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.

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.
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IMPORTANT NOTES

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.

WARNING LABEL LEGEND

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<tr>
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<td>Mishandling due to failure to follow these instructions may result in danger.</td>
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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。
SAFETY NOTES

安全注意事項

- 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 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.

- 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.

- 嚴防火源

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.

- 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.

- 遠離飛行場

Each flight you must thoroughly inspect your model for any damage or wear and tear. Be sure to keep the screws tightened to avoid any safety issues.

- 保持清潔

Each flight you must thoroughly inspect your model for any damage or wear and tear. Be sure to keep the screws tightened to avoid any safety issues.

- 保持清潔

Each flight you must thoroughly inspect your model for any damage or wear and tear. Be sure to keep the screws tightened to avoid any safety issues.

- 遠離飛行場

Each flight you must thoroughly inspect your model for any damage or wear and tear. Be sure to keep the screws tightened to avoid any safety issues.
PROPER OPERATION

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 bounds of common safety.

WARNING

DO NOT FLY ALONE

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.)

SAFE OPERATION

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.

CAUTION

ALWAYS BE AWARE OF THE ROTATING BLADES

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.
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.

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.

無線電遙控模型，是藉由許多電子元件組裝而成，因此有必要保護這些脆弱的電子元件，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，請絕對不在雨天或溼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 在極端溫度變化的地方飛行，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。
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.

The sensors of MICROBEAST PLUS consist of highly sensitive electromechanical 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. due to a crash of the model or due to overvoltage caused by a defective receiver power supply. Otherwise a failure may happen any time.

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 of time, the system will power off and reboot. In this case a crash of the helicopter is unavoidable.

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.

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 start inadvertently when the receiver is switched on.

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 use the model for an extended period of time to prevent the supply battery from getting discharged and damaged in consequence.
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 燈號來了解當前正在運行的主程式版本。在初始化時，您將會看到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 顯示第二位版本(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

BOX CONTENT 包装内容
- Microbeast PLUS Flybarless System x1
- Einstellwerkzeug x1
- Klebe pads x2

OPTIOAL ACCESSORIES 另購品
- Microbeast PLUS Receiver wiring leads 15cm x3
- Spektrum-Adapterkabel x1
- Cable for stand-alone tail gyro use x1

2 ELECTRIC EQUIPMENT ILLUSTRATION

PARTS IDENTIFICATION 各部位名稱
MICROBEAST PLUS FLYBARLESS SYSTEM 無平衡翼系統

Status LED 設定燈
Sensor Port 感應器接口

MICROBEAST PLUS FLYBARLESS SYSTEM WIRING DIAGRAM 無平衡翼系統接線圖

Receiver 接收器
- AILERON 副翼
- ELEVATOR 升降舵
- THROTTLE 油門
- Rudder 横舵
- GYRO 鬆動器

CH1 Servo 伺服器
CH2 Servo 伺服器
CH3 Servo 伺服器
RUD Servo 伺服器

ESC

Cyclic Gain 直接旋轉
Direct Cyclic 極限旋轉
Feed Forward 前馈
Tail Dynamic 尾翼動態
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 your 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 安裝在直升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插頭，並且可以依您安裝的位置來選擇水平、直立懸掛。

您可以水平或由下往上倒立安裝，但無論如何懸掛，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 內具有精密的電機感應器，安裝時注意 MICROBEAST PLUS 外殼的邊緣平行於尾管，安裝的平面則必須與主軸垂直。
3.2 PREPARING THE TRANSMITTER

The following step is unnecessary when using MICROBEAST PLUS 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陀螺儀。MICROBEAST PLUS 會跟其他系統的尾陀螺儀一樣，使用遙控器的方向舵和滾轉通道來控制陀螺儀。

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，另外一個通道給馬達使用。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 m CCPM (mechanical mixing) which is often called “H1”, “1 servo 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。請自已設置您的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 alleron, 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%。增加或減少伺服器輸出路徑 / 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，也不要調整螺桿軌跡。點螺桿軌跡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儀調：每個搖桿都有控制一個通道/伺服輸出（除了常用來控制縱體螺旋和馬達的止推搖桿）。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，以防安全。如果電動電池是用作接收器、伺服器及 MICROBEAST PLUS 的電源時，請將馬達電源從 ESC 拆除。
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 MICROBEAST 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通電時，驅動異常而發生損壞。

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 to CH2 and collective pitch servo to CH3, the rudder servo is always connected on CH4.

使用 eCCPM 電子捲盤十字盤 (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]；蝶距伺服器選擇 [CH3]。尾舵伺服器則固定插在 [CH4]。

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 本體的地方捆綁或緊緊束帶。另一方面，所有線材皆須確實接好，以免飛行時 MICROBEAST PLUS 因連繫而脫落。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。這樣會使電纜僵硬不靈活，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）。對於無平衡翼直升機，因為電子混控系統會不斷地運動，所以，伺服器負載及消耗功率會比有平衡翼直升機來的更高！
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 single-line 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.

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.

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

4.1.1 FLYBARLESS USAGE
無平衡器的使用方法

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:

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 these 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，以便準確認出口號線插入相應的通道插槽。連接至接收器的升降 (elevator) 與副翼 (ailerons) 的連接線，請務必使用原廠標準 3 條連接線，那是具有訊號 + 、－的標準連接線。MICROBEAST PLUS 必須透過這兩條具有 + 、－極性電源線來取得電源，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器，這 3 條線並排後連接到 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－棕線，並且插入接頭時特別注意別把針腳弄歪，這可能造成短路故障。
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情況（如果有）或聯繫
您的遙控器製造商。
4.1.2 USAGE AS STAND-ALONE TAIL GYRO

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舵螺使用。這需要使用一條特殊連接線 (無購品)，該線材可確保 MICROBEAST PLUS 正常提供電源及接收器正常傳送信號至尾舵和尾舵舵度。

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 | D1]，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 作獨立的尾舵螺時，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。
4.2 USE OF SINGLE-LINE RECEIVERS

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，也相容單線接收器。可適用接收器的品牌如 Spektrum 區域接收機，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

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 [D12 | Ch7 | Ch8] 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 [D12] 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 由此插槽提供電源給 MICROBEAST PLUS，伺服器和接收器。


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線連接線給接收器時，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。
4.2.2 SPEKTRUM SATELLITE RECEIVER

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插入方向，Spektrum 衛星接收天線則插入這個轉接線。

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，基於無法遮蔽接收角度的理由，會使飛行範圍受限，因此僅限於使用在小型直升機上（含450級及直升機和以下）！對於大型直升機（含 500 級直升機和以上）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）。
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.

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 (I) 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.
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

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 receivers 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 [D11]. 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 single line connection and transfers the control commands from the transmitter to MICROBEAST PLUS over this line.

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許多單線接收器（尤其是PPM複合信號的衛星接收器），只有一個單一輸出端。市面上的接收器（如Jeti RSAT接收器）具有連接線可直接接到底輸出端。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，轉接線的两端都有插頭，將它插入接收器的輸出端來收集訊號。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，所以插入時請三確認，以免裝備損壞。

將轉接線的另一端插入 MICROBEAST PLUS 輸入端[D11]。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。
4.2.4 SINGLE-LINE RECEIVER WITH ADDITIONAL SERVO CONNECTORS

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.

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连接到接收器或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。
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），因為不同廠牌的通訊協定各有差異，所以在首次使用和進一步步驟，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。

---

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 定速器來調節馬達，您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，輸出功能已被激活！

---

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，一直到修改儲存完成，以及所選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，通常您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，集體螺旋的設定（設定選單第 K 點）和尾旋螺的調整（請參閱 8.4 章）。
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 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。

<table>
<thead>
<tr>
<th>STATUS-LED</th>
<th>RECEIVER TYPE / TRANSMISSION PROTOCOL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>Standard Receiver (Fig. 7, 8, 9)*</td>
</tr>
<tr>
<td>Purple</td>
<td>Single Spektrum Satellite (Fig. 10)</td>
</tr>
<tr>
<td>Red Flashing</td>
<td>Futaba S-BUS (Fig. 12, 13)</td>
</tr>
<tr>
<td>Red</td>
<td>SRXL (Fig. 12, 13)</td>
</tr>
<tr>
<td>Blue Flashing</td>
<td>PPM Composite Signal (Fig. 12, 13)</td>
</tr>
</tbody>
</table>

*Factory Setting *出廠預設值

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複上述步驟即可。

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。
Operation With A Futaba S-bus Receiver Using The S-bus Transmission Protocol:

1. Hold the Button Down
2. Turn Power supply ON
3. Release Button
4. Keep button pushed a long time
5. Release Button

---

LED A: flashing
Status-LED: Off
= Standard receiver

LED A: 灯亮
Status-LED灯: 熄灭
表示標準型接收器

---

LED A: flashing
Status-LED: purple
= Spektrum receiver

LED A: 灯亮
Status-LED: 紫色
表示Spektrum接收器

---

LED A: flashing
Status-LED: flashing Red
= Futaba S-Bus receiver

LED A: 灯亮
Status-LED: 红色
表示Futaba S-Bus receiver

---

LED B: flashing
Status-LED: Blue
as soon as signal is valid

LED B: 灯亮
Status-LED: 紫色
表示信号有效
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搭配控制功能。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。若無法對應，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，來查看每個伺服器的對應通道。

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 點中某一點，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 點按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*

<table>
<thead>
<tr>
<th>Transmitter</th>
<th>Function</th>
<th>Function</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel 1 頻道 1</td>
<td>Throttle [CH5] 油門 [CH5]</td>
<td>Aileron 副翼</td>
<td>Collective Pitch 集體動力</td>
</tr>
<tr>
<td>Channel 2 頻道 2</td>
<td>Aileron 副翼</td>
<td>Elevator 升降舵</td>
<td>Aileron 副翼</td>
</tr>
<tr>
<td>Channel 3 頻道 3</td>
<td>Elevator 升降舵</td>
<td>Throttle [CH5] 油門 [CH5]</td>
<td>Elevator 升降舵</td>
</tr>
<tr>
<td>Channel 4 頻道 4</td>
<td>Rudder 尾舵</td>
<td>Rudder 尾舵</td>
<td>Rudder 尾舵</td>
</tr>
<tr>
<td>Channel 5 頻道 5</td>
<td>Tail Gyro Gain 感度</td>
<td>Tail Gyro Gain 感度</td>
<td>Auxiliary [CH6] 需助通電</td>
</tr>
<tr>
<td>Channel 6 頻道 6</td>
<td>Collective Pitch 集體動力</td>
<td>Collective Pitch 集體動力</td>
<td>Throttle [CH5] 油門 [CH5]</td>
</tr>
</tbody>
</table>

* 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

<table>
<thead>
<tr>
<th>Transmitter</th>
<th>Function</th>
<th>Function</th>
<th>Function</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEASTRX</td>
<td>Aileron 副翼</td>
<td>Aileron 副翼</td>
<td>Collective Pitch 集體動力</td>
<td>Throttle [CH5] 油門 [CH5]</td>
</tr>
<tr>
<td>JR X bus Mode b JeTI Udi</td>
<td>Elevator 升降舵</td>
<td>Elevator 升降舵</td>
<td>Aileron 副翼</td>
<td>Aileron 副翼</td>
</tr>
<tr>
<td>Graupner SUMD</td>
<td>Rudder 尾舵</td>
<td>Elevator 升降舵</td>
<td>Elevator 升降舵</td>
<td>Elevator 升降舵</td>
</tr>
<tr>
<td>Graupner SUMD 6 Kanal (NX-12)</td>
<td>Tail Gyro Gain 感度</td>
<td>Throttle [CH5] 油門 [CH5]</td>
<td>Tail Gyro Gain 感度</td>
<td>Tail Gyro Gain 感度</td>
</tr>
</tbody>
</table>

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預設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。

---

**Release Button** 旋鈕按鈕

LED B lights Status-LED: blue
LED燈 B亮起 Status-LED：藍色

Loading of standard channel assignment
載入默認的通道分配

LED N lights Status-LED is flashing red / blue
LED燈 N亮起 Status-LED：紅 / 藍色
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 which 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.

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定。

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、油門到怠速狀態。

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

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 off 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.

如果啟動油門失控保護，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電信號漏失（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信號鏈尚未被建立。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。
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 transmitters tail gain channel.

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 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。您只能選一進入，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一個選項，在字母後面的LED 燈提示玩家當前的選項，需要注意選單的燈號指示會有不同。

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 燈停止閃爍變成恆亮。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，按按鈕達到選單第 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，一般都在場地現場調整。
3. In the menu, the settings are usually used to adjust the control parameters, and the LED lights indicate the states of the controls. The LED lights may show: Off, Purple, Red Flashing, Red, Blue Flashing, or Blue. The display may also show the states of the controls.

4. When changing the settings, a short press of the button can be used to select the next menu point. If the button is held down, the settings will be adjusted. In this condition, the gyrocontrol and stick controls are disabled.

In the menu, press the button to enter the setup menu. Press the button briefly to enter the parameter menu. The LED A will be flashing.

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

Menu-LED A steady on
Menu-LED燈 A 恒亮

Operation Mode
操作模式

Setup Menu - Menu Point A
設定選單第 A 點

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

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

Operation Mode
操作模式

Parameter menu-menu point A
參數選單第 A 點
6.3 SELECTION WITHIN THE MENUS

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.

6.4 SWITCHING TO THE NEXT MENU POINT

Push button shortly
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 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).

In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，過一會便變
成恆亮狀態。現在(也只有現在)可以放開設置按鈕，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鈕跳過所有的設定點 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 10 seconds, 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握臂，以防安全。

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）。
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 edges 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:

<table>
<thead>
<tr>
<th>Status-LED</th>
<th>Mounting Orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Vertical (On The Side)</td>
</tr>
<tr>
<td>Blue</td>
<td>Horizontal (Flat)</td>
</tr>
</tbody>
</table>

Status-LED: Red
Status-LED 燈：紅色

Status-LED: Blue
Status-LED 燈：藍色

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。
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.

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 cannot list all servo types. We also cannot guarantee the accuracy of this data. Ask the manufacturer of the servos or your local dealer for detailed information.

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

<table>
<thead>
<tr>
<th>Status-LED</th>
<th>Swashplate Servo Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purple</td>
<td>50Hz*</td>
</tr>
<tr>
<td>Red Flashing</td>
<td>65Hz</td>
</tr>
<tr>
<td>Red</td>
<td>120Hz</td>
</tr>
<tr>
<td>Blue Flashing</td>
<td>165Hz</td>
</tr>
<tr>
<td>Blue</td>
<td>200Hz</td>
</tr>
<tr>
<td>Off</td>
<td>User Defined</td>
</tr>
</tbody>
</table>

* 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.

幾乎所有型號的伺服器都適用於 MICROBEAST PLUS。但是，所選擇的伺服器必須滿足無旋翼系控制的要求（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旋翼範圍有直接影響，伺服器越適用於無旋翼操作，其旋翼對無旋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的旋翼，就非常重要。相反的，當使用特殊的旋翼在無旋翼操作時，就不需要高強度伺服器，因為控制力量的要求將會降低。

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，如停機時產生震動，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Align伺服器網頁：


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。
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.

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.

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

<table>
<thead>
<tr>
<th>Status-LED</th>
<th>Rudder servo center pulse length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purple</td>
<td>960 μs</td>
</tr>
<tr>
<td>Red</td>
<td>760 μs</td>
</tr>
<tr>
<td>Blue</td>
<td>1520 μs*</td>
</tr>
<tr>
<td>Off</td>
<td>User defined</td>
</tr>
</tbody>
</table>

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.

"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縱特性，而無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。
As with the swashplate servos at Setup menu point B you can select at Setup menu point D the frequency for the rudder servo.

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 cannot list all servo types. We also cannot guarantee the accuracy of this data. Ask the manufacturer of the servos or your local dealer for detailed information.

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.

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

<table>
<thead>
<tr>
<th>Status-LED</th>
<th>Rudder servo frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purple</td>
<td>50Hz*</td>
</tr>
<tr>
<td>Red Flashing</td>
<td>165Hz</td>
</tr>
<tr>
<td>Red</td>
<td>270Hz</td>
</tr>
<tr>
<td>Blue Flashing</td>
<td>333Hz</td>
</tr>
<tr>
<td>Blue</td>
<td>560Hz</td>
</tr>
<tr>
<td>Off</td>
<td>User defined</td>
</tr>
</tbody>
</table>

*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 度垂直於尾螺旋槳軸（或盡可能接近 90 度），然後根據您的直昇機說明書調整螺旋槳螺旋槳的長度。大部分的直昇機，當螺旋槳在中立點的時候，尾槳應該會有一點正的擺距，以抵消主旋翼帶來的反扭力。正常速率模式下使用尾螺旋槳時，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者尾螺旋槳的反向漂移。當尾螺旋槳在鎖定模式，此調整就不那麼重要了。在這裡，陀螺儀將主動控制尾駕使直昇機遵循尾槳操縱的命令。為了獲得最佳性能，建議盡可能將機械調到最好。

警告

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，所以您有充足的时间做機械調整。

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。
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.

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 transmitters 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.

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側的尾舵行程量，鬆開搖桿。等候 Status-LED 燈閃爍直到變成恒亮的紫（紅、藍一起亮），至此尾舵行程量設定完成！
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.

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 it 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.

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).

Push the button to save the configuration and to proceed to Setup menu point F.
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MICROBEAST PLUS的尾舵修正方向是否正確。

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拖著垂直軸線懸停，陀螺儀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，則陀螺儀會操作尾舵進行左舵修正，就如同你自行發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:

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.

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.

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。
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.

When it comes to the swashplate servo configuration, the Status-LED is used to indicate the status of the swashplate position. When the LED is off, it indicates that the swashplate position is at its reference position. When the LED is on, it indicates that the swashplate position is outside its reference position.

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

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.

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.

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.
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.

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).

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.

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。
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的十字盤混控類型：

<table>
<thead>
<tr>
<th>Status-LED</th>
<th>Off</th>
<th>Purple</th>
<th>Red Flashing</th>
<th>Red</th>
<th>Blue Flashing</th>
<th>Blue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status-LED</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swashplate Mixer</td>
<td>User defined</td>
<td>Mechanical</td>
<td>90°</td>
<td>120°</td>
<td>140°</td>
<td>140° (1=1)</td>
</tr>
</tbody>
</table>

*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。主要是升降舵有相等的伺服比。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。
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 1 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

<table>
<thead>
<tr>
<th>Status-LED 燈色</th>
<th>CH1</th>
<th>CH2</th>
<th>CH3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off 無亮</td>
<td>Normal</td>
<td>Reverse</td>
<td>Reverse*</td>
</tr>
<tr>
<td>Purple 紫色</td>
<td>Normal*</td>
<td>Normal*</td>
<td>Reverse*</td>
</tr>
<tr>
<td>Red 紅色</td>
<td>Normal</td>
<td>Reverse</td>
<td>Normal</td>
</tr>
<tr>
<td>Blue 藍色</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
</tr>
</tbody>
</table>

*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.

如您的伺服器不能正確反應，請檢查副翼及升降的控制線是否正確連接，如果接收器中通道分配（section 5.2）正确，請檢查接收器上仍然可用的線路設定（see section 3.2）及核驗機構模式是否正確。

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構設定。

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。
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. 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 theileron 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 geometries 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.

In setting menu J point, you must teach MICROBEAST PLUST know how high the gimbal’s swashplate to run, and the manner as follows.

首先, 將設定選單第 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，讓主旋翼定位在水平方向與軸平行（圖.31），然後把變距器固定在尾管上方的主旋翼，這時觀察指標位，變距器動態應該是 0 度。十字螺桿伺服器應該是在中立點位置，十字盤應該保持水平。如果十字螺桿伺服器和變距器顯示的度數不正確，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傾角，直到剛好 6 度。撥動尾舵搖桿可以清除之前的主旋翼傾角，使其回歸 0 度。調整度數時，搖桿動作的方向並不重要，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。

當循環螺距為 6 度時，Status-LED 指示燈必須顯示藍燈。如果 LED 應亮為紅色，或紫色，甚至是熄滅狀態，則表示該架直飛機的旋翼周期設定不適合使用無平衡系統。您可以將旋翼的動態裝置在變距器的長短，以及球頭連接，來使直飛機的動作和無平衡系統的要求。

往單一方向旋轉尾軸搖桿，可以刪除調整和回復十字盤到 0 度位置，例如，重新調整螺距數。

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 helicopters head geometry is not perfect. Do not adjust 7° for instance just because the Status-LED does become blue there!

一定要在循環螺距設定為 6°時來觀察 Status-LED 燈，才能顯示出您直鷹機的調校是正確的。此設定並不會影響到無平衡系統的最高速度轉定，只是用於觀察機械過控是否適合 MICROBEAST PLUS。如果不按照此說明進行調整，可能引起 MICROBEAST PLUS 不正常的動作表現。此外，Status-LED 燈號亮起紅燈，表示當前直鷹機機械過控適合 MICROBEAST PLUS 無平衡系統，如果循環螺距在 6°時所亮的燈號是紅色的，那麼請注意，這是系統警示您直鷹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 燈號亮起藍燈，而將循環螺距的度數調到 7°。

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 分鐘到時自動退出功能，所以您有足夠的時間來進行機構調校。
1. Orientate The Rotor Blades Parallel To The Longitudinal Axis Of The Helicopter.

2. Adjust the cyclic pitch to exactly 6 degrees.

Push the button to save the configuration and to proceed to Setup menu point 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。
將螺距桿推至最高點，此時您可以利用尾舵通道桿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，將螺距桿拉到底，用同樣的方法來調整最低點集體螺距行程量。

**CAUTION**

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 transmitters servo reversing function for the collective pitch channel to correct this as already described in section 1.

在此項設定中，請再次確定集體螺距的方向符合遙控機設定的方向。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。
Cyclical Swashplate Limit

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 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範圍/升降舵傾角。傾斜範圍將被限定在一個等於 Swash Ring（十字盤模擬滑動）功能的路徑內。

按流程設定:
小心的撥動副翼/升降桿以及螺距桿至最大行程，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桿來增大或減小副翼/升降輸出行程。十字盤設定範圍過大，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。

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 燈藍色的數位範圍內。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調大，以保證MICROBEAST PLUS 有足夠的空間發揮其功能。此時 Status-LED 燈僅作輔助線索，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，此時您必須改變機構上的調整，來提供充足的螺距範圍。

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.

如後若修設定選單第 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。
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。

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.

當直昇機向前傾斜時，十字盤應當向後傾斜。當直昇機向後傾斜時，傾斜盤應當向前傾斜（圖33）。同樣如果將直昇機向左傾斜，十字盤應當向右修正（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 燈將用不同顏色表達當前選擇。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：

<table>
<thead>
<tr>
<th>Sensor Directions</th>
<th>Status-LED</th>
<th>Elevator</th>
<th>Aileron</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Status-LED</td>
<td>輪轉 橫幅</td>
<td>副翼</td>
</tr>
<tr>
<td>Off 失靈</td>
<td>Reversed*</td>
<td>Reversed*</td>
<td></td>
</tr>
<tr>
<td>Purple 紫色</td>
<td>Reversed</td>
<td>Normal</td>
<td></td>
</tr>
<tr>
<td>Red 紅色</td>
<td>Normal</td>
<td>Reversed*</td>
<td></td>
</tr>
<tr>
<td>Blue 藍色</td>
<td>Normal</td>
<td>Normal</td>
<td></td>
</tr>
</tbody>
</table>

* 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 transferring 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 標的感應器顏色，僅供單一装置或特定版本參考。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。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。
Tilt the helicopter forwards

The swashplate has to move backwards

Roll the helicopter to one side

The swashplate has to steer to the opposite direction
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 helicopters 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 piroette 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)。這將導致直昇機在某特定方向的傾斜。

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有關係的。

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:

<table>
<thead>
<tr>
<th>Status-LED</th>
<th>Piroette Optimization Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Normal *</td>
</tr>
<tr>
<td>Blue</td>
<td>Reversed</td>
</tr>
</tbody>
</table>

* 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。
1. Swashplate points to the left (initial position may differ)
   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
   直昇機繞著垂直軸旋轉

3. Swashplate must always point to the same direction as before (in this case to the left)
   十字盤的指向，必須和之前的方向相同（例如：指向左邊）
8. DIALS AND TAIL GYRO GAIN

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的信號。正確的設定本參數，可以減少十字盤干渉使得十字盤工作更有效率，旋鈕指針設置為水平方向，此設置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到副翼和升降伺服器，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，十字盤將方可以恢復初始狀態。當然此時獲得了更直接的操作，但是仍有可能出現某些負面效果，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軌跡。

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、陀螺儀、主發動機轉速、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，您應該先嘗試找到最佳循環螺距（旋鈕1）。然後調整十字盤直接輸出量後，您可能需要再次調整循環螺距，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和提高最大滾轉速度），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齒輪機有過度靈敏的反應及產生迫尾現象，在快速改變方向時又會感到鬆軟無力。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，齒輪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舵螺槳度數。（參考8.4節）增加尾舵動態補償將會增加自旋剎車力度，以及更直接的操控反應。調整尾舵動態

CAUTION

If the tail rotor only stops properly from rotations into one specific direction, check your tail rotors 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，請檢查尾桿角度，如果尾桿角度太高，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。因此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)
尾舵螺槳度（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 startup, 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
您可以利用遙控器的輔助通道來調整尾舵螺感度。越多伺服訊號對這個通道產生並發射，就會產生更高的尾舵螺感度。除此之外，伺服訊號發射的方向決定了尾螺儀工作的模式：設定模式或非設定模式。當 MICROBEAST PLUS 單在待機狀態時，Status-LED 燈表示目前所選擇的尾螺儀工作模式。Status-LED 燈亮起紫色時，表示處在非設定模式狀態，紫色表示處在設定模式。請調整完設定的首次啓動，或在第一次非常短暫的設定後，當設定儀器在其中一個設定選單的 LED 燈中顯示約 10 秒鐘時，當設定設定儀器點點時，會對應於 0% 感度。由選單 LED 燈 A 表示。在設定模式時，最大可調的感度是 100%。由選單 LED 燈 N 表示。請注意直昇機尾螺儀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。

在設定模式下，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），低感度會讓尾螺儀的控制感動無力，且會產生回彈追尾現象。此時請慢慢的增大尾螺儀感度，你會覺得尾部在停止時越來越精確，且螺距輸入時會保持的越來越好。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！為避免最佳飛行表現，在快速前向尾旋翼推進前，感度盡可能設定越低越好。

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 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。

In Normal-Rate mode the tail gyro of MICROBEAST PLUS only acts as dampening that deaccelerates 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 的尾舵螺在非設定模式下，因外部的影響而突然旋轉時，會常緩緩緩緩，直接機的旋轉速度變慢，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，所以在停懸時尾螺儀不會漂移。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，尾部會與風向下保持一致，此時飛行曲線是不斷改變的，所以飛行員不必持續專注於尾螺儀控制。

我們建議使用設定模式。在這個模式下尾部是尾螺儀主動控制的。你將幾乎感覺不到任何外部影響。飛行員只需要透過尾舵螺桿下指令給陀螺儀來控制尾部螺旋系統即可。當搖桿在中立點時，尾螺儀將確保尾部螺旋系統。這樣的設計讓操控方式簡易易。可以方便初學者在停懸時，完全專注於螺旋桿和集體轉動的控制，且熟練的飛行員也能輕鬆地操控 3D 花式飛行。設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，陀螺儀將依賴原來的方，一直將尾部保持直線飛行。
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. Therefore 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 comparison 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.

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!
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，若您的直葉機構有緩慢的漂移，或在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點即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：只有尾踏輪在非鎖定模式下（請參閱 8.4 節），尾踏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立位置。
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 shorty 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.
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，以抵消懸停飛行時的旋翼扭矩。否則直昇機會不斷地往特定方向或往尾旋翼夾角的反向漂移，而陀螺儀只減少突然的動作，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，使直昇機在懸停飛行時不會漂移。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。

1. MICROBEAST PLUS only accepts 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. 如果陀螺儀處於鎖定模式，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 previous 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同被刪除而回到初始值。請注意，接下來的重設數據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。若要遺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、升降和尾舵桿在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，桿桿中心附近的敏感度降低。依照下表一步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桿，直到 Status-LED 燈亮起您所需要的顏色。

<table>
<thead>
<tr>
<th>Status-LED</th>
<th>Control behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purple</td>
<td>Normal</td>
</tr>
<tr>
<td>Red Flashing</td>
<td>Sport</td>
</tr>
<tr>
<td>Red</td>
<td>Pro</td>
</tr>
<tr>
<td>Blue Flashing</td>
<td>Extreme</td>
</tr>
<tr>
<td>Blue</td>
<td>Transmitter</td>
</tr>
<tr>
<td>Off</td>
<td>User defined</td>
</tr>
</tbody>
</table>

*Factory Setting  *出廠預設值
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 transmitter 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 midstick 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 indefinitely 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.

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. Therefore 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.

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。
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 may be 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).

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.

<table>
<thead>
<tr>
<th>Status-LED</th>
<th>Pitching Up Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purple</td>
<td>Very Low</td>
</tr>
<tr>
<td>Red Flashing</td>
<td>Low</td>
</tr>
<tr>
<td>Red</td>
<td>Medium*</td>
</tr>
<tr>
<td>Blue Flashing</td>
<td>High</td>
</tr>
<tr>
<td>Blue</td>
<td>Very High</td>
</tr>
<tr>
<td>Off</td>
<td>User defined</td>
</tr>
</tbody>
</table>

*Factory Setting *出厂预设值

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.

"使用者自定义"允许您使用StudioX软件包（另购USB2SYS），直接在电脑上设定并修改符合自己的个性化操控特性，而无需通过遥控器做调整。

Push the button to save the configuration and to proceed to Setup menu point D.
按下设定按鈕保存當前設定，並進入選單第 D 點。
TAIL GYRO - HEADINGLOCK GAIN
尾舵螺-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 not feel very precise. 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.

在参数選單第 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回轉動的現象（俗稱還尾現象）。

請注意，如果上述情形一直出現，也有可能是尾翼機構結構不良的警訊，請檢查連桿球頭是否太鬆，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，尾舵操控起來會有慢半拍的感覺。如果您前增尾舵鎖定感度時無法超過 "最低" 或 "低" 的範圍，可能是機構結構的出現問題了！

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，請透過試飛找到尾舵鎖定感度，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。

<table>
<thead>
<tr>
<th>Status-LED</th>
<th>Headinglock Gain</th>
<th>Tail Gyr Lock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purple</td>
<td>Very Low</td>
<td>最低</td>
</tr>
<tr>
<td>Red Flashing</td>
<td>Low</td>
<td>低</td>
</tr>
<tr>
<td>Red</td>
<td>Medium*</td>
<td>中等*</td>
</tr>
<tr>
<td>Blue Flashing</td>
<td>High</td>
<td>高</td>
</tr>
<tr>
<td>Blue</td>
<td>Very High</td>
<td>極高</td>
</tr>
<tr>
<td>Off</td>
<td>User defined</td>
<td>使用者自定義</td>
</tr>
</tbody>
</table>

※ 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），直接在電路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!

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 axes. 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 lose 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 imprecise. 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.
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。

<table>
<thead>
<tr>
<th>Status-LED</th>
<th>Stick Deadband</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purple</td>
<td>Very Small</td>
</tr>
<tr>
<td>Red Flashing</td>
<td>Small</td>
</tr>
<tr>
<td>Red</td>
<td>Medium</td>
</tr>
<tr>
<td>Blue Flashing</td>
<td>Large</td>
</tr>
<tr>
<td>Blue</td>
<td>Very Large</td>
</tr>
<tr>
<td>Off</td>
<td>User defined</td>
</tr>
</tbody>
</table>

*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。

---

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，其扭力的延續性是來自於主旋翼，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.
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小，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 heel 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 heel 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（直昇機機頭向左）。偏航相同的方向，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預補償扭力（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，而不需透過遙控器設定調整。

### Status-LED | Torque Precompensation
---|---
Purple 紫色 | Off
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。
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 機翼的循環控制命令（滾轉和俯仰）反應更為活潑。這可以減少飛飛翼系統慣有的線性控制感覺，使其接近有飛翼直昇機的飛行感受。

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，你應該只添加極少量的 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，而不用透過遙控器做調整。

<table>
<thead>
<tr>
<th>Status-LED</th>
<th>Cyclic Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purple</td>
<td>Normal*</td>
</tr>
<tr>
<td>Red Flashing</td>
<td>Slightly Increased</td>
</tr>
<tr>
<td>Red</td>
<td>Increased</td>
</tr>
<tr>
<td>Blue Flashing</td>
<td>High</td>
</tr>
<tr>
<td>Blue</td>
<td>Very High</td>
</tr>
<tr>
<td>Off</td>
<td>User defined</td>
</tr>
</tbody>
</table>

※ 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。
Collective Pitch Boost

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, ...

<table>
<thead>
<tr>
<th>Status-LED цвет</th>
<th>Collective pitch boost</th>
<th>Parameter setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purple</td>
<td>Off*</td>
<td>低</td>
</tr>
<tr>
<td>Red Flashing</td>
<td>Low</td>
<td>中等</td>
</tr>
<tr>
<td>Red</td>
<td>Medium</td>
<td>集體螺距提升</td>
</tr>
<tr>
<td>Blue Flasing</td>
<td>High</td>
<td>高</td>
</tr>
<tr>
<td>Blue</td>
<td>Very High</td>
<td>使用者自定義</td>
</tr>
<tr>
<td>Off</td>
<td>User defined</td>
<td>出廠預設值</td>
</tr>
</tbody>
</table>

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.

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

按按鈕保存設定後，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 inexperienced with flying flybarless helicopters you should highly decrease the maximum rotation rate, so change Parameter menu point B to “normal” setting.

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.

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.
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 Heading Lock 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 aggressively 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.

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 switching servos, random lighting up of the LEDs or even cause the system to hang up or reboots. 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設時發生抖動。這通常是一個明確的信號，因為在非常高的頻率範圍內自升機械振動會腐蝕 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 為造成。

如果您使用的自升機是尾皮帶傳動，強烈建議執行上所述的測試。皮帶傳動可能產生靜電，靜電會干擾自升機上的電子元件，如 MICROBEAST PLUS。這可能導致伺機器抖動、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，請勿飛行自升機。
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.

In MICROBEAST PLUS 機電後，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

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

在初始化過程中短按一下按鈕，Status-LED 燈變成青色閃爍，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

Representation of Values 數值意義:

The representation of all values using the menu LEDs is in binary. A lighting menu LED stands for

Firmware Version 主程式版本:

The firmware version consists of three values X.Y.Z. X and Y are displayed automatically 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.

Data Version 資料版本:

The data version consists of two values X.Y which are displayed at the same time through menu

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。
### Description

**MICROBEAST PLUS does not initialize.**
- Menu-LEDs A - G are running for some time, then only Status-LED flashes red.

**MICROBEAST PLUS 不能正常初始 化。Status-LED 間時閃爍紅燈。**

<table>
<thead>
<tr>
<th>Description</th>
<th>Reason</th>
<th>Solutions</th>
</tr>
</thead>
</table>
| MICROBEAST PLUS does not initialize. Menu-LEDs A - G are running for some time, then only Status-LED flashes red. | Sensor failure occurred. | * Helicopter must stand absolutely still during initialization process.  
* Strong wind can shake the helicopter and disturb sensor calibration. Lay the hell 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 laying against or sitting on.  
* Power supply voltage is dropping due to weak power supply or damaged servos. |

### Description

**MICROBEAST PLUS 不能正常初始 化。Status-LED 間時閃爍紅燈。**

<table>
<thead>
<tr>
<th>Description</th>
<th>Reason</th>
<th>Solutions</th>
</tr>
</thead>
</table>
| 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. |

### Description

Selection in the menus with the rudder control stick does not work.  

在設定選單上“方向舵控制桿”選項無反應。

<table>
<thead>
<tr>
<th>Description</th>
<th>Reason</th>
<th>Solutions</th>
</tr>
</thead>
</table>
| 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.  
* 增加遙控器尾舵通道的同服器輸出/Dual rate 雙速器。  
* 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。 |

### Description

MICROBEAST PLUS 無法穩定接受來自接收器的信號。

設定選單 LED 為 HN 上下跳動，MICROBEAST PLUS 無法初始化，MICROBEAST PLUS 無法穩定接受來自接收器的信號。

<table>
<thead>
<tr>
<th>Description</th>
<th>Reason</th>
<th>Solutions</th>
</tr>
</thead>
</table>
| 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.  
* 增加遙控器尾舵通道的同服器輸出/Dual rate 雙速器。  
* 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。 |
<table>
<thead>
<tr>
<th>Description</th>
<th>Reason</th>
<th>Solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The sensors do not seem to work correctly.</strong> The rudder servo does not react or reacts very slowly to rotation of the helicopter. The same happens to the elevator axis.**</td>
<td>The gain of tail gyro is too low or wrong mounting orientation has been selected.</td>
<td>* 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.</td>
</tr>
<tr>
<td>感應器動作似乎不正確，尾舵移伺服沒有反應或是當直立機轉動時反應緩慢。且升降機伺服也有相同問題。</td>
<td>尾舵幅的設定低或選了錯誤的安裝方向。</td>
<td>* 檢查感應通道的分配和調整遙控器中的設定（請參閱8.4節） * 正確連接或設定尾舵感應線/頻道。 * 在設定選單第A點選擇正確的安裝方向。</td>
</tr>
<tr>
<td><strong>The helicopter slowly drifts by itself on aileron, elevator and/or tail.</strong></td>
<td>This indicates to a vibration problem which interferes with the sensors of the MICROBEAST PLUS.</td>
<td>* 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 bell. * Choose another mounting position for MICROBEAST PLUS. * Try other types of gyro pads.</td>
</tr>
<tr>
<td><strong>The swashplate is perfectly leveled and no sub trimming is present in the radio nor is any mixing function active.</strong></td>
<td>* This behavior seems to be influenced by the rotor head **</td>
<td>* The helicopters 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.</td>
</tr>
<tr>
<td><strong>The helicopter wobbles on aileron and elevator axis.</strong> Reducing the swashplate gain does not help to suppress this effect completely.**</td>
<td>**</td>
<td>* 感應器方向不正確，尾槳方向異動。 * 增加十字駕比度也完全無效。</td>
</tr>
</tbody>
</table>

**感應器方向不正確，尾槳方向異動。”

* 增加十字駕比度也完全無效。
<table>
<thead>
<tr>
<th>Description 故障現象</th>
<th>Reason 故障原因</th>
<th>Solutions 解決方法</th>
</tr>
</thead>
</table>
| The tail rotor turns around instantly when doing backwards flying. | - Tail gyro gain too low.  
- No sufficient thrust produced by the tail rotor. | - 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. |
| 在向後飛行時，尾旋翼瞬間轉向。 | * 尾旋翼角度太低。  
* 尾旋翼沒有產生足夠的力。 | * 增加尾旋翼角度。如第 8.4 節所述。  
* 檢查尾旋翼轉角。在設置選單第 E 點減少尾旋翼的輸出最大行程量，以防止尾葉失速。如行程量太小則增加尾旋翼轉角。  
* 使用不同的 (較大的) 尾葉或增加轉速。 |
| The tail oscillates in horizontal position slowly and irregularly while hovering. | The HeadingLock gain of the tail gyro is too high. Due to mechanical issues the tail gyro can not work precisely. | * 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. |
| 在停懸時尾旋翼會不正常的慢慢左右顫動。 | 尾旋葉感動失靈。因為自旋機械結構原因導致旋葉機不精確地工作。 | * 直接在 MICROBEST PLUS 的參數選單第 D 點中降低旋葉尾旋葉度及增加尾旋葉角度，請不要使用遙控器來增加尾旋葉度。  
* 請仔細檢查自旋機械的結構並除去干擾，如連桿糾斜，主旋翼、尾旋葉等。  
* 使用快速準確的尾旋翼專用高壓伺服器。 |
| During slow hovering pirouettes, the helicopter is rolling out. | The pirouette optimization setting is wrong. | * 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。 |
| 在停懸自旋時，直旋機側轉。 | 自旋翼化設置錯誤。 | |
| Status-Led flashes in operation mode, e.g. after landing. | During operation a software-reset occurred. | * 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. |
| Status-LED 燈在操作模式時閃爍。例如：降落後 | 在操作過程中軟體重設。 | * 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。  
* 高電壓轉移可能會引發軟體重設。採取適當措施以防止靜電發生。 |

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We

BEASTX GmbH
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50170 Kerpen
Germany

hereby 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:

在此特别声明 MICROBEAST 是依照 EMC 標準 2004/108/EC 下生產製造。

EN 61000-6-1:2007

The products carry the CE mark:
本產品通過CE認證

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免疫：符合IEC61000-6-1
EAR WEEE-REG. Nr.: DE 72549415

Kerpen, 01.08.2014
place and date of issue

Markus Schaaack, CEO
name and signature
## Setup Menu (Menu-LED is steady ON)

<table>
<thead>
<tr>
<th>Status-LED:</th>
<th>Off</th>
<th>Purple</th>
<th>Red Flashing</th>
<th>Red</th>
<th>Blue Flashing</th>
<th>Blue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting Orientation</td>
<td></td>
<td></td>
<td>Upright (Vertical)</td>
<td></td>
<td>Flat (Horizontal)</td>
<td></td>
</tr>
<tr>
<td>Swashplate - Servo Frequency</td>
<td>User Defined</td>
<td>50 Hz*</td>
<td>65 Hz</td>
<td>120 Hz</td>
<td>165 Hz</td>
<td>165 Hz</td>
</tr>
<tr>
<td>Rudder - Center Position Pulse Length</td>
<td>User Defined</td>
<td>960 μs</td>
<td>760 μs</td>
<td>1520 μs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rudder - Servo Frequency</td>
<td>User Defined</td>
<td>50 Hz*</td>
<td>165 Hz</td>
<td>270 μs</td>
<td>333 Hz</td>
<td>560 Hz</td>
</tr>
<tr>
<td>Rudder - Servo Endpoints</td>
<td>Use Rudder Stick To Move Servo To Right Endpoint And Wait, Then Left Endpoint And Wait (or Vice Versa)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rudder - Sensor Direction</td>
<td></td>
<td></td>
<td>Normal*</td>
<td>Reversed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swashplate - Servo Centering</td>
<td>Reference Position</td>
<td>CH1 Center Pos.</td>
<td>CH2 Center Pos.</td>
<td>CH3 Center Pos.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swashplate - Mixer</td>
<td>User Defined</td>
<td>Mechanical</td>
<td>90°</td>
<td>120° *</td>
<td>140° *</td>
<td>140° (1=1)</td>
</tr>
<tr>
<td>Swashplate - Servo Directions</td>
<td>Nor</td>
<td>Rev</td>
<td>Nor</td>
<td>Nor</td>
<td>Nor</td>
<td>Nor</td>
</tr>
<tr>
<td>Swashplate - Cyclic Pitch Geometry</td>
<td></td>
<td></td>
<td>Normal*</td>
<td>Reversed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collective Pitch Range and Endpoints</td>
<td></td>
<td></td>
<td>Normal*</td>
<td>Reversed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swashplate - Cyclic Limit</td>
<td>Move Aileron, Elevator And Thrust Stick-Adjust Maximum Limit With Rudder Stick</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Swashplate - Sensor Directions</td>
<td>Nor</td>
<td>Rev</td>
<td>Nor</td>
<td>Nor</td>
<td>Nor</td>
<td></td>
</tr>
<tr>
<td>Piroette Optimization Direction</td>
<td></td>
<td></td>
<td>Normal*</td>
<td>Reversed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Factory Setting  *出廠預設值

## Parameter Menu (Menu-LED is flashing quickly)

<table>
<thead>
<tr>
<th>Status-LED:</th>
<th>Off</th>
<th>Purple</th>
<th>Red Flashing</th>
<th>Red</th>
<th>Blue Flashing</th>
<th>Blue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclic and Rudder Trim</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control Behavior</td>
<td>User Defined</td>
<td>Normal</td>
<td>Sport*</td>
<td>Pro</td>
<td>Extreme</td>
<td>Transmitter</td>
</tr>
<tr>
<td>Swashplate - Pitching up compensation</td>
<td>User Defined</td>
<td>Very Low</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Tail - HeadingLock Gain</td>
<td>User Defined</td>
<td>Very Small</td>
<td>Small*</td>
<td>Medium</td>
<td>Large</td>
<td></td>
</tr>
<tr>
<td>Stick Deadband</td>
<td>User Defined</td>
<td>Very Large 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tail-Torque Precompensation(RevoMix)</td>
<td>User Defined</td>
<td>Off</td>
<td>Low - Nor</td>
<td>High - Nor</td>
<td>Low - Rev</td>
<td>High - Rev</td>
</tr>
<tr>
<td>Cyclic Response</td>
<td>User Defined</td>
<td>Normal</td>
<td>Slightly Increased</td>
<td>Increased</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Collective Pitch Boost</td>
<td>User Defined</td>
<td>Off</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td></td>
</tr>
</tbody>
</table>

*Factory Setting  *出廠預設值

---

**Notes:**

- * Normal: Normal function, default setting.
- * Reversed: Reversed function.
- * Out of Spec: Outside specifications.

---

**Language:**

- **Title:** MENU OVERVIEW
- **Language:** Chinese
- **Language:** English

---

**Image:**

- Image of a printed page with tables and diagrams.
- The page contains technical information and settings for various menu options.

---

**Document:**

- This document is likely part of an instruction manual or user guide for a device, possibly related to aviation or electronic control systems.

---

**Footer:**

- Page number 79.
Menu-LEDs: Amount of tail gain A=0% to N=100%
(only after powering up or when adjusting the gain)
Menu-LED尾鈣飛感度範圍A=0%至N=100%
(只有開機後或調整時才會顯示)

Status-LED:
Tail gyro mode
blue = HeadingLock mode
purple = Normal-Rate mode

Status-LED: 尾鈣飛工作模式
藍色=鎖定模式
紫色=正常模式

Button:
- to enter Setup menu push down several seconds until LED A is steady on
- to enter Parameter menu push shortly until LED A is flashing

Dial 1: Cyclic gain
旋鈕1：循環增益
Dial 2: Cyclic feed forward
旋鈕2：循環前進
Dial 3: Tail gyro response
旋鈕3：尾鈣飛反應

Parameter Menu
參數選單
Push Button Shorty
短按一下
Parameter Menu Point A
參數選單第A點
Push Button Shorty
短按一下
Parameter Menu Point H
參數選單第H點
Push Button Shorty
短按一下
Operational
操作

Setup Menu:
設定選單
Hold Button A Long Time
長按按鈕
Setup Menu Point A
設定選單第A點
Push Button Shorty
短按一下
Setup Menu Point N
設定選單第N點
Push Button Shorty
短按一下
Operational
操作

Receiver Setup Menu:
接收器設定選單
Push Button Shorty
短按一下
Receiver Menu Point A
接收器選單第A點
Push Button Shorty
短按一下
Receiver Menu Point N
接收器選單第N點
Push Button Shorty
短按一下
End Of Adjustment
調整結束

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 controlling 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。
### Setup Menu (Menu-LED is steady ON)

<table>
<thead>
<tr>
<th>Status-LED:</th>
<th>Off</th>
<th>Purple</th>
<th>Red Flashing</th>
<th>Red</th>
<th>Blue Flashing</th>
<th>Blue</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Mounting Orientation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Swashplate - Servo Frequency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Rudder - Center Position Pulse Length</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>D</td>
<td>Rudder - Servo Frequency</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Rudder - Sensor Direction</td>
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<tr>
<td>F</td>
<td>Swashplate - Servo Centering</td>
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</tr>
<tr>
<td>G</td>
<td>Swashplate - Mixer</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>H</td>
<td>Swashplate - Servo Directions</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Swashplate - Sensor Directions</td>
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<td></td>
</tr>
<tr>
<td>J</td>
<td>Pirouette Optimization Direction</td>
<td></td>
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</tr>
</tbody>
</table>

### Parameter Menu (Menu-LED is flashing quickly)

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<tbody>
<tr>
<td>B</td>
<td>Control Behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Swashplate - Pitching Up Compensation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Tail - HeadingLock Gain</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Stick deadband</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Tail-Torque Precompensation(RevoMix)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>Cyclic Response</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>Collective Pitch Boost</td>
<td></td>
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