Multifunctional Drone

# M490 TOP

ALIGN

# INSTRUCTION MANUAL

# 使用說明書

**[RM49005XT]**

**Thank you for purchasing Align products.**

Please read the manual carefully before installing and be sure to retain the manual for future reference. All pictures shown are for illustration purpose only. Actual product may vary due to product enhancement. Specifications, contents of parts and availability are subject to change, ALIGN RC is not responsible for inadvertent errors in this publications.

承蒙閣下選用亞拓遙控世界系列產品，謹表謝意。

使用前，請務必詳閱本說明書，相信一定能夠給您帶來相當大的幫助，也請您妥善保管這本說明書，以做為日後參考。本公司將不對此印刷物之異動負責，也無法主動通知消費者任何更新或異動。所有圖片僅用於展示目的。產品可能因改良而有些不同。本說明書內記載的材質、規格或零件包裝之內容物如有異動，請依亞拓官網公告為主。

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**!!Remind!! 提醒**

ALIGN

自行拆改裝 保固失效

The warranty could invalid if modified

Dear customer:

For your consumer rights, please do not disassemble or modify the products sold by our company. If there is any unauthorized disassembly or modification, the product warranty and warranty liability will be invalid immediately! Hereby declare!

敬愛的客戶:

為了您的消費權益，本公司所售出之產品請勿自行拆裝、改裝，如果有任何私自拆改裝，產品的保修、保固責任即刻失效！　特此聲明！

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# INTRODUCTION. 前言

Radio Control (R/C) multicopters are not toys. R/C multicopters utilize various high-tech components to achieve superior performance. Improper use of this product can result in serious injury or even death. Please read this manual carefully before operating, and make sure to be conscious of your own personal safety and the safety of others nearby when operating all ALIGN products. Manufacturer and seller assume no liability for the operation or the use of this product. This product is intended for use

only by adults with experience flying remote control aircraft at legal flying fields. After the sale of this product we cannot be held liable over its operation or usage.

We recommend that you seek the assistance of an experienced pilot before attempting to fly our products for the first time. A local expert is the best way to properly assemble, setup, and fly your model for the first time. This product requires a certain degree of skill to operate, and is an expendable item. Any damage or dissatisfaction as a result of accidents or modifications are not covered by any warranty and cannot be returned for repair or replacement. Please contact our distributors for free technical consultation and parts at discounted rates when you experience problems during operation or maintenance. As Align Corporation Limited has no control over the use, setup, assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability.

In addition, R/C multicopters and its components are precision electronics susceptible to interferences from external forces such as magnetic field and radio signal. Should the multicopter or any onboard photographic equipment suffers loss or crash damage as result of external magnetic or radio interferences, Align cannot be held liable as the cause is beyond our control.

**As the user of this product, you are solely responsible for operating in a manner that does not endanger yourself and others or result in damage to the property of others.**

遙控無人機包括遙控直昇機與多軸無人機（以下簡稱遙控無人機）並非玩具，它是結合了許多高科技產品所設計出來的休閒用品，所以商品的使用不當或不熟悉都可能會造成嚴重傷害甚至死亡，使用之前請務必詳讀本說明書，勿輕忽並注意自身安全。注意！任何遙控無人機的使用，製造商和經銷商是無法對使用者於零件使用的損耗異常或組裝不當所發生之意外負任何責任，本產品是提供給有操作過遙控無人機經驗的成人或有相當技術的人員在旁指導，並於當地合法遙控飛行場飛行，以確保安全無虞下操作使用。產品售出後本公司將不負任何操作和使用控制上的任何性能與安全責任。

遙控無人機屬於需高操作技術且為消耗性之商品，如經拆裝使用後，會造成不等情況零件損耗，任何使用情況所造成商品不良或不滿意，將無法於保固條件內更換新品或退貨，如遇有使用操作維修問題，本公司全省分公司或代理商將提供技術指導、特價零件供應服務。對使用者的不當使用、設定、組裝、修改、或操作不良所造成的破損或傷害，本公司無法控制及負責。且遙控無人機與配件之精密電子產品，易受外力、磁場、訊號干擾，在使用過程中如外力、磁場、訊號干擾，導致無人機本身、及其搭載之攝影設備、器材之損壞或滅失，本公司亦無法控制及負責。

**做為本產品的使用者，您，是唯一對於您自己操作的環境及行為負全部的責任之人。**

## IMPORTANT NOTES 重要聲明

Prior to obtaining the valid flight license (training certification) in accordance with the local regulations of the country, engaging in actual aircraft operation is strictly prohibited. Please comply with the relevant laws and administrative procedures of the country to acquire the lawful flight license (training certification). Individuals lacking proficient flight handling experience are strictly prohibited from operating flights.

在尚未通過考取該國法規之合格飛行執照(訓練合格證)前，嚴禁實機飛行。請依循該國相關法規及管理辦法，通過考取合法之飛行執照(訓練合格證)，嚴禁無熟練操控飛行經驗者操控飛行。

# 標誌代表涵義

| | |
|---|---|
| FORBIDDEN 禁 止 | Do not attempt under any circumstances.<br>在任何禁止的環境下，請勿嘗試操作。 |
| WARNING 警 告 | Mishandling due to failure to follow these instructions may result WARNING in serious damage or injury.<br>因為疏忽這些操作說明，而使用錯誤可能造成財產損失或嚴重傷害。 |
| CAUTION 注 意 | Mishandling due to failure to follow these instructions may result in danger.<br>因為疏忽這些操作說明，而使用錯誤可能造成危險。 |

- Fly only in safe areas, away from other people. Do not operate R/C aircraft indoors or within the vicinity of homes or crowds of people. R/C aircraft are prone to accidents, failures, and crashes due to a variety of reasons including: lack of maintenance, pilot error, and radio interference. Pilots are responsible for their actions and damage or injury occurring during the operation or as of a result of R/C aircraft models.

- Prior to every flight, carefully check all parts such as blades, screws, frame, arms, etc; ensure they are firmly secured and show no unusual wears, or unforeseen danger may happen.

- 遙控無人機屬高危險性商品，飛行時務必遠離人群，禁止於室內飛行。人為組裝不當或未定期檢修造成的機件損壞、電子控制設備不良，以及操控上的不熟悉、都有可能導致飛行失控損傷等不可預期的意外，請飛行者務必注意飛行安全，並需了解自負疏忽所造成任何意外之責任。
- 每趟飛行前須仔細檢查機身各部位之零/配件/電子設備之性能是否正常，及無損耗老化現象，並確實將螺絲鎖緊才能升空飛行。並做好定期檢修，避免零件或電子產品異常所造成不可預期意外。

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## FORBIDDEN 禁止 LOCATE AN APPROPRIATE LOCATION 遠離障礙物及人群

R/C aircraft can fly at high speed, thus posing a certain degree of potential danger. Choose a legal flying field consisting of flat, smooth ground without obstacles. Do not fly near buildings, high voltage cables, or trees to ensure the safety of yourself, others, and your model. Avoid location with magnetic and radio interferences. Please choose a legal flying field. Do not fly your model in inclement weather, such as rain, wind, snow or darkness.

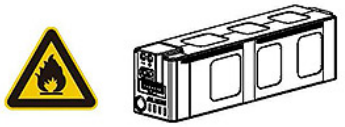
遙控無人機飛行時具有一定的速度，相對的也潛在著危險性，場地的選擇也相對的重要，請需遵守當地法規到合法遙控飛行場地飛行。必須注意周遭有沒有人、高樓、建築物、高壓電線、樹木等等，避免磁場干擾、外力訊號干擾及操控的不當造成自己與他人財產的損壞。請務必選擇在空曠合法專屬飛行場地。請勿在下雨、打雷、沙塵等惡劣天候下操作，以確保本身及機體的安全。

## FORBIDDEN 禁止 NOTE ON LITHIUM POLYMER BATTERIES 鋰聚電池注意事項

- **Be sure to unplug the battery when storing the helicopter after completing operations, otherwise it may cause damage to the battery due to over-discharge or unexpected accidents such as fire.**
- Lithium batteries are dangerous and flammable items. When charging the battery, the operator is strictly prohibited from leaving and staying away from flammable items. Otherwise, the operator will be responsible for all losses caused by any accidents caused.
- **無人機作業完畢後收藏時一定要拔除電池，否則可能導致電池過放的損壞或起火燃燒，導致不可預期的意外發生。**
- 鋰電池屬危險易燃物品，充電過程中，務必遠離易燃環境及物品，並確保在可視範圍內進行操作。嚴禁！操作人員離開，否則導致的任何意外，操作者需自負所有造成的損失責任。

Lithium Polymer batteries are significantly more volatile than alkaline or Ni-Cd/Ni-MH batteries commonly used in RC applications. All manufacturer's instructions and warnings must be followed closely. Mishandling of Li-Po batteries can result in fire. Always follow the manufacturer's instructions when disposing of Lithium Polymer batteries.

鋰聚電池跟一般在RC使用的鹼性電池、鎳鎘電池、鎳氫電池比較起來是相對危險的。請嚴格遵守鋰聚電池說明書之使用注意事項。不恰當使用鋰聚電池，可能造成火災並傷及生命財產安全，切勿大意！



## FORBIDDEN 禁止 PROPER OPERATION 勿不當使用本產品

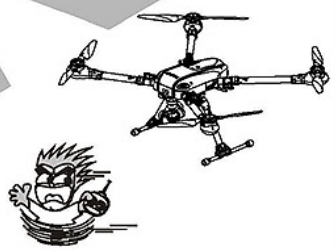
Do not attempt to modify the aircraft to alter its intended design. Please use only designated replacement parts listed in the manual to ensure its design structure integrity. Operate this product within its intended design parameters; do not overload it with excess cargo. This product is limited to personal hobby use, and pilot should be proficient with operation of this model. Follow all local law and ordinances when operating. Do not use this product for purposes which may violate others personal privacy, and respect other s intellectual properties. Do not use this product for illegal purposes or beyond the bonds of common safety

請勿自行改造加工，任何的升級改裝或維修，請使用亞拓產品目錄中的零件，以確保結構的安全。請確認於產品限界內操作，請勿過載使用，本產品為休閒娛樂專用之精密電子遙控飛行產品，僅限熟練遙控飛行器之個人使用，使用時請遵守當地法律規定，並嚴禁在任何違反公共安全區域操作，請勿利用本產品侵犯他人隱私/公開權、並遵重他人智慧財產權、著作權，且勿用於安全、法令外之其它非法用途。並充分了解您任何的使用與操作必須負完全的責任。

## WARNING 警告 DO NOT FLY ALONE 避免獨自操控

Before turning on your model and transmitter, check to make sure no one else is operating on the same frequency. Frequency interference can cause your model, or other models to crash. The guidance provided by an experienced pilot will be invaluable for the assembly, tuning, trimming, and actual first flight or unforeseen danger may happen. (Recommend you to practice with experienced pilots or with computer-based flight simulator firstly.)

至飛行場飛行前，需確認是否有相同頻率的同好正進行飛行，因為開啓相同頻率的發射機將導致自己與他人立即干擾等意外危險。遙控無人機操控技巧在學習初期有著一定的難度，要盡量避免獨自操作飛行，需有經驗的人士在旁指導，才可以操控飛行，否則將可能造成不可預期的意外發生。(勤練電腦模擬器及老手在場指導是入門必要的選擇)



## WARNING 警告 SAFE OPERATION 安全操作

Operate this unit within your ability. Do not fly while feeling impaired, as improper operation may result in danger. Never take your eyes off the model or leave it unattended while it is turned on. Immediately turn off the model and transmitter when you have landed the model.

請於自己能力內及需要一定技術範圍內操作這台遙控無人機，過於疲勞、精神不佳或不當操作，意外發生風險將可能會提高。不可在視線範圍外飛行，降落後也請馬上關掉遙控無人機和遙控器電源。


## CAUTION 注意 ALWAYS BE AWARE OF THE ROTATING BLADES 遠離運轉中零件

During the operation of the multicopter, the rotor will be spinning at a high rate of speed. The blades are capable of inflicting serious bodily injury and damage to surrounding properties. Be conscious of your actions, and careful to keep your face, eyes, hands, and loose clothing away from the blades. Always fly the model a safe distance from yourself and others, as well as surrounding objects.

遙控無人機主旋翼/螺旋槳運轉時會以高轉速下進行，在高轉速下的主旋翼/螺旋槳會造成自己與他人在身體上或環境上的嚴重損傷，請勿觸摸運轉中的主旋翼/螺旋槳，並保持安全距離以避免造成危險及損壞。

# MODEL STANDARD EQUIPMENT DIFFERENCE 標準配備版本說明

**Quick Finder**
零件快速購

The M490 includes additional electronics and other equipment. The Instruction Manual will refer to the The M490. You may purchase any additional items or spare parts referenced in the instruction manual.

M490空拍任務無人機系列商品，除標準配備會因您購買的版本而有些微不同，在組裝、設定上都是一致的，您也可依照書面上的商品資訊來增添其他選購商品。

## M490TOP STANDARD EQUIPMENT 標準配備 [RM49005XT]

[RM49005XT]

M490TOP Aerial Photography / Mission Drone
M490TOP空拍任務無人機 x1

Ground Station Transmitter
地面站遙控器組 x 1

Transmitter Charger
遙控器充電器 x 1

[HEC00009T]

Charger Cable
充電器電源線 x1
UP7 Intelligent Battery Charger
UP7智能快充電器 x1
Intelligent Battery Charger Cable
智能電池充電線 x2

[HBP10008]

Intelligent Flight Battery
10000mAh 智能電池x1

32G Memory Card
32G 記憶卡 x1

The SD card provided with the Align drone is given free of charge. It is a consumable item and is not covered by the warranty. If it is damaged due to wear or other factors during use, please purchase a replacement by yourself.

亞拓無人機所隨附的SD卡是免費贈送，屬消耗品不在保固範圍內，使用期間如有磨損或其他因素導致的損壞，請自行購買更換。

### Optiinal Equipment選配

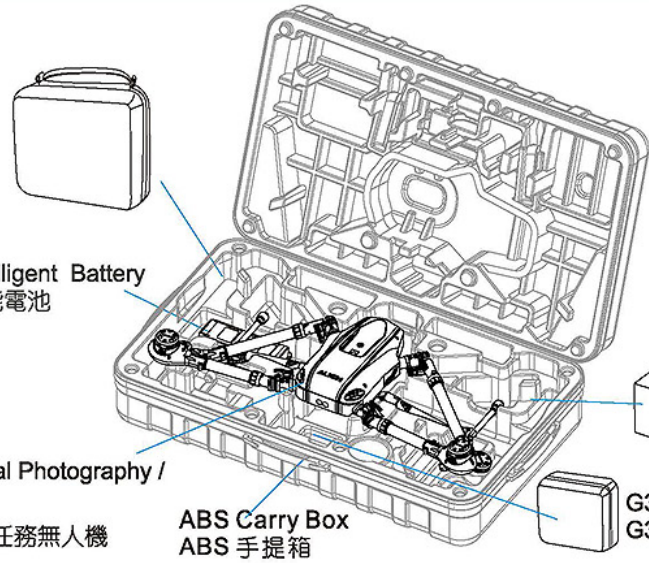
Ground Station Transmitter
地面站遙控器組

Transmitter Charger
遙控器充電器

### Optiinal Equipment選配 [HBP60003 ]

Intelligent Flight Battery
6000mAh 智能電池

# PACKAGE CONTENTS 包裝說明



Ground Station Transmitter
地面站遙控器組

10000mAh Intelligent Battery
10000mAh 智能電池

M490PRO Aerial Photography / Mission Drone
M490TOP空拍任務無人機

ABS Carry Box
ABS 手提箱

UP7 Intelligent fast charge charger
UP7智能快充充電器

G3P 4K 3 axis Gimbal system
G3P 4K 三軸雲台相機組

M490 body structure is already assembled in factory. Just need to twist off screws and adjust tube to proper position and locked well, and then install the canopy on the body firmly, ensure it will not detach during flight.

M490出廠時機身結構已組裝完成，僅需將調整軸管調整至適當位置後鎖緊即可。

## PREPARATION 準備工作

1. When you're preparing to assemble or disassemble a tripod head camera, it's important to do so on a stable work surface.
2. This helps reduce the risk of accidental damage and ensures smooth and efficient operation.
3. Additionally, it's important to properly store camera components and accessories to prevent them from being contaminated by dust or other debris, thus extending their lifespan.

1. 當您準備組裝或拆卸雲台相機組時，需要在穩固的工作區域／工作台上操作。
2. 這樣可以降低意外損壞的風險，同時也有助於確保工作進行順利且高效。
3. 另外，妥善存放相機部件和配件也很重要，可以避免它們被灰塵或其他污垢污染，延長其使用壽命。

**CAUTION 注 意**

IThe G3P gimbal mounted on the TOP version is designed for specific configurations. Both the DV and the mainboard have matching serial numbers etched onto them. Please do not mix and match the gimbal with different serial numbered mounting brackets (chassis), as this can result in issues such as lens misalignment after activation.

If you need to switch the gimbal between bodies, ensure that the mounting bracket on the body is paired with the gimbal as a complete set.

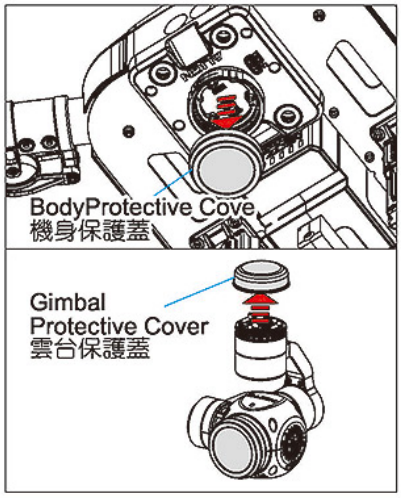
TOP版掛載的G3P雲台都是配組使用，DV與上主板固定座均刻有配對編號，請勿將鏡頭與不同編號雲台固定座(機體)混搭使用，會有鏡頭啓動後歪斜等問題。

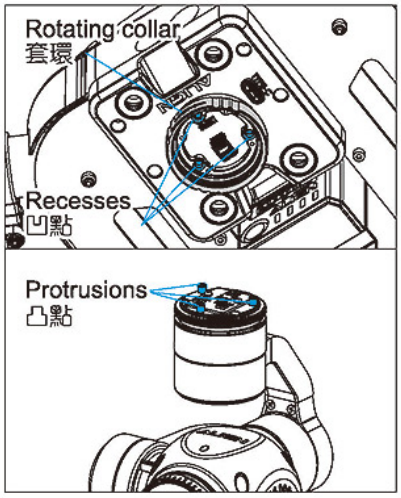
如果雲台要調換機身使用，機體上的雲台固定座要跟著雲台一起配組使用。

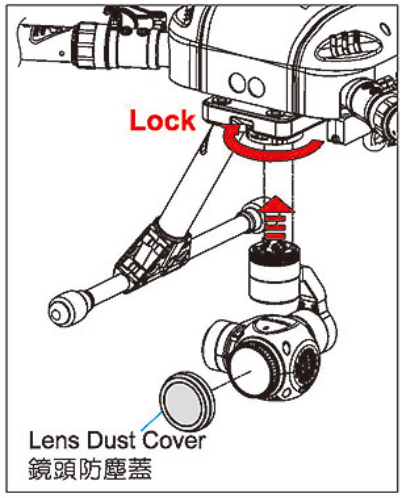
## ASSEMBLY STEPS 組裝步驟

1. Remove the body protective cover and the GIMBAL protective cover.
2. **Align the three protrusions on the top of the camera with the corresponding recesses on the tripod head base, and insert them into place.**
3. Rotate the locking ring clockwise to secure the camera to the tripod head.
4. Before operating, remove the lens dust cover.

1.先取下機身保護蓋、及雲台保護蓋。
2.**將相機上方三個凸點位置，對齊雲台座的凹點，並嵌入安裝位置。**
3.順時針方向旋轉套環鎖附以固定雲台。
4.作業前，將鏡頭防塵蓋拆下 。



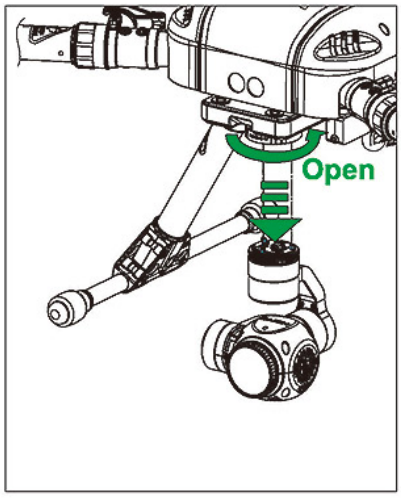



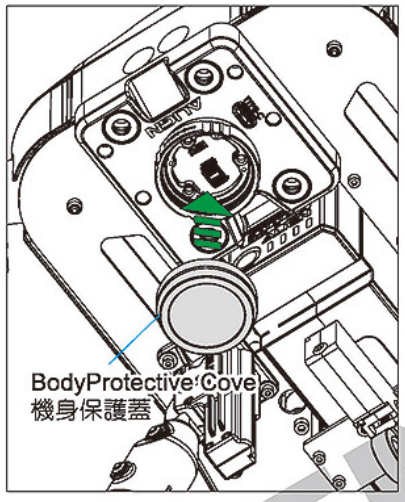



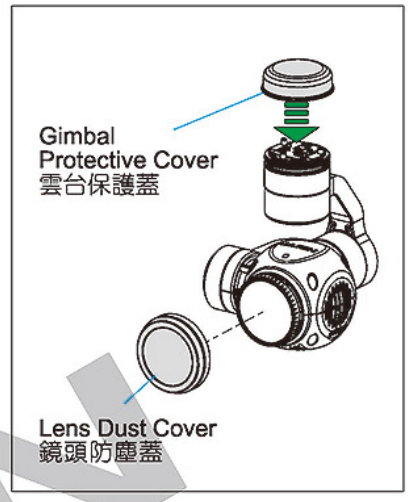
## DISASSEMBLY STEPS 拆卸步驟

1. Place the lens dust cover back on.
2. Rotate the lens mount counterclockwise and release the camera.
3. Replace the body protective cove.
4. Remove the camera and place it inside the handbag for protection.

1. 將鏡頭防塵蓋蓋上 。
2. 逆時針方向旋轉套環，鬆開並取下相機。
3. 蓋回機身保護蓋。
4. 蓋回雲台保護蓋，將相機放置於手提包。



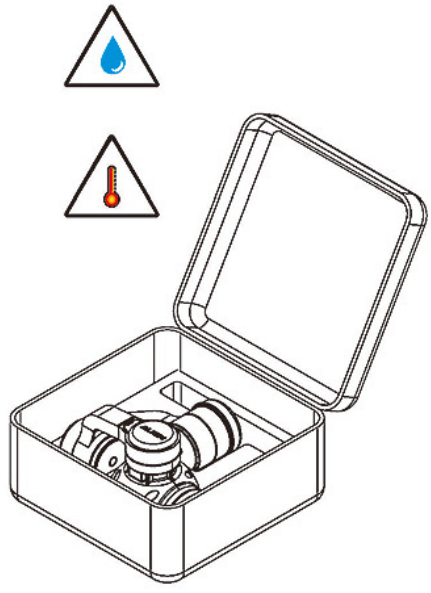




## PROTECTION AND STORAGE 保護及存放

1. If not used for an extended period, regularly inspect the condition of the camera and tripod and maintain cleanliness and protection.
2. Ensure the camera and tripod are clean, free from dust or dirt.
3. Avoid storing the camera and tripod in damp areas to prevent damage.
4. Place them in a dry, well-ventilated area, away from direct sunlight and extreme temperature changes.

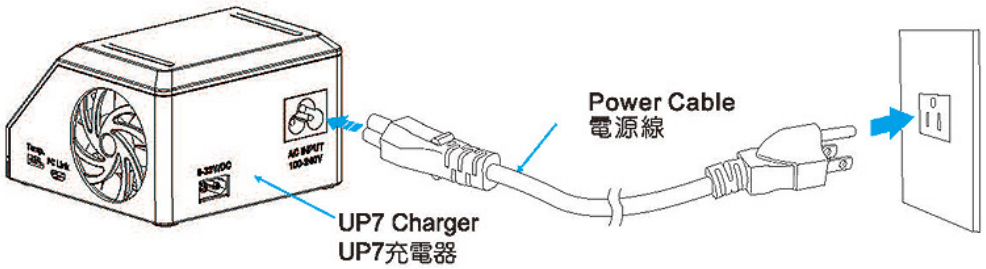
1. 若長時間不使用，應定期檢查相機和雲台的狀況，並保持清潔和保護。
2. 確保相機和雲台都清潔乾淨，沒有灰塵或污垢。
3. 避免將相機和雲台存放在潮濕的地方，以防止損壞。
4. 放置在乾燥、通風良好的地方，遠離直射陽光和極端溫度變化的地方。

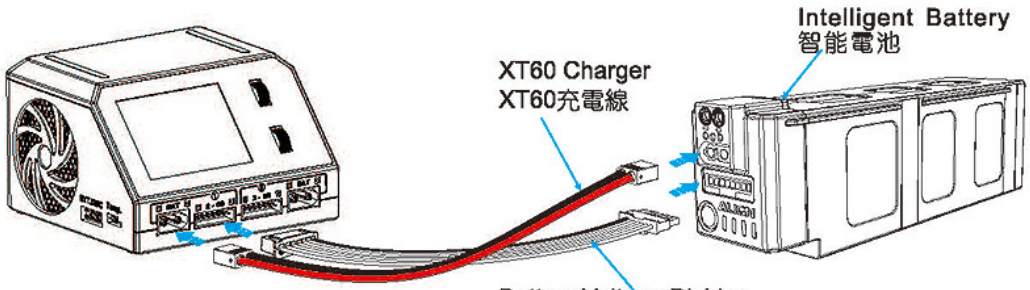


## DRONE POWER BATTERY CHARGING 無人機動力電池充電

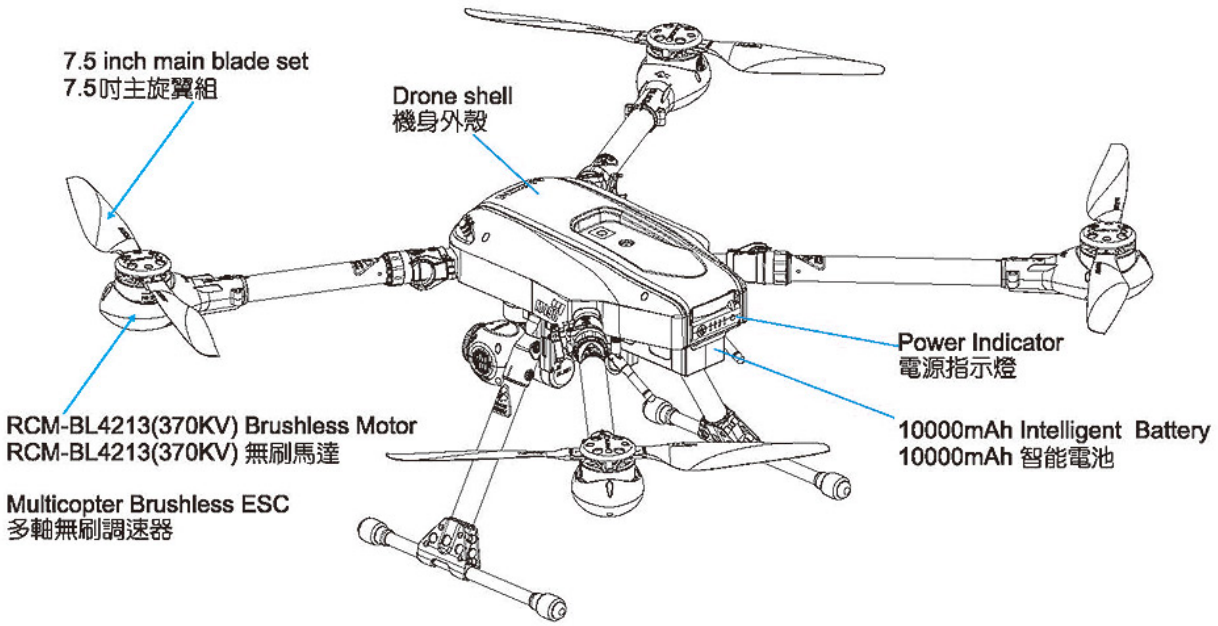
Before using the drone or flying for the first time, the power battery should be fully charged. Please use the standard charger to connect the intelligen battery.
10000mAh intelligent battery fully charged time: about 1 hour.

首次使用無人機及飛行前，應先將動力電池充滿電，請使用標配充電器連接智能電池。
10000mAh智能電池完全充滿電時間：約1個小時。

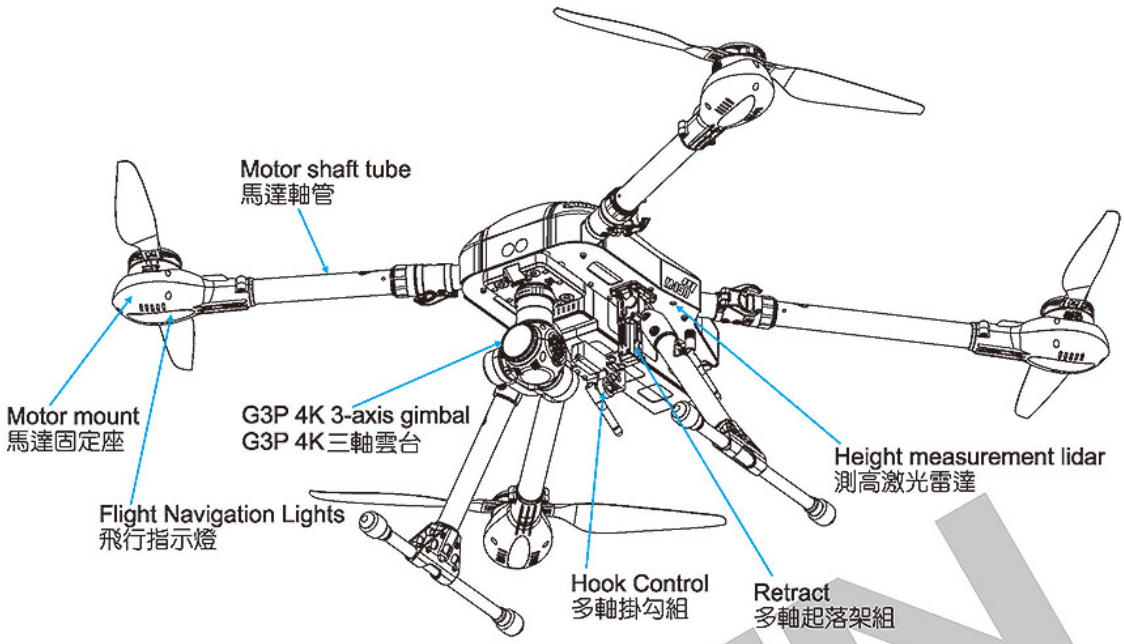


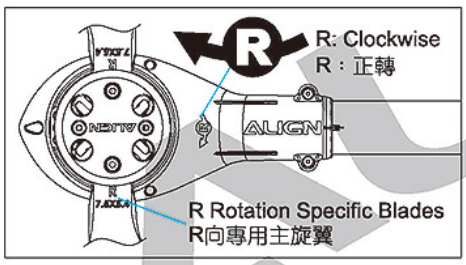

## DRONE COMPONENT LOCATIONS 無人機組件位置

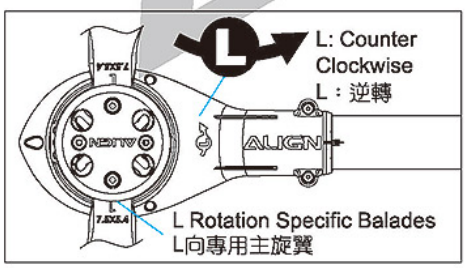


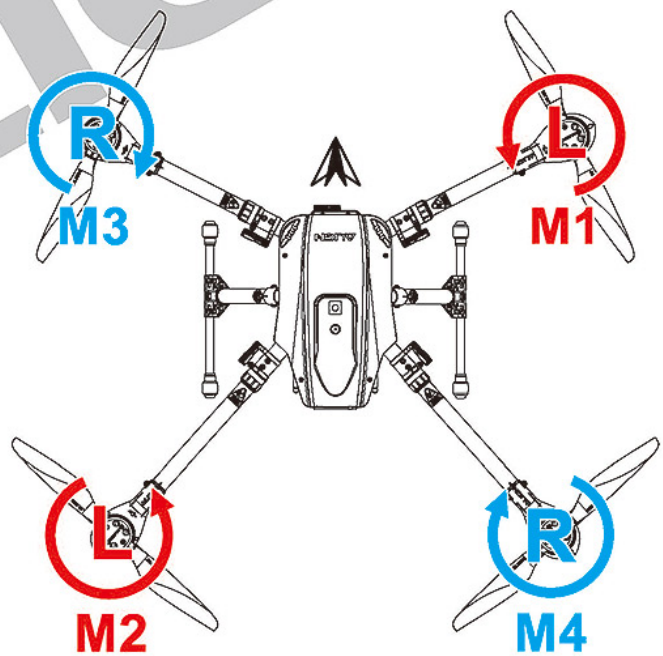
## DRONE COMPONENT LOCATIONS 無人機組件位置




## MOTOR ROTATION DIRECTION 馬達正逆轉方向




**CAUTION 注 意**

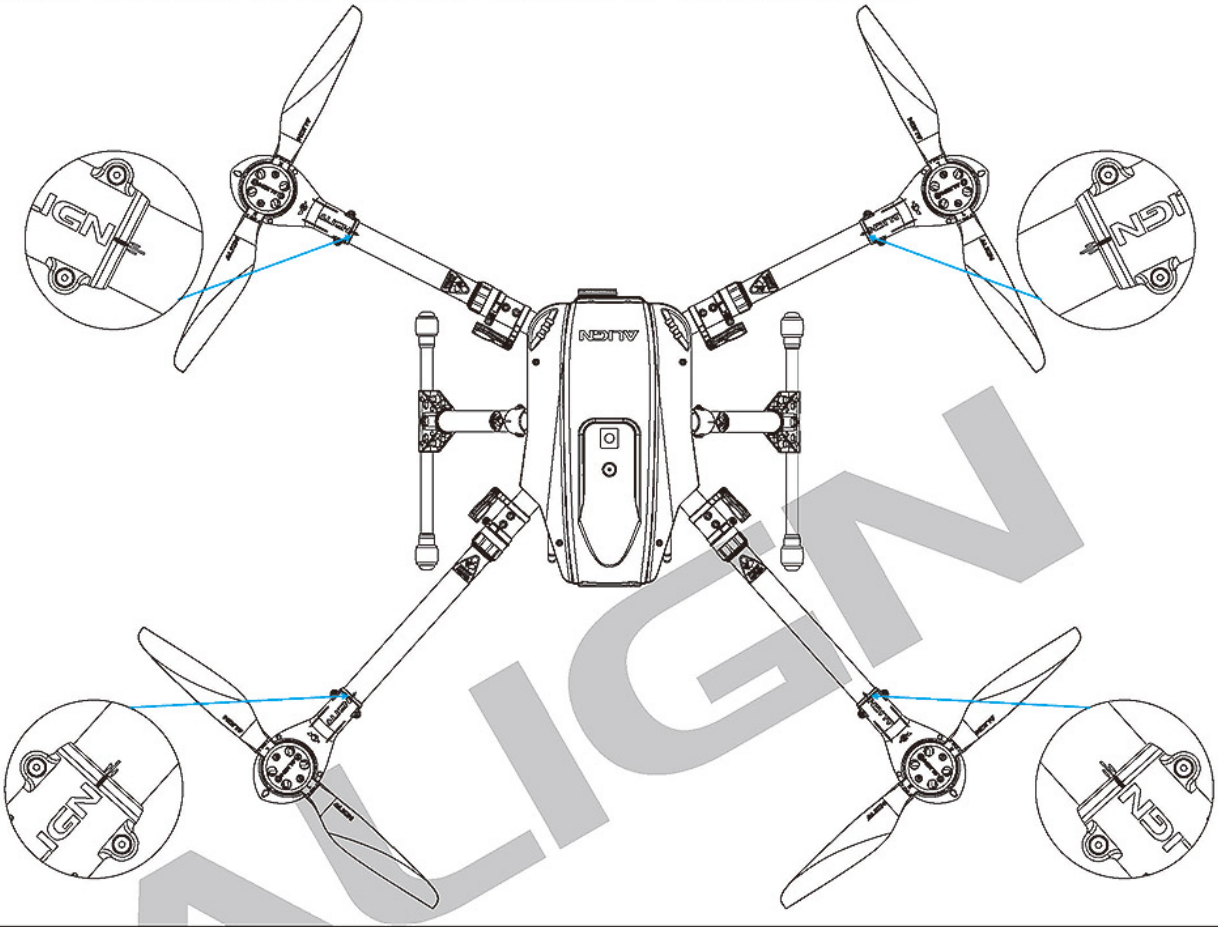
Identify the direction identifier on each motor mounts: R (clockwise) rotation motor must match R rotation blades; L (counter-clockwise) rotation motor must match L rotation blades. Incorrect sequence of motor tube assembly or changes made to rotational directions of motor I blades may cause immediate flip-over on takeoff, and result in unforeseen dangerous situation.

馬達固定座上所標示的正、逆轉方向符號：R向馬達組必須搭配R向主旋翼；L向馬達組必須搭配L向主旋翼。馬達軸管順序組裝錯誤或自行更改馬達、主旋翼R/L轉向，將會造成機體升空後翻滾、撞毀，嚴重的將導致不可預期的意外發生。

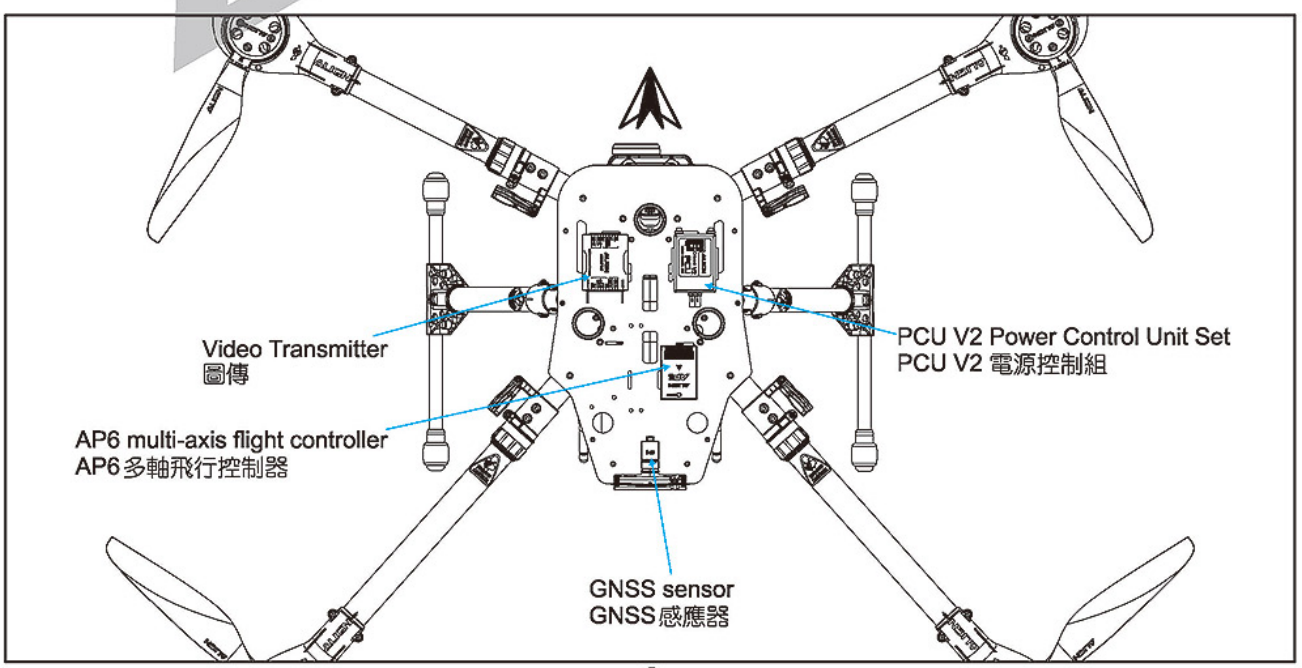
## MOTOR MOUNT ASSEMBLY SECTION 馬達座安裝示意圖

The center line scale of the motor base is aligned with the shaft tube scale line middle, which is the motor attack angle of 0 degrees. The assembly has been corrected before leaving the factory.

馬達座中心線刻度與軸管刻度線置中位置對齊，為馬達攻角0度，出廠時組裝已校正完成。



## ELECTRONICS WIRING ASSEMBLY DIAGRAM 電子設備配置示意圖



# M490 TOP AERIAL PHOTOGRAPHY / MISSION DRONE ELECTRICAL MODULE ARCHITECTURE DIAGRAM

## 10000mAh Intelligent Battery

- Specification: 22.2V/10000mAh 222Wh (6S1P)
- Supports 5C charging
- Size:215x55x67mm
- Weight:1170g
- Maximum sustainable discharge: 30C

## 6000mAh Intelligent Battery

- Specification:22.2V/60000mAh 133.2Wh (6S1P)
- Supports 5C charging
- Size:215x55x67mm
- Weight:840g
- Maximum sustainable discharge: 30C

Optiinal Equipment

## Retract

- Input voltage: DC 8.4-12V
- Operating temperature: -10° C to +50° C
- Expansion time: 12V/4s
- Expansion angle: 65°
- Dimensions: 70.08 x 40 x 31.41mm
- Weight: Approximately 66.5g

## PCU V2 Power Control Unit Set

- Input voltage: 13.2V~25.2V (4S~6S Li-Po)
- Operating frequency: 500KHz
- Operating temperature: -5°C~45°C
- Dimensions: 62x35x26mm
- Weight: Approximately 94.58g

## Front Obstacle Avoidance Radar

- Sensor category: laser sensor
- Detectable distance: 0.05-15M
- Dimensions/weight: 28x135x21mm/55g

## BL4213 (370KV) brushless motor set

- Input voltage: 22.2V
- Silicon steel sheet size: 4213
- Silicone steel sheet module: 12
- Number of magnet poles: 14
- Maximum continuous current: 25A
- Maximum continuous power: 550W
- Size: Φ4xΦ52x33mm
- Weight: 185g
- Multi-axis 3.5mm gold connector -male x 3 (Φ3.7x13mm)

## Height measurement lidar

- Sensor category: laser sensor
- Detectable distance: 0.05-15M
- Dimensions/weight: 28x135x21mm/55g


## Enhanced Control Hook

- Aluminum alloy material
- Input voltage: 5V~8.4V
- Operating temperature: -10° C~50° C
- Expansion time: 8.4V/5 seconds
- Maximum load capacity: 20kg
- Size: 71x27x35mm
- Weight: Approximately 57g

## GNSS satellite antenna

- GPS + Galileo + BeiDou+ Glonass

## G3P 4K 3-axis gimbal set

- Stabilization System:Three-Axis Mechanical Gimbal
- Controllable Rotation Range: pitch -8° to -90°; Pointing ±90
- Photoreceptor: 1/2.3" SONY COMS 12 million/ effective difference pixels 36 million
- Lens: FOV 100° 、aperture f/2.7、Focus：2 m to infinity
- Digital zoom: 4K-8X
- Shutter speed: 1 ~ 1/8000s
- Photo size: 8000x4496
- Photo shooting mode: single, continuous shooting
- Image format: JPEG/DNG
- Video format: MP4/H264、MP4/H265、MOV
- Video resolution: 4K (4096x2160) 60/30/24 fps
  2.7K (2720x1530) 60/30/24 fps
  1080p (1920x1080) 120/60/30/24 fps
  720p (1280x720) 120/60/30 fps
- Supported memory card types: MicroSDXC：V30 A1/A2 256GB

## AP6 flight control system

- Main processor: Model: STM32H753 Frequency: 480Mhz FLASH：2M RAM：1M
- IMU (shockproof level) (Gyroscope/Accelerator)ICM-20948 ICM-42688-P x2
- High-end barometer:MS5611 x2
- UART serial port: 7
- I2C (battery/GPS electronic compass interface): 2
- CAN (communication interface): 2
- PWM output: 10
- RC input: S.bus and A.bus
- Power input: 2 (5V IN & RC-IN)
- GPS / RTK interface: 2
- USB:TYPE-C
- Working voltage: 5V~8.4V
- USB voltage: 4.5V~5.5V
- Operating temperature: -40℃~85℃
- Weight: 33.1g
- Size:48.2*32.2*22.5mm

## A8 4K 3-axis gimbal

Optiinal Equipment

- Angle vibration range: ±0.01°
- Controllable pitch angle: -135° ~ +45°
- Controllable yaw angle: -160° ~ +160°
- Controllable roll angle: -30° ~ +30°
- Operating temperature: -10 ~ 50℃
- Image sensor Sony 1/1.7-inch CMOS, effective pixels 12 million
- Lens: 6x digital zoom, 4K (none), 2K (3.5x), 1080p (5x), 720p (6x)
- FOV: diagonal 93°, horizontal 81°
- TF recording resolution: 4K (4096*2160) 25 fps
  2K (2560*1440) 30 fps
  1080p (1920*1080) 30 fps
  720p (1280*720) 30 fps
- Photography/video format: JPG/MP4
- Supported MicroSD card: MicroSD Class10, up to 128 GB

## Air System Image Transmission Receiver

- Signal output: 16 channels
- Working voltage: 4.5-5.5V
- Operating current: 400~800mA@5V
- Support SUBS+UART digital flight control
- Network port: 2
- Interface: SBUS x1, URAT x1, PWM x2, LAN x2
- Dimensions/weight: 51 x41 x 13 mm/14 g

**2.4GHz**
Remote control signal

Transmission distance 6-10 kilometers (no interference)

**5GHz**

**5GHz**

**Ground station**

## Ground Station Transmitter

- Physical channels: 12
- Communication channels: 16
- Applicable models: helicopter/multi-axis aircraft
- Frequency range: 2.400~2.483GHz
- System mode: OFDM frequency hopping
- Power supply: 10000 mAh rechargeable lithium battery
- Maximum receiving distance: 6-10 kilometers in an open space without interference
- Weight/dimensions: 660 g/190x152x94mm

TV/monitor

HDMI wired connection
Image projection

Ground Station Transmitter can be shared via HDMI wired connection and capture images in real time for viewing on a TV/monitor.

## 智能電池 10000mAh
●規格:22.2V/10000mAh 222Wh (6S1P)
●支援5C充電
●尺寸:215x55x67mm
●重量:1170g
●最大可持續放電:30C

## 智能電池 6000mAh
●規格:22.2V/60000mAh 133.2Wh (6S1P)
●支援5C充電
●尺寸:215x55x67mm
●重量:840g
●最大可持續放電:30C

選配

## 多軸起落架組
●輸入電壓：DC 8.4-12V
●操作溫度：-10° C至+50° C
●展開時間：12V/4s
●展開角度：65°
●尺寸：70.08 x 40 x 31.41mm
●重量：約66.5g

## PCU V2電源控制組
●輸入電壓：13.2V~25.2V(4S~6S Li-Po)
●工作頻率：500KHz
●工作溫度：-5° C~45° C
●尺寸：62x35x26mm
●重量：約94.56g

## 前向避障雷達
●傳感器類別：激光傳感器
●可偵測距離：0.05-15M
●尺寸/重量：28x135x21mm/55g

## BL4213(370KV)無刷馬達組
●輸入電壓：22.2V
●砂鎮片尺寸: 4213
●砂鎮片模數：12
●磁鐵極數：14
●最大持續電流：25A
●最大持續功率：550W
●尺寸：Φ4xΦ52x33mm
●重量：185g
●多軸3.5mm金接頭-公 x 3 (Φ3.7x13mm)

## 測高激光雷達
●傳感器類別：激光傳感器
●可偵測距離：0.05-15M
●尺寸/重量：28x135x21mm/55g


## 加強型掛勾組
●鋁合金材質
●輸入電壓：5V~8.4V
●操作溫度：-10° C~50° C
●展開時間：8.4V/5秒
●最大承載：20kg
●尺寸：71x27x35mm
●重量：約57g

## GNSS衛星天線
●GPS + Galileo + BeiDou+ Glonass

## G3P 4K 三軸雲台組
●穩定系統：三軸機械雲台
●雲台可控角度範圍：俯仰 -8° 至 -90°
指向 ±80°
●影像傳感器：1/2.3" SONY COMS 1200萬/等值有效像素3600萬
●鏡頭：FOV 100° 、光圈f/2.7、/對焦點：2米至無限遠
●數位變焦：4K-8倍
●快門速度：1 - 1/6000s
●照片尺寸：8000x4496
●照片拍攝模式：單張拍攝、多張連拍、定時拍攝
●圖片格式：JPEG/DNG
●影片格式：MP4/H264、MP4/H265、MOV
●錄影解析度：4K (4096x2160) 60/30/24 fps
2.7K (2720x1530) 60/30/24 fps
1080p (1920x1080) 120/60/30/24 fps
720p (1280x720) 120/60/30 fps
●支援存儲卡類型：MicroSDXC：V30 A1/A2 256GB

## AP6飛行控制系統
●主處理器：型號：STM32H753
頻率：480Mhz
FLASH：2M
RAM：1M
●IMU(防震等級)
(陀螺儀/加速器)ICM-20948
ICM-42688-P x2
●高陽氣壓計:'MS5611 x2
●UART 串口：7個
●I2C (電池 / GPS電子羅盤接口):2個
●CAN (通訊接口):2個
●PWM輸出:10個
●RC輸入:S.bus及A.bus
●電源輸入:2組(5V IN及RC IN)
●GPS / RTK 接口:2個
●USB:TYPE-C
●工作電壓:5V~8.4V
●USB電壓:4.5V~5.5V
●工作溫度:-40°C~85°C
●重量:33.1g
●尺寸:48.2*32.2*22.5mm

## A8 4K 三軸雲台
選配
●角度振動範圍：±0.01°
●可控俯仰角：-135° ~+45°
●可控偏航角：-160° ~+160°
●可控橫滾角：-30° ~+30°
●工作溫度：-10 ~ 50 ℃
●圖像傳感器 索尼 1/1.7 英寸CMOS，有效像素1200萬
●鏡頭：6倍數位變焦、4K (無)、2K (3.5倍)、1080p (5倍)、720p (6倍)
●FOV：對角93° 、水平81°
●TF 錄製分辨率：4K (4096*2160) 25 fps
2K (2560*1440) 30 fps
1080p (1920*1080) 30 fps
720p (1280*720) 30 fps
●攝影/視頻格式：JPG/MP4
●支持的 MicroSD 卡：MicroSD Class10，最大 128 GB

## 天空端圖傳接收器
●信號輸出：16 通道
●工作電壓：4.5-5.5V
●工作電流：400~800mA@5V
●支援SUBS+UART數傳雙控
●網口：2個
●接口：SBUS x1、URAT x1、PWM x2、LAN x2
●尺寸/重量：51 x41 x 13 mm/14 g

2.4GHz
遙控器控制訊號

傳輸距離6-10公里（無干擾）

5GHz

5GHz

地面站

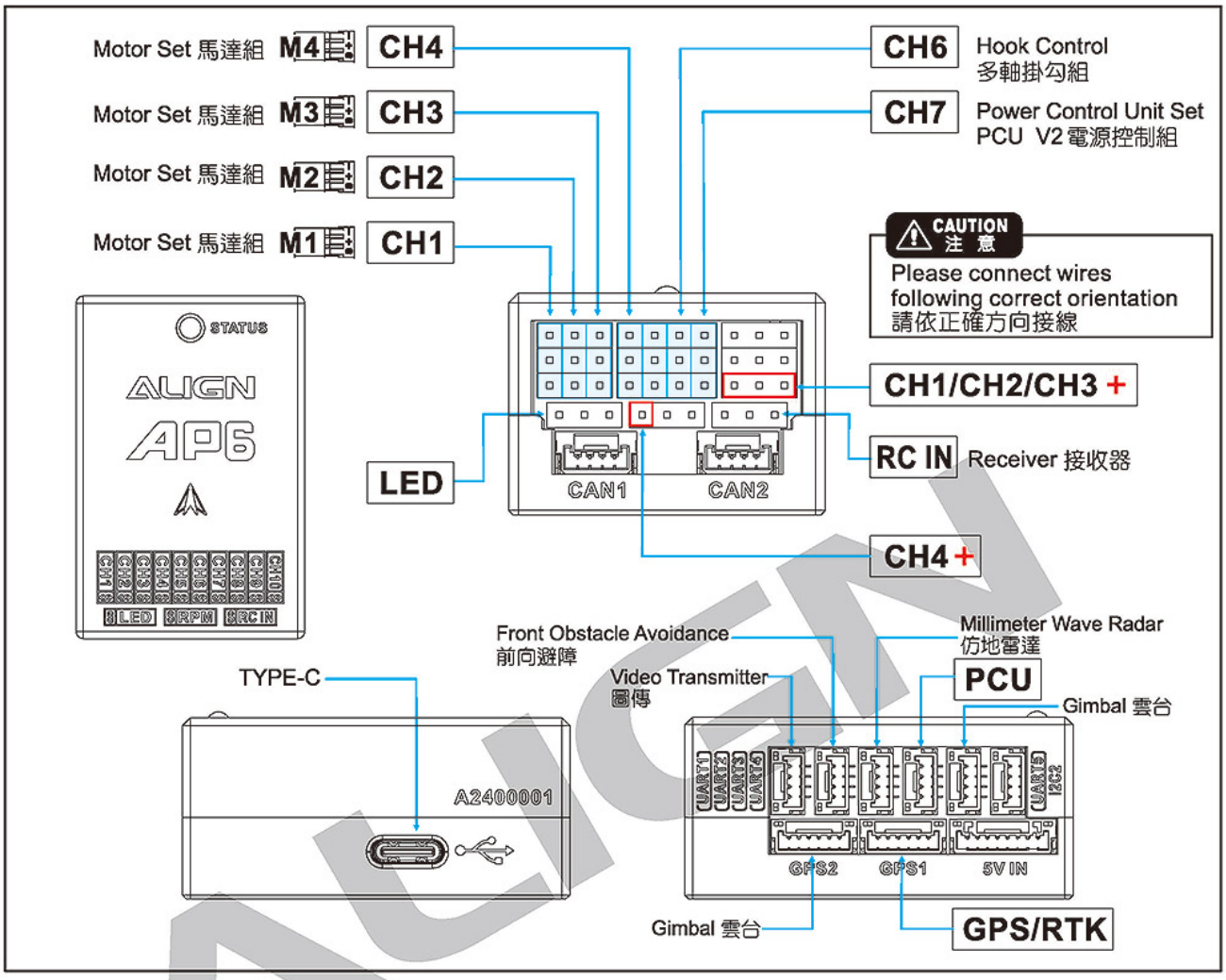
## 地面站遙控器
●物理通道：12個
●通訊通道：16 個
●適用機型:直昇機/多軸機
●頻率範圍:2.400~2.483GHz
●系統模式: OFDM跳頻
●電源:10000 mAh充電式鋰電池
●最大收訊距離：6-10公里空曠無干擾
●重量/尺寸: 660 g/190x152x94mm

HDMI有線連接
影像投影

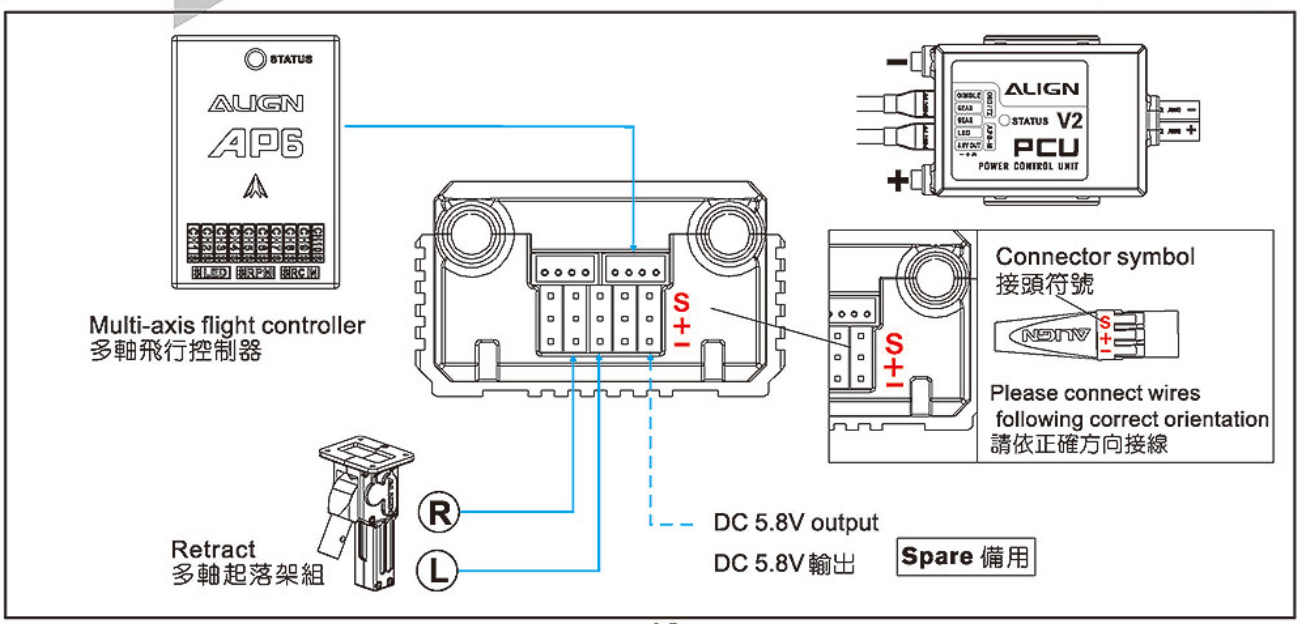
電視/顯示器

地面站遙控器可透過HDMI有線連接分享，即時拍攝影像給電視/顯示器觀看。

# AP6 MULTI-AXIS FLIGHT CONTROLLER WIRING DIAGRAM
## AP6多軸飛行控制器接線示意圖



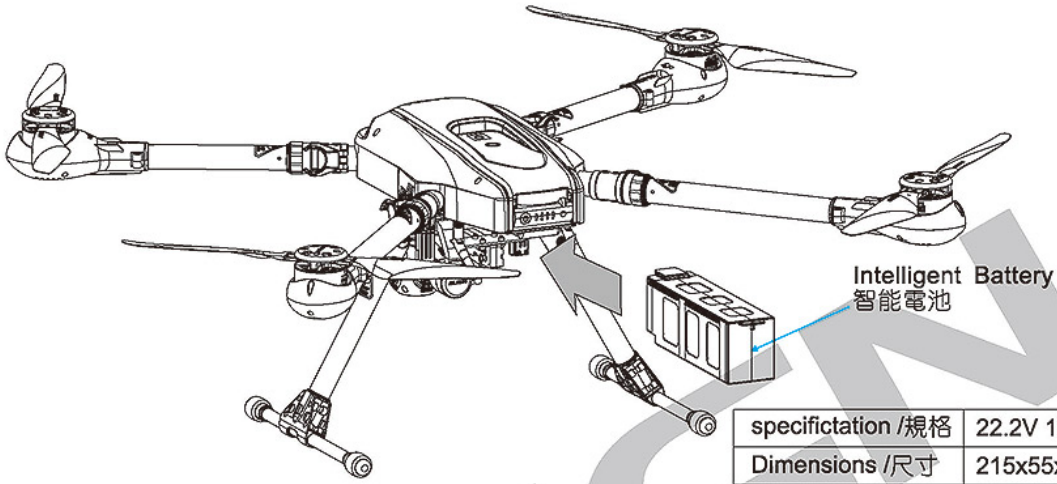

# PCU POWER CONTROL GROUP WIRING DIAGRAM
## PCU電源控制組接線示意圖



## INTELLIGENT BATTERY INSTALLATION DIAGRAM 智能電池安裝示意圖

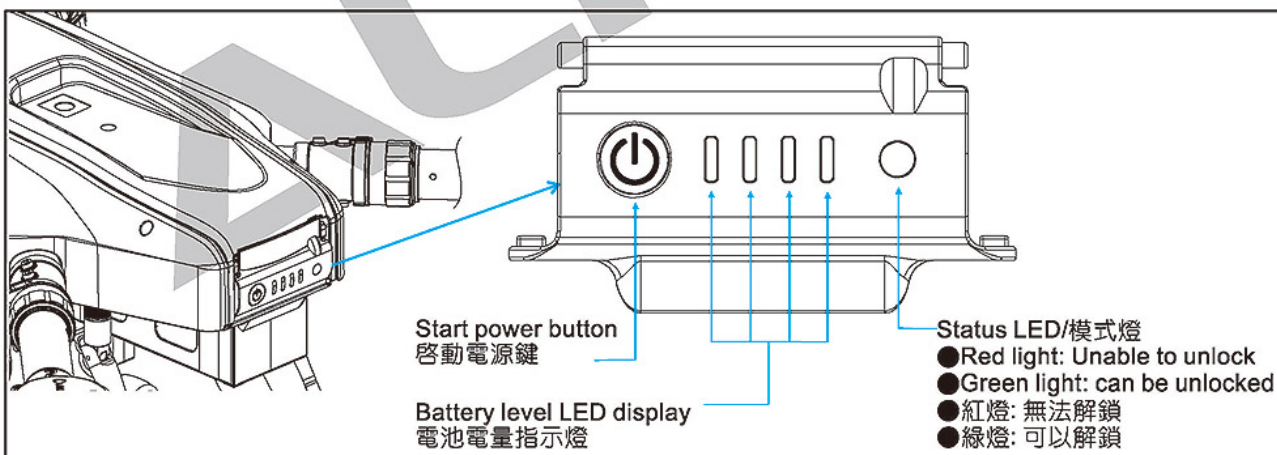
Brand new 10000mAh high-efficiency intelligent battery, exquisite appearance, one-piece quick-release slide rail design, which can easily replace the battery. The battery board is equipped with a new "anti-spark" patented design, which can effectively prevent sparks generated when the battery is quickly removed and inserted, reducing damage to electronic equipment and the problem of joint wear and poor contact. Equipped with battery indicator light, press the switch to display the current battery level.

全新10000mAh高效能智能電池，精緻外觀、一體成型快拆式滑軌設計，能簡易輕鬆抽換電池。電池板內搭載新型”防火花”專利設計，能有效防止電池快拆插入時所產生的火花，降低電子設備傷害及接頭耗損接觸不良問題。具電量指示燈號，按壓開關可顯示目前電池電量。




| | |
|---|---|
| specifictation /規格 | 22.2V 10000mAh 222Wh |
| Dimensions /尺寸 | 215x55x67 |
| Weight /重量 | 1170g |

## INTELLIGENT POWER CONTROL SYSTEM 智慧型電源控制系統




### POWER ON 電源開啓

Battery level check: Momentary press of power button to check remaining power.

Power On: Press and hold power button for 3 seconds until battery indicator LEDs light up and Status LEDs flash.

Power Off: Press and hold power button for 3 seconds until all LEDs shut off.

檢查電量：短按電源鍵檢視剩餘電量。

開啓電源：長按電源鍵3秒，電池電量指示燈亮起與模式燈閃爍，即完成開機動作。

關閉電源：長按電源鍵3秒，所有燈號熄滅，即完成關機動作。

### BATTERY LEVEL INDICATIO DESCRIPTION 電池電量指示燈說明

| Battery level LED display 電池燈號顯示 | Battery level indicator 電量顯示 |
|---|---|
|  | 75%~100% |
|  | 50%~75% |
|  | 25%~50% |
|  | 0%~25% |

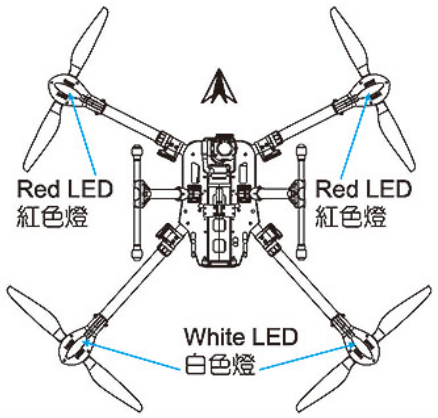
## FLIGHT NAVIGATION LIGHTS 飛行指示燈

### FLIGHT MODE STATUS LIGHT ICON ILLUSTRATION 飛行模式狀態燈號圖示說明

| Flight Mode/飛行模式 | Light display status/燈號顯示狀態 |
|---|---|
| attitude mode<br>姿態模式 | Light: flashing/ 燈號：閃爍 |
| GPS mode<br>GPS模式 | Light signal: always on/燈號：恆亮 |
| Auto return/自動返航<br>Failsafe、Low voltage protection<br>(失控保護、低電壓保護) | Light: flashes twice/燈號：閃爍兩次 |

After the drone is turned on, the indicator lights flash in sequence, and after the drone is turned off, the indicator lights all turn off.

無人機開機後指示燈依序閃爍、關機後指示燈全部關閉。



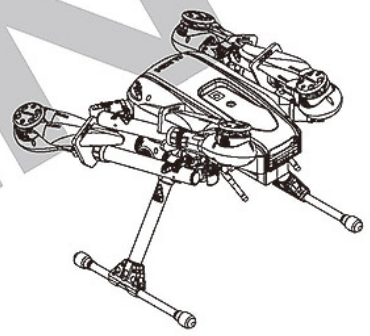

## COLLAPSIBLE MOTORARMS 馬達軸管收納示意圖

The quick-release design allows you to quickly fold the motor shaft tube without tools. The shaft tube folds inward, which can reduce the carrying volume and make storage and carrying more convenient. The low-noise, low-wind resistance, high-strength industrial-grade fiber composite plastic main rotor provides high efficiency and increases flight time. The foldable main rotor also increases portability.

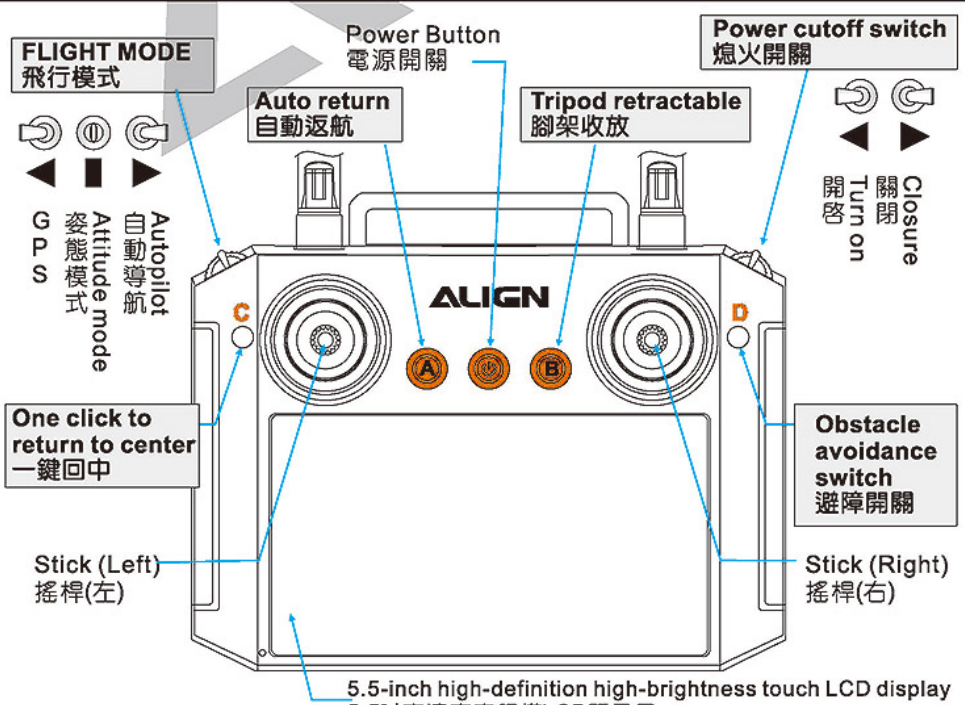
免工具就可快速收折馬達軸管的快拆設計，軸管向內收折，可減小攜帶體積，讓收納攜帶更便利。低噪音、低風阻、高強度工業級纖維複合塑膠主旋翼，提供高效率且增長飛行時間，主旋翼可收折設計，也增加攜帶的方便性。


When folding the motor shaft tube or retracting the tripod legs, please pay attention to safety and avoid getting your hands caught.

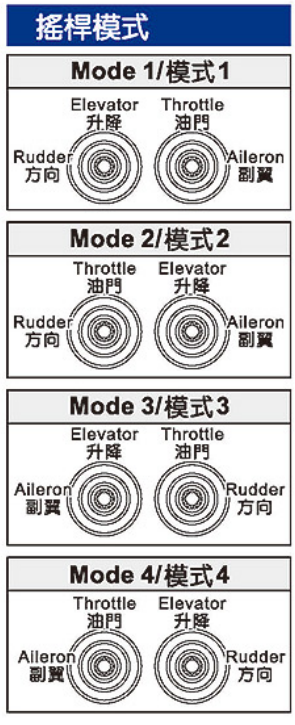
收折馬達軸管或收放腳架時，務必注意操作安全，避免夾傷手。



## GROUND STATION TRANSMITTER FUNCTION 地面站遙控器功能




### 搖桿模式



# AP3 SOFTWARE DOWNLOAD AND INSTALLATION AP3 下載安裝

Multicopter Flight Controller is flashed with the latest firmware version in factory.
Visit Align at www.align.com.tw for more news and firmware updates.
Please scan QR Code for link to ALIGN website.

多軸飛行控制器，在出廠前已是最新版本，請安心使用。您也可以連結至亞拓網站查詢，隨時更新亞拓發佈的最新版本及各項最新訊息。
請掃描QR Code連結亞拓網站下載相關軟體。

AP3/AP6 utilize ArduPilot's open-source flight controller firmware, which can be found on Align GitHub page.

## 1. TURN ON AP3 INTERFACE 開啓AP3 介面

The AP3 flight control system Disclaimer is displayed when the APP is launched for the first time. Please, read Align AP3 flight control system Agreement in it's entirety.

首次使用AP3 飛行控制系統，請詳讀免責聲明內容！一旦下載、安裝或使用 AP3飛行控制系統軟體或其中任何部分，即表示貴用戶同意遵守各項條款與細則。


When first using the system, you need to create a user account and password to protect user information. In the future, by entering the correct account (6 alphanumeric characters) and password (8 alphanumeric characters), you can successfully log in and use the system.

首次使用時，需創建使用者帳戶及密碼，以保護用戶資訊。
日後，輸入正確的帳戶(英文或數字6位數)、及密碼(英文或數字8位數)，成功登入後即可使用。


## 2.SELECT MODE 無人機機型

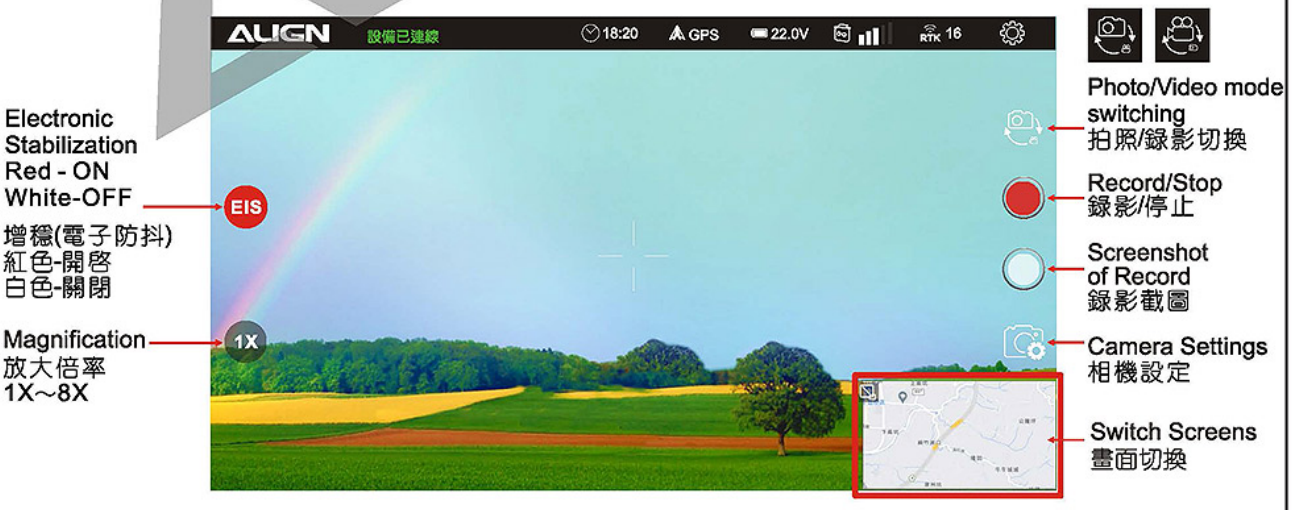
The used mode "Multicopter"
Press "Enter Ground Station" to enter ground station interface directly.
Please make sure the Multicopter has been connected correctly

顯示使用的機型。
點選〔進入地面站介面〕將直接進入地面站頁面。請確定已經正確連接飛行機。

# GROUND STATION BASIC INTRODUCTION 地面站基本資訊介紹

## MAP MODE 地圖模式


## CAMERA MODE 相機模式



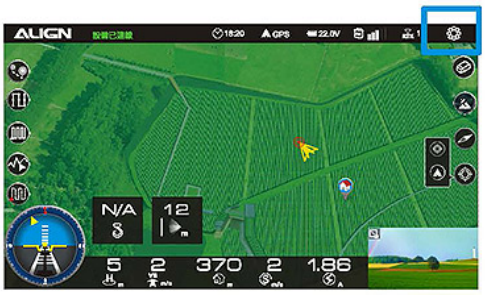

Camera mode options: Stabilization (anti-shake) on/off, zoom level 1~8X. Switch between photo/video, start/stop recording, capture screenshot while recording, and Camera Settings.

相機模式可選擇：增穩(電子防抖)開啓/關閉、放大倍率1~8倍。拍照/錄影切換、錄影/停止、錄影截圖、以及相機設定。

**CAUTION 注 意**

When the Electronic Stabilization function is turned off, you can use the zoom-in feature.
當增穩(電子防抖)功能關閉時，才可使用放大畫面。

## GENERAL SETTINGS 常用設置




Click "General settings" then you can start set up:
flight controller parameter settings, transmitter settings, video transmitter settings, GPS satellite, magnetometer calibration, aircraft status information, RTK settings, intelligent battery settings, and general settings.

〔常用設置〕可開啓飛控參數設置、遙控器設置、磁力計校正、飛行機狀態資訊、RTK設置、智能電池設置、通用設置。

### 1. FLIGHT CONTROLLER SETTINGS 飛控參數設置

#### A) AUTOMATIC RETRACTION SWITCH 自動收腳開關

Turn on the automatic foot retracting function: when the drone takes off and rises to 5M, the system will automatically retract the tripod. When the drone lands at 4M during flight, the system will automatically lower the tripod.

Turn off the automatic function and switch to manual control of the tripod retracting and retracting function.

開啓自動收腳功能：無人機起飛上升至5M時，系統會自動收啓腳架、飛行中降落至4M時，系統會自動放下腳架。

關閉自動功能，切換為手動控制收放腳架功能。


#### B)BASIC SETTINGS 基礎設置

Set automatic return altitude, return speed, flight speed, ascent speed, etc.

設定自動返航高度、返航速度、飛行速度、上升速度..等。


### 2. REMOTE CONTROL SETTINGS 遙控器設置

Displays the channel display.

顯示目前頻道。

### 3. MAGNETOMETER CALIBRATION 磁力計校正

Calibration must be perform whenever one of the following condition occurs:

- The initial install of Modules.
- Changes to the GPS module.
- Additions or removal to electronic equipment near the magnetometer(Servos, ESC, etc).
- When flying location differs from last compass calibration position by 300KM or more.s

在以下情況，必須做磁力計的校正：

- 第一次安裝多軸飛行控制器時。
- 更換或移動GPS感應器時。
- 增加或減少磁力計附近的電子裝置(伺服器、電子變速器等)時。
- 當變更飛行場地，位於上一次做磁力計校正動作的位置，兩地相隔距離300公里以上時，請必須重新校正一次。


### 4.AIRCRAFT FLYING INFORMATION 飛行機狀態資訊

Display Flight Time, Flight Mode, Flight Speed, Distance from HOME, Flight Altitude, Voltage, Currency, GPS Signal, Number of Satellites, and so on.

顯示飛行時間、飛行模式、飛行速度、HOME點距離、飛行高度、電壓、電流、訊號強度、衛星數量.....等相關資訊。

## 5.RTK SETTINGS RTK設置


Turn on the RTK positioning of the aircraft, display the longitude, latitude, altitude, heading angle; and GPS, Beidou, GLONASS, Galileo star number... and other related information.

開啓飛行器RTK定位，顯示經度、緯度、海拔、航向角；以及GPS、北斗、格洛納斯、伽利略星數.....等相關資訊。

## 6.NTELLIGENT BATTERY SETTINGS 智能電池設置

a) Set low battery alarm and severe low battery alarm.

b) Battery protection function

(1) When the battery power is low, the system voice will prompt Battery power is low, please return as soon as possible to replace the battery." In this case, please return as soon as possible to replace the battery

(2) When the battery reaches 20%, the system voice will prompt "Battery voltage is too low, perform return". At this time, the drone will automatically return to the home point and land on its own. Please replace the battery.

(3) When the battery reaches 8%, the voice will prompt "The battery voltage is seriously low, please land immediately to replace the battery." At this time, the drone will land at the current location to avoid crashing due to too low battery. "

a) 設置低電量警報、及嚴重低電量警報。


b) 電池保護功能

(1) 當電池電量低，系統語音會提示「電池電量低，請盡速返航更換電池」，此時請盡速返航更換電池。

(2) 當電量到達20%時，系統語音會提示「電池電壓過低，執行返航」，此時無人機會執行自動返航回到home點上方後自行降落，請更換電池 。

(3)當電量達到8%時，語音會提示「電池電壓嚴重過低，請立即降落更換電池」，此時無人機會降落在當時地點，以避免因為電量太低而摔機。

## 7. GENERAL SETTINGS 通用設置


a) Select voice prompt on/off.

b) Motor detection:

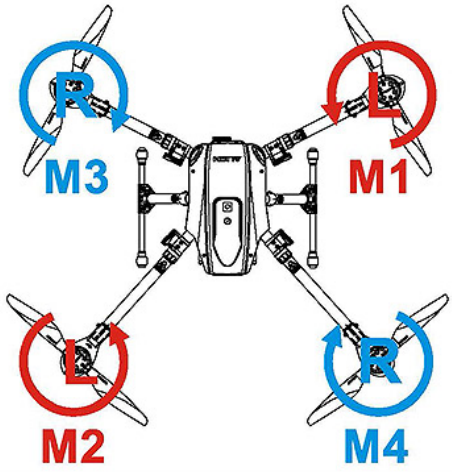
a) 選擇語音提示開啓/關閉。

b) 馬達檢測:

## MOTOR DETECTION 馬達檢測

When using this function, the motors M1, M4, M2, and M3 will slowly rotate clockwise for about 3 seconds. During the test, be sure to carefully check whether the steering of each motor is normal. Wrong steering will cause an accidental rollover during takeoff. The rotor rotation process is dangerous. When inspecting, please first confirm that there are no debris around the multi-axis machine, and people should stay away from the main rotor rotation range to avoid danger.

使用此功能時，馬達會順時針方向 M1 、M4 、M2 、M3依序慢速轉動約3秒，測試時務必仔細檢視各馬達轉向是否正常，錯誤的轉向將導致起飛時翻機意外，馬達主旋翼轉動過程有危險性，檢測時請先確認多軸機旁無雜物，並且人要避開主旋翼轉動範圍，以免發生危險。




**WARNING 警 告**

When testing, please confirm that the motor rotates in sequence from M1, M4, M2, M3 clockwise. Please check whether the rotation direction printed on the motor base is correct. If it is incorrect, please do not fly.

檢測時，請確認馬達由**順時針方向 M1 、M4 、M2 、M3 依序轉動**，請核對是否與馬達座印刷轉動方向正確，如果不正確，請勿飛行。

## AP3 OFFER TWO KINDS OF MISSION PLANNER AP3具備兩種任務規劃方式

### 1.REMOTE TARGET ROUTE PLANNER 遠端路徑規劃

Use multi-point path coordinates to fly to designate location. The flight height, flight speed and flight modes can be set up on every point path (max. 200 waypoints).

Basic Setup: flight height, flight speed and flight mode. .etc. After setup, press "Upload data to flight controller".

Advanced Setup: sub-trim based on personal usage habits. It's set up to optimization in factory, basic works can be skip.

利用多點式路徑點座標，執行命令飛至指定的目的地，每個路徑點可設定飛行高度、速度，最多可設定200個路徑點。

基本設置:飛行高度、飛行速度等，設定完成後，按〔數據上傳至飛控〕。

進階設置:為個人使用習慣微調，出廠時已調至最佳化，一般作業可省略不需設定。


### 2. REGIONAL ROUTE PLANNER 區域路徑規劃

Select the desired area on the map at the ground station where the flight mission is to be conducted. The system will automatically plan based on the selected area, allowing for up to 200 waypoints to be set. It will compute a flight path covering the entire area. You can adjust the direction angle of the flight path, the altitude of the waypoints, spacing between them.

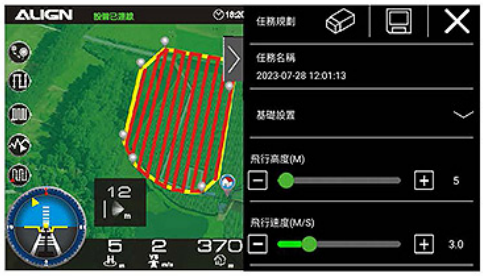
Basic settings such as flight altitude and speed need to be configured. Once set, click 'Upload Data to Flight Controller.'

Advanced settings are available for fine-tuning according to individual preferences but are factory optimized for general use and can be skipped for regular operations.

於地面站的地圖上點選所要執行飛行任務的範圍，由系統依點選的區域自動規劃，最多可設定200個路徑點，運算出涵蓋整個範圍面積的飛行路徑。可調整移動飛行路徑方向的角度、飛行路徑點的高度、間距。

基本設置:飛行高度、飛行速度等，設定完成後，按〔數據上傳至飛控〕。

進階設置:為個人使用習慣微調，出廠時已調至最佳化，一般作業可省略不需設定。




### FLIGHT RECORD 飛行記錄

Flight record can auto record every mission status in bar type display, simultaneously accumulate flight time, or re-calculate the record. If there are lots of records, it can enter key words to narrow down search range to find out the record information rapidly and precisely.

飛行記錄可自動記錄每趟任務的執行狀況，條列式展出，同時可累計飛行時間，或將其記錄歸零重新計算。

當有多筆記錄時，亦可輸入關鍵字縮小搜尋範圍，快速精準的尋找該筆飛行資料。

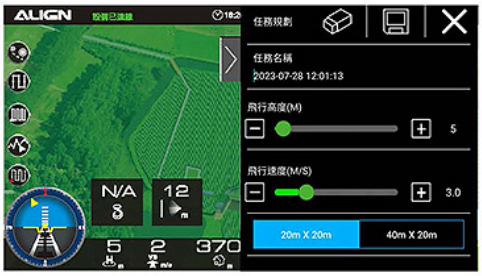

### SINGAL MISSION DETAILS 單趟任務細節

Each flight mission can be saved in detail :

mission content, working power energy, contact information, next working reminder...etc. Simultaneously record voltage line chart, photos, and export.

可詳細記錄每筆飛行記錄，同時記錄電壓折線圖，作為統計分析及參考數據。

## EXAM MODE 考場模式




Exam mode: You can choose the area of the exam area as 20Mx20M or 20Mx40M for flight practice.

考場模式:可選擇考場範圍為20Mx20M、或20Mx40M，做為考照飛行練習。

## MAP MODE 地圖模式

Different map versions, ways of finding north, positioning modes can be choosed :
Map Version: Earth Mode, Maps Mode, Mix Mode.
Finding North: Maps Direction, Directioons North.
Locating Mode: Aircraft Positioning, Maps Posit.

地圖模式可選擇地型顯示方式、指向回北、定位模式。
地型顯示選項：衛星模式、地圖模式、混合模式切換。
指向回北選項：地圖方向、地圖回北切換。
定位模式選項：多軸機定位置中、地圖定位置中。


Switch screens by clicking the picture-in-picture on the bottom right for Camera Mode or Map Mode.
點擊右下方子母畫面，可切換主畫面為相機模式或地圖模式。

Switch Screens
畫面切換

## CAMERA MODE 相機模式

Camera mode options: Stabilization (anti-shake) on/off, zoom level 1~8X. Switch between photo/video, start/stop recording, capture screenshot while recording, and Camera Settings.

相機模式可選擇：增穩(電子防抖)開啓/關閉、放大倍率1~8倍。拍照/錄影切換、錄影/停止、錄影截圖、以及相機設定。


When the stabilization (Electronic Image Stabilization) function is turned off, you can zoom in on the image. When ending the zoom, re-enabling EIS will restore the image to its original 1x magnification.
當增穩(電子防抖)功能關閉時，才可使用放大畫面。
結束放大倍率，重新開啓EIS，影像會恢復1倍畫面。


- Photo/Video mode switching: Switches the camera between photo mode and video mode.
- Screenshot of Record: When the button is pressed, the camera captures the current image or scene.
- Camera Settings: Allows for settings such as ISO sensitivity, EV (Exposure Value), white balance, and sharpness. Also includes options for selecting photo resolution and quality, continuous shooting, interval shooting, photo format, returning image resolution, metering mode, light source frequency, etc.

- 拍照／錄影切換：切換相機為拍照模式或錄影模式。
- 錄影截圖：當按下按鍵時，相機會捕捉當下的影像或場景。
- 相機設定：可設定ISO感光度、EV曝光值、白平衡、銳利度。選擇照片解析和品質、連拍、定時拍照、拍照格式...。以及回傳影像分辨率、測光模式、光源頻率....等。

## CAMERA PARAMETERS 相機參數

- ISO : In brighter lighting conditions, you can use lower ISO values to achieve suitable exposure. Conversely, when there's less available light, you need higher ISO values to compensate.
- EV : With the correct exposure, higher EV values result in brighter images, while lower values make them darker.
- White Balance : Adjusting the camera to capture the natural colors of objects in the image, ensuring they appear true to life under different light sources.
- Picture Styles : There are three settings: Sharpness/Saturation/Contrast

(1) Sharpness enhances or reduces detail and edges.
(2) Saturation adjusts the intensity of colors.
(3) Contrast adjusts the difference in brightness between highlights and shadows.

- ISO：在較亮的光線下，可使用較低的ISO值，達到適合光線充足的情境。反之，當可用光線較少時，您需要較高的ISO值進行補償。
- EV ：在正確的曝光下，EV 值越高，影像越亮；反之，越低則越暗。
- 白平衡：調整相機以捕捉影像中物體的自然色彩，使其看起來在不同光源下都能呈現真實的顏色。
- 風格：共三種設定功能，分別銳度/飽和/對比。

(1) 銳度調整細節和邊緣進行增強或減弱。
(2) 飽和調整色彩的鮮艷度。
(3) 對比調整影像中亮部和暗部之間的差異程度。


## PHOTO MODE 拍照模式

- Single Shot : Each time the capture button is pressed, the camera captures only one photo.
- Burst Mode : Each time the capture button is pressed, the camera captures a continuous series of photos based on the set number.
- Timer Mode : After pressing the capture button, the camera continuously captures photos after a set delay time; pressing the capture button again stops the timer function.
- Photo Size : Offers multiple size options; the larger the size, the slightly longer the save time.
- Photo Formats

(1) JPG = Standard photo format.
(2) JPG+DNG = DNG is the lossless compressed original image format.

- Date Stamp : When enabled, the current date and time will appear in the bottom right corner of the photo.

- 單拍：每次按下拍照按鈕，相機只會拍攝一張照片
- 連拍：每次按下拍照按鈕，依造設定張數連續拍照片
- 定時：按下拍照後，相機會持續地在設定的延遲時間後自動拍攝照片，可以再次按下拍照來停止定時功能。
- 照片尺寸：提供多種尺寸選擇，尺寸越大，需要稍微等待存檔時間。
- 照片格式：

(1)JPG = 一般照片格式
(2)JPG+DNG = DNG為無損壓縮的原始影像格式。

- 日期水印：開啓後，照片右下角會顯當下日期與時間。

## RECORDING MODE 錄影模式

- The higher the resolution, the greater the detail and clarity in the image.
- FPS stands for frames per second, indicating the number of frames captured and recorded per second of video. Higher FPS is available, but it does not support EIS (Electronic Image Stabilization) comparatively.

※Below are the resolutions and FPS without stabilization:4K 60fps, 2.7K 60fps, 1080P 120fps, 720P 120fps

- Video formats:

(1) MP4/H264 = Standard video format.

(2) MP4/H265 = More advanced technology format, resulting in smaller files, but playback and post-production processing may require better hardware specifications.

(3) MOV = Developed by Apple, initially used for the QuickTime multimedia player.

**※ It is recommended to use MP4/H264.**

- Date watermark: When enabled, the current date and time will appear in the bottom right corner of the video.

- 分辨率越高，影像中的細節和清晰度就越高。
- FPS代表錄影每秒捕捉和記錄的影像幀數。提供更高FPS，但相對不支援EIS(增穩技術)

※以下為無增穩分辨率與FPS：

4K 60fps、2.7K 60fps、1080P 120fps、720P 120fps

- 影片格式

(1) MP4/H264 = 標準影像格式

(2) MP4/H265 = 較先進技術格式，檔案較小，但相對撥放影片與後製處理，硬體規格需要更好

(3) MOV = 蘋果公司開發，最初用於 QuickTime 多媒體播放器。

**※ 建議設置為：MP4/H264**

- 日期水印：開啓後，影片右下角會顯當下日期與時間。


## CAMERA SETTINGS 相機設置

- Video Transmission Resolution: This determines the quality and clarity of the transmitted image. 640P is the optimal setting.
- Metering Mode:

(1) Center Metering: The camera meters the central area of the frame.

(2) Multi-spot Metering: Calculates average exposure based on the brightness and contrast of multiple points in the frame.

- Grid: Displays reference lines on the transmission screen to aid in composition.
- Center Point: Displays a crosshair on the transmission screen for directional reference.
- Light Source: Due to varying standard frequencies in power grids across different countries and regions, it's recommended to set it to AUTO.
- Camera Firmware Version: Provides users with relevant information about the camera's firmware to determine if an update is needed.
- Format SD Card: Deletes images from the SD card inserted in the camera.
- **Reset Camera Parameters: Restores the camera to its factory default settings.**

- 回傳影像分辨率：此為回傳畫面質量和清晰度，640P為最佳設定值。
- 測光模式：

(1) 中間測光：相機對畫面中央區域進行測光。

(2) 多點測光：根據畫面中多個點的亮度和對比度來計算平均曝光。

- 網格：在回傳螢幕上顯示參考線，提供畫面構圖依據。
- 中心點：在回傳螢幕上顯示十字點，提供飛行方向參考。
- 光源頻率：許多國家和地區，電力網絡的標準頻率不同，建議設AUTO。
- 相機韌體版本：提供使用者有關相機韌體的相關資訊，了解是否需為最新版本的韌體。
- 格式化SD卡：將插在相機裡SD卡影像刪除。
- **重置相機參數：恢復相機原廠預設值。**

## PLEASE PRACTIOTEC SIMULATION FLIGHT BEFORE REAL FLYING
## 飛行前請事先熟練電腦模擬飛行

A safe and effective way to practice is to use commercially available simulator software to fly on a computer launcher. Carry out simulated flight until your fingers are familiar with the rudder movements, and continue practicing until your fingers are familiar with the rudder movements.

1. Place the drone in an open area (make sure the power is turned off) and point the tail of the drone towards you.
2. Practice operating the throttle stick (as shown below) and repeat the exercise "Throttle high/low", "Aileron left/right", "rudder left/right" and "elevator up/down".
3. Simulated flight practice is very important, please keep practicing until you hear Until the fingers can move naturally when operating instructions.

在還沒瞭解無人機各動作的操控方式前，嚴禁實機飛行，請先進行電腦模擬飛行的練習，一種最有效、最安全的練習方式，就是透過市面販售的模擬軟體，以遙控器在電腦上模擬飛行，熟悉各種方向的操控，並不斷的重複，直到手指可熟練的控制各個動作及方向。

1.將無人機放在空曠的地方(確認電源為關閉)，並將無人機的機尾對準自己。
2.練習操作遙控器的各搖桿(各動作的操作方式如下圖)，並反覆練習油門高/低、副翼左/右、升降舵前/後及方向舵左/右操作方式。
3.模擬飛行的練習相當重要，請重複練習直到不需思索，手指能自然隨著喊出的指令移動控制。

| MODE 1 | MODE 2 | Illustration 圖示 |
|---|---|---|
| Aileron 副翼 | | Move Left 左移 / Move Right 右移 / Rotate Left 左翻 / Rotate Right 右翻 |
| Elevator升降/前後 | | Fly forward 前進 / Fly Backward 後退 / Forward Rotate 前翻 / Backward Rotate 後翻 |
| Throttle 油門 | | Ascent 上升 / Descent 下降 |
| Rudder 方向 | | Turn Right 右旋 / Turn Left 左旋 |

## STAY AWAY FROM OBSTACLES AND CROWDS 遠離障礙物與人群

R/C aircraft can fly at high speed, thus posing a certain degree of potential danger. Choose a legal flying field consisting of flat, smooth ground without obstacles. Do not fly near buildings, high voltage cables, or trees to ensure the safety of yourself, others, and your model. Avoid location with magnetic and radio interferences. Please choose a legal flying field. Do not fly your model in inclement weather, such as rain, wind, snow or darkness.

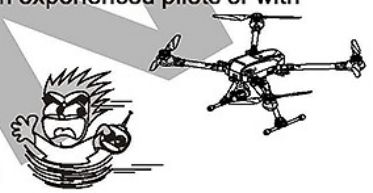
遙控無人機飛行時具有一定的速度，相對的也潛在著危險性，場地的選擇也相對的重要，請需遵守當地法規到合法遙控飛行場地飛行。必須注意周遭有沒有人、高樓、建築物、高壓電線、樹木等等，避免磁場干擾、外力訊號干擾及操控的不當造成自己與他人財產的損壞。請務必選擇在空曠合法專屬飛行場地。請勿在下雨、打雷、沙塵等惡劣天候下操作，以確保本身及機體的安全。

## DO NOT FLY ALONE 避免獨自操控

Before turning on your model and transmitter, check to make sure no one else is operating on the same frequency. Frequency interference can cause your model, or other models to crash.

The guidance provided by an experienced pilot will be invaluable for the assembly, tuning, trimming, and actual first flight or unforeseen danger may happen. (Recommend you to practice with experienced pilots or with computer-based flight simulator firstly.)

至飛行場飛行前，需確認是否有相同頻率的同好正進行飛行，因為開啓相同頻率的發射機將導致自己與他人立即干擾等意外危險。遙控無人機操控技巧在學習初期有著一定的難度，要盡量避免獨自操作飛行，需有經驗的人士在旁指導，才可以操控飛行，否則將可能造成不可預期的意外發生。(勤練電腦模擬器及老手在場指導是入門必要的選擇)



## DO NOT POINT THE DRONE TOWARDS YOUR EYES 禁止將無人機對著眼睛

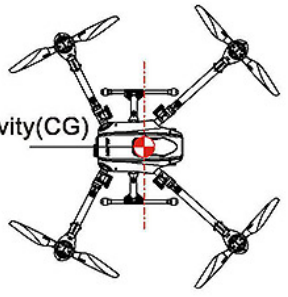
It is strictly forbidden to grab the running drone with your hands, and it is forbidden to point the drone towards your eyes. After the main rotor rotates, or when taking off/test flight, be sure to stay away from obstacles. The standing position must be more than 10 meters away to avoid human interference. Improper assembly may cause parts to fall off, causing unexpected damage to property and personnel.

嚴禁用手抓取運行中的無人機，並禁止將無人機對著眼睛，當主旋翼轉動後，或起飛／試飛時，務必遠離障礙物，站立位置必需距離10公尺以上，避免因人為組裝不當造成零件脫落，而引發不可預期的財物及人員損傷。

## CENTER OF GRAVITY ADJUSTMENT 重心調校

The aircraft needs to be balanced at the Center of Gravit(CG) point with full payload onboard. Improper CG balance may cause flight instability and/or uneven power consumption of the motors, and may even leads to crash in worse case scenario.

飛行前務必確認，並調整好全載重機體的重心位置，偏移的重心容易導致飛行不穩與馬達受力不均的耗電、損傷，嚴重將導致不可預期的失衡摔機。




## CHECK THE WIRE DIRECTION 檢查插線

Make sure to install the wires rith "up" imprint facing up, and ensure the plug is inserted deep enough. Improper plug insertion may lead to poor connecion or even malfunction of the unit.

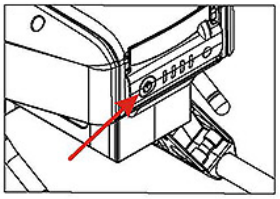
插線時，請務必將刻有UP字樣端口朝上，對準插座後，確實將插頭完全插入到底，若無確實插入定位，將導致接觸不良、飛行控制系統不動作等問題產生！

## POWER UP PROCEDURE WHEN MOUNTED TO ALIGN DRONE 掛載於亞拓無人機開機步驟

1. Turn on RC transmitter power
開啓遙控器電源

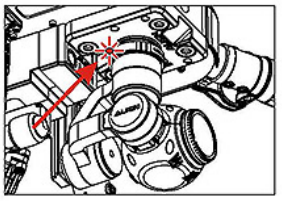
Press and hold for 2 seconds to Power ON
長按2秒，電源開啓

2. Turn on Drone power
開啓無人機電源



Press and hold for 5 seconds to power up
長按5秒，無人機開機

3.Gimbal power up
雲台電源啓動

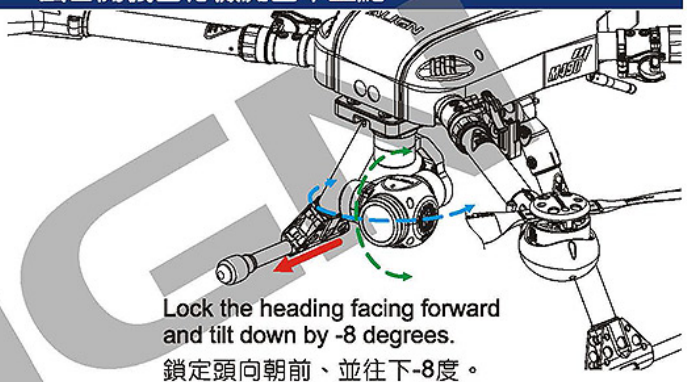


Successful power up is indicated by gimbal status LED shows red.
雲台狀態指示燈顯示紅燈恆亮，代表開機完成。

## GIMBAL AUTOMATIC POWER ON TEST 雲台開機自行檢測回中立點

Gimbal automatically performs 3-axis neutral point calibration after power on. The process takes about 10 seconds, Lock the heading facing forward and tilt down by -8 degrees.

開啓電源後，雲台會自動校正三軸中立定位點檢測，過程約10秒鐘自檢完成，鎖定頭向朝前、並往下-8度。



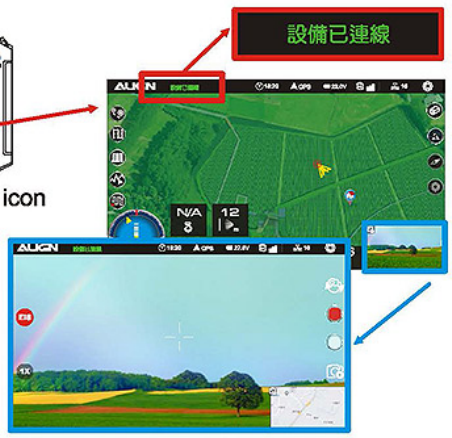
Lock the heading facing forward and tilt down by -8 degrees.
鎖定頭向朝前、並往下-8度。

## CHECK THE CONNECTION STATUS WITH THE GROUND STATION 檢查與地面站連線狀況

1. Click on the AP3 icon on the remote controller page to open the app.
2. Wait for the device connection status to appear in the top left corner of the interface.
3. Once the connection is established, the G3P video feed will appear in the bottom right corner. You can click on the video feed window to switch to zoom mode.

1. 點擊遙控器頁面AP3 icon ，開啓APP。
2. 等待介面左上角顯示設備連線狀態。
3. 連線完成後右下角會顯示G3P影像回傳畫面。可點擊影像回傳畫面視窗切換放大。

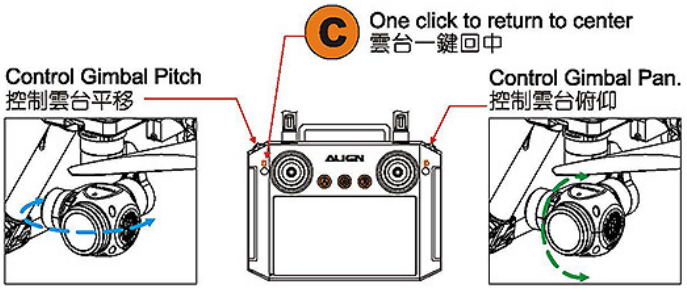
Click on the AP3 icon
點擊AP3 icon




## REMOTE CONTROLLER FOR GIMBAL CONTROL 遙控器控制雲台動作

1. Use the right dial on the remote controller to control the gimbal's pitch and the left dial to control its pan.
2. Press the left button [C key] to center the gimbal with a single click.

1. 透過遙控器右邊撥輪：可控制雲台俯仰、左邊撥輪：控制雲台平移。
2. 點擊左側按鈕〔C鍵〕控制雲台一鍵回中。

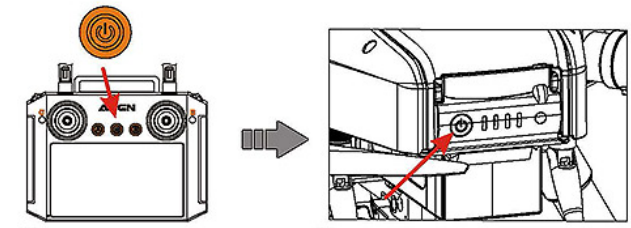


# POWER ON STEPS AND SHUT DOWN 啓動電源步驟與關閉

## M490 POWER ON STEPS M490啟動電源步驟

1. Turn on the power of the remote control (press and hold for 2 seconds).
2. Press and hold the power of the drone for 3 seconds.
3. If it is idle for 10 minutes after being powered on and does not take off or rock the stick, the motor will sound a warning sound.

1.開啓遙控器電源(長按2秒)。
2.無人機電源長按3秒。
3.通電後閒置10分鐘若未起飛或未動搖桿，馬達會發出警告音提示。



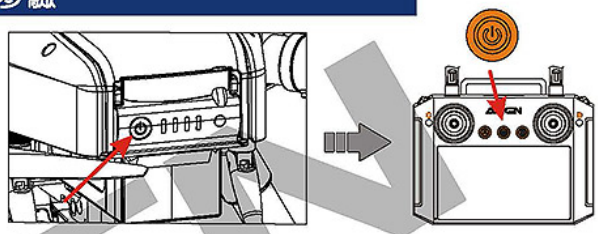
① Power on 電源開啟

② Press and hold for 3 seconds to turn on 長按3秒開機

## M490 POWER OFF STEPS M490關閉電源步驟

1. Press and hold the power of the drone for 3 seconds.
2. Turn off the power of the remote control (press and hold the power switch until the screen displays shutdown or restart, then click the shutdown button to shut down the remote control).

1.無人機電源長按3秒。
2.關閉遙控器電源（長按電源開關等待銀幕顯示關機或重新啓動，再點選關機按鈕，執行遙控器關機）。



① Press and hold for 3 seconds to turn off 長按3秒關機

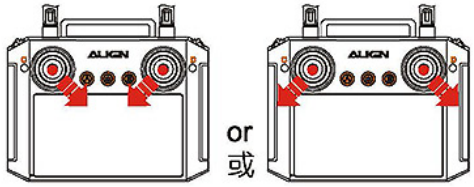
② Power off 電源關閉

# STARTER MOTOR POWER AND SHUTDOWN 啓動馬達動力與關閉

## STARTER MOTOR POWER 啟動馬達動力

Turn the two rockers [inward and downward] or [outward and downward] 45° to start the motor.

將兩支搖桿〔向內向下〕或〔向外向下〕45° 即可啓動馬達。

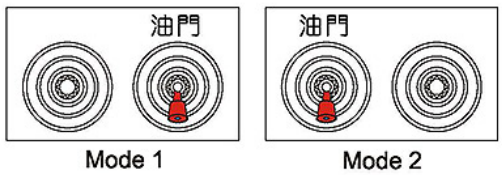



## TURN OFF THE MOTOR POWER (THERE ARE TWO WAYS TO TURN OFF THE POWER) 關閉馬達動力（關閉動力有分兩種方式）

**1. Normally shut down the motor power:**

When the tripod is indeed on the ground, 3-4 seconds after pulling the throttle stick down to the bottom, the motor will turn off power (please note the different positions of the throttle in Mode1 and Mode2).

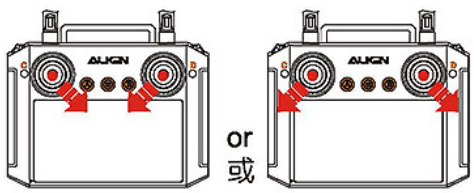
**1.**正常關閉馬達動力：
腳架確實落地，下拉油門搖桿到底3-4秒後，馬達即關閉動力（請注意Mode1 Mode2油門不同位置）。




**2. Quickly turn off motor power:**

After the tripod has truly landed, pull the throttle to the bottom for 2 seconds, then move the left and right joysticks (inwards and downwards) or [outwards and downwards] 45° to quickly turn off the motor power.

**2.**快速關閉馬達動力：
腳架確實落地，下拉油門到底2秒後，再打左右搖桿〔向內向下〕或〔向外向下〕45° 即可快速關閉馬達動力。

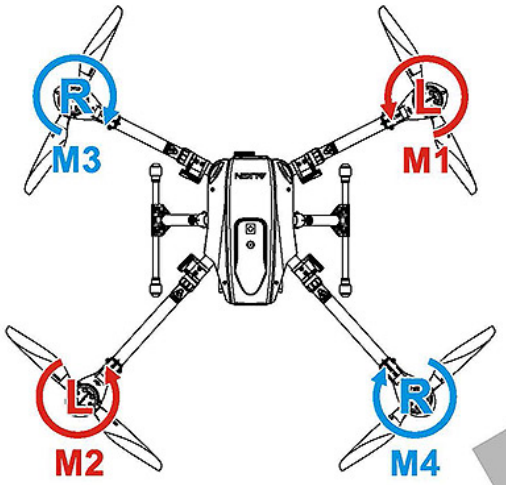


## MOTOR SPIN TEST 馬達運轉測試

1. When the motor running test function is turned on, the motor will slowly rotate M1, M4, M2, and M3 clockwise for about 3 seconds. Check whether the installation position and the main rotor rotation direction are consistent.
2. The rotation process of the main rotor of the motor is dangerous. When inspecting, please first confirm that there is no debris around the drone and avoid the rotation range of the main rotor to avoid danger.

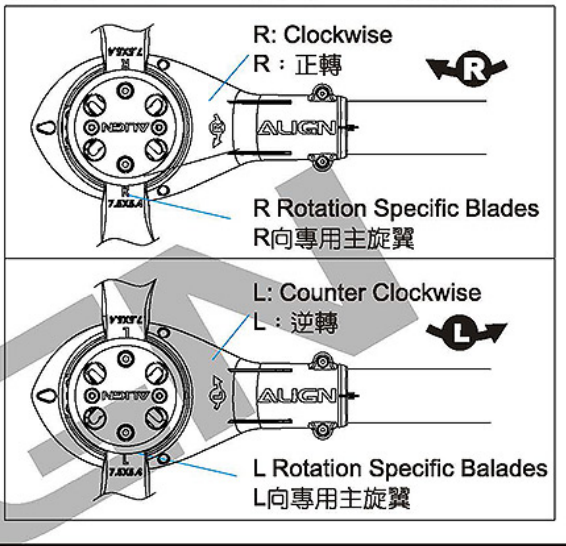
1.馬達運轉測試功能開啓時，馬達會**順時針方向M1、M4、M2、M3依序**慢速轉動約3秒，檢查安裝位置及主旋翼旋轉方向是否一致。

2.馬達主旋翼旋轉過程有危險性，檢測時請先確認無人機旁無雜物，並避開主旋翼轉動範圍，以免發生危險。




### MOTOR ROTATION DIRECTION 馬達正逆轉方向

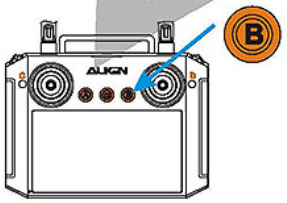
Please confirm the forward and reverse direction symbols marked on the motor holder.
請確定馬達固定座上所標示的正、逆轉方向符號。

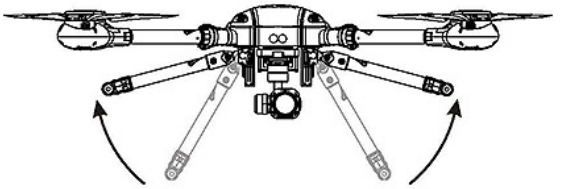



## RETRACT TEST 腳架收放測試

Test the retract switch on RC transmitter and do retraction for 2 to 3 times prior to flight.

飛行前應測試腳架收放功能，切換收腳架按鍵開關做腳架收放動作2~3次，確定收合動作正常。



**CAUTION 注意**


To avoid getting your hands pinched, do not touch retracts while in motion.

請勿觸碰正在進行收放腳架的收折處，避免夾傷手。

**There are two ways of retracting and retracting the tripod:**

1. Automatic tripod retraction: When the drone takes off and rises to 5M, the system will automatically retract the tripod. When the drone lands at 4M during flight, the system will automatically lower the tripod.
2. Manual tripod retracting: Turn off the automatic function and switch to manual control of the tripod retracting and retracting function.

Automatic foot retraction function switch: You can choose to turn it on or off from Common Settings>>Flight Control Parameter Settings>>Automatic Foot Retraction.


具備兩種腳架收放方式：

1. 自動收腳架：無人機起飛上升至5M時，系統會自動收啓腳架、飛行中降落至4M時，系統會自動放下腳架。
2. 手動收腳架：關閉自動功能，切換為手動控制收放腳架功能。

**自動收腳功能開關**：可由常用設置>>飛控參數設置>>自動收腳，選擇開啓或關閉。

## ATTITUDE MODE 姿態模式

Attitude mode will automatically maintain the drone's attitude level and altitude control functions. The elevator, aileron, and tail rudder rocker commands are angle commands. The greater the rocker movement, the greater the drone's movement angle. The maximum angle is limited to 25 degrees.

姿態模式會自動保持無人機姿態水平與定高功能，升降、副翼、尾舵搖桿指令為角度命令，搖桿動作越大無人機動作角度越大，最大角度限制為25度。

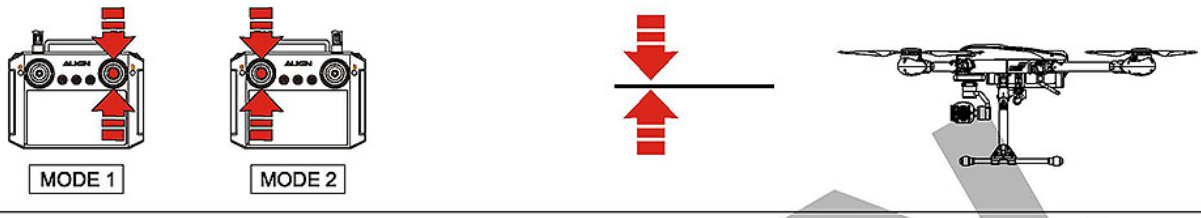
**CAUTION 注 意**

**In Attitude Mode, obstacle avoidance is disabled. Be aware of your surroundings to avoid collisions and ensure flight safety.**

**姿態模式下無避障功能，應注意周圍環境，避免碰撞，確保飛行安全。**

a) Throttle stick in center = fixed height

a) 油門搖桿置中=定高

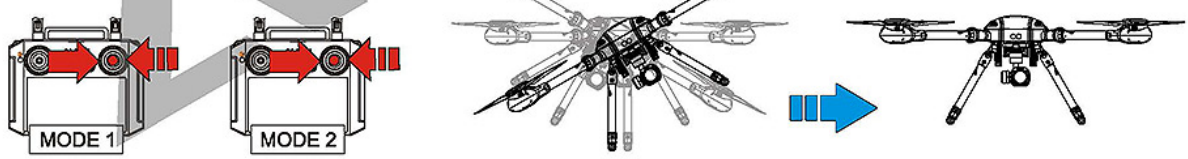



b) Elevator/aileron rocker (maximum 30 degrees left or right)

b)升降/副翼搖桿(左或右最大25度)


c) Release the rocker (the body will automatically return to normal)

c) 搖桿放開(機體自動回正)




## GPS(SPEED) GPS(速度)

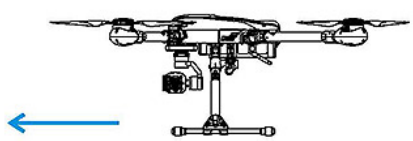
It will automatically maintain the drone's attitude level, fixed height and GPS positioning. The elevator, aileron, and tail rudder rocker commands are speed commands. The greater the rocker movement, the faster the drone flies. The maximum flight speed is 18 meters horizontally. /s, rising 5 meters/s, falling 2.5 meters/s.

會自動保持無人機姿態水平、定高與GPS定位，升降、副翼、尾舵搖桿指令為速度命令，搖桿動作越大無人機飛行速度越快，，最大飛行速度水平18 公尺/秒、上升 5公尺/秒 、下降2.5公尺/秒。

**CAUTION 注 意**

GPS signals may affect positioning due to factors such as weather, external interference, environment, etc. When flying in GPS mode, if the drone's positioning is inaccurate or offset, please switch to attitude mode and fly the drone back manually.

GPS訊號會因天氣、外界干擾、環境...等因素影響定位。在使用GPS模式飛行下，如果無人機發生定位不準、偏移情況，請切換至姿態模式，將無人機手控飛回。



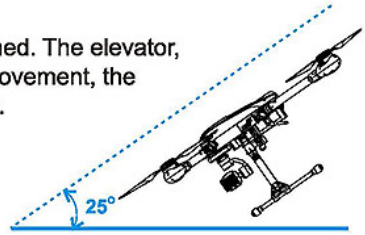
Straight flight speed: 18 m/sec

直線飛行速度：18公尺/秒

## GPS(ANGLE) GPS(角度)

The drone's attitude level and height-setting function will be automatically maintained. The elevator, aileron, and tail rocker commands are angle commands. The greater the rocker movement, the greater the drone's movement angle. The maximum angle is limited to 25 degrees.

會自動保持無人機姿態水平與定高功能，升降、副翼、尾舵搖桿指令為角度命令，搖桿動作越大無人機動作角度越大，最大角度限制為25度。




## FLIGHT MODE FUNCTION COMPARISON 飛行模式功能對照

| Function 功能 / FLIGHT MODE 飛行模式 | ATTITUDE MODE 姿態模式 | GPS MODE GPS模式 | AUTOPILOT MODE 自動導航模式 |
|---|---|---|---|
| Intelligent flight—head-to-head mode 智能飛行—頭向模式 | | | V |
| Intelligent flight—remote path planning 智能飛行—遠端路徑規劃 | | | V |
| Intelligent flight—regional path planning 智能飛行—區域路徑規劃 | | | V |
| Intelligent flight—exam mode 智能飛行—考場模式 | | | V |
| Auto return 自動返航 | V | V | V |
| Failsafe 失控保護 | V | V | V |
| Low voltage protection 低電壓保護 | V | V | V |



# INTELLIGENT FLIGHT 智能飛行

ALIGN

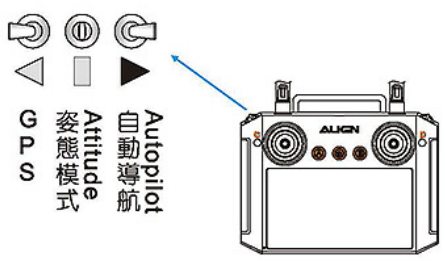
## HEAD MODE 頭向模式

**AUTOPILOT MODE 自動導航**

It is an intuitive way to control the drone. In the automatic navigation and automatic return modes, it is head-to-head mode, and its flight direction is relative to the front of the fuselage.

是操控無人機直觀的方式，在自動導航及自動返航模式下均為頭向模式，其飛行方向相對於機身的前方。

| Setting Method 設定方式 | The system defaults to head-direction mode and no setting is required. 系統默認為頭向模式，不需設定。 |
|---|---|




| Flight Status 飛行狀態 | The flight direction is in front of the fuselage. 飛行方向於機身的前方。 |
|---|---|

## REMOTE PATH PLANNING 遠端路徑規劃

**AUTOPILOT MODE**
**自動導航**

Use multi-point path point coordinates to execute commands and fly to the specified destination. Two methods of planning can be used: [Map Pointing] and [Drone Pointing].

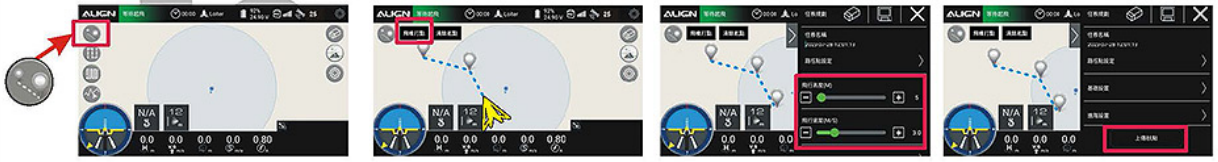
利用多點式路徑點座標，執行命令飛至指定的目的地。可使用〔地圖打點〕及〔無人機打點〕兩種方式規劃。

### Setting method 1 設定方式1 — Map dotting 地圖打點

1. Open the APP and select the [Route Planning] icon
2. Plan the flight path in the APP map mode and select at least two points to form the desired path.
3. At the same time, you can set the flight altitude, speed, and hover time.
4. After the setting is completed, you need to click [Upload Waypoint] on the APP. After the APP displays [Upload Successful], the route planning is completed.

1. 開啓APP，選取〔路徑規劃〕icon
2. 在APP地圖模式規劃飛行路徑，點選至少兩個點，形成所需的路徑。
3. 同時可以設定飛行高度、速度、停懸時間。
4. 設定完成，需在APP點擊〔上傳航點〕，待APP顯示〔上傳成功〕後，即完成路徑規劃。

### Setting method 2 設定方式2 — Drone management 無人機打點



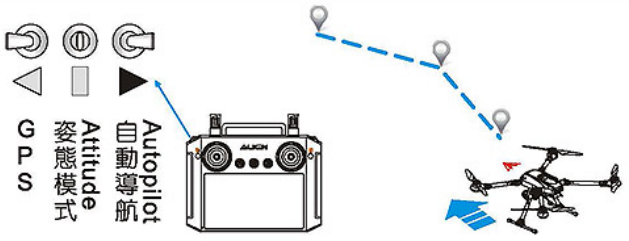
1. Open the APP and select the [Route Planning] icon
2. Fly the drone to the planned point, click the [Drone management] icon in the APP interface to complete the first point. Subsequent marking positions are continued in the same manner as above, at least two points, to form the required path.
3. Attention! After using the drone to do the points, you need to return and land the drone, and then set the flight altitude, speed, and hover time.
4. After the planning is completed, you need to click [Upload Waypoint] on the APP. After the APP displays [Upload Successful], the route planning is completed.

1. 開啓APP，選取〔路徑規劃〕icon
2. 將無人機飛行至預計規劃的點，點選APP介面〔飛機打點〕icon即完成第一個打點位置。後續打點位置同上述方式持續打點，至少兩個點，形成所需的路徑。
3. 注意！使用無人機打點完成後需將無人機返回並降落，再設定飛行高度、速度、停懸時間。
4. 規劃完成後，需在APP點擊〔上傳航點〕，待APP顯示〔上傳成功〕後，即完成路徑規劃。

**flight status 飛行狀態**

There are two ways to perform path planning flight:
執行路徑規劃飛行有以下兩個方式：

1. Automatically take off: After unlocking the drone, click the [start] icon. The system will display whether it will automatically take off? After clicking [Yes] at this time, the drone will automatically take off to an altitude of 3M and then perform the flight mission.




2. Manual takeoff: After unlocking the drone, manually take off to the required height, switch to automatic navigation mode, and the drone will automatically perform flight tasks.

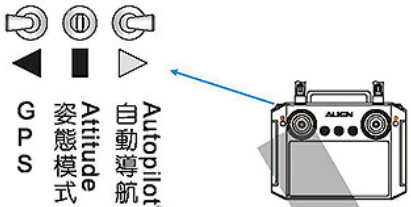
1. 自動起飛：無人機解鎖後，點選〔start〕icon ，系統會顯示是否自動起飛？此時點選〔是〕後，無人機會自動起飛至3M高度接著執行飛行任務。

2. 手動起飛：無人機解鎖後手動起飛至所需高度，切換至自動導航模式，無人機會自動執行飛行任務。

**Disable Function 功能解除**

Turn on attitude mode or GPS mode to disable the function.

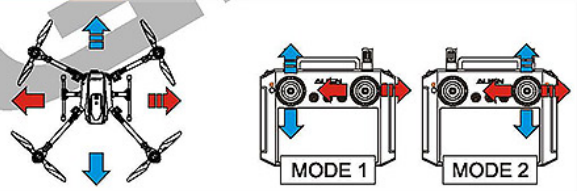
開啓姿態模式或GPS模式，即可解除功能。




**Intervention Control 介入操控**

In automatic navigation mode, the throttle can be used to control altitude.
If there is any movement in the ailerons or elevators, the automatic navigation function will be disengaged, transitioning to manual control.

在自動導航模式下，油門可用來控制高度。若副翼或升降出現動作，則自動導航功能將被解除，轉為手動控制。




## REGIONAL ROUTE PLANNING 區域路徑規劃

**AUTOPILOT MODE 自動導航**

Using multi-point regional point coordinates to automatically plan flight paths and execute commands to fly to the designated area.
Two methods of planning can be used: [Map Pointing] and [Drone Pointing].

利用多點式區域點座標，自動規劃飛行路徑，執行命令飛至指定的區域。
可使用〔地圖打點〕及〔無人機打點〕兩種方式規劃。

**Setting method 1 設定方式1**

Map dotting
地圖打點

1. Open the APP and select the [regional Route Planning] icon

2. Plan the flight path in the APP map mode and select at least three points to form the required area.

3. At the same time, you can set the flight altitude, speed, and hover time.

4. After the planning is completed, you need to click [Upload Waypoint] on the APP. After the APP displays [Upload Successful], the regional planning is completed.

1. 開啓APP，選取〔區域路徑規劃〕icon

2. 在APP地圖模式規劃飛行路徑，點選至少三個點，形成所需的區域。

3. 同時可以設定飛行高度、速度、停懸時間。

4. 設定完成，需在APP點擊〔上傳航點〕，待APP顯示〔上傳成功〕後，即完成區域規劃。

## Setting method 2 設定方式2

Drone management
無人機打點

1. Open the APP and select the [regional Route Planning] icon

2. Fly the drone to the planned point, click the [Drone management] icon in the APP interface to complete the first point. Subsequent marking positions are continued in the same manner as above, at least three points are formed to form the required area.

3. Attention! After using the drone to do the points, you need to return and land the drone, and then set the flight altitude, speed, and hover time.

4. After the planning is completed, you need to click [Upload Waypoint] on the APP. After the APP displays [Upload Successful], the regional planning is completed.

1. 開啓APP，選取〔區域路徑規劃〕icon

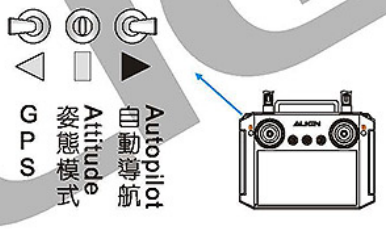
2. 將無人機飛行至預計規劃的點，點選APP介面〔飛機打點〕icon即完成第一個打點位置。後續打點位置同上述方式持續打點，至少三個點，形成所需的區域。

3. 注意！使用無人機打點完成後需將無人機返回並降落，再設定飛行高度、速度、停懸時間。

4. 規劃完成後，需在APP 點擊〔上傳航點〕，待APP顯示〔上傳成功〕後，即完成區域規劃。

## flight status 飛行狀態

There are two ways to perform area planning flights:
執行路區域規劃飛行有以下兩個方式：




1. Automatically take off: After unlocking the drone, click the [start] icon. The system will display whether it will automatically take off? After clicking [Yes] at this time, the drone will automatically take off to an altitude of 3M and then perform the flight mission.

2. Manual takeoff: After unlocking the drone, manually take off to the required height, switch to automatic navigation mode, and the drone will automatically perform flight tasks.

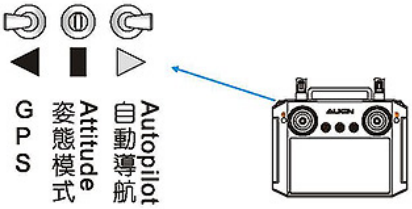
1. 自動起飛：無人機解鎖後，點選〔start〕icon ，系統會顯示是否自動起飛？此時點選〔是〕後，無人機會自動起飛至3M高度接著執行飛行任務。

2. 手動起飛：無人機解鎖後手動起飛至所需高度，切換至自動導航模式，無人機會自動執行飛行任務。

## Disable Function 功能解除

Turn on attitude mode or GPS mode to disable the function.

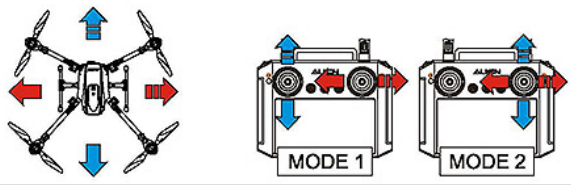
開啓姿態模式或GPS模式，即可解除功能。




## Intervention Control 介入操控

In automatic navigation mode, the throttle can be used to control altitude.
If there is any movement in the ailerons or elevators, the automatic navigation function will be disengaged, transitioning to manual control.

在自動導航模式下，油門可用來控制高度。若副翼或升降出現動作，則自動導航功能將被解除，轉為手動控制。



## EXAMINATION MODE 考場模式

**AUTOPILOT MODE 自動導航**

You can choose 20Mx20M or 40Mx20M as the range of the simulated examination room to practice flying movements and become familiar with the mission settings to maintain stable flight.

The system presets the flight altitude to 5M, the flight speed to 10M/s, and the hover time to 0 seconds.

可選擇20Mx20M或40Mx20M，做為模擬考場的範圍，練習飛行動作並熟悉任務設定，保持穩定飛行。

系統預設飛行高度為5M、飛行速度為10M/s、停懸時間為0秒。

### Setting Method 設定方式

1. Open the APP and select the [Examination Room Mode] icon

2. Enter the setting interface, scroll down to 20Mx20M or 40Mx20M, and select the required examination room range.

3. Click the first point in front of the drone on the map to generate the flight range.

4. You can click on the second point in any of the four directions of the block, and the path and flight direction will be generated.

**For example:** to fly from bottom to top, click on the top of the block, and to fly from top to bottom, click on the bottom of the block.

After the drone is turned on, the nose of the drone faces the direction to fly.

---

1. 開啓APP，選取〔考場模式〕icon

2. 進入設置介面，下拉至20Mx20M或40Mx20M，選取所需的考場範圍。

3. 再從地圖上無人機前方點擊第一個點，生成飛行範圍。

4. 可在區塊4個方向任意點擊第二個點，即會產生路徑及飛行方向。

例如：由下往上飛點擊區塊上方、由上往下飛則點擊區塊下方。

無人機開機後，機頭朝向要飛行的方向。

---

5. If you need to modify the flight altitude and speed, you can click on the basic settings: Set flight altitude and flight speed.

6. If you need to stay at each flight turning point, you can enter the advanced settings to set the hover time, up to 10 seconds.

6. After the setting is completed, you need to click [Upload Waypoint] on the APP. After the APP displays [Upload Successful], the examination room mode planning is completed.

---

5. 若需修改飛行高度、速度，可點開基礎設置：設定飛行高度、飛行速度。

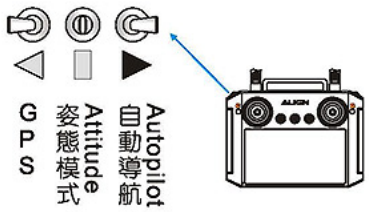
6. 若需在每一個飛行轉折點停留，可進入進階設置設定停懸時間，最多10秒。

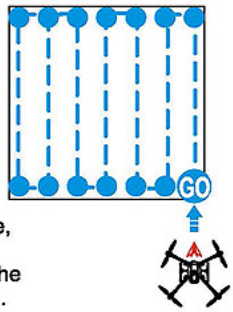
7. 設定完成，需在APP點擊〔上傳航點〕，待APP顯示〔上傳成功〕後，即完成考場模式規劃。

**flight status 飛行狀態**

There are two ways to fly in exam room mode:
執行考場模式飛行有以下兩個方式：

1. Automatically take off: After unlocking the drone, click the [start] icon. The system will display whether it will automatically take off? After clicking [Yes] at this time, the drone will automatically take off to an altitude of 3M and then perform the flight mission.




2. Manual takeoff: After unlocking the drone, manually take off to the required height, switch to automatic navigation mode, and the drone will automatically perform flight tasks.

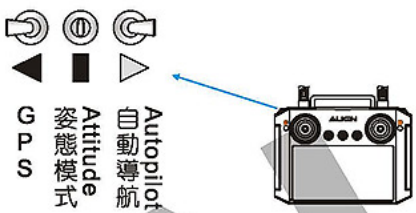
1. 自動起飛：無人機解鎖後，點選〔start〕icon ，系統會顯示是否自動起飛？此時點選〔是〕後，無人機會自動起飛至3M高度接著執行飛行任務。

2. 手動起飛：無人機解鎖後手動起飛至所需高度，切換至自動導航模式，無人機會自動執行飛行任務。

**Disable Function 功能解除**

Turn on attitude mode or GPS mode to disable the function.

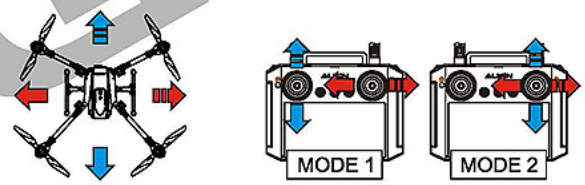
開啓姿態模式或GPS模式，即可解除功能。




**Intervention Control 介入操控**

In automatic navigation mode, the throttle can be used to control altitude.
If there is any movement in the ailerons or elevators, the automatic navigation function will be disengaged, transitioning to manual control.

在自動導航模式下，油門可用來控制高度。若副翼或升降出現動作，則自動導航功能將被解除，轉為手動控制。




## AUTO RETURN 自動返航

The automatic return function is to assist the drone during the control process. If it becomes lost or the distance is too far and the correct flight direction cannot be identified, the flight control system can execute the automatic return command, allowing the drone to drive safely under the safety mechanism. Return to Home point. You can set the return altitude and return speed before flying.

**Attitude/GPS/ Auto Navigation 姿態 / GPS / 自動導航**

自動返航功能是輔助無人機在操控過程中，若發生迷航或距離太遠無法辨識正確飛行方向時，可藉由飛控系統執行自動返航指令，讓無人機在安全機制下自動駕駛安全返回Home點。飛行前可先設定返航高度、返航速度。

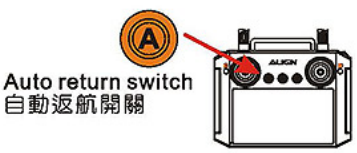
**Setting Method 設定方式**

1. Open the APP and select the [Common Settings] icon

1. 開啓APP，選〔常用設置〕icon

2. Enter [Flight Control Parameter Settings] to set the return altitude and return speed.

2. 進入〔飛控參數設置〕設定返航高度、返航速度。




3. In GPS mode and within the receiving range of the remote control, press the [Auto Return] button on the remote control to execute automatic return.

3. 在GPS模式下且遙控器接收範圍內，按下遙控器上的〔自動返航〕鍵，即執行自動返航。

## Flight Status 飛行狀態

1. When the drone exceeds the set return altitude:

a) The drone returns home at the current flight altitude and head towards the Home point.

b) When returning above the Home point, the drone will turn back to the head direction when taking off, lower the tripod first, and then land.

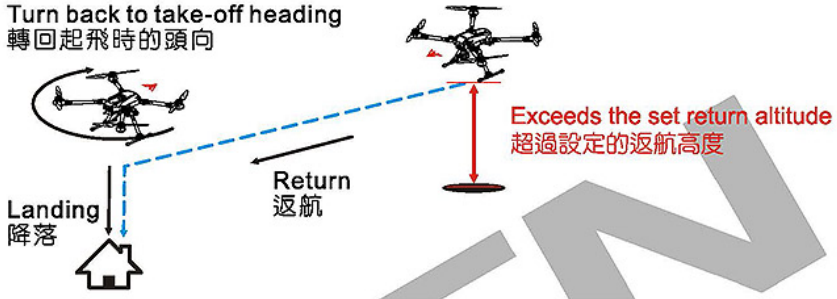
c) The system will automatically shut down the motor power after the drone lands.

**1. 無人機超過設定的返航高度時：**

a) 無人機以當前的飛行高度，頭向朝Home點方向返航。

b) 回到Home點上方時，無人機會轉回起飛時的頭向，先放下腳架再降落。

c) 無人機降落後系統會自動關閉馬達動力。




**2. . When the drone is lower than the set return altitude:**

a) The drone will rise to the set altitude and head back toward the Home point.

b) When returning above the Home point, the drone will turn back to the head direction when taking off, lower the tripod first, and then land.

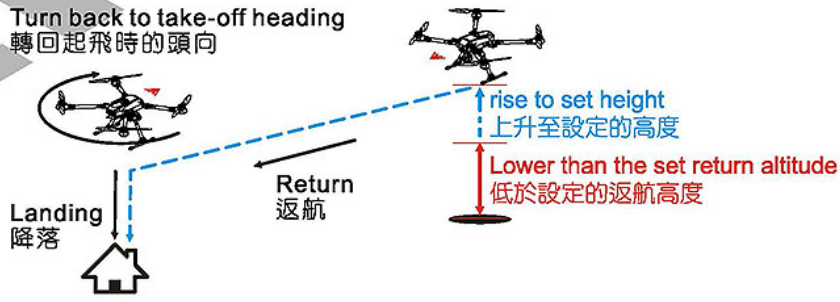
c) The system will automatically shut down the motor power after the drone lands.

**2. 無人機低於設定的返航高度時：**

a) 無人機將上升至設定的高度，頭向朝Home點方向返航。

b) 回到home點上方時，無人機會轉回起飛時的頭向，先放下腳架再降落。

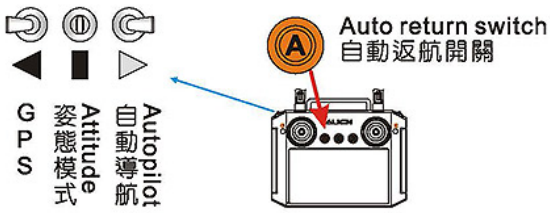
c) 無人機降落後系統會自動關閉馬達動力。




**Disable Function 功能解除**

Turn on attitude mode or GPS mode. Or press the [Auto Return] button on the remote control again.

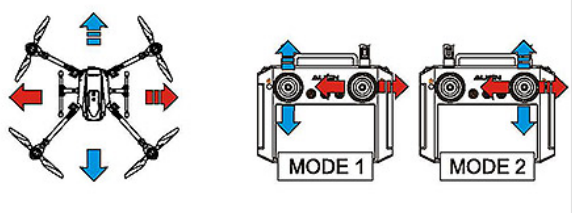
開啓姿態模式或GPS模式。或再次按下遙控器〔自動返航〕鍵。




**Intervention Control 介入操控**

You cannot intervene until the function is disabled. After the function is released, it can be controlled manually.

功能未解除前無法介入。功能解除後可手動操作控制。



When the drone loses the remote control signal, the system will automatically return home if there is a GPS signal. If there is no GPS signal, the drone will maintain a level attitude. You can set the return altitude and return speed before flying.

當無人機丟失遙控器訊號時，在有GPS訊號下，系統會執行自動返航。在無GPS訊號下，無人機會保持姿態水平。飛行前可先設定返航高度、返航速度。

**Attitude/GPS/ Auto Navigation**
**姿態 / GPS / 自動導航**

## Setting Method 設定方式

1. Open the APP and select the [Common Settings] icon
1. 開啓APP，選〔常用設置〕icon

2. Enter [Flight Control Parameter Settings] to set the return altitude and return speed.
2. 進入〔飛控參數設置〕設定返航高度、返航速度。

## Flight Status 飛行狀態

1. When the drone exceeds the set return altitude:

a) The drone returns home at the current flight altitude and head towards the Home point.

b) When returning above the Home point, the drone will turn back to the head direction when taking off, lower the tripod first, and then land.

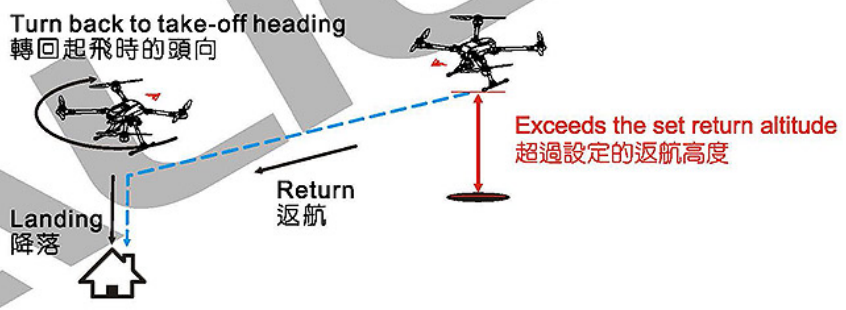
c) The system will automatically shut down the motor power after the drone lands.

**1. 無人機超過設定的返航高度時：**

a) 無人機以當前的飛行高度，頭向朝Home點方向返航。

b) 回到Home點上方時，無人機會轉回起飛時的頭向，先放下腳架再降落。

c) 無人機降落後系統會自動關閉馬達動力。




**2. . When the drone is lower than the set return altitude:**

a) The drone will rise to the set altitude and head back toward the Home point.

b) When returning above the Home point, the drone will turn back to the head direction when taking off, lower the tripod first, and then land.

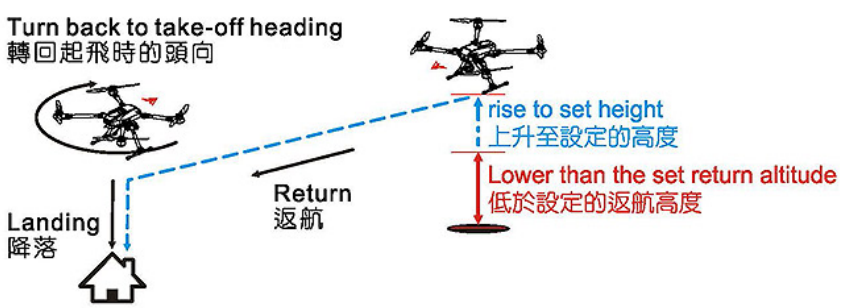
c) The system will automatically shut down the motor power after the drone lands.

**2. 無人機低於設定的返航高度時：**

a) 無人機將上升至設定的高度，頭向朝Home點方向返航。

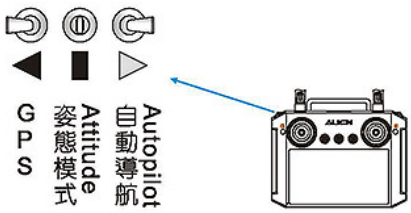
b) 回到home點上方時，無人機會轉回起飛時的頭向，先放下腳架再降落。

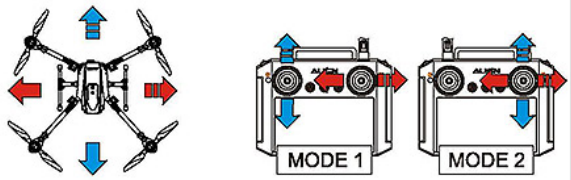
c) 無人機降落後系統會自動關閉馬達動力。



## FAILSAFE 失控保護

| | |
|---|---|
| **Disable Function 功能解除** | Turn on attitude mode or GPS mode. 開啓姿態模式或GPS模式。 |
| **Intervention Control 介入操控** | You cannot intervene until the function is disabled. After the function is released, it can be controlled manually. 功能未解除前無法介入。功能解除後可手動操作控制。 |




## LOW VOLTAGE PROTECTION 低電壓保護

**Attitude/GPS/ Auto Navigation 姿態 / GPS / 自動導航**

When the battery power of the drone is low, the system voice will prompt "Battery power is low, please return as soon as possible to replace the battery." In this case, please return as soon as possible to replace the battery.

**The system provides two types of low voltage protection and will issue a voice warning prompt:**

1. When the low battery voltage reaches 20%, the system voice will prompt "Battery voltage is too low, perform return". At this time, the drone will automatically return to the home point and land on its own. Please replace the battery.
2. When the low battery voltage reaches 8%, the voice will prompt "The battery voltage is seriously low, please land immediately to replace the battery." At this time, the drone will land at the current location to avoid crashing due to too low battery.

You can set the return altitude and return speed before flying.

當無人機電池電量低，系統語音會提示「電池電量低，請盡速返航更換電池」，此時請盡速返航更換電池。

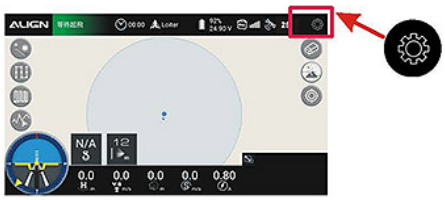
**系統提供兩種低電壓保護，同時會發出語音警告提示：**

1.當電量低電壓到達20%時，系統語音會提示「電池電壓過低，執行返航」，此時無人機會執行自動返航回到home點上方後自行降落，請更換電池 。

2.當電量低電壓到達8%時，語音會提示「電池電壓嚴重過低，請立即降落更換電池」，此時無人機會降落在當時地點，以避免因為電量太低而摔機。

飛行前可先設定返航高度、返航速度。

**Setting Method 設定方式**



1. Open the APP and select the [Common Settings] icon

1. 開啓APP，選〔常用設置〕icon

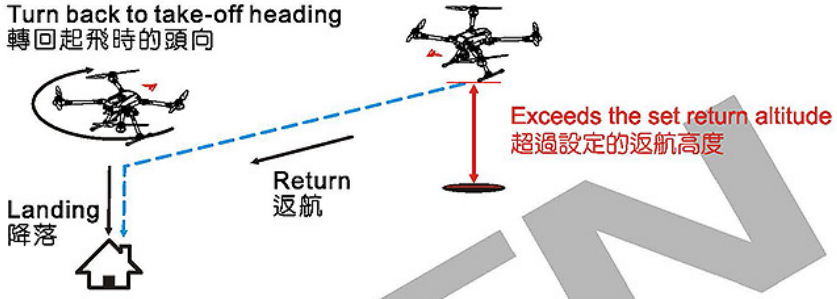
2. Enter [Flight Control Parameter Settings] to set the return altitude and return speed.

2. 進入〔飛控參數設置〕設定返航高度、返航速度。

## Flight Status 飛行狀態

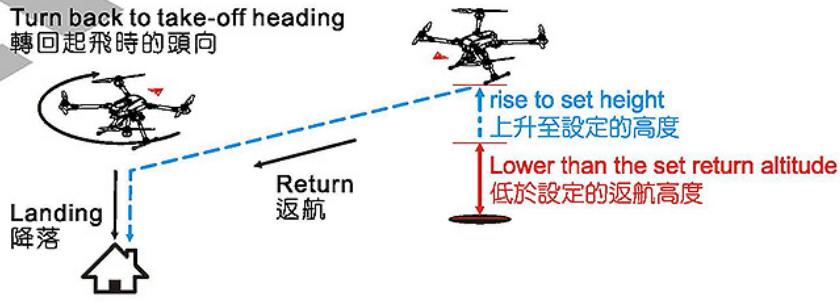
1. When the drone exceeds the set return altitude:
a) The drone returns home at the current flight altitude and head towards the Home point.
b) When returning above the Home point, the drone will turn back to the head direction when taking off, lower the tripod first, and then land.
c) The system will automatically shut down the motor power after the drone lands.

**1. 無人機超過設定的返航高度時：**
a) 無人機以當前的飛行高度，頭向朝Home點方向返航。
b) 回到Home點上方時，無人機會轉回起飛時的頭向，先放下腳架再降落。
c) 無人機降落後系統會自動關閉馬達動力。



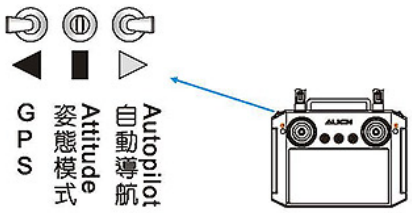

**2. . When the drone is lower than the set return altitude:**
a) The drone will rise to the set altitude and head back toward the Home point.
b) When returning above the Home point, the drone will turn back to the head direction when taking off, lower the tripod first, and then land.
c) The system will automatically shut down the motor power after the drone lands.

**2. 無人機低於設定的返航高度時：**
a) 無人機將上升至設定的高度，頭向朝Home點方向返航。
b) 回到home點上方時，無人機會轉回起飛時的頭向，先放下腳架再降落。
c) 無人機降落後系統會自動關閉馬達動力。



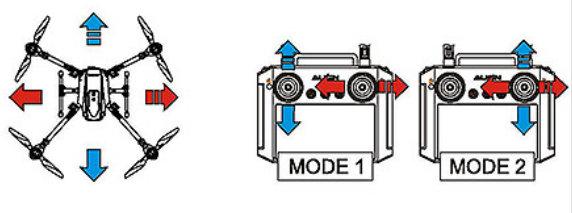

**Disable Function 功能解除**

Turn on attitude mode or GPS mode.
開啓姿態模式或GPS模式。




**Intervention Control 介入操控**

You cannot intervene until the function is disabled. After the function is released, it can be controlled manually.
功能未解除前無法介入。功能解除後可手動操作控制。



| M490TOP AERIAL PHOTOGRAPHY / MISSION DRONE M490TOP空拍任務無人機 | |
|---|---|
| Power system 動力系統 | RCM-BL4213(370KV) |
| Wheelbase 軸距 | 905mm |
| Body height 機身高 | 318mm |
| Folding paddle 摺疊槳 | 7.5 inches (190mm) |
| Propeller diameter 螺旋槳直徑 | 415mm |
| Expanded size (length x width x height)<br>展開尺寸(長x寬x高) | 592x659x318mm |
| Collapsed size (length x width x height)<br>收合尺寸(長x寬x高) | 445x440x349mm |
| Empty weight 空機重量 | 2.84kg |
| Flight weight 飛行重量 | 4.01kg(including 6S 10000mAh smart battery) |
| Maximum load 最大載重 | 3.5kg |
| Maximum flight weight 最大飛行重量 | 7.81kg |
| Flight duration 飛行時間 | About 28 minutes (no load)/約28分鐘(空載) |
| Satellite navigation system 衛星導航系統 | GPS + Galileo + BeiDou+ Glonass |
| Air dwell accuracy 滯空停留精準度 | Horizontal/水平: ±0.5M (GNSS signal normal)<br>Vertical/垂直: ±0.5M (GNSS signal is normal) |
| Maximum rotation angle 最大旋轉角度 | 70° /sec(秒) |
| Maximum tilt angle 最大傾斜角度 | 25° (GPS mode/GPS模式)<br>25° (Attitude mode/姿態模式) |
| Maximum ascent speed 最大上升速度 | 5 M/sec(秒) |
| Maximum descent speed 最大下降速度 | 2.5M/sec(秒) |
| Maximum horizontal flight speed<br>最大水平飛行速度 | 18M/sec (seconds) about 64.8 kilometers/hour<br>18M/sec(秒) 約64.8公里/小時 |
| Maximum flight altitude 最大飛行高度 | 500M |
| Maximum wind resistance level 最大抗風等級 | Level 7/7級 |

| AP6 MULTI-AXIS FLIGHT CONTROLLER AP6多軸飛行控制器 | |
|---|---|
| Main processor 主處理器 | Model/型號：STM32H753<br>Frequency/頻率：480Mhz<br>FLASH：2M<br>RAM：1M |
| (gyro+accelerator) (陀螺儀+加速器) | IMU (shockproof level)(防震等級)<br>ICM-20948<br>ICM-42688-P x2 |
| Barometer 氣壓計 | MS5611 x2 |
| UART serial port UART 串口 | 7 |
| I2C(接電池 / GPS上面的電子羅盤接口) | 2 |
| CAN (通訊接口) | 2 |
| PWM output PWM輸出 | 10 |
| RC input RC輸入 | S.bus、A.bus |
| Power input 電源輸入 | 2 (5V IN & RC IN) |
| GPS/RTK interface GPS / RTK 接口 | 2 |
| USB | TYPE-C |
| Operating Voltage 工作電壓 | 5V~8.4V |
| USB voltage USB電壓 | 4.5V~5.5V |
| Operting Temperature 工作溫度 | -40°C~85°C |

| RCM-BL4213 BRUSHLESS MOTOR RCM-BL4213無刷馬達 | |
|---|---|
| Imput Voltage 輸入電壓 | DC 22.2V |
| Max Continuous Current 最大持續耐電流 | 25A |
| Max Continuous Power 最大持續功率 | 550W |
| Stator Arms 矽鋼片槽數 | 12 |
| Magent Poles 磁鐵極數 | 14 |
| Dimesion/ Weight 尺寸/ 重量 | φ4xφ52x33mm/ 185g |

| MULTICOPTER BRUSHLESS ESC 多軸無刷調速器 | |
|---|---|
| Imput Voltage 輸入電壓 | 13.2V~25.2V(4S~6S Li-Po) |
| Max Continuous Current 最大持續耐電流 | 40A |
| Dimesion 尺寸 | 74.2x27x12.7mm |
| Operting Temperature 工作溫度 | -5°C~ 45°C(23°F~ 113°F) |

| G3P THREE-AXIS GIMBAL G3P三軸雲台 | |
|---|---|
| Stabilization System 穩定系統 | Three-Axis Mechanical Gimbal / Pitch 、Pointing、roll<br>三軸機械雲台/俯仰、指向、滾轉 |
| Controllable Rotation Range 可控轉動範圍 | Pitch/俯仰 -8° to-90°、Pointing/指向 ±90 |

| 4K CAMERA 4K 相機 | |
|---|---|
| Photoreceptor 影像傳感器 | 1/2.3" SONY COMS 12 million /1200萬<br>effective difference pixels 36 million/ 差值有效像素3600萬 |
| Lens 鏡頭 | 可視角度：FOV 100°<br>光圈：f/2.7<br>對焦點：2米至無限遠 / Focus：2 m to infinity |
| Lens element 鏡片 | 4G2P<br>UV（Aattachable lenses/ 外掛鏡片） |
| ISO Range ISO 範圍 | 100-6400 |
| EV Value EV值 | ±2 |
| White Balance 白平衡 | Auto/Sunny/Cloudy/Overcast/Sunset 自動、晴天、陰天、多雲、日落 |
| Style 風格 | Sharpness/Saturation/Contrast 銳利、飽合、對比 |
| Shutter speed 快門速度 | 1 - 1/6000s |
| Photo size 照片尺寸 | 8000x4496 |
| Photo shooting mode 照片拍攝模式 | Single shot/ 單張拍攝<br>Burst mode/多張連拍：(36M 5shots/張)<br>Timed shooting/定時拍攝：36M(8000 x 4496)-7s/秒<br>27M(6912 x 3904)-6s/秒 |
| Image format 圖片格式 | JPEG/DNG |
| Video resolution 錄影解析度 | 4K (4096x2160) 60/30/24 fps<br>2.7K (2720x1530) 60/30/24 fps<br>1080p (1920x1080) 120/60/30/24 fps<br>720p (1280x720) 120/60/30 fps |
| Video format 影片格式 | MP4/H264<br>MP4/H265<br>MOV |
| Maximum Video Data Rate 影片最大資料傳輸速率 | 120Mbps |
| Supported memory card types 支援存儲卡類型 | MicroSDXC：V30 A1/A2 256GB<br>（Includes one 32GB SD card/ 標配32G SD卡一張） |
| Color Mode and Sampling Method<br>色彩模式與取樣方式 | A-Log |
| Digital zoom 數位變焦 | 4K-8X 4K-8倍 |
| Camera Settings<br>相機設置 | Image resolution<br>Metering mode: Center-weighted metering<br>Multi-zone metering<br>Grid/ Center point/ Light source<br>回傳影像分辨率<br>測光模式：中間測光 、多點測光<br>網格、中心點 、光源 |

| PCU V2 POWER CONTROL UNIT SET PCU V2電源控制組 | |
|---|---|
| Imput Voltage 輸入電壓 | 13.2V~25.2V(4S~6S Li-Po) |
| Operating Frequency 工作頻率 | 500KHz |
| Dimesion 尺寸 | 62x35x26mm |
| Operting Temperature 工作溫度 | -5°C~ 45°C(23°F~ 113°F) |

| HOOK CONTROL 多軸掛勾組 | |
|---|---|
| Imput Voltage 輸入電壓 | 5V~8.4V |
| Operating Temperature 操作溫度 | -10°C~50°C |
| Oper & Close Time 展開時間 | 8.4V/5 sec(秒) |
| Dimesion/ Weight 尺寸/ 重量 | 71x27x35mm/ Approx. 52g |

## 一、遙控無人機產品標示

| | |
|---|---|
| 本產品最大起飛重量：7.81公斤 | (1) |
| ☑應 ☐免 依遙控無人機管理規則至民航局「遙控無人機規範管理系統」（https://drone.caa.gov.tw/）進行線上註冊，註冊號碼應標明於機身顯著處。 | (2) |
| ☑應 ☐免 具備航空站或飛行場圖資軟體功能。 | (3) |
| ☐具型式檢驗(認可)標籤且應向民航局申請辦理實體檢驗。☑免辦理檢驗或認可。 | (4)(5) |
| 操作人☐免持操作證 ☑應持普通操作證 ☐應持專業操作證。 | (6) |
| 操作本產品前，經檢查確保符合飛航安全條件後從事活動，並禁止飲酒或使用影響精神之藥物，亦不得於公告禁止或限制區域飛航，其餘請詳參見本產品所附操作手冊說明。 | (7)(8) |
| 違反上述規定者，中央及地方主管機關得依民航法禁止其活動，並處以新臺幣1萬至150萬元罰鍰，情節重大者沒入遙控無人機。 | (9)(10) |
| 本標示依據遙控無人機管理規則第17條第1項規定辦理。 | (11) |

## 二、遙控無人機相關法規說明：

(1) 遙控無人機管理規則(以下稱管理規則)第6條第1項：自然人所有之最大起飛重量250公克以上之遙控無人機及政府機關(構)、學校或法人所有之遙控無人機，應由其所有人向民航局申請註冊，並將註冊號碼標明於遙控無人機上顯著之處後，始得操作。

(2) 管理規則第8條：註冊號碼應依下列方式標明於遙控無人機上顯著之處：一、以標籤、鐫刻、噴漆或其他能辨識之方式標明，且應確保每次飛航活動時不至脫落並保持清潔、明顯使能辨識。二、標漆位置應為遙控無人機之固定結構外部。三、其顏色應使註冊號碼與背景明顯反襯，且以肉眼即能檢視。

(3) 管理規則第12條第1項：最大起飛重量1公斤以上且裝置導航設備之遙控無人機，應具備防止遙控無人機進入禁航區、限航區及航空站或飛行場四周之一定距離範圍之圖資軟體系統，其圖資應符合本法第4條劃定及第99條之13第1項公告之範圍。

(4) 管理規則第13條：遙控無人機之設計、製造、改裝，應由設計者、製造者或改裝者檢附申請書向民航局申請型式檢驗，經型式檢驗合格者，發給型式檢驗合格證，並發給型式檢驗標籤。
自國外進口之遙控無人機，應由進口者依第一項規定向民航局申請型式檢驗，或檢附申請書向民航局申請認可。經認可者，發給認可證明文件及認可標籤。
前二項之遙控無人機，其型式構造簡單經民航局公告者，得免辦理檢驗或認可。

(5) 管理規則第15條第1項：最大起飛重量25公斤以上之遙控無人機，為確保遙控無人機符合設計、製造、改裝之性能諸元，應由其所有人檢附申請書向民航局申請實體檢驗，經檢驗合格者，發給實體檢驗合格證。

(6) 管理規則第20條：遙控無人機操作證分類、申請者年齡及其他規定如下：
A. 學習操作證：申請者應年滿16歲，經申請後，由民航局發給。
B. 普通操作證：申請者應年滿18歲，經學科測驗合格後，由民航局發給。
C. 專業操作證：申請者應年滿18歲並符合相關經歷規定後，經體格檢查及學、術科測驗合格後，由民航局發給。
前項各類操作證之操作權限如下：一、學習操作證：持有人得於持有遙控無人機普通操作證或專業操作證之操作人在旁指導下，依其普通操作證或專業操作證所載之構造分類，學習操作最大起飛重量未達二十五公斤之遙控無人機。二、普通操作證：持有人得操作自然人所有最大起飛重量二公斤以上、未達十五公斤且裝置導航設備之遙控無人機。三、專業操作證：持有人得操作政府機關（構）、學校或法人所有之遙控無人機及自然人所有最大起飛重量十五公斤以上之遙控無人機。

(7) 管理規則第25條：操作人操作遙控無人機應遵守下列事項：一、血液中酒精濃度不得超過百分之0.02或吐氣中酒精濃度不得超過每公升0.1毫克。二、不得受精神作用物質影響，導致行為能力受到損傷。三、不得對任何生命與財產有造成危險之操作行為。

(8) 管理規則第26條：操作人從事遙控無人機飛航活動前，應依遙控無人機製造者所提供之維修指引對遙控無人機系統進行檢查，符合安全飛航條件後始得活動。

(9) 民用航空法遙控無人機專章第118條之1：遙控無人機之所有人或操作人有下列情事之一者，由民航局廢止其操作證，並處新臺幣30萬元以上150萬元以下罰鍰，並得沒入遙控無人機：一、違反第99條之13第1項規定，於禁航區、限航區及航空站或飛行場四周之一定距離範圍內從事飛航活動。二、違反第99條之14第1項第1款規定，逾距地面或水面高度400呎從事飛航活動。

(10) 民用航空法遙控無人機專章第118條之2：遙控無人機之所有人或操作人有下列情事之一者，禁止其活動，並處新臺幣6萬元以上30萬元以下罰鍰；情節重大者，並得沒入遙控無人機：一、違反第99條之10第2項規定，未領有操作證而操作遙控無人機。二、違反第99條之15第3項規定，未投保或未足額投保責任保險而從事遙控無人機活動。
遙控無人機之所有人或操作人有下列情事之一者，禁止其活動，並處新臺幣3萬元以上15萬元以下罰鍰；情節重大者，並得沒入遙控無人機：一、違反第99條之10第1項有關遙控無人機註冊或標明註冊號碼之規定。二、違反第99條之13第2項有關直轄市、縣（市）政府公告區域、時間及其他管理事項之規定。三、違反第99條之14第1項第2款至第10款遙控無人機飛航活動應遵守之規定。
本條規定之處罰，除同時違反第99條之13第1項或第99條之14第1項第1款由民航局處罰外，由直轄市、縣（市）政府處罰之。

(11) 民用航空法遙控無人機專章第118條之3：違反依第99條之17所定規則有關射頻識別、檢驗、認可、維修與檢查、飛航活動之活動許可及內容、製造者與進口者之登錄及責任、飛航安全相關事件之通報等事項規定者，禁止其活動，並處新臺幣1萬元以上150萬元以下罰鍰；情節重大者，並得沒入遙控無人機。

※有關後續遙控無人機法規最新資訊，請詳見：（https://drone.caa.gov.tw/）或掃瞄右方QR Code連結。

感謝您購買亞拓系列商品，謹表謝意！

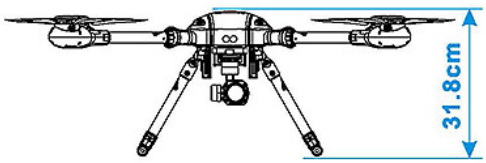
1. 亞拓E1植保直昇機、M4 / M6植保多軸機、M460 / M490 / M470L / M480XL / M690L任務無人機、屬『衛星導航無人機』，民航局已有預先登錄資料，操作者可直接在交通部民用航空局無人機專區註冊完後，登錄系統下拉選擇型號即可快速完成註冊程序。
2. 亞拓T-REX系列/E1空機版/MR25XP穿越機/多軸空拍機系列商品，其屬於『自製無人機(含航空模型機)』，飛友需自行辦理型號登錄作業。
3. 相關型號、構造、尺寸(長x寬x高)、飛機翼展/直昇機旋翼半徑/多旋翼軸距、使用動力、導航方式…等詳細資訊，請連結右側QR Code『亞拓無人機註冊資料』、或參考『亞拓無人機註冊教學』進行登錄註冊。

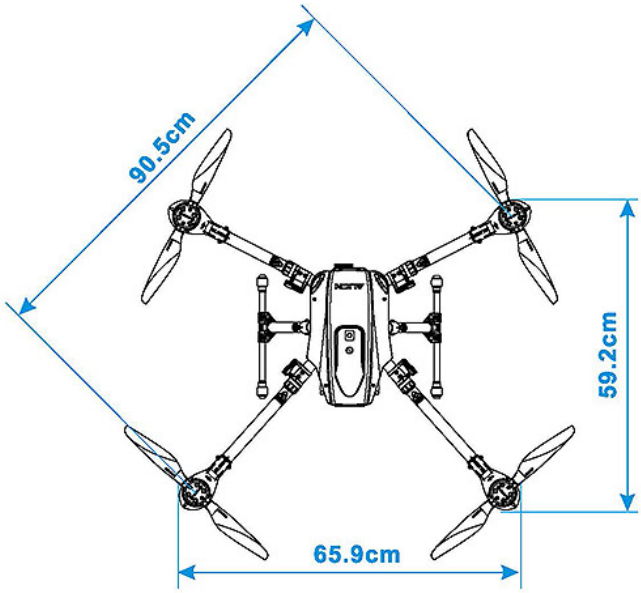
連結QR Code 亞拓無人機註冊資料

連結QR Code 亞拓無人機註冊教學

ALIGN

## Specifications /產品規格:

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|---|---|
| Brand 廠牌 | ALIGN |
| Mode 產品型號 | M490TOP Aerial Photography / Mission Drone |
| Construction 構造 | Multicopter 無人多旋翼機 |
| Dimensions 尺寸(長x寬x高)(公分) | 59.2x65.9x31.8(cm) |
| Multi-rotor wheelbase 多旋翼軸距(公分) | 90.5(cm) |
| Power 使用動力 | Battery 電池 |
| Avigation Method 導航方式 | Satellite System 衛星系統 |
| Max. take-off weight 最大起飛重量(公斤) | 7.81(kg) |
| Max. speed(km/h) 最大速度(公里/小時) | 64.8(Km/h) |
| Remote Control Method 遙控方式 | WIFI |
| Remote Control Frequency 遙控頻率 | 2.4G |