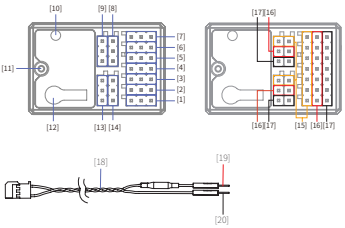
FLYSKY FS-R7V 接收机 Receiver

产品介绍 Introduction

FS-R7V 是一款采用 ANT 通信协议，提供 7 通道的双向接收机，内置陀螺仪，外置单天线，输出 PWM 或 PPM/i-BUS/S.BUS 信号，设计小巧紧凑，可适配多种模型车和模型船使用。

FS-R7V based on ANT protocol is a receiver which provides seven channels and bidirectional transmission. It features an external single antenna with built-in gyroscope and compact design, output of PWM or PPM/i-BUS/S.BUS signal, adaption to a variety of model cars or boats.

接收机概览 Overview



[1] CH1/P
[2]-[5]CH2- CH5
[6] 对码接口
[7] BVD/VCC(电池电压检测 / 供电接口)
[8] CH7
[9]SERVO
[10]LED 指示灯
[11] 天线
[12] 对码按键
[13] 传感器接口
[14] CH6
[15] 信号端
[16] + (电源正极）
[17] - (电源负极）
[18] BVD 功能配件
[19] 接电池正极
[20] 接电池负极

[1] CH1/P(PWM/PPM)
[2]-[5]CH2- CH5
[6] BIND Interface
[7] BVD/VCC(Battery Voltage Detection/ Power Supply Interface)
[8] CH7
[9] SERVO
[10] LED
[11] Antenna
[12] BIND Button
[13] SENS Interface
[14] CH6
[15] Signal Pin
[16] + (Power Anode)
[17] - (Power Cathode)
[18] BVD Harness
[19] Connect to Battery Anode
[20] Connect to Battery Cathode

注：BVD 电压检测范围： 0~70V　　Note: BVD voltage detection range: 0~70V

产品规格 Specifications

- 产品型号：FS-R7V
- 适配发射机：FS-G7P (支持 ANT 协议的枪控发射机)
- 适配模型：车、船
- PWM 通道数：7
- 无线频率：2.4GHz ISM
- 发射功率：<20dBm
- 天线类型：单天线
- 遥控距离： ≥ 300 米 (空旷无干扰地面距离)
- 无线协议：ANT(蚂蚁版自动跳频数字系统)
- 通道分辨率：4096 级
- 数据输出：PWM/PPM/i-BUS/S.BUS
- 输入电源：3.5 ~ 9V/DC
- 在线更新：支持
- 温度范围：-10°C ~ +60°C
- 湿度范围：20% ~ 95%
- 防水等级：PPX4
- 外形尺寸：35.0mm*23.3mm*13.3mm
- 机身重量：8.0g
- 认证：CE，FCC ID: 2A2UNR7P00

- Product Model: FS-R7V
- Compatible Transmitters: FS-G7P(Adapts surface transmitters with ANT protocol)
- Compatible Models: Cars or boats
- Number of PWM Channels: 7
- RF: 2.4GHz ISM
- Maximum Power: <20dBm (e.i.r.p.)　(EU)
- Antenna: Single antenna
- Distance: ≥ 300m (Ground distance without interference)
- 2.4G Protocol: ANT
- Resolution: 4096
- Data Output: PWM/PPM/i-BUS/S.BUS
- Input Power: 3.5 ~ 9V/DC
- Online Update: Yes
- Temperature Range: -10°C ~ +60°C
- Humidity Range: 20% ~ 95%
- WaterProof: PPX4
- Dimensions: 35.0mm*23.3mm*13.3mm
- Weight: 8.0g
- Certifications: CE, FCC ID: 2A2UNR7P00

接口介绍 Interface Introduction

CH1~CH7：输出标准的 PWM 信号（CH1 接口，还支持输出 PPM 信号）。连接舵机或其他各部件；

BVD/VCC：BVD 电压检测时用于连接 BVD 功能件，正常操作时用于连接电源线；

BIND：对码时用于连接对码线；

SENS：用于连接 i-BUS 传感器；

SERVO：支持 i-BUS/S.BUS 信号输出，支持 i-BUS 通道扩展。

CH1~CH7: To output PWM signal (Additional, CH1 can output PPM signal). Can be connected to the servos, or other compatiable components.

BVD/VCC: During the battery voltage detecting process, a BVD harness is connected here. During normal operation, the power cable is applied to this interface.

BIND interface: During the binding process, a binding cable is connected to this interface.

SENS interface: For connecting i-BUS sensors.

SERVO interface: To output i-BUS or S.BUS signal, and support channel expansion in i-BUS type.

对码 Binding

本款接收机支持双向对码和单向对码，双向对码完成后发射机将显示接收机回传的信息。

双向对码步骤：

1. 发射机选择双向通信，然后进入对码状态；
2. 本接收机支持三种方式进入对码状态：按键对码、对码线对码和通电后按键对码
   - 按键对码：按住接收机对码按键同时上电，接收机 LED 灯快闪表示进入对码状态，松开对码键；
   - 对码线对码：Bind 接口连接对码线后上电，接收机 LED 灯快闪，进入对码状态。注意对码成功后需取下对码线；
   - 通电后按键对码：接收机上电后未与发射机通信过，长按对码键 3 秒，接收机指示灯快闪表示进入对码状态，松开对码键。
3. 接收机 LED 灯常亮，即对码成功。发射机对码成功后自动退出对码状态，对码完成；
4. 检查发射机、接收机是否正常工作。如需重新对码，请重复以上步骤。

单向对码步骤：

1. 发射机选择单向通信，然后进入对码状态；

对码 Binding

2. 本接收机进入对码状态（进入对码状态的方式请参考双向对码时描述）；
3. 接收机 LED 灯慢闪，即对码成功。发射机则需手动将其退出对码状态，接收机 LED 灯常亮，对码完成；
4. 检查发射机、接收机是否正常工作。如需重新对码，请重复以上步骤。

注：对码时请先将发射机进入对码状态，再将接收机进入对码状态，若十秒内对码没有完成，接收机 LED 指示灯进入慢闪状态。

The receiver supports two -way binding and one-way binding. The transmitter will display the information returned from the receiver after the two-way binding is completed.

Follow the steps below to bind in two-way binding:

1. Select [ANT 2 WAY] for RF standard of the transmitter, then put the transmitter in binding mode.
2. The receiver supports three ways to enter bind mode: BIND button binding, bind cable binding and BIND button binding after power-on.
   - BIND button binding: Press and hold the BIND button of the receiver while powering on the receiver, the LED of the receiver should be flashing, indicating that the receiver is in binding mode. Then release the BIND button.
   - Bind cable binding: Insert the bind cable to the BIND interface of the receiver, then power on the receiver. The LED of the receiver should be flashing, indicating that the receiver is in binding mode. Note that you need to remove the bind cable from the receiver after the binding process is completed.
   - BIND button binding after power-on: The receiver has not been connected to the transmitter when it is powered on. Press and hold the BIND button for 3 seconds, the LED of the receiver should be flashing, indicating that the receiver is in binding mode. Then release the BIND button.
3. When the LED of the receiver is solid on, the binding process should be completed. The transmitter exits the bind mode automatically.
4. Check to make sure the transmitter and receiver functions are working correctly, repeat steps 1 to 3 (binding process) if any problems arise.

Follow the steps below to bind in one-way binding:

1. Select [ANT 1 WAY] for RF standard of the transmitter, then put the transmitter in binding mode.
2. Put the receiver in binding mode (Refer to the description above for entering bind mode).
3. When the LED of the receiver is in slow flashing state, the binding process should be completed. You need to manually put the transmitter to exit the binding mode. Then the LED of the receiver is solid on, indicating that the binding is completed.
4. Check to make sure the transmitter and receiver functions are working correctly, repeat steps 1 to 3 (binding process) if any problems arise.

Note: Put the transmitter in binding mode first, then put the receiver in binding mode. If the binding is not completed within ten seconds, the LED of the receiver will enter its slow flashing state.

陀螺仪功能介绍 Instruction for Gyroscope Function

本款接收机内置陀螺仪，可适配带有智能车控功能的 ANT 协议发射机使用。智能车控功能是依靠陀螺仪对车辆油门和方向通道进行智能控制，即使在颠簸路况下或急剧转弯时，也能保证车辆在预期的方向保持更好的行驶状态。需在发射机端完成该功能相关参数设置，以下以与 FS-G7P 发射机适配为例，介绍相关参数的意义，包括 [状态]、[中位校准]、[增稳模式]、[正逆转]、[方向感度]、[油门感度]、[优先级] 和 [陀螺仪校准]。

[**状态**]: 设置开启或关闭陀螺仪功能。默认为关，也可通过 [按键设定] 分配一个开关类控件控制陀螺仪功能的开启与关闭。

[**中位校准**]: 用于陀螺仪校准方向和油门中位，使车辆正常行驶时发挥最佳行驶状态。开启智能车控功能前，需将车辆的方向舵量、中位微调和油门中位调至最佳行驶状态，完成后再进行中位校准。注意 [微调] 和 [曲线] 调节后都需进行中位校准，中位校准过程中，方向和油门需置中位静止，待完成方可操作。

[**增稳模式**] 设置陀螺仪的工作模式，可设为 [普通] 或 [锁定]，默认普通模式。

若设置为 [普通] 模式，当车辆偏航或转向时，陀螺仪自动根据所产生的角速度大小提供一个相反的补偿控制舵机使其保持稳定或防止甩尾；

[锁定] 模式仅在手轮回中保持的情况下有效，即车辆偏航时，陀螺仪会根据偏航角度反方向控制舵机使其回到预期方向行驶。注：若 [锁定] 模式下手轮未回中，则同 [普通] 模式。

[**正逆转**] 设置陀螺仪混控通道的方向，默认为 [正向]。

[**方向感度**] 设置矫正车轮按预期的方向行驶，当系统检测到车身将发生转动时，会自动通过车轮矫正车身。方向感度是调节系统对车轮的矫正力度。0% 表示混控舵机无陀螺仪辅助效果，100% 为陀螺仪辅助效果最大。

[**油门感度**] 设置陀螺仪介入油门调节的力度，应用于车辆转弯时油门扣机不变的情况下，陀螺仪混控降低油门输出，使其能够快速安全地转弯。

[**优先级**] 设置设置车辆转向时，方向感度的控制比例，即转弯半径。例如转向时，当打方向手轮至最大行驶转弯时，数值为 0 时，混控力度最大，即转弯半径最大，当数值为 100% 时，混控力度为 0%，转弯半径最小。

[**陀螺仪校准**] 第一次启用陀螺仪或更换陀螺仪时需进行校准。校准前，模型保持平稳静止状态，启动校准，此时接收机 LED 灯两闪一灭，校准成功自动退出，若失败会弹窗提示。

This receiver has a built-in gyroscope and can be adapted to the ANT protocol transmitter with the SVC (smart vehicle control) function. The smart vehicle control function is to control the vehicle throttle and steering channel intelligently through the gyroscope. It can ensure that the vehicle is in the expected direction to maintain a better driving condition even in case of bumpy roads or zigzagging. It is necessary to finish the parameter settings related to this function at the transmitter side. Take FS-G7P transmitter as an example to introduce the meaning of related parameters, including **USE**, **Neutral Calibration**, **ESP mode**, **Reverse**, **Steering Gain**, **Throttle Gain**, **Priority** and **Gyroscope Calibration**.

USE: Used to set to enable or disable the gyroscope function. By default, it is disabled. You can assign a switch-like control to control the gyroscope function (**ON** or **OFF**) by **Control ASSIGN** function.

Neutral Calibration: Used for gyroscope to calibrate the steering and throttle neutral to make the best driving condition when the vehicle is driving normally. Before enabling the smart vehicle control function, you need to adjust the vehicle's steering servo volume, neutral trim and throttle neutral to the best driving condition. After completion, start the **SVC**(Smart Vehicle Control) function for neutral calibration. It should be noted that the neutral calibration is required after the adjustments of **Trim** and **Curve**. The steering and throttle need to be set to the neutral position during the calibration process.

ESP mode: Used to set the working mode of the gyroscope. It can be set to **Normal** or **Lock**. By default, it is **Normal** mode. If it is set to **Normal** mode, when the vehicle is yawing or steering, the gyroscope automatically provides an opposite compensation to control the servo to keep it

陀螺仪功能介绍 Instruction for Gyroscope Function

stable or prevent it from drifting according to the angular velocity generated. The **Lock** mode is only effective when the steering wheel is kept in its self-centering state, (i.e., the vehicle yaws), the gyroscope will control the servo in the opposite direction according to the yaw angle to make it travel back to the expected direction. Note: If the steering wheel is non-self-centering in the **Lock** mode, the operations are the same as those in **Normal** mode.

Reverse: Used to set the direction of the gyroscope in the mixing channel direction. By default, it is set to **Normal**.

Steering Gain: Used to set the correction wheel to travel in the expected direction. When the system detects that the vehicle body is about to move away from the intended steering, it will automatically correct the body through the wheel. Steering Gain is to adjust the correction strength of the wheels by the system. 0%: No gyroscope assisting effect for the mixing servo. 100%: maximum gyroscope assisting effect.

Throttle Gain: Used to set the strength of the gyroscope intervening in the throttle adjustment. It is applied to the case that the throttle output is reduced through mixing control by gyroscope to enable the car to change directions quickly and safely when the vehicle turns with the throttle trigger unchanged.

Priority: Used to set the control rate of **Steering Gain** when the vehicle turns, that is, the turning radius. For example, in the direction turning by using the traversing steering wheel, when the value is 0%, the mixing control is the strongest, that is, the turning radius is the largest. When the value is 100%, the mixing control is 0%, that is, the turning radius is the smallest.

Gyroscope Calibration: Calibration is required when the gyroscope is enabled for the first time or replaced. Before calibration, keep the model in a stable and stationary state. Start the calibration. Then, the LED of the receiver will be in twice- flash-one-off state. The calibration will automatically exit if it succeeds. If it fails, a prompt is given in a pop-up window reminder.

固件更新 Firmware Update

本接收机固件更新需通过富斯遥控管家（FlySkyAssistant）完成（仅 3.0 及以上版本支持，富斯遥控管家固件可从官网 www.flysky-cn.com 获取）。

本接收机可以通过以下两种方式进入更新：

1. 先将发射机与接收机对码后（接收机 LED 灯常亮），再将发射机与电脑连接，然后在电脑端打开富斯遥控管家，通过富斯遥控管家进行固件更新；
2. 将发射机与电脑连接，参考如下方式使接收机进入强制更新状态（接收机 LED 灯状态三闪一灭），然后在电脑端打开富斯遥控管家，通过富斯遥控管家进行固件更新。

   进入强制更新状态的操作方式有如下三种方式：

   - 按下对码按键，上电十秒钟后接收机 LED 灯状态三闪一灭，松开对码按键。
   - 先给接收机上电，长按对码键十秒后接收机 LED 灯状态三闪一灭，松开对码按键。
   - 先将对码线连接到接收机 CH4 和 BIND 信号端，然后接通接收机电源。

The firmware of this receiver is updated through the FlyskyAssistant (Only version 3.0 or above is supported. The firmware of FlyskyAssistant is available on the Flysky official website).

This receiver can be updated via the following two ways:

1. After the binding between the transmitter and the receiver (the LED of the receiver is solid on), connect the transmitter to the computer, then open the FlyskyAssistant on the computer to update the firmware.
2. Connect the transmitter to the computer. Then put the receiver to enter the forced update mode by referring to the following three ways (The LED of the receiver operates in three-flash-one-off manner repeatedly). Afterwards, open the FlyskyAssistant on the computer to update the firmware.

- Power on the receiver while pressing and holding the BIND button for more than ten seconds, until the LED of the receiver operates in three-flash-one-off manner repeatedly, then release the BIND button.
- Power on the receiver first, then press and hold the BIND button for more than ten seconds, when the LED of the receiver operates in three-flash-one-off manner repeatedly, then release the BIND button.
- Connect the bind cable to the signal pins of the CH4 and BIND interface, then power on the receiver.

失控保护 Failsafe

失控保护功能用于在接收机失去信号不受控制后，接收机按设置好的失控保护值进行通道输出以保护模型及人员安全。

本款接收机共支持两种失控保护模式：[无输出] 和 [有输出]

[无输出] i-BUS/PPM/PWM 通道接口为无输出状态；

[有输出] i-BUS/PPM/PWM 通道接口输出设置的固定值。

注：

1. 因为 S.BUS 信号包含失控标志位，所以接收机可通过失控标志位将“失控状态”信息传递到后续设备，而无需通过 [无输出] 状态传递（后续设备通过解析失控标志位信息做出相应地应对即可）；
2. 对于无失控标志位的信号 PWM/PPM/i-BUS，支持设置失控时信号 [无输出]，通过 [无输出] 状态将“失控状态”信息传递给后续设备。

The failsafe function is used to output the channel value according to the out-of-control protection value set by the user after the receiver loses its signal and is out of control to protect the model and personnel.

It can also be set failsafe for each channel respectively. This receiver supports two failsafe modes: **ON** and **OFF**

OFF It is no output for the interface of i-BUS/PPM/PWM.

ON To output the failsafe values set for the interface of i-BUS/PPM/PWM.

Notes:

1. Because the S.BUS signal information contains failsafe flag bits, the failsafe information can be transmitted to the subsequent devices by the failsafe flag bits rather than by **OFF** state. The subsequent devices gives response according to the analysed information for the failsafe flag bits.
2. For the signal PWM/PPM/i-BUS without failsafe flag bits, it supports the setting of the output signal to **OFF** in case of failsafe, transmitting the failsafe information to the subsequent devices by **OFF** state.

注意事项：

- 使用前必须确保本产品与模型安装正确，否则可能导致模型发生严重损坏。
- 关闭时，请务必先关闭接收机电源，然后关闭发射机。如果关闭发射机电源时，接收机仍然在工作，将会导致遥控设备失控。失控保护设置不合理可能引起事故。
- 确保接收机安装在远离电机或电子噪声过多的区域。
- 接收机天线需远离导电材料，例如金属棒和碳物质。为了避免影响正常工作，请确保接收机天线和导电材料之间至少有 1 厘米以上的距离。
- 准备过程中，接收机勿连接电源，避免造成不必要的损失。

Attentions:

- Make sure the product is installed and calibrated correctly, failure to do so may result in serious injury.
- Make sure the receiver's battery is disconnected before turning off the transmitter, failure to do so can result out of control. Unreasonable setting of the Failsafe may cause accidents.
- Make sure the receiver is mounted away from motors, electronic speed controllers or any device that emits excessive electrical noise.
- Keep the receiver's antenna at least 1cm away from conductive materials such as carbon or metal.
- Do not power on the receiver during the setup process to prevent loss of control.

认证相关 Certifications

FCC Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Warning: changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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.

EU DoC Declaration

Hereby, [Flysky Technology Co., Ltd.] declares that the Radio Equipment [FS-R7V] is in compliance with RED 2014/53/EU.
The full text of the EU DoC is available at the following internet address: www.flyskytech.com/info_detail/10.html

RF Exposure Compliance

This equipment complies with FCC/ISED RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

Environmentally friendly disposal

Old electrical appliances must not be disposed of together with the residual waste, but have to be disposed of separately. The disposal at the communal collecting point via private persons is for free. The owner of old appliances is responsible to bring the appliances to these collecting points or to similar collection points. With this little personal effort, you contribute to recycle valuable raw materials and the treatment of toxic substances.

FCC ID: 2A2UNR7P00

微信公众号 Bilibili Website Facebook

Manufacturer: ShenZhen FLYSKY Technology Co., Ltd.
Address: 16F, Huafeng Building, No. 6006 Shennan Road, Futian District, Shenzhen, Guangdong, China