FMS-R3D

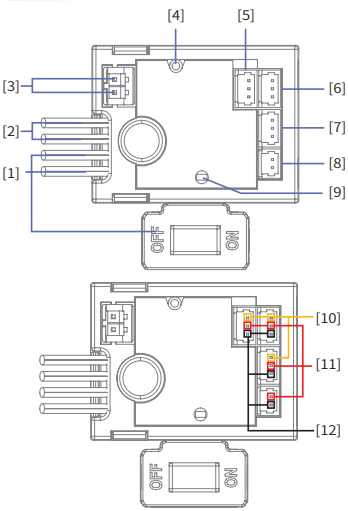
接收机 Receiver

产品介绍 Introduction

FMS-R3D 是一款采用 2A-BS 协议的二合一 4 通道接收机，集成了电调和 LED 灯组控制功能。本接收机外置单天线，输出 PWM 信号和车灯控制信号，支持双向传输，采用上电自动对码，设计小巧紧凑，可适配多款模型车使用。

The FMS-R3D，compliant with the 2A-BS protocol, is a 2-in-1, 4-Channel receiver that integrates an ESC (Electronic Speed Controller) and an LED light control. Equipped with a single external antenna, it outputs PWM signals and LED light control signals while supporting two-way transmission. It features automatic binding technology upon power-on and lightweigh, compact design. Additionally, it is compatible with a variety of RC crawlers.

接收机概览 Receiver Overview



[1] 电源开关
[2] 电池接口
[3] 电机接口
[4] 天线
[5] 车灯扩展接口
[6] CH3
[7] CH1
[8] 车灯接口
[9] LED
[10] S（通道接口 / 车灯扩展接口信号端）
[11] +（通道接口 / 车灯接口 / 车灯扩展接口正极）
[12] -（通道接口 / 车灯接口 / 车灯扩展接口负极）

[1] Power Switch
[2] Battery Interface
[3] Motor Interface
[4] Antenna
[5] LED Light Expansion Interface
[6] CH3
[7] CH1
[8] LED Light Interface
[9] LED (Status Indicator)
[10] S (Signal Pin of LED Light Expansion Interface/CH Interface)
[11] + (Anode of LED Light Expansion Interface/LED Light Interface/CH Interface)
[12] - (Cathode of LED Light Expansion Interface/LED Light Interface/CH Interface)

注：电机接口为 PH2.0 母座端子；电池接口为 Molex51005 母座接口；CH1、CH3 和车灯扩展接口为标准 1.25mm*3Pin 端子座；车灯接口为标准 1.25mm*2Pin 端子座。

Note: The specification of the motor interface is a PH2.0 female connector. The specification of the battery interface is a Molex 51005 female connector. The specification of the CH1, CH3, and LED light expansion interfaces is a standard 1.25mm3-Pin connector. The The specification of the LED light interface is astandard 1.25mm 2-Pin connector.

产品规格 Product Specifications

- 产品型号：FMS-R3D
- 适配发射机：FS-FMS-MG44-BS
- 适合模型：1/18、1/24 仿真、攀爬车
- 适配电机：180 有刷电机
- 通道个数：4（2 个 PWM 通道 +1 个电机输出通道 +1 个车灯扩展接口）
- 车灯组数：7（1 车灯接口 +1 车灯扩展接口；车灯扩展接口连接车灯驱动板）
- 无线频率：2.4GHz ISM
- 发射功率：<20dBm
- 无线协议：2A-BS
- 天线类型：外置单天线
- 工作电压：2S LiPo
- BEC 输出：5V/1A
- 持续 / 峰值电流：10A/40A
- 遥控距离：> 100 米 (空旷无干扰地面距离)
- 数据输出：PWM
- 通道分辨率：4096 级
- 温度范围：-10°C ~ +60°C
- 湿度范围：20% ~ 95%
- 防水等级：PPX4
- 固件更新：不支持
- 外形尺寸：32.0*24.4*12.0mm
- 机身重量：11.0g
- 认证：CE，FCC ID：2A2UNR3D00

- Product Model: FMS-R3D
- Compatible Transmitters: FS-FMS-MG44-BS
- Compatible RC Models: 1/18 Scale, 1/24 Scale RC Models, and RC Crawlers
- Applicable Motors: 180 Brushed Motor
- Number of Channels: 4 (Including: 2 PWM channels, 1 motor output channel, and 1 LED light expansion interface)
- Number of LED Lights: 7 (Including: 1 LED light interface + 1 LED light expansion interface. The LED ight unit connects to the expansion interface.)
- RF: 2.4GHz ISM
- Maximum Power: <20dBm (e.i.r.p.) （EU）
- RF Protocol: 2A-BS
- Antenna: Single External Antenna
- Operating Voltage: 2S LiPo
- BEC Output: 5V/1A
- Continuous/Peak Current: 10A/40A
- Distance: > 100m (Ground Distance without Interference)
- Data Output: PWM
- Resolution: 4096
- Temperature Range: -10°C ~ +60°C
- Humidity Range: 20% ~ 95%
- Waterproof: PPX4
- Firmware Update: Not Supported
- Dimensions: 32.0*24.4*12.0mm
- Weight: 11.0g
- Certifications: CE, FCC ID: 2A2UNR3D00

对码 Binding

本款接收机支持双向对码，通电自动进入对码状态：

- 接收机上电即进入等待连接状态，等待与已对码的发射机建立通信；
- 若 2 秒 未与已对码的发射机建立通信，则自动进入对码状态，此状态持续 10 秒；
- 若与发射机对码成功，即进入正常通信状态；否则退出

This receiver is compatible with two-way binding, and is to automatically enter the binding mode upon power-on.

- The receiver will enter the waiting-for-connection status upon power-on, waiting for the connection to the bound transmitter.
- If the receiver does not connect the bound transmitter within 2 seconds, it will automatically enter the binding state. This state lasts for 10 seconds.
- If the binding with the transmitter is successful, it will enter the normal

2.4GHz 2A-BS

对码 Binding

对码状态，回到等待连接状态。

注：对码时，接收机 LED 灯快闪；等待连接时，接收机 LED 灯慢闪；正常通信时，接收机 LED 灯常亮。

对码步骤如下：

1. 将发射机进入对码状态；
2. 接收机通电等待 2 秒没有连接后自动进入对码状态，此时接收机 LED 灯快闪；
3. 对码成功后，接收机 LED 灯常亮；
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 10 秒内对码没有完成，接收机 LED 灯进入慢闪状态。

communication status, otherwise, it will exit the binding state and return to the waiting-for-connection status.

Note: In case of binding, the receiver LED flashes quickly. In case of waiting-for-connection, the receiver LED flashes slowly. In case of normal communication, the receiver LED is solid on.

The binding steps are as below.

1. Put the transmitter into binding mode.
2. Turn on the receiver, and it will wait 2 seconds for connection. If without connection, the receiver will enter the binding mode automatically. At this time, the receiver LED will be flashing fast.
3. After the binding is successful, the receiver LED is solid on.
4. Verify that the transmitter and the receiver are working properly. If you need to re-bind, repeat the above steps.

Note: Set the transmitter to its binding state first, and then set the receiver to its binding status. If the binding is not finished within 10 seconds, the receiver LED will enter a slow flashing status.

保护功能 Protection

本接收机具有电池电压过低和过高保护功能。

- 电压过低保护：当检测到电池电压过低时，所有通道无输出，所有车灯慢闪提示。
- 电压过高保护：当检测到电池电压过高时，所有通道无输出，所有车灯快闪提示。

本接收机电调具有过热保护功能。

- 过热保护：当检测到整机温度过高时，CH2 无输出；当温度正常后，通道恢复输出。

可将电池电压（高、中、低、过低）回传到发射机端。

- 用于发射机端指示接收机电池电量状态。

The receiver features low and high voltage protection functions.

- Low Voltage Protection: When the voltage is detected to be low, all the channels will not output and all the LED lights will flash slowly for prompt.
- High Voltage Protection: When the voltage is detected to be high, all the channels will not output. All the LED lights will flash fast for prompt.

The receiver ESC has an overheating protection function.

- Overheating Protection: When the internal temperature of the ESC is detected to be too high, CH2 will not output and all the LED lights will flash fast for prompt. When the temperature is normal, the channel will resume output.

The receiver can return the battery voltage (high, medium, low, ultra-low) back to the transmitter side.

- The transmitter can indicate the battery power status of the receiver.

闲置报警 Idle Alarm

本接收机具有闲置报警功能。

进入闲置报警状态

当接收机检测到对码的发射机通道值超过 10 分钟未变化时，即进入闲置报警状态。此时，电机持续慢响提示。

退出闲置报警状态

重启接收机即退出闲置报警状态。

This receiver features an idle alarm function.

Entering Idle Alarm State

When the receiver detects that the channel values of the bound transmitter have not changed for over 10 minutes, it enters the idle alarm state. At this time, the motor will continuously beep slowly as a reminder.

Exiting Idle Alarm State

The receiver will exit the idle alarm state when it is restarted.

离线模式 Offline Mode

本接收机具有离线模式功能。

当接收机通电 20 秒后仍未收到发射机信号信息，则进入离线模式状态。

此状态下，车灯驱动板上的所有车灯为呼吸灯状态。

This receiver features an offline mode function.

If no transmitter signal is detected within 20 seconds after power-on, the receiver will enter offline mode.

In this state, all LED lights on the LED light unit will be in a breathing light state.

车灯控制 LED Light Control

本接收机支持 7 组车灯：1 组直接连接（车灯接口），另外 6 组（前左转灯、前右转灯、日行灯、前大灯、左刹车灯 / 后左转灯和右刹车灯 / 后右转灯）通过车灯驱动板与本接收机建立连接（注意：左 / 右刹车灯分别与后左 / 右转向灯复用同一组灯；当刹车与转向同时触发时，则优先作为刹车灯）。

车灯亮灯状态及亮灯模式的转换由发射机的相应控件控制，以 FS-FMS-MG44-BS 发射机为例：

直接连接的 1 组车灯（车灯接口）

此组车灯：亮灭状态由 CH4 按键控制（若对码 FMS-G3 发射机，则由 BIND 按键控制）。

另外 6 组车灯（车灯扩展接口），此款接收机对此 6 组灯的控制预设了三种模式：

- 模式切换：短按发射机上的 CH4 按键可切换控制模式，每按一次，切换一个模式（默认模式、模式 A 和模式 B 依次切换）；每次开机时，车灯控制模式为默认模式。
- 转向灯功能：左右转向灯（包括前左转灯、前右转灯、后左转灯、后右转灯）在转向灯功能开启状态下按预设模式工作，反之则为关闭状态。默认情况下，转向灯功能为开启状态，旋转手轮即可触发左右转向灯。在正常通信情况下，可顺时针旋转手轮至最大位置，然后同时长按 CH4 按键，以关闭转向灯功能。继续长按 CH4 按键，可开启或关闭转向灯功能。转向灯功能开启后，左右转向灯的亮灭状态由手轮控制。关机时，系统会保存当前设置。再次开机时，转向灯状态将与上次关机时保持一致。

6 组车灯工作状态具体如下所述：

车灯	默认模式	模式 A	模式 B	备注
前左转灯	左转时慢闪（逆时针打手轮）			转向灯功能可设置为关闭。关闭时，转向灯不亮。
前右转灯	右转时慢闪（顺时针打手轮）			
日行灯	常灭	常灭	常亮	/
前大灯	常灭	常亮	常亮	/
右刹车灯 / 后右转灯	刹车时（前推扳机）高亮； 非刹车且右转向时高亮慢闪； 非刹车、非右转向时灭。	刹车时高亮； 非刹车且右转向时高亮慢闪； 非刹车、非右转向时低亮。		当电调运行模式设置为正转 / 反转模式时（无刹车），前推扳机刹车灯不亮。
左刹车灯 / 后左转灯	刹车时（前推扳机）高亮； 非刹车且左转向时高亮慢闪； 非刹车、非左转向时灭。	刹车时高亮； 非刹车且左转向时高亮慢闪； 非刹车、非左转向低亮。		

注：

1. 接收机开机后，所有车灯长亮 1 秒后灭；
2. 方向通道（CH1）和油门通道（CH2）具有自动识别中位的功能，当调过微调后，需重新给接收机上电以完成中位自动识别；

车灯控制 LED Light Control

3. 方向通道设置反向后对左、右转向灯无影响。

This receiver supports seven sets of LED lights: One set is connected directly to the LED light interface. The remaining six sets—comprising the front turn signal left light, front turn signal right light, daytime running light, headlight, and left and right brake lights (which also function as rear turn signals)—are connected to the receiver via the LED light unit. (Note: The left and right brake lights share the same physical lights with the rear left and right turn signals respectively; The brake function has priority if both are activated simultaneously).

The status of all the LED lights is controlled by the corresponding controls on the transmitter (e.g., FS-FMS-MG44-BS).

One set directly connected (via the LED Light interface)

The on/off state of this light set is controlled by the CH4 button (or by the BIND button when bound with an FMS-G3 transmitter).

The remaining six sets (via the LED light expansion interface)

- Mode Switching: Briefly press the CH4 button on the transmitter to switch between control modes. Each press changes to the next mode in sequence: Default Mode, Mode A, and Mode B. Each time the system is powered on, the LED light control mode defaults to Default Mode.
- Turn Signal Function: If the turn signal function is enabled, all turn signals will operate in their preset mode; if the function is disabled, they remain off. The turn signal function is enabled by default. Rotating the steering wheel will activate the corresponding left or right turn signal. Under normal communication conditions, the turn signal function can be disabled by rotating the steering wheel fully clockwise and simultaneously pressing and holding the CH4 button. Continuing to press and hold the CH4 button will toggle the turn signal function between enabled and disabled states. When the turn signal function is enabled, the on/off state of the left and right turn signals is controlled by the steering wheel. The current setting is saved automatically upon power-off. When powered on again, the turn signal state will be restored to its pre-shutdown status.

The specific working states of the six sets of LED lights are described as follows:

LED Lights	Default Mode	Mode A	Mode B	Notes
Front Turn Signal Left Light	The light flashes slowly on a left turn. (Rotate steering wheel counterclockwise to trigger.)			The turn signal function can be set to disabled. When disabled, the turn signals remain off.
Front Turn Signal Right Light	The light flashes slowly on a right turn. (Rotate steering wheel clockwise to trigger.)			
Daytime Running Light	OFF	OFF	Solid ON	/
Headlight	OFF	Solid ON	Solid ON	/
Right Brake Light/Rear Turn Signal Right Light	• Braking (trigger pushed): High brightness • Not braking & right turn inactive: Off • Not braking & right turn active: High brightness and slow flash	• Braking: High brightness • Not braking & right turn inactive: Low brightness • Not braking & right turn active: High brightness and slow flash		When the running mode of ESC is set to Forward/Reverse mode (no brake), the Brake Light will not on when pushing the throttle trigger forward.
Left Brake Light/Rear Turn Signal Left Light	• Braking (trigger pushed): High brightness • Not braking & left turn inactive: Off • Not braking & left turn active: High brightness and slow flash	• Braking: High brightness • Not braking & left turn inactive: Low brightness • Not braking & left turn active: High brightness and slow flash		

Notes:

1. After the receiver is turned on, all the LED lights will be on for one second and then go out.
2. The steering channel (CH1)and throttle channel (CH2) are capable of automatic neutral identifying, after the trim is adjusted, the receiver should be powered again to recognize the neutral positions of these two channels automatically.
3. If you have set the steering channel in reverse, the trigger condition for turn signal left light and turn signal right light will not be affected.

电调与电机介绍 ESC & Motor Instruction

本接收机电调功能支持在发射机端设置电调拖刹力度设置 (0%、50%、75% 和 100% 四个等级）及运行模式 (正转 / 反转、正转 / 反转 / 刹车), 具体详情请参阅发射机说明书的相关章节。

注：电调拖刹力度默认为 0%，运行模式默认为正转 / 反转。

This receiver ESC function supports the settings of drag brake force (0%, 50%, 75% or 100%) and running mode (forward/reverse or forward/reverse/brake) at the transmitter side. See the relevant section of the transmitter manual for details.

Note: The drag brake force is set to 0% by default, and the running mode is set to forward/reverse by default.

故障现象	可能原因	解决方法
上电后 , 指示灯不亮，电机无法启动。	1. 电调没有得到工作电压。	1. 检查电池与电调有无连接问题以及相关插头是否有虚焊情况。
	2. 接收机开关或电调损坏。	2. 返厂检测处理。
发射机做前进操作，车子反而倒退。	发射机油门方向设置错误。	将发射机油门方向设置为相反方向。
电机转动过程中，突然停转。	1. 油门信号丢失。	1. 检查发射机和接收机。
	2. 电调进入电池低压 / 高压保护或过热保护。	2. 请检查电池电压以及电调温度。
启动时急加速，有卡住或停顿的现象。	1. 电池放电能力不够。	1. 更换放电能力强的电池。
	2. 电机转速过高，齿轮比搭配不合适。	2. 更换低速电机，或将减速比提高。

Troubles	Possible Causes	Solutions
The motor cannot start and the LED is not on after power on.	1.The ESC has no working voltage.	1. Check whether there is any connection problem between the battery and ESC and whether there is faulty welding of the relevant plug.
	2. The power switch of receiver or ESC is damaged.	2. Return to factory for inspection and treatment.
When forward the car by the transmitter, it reverse.	The throttle direction of transmitter is wrongly set.	Set throttle direction of transmitter to the opposite direction.
The motor suddenly stops rotating during rotation.	1. The throttle signal is lost.	1. Check the transmitter and the receiver.
	2. The ESC enters low/high voltage protection or overheat protection of battery.	2. Check the battery voltage and the temperature of the ESC.
When the motor starts, it accelerates rapidly, and the motor is stuck or stops.	1. Battery discharge capacity is insufficient.	1. Replace battery with strong discharge capacity.
	2. The rotation speed of motor is too fast, the gear ratio is not reasonable.	2. Replace low speed motor, or increase the reduction ratio.

失控保护 Failsafe

此功能用于当接收机无法正常收到发射机的信号不受控制时，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。

- CH2 失控保护默认开启，失控后电调进入刹车模式；CH1、CH3 默认为未设置，未设置时保持最后输出。可在发射机端设置 CH1、CH3 失控保护值。
- 失控后，左、右车灯（包括前左转灯、前右转灯、后左转灯、后右转灯）同步慢闪提示。

The failsafe function is used when radio signal connection is lost between the transmitter and receiver. The receiver performs channel output according to the set fail-safe value to protect the safety of the model and personnel.

- By default, the failsafe for CH2 is enabled, and the ESC will enter the brake status when the receiver is out-of-control. By default, the CH1 and CH3 are not set, and these two channels will maintain the last output in case of out-of-control. You can set the failsafe value for CH1 and CH3 at the transmitter side.
- When the receiver is out-of-control, all turn signal lights will flash slowly for prompt.

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。
- 请查看各动力设备以及车架说明书，确保动力搭配合理，避免因错误的搭配导致动力系统损坏。
- 勿使系统的外部温度超过 90°C /194 °F，高温将会毁坏动力系统。
- 为了一切正常，请养成先开发射机再接收机通电以及先接收机断电再关闭发射机的习惯。
- 使用完毕后，若长时间不玩车，切记断开电池与电调的连接。如电池未断开，即使电调开关处于关闭状态，电调也会一直消耗电能（只是非常小），长时间连接电池最终会被过放，进而导致电池或电调出现故障。我们不对因此而造成的任何损害负责！
- 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，请勿连接接收机电源，避免造成不必要的损失。
- 若在发射机端调整油门通道微调后，接收机须重新通电以识别新的油门通道中位，否则可能会出现倒车异常的现象。

Attention:

- Make sure the product is installed and calibrated correctly, failure to do so may result in serious injury.
- Please carefully check each power device and car frame instructions to ensure the power matching is reasonable before use. Avoid damaging power system due to incorrect matching.
- Do not let the external temperature of the system exceed 90°C /194 °F , because high temperature will damage the power system.
- Normally, you must power on the transmitter and then receiver, and power off the receiver and then the transmitter.
- After use, remember to disconnect the battery and the ESC. If the battery isn't disconnected, the ESC will consume electric energy all the time even if it is off. It will discharge completely if connect the battery for a long time, thus resulting in the failure of the battery or the ESC. We are not responsible for any damage caused by this!
- Make sure the receiver is mounted away from motors or any device that emits excessive electrical noise.
- Keep the antenna of the receiver 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.
- If the throttle trim is changed on the transmitter side, the receiver needs to be re-powered to recognize the new throttle neutral. Otherwise, an exception may occur during RC car reversing.

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, we declare that the Radio Equipment [FMS-R3D] is in compliance with RED 2014/53/EU.

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: 2A2UNR3D00