MICROBEAST PLUS FLYBARLESS SYSTEM

INSTRUCTION MANUAL

使用說明書

HEGBP301T

For firmware version 3 .2 .x
主程式 V 3 .2 .x 版本專用

BEASTX FLYBARLESS SYSTEM

MICROBEAST **PLUS**

6-AXIS MEMS SENSOR SYSTEM FOR RC-MODELS

Thank you for buying ALIGN Products. Please read this manual carefully before assembling. We recommend that you keep this manual for future reference regarding tuning and maintenance.

承蒙閣下選用亞拓系列產品，謹表謝意。進入遙控世界之前必須告訴您許多相關的知識與注意事項，以確保您能夠在使用的過程中較得心應手。在開始操作之前，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，以作為日後參考。

Compatible with helicopter of all sizes from T-REX 250 to T-REX 800 MICROBEAST PLUS Flybarless System. Here we use T-REX 700L DOMINATOR as an example .

MICROBEAST PLUS 無平衡翼系統電子設備相容小型直昇機至大型直昇機T-REX 250～T-REX800。
在此我們以T-REX 700L DOMINATOR作為操作範例。

TABLE OF CONTENTS

目錄

ALIGN

ALIGN

TABLE OF CONTENTS
目錄

ALIGN

ALIGN

IMPORTANT NOTES
重要聲明

ALIGN

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.

遙控飛行機包括遙控直昇機與多軸飛行機（以下簡稱遙控飛行機）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！任何遙控飛行機的使用，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飛行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。

遙控飛行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。且遙控飛行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，導致飛行機本身、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。

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 serious 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。

SAFETY NOTES
安全注意事項

ALIGN

- 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.
- 遙控飛行機屬高危險性商品，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。

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.

遙控飛行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。

CAUTION 注意 KEEP AWAY FROM HEAT
遠離熱源

R/C aircraft are made of various forms of plastics, such as carbon fiber and polyethylene. Plastics are very susceptible to damage or deformation from extreme heat and cold climate. Make sure not to store the model near any source of heat such as oven or heater. It is best to store the model indoors, in a climate-controlled, room temperature environment.

遙控飛行機多半是以碳纖維、PA纖維或聚乙烯、電子商品為主要材質，因此要盡量遠離熱源、日曬，以避免因高溫而變形甚至熔毀損壞的可能。

FORBIDDEN 禁止 PREVENT MOISTURE
遠離潮濕環境

R/C aircraft are composed of many precision electrical components. It is critical to keep the model and associated equipment away from moisture and other contaminants. The introduction or exposure to water or moisture in any form can cause the model to malfunction resulting in loss of use, or a crash. Do not operate or expose to rain or moisture.

遙控飛行機內部也是由許多精密的電子零組件組成，所以必須絕對的防止潮濕或水氣，避免在浴室或雨天時使用，防止水氣進入機身內部而導致機件及電子零件故障而引發不可預期的意外！

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。遙控飛行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

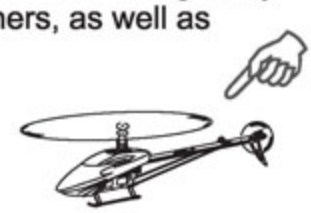
Operate this unit within your ability. Do not fly while feeling impaired, as improper operation may result in danger. Never take your eyes off the model or leave it unattended while it is turned on. Immediately turn off the model and transmitter when you have landed the model.

請於自己能力內及需要一定技術範圍內操作這台遙控飛行機，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飛行機和遙控器電源。

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.

遙控飛行機主旋翼/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。



ALIGN

MICROBEAST PLUS SAFETY NOTES
MICROBEAST PLUS 安全注意事項

Radio controlled (R/C) helicopters are not toys! The rotor blades rotate at high speed and pose potential risk. They may cause severe injury due to improper usage. It is necessary to observe common safety rules for R/C models and the local law. You can gather information from your local R/C model club or from your national modelers association.

遙控直昇機不是玩具！螺旋槳高速旋轉帶來的潛在風險相當高，它們可能會導致嚴重的傷害，一切的使用要符合並遵守共同的安全規則，並且遵守當地的無線電遙控模型協會制度規定。您可以從當地的模型俱樂部或從您的國家航模運動協會取得相關資訊。

Pay attention to your own safety and the safety of other people and property in your vicinity when using our product. Always fly in areas away from other people. Never use R/C models in close proximity to housing areas or crowds of people. R/C models may malfunction or crash due to several reasons like piloting mistakes or radio interference, and cause severe accidents. Pilots are fully responsible for their actions, and for damage or injuries caused by the usage of their models.

注意自己與他人以及財物的安全，在您使用我們的產品時，請您遠離建築與人群。遙控直昇機可能在飛行中出現任何可能發生的意外，可能是飛行員的操控失誤，或者是無線電干擾，並導致嚴重事故的發生。飛行員必須為自己的行為負完全責任，以及所造成的任何損害。

The MICROBEAST PLUS system is not a flying aid for beginners! It replaces the conventional mechanical flybar on most R/C helicopters. It is absolutely necessary that you have flying experience and that you are experienced in the operation of R/C helicopters. Otherwise we suggest you to seek the support of an experienced helicopter pilot before you undertake the first flight of your model. Additionally, flight training with a R/C simulator can help make flying easier and more enjoyable. Ask your local dealer if you need technical support or if you observe problems during the usage of our system.

本產品MICROBEAST PLUS無平衡翼系統並不適合初學者使用與調整！它取代了傳統遙控直昇機的平衡桿、平衡翼混控系統。你必須擁有一定的飛行經驗與獨立的調整技術，並熟悉部分專有名詞，例如「循環螺距、集體螺距」等，這是絕對必要的。否則，我們建議您尋求具有足夠經驗的遙控直昇機飛行員，然後再進行第一次的 MICROBEAST PLUS 搭配飛行。

Radio controlled (R/C) models consist of several electrical components. It is therefore necessary to protect the model from moisture and other foreign subtances. If the model is exposed to moisture this may lead to a malfunction which may cause damage to the model or a crash. Never fly in the rain or extremely high humidity.

無線電遙控模型，是藉由許多電子零件組裝而成，因此有必要保護這些脆弱的電子零件，例如防水、防塵等工作。如果遙控模型受潮可能導致故障，如果遙控模型受潮可能導致故障，請絕對不要在雨天或濕度極高的氣候中飛行，這可能會導致無線電永久故障。

Please read the following instructions thoroughly before the first use of your MICROBEAST PLUS and setup the system carefully according to this manual. Allow sufficient time for the setup procedure and check each step carefully. Watch for a mechanically clean and proper build of your helicopter. A wrong system setup can lead to a serious accident and damage to the model.

設置MICROBEAST時請仔細閱讀以下說明，並且一定留出足夠的時間來仔細設定，並仔細檢查每一個步驟。除此之外，也要特別注意無平衡翼旋翼頭的組裝正確，稍有差錯或機械故障，可能導致嚴重的事故發生。

Do not expose the MICROBEAST PLUS system to extreme variations in temperature. Before powering up the system, wait some time so that the electronics can acclimatize and any accumulated condensation is able to evaporate.

請勿讓 MICROBEAST PLUS 在極端溫度變化的環境下飛行，例如從溫暖的室內短時間帶到寒冷的室外，環境轉換至少需有 20 分鐘以上的緩衝適應，讓電子零件上的水氣凝結揮發掉，才能夠通電開機。

CAUTION 注 意 MICROBEAST PLUS SAFETY NOTES
MICROBEAST PLUS 安全注意事項

MICROBEAST PLUS consists of highly sensitive electrical components with limited capability to operate with excessive vibrations or electrostatic discharges. If you find such disturbances in your model, the use of MICROBEAST PLUS should be postponed until the problems have been fixed.

MICROBEAST PLUS 包括高度敏感的電子元件，震動與靜電會影響到 MICROBEAST PLUS 正常的運作。如果您的模型處於這種環境中，那應該暫停使用 MICROBEAST PLUS，並試著轉換環境，直到問題得到改善。

The sensors of MICROBEAST PLUS consist of highly sensitive electomechanical components. These can be damaged due to moisture or mechanical or electrical impact. Do not continue using this product, if it has been exposed to such influences, e.g. dure to a crash of the model or due to overvoltage caused by a defective receiver power supply. Otherwise a failure may happen any time.

MICROBEAST PLUS 包括高度敏感的電子元件，它可能在潮濕的環境中、機械或電子的衝擊中受到損害。如果您的模型已經遭受到撞擊，或者接收器的電源供應不穩定等等，請不要繼續使用 MICROBEAST PLUS，否則故障會不斷發生。

When operating the helicopter with a MICROBEAST PLUS ensure there is a sufficiently large and stable receiver power supply. Because of the direct coupling of the rotor blades to the servos, without the use of a flybar mixer, the servos are exposed to increased actuating forces. In addition, because of the intermediary electronic gyro system, the servos are driven more often than with traditional use. These factors can make the power consumption increase a lot compared to a flybar helicopter. When the supply voltage falls below 3,5 volts for a short amount a of time, the system will power off and reboot. In this case a crash of the helicopter is unavoidable.

操控您的直昇機時，請確保 MICROBEAST PLUS 有一個充足、穩定的接收器電源。由於十字盤伺服器直接連接十字盤、主旋翼，不像傳統貝爾希拉混控旋翼頭那樣的省力，所以請特別注意！無平衡翼直昇機使用的伺服器會顯得特別的耗電，請務必確定您的供電系統有足夠的供電能力。

To connect receiver and MICROBEAST PLUS only use the supplied connection cables. Extending the cables is at your own risk. For the rest only use high quality servo plugs and keep the cables' length as short as possible. So contact resistance of the power supply is kept down to a minimum.

連接接收器和 MICROBEAST PLUS 請使用隨貨附的連接線。延長連接線長度需自行承擔風險。其它應注意事項如：只使用高品質伺服器用之接頭並盡量縮短連接線長度。這樣可將電源供應的接觸阻力降到最低。

When operating electric helicopters make sure that the electric motor cannot start inadvertently during the setup procedure. Particularly pay attention if using a single-line receiver and if the ESC is connected directly to the MICROBEAST PLUS. We recommend disconnecting the electric motor from the ESC during the setup procedure. Prior the first usage please slide the motor/pinion away from the main gear, then check that the motor does not to start inadvertently when the receiver is switched on.

操作電動直昇機時，請確保電動馬達不會在安裝過程中無意間啓動。尤其要特別注意，如果您使用的是單線連接接收器，且 ESC 直接連接到 MICROBEAST PLUS。我們建議在安裝過程中 ESC 先不要連到電動馬達。在第一次使用之前，請滑動馬達/齒輪以遠離主齒輪，然後檢查馬達不會在開啓接收器時被啓動。

---

when switched off MICROBEAST PLUS consumes a very low amount of standby current . Therefore always completely disconnect the battery from the system if you do not usethe model for a extended period of time to prevent the supply battery from getting discharged and damaged in consequence.

關閉 MICROBEAST PLUS 會消耗非常低的待機電流。若長時間不使用，請完全拔除系統中電池，以防止電池電源輸出，導致損壞。

GENERAL INFORMATION
說明書版本概述

ALIGN

CAUTION 注 意

Please note that these instructions are only valid for the MICROBEAST PLUS firmware version 3 .2 .x !

本說明書所描述的調整內容，只適合 MICROBEAST PLUS Version 3.2.x 版本！

The delivered firmware version is printed on a sticker on the outside of the MICROBEAST PLUS packaging. You can also read it out on a computer by using the optional USB2SYS Interface along with the StudioX software bundle. Also you can directly read on the MICROBEAST PLUS unit during the initialization phase what firmware version your MICROBEAST PLUS is running:

MICROBEAST PLUS first carries out a brief selftest by lighting up all Menu-LEDs simultaneously, and cycling the Status-LED color. Then for about 3 seconds, the Status-LED lights red while the Menu-LEDs A - G display the first digit of the firmware version, and the LEDs H - N the second digit of the firmware version.

MICROBEAST PLUS 的產品外包裝上的貼紙會註記軟體版本。你也可以使用選購的 USB2SYS 的 StudioX 軟體在 PC 電腦上看到版本資訊。或是直接在MICROBEAST PLUS 初始化階段時知道主程式版本。

在初始化階段，您可以藉由 MICROBEAST PLUS 燈號來瞭解當前正在運行的主程式版本。在初始化時，你將會看到Menu-LED燈來回閃爍，約3秒鐘後，Status-LED燈就會亮起紅燈。而Menu-LED燈號 A-G 顯示第一位軟體版本，燈號 H-N 顯示第二位版次(請參考下列範例)。

Firmware Version 3 .2 .x

On the first column LEDs A and B must light corresponding to digit 3. LED I corresponds to minor version 2.

主程式 V 3 .2 .x

第一列的 LED燈 A 和 B 需亮燈並對應到主程式的數字3。LED燈 I 需對應次要版本2。

By briefly pushing the button you can get more version informations displayed. In respect to the manual this information is not important. You will get more information about the version display in chapter11.

只要簡單地按下按鈕，就可以得到更多的版本資訊。更多版本顯示資訊的介紹，請參見第 11 章。

1 PACKAGE CONTENTS
包裝說明

ALIGN

BOX CONTENT 包裝內容

Microbeast PLUS
Flybarless System x1
無平衡翼系統組 x1

Microbeast PLUS
Receiver wiring leads 15cm x3
接收器連接線 15cm x3

Einstellwerkzeug x1
旋鈕調整工具 x1

Klebepads x2
專用泡棉 x2

Spektrum -Adapterkabel x1
Spektrum衛星天線轉接線 x1

OPTIOAL ACCESSORIES 另購品

Microbeast PLUS
Receiver wiring leads 8cm x3
接收器連接線 8cm x3

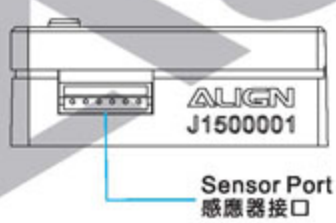
Cable for stand-alone tail gyro use x1
尾舵單軸陀螺儀轉連接線 x1

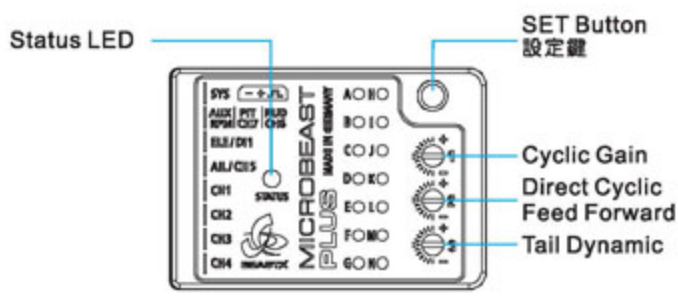
2 ELECTRIC EQUIPMENT ILLUSTRATION
電子設備建議配置圖示

ALIGN

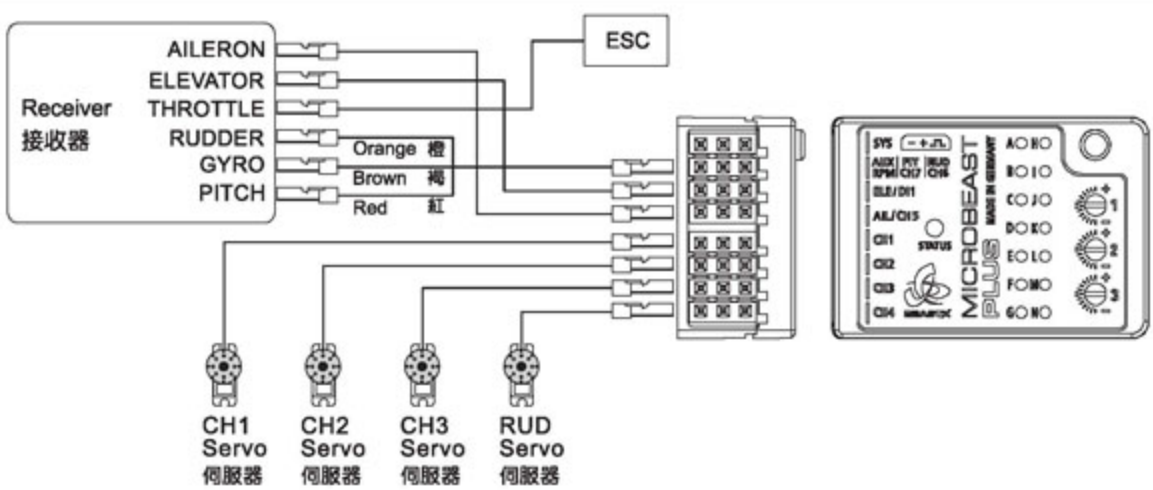
PARTS IDENTIFICATION 各部位名稱

MICROBEAST PLUS FLYBARLESS SYSTEM 無平衡翼系統





MICROBEAST PLUS FLYBARLESS SYSTEM WIRING DIAGRAM 無平衡翼系統接示意圖



3 MOUNTING AND CONNECTION
安裝與連接方式

ALIGN

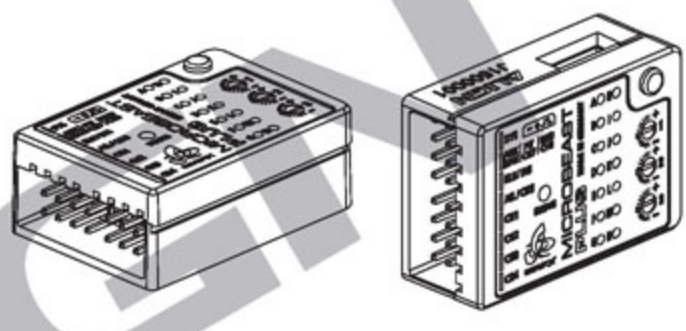
3.1 MOUNTING THE MICROBEAST PLUS UNIT
MICROBEAST PLUS 本體安裝方式

Attach the MICROBEAST PLUS unit by using one of the provided gyropads at a preferably low vibrating position on your helicopter such as the gyro platform or receiver platform. You may need to choose another type of mounting pad depending on the vibration pattern of your helicopter. For more information please ask you MICROBEAST PLUS dealer.

The MICROBEAST PLUS unit can be attached flat or upright and even upside down under the helicopter. however, the servo connector pins must always point toward the front (or rear) of the helicopter .

請儘量避免將 MICROBEAST PLUS 安裝在震動過大的機體上，您可以將 MICROBEAST PLUS 安裝在直昇機的陀螺儀專用位置，您可能必須依照您的需求選擇不同種類的專用泡棉，並且可以依照您安裝的位置來選擇水平、直立擺放。

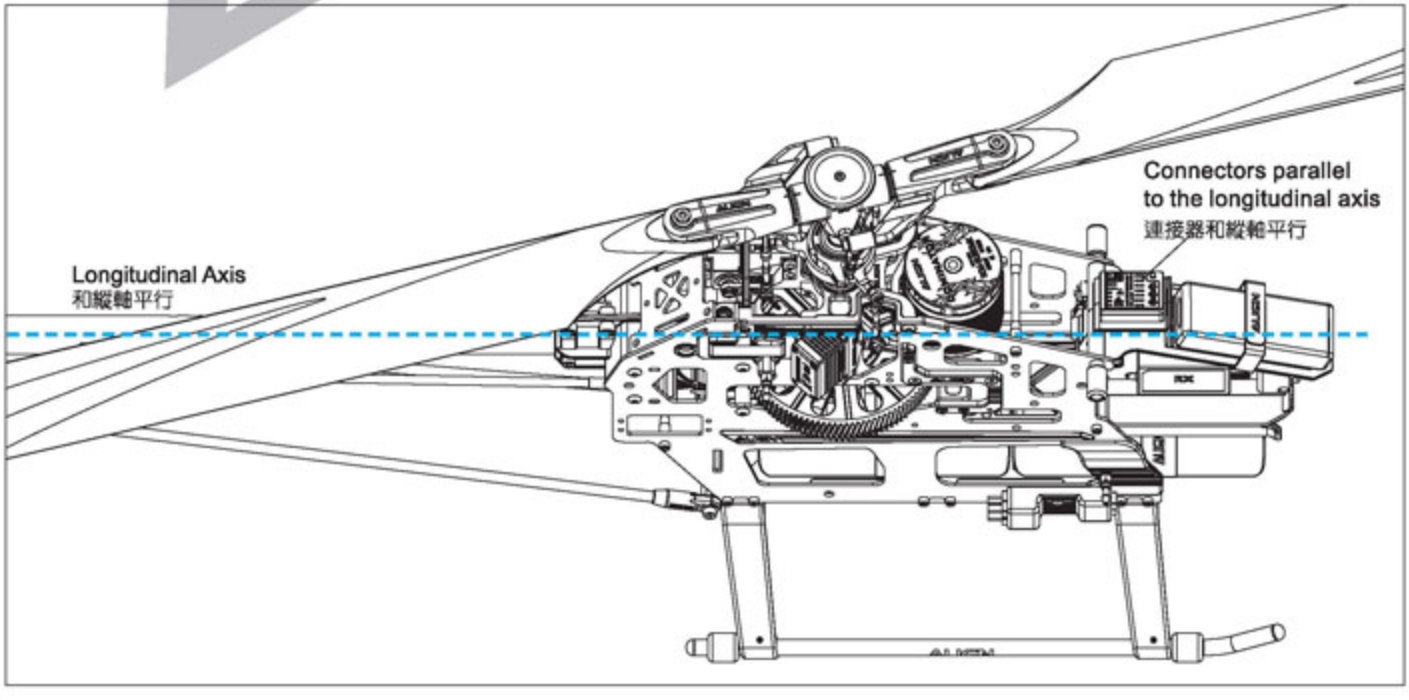
您可以水平或由下往上倒立安裝，但無論如何擺放，MICROBEAST PLUS 的伺服器插槽都必須朝前或朝後安裝。



CAUTION 注 意

Pay attention that the edges of the MICROBEAST PLUS unit are all parallel with the corresponding axes of the helicopter! And be sure that the mounting platform is perpendicular to the main shaft!

請注意， MICROBEAST PLUS 內具有精密的三軸感應器，安裝時注意 MICROBEAST PLUS 外殼的邊線平行于尾管，安裝的平面則必須與主軸垂直。



ALIGN

3.2 PREPARING THE TRANSMITTER
準備遙控器

The following step is unnecessary when using MICROBEASTPLUS with the optional cable for stand-alone tail gyro use, see 4.1.2. In this case you can setup your transmitter as described in the transmitter's manual. MICROBEAST PLUS then acts like any other tail gyro system using rudder and gain channel of the transmitter to control the gyro.

如果使用 MICROBEAST PLUS 與選購的電源線來單獨設定尾陀螺，以下步驟是不必要的，請參閱 4.1.2。在這種情況下，您可以利用遙控器的選單來設定尾舵陀螺儀。 MICROBEAST PLUS 會跟其他系統的尾舵陀螺儀一樣，使用遙控器的方向舵和感度通道來控制陀螺儀。

First create a new model in your radio's model memory. When using MICROBEAST PLUS you have to disable any mixing functions for the swashplate or tail. Each function should be assigned to just one receiver channel. As you see the requirement for the transmitter is very low, you can use nearly any transmitter that provides 5 channels for controlling the MICROBEAST PLUS one channel for the motor.

使用 MICROBEAST PLUS 所需要的遙控器，必須最少要有 6 個通道，其中 5 個通道控制 MICROBEAST PLUS ，另外一通道給馬達使用。首先創建一個在您的遙控器新的記憶模式。除此之外，您需要禁用十字盤或尾舵的任何混用功能。每個功能應該被分配到只有一個接收器通道。

Never enable your radio's eCCPM mixing function. All the swash plate mixing will be done by MICROBEAST PLUS. Always set your radio's swash mixer to mCCPM (mechanical mixing) which is often called "H1", "1 servo" or "normal" mixing or disable "swash mixing" at all.

永遠不要開啓您遙控器的 eCCPM 為混控功能。所有的十字盤混控功能將由 MICROBEAST PLUS 處理完成。請自始至終都將您遙控器十字盤的混控功能設定為 mCCPM（機械混控），常被稱為 [H1]，[1 servo] 或 [normal] ；全面禁用或混用 [swash mixing] 。

Be sure that all trims and sub trims are disabled and that all servo travels are 100%. Increasing or decreasing the servo travel/stick throw for aileron, elevator and rudder can later adjust the maximum control rates (see chapter 9 - Point B). For the moment to setup MICROBEAST PLUS let anything stay at default. Also do not adjust the pitch curve at the moment. For the setup procedures it has to be set as a straight line reaching from -100% to +100% (or 0 to 100% depending on radio brand).

確保所有的微調和內微調都被禁止，所有的伺服器行程都是 100％。增加或減少伺服輸出行程 / 搖桿油門設為副翼，升降舵和方向舵可調最大行程量（請參閱第 9 章第 B 點）。這時設置 MICROBEAST PLUS 讓所有的設定都成為預設值。同時，也不要調整螺距曲線。螺距曲線必須被設定為一條直線從 -100％ 到 + 100％（或0至100％，取決於遙控器品牌）。

Again make sure that there are no mixing functions active (for example revo-mixing). Have a look at the radio's servo monitor: each stick has to control one channel / servo output (except for thrust stick which typically controls collective pitch and motor). Remember when using MICROBEAST PLUS you do not directly control the servos of the helicopter. By moving a stick you give a control command to the MICROBEAST PLUS unit which then performs the necessary servo movements.This command is transmitted by one servo output channel from the receiver.

請再次確認，您遙控器所有的混控功能都沒有開啓（例如 REVO 混合）。再檢查一次遙控器的螢幕：每個搖桿都有控制一個通道/伺服輸出（除了常用來控制集體螺距和馬達的止推搖桿）。請記住，在使用 MICROBEAST PLUS 時，您並不是直接控制直昇機伺服器的動作。而是您透過搖桿下達指令給 MICROBEAST PLUS，然後由 MICROBEAST PLUS 執行其動作。 這個傳輸命令是從接收器經過一個伺服輸出通道所傳輸的。

Other functions such as throttle curves, ESC switches or auxiliary functions can be adjusted as usual. Always make sure that the motor in electric models can not start when doing the adjustment work! If the drive battery is used as power supply for receiver, servos and MICROBEAST PLUS, disconnect the motor from the ESC .

其他功能，如油門曲線，ESC 開關或輔助功能可以正常使用。當在進行調整工作時，請務必確保馬達在電動模式下無法發動，以策安全。如果動力電池是用來作為接收器、伺服器及 MICROBEAST PLUS 的電源時，請將馬達電源從 ESC 拔除。

AUGEV

3.3 SERVO CONNECTIONS AND AUXILIARY CHANNELS
伺服器連接與輔助通道

The following describes the order in which the servos are plugged into MICROBEAST PLUS. don't plug the servos into the MICROBEAST PLUS yet! The correct servo type and appropriate driving frequency has not yet been selected in the Setup menu . Also we recommend not installing the servo horns yet as the servos could bind and get damaged on first power up .

以下描述伺服器插入 MICROBEAST PLUS 的順序。在正確選擇伺服器類型和相應的驅動頻率前，請勿將伺服器插入 MICROBEST PLUS！此外，我們建議您先不要安裝伺服擺臂，因為伺服器可能在第一次送電時，驅動直昇機而發生損壞。

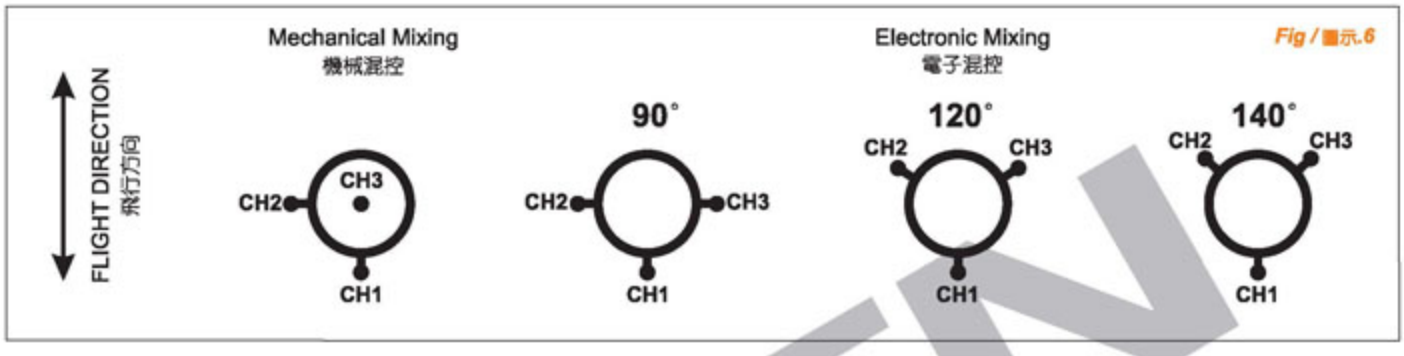


Fig / 圖示.6

In slot CH1 is the elevator servo. With electronic swashplate mixing the two aileron servos have to be connected to CH2 and CH3, with a mechanical mixed head (H1) the aileron servo connects th CH2 and collective pitch servo to CH3. the rudder servo is always connected on CH4.

使用在 eCCPM 電子混控十字盤 (120°- 140° 十字盤) 時，位於機體兩側控制滾轉軸的伺服器必須連接到 [CH2] 和 [CH3]。使用機械混控 [H1] 副翼伺服器選擇 [CH2]：螺距伺服器選擇 [CH3]。尾舵伺服器則固定插在 [CH4]。

⚠ CAUTION 注 意

When you route the wire leads in your model make sure that there is no tension passed to the MICROBEAST PLUS. Make sure that MICROBEAST PLUS is able to move freely, so no vibrations get passed onto the unit by the wire leads. It is not recommended to bundle or tie down the leads close to the MICROBEAST PLUS.
On the other hand the wires must be attached so that they are unable to move the MICROBEAST PLUS during the flight caused by g-force. In particular, do not use any shrink tubing or fabric hose to bundle or encase the wiring in close proximity to the point at which the cables are plugged into the MICROBEAST PLUS. This makes the cables stiff and inflexible and can cause vibrations being transmitted to MICROBEAST PLUS.

安裝 MICROBEAST PLUS 時，請勿將連接線拉得太緊，請確保 MICROBEAST PLUS 本體能保持足夠的晃動空間，這樣才不會因為連接線太緊而將震動傳遞到感應器。也不建議在靠近 MICROBEAST PLUS 本體的地方綑綁或繫緊束帶。另一方面，所有線材皆須確實接好，以避免飛行時 MICROBEAST PLUS 因離心力而脫落。特別是，請不要在接近 MICROBEAST PLUS 的連接線上使用任何熱縮套管、保護套管來捆綁連接線。這會使電線僵硬不靈活，引起振動，進而影響到 MICROBEAST PLUS 的功能。

we would like to point out that the correct dimensioning of receiver power supply is very important (BEC and battery current rating, number of supply cables, cable diameter, cable length . . .) . For flybarless helicopters, the load on the servos and the resulting power consumption is significantly higher than for helicopters with a flybar! Also the servos are constantly in motion when used with an electronic control system.

我們特別強調，接收器電源的正確規格是非常重要的（BEC和電池的額定電流，供電線材，線材外徑與長度）。對於無平衡翼直昇機，因為電子混控系統會不斷地運動，所以，伺服器之負載及消耗功率會比有平衡翼直昇機來的更高！

ALIEN

4 RECEIVER CONNECTION
接收器連接方法

To control the MICROBEAST PLUS you have the opportunity to use different receiver types. Basically it is distinguished between (conventional) "Standard" receivers and "Single-Line" (or"sum signal") receivers:

A standard receiver is a receiver that is connected to MICROBEAST PLUS by using any single servo output of the receiver to connect the five control channels between MICROBEAST PLUS and receiver. The channel which determines the controlled function simply is selected by inserting each plug to the correct output at the receiver. In section 4.1.1 it is shown how to exactly connect the receiver to MICROBEAST PLUS when using MICROBEAST PLUS as flybarless system. In addition the use of MICROBEAST PLUS is possible as a stand-alone tail gyro. See section 4.1.2 to learn how to connect receiver and MICROBEAST PLUS in this case.

When using a single-line receiver all channels (control functions) are transmitted by one single connection line to MICROBEAST PLUS. Because of this, it is not possible here to assign functions by inserting the appropriate plugs in the receiver. Since almost any manufacturer uses its own channel ordering, this must be explicitly be set in MICROBEAST PLUS. Additionally most singleline transmission protocols are coded. This requires further setup steps which are described in chapter 5. How to connect a single-line receiver to the MICROBEAST PLUS is described in section 4.2.

您可以選擇不同的接收器類型來控制 MICROBEAST PLUS。基本上分為傳統型接收器 (標準型接收器包含 PCM、PPM、2.4GHz，6~14CH接收器)，以及單線連接接收器：

標準型接收器是單一伺服器連結 MICROBEAST PLUS ，利用伺服器所輸出的訊號連結遙控器的五個通道來控制 MICROBEAST PLUS 和伺服器 。通道決定了控制功能，只要簡單地將接收器的訊號線準確插入相對應的通道插槽即可。 4.1.1節是展示了如何使用 MICROBEAST PLUS 作為無平衡翼系統時，接收器精確地連接到 MICROBEAST PLUS。除此之外，MICROBEAST PLUS 也可作為一個獨立的尾陀螺使用。請參閱 4.1.2節，以了解接收器和 MICROBEAST PLUS 的連接方式。

當使用單線連接接收器時，所有通道（控制功能）是由一個單一的連接線從 MICROBEAST PLUS 發送。正因為如此，所以不可能利用接收器插入訊號線來分配遙控器之通道功能。因為幾乎所有遙控器製造商已經自行定義其功能，所以通道功能必須在 MICROBEAST PLUS 設置。另外，大多數單線傳輸之溝通協議已經編碼，進一步的設定要求請參閱第 5 章。如何將單線接收器連接到 MICROBEAST PLUS 的進一步描述可在 4.2 節取得。

CAUTION 注 意

There are single-line receivers available that supply additional single channel connectors/servo outputs similar to a standard receiver. In combination with MICROBEAST PLUS you only have to treat such receivers as single-line receivers if you really use the single-line function (see section 4.2.4). If you connect the receiver by using the standard 5-plug layout, such receiver has to be considered as standard receiver.

單線接收器提供了額外的單一頻道連接器/伺服器輸出，類似標準的接收器。通過與MICROBEAST PLUS組合，如果您確定使用單線功能，您只需要處理這類接收器的單線接收器（參見4.2.4節）。如果使用標準的5針插頭連接接收器，此種接收器為標準的接收器。

Ensure a tight fit of the connectors. The pin board of MICROBEAST PLUS is designed so that the plugs firmly clamp each other when they are fully inserted. Anyhow, especially when using a single-line receiver, it is possible that connectors are plugged in with no adjacent neighbors. Such plugs should additionally be secured against loosening.

請務必確認每個端子都已正確緊實地插入。MICROBEAST PLUS 的插槽為緊配設計，以確保端子可牢固地完全插入。無論如何，使用單線連接接收器時，它的端子在插入時是沒有倚鄰的，所以這種插頭應該要特別固定好以防止鬆動。

4.1 CONNECTION OF A STANDARD RECEIVER
傳統接收器的連接方式

4.1.1 FLYBARLESS USAGE
無平衡翼的使用方法

If using a conventional standard receiver connect the receiver outputs to MICROBEAST PLUS as follows:

使用傳統接收器連接接收器輸出訊號給 MICROBEAST PLUS 方法如下：

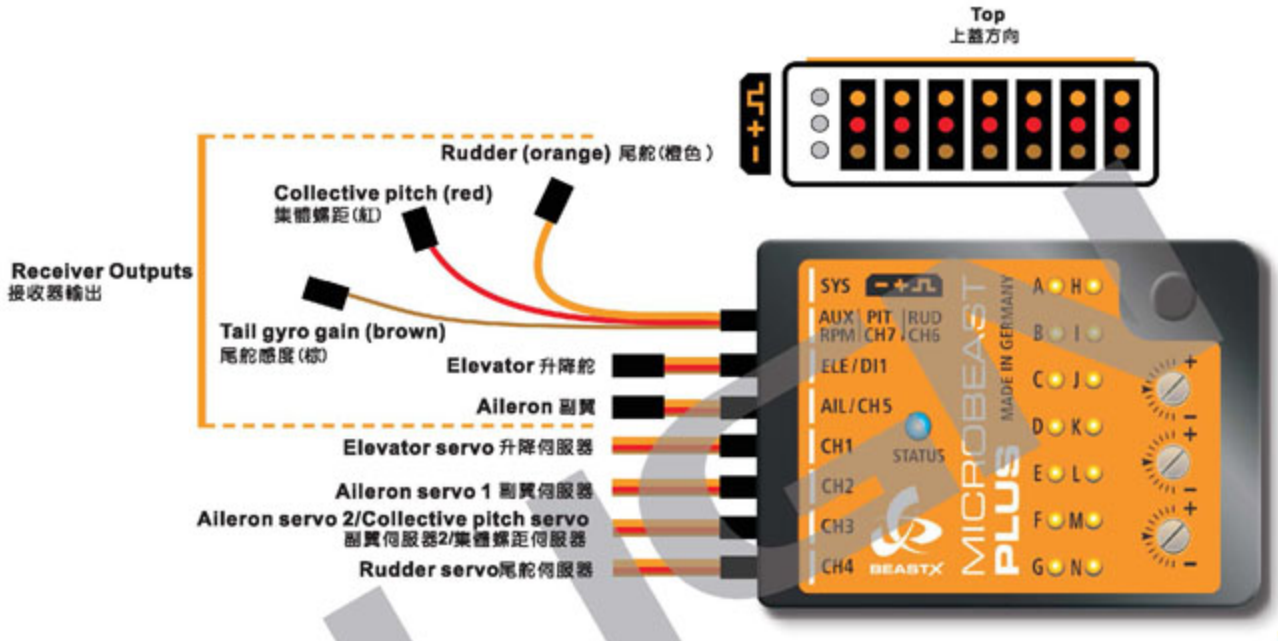


Fig / 圖示.7

Now plug the receiver cables for aileron, elevator, pitch, rudder and tail gain between MICROBEAST PLUS and receiver. To find out the channel assignments of your remote control receiver, please refer to the user manual of your transmitter or contact its manufacturer. To connect elevator and aileron, use the plain 3-wire cables that transmit the control signal in addition to the power supply from the receiver to MICROBEAST PLUS. Collective pitch (red), tail (orange) and gain (brown) have only one lead for the control signal on the receiver side and are connected to MICROBEAST PLUS on the combined connector. Please ensure these plugs are connected correctly to the receiver. Although the cable color is different, all three wires are signal lines which go to the usual orange, yellow or white side!"+" and"-" remain open on theses channels.

Please respect the polarities for the plugs going to MICROBEAST PLUS. The orange line on MICROBEAST PLUS must always be on the top and the brown on the bottom. Also be sure when inserting the connectors not to accidentally plug them into the space next to the pins or vertically offset by one pin.

現在利用 MICROBEAST PLUS 附上的連接線來連接接收器，必須連接的有：副翼、升降、螺距。為了確保接收器連接無誤，請您仔細閱讀接收器使用說明書，以便準確地將訊號線插入相應的通道插槽。連接至接收器的升降 (elevator) 與副翼 (aileron) 的連接線，請務必使用原廠標準 3 線連接線，那是具有訊號 + 、－ 的標準連接線，MICROBEAST PLUS 必須透過這兩條具有 + 、－ 極電源線來取得電源。螺距 / PIT (紅色)、尾舵 / Rudder (橙) 和尾舵感度 / Tail Gain (棕)是只有一條單獨的控制信號連接在接收端，這 3 條線並排後接到 MICROBEAST PLUS (專用線) 。請確保這些插頭能正確連接到接收器的對應通道插槽。

請務必保證每條連接線都已正確地插入MICROBEAST PLUS，靠近面板為橙色訊號線，靠近底殼則是棕色－極線，並且在插入插頭時，特別注意別把針腳弄歪，這可能造成短路故障。

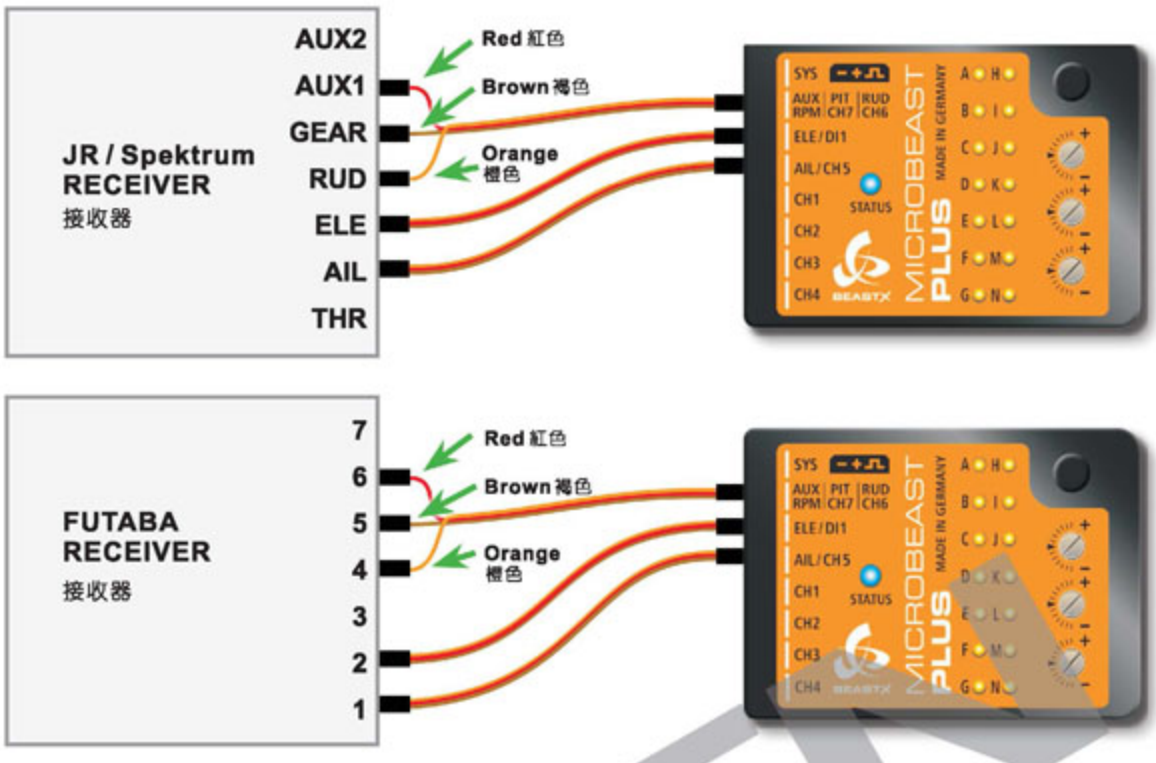


Fig / 圖示.8

Other wires such as throttle servo, ESC or power supplies are connected as usual to the remote control receiver.

The illustrations are only examples. MICROBEAST PLUS works with nearly any other receiver and remote control system that supplies 6 servo output channels (5 channels for MICROBEAST PLUS and 1 channel for the motor).

Remember that it is not the receiver that is crucial for the channel order but that this depends primarily on the allocation of control functions in the transmitter. If you do not know in which order the channels of your transmitter/receiver have to be connected, refer to the instructions that came with your transmitter and receiver, see the servo monitor of the transmitter (if available) or contact the manufacturer of your remote control system.

其它線材連接到接收器方式和油門伺服器、ESC 或電源供應器相同。

圖示僅為參考。MICROBEAST PLUS 適用於任何接收器和遙控系統，它提供 6 個伺服器輸出通道（5 個通道給 MICROBEAST PLUS ，另外一個通道給馬達使用）。

請記住，接收器對通道順序來說並不是那麼重要的，關鍵在於最初遙控器的功能分配。如果你不知道遙控器/接收器的頻道連接順序，請參閱您的遙控器和接收器的說明，及遙控器上的伺服器螢幕（如果有）或聯繫您的遙控器製造商。

ALIGN

4.1.2 USAGE AS STAND-ALONE TAIL GYRO
單機尾陀螺使用方式

MICROBEAST PLUS can also be used as high-end stand-alone tail gyro. This requires the use of a special patch cable which can be purchased separately. The patch cable ensures that MICROBEAST PLUS is provided with power and that the signals for rudder and tail gain are available from the receiver.

The signal lead with the orange and yellow wires must be connected to the slot [AUX | PIT | RUD]. The orange wire must be closest to the topside of MICROBEAST PLUS.

The power lead must be plugged into the slot [ELE |DL1]. The brown wire (negative or ground) is on the bottom, the red wire (positive or power) should be in the middle position. Connect the rudder servo to [CH4].

If using the MICROBEAST PLUS as stand-alone tail gyro only the menu points A, C, D, E and F need be adjusted in Setup menu . All other menu points can be skipped .

To avoid damage to the rudder servo, first adjust Setup menu points C and D which are rudder servo pulse and frequency, prior to connecting the servo.

MICROBEAST PLUS 也可以作為高端單機尾陀螺使用。這需要使用一條特殊的連接線 (另購品)。該線材可確保 MICROBEAST PLUS 正常提供電源且接收器正常傳送信號至尾舵和尾舵感度。

橘色和黃色信號線必須連接到插槽 [AUX | PIT | RUD]。橘色的線必須在 MICROBEAST PLUS 的上方。該電源線必須插入插槽 [ELE | DI1]。棕線（負或接地）在底部，紅線（正或功率）應當在中間位置上。連接尾舵至 [CH4]。

如果使用 MICROBEAST PLUS 作為獨立的尾陀螺時，只需要調整設定選單第 A，C，D，E 和 F 點。其它選單點可以跳過。

為了避免尾舵伺服器損壞，在連接到伺服器之前，首先到設定選單的第 C 和 D 點來調整尾舵伺服器中立點及頻率。

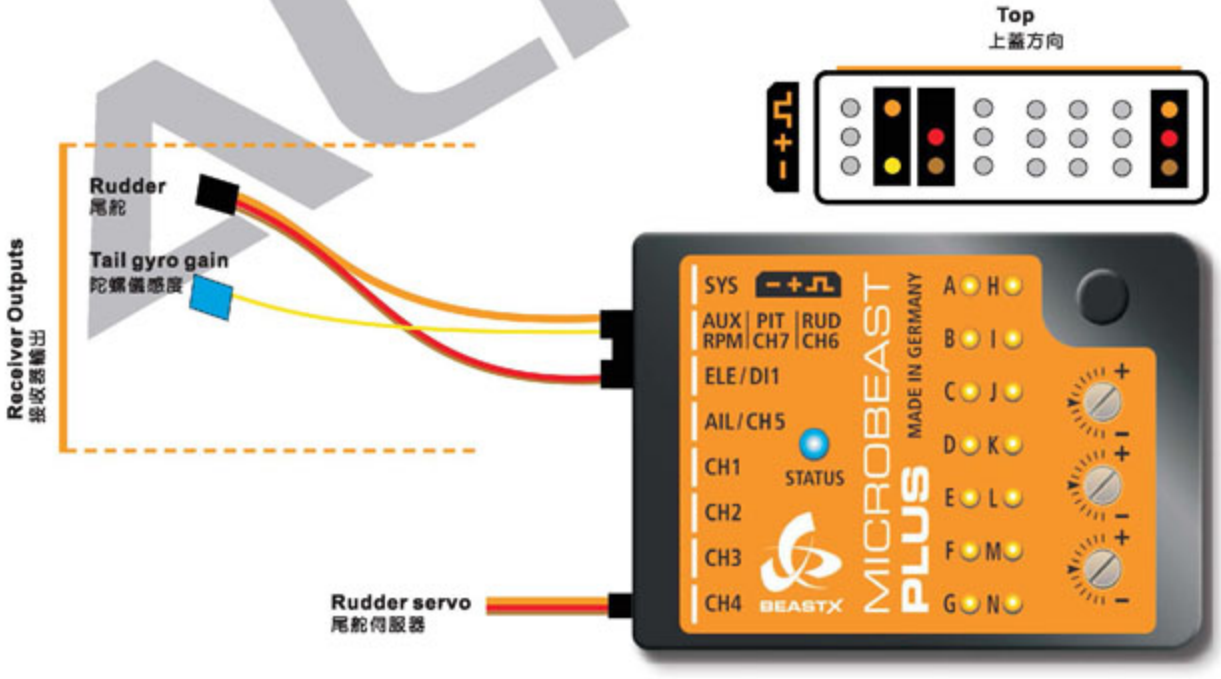


Fig / 圖示.9

ALIGN

4.2 USE OF SINGLE-LINE RECEIVERS
單線連接接收器連接方法

MICROBEAST PLUS enables the use of conventional receivers with individual channel outputs or the use of special receivers which output the channel signals as a merged single-line signal. These include Spektrum satellite receivers, PPM composite signal receiver (e.g. robbe/Futaba SP Series receiver, satellite receivers by Jeti , Graupner HOTT receivers in SUMO mode), receivers with Futaba S-BUS as well as receivers with SRXL compatible data output (e.g. SRXL-Multiplex , BEASTRX, Graupner/SJ HOTT in SUMD mode, JR receivers with X.Bus Mode B output, Spektrum receivers with SRXL output).

MICROBEAST PLUS 除了能夠支援傳統型接收器外，也相容單線連接接收器。可適用接收器的品牌如 Spektrum 衛星接收機，PPM複合信號接收器（如 robbe /Futaba SP 系列接收器，衛星接收機 JETI ，Graupner HOTT 接收機 SUMO 模式）， Futaba S-BUS 系統，以及接收器與 SRXL 兼容的輸出數據（如 SRXL-Multiplex，BEASTRX，Graupner/SJ HOTT 在 SUMD 模式，JR接收器與 X.Bus 模式B輸出，Spektrum 接收器與 SRXL 兼容的輸出數據）。

4.2.1 INSTALLATION OF TOP CARBON PLATE
一般注意事項

When operating with single-line receivers (Spektrum satellite receiver in direct connection, PPM composite signal receivers, receivers using Futaba S-BUS protocol or SRXL compatible receivers), the throttle servo/motor controller can be connected to [Ch5] on the MICROBEAST PLUS. When using a motor controller for electric models with a BEC this slot then also will be supplying MICROBEAST PLUS, servos and receiver with power.

On slot [DI2 | CH7 | CH6] another auxiliary channel is available on the top pin [CH6], for example to hook up a headspeed governor for nitro engines. Please note that this slot is only issuing a control signal and has no power. For this reason a servo cannot be plugged here directly. The two lower pins [DI2] and [CH7] are reserved for other applications. Never connect a power source on those two pins . This could damage the MICROBEAST PLUS!

In the case of an electric model if the ESC has a second BEC output or when using a buffering battery this wire can be connected to the [SYS] or [CH5] terminal (if [CH5] is not occupied in case the ESC is connected to the receiver). This ensures that the power supply for the servos is carried over short distances.

On models with a separate power supply this also can be connected to slot [SYS] and/or [CH5] (if [CH5] is not occupied). Please ensure adequate sizing of the supply lines. Especially with large models use a second (or even third) supply line which can be derived to the receiver or that can be injected by using a Y-cable parallel to one of the servo outputs. When using very powerful servos you might consider using the MICROBEAST PLUS HD which allows to connect one sufficiently sized supply line.

使用單線連接接收器時（Spektrum 衛星接收器，PPM複合信號接收器，Futaba S-BUS 或 SRXL 兼容接收器），油門伺服器/ ESC 電變器的訊號/ BEC輸入請連接到 MICROBEAST PLUS [CH5] 。BEC可由此插槽提供電源給 MICROBEAST PLUS， 伺服器和接收器。

插槽 [DI2 | CH7 | CH6] 的另一個輔助通道可以提供給外掛裝置使用，如BEC定速器，位置在 [CH6] 最上面的針腳。請注意，此插槽僅發出控制信號並無電源。因此，這個位置不能直接插入伺服器。兩個插槽 [DI2] 和 [CH7] 下方的針腳是保留給其它應用的。請勿將電源插入 [DI2] 和 [CH7]下方的針腳，否則將損壞MICROBEAST PLUS！

在電動直昇機模式下，若所使用的 ESC 具有第二 BEC 輸出或使用緩衝電池時，可連接到 [SYS] 或 [CH5] 終端（如果 [CH5] 沒有被使用，ESC 同時被連接到接收器的情況下）。這確保並縮短了電源持續供給伺服器之距離。

無論是引擎或電動傳動的直昇機，若需要一個獨立電源，也可以連接到插槽 [SYS] 和 / 或[CH5]（如果 [CH5] 沒有被使用）。請確保連接線有足夠的承載力。尤其是大型直昇機使用的第二或第三條連接線給接收器時，可使用 Y 型線平行輸出給其中一個伺服器使用。若所使用的伺服器之電流非常大時，可以考慮使用 MICROBEAST PLUS HD，它允許較高規格/尺寸的連接線。

ALIGN

4.2.2 SPEKTRUM SATELLITE RECEIVER
SPEKTRUM 衛星接收天線

To connect a single Spektrum satellite (remote) receiver directly to the MICROBEAST PLUS a special adapter is required . This adapter is connected to the [dI1] input of the MICROBEAST PLUS. Please observe correct polarity, the orange signal line must be next to the cover. The cable for the Spektrum satellite receiver is then plugged into this adapter.

MICROBEAST PLUS 連接 Spektrum衛星接收器，必須使用一條轉接線（編號EGBP307）。此轉接線連接到 MICROBEAST PLUS 的[DI1]插槽，請確保正確的極性方向，橙色信號線必須朝向上蓋方向，Spektrum衛星接收天線則插入這個轉接線。

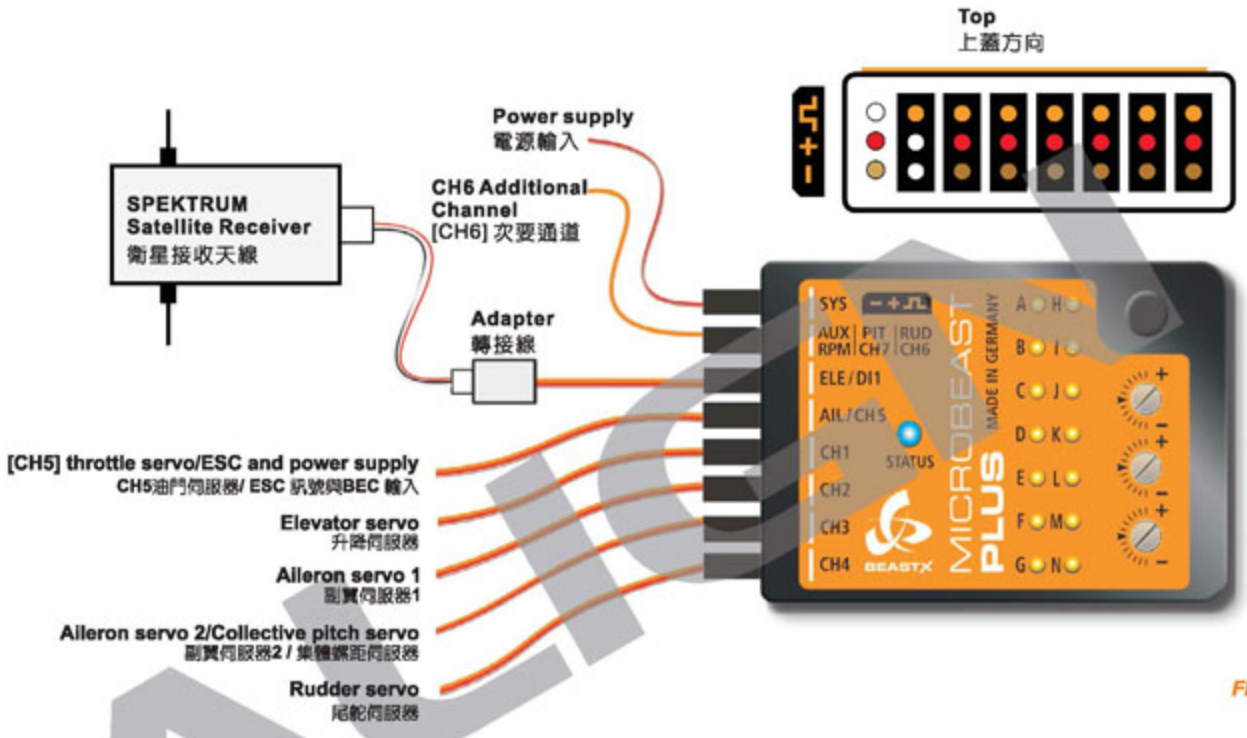


Fig / 圖示.10

CAUTION 注 意

The use of MICROBEAST PLUS with a single Spektrum? satellite receiver is allowed only on micro or mini helicopters (450 size helicopters and smaller) because of the limited range due to the lack of antenna diversity! For larger models we recommend using a Spektrum? receiver with SRXL data output which also can be connected to MICROBEAST PLUS by only one single line (see 4.2.4) and which allows the connection of multiple satellites.

使用Spektrum衛星天線連接 MICROBEAST PLUS 時，因為外接天線的數量有限，基於無法涵蓋接收角度的理由，會使飛行範圍受限，因此僅限於使用在小型直昇機上（含450級及直昇機和以下）！對於大型直昇機（含500級直昇機和以上）我們推薦使用具有 SRXL 數據輸出的 Spektrum 接收器，它可利用一條訊號線連接到 MICROBEAST PLUS ，來並聯衛星天線（請參閱 4.2.4）。

BINDING PROCEDURE 對頻步驟

CAUTION 注 意

In the case of using a single Spektrum satellite receiver directly connected to MICROBEAST PLUS, it is very important to bind the receiver first before programming MICROBEAST PLUS. This step is essential to perform, even if the satellite was already in use elsewhere (e. g. in connection with a "standard" Spektrum receiver) and was already bound to the transmitter earlier.

在 MICROBEAST PLUS 直接連接到單一 Spektrum 接收衛星天線的情況下，調整 MICROBEAST PLUS 前，必須先對頻。 即使衛星天線在其它地方已經使用且已經連到遙控器 (例如，連接到 "標準" Spektrum 接收機），此步驟仍然非常重要。

Simultaneously with the binding process, the type of satellite receiver has to be set, i .e . whether it is a DSMX or DSM2 satellite (The actual selected signal protocol in the transmitter is not relevant!) . It is very important to choose the correct type of satellite receiver here, since an improper setting may seem to work but can lead to radio interference or total loss of the link in the subsequent operation!

Insert a Spektrum "Bind Plug" in the **[SYS]** slot on MICROBEAST PLUS.

In cases where power is supplied exclusively by the **[SYS]** connection, to bind a Spektrum satellite receiver the power supply must be provided temporarily through any of the ports [CH1] - [CH5].

To select a **DSM2** satellite and to enter bind mode, simply switch on the power supply now. The LED on the receiver and LED N on MICROBEAST PLUS will start to flash. You can bind the transmitter as usual (for more information refer to the instructions of your radio control system).

To select and bind a **DSMX** satellite, **hold down the button** on MICROBEAST PLUS while switching on the power supply. Now the receiver's LED and LED H (!) on the MICROBEAST PLUS will flash and you can release the button and bind the receiver with your transmitter.

After successful binding procedure the receiver's LED will stay solid. LED H respectively N flash alternately to all other LEDs. Now switch off the power supply and remove the bind plug. Continue with receiver type setup (see next chapter).

It makes no difference if you pull off the "Bind Plug" during the binding process or leave it connected as you would expect from some "standard" Spektrum receivers.

在對頻過程中，必須設定衛星接收器的類型。例如:是否是 DSMX 或 DSM2 衛星（遙控器中的實際選擇的信號方案無關！）。選擇正確的衛星接收器類型非常重要，因為不正確的選擇可能可以設定及運轉，但會導致無線電干擾，或在操作時失控！

將 Spektrum "對頻金鑰" 插入MICROBEAST PLUS 的 [SYS] 插槽 。

在電源單獨由 [SYS] 連接供應的情況下，綁定一個 Spektrum 衛星接收器時，電源必須暫時由 [CH1] 至 [CH5] 其中一個頻道輸出。

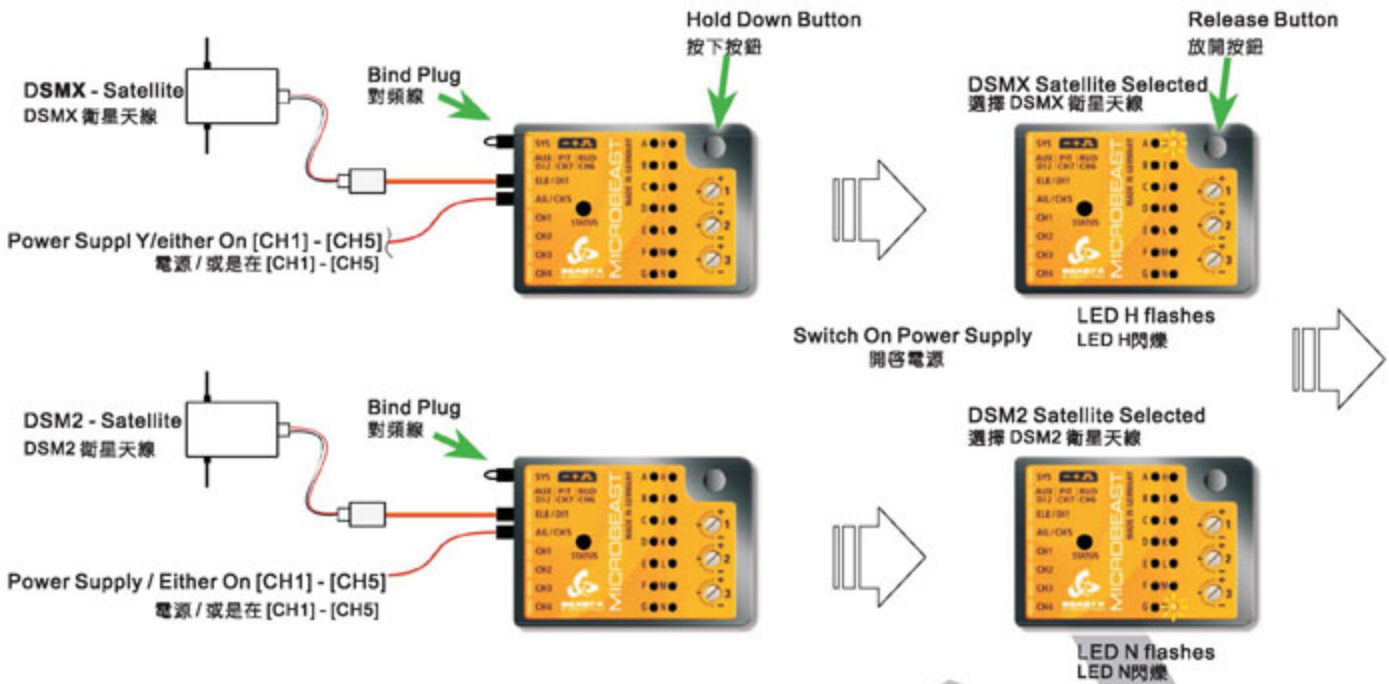
選擇 DSM2 衛星天線，並進入對頻模式後，只需接通電源，接收器上的 LED燈和 MICROBEAST PLUS 上的 LED燈 N 即開始閃爍。您可以像往常一樣對頻遙控器（請參閱您的遙控器說明書取得更多資訊）。

選擇並綁定一個 DSMX 衛星天線，按下 MICROBEAST PLUS 上按鈕的同時接通電源。現在，在 MICROBEAST PLUS 的 LED燈 H 和 接收器的 LED燈（ ！）將閃爍，此時可以鬆開按鈕，然後對頻你的接收器跟遙控器。

對頻成功後，接收器的指示燈會保持恆亮。 MICROBEAST PLUS 的 LED燈 H 及 N 會分別與其他LED 燈交替閃爍。現在關掉電源，拔出對頻線。繼續設定接收器類型（下一章）。

如果你在對頻過程中拉斷了"對頻線"或連接至"標準"Spektrum 接收器，這是沒有什麼區別的。

AUTEN



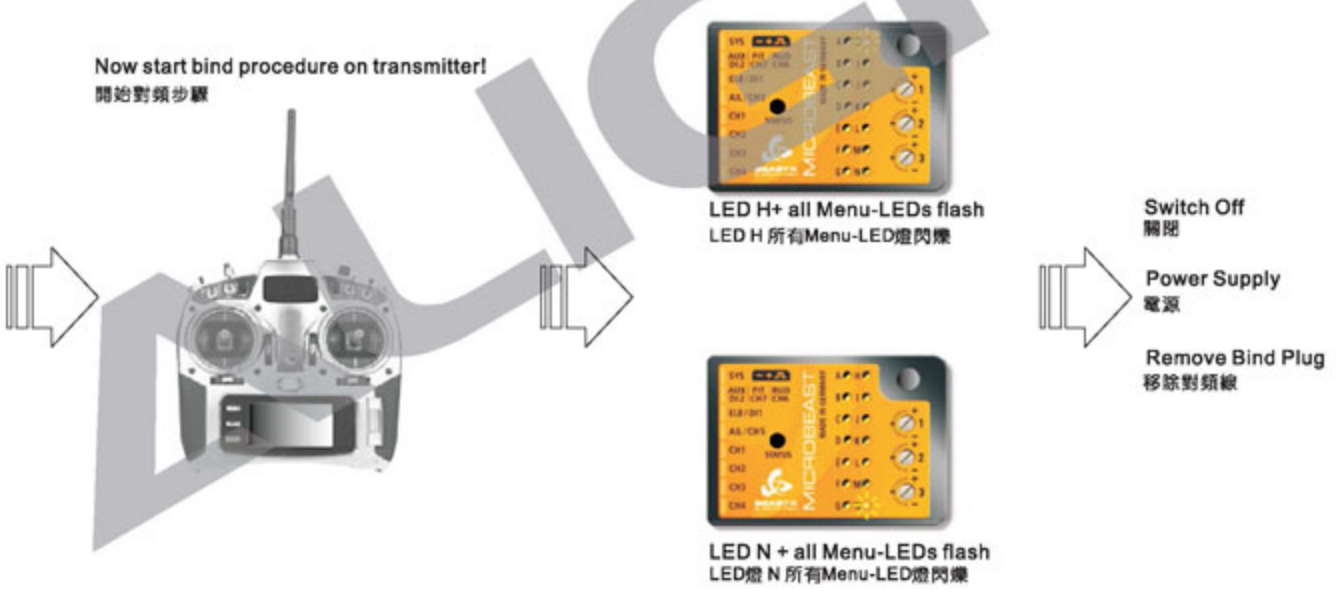


Fig / 圖示.11

CAUTION 注 意

Decisive for the selection alone is, which type of satellite receiver is plugged in! It is irrelevant which transmission method between the receiver and transmitter is actually used.

Check carefully what type of receiver you have and what type you setup . An incorrect setting is not obvious but will lead to malfunction or failure of the radio link later in use.

衛星接收器的類型是否正確是決定性的關鍵！它與接收器和發射器之間的傳輸方法並無關連。

請仔細檢查您所使用的接收器類型以及設定的方法。不正確的設定可能不容易顯示出來，但會導致未來使用的故障或失靈。

4.2.3 SINGLE-LINE RECEIVERS WITHOUT ADDITIONAL SERVO OUTPUTS
單線連接接收器，無需額外的伺服輸出 （如：PPM 複合信號接收器）

Many single-line receivers (especially satellite receivers with PPM composite signal) only have one single output port. Some receivers (e.g. "RSAT" receivers from Jeti) have the connection cable directly soldered to this port. Others (e.g. Futaba? "SP" series receivers) can be connected to MICROBEAST PLUS by using one of the supplied connection cables that have one servo plug at each end. Plug it into your receiver's output for the sum signal. Pay attention to maintain correct polarity. Since the supplied cable can be used universally it lacks the polarity protection tab that is common to some servo connectors and which mark the signal line (orange).

Plug the other end of the cable into the MICROBEAST PLUS input [DI1]. Make sure the polarity is correct. The orange signal line must be next to the MICROBEAST PLUS top cover.

All devices (servos, ESC, power supply) are connected to MICROBEAST PLUS. The receiver is powered over the signle line connection and transfers the control commands from the transmitter to MICROBEAST PLUS over this line.

許多單線接收器（尤其是PPM複合信號的衛星接收器），只有一個單一輸出埠。市售的接收器（如 Jeti "RSAT" 接收器）具有連接線可直接接到此輸出埠。其他（如 Futaba "SP" 系列接收器）可以利用選購的轉接線來連接 MICROBEAST PLUS，轉接線的兩端都有插頭，將它插入接收器的輸出埠來收集訊號。請注意並保持正確的極性。因為此類型的轉接線已廣泛被運用為伺服連接線，並無防呆插頭設計，所以插入前請再三確認，以免裝備損壞。

將轉接線的另一端插入 MICROBEAST PLUS 輸入埠 [DI1]。請注意極性是否正確。橙色信號線必須接著 MICROBEAST PLUS 上蓋。

所有電子設備（伺服器，ESC，電源）已連接到 MICROBEAST PLUS 中。接收器透過此訊號線開啓、轉換控制指令，並在遙控器和 MICROBEAST PLUS 間傳輸。

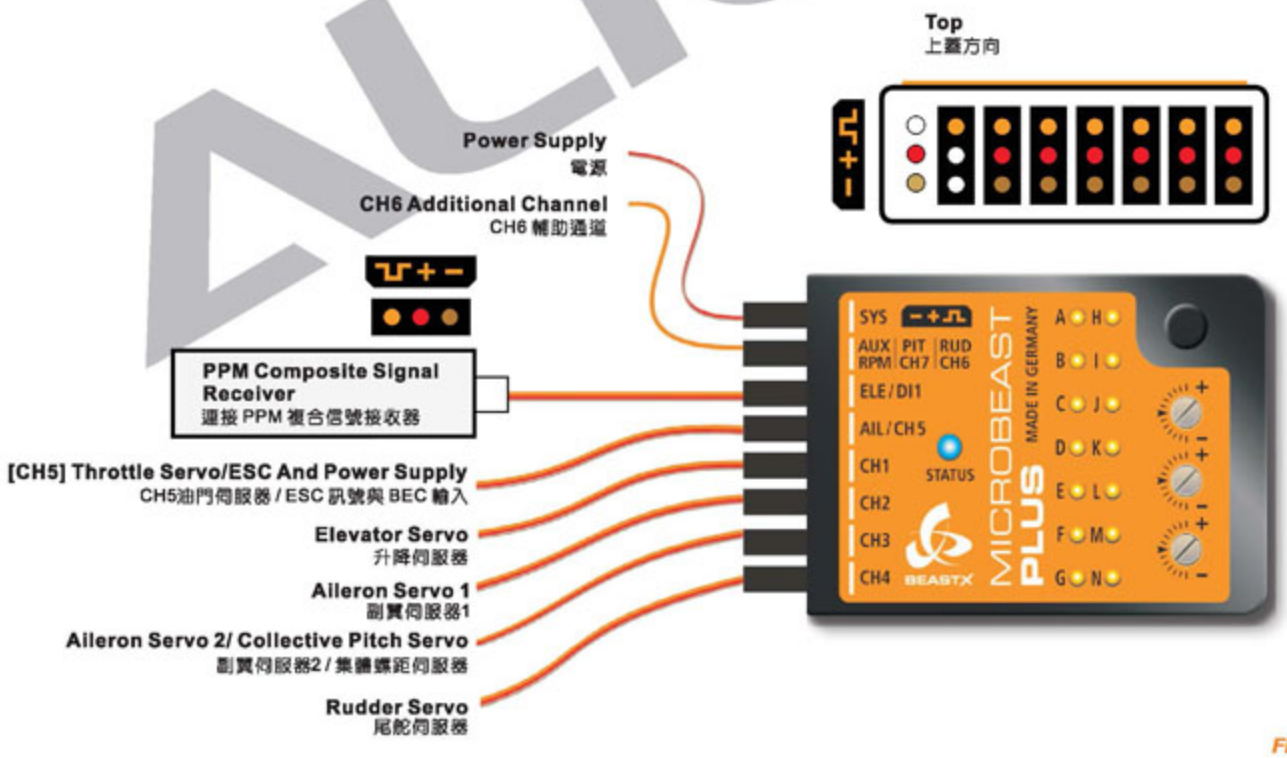


Fig / 圖示.12

ALIEN

4.2.4 SINGLE-LINE RECEIVER WITH ADDITIONAL SERVO CONNECTORS
單線連接接收器與附加伺服連接器（如：S-BUS 和 SRXL 接收器）使用方法

Some receivers have a terminal that outputs all the channel data as sum signal in addition to conventional servo sockets. Plug one of the supplied connection cables to this terminal (marked [S .BUS] for Futaba , [SRXL] for Spektrum and BEASTRX, [B | D] for Multiplex , Graupner/SJ HOTT receivers typically use channel [8] port) and the other end to input [dI1] of MICROBEAST PLUS. Please make sure that the plugs are inserted with correct polarity. On MICROBEAST PLUS the (orange) signal line must be next to the case cover.

有些廠牌的接收器擁有一個頻道，用它來輸出所有通道的數據和收集訊號，此外，還可做為傳統伺服器的插口。請將一條所附的連接線插入該頻道（標有[Futaba S.BUS，[Spektrum 和BEASTRX-SRXL，Multiplex [B| D]，Graupner/SJ HOTT 接收器通常使用通道 [8] ），將另一端連接到 MICROBEAST PLUS 輸入埠 [DI1。插頭插入時請再三確保極性是否正確。MICROBEAST PLUS 的訊號線（橙色）必須朝向上蓋方向。

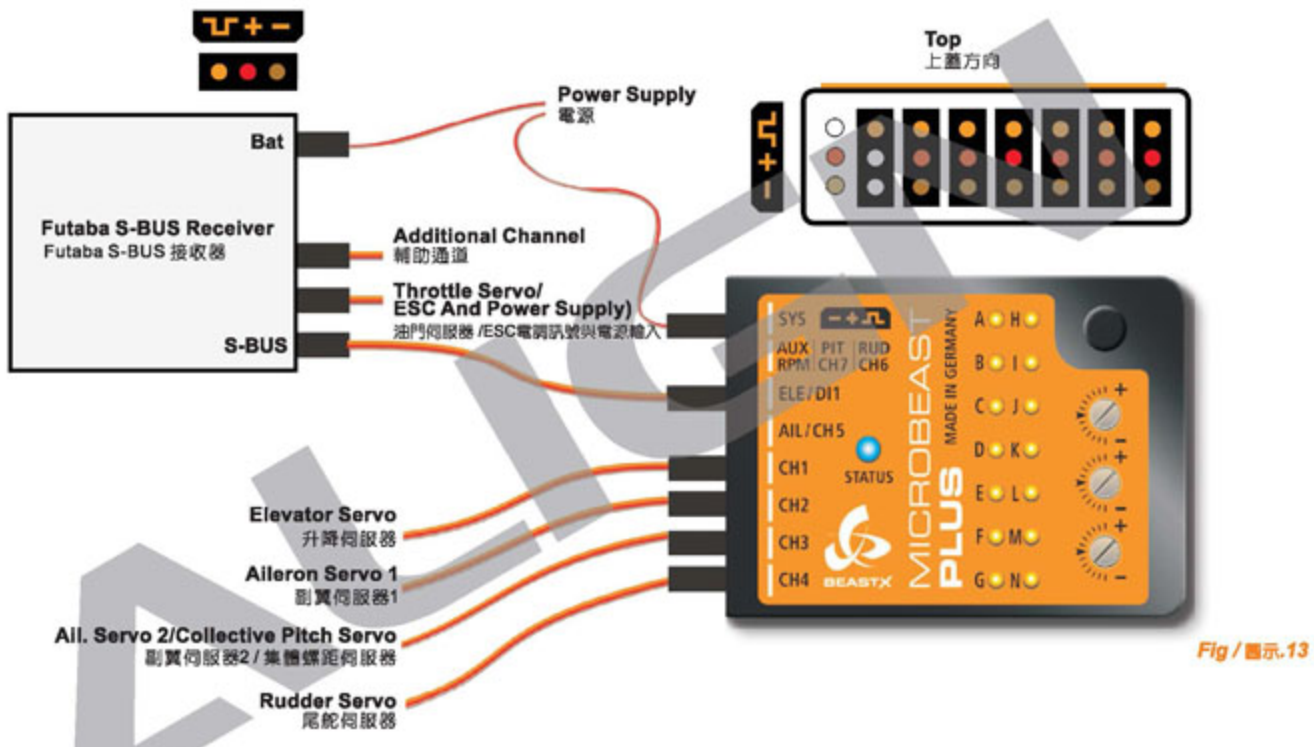


Fig / 圖示.13

This description also applies to other single-line receivers with additional servo connectors e.g. SRXL receivers like BEASTRX, Multiplex, Graupner/SJ, Spektrum.

這個描述也適用於其它具有輔助伺服接頭的單線接收器，如 SRXL 接收器，BEASTRX，Multiplex，Graupner/SJ，Spektrum。

ESC and additional functions can either be connected directly to the receiver or to the terminals [Ch5] and [Ch6] of MICROBEAST PLUS. When the BEC of the speed controller is used to power the devices it is recommended to plug the controller's servo lead directly to [Ch5] port of MICROBEAST PLUS. This ensures that the power is transferred to the servos as lossless as possible.

ESC 和其他附加功能可以直接連接到接收器或 MICROBEAST PLUS 的插槽 [CH5] 和 [CH6]。當定速器BEC被用作啓動電源使用時，建議將定速伺服器直接插在 MICROBEAST PLUS 的 [CH5] 。這樣可盡量減少電源在伺服器傳輸時的功率損耗。

5 RECEIVER TYPE SETUP
接收器類型設定方法

By default the use of a conventional standard receiver is provided. Therefore it is not necessary to call the Receiver setup menu. Skip the following sub-items and proceed with chapter 6.

If using a single-line receiver (see chapter 4) because of the different signal protocols the receiver type must be selected in the Receiver menu before the first use and further steps such as allocation of individual channels and failsafe setting are needed. To get into the Receiver menu press the button on MICROBEAST PLUS and hold it down while you turn on the receiver power supply. The yellow Menu- LED A should now be flashing instantly. Release the button.

傳統型接收器提供預設值。因此，接收器的選單並不須要設定。請跳過下面的子項，直接跳到第 6 章。

使用單線連接接收器時（參閱第4章），因為不同廠牌的溝通協定各有差異，所以在首次使用和進階步驟，必須在接收器的選單中分配每一通道的用法及失控保護設定。進入接收器的選單，在打開接收器電源前，先按住 MICROBEAST PLUS 按鈕。當Menu- LED 燈 第A點開始閃爍黃色後，鬆開按鈕即可。

CAUTION 注 意

If you use a speed controller with BEC disconnect the motor to avoid unintentional starting of the engine! for a heli with combustion engine you should remove the servo horn from the throttle servo . Note that in the first menu points of Receiver setup menu no control signal is emitted on [Ch5] of MICROBEAST PLUS. At menu point N (Throttle failsafe setting) the output is activated though to check servo position!

如果您的引擎直昇機是使用 BEC 定速器來關閉馬達，你應該將油門伺服器的舵角片取出，以避免引擎意外啓動！請注意，在接收器選單中的第一點接收器的設定選單中，並沒有控制訊號傳輸到 MICROBEAST PLUS 的 [CH5] 中。在選單第 N 點（油門失控保護設定請參閱第5.3章）在檢查伺服器功能的同時，輸出功能已被活化！

CAUTION 注 意

For safety reason the Receiver menu setup must be done completely. Only when the end of the menu is reached the modified values will be stored and the selected receiver type can be used. If the power is turned off before the end of Receiver menu is reached, the previous settings remain unchanged.

Reconfiguration in the Receiver setup menu does not affect the other settings of MICROBEAST PLUS. For example if you switch to a different brand of remote control system and thus change the receiver type you can usually fly again immediately after changing the settings in the Receiver setup menu. Note, however, that transmitter-specific parameters may change very well. It is absolutely necessary to check all control functions for proper operation before the first flight. In particular these are directions of control functions, the collective pitch settings (Setup menu point K) and the tail gyro adjustment (see section 8.4).

為了安全起見，接收器選單的設定必須徹底完成。設定的步驟必須進行到選單的最後階段，一直到修改值儲存完成，以及所選擇的接收器類型可以被使用為止。如果電源在接收器設定的最後階段前關閉，之前的設定值依舊不變。

在接收器上的選單重新配置設定，不會影響 MICROBEAST PLUS 的其他設定。例如，如果您切換到不同品牌的遙控系統，然後更改了接收器類型，通常你可以再次在接收器的選單中更改設定後立即飛行。然而，請注意，該遙控器的特定參數必須修改得宜。檢查所有控制功能是第一次飛行前絕對必要的例行工作。特別是控制功能的方向，集體螺距的設定（設定選單第 K 點）和尾陀螺的調整（請參閱 8.4 章）。

ALIGN

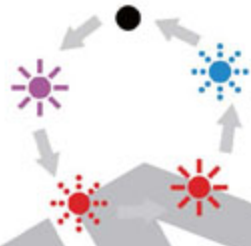
5.1 RECEIVER TYPE CHOICE (RECEIVER MENU POINT A)
接收器類型的選擇（接收器選單第 A 點）

At menu point A color and state of the Status-LED give you information about which type of receiver/ transmission protocol is currently selected (refer to the table below). In order to change the type, press and hold the button for about 2 seconds. The Status-LED will light in the next color and flash eventually. Repeat this as many times as required until the Status-LED matches your receiver type/ transmission protocol:

接收器選單中第 A 點，Status-LED燈的顏色分別代表著不同類型的接收器/溝通協議（參考下表）同時也表示您目前所選擇的接收器。如果想變更接收器類型，長按 Status-LED燈按鈕大約 2 秒鐘。指示燈會更換下個顏色最後閃爍。重複這個動作直到 Status-LED燈的顏色符合您的接收器：

STATUS-LED Status-Led燈	RECEIVER TYPE / TRANSMISSION PROTOCOL 接收器類型 / 溝通協議
Off	Standard Receiver (***Fig. 7, 8, 9***)* 傳統型接收器
Purple	Single Spektrum Satellite (***Fig. 10***) 衛星天線
Red Flashing	Futaba S-BUS (***Fig. 12, 13***)
Red	SRXL (***Fig. 12, 13***)
Blue Flashing	PPM Composite Signal (***Fig. 12, 13***) 單線接收訊號

*Factory Setting *出廠預設值



Push and hold button for about 2 seconds

按住按鈕長按大約 2 秒鐘

Press the button, but only briefly, to save the setup and switch to Receiver menu point B (the yellow Menu-LED B will flash).

短按按鈕，來儲存設定以及切換到接收器選單 第 B 點（Menu-LED 燈閃爍黃色）。

CAUTION 注 意

1. If you have already briefly pressed the button by mistake and it did not change the receiver type but switch to menu point B, switch off the power and repeat the above procedure.
2. If the selected receiver type is "Standard" the setup is finished now and briefly pushing the button will complete receiver setup (all LEDs flashing). Switch off power supply and directly proceed with chapter 6. Channel assignment is not necessary and not provided since the allocation takes place by appropriate insertion of the cables into the "standard" receiver.

1. 如果您速度很快不小心地錯按了按鈕，接收器類型尚未更改，但已經切換到選單第 B 點，此時只要重新啓動電源並重覆上述步驟即可。
2. 如果選擇的接收器類型是 "傳統型"，只要短按按鈕，即可完成接收器設定（此時所有 LED 燈閃爍）。關閉電源，並直接跳到第 6 章。使用傳統型接收器，通道分配功能是不必要的，因為傳統接收器會插入一條連接線來取代通道分配功能。

ALIGN

PROGRAMMING EXAMPLE 設定範例

Operation With A Futaba S-bus Receiver Using The S-bus Transmission Protocol:
使用 Futaba S-BUS 接收器

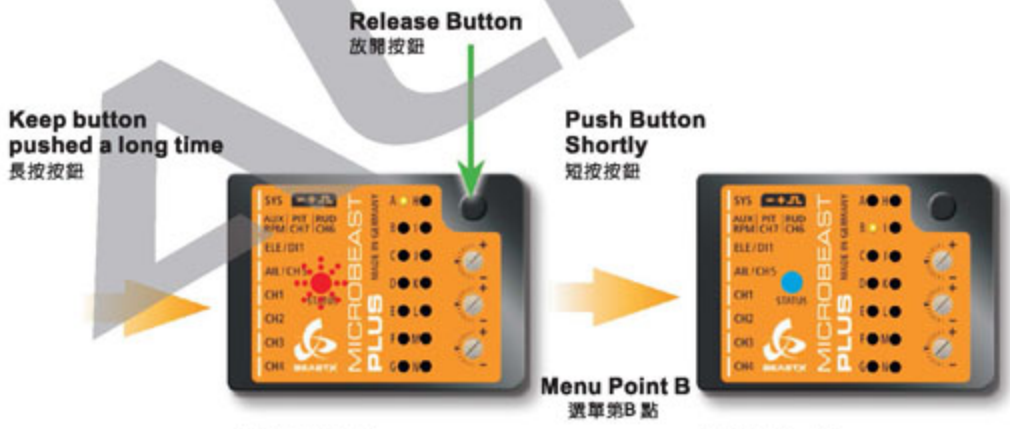


Fig / 圖示.14

ALIGN

5.2 INPUT CHANNEL ASSIGNMENTS (RECEIVER MENU POINTS B - H)
輸入通道分配 (接收器選單第 B-H 點)

If not a standard receiver but a single-line receiver was selected at menu point A, it must be established which control function is controlled by what channel. This is necessary because all the control functions are transmitted via one single line and virtually every manufacturer uses its own order in the arrangement of channels to control functions. There is no possibility of plugging the cables in each individual channel matching, like it is with a standard receiver.

如果不是使用傳統型接收器，且單線連接接收器在選單第 A 點中，已經被選擇，那就必須為其通道建立控制功能。這是必要的，因為所有的控制功能都是通過一條連接線發送，且幾乎所有接收器的製造商都已自行定義其通道及指配控制功能。更不可能像傳統接收器那樣將連接線插入每一個單獨通道來分配功能。

5.2.1 PRESET CHANNEL ASSIGNMENT
預設的頻道分配

When selecting a specific type of single-line receiver the appropriate type of receiver channel allocation will be preset in MICROBEAST PLUS. Please refer to the tables below and check if your radio transmits the channels in the correct order. If this is not the case, you have to assign the channel order step by step through the menu points B - H (for this see section 5.2.2). To know the channel assignment of your transmitter you can check the user manual of the transmitter or look at the servo monitor of the transmitter (if it has this feature) . If in doubt ask the manufacturer of your transmitter .

If you are on Receiver menu point B, please wait until the Status-LED lights blue. To load the selected standard channel assignment (see tables below), hold the button down for several seconds . The yellow Menu-LED will immediately jump to Receiver menu point N.

MICROBEAST PLUS 在出廠前，已經針對單線連接接收器的伺服器類型，進行了通道功能預設。請利用下方的表格來確定您遙控器各通道的對應功能是否正確。如果無法對應，那麼只能利用選單第 B - H 點來設定（請參考 5.2.2 ）。如果對遙控器的通道分配不清楚，請查閱遙控器的說明書，或者進入遙控器當中的 Servo 監視畫面，來觀看每個伺服器的對應頻道。

如果您此時在接收器選單中的第 B 點，請等到 Status-LED 燈號轉為藍色。長按按鈕幾秒鐘，下載選定的標準通道分配（請見下表）。黃色 Menu-LED 燈會立即跳轉到接收器選單第 N 點.

1. If the Status-Led stays red at one of the menu point B - H, it means that there is no valid remote control signal available . A channel assignment in this case is impossible! Check if the receiver is properly bound to the transmitter (if using a single Spektrum satellite see section 4.2.2) and that a receiver/transmission protocol of the correct type is selected in Receiver menu point A. Switch off the power and restart the receiver type setup procedure from the beginning.
2. You can also load the default settings by pushing the button for several seconds in any of the points from C to H. This will erase all previously made individual channel assignments.

1. 如果 Status-LED 燈號轉為紅色並停留在選單第 B-H 點之其中一點，這表示沒有有效的遙控訊號可用。在這種情況下，通道分配是不能進行的！請檢查接收器是否正確對頻到遙控器（如果使用 SPEKTRUM 衛星天線，請參閱 4.2.2 節），以及在接收器選單中的第 A 點選擇了正確的接收器類型 / 溝通協議。此時，請關閉電源並從頭設定接收器。
2. 您可以長按 Status-LED 燈第 C-H 點任一按鈕幾秒鐘來取得預設值，但是您先前所設定的每一個通道分配都會被刪除。

	Spektrum Satellite 衛星天線	Futaba S-bUS	PPM composite signal*
Transmitter 遙控器	**Function** 功能	**Function** 功能	**Function** 功能
Channel 1 通道 1	Throttle [CH5] 油門 [CH5]	Aileron Motor 油門	Collective Pitch 集體螺距
Channel 2 通道 2	Aileron 副翼	Elevator Ailero n副翼	Aileron 副翼
Channel 3 通道 3	Elevator 升降舵	Throttle [CH5] 油門 [CH5]	Elevator 升降舵
Channel 4 通道 4	Rudder 尾舵	Rudder 尾舵	Rudder 尾舵
Channel 5 通道 5	Tail Gyro Gain 感度	Tail Gyro Gain 感度	Auxiliary [CH6] 輔助通道
Channel 6 通道 6	Collective Pitch 集體螺距	Collective Pitch 集體螺距	Throttle [CH5] 油門 [CH5]
Channel 7 通道 7	Auxiliary [CH6] 輔助通道 [CH6]	Auxiliary [CH6] 輔助通道 [CH6]	Tail Gyro Gain 感度

* e.g. provided by Futaba SP-Series receivers, Jeti satellite receivers in PPM-mode, Graupner/SJ receivers in mode SUMD

* Futaba SP 系列接收器，Jeti PPM模式下的衛星接收器，Graupner/SJ 在 SUMD模式下的接收器

SRXL					
	BEASTRX	**Multiplex SRXL jR X .bus Mode b jeTI Udl**	**Graupner SUMD**	**Graupner SUMD 6 Kanal (MX -12)**	**Spektrum SRXL**
Transmitter 遙控器	**Function** 功能	**Function** 功能	**Function** 功能	**Function** 功能	**Function** 功能
Channel 1 通道 1	Aileron 副翼	Aileron 副翼	Collective Pitch 集體螺距	Collective Pitch 集體螺距	Throttle [CH5] 油門 [CH5]
Channel 2 通道 2	Elevator 升降舵	Elevator 升降舵	Aileron 副翼	Aileron 副翼	Aileron 副翼
Channel 3 通道 3	Throttle [CH5] 油門 [CH5]	Rudder 尾舵	Elevator 升降舵	Elevator 升降舵	Elevator 升降舵
Channel 4 通道 4	Rudder 尾舵	Collective Pitch 集體螺距	Rudder 尾舵	Rudder 尾舵	Rudder 尾舵
Channel 5 通道 5	Tail Gyro Gain 感度	Throttle [CH5] 油門 [CH5]	Auxiliary [CH6] 輔助通道	Tail Gyro Gain 感度	Tail Gyro Gain 感度
Channel 6 通道 6	Collective Pitch 集體螺距	Tail Gyro Gain 感度	Throttle [CH5] 油門 [CH5]	Throttle [CH5] 油門 [CH5]	Collective Pitch 集體螺距
Channel 7 通道 7	Auxiliary [CH6] 輔助通道 [CH6]	Auxiliary [CH6] 輔助通道 [Ch6]	Tail Gyro Gain 感度	———	Auxiliary [CH6] 輔助通道

When using SRXL the preset channel assignment is based on the receiver's protocol version. MICROBEAST PLUS will detect automatically which brand of receiver is used and will choose the appropriate channel assignment accordingly.

SRXL 預置通道是根據接收器的溝通協議版本來分配的。 MICROBEAST PLUS 會自動檢測不同品牌的接收器來選擇合適的通道分配。

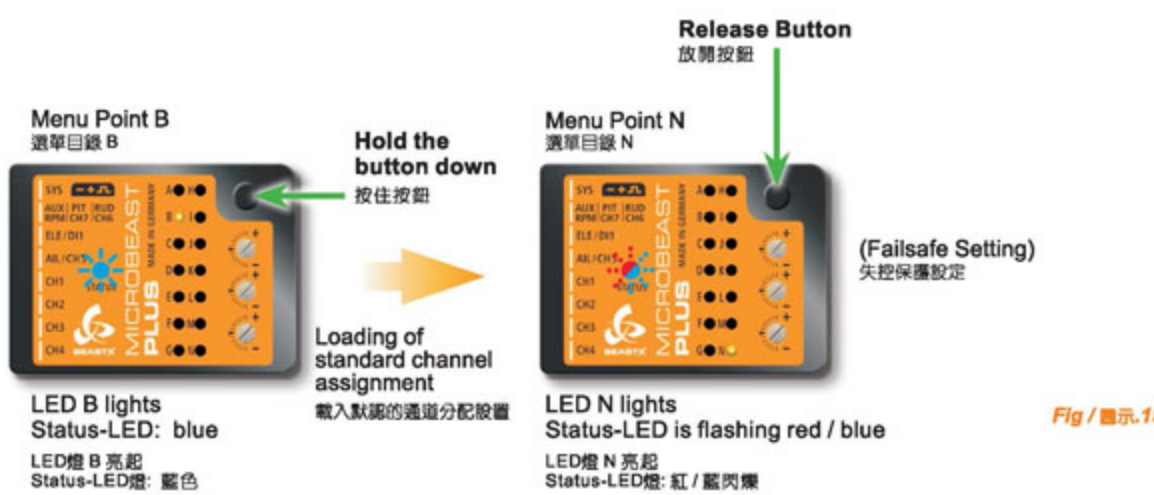


Fig / 圖示.15

5.2.2 TEACHING OF CUSTOMIZED CHANNEL ORDER
自定義通道順序教學

If you need a customized channel order, please first prepare your transmitter as described in section 3.2 (if not already done). Additionally make sure that each control function of your transmitter activates one and only one channel, for example by using the servo monitor of your transmitter . This can be tricky especially for throttle/collective pitch functions which are usually coupled by a mixer in the transmitter. In this case set the throttle channel quiet, for example by using the throttle hold switch or providing a flat throttle curve, so that the thrust stick actually controls only the channel for the collective pitch. For the later, keep the possibility to control also the throttle channel like by flipping a switch or similar.

In the following seven menu points B - H, you can assign different functions by simply actuating the appropriate channel function on your transmitter. A blue flash of the Status-LED indicates that a channel has been detected. It does not matter how far or in what direction you move the stick or in what position the stick/switch was. Note the channel value itself is not important, but the change of this value is. It is therefore important that only the requested function is activated and not by accident several simultaneously. Otherwise MICROBEAST PLUS may not recognize the allocated channel correctly.

如果需要自訂通道順序，請先參照 3.2 章節的描述做好遙控器上的設定準備工作。此外，一定要注意觀察遙控器上的 servo monitor（伺服器通道狀態）選單來確認每個控制動作只能控制一個通道。這項設定比較麻煩，因為有的遙控器上諸如油門和螺距兩個動作都是在一起混控。在這種情況下，可以將油門曲線拉平或者設定油門鎖定來達到油門搖桿僅僅控制螺距伺服器行程量而非油門的目的。

在以下七個目錄 B - H 中，你都能在遙控器中啓動並指派每個通道的對應功能。Status-LED 燈閃藍光，藍燈表示其通道已被偵測到。它和距離遠近，方向及搖桿的位置都無關聯。請注意，通道數值的本身並不重要，但是通道數值的變化就很重要了。因此，它的重要在於被指派的通道功能是否被活化，而不是只偶然出現幾次的反應動作。否則 MICROBEAST PLUS 可能無法正確識別所分配的通道。

Menu-LED 燈號	Function 選單	
B	Collctive Pitch	集體螺距
C	Aileron	副翼
D	Elevator	升降舵
E	Rudder	尾舵
F	Gyro Gain	陀螺感度
G	Trottle [CH5]	油門
H	Auxiliary [CH6]	輔助通道

If you have moved the wrong stick/switch, you can reactivate the correct function again. The MICROBEAST PLUS remembers only the last function that was operated and confirms it with blue flashing of the Status-LED.

Press the button after learning each function to save the assignment and to go to the next function. The button remains locked until you operate a new control function. you have to assign every function with the exception of the last auxiliary channel [Ch6] (this channel can be skipped by pressing the button without learning the function).

Once a channel is assigned, it is no longer available and is ignored by MICROBEAST PLUS for the remaining process . Thus, after learning of the collective pitch function (menu point B) you can enable the throttle function (remove throttle hold and switch to a linear or V shape curve) and teach the throttle channel by re-operating the thrust stick (menu point G). Now the collective pitch channel is no longer considered, as this channel has already been assigned previously!

如果在設定過程中撥動了錯誤的搖桿，可以再次撥動正確的搖桿來繼續設定，因為 MICROBEAST PLUS 只認准最後撥動的那根搖桿動作，並且 Status-LED 燈 會呈現藍色閃爍狀態向你確認。

設定好分派的功能，按下按鈕儲存後，就可以進入下一個功能。此時按鈕保持鎖定狀態，直到你開啓新的控制功能。每一通道的功能都必須被設定，除了輔助通道 [CH6] 外，（可以直接按一下按鈕跳過設定）。

一旦某一個通道設定完成，那麼 MICROBEAST PLUS 就會自動在接下來的設定中忽略這個通道。因此，設定完集體螺距通道時（選單 B 點），您可以撥動 HOLD 搖桿啓動油門鎖定功能，接著設定油門通道 。在設定油門通道時關閉 HOLD功能後，繼續推動遙控器的螺距搖桿，來設定油門通道（選單第 G 點）。現在可以不必考慮集體螺距通道了，因為這個通道已經在先前被指派了。

If the Status-Led stays red at one of the menu point B - H, it means that there is no valid remote control signal available . A channel assignment in this case is impossible! Check if the receiver is properly bound to the transmitter (if using a single Spektrum satellite see section 4.2.2) and that a receiver/transmission protocol of the correct type is selected at Receiver menu point A. Switch off the power and restart the receiver type setup procedure from the beginning.

如果 Status-LED 燈是紅色的，說明 MICROBEAST PLUS 並沒有接收到持續穩定的輸入訊號，所以在此燈號下，是不可能設定通道分配的。如果 Status-LED燈一直無法變成藍色，那麼請檢查接收器與遙控器是否對頻成功，（如果使用 SPEKTRUM 單線衛星，請參閱 4.2.2 節），同時，確定在接收器選單第 A 點的接收器樣式是否選擇正確。如果是錯誤的，那麼在斷電後請重新進行設置。

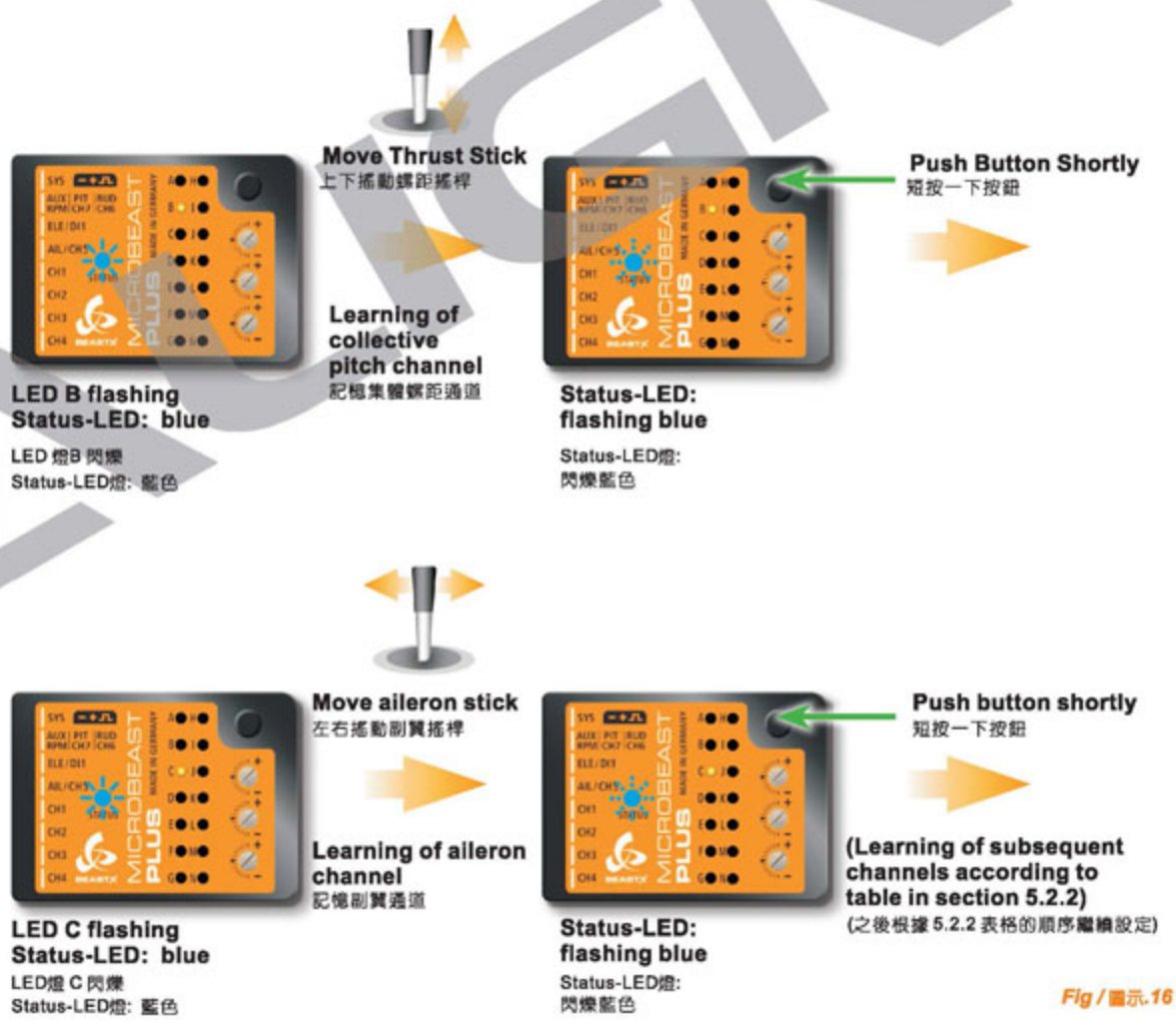


Fig / 圖示.16

By pressing the button at Receiver menu point H the Menu-Led jumps directly to Receiver menu point N .

接收器選單第 H 點設定完成後，會直接跳入選單第 N 點，進行失控保護設定。

5.3 THROTTLE FAILSAFE SETTING (RECEIVER MENU POINT N)
失控保護設定（接收器選單第 N 點）

At Receiver menu point N you have to program the failsafe position for the throttle channel. If during operation the received single-line signal is interrupted, the throttle servo/speed controller connected to the output [CH5] is automatically set to this failsafe position. To avoid accidents, you should program electric motors to "off" and reduce throttle on nitro helicopters to idle. The other control functions will be set to "position hold" in case of signal interruption. For these setting a failsafe position is not provided.

Set the throttle channel on your remote control to the desired position and press the button briefly. If you did not connect a function to [CH5], anyway press the button to complete setup.

在接收器選單第 N 點中，您需要設定油門通道的失控保護功能。如果在飛行中，接收器的訊號受到干擾或中斷，那麼油門伺服器或電子調速器（連接在 [CH5]）就會自動切換到失控保護的狀態。為了避免事故的發生，玩家需要設定電機的馬達到關閉、油機的油門到怠速狀態。

將遙控器的油門搖桿移到所需的位置，然後短按一下設定按鈕。如果您的遙控器 [CH5] 沒有設定好，請按照步驟設定完全。

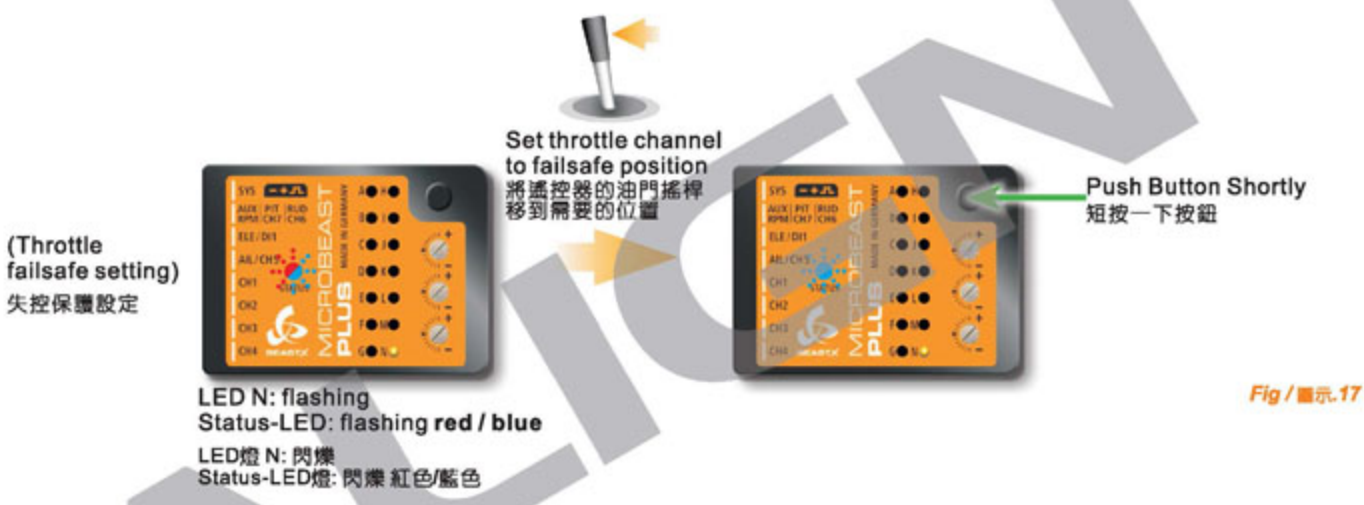


Fig / 圖示.17

The throttle failsafe is triggered if MICROBEAST PLUS does not get valid channel data from the receiver. This particularly is the case:

1. If using a single-line receiver that turns of the single-line signal in case of signal loss between receiver and transmitter (e.g. Spektrum satellite receiver, Graupner/SJ receiver in "SUMDOF" mode).
2. If the connection between MICROBEAST PLUS and receiver gets disconnected.
3. During initialization when the transmitter was not switched on before or was switched on too late and the radio link between transmitter and receiver is not established yet.

The fail-safe function is not effective if the receiver continues sending data even if the radio link is interrupted. In this case the failsafe setting of the remote control system may take precedence.

如果啓動油門失控保護，可是 MICROBEAST PLUS 並沒有從接收器收到有效訊號。可能的情形如下：

1. 使用單線連接接收器，因為單線傳輸的限制，訊號在接收器和遙控器發送間漏失（例如 Spektrum 衛星接收器，Graupner/SJ "SUMDOF" 模式的接收器）
2. MICROBEAST PLUS 和接收器之間的連接不確實
3. 在初始化前遙控器的開關並未開啓，或太慢開啓，或遙控器和接收機間的無線電傳送鏈尚未被建立。

如果接收器持續發送訊號，但是遙控器的無線電波是中斷的，在這種情況下，接收器的失控保護功能是無效的，因為遙控器的失控保護優先於接收器的失控保護功能。

6 SETUP PROCEDURE OVERVIEW
設定流程概述

ALIGN

After power on MICROBEAST PLUS will perform an initialization sequence. During this phase, do not move the MICROBEAST PLUS unit and the helicopter . First MICROBEAST PLUS runs a short selftest and the firmware version is displayed for 3 seconds. After that, the running LEDs H to N show the initialization of the receiver input signals. Lastly the sensor zero positions are calibrated, indicated by the running LED light from Menu-LEDs A - G.

When the system is ready it does a short move of the swashplate servos and the Status-LED turns blue if the tail gyro is in HeadingLock mode or purple in Normal-Rate mode. For about 10 seconds you can see one of the LEDs A - N light up according to the current amount of tail gain which is adjusted by the transmitter's tail gain channel.

在開啓電源時，或者在退出接收器樣式設定後，MICROBEAST PLUS 將初始化。在這段初始化期間，千萬不要移動 MICROBEAST PLUS 本體或者直昇機。首先 MICROBEAST PLUS 會進行一個短暫的燈號測試，然後主程式的版本會顯示3秒鐘。在這之後，Menu-LED 燈 A - G 閃爍表示感應器的校準，Menu-LED 燈 N - H 閃爍表示接收器信號輸入的初始化。

當 MICROBEAST PLUS 的系統準備就緒後，十字盤的伺服器會進行移動， Status-LED燈在尾陀螺鎖定的模式下亮藍燈，在非鎖定模式下亮紫燈。在 10 秒鐘內，LED 燈 A - N 會根據當前尾舵的感度值亮起一盞相應的燈。

The programming of MICROBEAST PLUS works in the following way:

There are two menu levels. From ready mode (flight mode) you can always get into the one or the other menu level. A change between the menu levels is not possible. You always have to first get out of the current level to enter the other menu level. Each level includes several setup points. The yellow LEDs next to the letters shows at which setup point you are currently. Note that the two menu levels have a different number of setup points.

1. To access the Setup menu level you keep the button pressed for several seconds until LED A stops flashing and lights up continuously. In this menu level all the basic settings are made to adjust MICROBEAST PLUS to your helicopter.
2. To access the Parameter menu level, press and hold the button briefly until the LED A starts to flash quickly and immediately release the button. This menu level is used to fine tune the flight characteristics and is mostly needed at the airfield.
3. While in one of the menus you normally select the different options by giving an input with the rudder stick to the left or right. The momentary selected option is indicated by the color of the Status- LED. Possible colors are: off, purple, flashing red, red, flashing blue and blue. On some of the menus you might have to adjust settings with different stick functions.
4. While in one of the menus, a short push on the button will switch to the next menu point. It is also possible to skip a menu point. Therefore do not move any stick while being in the menu point you want to skip, and just press the button once again.

After the last menu point, a short press on the button will exit the menu. Then MICROBEAST PLUS is ready to fly again.

設定 MICROBEAST PLUS 請按照以下步驟操作：

共有 [設定選單 Setup menu] 與 [參數選單 Parameter menu] 兩種選單。您只能擇一進入，無法在兩種選單中來回交替。必須在退出當前操作的選單後，才能進入另一個選單。每一種選單都包含有許多選項，在字母後面的LED 燈提示玩家當前的選項。需要注意兩種選單的燈號指示各有不同。

1. 要進入設定選單，請長按按鈕幾秒鐘，直到選單第 A 點的 LED 燈停止閃爍變成恒亮。在此選單，直昇機的所有基本參數都可調整。
2. 要進入參數選單，按下按鈕直到選單第 A 點的 LED 燈快速閃爍然後迅速放開。此選單可以調整直昇機的綜合飛行特性，一般都是在飛場現場調整。

3. 在選單中的設置通常是利用左右擺動搖桿來選擇參數，只是燈號會瞬間變換顏色來提示狀態。可能出現的 Status- LED 燈有：熄滅、紫色、閃爍紅色、紅色、閃爍藍色以及藍色。某些參數的選擇也許要用到其他搖桿。

4. 選單表之間的轉換，可以利用短按一下按鈕來實現，亦可不動用搖桿而直接跳過某一個選單點。因此，在轉換或跳過選單點時，請不要移動搖桿，您只需要按下按鈕即可。

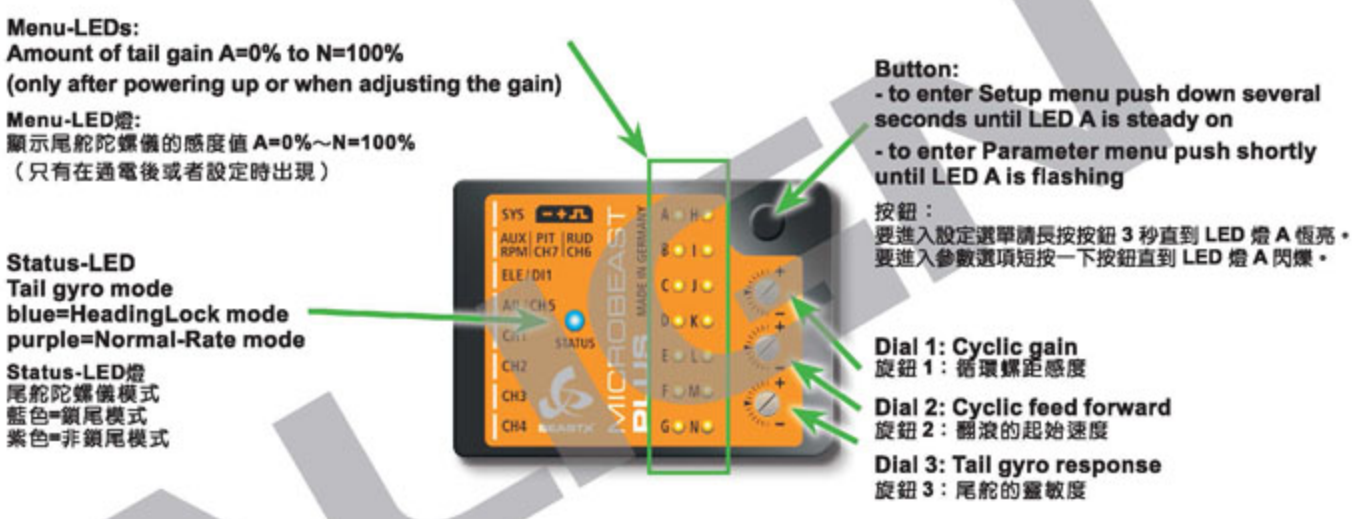
在選單的最後選項設置完後，按下按鈕就會退出設定選單。此時，MICROBEAST PLUS 就可以再次飛行了。

CAUTION 注 意

Never fly while MICROBEAST PLUS is in Setup or parameter menu! In this condition the gyro control and the stick controls are disabled.

永遠不要在 MICROBEAST PLUS 處於選單中或設定狀態下進行飛行。在此狀態下，陀螺儀和搖桿的指令都是失效的。

OPERATION MODE 操作介面



MENU SELECTION 選單選擇

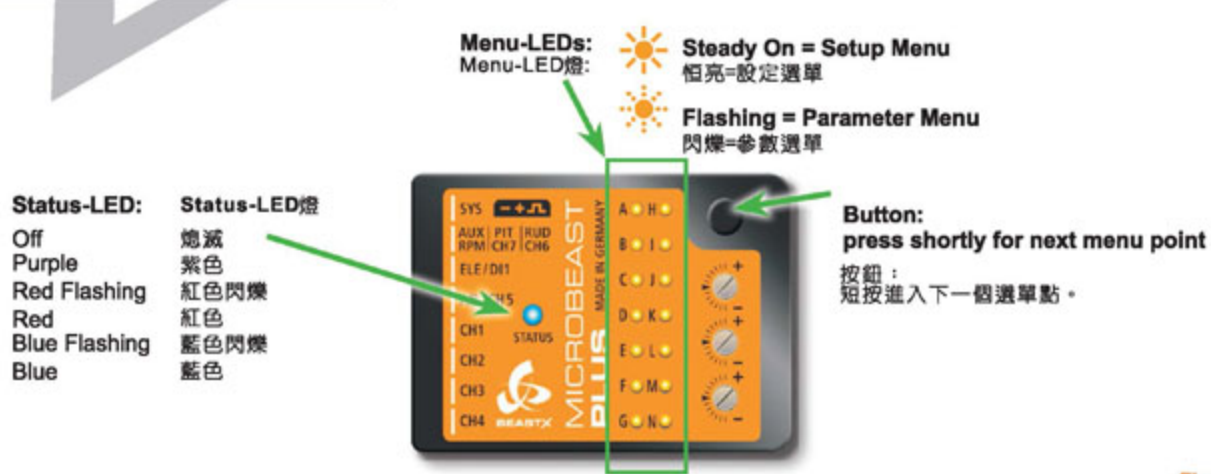


Fig / 圖示.18

Selection by rudder stick input and aileron / elevator / thrust stick within menus as needed.

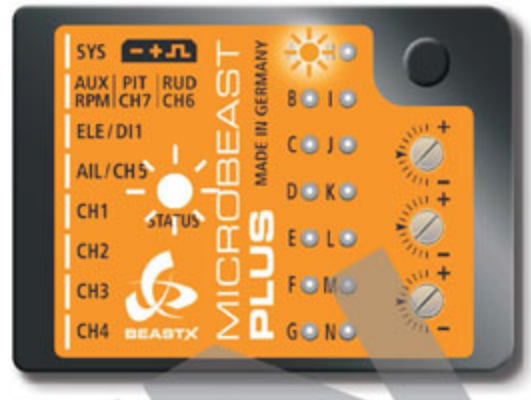
必須搖動尾舵搖桿來選擇燈號的顏色，某些功能必須透過選單的 Aileron / Elevator / Pitch 搖桿來調整。

6.1 SETUP MENU
設定選單

No Menu-LED is on
Push button for about 3 seconds
Menu-LED 燈沒有亮起的情況下
長按按鈕 3 秒

Operation Mode
操作模式

Menu-LED A steady on
Menu-LED燈 A 恆亮



Setup Menu - Menu Point A
設定選單第 A 點

Fig / 圖示.19

6.2 PARAMETER MENU
參數選單

No Menu-LED is on
Press button shortly
Menu-LED 燈沒有亮起的情況下
短按按鈕

Operation Mode
操作模式

Menu-LED A is flashing quickly
Menu-LED燈 A 快速閃爍

Parameter menu- menu point A
參數選單第 A 點

Fig / 圖示.20

AUGM

6.3 SELECTION WITHIN THE MENUS
參數選單的選擇方式

By moving the rudder stick to the left or right, you can select the different options within a menu point.

The number of possibilities depends on the menu point.

利用左右移動尾舵搖桿，您可以在一個選單點中選擇不同的參數。

可供選擇的參數值(量)依照選單的不同而有區別。

STATUS-LED:

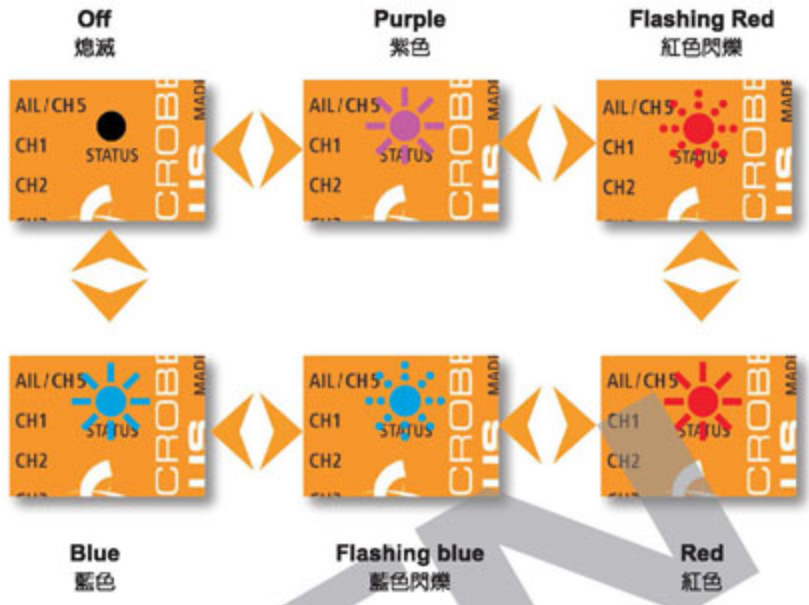


Fig / 圖示.21

6.4 SWITCHING TO THE NEXT MENU POINT
切換到下一個選單點

Menu Point A
選單第A點

Menu Point B
選單第B點

Fig / 圖示.22

ALIGN

7 SETUP MENU
設定選單

Before the first flight MICROBEAST PLUS has to be adjusted to your helicopter mechanics and its components. This is done in Setup menu level.

When MICROBEAST PLUS shows that the system is ready, press and hold the button down, the Menu-LED next to menu point A will begin to flash and then after a while will be steady on. Now and only now you can release the button. You just entered the Setup menu at menu point A (description on next page).

To leave the Setup menu you have to skip through all menu points by pressing the button several times. After pushing the button at menu point N you will exit the Setup menu and the system is ready for operation again. None of the LEDs A - N are glowing anymore (see chapter 6).

在首次飛行 MICROBEAST PLUS 之前，需要調整好您的直昇機和做好相關安全檢查。

當 MICROBEAST PLUS 系統顯示已做好飛行準備，按住設置按鈕，Menu-LED 燈 A 開始閃爍，過一會即變成恒亮狀態。現在(也只有現在)可以放開設置按鍵，進入設定選單第 A 點。

如果要離開設定選單，您需要按好幾次設定按鍵跳過所有的設定點 A - N。當按下第 N 點的設定按鈕後，才能退出設定選單，此時，系統進入準備狀態。所有燈號熄滅（請參閱第6章）。

CAUTION 注 意

If there is no stick or button input for 4 minutes, while being in the Setup menu, MICROBEAST PLUS will exit the menu automatically . This will not happen during setup points D, G, I and J to give you enough time to adjust the mechanical setup of your helicopter.

在設定選單中，如果您 4 分鐘內沒有任何搖桿和按鈕的動作，MICROBEAST PLUS 會自動退出設定選單。（ 然而，在設定點 D、G、I 和 J 中，系統並無 4分鐘自動退出的設定，那是為了給您足夠的時間調整直昇機結構）。

FACTORY RESET: 回復出廠預設值：

To reset MICROBEAST PLUS to factory settings, **at any Setup menu point** push down the button for at least 10seconds, until the LEDs A - N quickly blink one after the other to confirm the reset.

Please note that any previous configuration is now deleted . do not attempt to fly the helicopter without doing the complete setup procedure again, otherwise you will crash your helicopter. Please also note that all servo settings are lost, therefore you should unplug the servos and remove the servo horns before resetting MICROBEAST PLUS.

The receiver type settings (see chapter 6) are not affected by the reset!

Conversely, if you change the receiver type in Receiver setup menu, the parameters of Setup menu and Parameter menu are not affected. However, you have to redo all the receiver-specific settings (channel assignment and fail-safe, see sections 5.2 to 5.3).

想要回復 MICROBEAST PLUS 出廠預設值，請長按設定按鍵超過 10 秒，直到選單 A – N 和 J 點的指示燈快速閃爍一次，表示已經回復出廠預設值。

請注意，一旦回復出廠預設值，之前的設定資料將會被刪除。嚴禁在完成所有設定前試飛直昇機，否則會造成直昇機摔機或損壞。另外，因為先前所設定的伺服器參數也同時會被刪除，所以您應該在重新設定 MICROBEAST PLUS 前移除伺服器連桿及伺服器擺臂，以策安全。

接收器類型設定（請參閱第6章）不會因為回復出廠設定值而被刪除！

相反的，如果您在接收器類型中更改任何設定，設定選單或參數選單都不會被重置。不過，您需要重新做接收器個別設定（通道分配和失控保護，請參閱第 5.2 到 5.3 章節）。

A MOUNTING ORIENTATION OF MICROBEAST PLUS
MICROBEAST PLUS 的安裝方向

The MICROBEAST PLUS unit can be mounted in nearly all possible orientations. The only restriction is that the plug connectors have to point in or against flying direction and the egdes of the unit must be parallel to the rotation axis (see section 3.1).

At Setup menu point A, you have to choose whether MICROBEAST PLUS is mounted horizontally (printed surface 90 degrees to the main shaft) or vertically (printed surface in parallel with the main shaft). The color of the Status-LED shows the currently selected orientation:

MICROBEAST PLUS 可以安裝在機體的任何位置。唯一的限制是接線口必須和飛行方向一致。（詳細請參閱 3.1 章）

在設定選單第 A 點，您必須選擇 MICROBEAST PLUS 的安裝方向。水平安裝（印刷面 90° 垂直於直昇機主軸）或垂直安裝（印刷面與直昇機主軸平行）。Status-LED 燈的顏色顯示目前所選擇的方向。

Status-LED Status-LED燈	Mounting Orientation 安裝方向
Red 紅色	Vertical(On The Side) 垂直（側面）
Blue 藍色	Horizontal (Flat)* 水平（平）*

*Factory Setting *出廠預設值

Status-LED: Red
Status-LED燈：紅色

Status-LED: Blue
Status-LED燈：藍色

Fig / 圖示.23

You can switch between the two options by moving the rudder stick to one or other direction (see section 6.3). The Status-LED will change the color according to the selected orientation.

正如之前提到的方法（第6.3章），您可以利用移動遙控器上尾舵通道搖桿的方向來改變參數，Status-LED 燈也會隨著所選擇的方向而改變顏色。

Push the button to save the configuration and to proceed to Setup menu point B .

按下按鈕保存當前設定，並進入設定選單第 B 點。

ALIGN

B SWASHPLATE SERVO FREQUENCY
十字盤伺服器頻率設定

If you are using the MICROBEAST PLUS as stand-alone tail gyro with the optional patch cable (see section 4.1.2) it is not necessary to make any adjustments at this Setup menu point.

Setup menu point B is for selecting the servo frequency (pulse rate) of your swashplate servos.

如果您把 MICROBEAST PLUS 配合選購的連接線當作尾陀螺使用(詳細請參閱第4.1.2章)，那這項選單就沒有必要去做任何調整。

設定選單第 B 點是用來選擇十字盤伺服器的工作頻率。

CAUTION 注 意

If you do not know what the maximum pulse rate tolerated by your servos is, do not select more than 50hz driving frequency . A higher driving frequency can lead to failure of the servos!

Digital servos allow usually higher frequencies, but this has to be verified in the servo datasheet. On www .beastX.com you can find a list of parameters for the most common servos. Please understand that we can not list all servo types. We also can not guarantee the accuracy of this data. Ask the manufacturer of the servos or your local dealer for detailed information.

如果不清楚您所使用的十字盤伺服器最高工作頻率，請不要選擇超過 50Hz 的驅動頻率。過高的驅動頻率會導致伺服器無法工作！

數位伺服器通常允許的工作頻率較高，但是必須對照伺服器資料表做參考，您可以諮詢伺服器製造商。在 www .beastx .com 網站上，您可以找到"常用伺服器對應列表"。由於市面上伺服器種類太多，無發全部都列出，我們也無法保證資料的準確度。建議您與伺服器製造商或原購買處取得詳細的資料。

To optimize the performance of MICROBEAST PLUS, the rule is the higher the better! Nevertheless if you experience an unusually high power consumption of the receiver power supply or if the servos get hot, you should reduce this frequency.

When using a servo that allows a higher frequency as MICROBEAST PLUS offers or that allows a maximum frequency which is not choosable, please select the next lower frequency that is closest to the given frequency. Using a lower frequency is always possible. Only too high frequencies can damage the servo and/or will cause the servo to not work properly.

With high frequencies, some servos run in a jerky manner, especially the fast ones with coreless or brushless servos. This is due to the high update rate that the servo receives. This is not critical and will not impact flight performance.

To select the desired servo frequency, move the rudder stick repeatedly in one direction until the Status-LED lights in the correct color.

The option "user defined" allows you to choose your own setting that can be edited by using the StudioX software bundle and the separately available USB2SYS interface.

為了優化 MICROBEAST PLUS 的性能，原則上是頻率越高越好！不過，如果出現異常的高電源消耗，或伺服器變熱，您應該降低這個頻率。

當使用的伺服器允許設定較高的頻率如 MICROBEAST PLUS 所提供或允許的最大頻率沒有此選項時，請選擇下一個較低且最接近的頻率。使用較低的頻率比較安全。設定過高的頻率會損壞伺服器和(或)會導致伺服器無法正常運作。

高頻率運作，有部分伺服器會出現 "抽動" 現象，特別是像無核數位伺服器或無刷伺服器這類高速伺服器，這是因為伺服器接收到快速的更新率。這點並不重要，也不會影響飛行性能。

選擇所需要的伺服器頻率，重複往同一方向移動尾舵通道搖桿來改變參數，直到指示燈的顏色正確為止。

"使用者自定義" 允許您使用 StudioX 軟體介面 (另購品 USB2SYS)，直接在電腦上設定並修改符合自己的個性化操控特性，而不需透過遙控器做調整。

ALIGN

The color and state of the Status-LED shows the currently selected frequency:

Status-LED 燈的顏色和狀態表示當前選擇的頻率：

Status-LED Status-LED燈	Swashplate Servo Frequency 十字盤伺服器工作頻率
Purple 紫色	50Hz*
Red Flashing 紅色閃爍	65Hz
Red 紅色	120Hz
Blue Flashing 藍色閃爍	165Hz
Blue 藍色	200Hz
Off 熄滅	User Defined 使用者自定義

＊Factory Setting ＊出廠預設值

MICROBEAST PLUS can be used with nearly all available servo types. However, the selected servos should be adequate for flybarless operation (high torque and also fast and precise). Also the servo should allow using a high pulse rate and should offer an (almost) linear response. The quality of the servos will have a direct influence on the range of rotor blades that can be used. The more the servos are suited for flybarless operation, the less important is the flybarless specificity of the rotor blades. This is especially important if the pilot demands fast cyclic reactions and wants to use light and aggressive rotor blades. Conversely, when using special rotor blades for flybarless operation the requirements for a powerful servo are reduced as the necessary control forces are smaller.

The use of a bad servo-rotor blade combination will lead to several issues, ranging from oscillations during hover to unwanted reactions in fast forward flight.

幾乎所有型號伺服器都適用於 MICROBEAST PLUS。但是，所選擇的伺服器必須滿足無平衡翼系統操控的要求（高扭力、高速度和精準度）。此外，伺服器應該允許使用高頻率，並應提供（幾乎）線性反應。伺服器的品質對可使用的主旋翼範圍有直接影響。伺服器越適用於無平衡翼操作，主旋翼對無平衡翼的專一性就越不重要。但是如果飛行員需要快速循環的反應，並希望使用輕量和快速運轉主旋翼時，就非常重要。相反的，當使用特殊的主旋翼搭配無平衡翼操作時，就不需要使要高強度伺服器，因為控制力量的要求強度降低。

使用一個不好的伺服器 / 主旋翼組合，會導致很多嚴重的後果，如停旋時產生震動，或快速前進時出現不良的飛行表現。

Visit Align Cart to get more suitable servo information:
更多適用的伺服器，請參考亞拓伺服器網頁:

http://shop.align.com.tw/index.php?cPath=11_2965_26

Push the button to save the configuration and to proceed to Setup menu point C .
按下設定按鈕保存當前設定，並進入選單第 C 點。

C RUDDER SERVO CENTER POSITION PULSE LENGTH
尾伺服器寬、窄頻設定

At Setup menu point C you can select the pulse length for the rudder servo's center position. Almost all commercially available servos work with 1500 - 1520 µs. But there are a few special rudder servos on the market which use a different center position pulse length. On www .beast.com you can find a list of parameters for the most common servos.

Please understand that we can not list all servo types. If a servo needs a special pulse length this usually is mentioned in the data sheet of the servo, mentioned on the packaging or directly printed on the servo. Ask the manufacturer of the servos or your local dealer for detailed information. If in doubt about the center pulse for your servo use the setting 1520 µs. It is very likely that the servo will work with this pulse length. Also when the servo is rated with 1500 µs center pulse use this setting. There is barely any difference between 1500 and 1520 µs and the operating pulse range is nearly the same, so these servos are all of the same type.

在C項設定功能表，您可以選擇尾伺服器的中立點訊號 (PWM) 寬度，俗稱"窄頻/寬頻"。市面上大部分的尾伺服器都是工作在 1500 µ s-1520 µ s，也就是"寬頻"：而較高性能的 760 µ s 就是所謂的"窄頻"伺服器。但市面上也有小部分特殊尾伺服器是工作在不同的中立點訊號寬度。在 www.beastx.com 您可以找到最常用的伺服器參數列表。

由於市面上伺服器種類太多，無法全部列出。如果伺服器需要設定特殊訊號長度，通常會顯示在伺服器資料表、包裝上或直接印在伺服器上。如果對您的伺服使用的中立點訊號設置 1520 µ s 有疑問，建議您與伺服器製造商或原購買處取得詳細的資料。大部分的伺服器都是設定在 1520 µ s。當伺服器中立點訊號被測量為設定在 1500 µ s。1500 µ s 和1520 µ s 幾乎沒有任何差異，且操作中立點範圍幾乎相同，所以這些伺服器都是相同類型的。

There is a relationship between the setting of the rudder servo center pulse length and the rudder servo frequency (menu point D). If a pulse length is selected that does not allow a certain frequency, the frequency is automatically reduced. The center position pulse setting always has priority, since a servo can run without problems at a lower frequency but can not be operated with an incorrect center position pulse.

尾伺服器的中立點訊號設定與工作頻率（設定選單第 D 點）是有關聯的。如果尾伺服器的中立點訊號已設置好但工作頻率設置錯誤，這個頻率會被自動降低，而中立點訊號始終擁有優先權。因為尾伺服器可以在低頻率正常工作，但是不能在不正確的中立點訊號下工作。

The color of the Status-LED shows the currently selected servo center position pulse length:

Status-LED燈的顏色表示當前選擇的伺服器中立點訊號：

Status-LED Status-LED燈	Rudder servo center pulse length 尾伺服器中立點訊號
Purple 紫色	960 µs
Red 紅色	760 µs
Blue 藍色	1520µs*
Off 熄滅	User defined 使用者自定義

＊Factory Setting ＊出廠預設值

To select the desired servo center pulse repeatedly move the rudder stick in one direction until the Status- LED glows in the correct color.

The option "user defined" allows you to choose your own setting that can be edited by using the StudioX software bundle and the separately available USB2SYS interface.

選擇所需要的尾伺服器中立點訊號，重複往同一方向移動尾舵通道搖桿改變參數，直到指示燈的顏色正確。

"使用者自定義" 允許您使用 StudioX 軟體介面 (另購品 USB2SYS)，直接在電腦上設定並修改符合自己的個性化操控特性，而不需透過遙控器做調整。

Push the button to save the configuration and to proceed to Setup menu point D .
按下設定按鈕保存當前設定，並進入選單第 D 點。

D RUDDER SERVO FREQUENCY
尾伺服器工作頻率

As with the swashplate servos at Setup menu point B you can select at Setup menu point D the frequency for the rudder servo.

就如同在設定選單第 B 點中設定十字盤伺服器一樣，您可以在設定選單中第 D 點設定尾伺服器工作頻率。

If you do not know what the maximum pulse rate tolerated by your servos is, do not select more than 50hz driving frequency . A higher driving frequency can lead to failure of the servos!

Digital servos allow usually higher frequencies, but this has to be verified in the servo datasheet. On www .beast.com you can find a list of parameters for the most common servos. Please understand that we can not list all servo types. We also can not guarantee the accuracy of this data. Ask the manufacturer of the servos or your local dealer for detailed information.

如果您不知道您的尾伺服器所能承受的最高頻率，工作頻率不要選擇超過 50HZ，過高的工作頻率可能導致伺服器無法工作或燒毀！

數位伺服器通常允許的工作頻率更高，但是必須對照伺服器資料表的參數，您可能需要諮詢伺服器製造商。在 www.beastx.com 網站上，您可以找到“常用伺服器對應列表”。由於市面上伺服器種類太多，無發全部都列出，我們也無法保證資料的準確度。建議您與伺服器製造商或原購買處取得詳細的資料。

To optimize the performance of the MICROBEAST PLUS tail gyro the rule is: the higher the better! A good rudder servo should be capable of running at least 270Hz.

為了優化 MICROBEAST PLUS 的尾陀螺性能，原則上是頻率越高越好！一般性能比較好的尾伺服器都可以工作在至少 270HZ。

CAUTION 注 意

Please note that depending on the rudder servo center position pulse length chosen at Setup menu point C, you may not be able to choose a frequency higher than 333Hz. This also applies to the "user defined" setting which might be limited to 333Hz (see note at Setup menu point C).

幾請注意，在設定選單第 C 點尾伺服器中立點訊號選擇中，建議您不要選擇超過 333Hz 頻率。這也適用於"使用者自定義"設定。伺服器中立點訊號可能會被限制至 333 Hz（詳細見設定選單第 C 點）。

By moving the rudder stick repeatedly in one direction you can choose the desired rudder servo frequency.

選擇所需要的尾伺服器頻率，請重複往同一方向移動尾舵通道搖桿來改變參數。

Status-LED Status-LED燈	Rudder servo frequency 尾舵伺服器頻率
Purple 紫色	50Hz*
Red Flashing 紅色閃爍	165Hz
Red 紅色	270Hz
Blue Flashing 藍色閃爍	333Hz
Blue 藍色	560Hz
Off 熄滅	User defined 使用者自定義

*Factory Setting *出廠預設值

The option "user defined""allows you to choose your own setting that can be edited by using the StudioX software bundle and the separately available USB2SYS interface.

Connect the rudder servo to [CH4] port of MICROBEAST PLUS after choosing the rudder servo frequency . Attach a servo horn to the rudder servo in such a way that the tail linkage rod forms a 90 degree angle to the servo horn (or as close as possible). Then adjust the linkage rod as described in the manual for your helicopter. For most helicopters the tail pitch slider should be centred and the tail rotor blades will then have some positive pitch to compensate for the torque of the main rotor. This mechanical adjustment especially is important when using the tail gyro in Normal-Rate mode. If the adjustment was not done properly the helicopter will constantly drift to one side or the other on the rudder axis. When using the tail gyro only in HeadingLock mode this adjustment is not so critical. Here the gyro will actively control the rudder so the helicopter does exactly follow the commands of the rudder stick. For optimum performance it is nevertheless recommended to perform the mechanical adjustment as good as possible.

"使用者自定義" 允許您使用 StudioX 軟體介面 (另購品 USB2SYS)，直接在電腦上設定並修改符合自己的個性化操控特性，而不需透過遙控器做調整。

選擇好尾伺服器工作頻率後，連接尾伺服器至 MICROBEAST PLUS 的 [CH4] 插槽，此時尾伺服器會處於中立點位置，您可以在這時候安裝伺服器臂。請使用以下的方法安裝尾伺服器的擺臂：擺臂的安裝需要 90 度垂直於尾螺距連桿（或者盡可能接近 90 度），然後根據您的直昇機說明書調整尾螺距連桿的長度。大部分的直昇機，當尾軸滑套在中立點的時候，尾槳應該會帶有一點正的螺距，以抵消主旋翼帶來的反扭力。正常速率模式下使用尾陀螺時，此機械調整尤為重要。如果沒有正確的調整，直昇機會不斷地往特定方向或往尾旋翼夾座的反向漂移。當尾陀螺在鎖定模式，此調整就不那麼重要了。在這裡，陀螺儀將主動控制尾舵使直昇機遵循尾舵搖桿的命令。為了獲得最佳性能，建議盡可能將機械調到最好。

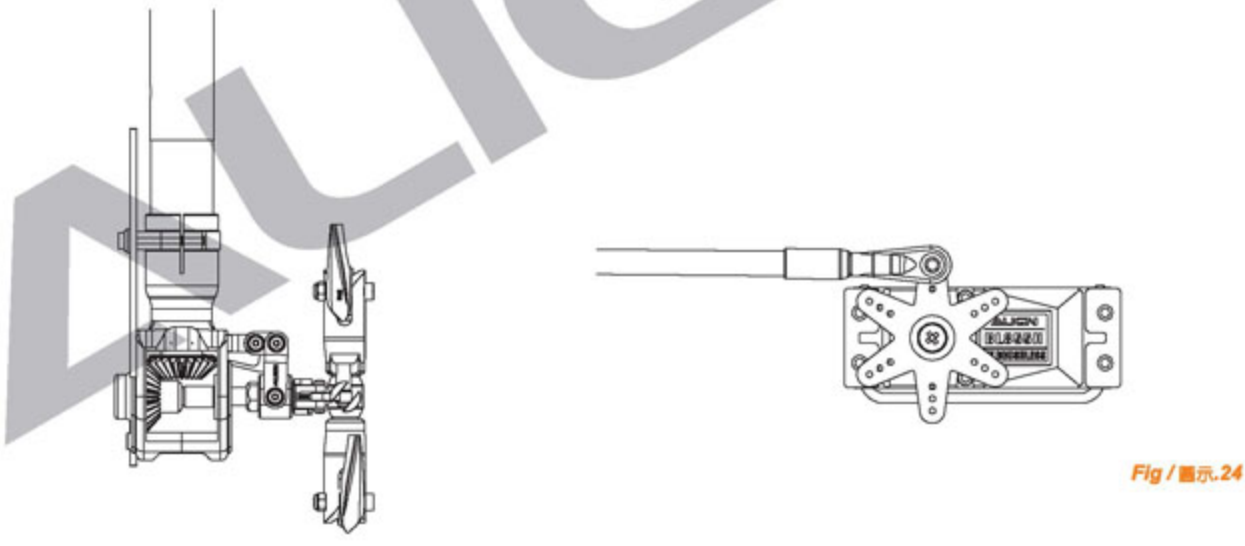


Fig / 圖示.24

CAUTION 注 意

This menu item will not be left automatically after 4 minutes, so you have plenty of time to adjust the mechanical setup.

"使用者自定義" 在4分鐘內不會自動退出，所以您有充足的時間做機械調整。

Push the button to save the configuration and to proceed to Setup menu point E .

按下設定按鈕保存當前設定，並進入選單第 E 點。

E TAIL ROTOR ENDPOINTS
尾舵行程量設定

At Setup menu point E you adjust the best possible servo throw for your tail rotor. To adjust the limits, move the rudder stick in one direction until the servo reaches the maximum endpoint without any binding or stall and release the rudder stick. The further you move the rudder stick the quicker the servo will steer into the given direction. If you move the servo too far you can steer the stick to the opposite direction and move the pitch slider a short way back.

Once you adjusted the maximum endpoint don't move the rudder stick anymore and wait for the Status-LED to flash and then light steady red or blue, depending on the adjusted direction. Now you have saved the servo limit for one direction.

在設定選單第 E 點，您可以在這裡設定最合適的尾舵行程量。在這裡，只要所調整的尾舵行程量到不會引起追蹤現象(直昇機尾部出現左右搖擺的情況)即可，最大的尾舵行程量就是最適合的感度值。設定尾舵行程量只需要將尾舵搖桿撥向您要設定的螺距方向至最大，鬆開搖桿即可。撥動尾舵搖桿時請注意，舵量給的越大，尾舵行程設定數值就越大，在飛行打尾舵時，尾舵會更快的移動到搖桿指定的行程處，如果發現行程過大，只需將尾舵搖桿撥向相反方向觀察尾軸滑套後退至合適的行程處，鬆開搖桿即可。

兩邊的螺距行程量都用同樣的方法設定正確後，請勿再碰觸尾舵搖桿，並等待機體上的 LED 燈從閃爍到紅或藍光恆亮為止 (光的顏色取決於最後設定的螺距方向）。至此，尾舵行程量設定完成。

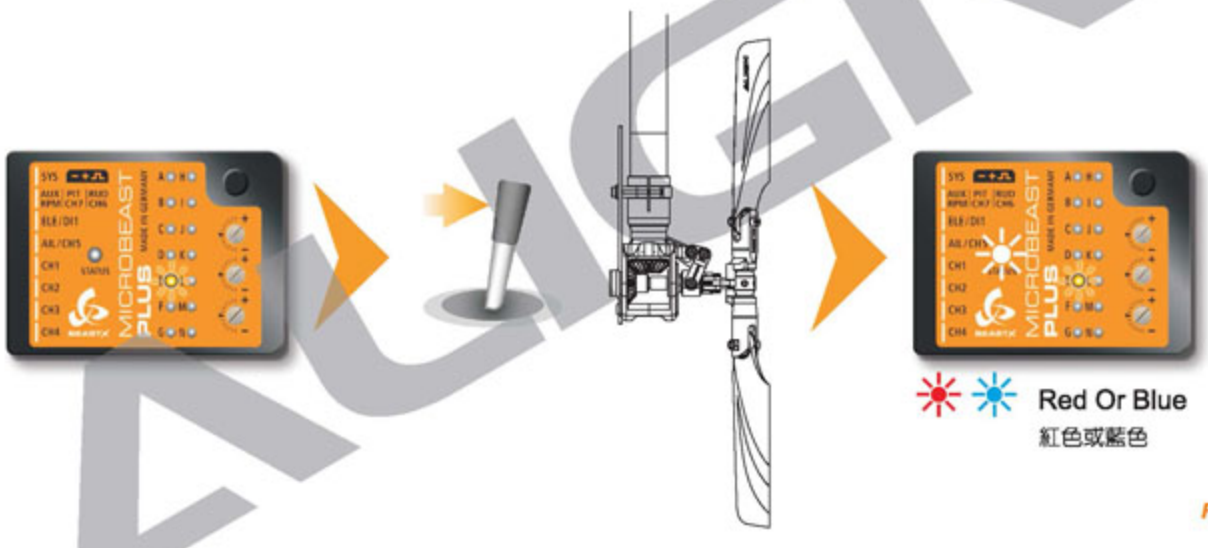


Fig / 圖示.25

Pay attention that the steered direction of your rudder stick corresponds to the direction your helicopter should turn . If this is not the case, use your transmitter's servo reversing function for the rudder stick . If you're not sure in which direction the helicopter should rotate consult the manual for your helicopter.

請注意，尾舵搖桿的方向應該與尾舵控制的直昇機旋轉方向保持一致。如果不一致，請在遙控器上的伺服器反向選單中將尾舵通道反向。如果不了解您的直昇機尾舵方向和直昇機旋轉方向的關係，請參考直昇機的使用說明書。

Then adjust the servo limit for the other direction. Drive the tail pitch slider by using the rudder stick to the other maximum endpoint and then release the rudder stick. After a short moment, the color of the Status-LED should start flashing followed by lightning steady purple (mix of red and blue) indicating that the servo endpoint adjustment is complete.

接下來按照之前的方法設定好另外一邊的尾舵行程量，鬆開搖桿。等候 Status-LED 燈閃爍直到變成恒亮的紫色（紅、藍一起亮），至此尾舵行程量設定完成！

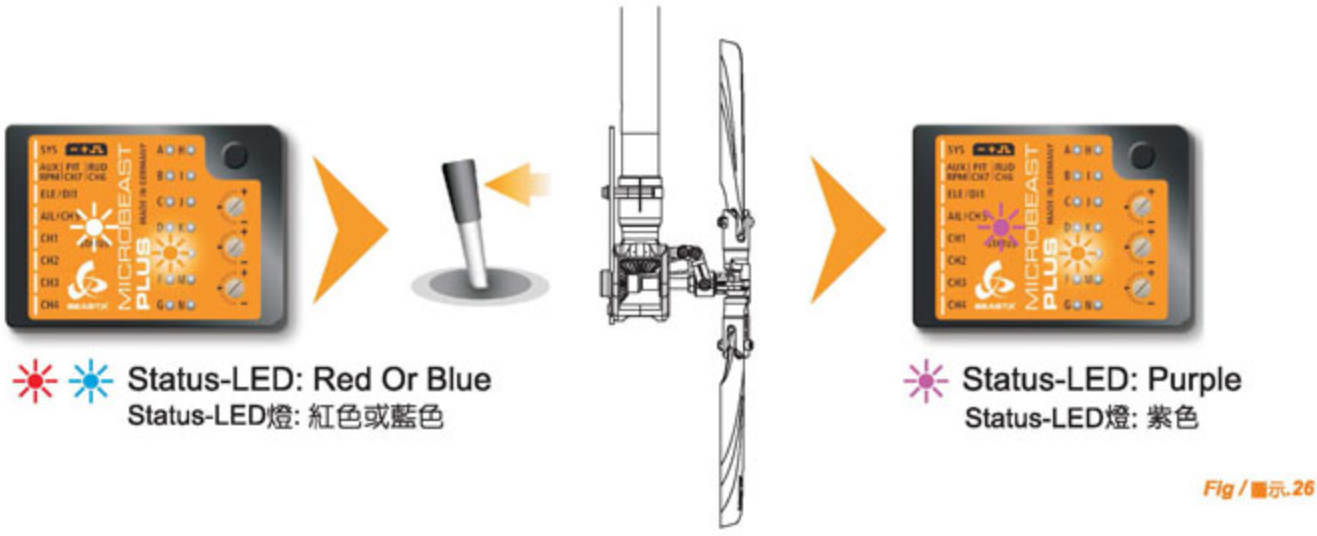


Fig / 圖示.26

CAUTION 注 意

If the Status-LED does not light or lights in an unexpected color, the servo throw is obviously too small. In this case mount the linkage ball of the tail linkage rod further inward on the servo horn. This ensures that the tail gyro of MICROBEAST PLUS will perform in the best way and that enough servo resolution is available.

如果 Status-LED燈不亮或著所亮的顏色與期望不同，意謂著尾舵總行程量過小。此時，請將尾舵擺臂上的球頭向內 (尾齒輪組方向) 移動以保持 MICROBEAST PLUS 最佳鎖尾功能。

The optimum throw is determined by the maximum possible control travel of the tail mechanism or based on the maximum allowed angle of attack of the tail rotor blades that will not lead to an aerodynamic stall of the blades. Such stalls can cause very bad stopping behavior like overshooting of the tail when stopping from rotation and can also cause bad tail response to rudder stick input when performing directional changes. Keep this in mind when adjusting the tail rotor endpoints. Several helicopters on the market allow for a very wide range of tail travel. Here is not necessarily useful to use the whole range of travel. Check the helicopter's manual to find out where to set tail pitch end points.

最佳的直昇機尾舵轉動是由直昇機尾舵機構及左右行程而決定。雖然尾旋翼並不會因為這些問題而失速。但是上述兩種問題可能造成尾舵在停懸時有嚴重的回彈現象。此時，請調整尾舵機械結構是否順暢無干涉，及檢查左右行程量是否足夠。若尾舵感度不足時，請先將尾舵感度調到有追蹤現象，再稍微往回調低感度，直到理想感度為止。市面上有些直昇機可支援較廣的尾舵行程量。請依自己手感調整最佳感度。並請參考直昇機說明書中的尾舵設定。

Note: By (re-)adjusting tail rotor endpoints the servo center trim will be set to zero (in case it has been changed at Parameter menu point A - see chapter 9).

請注意:（重新）調整尾舵最大行程量，伺服器中立點將被設定為零度（如果在參數選單中的第 A 點已經被改變 - 請參閱第 9 章）。

Push the button to save the configuration and to proceed to Setup menu point F .

按下設定按鈕保存當前設定，並進入選單第 F 點。

KUGN

F TAIL GYRO SENSOR DIRECTION
設置尾舵陀螺修正方向

Here you have to check if the tail gyro of MICROBEAST PLUS does compensate to the correct direction.

在這裡您必須檢查 MICORBEAST PLUS 的尾舵螺修正方向是否正確。

At setup point F, you can find this out very easily:

The gyro always tries to steer in the opposite direction of the rotation that is applied to the helicopter.

If you move the helicopter by hand around its vertical axis, the gyro must actuate a rudder servo movement to compensate this rotation. If for example you move the nose of the helicopter to the right, the gyro has to steer left the same way as you would steer left with the rudder stick (figure 27).

If this is not the case you have to reverse the sensor direction. This happens by moving the rudder stick once into any direction. For confirmation you will see that the Status-LED will change its color:

在設定選單第 F 點，您可以很容易地了解：

陀螺儀會不斷地嘗試控制尾舵方向來抵消直昇機機體自旋。

如果用手抓住直昇機沿著垂直軸線擺動，陀螺儀則會操控尾伺服器的方向來抵消轉動的方向。例如，機鼻向右轉動，則陀螺會操控尾舵進行左舵修正，就如同你自行撥動尾舵搖桿向左修正是一樣的。（如圖27）

如果不是這種情況，您需要把感應器反向。此時，只需要把尾舵搖桿往任意方向移動一次。 您可以從 Status-LED 燈的顏色改變來確認設置是否隨之改變。

If this is not the case you have to reverse the sensor direction. This happens by moving the rudder stick once into any direction. For confirmation you will see that the Status-LED will change its color:

如果不是這種情況，您需要把感應器反向。此時，只需要把尾舵搖桿往任意方向移動一次。 您可以從 Status-LED 燈的顏色改變來確認設置是否隨之改變。

Status-LED Status-LED燈	Tail Sensor Direction 尾陀螺修正方向
Red 紅色	Normal * 正常*
Blue 藍色	Reversed 反向

＊Factory Setting ＊出廠預設值

Once again repeat the test as described above. MICROBEAST PLUS should now correct in the right way:

直接用手推動尾旋翼，觀察尾旋翼的修正方向，調整尾舵的修正方向，直到 MICROBEAST PLUS 做出正確的修正。

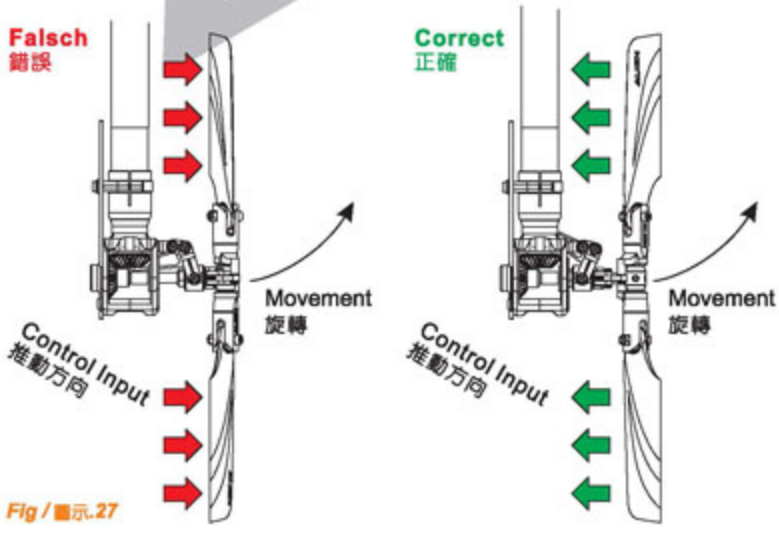


Fig / 圖示.27

If using MICROBEAST PLUS as a stand-alone tail gyro with the special patch cable (see chapter 4 and section 4.1.2) you do not have to do any further adjustments within the Setup menu from here on. Push the button repeatedly to skip the following Setup menu points until no menu LED is on anymore and the system is ready for operation.

如果使用選配的連接線，把 MICROBEAST PLUS 只當作單獨的尾舵陀螺儀使用（詳見4 節跟 4.1.2 節），您沒有必要在設定選單內做其他功能的設置了。此時，請長按設定選單按鈕，直到所有指示燈都熄滅，表示跳出設定選單，讓系統回到正常工作狀態。

Push the button to save the configuration and to proceed to Setup menu point G .

按下設定按鈕保存當前設定，並進入選單第 G 點。

ALIGN

G SWASHPLATE SERVO CENTER TRIM
設定十字盤伺服器中立點

When entering Setup menu point G connect all swashplate servos as described in chapter 3.3. They now will be running to their origin zero position (1520 µs) what we call reference position here when the Status- LED is off. This reference position is used to mount the servo horns on the servos at their true center position, so that you get roughly equal throws to both direction. Mount the servo horns so that they form as much as possible a 90 degrees angle to the linkage rod. Then in the next step you electronically fine trim every single servo's center position, as usually mounting the servo horn at exact 90 degrees will not work out perfectly depending on the servo's gear train and the servo horn.

當進入設定選單第 G 點的時候，所有十字盤伺服器將進入中立點位置（1520 µs 頻寬），這個位置我們稱作“參考點”，此時 Status-LED 燈處於熄滅狀態。這個參考點的作用是幫助用戶在伺服器中立點的位置調整伺服器擺臂、球頭連桿的夾角，使其盡可能的接近 90 度。通常，我們無法完美的保證伺服器在參考點位置時可以把伺服器擺臂和球頭連桿裝成 90 度，因為這還關係到伺服器輸出齒以及伺服器擺臂齒槽的咬合，因此我們需要按照下一步的方法進行電子方面的調整。不管電子方面如何調整，您仍然可以在任何時間進入此參考點（Status-LED 燈熄滅）來查看此處的機械安裝。往一個方向撥動尾舵搖桿一次，則更換一個當前十字盤伺服器，從而有針對性的使用升降舵的前/後進行十字盤伺服器中立點調整。Status-LED 燈的顏色會隨著當前選中十字盤伺服器的改變而改變，同時當前選定的十字盤伺服器會做快速上下跳動來提醒您。

Note: Although if you were able to mount the servo horn perfectly at 90 degrees, check the electronical trimming as described below as the reference possition is not used later onwards and in operation but the trimmed position is!

至此，請參考您的直昇機與遙控器手冊，將螺距搖桿置於中立點，十字盤伺服器控制臂與十字盤保持水平，連桿儘量成 90 度。十字盤完全水平也是很重要的，完成了伺服器與十字盤的正確安裝後，調整集體螺距連桿，使集體螺距成為0度。

If you move the rudder stick to a single direction once, you can select one servo and change its center position by moving the elevator stick back and forth. Every color of the Status-LED is corresponding to a specific servo channel that is indicating its selection by a short up and down move.

如果您將尾舵搖桿往單一方向移動一次，您可以選擇一個伺服器和前後移動升降桿來改變其中心位置。Status-LED燈的每個顏色與特定伺服器頻道相對應，並由快速上下移動表示其選擇。

If you move the rudder stick once again in the same direction as before, you can select the next swash servo and adjust its center position by using the elevator stick.

您需要在同一方向再次移動尾舵搖桿，才能選擇下一個十字盤伺服器並調整它的中立點。

Status-LED Status-LED燈	Function 功能
Off 熄滅	Swashplate servos at reference position 十字盤伺服器中立點置於“參考點”位置
Purple 紫色	CH 1 — elevator servo center trim adjust CH1 升降伺服器中立點調整
Red 紅色	CH 1 — aileron(1) servo center trim adjust CH2 副翼伺服器中立點調整
Blue 藍色	CH 3 — aileron(2)/pitch servo center trim adjust CH3 螺距伺服器中立點調整

You can switch back and forth between the servos as often as you need and also switch back to the reference position anytime . The already adjusted servo centers will not be lost doing this .

您可根據自己的需要，在不同的十字盤參考點之間隨意切換，已經調整過的伺服器中立點數據不會因此而丟失。

Align

Only the trimmed servo positions are important and get stored (those which have been set with the corresponding Status-LED colors). The servo positions at "Status-LED off" only serve for reference and to get the servo horns best plugged into position, for instance if you install new servos or replace the servo gears after a crash. This reference position will not be used later onwards. Only the servo positions with active trimming are used.

只有調整過中立點的十字盤伺服器的資料才會被認為是重要的並且被保存下來。當前伺服器切換時只有 Status-LED 燈亮時才表示此時設定的資料會被保存。當 Status-LED 燈處於熄滅狀態時，表示處於參考點位置。此位置只用於調整機械初始位置。

Now if servos are trimmed do not yet proceed to the next menu point . With active trimming (Status-LED still lights up in one color!) adjust the linkage rods according to your helicopter manual. The swashplate should now be at the midpoint and perpendicular to the main shaft and the rotor blades should have 0 degrees of pitch. Always work this out from bottom (servos) to top (blade grips).

如果微調伺服器還沒有進入下一個調整設定。請微調伺服器連桿（Status-LED 燈仍然亮起一種顏色的情況下！）請參考您的直昇機說明書。十字盤現在應該中立點處並且垂直於主軸和主旋翼，集體螺距應為 0 度。從底部（伺服器）頂部（主旋翼夾座）都請確實執行。

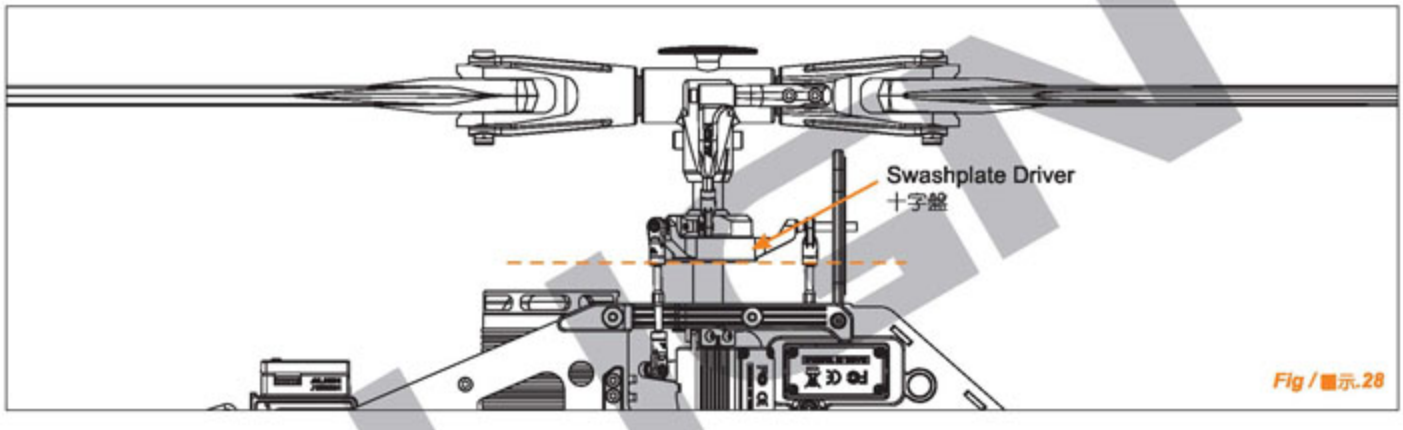


Fig / 圖示.28

Don't forget to level and phase the swashplate driver in the correct way (if it's adjustable)!

At 0 degrees of pitch the swash driver arms must be horizontal and the linkage balls of the blade grips have to be perpendicular to the spindle shaft.

同樣，請確保十字盤伺服器工作方向正確，並且在集體螺距 0 度時，向位器控制器擺臂盡量維持水平。主旋翼夾座球頭應儘量與橫軸垂直（三角補償角為 0）。

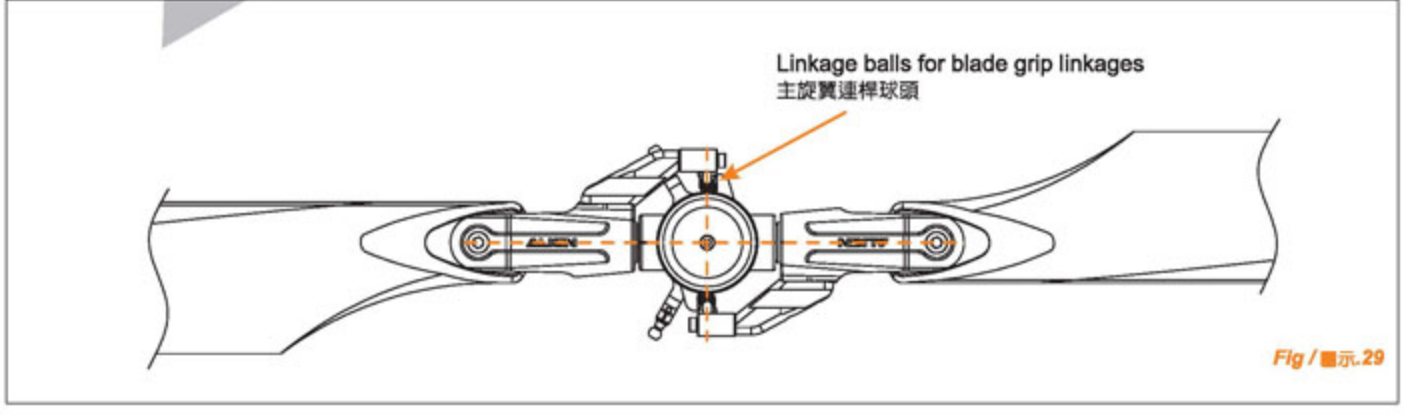


Fig / 圖示.29

Push the button to save the configuration and to proceed to Setup menu point H .
按下設定按鈕保存當前設定，並進入選單第 H 點。

H SWASHPLATE MIXER
十字盤混控形式選擇

At Setup menu point H you can choose the electronic swashplate mixer your helicopter requires or choose "mechanical" for switching of the electronic swashplate mixer if your helicopter has a mechanical mixer. For the electronic mixer by default MICROBEAST PLUS supports 90°, 120° and 140° swashplates. Besides these choices, you can set any swashplate geometry by using the StudioX software bundle in combination with the optional USB2SYS interface.This also includes setting a virtual swash phasing for scale helicopters.Which kind of CCPM your helicopter uses can be read in the manual for your helicopter.

在設定選單第 H 點中，您可以為直昇機十字盤選擇電子混控或者機械混控。如果選擇電子混控，MICROBEAST PLUS 支援 90°，120°和140°十字盤。同時，您還可以在 PC 軟體端進行十字盤電子混控設定以及選擇機械混控。這也包括為直昇機設定一個虛擬的十字盤。請參考您的直昇機說明書並確認直昇機所使用的 CCPM 類型。

CAUTION 注 意

If your helicopter requires an electronic swashplate mixer by no means use your transmitter's swashplate mixer function!

The mixing is all done by MICROBEAST PLUS. Deactivate the swashplate mixing in your transmitter or program it to mechanical mixing (which is often called "normal", "H1" or "1 servo" mixing), even if your helicopter requires electronic mixing (also see section 3.2).

如果您的直昇機十字盤需要透過電子混控，並不表示要您打開遙控器上的十字盤混控功能！

所有的混控都將會由 MICROBEAST PLUS 來完成。請禁用遙控器上的十字盤混控功能，即使您的直昇機要求電子混控 (參考 3.2 章)，也請將遙控器的十字盤設定為機械混控，通常為 [H1] 或者 [1 servo]。

The color and state of the Status-LED shows the currently selected mixing type:
Status-LED燈的顏色和狀態表示所選擇的十字盤混控類型：

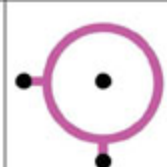
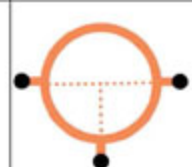
Status-LED Status-LED燈	Off 熄滅	Purple 紫色	Red Flashing 紅色閃爍	Red 紅色	Blue Flashing 藍色閃爍	Blue 藍色
Swashplate Mixer 十字盤混控類型	User defined 使用者自定義	Mechanical 機械結構	90°	120° *	140°	140° (1=1)
						

Fig / 圖示.30

＊Factory Setting ＊出廠預設值

The type 140° (1=1) can also be considered as 135° swashplate! There is no uniform designation for this type of swash mixing. The main idea with this type of swash is to have an equal servo ratio on the elevator axis. If this is the case on your helicopter then choose this type, no matter whether it's called 135° or 140° swashplate.

140°(1 =1)混控類型也可以被認定為 135°十字盤！這類型的混控十字盤沒有統一的命名。主要是升降軸有相等的伺服比。如果您的直昇機的十字盤混控符合此類型，無論它是135°或 140°，都請選擇140°(1=1) (燈號藍色恆亮)。

Push the button to save the configuration and to proceed to Setup menu point I .
按下設定按鈕保存當前設定，並進入選單第 I 點。

I SWASHPLATE SERVO DIRECTIONS
設定十字盤伺服器工作方向

At Setup menu point I, you adjust the correct swashplate servo directions. To facilitate this setup, you don't need to adjust every servo by its own, but just try the 4 possible combinations. Move the thrust stick and check if the swashplate moves horizontally up and down. The direction itself is not yet important. If one or more servos are not running in the right direction, just choose another combination of servo directions by giving a short rudder input. Repeat this rudder input until all servos are running in the same direction and moving collective pitch up and down.

在設定選單第 I 點，您可以設定正確的十字盤伺服器工作方向，為了簡化設定，此處不需要針對單個伺服器進行設定，只需要嘗試 4 種不同的組合，便可以找到正確的方向。移動螺距通道搖桿時，請檢查十字盤是否在上下移動時保持水平狀態，移動方向暫時不需要考慮，如果有伺服器工作方向不正確，只需要快速撥動尾舵更換下一組合，重複以上步驟，直至所有十字盤伺服器工作方向一致。

Servo Directions
伺服器方向

Status-LED Status-LED燈	CH1	CH2	CH3
Off 熄滅	Normal 正常	Reverse 反向	Reverse 反向
Purple 紫色	Normal * 正常*	Normal * 正常*	Reverse* 反向*
Red 紅色	Normal 正常	Reverse 反向	Normal 正常
Blue 藍色	Normal 正常	Normal 正常	Normal 正常

＊Factory Setting ＊出廠預設值

Check now, if your control directions of aileron, elevator and collective pitch are correct . If this is not the case, you have to use the servo reverse feature of your transmitter to reverse the appropriate

現在可以檢查副翼，升降以及螺距的控制方向，如果有單獨某一個動作方向不正確，請使用遙控器的通道反向功能進行調整。

CAUTION 注 意

If the servos are not reacting properly to aileron and elevator functions, check if the servos and receiver wires are connected as described above in section 3.3 and chapter 4. Also check if the channel assignment within Receiver menu has been done correctly (section 5.2) if applicable.Additionally verify the settings of your transmitter on any remaining mixer functions (see section 3.2)and check if the transmitter is set to the correct stick mode.

如果經過以上設定，副翼/升降控制仍然不正確，請檢查伺服器連線以及接收器與 MICROBEAST PLUS 本體接線是否正確。請參閱 3.3 及第 4 章。如果接線正確，則請檢查遙控器上是否仍有混控功能被啓用。(請參閱 3.2 章)，並檢查遙控器的設定模式是正確的。

Note: This menu item will not be left automatically after 4 minutes, so you have plenty of time to adjust the mechanical setup.

請注意：此項設定並沒有 4 分鐘超時自動退出功能，所以您有足夠的時間來進行機械設定。

Push the button to save the configuration and to proceed to Setup menu point J .

按下設定按鈕保存當前設定，並進入選單第 J 點。

ALIGN

J CYCLIC PITCH GEOMETRY
定義循環螺距 6 度位置

At Setup menu point J, you have to teach MICROBEAST PLUS the cyclic pitch ratio.

First don't touch any stick on your transmitter when entering Setup menu point J. Orientate the rotor blades (or one of the rotor blades when using a rotorhead with more than two blades) so that they are parallel to the tail boom (Fig. 31). The swashplate should be in the neutral position and the blades should have 0 degrees of pitch. If this is not the case repeat the swashplate servo centering at Setup menu point G. Then attach a pitch gauge to one of the rotor blades on the longitudinal axis to measure aileron pitch.

Move the aileron stick until the rotor blade has an exact 6 degrees of cyclic pitch and release the stick (Fig. 32). If you moved the swashplate too far you can steer the stick to the opposite direction and reduce the pitch. The direction you choose is not important, what is important is that you keep the position steady on 6° when you save and leave this menu point (it is not enough to go to 6° and then move back before saving and leaving).

When reaching 6 degrees, the Status-Led should light blue . This indicates that your helicopter's rotor head geometry is perfect for the use with a flybarless system. Otherwise, if the Status-LED's color is red or purple or even if the Status-LED is off, this indicates that your helicopter's geometry is not optimal for flybarless usage. Correct this by using shorter servo horns, shorter linkage balls on the inner swashplate ring or longer blade grip link levers.

By moving the rudder stick to one direction you can also delete the adjustment and reset the swashplate back to 0 degrees, e.g. to readjust your pitch gauge.

在設定選單第 J 點，您必須讓 MICROBEAST PLUST 知道您直昇機的循環螺距的度數，方法如下。

首先，進入設定選單第 J 點後不要碰觸任何遙控器上的搖桿。然後用手旋轉主旋翼，讓主旋翼夾座的方向與尾管平行（圖.31），然後把螺距規固定在尾管上方的主旋翼。這時觀察螺距規，螺距度數應該是 0 度，十字盤伺服器應該是在中立點位置，十字盤也應該保持水平。如果十字盤伺服器和螺距規顯示的度數不正確，請重新進行設定選單第 G 點設定。

現在撥動副翼搖桿使主旋翼傾角度數為 6 度後鬆開搖桿 (請參考圖. 32)。如果撥動搖桿出現的主旋翼傾角超過 6 度，請反向撥動副翼搖桿來減少主旋翼攻角，直到剛好 6 度。撥動尾舵搖桿可以清除之前的主旋翼攻角，使其回歸 0 度。調整度數時，搖桿搖動的方向並不重要，重要的是在退出此設定前，你必須正確地將循環螺距的度數調整為 6 度並儲存起來。

當循環螺距處於 6 度時，Status-LED 燈號必須顯示藍燈。如果 LED 燈處於紅色，或紫色，甚至是熄滅狀態，則表示這架直昇機的旋翼頭連桿混控比不適合使用無平衡翼系統。您可以利用改變十字盤伺服器擺臂的長短，以及球頭連桿，來使直昇機混控符合無平衡翼系統的要求。

往單一方向移動尾舵搖桿，可以刪除調整和回復十字盤到 0 度位置，例如：重新調整螺距規。

CAUTION 注 意

Always set the cyclic pitch to 6 degrees! This setup does not affect the maximum rotation rate of the helicopter but is only there to show and teach MICROBEAST PLUS the actual mechanical cyclic geometry and to estimate servo throws. A wrong adjustment at this step may be extremely detrimental to the performance of MICROBEAST PLUS. The blue color of the Status-LED is secondary and just for information. Do not try to get a blue Status-LED by any means. For example if the LED only lights up red when the pitch is set to 6° then use this adjustment anyway but keep in mind that your helicopter's head geometry is not perfect. Do not adjust 7° for instance just because the Status- LED does become blue there!

一定要在循環螺距度數為 6 度時來觀察 Status-LED 燈，才能顯示您直昇機的調校是否正確。此設定並不會影響到無平衡翼系統的最大滾轉速率，只是用於觀察機械混控是否適合 MICROBEAST PLUS。如果不按照此說明進行調整，可能引起 MICROBEAST PLUS 不正常的飛行表現。此外，Status-LED 燈號亮起藍色，表示當前直昇機集合混控適合 MICROBEAST PLUS 無平衡翼系統，如果循環螺距在 6 度時所亮的燈號是紅色的，那麼，請注意，這是系統警示您直昇機主旋翼頭部結構的調校並不完美。在此情況下，請不要為了讓 Status-LED 燈亮起藍燈，而將循環螺距的度數調到 7 度。

Note: This menu item will not be left automatically after 4 minutes, so you have plenty of time to adjust the mechanical setup.

請注意：此項設定並沒有 4 分鐘超時自動退出功能，所以您有足夠的時間來進行機械設定。

1. Orientate The Rotor Blades Parallel To The Longitudinal Axis Of The Helicopter.
1.使主旋翼平衡於直昇機的縱軸方向。

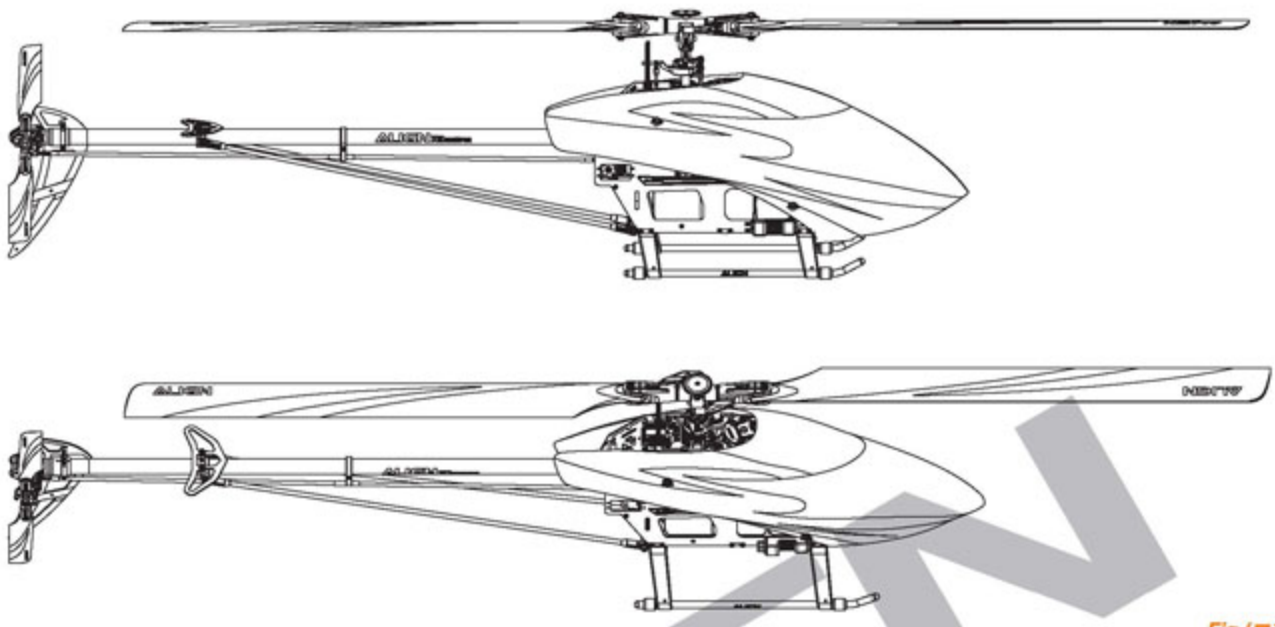
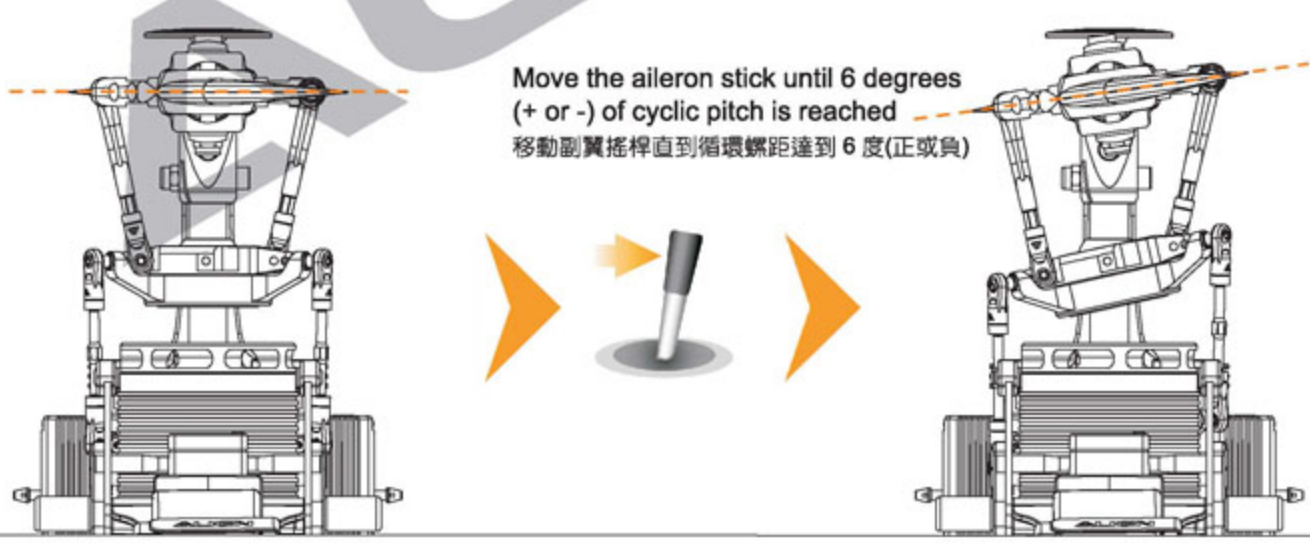


Fig / 圖示.31

2. Adjust the cyclic pitch to exactly 6 degrees.
2.調整循環螺距為準備的 6 度。

Fig / 圖示.32



Push the button to save the configuration and to proceed to Setup menu point K .
按下設定按鈕保存當前設定，並進入選單第 K 點。

ALIGN

K COLLECTIVE PITCH RANGE AND ENDPOINTS
設定集體螺距行程量（總螺距）

At Setup menu point K you adjust the maximum desired negative and positive collective pitch.

Move the thrust stick all the way up and let it stay there. Now you can increase or decrease the maximum amount of collective pitch using the rudder stick.

When you adjusted the desired maximum pitch angle, move the thrust stick all the way down and again increase or decrease the collective pitch to the minimum desired value using the rudder stick.

在設定選單第 K 點，可以調整您想要的正負集體螺距行程量。

將螺距搖桿推到最高點，此時您可以利用尾舵通道搖桿來調整進行最大集體螺距行程量。

當您調整完最大集體螺距之後，將螺距搖桿拉到底，用同樣的方法來調整最低點集體螺距行程量。

⚠ CAUTION 注 意

At this point, verify again that the demanded collective pitch direction on the transmitter is in the correct direction for the model. Otherwise use your transmitter's servo reversing function for the collective pitch channel to correct this as already described in section I.

在此項設定中，請再次確定集體螺距的方向符合直昇機設定的方向。否則，請利用遙控器頻道反向功能來進行修正，設定方法請參考遙控器說明書。

Don't use any pitch curves in your transmitter while doing these adjustments. Later on for the flights, you can adjust your pitch curves as you like and are used to. Setup menu point K solely serves to teach MICROBEAST PLUS the maximum pitch range and the endpoints of the thrust stick.

當 MICROBEAST PLUS 進行設定時，請不要更改遙控器上的螺距曲線設定（保持 0-50-100 直線）。設定完成後，試飛前，您可以按照自己的偏好，在遙控器上設定螺距曲線。設定選單第 K 點僅用於設定 MICROBEAST PLUS 可用的最大集體螺距行程量。

Push the button to save the configuration and to proceed to Setup menu point L .

按下設定按鈕保存當前設定，並進入選單第L點。

ALIGN

L CYCLIC SWASHPLATE LIMIT
設定十字盤最大傾斜範圍

At Setup menu point L you adjust the maximum possible tilting of the swashplate for aileron and elevator. The deflection will be limited in a circular path similar to a cyclic ring function.

For adjustment proceed in the following way:

Carefully move the sticks for aileron, elevator and pitch to all maximum end points and watch out if the swashplate, the linkage rods or servos are binding somewhere or even getting not more driven.

By moving the rudder stick to the left or right, you can increase or decrease the throw limiter. The limiter affects all servo directions, so adjust it until there is just no binding at all possible servo deflections. Always try to achieve the maximum possible cyclic throw. This will ensure that the maximum possible rotation rate of the helicopter can be achieved and the the gyro control loop does not get sacrificed.

在設定選單第 L 點，您可以設定十字盤最大可用副翼/升降舵傾角。傾斜範圍將被限定在一個同等於 Swash Ring（十字盤模擬圓運動）功能的路徑內。

按流程設定：

小心的撥動副翼/升降搖桿以及螺距搖桿至最大行程，觀察十字盤、球頭連桿或伺服器是否有任何干涉現象。

利用左右撥動方向通道搖桿來增大或減小副翼/升降輸出傾角。十字盤傾斜範圍越大，MICROBEAST PLUS 在飛行中的表現越佳。這可以讓直昇機在 MICROBEAST PLUS 控制下，獲得更大的滾轉速率。

CAUTION 注 意

Similar to Setup point J, the color of the Status-LED indicates whether the adjusted limit allows sufficient cyclic throw. In the ideal case, the swashplate is limited only to the extent where the Status- LED still lights blue. In particular, for models that are intended to be used in 3D aerobatics, 10° to 12° cyclic throw should be possible. But even for all the other helicopters, it is recommended to adjust as much throw as possible, because otherwise the control loop may not work properly. Here, the color of the Status-LED provides a clue. If you get only purple or even no light at all, it is essential that you change the mechanical setting of your model to increase the available throw.

和設定選單第 J 點相同，Status-LED 燈表示所設定的範圍是否足夠讓循環螺距使用。在理想狀態下，十字盤會被限定在 Status-LED 燈藍色的數值範圍內。某些情況，比如 3D 飛行，循環螺距可能會需要10° 至12° 。其餘情況也建議您盡量將循環螺距量調大，以保證MICROBEAST PLUS 有足夠的空間發揮其功能。此 Status-LED 燈僅作為輔助線索。如果Status-LED 燈呈紫色或熄滅狀態，表示您所設定的循環螺距過大或不足，此時您必須改變機械上的調整，來提供充足的傾角範圍。

Note: If afterwards any modifications are done to one of the other Setup menu points which affect servo adjustments (Setup menu points G, J and K) the cyclic swashplate limit adjustment has to be checked and redone.

請注意：之後若有修改設定選單第 G、J 或 K 點，它們將影響到伺服器的設定，請務必記得重新設定十字盤的循環螺距行程量。

Push the button to save the configuration and to proceed to Setup menu point M .
按下設定按鈕保存當前設定，並進入選單第 M 點。

M SWASHPLATE SENSOR DIRECTIONS
設定十字盤感應器修正方向

At Setup menu point M you check if the sensors for aileron and elevator are measuring the correct direction. This can be directly verified in this menu point: If you roll or tilt the helicopter by hand the swashplate has to steer against the rotational movement. See figures 33 and 34 on the next pages.

在設定選單第 M 點中， 您可以檢查 MICROBEAST PLUS 對副翼/升降的修正方向是否正確。請按此方法進行檢查：手持直昇機並向某方向傾斜直昇機機體，此時十字盤應該朝機體的相反方向傾斜。請參考下頁圖示 33~34.

CAUTION 注 意

When tilting the helicopter forward the swashplate has to move backwards, when tilting the helicopter to the back, the swashplate has to compensate forward. Same thing applies to the roll axis, when you roll the helicopter to the left the swashplate has to steer right and vice versa. Basically the swashplate has to remain horizontal while banking the helicopter.

當直昇機向前方傾斜時，十字盤應當向後方傾斜。當直昇機向後方傾斜時，傾斜盤應當向前方傾斜（圖.33）。同樣，如果將直昇機橫向傾斜，十字盤應當向相反方向修正（圖.34）。當機體恢復初始水平位置，十字盤也應該同樣回到初始位置。

If this is not correct, you can reverse the sensor directions by moving the rudder stick in one direction. For confirmation you will see that the Status-LED changes color. Repeat this step until both sensors are working in the correct manner.

如果表現不正常，請撥動方向通道搖桿更改感應器方向設定。Status-LED 燈將用不同顏色表明當前選擇。重複此步驟直至十字盤修正方向正常。

There are four possible displays for control to choose from, one will be correct.
下表是四種不同組合的選項表列，請選擇適合項目：

Sensor Directions
感應器修正方向

Status-LED Status-LED燈	Elevator 升降舵	Aileron 副翼舵
Off 熄滅	Reversed* 反向*	Reversed* 反向*
Purple 紫色	Reversed 反向	Normal 正常
Red 紅色	Normal 正常	Reversed 反向
Blue 藍色	Normal 正常	Normal 正常

＊Factory Setting ＊出廠預設值

Note: The sensor direction colors may differ between different MICROBEAST PLUS devices and different firmware versions. Therefore the Status-LED colors should be used as reference for one device with one specific firmware version only. We highly recommend not to rely on the Status-LED color when transfering setups from one device to another. Always check sensor directions manually!

請注意：感應器方向的燈號顏色可能會因個別 MICROBEAST PLUS 或版本而有所差異。因此，Status-LED燈的感應器顏色，僅供單一裝置或特定版本參考。我們強烈建議當您的裝置轉裝到另一台直昇機時，請不要依賴原本熟悉之燈號顏色來判定感應器的方向。請務必手動檢查感應器的方向！

Push the button to save the configuration and to proceed to Setup menu point N .
按下設定按鈕保存當前設定，並進入選單第 N點。

ALIGN

Tilt the helicopter forwards
直昇機向前傾斜

The swashplate has to move backwards
十字盤必須向後移動

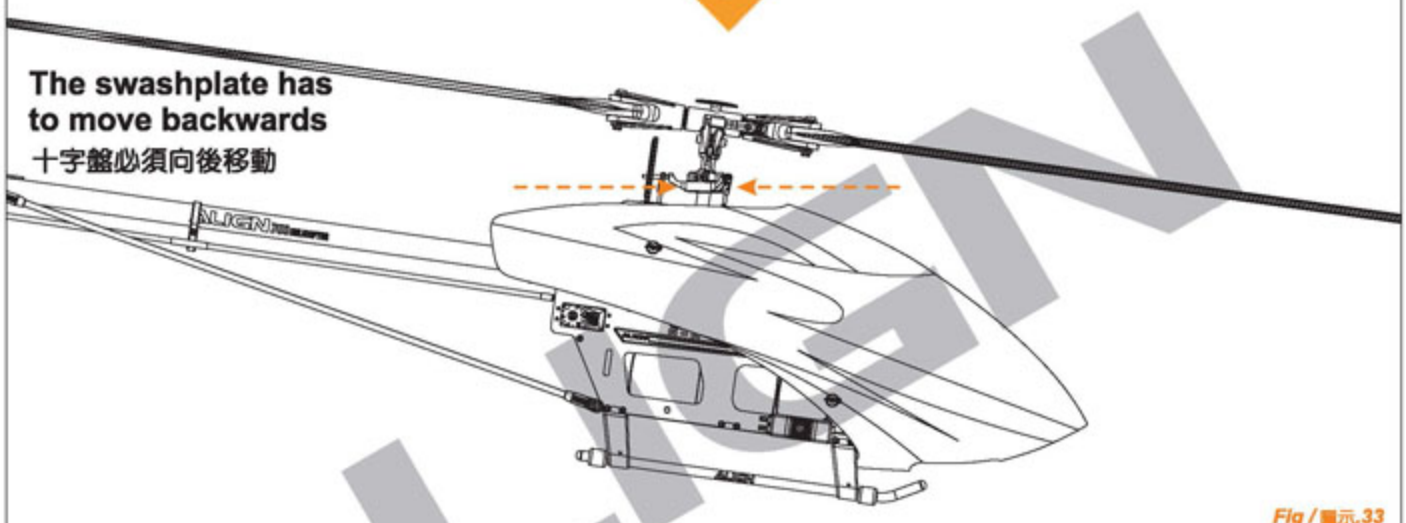
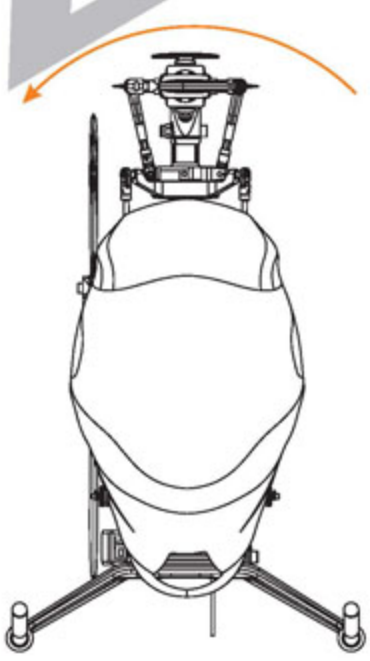


Fig / 圖示.33

Roll the helicopter to one side
直昇機往單側傾斜



The swashplate has to steer to the opposite direction
十字盤必須往反向移動

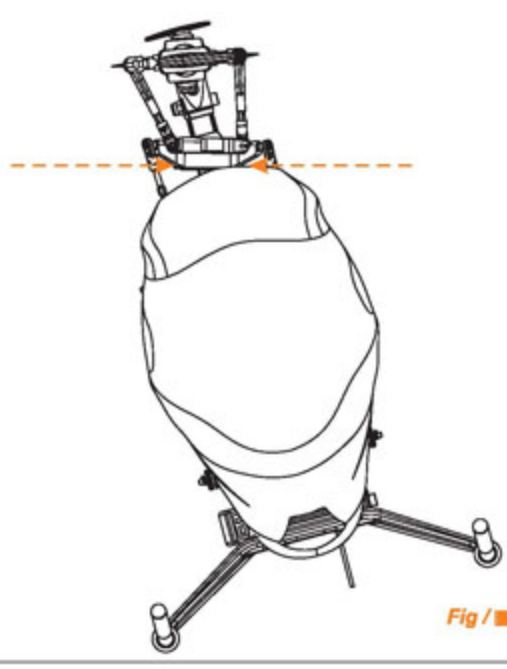


Fig / 圖示.34

ALIGN

N PIROUETTE OPTIMIZATION DIRECTION
設定自旋優化方向

When entering Setup menu point N the swashplate will tilt forwards or backwards depending on your helicopter's setup (servos, linkages,...). This resulting tilt will correspond into a specific compass heading.

Grab your helicopter at the rotor head and rotate it on the vertical (yaw) axis by hand. The swashplate must continue to maintain the same compass heading (see fig. 35 on the next page). The initial direction (forward or backward) is irrelevant.

If the noted swashplate tilt opposes the rotation of the helicopter and rotates against the direction of the model, the pirouette optimization should be inverted. This can be done by moving the rudder stick in one direction. For confirmation the color of the Status-LED on the MICROBEAST PLUS will change.

當進入設定選單第 N 點後，十字盤將會自動向前或向後傾斜，傾斜方向取決於之前的設定 (伺服器，連桿等)。這將導致直昇機往某特定方向的傾斜。

此時抓住直昇機旋翼頭，並用手轉動直昇機使之圍繞主軸旋轉，旋轉過程中十字盤應當始終保持傾斜方向不變(請參閱下頁圖.35)。無論往前或往後和最初的方向都是沒關係的。

如果十字盤傾斜方向在旋轉機體的過程中朝相反方向修正旋轉，請更改此選項方向。請撥動方向搖桿來改變選項。Status-LED 燈會顯示當前選項：

Status-LED Status-LED燈	Pirouette Optimization Direction 自旋優化方向
Red 紅色	Normal * 正常*
Blue 藍色	Reversed 反向

＊Factory Setting ＊出廠預設值

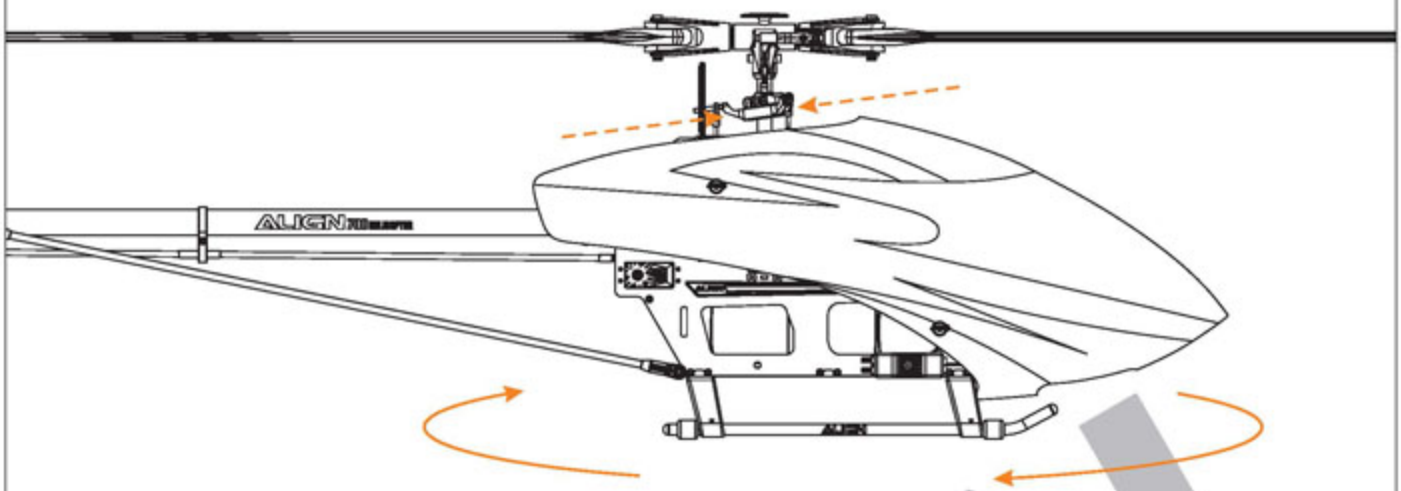
Now the initial setup of the MICRObeAST pLUS is finished . when you press the button now, you will exit the Setup menu and the MICROBEAST PLUS is ready for operation .

至此，所有 MICROBEAST PLUS 本體的基本初始化設定全部完成。按下按鈕後將退出設定選單，進入正常工作模式。

ALIGN

1. Swashplate points to the left(initial position may differ)

1. 十字盤指向左邊 (可能和最初的方向不同)



2. Rotate the helicopter around the vertical axis

2. 直昇機繞著垂直軸線旋轉

3. Swashplate must always point to the same direction as before (in this case to the left)

3. 十字盤的指向，必須和之前的方向相同 (例如：指向左邊)

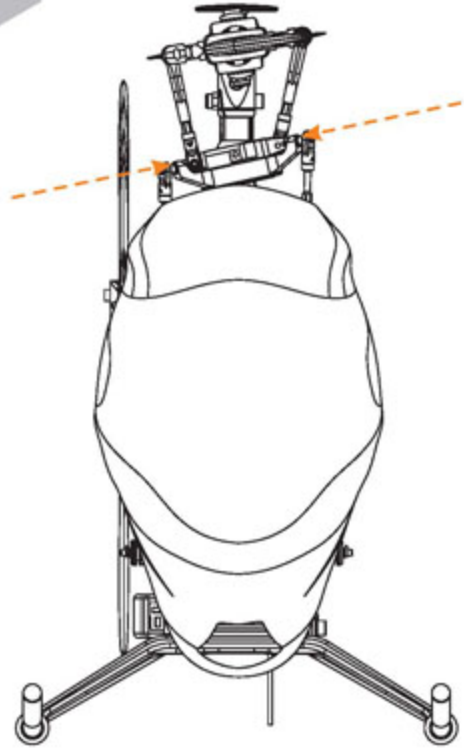


Fig / 圖示.35

ALIGN

8 DIALS AND TAIL GYRO GAIN
面板旋鈕和尾陀螺感度

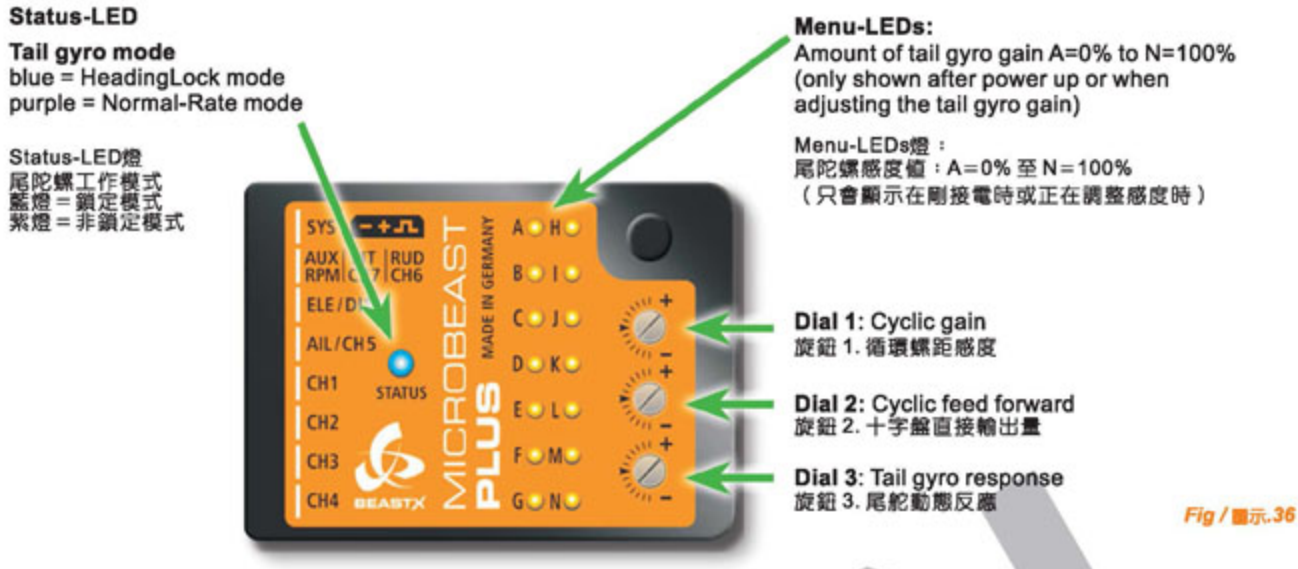


Fig / 圖示.36

To adjust the dials please only use the supplied plastic BEASTX adjustment tool to prevent damage to the dials!

請使用 BEASTX 原裝塑膠調整工具來調整旋鈕，否則可能導致旋鈕損壞！

8.1 SWASHPLATE: CYCLIC GAIN (DIAL 1)
十字盤：循環螺距感度（旋鈕1）

The swash gyro gain (cyclic gain) can be set by dial 1 from 50% up to 150%. Turn dial 1 clockwise to increase the gain. The factory setting is horizontal which corresponds to 100% swashplate gain. For your first flights we suggest not changing this setting. However, when using very small helicopters (such as 250 or 450 size), reduce the cyclic gain by 3 marks (=75% gain).

In general the higher the gain the harder the helicopter will stop after cyclic moves and the helicopter will feel more stable in the air. If the gain is too high, the helicopter will tend to oscillate at high frequency especially on the elevator axis. Due to their low mass, this behavior will occur sooner on small helicopters, so typically these do not need as much gain as large helicopters.

If the gain is too low the helicopter does not stop precisely and overshoots the more or less after a cyclic movement. Additionally it feels unstable in fast forward flight and when hovering. In general low gain will allow the helicopter to have more life of its own and so it will not react to stick inputs as precise and immediate as the pilot expects it.

循環螺距感度的出廠預設值為水平位置，感度相當於 100%，循環螺距的感度值可以設定從 50% ~150%。在您第一次飛行時，我們不建議更改原廠設定值。然而，小型直昇機（如 250 或 450 級別）的循環螺距感度需要減少至 75%。

一般來說，感度越高，循環螺距變化後直昇機的停止動作越硬，停懸也會更穩定。如果感度太高，直昇機的動作會有回彈追尾現象，並且容易產生抖動，特別是升降舵。所以大型直昇機 (500級以上) 並不需要太高的感度。

如果感度太低，直昇機的停止動作將不精確，快速前進直線飛行也變得不穩定。此外，在停懸時也會感覺往前移動。一般來說較低的感度可以讓直昇機變得比較為靈活，但是對飛行員下達的飛行指令，也不會那麼立即且精確地反映出來。

8.2 SWASHPLATE: CYCLIC FEED FORWARD (DIAL 2)
十字盤：十字盤直接輸出量（旋鈕2）

Turn dial 2 clockwise to increase the swashplate's cyclic stick feed forward. This part mixes some amount of stick input directly to the servos, bypassing the control loop. If correctly adjusted, this relieves the control loop which will work more efficiently by only having to make residual corrections. Factory setting of the dial is horizontal which provides a good setup in most cases.

Increasing the cyclic feed forward will cause more cyclic stick input going directly to aileron and elevator on the swashplate. Decreasing the direct stick feed forward will do the opposite.

If the cyclic feed forward is too high, it will over control your cyclic input. The control loop needs then eventually to steer back. Even though you get the impression to have a more direct control, unwanted side effects may appear, like pitch backs on cyclic stops and imprecise fast forward flight.

If the direct cyclic feed forward is too low, the helicopter will feel softer, slower and less direct. The optimal point depends of many factors like blades, servos, head speed, size and mass of the helicopter.

At delivery the dial is in the middle which should be a good starting point for most helicopters. Before adjusting the cyclic feed forward you should try to find the optimal maximum cyclic gain first (dial 1). Then after adjusting the cyclic feed forward you may have to adjust the cyclic gain once again. Both parameters interact to each other.

順時針方向調整旋鈕 2 可以增大十字盤直接輸出量。此處用於設定遙控器直接輸出至伺服器的舵量。正確的設定本參數，可以減小十字盤干涉使得十字盤工作更有效率。旋鈕出廠預設值為水平方向，此預設值對於大多數的情況都有不錯的效果。

增加十字盤直接輸出量，會使遙控器循環螺距輸出更直接的傳遞至副翼和升降伺服器，進而傳至十字盤。減少此參數會獲得相反效果。

如果十字盤直接輸出量過大，則會導致您感覺無法正常操控。直至沒有十字盤輸出時，十字盤將方可恢複初始位置。儘管此時獲得了更直接的操控，但是仍有可能出現某些負面影響，例如當停止循環螺距操控時，循環螺距會感覺回彈，或者出現不精確的前進航線。

如果十字盤直接輸出量過小，直昇機的操控會感覺更柔和、緩慢，以及反應遲鈍。最佳設定值也會與一些例如主旋翼、伺服器、主旋翼轉速、直昇機大小等客觀因素有關。

在傳輸時，對大多數直昇機來說，面板旋鈕的起始點會設置在中間。在調整十字盤直接輸出量時，你應該先嘗試找到最佳循環感度（旋鈕1）。然後調整十字盤直接輸出量後，你可能需要再次調整循環感度。兩個參數相互作用。

⚠ CAUTION 注 意

The cyclic feed forward does not affect the maximum rate of rotation! If the helicopter turns too slowly, you should check the settings of the swashplate limiter in Setup menu point L, change the control behavior in the Parameter menu at point B or increase the servo travels or "Dual Rate" setup of your transmitter.

Also to get a quicker and more aggressive response increase the control behavior at Parameter menu point B (reducing expo and increasing the maximum rotation rate) and increase the cyclic response at Parameter menu point G.

十字盤直接輸出量，不影響最大滾轉速率！如果直昇機滾轉太慢，您可以檢查設定選單第 L 點十字盤循環螺距最大值的設定限制為何，請改變參數選單第 B 點中的飛行風格，或者在您的遙控器中增加伺服器行程或 D/R (Dual Rate) 設定。

在參數選單第 B 點（降低 expo 和提高最大旋轉速度），並增加參數選單第 G 點的循環螺距反應，以獲得更快速、更積極、及更好的控制性能。

8.3 TAIL GYRO RESPONSE (DIAL 3)
尾舵動態反應（旋鈕3）

Turn dial 3 clockwise to increase the tail gyro response. Turning dial 3 counter clockwise will decrease it. Increasing the tail dynamic will lead to harder stopping behavior and more aggressive response to rudder stick inputs. If the dynamic is too high the tail will bounce back shortly after a hard stop and feel spongy when making fast direction changes. If the dynamic is set too low the tail feels dull and stopping might be too soft. Ideally the tail should stop perfectly to the point without making any flapping noises.

Factory setting of the dial 3 is horizontal which provides a good setup in most cases. You have to make sure the maximum possible tail gyro gain has already been determined (see section 8.4) before adjusting the tail gyro response. Then after adjusting the tail gyro response you may have to adjust the tail gyro gain once again.

順時針轉動旋鈕 3 可以增加尾舵動態補償，反之，逆時針旋轉將減少。如果尾舵動態補償太高，在自旋剎車時會感到直昇機有過度靈敏的反應及產生追尾現象，在快速改變方向時又會感到懸軟無力。如果動態補償設置過低，尾部會感覺呆滯和軟力。理想情況是，直昇機應該在自旋剎車時完美停止，沒有其他拖泥帶水的動作產生。

旋鈕 3 的出廠設置為水平位置，大多數情況下的效果都已經不錯。在設置尾舵動態補償之前，您必須要先設置好正確的最大尾陀螺感度值。(參考8.4節) 增加尾動態補償將會增加自旋停止力度，以及更直接的操控反應。調整尾舵動態

CAUTION 注意

If the tail rotor only stops properly from rotations into one specific direction, check your tail rotor's pitch values. If the tail pitch is too large, the rotor blades may stall. Also check the tail rotor center position as described in the section of Setup menu point D, so the tail rotor reaction is as uniform as possible.

如果尾槳只對一個特定的方向停住，請檢查尾舵感度。如果尾舵感度太高，尾旋翼可能會失速。同時，檢查尾舵中心點設定是否正確，請參考設定選單第 D 點。所以尾旋翼的反應和中心點的設定必須盡可能一致。

8.4 TAIL GYRO GAIN (ADJUSTED BY TRANSMITTER)
尾陀螺感度（利用遙控器調整）

The tail gyro gain can be adjusted by one of the transmitter's auxiliary channels. The more servo throw this channel produces, the higher the tail gyro gain will be. Additionally the direction of servo throw determines whether the gyro works in Normal-Rate mode or in HeadingLock mode. The color of the Status-Led indicates the selected mode when MICROBEAST PLUS is ready for operation . Purple indicates Normal-Rate mode and blue indicates HeadingLock mode. Additionally while adjusting the gain or shortly after the first start up, the current amount of gain is displayed by one of the menu LEDs for about 10 seconds. When the gain channel is centered, this will correspond to 0% gain indicated by LED A. In both modes, the maximum adjustable tail gain is 100% and will correspond to LED N. Please note that the actual percentage of servo throw in the transmitter will depend on its brand and/or type.

For the first flight we suggest to start with medium gain not higher than LED G (LED D for 450 size helicopters and smaller) in HeadingLock mode. Low gain will cause the tail rotor control to feel weak and it will stop with overshoots. Increase the gain step by step and you will feel the tail having more and more precise stops, and hold better and better on jerky pitch inputs. If the gain gets too high, the stops will bounce back quickly and wagging will appear in fast forward or backward flight. In this case immediately reduce the gain! For optimum performance set the gain

ALIGN

您可以利用遙控器的輔助通道來調整尾陀螺感度。越多伺服訊號在這個通道產生並發射，就會產生更高的尾陀螺感度。除此之外，伺服訊號發射的方向決定了陀螺儀工作的模式：鎖定模式或非鎖定模式。當 MICROBEAST PLUS 處在待機狀態時，Status-LED 燈表示目前所選擇的尾陀螺工作模式。Status-LED 燈亮起紫色時，表示處在非鎖定模式狀態；藍色表示處在鎖定模式。剛調整完感度的首次啓動，或在第一次非常短暫的設定後，當前感度值會在其中一個設定選單的 LED 燈中顯示約 10秒鐘。當感度通道為中立點時，會對應於 0% 感度，由選單 LED 燈 A 表示。在兩種模式下，最大可調的感度值是 100%，由選單 LED 燈 N 表示. 請注意直昇機尾陀螺感度的實際百分比數值，取決於您所使用的遙控器品牌與型號。

在鎖定模式下，對於第一次飛行，我們建議先從中等感度且不超過 LED 燈 G（LED 燈 D 適合 450 級以下的小型直昇機使用）。低感度會讓尾槳的控制感到無力，且會產生回彈追尾現象。此時請慢慢的增大尾舵感度，你會覺得尾部在停止時越來越精準，且螺距輸入時會保持得越來越好。如果感度過高，在停止時會產生快速的回彈及前後擺尾現象。此時，請立即降低感度！為獲得最佳飛行表現，在快速向前飛行尾旋翼始搖擺前，感度盡可能設定越高越好。

1. Operation without using the auxiliary channel for tail gyro gain is not possible!
2. When gain is close to point A the rudder servo will not perform full servo travel as the gyro is swit- ched off. Do not fly if tail gain is close to 0%.

1. 只有使用輔助通道才能調整尾舵感度！
2. 當感度接近 A 點時，陀螺儀是關閉的，所以尾舵將不會執行全部伺服器行程。請不要在尾感度接近 0% 時飛行。

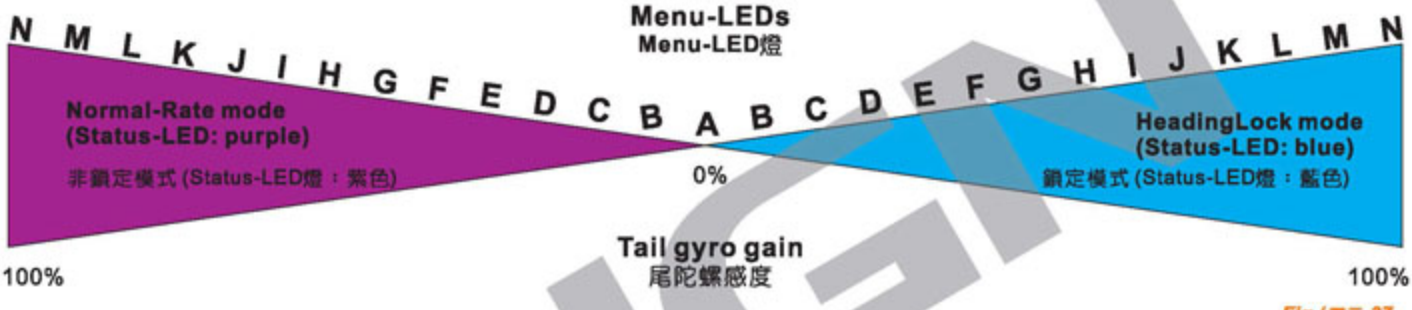


Fig / 圖示.37

In Normal-Rate mode the tail gyro of MICROBEAST PLUS only acts as dampening that decelerates sudden rotations caused by external influences. Slow, constant rotational movements will not be compensated.Thus the tail does not drift in hover due to the main rotor torque, a perfect mechanical adjustment of the tail rotor is essential (see the section to Setup menu point D). But even with perfect mechanical adjustment you will always encounter some drift on the rudder axis due to crosswinds and the pilot has to constantly perform corrections when doing hovering flight. In high-speed flight on the other hand the tail will be aligned in flight direction by the wind, so curves can be flown very dynamically and the pilot doesn't have to constantly concentrate on controlling the rudder.

We recommend to use the headingLock mode. Here the tail is actively controlled by the gyro system. You will barely feel any external influences. By giving rudder stick input, the pilot only commands the gyro how fast it has to turn the tail. When the stick is in center position the tail gyro will ensure that the tail keeps locked into position by any means.This simplifies the control significantly. In hovering flight the beginner can fully concentrate on the control of cyclic and collective pitch and the advanced pilot can perform 3D - flight maneuvers such as backwards flying quite easily. The only disadvantage of HeadingLock-Mode is that the rudder must be steered by the pilot when flying curves. Otherwise the gyro will try to keep the tail aligned with the initial direction.

MICROBEAST PLUS 的尾陀螺在非鎖定模式下，因外部的影響而突然旋轉時，僅會減速緩衝。直昇機速度變慢，不斷地旋轉，此時不會得到陀螺儀的補償功能。因為主旋翼扭力作用，所以在停懸時尾部不會漂移。將尾旋翼的機械調整到最佳狀態是非常重要的（請參考設定選單第 D 點）。但即使有完美的機械調整，你還是會遇到尾舵漂移問題，像是側風，以及飛行員在做停懸時，不斷地進行修正。另一方面，在高速飛行時，尾部會與風向保持一致，此時飛行曲線是不斷變化的，所以飛行員不必持續專注於尾舵控制。

我們建議使用鎖定模式。在這個模式下尾部是由陀螺儀主動控制的。你將幾乎感覺不到任何外部影響。飛行員只需要透過尾舵搖桿下指令給陀螺儀來控制尾部速度快慢即可。當搖桿在中立點時，尾陀螺將確保尾部持續鎖定。這樣的設計讓操控方式簡而易舉。可以方便初學者在停懸時，完全專注於循環螺距和集體螺距的控制，且熟練的飛行員也能輕鬆地操控 3D 花式飛行。鎖定模式的唯一缺點是尾舵必須由飛行員操控其飛行曲線。否則，陀螺儀會依照原來的方向，一直將尾部保持直線飛行。

9 PARAMETER MENU
參數選單

The Parameter menu offers a variety of settings with which you can further improve the system performance and which allow you to adjust the flight characteristics of the helicopter to suit your personal preferences. Normally for the first flight you don't need to make any adjustments here. Only the control behavior (menu point B) and the stick deadband (menu point E) should be adapted under certain circumstances.

When MICROBEAST PLUS is ready for operation, hold down the button until the Menu-LED next to point A flashes quickly and then release the button. This is how to enter parameter menu.

To switch to the next Parameter menu point, just briefly press the button once again. After the last menu point pressing the button one more time exits the Parameter menu and MICROBEAST PLUS is ready for flight again (in this case the Status-LED will indicate the tail gyro mode and the LEDs A - N are off).

Single menu points can be skipped without performing any changes. Therefor don't move any stick while you are at the menu point you want to skip and just press the button shortly once again.

Parameter menu in comparance to Setup menu only has eight menu points, A to H. After menu point H you will exit the Parameter menu and MICROBEAST PLUS returns to flight mode.

參數選單提供各種參數設定來提升飛行表現，您也可依照個人喜好，調整直昇機的飛行特性。首次飛行，通常不需要做任何調整。只有在某些情況下的控制行為（參數選單第 B 點）和搖桿死區（參數選單第 E 點）應該做適當的參數調整。

當 MICROBEAST PLUS 準備就緒後，長按按鈕直到在選單第 A 點旁的 Menu-LED 燈快速閃爍後鬆開按鈕。這是進入參數選單的方法。

要切換到下一個參數選單點，只要再次短按一下按鈕。在最後一個設定選單點按下按鈕，便可退出參數選單，此時 MICROBEAST PLUS 及參數選單已經做好飛行準備。(在此情況下，Status-LED 燈會顯示尾陀螺的模式狀態，以及設定選單的指示燈第 A-N 點全部成熄滅狀態。)

可以短按按鈕兩次，而且不移動任何搖桿來跳過不需要更改參數的選單點。

參數選單功能共有八個，從第 A - H 點，在參數選單第 H 點設定完成後，您將會退出參數選單，MICROBEAST PLUS 返回飛行模式。

CAUTION 注 意

Never attempt to fly when MICROBEAST PLUS is in one of the menus! In this condition the control system and sometimes the stick inputs are deactivated!

永遠不要在 MICROBEAST PLUS 處於選單中或設定狀態下進行飛行。在此狀態下，陀螺儀和搖桿的指令都是失效的。

A CYCLIC AND RUDDER TRIM
循環螺距及尾舵微調

The first menu point of the Parameter menu gives you the possibility to easily adjust your servo center trim on the flying field as for instance your helicopter does slowly drift in hovering flight or when it doesn't climb out straight on collective pitch inputs.

當您在戶外做停懸飛行時，若您的直昇機有緩慢的漂移，或在打升降舵做爬升動作時無法呈一直線，此時，請利用參數選單的第 A 點就可快速又輕鬆地微調伺服器中立點。

⚠ CAUTION 注 意

Never use the trim functions of your remote control! MICROBEAST PLUS will see trim as a control command to turn the heli and not as servo trim.

There is one exception: The rudder servo can be trimmed on the remote control when the tail gyro is operated in Normal-Rate mode (see section 8.4). Note, however, that this trimming should only be temporary as MICROBEAST PLUS calibrates the stick center positions during every initialization process. Thus, on the next flight the servo would be back on center position despite trimming in the transmitter.

千萬不要使用遙控器的 Trim（微調）或 Sub Trim 功能來微調伺服器!! MICROBEAST PLUS 會認為 Trim 是遙控指令而非伺服器微調。

只有一個例外：只有尾陀螺在非鎖定模式下（請參閱 8.4 節），尾舵伺服器可以在遙控器上進行微調。但是請注意，此微調應該只是暫時性的，因為 MICROBEAST PLUS 在每一次初始化的過程中都會重新校準搖桿中心位置。因此，在下次飛行時，伺服器都回到中心位置，除非你使用了遙控器的 Trim 功能微調伺服器。

1 SWASHPLATE SERVOS
十字盤伺服器

Contrary to centering every single servo at Setup menu point G, here you are able to directly adjust aileron and elevator without taking care about the single servos. Similar to the digital trim function of most transmitters here at Parameter menu point A you can adjust the swashplate "one click" by shortly moving the aileron or elevator stick in the desired direction. If you want to trim the swashplate any further repeat tapping the stick several times or simply hold the control stick pushed for a longer time to automatically perform several trim steps. The color of the Status-LED gives you an approximate indication of how much you did trim.

Please note that this function, as opposed to the digital trim of the transmitter, is not a separate trim function. Here you directly adjust the servo centers as well as you would set servo centers at Setup menu point G. Technically there is no difference between Parameter menu point A and Setup menu point G.

讓每個伺服器都回歸中立點的功能與設定選單第 G 點相反，在這裡您可以直接調整副翼和升降的微調偏移值，而不用考慮每個伺服器的中立點位置。不過循環螺距的大小不能在此處調整。在參數選單第 A 點中，只要朝需要的方向移動副翼、升降搖桿，直到十字盤正確運作即可。搖桿推的越遠，伺服器的移動速度越快。也可以撥動一下尾舵搖桿來恢復初始化設定狀態。Status-LED 燈的顏色表示您大約的微調值。

請注意此微調功能，相對於搖控器的數位微調，它並不是獨立的微調功能。在這裡，您可以直接調整伺服器中心點，也可以在設定選單第 G 點中設定伺服器中心點。技術上，不論在參數選單第 A 點或設定選單第 G 點的設定，都是沒有差別的。

ALIGN

2 RUDDER SERVO
尾舵伺服器

If the tail gyro is operated in Normal-Rate mode, the rudder servo must often be trimmed precisely so that the tail rotor produces just enough thrust to counteract the rotor torque in hovering flight. Otherwise the helicopter would constantly drift into one or another direction on its vertical axis as the gyro only dampens sudden movements but does not control the tail rotor's absolute position.

To trim the rudder servo proceed as follows: Switch the tail gyro to Normal-Rate mode fly the helicopter.

By using the digital trim function of your transmitter trim the rudder servo so that the helicopter does not drift in hovering flight. Land the helicopter and immediately open Parameter menu point A by briefly pressing the button on MICROBEAST PLUS once. To take the tail trim value from the transmitter once again press the button and this time hold it for at least 2 seconds (if you briefly press the button only, you would switch to menu point B!). You can see the rudder servo move to the new center position and the Status-LED will flash for some moment to signalize the position has been set. Now reset the digital trim of your transmitter back to zero.

如果尾陀螺在非鎖定模式下運行，尾舵伺服器必須經常進行精確微調，使尾槳產生足夠的推力，以抵消停懸飛行時的旋翼扭力。否則直昇機會不斷地往特定方向或往尾旋翼夾座的反向漂移，而陀螺儀只減弱突然的動作，並不控制尾螺旋槳的絕對位置。

請依照以下步驟微調尾舵：將直昇機的尾陀螺切換至到鎖定模式下飛行。

使用遙控器的數位微調功能來微調尾舵，使直昇機在停懸飛行時不會漂移。請將直昇機降落，然後快速按下 MICROBEAST PLUS 的按鈕一下，開啓參數選單第 A 點。請再次按下按鈕至少 2 秒，從遙控器取得尾部的微調值（如果您只簡單地按下按鈕，您會切換到設定選單第 B 點！）。你可以看到尾舵移動到新的中心點以及 Status-LED 燈某些時刻會閃爍以顯示中心點已設置。現在請重置您的遙控器的數位微調至零。

⚠ CAUTION 注 意

1. MICROBEAST PLUS only accepts the the tail trim value from the transmitter when the gyro is set to Normal-Rate mode. When you land after the trim flight and open Parameter menu point A make sure that you do not change the gyro mode and/or trimming of the transmitter by accident, e.g. when using a flight mode switch in the transmitter.
2. If the tail gyro solely is operated in HeadingLock mode, trimming the rudder servo is not required under normal circumstances. Here the gyro actively controls the rate of rotation whereby drifting is excluded on the vertical axis. Anyhow, in unfavorable mechanical conditions it may be helpful to fly the heli in Normal-Rate mode once and to trim the rudder servo accordingly, so that the mechanical throw is balanced more equally.

1. 當陀螺儀設定為非鎖定模式時，MICROBEAST PLUS 只會接受來自遙控器的尾部微調值。當您微調飛行後降落，開啓參數選單第 A 點時，請確定您不會改變陀螺儀模式和(或)不會不小心碰到遙控器 Trim (微調)功能，例如：在切換飛行模式時，請注意不要碰到遙控器的微調功能。
2. 如果尾陀螺處於鎖定模式，在正常的情況下，就不需要微調尾舵。陀螺儀會主動地控制旋轉率，藉此排除在垂直軸上的漂移。總之，在直昇機結構不佳的條件下，非鎖定模式可能有助於飛行表現，它會不斷地微調尾舵伺服器，因此平衡了機械結構不良的運轉表現。

3 RESET ADJUSTMENT
重設調整

During the trim procedure you can delete the just performed trimming by moving the rudder stick in any direction. All servos will be moved to the initial position from entering Parameter menu point A. Note that a subsequent reset to previous states is not possible! If the servo trimming was changed and Parameter menu point A is left, the servo positions will be saved permanently. You can only bring back the servos to the previos positions by manually trimming them back into the opposite direction. The trimming of the rudder servo will be fully deleted when the tail rotor endpoints are readjusted at Setup menu point E (see chapter 7)!

在微調的過程中，您可將尾舵搖桿移動至任一方向來刪除設定值。當回到參數選單第 A 點時，所有的伺服器行程量將一併被刪除而回到初始值。請注意，接下來的重設數值不可能再回到您之前的微調的狀態了。如果參數改變並從參數選單第 A 點中退出，新的伺服器中立點會被永久儲存。若要還原伺服器原先微調的位置，您只能用手動的方式，直接將伺服器調整到相反的方向。在設定選單第 E 點重新設定後，尾舵最大行程量將完全被刪除（詳見第七章）！

Push the button to save the configuration and to proceed to Setup menu point B .
按下設定按鈕保存當前設定，並進入選單第 B 點。

B CONTROL BEHAVIOR
操控特性

At Parameter menu point B you can choose between different control behaviors for your helicopter. This includes the maximum rotation rate of the helicopter as well as how sensitive MICROBEAST PLUS will react to stick inputs for aileron, elevator and rudder around the stick centre.

Factory setting for this option is "sport" ! This should be suitable for most pilots.

If you are a rather inexperienced model pilot it is absolutely suggested to select the option "normal " for the first flights. In this state the rotation rate on cyclic and tail is very much decreased and the stick inputs around center are very gentle. Then find your individual preference by increasing the option step by step.

在參數選單第 B 點，您可以為您的直昇機選擇不同操控特性，這包括直昇機的最大旋轉速率，以及 MICROBEAST PLUS 對副翼、升降和尾舵搖桿中心周圍的操控敏感度。

出廠預設值是 "Sport 運動"，這應該適合大多數玩家的手感。

如果您是一個飛行經驗尚淺的飛行員，那麼強烈建議在首次飛行時選擇 "NORMAL 普通" 模式。此時，直昇機的滾轉速率減慢，搖桿中心附近的敏感度降低。依照下表一步一步找到最適合您的手感。

The choice is done by moving the rudder stick in one direction until the LED indicates the desired color and state.

更改設定只需撥動尾舵搖桿，直到 Status-LED 燈亮起您所需要的顏色。

Status-LED Status-LED燈	Control behavior 操控特性
Purple 紫色	Normal 普通
Red Flashing 紅色閃爍	Sport * 運動*
Red 紅色	Pro 專家
Blue Flashing 藍色閃爍	Extreme 極限
Blue 藍色	Transmitter 遙控器
Off 熄滅	User defined 使用者自定義

＊Factory Setting ＊出廠預設值

ALIGN

If you are not satisfied with the presets, you may adjust the control behavior by using your remote control. To do so, set the control behavior to "transmitter" (Status-LED "blue"). The maximum rotation rate for aileron, elevator and rudder can then be adjusted by increasing or decreasing the servo travel for the corresponding function in your transmitter or by using the "DualRate" function. Approximately 100% stick throw (servo throw) in the transmiter are equivalent to maximum rotation rate in this mode. However, it is also possible that the maximum possible rotation rate of MICROBEAST PLUS is achieved at values greater than 100%.

To adjust the sensitivity around mid stick position you can use the "Expo" function of your transmitter. Please refer to the manual for your transmitter.

When using predefined control behaviors other than "transmitter" we do not recommend to additionally adjust control curves (expo/dual rates) in your transmitter as this will indefinably mix the preset curves of MICROBEAST PLUS with the curves of the transmitter . Anyhow, if you only make small adjustments (e.g. slightly increasing the servo throw to increase rotation rate) this should be no problem.

The option "user defined" allows you select your own predefined setting. This can be edited by using the StudioX software bundle in combination with the optional USB2SYS interface. Thus you can take the values of the predefined settings and modify them directly without the need of adjusting anything in the transmitter.

如果您對預設的幾種模式都不滿意，那麼請選擇「transmitter 遙控器模式」（Status-LED 燈藍色恒亮）。在此模式下，MICROBEAST PLUS 內所有的預設模式都不起作用，而是通過遙控器內的程式來調整操控特性。副翼、升降和尾舵的旋轉速率因此可以經過更改遙控器內的舵機行程功能表來進行更改。遙控器中大約 100% 的搖桿（伺服）相當於在此模式下的最大滾轉速度。但是， MICROBEAST PLUS 的最大旋轉速度的值可能大於 100% 。

可以利用您遙控器 "Expo" 功能來調整搖桿的靈敏度。請參考您所使用的遙控器說明書。

當使用 "預設自定義" 做為操控特性時，除了在 transmitter 搖控器模式外，我們不建議您另外調整您的遙控器控制曲線（expo/dual rates），因為這將混淆 MICROBEAST PLUS 的預設曲線對應到遙控器的曲線。總之，如果你只進行微小的調整（比如，稍微增加旋轉速率來增加伺服輸出），這應該是沒有問題的。

"使用者自定義" 允許您使用 StudioX 軟體介面 (另購品 USB2SYS)，直接在電腦上設定並修改符合自己的個性化操控特性，而不需透過遙控器做調整。

WARNING 警告

If the tail gyro is operated in Normal-Rate mode (see section 8.4) the rudder stick directly controls the rudder servo instead of commanding a rotation rate to the gyro. In this mode the tail turns as fast as it is determined by servo position and angle of attack of the rotor blades. The tail gyro does not monitor the rate of rotation. Therfore it is possible when using Normal-Rate mode, that extremely high rotation rates can be achieved. It is absolutely necessary to check how much pitch angle can be achieved at full rudder stick deflection at the tail rotor. Reduce the servo throw of the rudder servo by decreasing it on the remote control or limiting it at Setup menu point E to a reasonable level.

如果尾陀螺在非鎖定模式下（請參閱 8.4 節），尾舵搖桿會直接控制尾舵，而不是傳達轉速給陀螺儀。在這種模式下，尾翼轉速是由伺服器位置和旋翼的攻角所決定。尾陀螺不會監控轉速。因此，在非鎖定模式下的尾翼旋轉時，可能產生極端高的轉速。所以請務必檢查螺距角度大小，以及在尾舵在行程量打滿的情況下是否偏移。您可以利用遙控器的尾舵調整功能來降低尾舵行程，或在 MICROBEAST PLUS 設定選單第 E 點中限制尾舵伺服器輸出，調整合理的尾翼轉速。

Push the button to save the configuration and to proceed to Setup menu point C .
按下設定按鈕保存當前設定，並進入選單第 C 點。

C SWASHPLATE - PITCHING UP COMPENSATION
十字盤-直線飛行補償

While in fast forward flight apply jerky collective pitch inputs to test this parameter. The helicopter should mainly remain in its horizontal path during climbing and descending. If the nose of the helicopter is pitching up and down heavily like a swimming dolphin, increase the value at Parameter menu point C to compensate for this effect. But if the value is too high, the helicopter might feel sluggish and lazy. Try to find the lowest suitable setting. Note that the Cyclic gain (Dial 1 - see section 8.1) must be set as high as possible, otherwise the pitching up effect maybe a result of too low reaction of the gyro system in general.

If the helicopter is still pitching up at the highest value, check if the swashplate has enough cyclic throw at high collective pitch values (Setup menu point L) and use faster and stronger servos as well as rotor blades that are as neutral as possible (for example blades specifically designed for flybarless helis).

在高速直線航線的飛行中，可利用急推集體螺距來測試這個功能。正常的情況下直昇機應該是平穩的爬升或者下降，如果機頭忽上忽下如同海豚在水面上跳動，就需要增加參數選單第 C 點的數值來消除這一現象。不過如果數值過高，直昇機會如同陷入沼澤一樣，動作變得緩慢，反應動作拖泥帶水。所以要找出數值最低的最佳狀態。請注意：循環螺距感度設定必須越高越好（旋鈕 1 - 參見 8.1 節），否則直線飛行可能因為太低的感度而產生海豚跳的現象。

如果螺距行程量設到最高，而問題依舊沒能解決，可以試著增強十字盤感度（參見設定選單第 L 點），以及更換扭力更大的伺服器，或重心儘量靠近中間的主旋翼（例如專為無平衡翼設計的主旋翼）直到問題改善為止。

The currently selected value is indicated by the Status- LED color and state. Move the rudder stick into one direction until the Status- LED lights in the desired color.

Status-LED 燈的顏色顯示當前所選擇的感度值及狀態。 朝一個方向推動尾舵搖桿直到 Status-LED 燈亮出需要的顏色。

Status-LED Status-LED燈	Pitching Up Behavior 直線飛行補償
Purple 紫色	Very Low 最低
Red Flashing 紅色閃爍	Low 低
Red 紅色	Medium* 中等*
Blue Flashing 藍色閃爍	High 高
Blue 藍色	Very High 極高
Off 熄滅	User defined 使用者自定義

＊Factory Setting ＊出廠預設值

The option "user defined" allows you to choose your own setting that can be edited by using the StudioX software bundle and the separately available USB2SYS interface.

"使用者自定義" 允許您使用 StudioX 軟體介面 (另購品 USB2SYS)，直接在電腦上設定並修改符合自己的個性化操控特性，而不需透過遙控器做調整。

Push the button to save the configuration and to proceed to Setup menu point D .
按下設定按鈕保存當前設定，並進入選單第 D 點。

D TAIL GYRO - HEADINGLOCK GAIN
尾陀螺-尾舵鎖定感度

At Parameter menu point D the HeadingLock gain for the tail can be adjusted. This gain comes into play when the tail gyro is operated in HeadingLock mode (see section 8.4). It determines how hard the tail gyro tries to maintain a given rotation rate from the transmitter. If the HeadingLock gain is too low, pirouettes will be inconsistent during fast forward flight or in crosswind conditions and the helicopter will slowly drift on the vertical axis when in stationary hovering flight with crosswinds. If the HeadingLock gain is too high, the tail rotor will respond delayed to fast directional changes and the rudder stick control does feel very inprecise. So only adjust this parameter as high as necessary. It is also possible that the tail will bounce back slowly after stopping from a rotation and commute gently while hovering or flying around.

Please note that very often this also may be a sign of a stiff tail mechanics, slop in the tail linkage or an inadequate rudder servo! The tail rotor system in this case does not react as precise as necessary and hinders the tail gyro from working properly. If you cannot increase the HeadingLock gain higher than "very low" or "low" it is very likely that there is a mechanical issue.

在參數選單第 D 點可以設定尾舵鎖定感度。尾舵鎖定感度決定了陀螺對自旋或停懸的干預程度 (請參見 8.4)。設定時，請從 “最低"或者 “低"選項開始，逐步找到遙控器所允許的最大感度。接著，便可切換尾舵鎖定感度選項了。 如果尾舵鎖定感度太低，在高速航行或側風中做自旋動作會出現不均勻的現象。如果尾舵鎖定感度太高，尾舵會在煞車停止時出現回彈現象，看起來會相當不穩定，也可能出現在飛行中來回擺動的現象（俗稱追尾現象）。

請注意，如果上述情形一直出現，也有可能是尾翼機械結構不良的警訊，請檢查連趕球頭是否太鬆，或是所使用了不適合的尾舵伺服器！若有上述兩種情形，尾旋翼系統就無法精確的運作，尾陀螺操控起來會有慢半拍的感覺。如果您增加尾舵鎖定感度時無法超過 "最低" 或 "低" 的範圍，可能是機械結構的出現問題了！

1. Before adjusting the HeadingLock gain always try to find the maximum amount of tail gyro gain by flying around and using the tail gyro in HeadingLock mode.
2. After adjusting the HeadingLock gain it might be necessary to readjust the tail gyro gain! Both parameters interact to each other.

1. 在調整尾舵鎖定感度前，請透過試飛找到尾陀螺最高感度，並將尾陀螺設定在鎖定模式。.
2. 調整好尾舵鎖定感度後，可能必須重新調整尾陀螺的感度！兩個參數會互相影響。

Move the rudder stick into one direction until the Status-LED lights in the desired color.

推動尾舵搖桿至任一方向直到 Status-LED 燈亮出需要的顏色。

Status-LED Status-LED燈	Headinglock Gain 尾舵鎖定感度
Purple 紫色	Very Low 最低
Red Flashing 紅色閃爍	Low 低
Red 紅色	Medium* 中等*
Blue Flashing 藍色閃爍	High 高
Blue 藍色	Very High 極高
Off 熄滅	User defined 使用者自定義

*Factory Setting *出廠預設值

The option "user defined" allows you to choose your own setting that can be edited by using the StudioX software bundle and the separately available USB2SYS interface.

"使用者自定義" 允許您使用 StudioX 軟體介面 (另購品 USB2SYS)，直接在電腦上設定並修改符合自己的個性化操控特性，而不需透過遙控器做調整。

If the tail does not turn constantly at high speeds or not at all turns around even in the setting "very high" then this may be due to a mechanical cause. Make sure that the maximum blade pitch at the tail rotor neither is too large nor too small. A large pitch angle can lead to a stall of the tail rotor blades. Then the tail rotor produces hardly any thrust, similar to a very small angle. Also check the entire tail mechanics running smooth and without binding. Make sure that the rudder servo is strong enough and that it is supplied with sufficient power (long supply leads cause high voltage loss!). Additionally check that the rudder servo does not get powerless at maximum servo deflection. This can happen if the pulse range of the servo is exceeded. The cause for lacking tail thrust also can be that the tail rotor blades are too small or too soft, or because the rotation speed of the tail rotor is too low!

如果尾舵的自旋和煞車停止控制在兩個方向都不均勻時，建議將尾陀螺切換到非鎖定模式，然後先進行停懸測試，看看尾舵朝哪個方向會漂移。找出方向後，調整尾舵連桿的球頭長度來讓尾旋翼有合適的補償螺距，儘量在停懸模式時尾舵保持不偏移，然後再調回尾舵鎖定模式。設定完成後，請記得在設定選單第 E 點的尾舵極限也要隨之調整。如果您在之前的參數選單第 B 點的操控特性選擇了 "Transmitter" 遙控器模式，那麼請注意自己不會在無意間，將遙控器中的尾舵行程調整過大，導致陀螺儀失效，出現自旋不均勻的現象。同時請檢查整個機械結構運轉是否順暢無干涉，尾舵伺服器是否夠力，電源供應是否充足有效率 (太長的連接線也可能損耗電力)，此外，也請檢查尾舵伺服器在最大行程量的供電是否正常。

Push the button to save the configuration and to proceed to Setup menu point E .
按下設定按鈕保存當前設定，並進入選單第 E 點。

E STICK DEADBAND
搖桿死區

Use Parameter menu point E to adjust the stick deadband for elevator, aileron and rudder sticks. The deadband is the range around the very center of the stick in which MICROBEAST PLUS will not react to stick inputs.

Unfortunately, some on the market available transmitters have the problem that when the sticks are brought back to the center position after a stick input, they aren't exactly at the same center position as before. This generates a continuous deviation on the corresponding function, although the stick seems to be at mid position. This deviation is interpreted as a small input by MICROBEAST PLUS which leads to an unwanted drift on one or more axis. Especially you can see and feel this in hovering flight when the helicopter is turning slightly to one or another direction all the time. This makes it difficult to have precise hovering as it is hard to find a stick position at which no input is sent to MICROBEAST PLUS. This can be very dangerous as it may cause the helicopter to tip over when trying to take off or it can cause the pilot to loose control over the helicopter at all! So increase the stick deadband stepwise just until you don't see such effects. Note that as a result of large stick deadband there will be a wide range around mid stick position in that MICROBEAST PLUS will not react to stick inputs. This will make the control more inprecise. So if using "large" or "very large" deadband is necessary, we recommend to let your transmitter get checked by its manufacturer for damaged or worn out stick potentiometers.

在參數選單第 E 點，您可以調整升降、副翼和尾舵的搖桿死區。所謂死區是指 MICROBEAST PLUS 在遙控器搖桿中立點附近的無效操控範圍。

由於市面上有些遙控器的搖桿存在著不精確的問題，特別是移動電位器（VR）後不能準確回中，導致表面上搖桿雖然已經回到中立點，但其實仍在不停地輸出動作信號。這種誤差會讓 MICROBEAST PLUS 出現不該有的偏差反應。

MICROBEAST PLUS 在讀取這些訊號後所做出的補償動作，就是不必要的漂移。尤其是在停懸飛行時，你會看到直昇機一直略微轉至某一個方向。這是因為 MICROBEAST PLUS 難以辨認搖桿輸入位置所造成的結果。這樣非常危險，因為它可能導致直昇機在起飛時翻倒或失控！所以，請逐步加大搖桿死區的範圍直到漂移消失為止。需要注意的是，搖桿死區的設定等同於命令 MICROBEAST PLUS 在死區內不做反應，所以在打舵時，若搖桿落在此範圍內，直昇機可能沒有反應。這將使得控制更不精確。因此，如果必須將搖桿死區設定為 "大" 或 "極大" 時，我們建議您檢查遙控器，若遙控器的電位器（VR）有磨損或老舊情形，請務必送回原廠維修。

ALIGN

The choice is made by moving the rudder stick into one direction until the Status-LED lights in the desired color.

The option **"user defined"** allows you to choose your own setting that can be edited by using the StudioX software bundle and the separately available USB2SYS interface.

朝一個方向推動尾舵搖桿直到 Status-LED燈出現需要的顏色。

"使用者自定義"允許您使用 StudioX 軟體介面 (另購品 USB2SYS)，直接在電腦上設定並修改符合自己的個性化操控特性，而不需透過遙控器做調整。

Status-LED Status-LED燈	Stick Deadband 搖桿死區
Purple 紫色	Very Small 最小
Red Flashing 紅色閃爍	Small* 小*
Red 紅色	Medium 中等
Blue Flashing 藍色閃爍	Large 大
Blue 藍色	Very Large 極大
Off 熄滅	User defined 使用者自定義

＊Factory Setting　＊出廠預設值

Push the button to save the configuration and to proceed to Setup menu point F .
按下設定按鈕保存當前設定，並進入選單第 F 點。

F TAIL ROTOR - TORQUE PRECOMPENSATION (RevoMix)
尾舵－反扭力補償 (RevoMix)

The advantage of always knowing the pitch and cyclic load on the flybarless system, allows MICROBEAST PLUS to precompensate for the torque variations on the tail rotor, just before any noticeable deviation occurs. This method of torque precompensation (RevoMix) relieves the tail control loop and improves the tail performance, especially when using MICROBEAST PLUS on helicopters with insufficient tail authority and/or extreme motor torque (e.g. well powered electric helicopters) where the tail does blow out shortly when applying a sudden pitch or cyclic input.

To see the compensation direction, you can move the collective pitch, roll and elevator control stick at Parameter menu point F. With precompensation activated the tail rotor has to produce a deflection which must counteract the rotor torque. Since at 0˚ pitch the least torque is applied by the main rotor, also the tail rotor makes the least deflection and the tail slider is in center position. If you pitch in positive or negative direction or move aileron or elevator control, a deflection will be added to the tail rotor which will act against the torque of the main rotor.

集體螺距、循環螺距在無平衡翼系統上的負載是持續存在的，這會讓尾舵的修正負載不斷的變化，MICROBEAST PLUS 可以在尾舵出現偏離前，提前做到您無法察覺的反扭力補償。 反扭力補償 (RevoMix)是針對細節要求很高的玩家，正確的設定有助於提升尾舵的性能。

您可以在參數選單第 F 點，移動集體螺距的感度，搖動升降搖桿來了解補償方向。MICROBEAST PLUS 可以在尾舵出現偏離前，提前做到您無法察覺的反扭力補償。因為當螺距在 0° 的位置時，其扭力的延續是來自於主旋翼，同時尾旋翼不斷偏移和尾滑塊同處於中心位置所造成的結果。如果你將感度設在正向或反向，或移動副翼/升降舵，尾旋翼將增加偏移，反映到主旋翼而出現反扭力。

1. Torque precompensation can only be used if you have 0˚ of pitch at the servos ‘ center positions like adjusted at Setup menu point G!
2. The amount of servo throw in the ratio of cyclic to collective pitch adjustment depends on the setting of the maximum collective pitch angle at Setup menu point K. The larger the maximum collective pitch angle, the greater the rudder servo throw due to the collective pitch input will be, while the servo throw through cyclic control commands will remain the same.

AUGEN

1. 反扭力補償只能在伺服器中立點螺距為 0° 時設定，就如同在調整設定選單第G點一樣！
2. 在設定選單第 K 點，伺服器輸出行程量的調整，對應到集體螺距的行程量，取決於最大集體螺距角度。因為集體螺距行程越大，尾舵伺服器輸出相對就越大。但是，若伺服器輸出的循環控制命令是來自於循環螺距時，伺服器輸出將保持不變。

For helicopters with clockwise rotating main rotor, the precompensation has to always push the tail to the left (nose of the heli to the right) . for helicopters with the main rotor turning anti- clockwise, the precompensation has to push the tail to the right (nose of the heli to the left) . The deflection will be to the same direction, whether positive or negative pitch, as the torque only increases . You then have two options to set the precompensation (low or high).

直昇機主旋翼順時針旋轉，預補償必須一直推尾部向左側（直昇機機頭向右）。直昇機的主旋翼逆時針旋轉，預補償必須一直將尾部推到右側（直昇機機頭到左）。偏斜相同的方向，無論是正或負的螺距，作為扭矩只會增加。這時你就有兩種選擇來設定反補償扭力 (低或高)。

The choice is made by moving the rudder stick into one direction until the Status-LED lights in the desired color.

The option “user defined" allows you to choose your own setting that can be edited by using the StudioX software bundle and the separately available USB2SYS interface.

朝一個方向推動尾舵搖桿直到 Status-LED 燈出現需要的顏色。

"使用者自定義" 允許您使用 StudioX 軟體介面 (另購品 USB2SYS)，直接在電腦上設定並修改符合自己的個性化操控特性，而不需透過遙控器做調整。

Status-LED Status-LED燈	Torque Precompensation 反扭力補償
Purple 紫色	Off * 關*
Red Flashing 紅色閃爍	Low - Normal Direction 低-正向
Red 紅色	High - Normal Direction 高-正向
Blue Flashing 藍色閃爍	Low - Reverse Direction 低-反向
Blue 藍色	High - Reverse Direction 高-反向
Off 熄滅	User defined 使用者自定義

＊Factory Setting ＊出廠預設值

Push the button to save the configuration and to proceed to Setup menu point G .
按下設定按鈕保存當前設定，並進入選單第 G 點。

AUGN

G CYCLIC RESPONSE
循環反應

With point G can be set how aggressive the MICROBEAST PLUS responds to cyclic control commands (roll and pitch). This can reduce the usual uniform and linear control feeling of flybarless systems and approach it to the feeling of a flybared helicopter.

If you want to use this feature, start from the "slightly increased" setting, gradually increasing to the desired level, until you have found your ideal setting.

A too high setting will result in uncontrollable, inaccurate rotation and deteriorating stopping behavior of each control function.

How high this feature is adjustable without causing any adverse effects depends on many factors such as heli size, swashplate servos, main rotor blades, main rotor speed, servo power supply and depending on the particular heli setup.

參數選單第 G 點可設定讓 MICROBEAST PLUS 積極的回應循環控制命令（滾轉和俯仰）。這可以減少無平衡翼系統慣用的線性控制感覺，使其接近有平衡翼直昇機的飛行手感。

如果要使用此功能，可以從"微增"開始，然後逐漸增加，直到找到理想手感為止。

太高的設定將導致各控制動作失控，使得直昇機的轉動不準確和突然停止轉動。

至於循環反應要調到多高，且不會造成任何不良影響，還要取決於很多不同的因素，比如直昇機的尺寸、十字盤伺服器、主旋翼、主旋翼速度、伺服器電源以及直昇機的設定。

If using an increased Cyclic response (greater than "normal" setting) it is recommended to set Parameter menu point B (Control behavior) to "transmitter" (Status-LED = blue). Additionally you should only add a very small amount of Expo by the transmitter or don't use any Expo at all. Otherwise this feature may not show any significant effect!

如果使用的是 "增加" 循環反應（大於 "正常" 的設定）時，建議在參數選單第 B 點中的 "控制特性" 設定為 "transmitter" 遙控器模式（Status-LED燈藍色恆亮）。另外，你應該只增加極少量的 Expo 或不使用任何 Expo。否則，此功能可能不會有任何顯著的效果！

The choice is made by moving the rudder stick into one direction until the Status-LED lights in the desired color.

The option **"user defined"** allows you to choose your own setting that can be edited by using the StudioX software bundle and the separately available USB2SYS interface.

朝一個方向推動尾舵搖桿直到 Status-LED燈出現需要的顏色。

"使用者自定義"允許您使用 StudioX 軟體介面 (另購品 USB2SYS)，直接在電腦上設定並修改符合自己的個性化操控特性，而不需透過遙控器做調整。

Status-LED Status-LED燈	Cyclic Response 循環反應
Purple 紫色	Normal * 正常*
Red Flashing 紅色閃爍	Slightly Increased 微增
Red 紅色	Increased 增加
Blue Flashing 藍色閃爍	High 高
Blue 藍色	Very High 極高
Off 熄滅	User defined 使用者自定義

＊Factory Setting ＊出廠預設值

Push the button to save the configuration and to proceed to Setup menu point H .
按下設定按鈕保存當前設定，並進入選單第 H 點。

ALIGN

H COLLECTIVE PITCH BOOST
集體螺距提升

Parameter point H allows you to setup the collective pitch boost function. This function causes that the faster you move the thrust stick the more additional collective pitch will be exposed. This can be especially useful in 3D aerobatics when very rapid collective pitch changes are necessary for certain flight maneuvers, as hereby dynamically the required control stick deflection will be reduced. However, the maximum set pitch value (Setup menu point K) will not be exceeded.

A too high setting can cause the rotor blades to stall when giving very fast collective pitch commands. The collective pitch will feel slow and spongy, precisely causing the opposite effect as desired.

Start from the "low" setting, gradually increasing to the desired level, until you have found your ideal setting. How high this feature is adjustable without causing any adverse effects depends on many factors, such as maximum pitch values, pitch curve, swashplate servos, main rotor blades, system headspeed, ...

參數選單第H 點允許您設定[集體螺距提升] 功能。在這個功能下，集體螺距搖桿移動得越快，越多額外的螺距就會顯現出來。這特別適合3D 特技飛行，對某些飛行動作，快速的螺距變化是必要的，因為在此動力所需的控制桿偏移將減少。然而，螺距最大行程量（設定選單第K 點）並不會因此過高。

一個太高的[集體螺距提升] 設定，可能會導致主旋翼失速。所顯現出的情況就是，當你輸入非常快的螺距命令時，你會感覺集體螺距的反應遲緩和軟力，剛好和你想要的效果想反。

請由"低"開始，然後逐漸增加[集體螺距提升]，直到找到理想設定為止。此功能在對飛行不會造成任何不良影響的情況下，究竟可以調到多高呢？這取決於許多因素，諸如螺距最大行程量，螺距曲線，十字盤伺服器，主旋翼，系統鎖頭速度等。

The choice is made by moving the rudder stick into one direction until the Status-LED lights in the desired color.

The option "user defined" allows you to choose your own setting that can be edited by using the StudioX software bundle and the separately available USB2SYS interface.

朝一個方向推動尾舵搖桿直到 Status-LED燈出現需要的顏色。

"使用者自定義"允許您使用 StudioX 軟體介面 (另購品 USB2SYS)，直接在電腦上設定並修改符合自己的個性化操控特性，而不需透過遙控器做調整。

Status-LED Status-LED燈	Collective pitch boost 集體螺距提升
Purple 紫色	Off * 關閉*
Red Flashing 紅色閃爍	Low 低
Red 紅色	Medium 中等
Blue Flashing 藍色閃爍	High 高
Blue 藍色	Very High 極高
Off 熄滅	User defined 使用者自定義

＊Factory Setting ＊出廠預設值

By pressing the button you save the setting and exit the parameter menu . Now MICROBEAST PLUS is ready for operation again!

按下按鈕保存設定後，結束參數選單的設置，可以準備飛行了。

After turning on the receiver power supply wait until MICROBEAST PLUS has fully initialized. This is displayed by a short movement of the swashplate servos (see chapter 6). For initialization, it is irrelevant whether the helicopter is leveled horizontally! Only important is that it is not moved as long as the calibration of the sensor positions takes place (LEDs lights A - G running). Also the control sticks of the transmitter must not be moved as long as MICROBEAST PLUS calibrates the stick center positions (LEDs H - N). If the initialization is not completed even after several minutes, read the Trouble shooting guide at the end of this manual.

Like mentioned in chapter 8 the three dials should be turned to factory setting (centered horizontally), when using in small helicopters for safety reason dials 1 and 2 should be set to slightly below the center position. The tail gain channel should be set so that point G lights up, similar to approx. 50% tail gain adjustment. In micro or mini helicopters experience has shown that the gain must be lower (set to point D). Select the control behavior at Parameter menu point B to fit your flying style. If you're a beginner or unexperienced with flying flybarless helicopters you should highly decrease the maximum rotation rate, so change Parameter menu point B to "normal" setting.

打開接收器電源後，等到 MICROBEAST PLUS 初始化完成。這會由十字盤伺服器的短動作中顯示（請參見第六章）。初始化與直昇機是否水平無關！重要的是，只要感應器位置開始校準就不會移動（Status-LED 燈 A-G 亮起）。另外，只要 MICROBEAST PLUS 在校準搖桿中心位置時（Status-LED燈 H - N），搖控器控制桿不得移動。如果初始化幾分鐘後仍未完成，請閱讀本說明書頁尾的故障排除指南。

如同在第 8 章說明一樣，面板上 3 個旋鈕應該轉至出廠預設值的位置(水平置中)，為了安全起見，當使用小型直昇機時，旋鈕 1 及旋鈕 2 應設定在稍微低於中點的位置。並設定尾感度頻道，此時第 G 點會亮起，調整類似約 50％的尾舵感度。根據使用微型或小型直昇機的經驗顯示，感度必須設定較低（設定到第 D 點）。並且可以在參數選單第 B 點，選擇您想要的飛行風格模式。如果您沒有飛行無平衡翼直昇機的經驗或是初學者，我們建議您應該大幅降低最大旋轉率，然後在參數選單第 B 點的 "操控特性" 中選擇 "normal 普通" 模式 (燈號為紫色)。

⚠ CAUTION 注 意

Before the first take off, make a stick direction check and again make sure that the sensors are correcting to the right direction when you tilt, roll or yaw the helicopter by hand.

It is normal that the swashplate might move only slowly back to its original position after a stick input and that the servos don't run at the same speed as your sticks . In comparison to a flybar head you are not directly controlling the servos anymore but controlling rotational rates like for fly-by-wire. The control of the servo is left to the control loop of MICROBEAST PLUS. Thus it is also normal when the tail gyro is operated in HeadingLock mode, that the rudder servo will stay in its end position after a rudder stick input or tail movement and that it does not always react immediately to a stick input. For the same reason, it is also normal that the rudder servo runs to the endpoints even with small stick inputs.

在起飛之前，最好再做一次檢查，例如撥動搖桿，看十字盤運動方向是否正確，左右或前後傾斜直昇機，看伺服器是否會做出正確的方向補償。

十字盤在檢查後回中緩慢，或者伺服器的移動速度緩慢遲鈍，動作速度不及您撥動搖桿的速度，這些都屬於正常現象。與傳統有平衡翼直昇機不同的是，您遙控器的操控不再直接反應到伺服器上，而是遙控器發出的控制訊號交由 MICROBEAST PLUS，由無平衡翼控制系統完成演算後實現飛行動作。因此，在鎖尾模式下，撥動尾伺服器搖桿後，尾舵不會立即有移動的反應，有些時候，給一點尾舵搖桿的輸入，尾伺服器會慢慢跑到底也是正常的現象。

Just before lift off make sure that the swashplate is horizontal and that the tail pitch slider is near center. You can shortly switch the tail gyro to Normal-Rate mode, in this mode the rudder servo will center itself if the rudder stick is released.

在直昇機離地之前，請確認十字盤在水平位置，尾軸滑套也要在接近中央的位置。您可以在起飛前稍微搖動一下尾舵搖桿，讓尾陀螺處於非鎖定模式，在此模式下，如果放開尾舵搖桿，尾舵伺服器會自行置中。

Avoid excessive steering during lift off, otherwise the helicopter may tip over!The best way is to give a fair and direct collective pitch input to lift the helicopter quickly up into the air. This demands some re-education, if you have only flown flybared helicopters before.

Now at first you should adjust and try to find the maximum possible amount of tail gyro and cyclic gain (dial 1). Then you may optimize the tail gyro by adjusting Parameter menu point D (when operating the tail gyro in HeadingLock mode) and adjust the response of the tail gyro with dial 3. Additionally you may need to adjust the Cyclic feed forward (dial 2) and Parameter menu point C. If the helicopter does react very aggressive to stick inputs, change the Control behavior at Parameter menu point B to a lower adjustment and/or reduce stick throws (servo throws) in the transmitter for the specific functions. Likewise increase the stick throws and/or Parameter menu point B, if the reaction is to slow and gentle for you. When the control loop is well adjusted you can additionally use Parameter menu points G and H to fit your flying style and stick feeling. To support the tail gyro you can activate the Torque precompensation (Parameter menu point F) if necessary.

起飛時，切勿過度打舵，以避免直昇機翻覆。最好的辦法就是升空時，所打的舵量要既合理又直接地讓直昇機迅速上升到空中。如果您只飛過有平衡翼直昇機，那麼您需要再多一些練習，來抓到自己熟悉的手感。

首先應該調整並找到尾陀螺和循環感度的最大可能值（旋鈕1）。然後，您可以透過調整參數選單第D 點優化尾陀螺（在鎖定模式下操作尾陀螺），利用旋鈕3 調整尾陀螺反應。此外，您可能需要調整循環反應（旋鈕2）和參數選單第C 點。如果搖桿輸入時直昇機反應非常快速，請改變參數選單第B 點的操控特性到一個較低的調節和(或)減少遙控器的特定的功能搖桿行程輸出量（伺服器輸出）。同樣的，如果反應太慢和溫和，請增加搖桿輸出和(或)參數選單第B 點。當控制環調整好，您還可以調整參數選單第G 點和第H 點，以滿足您的飛行風格及搖桿的控制習慣。為了支援尾陀螺，如果有必要，可以執行反扭力補償（參數選單第F 點）。

We recommend to remove main and tail rotor blades before the first flight and let the motor/ engine run at all speeds. **Caution: Risk of injury!**

Watch whether the swashplate automatically starts to tilt in one direction or begins to twitch at a specific speed. This usually is a sure sign that the helicopter mechanics vibrate at a very high frequent range which disturbs the sensors of MICROBEAST PLUS.

Before the first flight it is absolutely necessary to correct the cause of these vibrations. Often simply the attachment of the cables or MICROBEAST PLUS is not optimal, so that vibrations can very easily be transferred to MICROBEAST PLUS.

When your helicopter uses a tail belt drive system for the tail rotor then it also is highly recommended to perform a bench test as described above. A tail belt can produce static discharges which may interfere with the electronic components on your heli such as MICROBEAST PLUS. This can result in twitching servos, random lighting up of the LEDs or even can cause the system to hang up or reboot. **Take precautionary measures against static discharges and do not fly the heli, if effects occur as described above .**

第一次飛行前，我們建議移除主/尾旋翼，並在各速度下測試馬達/引擎運轉。**注意：有受傷的危險！**

觀察十字盤是否自動啓動並傾斜同一個方向或在特定的速度時發生抖動。這通常是一個明確的信號，因為在非常高的頻率範圍內直昇機機械振動會擾亂 MICROBEAST PLUS 的感應器。

第一次飛行之前，必須改善振動源。振動的原因，往往只是單純的接線不良或 MICROBEAST PLUS 的狀態不理想，導致振動輕易地轉移給 MICROBEAST PLUS 所造成。

如果您使用的直昇機是尾皮帶傳動，強烈建議執行上所述的測試。皮帶傳動可能產生靜電，靜電會干擾直昇機上的電子元件，如 MICROBEAST PLUS 。這可能導致伺服器抖動、Status-LED 燈隨機亮燈、系統當機或重啓。請採取預防措施以防止靜電問題，如有上述情形發生，請勿飛行直昇機。

11 VERSION DISPLAY
版本顯示

ALIGN

After powering up MICROBEAST PLUS, it performs a brief initialization phase. A quick self test turns all menu LEDs on simultaneously and the Status-LED cycles through all colors. Then for about 3 seconds, the Status- LED turns red and the first two digits (X and Y) of the internal firmware version are displayed. Then, in the remaining time a running light of the LEDs A - G signals that the sensors are being calibrated and the LEDs H - N do indicate the initialization of the receiver signals.

During the initialization phase (i.e. when viewing the firmware version or later) briefly push the button and you can display the third digit (Z) of the firmware version. Here the Status-LED flashes purple. Press the button again briefly, and the color of the Status-LED changes to flashing blue while displaying the firmware??s data version (X.Y). If you press the button third time, the Status-LED goes off and the hardware version (X.Y) of this MICROBEAST PLUS device is displayed. Press the button once again to leave the version display and to view the initialization display.

在 MICROBEAST PLUS 通電後，會進行短暫的初始化，在此期間，設定選單的所有 LED 燈會同時快速亮起，Status-LED 燈也會依次亮起所有的顏色。3秒鐘後，Status-LED 燈變成紅色，主程式版本會以數值（X.Y）顯示出來。之後，LED燈 A-G 依次亮起，表示感應器進行校準，接著 LED 燈 H-N 依次亮起，表示進行接收器信號初始化。
在初始化過程中短按一下按鈕，您就可以讓第三個數值（Z）顯示出來，該狀態下 Status-LED 燈紫色閃爍。再短按一下按鈕，Status-LED 燈變成藍色閃爍，顯示目前主程式版本（X.Y）。如果第三次按下按鈕，Status-LED 燈熄將會滅，開始顯示硬體版本（X.Y）。再短按一下按鈕就會退出版本顯示，初始化繼續進行。

Representation of Values　數值含義：

The representation of all values using the menu LEDs is in binary. A lighting menu LED stands for a 1, an off LED for 0. The least significant bits are A and H. The type of value that is currently displayed is represented by the Status-LED as described above.

所有的數值是以選單的 Status-LED 燈用二進位表示。一個 Status-LED 燈亮表示1，一個熄滅表示0。

Firmware Version　主程式版本：

The firmware version consists of three values X.Y.Z. X and Y are displayed automaticaly before the initialization sequence. X is displayed through menu LEDs A - G, Y through H - N. The Z value is shown if the button is pushed once while initialization takes place. To display Z all LEDs A - N are used.

主程式版本由 X.Y.Z 組成，其中 X 和 Y 會在初始化中顯示。LED 燈 A-G 顯示 X 的值，LED 燈 H-N 顯示 Y 的值，LED 燈 A-N 顯示 Z 的值。Z 的值要等初始化後按一下按鈕才能顯示，LED 燈 A-N 都能用來顯示 Z 值。

Data Version　資料版本：

The data version consists of two values X.Y which are displayed at the same time through menu LEDs A - G for X and H - N for Y.

資料版本由 X.Y 組成，X 和 Y 的值透過設定選單的 LED 燈顯示出來， LED 燈 A-G 顯示 X 的值，LED 燈 H-N 顯示Y的值。

Hardware Version　硬體版本：

The hardware version consists of two values X.Y which are displayed at the same time through menu LEDs A - G for X and H - N for Y.

硬體版本由 X.Y 組成，X 和 Y 的值透過設定選單的 LED 燈顯示出來， LED 燈 A-G 顯示 X 的值，LED 燈 H-N 顯示Y的值。

12 TROUBLE SHOOTING GUIDE
常見故障排除

ALIGN

Description 故障現象	Reason 故障原因	Solutions 解決方法
MICROBEAST PLUS does not initialize . Menu-LEDs A - G are running for some time, then only Status-LED flashes red.	Sensor failure occured.	* Helicopter must stand absolutely still during initialization process. * Strong wind can shake the helicopter and disturb sensor calibration. Lay the heli on its side during the initialization. * Don't initialize on a vibrating support, like a car hood or trunk with a running motor or a work bench that people are layed against or sitting on. * Sensors damaged. Return MICROBEAST PLUS for repair. * Power supply voltage is dropping due to weak power supply or damaged servos.
MICROBEAST PLUS 不能正常的初始化。Status-LED燈始終閃爍紅燈。	MICROBEAST PLUS 故障。	* 在初始化過程中直昇機必須保持靜止不動。 * 大風可能晃動直昇機，影響到了感應器。可以讓直昇機側躺在地面上進行初始化。 * 不要在晃動的平臺上面進行初始化，例如汽車的引擎蓋上。 * MICROBEAST PLUS 的感應器損壞，請寄回廠家維修。 * 供電電壓降低可能電池狀態不佳或伺服器損壞。
MICROBEAST PLUS does not initialize . Menu-LEDs H to N do not quit running up and down.	No valid signal from the receiver.	* Check the wiring. Mainly check receiver wires for polarity on both sides and correct plugging (no vertical offset by one pin). * In case of 2.4GHz, check the transmitter-receiver binding. * Check the correct receiver type is set, chapter 5. * When using a single-line receiver check whether the receiver is set to correct signal output mode.
設定選單 LED燈 H-N 上下跑動，MICROBEAST PLUS 無法初化。	MICROBEAST PLUS 無法穩定接受來自接收器的信號。	* 檢查連接線的接線方式，尤其要注意接收器兩邊的端子極性是否插反。 * 如果用 2.4GHz 信號，請檢查接收機是否對頻正確。 * 檢查接收器類型選擇是否正確，請參閱第 5 章。 * 若使用 "單線連接接收器" 時，請檢查接收器設定是否在正確的訊號輸出模式。
Selection in the menus with the rudder control stick does not work .	No movement or not enough movement on the rudder channel.	* Increase the servo throw / dual rate for the rudder channel in the TX. * Check that the connector for the rudder channel (orange wire) is inserted correctly in the receiver. * Is the correct stick moved? Check stick mode of transmitter.
在設定選單上 "方向舵控制搖桿" 選項無反應。	尾舵通道無動作或行程量不足。	* 增加遙控器尾舵通道的伺服器輸出/Dual rate 雙速率。 * 檢查尾舵通道（橙色線）的連接已正確插入接收器。 * 移動的搖桿是否正確? 檢查遙控器搖桿模式。

ALIGN

Description 故障現象	Reason 故障原因	Solutions 解決方法
The sensors do not seem to work correctly . The rudder servo does not react or reacts very slowly to rotation of the helicopter. The same happens to the elevator axis. 感應器動作似乎不正確。尾舵伺服器沒有反應或是當直昇機轉動時反應緩慢。且升降伺服器也有相同問題。	The gain of tail gyro is too low or wrong mounting orientation has been selected . 尾陀螺的感度太低或選擇了錯誤的安裝方向。	* Check assignment of gain channel and adjust the gain in the transmitter (see section 8.4) * Correct wiring or setup of tail gain cable/channel. * In Setup menu point A select the correct mounting orientation. * 檢查感度通道的分配和調整遙控器中的感度（請參閱 8.4 節） * 正確連接或設定尾感度連接線/頻道。 * 在設定選單第 A 點選擇正確的安裝方向。
* The helicopter slowly drifts by itself on aileron, elevator and/or tail . * The swashplate is perfectly leveled and no sub trimming is present in the radio nor is any mixing function active. * This behavior seems to be influenced by the rotor head * 副翼、升降舵和(或)尾舵自行移動，使得直昇機緩慢漂移。 * 十字盤完全是水平的，遙控器的 Sub Trimming 微調是 0，並且沒有啓動任何混控。 * 此現象似乎是由旋翼頭速度所造成的。	This indicates to a vibration problem which interferes with the sensors of the MICROBEAST PLUS. 表示振動問題干擾了 MICROBEAST PLUS 的感應器。	* Check the whole helicopter for imbalances. * In electric helicopters the motor can cause high frequent micro-vibrations. * Balance the tail rotor blades very accurately. * Check the tension of the tail belt. * Choose another mounting position for MICROBEAST PLUS. * Try other types of gyro pads. * 檢查整台直昇機的重心。 * 電動直昇機馬達可能引起高頻率的微振動。 * 使尾旋翼保持精確的平衡。 * 檢查尾皮帶的鬆緊度。 * 選擇其它 MICROBEAST PLUS 安裝位置。 * 嘗試其它類型的陀螺泡棉(墊)。
* The helicopter wobbles on aileron and elevator axis . * Reducing the swashplate gain does not help to suppress this effect completely. **直昇機往副翼、升降方向晃動。 *降低十字盤感度也完全無效。	* The helicopter's linkage ratio is not suitable for flybarless usage. * The servo-blade combination is not good. Some linkages aren't moving smoothly and freely.. * Imbalance of the main rotor head. * 連桿比例並不適合無平衡翼直昇機。 * 伺服器和尾旋翼的組合不佳，伺服器連桿的移動不順暢有干涉。 * 主旋翼不平衡有雙槳現象。	* In Setup menu point J adjust the cyclic pitch to exactly 6 degrees. The color of the Status-LED should light up "blue" (see chapter 7). * Use faster and stronger servos and/ or specific flybarless blades. * Check the mechanics for any hard points (ball linkages, blade grips) * Check if the dampers are greased and that the thrust bearings in the blade grips are correctly mounted. * Do not tighten rotor blade bolts to much. The blades must be able to align themselves by centrifugal force. * 在設定選單第 J 點，調整循環螺距到 6 度，此時 Status-LED 燈應該亮藍燈(參見第 7 章)。 * 請使用寬頻數位伺服器和(或)無平衡翼專用的螺旋槳。 * 請仔細檢查直昇機的結構並排除干涉，如連桿球頭，主旋翼、尾旋翼夾座等。 * 請檢查主旋翼夾座裏止推軸承及華司的組裝方向是否正確，或狀況是否良好。 * 請不要將固定主旋翼的螺絲鎖附太緊。必須留一些空隙，允許主旋翼在旋轉時能自行校準離心力。

ALIGN

Description 故障現象	Reason 故障原因	Solutions 解決方法
The tail rotor turns around instantly when doing backwards flying . 在向後飛行時，尾旋翼瞬間轉向。	* Tail gyro gain too low. * No sufficient thrust produced by the tail rotor. *尾陀螺感度太低。 *尾槳沒有產生足夠的推力。	* Increase tail gyro gain as described in section 8.4. * Check tail pitch angles. Reduce the maximum amount of available tail pitch throw at Setup menu point E to prevent the tail blades from stalling. Increase the tail pitch angle if it's too small. * Use different (larger) tail rotor blades or increase the rotor rpm. * 增加尾陀螺感度，如第 8.4 節所述。 * 檢查尾舵螺距攻角。在設置選單第 E 點減少尾螺距的輸出最大行程量，以防止尾槳失速。如果行程量太小則增加尾螺距攻角。 * 使用不同的 (較大的) 尾槳或增加轉速。
The tail oscillates in horizontal??position slowly and irregularly while hovering . 在停懸時尾舵會不正常的緩慢左右擺動。	The HeadingLock gain of the tail gyro is too high. Due to mechanical issues the tail gyro can not work precisely. 尾陀螺感度過高。因為直昇機機械結構的原因導致尾陀螺不能精確地工作。	* Reduce the HeadingLock gain in Parameter menu point D by one step and increase the tail gain instead at your transmitter. * Check the linkage and mechanics for absolute free movement without hard points. * Use a dedicated rudder servo that is fast and accurate and allows a high driving frequency. * 直接在 MICROBEST PLUS 的參數選單第 D 點中降低鎖尾感度及增加尾舵感度，請不要使用遙控器來增加尾舵感度。 * 請仔細檢查直昇機的結構並排除干涉，如連桿球頭，主旋翼、尾旋翼夾座等。 * 使用快速準確的尾舵專用高壓伺服器。
During slow hovering pirouettes, the helicopter is rolling out . 在停懸自旋時，直昇機偏轉。	The pirouette optimization setting is wrong 自旋優化設置錯誤	* Adjust the pirouette optimization in setup point N correctly. * 在設定選單第 N 點中選擇正確的自旋優化方向。
Status-Led flashes in operation mode, e .g . after landing . Status-LED 燈在操作模式時閃爍。例如:降落後	During operation a software-reset occurred. 在操作過程中軟體重設。	* The receiver power supply does not seem to be sufficient. The voltage during operation dropped in a critical area (<3.5 Volts). Use a stable power supply and make sure that the wiring and plugs are dimensioned big enough and feature low contact resistance. * A reset can be triggered due to a transfer of high voltage. Take measures to prevent static discharges. * 接收器電源似乎不充足。在操作過程中電壓下降到一個臨界區域（ <3.5伏特 ）。使用穩定的電源供應，確保接線和插頭的尺寸夠大，並具有低接觸電阻。 * 高電壓轉移可能引發軟體重設。採取適當措施以防止靜電發生。

For further information have a look at our online content at www .beastx.com .

請至www .beastx.com取得更多資訊

A-ICTY

LEGAL TERMS
法律條款

All statements in this document have been checked for accuracy. However, we cannot guarantee accuracy, integrity or actuality. Do not hesitate to send us any suggestions for improvement by e-mail to info@beastx.com.

本說明書中的所有描述都儘量檢查過正確性。但是我們不能保證說明書百分之百的正確或完整。如果有任何建議請發送電子郵件到 info@beastx.com.。

DISCLAIMER
免責聲明

The provided information was proofed for accuracy and integrity. However, potential mistakes cannot be excluded. We are not responsible for any damage which occurs as a result of these contents.

This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

本說明書所提供的資訊校對過準確性和完整性，但是潛在的錯誤不能被排除在外，包括操作失誤、周邊器材影響而導致故障或意外發生，我們不會對對這樣發生的錯誤做出任何損害賠償。

本品在加州實驗室檢測出含有少量可能導致癌症、出生缺陷或其他生殖危害的成分，請避免讓孩童接觸把玩甚至將其放入口中。

COPY RIGHTS
版權

The actual contents of this publication are protected by copyright law. All rights reserved. Any usage of text or illustrations, even in excerpts, without our permission is illegal and culpable. Particularly this applies to the duplication, translation or usage in electronic systems. The contents of this publication contain registered trademarks, brands and common names. Although those are not expressly designated as such, the safeguarding provisions apply accordingly.

本說明書的內容受版權法律保護，本公司將保留所有解釋權。任何未經許可擅自摘錄文字或插圖都屬於非法的行為。其他非法行為還包括私自拷貝、翻譯。本說明書內含有註冊商標、品牌和通用名稱受法規保護，擅自使用者將受到法律制裁。

BEASTX, MICROBEAST and **SRXL** are registered trademarks.

BEASTX 和 MICROBEAST 已註冊商標。

DECLARATION OF CONFORMITY

符合標準聲明

ALIGN

We

BEASTX GmbH

Karl-Ferdinand-Braun-Str. 33

50170 Kerpen

Germany

herewith declare that MICROBEAsT **plus** / MICROBEAsT **plus hd** meet all the essential requirements of the Directives 2004/108/EC und 2011/65/EU. For the evaluation of compliance with these Directives the following standards where applied:

在此特別聲明 MICROBEAST 是依照 EMC 標準 2004/108/EC下生產製造。

EN 61000-6-1:2007

EN 61000-6-3:2007 + A1:2011 + AC:2012

The products carry the CE mark:

本產品通過CE認證

CE

The products mentioned above are fully compliant with requirements stipulated by REACH (1907/2006/ EC) and RoHS (2011/65/EC), where applicable. Furthermore, the articles and their packaging materials do not contain substances included on the current candidate list for authorization (SVHC list) according to Art. 33 and 59(1, 10) REACH in a concentration above 0.1 % weight by weight. The candidate list and its updates are closely monitored on a regular basis. In addition, our products do not contain any substances subject to authorization or restriction (REACH Annexes XIV and XVII).

排放：符合IEC55011 B類

免疫：符合IEC61000-6-1

EAR WEEE-REG. Nr.: DE 72549415

Kerpen, 01.08.2014
place and date of issue

Markus Schaack,CEO
name and signature

ALIGN

MENU OVERVIEW
快速對照表

ALIGN

Setup Menu (Menu-LED is steady ON)
設定選單 (Menu-LED 恆亮)

	Status-LED: Status-LED燈:	Off 熄滅	Purple 紫色	Red Flashing 紅色閃爍	Red 紅色	Blue Flashing 藍色閃爍	Blue 藍色
A	**Mounting Orientation** 陀螺固定方向	———	———	———	Upright (Vertical) 垂直	———	Flat (Horizontal)* 水平*
B	Swashplate - **Servo Frequency** 十字盤舵機工作機頻率	User Defined 使用者自定義	50 Hz*	65 Hz	120 Hz	165 Hz	165 Hz
C	Rudder - **Center Position Pulse Length** 尾舵機中立點脈衝頻率	User Defined 使用者自定義	960 μs	———	760 μs	———	1520 μs
D	Rudder - **Servo Frequency** 尾舵機工作機頻率	User Defined 使用者自定義	50 Hz*	165 Hz	270 μs	333 Hz	560 Hz
E	Rudder - **Servo Endpoints** 尾舵機行程極限	Use Rudder Stick To Move Servo To Right Endpoint And Wait, Then Left Endpoint And Wait (or Vice Versa) 尾舵搖桿移到右極限並等待/再移到左極限並等待					
F	Rudder - **Sensor Direction** 尾感應器正逆方向	———	———	———	Normal* 正常*	———	Reversed 反向
G	Swashplate - **Servo Centering** 十字盤舵機中立點	Reference Position 原始位置	CH1 Center Pos. CH1中立點	———	CH2 Center Pos. CH2中立點	———	CH3 Center Pos. CH3 中立點
H	Swashplate - **Mixer** 十字盤混控	User Defined 使用者自定義	Mechanical 機械混控	90°	120° *	140° *	140° (1=1)
I	Swashplate - **Servo Directions** 十字盤舵機方向	Nor | Rev | Rev 正/逆/逆	Nor | Nor | Rev* 正/正/逆*	———	Nor | Rev | Nor 正/逆/正	———	Nor | Nor | Nor 正/正/正
J	Swashplate - **Cyclic Pitch Geometry** 十字盤迴圈螺距設定	Aileron Stick-Adjust 6° Cyclic Pitch On The Roll Axis To One Direction (blades Aligned With Fuselage) 用副翼搖桿調整到6° （主旋翼與機身綁定）					
K	**Collective Pitch Range and Endpoints** 機體螺距範圍	Collective Stick On Max/min Position, Use Rudder Stick To Adjust Desired Pitch 將螺距搖桿推到最高點和最低點的同時用尾舵搖桿來做選擇					
L	Swashplate - **Cyclic Limit** 十字盤運動極限	Move Aileron, Elevator And Thrust Stick-Adjust Maximum Limit With Rudder Stick 移動副翼、升降和螺距搖桿，在最大極限位置用尾舵搖桿做選擇					
M	Swashplate - **Sensor Directions** 十字盤感應器正逆方向	Rev | Rev 逆/逆	Rev | Nor 逆/正	———	Nor | Rev 正/逆	———	Nor | Nor* 正/正*
N	**Pirouette Optimization Direction** 自旋優化方向	———	———	———	Normal* 正常*	———	Reversed 反向

＊Factory Setting ＊出廠預設值

Paramete Menu (Menu-LED is flashing quickly)
參數功能表 (Menu-LED 快速閃爍)

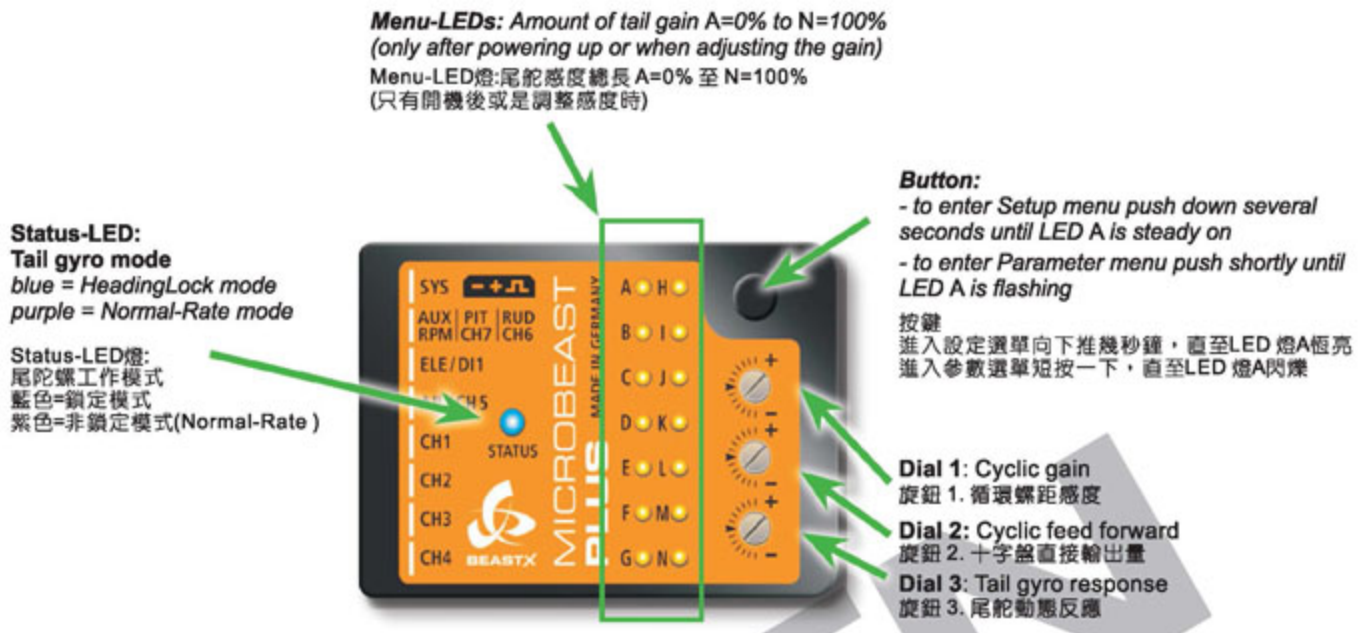
	Status-LED: Status-LED燈:	Off 熄滅	Purple 紫色	Red Flashing 紅色閃爍	Red 紅色	Blue Flashing 藍色閃爍	Blue 藍色
A	**Cyclic and Rudder Trim** 十字盤迴圈中立點調整	Aileron and elevator stick to trim cyclic, hold button 2s to trim rudder – reset all with rudder– stick 移動副翼和升降，用尾舵搖桿還原初始化設定					
B	**Control Behavior** 控制風格	User Defined 使用者自定義	Normal 普通	Sport* 運動*	Pro 專業	Extreme 極限	**Transmitter** 遙控器
C	Swashplate - **Pitching up compensation** 十字盤集體螺距補償	User Defined 使用者自定義	Very Low 極低	Low 低	Medium* 普通*	High 高	Very High 極高
D	Tail - **HeadingLock Gain** 鎖尾感度	User Defined 使用者自定義	Very Low 極低	Low 低	Medium* 普通*	High 高	Very High 極高
E	**Stick Deadband** 搖桿死區	User Defined 使用者自定義	Very Small 1	Small* 2*	Medium 3	Large 4	Very Large 5
F	Tail-**Torque Precompensation(RevoMix)** 尾舵反扭力補償	User Defined 使用者自定義	Off* 關閉*	Low - Nor 低-正	High - Nor 高-正	Low - Rev 低-逆	High - Rev 高-逆
G	**Cyclic Response** 循環反應	User Defined 使用者自定義	Normal* 普通	Slightly Increased 增加一點	Increased 增加	High 高	Very High 極高
H	**Collective Pitch Boost** 集體螺距提升	User Defined 使用者自定義	Off* 關閉*	Low 低	Medium 普通*	High 高	Very High 極高

＊Factory Setting ＊出廠預設值

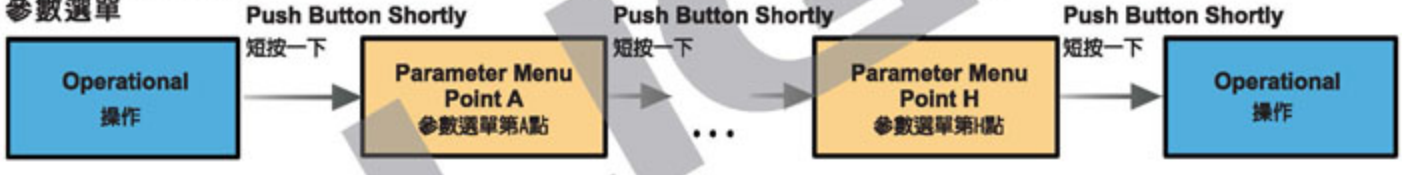
ALIGN

ADJUSTMENT OPTIONS OVERVIEW
調整選項概覽

ALIGN

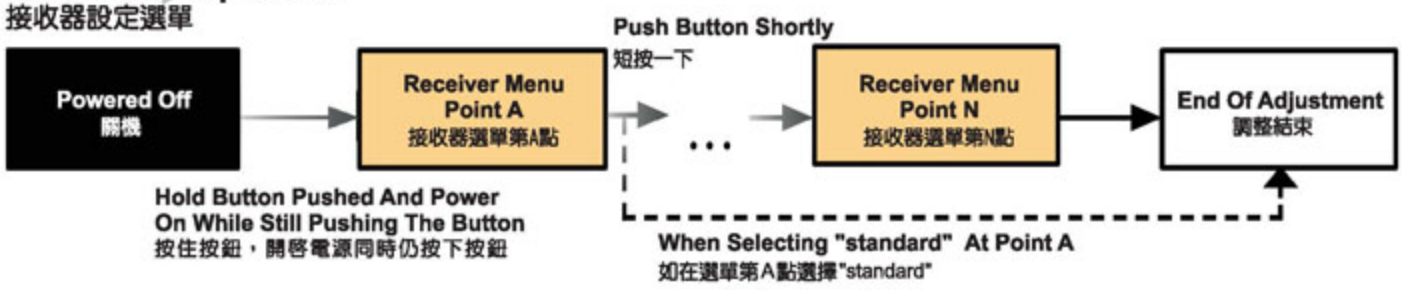


Parameter Menu
參數選單



Setup Menu:
設定選單

Receiver Setup Menu:
接收器設定選單



CAUTION 注意

Never fly while MICROBEAST PLUS is in one of the menus! In this condition gyro and stick controls are partially disabled and not used for controling the helicopter.

永遠不要在MICROBEAST PLUS處於選單中或設定狀態下進行飛行。在此狀態下，陀螺儀和搖桿的指令都是失效的。

MY HELI SETUP
我的伺服器設定

ALIGN

Heli 直昇機	

Setup Menu (Menu-LED is steady ON)
設定選單 (Menu-LED 恆亮)

	Status-LED: Status-LED燈:	Off 熄滅	Purple 紫色	Red Flashing 紅色閃爍	Red 紅色	Blue Flashing 藍色閃爍	Blue 藍色
A	**Mounting Orientation** 陀螺固定方向						
B	Swashplate - **Servo Frequency** 十字盤舵機工作機頻率						
C	Rudder - **Center Position Pulse Length** 尾舵機中立點脈衝頻率						
D	Rudder - **Servo Frequency** 尾舵機工作機頻率						
F	Rudder - **Sensor Direction** 尾感應器正逆方向						
G	Swashplate - **Servo Centering** 十字盤舵機中立點						
H	Swashplate - **Mixer** 十字盤混控						
I	Swashplate - **Servo Directions** 十字盤舵機方向						
M	Swashplate - **Sensor Directions** 十字盤應器正逆方向						
N	**Pirouette Optimization Direction** 自旋優化方向						

Paramete Menu (Menu-LED is flashing quickly)
參數功能表 (Menu-LED 快速閃爍)

	Status-LED: Status-LED燈:	Off 熄滅	Purple 紫色	Red Flashing 紅色閃爍	Red 紅色	Blue Flashing 藍色閃爍	Blue 藍色
B	**Control Behavior** 控制風格						
C	Swashplate - **Pitching Up Compensation** 十字盤集體螺距補償						
D	Tail - **HeadingLock Gain** 鎖尾感度						
E	**Stick deadband** 搖桿死區						
F	**Tail-Torque Precompensation(RevoMix)** 尾舵反扭力補償						
G	**Cyclic Response** 循環反應						
H	**Collective Pitch Boost** 集體螺距提升						

Memo

ALIGN

www.align.com
www.
www.align.con
www.align.com.tw www.alig
www.align
www.align.com.tw
www.align.com.

亞拓電器股份有限公司
ALIGN CORPORATION LIMITED MADE IN TAIWAN

2016.Nov.17 G00666