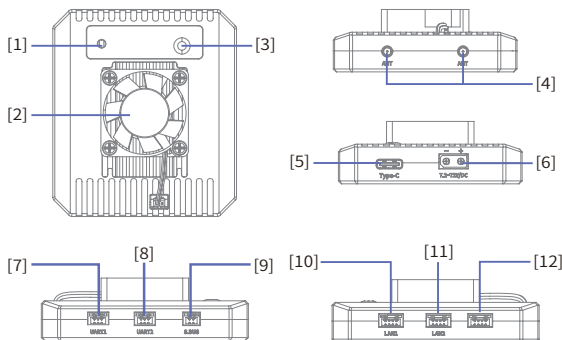## 产品介绍 Introduction

Fr20 是一款支持 800M、1.4G 与 2.4G 三频段工作的远航图传接收机。它具备外置可折叠和可拆卸双天线，具备 UART、S.BUS 及网口多种数据接口，支持 PPX6 防水等级，适配多旋翼飞行器等各类模型。

此外，它还可配置为中继器使用。

The Fr20 is a long-range video receiver that operates across three frequency bands: 800M, 1.4G, and 2.4G. It features external, foldable, and detachable dual antennas, and offers multiple data interfaces including UART, S.BUS, and LAN ports. With an PPX6 waterproof rating, it is compatible with various RC models such as multicopters.

Additionally, it can be configured as a repeater.

接收机概览 Receiver Overview

[1] RGB LED 指示灯	[7] UART1 接口
[2] 风扇	[8] UART2 接口
[3] BIND（对码按键）	[9] S.BUS 接口
[4] 天线接口	[10] 网口 1
[5] USB Type-C 接口	[11] 网口 2
[6] 电源接口	[12] 外接扩展口

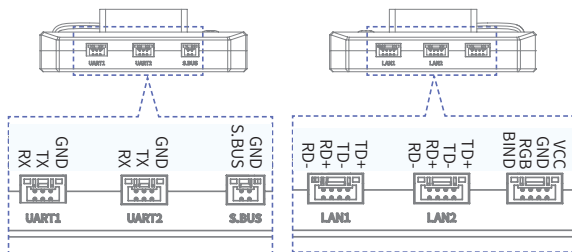|	
[1] RGB LED Indicator	[7] UART1 Interface
[2] Fan	[8] UART2 Interface
[3] BIND (Binding Button)	[9] S.BUS Interface
[4] Antenna Interface	[10] LAN 1
[5] USB Type-C Port	[11] LAN 2
[6] Power Interface	[12] Expansion Port

注：

1. 风扇可拆卸，并具备智能温控功能：系统温度过高时自动启动，降温后自动关闭；

2. 天线接口为 MMCX 接口；电源接口为 XT30 接口；UART1 接口和 UART2 接口为 3Pin 1.25 间距带锁扣 GH 端子座；S.BUS 接口为 2Pin 1.25 间距带锁扣 GH 端子座；网口 1、网口 2 和外接扩展口为 4Pin 1.25 间距带锁扣 GH 端子座。

Notes:

1. The detachable fan incorporates intelligent temperature control, automatically turning on when overheated and off once cooled.

2. Antenna interface: MMCX connector. Power interface: XT30 connector. UART1 & UART2: 3-pin 1.25 mm-pitch locking GH headers.

   S.BUS: 2-pin 1.25 mm-pitch locking GH header. LAN1, LAN 2 & Expansion port: 4-pin 1.25 mm-pitch locking GH headers.

数据接口端定义 /Data Interface Pin Definition

产品规格 Product Specifications

- 产品型号：Fr20
- 适配发射机：F20
- 适配模型：多旋翼、固定翼、垂直起降、植保机、车、船等
- 无线频率：800M、1.4GHz、2.4GHz
- 发射功率：<20dBm
- 天线类型：外置可折叠、可拆卸双天线
- 工作电压：7.2~72V/DC
- 通道分辨率：4096 级
- 遥控距离：30KM（空旷无干扰空中距离）
- 数据接口：S.BUS、UART、网口
- 温度范围：-20℃～ +60℃
- 湿度范围：20% ～ 95%
- 防水等级：PPX6
- 固件更新：支持（配合发射机 OTA 升级）
- 外形尺寸：71.0*63.0*21.4mm
- 机身重量：82g（不含天线及延长线）
- 认证：CE, SRRC, FCC ID: 2A2UNFR2000

- Product Model: Fr20
- Compatible Transmitters: F20
- Compatible RC Models: Multicopters, airplanes, vertical take-off and landing, agricultural drone, cars, boots, etc.
- RF: 800M, 1.4Ghz, 2.4GHz
- Maximum Power: <20dBm (e.i.r.p.) （EU）
- Antenna: External, foldable, and detachable dual antennas
- Operating Voltage: 7.2~72V/DC
- Resolution: 4096
- Distance: 30KM (air distance without interference)
- Data Interface: S.BUS, UART, LAN
- Temperature Range: -20℃ ~+60℃
- Humidity Range: 20%~95%
- Waterproof: PPX6
- Firmware Update: Supported (Transmitter-side OTA update)
- Dimensions: 71.0*63.0*21.4mm
- Weight: 82g (excluding antenna and extension cable)
- Certifications: CE, SRRC, FCC ID: 2A2UNFR2000

RGB LED 指示灯 RGB **LED Indicator**

接收机 RGB LED 指示灯用于指示接收机的电源及工作状态。

- LED 蓝色慢闪：初始化状态（接收机通电后会进入此状态，持续约 1 秒时间）。
- LED 红色慢闪：表示未与发射机通信或掉码。
- LED 红色快闪：表示进入对码状态。
- LED 红色常亮：表示与发射机通信正常。
- LED 红色三闪一灭：表示固件正在更新（OTA）。
- LED 绿色常亮：作为中继器使用时与发射机通信正常。

The receiver RGB LED indicator is used to indicate the power and operating status of the receiver.

- The LED flashes blue slowly: Initialization State (The receiver will enter an initialization state for approximately one second after power-up.)
- The LED flashes red slowly: This indicates that the receiver is not communicating with the transmitter or has lost signal.
- The LED flashes red rapidly: This indicates that the receiver is in the binding process.
- The LED is red solid on: This indicates that the receiver is communicating normally with the transmitter.
- When the LED in red operates in a three-flash-one-off state repeatedly, it indicates that the receiver's firmware is being updated via OTA.
- The LED is green solid on: It communicates normally with the transmitter when used as a repeater.

对码 **Binding**

Fr20 接收机支持双向对码。在双向对码完成后，发射机会显示接收机回传的信息。如需对码接收机与发射机，请按照以下步骤操作：

1. 使发射机进入对码状态；
2. 接收机进入对码状态：
   - 接收机通电；
   - 当 RGB LED 灯由蓝色慢闪改为红色慢闪后，长按 BIND（对码按键）3 秒；
   - 当 RGB LED 灯由红色慢闪变为红色快闪时，表示接收机进入对码状态，松开 BIND。
3. 当接收机的 RGB LED 灯红色常亮时，表示对码成功。
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。

The Fr20 receiver supports a two-way binding. After completing binding, the transmitter will display the information returned by the receiver. If you need to bind the receiver and the transmitter, the steps are as follows.

1. Put the transmitter into the binding mode.
2. Put the receiver into the binding mode:
   - Power on the receiver.
   - Wait for the RGB LED to switch from slow blue flash to slow red flash. Press and hold BIND (Binding Button) for 3 seconds.
   - When the LED rapidly flashes red, the receiver has entered binding mode; release BIND.
3. When the receiver's LED is red solid on, it indicates that the binding is successful.
4. Check if the transmitter and receiver are working properly. If you need to re-bind, please repeat the above steps.

功能相关 **Function**

数据接口介绍

UART1/UART2 接口：用于连接飞控。

S.BUS 接口：用于连接飞控。

网口 1/ 网口 2：接收机与摄像头的连接接口。

外接扩展口：用于引出 BIND（对码按键）和 RGB LED 指示灯的接口。当接收机安装在设备内部时，可由此将两者引出至外部，方便操作与状态观察。
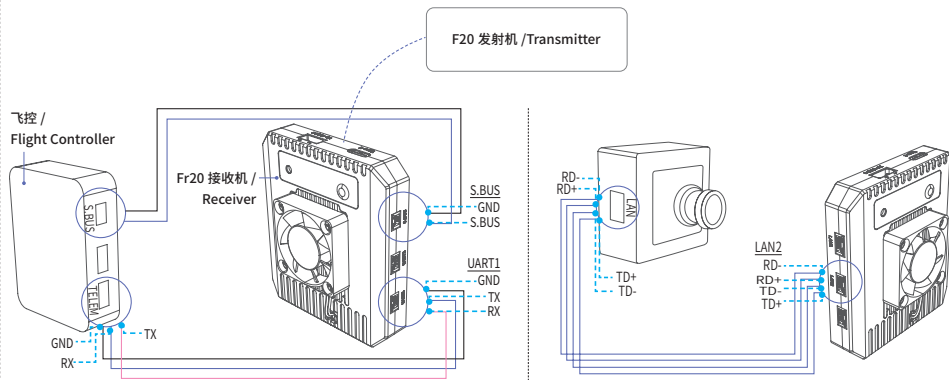
Data Interface Introduction

UART1/ UART2 Interface: Connects to a flight controller.

S.BUS Interface: Use this interface to connect your receiver to the flight controller using an S.BUS cable.

LAN1 / LAN2: Connects to a digital video.

Expansion Port: Used to extend the BIND (Binding Button) and RGB LED indicator. When the receiver is installed inside a device, these can be routed externally for convenient operation and status monitoring.

一种连接示意图 /A Connection Diagram

F20 发射机 /Transmitter

飞控 /
Flight Controller

Fr20 接收机 /
Receiver

S.BUS
GND
S.BUS

UART1
GND
TX
RX

GND
TX
RX

RD-
RD+

TD+
TD-

LAN2
RD-
RD+
TD-
TD+

功能相关 Function

功能介绍

作为图传接收机

本接收机与发射机建立正常通信，UART/S.BUS 接口连接飞控，网口连接摄像机 , 即可同时传输图像与数据。详见 F20 发射机说明书。

作为中继器

Fr20 也可设为中继节点：先与 F20 发射机对码，随后转发发射机的控制信号至目标飞机，并把飞机的遥测数据回传给发射机，形成双向中继链路。

中继对码步骤与普通接收模式相同，只需在发射机端选择"中继对码"即可。

将 Fr20 设置为中继器后，如需恢复为接收机，只需将其与发射机重新对码即可。

Feature Introduction

As a Video Receiver

This receiver establishes normal communication with the transmitter. By connecting the UART/S.BUS interface to the flight controller and the LAN to the digital video, it enables simultaneous transmission of video and data. For details, please refer to the F20 Transmitter User Manual.

As a Repeater

The Fr20 can also be configured as a repeater node: first bind it with the F20 transmitter, then forward the transmitter's signals to the target RC airplane, and repeater the airplane's telemetry data back to the transmitter, forming a bidirectional repeater link.

The binding procedure for repeater mode is the same as for normal receiver mode—simply select "Repeater Binding" on the transmitter side.

To restore the Fr20 to receiver mode after it has been set as a repeater, simply re-bind it to the transmitter.

固件更新 Firmware Update

本接收机的固件更新需要通过发射机 OTA 更新。步骤如下：

接收机与发射机先完成对码，然后通过发射机端完成固件更新。详细内容参考 F20 发射机说明书。

Firmware updates for this receiver can only be performed Over-The-Air (OTA) through the transmitter. The steps are as follows:

First, bind the receiver and the transmitter. Then, complete the firmware update from the transmitter side. For detailed instructions, please refer to the F20 Transmitter User Manual.

失控保护 Failsafe

本接收机支持失控保护功能。

S.BUS 信号自带失控标志位。失控时，接收机会置位该标志，并将预设的各通道保护值输出。下游设备（如飞控）检测到标志位后，便直接输出这些预设值。

This receiver supports failsafe functionality.

As the S.BUS data stream includes a dedicated failsafe flag, the receiver will activate this flag and output pre-programmed channel values upon signal loss. Consequently, downstream devices (e.g., flight controllers) can detect the flag and immediately switch to these preset values.

恢复出厂设置 Factory Reset

本接收机支持恢复出厂默认设置。步骤如下：

接收机通电初始化完成后，长按 BIND 10 秒，接收机恢复出厂设置，重新启动。

This receiver supports restoring factory defaults.

Steps:

Ensure the receiver has finished initialization after power-up. Press and hold the BIND button for 10 seconds. The receiver restores all factory settings and reboots automatically.

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。
- 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。
- 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.
- Normally, you must power on the transmitter and then receiver, and power off the receiver and then the transmitter.
- 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, [ShenZhen FLYSKY Technology Co., Ltd.] declares that the Radio Equipment [Fr20] 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: 2A2UNFR2000

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

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Figures and illustrations in this manual are provided for reference only and may differ from actual product appearance. Product design and specificatiions may be changed without notice.

http://www.flysky-cn.com