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COREWING

F405 WING V2

User Manual V2.1

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Specifications Overview

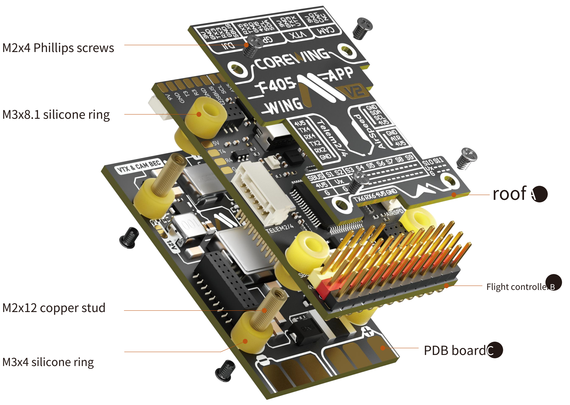
Product Name	CoreWing F405 WING V2
roof	CoreWing F405 WING V2 Top Plate
Flight controller	CoreWing F405 WING V2 Flight Controller
PDB board	CoreWing WING PDB Board PLUS
USB expansion board	CoreWing Wireless USB Expansion Board PRO
Wireless parameter tuning	support
Battery indicator	support
Firmware support	iNav/ArduPilot
Power input	3S-6S
size	52 (length) x 32 (width) x 17 (height) mm
weight	40g (including the PRO wireless USB expansion board)

Part 1 - Overview

Assembly method

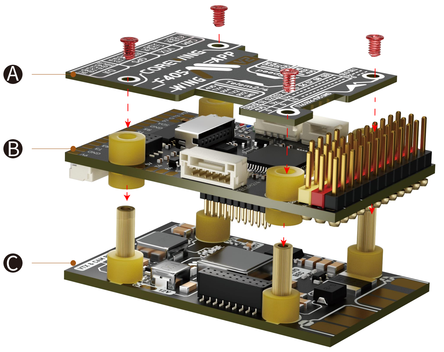
Please install the arrow.

Align with the direction of the nose



Installation sequence

1. Assemble the plate,
2. Assemble the plate
3. Screw in the screws



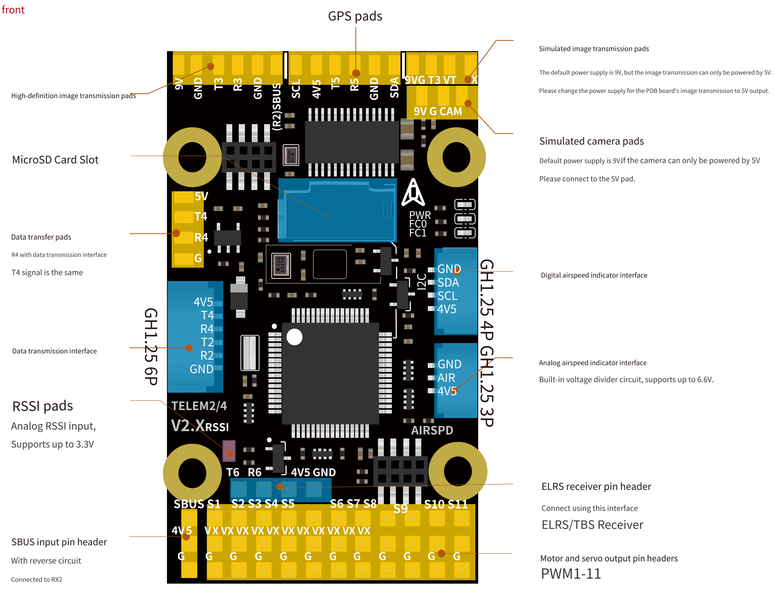
CoreWing F405 WING V2 vs. SpeedyBee F405 WING APP Comparison

category		CoreWing F405 WING V2		SpeedyBee F405 WING APP
Hardware or function	Input voltage	10~28V (3~6S LiPo)		7~36V (2~6S LiPo)
	LED strip interface	Not supported		Supports LED strip connection interface
	LED strip solder pads	Equipped with LED pads, it can be programmed and controlled via ground station. LED strip lighting effect		LED pads
	barometer	SPA06-003		SPL06-001
	Flight controller firmware (iNav /ArduPilot)	CoreWingF405WINGV2		SPEEDYBEEF405WING
	Image transmission power on/off function	support		Not supported
serial port	Wireless board serial port	Using USART1	DFU hijacking has been fixed. There is no need to disconnect the external device now. Firmware upgrades are also possible.	Using USART6
	Receiver serial port	Using USART6		Using USART1
	Image transmission serial port	Using USART3		Using UART5
	GPS serial port	Using UART5		Using USART3
Serial DMA support			USART1,USART6 (Expand to include more high-speed peripherals)	USART1 only
PWM interface	S1-S10		Supports PWM/Dshot (DMA)	Supports PWM/Dshot (DMA)
	S11		Supports PWM	Supports PWM/Dshot (DMA)
	S12 (LED interface)		Supports PWM	Supports PWM/Dshot (DMA)
PDB board	⚠ The power supply sequence of the PDB board for the CoreWing F405 WING V2 and the SpeedyBee F405 WING APP is different, and they are not interchangeable!			
	Flight Controller BEC		continued4Apeak5A	Continuous 2.4 A, peak 3 A
	Image transmission and camera BEC		continued2A,peak3A	Continuous A: 1.8 A, peak A: 2.3 A
	BEC Servo		continued8A,peak14A	Sustained 4.5 A, peak 5.5 A
Wireless board	Wireless board form	USB expansion board		roof
	Wireless board parameter tuning performance	Wireless parameter adjustment can be performed within 50m.		Wireless parameter adjustment is possible within 10-30m.
	Wireless board supported modes	BLE (green light), WiFi-AP (white light) WiFi-STA (Purple Light)		BLE (green light), WiFi-AP (white light) Bluetooth SPP (Blue Light)
	Wireless board supports the following functions	Firmware upgrade, automatic RF shutdown, custom name and password, Battery indicator light, OTG mode		Power indicator light, control switch LED light strip Display effect

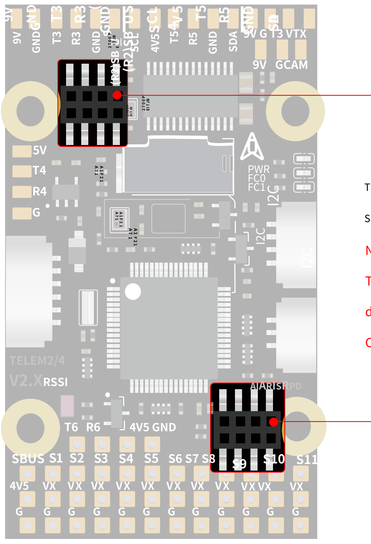
Part 2 - Hardware Description

Interface layout diagram

Flight control front



Precautions:



The flight controller board has a reserved expansion interface on the top plate.

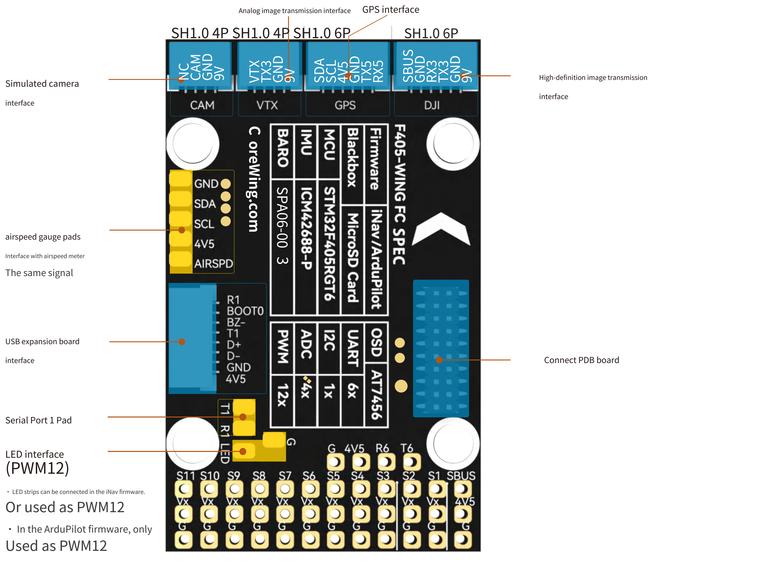
Support for future integration with other roof panels

Note: Do not connect to the SpeedyBee F405 WING APP wireless top board.

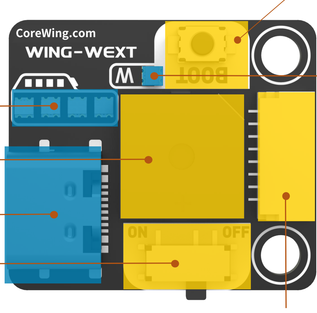
The pin definitions of the CoreWing F405 WING V2 flight controller are different from those of the SpeedyBee F405 WING APP wireless top board.

Connecting to the wrong pin will burn out the flight controller!

Flight control reverse side



Wireless USB Expansion Board PRO Front



BOOT button

Press and hold the BOOT button to power on the device and enter DFU mode for flashing firmware; when the flight controller is powered on and running, the BOOT button is also used to control other functions of the wireless board.

Wireless status indicator (RGB light)

The wireless board has onboard short-range data transmission, which has four radio frequency modes: Bluetooth Low Energy (BLE), WiFi-AP, WiFi-STA, and wireless off.

Green slow flashBluetooth Low Energy (BLE) connection not established.

Green light is always on.Bluetooth Low Energy (BLE) connection successful;

White slow flashWiFi-AP not connected;

White Long BrightWiFi-AP connection successful;

Blue slow flashWiFi-STA not connected.

Blue lightWiFi-STA connection successful;

RGB lights off, wireless off.

Each press and hold of the BOOT button for 6 seconds will cause the indicator light to switch to the next wireless mode in sequence. When the yellow light flashes rapidly and the device automatically restarts, the switch is successful.

PDB front

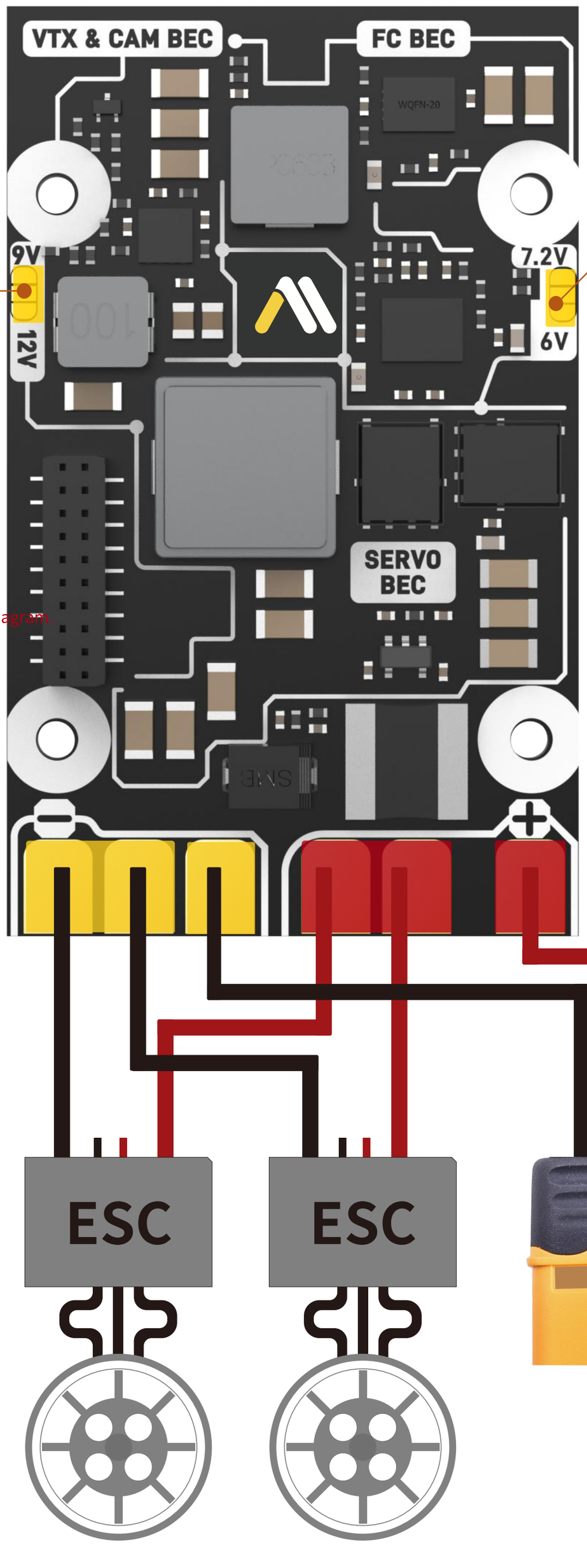


Image Transmit BEC Voltage Selection Jumper

Default 9V output

12V output

5V output

Please note the use of TX800.

5V power supply

Please connect according to the connection diagram.

Servo BEC voltage selection jumper

Default 5V output

7.2V output

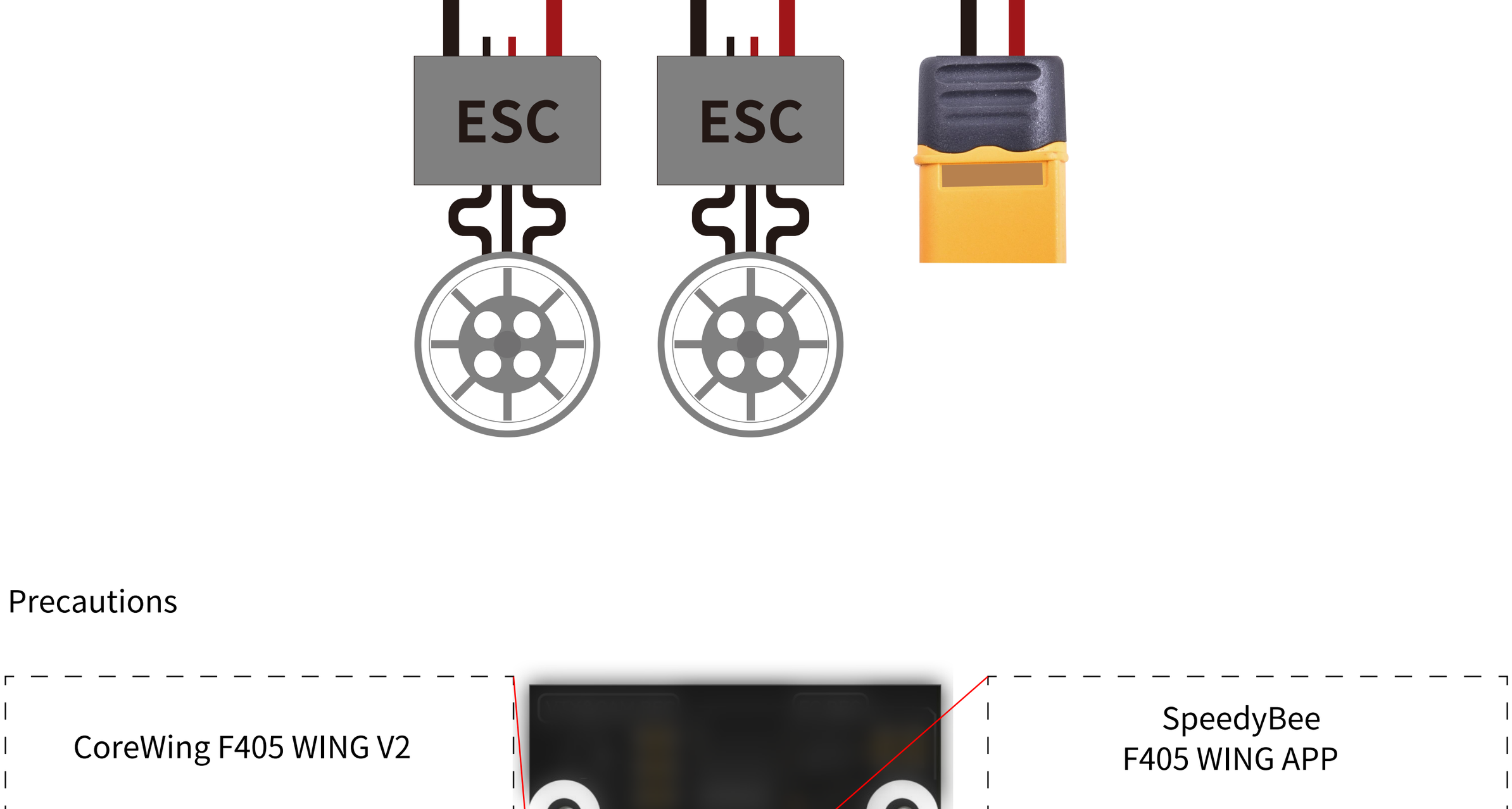
6V output

Do not connect the BEC of the ESC.

Output to Vx pin (ESC)

(Red wire of PWM connector)

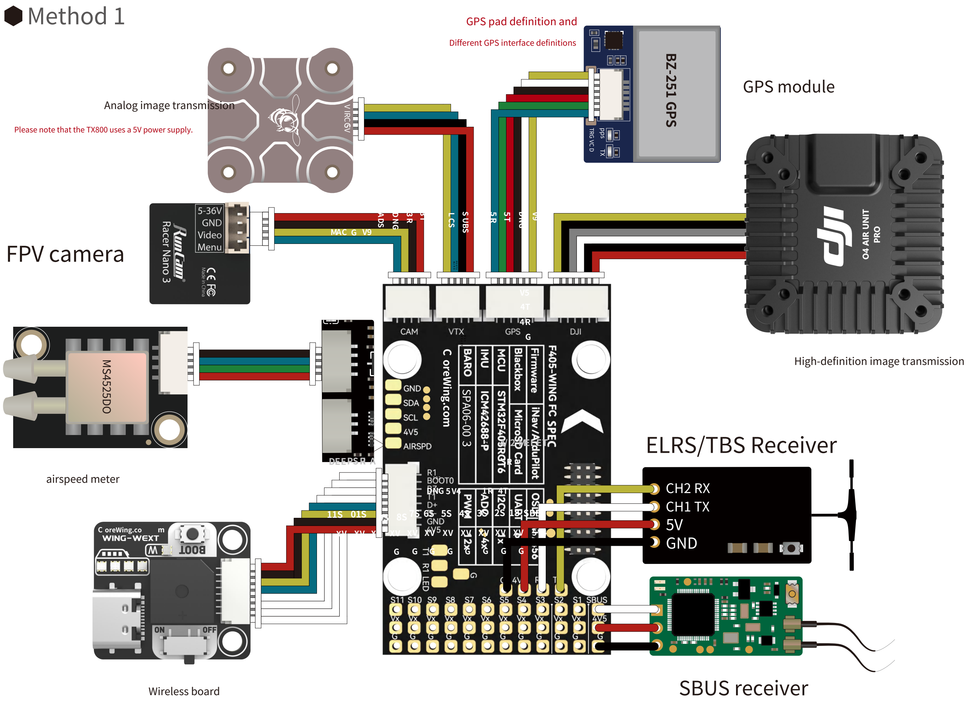
Precautions



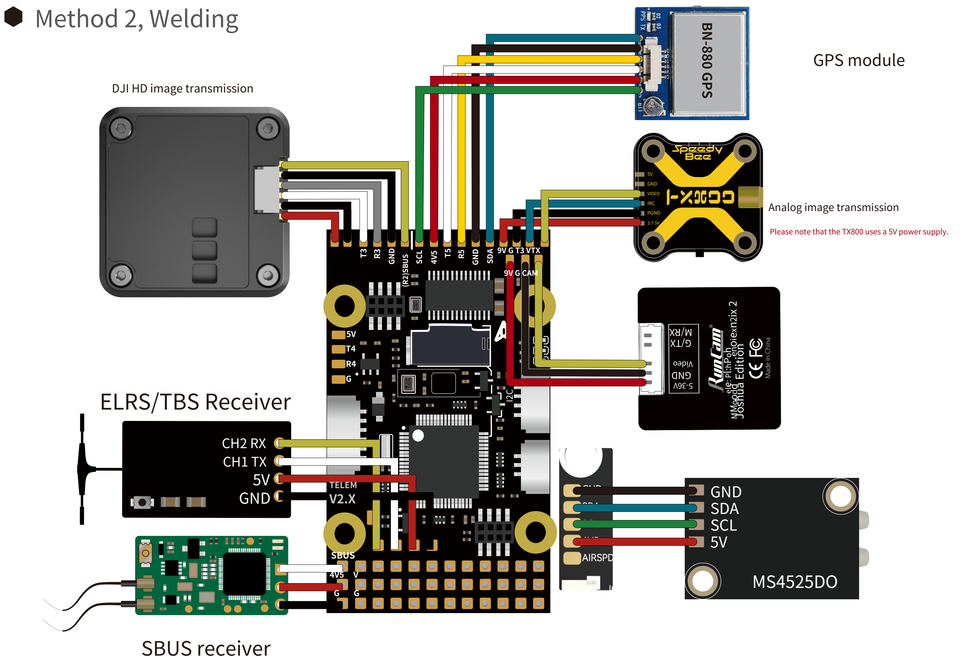
PDB boards are not interchangeable; otherwise, the flight controller will burn out!

Flight control board exterior

Method 1

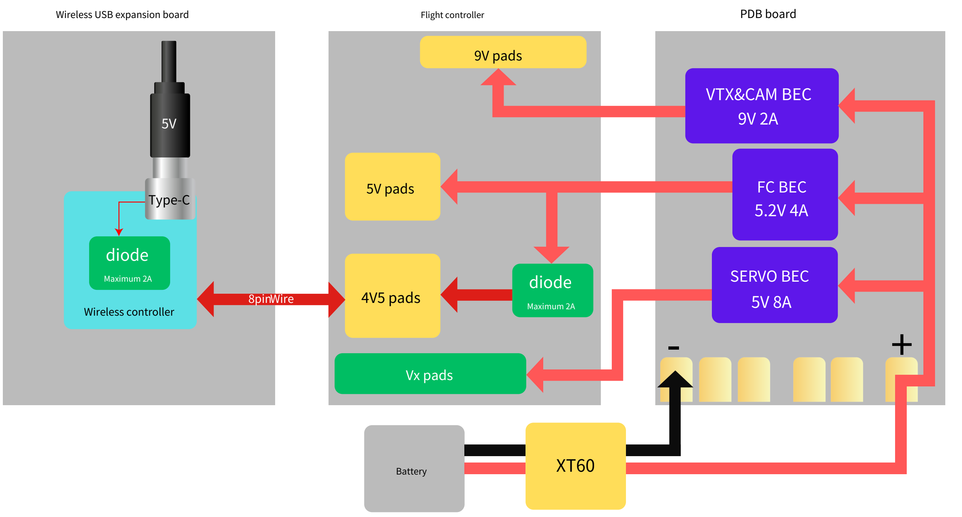


Method 2, Welding



Power supply logic description

The power supply logic of the entire board is shown in the following figure:



solder pads	Power source	Voltage	Power supply instructions
9V pads	VTX&CAM BEC	Switchable5V/9V/12V	Connect camera and image transmission device
Vx pads	Servo BEC	Switchable5V/6V/7.2V	⚠ Do not connect the red wire of the ESC BEC to the Vx header. It will burn out the ESC or BEC.
5V pads	FC BEC	fixed5.2V	Used for powering flight controllers and low-voltage peripherals
4V5 pads	FC BEC(via diode)	4.5-5.0V	Used for powering wireless boards and low-voltage peripherals

Part 3 - Firmware Upgrade and App Connection

For detailed information on the Wireless USB Extender Pro, please refer to the instruction manual: https://docs.corewing.com/pdfs/USB_Extender_PRO_CN_V2.1_2025-12-12.pdf

SpeedyBee APP connection

Supports iNav/ArduPilot firmware connection to the APP:

Observe the color of the wireless status indicator light. If it is BLE (slowly flashing green), open the app and follow the steps to connect. Observe the color of the wireless status indicator light. If it is WiFi-AP (slowly flashing white), connect to "CoreWing WING-WIFI", open the app, and follow the steps to connect.

Firmware update

Supports updating flight controller firmware via the SpeedyBee APP:

Enter the toolbox, select flight controller firmware flashing, and follow the steps to update the firmware.

Computer firmware update steps

① Press and hold the BOOT button on the flight controller, then connect the flight controller to the computer using a USB cable;

② Open the iNav ground station on your computer, go to the "Firmware Burning Tool" page, select the flight controller model "CoreWingF405WINGV2", and then burn the firmware.

③ To flash the ArduPilot firmware, follow the same steps as above, select "Load firmware from local computer", and then flash the firmware.

Part 4 - Parameter Table

CoreWing F405 WING V2 Flight Controller

Main controller	STM32F405, 168MHz, 1MB Flash
IMU (gyroscope and accelerometer)	ICM-42688-P
barometer	SPA06-003
OSD chip	AT7456E
Black box storage	Micro SD cards support SDSC or SDHC types, but not SDXC. Capacities range from 4-32GB, and card formats are FAT16 or FAT32. iNav can only recognize up to 4GB of storage; any additional storage cannot be recognized or used.
UART serial port	Six serial ports (USART1 - connected to the wireless board, USART2, USART3, UART4, UART5, USART6).
I2C interface	1x for compasses, digital airspeed gauges
ADC interface	4x (Voltage, Current, RSSI, Analog Airspeed)
PWM interface	12x (11 leads to the header pins + 1 lead to the LED signal)
ELRS/CRSF Receiver	Supports connection to USART6
SBUS input	Onboard SBUS inverting circuit (USART2-RX)
Flight controller status lights	3 LEDs (blue and green flight control lights and 3.3V power indicator)
RSSI input	Supported, marked as RSSI pad
Supported firmware	iNav: CoreWing F405 WING V2 default factory firmware ArduPilot: CoreWing F405 WING V2

CoreWing WING PDB Board PLUS

Input voltage	10~28V (3~6S LiPo)
Voltage detection	Connect to the flight controller VBAT, voltage divider ratio 10K:100K
Current detection	Continuous 90A, peak 215A connected to flight controller (Scale 158 in iNav, 64 A/V in ArduPilot).
TVS peak suppression diode	have
Flight Controller BEC	DC 5.2V ± 0.1V, continuous 4A, peak 5A. Power supply for controller, receiver, GPS, airspeed meter, data transmission module, etc.
Image transmission and camera BEC	DC 9V+/-0.1V, continuous 2A, peak 3A. Can be adjusted to 5V/9V/12V via jumper pads to power digital video transmission, analog video transmission, and cameras.
BEC Servo	DC 5V ± 0.1V, continuous 8A, peak 14A. Can be adjusted to 5V/6V/7.2V via jumper pads to power servos.

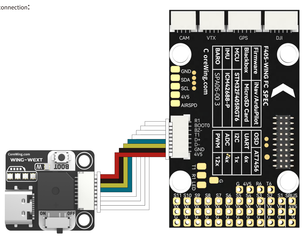
CoreWing Wireless USB Expansion Board PRO

Wireless parameter tuning (BOOT) (Press and hold the button for 6 seconds to switch modes)	BLE mode, connecting to CoreWing APP, SpeedyBee APP, and iNav Configurator.
	WiFi-AP mode, connects to SpeedyBee APP, iNav Configurator, MissionPlanner, QGroundControl APP, etc.
	WiFi-STA mode, connects to iNav Configurator, MissionPlanner, QGroundControl APP, etc.
Onboard battery power indicator	4 x RGB LEDs indicate battery level by turning them on and off.Compareexample

Part 5 - Common Settings

Wireless parameter tuning settings

Hardware connection：



iNav parameter settings

The default parameters allow for direct connection. If wireless connection fails...

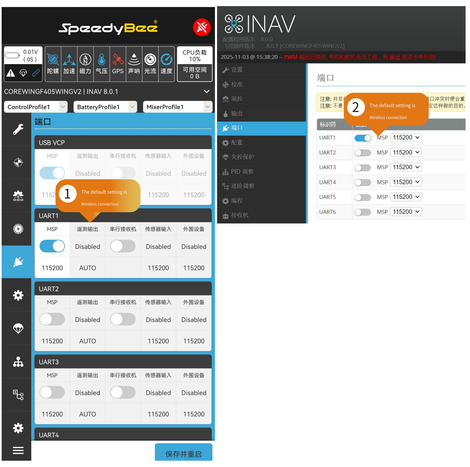
The circuit is connected, and the power indicator light changes to a running light. Please check

Check the settings.

ArduPilot parameter settings

Parameter settings: Default parameters allow for direct connection. If wireless connection fails and the battery indicator changes to a running light, please enter MissionPlanner's parameter settings, check the following parameters, and manually restart.

iNav parameter settings



ArduPilot parameter settings

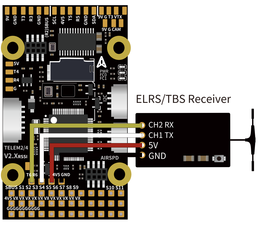
SERIAL1_BAUD	115	Set the default baud rate for wireless connection to 115200.
SERIAL1_OPTIONS	0	Set the serial port 1 working mode to default.
SERIAL1_PROTOCOL	2	Set the protocol of serial port 1 to Mavlink2.

Receiver settings

ELRS/TBS Receiver

Hardware connection：

Solder the receiver using a DuPont 4P single-ended connector and insert the DuPont connector into the corresponding pin header.



1 iNav parameter settings

Default parameters

It can be recognized without any settings.

ArduPilot parameter settings

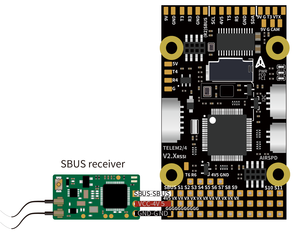
Default parameters

It can be recognized without any settings.

SBUS receiver

Hardware connection：

Use a DuPont 3P double male cable and insert it into the SBUS input header.



iNav parameter settings

① Port page, UART6 serial digital signal disabled Receiver, UART2 enabled for serial digital reception Save and restart the machine.

② On the receiver page, the CRSF protocol has been changed.

SBUS, save and restart.

ArduPilot parameter settings

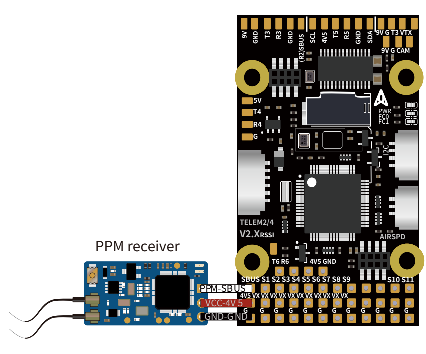
The default parameters are recognized without needing to be set.

iNav parameter settings

- PPM receiver:

Hardware connection:
Use a DuPont 3P double male cable and insert it into the SBUS input header.

The PPM receiver only supports iNav 3.x and earlier versions.



1 iNav parameter settings

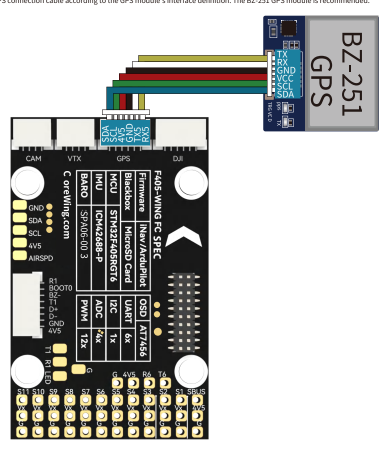
iNav is not supported.

2 ArduPilot parameter settings

The default parameters are recognized without needing to be set.

- GPS settings

Hardware connection:
Adjust the terminal sequence of the GPS connection cable according to the GPS module's interface definition. The BZ-251 GPS module is recommended.



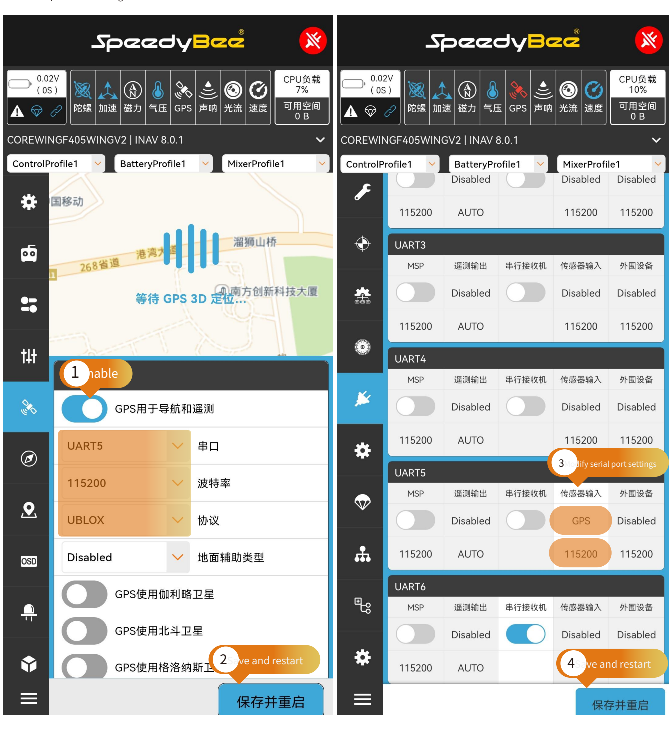
1 iNav parameter settings

On the GPS page, enable GPS for navigation and telemetry.
Save and restart.
The iNav7 does not support NEMA and only supports UBLOX.

2 ArduPilot parameter settings

Supports both UBLOX and NMEA GPS protocols, by default.
The parameters are for the UBLOX protocol.
UBLOX M8N, M9, and M10 solutions are automatically recognized without requiring any settings.

- iNav parameter settings



- Compass (magnetometer/compass) settings

Hardware connection:
The BZ-251 GPS module with a built-in QMC5883 compass is recommended. Install the GPS module away from the power supply lines, ESCs, and canopy magnets. Secure it firmly. Verify the signal lines are SDA→SDA and SCL→SCL. Fixed-wing aircraft can be equipped with a GPS module without a compass, while VTOL fixed-wing aircraft must be equipped with a GPS module with a compass.

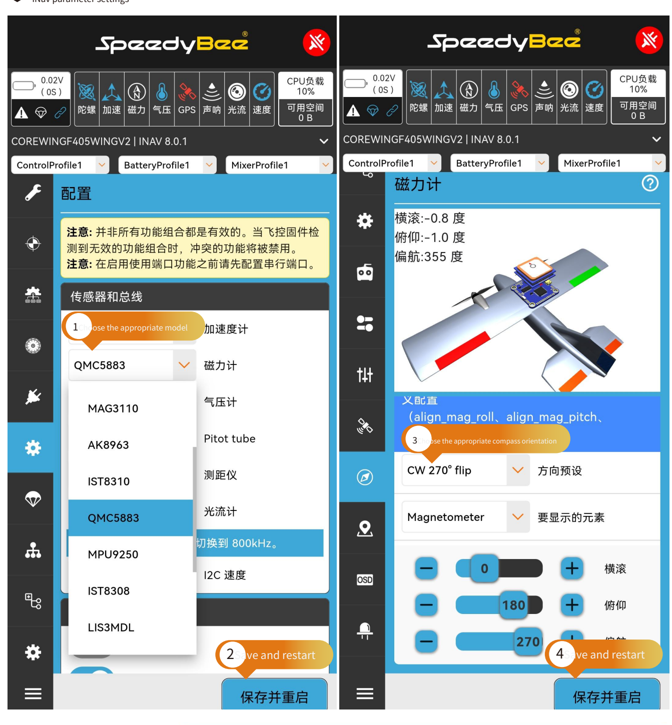
1 iNav parameter settings

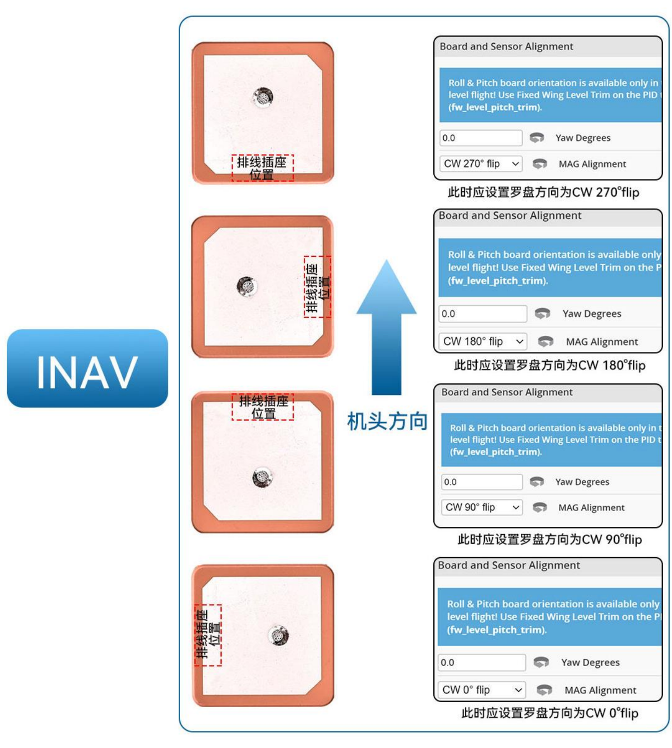
On the configuration page, select the appropriate option based on the compass model.
Select the compass option, save, and restart.
The installation orientation should be set as shown in the diagram below.

2 ArduPilot parameter settings

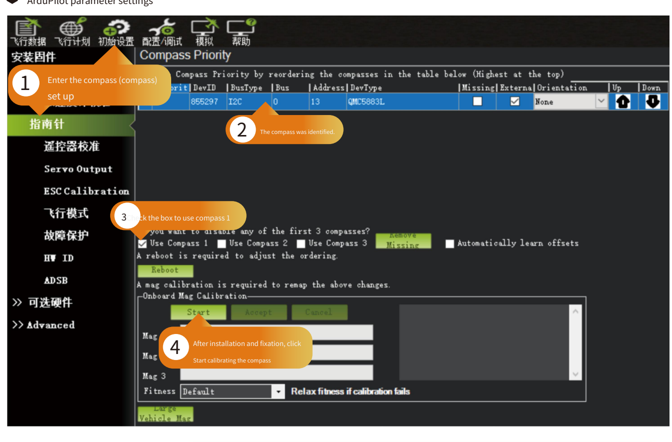
Access the compass page in MissionPlanner's initial settings and check if the compass is correctly recognized. If the compass is recognized normally, then...
Select USE Compass1.
Once the flight controller and GPS are installed and fixed, try calibrating the compass.
After successful calibration, simply restart the flight controller as prompted (no selection required).
Select the compass model and set the compass direction.

- iNav parameter settings



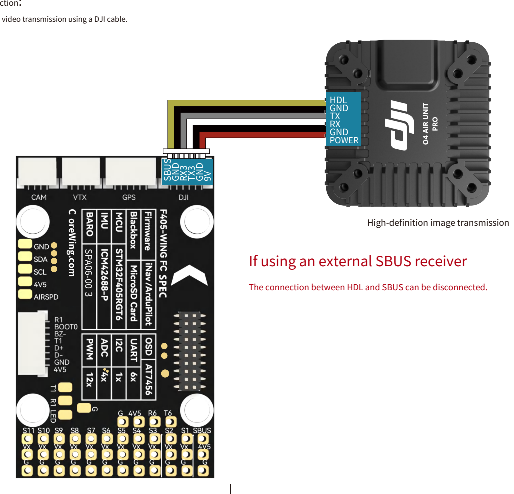


- ArduPilot parameter settings



- High-definition image transmission settings

Hardware connection:
Connect to the HD video transmission using a DJI cable.



If using an external SBUS receiver
The connection between HDL and SBUS can be disconnected.

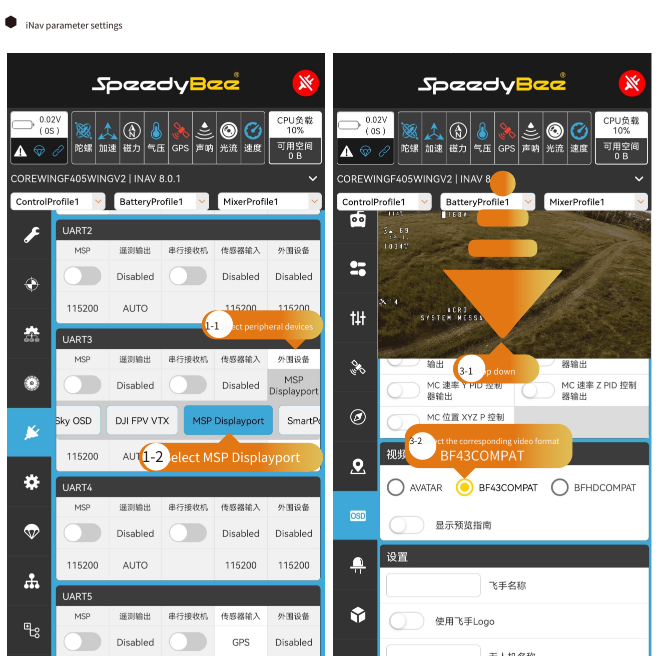
1 iNav parameter settings

① On the port page, select peripheral device for UART3.
Select the MSP DisplayPort option, save, and restart.
② On the OSD page, scroll down to the video format option.
Select BF43COMPAT, save, and restart.

2 ArduPilot parameter settings

Enter the MissionPlanner parameter settings.
Set the following parameters and restart manually.

- iNav parameter settings

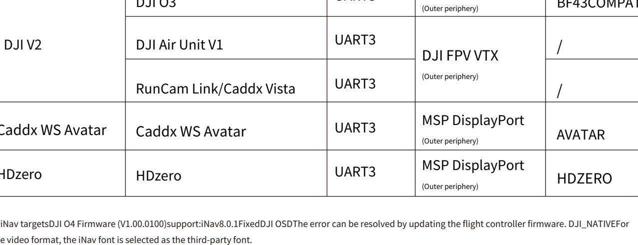


For other high-definition image transmission devices, please refer to the table below for the corresponding parameter settings.

FPV glasses/VRX type	Sky End Model	Port page: corresponding serial port	Port page: Device Protocol	OSD page: Video format
DJI Flight Goggles 3 DJI Flight Goggles N3	DJI O4	UART3	MSP DisplayPort (Outer periphery)	BF43COMPAT
DJI G2	DJI O3 / DJI O4	UART3		
	DJI Air Unit V1	UART3		
	RunCam Link/Caddx Vista	UART3		
RunCam WiFi Link2 - OpenIPC		UART3		
EDGE T3		UART3	Set as MSP port	/
DJI V2	DJI O3	UART3	MSP DisplayPort (Outer periphery)	BF43COMPAT
	DJI Air Unit V1	UART3	DJI FPV VTX (Outer periphery)	/
	RunCam Link/Caddx Vista	UART3		/
Caddx WS Avatar	Caddx WS Avatar	UART3	MSP DisplayPort (Outer periphery)	AVATAR
HDzero	HDzero	UART3	MSP DisplayPort (Outer periphery)	HDZERO

※iNav targetsDJI O4 Firmware (V1.00.0100)support:iNav8.0.1FixedDJI OSDThe error can be resolved by updating the flight controller firmware. DJI_NATIVEFor the video format, the iNav font is selected as the third-party font.

- ArduPilot parameter settings



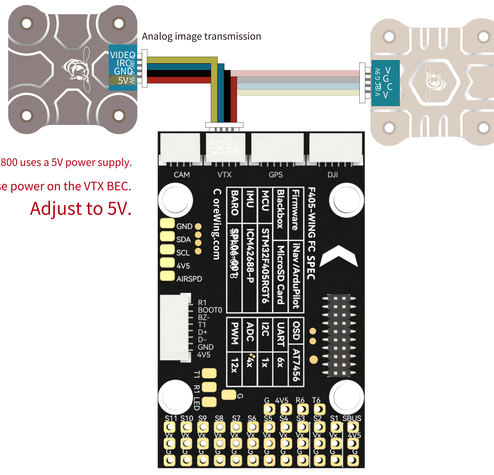
<table>
<tr><th>FPV glasses/VRX model</th><th>Sky End Model</th><th colspan="3">Parameter settings</th></tr>
<tr><td>DJI Flight Goggles 3
DJI Flight Goggles N3</td><td>DJI O4</td><td rowspan="7">SERIAL3_BAUD
SERIAL3_OPTIONS
SERIAL3_PROTOCOL
MSP_OPTIONS
OSD_TYPE</td><td rowspan="7">115
0
42
4
5</td><td rowspan="7">Set the default baud rate for MSP OSD 115200
Set the serial port 3 working mode to default.
Configure serial port 3 protocol to MSP image transmission.
Set to use Betaflight font Rendering mode
Set to use OSD mode. MSP OSD</td></tr>
<tr><td rowspan="3">DJI G2</td><td>DJI O3 / DJI O4</td></tr>
<tr><td>DJI Air Unit V1</td></tr>
<tr><td>RunCam Link/Caddx Vista</td></tr>
<tr><td>RunCam WiFi Link2 - OpenIPC</td><td>RunCam WiFi Link2-OpenIPC</td></tr>
<tr><td>DJI V2</td><td>DJI O3</td></tr>
<tr><td>Caddx WS Avatar</td><td>Caddx WS Avatar</td></tr>
<tr><td>HDzero</td><td>HDzero</td><td></td><td></td><td></td></tr>
<tr><td>EDGE T3</td><td>EDGE T3</td><td>SERIAL3_BAUD
SERIAL3_PROTOCOL</td><td>115
2.</td><td>Set the baud rate of serial port 3 to 115200
Configure serial port 3 protocol to Mavlink2</td></tr>
<tr><td rowspan="2">DJI V2</td><td>DJI Air Unit V1</td><td rowspan="2">SERIAL3_BAUD
SERIAL3_OPTIONS
SERIAL3_PROTOCOL
MSP_OPTIONS
OSD_TYPE</td><td rowspan="2">115
0
33
0
3</td><td rowspan="2">Set the default baud rate for MSP OSD 115200
Set the serial port 3 working mode to default.
Set the serial port 3 protocol to DJI FPV.
Use polling mode
Set the OSD mode to MSP.</td></tr>
<tr><td>RunCam Link/Caddx Vista</td></tr>
</table>

For more detailed settings, please refer to the following link:
https://ardupilot.org/plane/docs/common-msp-osd-overview-4.2.html

Simulated image transmission settings

Hardware connection：

Use the VTX cable to connect the SpeedyBee TX800/TX ULTRA analog video transmitter.



1 iNav parameter settings

① On the port page, select peripheral device for UART3.

Select the IRC Tramp option, save, and restart.

② On the configuration page, scroll down to the image transmission options.

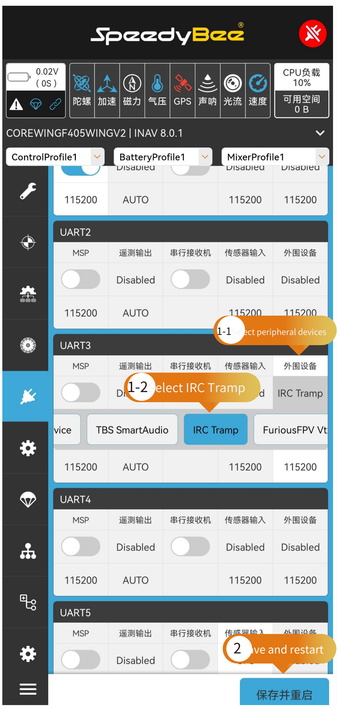
Select the desired features, save, and restart.

2 ArduPilot parameter settings

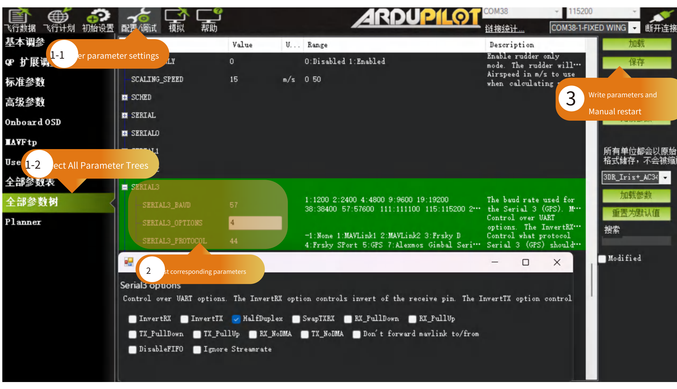
Enter the MissionPlanner parameter settings.

Set the following parameters and restart manually.

iNav parameter settings



ArduPilot parameter settings



SERIAL3_BAUD	57	Set the default IRC baud rate to 57600.
SERIAL3_OPTIONS	4	Set the serial port 3 working mode to half-duplex.
SERIAL3_PROTOCOL	44	Set the serial port 3 protocol to IRC Tramp
VTX_ENABLE	1	Enable the analog image transmission function. A restart is required after configuration.
VTX_OPTIONS	10	Enable Pitmode to prevent overheating during image transmission. (Pitmode until armed and Unlocked)
VTX_MAX_POWER	800	Maximum power, set according to the image transmission system used.

If the video transmission supports SmartAudio, the following settings are required.

SERIAL3_BAUD	4	Set the default baud rate for SmartAudio to 4800.
SERIAL3_OPTIONS	4	Set the serial port 3 working mode to half-duplex.
SERIAL3_PROTOCOL	37	Set the serial port 3 protocol to SmartAudio

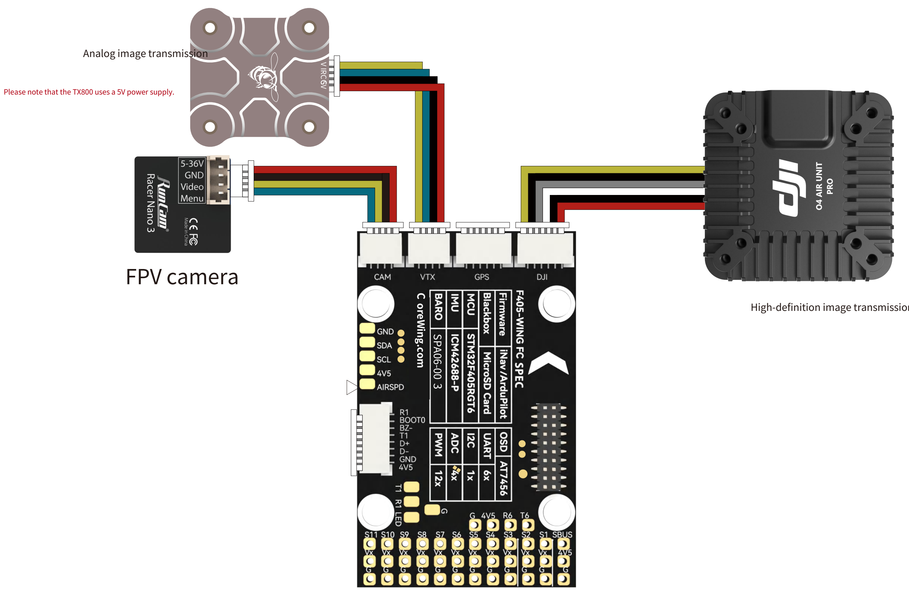
For more detailed settings, please refer to the following link:

https://ardupilot.org/copter/docs/common-vtx.html

Image transmission power outage switching function

Hardware connection:

As shown in the picture below, connect the image transmitter and the camera respectively.



1 Inav parameter settings

① On the mode page, scroll down to the user-defined option 1.

Click to add a range.

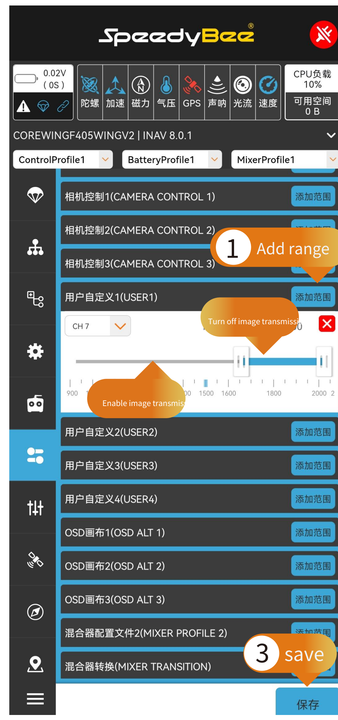
② Select the control channel for switching cameras.

And drag the blue bar to select the area to be identified.

(The white area indicates the start of image transmission)

(The blue progress bar indicates that image transmission is off)

③ Click Save



2 ArduPilot parameter settings

Enter MissionPlanner parameter settings,

Set the following parameters and restart manually.

Configure the power on/off pins of the image transmission device with relay functionality:

RELAY1_FUNCTION = 1;
RELAY1_PIN=81;
RC X_OPTION=28;

When the PWM value of the switch is below 1200, the image transmission is enabled.

When the value is above 1800, the image transmission will be turned off.

ArduPilot parameter settings

RELAY1_FUNCTION	1	To enable the function of relay 1, you need to power off and restart the flight controller after setting it.
RELAY1_PIN	81	Configure relay function
RC X_OPTION	28	Configure the control switch channel; X is the channel you select. For example, when using 7-channel control, RC7_OPTION=28

*The parameters above are for ArduPilot 4.5.7. Parameters may vary depending on the firmware.

*** If correctly configured, toggle the channel switch to...**

The MissionPlanner ground station flight data message interface

displays the following operation information:

The message shows	state
RELAY1 LOW	Enable image transmission
RELAY1 MIDDLE	Turn off image transmission
RELAY1 HIGH	Turn off image transmission

This message appears in ArduPilot firmware version 4.4.x, but not in ArduPilot firmware version 4.5.x. It is recommended to check whether the image transmission is successfully powered on and off to determine if the settings are successful.

Part 6 - Pin Mapping

iNav pin mapping

UART			
USB		USB	
TX1 RX1	5V tolerant I/O	UART1	Wireless USB Expansion Board PRO
TX2 RX2 SBUS	5V tolerant I/O	SBUS pads	SBUS receiver SBUS pad = RX2 with reverse circuit
		TX2	SmartPort telemetry, enable Softserial_Tx2
TX3 RX3	5V tolerant I/O	UART3	MSP Displayport/DJ OSD/VTX
TX4 RX4	5V tolerant I/O	UART4	Custom
TX5 RX5	5V tolerant I/O	UART5	GPS
TX6 RX6	5V tolerant I/O	UART6	ELRS/TBS Receiver

PWM		TIMER	iNav Plane	iNav MultiRotor
S1	5V tolerant I/O	TIM4_CH2	Motor	Motor
S2	5V tolerant I/O	TIM4_CH1	Motor	Motor
S3	5V tolerant I/O	TIM3_CH3	Servo	Motor
S4	5V tolerant I/O	TIM3_CH4	Servo	Motor
S5	5V tolerant I/O	TIM8_CH3	Servo	Motor
S6	5V tolerant I/O	TIM8_CH4	Servo	Motor
S7	5V tolerant I/O	TIM8_CH2N	Servo	Servo
S8	5V tolerant I/O	TIM2_CH1	Servo	Servo
S9	5V tolerant I/O	TIM2_CH3	Servo	Servo
S10	5V tolerant I/O	TIM2_CH4	Servo	Servo
S11	5V tolerant I/O	TIM12_CH2	Servo	Servo
S12/LED	5V tolerant I/O	TIM1_CH1	led	led

*** In the iNav firmware, a maximum of 32 WS2812 chips can be controlled by default.**

ADC			
Voltage	10K:100K voltage divider ratio 0~36V	Voltage ADC ADC_CHANNEL_1	voltage scale 1100
Current	0~3.3V	ADC of ammeter ADC_CHANNEL_2	Current scale 158
Simulated airspeed	10K:10K voltage divider ratio 0~6.6V	Airspeed ADC ADC_CHANNEL_3	Analog Airspeed
Simulated RSSI	0~3.3V	RSSI ADC ADC_CHANNEL_4	Analog RSSI

I2C			
I2C1	5V tolerant I/O	Onboard barometer	SPA06-003 (identified as DPS310 by iNav8.0.1)
		compass	QMC5883/HMC5883/ MAG3110/LIS3MDL
		Digital airspeed meter	MS4525
		OLED	0.96"

ArduPilot pin mapping

USB	USB	SERIAL0	Console
TX1 RX1	USART1 (with DMA) ）	SERIAL1	Wireless USB Expansion Board Pro
TX2 RX2 SBUS	SBUS pads	BRD_ALT_CONFIG 0 Default	SBUS receiver SBUS pad = RX2 with reverse circuit
	RX2		IBUS/DSM/PPM
	USART2	BRD_ALT_CONFIG 1 SERIAL2	Custom
TX3 RX3	USART3	SERIAL3	MSP DisplayPort/DJI OSD/VTX
TX4 RX4	UART4	SERIAL4	Custom
TX5 RX5	UART5	SERIAL5	GPS1
TX6 RX6	USART6 (with DMA)	SERIAL6	ELRS/TBS Receiver Serial protocol input

*** If using a higher serial port speed, such as 921600, please use USART1 (UART1) or USART6 (UART6).**

PWM		timer		
S1	PWM1 GPIO50	TIM4_CH2	PWM/DShot(DMA)	Group1
S2	PWM2 GPIO51	TIM4_CH1	PWM/DShot(DMA)	
S3	PWM3 GPIO52	TIM3_CH3	PWM/DShot(DMA)	Group2
S4	PWM4 GPIO53	TIM3_CH4	PWM/DShot(DMA)	
S5	PWM5 GPIO54	TIM8_CH3	PWM/DShot(DMA)	Group3
S6	PWM6 GPIO55	TIM8_CH4	PWM/DShot(DMA)	
S7	PWM7 GPIO56	TIM8_CH2N	PWM/DShot(DMA)	
S8	PWM8 GPIO57	TIM2_CH1	PWM/DShot(DMA)	Group4
S9	PWM9 GPIO58	TIM2_CH3	PWM/DShot(DMA)	
S10	PWM10 GPIO59	TIM2_CH4	PWM/DShot(DMA)	
S11	PWM11 GPIO60	TIM1_CH3N	PWM	Group5
S12	PWM12 GPIO61	TIM1_CH1	PWM	

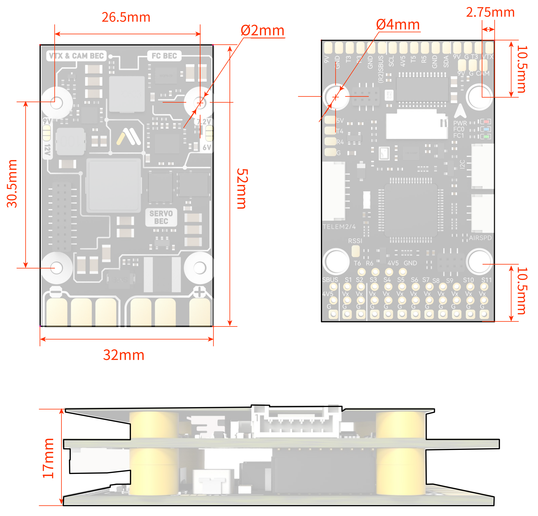
*** S1~S10 outputs support DShot and PWM. However, within the same timer group, if one channel enables DShot, all channels in the same group will also enable DShot. We provide combinations like 2+2+3+3+2 for easy configuration of different aircraft types.**

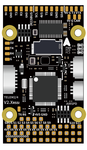
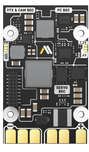
For example, in a single-motor fixed-wing aircraft, enabling DShot on channel S3 will also enable channel S4; it's impossible to enable DShot on a single channel independently. In a dual-motor fixed-wing aircraft, the motors are configured with DShot enabled on channels S3 and S4, while the remaining servo channels use the PWM protocol. In a Y3 VTOL fixed-wing aircraft, the three motors are configured with DShot enabled on channels S5, S6, and S7, while the remaining servo channels use the PWM protocol.

ADC				
Voltage	10K:100K voltage divider ratio 0~36V	Battery voltage	BATT_VOLT_PIN	10
			BATT_VOLT_MULT	11.05
ammeter	0~3.3V	Current sense	BATT_CURR_PIN	11
			BATT_AMP_PERVLT	64
Simulated airspeed	0~6.6V	Analog Airspeed	ARSPD_PIN	15
			ARSPD_TYPE	2
Simulated RSSI	0~3.3V	Analog RSSI	RSSI_ANA_PIN	14
			RSSI_TYPE	2

I2C				
I2C1	5V tolerant I/O	Onboard barometer	SPA06-003 (AP4.5.7 identifies it as SPL06)	
		compass	COMPASS_AUTODEC	
		Digital airspeed meter MS4525 ASP5033	ARSPD_BUS	0
			ARSPD_TYPE	1
			ARSPD_TYPE	15

Part 7 - Packaging size



 CoreWing F405 WING V2 Flight controller x1	 CoreWing WING PDB Board PLUS x1	CoreWing F405 WING V2 Top plate x1	CoreWing Wireless USB Expansion board PRO x1
90 Degree pin PWM bent pin header (3x12) x1 * Welded version without bent needles	Straight pins (1x12) x3	ELRS header (1x4) x1	M2x12 copper studs x5
M2x4 Phillips screws x10	M3x4 silicone rings x5	USB extension cable	VTX cable
GPS connection cable		DJI connection cable	
CAM connection cable		DuPont 4P single-ended connector cable	
capacitance		double-sided adhesive pad for pin headers	

Part 8 - Warranty Information

I. Warranty Service (within 30 days)

1. Warranty Coverage: Flight controller motherboard, PDB, and expansion board are covered within 30 days from the date of receipt.

For performance failures not caused by human error or issues arising from official firmware, free warranty is available.

2. Not covered by warranty: Consumables such as cables; Purchased through unofficial channels;

Damage caused by water ingress, impact, reversed connections, unauthorized disassembly or flashing of the firmware.

II. Return and Exchange Service

● 7-day no-reason return policy: Products can be returned within 7 days of receipt if they are unopened and in good condition (returns are not supported after opening).

Returns are possible. Please contact the store where you purchased the item for processing.

● 30-day quality problem replacement: Within 30 days of signing for the goods, if a non-human-caused quality problem occurs, it will be replaced free of charge after inspection and confirmation.

III. After-sales process

1. Contact customer service first: Contact customer service through the Coolwing Technology WeChat official account and explain the situation.

2. Submission and return: Submit a work order as instructed (proof of purchase and proof of problem are required) and return the product.

3. Inspection and handling: Upon receipt, we will complete the inspection, repair or replacement within 14 working days and return it to you.

4. Shipping Costs: If the issue is confirmed to be a product quality problem, we will bear the round-trip shipping costs.

For non-quality issues, you will need to bear the round-trip shipping costs yourself.

IV. Warm Reminder

● Please purchase through official authorized channels and keep your purchase receipt.

● Please read the instruction manual before use and operate correctly.

● The final interpretation of the warranty information rests with Zhuhai Coolwing Technology Co., Ltd.

Contact Us

● After-sales service hotline: 15018866740

● WeChat Official Account: Coolwing Technology

● Submit a support ticket (we recommend contacting customer service first): https://xmdwz.cn/6m2egx