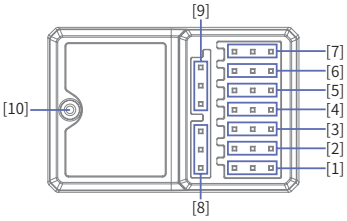
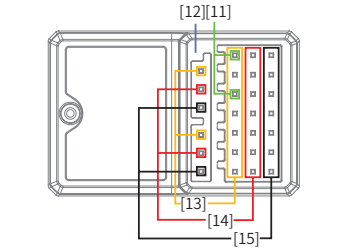
产品介绍 Introduction

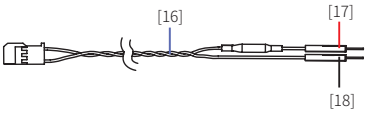
FBr8 是一款采用 AFHDS 3（第三代自动跳频数字系统）协议的八通道船用接收机。本接收机防水等级达到 PPX7，外置单天线，支持单双向传输，支持 4 个 Newport 功能接口（Newport 接口可自定义输入或输出的信号类型：i-BUS2/S.BUS/i-BUS/PPM 等），支持所有 AFHDS 3 协议发射机和高频头。

FBr8 is an 8-channel marine receiver based on AFHDS 3 third-generation automatic frequency hopping digital system protocol. This receiver features waterproof level PPX7, a single external antenna, and unidirectional and bi-directional transmission. It supports four Newport function interfaces. Newport interfaces can be customized with the input or output signal type: i-BUS2/S.BUS/i-BUS/PPM, etc. It adapts all transmitters or RF modules which support AFHDS 3 protocol.

接收机概览 Receiver Overview







[1] CH1
[2] CH2
[3] CH3
[4] CH4
[5] CH5/NPD
[6] CH6/NPC
[7] BVD/VCC（电池电压检测 / 供电接口）
[8] CH7/NPB
[9] CH8/NPA
[10] 天线
[11] 对码接口
[12] LED
[13] S（信号端）
[14] +（电源正极）
[15] -（电源负极）
[16] BVD 功能配件
[17] 接电池正极
[18] 接电池负极

[1] CH1
[2] CH2
[3] CH3
[4] CH4
[5] CH5/NPD
[6] CH6/NPC
[7] BVD/VCC (Battery Voltage Detection/ Power Supply Interface)
[8] CH7/NPB
[9] CH8/NPA
[10] Antenna
[11] BIND Interface
[12] LED
[13] S (Signal Pin)
[14] + (Power Anode)
[15] - (Power Cathode)
[16] BVD Harness
[17] Connect to Battery Anode
[18] Connect to Battery Cathode

注：

1. BVD 电压检测范围：0~70V；
2. 对于经常需要涉水的攀爬车以及各种船模型，建议模友在每次训练完成后或者出现模型浸水的情况后，对接收机都要进行一次清理，以及排查是否有天线座生锈、插针生锈等情况。

Notes:

1. BVD voltage detection range is from 0 to 70V.
2. For crawlers driving in water and various boat models, players are advised to clean the receiver and check whether the antenna holder or pin is rusted after each training or in case of a wetted model.

产品规格 Product Specifications

- 产品型号：FBr8
- 适配发射机：支持所有 AFHDS 3 协议的发射机和高频头
- 适配模型：车、船
- PWM 通道数：8
- 无线频率：2.4GHz ISM
- 无线协议：AFHDS 3
- 天线类型：外置单天线（同轴天线）
- 发射功率：小于 20dBm
- 遥控距离：≥ 300 米（空旷无干扰地面距离）
- 输入电源：3.5 ～ 9V/DC
- 工作电流：≤ 50mA/5V
- 数据输出：PWM/PPM/i-BUS2/S.BUS/i-BUS
- 通道分别率：4096
- 温度范围：-10°C ~ +60°C
- 湿度范围：20% ~ 95%
- 在线更新：支持
- 外形尺寸：37*23*13mm
- 防水等级：PPX7
- 机身重量：14g(不含排针胶塞）
- 认证： CE，FCC ID: 2A2UNFBR80

- Product Model: FBr8
- Adaptive Transmitters: Transmitters or RF Modules Which Support AFHDS 3 Protocol
- Adaptive Models: Car or Boat
- PWM Channels: 8
- RF: 2.4GHz ISM
- 2.4G Protocol: AFHDS 3
- Antenna: Single External Antenna(Coaxial Antenna)
- MaximumPower: <20dBm (e.i.r.p.)（EU）
- Distance: ⩾ 300m(Ground Distance without Interference)
- Input Power: 3.5~9V/DC
- Working Current: ⩽ 50mA/5V
- Data Output: PWM/PPM/i-BUS2/S.BUS/i-BUS
- Resolution: 4096
- Temperature Range: -10°C ~ +60°C
- Humidity Range: 20% ~ 95%
- Online Update: Yes
- Dimensions: 37*23*13mm
- Waterproof: PPX7
- Weight: 14g (Without Pin Header)
- Certifications: CE, FCC ID: 2A2UNFBR80

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. 先用对码线连接 BVD 接口信号端与 CH5 通道信号端，然后接通接收机电源，接收机即进入对码状态，接收机 LED 快闪；
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. 取下对码线；
5. 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；
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 灯变为慢闪后将发射机退出对码状态，此时接收机 LED 灯常亮，表示对码成功；
4. 取下对码线；
5. 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：如果 AFHDS 3 协议发射机无法与 FBr8 接收机对码，请检查两者高频库版本是否一致。如 PL18 V1.0.55 及以上版本、PL18EV V1.0.28 及以上版本、NB4 V2.0.93 及以上版本、NB4 Pro V1.0.1 及以上版本均可直接与 FBr8 接收机对码。

The receiver supports two -way binding and one-way binding, and can be set at the transmitter side. 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 [2 WAY] for RF standard of the transmitter, then put the transmitter into binding mode.
2. Connect the BVD interface signal pin to the CH5 channel signal pin with the binding cable and power on the receiver. The receiver enters the binding state and the receiver LED flashes fast.
3. When the LED of the receiver is solid on, the binding process should be finished. The transmitter exits the binding mode automaticlly.
4. Remove the binding cable from the receiver.
5. Check to make sure the transmitter and receiver functions are working correctly, repeat steps 1 to 4 (binding process) if any problems arise.

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

1. Select [1 WAY] for RF standard of the transmitter, then put the transmitter in binding mode.
2. Put the receiver into binding mode (Refer to the description above for entering binding mode).
3. After the receiver LED becomes slow flashing, then put the transmitter to exit the binding state. At this time, the receiver LED is solid on indicating the binding is successful.
4. Remove the binding cable from the receiver.
5. Check to make sure the transmitter and receiver functions are working correctly, repeat steps 1 to 4(binding process) if any problems arise.

Note: If a transmitter with AFHDS 3 protocol cannot be bound with a FBr8 receiver, check whether their RF library versions are consistent. Transmitters of PL18 V1.0.55 or later, PL18EV V1.0.28 or later, NB4 V2.0.93 or later, and NB4 Pro V1.0.1 or later can be directly bound with a FBr8 receiver.

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）。可通过以下两种方式完成更新：

方式一：先将发射机与接收机完成对码（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。

方式二：先将发射机与电脑连接，再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，通过富斯遥控管家完成固件更新（强制更新完成后，接收机指示灯由三闪一灭状态变为慢闪状态）。

进入强制更新状态的操作方式：先用对码线连接 CH1 和 CH3 通道信号端，再接通接收机电源， 接收机即进入强制更新固件状态。

The firmware of this receiver can be updated via the FlyskyAssistant (Only version 3.0 or later is supported. The firmware of FlyskyAssistant is available on the Flysky official website).

This receiver can be updated through the following two modes:

Mode Ⅰ: 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 in the computer to update the firmware.

固件更新 Firmware Update

Mode II : Connect the transmitter to the computer. Then put the receiver to enter the forced update mode by referring to the following way(The receiver LED works in three-flash-one-off mode repeatedly in forced update mode). Afterwards, open the FlyskyAssistant in the computer to update the firmware (When the forced update is finished, the state of receiver LED will change to slow flash from three-flash-one-off).

To enter the forced update mode: Firstly, connect the binding cable to the signnal pins of the CH1 interface and CH3 interface. Sencondly, power on the receiver. Then the receiver will enter the forced update state.

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。
本款接收机共支持三种失控保护模式 : [无输出]、[保持] 和 [固定值]
[无输出]PWM 通道接口为无输出状态 ;
[保持] 输出失控前最后的通道值;
[固定值] 输出设置的通道值。

注:

1. 对于 PPM/i-BUS/S.BUS/i-BUS2 等总线信号类型不允许单个或其中几个通道为 [无输出] 模式，通道设置为 [无输出] 模式时，实际信号是保持最后输出值;
2. 因 S.BUS/i-BUS2 信号信息包含失控标志位，各通道失控保护设置被失控标志位传达给后续设备，若连接的设备支持失控标志位解析，则失控后，输出各通道设置的失控保护值;
3. 对于无失控标志位的信号 PPM/i-BUS，支持设置失控时信号 [无输出] 模式。设置为 [无输出] 模式后，不管各通道失控保护如何设置，失控后各通道均为 [无输出] 模式。

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 three failsafe modes: **No output**, **Hold**, and **Fixed value**.

No output No output for PWM interface.

Hold Keeps the last output value.

Fixed value Outputs the failsafe values set for each channel.

Notes:

1. For bus signal types such as PPM/i-BUS/S.BUS/i-BUS2, a single or several of these channels are not allowed to be in **No output** mode. The actual signal is held at the last output value when the channel is set to **No output** mode.
2. Because the S.BUS/i-BUS2 signal information contains failsafe flag bits, the failsafe settings of each channel are communicated to subsequent devices by the failsafe flag bits. If the connected devices support the failsafe flag bit analysis, the failsafe values set for each channel are output after out of control.
3. For the signal PPM/i-BUS without failsafe flag bits, it supports the setting of the signal to **No output** mode in case of out of control. After setting to **No output** mode, regardless of the setting of the failsafe of each channel, each channel will be in **No output** mode after out of control.

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，电子调速器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，请勿连接接收机电源，避免造成不必要的损失。

Attention:

- 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 lead to lose 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 Certification

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 [FBr8] 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: 2A2UNFBR80

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