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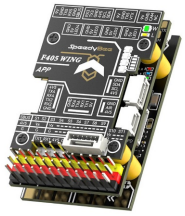

SpeedyBee F405 WING APP Fixed Wing Flight Controller User Guide

Contents [hide

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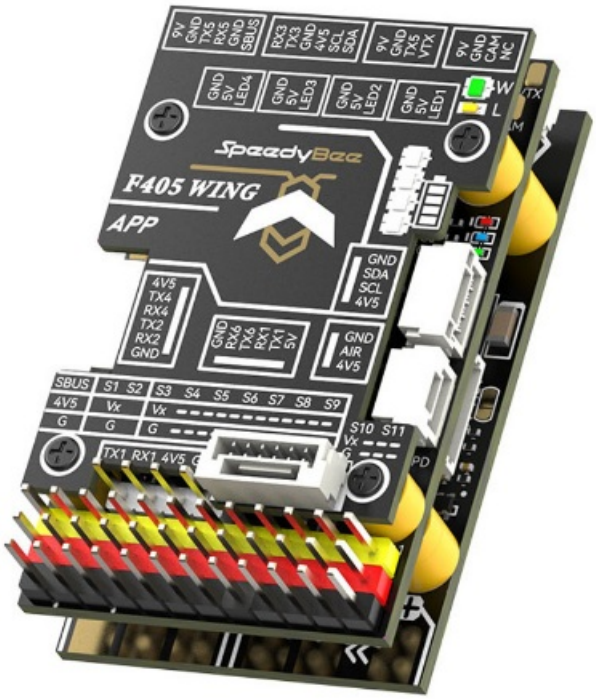


Product Information

The Quick Start Guide TOPBoard FC Board is a wireless board designed for use in drones. It includes a PDB board and a USB extender. It supports INAV / Ardupilot firmware and can be powered by a 2-6S LiPo battery with 52cL x 32cW x 19cH mm dimensions and a weight of 35g with the USB extender. The board features wireless configuration, LED strip controller, and battery level indicator. It also comes with a Speedybee APP Installation guide.

Overview

Speedybee APP

Installation guide

Facebook

Usage Instructions

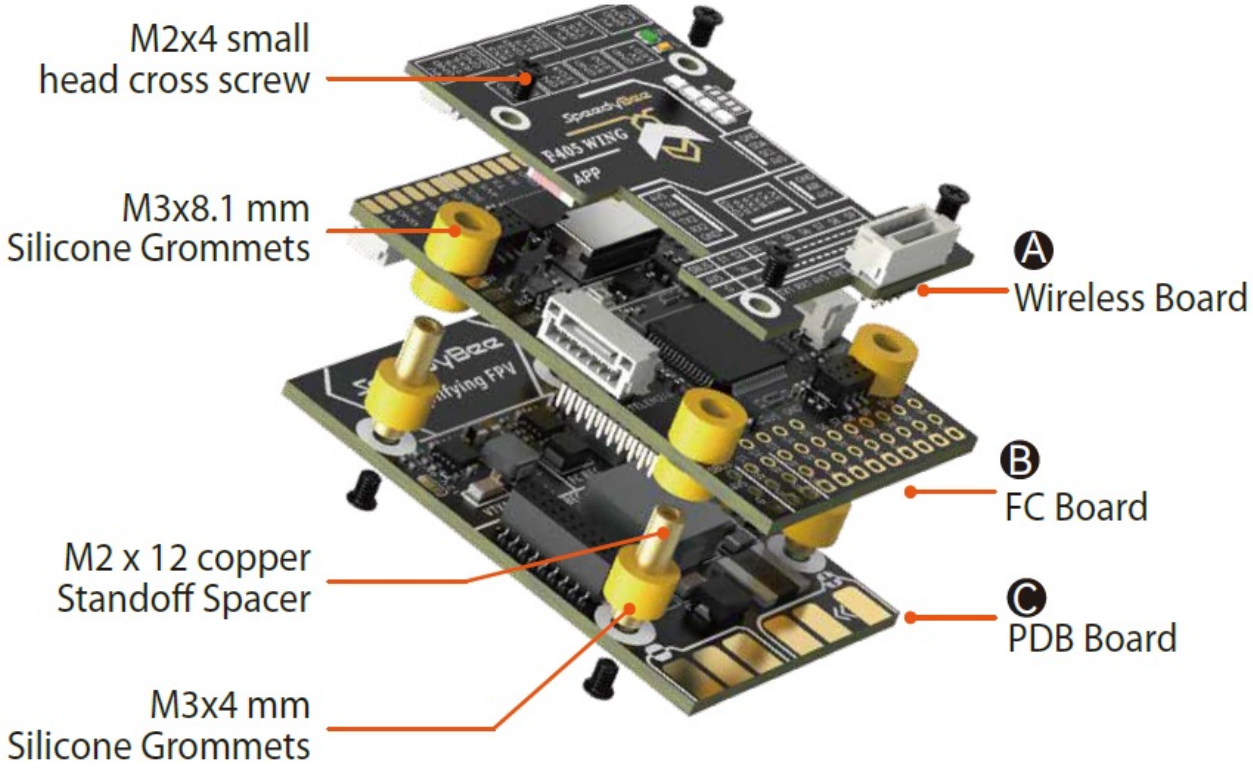
After assembling the board, connect it to your drone's power source and configure it using the Speedybee APP installation guide. The board supports INAV / Ardupilot firmware and can be used to control motors and servos with the motor and servo output pin header. The board also includes a buzzer, USB TYPE-C port, buzzer mute switch, FC RGB status indicator, and a BOOT button. Press and hold the BOOT button while powering on to enter DFU mode for firmware flashing. When the FC is powered on and in operating state, the BOOT button is also used for controlling other functions of the wireless board.

Specification Overview

- **Product Name:** Quick Start Guide TOPBoard FC Board
- **Part 1 – Overview:** PDB Board, USB extender, Wireless configuration, LED strip controller, Battery level indicator
- **Part 2 – Hardware Description:** Digital VTX solder pads, MicroSD card slot, Telemetry module solder pads, SBUS input pin header, GPS module solder pads, Analog VTX connector, Analog camera connector, Airspeed sensor solder pads, ELRS receiver pin header, UART6 solder pads, Motor and servo output pin header
- **Supported Firmware:** INAV / Ardupilot
- **Power Input:** 2-6S LiPo
- **Dimension:** 52cL x 32cW x 19cH mm
- **Weight:** 35g with USB extender
- **Wireless Configuration:** Supported
- **LED Strip Controller:** Supported
- **Battery Level Indicator:** Supported

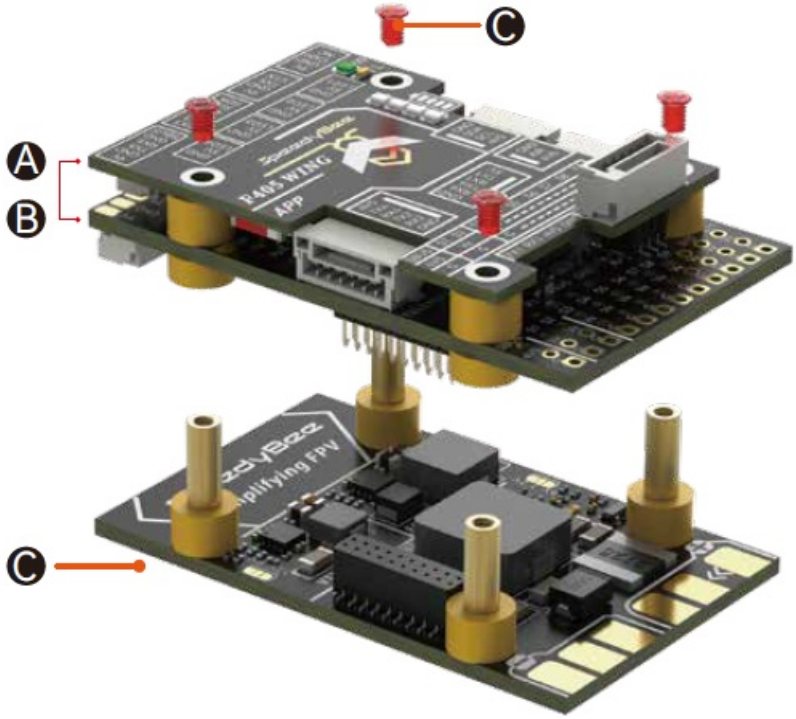
Product Name	**SpeedyBee F405 WING APP**
TOP Board	SpeedyBee F405 WING Wireless Board
FC Board	SpeedyBee F405 WING FC Board
PDB Board	SpeedyBee F405 WING PDB Board
USB extender	SpeedyBee F405 WING USB extender
Wireless configuration	Supported
LED strip controller	Supported
Battery level indicator	Supported
FC Firmware	INAV / Ardupilot
Power Input	2-6S LiPo
Dimension	52 L x 32 W x 19 H mm
Weight	35g with USB extender

Assembly Instructions



Assembly order

1. Align the pin headers between boards A and B then press the two boards together tightly.
2. Install both boards A and B onto board C, and tighten the screws.



Refer to the diagram for assembly order:

Hardware description

FC Board Front

Layout

Digital VTX solder pads

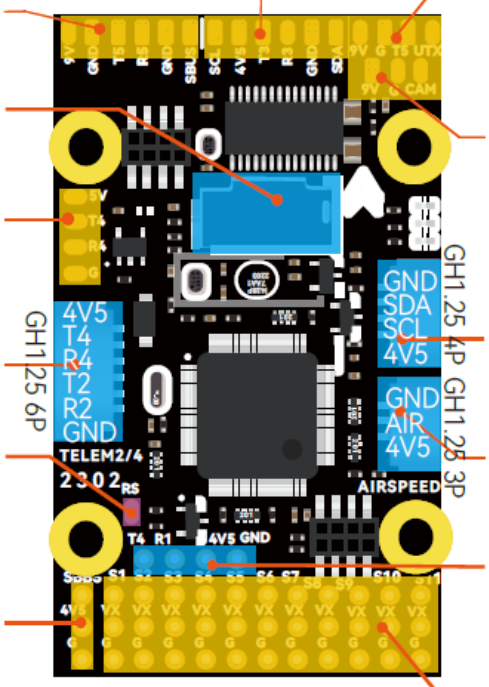
MicroSD card slot

Telemetry module solder pads
R4 and T4 signals are the same asthe Telemetry module connector

Telemetry module connector

RSSI solder pads
Analog RSSI signal input, supports up to 3.3V

SBUS input pin header
With inversion circuit, connected to RX2



Analog VTX solder pads
The default power supply is 9V. If the VTX can only be powered by 5V, please change the PDB board's VTX BEC to output 5V.

Analog camera solder pads
The default power supply is 9V. If the camera can only be powered by 5V, please connect the power supply to the 5V solder pad.

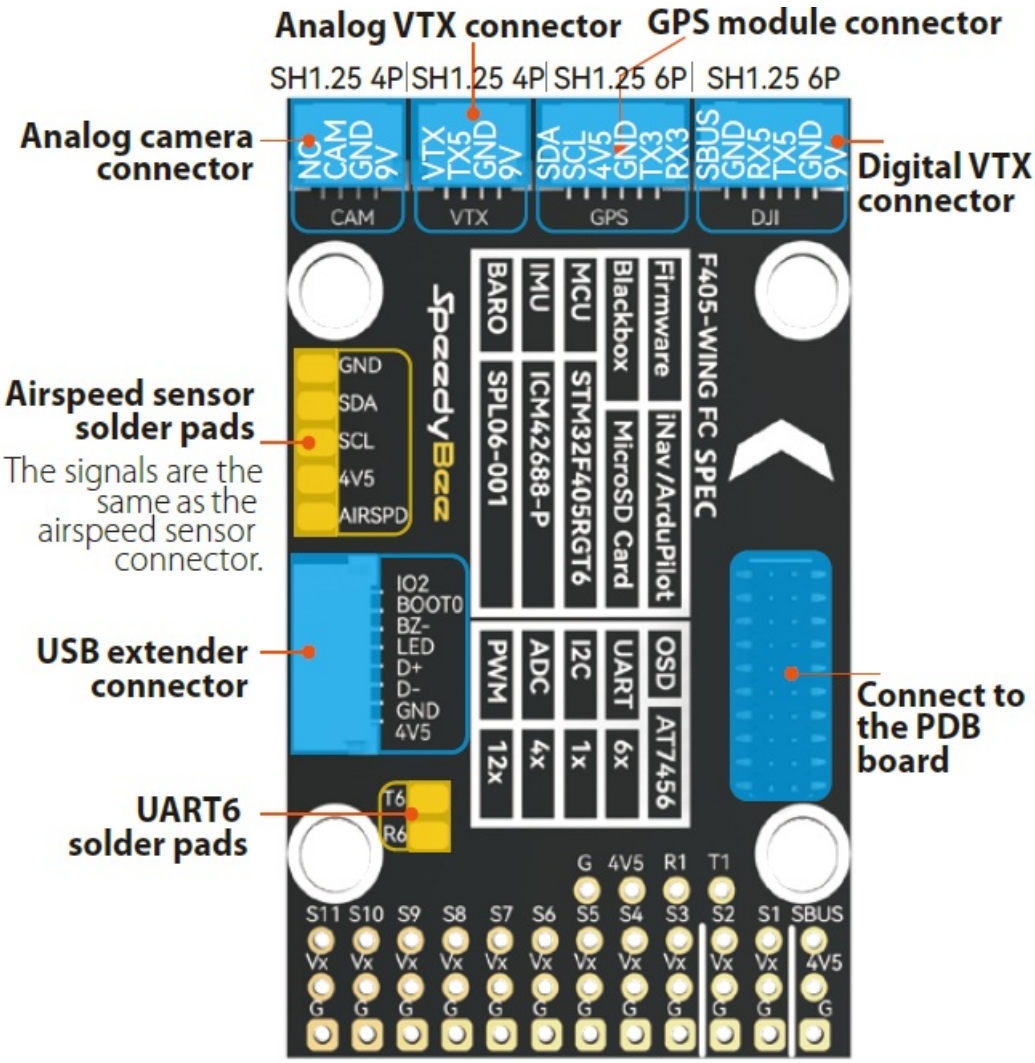
Digital airspeed sensor connector

Analog airspeed sensor connector
Built-in voltage divider circuit, supports up to 6.6V.

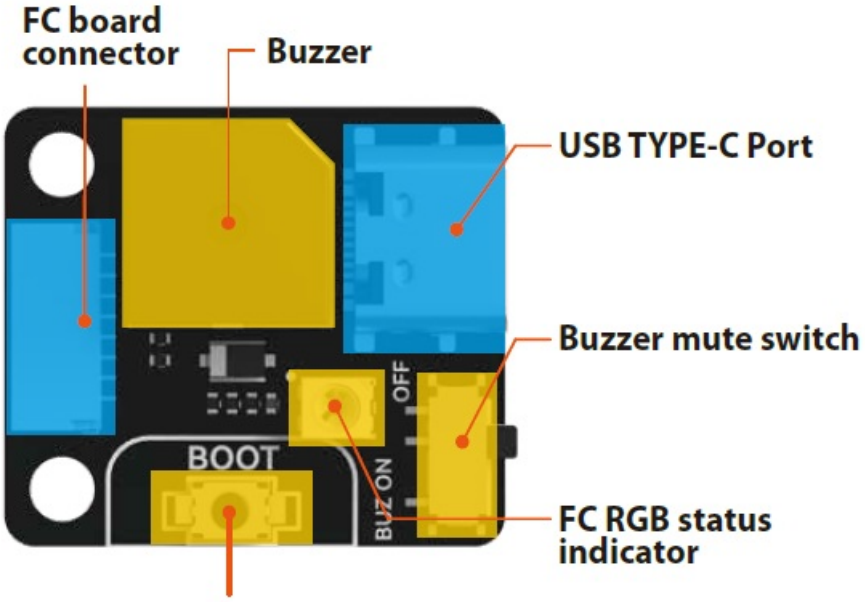
ELRS receiver pin header
Use this pin header to connect the ELRS/TBS receiver.

Motor and servo output pin header
PWM1-11

FC Board Back



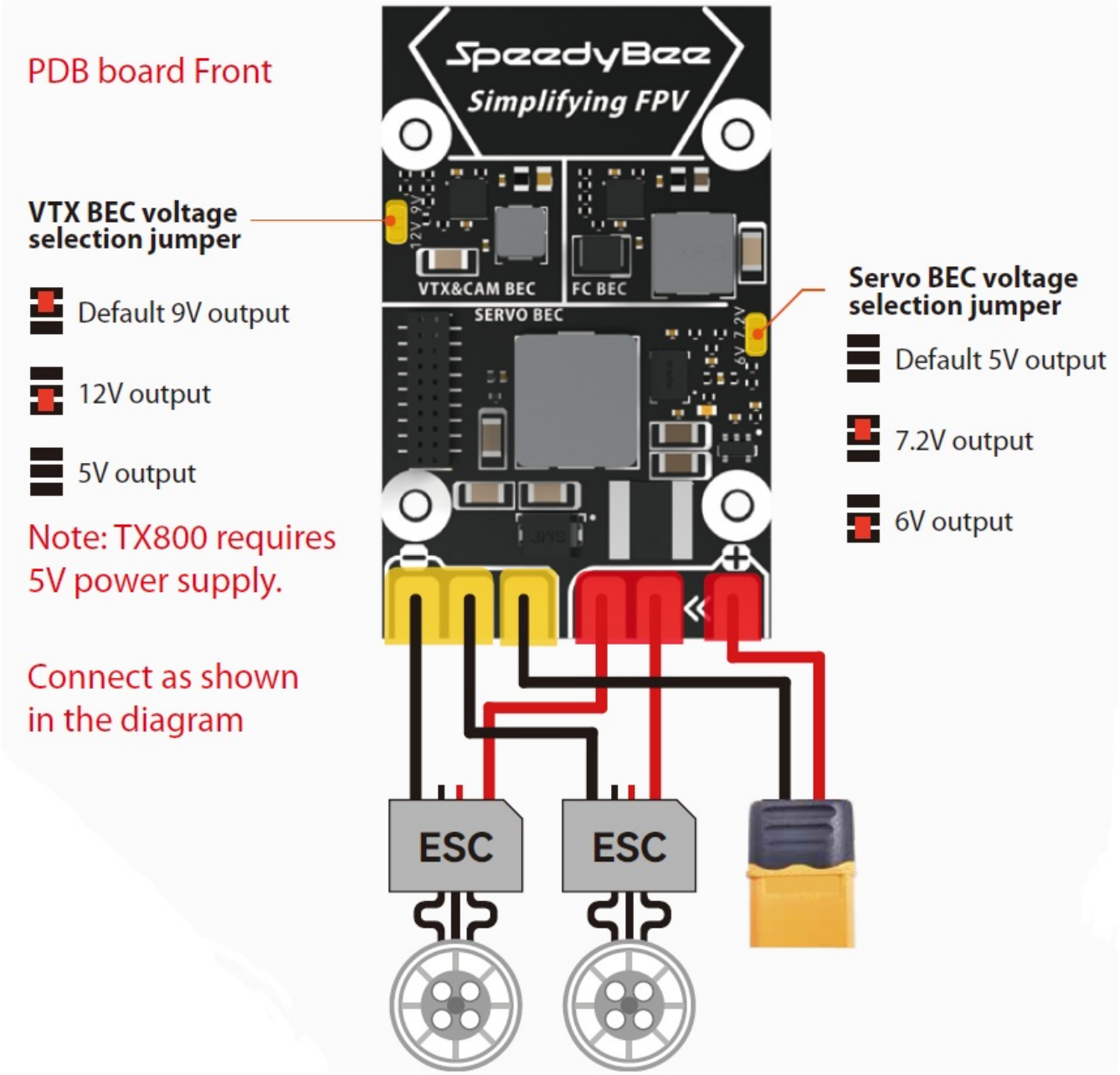
USB extender front



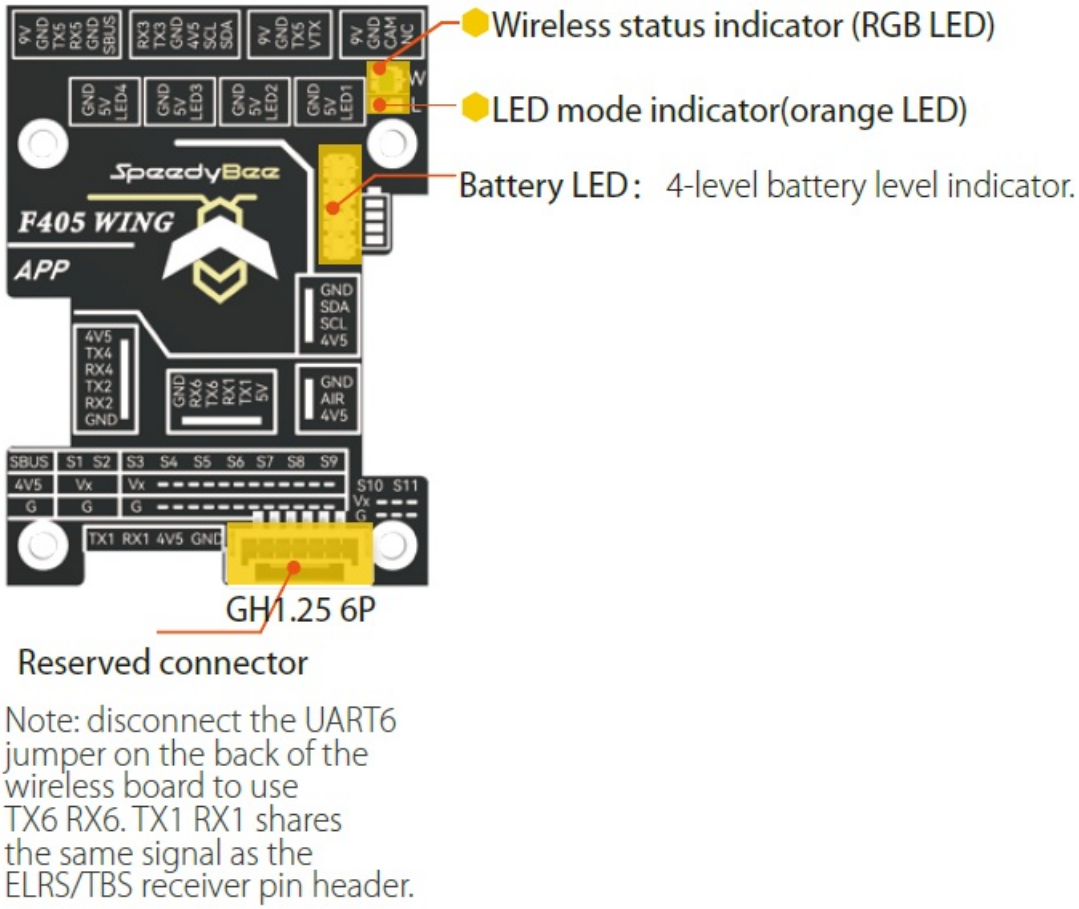
BOOT button

Press and hold the BOOT button while powering on to enter DFU mode for firmware flashing. When the FC is powered on and in operating state, the BOOT button is also used for controlling other functions of the wireless board.

PDB board Front



Wireless board Front

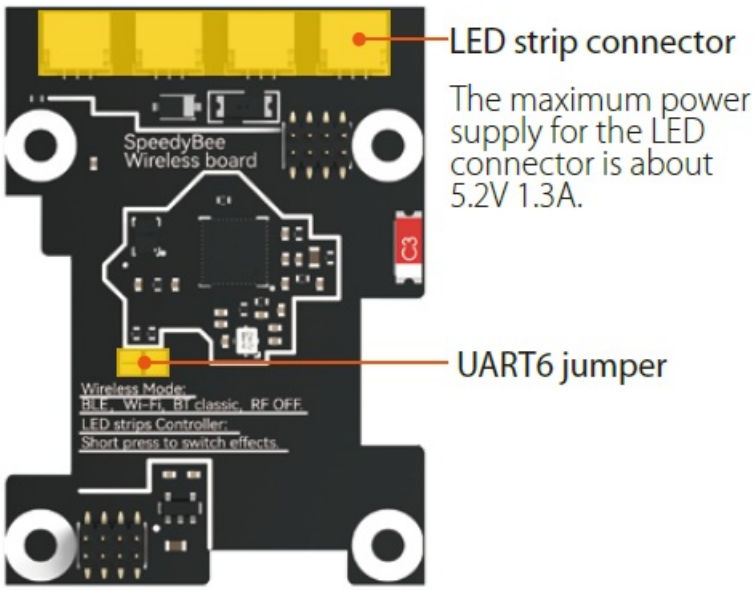


- **Wireless status indicator (RGB LED)**

  The wireless board has built-in telemetry function , which includes 4 RF modes: Bluetooth BLE, Wi-Fi, classic Bluetooth SPP, and wireless off mode.w

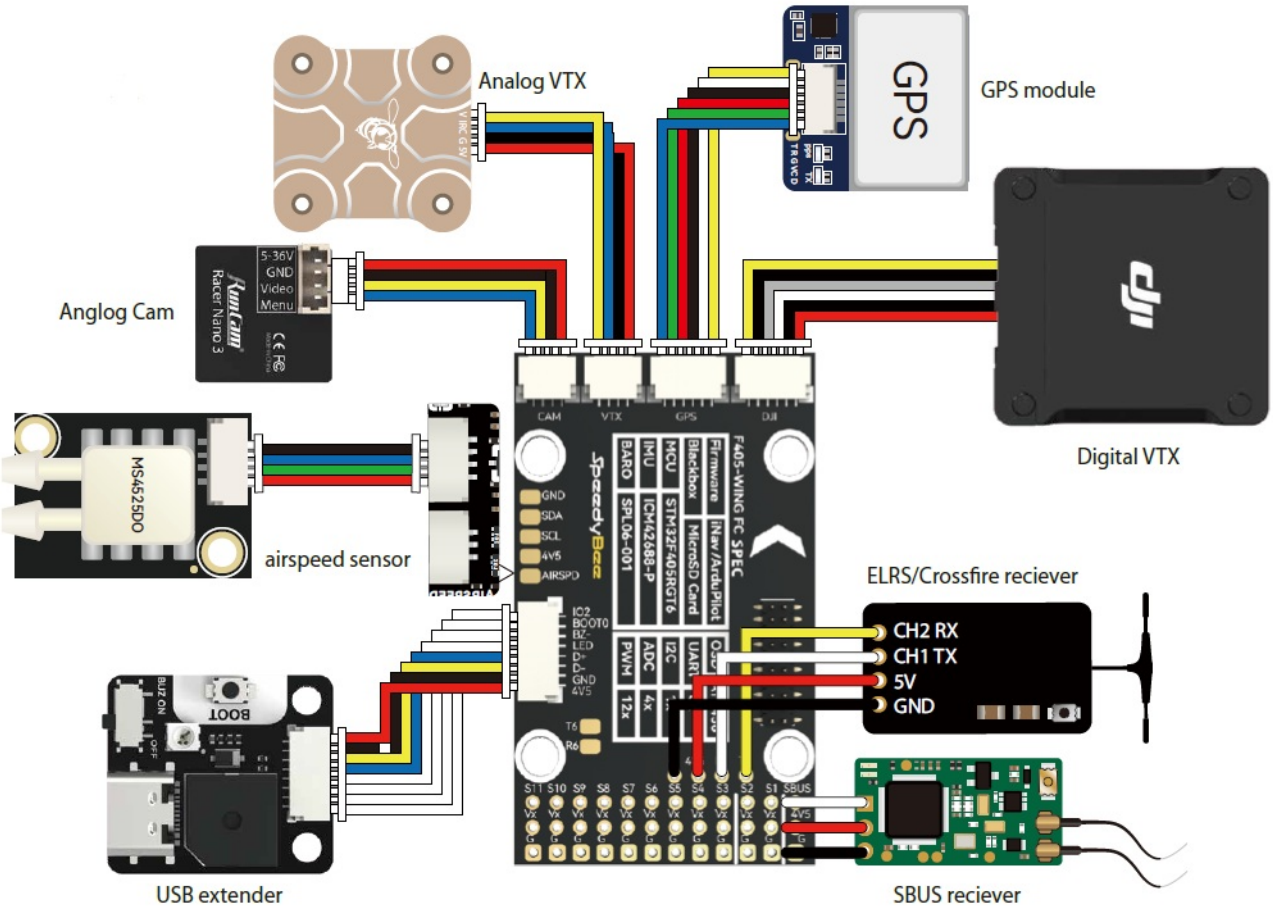
  - **Green:** low power Bluetooth BLE mode.
  - **White:** Wi-Fi mode.
  - **Blue:** classic Bluetooth mode.
  - **The RGB LED is off:** wireless off mode

    Press and hold the BOOT button for 3seconds to switch between the 4 wireless modes. A quick flashing yellow LED indicates a successful mode switch.
- **LED mode indicator(orange LED):**
  - **Orange light always on:** Solid orange LED means the 4 sets of LED strips are in SB_LED mode, controlled by the wireless chip. A short press of the
  - BOOT button cycles through different display effects when the FC is operating normally.
  - **Orange light is off –** Off orange LED indicates FC_LED mode, where the FC controls the 4 sets of LED strips directly. Press and hold the BOOT button for 2 seconds to switch between FC_LED mode and SB_LED mode

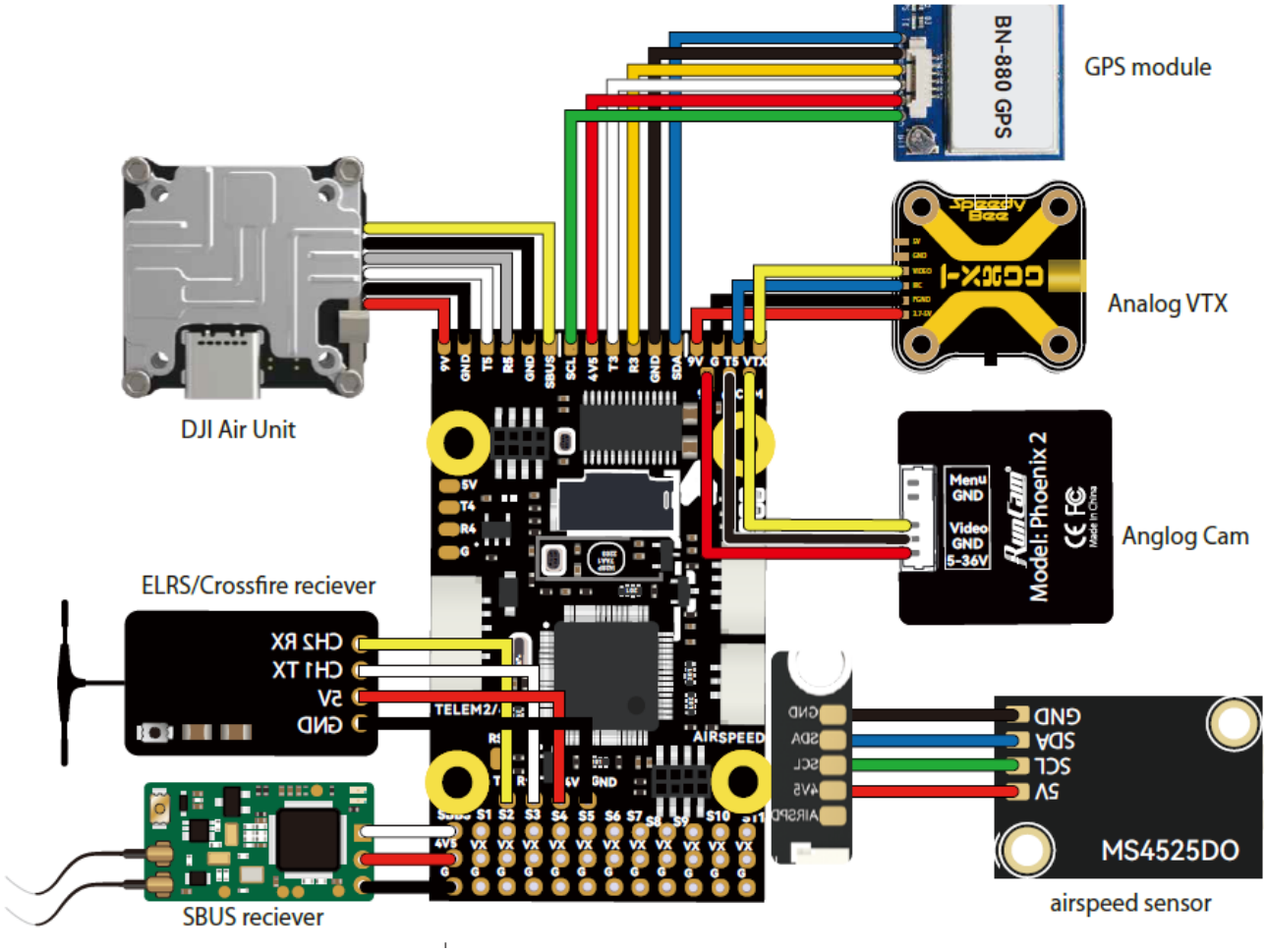


Wiring Diagram

Method 1: Plug and play



Method 2: Direct soldering.



Firmware upgrade and APP connection

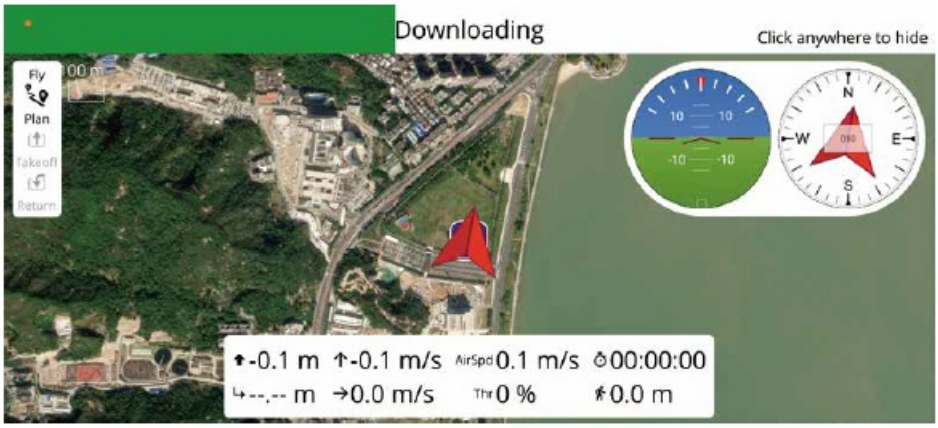
Firmware upgrade

SpeedyBee F405 WING APP not supporting wireless firmware flashing, please update the firmware on a computer. Follow these steps:

1. Press and hold the BOOT button , and connect the FC to the computer via USB cable.
2. Open the INAV Configurator on your computer, go to the “Firmware Flasher ” page, select the light controller target as “SPEEDYBEEF405WING”, and then flash the firmware.
3. To flash Ardupilot firmware, follow the same steps as above, select “Load Firmware [local]”, and then flash the firmware.

APP connection

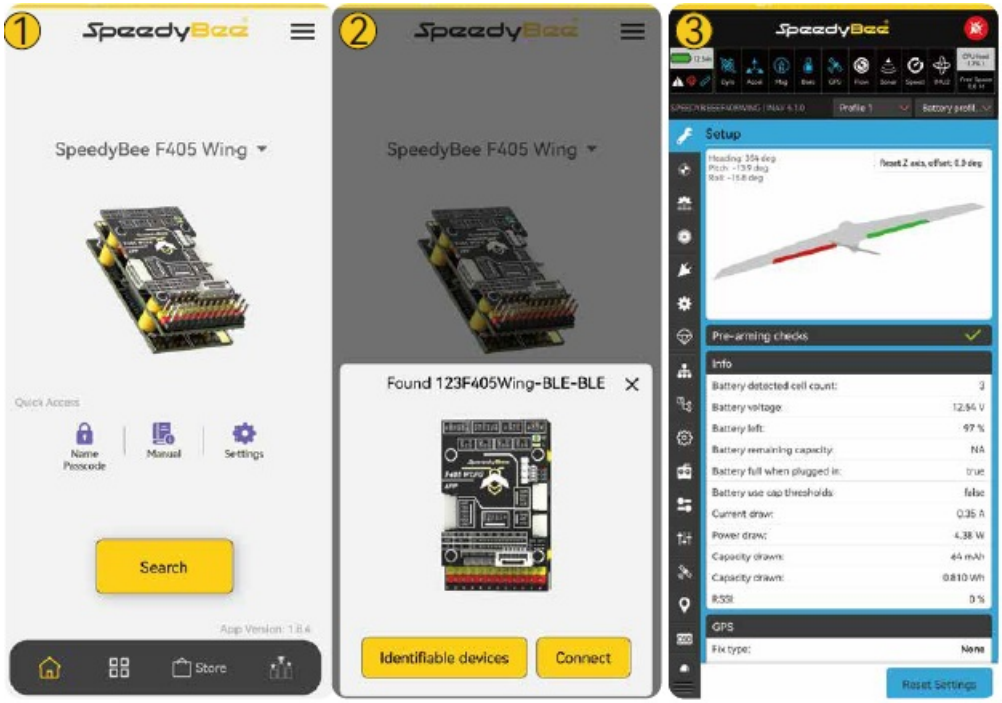
Connecting Ardupilot firmware to QGroundControl app.
Check the color of the wireless status indicator. If it’s not flashing white, press the BOOT button for 6 seconds to switch to white. Then connect to the “Speedybee F405Wing” Wi-Fi and open QGroundControl, it will automatically connect.



APP

Connecting INAV Firmware to Speedybee APP.

Check the color of the wireless status indicator . If it’s slow flashing green, open the SpeedyBee app and follow the steps to connect to the corresponding product.



Documents / Resources