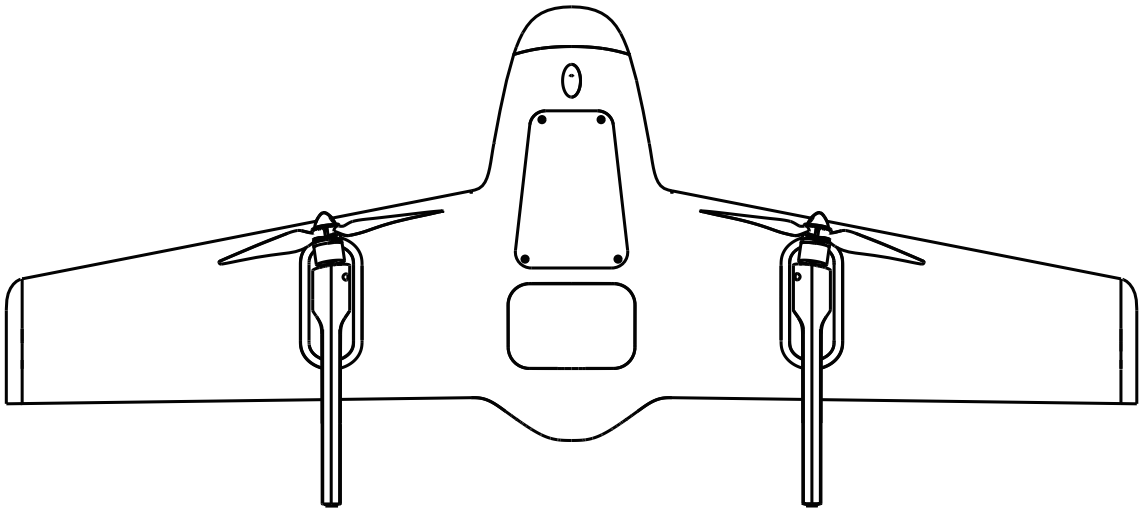
HEQUAV

SWAN K1 PRO PNP
Quick Start Guide

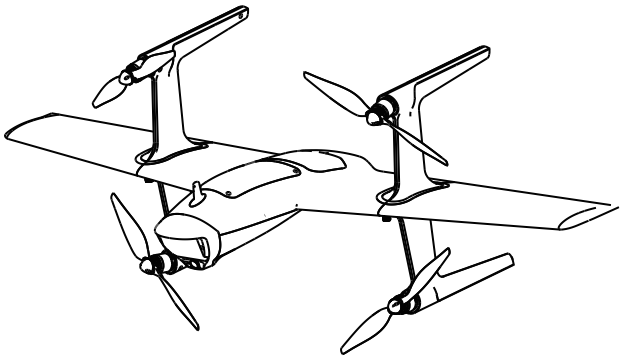
V1.0



Shenzhen HEQ Intelligent Technology Co.,Ltd.

PNP Introduction

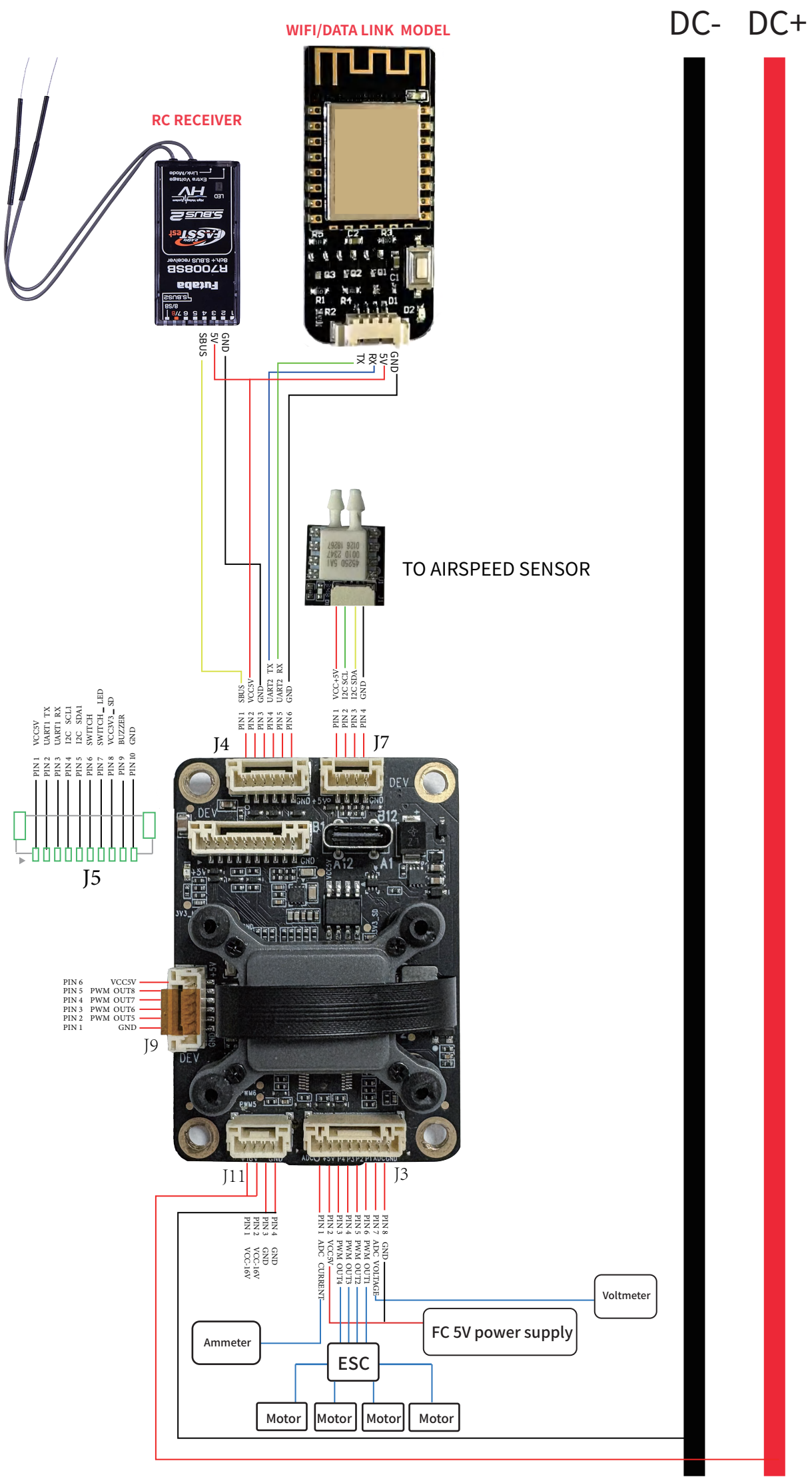
Swan K1 PRO PNP version is specially designed for drone DIY players. Players can make full use of idle modules to build their own drone. Swan K1 PRO PNP version has vertical take-off and landing function and has no flight field restrictions. The whole machine has a modular design with few structural parts. There are no other moving parts except 4 motors, and no additional tools are required for disassembly.



Swan K1 PRO PNP Composition

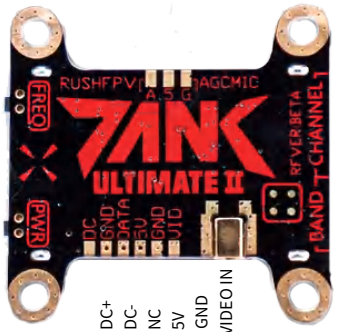
Swan K1 PRO PNP is mainly composed of wings, arms, fuselage, propellers, counterweights and other parts. The fuselage also contains flight control, ESC, airspeed meter, GPS, and WiFi modules.

Swan K1 PRO PNP Wiring Diagram Is As Follows


WIFI/DATA LINK MODEL
DC-
DC+
RC RECEIVER
SBUS
5V
GND
TX
RX
5V
GND
TO AIRSPEED SENSOR
VCC+5V
I2C SCL
I2C SDA
GND
SBUS
VCC5V
GND
UART2 TX
UART2 RX
GND
PIN 1
PIN 2
PIN 3
PIN 4
PIN 5
PIN 6
J4
J7
VCC5V
UART1 TX
UART1 RX
I2C SCL1
I2C SDA1
SWITCH
SWITCH_LED
VCC3V3_SD
BUZZER
GND
PIN 1
PIN 2
PIN 3
PIN 4
PIN 5
PIN 6
PIN 7
PIN 8
PIN 9
PIN 10
J5
PIN 6 VCC5V
PIN 5 PWM OUT8
PIN 4 PWM OUT7
PIN 3 PWM OUT6
PIN 2 PWM OUT5
PIN 1 GND
J9
J11
J3
PIN 1 VCC-16V
PIN 2 VCC-16V
PIN 3 GND
PIN 4 GND
PIN 1 ADC CURRENT
PIN 2 VCC5V
PIN 3 PWM OUT4
PIN 4 PWM OUT3
PIN 5 PWM OUT2
PIN 6 PWM OUT1
PIN 7 ADC VOLTAGE
PIN 8 GND
Voltmeter
Ammeter
FC 5V power supply
ESC
Motor
Motor
Motor
Motor

DC- DC+

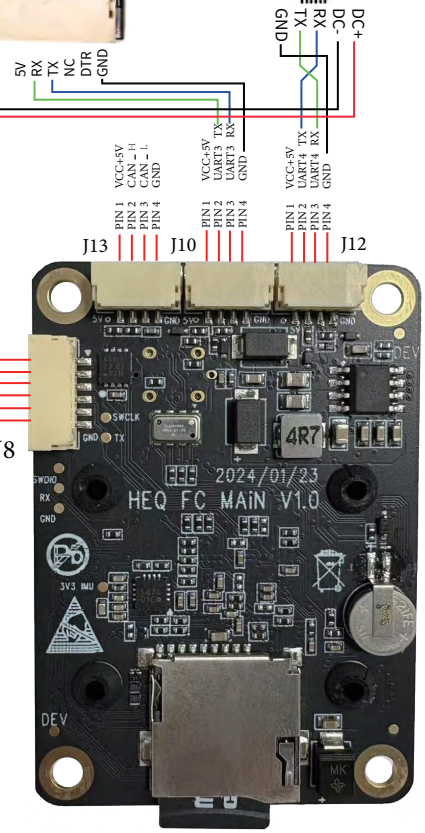
ANALOG VIDEO TRANSMISSION



ANALOG CAMERA

MAVLINK TO OSD

DJI FPV DIGITAL IMAGE TRANSMISSION SYSTEM



TIPS

J10 can output regular MAVLINK data, which is converted by the OSD conversion module and then input into the regular analog image transmission for image overlay display

J12 can directly output OSD data that can be adapted to the DJI digital image transmission system

Swan K1 PRO PNP Parameters

Wingspan: 1.1m
Empty weight: 1kg
Flight time: 50-60mins (using 4s 5500mAh lithium battery or HEQ official battery)
Range: 35-40km
Maximum take-off weight: 2.2kg
Maximum flight altitude: 500m
Wind resistance: Level 5
Propeller: 9060
Recommended battery: 4s LIPO 5500mAh battery (HEQ official battery, or compatible battery compartment, which does not exceed the maximum take-off weight after being added to the fuselage)
Battery compartment size: 7.5cm*3.5cm*6.5cm
Compatible sports cameras: GoPro5\6\7\8; DJI action1\2
Supported remote control protocol: SBUS
Parameter adjustment interface: built-in WiFi module (users can use the mobile phone QGC version to connect to the aircraft for debugging)
Supported remote control channels: 7 channels or more
Supported image transmission: analog image transmission/digital image transmission
External power supply voltage: 16.8v
One-key takeoff: supported
Intelligent return: supported
Fault protection: supported

Wifi Module Specifications

(The drone body will have a built-in WiFi module or a conventional data transmission radio. The specific specifications are subject to the actual product received. If there are any subsequent updates, we will not notify you separately.)

WIFI network name: Drone
WIFI password: 12345678
IP address: 192.168.4.1
Subnet mask: 255.255.255.0
Gateway: 192.168.4.1
Port number: 6789
Serial port baud rate: 57600
Communication protocol: TCP
Operating voltage: 4V-9V DC (5V recommended)

Others

Flight Control Compatibility:

The flight control is compatible with PX4 firmware and supports link products from mainstream manufacturers such as SIYI/skydroid. (flight experience can be performed according to the HEQFLY app).

Flight Control Configuration:

Please note that the sockets on the SWAN K1 PRO PNP flight control must be adapted to the GH1.25 model plug.

Power Plug Model:

For convenience, the power plug model used by the SWAN K1 PRO PNP version is XT60.

Flight Altitude And Distance:

The flight altitude and distance of the SWAN K1 PRO can be customized with geo-fence restrictions in the ground station, and the actual flight effect is determined by the user's remote control and image transmission device capabilities.

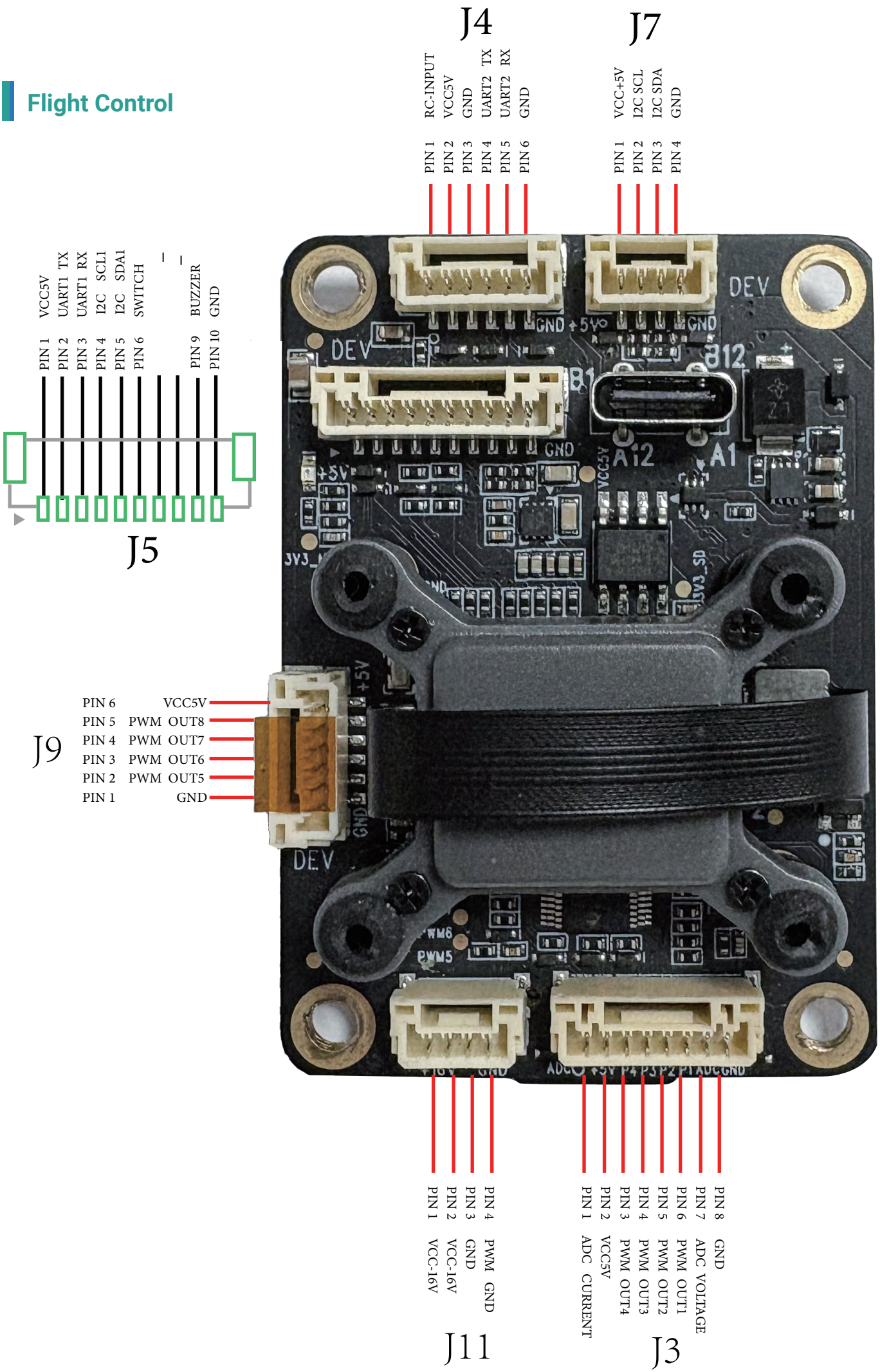
FPV Function And Image Transmission:

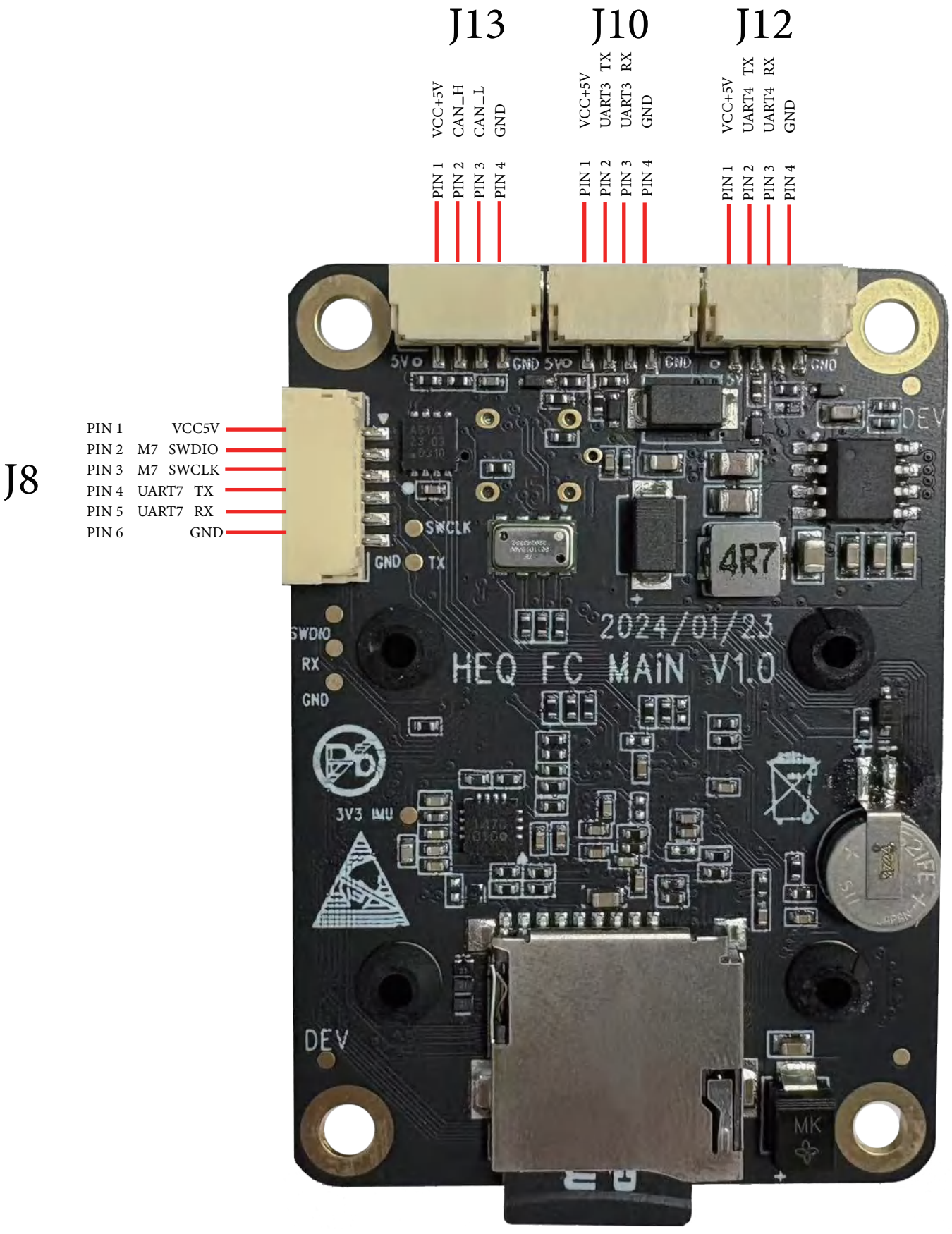
If you want to continue to experience the FPV function, you need to purchase and install analog or high-definition image transmission equipment separately. For the installation plan, please refer to the wiring diagram of the Swan K1 PRO PNP.

SWAN K1 PRO PNP Flight Control System Multiple Safety Protections

1. Low Voltage Protection
2. Intelligent Return Home
3. Dangerous Attitude Protection
4. Stall Protection
5. Lose Control Protection
6. Geographical Fencing

Flight Control




J13
VCC+5V
CAN_H
CAN_L
GND
PIN 1
PIN 2
PIN 3
PIN 4
J10
VCC+5V
UART3 TX
UART3 RX
GND
PIN 1
PIN 2
PIN 3
PIN 4
J12
VCC+5V
UART4 TX
UART4 RX
GND
PIN 1
PIN 2
PIN 3
PIN 4
J8
PIN 1 VCC5V
PIN 2 M7 SWDIO
PIN 3 M7 SWCLK
PIN 4 UART7 TX
PIN 5 UART7 RX
PIN 6 GND
5V
GND
SWCLK
TX
SWDIO
RX
GND
3V3 IMU
4R7
2024/01/23
HEQ FC MAIN V1.0
DEV
MK

Flight Guide

1. Remote Controller

Currently only supports SBUS protocol. It is recommended to use a remote controller with more than 7 channels to fully utilize the functions of the PNP drone. Our PNP has the function of switching between fixed-wing and rotary-wing, and the mode switching and attitude switching settings can be performed on the remote controller. (For details, please see the video tutorial of the "HEQUAV" Youtube channel). You can use the QGC APP (it is recommended to use QGC on a computer or mobile phone, and using it on a tablet may cause incomplete parameter display) to set the remote control channel (the channel recommendation is as shown below)

		Channel
	Roll	1
	Pitch	2
	Throttle	3
	Yaw	4
Mode switch	Altitude/Position	5
Attitude switch	Rotor/Fixed-wing	7
	Return	8

2.Calibration

Before the aircraft takes off, calibrate the accelerometer, gyroscope, horizon, airspeed meter and compass on the QGC APP. If the absolute value of the airspeed is greater than 5, recalibration is required. If the location is changed, the magnetic compass needs to be recalibrated. If the location environment is not changed, it is not necessary.

3. WiFi Connection

(1) Open QGC APP

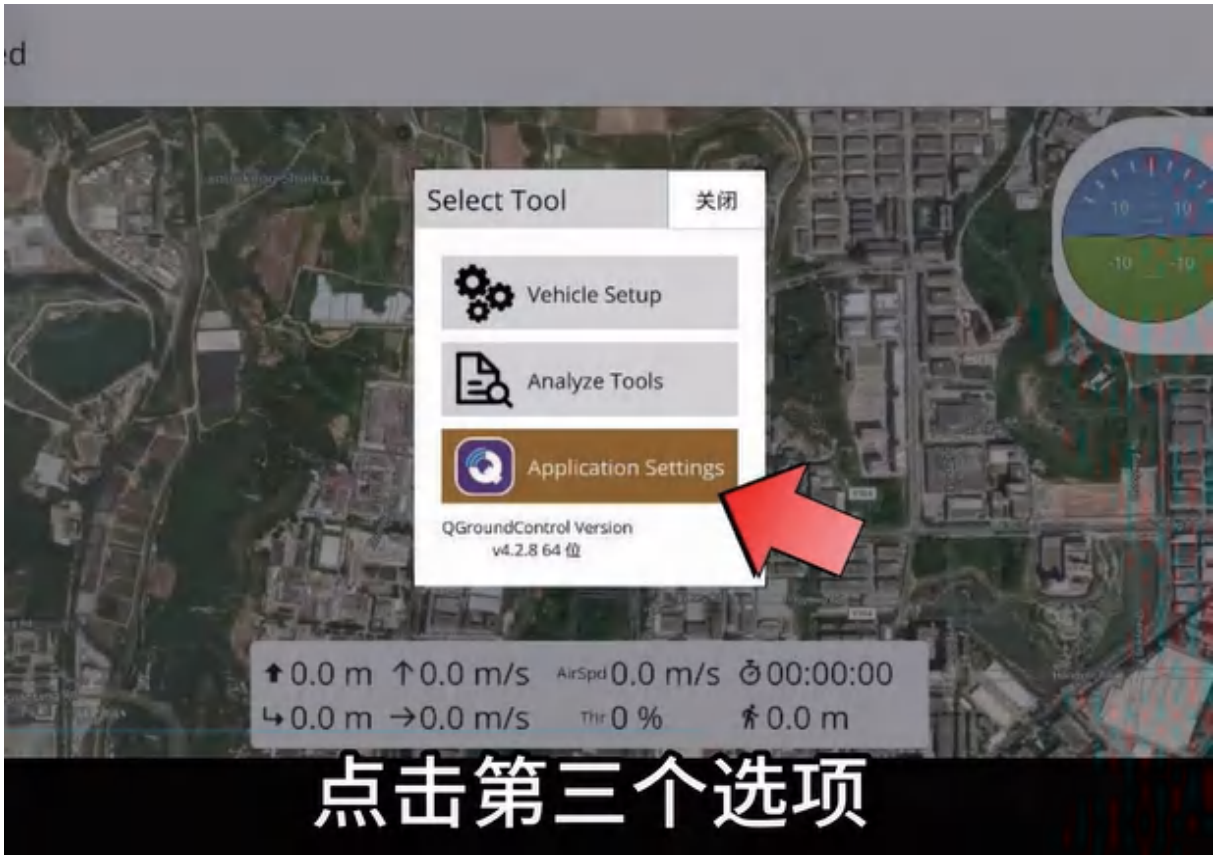
Note: QGC software is recommended to download the dedicated version from the download center of our official website (Download Center → Rudderless VTOL Flight Platform → Select Swan K1 Pro PNP → Select PC Version/Mobile Version):

https://www.hequavtech.com/downloads?name=Download+Center&navIndex=4

(2) Connect the drone's built-in module (please turn on your phone's WiFi)

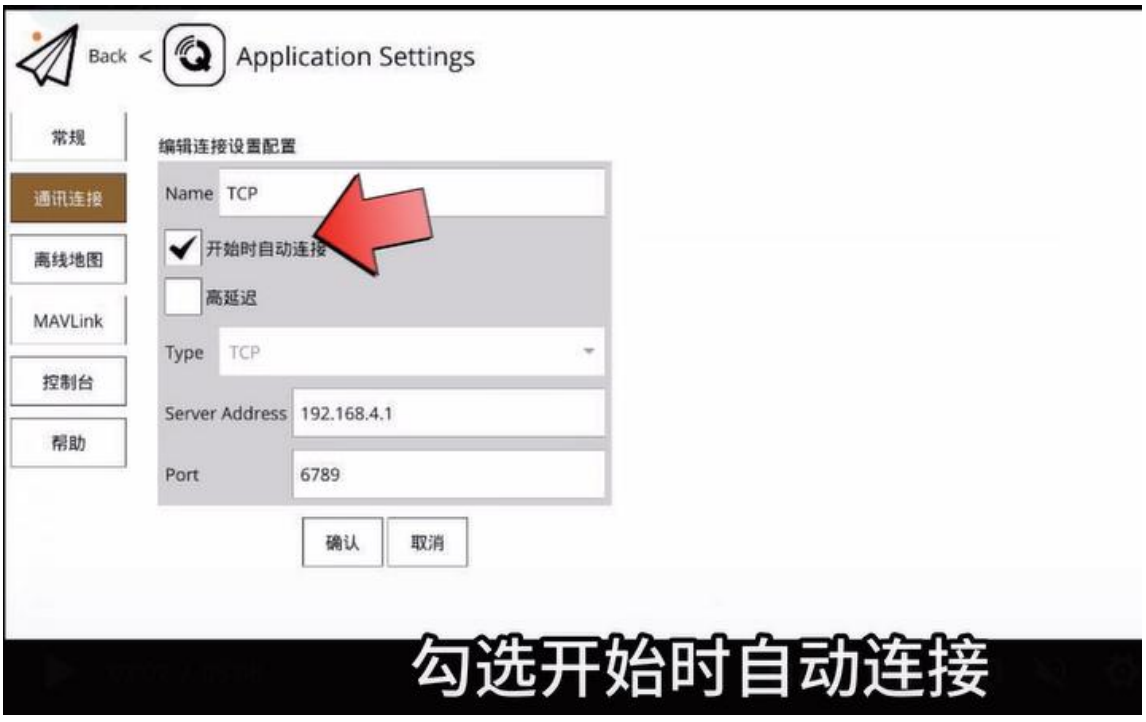
(3) Return to QGC app

(4) Click the third option

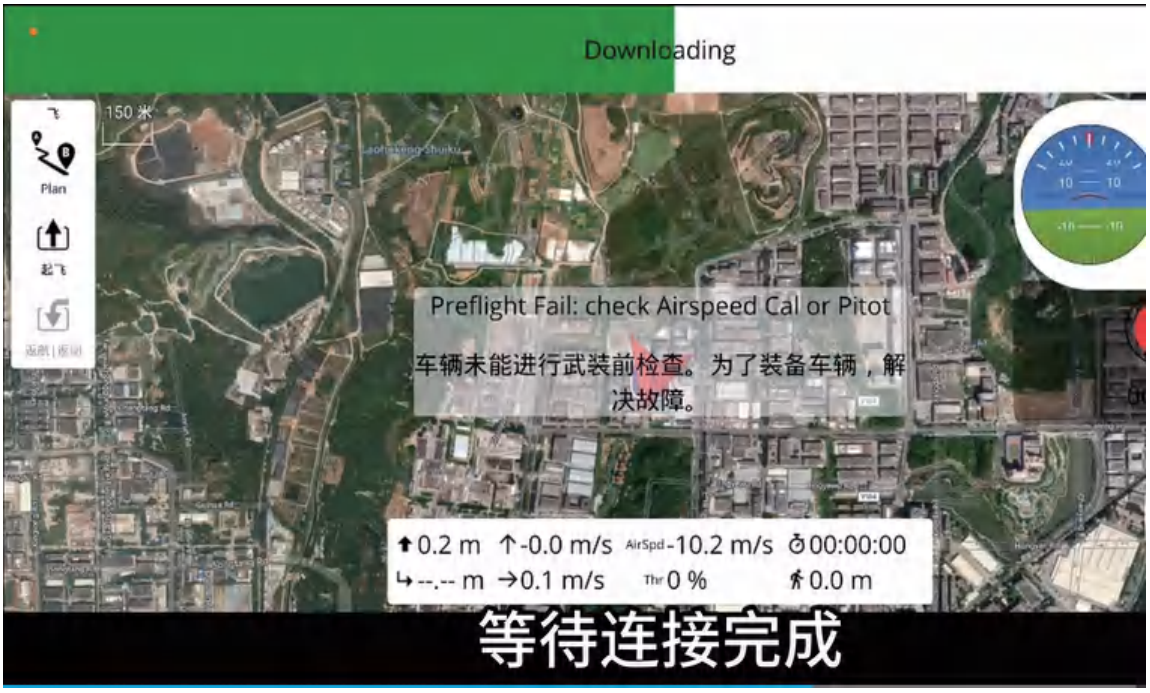


（5）Open the communication connection and click the TCP option

（6）Check Automatically connect at startup and click OK



(7) Return to the QGC interface and wait for the connection to complete



Pre-Flight Check

1. The joystick of the drone is switched to the position mode. To ensure safety, it is recommended to take off vertically to more than 20 meters before switching to the fixed-wing mode.
2. The drone and remote controller are fully charged.
3. WiFi has been connected and the map has been loaded before flight.
4. GPS signal ≥ 9 satellites.

Notes

1. During takeoff and landing, make sure there are no obstacles around the drone to avoid collision accidents.
2. During the flight, comply with relevant flight regulations, fly in legal areas, and ensure flight safety.
3. During flight, pay attention to the flight attitude and flight altitude of the drone to ensure flight stability.
4. Do not fly in crowds, woods, airports, train stations, buildings, and indoors.