User Manual

User Manual V1.0

SpeedyBee F7 V3 BL32 50A 30x30 Stack

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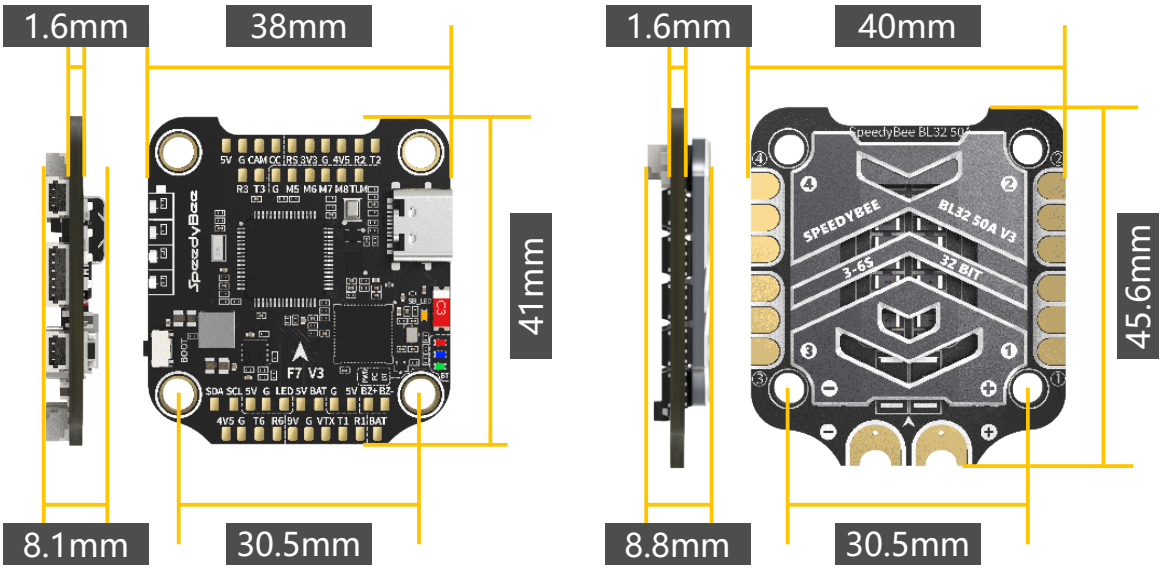
SpeedyBee®

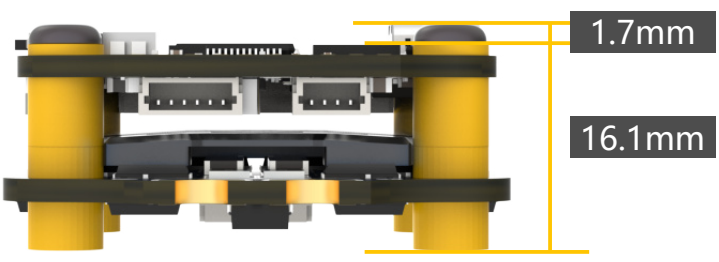
Part 1 - OverView

Specs Overview

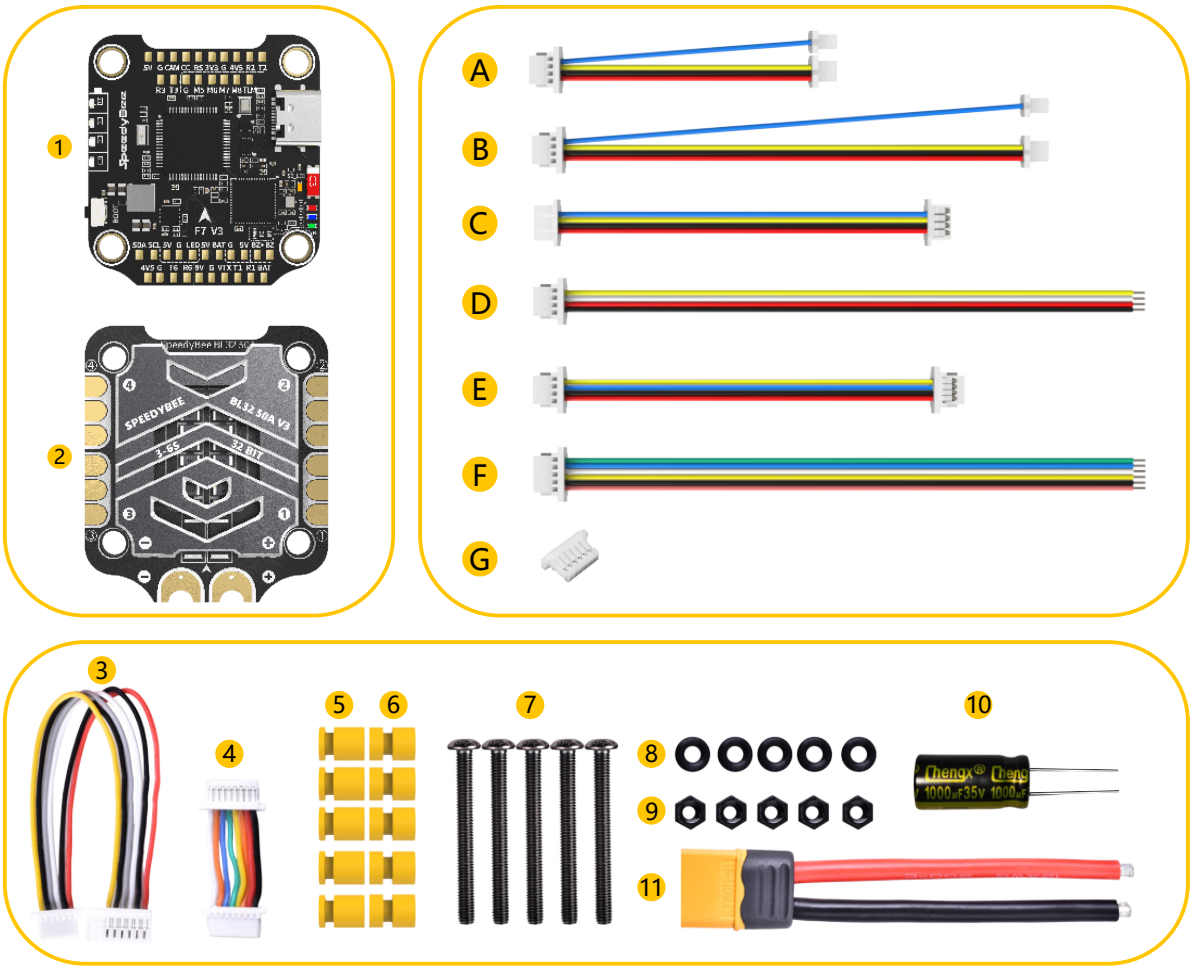
Product Name	SpeedyBee F7 V3 BL32 50A 30x30 Stack
Flight Controller	SpeedyBee F7 V3
ESC	SpeedyBee BL32 50A 4-in-1 ESC
Bluetooth	Supported. For FC & ESC parameter setting
Wireless FC Firmware Flashing	Supported
Wireless Blackbox Download	Supported
Power Input	3-6S LiPo
Mounting	30.5 x 30.5mm（4mm hole size）
Dimension	45.6mm(L) x 40mm(W) x 16.1mm(H)
Weight	29.9g

Dimensions



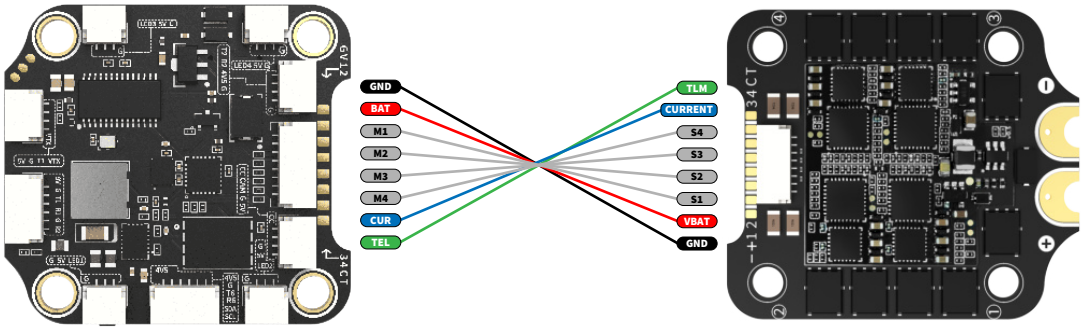


Package



1. SpeedyBee F7 V3 Flight Controller x 1
2. SpeedyBee BL32 50A 4-in-1 ESC x 1
3. DJI 6pin Cable(80mm) x 1
4. SH 1.0mm 15mm-length 8pin Cable(for FC-ESC connection) x 1
5. M3*8mm Silicone Grommets(for FC) x 5
6. M3*8.1mm Silicone Grommets(for ESC) x 5
7. M3*30mm Iner-hexagon Screws x 5
8. M3 silicone O Ring x 5
9. M3 Nylon Nut x 5
10. 35V 1000uF Low ESR Capacitor x 1
11. XT60 Power Cable(70mm) x 1
- A. 4pin SH1.0 to 3+2pin JST1.25 FPV Cam Cable(30mm) x 1
- B. 4pin SH1.0 to 3+2pin JST1.25 FPV Cam Cable(60mm) x 1
- C. 4pin SH1.0 to 4pin JST1.25 FPV Cam Cable(60mm) x 1
- D. 4pin SH1.0 Radio Receiver Cable(100mm) x 1
- E. 4pin SH1.0 to 4pin SH1.0 Analog VTX Cable x 1
- F. 6pin SH1.0 GPS Module Cable without Connector on another end(100mm) x 1
- G. 6pin SH1.0 GPS Module Cable Connector of another end x 1

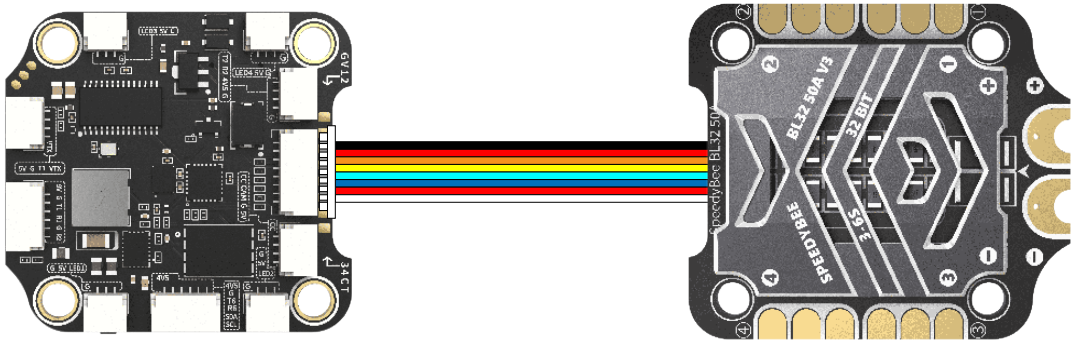
Method 1 - Direct Soldering



F7 V3 Flight Controller

BL32 50A 4-in-1 ESC

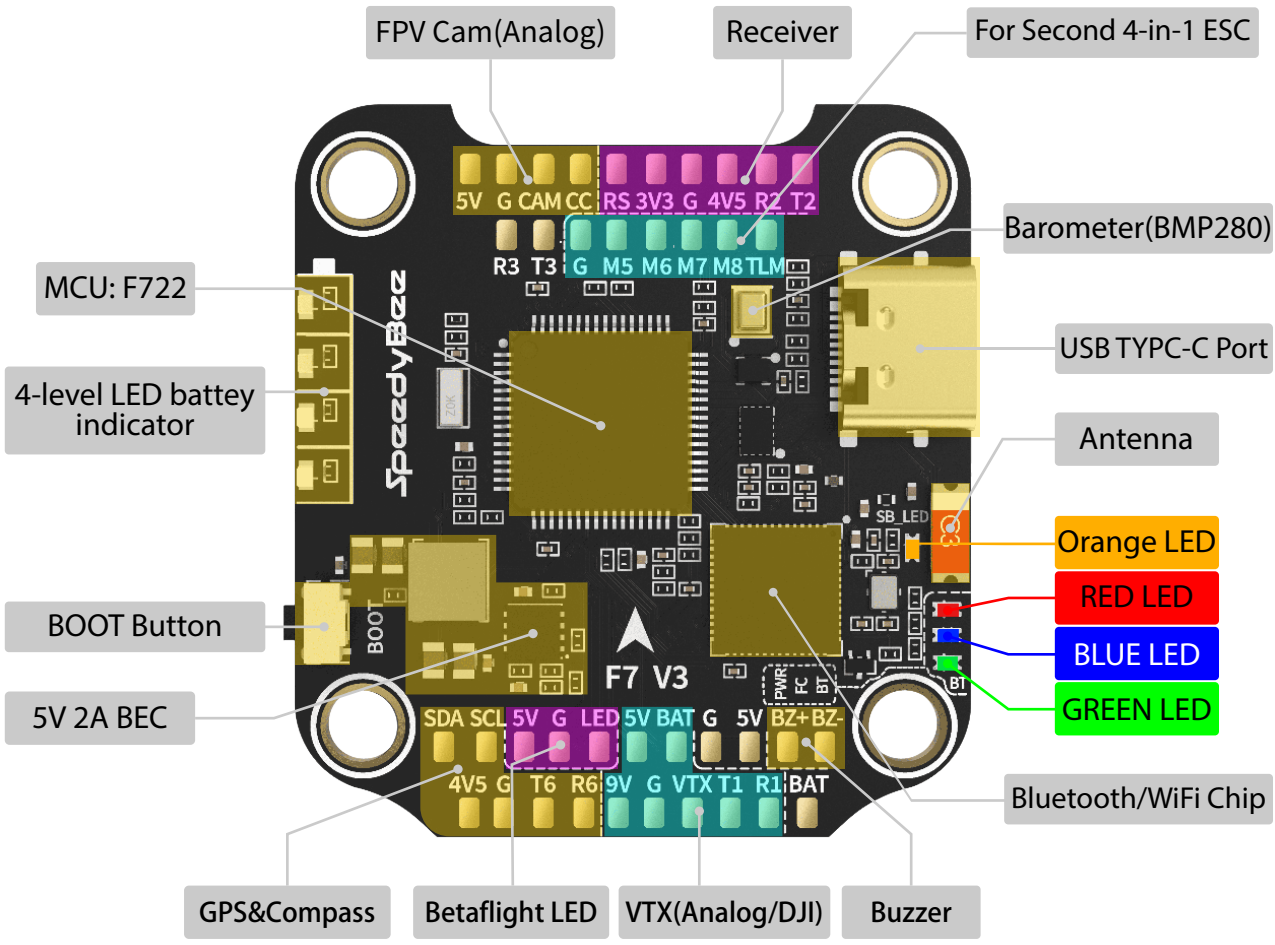
Method 2 - All connectors

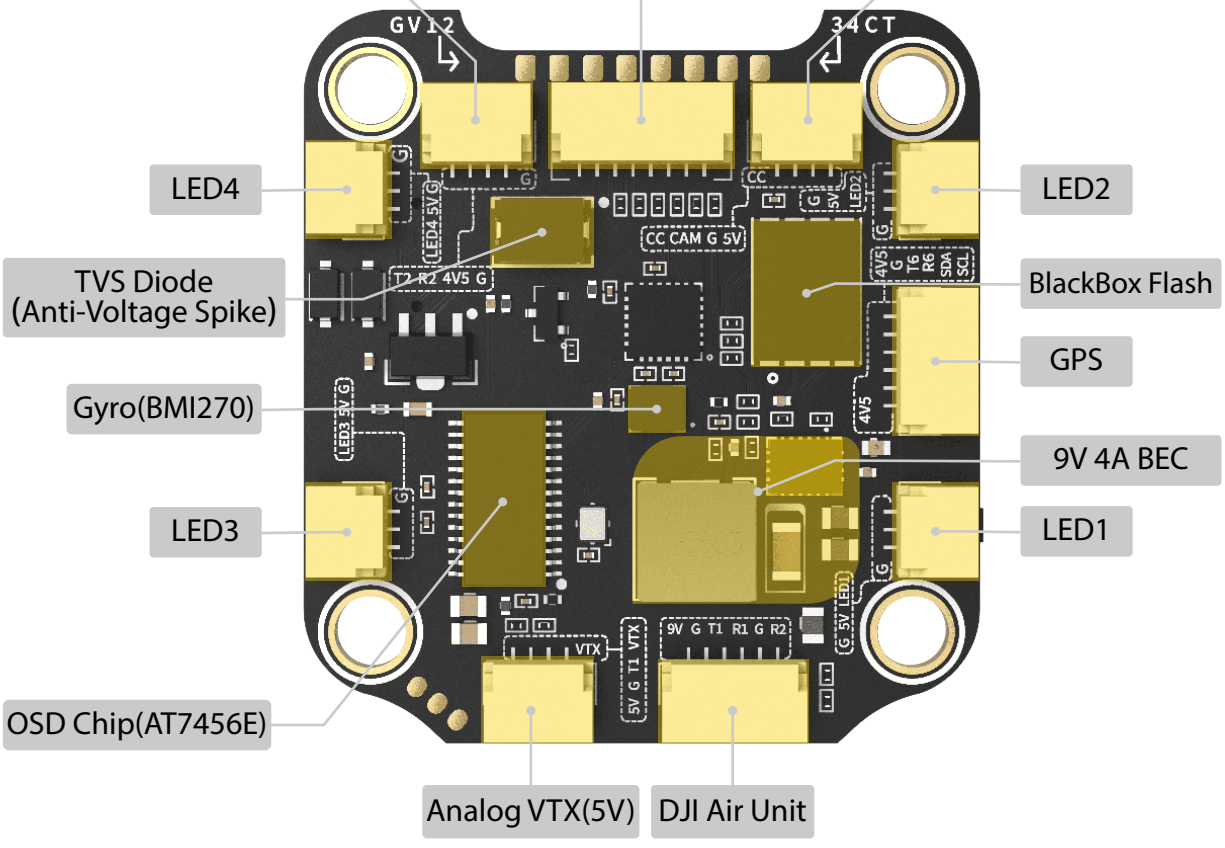


F7 V3 Flight Controller

BL32 50A 4-in-1 ESC

Layout





■ LED Indicator Definition

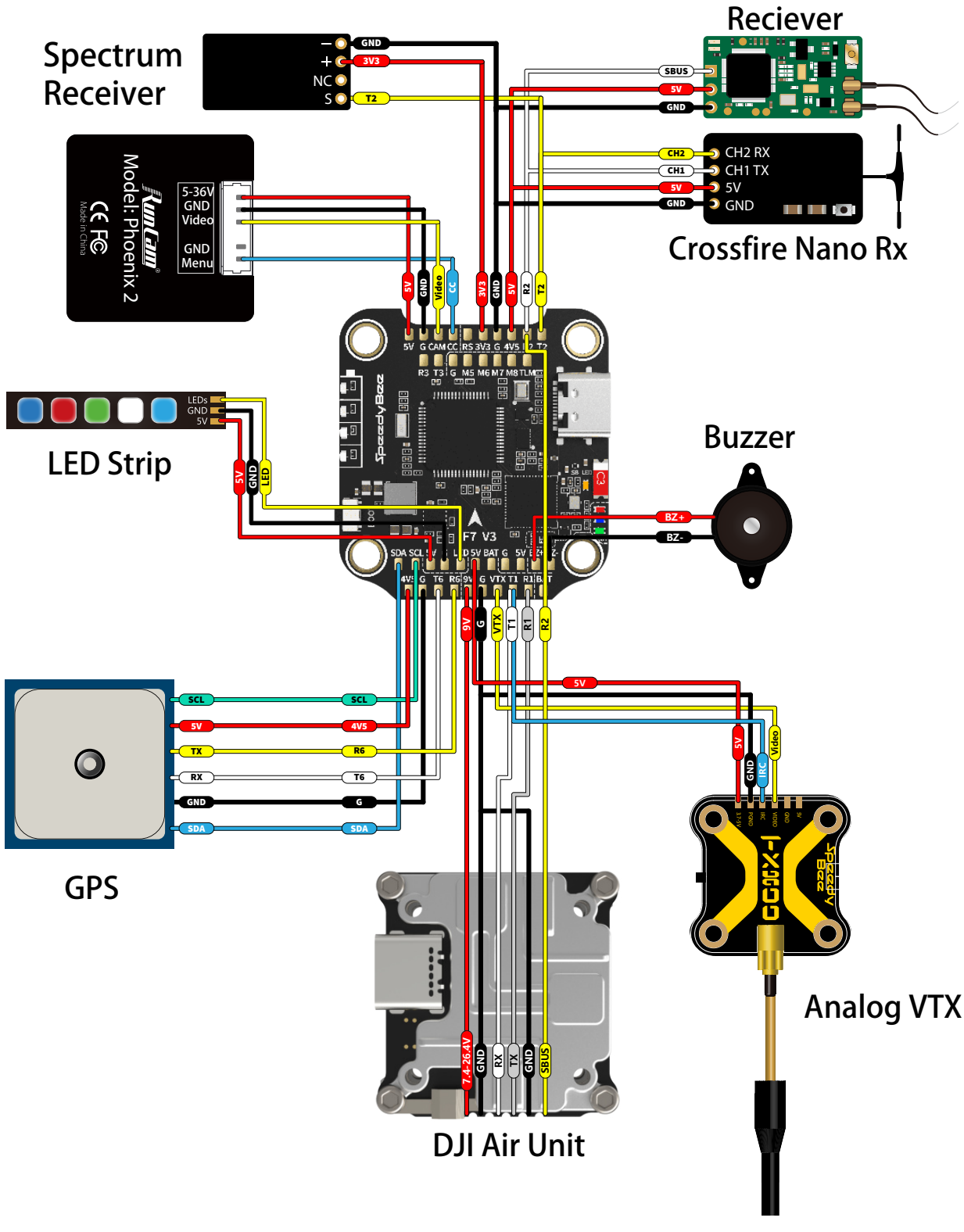
- **RED LED** - Power Indicator.Solid Red after powering up.
- **GREEN LED** - Bluetooth status light. Solid Green indicates Bluetooth is connected.
- **BLUE LED** - Flight controller status light which is controlled by the flight controller firmware.
- **Orange LED** - LED Control Mode Indicator. It 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： tindicates 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. You could also change modes in the app wirelessly.

  OFF： indicates the 4 x LEDs are controlled by Betaflight firmware.

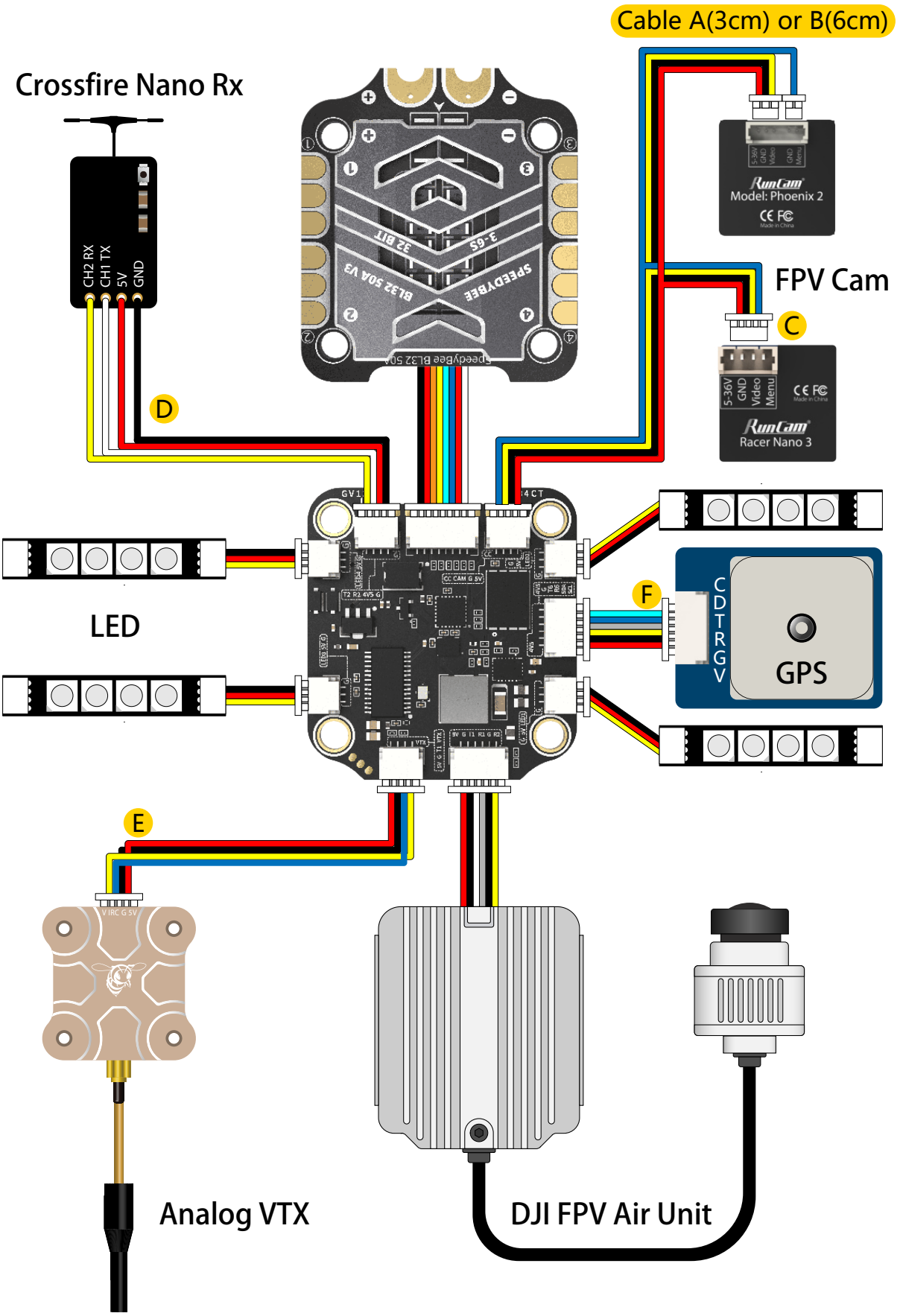
Long press the button for 3 seconds to switch the control modes between BF_LED mode and SB_LED mode.

Wiring Diagram
Method 1 - Direct Soldering



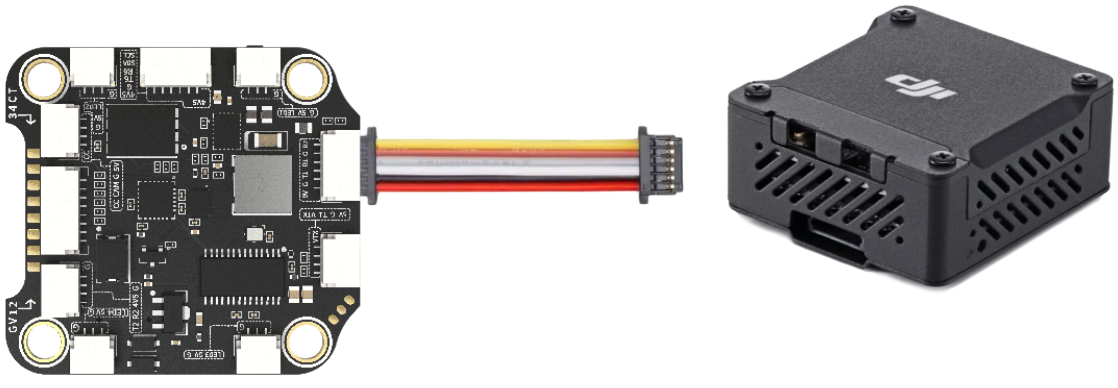
Method 2 - All connectors

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 accroding to their letters.



Cable Connection vs DJI O3 Air Unit

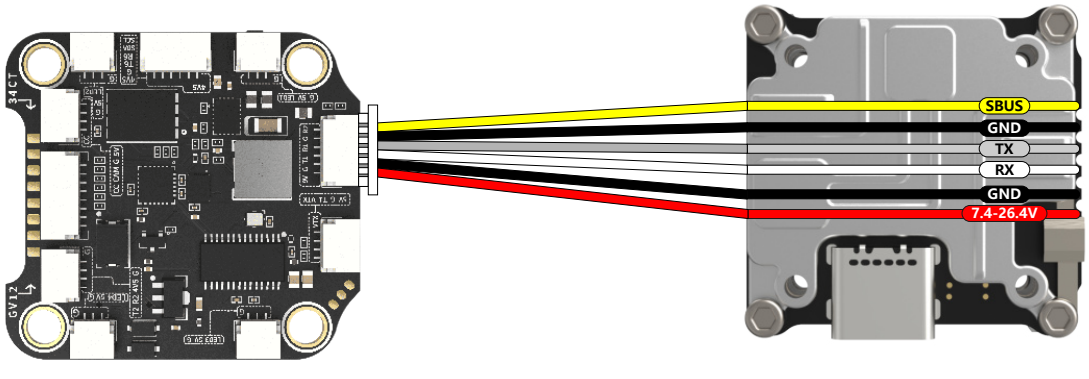
Use 6-pin cable comes with the O3 Air Unit



Cable Connection vs RunCam Link/ Caddx Vista Air Unit

Use 6-pin cable comes with the F7 V3 stack

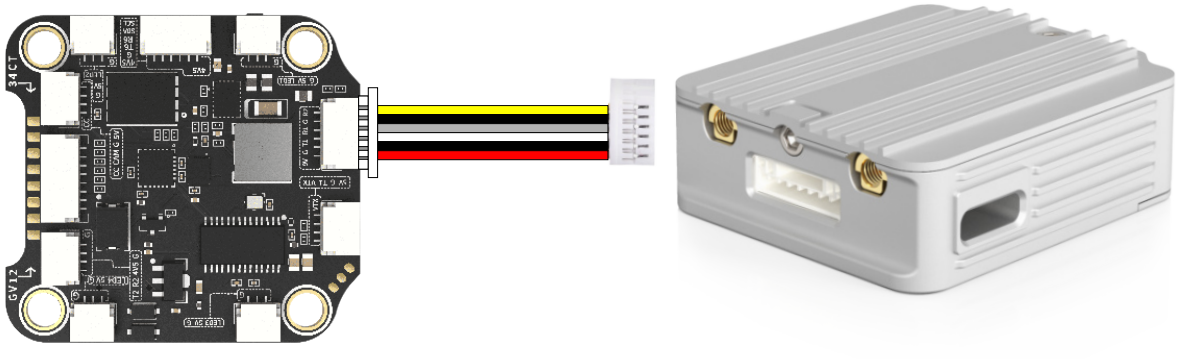
(See the accessory No.3 in the package section)

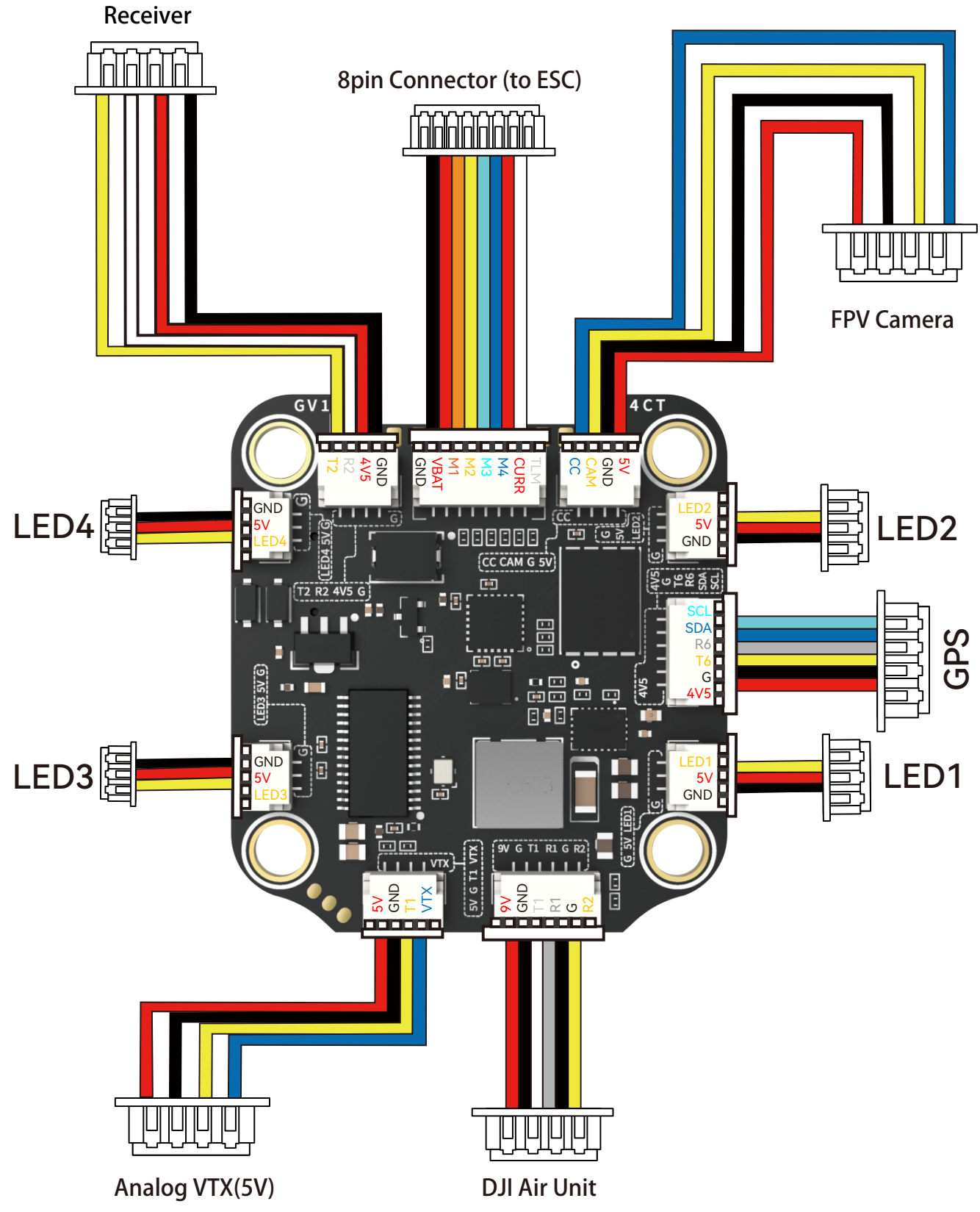


Cable Connection vs DJI Air Unit V1

Use 6-pin cable comes with the F7 V3 stack

(See the accessory No.3 in the package section)

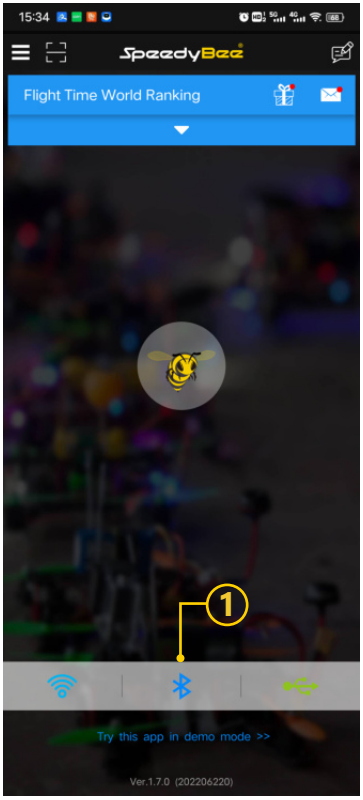


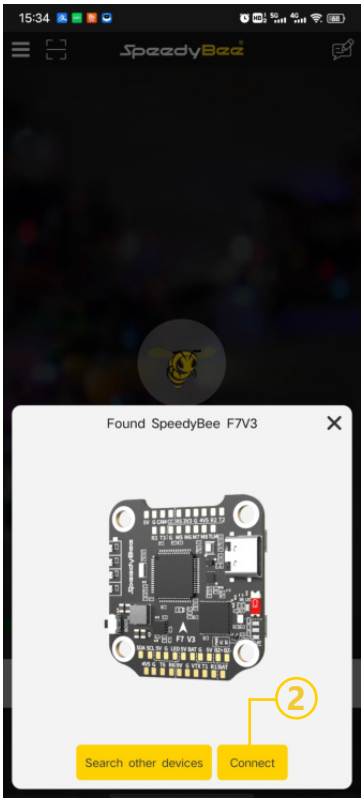

Receiver
8pin Connector (to ESC)
FPV Camera
LED4
LED2
GPS
LED3
LED1
Analog VTX(5V)
DJI Air Unit

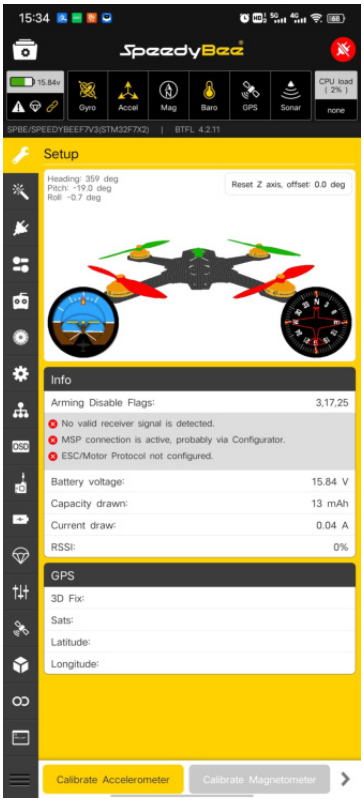
■ Get the SpeedyBee App

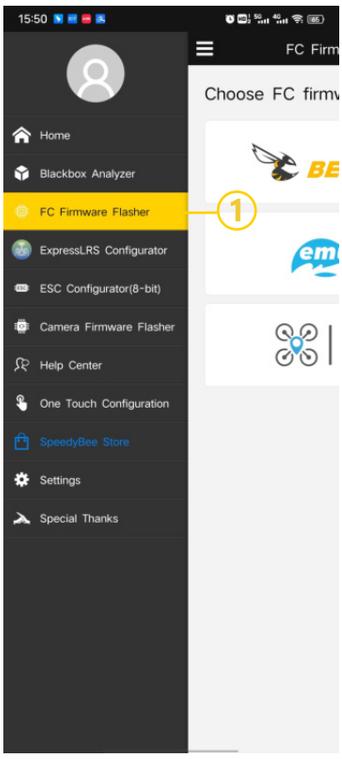
Search ‘SpeedyBee’ on Google Play or App Store. Or download the Android .apk file on our website: https://www.speedybee.com/download

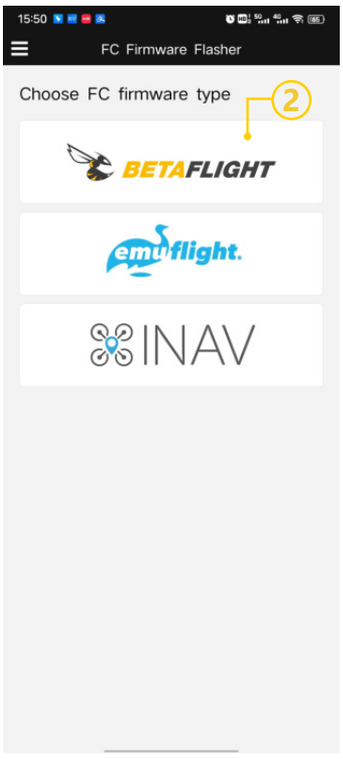
■ Connect the App

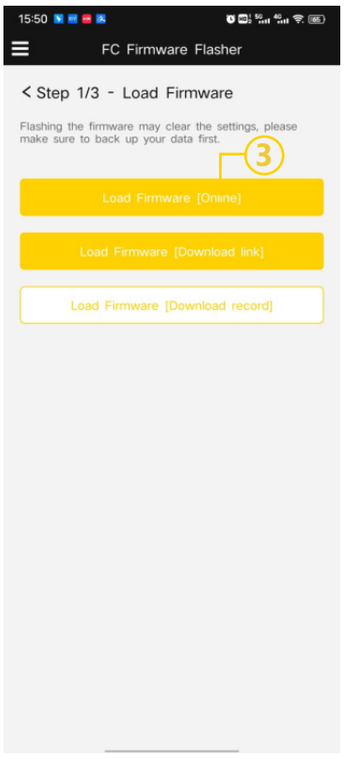


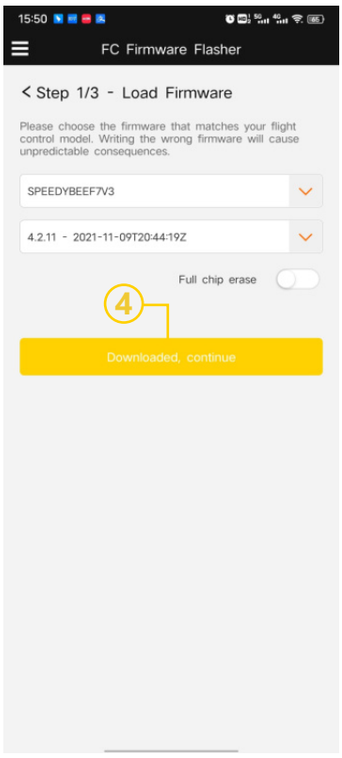


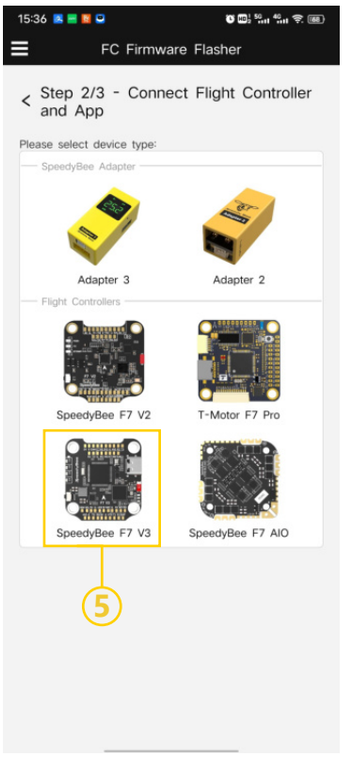


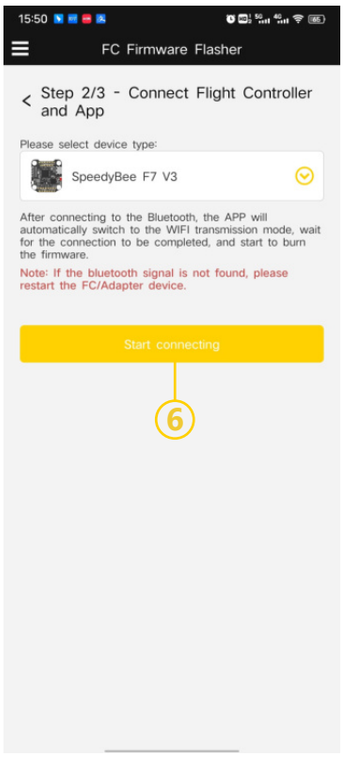

FC Firm
Choose FC firmv
Home
Blackbox Analyzer
FC Firmware Flasher
ExpressLRS Configurator
ESC Configurator(8-bit)
Camera Firmware Flasher
Help Center
One Touch Configuration
SpeedyBee Store
Settings
Special Thanks
1

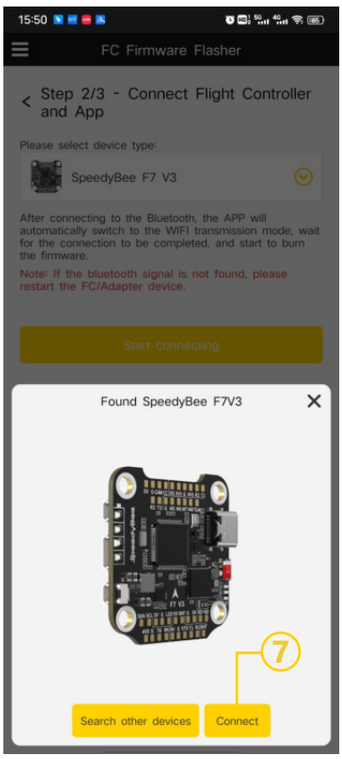

FC Firmware Flasher
Choose FC firmware type
2
BETAFLIGHT
emuflight.
INAV

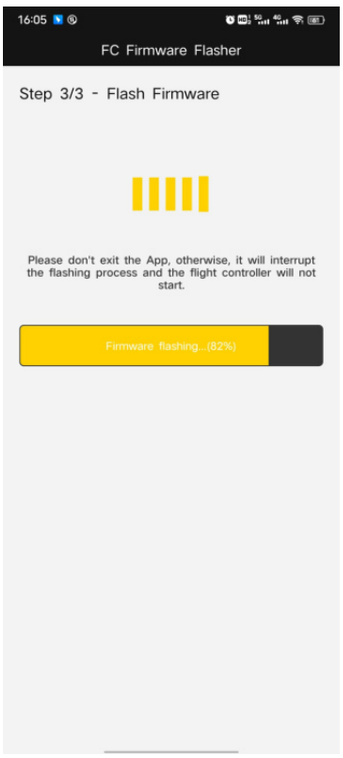

FC Firmware Flasher
Step 1/3 - Load Firmware
Flashing the firmware may clear the settings, please make sure to back up your data first.
3
Load Firmware [Online]
Load Firmware [Download link]
Load Firmware [Download record]

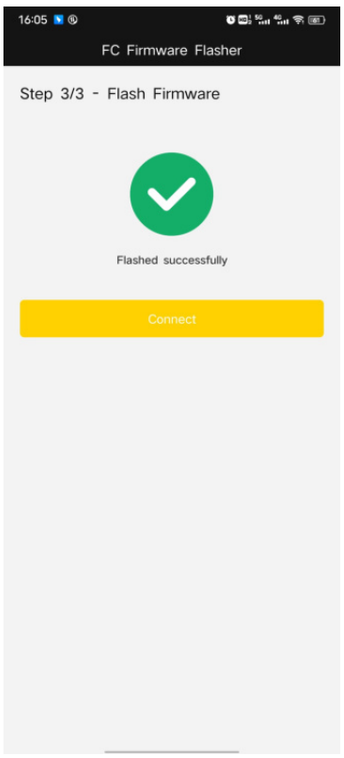

FC Firmware Flasher
Step 1/3 - Load Firmware
Please choose the firmware that matches your flight control model. Writing the wrong firmware will cause unpredictable consequences.
SPEEDYBEEF7V3
4.2.11 - 2021-11-09T20:44:19Z
Full chip erase
4
Downloaded, continue


FC Firmware Flasher
Step 2/3 - Connect Flight Controller and App
Please select device type:
SpeedyBee Adapter
Adapter 3
Adapter 2
Flight Controllers
SpeedyBee F7 V2
T-Motor F7 Pro
SpeedyBee F7 V3
SpeedyBee F7 AIO
5


FC Firmware Flasher
Step 2/3 - Connect Flight Controller and App
Please select device type:
SpeedyBee F7 V3
After connecting to the Bluetooth, the APP will automatically switch to the WIFI transmission mode, wait for the connection to be completed, and start to burn the firmware.
Note: If the bluetooth signal is not found, please restart the FC/Adapter device.
Start connecting
6

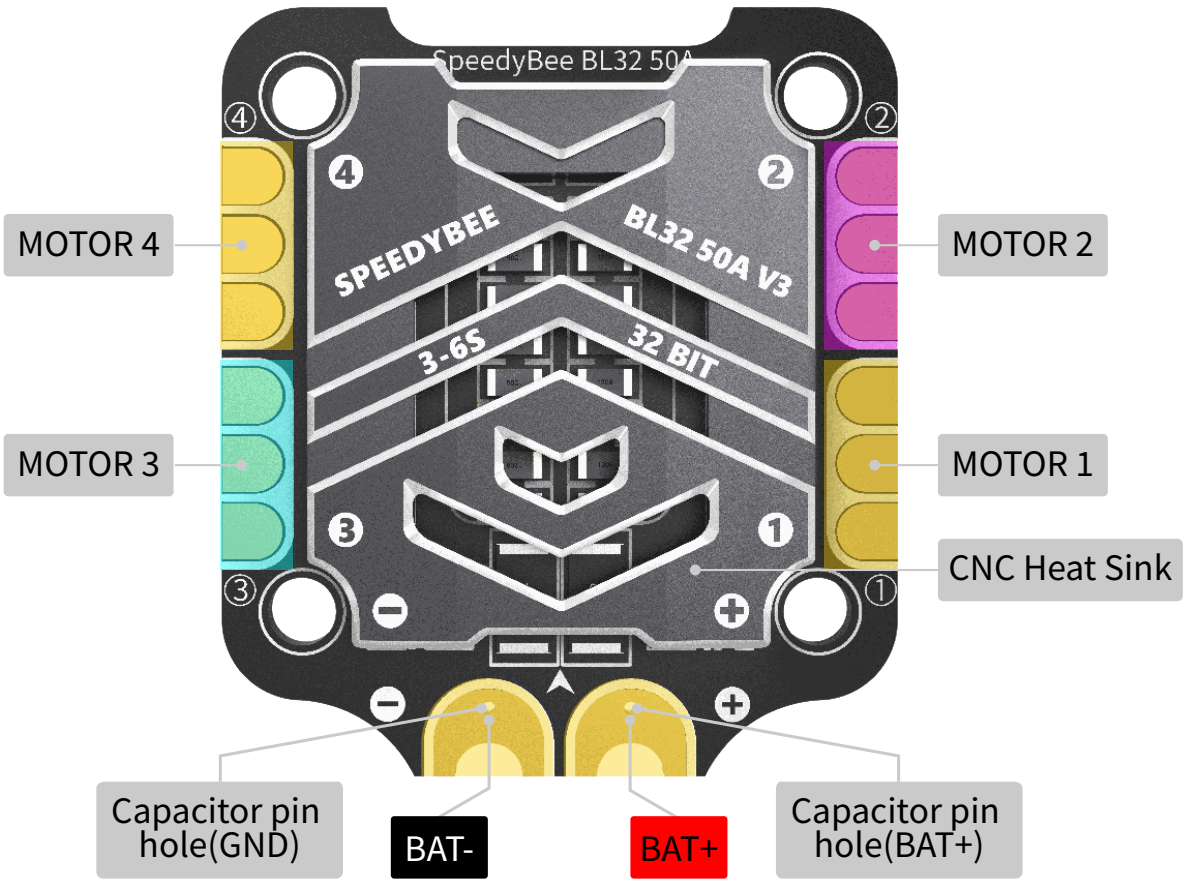

FC Firmware Flasher
Step 2/3 - Connect Flight Controller and App
Please select device type:
SpeedyBee F7 V3
After connecting to the Bluetooth, the APP will automatically switch to the WIFI transmission mode, wait for the connection to be completed, and start to burn the firmware.
Note: If the bluetooth signal is not found, please restart the FC/Adapter device.
Start connecting
Found SpeedyBee F7V3
7
Search other devices
Connect

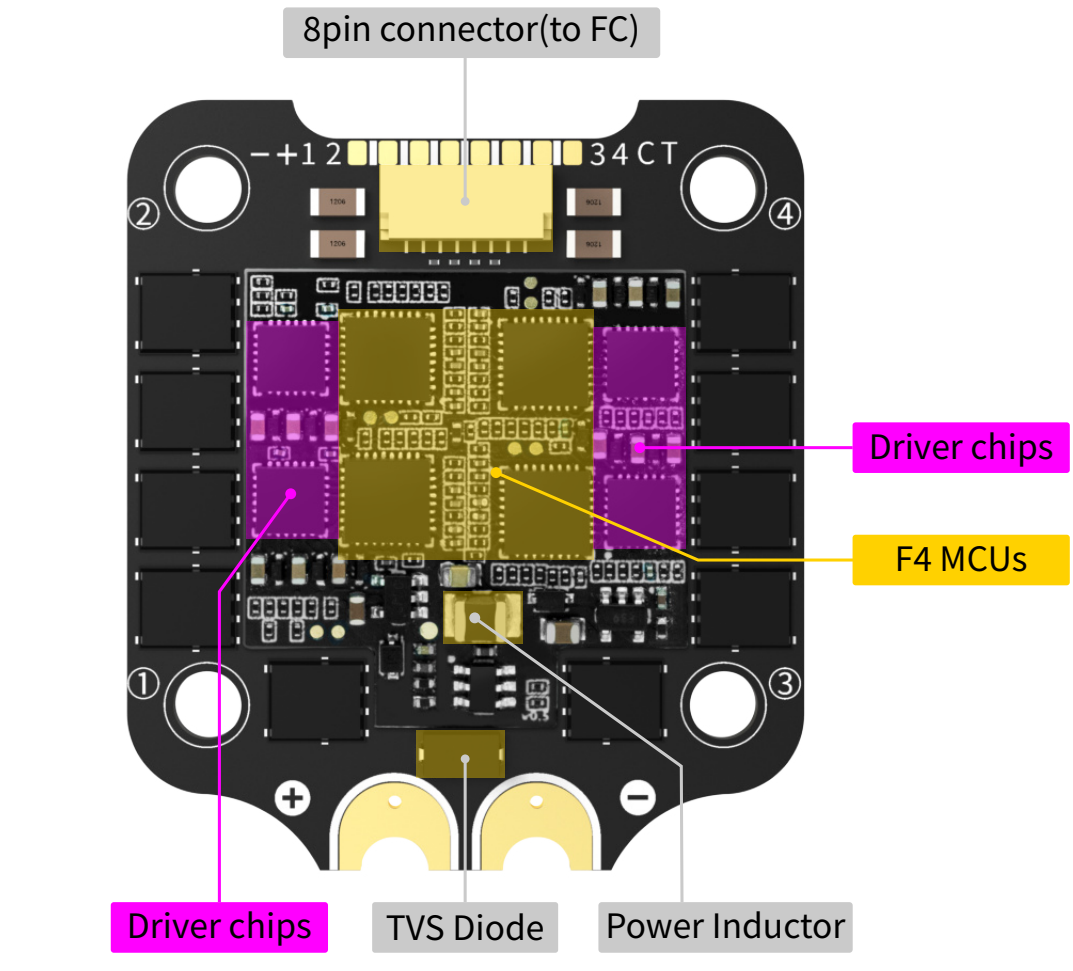

FC Firmware Flasher
Step 3/3 - Flash Firmware
Please don't exit the App, otherwise, it will interrupt the flashing process and the flight controller will not start.
Firmware flashing...(82%)


FC Firmware Flasher
Step 3/3 - Flash Firmware
Flashed successfully
Connect

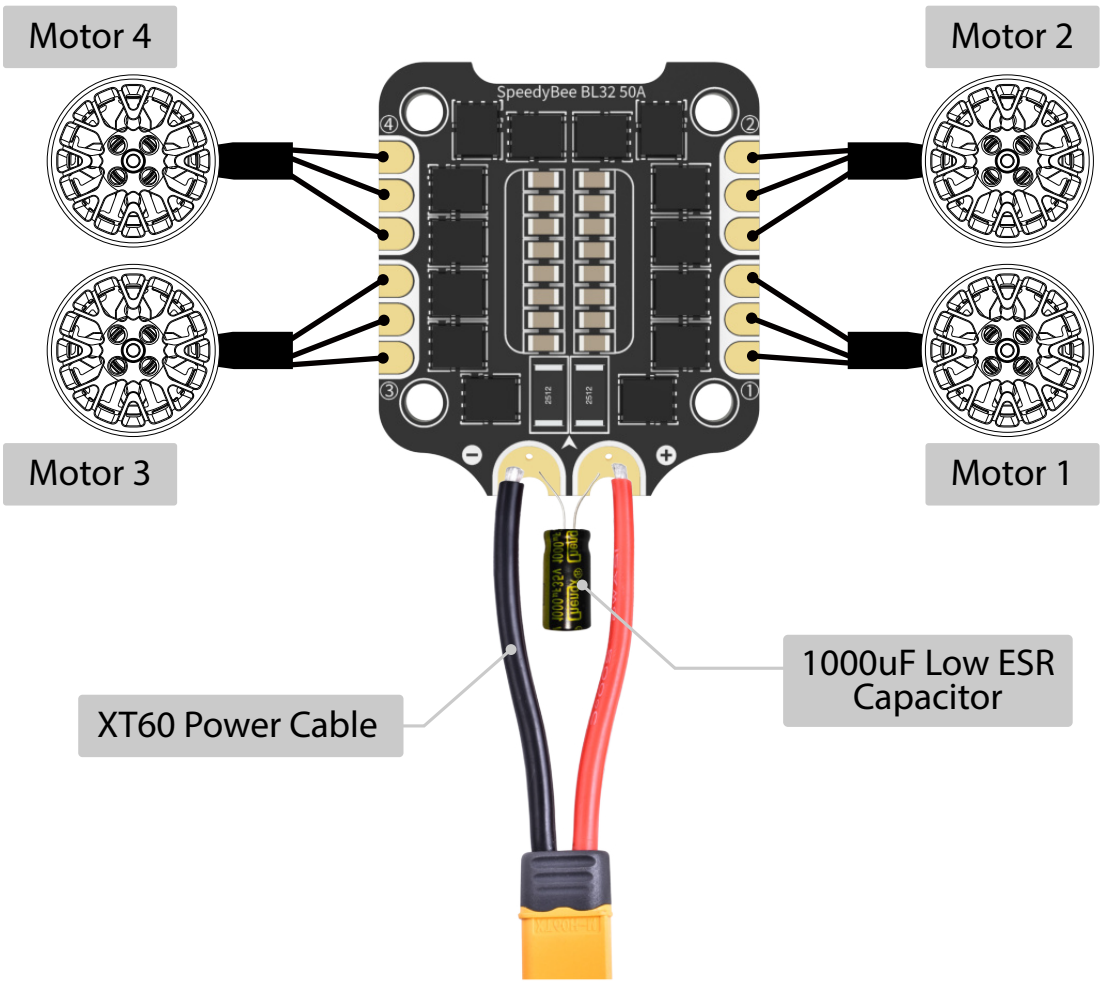
Product Name	SpeedyBee F7 V3 Flight Controller
MCU	STM32F722
IMU(Gyro)	BMI270
USB Port Type	Type-C
Barometer	BMP280
OSD Chip	AT7456E chip
BLE Bluetooth	Supported. Used for Flight Controller configuration
Flash FC Firmware Wirelessly	Supported. Please enter MENU > FC Firmware Flasher
Download/Analyze 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	BetaFlight(Default), EMUFlight, 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

Layout


SpeedyBee BL32 50A
SPEEDYBEE
BL32 50A V3
3-6S
32 BIT
MOTOR 4
MOTOR 2
MOTOR 3
MOTOR 1
CNC Heat Sink
Capacitor pin hole(GND)
BAT-
BAT+
Capacitor pin hole(BAT+)


8pin connector(to FC)
− + 1 2 3 4 C T
Driver chips
F4 MCUs
Driver chips
TVS Diode
Power Inductor

Connection with Motors & Power Cable 11/13

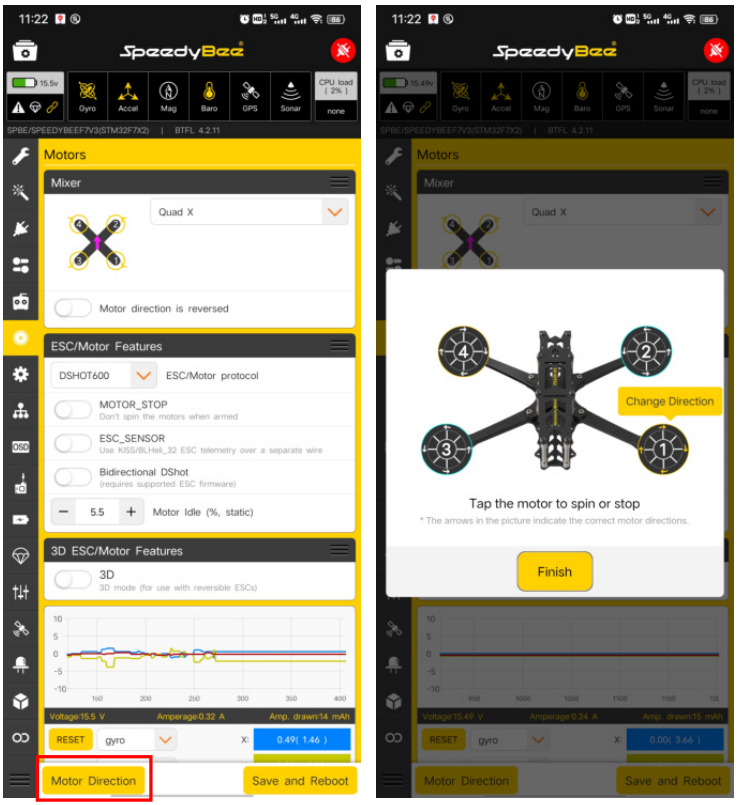


■ **Note**: In order to prevent the stack from being burnt out instantaneous voltage spikes on powering up, it is strongly recommended to use the Low ESR capacitor in the package.

ESC Conifguration & 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	SpeedyBee BL32 50A
Configurator Download Link	http://github.com/bitdump/BLHeli/releases
Continuous Current	50A * 4
Burst Current	55A(5S)
TVS Protective diode	Yes
Heat Sink	Yes
External Capacitor	1000uF Low ESR Capacitor(In the package)
ESC Protocol	DSHOT300/600
Power Input	3-6S LiPo
Power Output	VBAT
Current Sensor	Support (Scale=490 Offset=0)
ESC Telemetry	Not 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