

APS GYRO V1.3 UPDATE INSTRUCTION 更新使用說明

ALIGN



APS

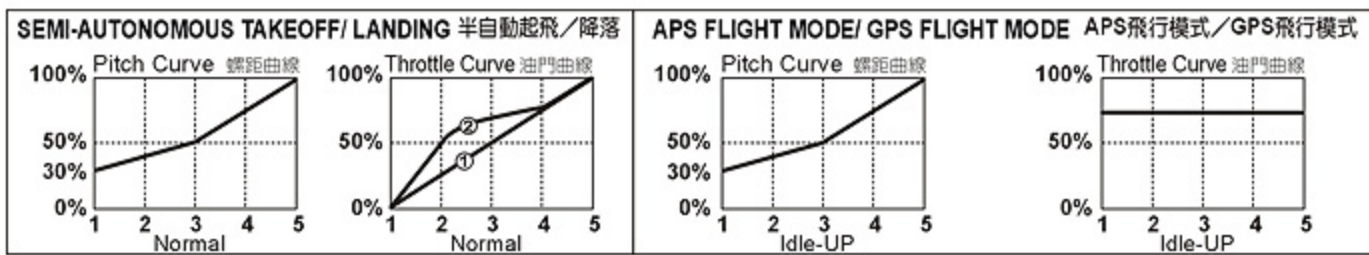
SPECIFIC FEATURES OF THE APS V1.3 VERSION APS V1.3版本特點

- Supports GS800 gimbal control system
支援GS800雲台控制系統
- Improve the control feel in APS mode, making the helicopter control feel more smooth and natural.
提升APS模式的操控手感，讓直昇機的控制更得心應手。
- Adjustable pitch curve
可調整螺距曲線
- Incorrect Transmitter Power on Mode Warning
新增遙控器開機錯誤警示
- APS V1.3 must be used with 3GX V3.1 or newer
APS V1.3版必須搭配3GX V3.1以上版本。

- Pilots are responsible for their actions and damage or injury occurring during the operation or as a result of R/C aircraft models.
- Prior to every flight, carefully check rotorhead spindle shaft screws and tail blade grip screws, linkage balls and screws, ensure they are firmly secured.
- 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，主旋翼夾座橫軸螺絲、尾旋翼夾座螺絲，以及機身各部位球頭、螺絲，確實上膠鎖緊才能昇空飛行。

- To ensure proper operation of APS correction routine, while in APS and GPS mode, V1.3 allows the pilot to adjust the pitch curve based on flight preference, allowing the APS system to provide control feel more familiar to the pilot. But be aware that the pitch must still be set to 0 degrees at mid stick, 50% rate position; and the pitch curve for Normal and Idle-Up modes must be identical, as shown in figures below:
- After entering APS flight mode, throttle stick position controls the helicopter height and vertical movement speed; helicopter pitch is controlled by APS's response.




- 為確保APS修正的正常運作，進入APS與GPS飛行模式時的螺距曲線可依使用習慣調整螺距曲線，但要特別注意，油門搖桿在中間點位置的螺距必須為0度，設定值為50%，並且Normal與IDLE-UP模式的螺距曲線要相同，如下圖所示。
- 當進入APS飛行模式後，油門搖桿的位置是控制直昇機的高度與垂直移動的速度，直昇機的螺距角度是由APS控制反應。



- Vibration test must be re-performed should helicopter experienced a crash, parts replacement or RPM/collective pitch changes.
- If vibration test wasn't passed and APS function is switched on, possible loss of control and crash may occur.
- We recommend performing vibration test periodically every 10 flights to ensure safety.
- After passed vibration test and enter APS/GPS flight mode, do not change the rotor RPM, pitch and 3GX setting. Changing the setting can make the vibration conditions change, severe cases lead to a flight out of control of the crashes.
- Should helicopter experience any unusual behavior during APS flight mode, you must switch back to 3GX mode immediately and fly manually to ensure safety.
- After APS is updated, please perform the magnetometer calibration and vibration test again, and check the direction of the correction in APS mode.
- 只要直昇機有變更主旋翼轉速、集體螺距設定、摔落或更換任何零件時，必須重新執行震動測試。
- 如未執行通過震動測試，冒然開啓APS功能，會造成直昇機失控墜毀的危險。
- 建議每10趟飛行定期執行震動測試檢查，以確保安全。
- 通過震動測試後，進入APS/GPS飛行模式，嚴禁隨意變更主旋翼轉速、螺距及3GX設定而使震動條件改變，嚴重者將導致飛行失控摔機。
- 在APS飛行模式下執行任何飛行功能時，若直昇機發生異常狀況，務必立刻恢復3GX飛行模式，改為手動操作，以確保安全。
- APS V1.3更新完畢後，需要重新做磁力計校正與震動測試，並檢查APS模式的修正方向。

2 WARNING LABEL LEGEND

標誌代表涵義

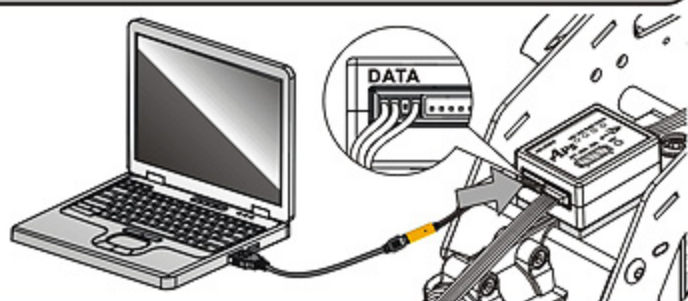
 FORBIDDEN 禁止	Do not attempt under any circumstances. 在任何禁止的環境下，請勿嘗試操作。
 WARNING 警告	Mishandling due to failure to follow these instructions may result in damage or injury. 因為疏忽這些操作說明，而使用錯誤可能造成財產損失或嚴重傷害。
 CAUTION 注意	Mishandling due to failure to follow these instructions may result in danger. 因為疏忽這些操作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

3 DATA LINK CONNECTION

傳輸線接線方式

Before APS V1.3 update, make sure to connect 3G data link cable between the DATA port on APS controller and PC.

進行APS V1.3更新前，必須將電腦與APS連接，連接方式如下：將3G傳輸線連接至電腦設備與APS控制器上的DATA埠。



4 INSTALLATION STEPS

安裝APS V1.3程式

STEP 步驟

1. Download 『APS V1.3 Update 20120403』 update file.
APS.rar will appear on desktop after download is finished.

下載『APS V1.3 Update 20130403』更新檔案。下載完成後，會在桌面上產生一個「APS」壓縮檔。



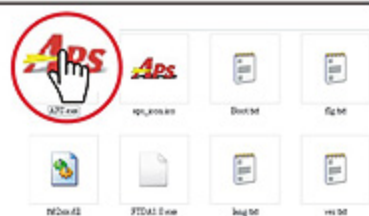
2. Move the mouse to “APS.rar” and unzip the file to the desktop and you will find an “APS V1.3 Update 20130403” folder.

游標指至壓縮檔按右鍵解壓縮至桌面，會在桌面上產生一個「APS V1.3 Update 20130403」資料夾。



3. Open the unzipped folder and double click “APS.exe” to start update.

開啟解壓縮後資料夾，點選資料夾裡的『APS.exe』檔案，執行更新程式。



4. APS V1.3 update screen will be pop out.

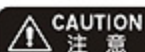
接著會出現「APS V1.3 更新界面」視窗。



5

START UPDATE

開始更新

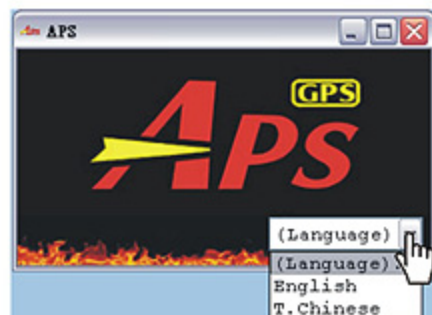


CAUTION
注意

APS controller need to power on or not be able to enter the update process.
需開啓APS控制器電源，否則無法進入更新程序。

STEP 步驟

1. Turn on APS controller power first
開啟APS控制器電源。
2. Select the language you want.
選擇使用語言。
3. APS update window pops up.
執行後會彈出APS更新視窗。



FORBIDDEN
禁止

Do not power off or remove 3G data link cable during update, doing so may cause APS to fail and not power back up properly, if failure please contact the local distributors.

更新進行中勿移除電源與3G傳輸線，否則會造成APS更新失敗且無法正常開機，如無法使用請連絡當地代理商。

4. Click on "Update" to start update process.
將滑鼠移至Update，並按下開始更新。
5. APS will restart after update completes.
更新完成後，APS會自動重新開機。
6. Close window, and remove 3G data link cable to complete update.
關閉視窗，完成更新並移開3G傳輸線。



6

APS V1.3 FEATURES

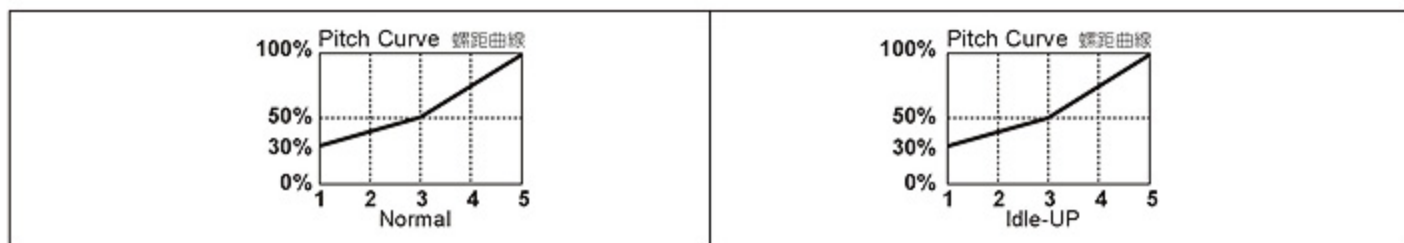
APS V1.3 更新特點說明

1. Adjustable pitch curve 可調整螺距曲線

Previously, setting up an APS system with firmware prior to V1.2 requires pitch curve to be set to 0-50-100 straight line. To allow more flexibility for enthusiasts to customize their pitch curves, firmware V1.3 added adjustable pitch curve feature. V1.3 allows the pilot to adjust the pitch curve based on flight preference, allowing the APS system to provide control feel more familiar to the pilot. One such example: many pilots prefers setting the minimum pitch to -3

degrees in normal mode. But be aware that the pitch must still be set to 0 degrees at mid stick, 50% rate position; and the pitch curve for Normal and Idle-Up modes must be identical, as shown in figures below:

APS在使用上有特別限制螺距曲線的設定，在V1.2以前版本必須設定為0/50/100線性直線，為了使玩家有更彈性的螺距曲線設定，V1.3版本新增了可調整螺距曲線功能，V1.3版可以依使用習慣調整螺距曲線，讓APS飛行更貼近自己習慣的操控手感，例如：常見一般飛行模式會把最低螺距設為-3度。但要特別注意，油門搖桿在中間點位置的螺距必須為0度，設定值為50%，並且Normal與IDLE-UP模式的螺距曲線要相同，如下圖所示。



2. Incorrect transmitter power on mode warning.

新增遙控器開機錯誤警示

When using APS, helicopter must be powered up while in 3GX mode for proper APS initialization. If the helicopter is powered up while in APS or GPS mode, initialization error will occur, and will be indicated by APS forcing swashplate to jump slowly up and down. Should this occurs, double check the APS mode switch is set to 3GX mode, and then power cycle again.

使用APS，直昇機必須在3GX 模式下開啓電源，APS 才會正常開機。如果在APS或GPS模式下開啓直昇機電源，會造成開機錯誤，APS會強制十字盤上下慢速跳動來表示開機錯誤，請檢查APS開關位置是否在3GX模式與遙控器設定正確無誤後，再重新開機。

3. APS V1.3 must be used with 3GX V3.1 or newer.

APS V1.3版必須搭配3GX V3.1以上版本。

In addition, APS V1.3 must be used with 3GX V3.1 or newer. Therefore, make sure 3GX is updated to V3.1 or newer when APS is updated.

After updating, please perform magnetometer calibration again prior to flight.

另外，APS V1.3版本必須搭配3GX V3.1或以上版本，所以更新APS同時也要一併更新3GX至V3.1或以上版本。更新完畢後，請重新執行磁力計校正才使用。

7 APS V1.3 HEADING DIRECTION GAIN ADJUSTMENT

APS V1.3 頭向感度調整功能

Should the helicopter exhibits tail hunting while flying under APS mode, this adjustment can be used to adjust the APS heading gain.

在APS飛行模式下，若出現尾舵追蹤現象，可以透過此功能來調降APS頭向感度。



Heading Direction
Gain Adjustment
頭向感度調整

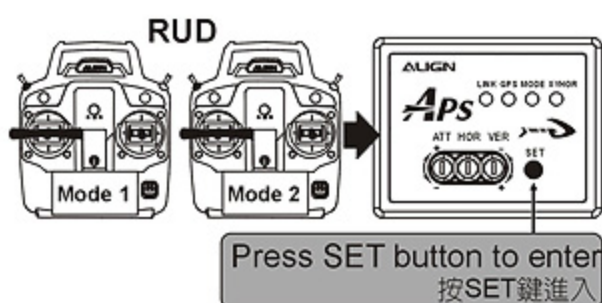


1. If helicopter do not exhibit any tail hunting effect under APS mode, updating to V1.3 will not have any effect on its tail holding ability.
 2. Should there already exist tail hunting issue under 3GX mode, APS heading gain will not eliminate such hunting. Please adjust the rudder gyro gain in radio transmitter under 3GX flight mode, and eliminate possible mechanical binding which may affect tail responsiveness.
 3. Insufficient APS heading gain may cause rudder drift while in APS flight mode, Please increase gain.
1. 更新前APS飛行模式無尾舵追蹤現象的直昇機，更新V1.3版本後之並不會改變原來的鎖定效果。
 2. 若在3GX飛行模式下尾舵已經呈現追蹤現象，APS頭向感度並不會消除尾舵追蹤。請先透過遙控器調整3GX飛行模式下的鎖定感度，並先行排除機械干涉所造成的不正常尾舵反應。
 3. APS頭向感度不足時會導致在APS飛行模式時產生尾舵飄移的現象，請調高感度。

STEP 步驟

1. After APS finished powering up, push the rudder stick on your transmitter all the way left or right, and press the SET button on APS to enter APS heading gain adjustment mode.

在APS完成開機的狀態下，將遙控器尾舵搖桿撥至左邊或右邊不放，再按一下APS設定鍵進入APS頭向感度設定模式。



2. After entering APS heading gain adjustment mode, APS indicator LEDs will display the current gain value, factory value is set to 2 LEDs steady lit.

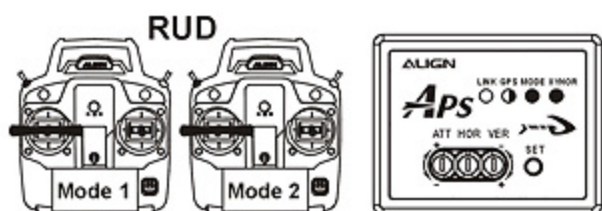
進入設定後APS顯示燈號會顯示當前的頭向感度設定，初始設定值為2個LED燈全亮。



3. Move the rudder stick to change the gain value. More LED's means higher gain, less LED's mean less gain, with total of 8 gain values. Reduce gain value should there be any tail hunting effect.

撥動尾舵搖桿來更改頭向感度設置，感度設置提供8個區段調整範圍。

燈號愈多感度愈高，反之燈號愈少感度愈小，若有尾舵追蹤現象，請調低感度。



4. After completing gain adjustment, press the SET button on APS once to exit.

設定完成後，按一下APS設定鍵記錄設定並退出APS頭向感度設定模式。



Press SET button to record
按SET鍵記錄

8

APS V1.3 Descend Deceleration System

APS V1.3 降落自動減速功能

To improve the safety of APS system, automatic landing safety deceleration system has been added to APS V1.3. While in APS flight mode, when pilot performs landing routine, to avoid crash as result of excessive descend speed, APS system will automatically reduce the descend speed to 2M/sec when the aircraft's altitude is between 10M and 5M, and lower to 0.8M/s when below 5M.

為提升APS使用的安全性，在APS V1.3版本特別新增降落自動減速功能。在APS飛行模式下，當操控者下達下降指令時，為避免直昇機下降速度過快而剎車不及，在距離地面高度10公尺到5公尺之間APS會自動把速度減速到每秒2公尺的下降速度，距離地面5公尺以下會減速到每秒0.8公尺的下降速度。



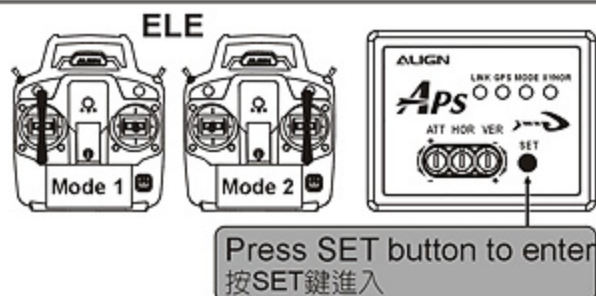
1. APS uses the elevation where the system was powered up as 0 altitude, not sea level elevation.
2. If APS is to be armed at higher elevation, and then flown into lower elevation environment, we recommend disabling this feature to achieve faster descent rate.

1. 飛行高度是以APS開機的地理位置為初始高度(0公尺)，而不是海拔高度。
2. 若在較高的地理位置將APS開機，欲飛行至相對較低高度的環境時，建議關閉此功能以獲得更快的下降速度。

STEP 步驟

1. After APS system powers up, move the elevator stick up or down and hold in position, press SET button on APS to enter setup mode for automatic landing safety deceleration system.

在APS完成開機的狀態下，將遙控器升降搖桿撥往上或往下不放，再按一下APS設定鍵進入降落自動減速功能設定模式。



2. After entering setup mode, the LINK and GPS LED's will both lit either green or red; green indicates automatic landing safety deceleration system is active, red means it's disabled.

Factory value is active.

進入設定後APS的LINK與GPS兩個燈號會同時恆亮綠燈或者紅燈，亮綠燈表示降落自動減速功能開啓，紅燈表示降落自動減速功能關閉，預設值為開啓。

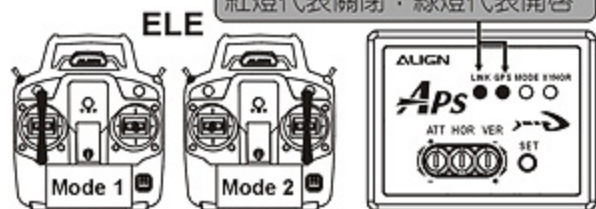
Red LED : Deactivate
Green LED : Activate
紅燈代表關閉：綠燈代表開啓



3. Move elevator stick to change the LED's color to correspond to active/disable of the automatic landing safety deceleration system.

撥動升降搖桿來更改燈號顯示，關閉或開啓降落自動減速功能。

Red LED : Deactivate
Green LED : Activate
紅燈代表關閉：綠燈代表開啓

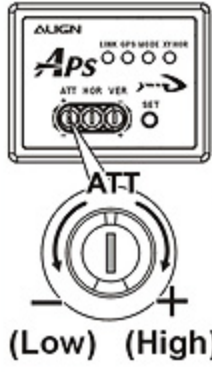



4. Press the SET button on APS to register the change and exit automatic landing safety deceleration system mode.


設定完成後，按一下APS設定鍵記錄設定並退出降落自動減速功能設定模式。

Press SET button to record 按SET鍵記憶



Attitude Gain 姿態敏感度		Low Gain 低敏感度	High Gain 高敏感度
 <p>(Low) (High)</p>	Heli Response 機體反應	Smoother attitude correction by APS 機體回復成水平姿態的動作較為滑順緩慢	Harder attitude correction by APS 機體回復成水平姿態的動作較為紮實迅速
	Control Feel 操控手感	Attitude control and control direction change is slower, fuzzy, and softer. 操控機體姿態與變換移動方向時的反應較為延遲及模糊柔和	Attitude control and control direction change is more direct and more precise. 操控機體姿態與變換移動方向時的反應較為直接及細膩精確
	Application 應用範圍	1. Higher gain should be used under strong gust condition to enable immediate attitude compensating reaction. 2. For aerial photography, adjust ATT gain to achieve the desired control feel. 1. 強風環境下須調高敏感度，使姿態修正及時反應。 2. 進行空中攝影時，可依據操控手感調整姿態敏感度。	

Level Gain 水平位置敏感度		Low Gain 低敏感度	High Gain 高敏感度
 <p>(Low) (High)</p>	Heli Response 機體反應	Slower and more fuzzy positioning of the helicopter by APS. 機體定位緩慢，保持位置時略為飄移，定位時機體修正反應較為緩和	Faster and more precise positioning of the helicopter by APS, possible horizontal twitching during positioning. 機體定位迅速，保持位置較為精準，定位時機體會有抖動現象
	Control Feel 操控手感	Less positioning intervention during control. 操控時定位介入較弱	More positioning intervention during control. 操控時定位介入較多
	Application 應用範圍	1. Higher gain should be used under strong gust condition to allow for more precise positioning. 2. For aerial photography, adjust the HOR gain can be lowered to maintain smooth control feel. 1. 強風環境下須調高敏感度，使定位更精確。 2. 進行空中攝影時，可調低敏感度，保持較滑順的操控手感。	

Vertical Gain 垂直位置敏感度		Low Gain 低敏感度	High Gain 高敏感度
 <p>(Low) (High)</p>	Heli Response 機體反應	Slower height compensation, longer time before compensation. 修正高度緩慢，高度變化時介入修正時間較為緩慢。	Faster height compensation, possible vertical twitching during compensation. 修正高度迅速，修正時機體會有垂直跳動現象。
	Control Feel 操控手感	Softer stop during altitude changes 改變高度時緩停。	Harder stop during altitude changes 改變高度時急停。
	Application 應用範圍	Higher gain should be used under strong gust condition 強風環境下需要較高的高度修正敏感度。	

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