

PPM-FM

E_sky®

数 码 比 例 无 线 控 制 系 统
DIGITAL PROPORTIONAL RADIO CONTROL SYSTEM



ET4

4&6 CHANNELS TRANSMITTER INSTRUCTION MANUAL

4 & 6 通道发射机使用说明书

注 意：使用本产品前请先阅读此说明书，妥善保管以备不时之需

Caution: please read this manual carefully before operation and keep the manual for untimely needs.

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ET4
(EK2-0404E)

特殊符号说明 MEANING OF SPECIAL MARKINGS

在手册部分显示下列符号的请特别注意安全。

Pay special attention to the parts of this manual indicated by the following marks.

危险 DANGER

如果不按正确的方法操作会导致操作者严重受伤甚至致命的危险。
Incorrect operation method may cause serious injury even death.

警告 WARNING

如果不按正确的方法操作会导致操作者严重外伤、重伤、或者致命。
incorrect operation method may cause serious trauma, grievous bodily harm or death.

注意 CAUTION

如果不按方法正常的操作会有轻伤的危险,但不会致操作者重伤。
Incorrect operation method may cause flesh wound but generally will not cause grievous bodily harm

符号: Symbol:



禁止
Prohibited



强制
Mandatory

强制事件 MANDATORY

启动电源:

1. 把发射机油门（第三通道）操纵杆以及微调打到最小位置
2. 打开发射机电源开关
3. 连接接收机电源

切短电源:

模型停飞时, 先切断接收机电源后关闭发射机开关。
操作顺序若相反的话, 会有失控危险。

最小位置: 机器或发动机运行时的最小速度。

When turning on the power :

- 1.set the transmitter throttle lever to the minimum.
- 2.turn on the transmitter power switch
- 3.then turn on the receiver power switch.

When turning off the power:

After stopping the engine, first turn off the receiver power switch, then turn off the ransmitter power switch.
If the operation order is opposite, the transmitter would be out of control.

Minimum position: the minimum speed when the machine or transmitter is operating.

警告 WARNING

- 禁止在同一场所同时使用相同频率的发射机，否则会导致模型失控造成损失或人身危险！
Do not use same frequency rate transmitter in the same flight field , otherwise helicopters would lost control and may lead to property damage or dangerous condition to the user.
- 禁止在夜晚、下雨、刮风等恶劣环境下使用，否则会对发射机的控制造成干扰。
Do not fly in rainy or windy days , or at night, otherwise transmitter would be interfered
- 使用时把天线拉到最大长度。如果太短，发射机的有效信号强度会减弱，从而影响控制距离。
Please pull antenna to the bottom. If not , it will weaken effective signal and impact control distance.
- 在飞行之前，检查每个伺服器相匹配的操纵杆的方位，如果伺服器不能往正确的方向或处于不正常状态下，请勿使用。
Please check control stick of every servo , if stick can't be moved to right direction or was in improper condition , do not fly.



飞行前的调节 ADJUSTMENTS BEFORE FLYING

- 每个控制器的操纵杆，副翼，方向舵的中位在出厂前已设置好，如有需要请根据您的遥控产品进行调整。
The control stick, aileron of each controller and the middle position of rudder had been settled in the factory. If need adjustment ,you can adjust according to your remote products.
- 如果你是一个初学者，请根据配套手册和相关图案进行基本连接和调整，确保遥控准确无误。
If you are a novice ,please adjust and link according to the corresponding manual and pictures to ensure the proper operation.

发射机与直升机的基本操作知识

TRANSMITTER OPERATION AND THE WORK OF HELICOPTER

制式1（右手油门）Mode 1



当油门操作杆向上推动时，直升机上升。
When the throttle stick is pushed forward, the helicopter lifts up.



当油门操作杆向下推动时，直升机下降。
When the throttle stick is pushed downward, the helicopter descends.



当副翼操作杆向左移动时，直升机飞向左边。
When the aileron stick is moved to the left, the helicopter moves to the left.



当副翼操作杆向右移动时，直升机飞向右边。
When the aileron stick is moved to the right, the helicopter moves to the right.



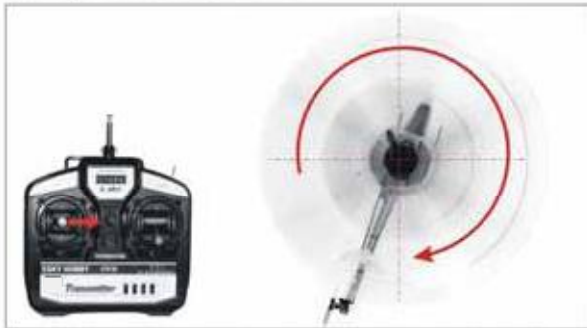
当升降操作杆向上推动时，直升机向前飞。
When the elevator stick is pushed forward, the helicopter flies forward.



当升降操作杆向下推动时，直升机向后飞。
When the elevator stick is pushed downward, the helicopter flies backward.



当方向操作杆向左推动时，直升机机头向左转。
When the rudder stick is moved to the left, the head of helicopter moves to the left.



当方向操作杆向右推动时，直升机机头向右转。
When the rudder stick is moved to the right, the head of helicopter moves to the right.

制式2（左手油门）Mode 2



当油门操作杆向上推动时，直升机上升，
When the throttle stick is pushed forward, the helicopter lifts up.



当油门操作杆向下推动时，直升机下降。
When the throttle stick is pushed downward, the helicopter descends.



当副翼操作杆向左移动时，直升机飞向左边，
When the aileron stick is moved to the left, the helicopter moves to the left.



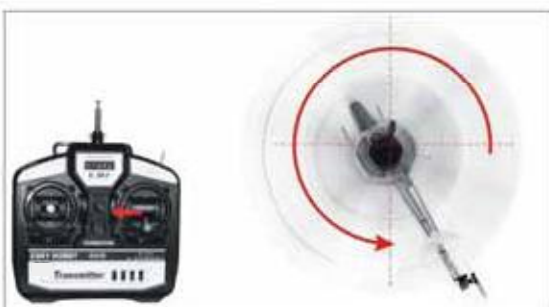
当副翼操作杆向右移动时，直升机飞向右边。
When the aileron stick is moved to the right, the helicopter moves to the right.



当升降操作杆向上推动时，直升机向前飞。
When the elevator stick is pushed forward, the helicopter flies forward.



当升降操作杆向下推动时，直升机向后飞。
When the elevator stick is pushed downward, the helicopter flies backward.



当方向操作杆向左推动时，直升机机头向左转，
When the rudder stick is moved to the left, the head of helicopter moves to the left.

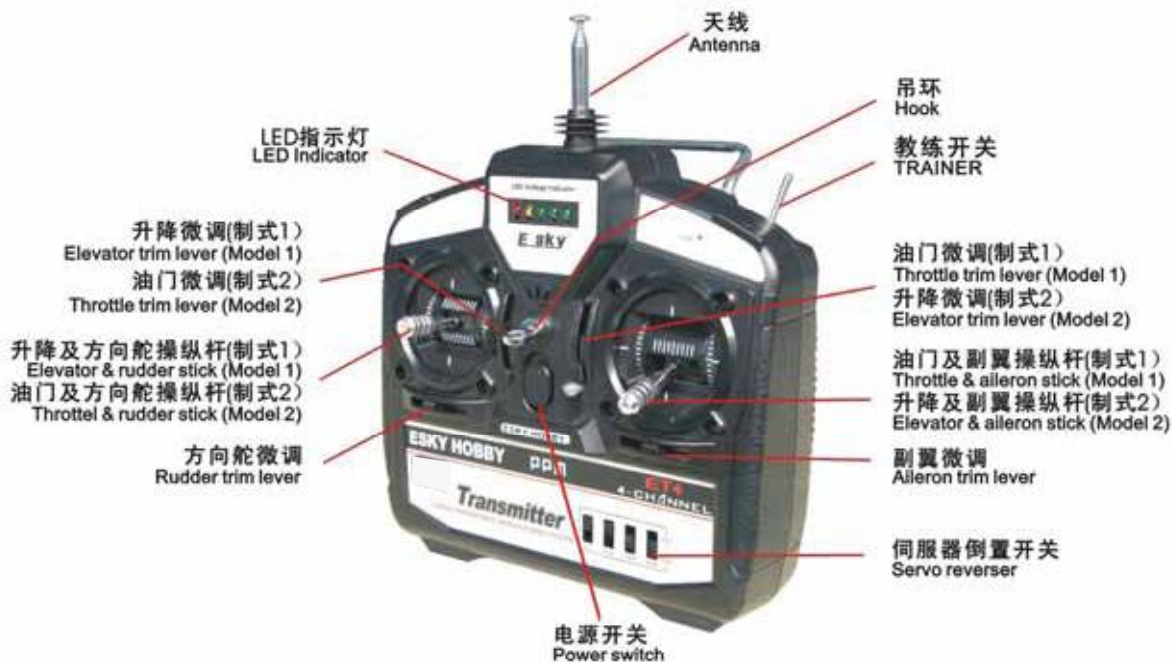


当方向操作杆向右推动时，直升机机头向右转，
When the rudder stick is moved to the right, the head of helicopter moves to the right.

制式 2 中方向舵的操作方式和制式 1 是相同的
The rudder stick operation for Model 2 is as same as Model 1 above

ET4 各部位名称/操纵方法 NAME AND OPERATION OF EACH PART

EK2-0404E



规格型号:

1. 通道数: 4通道
2. 频率波段: (35MHZ, 36MHZ, 40MHZ, 41MHZ, 72MHZ)
3. 模拟线接口: 有
4. 教练开关: 有
5. 高频模块: 内置
6. 使用电源: 1.5V*8 * AA * 电池
7. 编码方式: PPM
8. 调制方式: FM
9. 射频功率: $\leq 0.8\text{mW}$
10. 静态电流: $\leq 250\text{mA}$
11. 伺服器倒置开关: 有
12. 电压显示方式: LED
13. 低电压警告: 无
14. 尺寸: 185*205*55mm
15. 重量: 560g
16. 外壳颜色: 黑色
17. 天线长度: 100cm
18. 认证证书: CE, FCC, RoHS
19. 使用范围: 飞机, 直升机, 滑翔机

SPECIFICATION

1. Channel: 4 channels
2. Frequency band: (35MHZ, 36MHZ, 40MHZ, 41MHZ, 72MHZ)
3. Simulator port: Yes
4. Trainer switch: Yes
5. H.F.M.: Inner set
6. Power resource: 1.5V*8 * AA * Battery
7. Program type: PPM
8. Modulation type: FM
9. RF power: $\leq 0.8\text{mW}$
10. Static current: $\leq 250\text{mA}$
11. Servo reverser: Yes
12. Voltage display type: LED
13. Low voltage warning: NO
14. Size: 185*205*55mm
15. Weight: 560g
16. Color: black
17. Antenna length: 100cm
18. Certificate: CE, FCC, RoHS
19. Use range: Airplane, Helicopter, Glider



伺服器倒置开关: 出厂前倒置开关已调好, 没有必要时无须再调。右手是开关: 上下上下, 左手是开关: 上下上下

switch has been adjusted in the factory; it does not need to be adjusted any more if there is no necessary.



电源开关: 往上按打开电源开关。

Power resource switch: push it upward



教练线接口
Trainer wire switch



LED 指示灯: 灯全亮时说明电池电量最多, 最后一个红灯时说明电量快用尽, 需及时更换。

LED indicating light: when all the lights are on, it indicates that the quantity of electric charge is fullest; when only one red light is on, it indicates that the battery almost used up and it need change immediately.



电池盒: 注意正负级别, 切勿装反。

The battery box: notice its positive and negative. Never assemble it in the reverse direction.



教练开关
Trainer switch



天线: 注意在飞行时天线要拉到最长, 天线拉的越长信号越好。

Antenna: note: the antenna should be pushed to the longest before flying; and the antenna is longer, the signal is better.

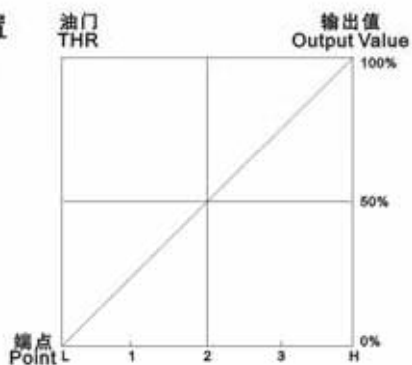


油门微调: 注意在飞行时或在调机子时, 油门微调一定要打与最低。

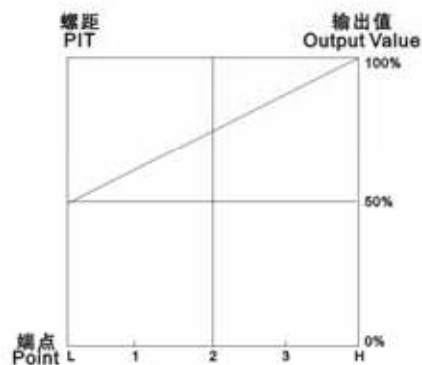
Throttle trimming: Note that the throttle trimming must be pushed down lowest when flying or adjusting the plane.

油门/螺距曲线图 **Throttle/pitch curve presentation**

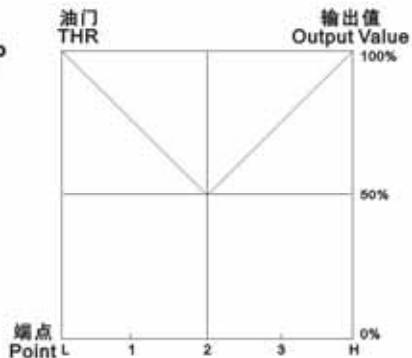
正常位置
NOR



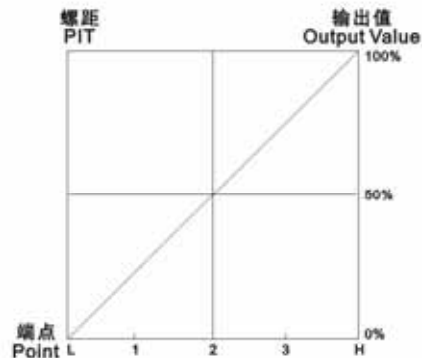
螺距 PIT



反方向
IDEL UP



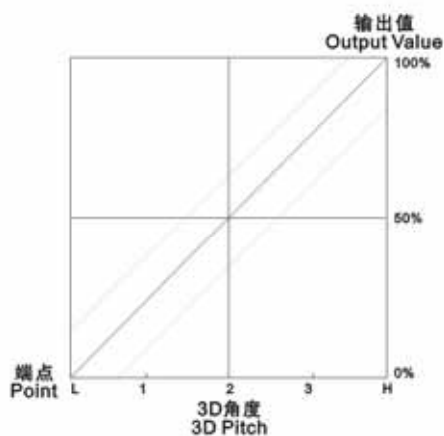
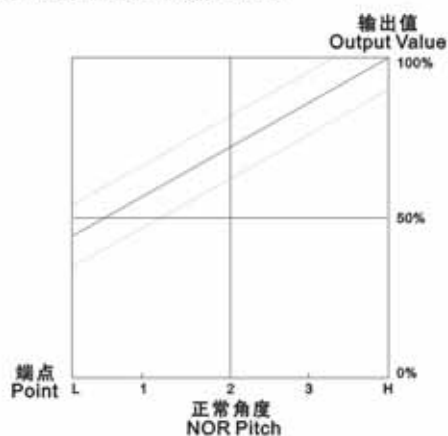
螺距 PIT



螺距行程直线微调 **The linear trim of pitch range**

旋扭是在旋停状态下通过转变曲线的中心点（上或下）来调整主旋翼的旋转速度。

The rotation torsion is to adjust the main rotor's rotation speed through the shift of the curve of the centre point in the hovering state.



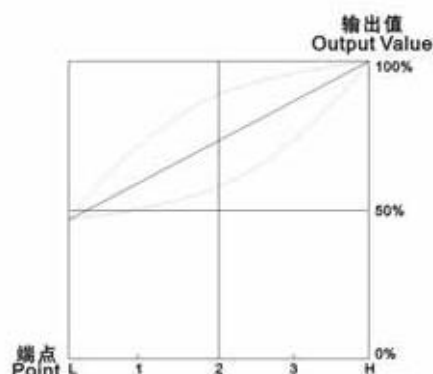
螺距行程曲线微调 PITCH TRIM KNOB

螺距微调旋钮是对PITCH变换通道的一种调整，首先旋钮打到“0”位置（最小），然后通过上下转变来调整主旋翼的速度。

The rotation of pitch trimmer is an adjustment to the pitch exchange channel. first it is set to the minimum position "0" then adjust the speed of main rotor through up and down transition.

不同的工厂有不同的设置，如果角设置在正确的情况下，只需作小小的调整。

Different factory have different setting, if the pitch curve is setted properly, only little adjustment will be required if needed.

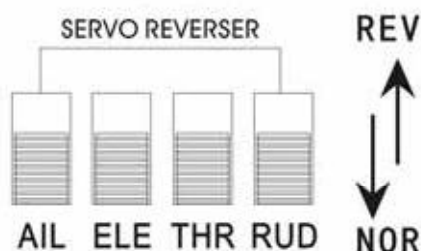
**调整程序** ADJUSTMENT

在作任何调节之前，请把发射机前面的所有开关跳到最小（正常）位置
Before making any adjustment, please set all the switches in the front of the transmitter to the lowest(normal) position.

•打开发射机和接收机电源开关，做下列的调节：

Turn on the transmitter and power switch, then make the following adjustments:

- <1>检查每个伺服器系统的设置位置，如果伺服器的操作方向错误，请转换伺服器倒置开关。
Check the set direction of each servo, If the direction of servo is incorrect please change its servo reverser switch. (The servo's work direction will change after setting the servo reverser, so there is no need to change the linkage.)



通道显示

AIL: 副翼 (通道1)
ELE: 升降舵 (通道2)
THR: 油门 (通道3)
RUD: 方向舵 (通道4)

Channels display

AIL: Aileron(channel 1)
ELE: Elevator(channel 2)
THR: Throttle(channel 3)
RUD: Rudder servo(channel 4)

方向操作显示

REV: 反方向
NOR: 正

Rudder operating display

REV: Reverse
NOR: Normal

- <2>同时检查机身控制面的中位位置（副翼，升降舵，方向舵等）如果中位改变，请重新设置和调试，伺服器的摆臂和舵角成90度垂直。

At the same time, check the neutral setting (aileron, elevator, rudder etc) of the airframe, if the neutral position has changed, please reset and adjust it until the servo arm is 90 degree vertical to the rudder.

- <3>检测机身各个方向的操作是否正常，如果机身上操纵方向不对，请调整发射机上面的舵机反向开关设置（针对6CH发射机）。

Check to see whether the work direction of the air frame is normal, if it is incorrect, please adjust the servo reverser switch on the transmitter (for 6CH transmitter).

4. 最后检测舵机各个方向的行程曲线大小，如行程偏小，请把摆臂拉杆连接往外调，如行程偏大，请把摆臂往内调。

At last, check the range curve of each servo direction, turn the suspension arm outward if the range is too small and turn it inward while the range is too large.

5. 所有的连接都连好后，重新检查操作方向，设置等等。

After finishing all the connections, recheck the operating direction and setting etc.



术语表 GLOSSARY**(副翼) AILERON(Ail)**

控制机翼左右两边的操纵杆，用来控制飞机的转向。

Control surface at the left and right sides the main wing of an aircraft. It usually controls turning of the aircraft.

(通道) CHANNEL

控制系统的通道表示，也可以叫做伺服器操作的数字表现。

Represents the number of control systems. It can also represent the number of servos that are operated.

(向下) DOWN

升降舵向下的意思，升降舵向下指示的通道表示。

Means down elevator. it is the direction in which the trailing edge of the elevator is pointing down.

(升降舵) ELEVATOR (ELE)

控制飞机向下或向上的水平稳定器，用来控制升降。

Control surface that moves up and down the horizontal stabilizer of an aircraft. It usually controls up and down.

(调制方式) MODULATION METHOD

无线电控制的两种调制方式：AM（调幅）和FM（调频）。飞机的无线电装置通常使用Fm。另一种方式是脉冲数字信号“PCM”

Two modulation methods are used with radio control: AM (amplitude Modulation) and FM (Frequency Modulation). Radio sets for aircraft mainly use FM. Another method that encoding and transmitting the modulated signals is "PCM"

(空档) NORMAL

空档，不运转时发射杆回到中心位置

Means the neutral position. It is the state in which a transmitter stick returns to the center when not operated.

(正常) NORMAL(NOR)

舵机的回转运行，是正常面，其反面是反向。

For the servo reversing function, it is normal side. the opposite side is the reverse side.

(平衡器) PROPORTIONAL

现在的无线电控制操作是平衡杆运动，无线电控制机器就叫平衡器。

Because today's radio control sets control servos in proportion to stick operation, radio control equipment is called proportional.

(方向舵) RUDDER(RUD)

操纵尾部控制飞机的方向。

Tail control surface that controls the direction of the aircraft.

(相反) REVERSE(REV)

舵机的回转运行，这里用来表示反面，其反面是正常面。

With the servo reversing function, this is used mean the reverse side. The opposite side is the normal side.

(连杆) ROD

连接舵机和机身控制的结构。

A bar that connects the servos and the fuselage control surfaces.

(舵机摆臂) SERVO HORN

舵机装置的一部分，旋转运动、或发射到连杆伤,舵机摆臂以多种方式运行。

Apart that is installed to the shaft of a servo and changes the rotating motion of the servo the linear motion and transmits the linear motion to a rod to. Servo horns come in various shapes.

(舵机设置) SERVO MOUNT

机身的舵机设置

Fuselage base for installing a servo to the fuselage.

(操纵杆) STICK

发射机操作杆。

Rod for operating the transmitter.

(油门) THROTTLE(THR)

控制空气气流吸入量和马达（发动机）的运转速度。当加大油门时，会吸收大量的气流，速度加快。当减小油门时，则速度减低。

Part that controls the air mixture at the engine intake. When opened(throttlehigh side),a large air mixture is sucked in and the engine speed increases. When closed(throttlelow side),the engine speed decreases.

(教练开关) TRIM

教学航空器安全飞行的装置，航行器正确飞行的指导装置。

A device that fine adjusts the neutral point of each servo for safe flying. It is a mechanism that corrects bad tendencies of the aircraft.

(向上) UP

升降舵上升，描述升降舵一直升高到最高点。

Means up elevator. Direction in which the trailing edge of the elevator is pointing up.

WARNING:

This transmitter is designed for use only in the Radio Control Service. The operating frequency is factory defined and will not include a plug-in crystal with external access to the user. User may not modify the operating frequency by plug-in/change crystal.

Any unauthorized adjustment on this product, such as replacement/modification of any transmitter component (crystal, semiconductor, etc.) is not allowed, could void the user's authority to operate the equipment and result in a violation of part 95 of the FCC Rules. The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment.

Please have a person certified as technically qualified to perform transmitter maintenance and repair duties in the private land mobile services and fixed services by an organization or committee representative of users of the services.

A license maybe required to operate this product in some countries. Consult about the license issue from the radiology department of the country.

NOTE:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or Modifications not expressly approved by the party responsible could void the user's authority to operate this device.