



# SpeedyBee F7 V3 BL32 Flight Controller Stack User Manual

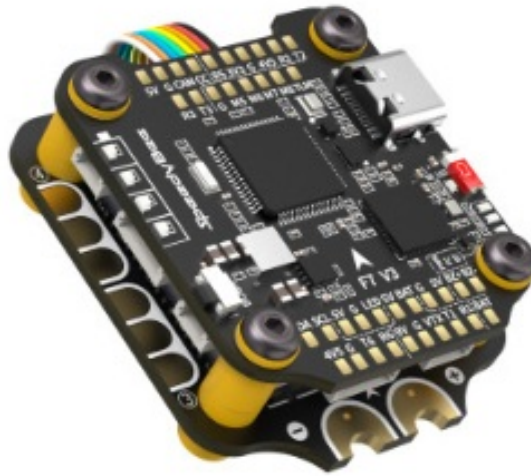
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**SpeedyBee F7 V3 BL32 Flight Controller Stack**



## User Manual

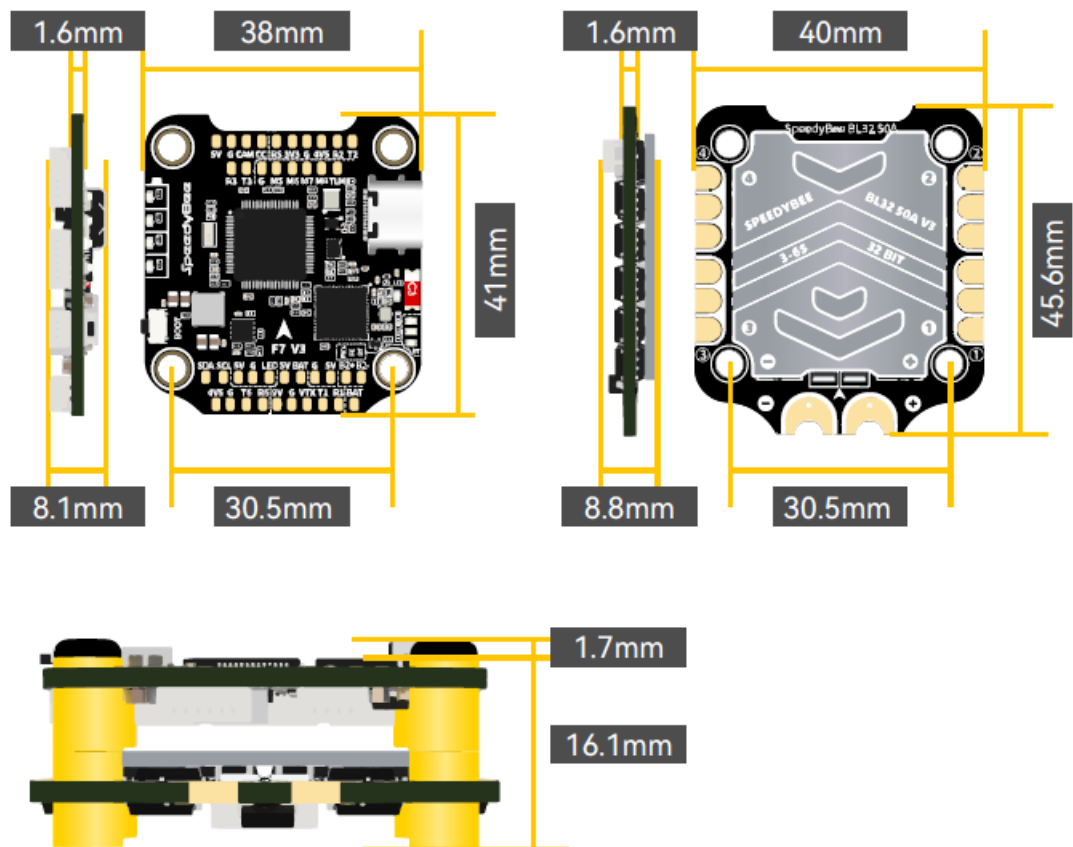
SpeedyBee F7 V3 BL32 50A 30×30 Stack

### Part 1 – OverView

#### Specs Overview

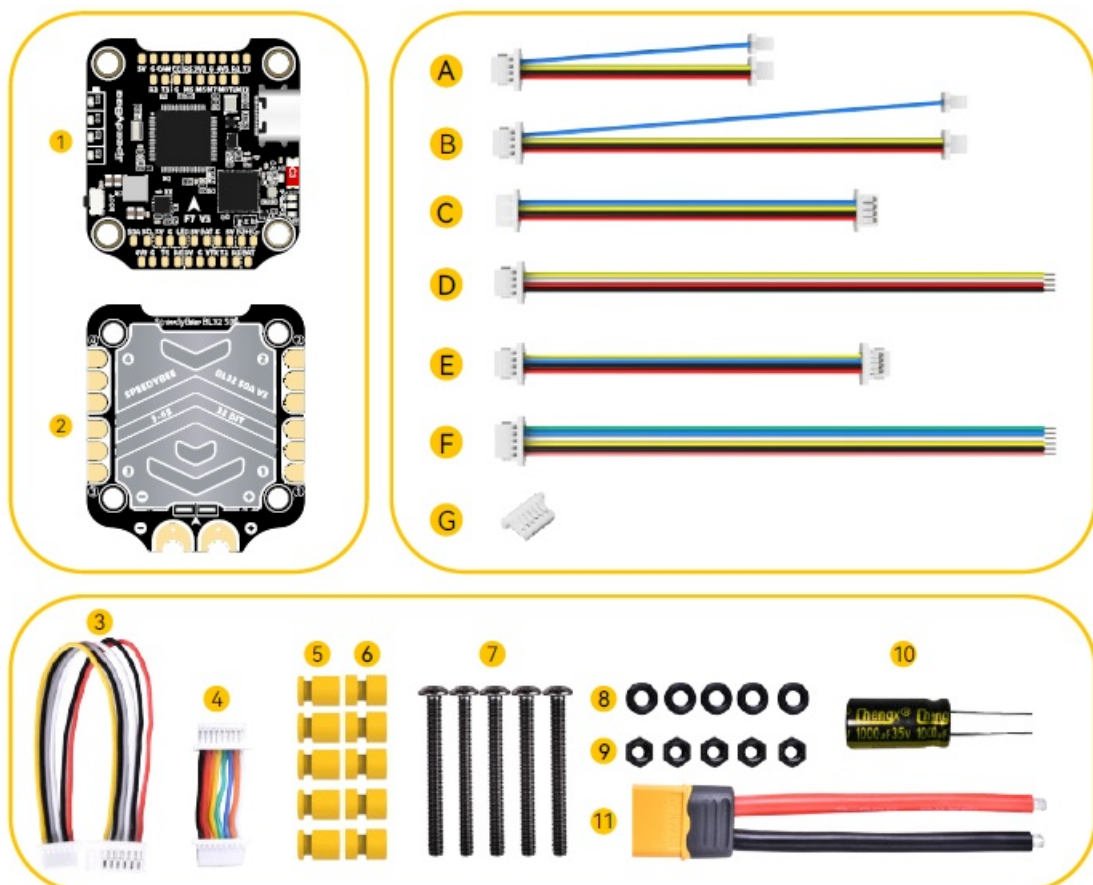
Product Name	SpeedyBee F7 V3 BL32 50A 30×30 Stack
Flight Controller	SpeedyBee F7 V3
ESC	SpeedyBee BL32 50A 4-in-1 ESC
Bluetooth	Supported. For FC & ESC parameter setting
Wireless FC Firmware Flashing	Supported
Wireless Blackbox Download	Supported
Power Input	3-6S LiPo
Mounting	30.5 x 30.5mm 4mm hole size
Dimension	45.6mm(L) x 40mm(W) x 16.1mm(H)
Weight	29.9g

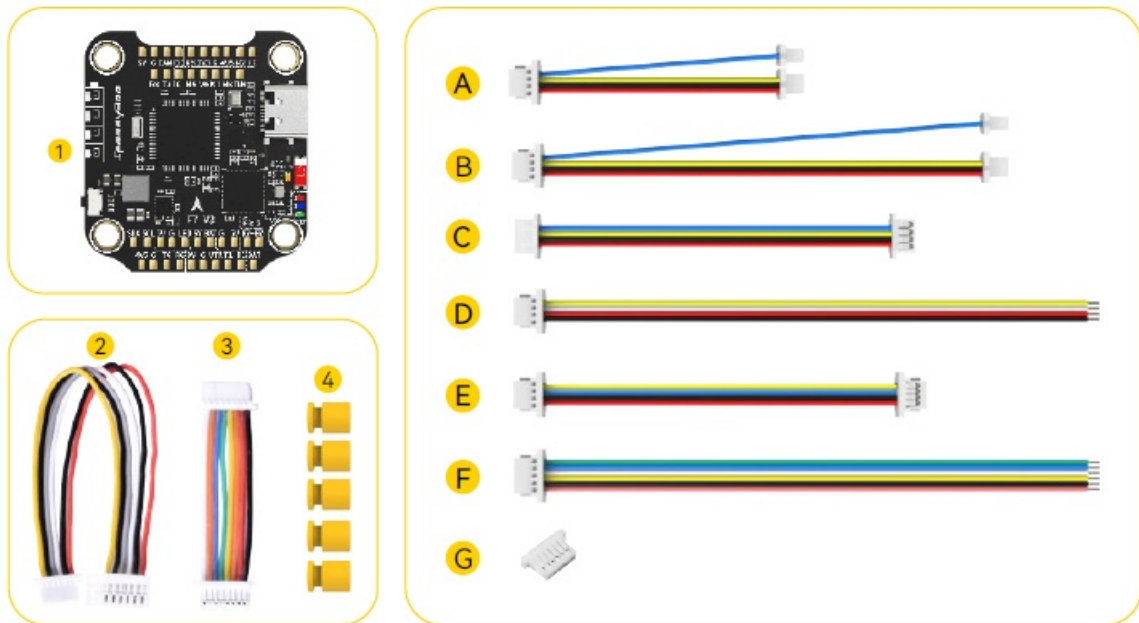
#### Dimensions



## Package

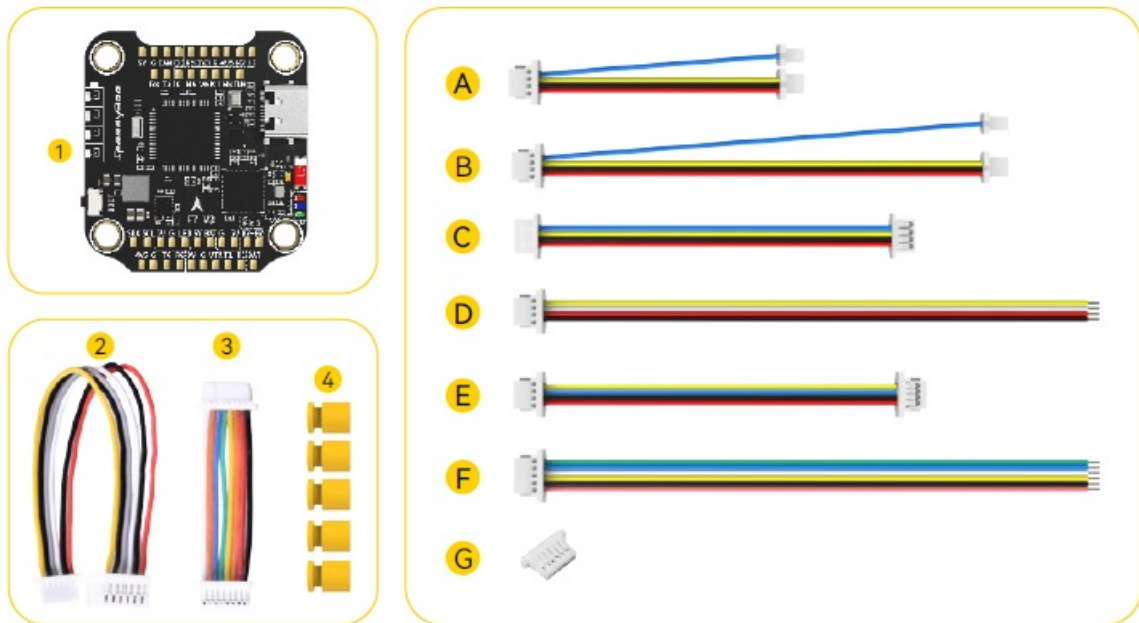
### Option 1 – SpeedyBee F7 V3 50A 30x30 Stack





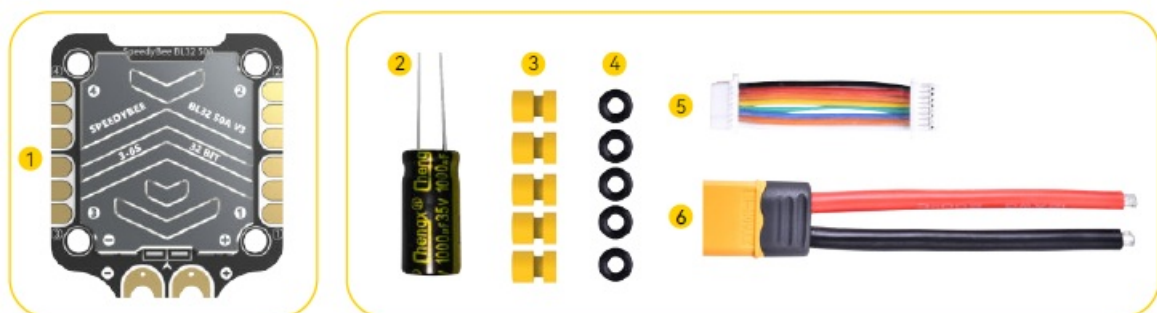
- SpeedyBee F7 V3 Flight Controller x 1
- SpeedyBee BL32 50A 4-in-1 ESC x 1
- DJI 6pin Cable(80mm) x 1
- SH 1.0mm 15mm-length 8pin Cable(for FC-ESC connection) x 1
- M3\*8mm Silicone Grommets(for FC) x 5
- M3\*8.1mm Silicone Grommets(for ESC) x 5
- M3\*30mm Iner-hexagon Screws x 5
- M3 silicone O Ring x 5
- M3 Nylon Nut x 5
- 35V 1000uF Low ESR Capacitor x 1
- XT60 Power Cable(70mm) x 1
- 4pin SH1.0 to 3+2pin JST1.25 FPV Cam Cable(30mm) x 1
- 4pin SH1.0 to 3+2pin JST1.25 FPV Cam Cable(60mm) x 1
- 4pin SH1.0 to 4pin JST1.25 FPV Cam Cable(60mm) x 1
- 4pin SH1.0 Radio Receiver Cable(100mm) x 1
- 4pin SH1.0 to 4pin SH1.0 Analog VTX Cable x 1
- 6pin SH1.0 GPS Module Cable without Connector on another end(100mm) x 1 6pin SH1.0 GPS Module Cable Connector of another end x 1

## Option 2 – SpeedyBee F7 V3 Flight Controller



- SpeedyBee F7 V3 Flight Controller x 1
- DJI 6pin Cable(80mm) x 1
- SH 1.0mm 30mm-length 8pin Cable(for FC-ESC connection) x 1
- M3\*8mm Silicone Grommets(for FC) x 5
- 4pin SH1.0 to 3+2pin JST1.25 FPV Cam Cable(30mm) x 1
- 4pin SH1.0 to 3+2pin JST1.25 FPV Cam Cable(60mm) x 1
- 4pin SH1.0 to 4pin JST1.25 FPV Cam Cable(60mm) x 1
- 4pin SH1.0 Radio Receiver Cable(100mm) x 1
- 4pin SH1.0 to 4pin SH1.0 Analog VTX Cable x 1
- 6pin SH1.0 GPS Module Cable without Connector on another end(100mm) x 1 6pin SH1.0 GPS Module Cable Connector of another end x 1

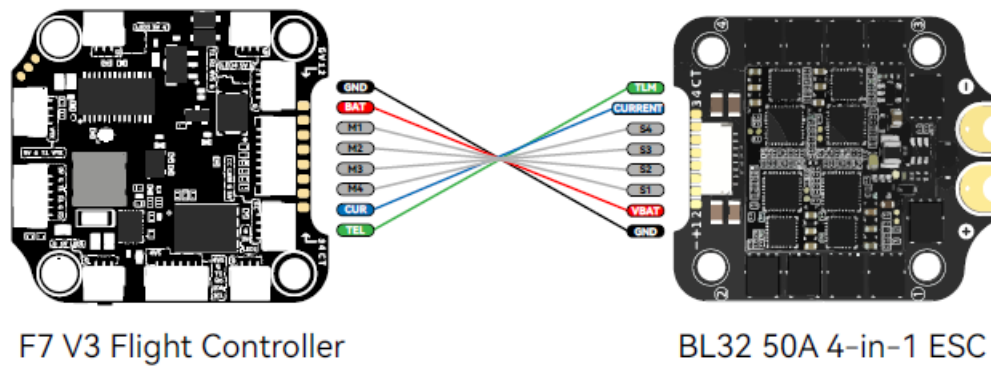
### Option 3 – SpeedyBee BL32 50A 4-in-1 ESC



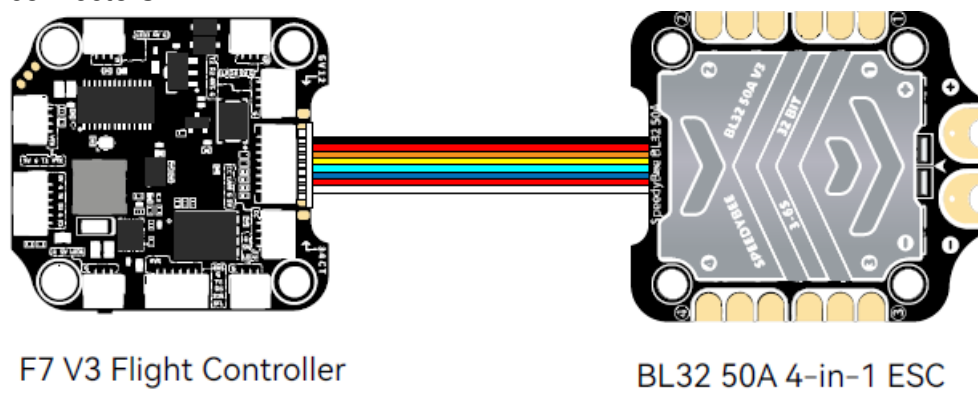
1. SpeedyBee BL32 50A 4-in-1 ESC x 1
2. 35V 1000uF Low ESR Capacitor x 1
3. M3\*8.1mm Silicone Grommets(for ESC) x 5
4. M3 silicone O Ring x 5
5. SH 1.0mm 30mm-length 8pin Cable(for F
6. C-ESC connection) x 1 XT60 Power Cable(70mm) x 1

## FC & ESC Connection

### Method 1 – Direct Soldering

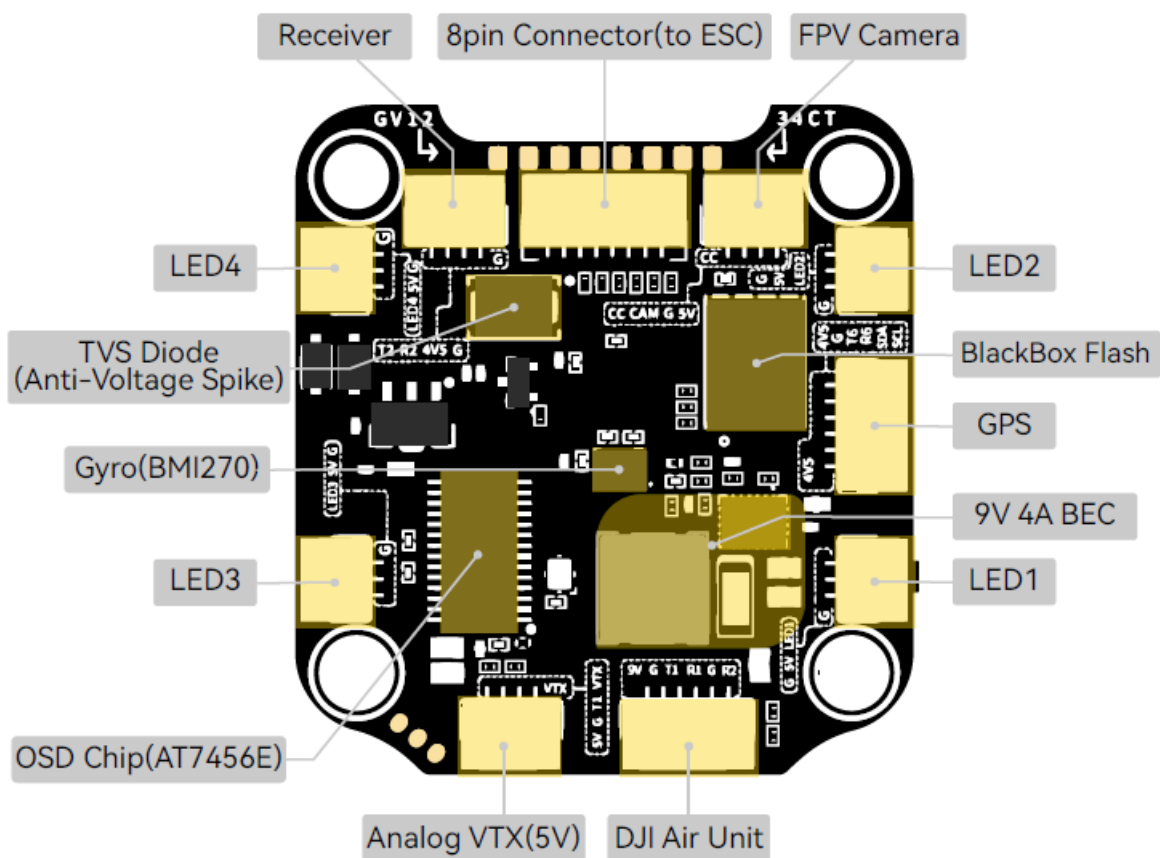
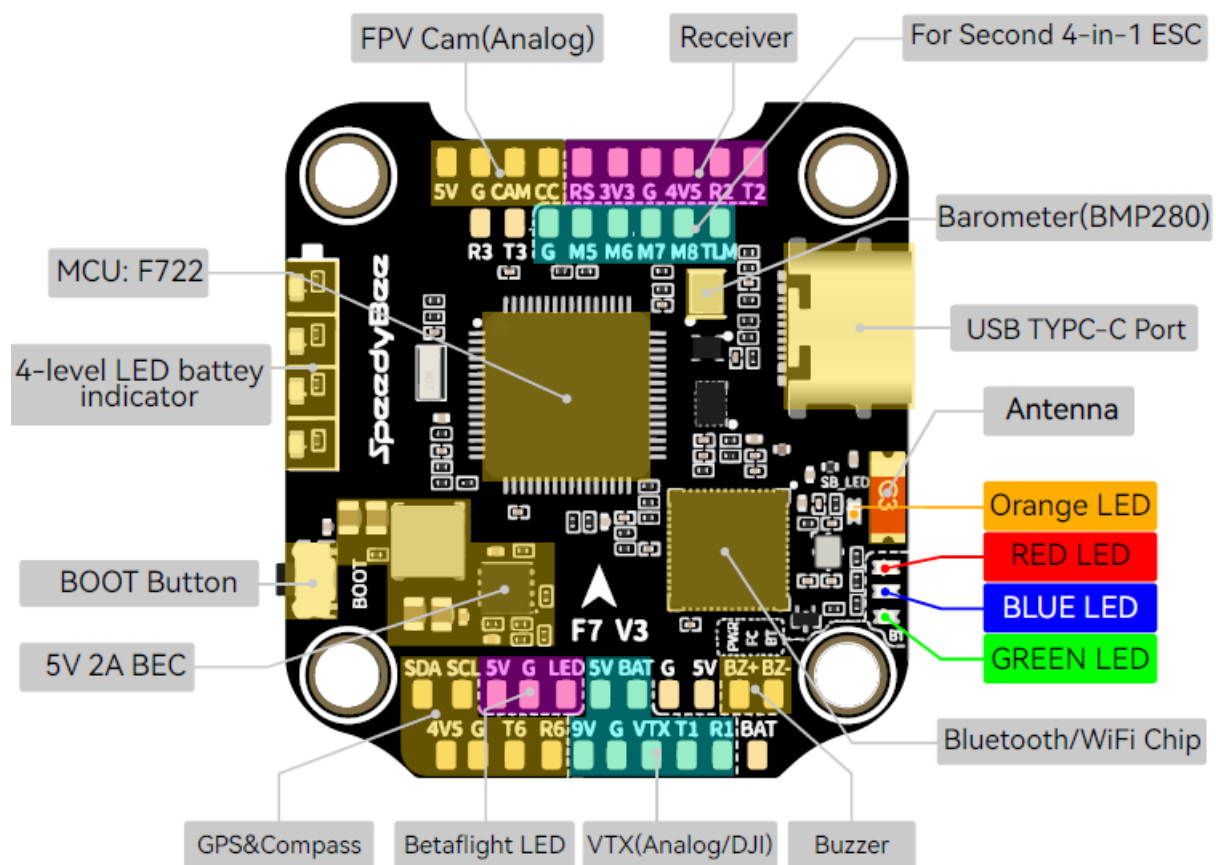


### Method 2 – All connectors



## Part 2 – SpeedyBee F7 V3 Flight Controller

### Layout



## LED Indicator Definition



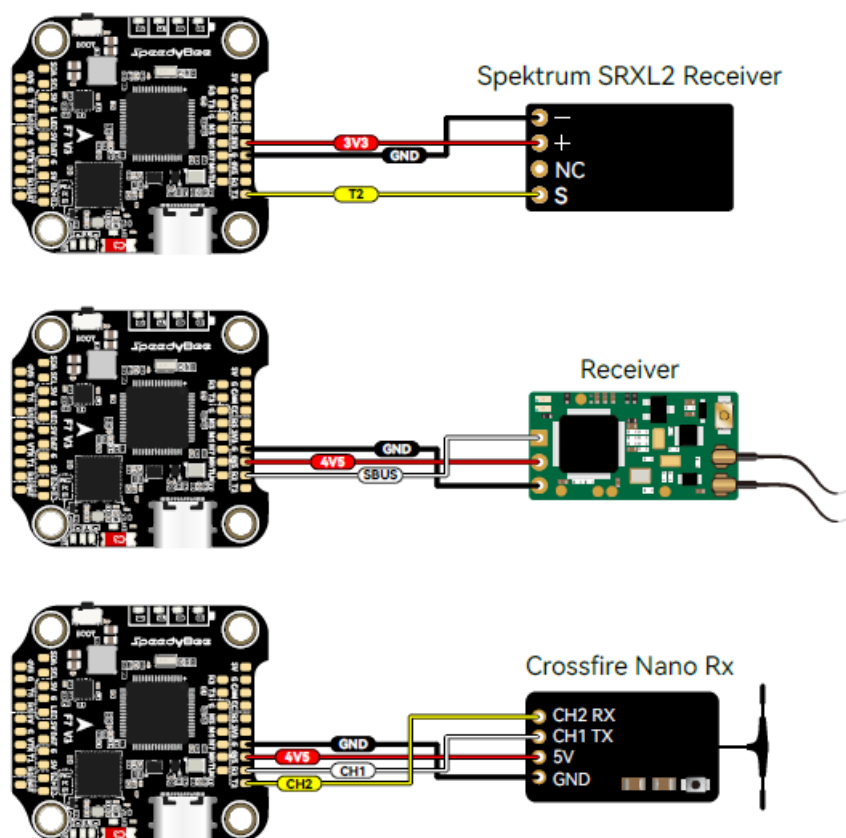
- ■ RED LED – Power Indicator. Solid Red after powering up.
- ■ GREEN LED – Bluetooth status light. Solid Green indicates Bluetooth is connected.
- ■ BLUE LED – Flight controller status light which is controlled by the flight controller firmware. Orange LED – LED Control Mode Indicator. It indicates the 4 sets of LEDs connected to LED1-LED4 connectors on the bottom side are controlled by Betaflight firmware(BF\_LED mode) or the Bluetooth Chip(SB\_LED mode).
- Solid Orange indicates the 4 x LEDs are in SB\_LED mode. In this mode, when the FC is powered on and in standby mode, press the BOOT button to cycle the display modes of the LEDs. OFF indicates the 4 x LEDs are controlled by Betaflight firmware.

Long press the button for 3 seconds to switch the control modes between BF\_LED mode and SB\_LED mode.

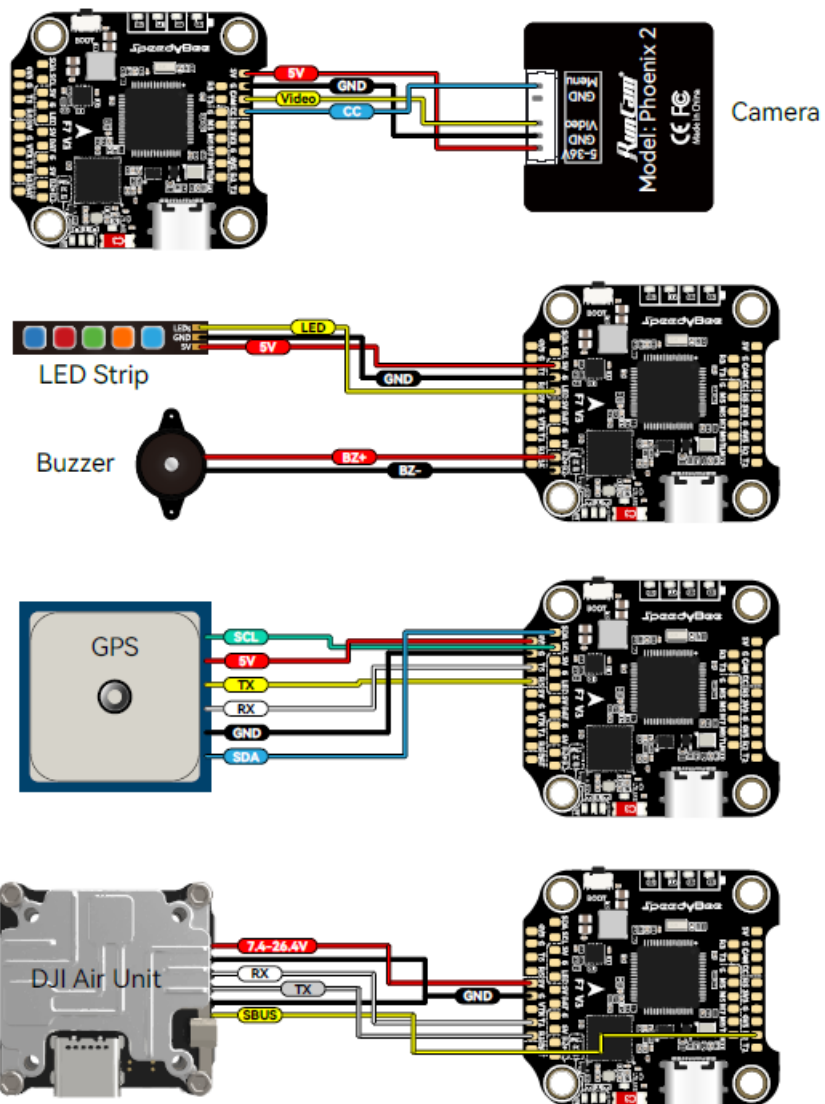
## FC's Peripheral Connection

Wiring Diagram

Method 1 – Direct Soldering

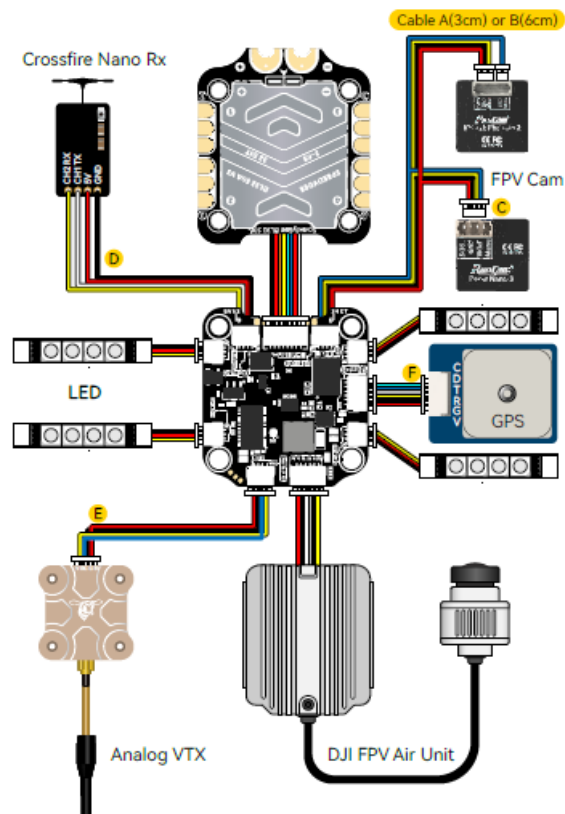






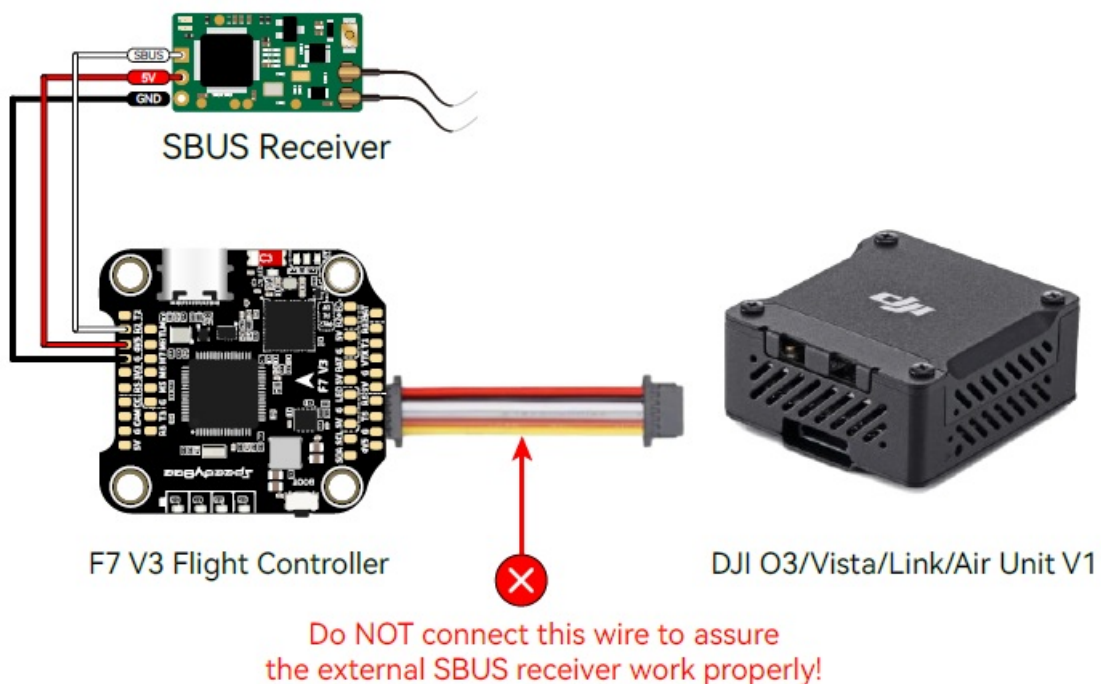
## Method 2 – All connectors

To recognize the wires in the package better, we marked some of these wires with letters (from A to F). Please find the right wires according to their letters.



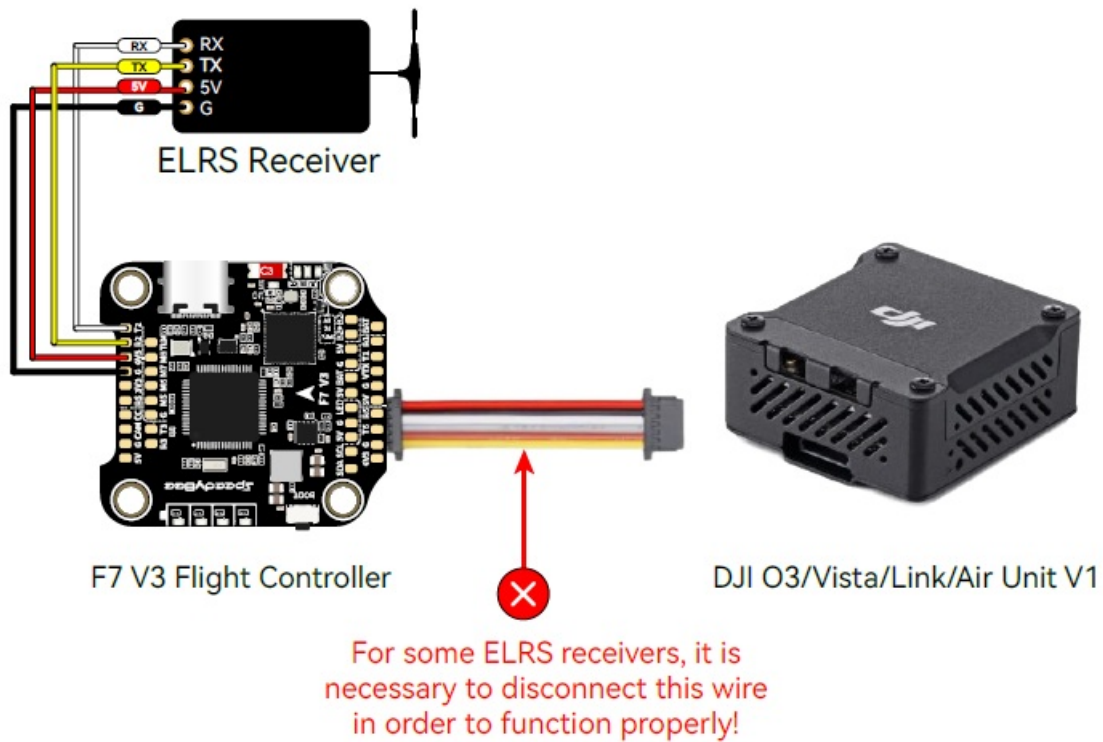
### Importance notice for SBUS receiver

- When using an SBUS receiver, the SBUS signal wire of the receiver must be connected to the SBUS pad on the front side of the flight controller (this pad internally uses UART2).
- If you are also using the DJI Air Unit(O3/Link/Vista/Air Unit V1), you will need to disconnect the SBUS signal wire from the
- Air Unit harness. Failure to do so will prevent the SBUS receiver from being properly recognized by the flight controller. You can use tweezers to pick out the SBUS wire from the 6-pin harness connector (or directly cut this wire) and insulate the exposed part of the wire carefully.

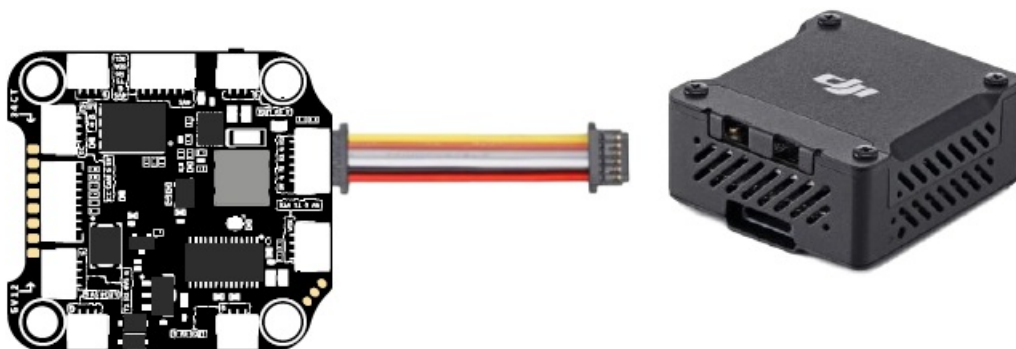


## Importance notice for ELRS receiver

- We recommend connecting the ELRS receiver's TX and RX to the T2 and R2 pads on the flight controller. However, when using the DJI Air Unit simultaneously, some ELRS receivers may not be recognized properly by the flight controller.
- If you encounter this issue, you need to disconnect the SBUS signal wire from the Air Unit harness. You can use tweezers to pick out the SBUS wire from the 6-pin harness connector (or directly cut this wire) and insulate the exposed part of the wire carefully.

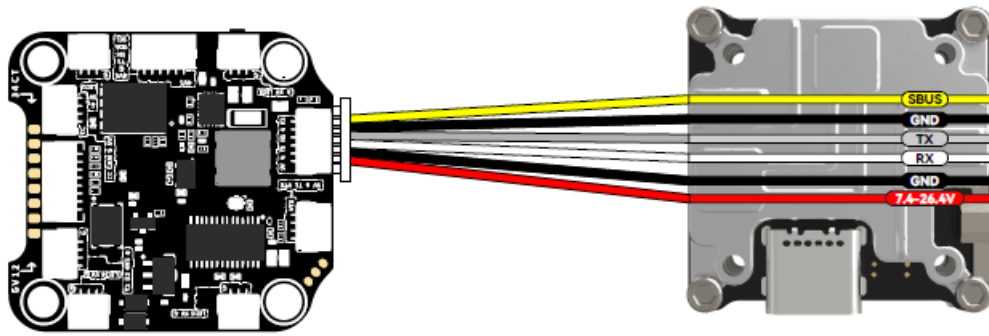


## Cable Connection vs DJI O3 Air Unit Use 6-pin cable comes with the O3 Air Unit



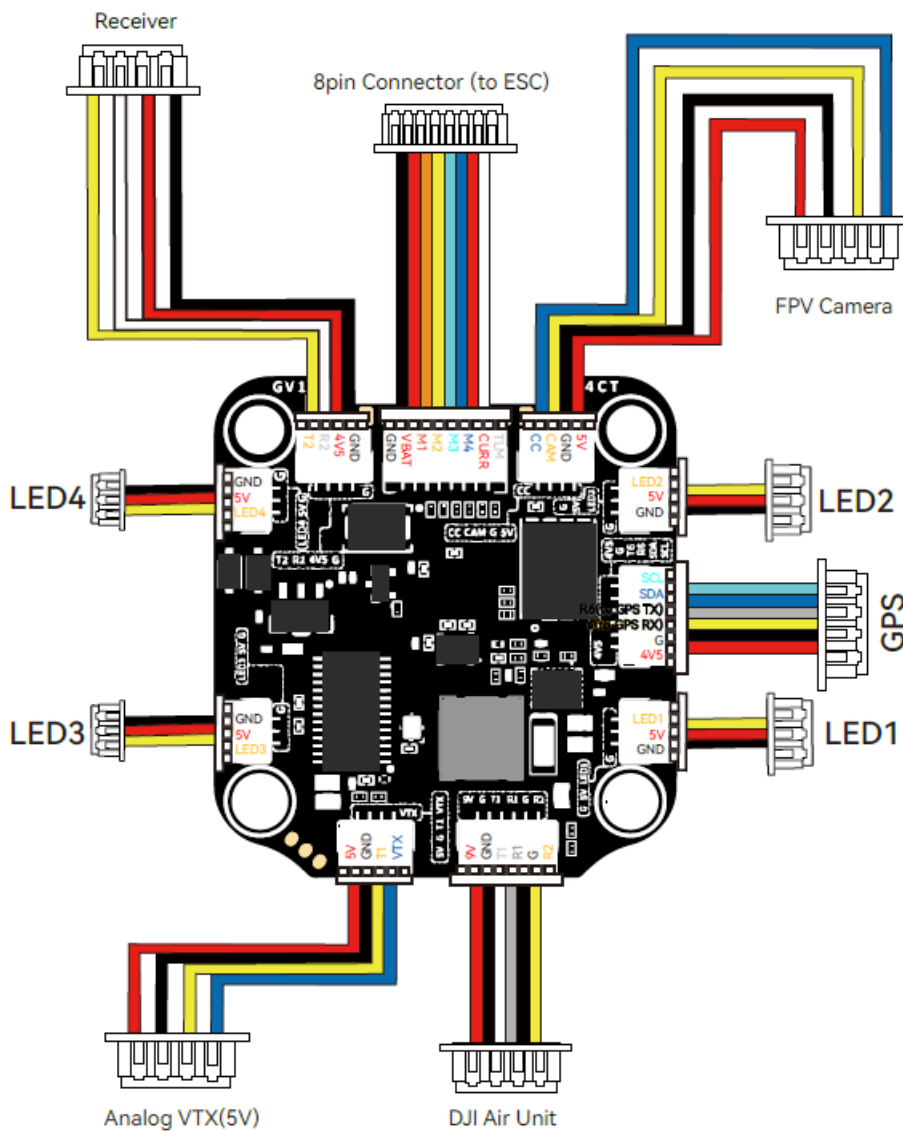
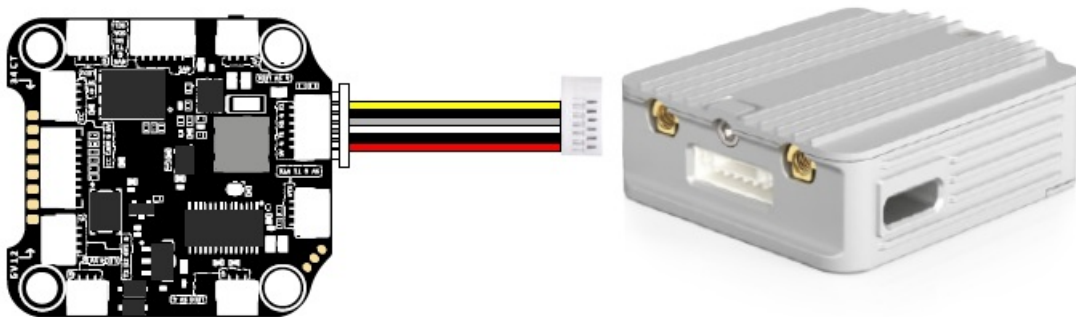
## Cable Connection vs RunCam Link/Caddx Vista Air Unit

- Use 6-pin cable comes with the F7 V3 stack (See the accessory No.3 in the package section)



## Cable Connection vs DJI Air Unit V1

- Use 6-pin cable comes with the F7 V3 stack (See the accessory No.3 in the package section)

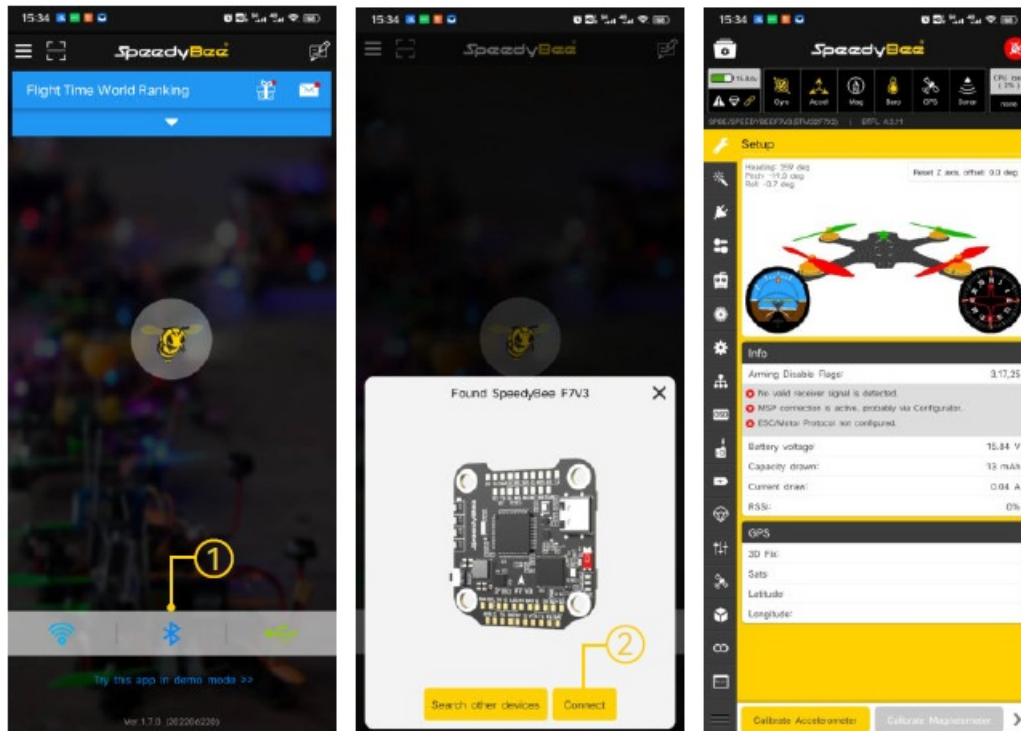


## App

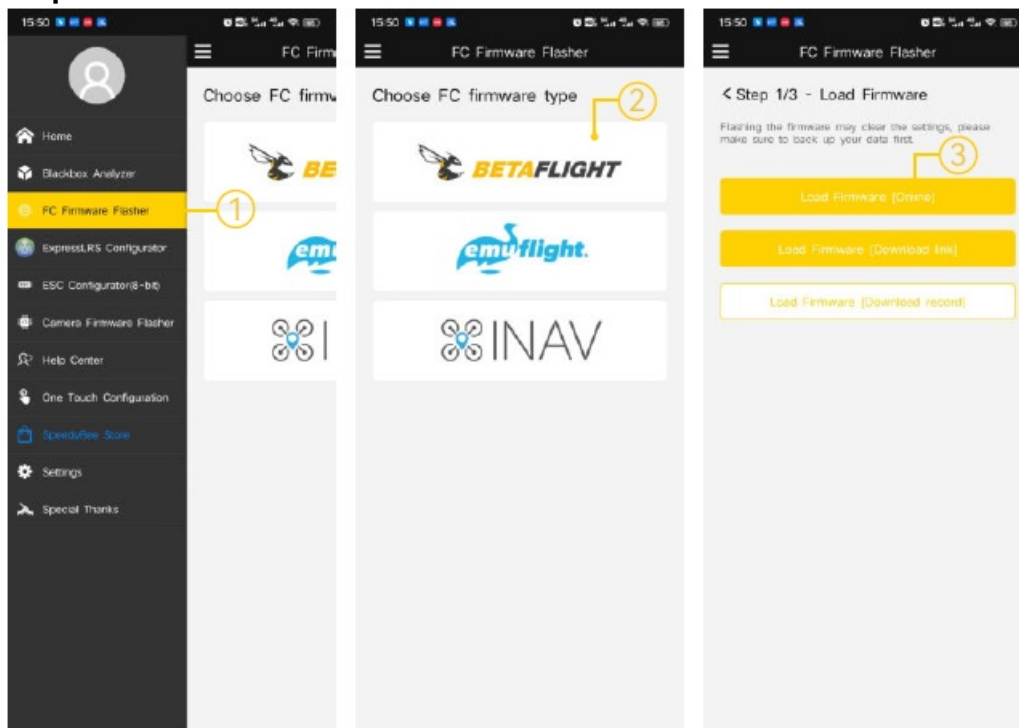
### Get the SpeedyBee App

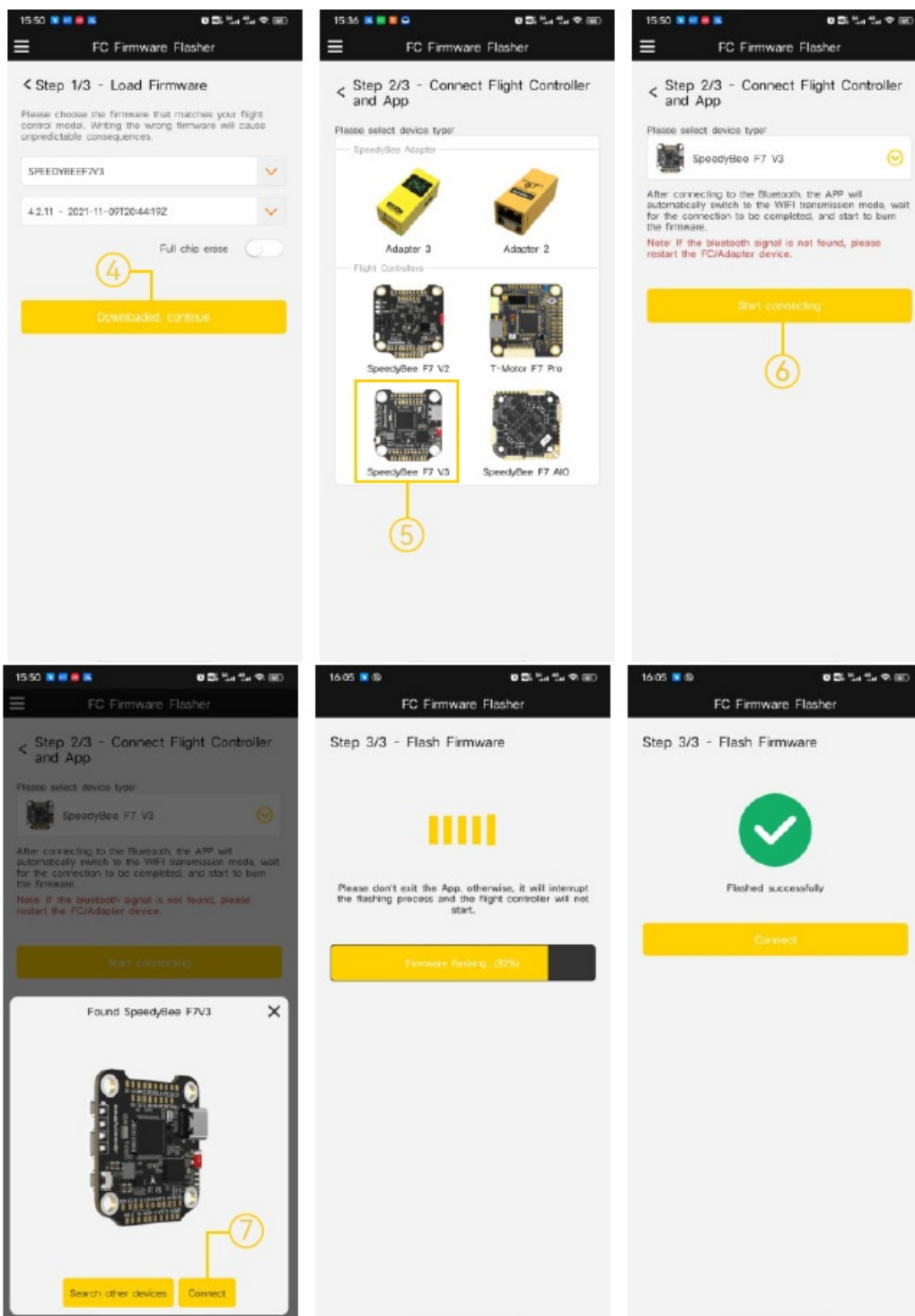
Search 'SpeedyBee' on Google Play or App Store. Or download the Android .apk file on our website:

<https://www.speedybee.com/download> Connect the App



## FC Firmware Update





## Spfcificattniosns

Product Name	SpeedyBee F7 V3 Flight Controller
MCU	STM32F722
IMU(Gyro)	BMI270
USB Port Type	Type-C
Barometer	BMP280
OSD Chip	AT7456E chip



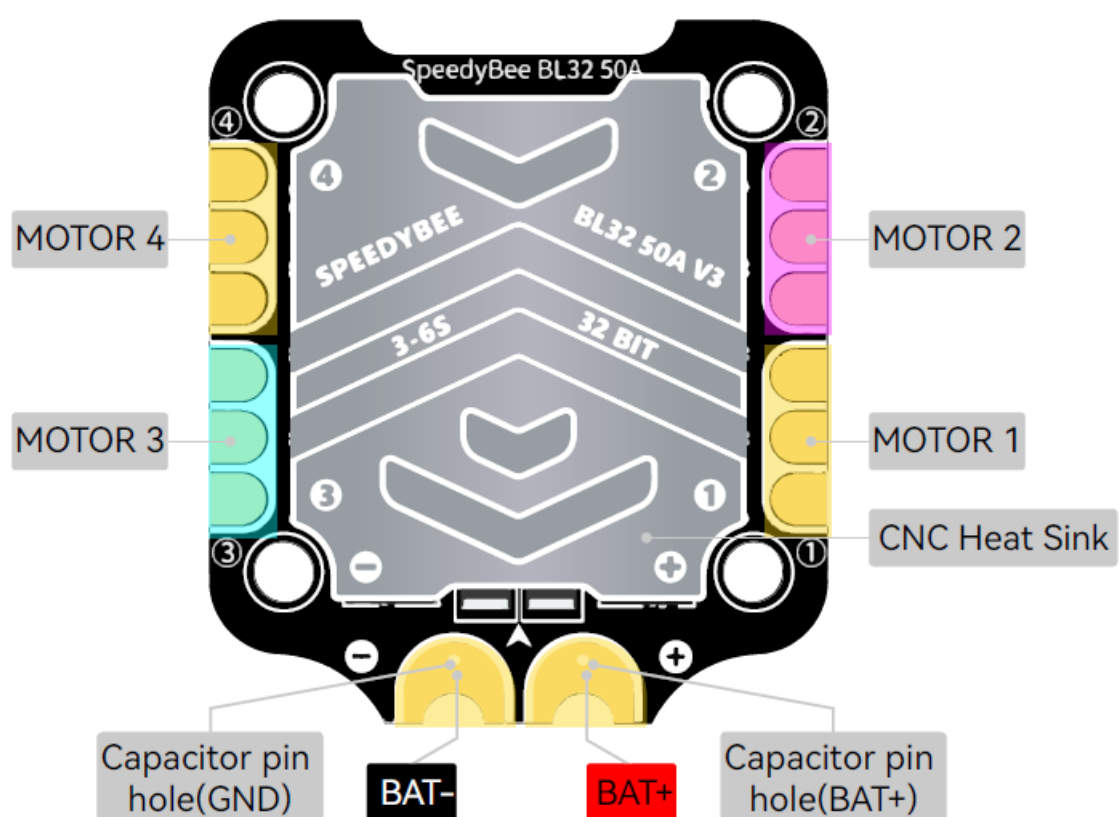
BLE Bluetooth	Supported. Used for Flight Controller configuration,built-in a single 2.4 GHz Wi-Fi- and-Bluetooth combo chip
Flash FC Firmware Wirelessly	Supported. Please enter MENU > FC Firmware Flasher
Download/Analyze Blackbox	Supported.Please enter MENU > Blackbox Analyzer
DJI Air Unit Connection 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.
Flash(for BlackBox)	500MB
BetaFlight Camera Control Pad	Yes(CC pad on the front side)
Power Input	3S – 6S Lipo
5V Output	10 groups of 5V output, three +5V pads and 1 BZ+ pad( used for Buzzer) on front side, and 6 +5V output included in the connectors on bottom side. The total current load is 2A.
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 4A.
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 Pads	M1 – M4 on bottom side and M5-M8 on front side.
UART	5 sets(UART1, UART2, UART3, UART4(For ESC Telemetry), UART6)
ESC Telemetry UART	R4(UART4)
I2C	Supported. SDA & SCL pads on front side. Used for magnetometer, sonar, etc.
LED Pad	Used for WS2812 LED controlled by Betaflight firmware.
Buzzer	BZ+ and BZ- pad used for 5V Buzzer
BOOT Button	Supported. [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. [B]. When the FC is powered on and in standby mode, the BOOT button can be used to controller the LED strips connected to LED1-LED4 connectors on the bottom side. By default, short-press the BOOT button to cycle the LED displaying mode. Long- press the BOOT button to switch between SpeedyBee-LED mode and BF-LED mode. Under BF-LED mode, all the LED1-LED4 strips will be controlled by Betaflight firmware.
RSSI Input	Supported. Named as RS on the front side.
SmartPort	Use any TX pad of UART for the SmartPort feature.

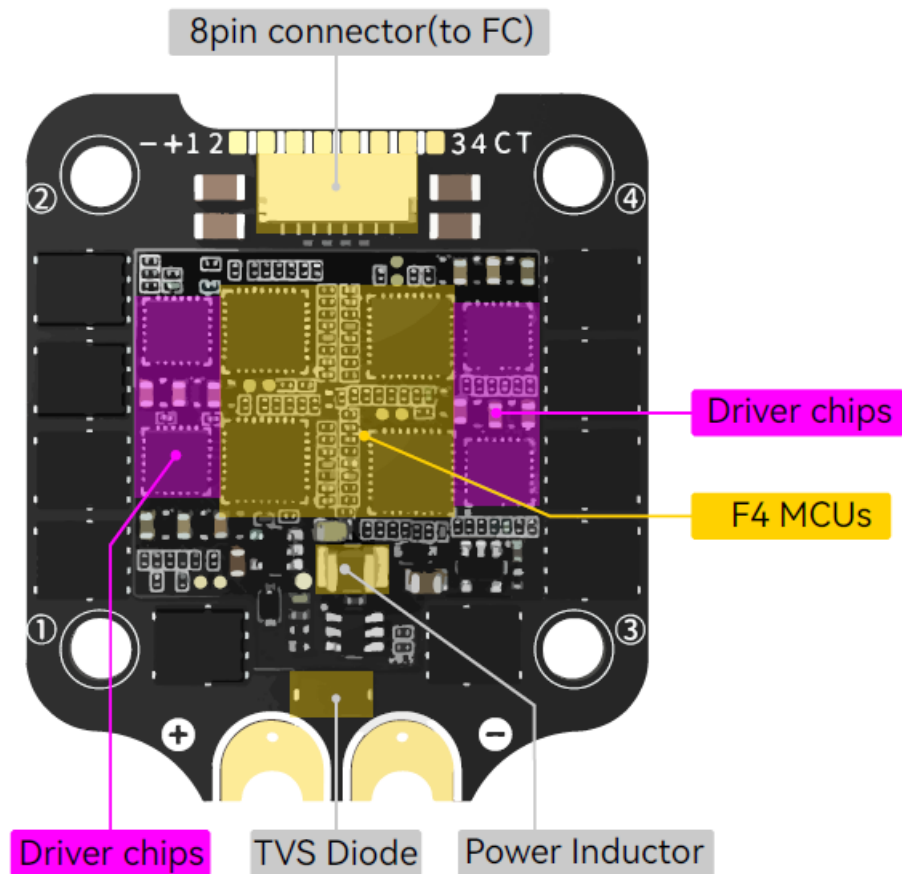


Supported Flight Controller Firmware	Beta Flight(Default),INAV
Firmware Target Name	SPEEDYBEEF7V3
Mounting	30.5 x 30.5mm( 4mm hole diameter)
Dimension	41(L) x 38(W) x 8.1(H)mm
Weight	10.7g

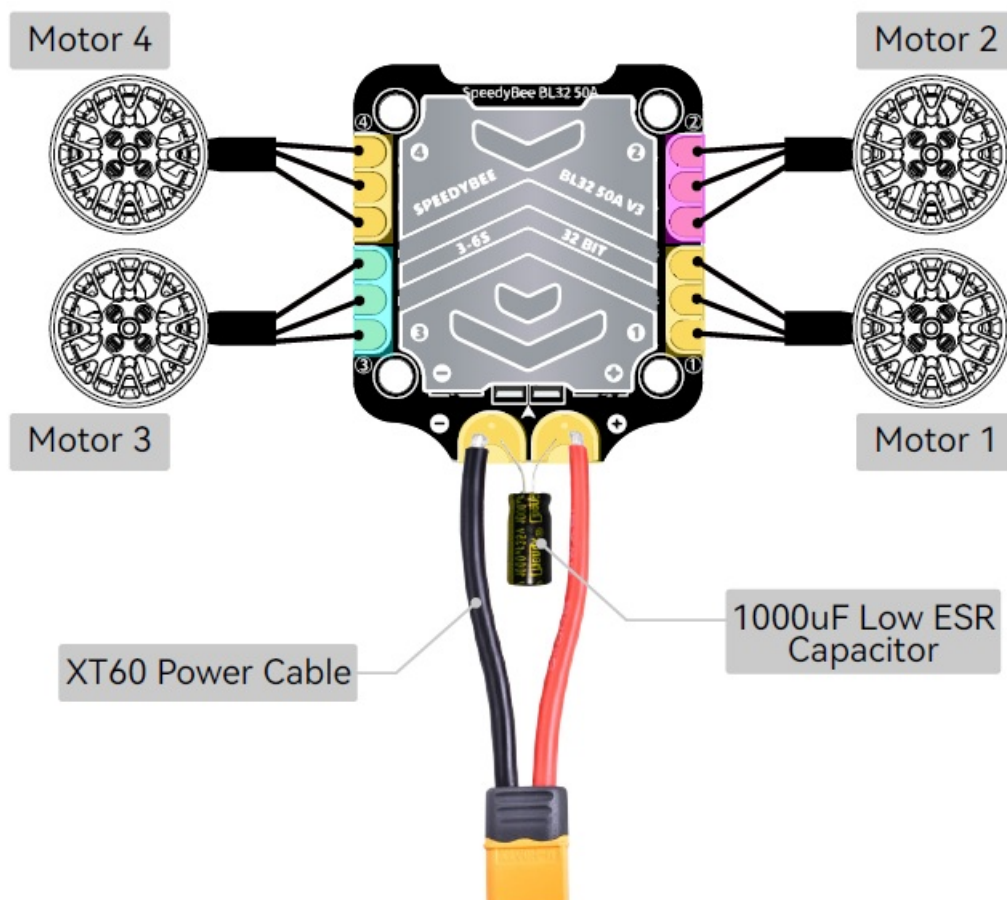
### Part 3 – SpeedyBee BL32 50A 4-in-1 ESC

#### Layout





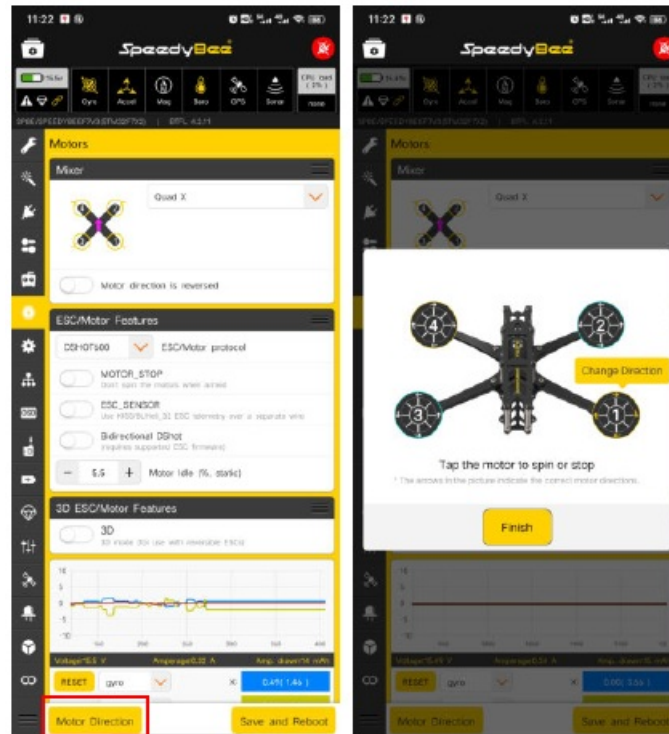
### Connection with Motors & Power Cable



**Note:** In order to prevent the stack from being burnt out instantaneous voltage spikes on powering up, it is strongly recommended to use the Low ESR capacitor in the package.

## ESC Configuration & Firmware Update

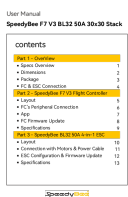
- This ESC is a 32-bit ESC running BLHeli32 firmware inside. Since the BLHeli32 is close-sourced. So ESC configuration & firmware update can't be done wirelessly in the SpeedyBee app. Please download the latest BLHeliSuit32 configurator to setup your ESC at <https://github.com/bitdump/BLHeli/releases>.
- Even so, you could still change motor directions in the app for this ESC. Please connect to the app, go to Motors page, click the button shown below. Then experience the easiest and coolest way to change motor directions.



## Specifications

Product Name	SpeedyBee BL32 50A 4-in-1 ESC
Firmware	J-H-50
Configurator Download Link	<a href="http://github.com/bitdump/BLHeli/releases">http://github.com/bitdump/BLHeli/releases</a>
Continuous Current	50A * 4
Burst Current	55A(5seconds)
TVS Protective diode	Yes
Heat Sink	Yes
External Capacitor	1000uF Low ESR Capacitor(In the package)
ESC Protocol	DSHOT300/600
PWM Frequency Range	16KHz-128KHz
Power Input	3-6S LiPo
Power Output	VBAT
Current Sensor	Support (Scale=490 Offset=0)
ESC Telemetry	supported
Mounting	30.5 x 30.5mm( 4mm hole diameter)
Dimension	45.6(L) * 40(W) * 8.8mm(H)
Weight	19.2g with heat sink

## Documents / Resources

	<p><a href="#">SpeedyBee F7 V3 BL32 Flight Controller Stack</a> [pdf] User Manual</p> <p>F7 V3 BL32, F7 V3 BL32 Flight Controller Stack, Flight Controller Stack, Controller Stack, Stack</p>
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## References

- [User Manual](#)