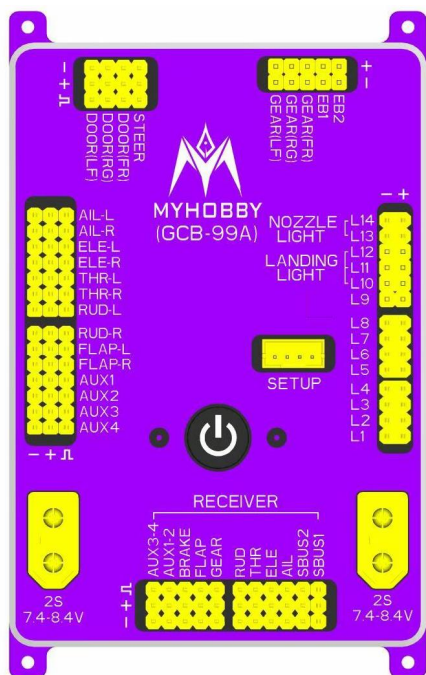


8GCB-99A 控制盒快速入门

(双接收版本)

概述

GCB-99A 是一款集成了电源管理、舵机管理、电动起落架、电磁刹车、航灯、飞控、前轮纠偏等多功能的控制盒，几乎可以满足一切以电动起落架、电动刹车为基础的涡喷航模。做到了涡喷航模常用功能的高度集成，通过手机客户端或调参卡可以对控制盒的各种参数自由设定，方便了用户装机及调试。同时，新版本升级了双接收机信号输入功能，兼容 EXbus/S. bus 等。



GCB-99A 控制盒



调参卡

➤ 电源管理功能

控制盒使用双插口电池（2sLiPo）供电，冗余设计，在两块电池之间无缝切换，也可单独使用一块电池工作。控制盒输出端舵机插口电

压等于输入端电池电压，（当两块电池同时接入时，控制盒会自动选择从电压较高的一块电池取电）；最大负载电流可以达到电池放电电流，例如：一块 2S 3000mAH 30C 的 Lipo 电池接入控制盒，理论上负载电流可以达到 90A。供电电池电压必须在 7.4v-8.4v 之间，否则控制盒因保护而不能开机（以防过高电压损坏设备，或过低电压造成舵机供电不足）。电池电量通过指示灯状态来显示，绿灯（8.0-8.4V）、蓝灯（7.6-8.0V）、红灯（7.4-7.6V），当备用电池未接入时，红灯闪烁。也可以通过手机 APP 或调参卡显示精确的电压值。

开机：长按电源按钮 2 秒后松开开机。注意电池电压必须在 7.4-8.4V 之间，低于 7.4V 控制盒无法开机。但当设备处于开机状态电池电压低于 7.4V 时，控制盒会持续保持开机状态，以免飞行途中因电池电压降低造成设备关机。因此当控制盒红灯亮起时，请及时更换电池。

关机：长按电源按钮 2 秒后松开关机。

➤ 调参卡使用说明

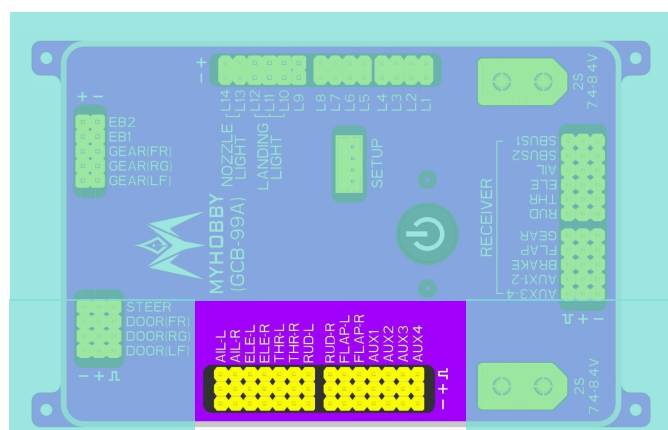
用专用数据线将调参卡与 GCB-99A 控制盒连接，打开控制盒电源，调参卡上有“+、ENT、ESC、-”四个按钮，用“+、-”选择语言后，按“ENT”进入设定菜单，按“ESC”可以退出当前菜单。



一、舵机设定：

分别有 AIL-L、AIL-R、ELE-L、ELE-R、THR-L、THR-R、RUD-L、RUD-R、FLAP-L、FLAP-R、AUX1、AUX2、AUX3、AUX4 十四个舵机插口。

每个通达都可以单独设定舵机的正反向, 中立点, 高低端点。



进行参数设定时，按“+、-”可以上下选择要修改的参数选项，也可进行数值大小的修改。按“ENT”键可以进入参数选项，在每次修改完成后按ESC退出，被修改的参数即保存生效。

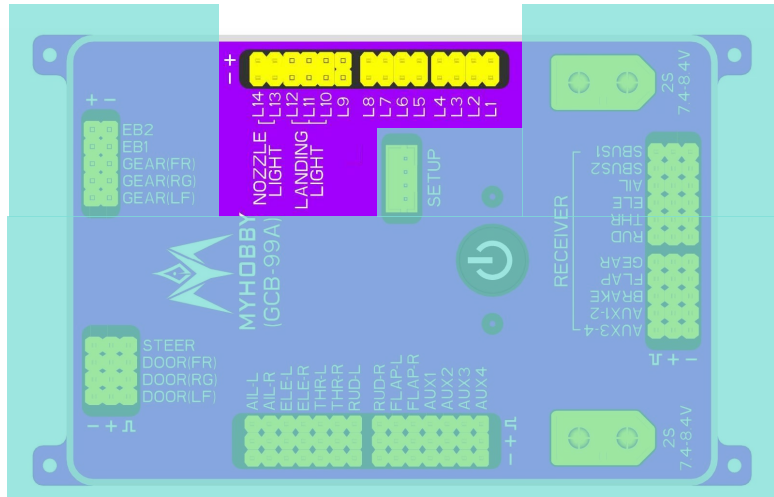
如果使用控制盒的尾喷灯或者飞控功能，**请确认接收机的油门通道接口必须先输出到控制盒的输入插口**，然后涡喷发动机 ECU 的油门信号线连接至控制盒的输出插口 THR-L 或 THR-R，并且 THR-L 或 THR-R 的低端点和高端点必须设为 135，油门通道方向设置为正向。

舵机插口与接收机插口对应表：

控制盒舵机输出通道	控制盒信号输入通道
AIL-L、AIL-R	AIL
ELE-L、ELE-R	ELE
THR-L、THR-R	THR
RUD-L、RUD-R	RUD
FLAP-L、FLAP-R	FLAP
AUX1	AUX1-2
AUX2	
AUX3	AUX3-4
AUX4	

二、航灯设定:

航灯共有 14 个插口, 分为 7 组, 分别为 L1-L2、 L3-L4、 L5-L6、 L7-L8、 L9、 L10-L12, L13-L14, 内部已做电流限制, LED 灯可直接接入控制盒航灯插口, 请勿加限流电阻, 否则影响亮度。



L1-L2、 L3-L4、 L5-L6、 L7-L8、 L9 可分别设定为常亮, 单闪, 双闪, 三闪四种模式。

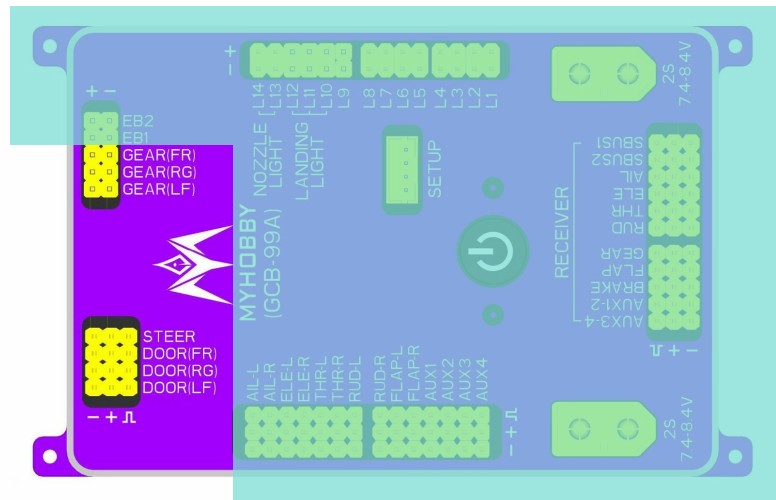
L10-L12 为起落架灯, 可以设定为打开或常关闭状态。当设定为打开时, 航灯受控于起落架的收/放信号, 起落架放下时航灯亮, 收起时航灯关闭。

L13-L14 为尾喷灯, 当设定为打开时, 尾喷灯受控于油门信号, 亮度随油门通道舵量的大小而变化。

三、起落架:

与起落架相关的插口共有 7 个, 分别为 EG (FR)、EG (LF)、EG (RG)、DOOR (FR)、DOOR (LF)、DOOR (RG)、STEER, 对应前起落架、左起落架、右起落架、前舱门、左舱门、右舱门、前轮转向舵机。插线时请按对

应的插口接线以方便设定(如前舱门舵机一定插在 DOOR (FR) 插口上)。



1. 起落架设置

A 模式选择设定:

M0: 放下起落架时先打开所有舱门, 再放起落架;

收起起落架时先收起起落架, 再关闭所有舱门。

M1: 放下起落架时先打开所有舱门, 起落架放下后, 关闭所有舱门;

收起起落架时先打开所有舱门, 起落架收起后, 关闭所有舱门。

M2: 前舱门运行方式同 M0; 左, 右舱门运行方式同 M1。

M3: 前舱门运行方式同 M1; 左, 右舱门运行方式同 M0。

B 堵转电流设定:

堵转电流设定目的是为了保护起落架设备, 当控制盒负载(起落架)电流超过所设的值时, 控制盒会断开输出, 起到保护起落架设备的作用。设定参考值: 中小型起落架设定为 1.0A, 大型起落架设定为

1.5-2.0A, 最大设定值不宜超过 3.0A。地面调试时可以从最小开始一点一点加大, 所设定的电流值能够保证起落架正常收放即可。

C 延时设定:

这个时间为起落架单次运行时间, 目的在于防止起落架堵转电流设定过大, 导致达不到设定的堵转电流而控制盒持续输出通电, 导致起落架电机损坏。设置合理的延时值, 即可保证只要单次起落架收放达到限定的运行时间, 无论堵流电流是否达到预设值, 控制盒都会断开起落架电机的供电。

延时时间按如下方式计算: 观察起落架正常运行时打开或收起所需时间 T 秒, 将时间设为 $T+2$ 秒即可。比如起落架收放时间需要 3 秒, 延时时间设为 5 秒即可。

注意: 设定时间过短会导致起落架收、放不能完成。设定时间过长, 并且堵流电流设定过大时, 会导致堵转时间过长, 造成起落架的电机发热甚至烧毁的可能。

D 回退时间设定:

回退即起落架收放到位后, 电机反向旋转一下, 以方便下次动作时更加顺畅。设定范围为“0 到 10”, “0”为不回退, “10”为回退 100 毫秒。

如果设定回退时间过大, 造成起落架收放不能完全到位, 只需适当减小设定值即可。

2. 舱门设定

舱门分别对前舱门, 左舱门, 右舱门进行设定, 设定方式与上述舵

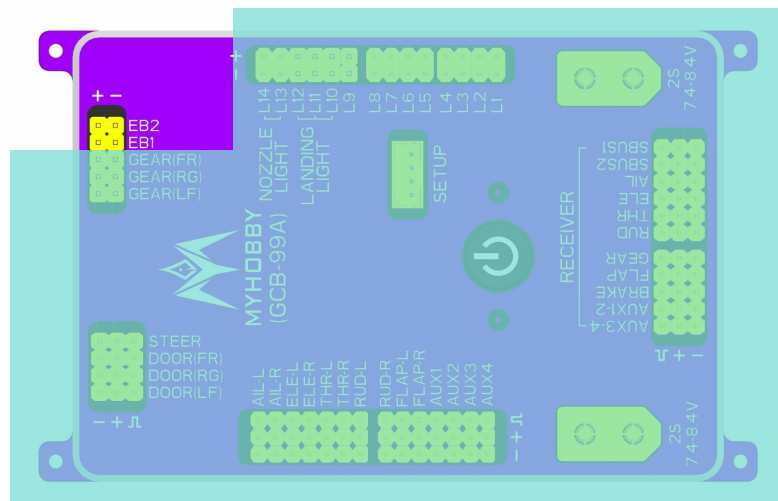
机设定方式相同。

3. 前轮设定

对前轮转向舵机进行设定，设定方式与上述舵机设定方式相同。

前轮纠偏在起落架放下时起效，收起起落架时关闭纠偏。纠偏感度设定范围为-100%至 100%，初始设定在 50%左右，用户可以通过调整感度的大小来控制方向舵机纠偏量（同飞控的感度调节方法），从而达到最佳的纠偏效果。“+、-”调整前轮修正方向，比如设定 50%发现修正方向反了，改为-50%即可。

四、刹车设定



控制盒上有两个标注“EB1、EB2”的插口，请将两个电磁刹车轮的控制线插入这两个插口，插入时请注意正负极。刹车力度设定值范围为“0%-100%”，100%为最大刹车力度，用户可根据个人习惯自行设定，刹车仅在起落架放下时开启。

五、飞控设定

GCB-99A 控制盒内置了陀螺仪，可以为飞机提供增稳模式，可以

增强飞机在空中的抗风能力，稳定飞行姿态，同时不影响飞手的操控手感。

1. 飞机翼型选择

控制盒预设了三种模式供用户选择，常规布局、三角翼、V-tail，用户可以根据飞机机型选择相应的模式。三角翼和V尾模式控制盒内已对相应舵面进行了混控，因此遥控器需要设定为常规布局机型。

2. 启用飞控

可以选择打开或关闭飞控。

3. 副翼、升降、方向参数设定

首飞时初始的感度设置不要太大，建议50%即可，然后根据飞行情况再作调整。具体调整方法如下：

飞机高速飞行时如果发生震颤抖动（俯仰、横滚、航向），是因为感度设置过大引起的，此时需要减小油门，将飞机速度减缓一点，降落后将感度适当调小至飞机高速时正好不震颤抖动。如果发现飞机增稳性能不佳，有风时飞机晃动较大，则需要调高感度，每次增大或减小5%-10%的幅度进行调整。当接收机的油门信号接入了控制盒，则飞控感度会随油门大小自动调整，以保持飞机在低速和高速时都获得最佳的增稳效果。

起飞前请再次确认飞控对各舵面修正的方向是否正确!错误的设置会造成飞机舵面反向修正，从而持续加剧飞机错误的姿态，造成炸机。

六、系统设定

1. 信号源选择

控制盒信号源支持 PWM/S. BUS/EXBUS 等。PWM 方式可以匹配任何型号的遥控器，S. bus 兼容 Futaba 遥控器等，EXbus 可以使用 JETI 遥控器。

2. 油门混控俯仰

为解决飞机因速度大小变化，造成俯仰姿态变化而设定的混控。建议使用遥控器提供的混控编程或条件模式。

3. 襟翼混控俯仰

为解决打开襟翼后飞机俯仰姿态变化而设定的混控。建议使用遥控器提供的混控编程或条件模式。

4. 参数保存与写入

A. 保存参数：指把控制盒所有参数存入调参卡的内存中保存起来。

B. 写入参数：指将调参卡的内存中保存的相关参数写入控制盒中，此操作会将控制盒中原有的参数覆盖。

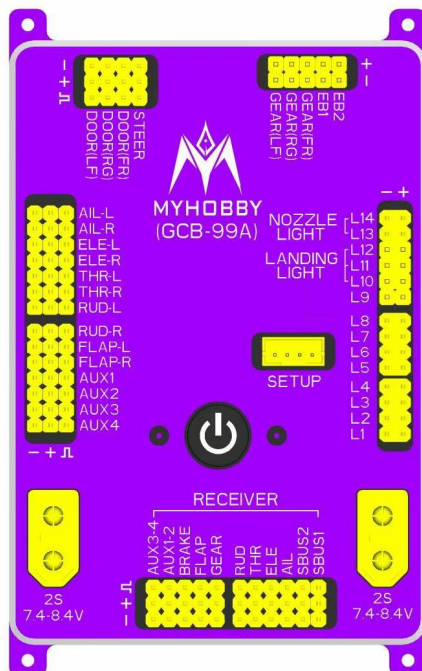
调机小贴士：因起落架相关设定较复杂，调试飞机时先将起落架灯和舱门设定好。设定时让起落架处于收起状态保持起落架处于断电状态（将起落架线从控制盒上拔出），待舱门和起落架设定正确后，再将三个起落架插入对应的插口。如果发现起落架动作方向反了，只需将插线正负极（+/-）对调即可。

手机 APP 设定与设定盒设定相同。

GCB-99A Control box Quick Start

Summariz:

GCB-99A is a control box that integrates power management, servo management, electric landing gear system, electric brake, navigation lights, gyro, front wheel correction, etc. It can almost meet all turbojet models based on electric landing gear and electric brakes. It has achieved a high integration of common functions of turbojet model, and various parameters of the control box can be freely set through the mobile phone client or setup card and convenient for the user to install and debug. The latest version supports dual-receiver and JETI Ex-BUS.



GCB-99A Control box



Setup card

Power management function

The control box is powered by a dual jack battery (2sLiPo), a redundant design that seamlessly switches between two batteries, or can operate with a single battery. The voltage of output end of the control box is equal to the voltage of the battery at the input end (when two batteries are connected at the same time, the control box will automatically choose to take power from the battery with higher voltage); The maximum load current can reach the battery discharge current, for example: a 2S 3000mAH 30C Lipo battery used for control box, theoretically the load current can reach 90A. The power supply battery voltage must be between 7.4v-8.4v, otherwise the control box cannot be turned on due to protection (to prevent too high voltage from damaging the equipment, or too low voltage from causing insufficient power supply). The battery level is displayed by indicator status. The indicator is green (8.0-8.4V), blue (7.6-8.0V), and red (7.4-7.6V). When the backup battery is not connected, the red indicator blinked. The precise voltage value can also be displayed through the mobile phone APP or setup card.

Power on: Press and hold the power button for at least 2 seconds and then release. The battery voltage must be between 7.4-8.4V. The control box cannot be turned on if it is lower than 7.4V. However, when the battery voltage of the device is lower than 7.4V, the control box will

continue to be turned on to prevent the device from shutting down due to low battery voltage during the flight. Therefore, when the indicator is red, please replace the battery in time.

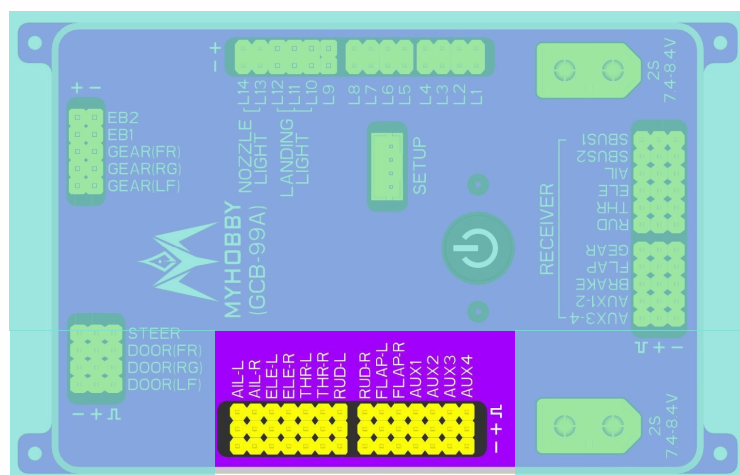
Power off: Press and hold the power button for an least 2 seconds and then release.

Setup card instructions



Connect the setup card to the GCB-99A control box with a special data cable, and turn on the power supply of the control box. There are four buttons on the setup card "+, -, ENT and ESC". After selecting the language with "+, -", press ENT to enter the setting menu.

1. Servo



There are 14 servo jacks labelled AIL-L, AIL-R, ELE-L, ELE-R, THR-L, THR-R, RUD-L, RUD-R, FLAP-L, FLAP-R, AUX1, AUX2, AUX3, AUX4 respectively.

Each servo can be individually set direction, neutral point, high and low end point.

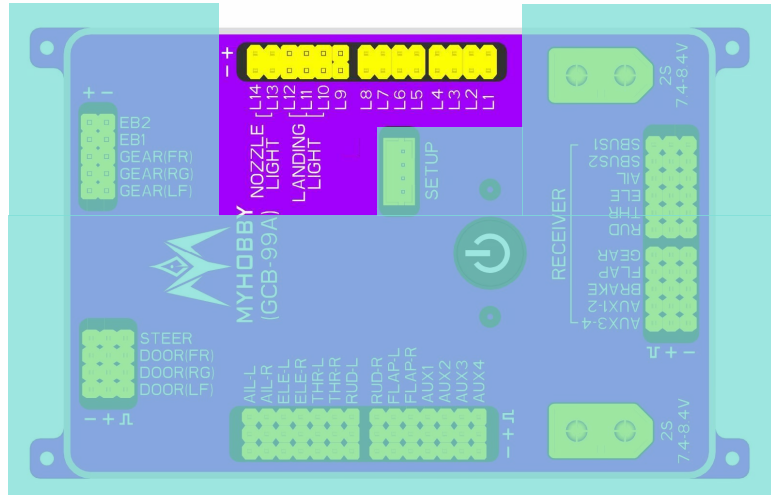
When setting parameters, press "+", "-" to select the item of parameter to be modified, or to modify the value. Press ENT to enter the parameter selected. After modification, press ESC to exit. The modified parameter is saved and takes effect.

If using the control box tail burner or gyro function, make sure that the throttle channel of the receiver must first output to the control box input jack, then the throttle signal line of the turbojet ECU must be connected to the control box output jack THR-L or THR-R, and the low and high points of THR-L or THR-R must be set to 135. The throttle channel direction is set to positive.

Servo jack and receiver jack corresponding table:

steering gear output channel	signal input channel
AIL-L、AIL-R	AIL
ELE-L、ELE-R	ELE
THR-L、THR-R	THR
RUD-L、RUD-R	RUD
FLAP-L、FLAP-R	FLAP
AUX1	AUX1-2
AUX2	
AUX3	AUX3-4
AUX4	

2. Navigation light setting:



The navigation light has 14 ports, divided into 7 independent groups, Labelled L1-L2, L3-L4, L5-L6, L7-L8, L9, L10-L12, L13-L14 respectively, the internal current limit has been done, LED light can be directly connected to the control box navigation light port, do not add current limiting resistance, otherwise affect the brightness.

L1-L2, L3-L4, L5-L6, L7-L8, and L9 can be set to four modes: steady on, single blinking, double blinking, and triple blinking.

L10-L12 are landing gear lights that can be set to on or always off. When set to on, the navigation light is controlled by the landing gear retraction/release signal, the navigation light is lit when the landing gear is down, and the navigation light is turned off when the landing gear is up.

L13-L14 is the tail burner, when set to on, the tail burner is controlled

landing gear, close all doors.

M2: The front door operates in the same way as M0; The left and right doors operate in the same way as the M1.

M3: The front door operates in the same way as M1; The left and right doors operate in the same way as the M0.

B. Locked-rotor current setting:

The purpose of blocking current setting is to protect the landing gear equipment, when the control box load (landing gear) current exceeds the set value, the control box will disconnect the output to protect the landing gear equipment. Setting reference value: the small and medium landing gear is set to 1.0A, the large landing gear is set to 1.5-2.0A, and the maximum setting value should not exceed 3.0A.

The ground debugging can be increased bit by bit from the minimum, and the set current value can ensure the normal retraction of the landing gear.

C. Delay setting:

This time is the running time of landing gear, and the purpose is to prevent the landing gear blocking current from being set too large, resulting in the failure to reach the set blocking current and the continuous output power of the control box, resulting in the damage of the landing gear motor. Setting a reasonable delay value can ensure that as long as a single landing gear action reaches the limited operating time,

regardless of whether the blocking current reaches the preset value, the control box will disconnect the power supply of the landing gear motor.

The delay time is calculated as follows: Assume that the time required to open or retract the landing gear normally is T seconds, Set the time to T+2 seconds. For example, the landing gear retracting time takes 3 seconds, and the delay time is set to 5 seconds.

Note that too short setting time will stop the action of landing gear during operation. If the setting time is too long and the blocking current is too large, the blocking time will be too long, resulting in the possibility of the motor of the landing gear overheating or even burning.

D. Rollback time setting:

After the landing gear is retracted in place, the motor rotates reversely a bit to facilitate smoother operation next time. The value range is 0 to 10. 0 indicates no rollback, and 10 indicates 100 milliseconds rollback.

If the set time is too large, resulting in the landing gear retracting can not be fully in place, just reduce the set value appropriately.

Cabin door setting:

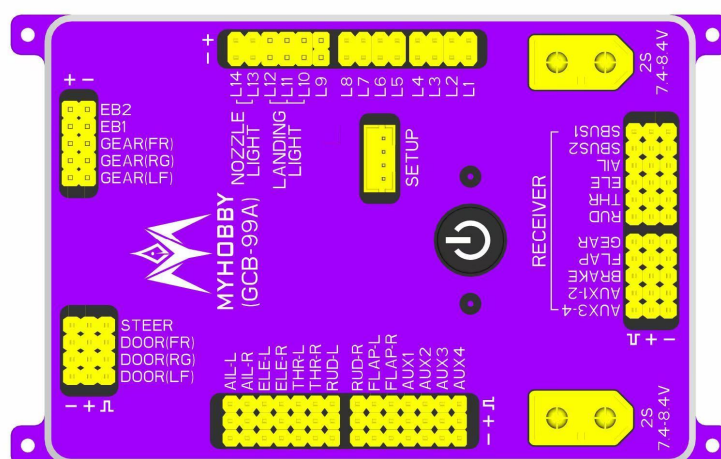
The front hatch door, the left hatch door and the right hatch door are respectively set, and the setting method is the same as that of the above servo setting.

Front wheel setting:

Set the front wheel steering servo in the same way as above.

Front wheel correction takes effect when the landing gear is lowered and turns off when the landing gear is retracted. The setting range of deviation correction sensitivity is -100% to 100%, and the initial setting is about 50%. The user can control the deviation correction amount of the steering servo by adjusting the degree of sensitivity, so as to achieve the best deviation correction effect. "+, -" adjust the front wheel to correct the direction, such as setting 50% to find that the correction direction is reversed, change to -50%.

4. brak



There are two ports labelled EB1 and EB2 for electric brake, insert two electric brake cable into the ports, be careful of "+" and "-" pole. The braking force setting range is "0%-100%", 100% is the maximum braking force, which can be set by the user according to personal habits, and the brake is only effective when the landing gear is lowered.

5. Gyro setting:

The GCB-99A control box has a built-in gyro scope, which can provide

an enhanced stability mode for the aircraft, mainly enhance the wind resistance of the aircraft in the air, and do not affect the control feel of the pilot.

A. Aircraft airfoil selection

The control box has three modes for the user to choose, regular layout, delta wing, V-tail, and the user can choose the corresponding mode according to the aircraft type. The corresponding mixed control has been made in the delta wing and V-tail mode, so the remote control needs to be set to the conventional layout model.

B. Enable gyro

You can choose to turn gyro on or off.

C. Aileron, elevator, rudder parameter setting

The initial sensitivity setting should not be too large during the first flight, 50% is recommended, and then adjust according to the flight situation. The specific adjustment methods are as follows:

When the aircraft is flying at high speed, if there is a tremor (pitch, roll, heading), it is because the sensitivity is set too large. In this case, it is necessary to reduce the throttle, slow down the aircraft, and adjust the sensitivity properly after landing. If it is found that the stability of the aircraft is not good, and the aircraft wobbles greatly when the wind is blowing, it is necessary to adjust the sensitivity by increasing by 5%-10% each time. When the receiver's throttle signal is connected to the control

box, gyro sensitivity is automatically adjusted with the throttle to maintain the best stability effect at both low and high speed.

Before taking off, please confirm again whether the gyro corrected direction is correct! The wrong setting will cause CRASHING!

6. System Settings

A. Select the signal source

At present, the control box signal source supports PWM,S.BUS,Ex-BUS. PWM mode can be matched with any type of remote control, S.BUS can be used for Futaba or compatible,Ex-BUS can only be used for JETI.

B. Throttle mixed control pitch

The mixing control is set to solve the pitch attitude change caused by the change of speed. It is recommended to use the mixed control programming or conditional mode provided by the remote control.

C. Flap mixed control pitch

It is also recommended to use the mixed control programming or conditional mode provided by the remote control.

D. Save and write parameters

a. Save parameters: All parameters of the control box are saved in the memory of setup card.

b. Write parameters: Write related parameters saved in the memory of setup card to the control box. This operation overwrites existing parameters in the control box.

Adjustment tip:

Due to the complexity of the landing gear related settings, Set the landing gear light and the door correctly before landing gear setting. Keep the landing gear in the retracted position during setting. Keep the landing gear in the power off state (pull the landing gear cable out of the control box). After the door and landing gear are set correctly, insert the three landing gear into the corresponding sockets. If it is found that the direction of the landing gear is wrong, just switch the positive and negative poles of the cable (+/-).

Mobile APP Settings are the same as Settings box Settings.