User Manual

User Manual V1.0

SpeedyBee F7 35A BLS Mini Stack

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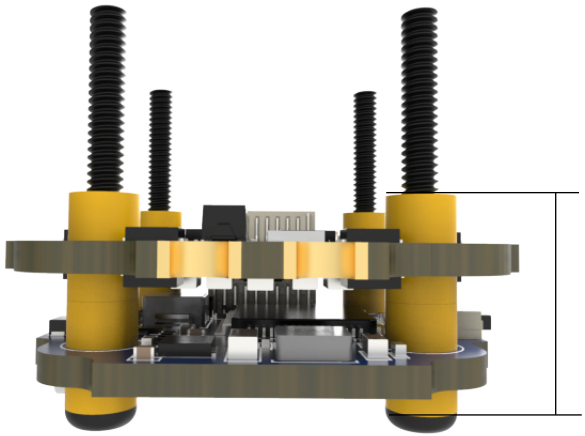
SpeedyBee®

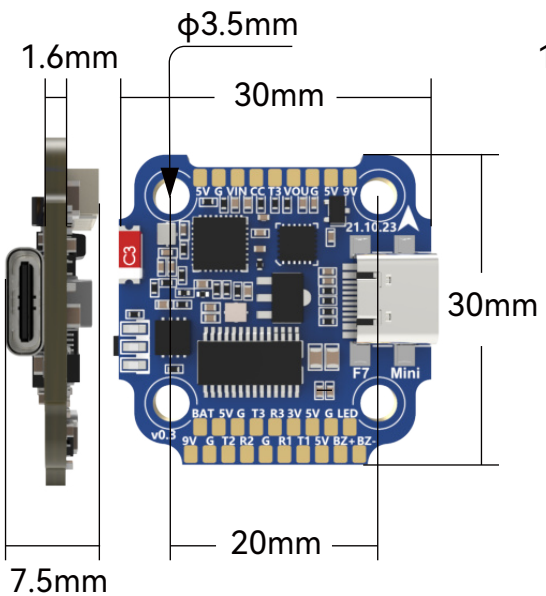
Part 1 - OverView

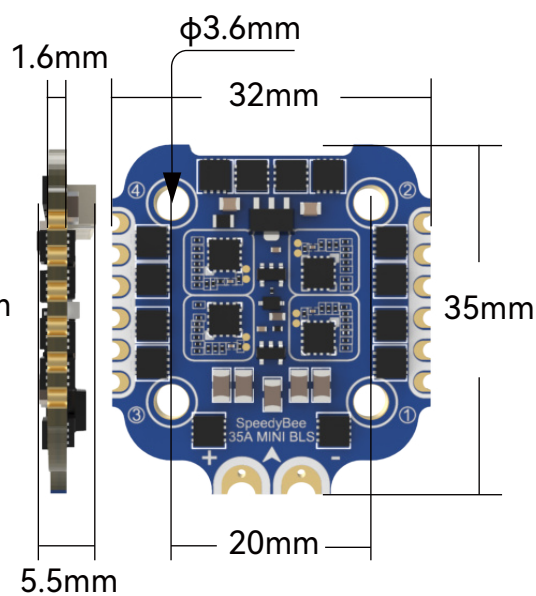
Specs Overview

Product Name	SpeedyBee F7 35A BLS Mini Stack
Flight Controller	SpeedyBee F7 Mini
ESC	SpeedyBee 35A BLS Mini 4-in-1 ESC
Bluetooth	Supported. For FC & ESC parameter setting
Wireless FC Firmware Flashing	Not supported
Wireless Blackbox Download	Not supported
Power Input	3-6S LiPo
Mounting	20 x 20mm ⌀3.5mm hole size, Compatible with M2 and M3 screws/Silicone grommets
Dimension	32mm(L) x 35mm(W) x 13mm(H)
Weight	12.7g

Dimensions

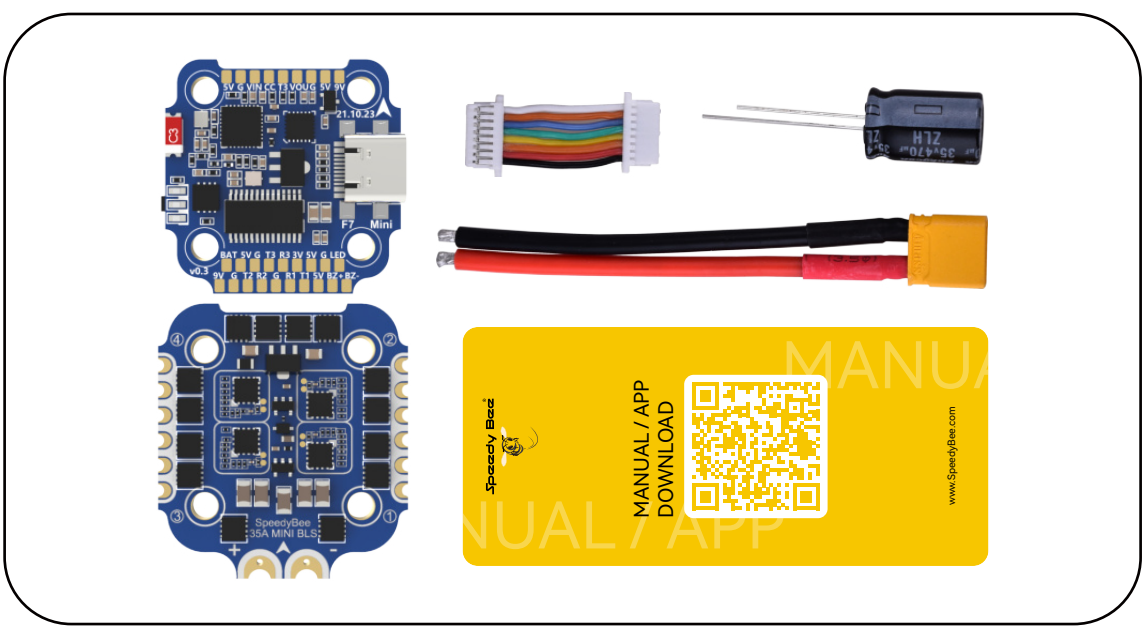

13mm


ϕ3.5mm
1.6mm
30mm
30mm
20mm
7.5mm
5V G VIN CC T3 VOUG 5V 9V
21.10.23
C3
F7 Mini
BAT 5V G T3 R3 3V 5V G LED
v0.3 9V G T2 R2 G R1 T1 5V BZ+ BZ-

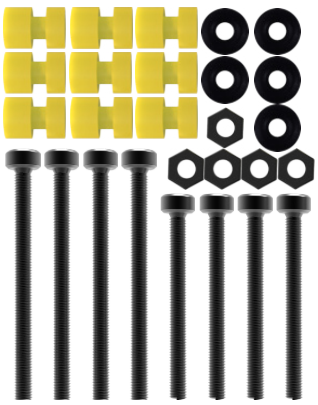

ϕ3.6mm
1.6mm
32mm
35mm
20mm
5.5mm
SpeedyBee
35A MINI BLS
+
-

Package

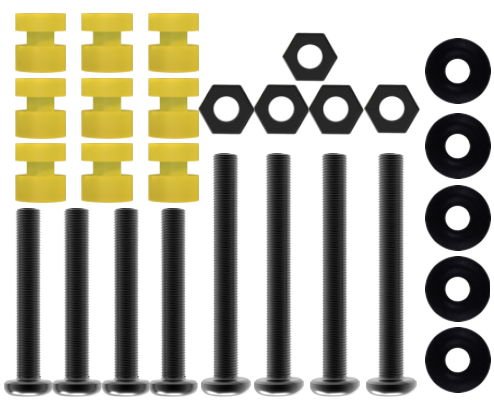
- SpeedyBee F7 Mini Flight Controller x 1
- SpeedyBee 35A BLHeli_S Mini 4-in-1 ESC x 1
- Manual & App Download Card x 1
- XT30 Power Cable(Length: 7cm) x 1
- 8pin JST cable(For FC & ESC Connection) x 1
- 35V 470uF Capacitor x 1
- M2 Accessories
  - M2(Diameter) * 20mm(Length) Screw x 4
  - M2(Diameter) * 25mm(Length) Screw x 4
  - M2(Hole Diameter) * 6.6mm(Height) Anti-vibration Silicone Grommets x 9
  - M2 Silicone O-Ring x 5
  - M2 Nylon Hex Nut x 5
- M3 Accessories
  - M3(Diameter) * 20mm(Length) Screw x 4
  - M3(Diameter) * 25mm(Length) Screw x 4
  - M3(Hole Diameter) * 6.6mm(Height) Anti-vibration Silicone Grommets x 9
  - M3 Silicone O-Ring x 5
  - M3 Nylon Hex Nut x 5



M2 Accessories

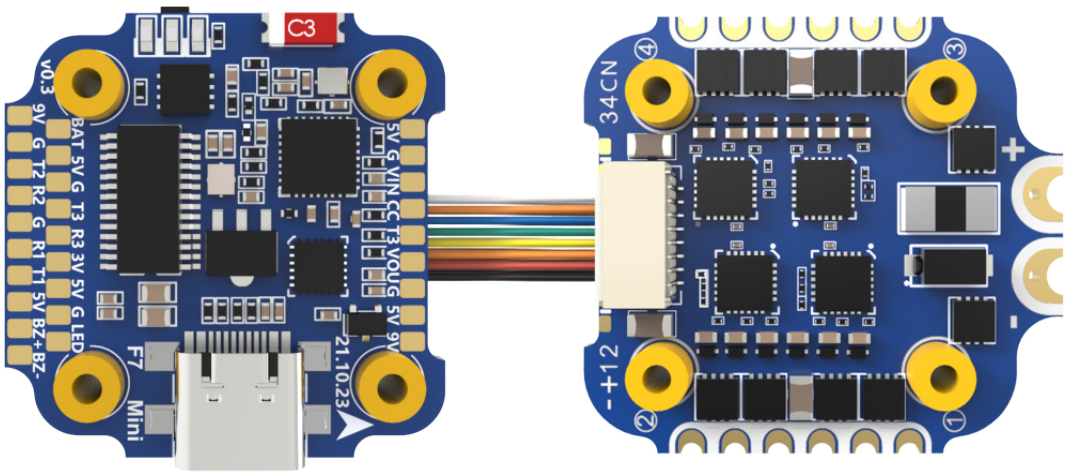


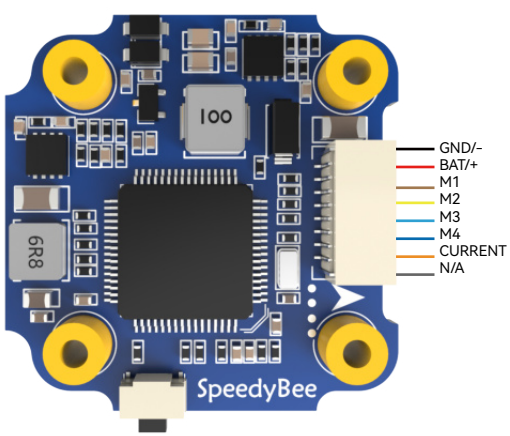
M3 Accessories

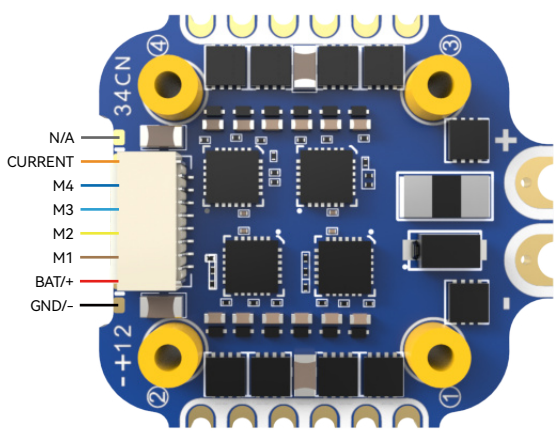


FC & ESC Connection

Use any end of the 8-pin JST cable to connect the FC to the ESC.

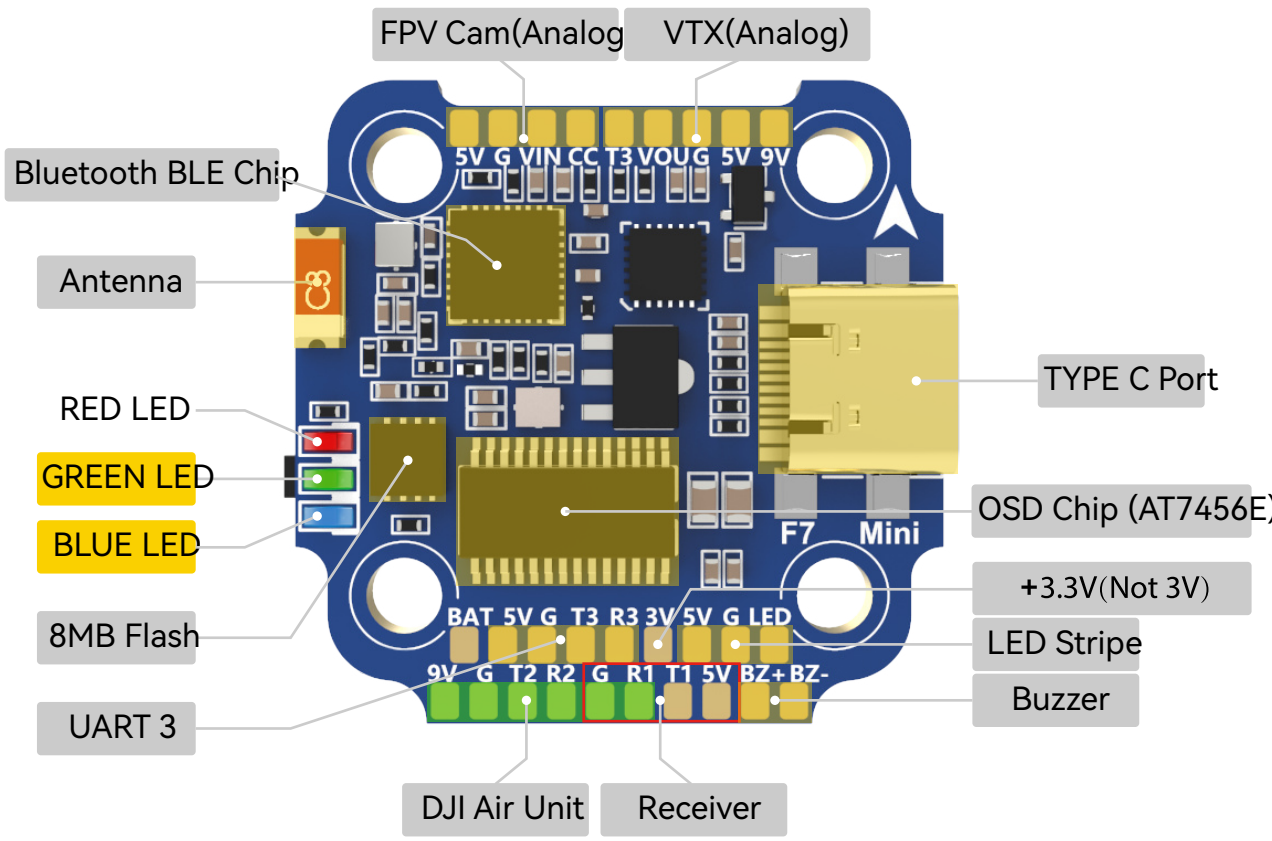


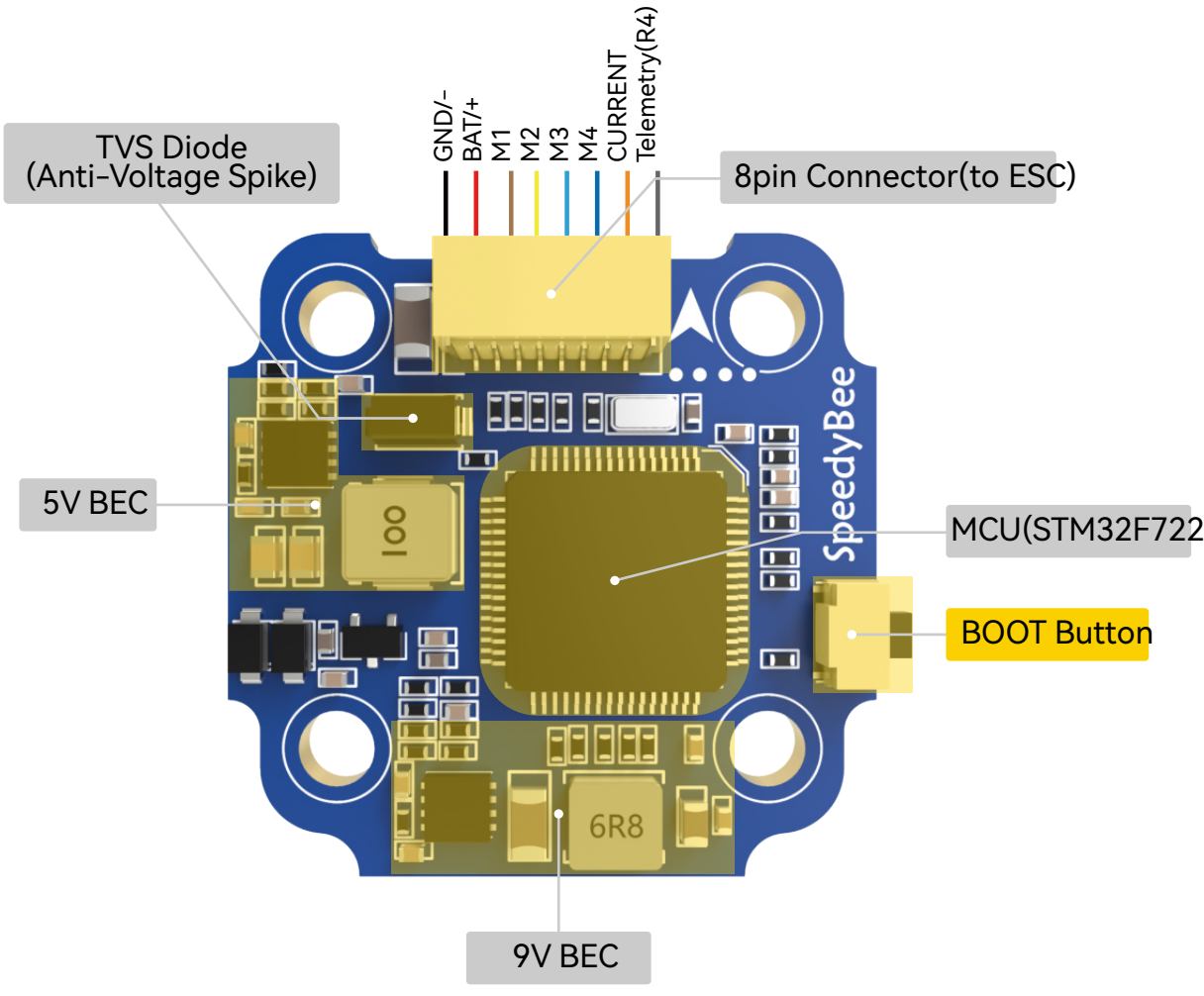




Part 2 - SpeedyBee F7 Mini Flight Contro

Layout





LED Indicator Definition

- RED LED - Solid Red after powering up.
- GREEN LED - Blinking Green indicates Bluetooth is open and waiting forconnection; Solid Green indicates Bluetooth is connected.
- BLUE LED - Flight controller status light which is controlled by the flight controller firmware.

BOOT Button

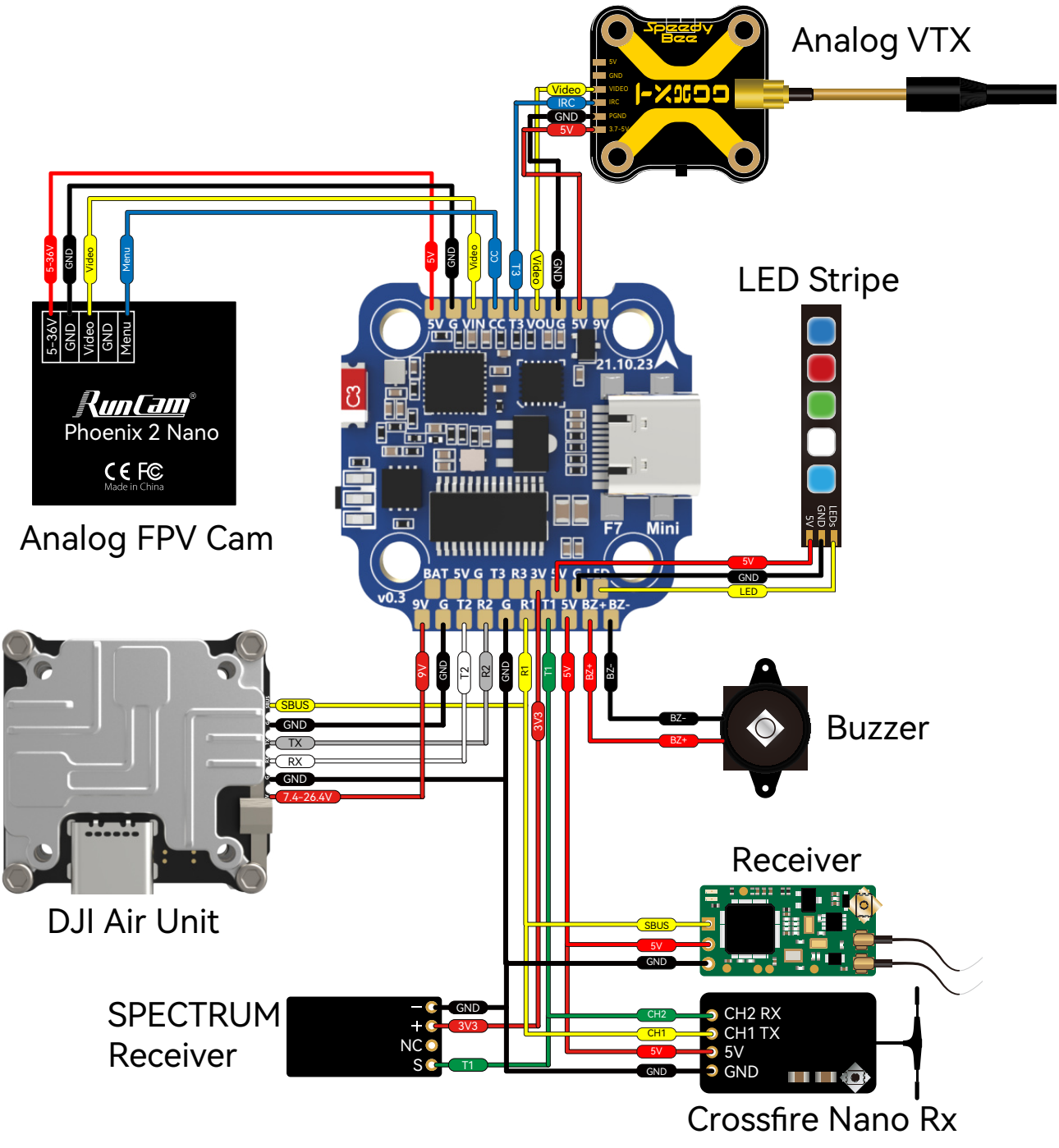
Only if the flight controller gets bricked and can't power up, please follow these steps to re-flash firmware for it:

① Insert a USB A to TYPE-C cable to your PC.

② Press and hold the BOOT button, insert the USB cable into the flight controller, then release the BOOT button.

③ Open Betaflight/INAV configurator on the PC, go to the 'Firmware Flashing' page, choose the target 'SPEEDYBEEF7MINI' and flash.

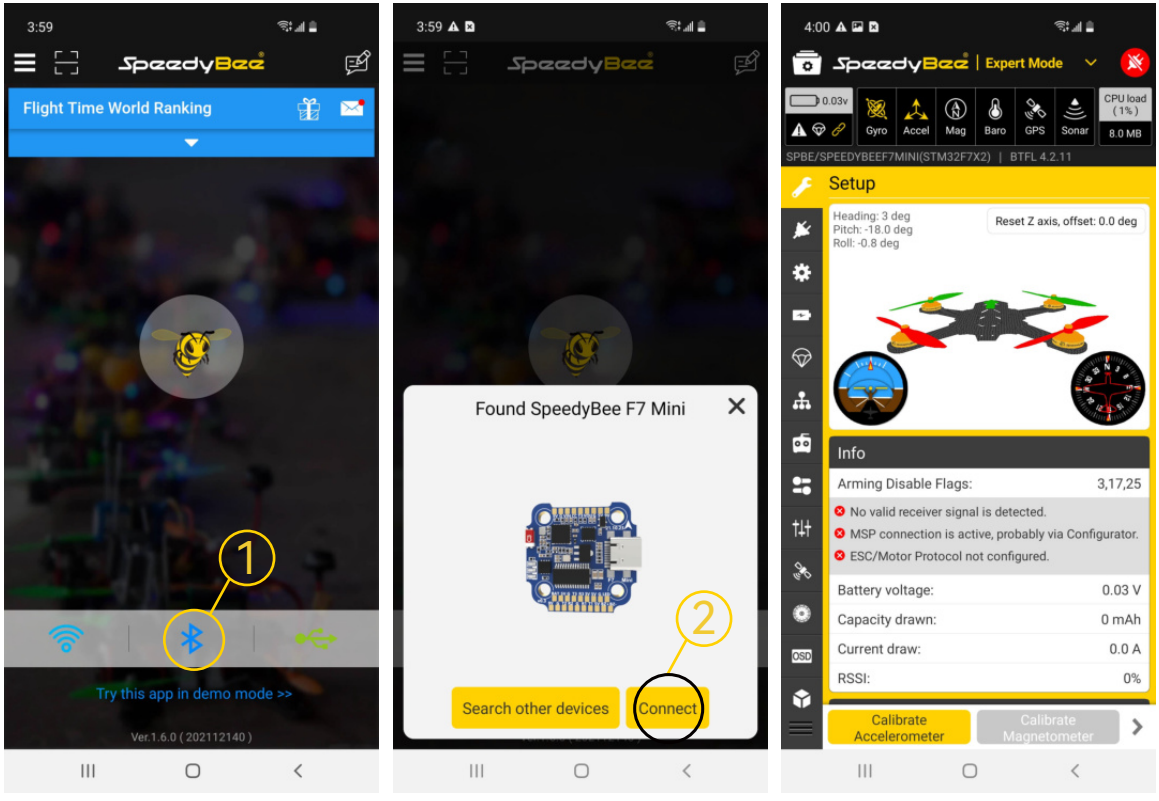
FC's Peripheral Connection



- 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

- SpeedyBee F7 Mini does not support wireless firmware flashing, so please flash firmware for it on your PC following the steps below:

  ① Connect the flight controller to the PC with a USB cable

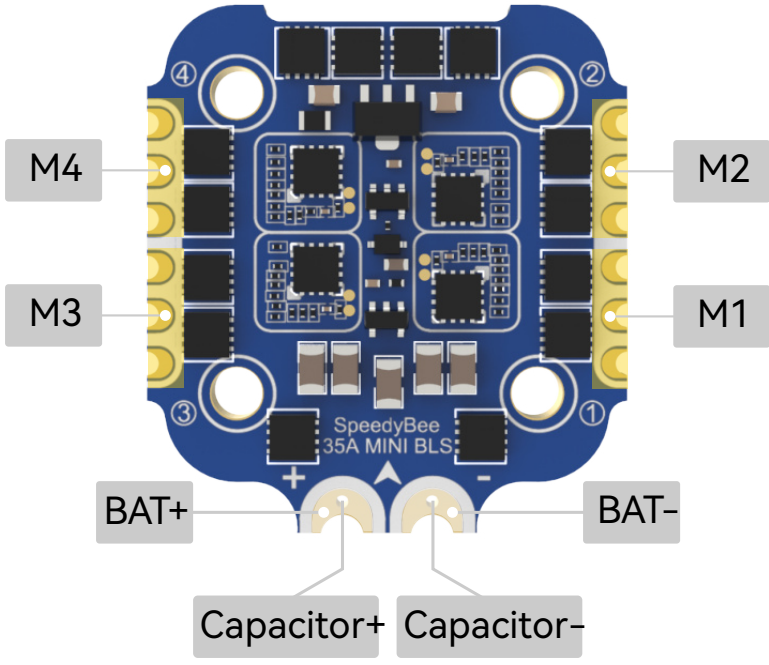
  ② Open Betafight/INAV configurator on your PC. Take Betaflight configurator as an example, go to the ‘Firmware Flashing’ page, choose the target ‘SPEEDYBEEF7MINI’ and flash.

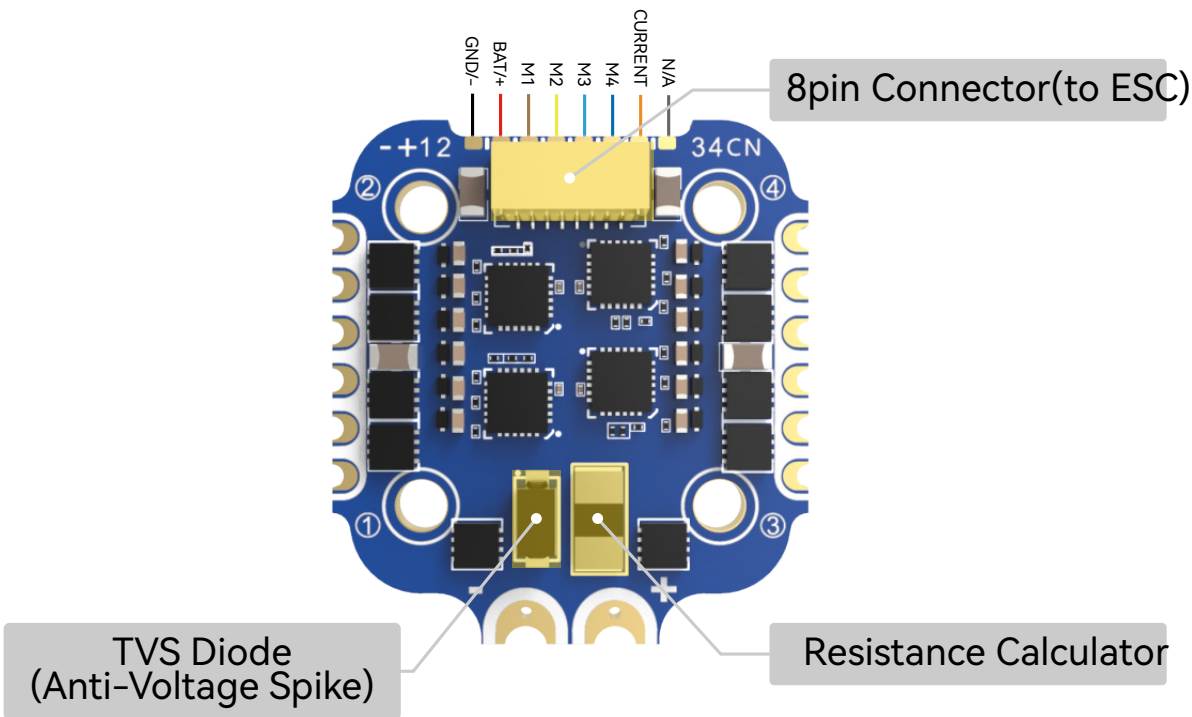
Parameters

MCU	STM32F722
IMU(Gyro)	BMI270 for current batches;MPU6000 for old batches before May 2022.
USB Port Type	Type-C
Barometer	N/A
OSD Chip	AT7456E chip
BLE Bluetooth	Supported. Used for Flight Controller configuration (MSP should be enabled with Baud rate 115200 on UART 6)
Flash FC Firmware Wirelessly	Not supported. Please update firmware for this FC on the PC
Download/Analyze Blackbox	Not supported. Please download and analyze Blackbox data on the PC
DJI Air Unit Soldering Pads	Supported
Flash(for BlackBox)	8MB
Current Sensor	Supported, Scale=250 Offset=-500
BetaFlight Camera Control Pad	Yes(CC pad)
Power Input	3S - 6S Lipo
5V Output	6 groups of 5V output, five +5V pads and 1 BZ+ pad(used for Buzzer). The total current load is 2.5A.
9V Output	2 groups of 9V output, the total current load is 2A.
3.3V Output	Supported. Up to 500mA current load.
ESC Signal Pads	M1 - M4
UART	Full UART * 3(UART1, UART2, UART3)
ESC Telemetry UART	R4(UART4)
I2C	Not supported
LED Pad	Used for WS2812 LED
Buzzer	BZ+ and BZ- pad used for 5V Buzzer
BOOT Button	Used to enter DFU mode
RSSI Input	Not supported
SmartPort	Use any TX pad of UART for the SmartPort feature.
Supported Flight Controller Firmware	BetaFlight(Default)
Firmware Target Name	SPEEDYBEEF7MINIV2 for current batches(Gyro: BMI270); SPEEDYBEEF7MINI for old batches(Gyro: MPU6000) before May 2022.
Mounting	20 x 20mm, 3.5mm hole diameter
Dimension	30 x 30 x 7.5mm
Weight	5.7g

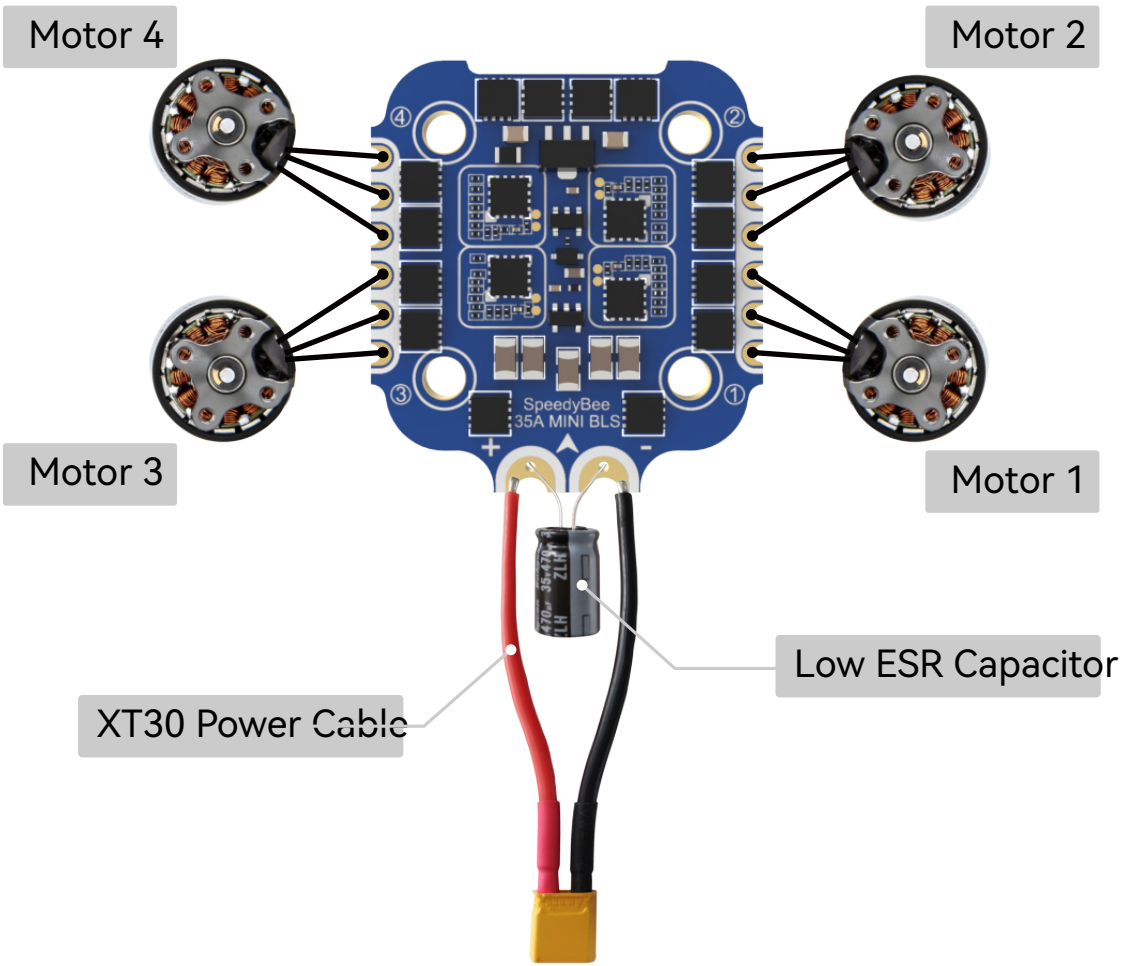
Part 3 - SpeedyBee 35A BLS 4-in-1 ESC

Layout

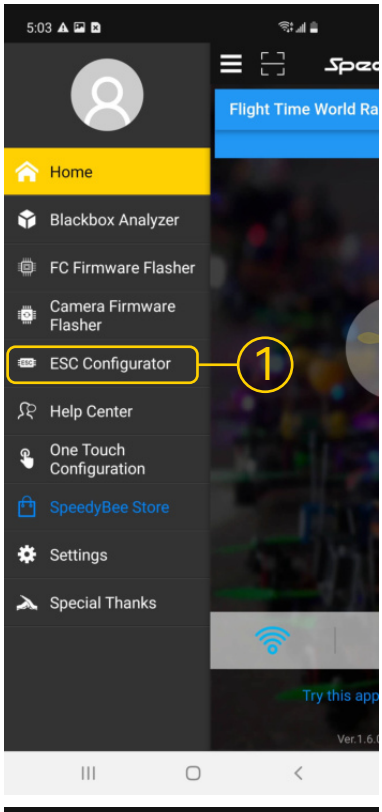


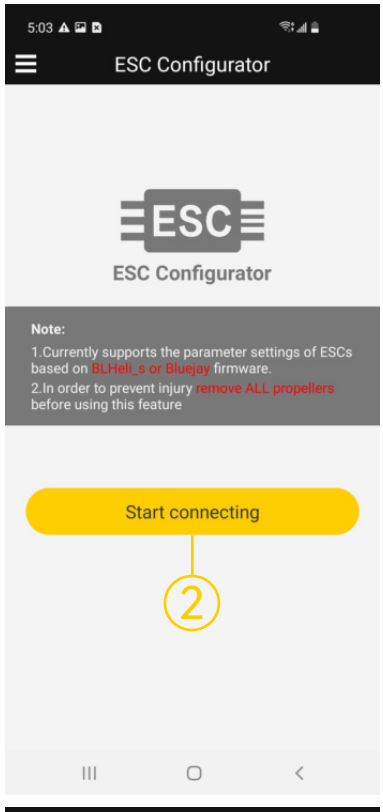


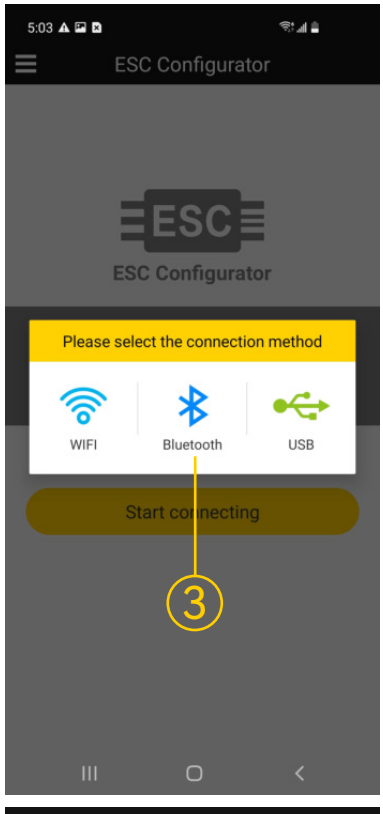
Connection with Motors & Power Cable

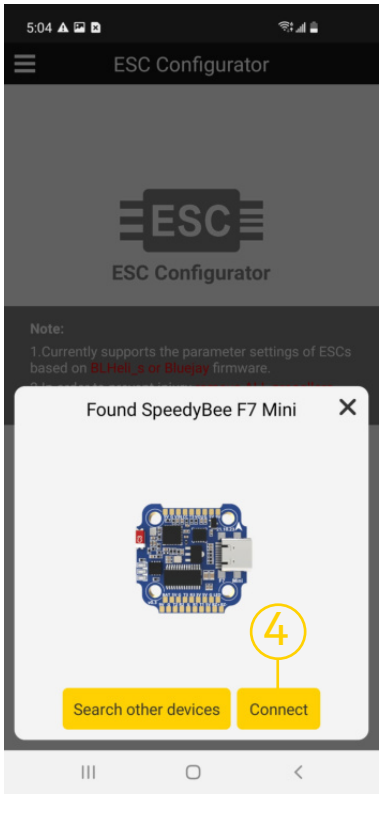


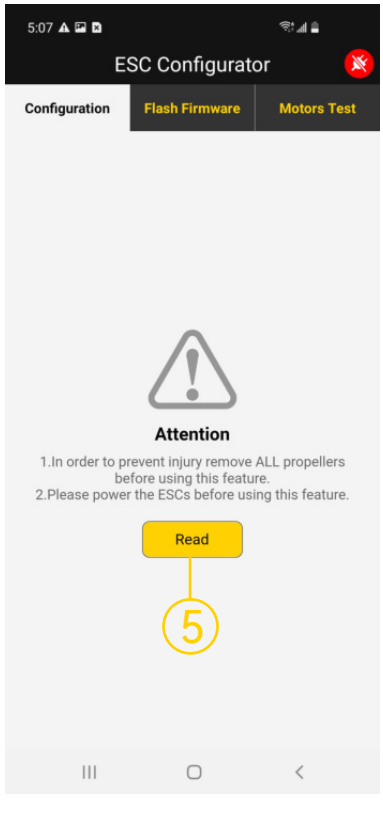
■ Note: In order to prevent the stack from being burnt out instantaneous voltage spikes on powering up, it is strongly recommended to use the Low ESR capacitor in the package.

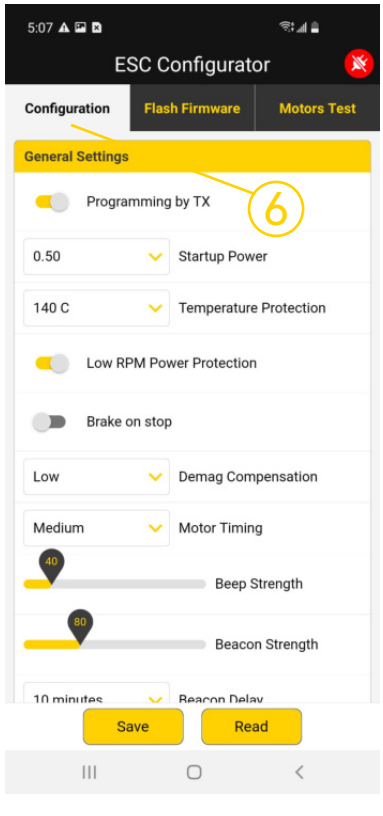

Home
Blackbox Analyzer
FC Firmware Flasher
Camera Firmware Flasher
ESC Configurator
Help Center
One Touch Configuration
SpeedyBee Store
Settings
Special Thanks
1


ESC Configurator
ESC Configurator
Note:
1.Currently supports the parameter settings of ESCs based on BLHeli_s or Bluejay firmware.
2.In order to prevent injury remove ALL propellers before using this feature
Start connecting
2


ESC Configurator
ESC Configurator
Please select the connection method
WIFI
Bluetooth
USB
Start connecting
3


ESC Configurator
ESC Configurator
Found SpeedyBee F7 Mini
4
Search other devices
Connect


ESC Configurator
Configuration
Flash Firmware
Motors Test
Attention
1.In order to prevent injury remove ALL propellers before using this feature.
2.Please power the ESCs before using this feature.
Read
5

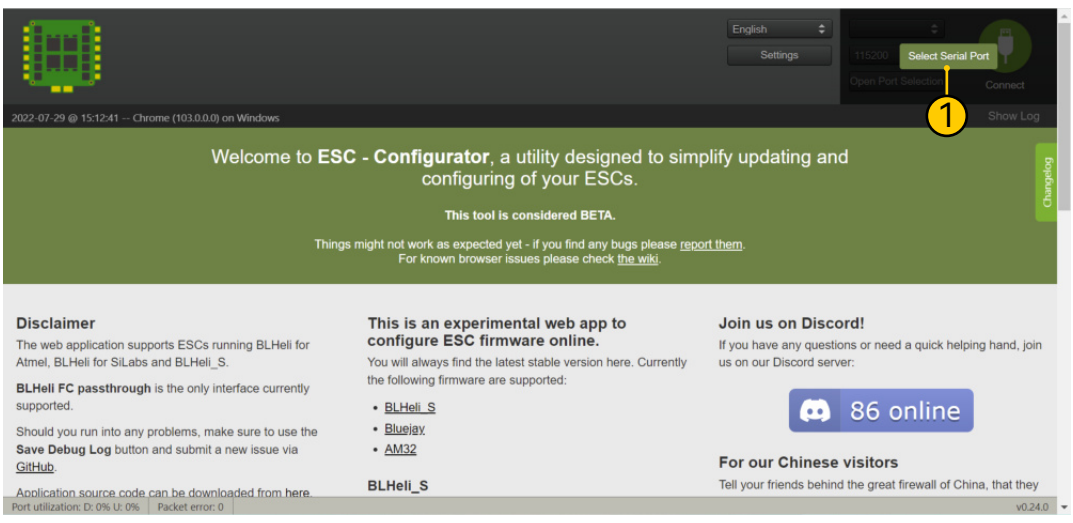

ESC Configurator
Configuration
Flash Firmware
Motors Test
General Settings
Programming by TX
6
0.50
Startup Power
140 C
Temperature Protection
Low RPM Power Protection
Brake on stop
Low
Demag Compensation
Medium
Motor Timing
Beep Strength
Beacon Strength
Save
Read

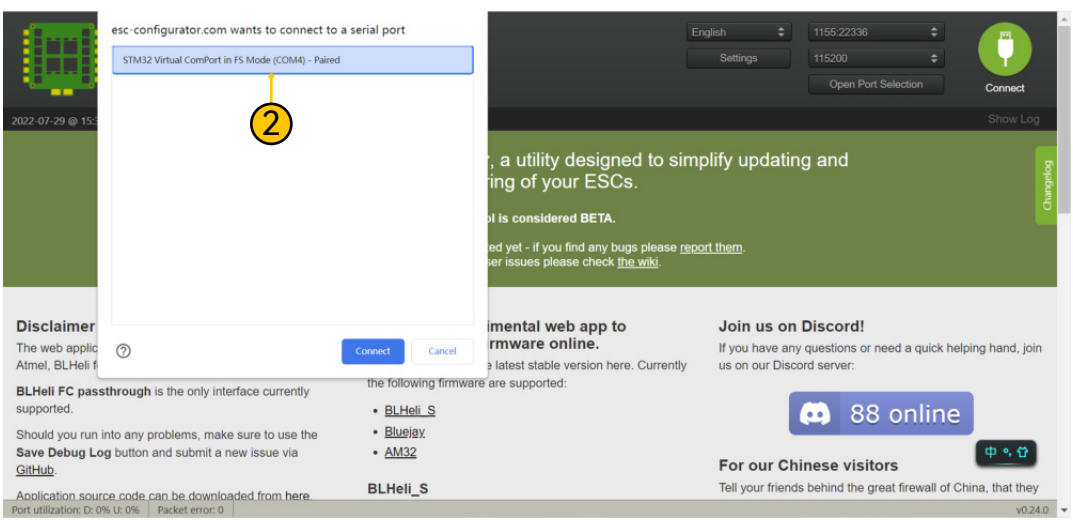
- You could flash both BLHeli_S and Blue Jay firmware for this ESC.

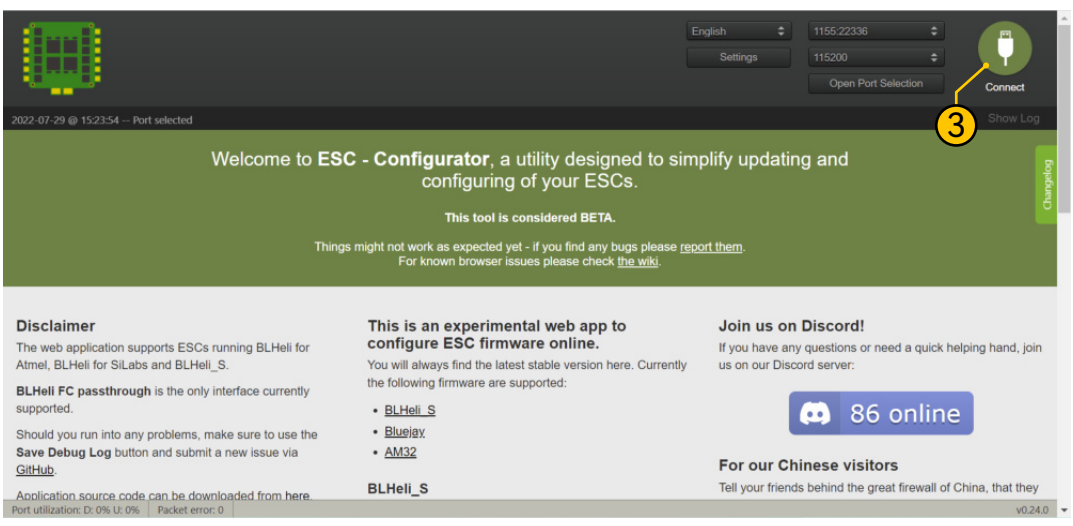
  You need to pulg in the battery to the Mini and then connect a USB cable between the Mini and your PC. Then flash ESC firmware (BLHeli_S or Blue Jay) in the following online configurator:

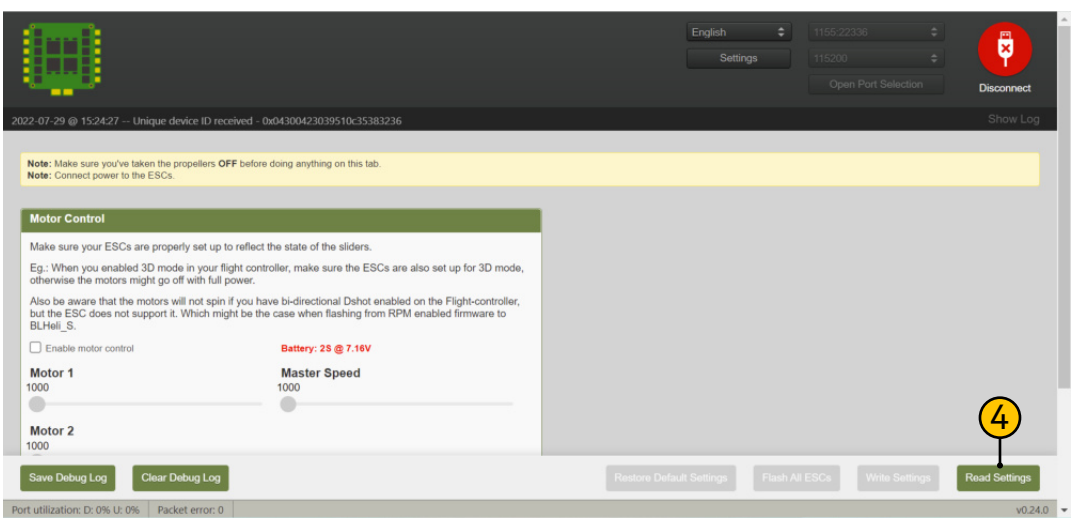
  https://esc-configurator.com/

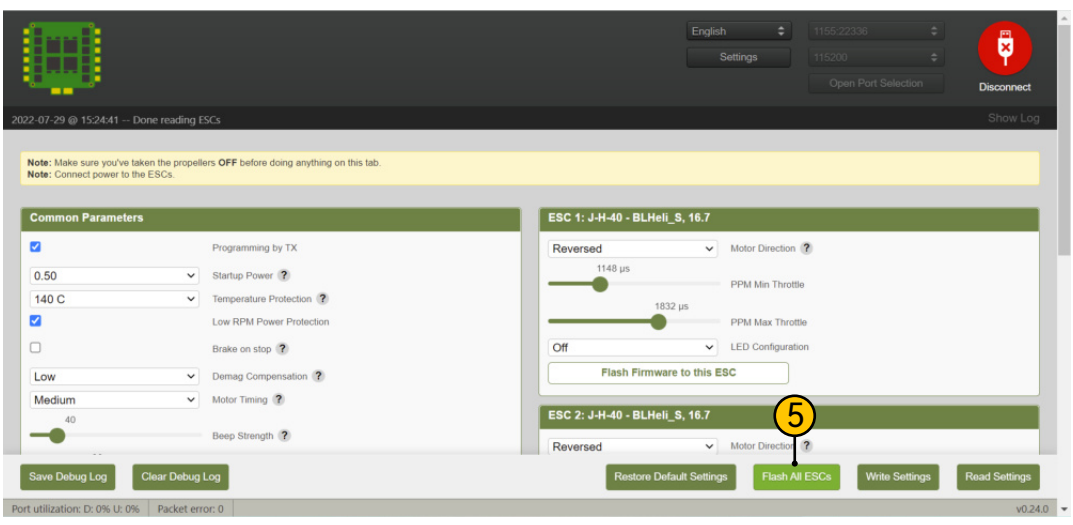
  Note: ESC Type should be set as 'J-H-40'.

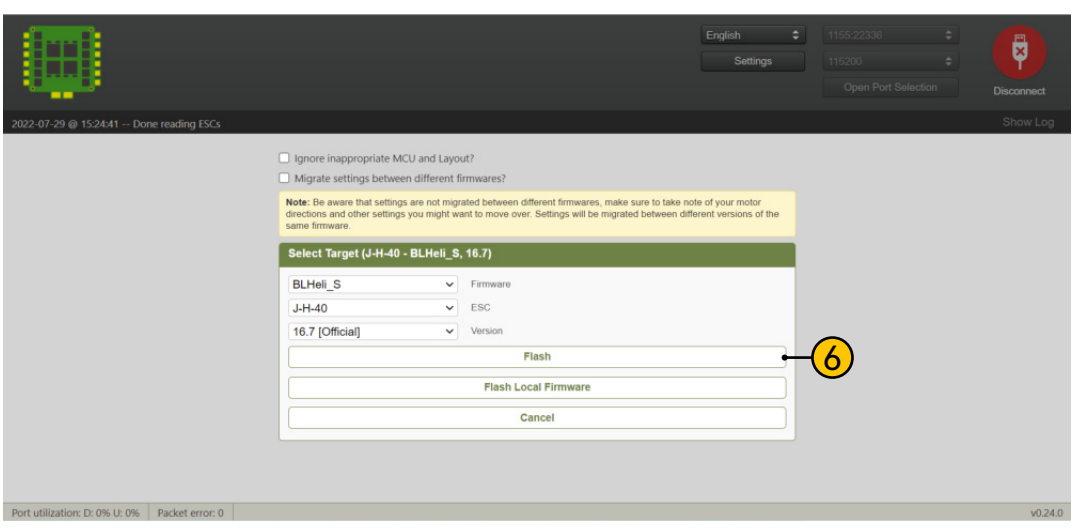












Parameters

Firmware	BLHeli_S JH40
Continuous Current	35A * 4
Burst Current	45A(5S)
ESC Protocol	DSHOT300/600
Power Input	3-6S LiPo
Power Output	VBAT
Current Sensor	Support (Scale=250 Offset=-500)
Mounting	20 x 20mm, 3.6mm hole diameter
Dimension	32(L) * 35(W) * 5.5mm(H)
Weight	7g