FRM302

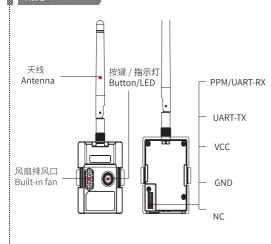## RF Module

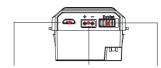## 产品介绍 Introduction

FRM302 采用 AFHDS 3（第三代自动跳频数字系统），单天线双向传输，设计小巧，支持多种信号输入，支持外部供电，兼容标准 JR 插槽。

FRM302 adopts AFHDS 3, Flysky's third-generation automatic frequency hopping digital system. Single antenna bidirectional transmission in a compact design with support for multiple signal inputs. Supports external power and is compatible with the JR bay standard.

概览 Overview

天线
Antenna

按键 / 指示灯
Button/LED

风扇排风口
Built-in fan

PPM/UART-RX

UART-TX

VCC

GND

NC

USB　　电源接口 /Power port　　开关 /Switch

功能按键：仅在 PPM 通信时有效；
USB：用于高频头固件升级；
电源接口：用于外接电源（接口类型：XT30）；
开关：切换内外部电源；
风扇排风口：内置风扇，当芯片温度达到 45°C风扇自动启动，低于 45°C风扇自动停止。

Function button: Only active during PPM communication.
USB: RF module firmware update.
Power port: External power(Types of ports: XT30).
Switch: Switch between internal and external power .
Built-in fan: If the chips temperature rises above .
45 ° C the built-in fan will start, it will stop again once the temperature drops below 45 ° C.

产品规格 Product specification

- 产品型号：FRM302
- 适用机型：PL18/NV14/FS-TH9X
- 无线频率：2.4G
- 发射功率：<20dBm
- 无线协议：AFHDS 3
- 遥控距离：>3500m（空中）
- 延时：<10ms （UART 模式）
- 天线类型：外置单天线（SMA 内螺纹内孔）
- 电源：DC 5-10V（内部）；DC 5-28V（外部）
- 数据接口：PPM/UART
- 温度范围：-10°C—+60°C
- 湿度范围：20%-95%
- 在线更新：支持
- 外形尺寸：52.4*65.9*34.6mm
- 机身重量：68.5g
- 安规认证：CE，FCC ID:N4ZFRM30200

- Product Type: FRM302
- Model Type :PL18/NV14/FS-TH9X
- RF: 2.4G
- RF Power: <20dBm(EU)
- 2.4GHz Protocol: AFHDS 3
- Distance :>3500m(Air disdence)
- Latency :<10ms （UART）
- Antenna: Single antenna (SMA female threaded)
- Power: DC 5-10V(Internal power); DC 5-28V(External power supply)
- Data ports:PPM/UART
- Temperature Range :-10°C—+60°C
- Humidity Limitz :20%-95%
- Online Update: Yes
- Dimensions: 52.4*65.9*34.6mm
- Weight: 68.5g
- Certification: CE，FCC ID:N4ZFRM30200

对码 Binding

UART 通信：只能通过发射机菜单进入对码；
PPM 通信：通过按住功能按键上电进入对码；

UART: If using UART binding must be done using the transmitters bind function.
PPM: If using PPM the modules bind button can be used to initiate the binding process.

对码 Binding

当指示灯绿色快闪时，表示进入对码状态；
当指示灯绿色常亮时，表示对码成功；
当指示灯蓝色慢闪时，表示掉码或未对码；

- 在对码之前，请先确保将 FRM302 准确安装于发射机上
- 双向模式下高频头只记录最后一次对码的接收机信息，如需记录多台接收机信息，请在发射机端调至单向模式

The status indicator will flash green quickly when the module is in bind mode.
When the status indicator turns solid green the module has bound successfully.
If the status indicator is slowly flashing blue it means the module is not bound.

- Before binding make sure that the FRM302 module is installed correctly.
- In two-way mode, the RF module only remembers the last receiver bound. If more receivers are required put the transmitter into single direction mode.

更新 Update

当需要升级高频头时（升级前请先关闭发射机及外部供电电源再插入 USB 线）：

1. 请将 USB 线连接高频头 USB 口及电脑；
2. 打开上位机；
3. 根据上位机操作指示进行升级 .

- 当高频头等待升级时，LED 灯红色快闪
- 当高频头正在升级中，LED 灯黄色快闪
- 升级完成后，LED 灯常亮

When you need to update the RF module(Please turn off the transmitter and external power supply before upgrading，then connect the USB):

1. Connect the RF module to a computer using a USB cable.
2. Power on the transmitter.
3. Follow the instructions on the computer to update.

- When the module is ready to be updated its LED status indicator will flash red
- When module is in the process of being updated the LED will flash yellow
- When the update is completed, the LED light will stop flashing

失控保护 Failsafe

失控保护功能用于在高频头失去信号不受控制后，保护模型及人员安全。

FRM302 支持两种信号模式：
PPM：长按功能按键 10S，到达 10S 时的通道值即为失控保护值；

- 仅在与接收机正常通信状态下生效
- 蓝色指示灯快闪 3S 表示失控保护设置成功

UART：请参照发射机说明书设置失控保护。

This function protects the user by preventing the model from behaving unexpectedly if signal is lost.

FRM302 supports two signal modes:
PPM: Hold the function button for 10S. The channels current value when it reaches 10S will be the failsafe value set.

- Only effective in normal communication with the receiver.
- If the blue indicator LED flashes every 3S then failsafe has been set.

UART: Please refer to the transmitter's user manual on how to set up the failsafe function.

兼容性 Compatibility

该高频头兼容 PL18/NV14/FS-TH9X 以及其他有 PPM 信号输出的遥控器。
该高频头兼容 FTr10、FTr16S、FTr4、FGr4、FGr4P、FGr4S、GMR、FTr8B、FGr8B 等所有 3 代协议的接收机。

The FRM302 module is compatible with the PL18 / NV14 / FS-TH9X along with various other Radios when using PPM output.
The FRM302 module is compatible with all AFHDS 3 receivers such as the FTr10, FTr16S, FTr4, FGr4, FGr4P, FGr4S, GMR, FTr8B, FGr8B.

► **注意事项：**

使用前必须确保本产品与发射机安装正确，否则可能导致模型发生严重损坏。
高频头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，请确保高频头和导电材料之间至少有1厘米以上的距离。
在使用过程中，严禁紧握高频头天线，否则将会大大减弱无线电传播信号的质量和强度。
准备过程中，请勿连接接收机电源，避免造成不必要的损失。
当遥控距离持续较远时，有发生失控的可能，请适当缩短遥控的距离。
建议使用外部电池为其供电，以防供电不足导致高频头无法正常使用。

► Attention:

Make sure the product is installed and calibrated correctly, failure to do so may result in serious injury.
Keep the RF's antenna at least 1cm away from conductive materials such as carbon or metal.
In order to ensure good signal quality, do not hold the RF antenna during use.
Do not power on the receiver during the setup process to prevent loss of control.
Make sure to remain within range to prevent loss of control.
It is recommended that an external power supply is used in order to make sure that the RF module is getting enough power to function correctly.

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 [FRM302] is in compliance with RED 2014/53/EU.
The full text of the EU DoC is available at the following internet address: www.flysky-cn.com.

RF Exposure Compliance

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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 ：N4ZFRM30200