Quick Start Guide

Part1 -OverView

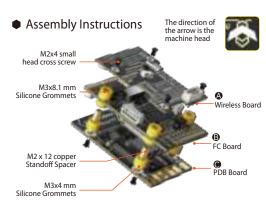Speedybee APP   Installation guide   Facebook
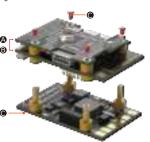
Specification overview

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）

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● Assembly Instructions

The direction of the arrow is the machine head

Assembly order
1.align the pin headers between boards Ⓐ and Ⓑthen press the two boards together tightly.
2.install both boards Ⓐ and Ⓑ onto board Ⓒ, and tighten the screws.

M2x4 small head cross screw
M3x8.1 mm Silicone Grommets

Ⓐ Wireless Board

M2 x 12 copper Standoff Spacer

Ⓑ FC Board

M3x4 mm Silicone Grommets

Ⓒ PDB Board

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Part2-hardware description

● Layout

GPS module solder pads

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.
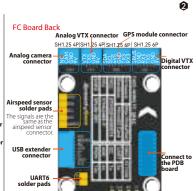
Digital airspeed sensor connector

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.
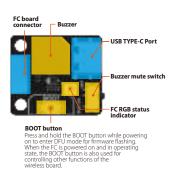
Motor and servo output pin header
PWM1-11

FC Board Front

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FC Board Back

Analog VTX connector   GPS module connector

Analog camera connector

Digital VTX connector

Airspeed sensor solder pads
The signals are the same as the airspeed sensor connector.

USB extender connector

UART6 solder pads

Connect to the PDB board

USB extender front

FC board connector   **Buzzer**

USB TYPE-C Port

Buzzer mute switch

FC RGB status indicator

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

VTX BEC voltage selection jumper

■ Default 9V output
■ 12V output
■ 5V output

Note: TX800 requires 5V power supply.

Connect as shown in the diagram

Servo BEC voltage selection jumper

■ Default 5V output
■ 7.2V output
■ 6V output

ESC   ESC

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Wireless board Front

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

● **LED mode indicator(orange LED)**

● **Battery LED :** 4-level battery level indicator.
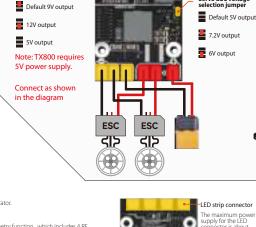
● **Wireless status indicator (RGB LED)**
The wireless board has built-in telemetry function , which includes 4 RF modes: Bluetooth BLE, Wi-Fi, classic Bluetooth SPP, and wireless off mode.vv
Green : low power Bluetooth BLE mode.
White : Wi-Fi mode.
Blue: classic Bluetooth mode.
The RGB LED is off: wireless 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.
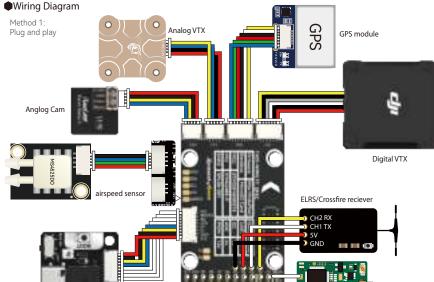
Reserved connector
Note: disconnect the UART6 jumper on the back of the wireless board to use TX6 RX6, TX1 RX1 shares the same signal as the ELRS/TBS receiver pin header.

LED strip connector
The maximum power supply for the LED connector is about 5.2V 1.3A.

UART6 jumper

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●Wiring Diagram

Method 1:
Plug and play

Analog VTX

GPS

GPS module

Anglog Cam

Digital VTX

airspeed sensor

ELRS/Crossfire reciever

CH2 RX
CH1 TX
5V
GND

USB extender

SBUS reciever

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● Method 2, Direct soldering.

BN-880 GPS

GPS module

Analog VTX

DJI Air Unit

Anglog Cam

ELRS/Crossfire reciever

XT-RX
CH1 RX
5V
GND

GND
SDA
SCL
5V

MS4525DO

SBUS reciever

airspeed sensor

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Part3-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:
①Press and hold the BOOT button , and connect the FC to the computer via USB cable.
②Open the INAV Configurator on your computer, go to the "Firmware Flasher " page, select the flight controller target as "SPEEDYBEEF405WING", and then flash the firmware.
③To 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.

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●APP连接

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.

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