SH 1.0mm 25mm-length 8pin Cable(for FC-ESC connection) x 1
- 9 SH 1.0mm 75mm-length 8pin Cable\* x 1
- 10 M3\*30mm Iner-hexagon Screws x 4
- 11 DJI 6pin Cable(80mm) x 1
- 12 XT60 Power Cable(100mm) x 1

# layout

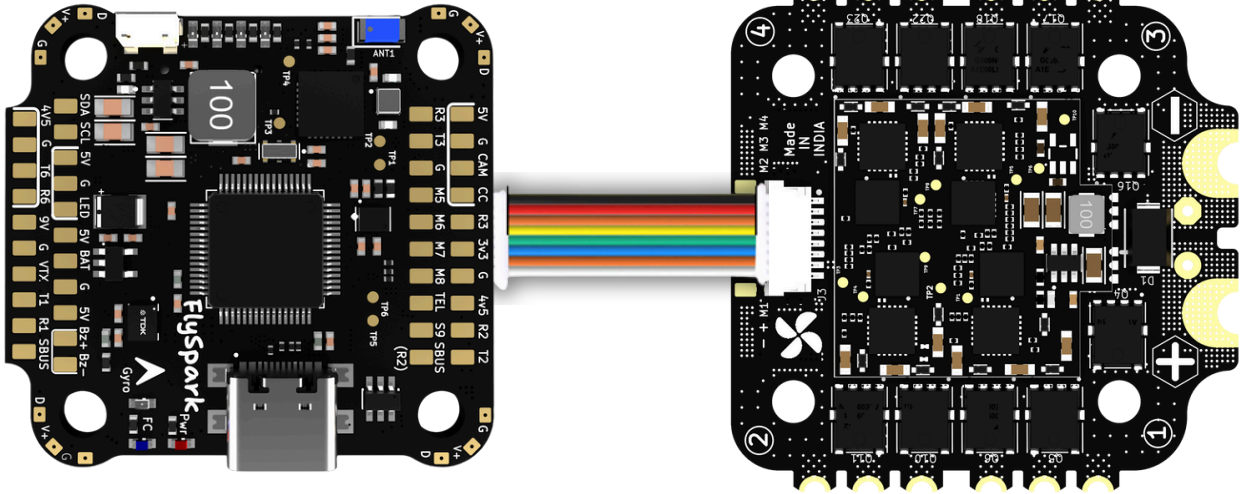


# FC Connection diagram



# Guide to FC & ESC Connections

## Method 1: Using 8-Pin JST Cable

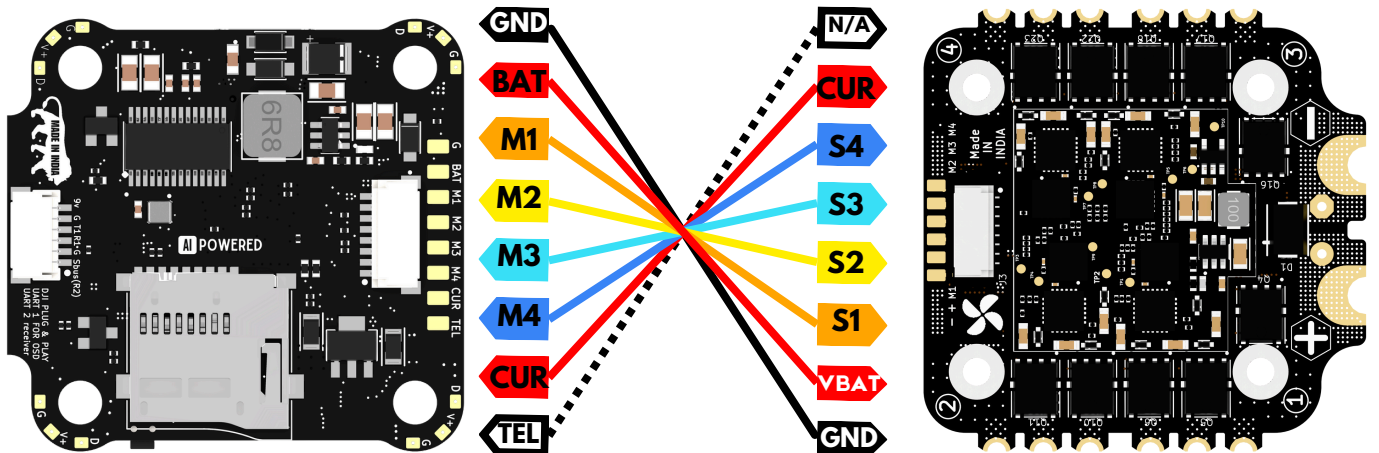


FC

ESC

## Method 2: Direct Soldering

Solder 8 wires to the 8 pads on each end, following the pad definitions below



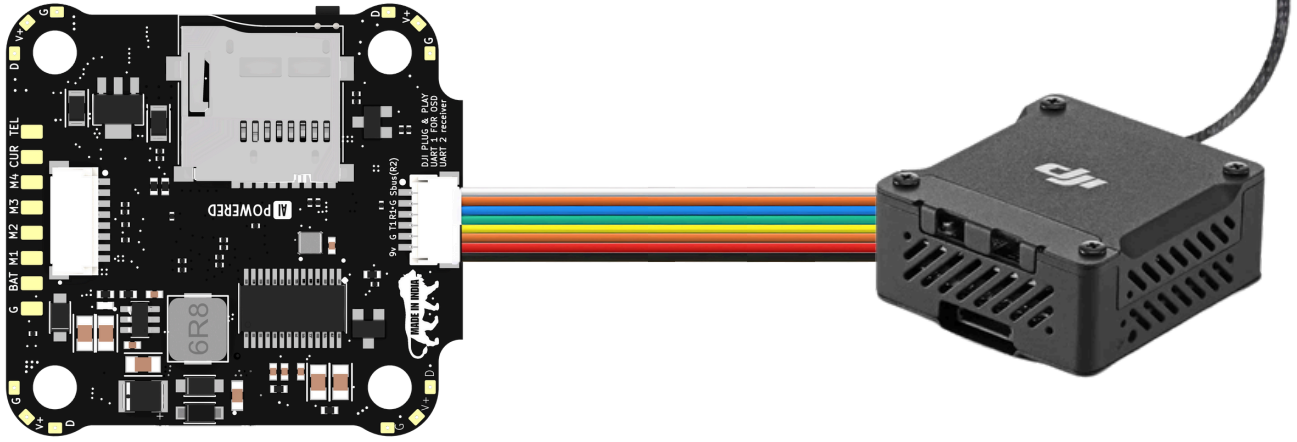


## Flight controller specs

### Specifications

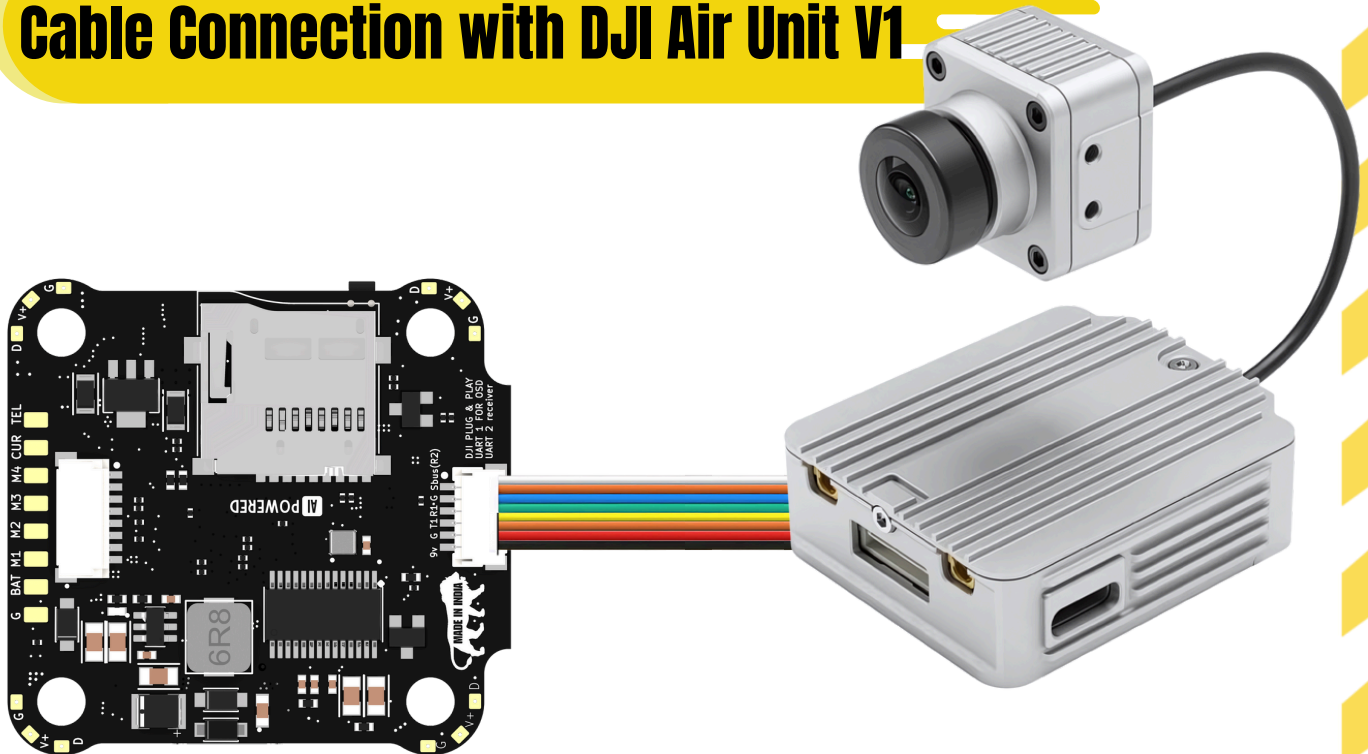
|                                      |   |
|--------------------------------------|---|
| MCU                                  | STM32F405   |
| IMU(Gyro)                            | ICM-42688-P   |
| USB Port Type                        | Type-C  |
| Barometer                            | Built-in ( DPS310XTSA1)   |
| OSD Chip                             | MAX7456EUI+ chip  |
| BLE Bluetooth                        | Supported. Used for Flight Controller configuration (MSP should be enabled with Baud rate 115200 on UART4)  |
| WIFI                                 | Not supported   |
| DJI Air Unit Connection Way          | Two ways supported: 6-pin connector or direct soldering.  |
| 6-pin DJI Air Unit Plug              | Supported. Completely compatible with DJI O3/RunCam Link/Caddx Vista/DJI Air Unit V1, no wire is needed to be changed.  |
| Blackbox MicroSD Card Slot           | *Betaflight firmware requires the type of the microSD card to be either Standard (SDSC) or High capacity (SDHC) under 32GB, so extended capacity cards (SDXC) are not supported (Many high-speed U3 cards are SDXC). Also the microSD card MUST be formatted with the FAT16 or FAT32 (recommended) format. So, you could use any SD card less than 32GB, but the Betaflight can only recognize 4GB maximum. We suggest you use this <a href="#">3rd party formatting tool</a> and choose 'Overwrite format' then format your card. Also check out <a href="#">here</a> for the recommended SD cards or buy the <a href="#">tested cards</a> from our store. |
| Current Sensor Input                 | Supported. For FlySpark BLS 60A 4-in-1 ESC , please set scale = 400 and Offset = 0.   |
| Power Input                          | 3S - 6S Lipo(Through G, BAT pins/pads from the 8-pin connector or 8-pads on the bottom side)  |
| 5V Output                            | 9 groups of 5V output, four +5V pads and 1 BZ+ pad( used for Buzzer) on front side, and 4x LED 5V pads. The total current load is 3A.   |
| 9V Output                            | 2 groups of 9V output, one +9V pad on front side and other included in a connector on bottom side. The total current load is 3A.  |
| 3.3V Output                          | Supported. Designed for 3.3V-input receivers. Up to 500mA current load.   |
| 4.5V Output                          | Supported. Designed for receiver and GPS module even when the FC is powered through the USB port. Up to 1A current load.  |
| ESC Signal                           | M1 - M4 on bottom side and M5-M8 on front side.   |
| UART                                 | 6 sets(UART1, UART2, UART3, UART4(Dedicated for Bluetooth connection)), UART5 (Dedicated for ESC telemetry),UART6   |
| ESC Telemetry                        | UART R5   |
| I2C                                  | Supported. SDA & SCL pads on front side. Used for magnetometer, sonar, etc.   |
| Traditional Betaflight LED Pad       | Supported. 5V, G and LED pads on bottom of the front side. Used for WS2812 LED controlled by Betaflight firmware.   |
| Buzzer                               | BZ+ and BZ- pad used for 5V Buzzer  |
| BOOT Button                          | Supported.<br>[A]. Press and hold BOOT button and power the FC on at the same time will force the FC to enter DFU mode, this is for firmware flashing when the FC gets bricked.   |
| RSSI Input                           | Supported. Named as RS on the front side.   |
| Smart Port / F.Port                  | Not supported   |
| Supported Flight Controller Firmware | BetaFlight(Default), INAV, EMU-Flight Ardupilot, skybrush, omnibus F4   |
| Firmware Target Name                 | FLYSPARKF4v1  |
| Mounting                             | 30.5 x 30.5mm( 4mm hole diameter)   |
| Dimension                            | 41.6(L) x 39.4(W) x 7.8(H)mm  |
| Weight                               | 10.5g   |

## Cable Connection vs DJI O3 Air Unit



Use 6-pin cable comes with the O3 Air Unit

## Cable Connection with DJI Air Unit V1



Use 6-pin cable comes with the FlySpark F4 V1 BLS 60A Stack

# App & FC Configuration

COMING SOON



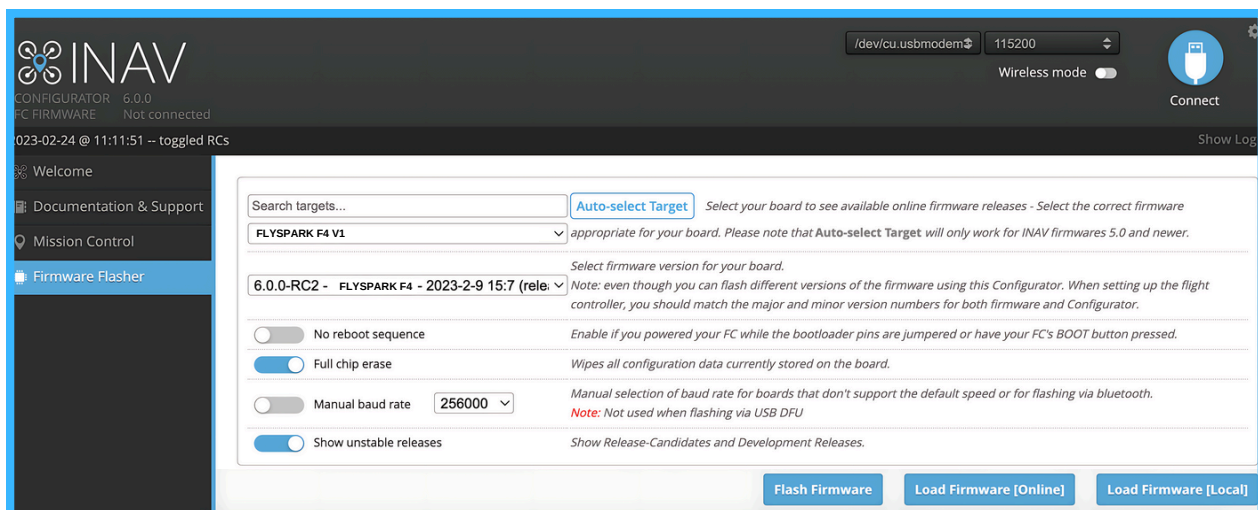
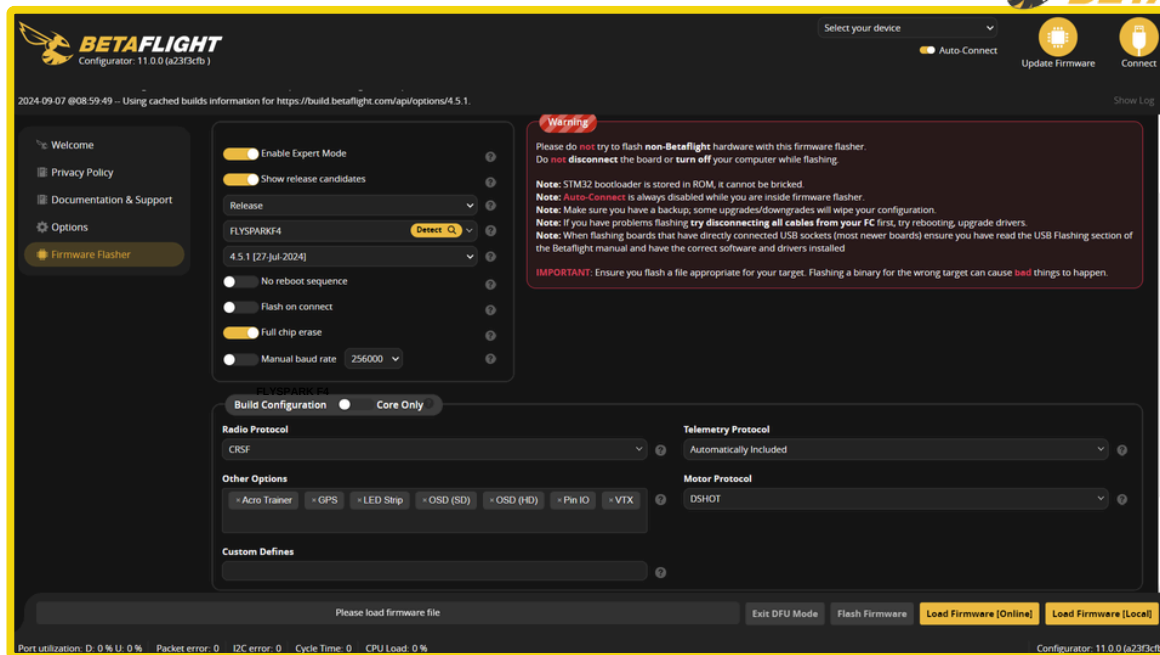
[www.FlySpark.in/app](http://www.FlySpark.in/app)

# FC Firmware Update

To update the firmware for your FlySpark F4 V1 flight controller, please follow these steps:

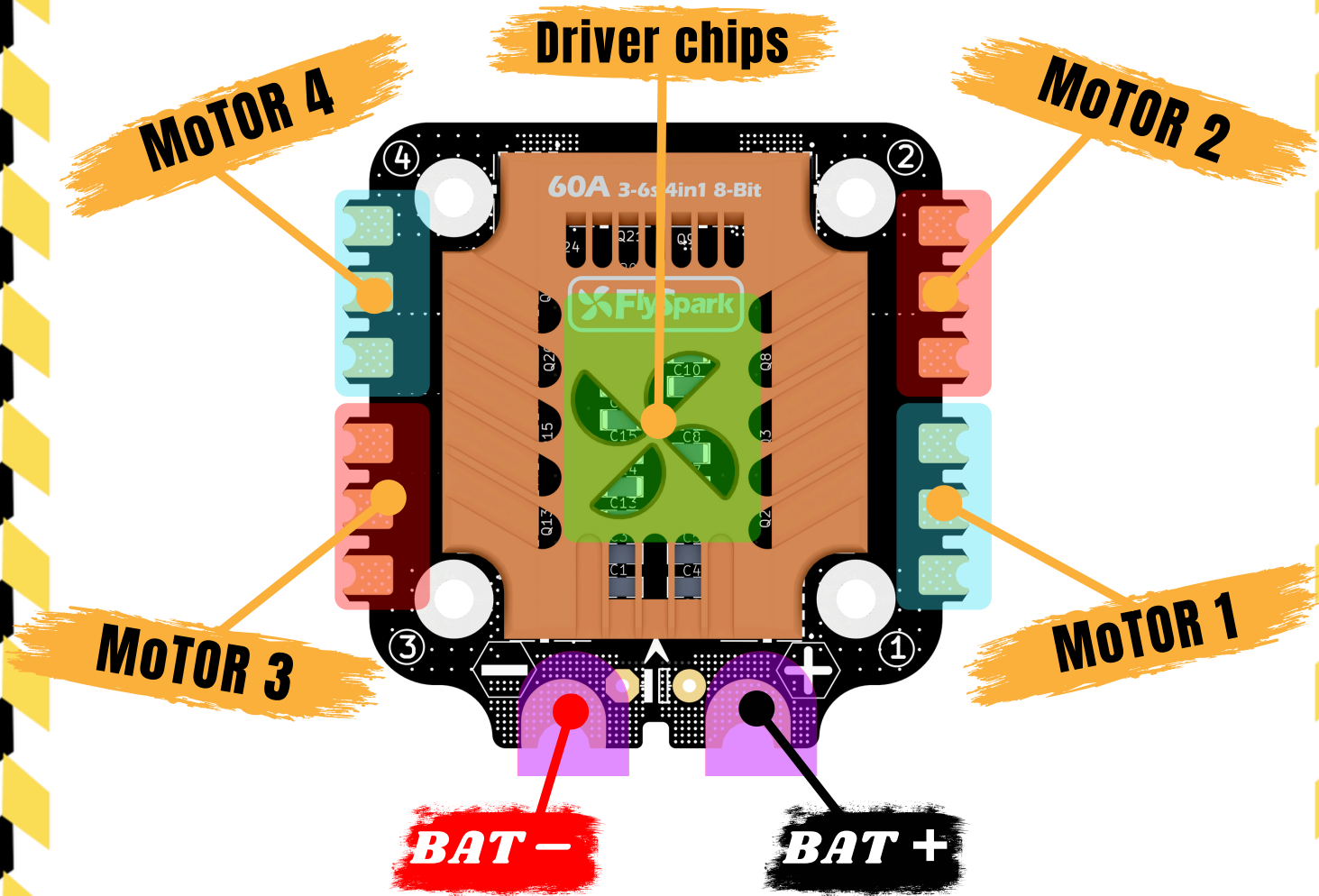
- 1. Connect the Flight Controller to Your PC:**
  - Use a USB cable to connect the FlySpark F4 V1 flight controller to your PC.
- 2. Open Betaflight / INAV Configurator:**
  - Launch the Betaflight Configurator or INAV Configurator on your PC. For this guide, we'll use Betaflight Configurator as an example.
- 3. Navigate to Firmware Flashing:**
  - In the Betaflight Configurator, navigate to the 'Firmware Flashing' page.
- 4. Select Target and Flash Firmware:**
  - Choose the target firmware for 'FlySpark F4 V1' from the dropdown menu.
  - Initiate the firmware flashing process.

**Note:** The FlySpark F4 V1 flight controller does not support wireless firmware flashing. It must be performed using a USB connection to your PC.

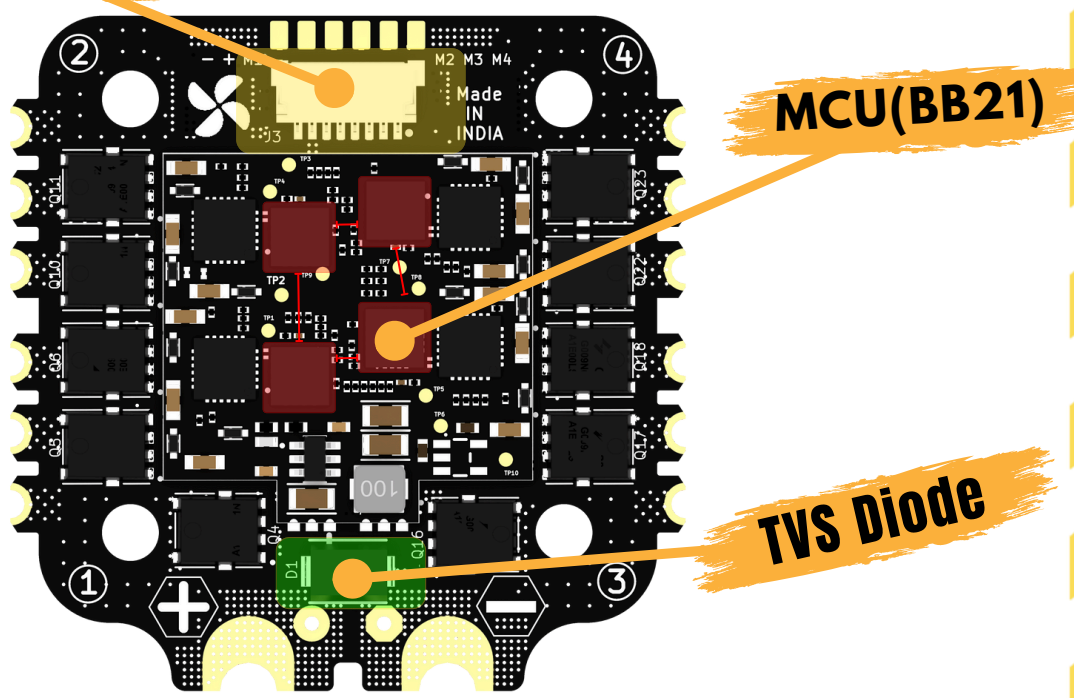


# FlySpark BLS 60A 4-in-1 ESC

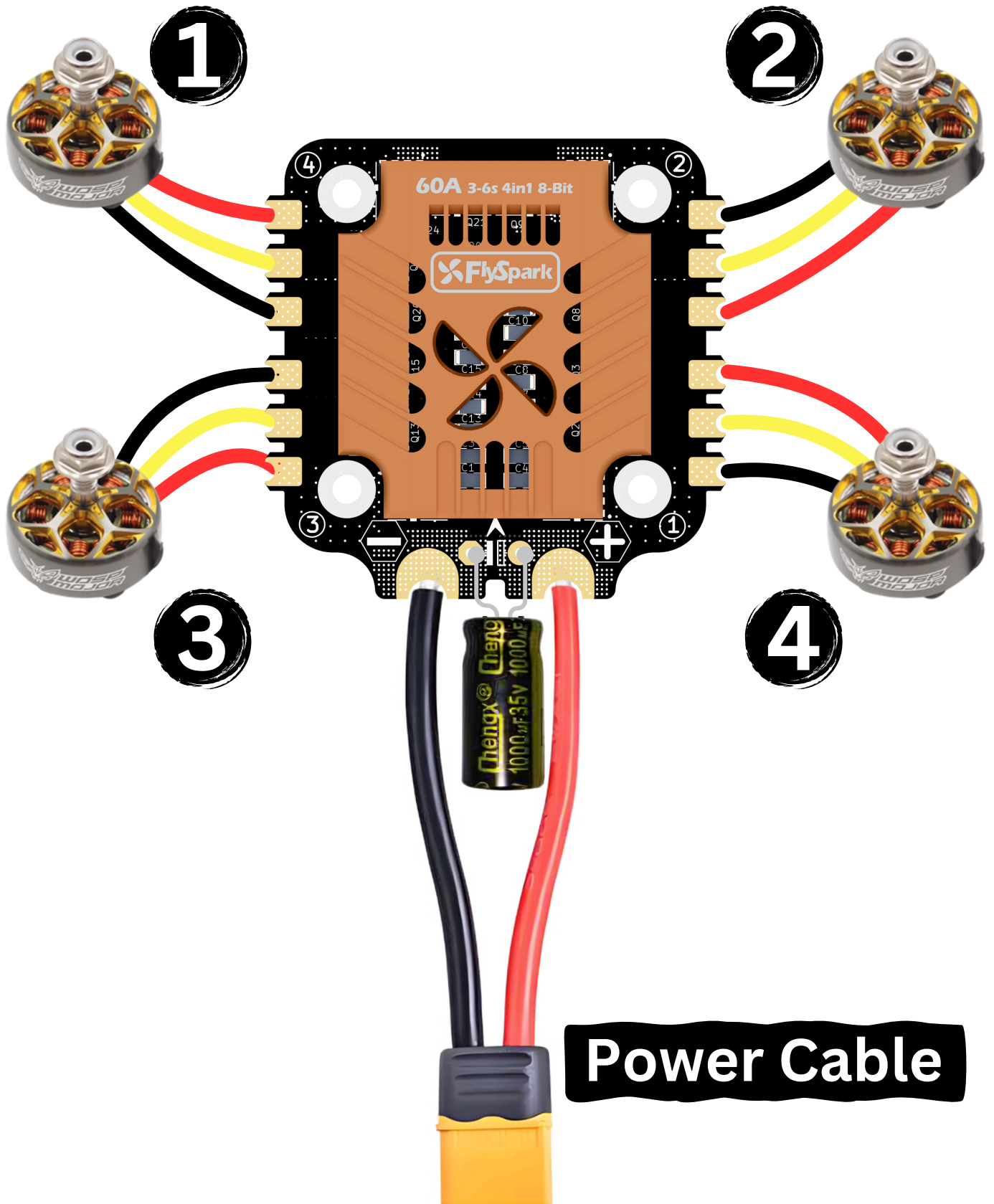
# layout



8pin connector(to FC)



# Connection with Motors & Power Cable



# ESC Specs

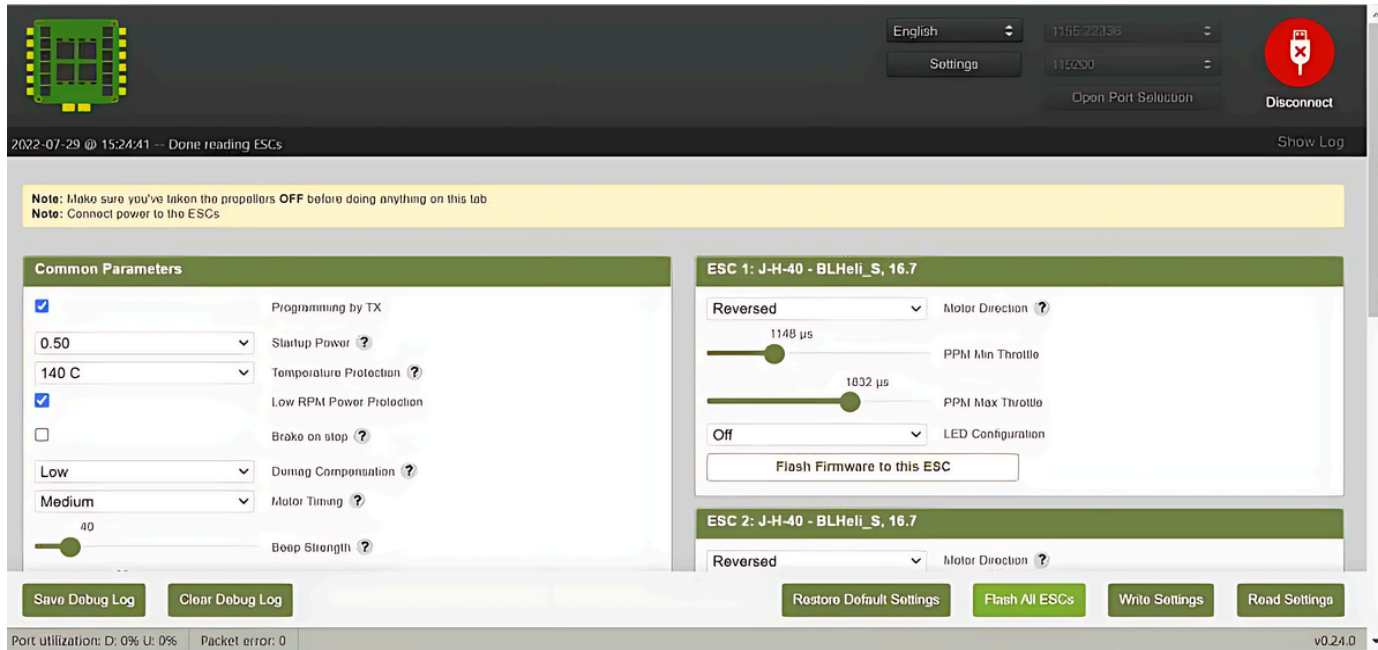
## FlySpark F4 V1 BLS 60A Stack

|                               |   |
|-------------------------------|---|
| Firmware                      | BLHeli_S JH50   |
| ESC Protocol                  | DSHOT300/600  |
| Wireless Configuration        | Full Configuration Supported in the FlySpark app                          |
| PC Configurator Download Link | <a href="https://esc-configurator.com/">https://esc-configurator.com/</a> |
| Continuous Current            | 60A*4   |
| Burst Current                 | 80A(10 sec)   |
| TVS Protective diode          | Yes   |
| External Capacitor            | 1000uF Low ESR Capacitor(In the package)                                  |
| ESC Telemetry                 | Not supported   |
| Power Input                   | 3-6S LiPo   |
| Power Output                  | VBAT  |
| Dimension                     | 47.8mm(L) x 47.5mm(W) x 18.3mm(H)   |
| Mounting                      | 30.5 x 30.5mm (4mm hole size )  |
| Weight                        | 24g*  |

# ESC Firmware Update

This 8-bit 50A ESC comes pre-loaded with BLHeliS firmware but can also be flashed to Bluejay firmware, offering RPM filtering and Bi-directional Dshot support. Follow these steps to update the firmware:

1. Prepare Your Drone:
  - ▶ Remove all propellers from your drone for safety.
2. Connect ESC to Flight Controller:
  - ▶ Ensure the flight controller is properly connected to the ESC, then power up the drone. This step ensures the ESC initializes correctly.
3. Connect to PC:
  - ▶ Use a USB Type-C cable to connect the flight controller to your computer.
4. Access Firmware Configuration:
  - ▶ Open the Chrome browser and visit: [www.esc-configurator.com](http://www.esc-configurator.com)
5. Flashing Steps:
  - ▶ Follow the firmware flashing steps displayed on the configurator website. Ensure you select the appropriate options for flashing to Bluejay firmware.



The screenshot displays the ESC Configurator web interface. At the top, there's a navigation bar with 'English', 'Settings', and 'Disconnect' buttons. Below this, a status bar shows '2022-07-29 @ 15:24:41 -- Done reading ESCs'. A yellow warning banner reads: 'Note: Make sure you've taken the propellers OFF before doing anything on this tab' and 'Note: Connect power to the ESCs'. The main content area is divided into two panels. The left panel, 'Common Parameters', includes checkboxes for 'Programming by TX', 'Low RPM Power Protection', and 'Brake on stop', along with dropdowns for 'Startup Power' (0.50), 'Temperature Protection' (140 C), 'Damage Compensation' (Low), and 'Motor Timing' (Medium), and a slider for 'Beep Strength' (40). The right panel, 'ESC 1: J-H-40 - BLHeli\_S, 16.7', shows 'Reversed' motor direction, '1148 µs' PPM Min Throttle, '1832 µs' PPM Max Throttle, and 'Off' LED Configuration, with a 'Flash Firmware to this ESC' button. Below this is a similar panel for 'ESC 2: J-H-40 - BLHeli\_S, 16.7'. At the bottom, there are buttons for 'Save Debug Log', 'Clear Debug Log', 'Restore Default Settings', 'Flash All ESCs', 'Write Settings', and 'Read Settings'. A footer bar shows 'Port utilization: D: 0% U: 0%' and 'Packet error: 0' on the left, and 'v0.24.0' on the right.

- CAUTIONS:**
- **PROPELLERS OFF: REMOVE ALL PROPELLERS.**
  - **SECURE CONNECTION: ENSURE SECURE ESC CONNECTION.**
  - **FOLLOW STEPS: FOLLOW FLASHING INSTRUCTIONS CAREFULLY.**
  - **STABLE POWER: ENSURE STABLE POWER SUPPLY.**

