

RJ-ESP-Master

Wireless Synchronization Master Controller User Manual

English · Illustrated edition · 28 October 2026



From connection to playback

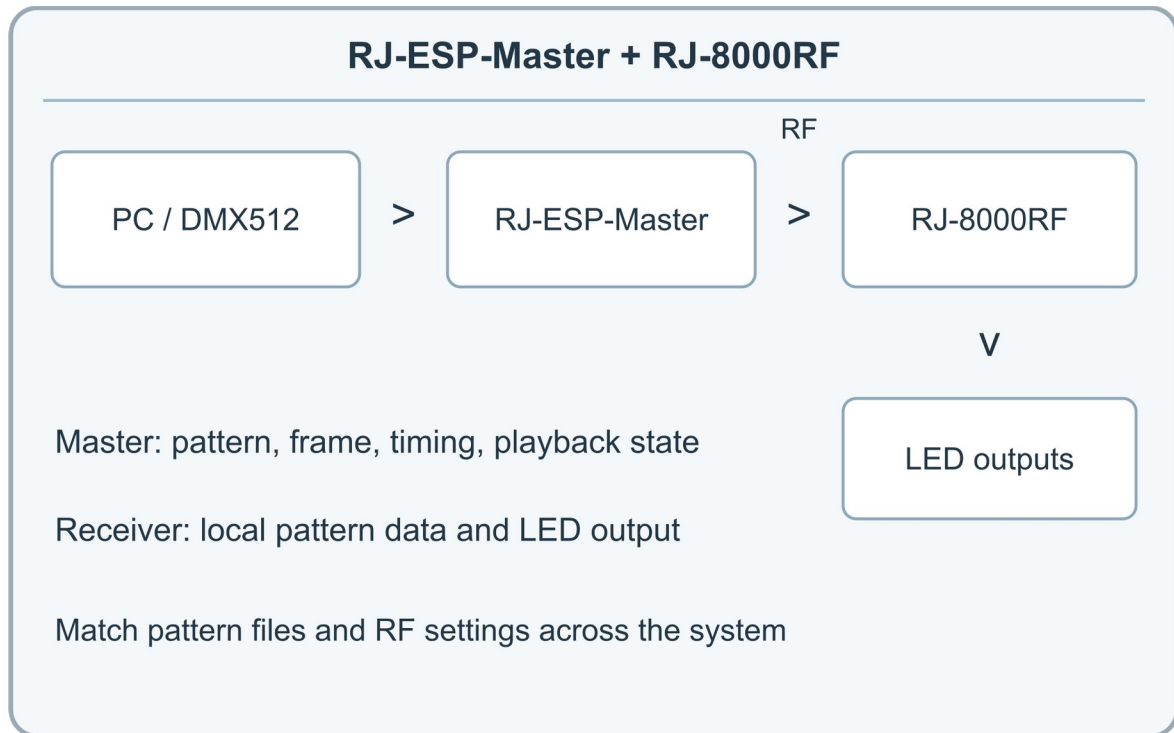
This manual covers connections, 13 functional screens, RF pairing, PC control and firmware upgrades. Start with wiring, configure the controller, verify one receiver, then expand to synchronized playback.

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Screen examples show version 3.0.0. Example parameters are not factory defaults. Button labels match the device.

Navigation and quick start

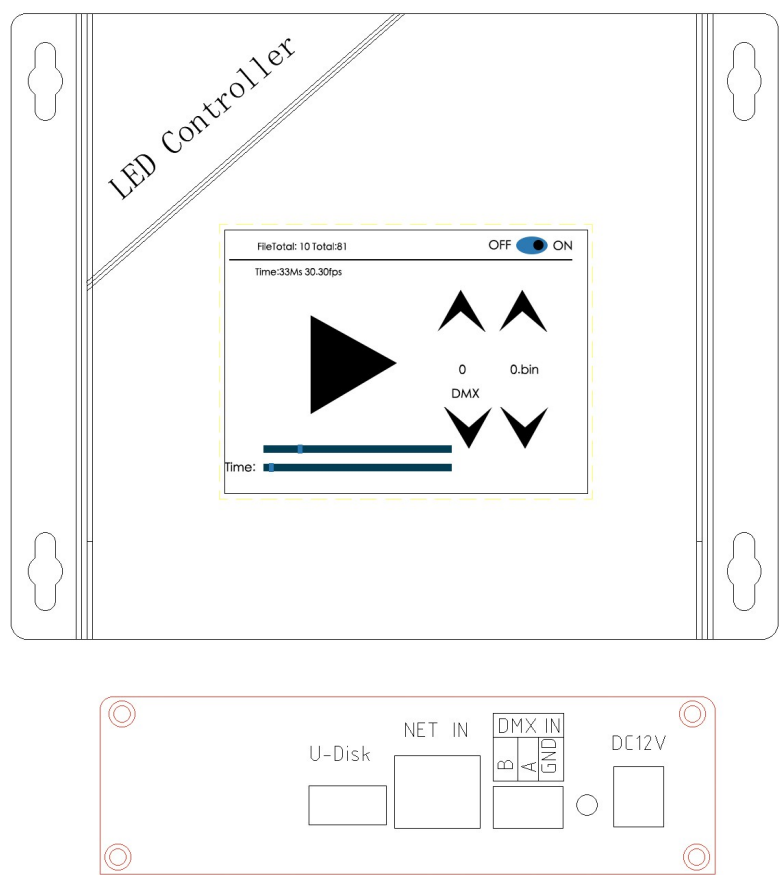
Item	Operation
03–09	Connections, Home, Setup, RF settings, U FILES, Time and Player.
10–14	Net pages for USB, Ethernet, Wi-Fi, Bluetooth and Clear Wi-Fi.
15–19	USB and online upgrades, pairing and DMX, PC connection and troubleshooting.



RJ-ESP-Master sends pattern numbers, frame numbers and playback commands. RJ-8000RF receivers read their locally stored lighting data to drive LEDs. Prepare corresponding pattern data for the Master and receivers.

First use: check DC12V power and signal wiring; match RF settings with one receiver; select a data source in Setup; set Time; open Player and test Play, Pause and Stop. Add receivers after the first link works.

Connections and wiring

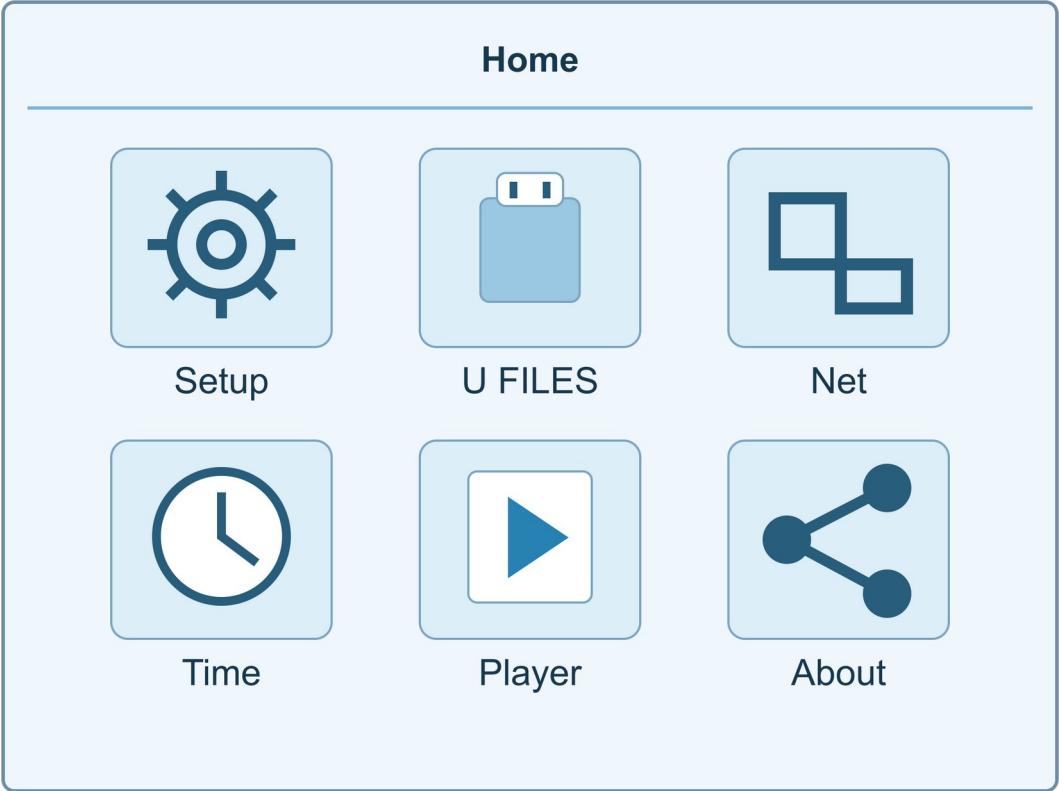


Enclosure reference drawing. Its screen shows the older single Play icon. See page 9 for the three-button controls.

Item	Operation
DC12V	Master power input. Check the rating and polarity. Do not substitute the receiver's DC5V supply rating.
USB / U-Disk	USB connects to a PC; U-Disk identifies USB-drive operation. Enable USB COM in Net for PC communication.
NET IN	Network port. Check link and IP status in Net.
DMX IN	Connect DMX512 to B, A and GND as labelled. Do not apply supply voltage to signal terminals.

01 Home

Path: Power on → Home



Screen diagram · Values shown are examples

Item	Operation
Setup	File format, data source, built-in frame count and initial screen. Open set RF for radio settings.
U FILES	Inspect the USB drive and select a file.
Net	View USB, Ethernet, Wi-Fi and Bluetooth and control their switches.
Time	Set the playback frame interval.
Player	Select a pattern and use Stop, Pause and Play.
About	View the version and use USB-drive or online firmware upgrade.

Tap an icon to enter a function. Exit or the return arrow goes back. The simplified icons retain the device's positions and labels.

02 Setup

Path: Home → Setup

SETUP

File Format

RJSC

▼

Data source

built-in

▼

Fram Num.

150

Initial screen

main

▼

set RF

◀ Exit

Screen diagram · Values shown are examples

Item	Operation
File Format	Select RJSC or agency. Renaming a file does not convert its format.
Data source	U Disk uses files on the USB drive; built-in uses built-in playback parameters.
Fram Num.	Total frame count for built-in mode, not FPS. The original screen spelling is retained.
Initial screen	main opens Home at startup; play opens Player.
set RF / Exit	set RF opens radio settings; Exit returns. Basic option changes are saved.

Select main while commissioning wiring. Existing loop settings may cause playback to start when Player opens.

03 RF settings

Path: Home → Setup → set RF

Speed: 6

Power: 30dBm

Channel: 23

LAddr.: 1

TGroup: 9

LGroup: 6

Tadd.: 1

Mode: A39

Packet: 22BYTE

UartPack: 22

Update

Exit

Screen diagram · Values shown are examples

Item	Operation
Mode	Select A39. AS32 is listed, but its configuration backend is not implemented in the current firmware.
Speed	Rate levels 1–6 map to codes 0–5. Level 6 is not a kbps value; consult the specific module’s rate table.
Power / Channel	Transmit power and channel. Power options are 15/24/27/30 dBm; select settings appropriate to the module and deployment.
LGroup / LAddr.	Local group and local address.
TGroup / Tadd.	Target group and target address for the receiver.
Packet	22BYTE or 11BYTE control-frame format; match the receiver protocol.
UartPack	A39 UART packet length, separate from Packet. Use the validated paired setting.

Tap Udata to apply. Test receiver operation after the success message. TGroup=9 and LGroup=6 are the target and Master local groups; they need not be equal.

04 U FILES

Path: Home → U FILES

U FILES

FILES

No U Disk

U Disk size :0Mb

FILE Name: No U Disk

FILE Size: 0

Refresh

Cancel

OK

Screen diagram · Values shown are examples

Prepare supported lighting files and insert the drive. If USB COM is enabled, turn it off before using the USB drive.

Item	Operation
Refresh	Rescan the drive and files.
FILES / File list	Open the file list, select a pattern, then check its name and size.
No U Disk	No usable USB drive is detected; it does not mean an opened file is empty.
OK / Cancel	OK confirms the selection; Cancel cancels the operation.

The firmware switches off USB-drive storage power while USB COM is enabled. Do not remove the drive during file access or upgrade.

05 Frame interval

Path: Home → Time

TIME

Time

Time:20 Ms 50.000000 fps

^

v

Cancel

OK

Screen diagram · Values shown are examples

Use the slider or arrow buttons to set the frame interval. The current range is 20–150 ms, with 1 ms per arrow step. Larger values produce slower playback.

Time	Configured FPS
20 ms	50.00
30 ms	33.33
33 ms	30.30
40 ms	25.00
50 ms	20.00
150 ms	6.67

FPS = 1000 ÷ Time(ms). OK saves and returns; Cancel discards changes. This is a configured rate, not measured RF throughput or receiver refresh performance.

06 Player

Path: Home → Player



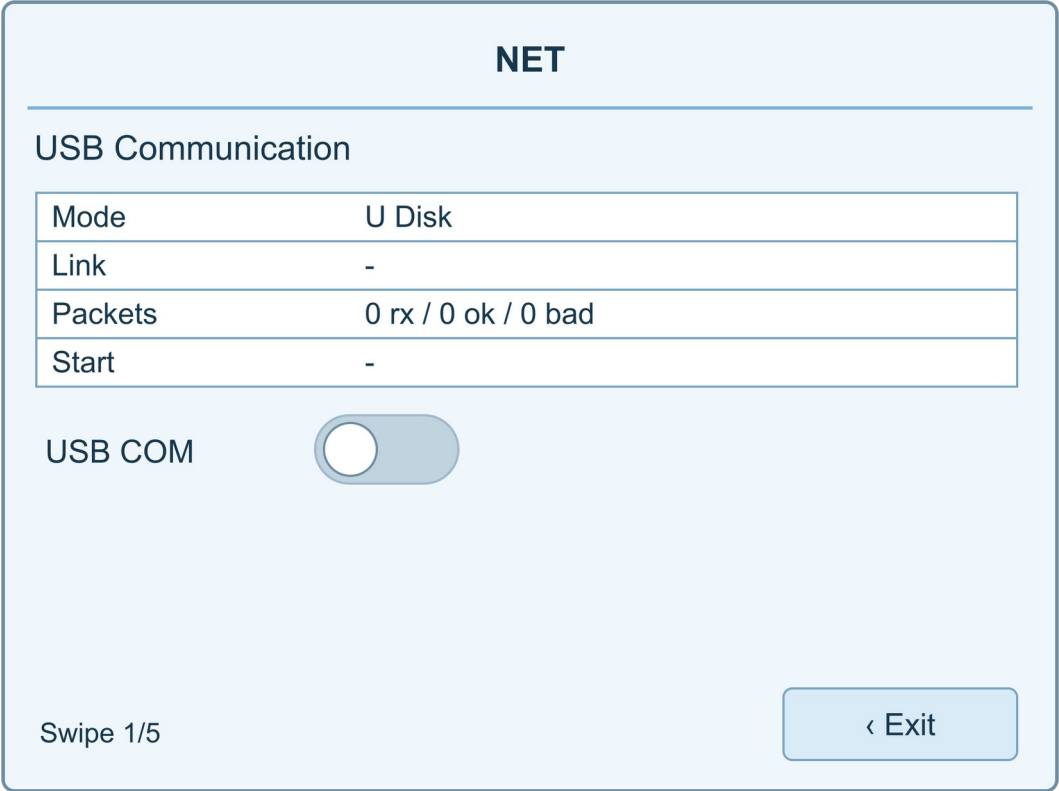
Screen diagram · Values shown are examples

Item	Operation
File Total / Total	File count / current total frame count. The upper-right switch controls looping.
■ ▶	Left to right: Stop, Pause, Play. Stop resets to frame 0 with zero RGBW output; Pause holds the current frame.
DMX / 10.bin	Left arrows adjust the DMX address; right arrows select the pattern file.
0/150 / Time	Upper slider: playback position. Lower Time slider: frame interval.
Return arrow	Leave Player. PC transport control requires the Master to remain on this page.

Pause or Stop does not shut down the radio; periodic hold-frame or zero-frame transmissions may continue.

07 USB communication

Path: Home → Net → USB Communication



Screen diagram · Values shown are examples

Item	Operation
USB COM	Off selects USB-drive mode; on selects USB serial communication. Stop playback before switching.
Mode / Link	Mode shows the active mode. Driver ready means the host driver is ready; Handshake OK confirms handshaking.
Packets	rx / ok / bad show received, forwarded and invalid packet counts.
Start / Details	Scroll the table vertically for additional packet and frame details.

A successful USB handshake does not switch screens automatically. Open Player manually on the Master before using PC playback controls.

Swipe horizontally in Net to change pages; scroll tables vertically for more information.

08 Ethernet status

Path: Home → Net → W5500 / UDP

NET

W5500 / UDP

W5500	Stopped
IP Ready	No
IP	0.0.0.0
Mask	0.0.0.0
Gateway	0.0.0.0
MAC	14:C1:9F:2F:00:8B

Swipe 1/5

◀ Exit

Screen diagram · Values shown are examples

Item	Operation
W5500	Ethernet module status. Stopped indicates the service is not running.
IP Ready	No means IP configuration is not ready.
IP / Mask / Gateway	Device IP, subnet mask and gateway. 0.0.0.0 does not indicate a working network connection.
MAC	Device network interface identifier; it can differ between units.

After connecting NET IN, check link and a valid IP. If unavailable, inspect the cable, switch port and network address allocation. Status values alone do not verify application communication.

09 Wi-Fi status

Path: Home → Net → HTTP / WiFi

NET

HTTP / WiFi

WiFi Mode	AP
STA Link	Disconnected
SSID	-
STA IP	0.0.0.0

ESP_RADIO_ENABLE

Swipe 1/5

⏪ Exit

Screen diagram · Values shown are examples

Item	Operation
WiFi Mode	Shows AP / STA mode. AP mode alone does not prove Internet access.
STA Link / SSID	Connection state and connected Wi-Fi name.
STA IP	Device address obtained for the router connection.
ESP_RADIO_ENABLE	Enables the ESP wireless network. This is separate from A39 transmit-power settings.

For an online upgrade, establish a working connection and valid IP before checking firmware in About.

10 Bluetooth provisioning

Path: Home → Net → Bluetooth

NET

Bluetooth

Bluetooth	Closed
Switch	OFF
Auto Off	-
Service	ZKI-2F008B

BLE

Swipe 1/5

◀ Exit

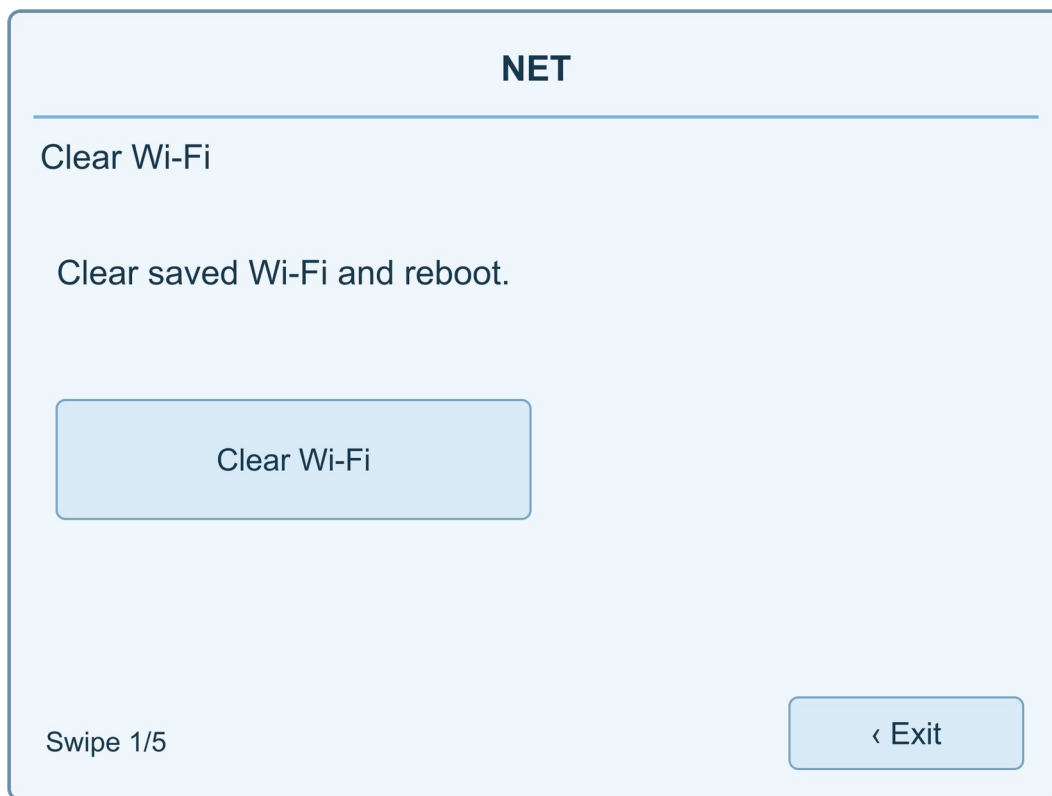
Screen diagram · Values shown are examples

Item	Operation
BLE	Enable or disable Bluetooth provisioning.
Bluetooth / Switch	Bluetooth operating state and switch state.
Auto Off	Automatic shutdown state. The current firmware turns provisioning off after about 30 seconds.
Service	Service name used to identify the unit. Device-specific suffixes may differ.

Match the Service name when provisioning. If BLE times out, enable it again to continue. After provisioning, check connection status and IP on the Wi-Fi page.

11 Clear Wi-Fi settings

Path: Home → Net → Clear Wi-Fi



Screen diagram · Values shown are examples

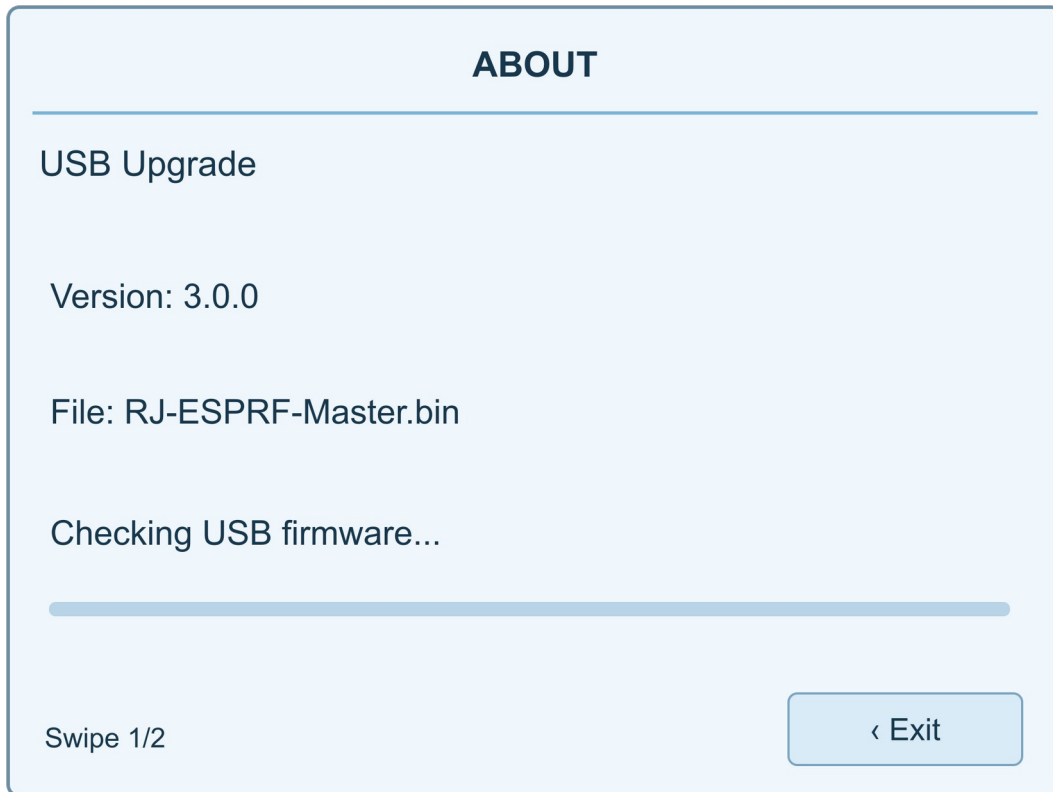
Use this page when you need to delete the saved Wi-Fi configuration and provision the controller again.

Item	Operation
Clear Wi-Fi	Clears saved Wi-Fi configuration and reboots the Master. The current implementation has no separate confirmation step.
Exit	Returns without clearing the settings.

Stop playback before using it. After restart, provision Wi-Fi again and check its status. This button is not a network refresh.

12 USB-drive firmware upgrade

Path: Home → About → USB Upgrade



Screen diagram · Values shown are examples

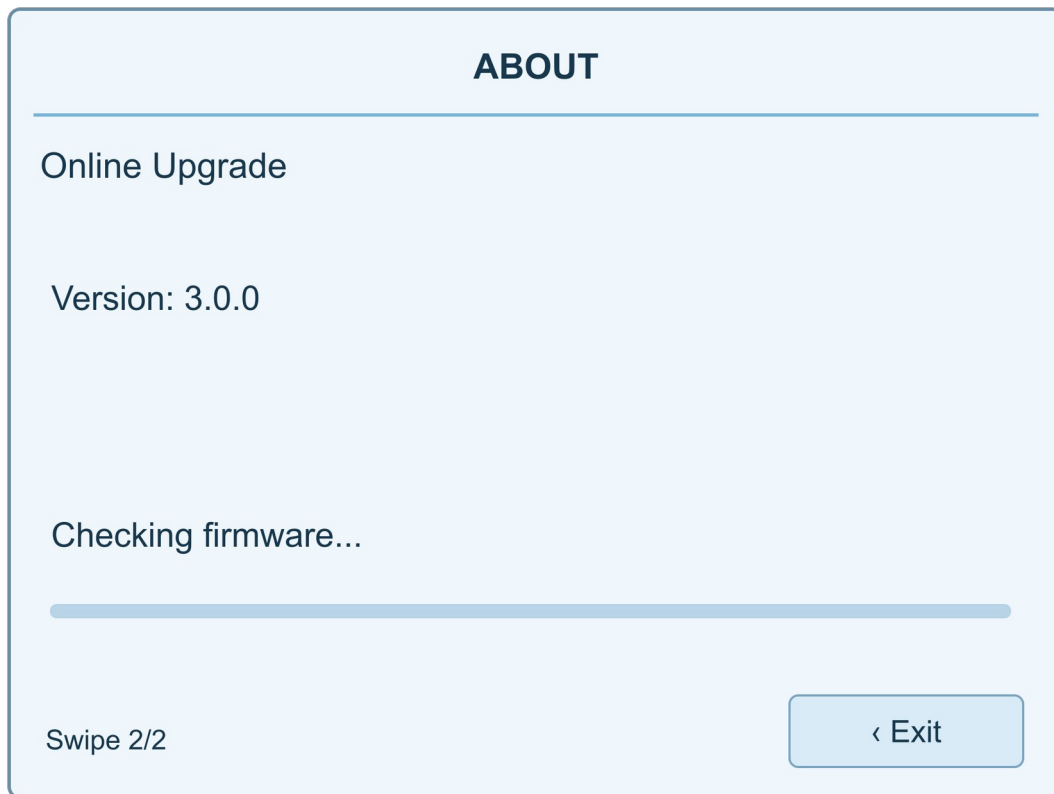
1. Obtain RJ-ESPRF-Master.bin intended for RJ-ESP-Master and place it in the USB-drive root.
2. Stop playback, turn USB COM off, insert the drive and confirm detection.
3. Open this page, wait for the check, then review and confirm the upgrade prompt.
4. Keep power stable; do not remove the drive or interrupt power. After restart, verify the version and key settings.

Checking USB firmware... means a check is in progress, not that an upgrade has succeeded. Do not use RJ-8000RF receiver firmware.

Record RF parameters, data source, Time, DMX address and initial screen before upgrading, then recheck them afterward.

13 Online firmware upgrade

Path: Home → About → Online Upgrade



Screen diagram · Values shown are examples

1. Check network connectivity and a valid IP in Net.
2. Swipe within About to Online Upgrade.
3. Wait for the result; review the new-version prompt before confirming.
4. Maintain network and power during the upgrade. After restart, check the version and playback functions.

Checking firmware... only indicates an ongoing check. If it persists, verify network access and update-service reachability. Use the company-provided USB-drive firmware when network access is unavailable.

RF pairing and DMX operation

Pair one receiver

Stop playback. Match radio rate level, channel, control-frame protocol and other paired RF settings. Set the Master target group/address to the receiver local group/address.

Example	Master	Receiver
Speed	6	6
Channel	23	23
Group	TGroup = 9	LGroup = 9
Address	Tadd. = 1	LAddr. = 1
Packet	22BYTE	Matching 22-byte protocol

This is a single-receiver example, not factory defaults or a broadcast configuration. Verify Play, Pause, Stop and frame progression before expanding under the paired receivers' configuration rules.

DMX input

With power off, connect B, A and GND. Open Player and set the DMX start address; 1–503 accommodates all 10 control channels. Avoid simultaneous PC and DMX control while commissioning.

From the start address, channel 1 selects 0.bin, channel 2 selects 1.bin, through channel 10 selecting 9.bin. A transition from ≤ 100 to > 100 triggers the pattern. When all monitored channels return to ≤ 100 , playback stops and resets.

For testing, keep the other nine channels at 0, raise the selected channel to 255, then return it to 0. The corresponding pattern file must exist.

PC connection procedure

Connection and control sequence

1. Stop playback and enable USB COM in Net → USB Communication.
2. Connect a USB data cable, open RJ-ESP-Master-Player and leave offline demo mode.
3. Select the correct serial port and handshake, then manually open Player on the Master.
4. Use PC Stop, Pause and Play after the Master Player screen is ready.
5. PC FPS, current frame and total frames follow Master status.

NET

USB Communication

Mode	U Disk
Link	-
Packets	0 rx / 0 ok / 0 bad
Start	-

USB COM

Swipe 1/5

◀ Exit

Handshake completion and Player readiness are separate states. Leaving Player disables PC transport control. Stop playback and turn USB COM off before using a USB drive.

Troubleshooting and field checks

Item	Operation
PC control unavailable	After handshaking, manually open Master Player and leave PC offline demo mode. Verify compatible versions.
Drive not detected	Turn USB COM off, check the drive connection and tap Refresh.
LEDs do not follow	Check receiver power and corresponding pattern files, then Mode, Speed, Channel, target group/address and Packet.
Incorrect speed	Distinguish Time in ms, FPS, RF Speed level and actual receiver refresh performance.
No DMX trigger	Remain on Player; check A/B/GND, the start address and files. Verify a channel transition across the 100 threshold.
Online check waiting	Check network connectivity, IP and update-service reachability.
No response after RF update	A configuration success message does not prove reception. Verify one receiver and check settings individually.

Field-check sequence

Power and connections → standalone receiver output → one RF link → Master transport controls → timing and frame progression → PC or DMX → multiple receivers.

When reporting a fault, record firmware version, screen, RF settings, file name and the complete sequence of operations.