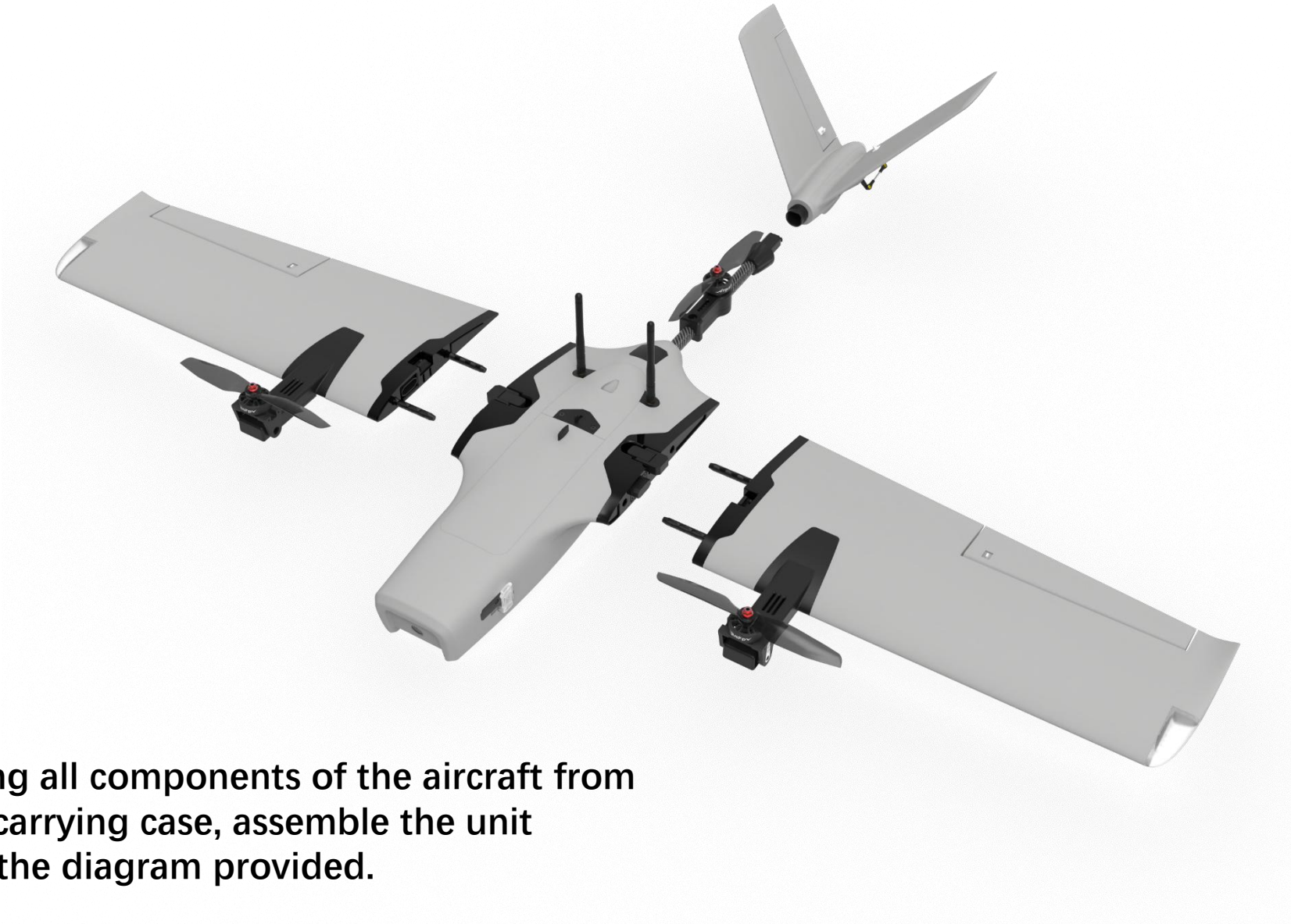




ROC WING MANUAL

www.flyhsd.com



After removing all components of the aircraft from the portable carrying case, assemble the unit according to the diagram provided.



To turn on the remote control, press and hold the power button.



Install the battery as shown and securely fasten the cable tie. Gently push the battery back and forth by hand to ensure it does not move. If any looseness is detected, **you must repeat the fastening process.** **Only 6S LIPO batteries must be used** (recommended capacity: 4000–8000mAh).



We strongly advise against the use of battery types such as 18650. This batteries generate powerful electromagnetic fields during high-current discharge, which can cause severe interference with critical aircraft sensors, including the electronic compass.



Center of gravity position

The indentation on the wing-mounted plastic part is allowed a maximum deviation of 1 cm toward the nose.

After installing the battery, press upward with your finger at the recessed area of the plastic component beneath the wing to lift the aircraft.

Observe whether the aircraft maintains general front-to-back balance.

After powering on the device, press and hold the **center button** on the left side of the remote screen to access the data retrieval interface. To exit the menu, press and hold the **Back button** located at the bottom.



Flight mode



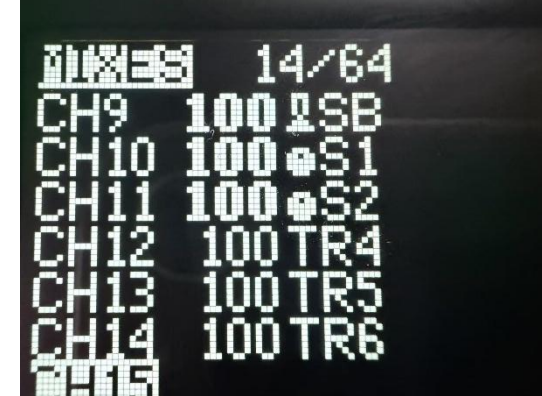
The flight mode button can be customized via Mission Planner or QGroundControl to assign different functions. The default factory settings are as shown in the diagram above. Please note: If the flight controller has no stored mission, pressing the button in AUTO mode will engage the RTL (Return-to-Launch) function.


Return-to-Launch





The Head Tracker is connected to the remote controller via the training cable.



TR12 RLL

TR11 PIT

TR10 YAW

To change the head tracker's installation orientation, please swap the interface connectors or reverse the corresponding channel settings on the remote control.



To power on the device:

First briefly press, then press and hold the M button.

After power-on:

Press and hold the M button to trigger gimbal recentering.

After connecting to power, do not move the aircraft.
Wait for the flight controller to initialize.

While the flight controller is warming up, the tail light
will illuminate orange. Please wait patiently.



After approximately one minute, when the
tail light turns green, preheating is complete
and the aircraft can be disarmed.





Flight Mode Descriptions

QLOITER Mode (VTOL)

QLOITER mode automatically maintains the vehicle's current position, heading, and altitude. In this mode, pilots operate the aircraft similarly to a quadcopter. Upon releasing the control sticks, the vehicle decelerates to a stop and maintains its position.

CRUISE Mode (Fixed-Wing)

CRUISE mode functions similarly to Fly-By-Wire-B (FBWB) but incorporates heading lock. This mode is ideal for long-range FPV (First-Person View) flights, enabling precise tracking of distant objects while automatically managing altitude, airspeed, and heading.

WARNING:

CRUISE mode is not recommended for low-altitude flight. Its altitude control time constant (derived from TECS) responds too slowly for terrain avoidance. This mode lacks the pitch control responsiveness required for safe ground proximity operations.

FBWA Mode (Fly By Wire A)

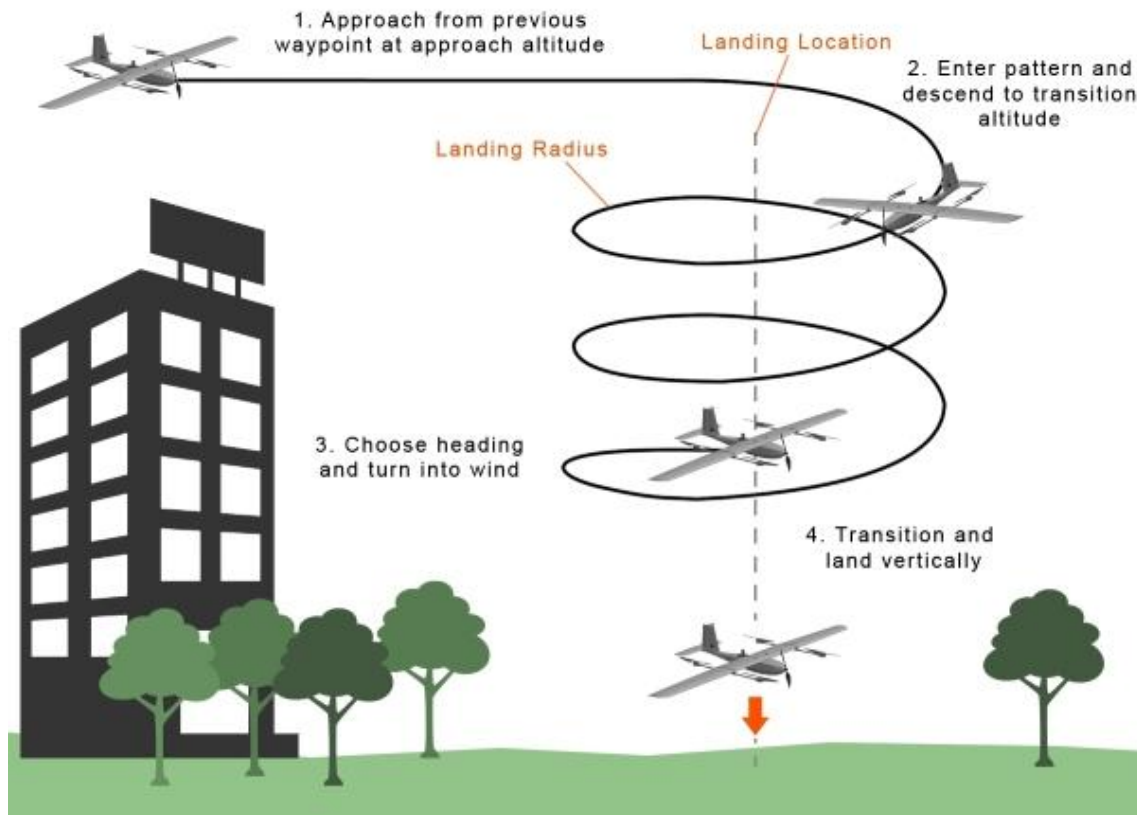
As the most widely used assisted flight mode in Plane and the optimal choice for novice pilots, FBWA maintains the roll and pitch angles specified by the control sticks. For example:

Full right aileron input holds a fixed 45-degree right bank angle (within system limits).

Pitch angles are constrained to ± 25 degrees.

Note: Level pitch does not guarantee altitude hold. Climb/descent rate at a given pitch angle depends on airspeed, primarily controlled by throttle. To gain altitude, increase throttle; to descend, reduce throttle. For automatic altitude maintenance, consider Fly-By-Wire B (FBWB) mode.

In FBWA, throttle is manually controlled. Rudder operation can be either manual or automated through configurable roll-rudder mixing, enabling ground steering while maintaining coordinated turns during flight.



RTL mode (Return To Land)

Aircraft Return-to-Land (RTL) Procedures:

1.Exceeding 75m from Home Point:

When the aircraft exceeds a **75-meter radius** from the takeoff point, it will activate **fixed-wing mode**.

It will maintain an altitude of **100 meters** while returning to the home point. Upon approaching within a **50-meter radius** of the home point, the aircraft will initiate a circling descent to **30 meters**.

At 30 meters, it will **switch into VTOL (Vertical Take-Off and Landing) mode** facing into the wind and land.

2.Within 75m of Home Point in VTOL Mode:

If the aircraft is **within a 75-meter radius** of the home point and operating in **VTOL mode**:

At an altitude **above 30 meters**, it will gradually descend to **30 meters** during its return to the home point before landing.

At an altitude **below 30 meters**, the aircraft will first **climb vertically to 30 meters** at its current position. It will then proceed to the home point and land.

3.Manual Control During VTOL Landing:

During the final **VTOL landing phase**, the pilot **can manually control** the aircraft using the control sticks to adjust its precise landing position.

Control is exercised **according to standard VTOL mode operation**.

Activating manual control will pause the automatic landing sequence.

The aircraft will move **slowly in the direction commanded by the control sticks**, allowing positioning to the desired landing point.

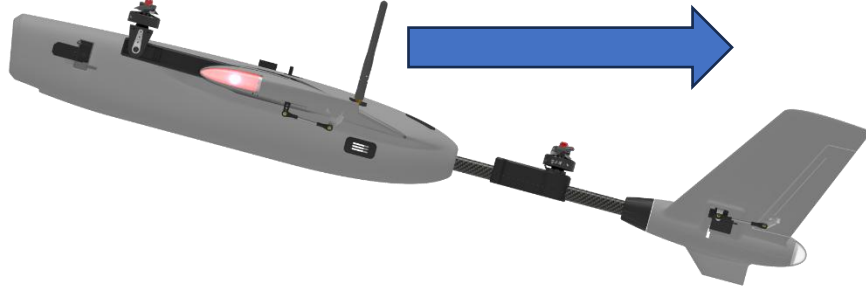
Automatic landing will resume when manual control inputs are released.



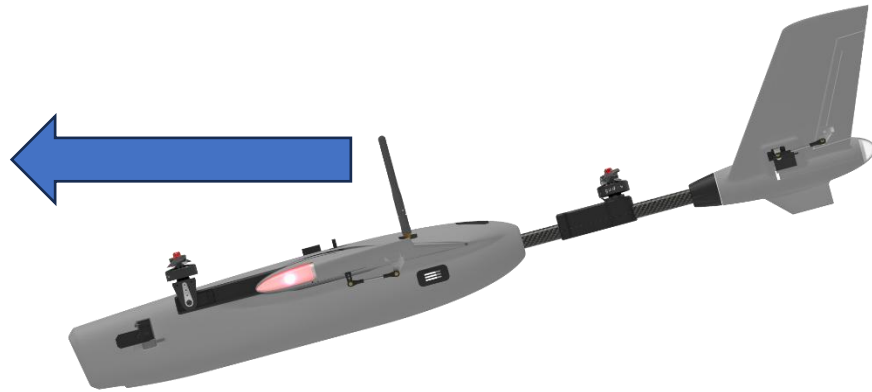
VTOL Mode

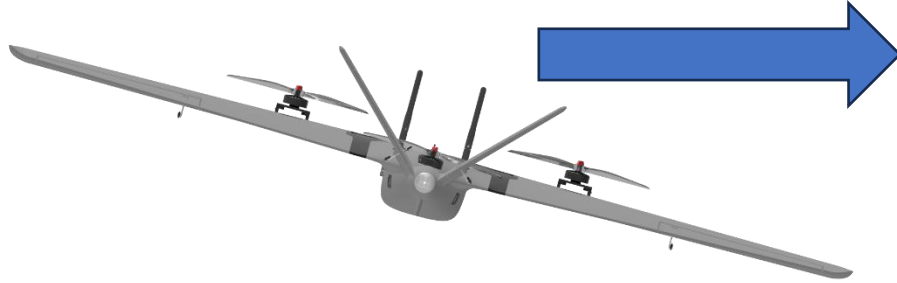


VTOL Mode (QLOITER)
The Channel 3 throttle channel manages aircraft ascending and descending.

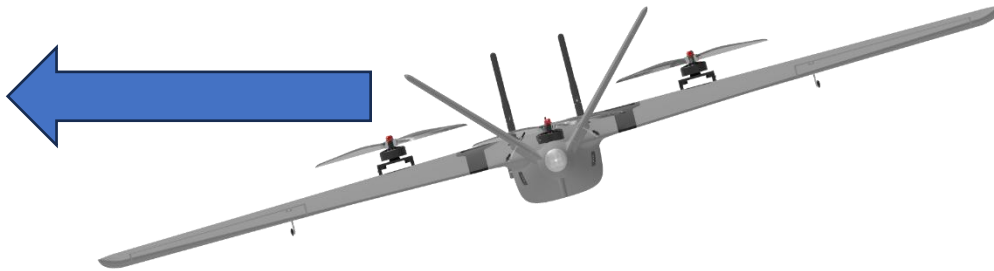


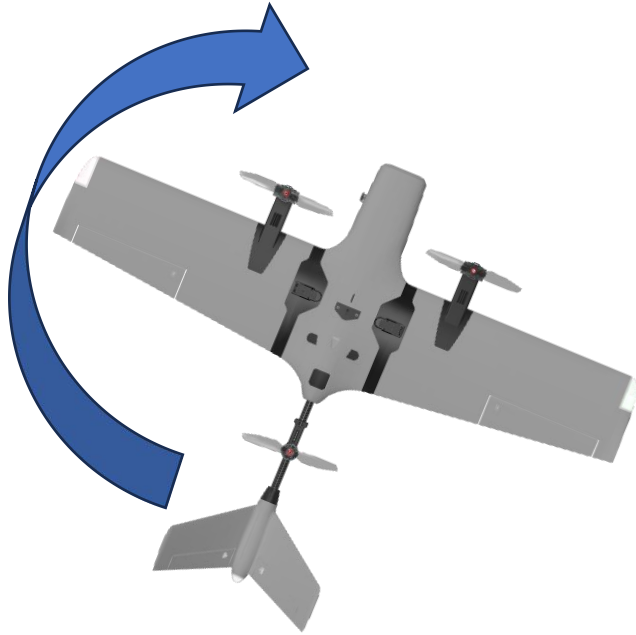
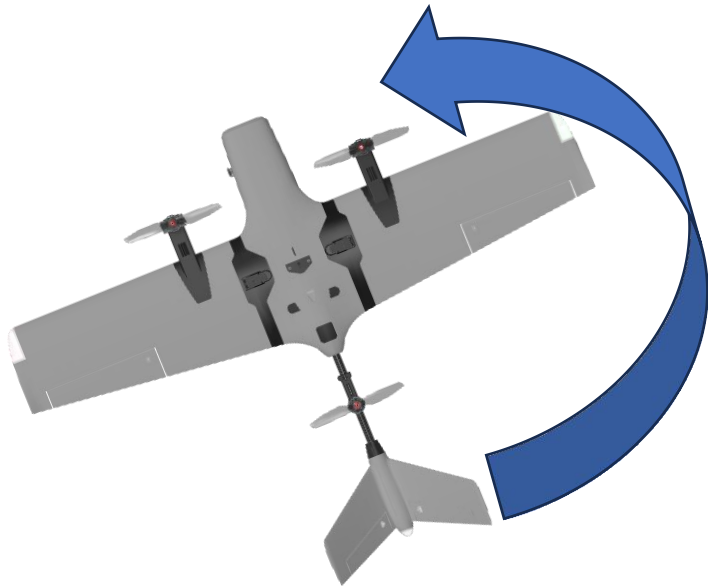
CH2 controls the aircraft's pitch, enabling forward and backward movement during VTOL mode.





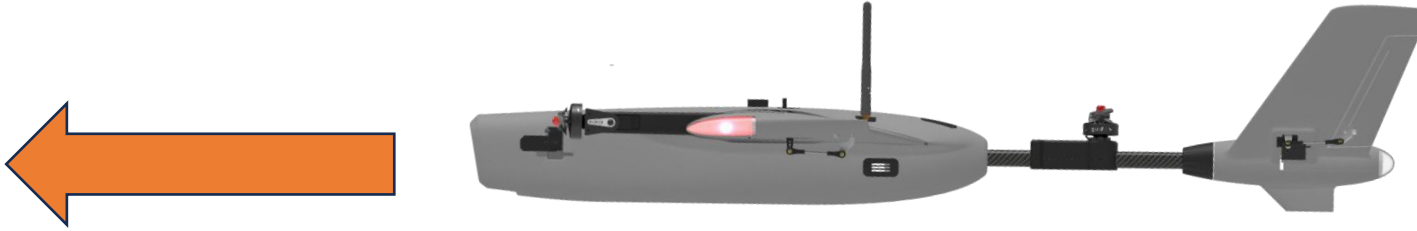
CH1 controls the aircraft's left and right roll, enabling it to bank and move laterally.





CH4:
Horizontal Rotation Control
(Left/Right)

Fixed-Wing Mode:
CRUISE Mode or FBWA Mode



Aircraft airspeed is controlled by CH3.

CRUISE Mode: The airspeed indicator actively manages throttle control.

Mid-throttle position: 16 m/s

Maximum throttle position: 24 m/s

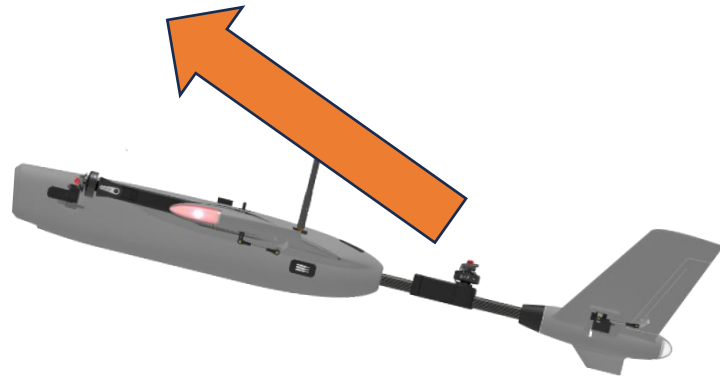
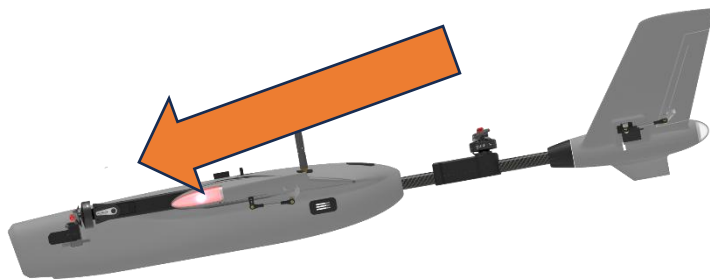
Minimum throttle position: 14 m/s

FBWA Mode: Throttle is manually controlled by the pilot, enabling airspeeds from 0 to 44 m/s.

Below 12 m/s, the flight controller automatically engages VTOL (Vertical Take-Off and Landing) assistance.

Maintaining mid-throttle delivers an optimal, economical cruising speed of approximately 16-20 m/s.





CH2: Controls Aircraft Pitch

Pull back on the stick: Raises the nose for climb.

Push forward on the stick: Lowers the nose for descent/dive.

CRUISE Mode:

The flight controller will restrict climb/sink rates to **2 m/s** when pitching up or down.

Throttle will automatically adjust to maintain airspeed within the **commanded range set by CH3**.

FBWA Mode:

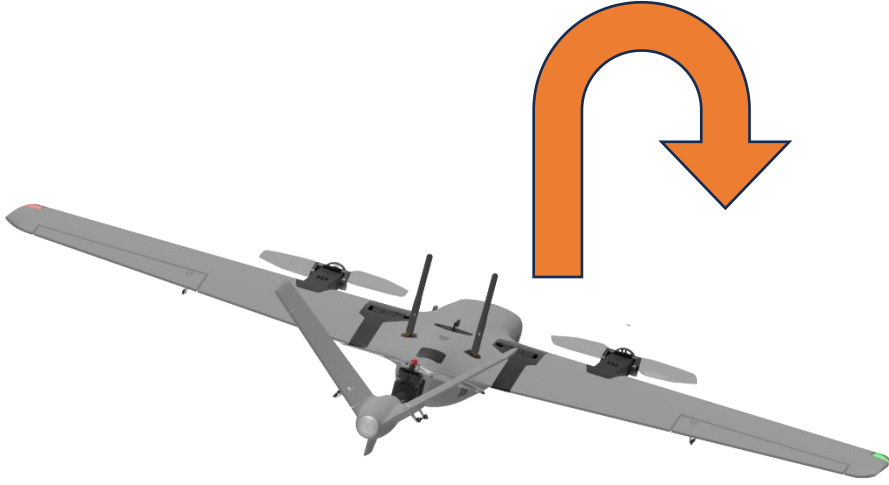
The flight controller limits pitch angle to **±20 degrees** when pitching up or down.

CAUTION

The CRUISE flight mode is not suitable for terrain-hugging flight. During CRUISE mode operation, altitude is controlled at a rate of 2 meters per second. When flying close to the ground, CRUISE mode **does not provide** the pitch control flexibility required to prevent ground impact.

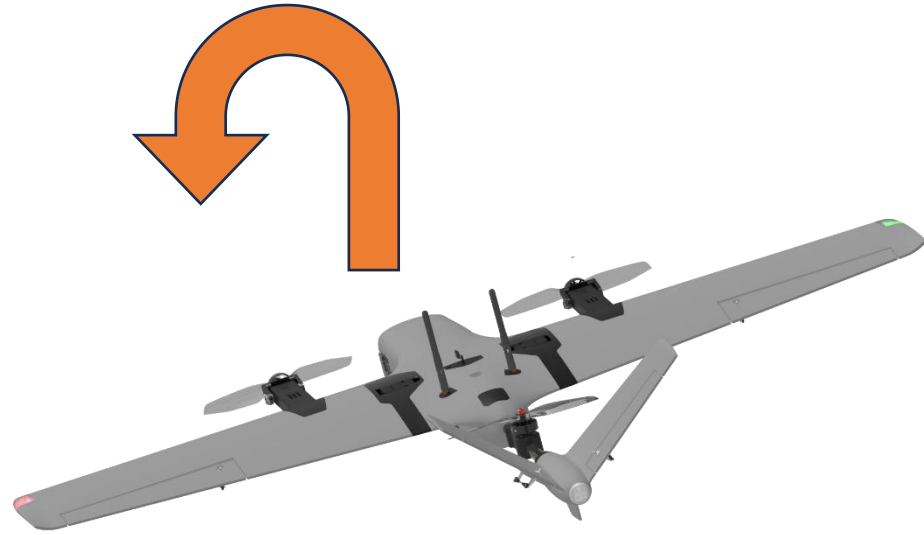
Benefits of CRUISE Mode:

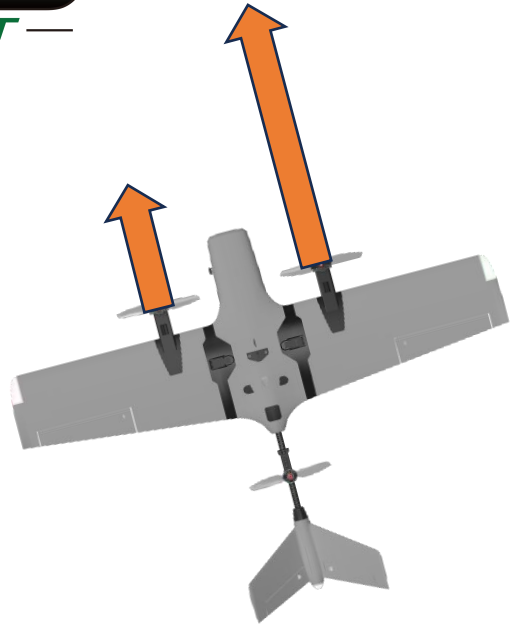
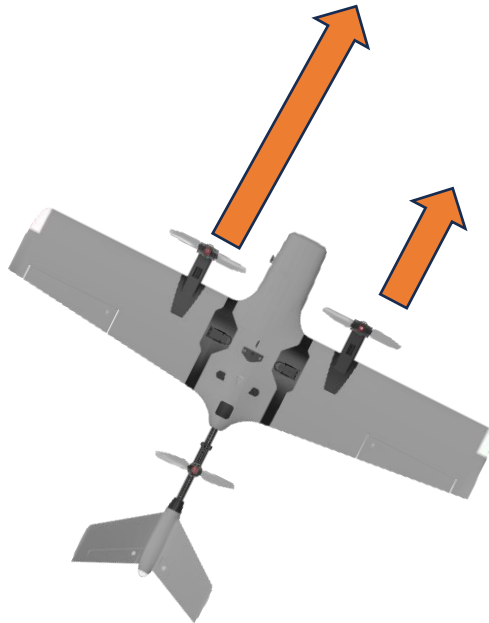
- Maintains optimal airspeed via the airspeed sensor
- Conserves battery power through automatic throttle control
- Enables stable, hands-off cruising by continuously maintaining altitude



Chapter 1: Roll Control

Controls the aircraft's roll along its longitudinal axis. The aircraft rolls and initiates turns in proportion to the deflection angle input via the remote control stick.





CH4 (Channel 4) controls the yaw axis (aircraft nose direction). Movement is initiated based on the pilot's joystick inputs. The aircraft achieves horizontal rotation (yaw) by generating a differential thrust between its left and right propellers.

Note: In practical operation, yaw responsiveness can be significantly reduced due to wind resistance and aerodynamic effects.

Therefore, using CH1 (Channel 1) for directional control during flight is strongly recommended.



For instructions on using the O4 Transmission Goggles, please refer to the official DJI website <https://www.dji.com>
Download software  DJI Assistant 2 (Consumer Drones Series) device is not activated, activation is readily available.

C20TGimbal default control channel

MODE 7CH

RLL 12CH

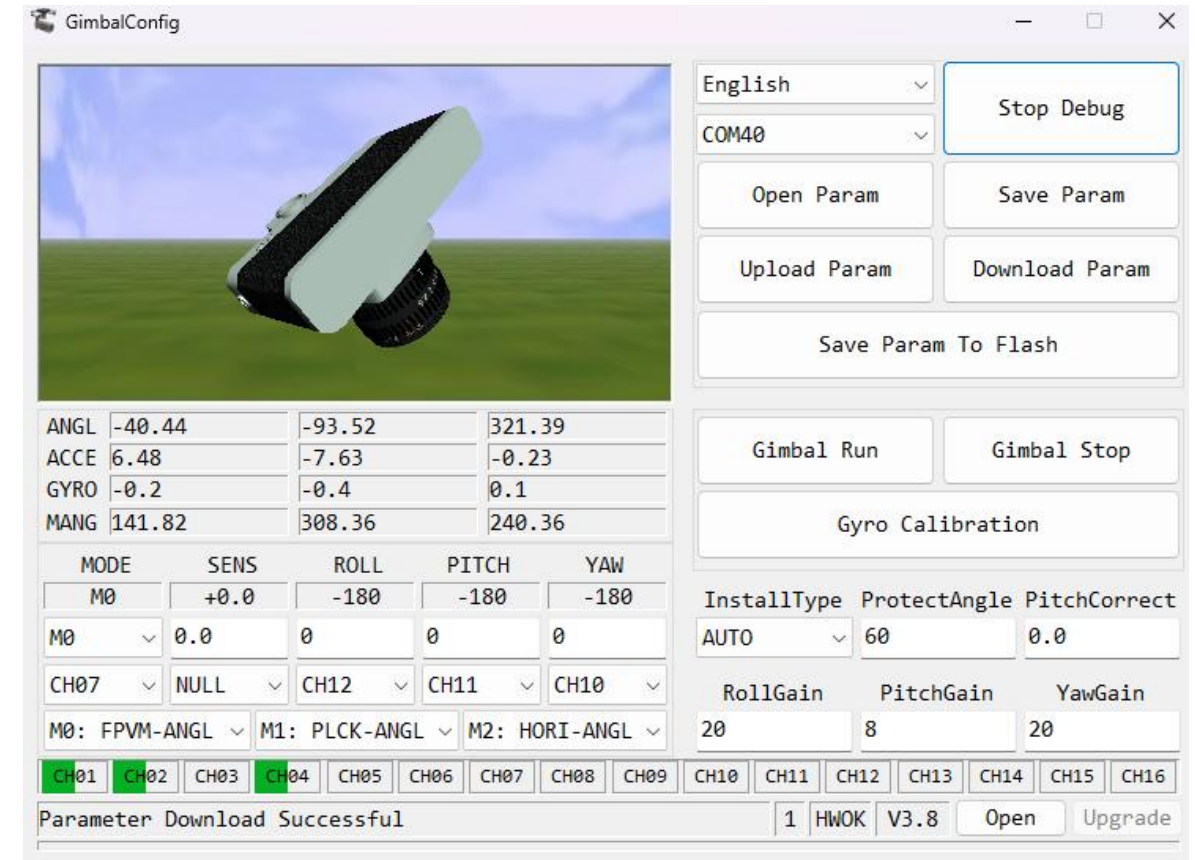
PIT 11CH

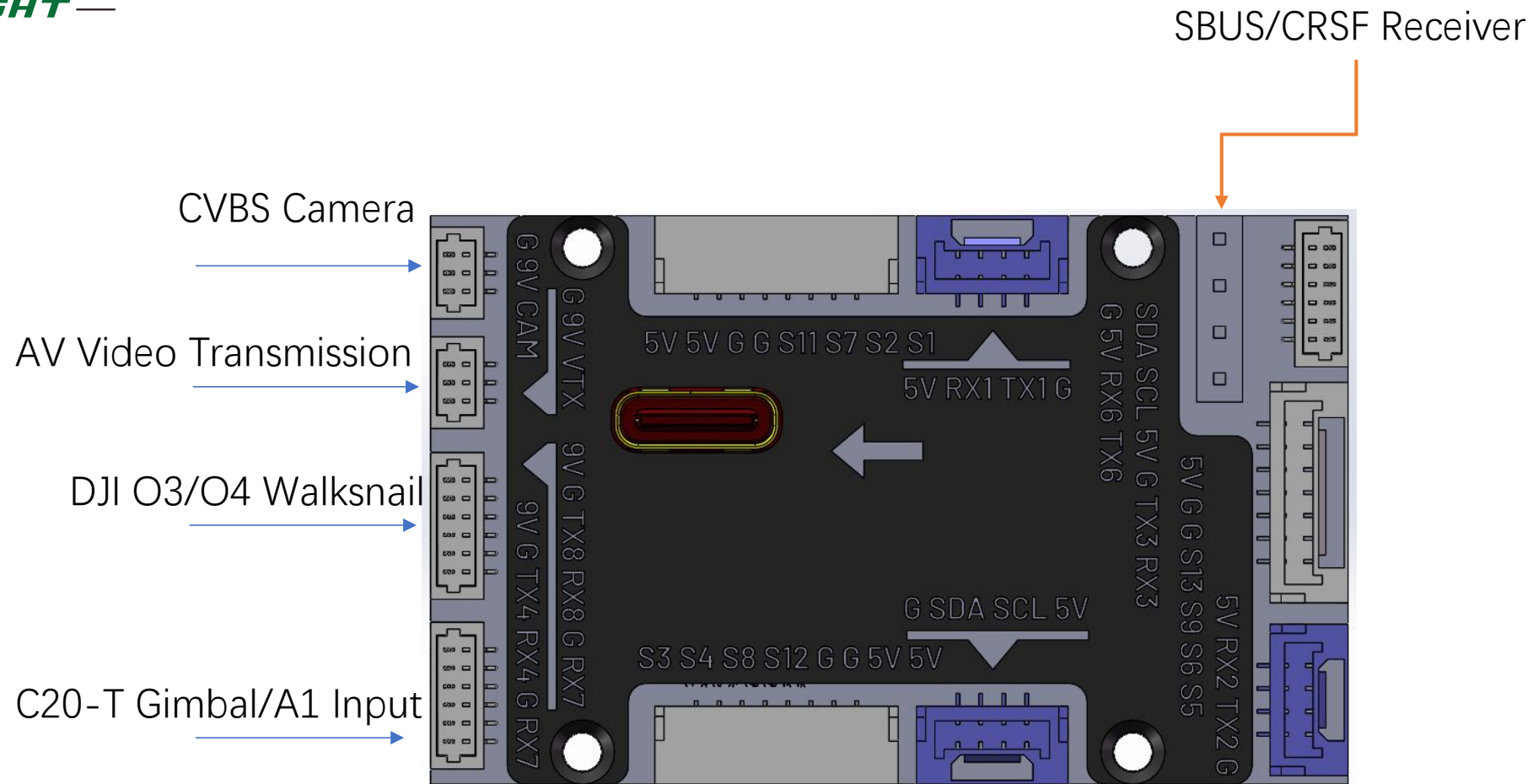
YAW 10CH

**For the Gimbal and Head Tracking Equipment
Instruction Manual, please refer to the following website.**

Chinese <https://www.allxianfei.com/>

English <https://www.allxf.com/>





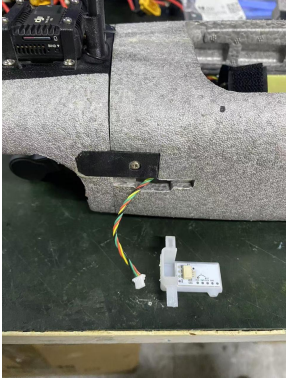
The flight controller is ready to use with no setup required.

Do not use fixed-wing manual (MANUAL) mode.

For the power battery, please use a 6S pouch Li-Po battery. Do not use 18650 cells.

When using the HD gimbal nose cover, you need to relocate the airspeed sensor to the top of the nose cover and adjust the airspeed scaling setting.

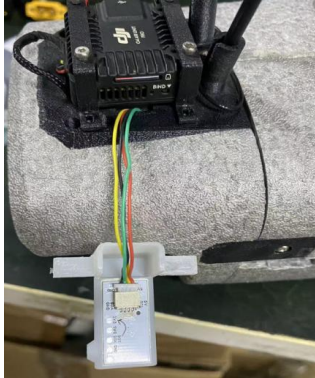
Remove the airspeed sensor.



Remove the nose cover.



Route the airspeed sensor cable through the nose cover before reconnecting it to the sensor.



Install the airspeed sensor mounting bracket.



Connect the flight controller to Mission Planner via USB and navigate to the basic parameter tuning page.



Configure the settings as shown in the figure below.
Set **Airspeed Scaling** to 1.0.
Write the parameters to the flight controller.



Note: The above setup applies only when using the HD gimbal nose cover. The default nose cover included with the product does not require any configuration and should remain with its factory settings.

If you prefer not to relocate the airspeed sensor, you may disable it as illustrated in the figure below. Disabling the airspeed sensor will not affect flight performance.

