

# **IP KVM Matrix Extender**

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**KFH151S/E\_TX    KFH151S\_RX**

**KFH151L\_TX    KFH151L\_RX**

**KFH251S\_TX    KFH251S\_RX**

## **User Manual**

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## User Information

### Telephone Support

For telephone support, please call below number:

TEL	0086-755-26755041
MOBILE	0086-13714411566

### User Notification

All information, documentation, and specifications contained in this manual are subject to change without prior notice. The manufacturer does not make any explicit or implied statement or guarantee about the contents of this document, especially for merchantability or fitness for any specific purpose. Any manufacturer's equipment described in this manual is sold or licensed as it is.

If the equipment is damaged artificially after purchase, the buyer (not the manufacturer, its distributor or reseller) shall bear all costs for necessary repair and any losses caused by equipment defects.

If the correct operating voltage setting is not selected before operation, the manufacturer will not be responsible for any damage caused by system operation.

**Please make sure the voltage has been set correctly before use.**

- User Information** ..... 1
  - Telephone Support ..... 1
- 1. Introduction** ..... 3
  - 1.1 Function ..... 4
  - 1.2 Feature ..... 4
  - 1.3 Safety Instructions ..... 5
  - 1.4 Product Overview ..... 6
  - 1.5 Components..... 9
    - Front Panel .....9
    - Rear Panel of Transmitter(TX) .....10
    - Rear View of Receiver (RX) ..... 11
- 2. Installation** ..... 12
  - 2.1 Installation of Extender ..... 12
- 3. Extender Configuration** ..... 17
  - 3.1 Use of UI Interface ..... 17
    - 【Name Setting of TX\_List】 ..... 18
    - 【User Login Interface】 ..... 19
    - 【The list of matched TX/RX】 ..... 19
  - 3.2 Function Setting ..... 20
    - 【Equipment Info】 .....21
    - 【Equipment Setting】 ..... 22
    - 【Frame Push】 ..... 24
    - 【Frame Get】 ..... 24
    - 【Update】 ..... 26
    - 【Hotkeys】 ..... 27
- 4. Specifications**..... 28
  - Specifications of KFH151S .....28
  - Specifications of KFH151L .....29
  - Specifications of KFH251S ..... 30

# 1. Introduction

The IP KVM Matrix System is a solution that combines KFH Series KVM extenders (KFH151S/E, KFH151L, KFH251S), with the IP KVM Matrix System to extend, control, and monitor access to computers, across a Local Area Network(LAN), in a multitude of ways. The system lets you set up a matrix of remote KVM consoles that access computers across a LAN, with the flexibility to control and configure each connection.

The high-performance KFH extenders consist of a transmitter and a receiver. The transmitter connects to a computer to deliver the computer's data to the receiver to collectively provide console access from a remote or separate location. The computer can be accessed via a network or direct Ethernet cable connection from the remote console.

The KFH extenders support flawless and lossless video compression quality with ultra-low latency, Latency as low as 16 milliseconds, and resolution up to 3840x2160@30Hz.

The extenders have a local On Screen Display (OSD) on the receiver end in configuring both the receiver and transmitter — for easy setup and operation.

The extenders can connect unit-to-unit or over a network via Gigabit Ethernet or the SFP ports. Connecting both methods allows network failover.

When working without the DC-SG centralized management, the IP KVM Matrix extenders feature the Slim Matrix Mode that makes up to 40 units (Tx & Rx ).

IP KVM Matrix Extenders allow flexible setup as they can make console-to-computer connections in several ways: one-to-one (Extender mode), one-to-many (Splitter mode), many-to-one (Switch mode), or many-to-many (Matrix mode).

The IP KVM Matrix Manager (DC-SG) allows you to define the aforementioned matrix connections and manage KFH extenders with features such as auto-detection of KFH extenders, username/password authentication, switching and sharing of connections, permissions, and more. Whether you're extending computer access for Monitoring, Editing, or Workstation setup, the IP KVM Matrix System gives you the flexibility and control to manage one or hundreds of extended connections.

The initial administrator account: admin Password: admin

## 1.1 Function

This product is to extend and switch USB peripherals such as keyboards, mouse, U disks, and video signals. As a professional product, it must not be used in any potentially explosive situations.

Please use this product in accordance with the instructions in this manual. Any use not in accordance with the instructions in this manual is considered as abnormal use. The product connected to the PC side is sender (TX), and to the monitor is receiver (RX).

## 1.2 Feature

- HDMI / USB2.0/Audio/Rs232 - IP KVM Matrix Extenders
- Flawless and lossless video compression quality with ultra-low latency(<1 frame/sec.)
- Supports standard resolutions from 640 x 480 to 3840x2160@30Hz
- OSD (On Screen Display) on the Receiver configures Tx / Rx devices
- Gigabit Ethernet port
- USB 2.0 over IP for KVM application
- Seamless and fast switching
- Supports connection via Gigabit Ethernet port (RJ-45) or SFP port for failover
- RS-232 serial ports allow you to connect to a serial terminal for configuration and serial devices such as touchscreens and barcode scanners
- Supports digital audio/ analog audio Hybrid Mode
- Direct connection- via a CAT6 cable, you can also connect the transmitter to multiple receivers and vice versa; each point can be supported by the unit up to 4(KFH251S)
- Connection via a Hub/switch - supports up to 40 units. Moreover, with the IP KVM Matrix Manager (DC-SG), it supports up to 9999 units(Tx & Rx)
- Remote login security
- Supports Power over Ethernet (PoE) functionality(KFH151E-TX)
- HDMI OUT loopback port on Transmitter(Tx)
- Hot pluggable, Upgradeable firmware
- Intelligent Dual Video Output Management — split two video sources from a dual display Transmitter and connect to each from different Receivers(KFH251S-TX/KFH251S-RX)
- VGA connection, local USB loop out, remote USB ON/OFF, remote powering on/off (KFH151L-TX/KFH151L-RX)
- Supports CAT5e/6/7 transmission. The longest point-to-point extension distance is up to 120m
- Push & Get - shares content instantly to/from a single Rx or video wall with just

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one click.

### 1.3 Safety Instructions

**WARNING! Read and understand all safety instructions.**

- Please follow all instructions, including prevention of serious accidents such as fire, explosions, etc. Please ensure users of this product have read and followed these warnings and instructions.
- Keep all safety information and instructions for future reference and pass them on to the third party together with product.
- The manufacturer is not liable for cases of material damage or personal injury caused by incorrect handling or non-compliance with the safety instructions. In such cases, the warranty will be voided.
- The product is not allowed to be used in potentially explosive environments.
- Check the product and the cables for any damage before use. If there is any visible damage, a strong odour, or overheating of components, unplug all the connections immediately and stop using the product.
- If the product is not installed and used in accordance with this manual, it may cause disruptive interference to the radio reception or other electronic products surrounded. Use shielded cables to connect components to avoid the above interference.
- Only the power adapter included with the product should be used as the power supply. Do not use other adapters.
- Make sure your local voltage matches the rating indicated on the product before powering on it.
- The product must be connected to a permanent and grounded AC wall socket.
- Protect cables from being squeezed or bent and place them in a way to prevent people from tripping over the cord.
- Avoid any damage to power adapter.
- Use the product with a suitable, properly installed and easily accessible power socket to make sure the product can be disconnected from the power socket at all times.
- Disconnect the product when not in use.
- Never touch the adapter with wet hands.
- Use the product within the specified performance limits.
- Keep the product away from any flammable materials like curtains.
- Keep the power adapter away from the third party, such as children.
- Keep the product away from heater.
- Do not drop or hit the product.

### 1.4 Product Overview

KFH151S/E\_TX    KFH151S\_RX



Front View



Rear View



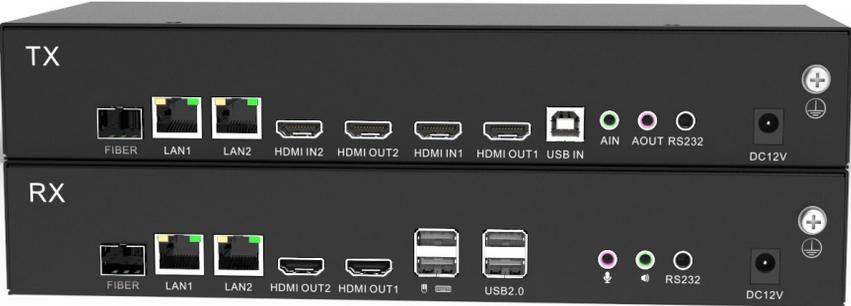
Front View



Rear View



Front View



Rear View

1.5 Components

Front Panel



KFH151S/E



KFH251S

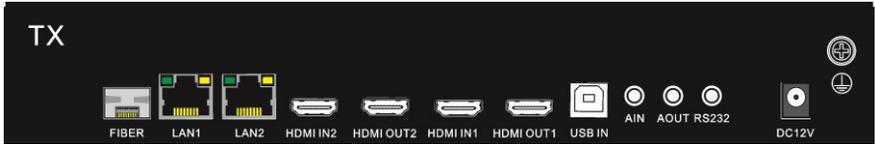
Table 1.1:

No	Name	Function
1	LINK	Connection indicator
2	PWR	Power indicator
3	LAN1	Connection indicator of LAN1
4	LAN2	Connection indicator of LAN2
5	FIBER	Connection indicator of FIBER

Rear Panel of Transmitter(TX)



KFH151S-TX/KFH151E-TX



KFH251S-TX

Table1.2:

No	Name	Function
1	FIBER	Fiber network connector
2	LAN1	LAN1 connector
3	LAN2	LAN2 connector
4	HDMI IN2	HDMI2 video signal input
5	HDMI OUT2	HDMI2 video signal loop out
6	HDMI IN1	HDMI1 video signal input
7	HDMI OUT1	HDMI1 video signal loop out
8	USB IN	USB Type-B, connect PC or server
9	AIN	Audio input
10	AOUT	MIC output
11	RS232	Serial port
12	DC12V	Connect to the 12V power supply
13		Ground the device

Rear View of Receiver (RX)



KFH151S-RX

KFH251S-RX



Table1.3:

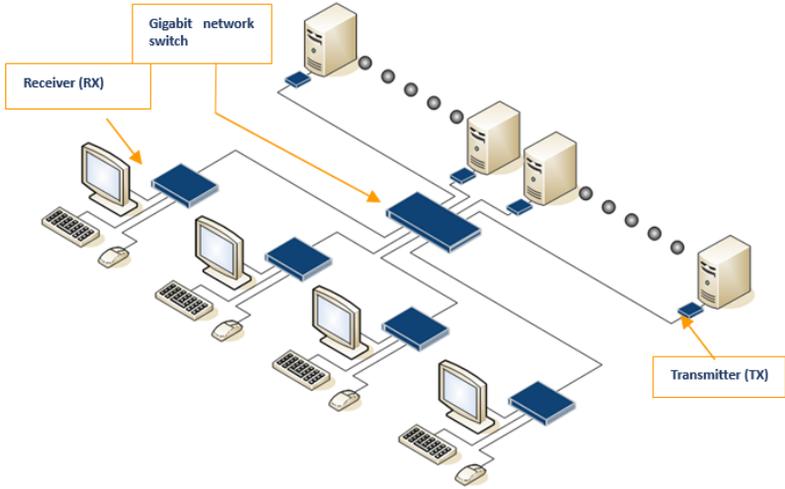
No	Name	Function
1	FIBER	Fiber network connector
2	LAN1	LAN1 connector
3	LAN2	LAN2 connector
4	HDMI OUT2	HDMI2 video signal output
5	HDMI OUT1	HDMI1 video signal output
6		Connect to a USB keyboard and mouse
7	USB2.0	Connect to USB2.0 peripherals
8		MIC input
9		Audio output
10	RS232	Serial Port
11	DC12V	Connect to the 12V power supply
12		Ground the device

2. Installation

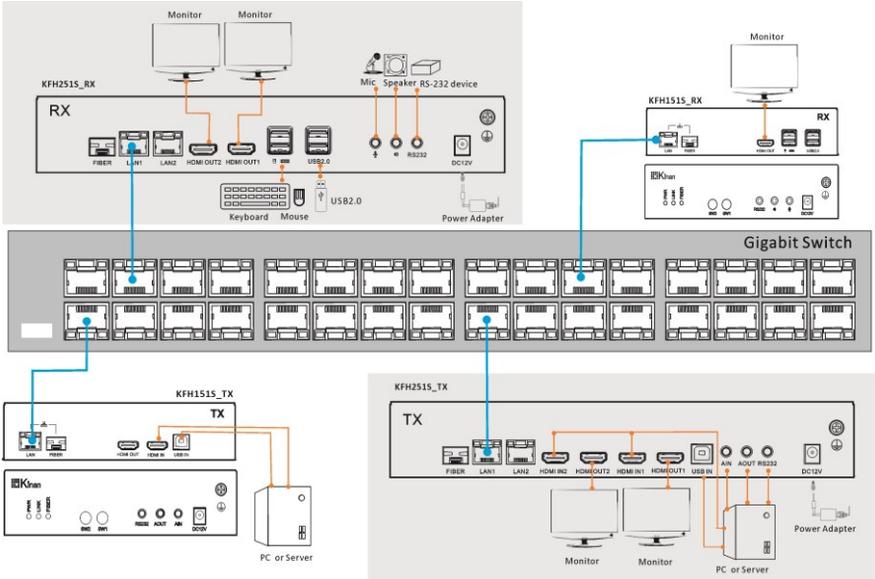
2.1 Installation of Extender

Warning! Please read and be aware of all safety instructions before installing the equipment. The extender can be set as a point-and-point mode to access a single PC, and also can access multiple PCs through matrix switching system.

Matrix switching system



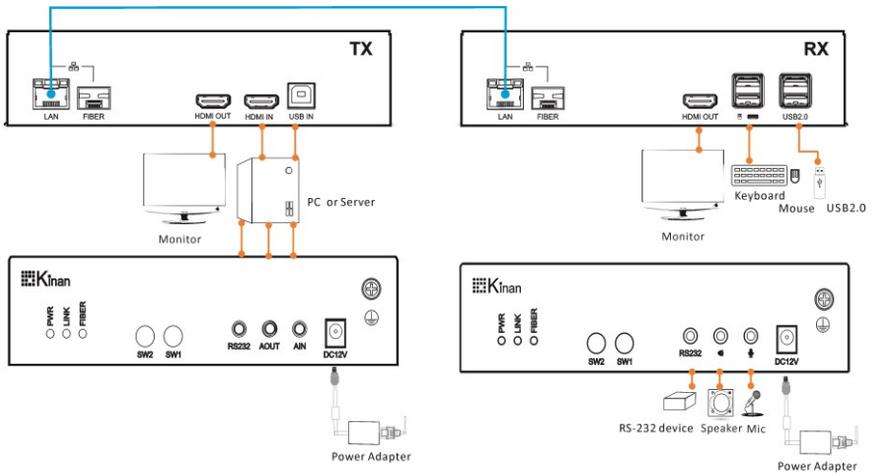
Matrix Connection Diagram



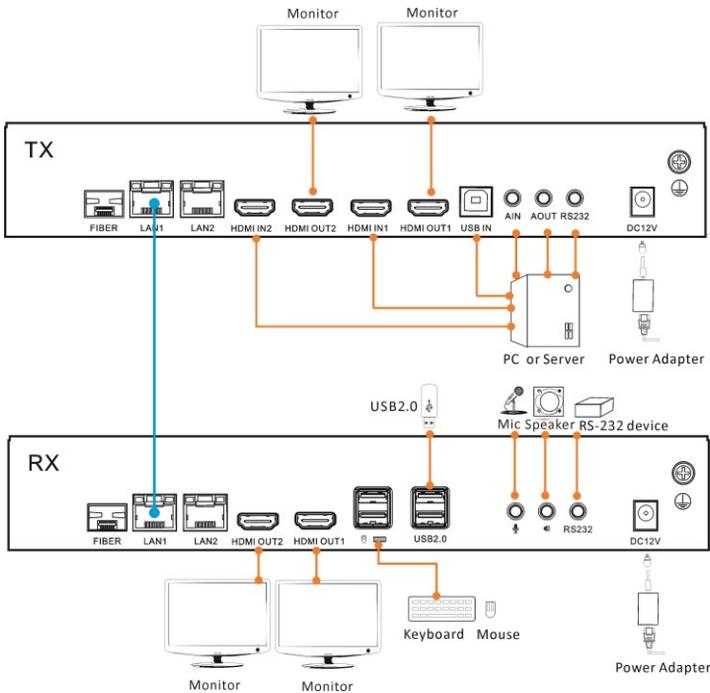
Configuration requirements: The electrical port of the network switch must reach a gigabit rate and support IGMP multicast. Huawei S5735 series and H3C-S5120 series network switches are recommended.

Single transmitter (TX) connected to a single receiver (RX)

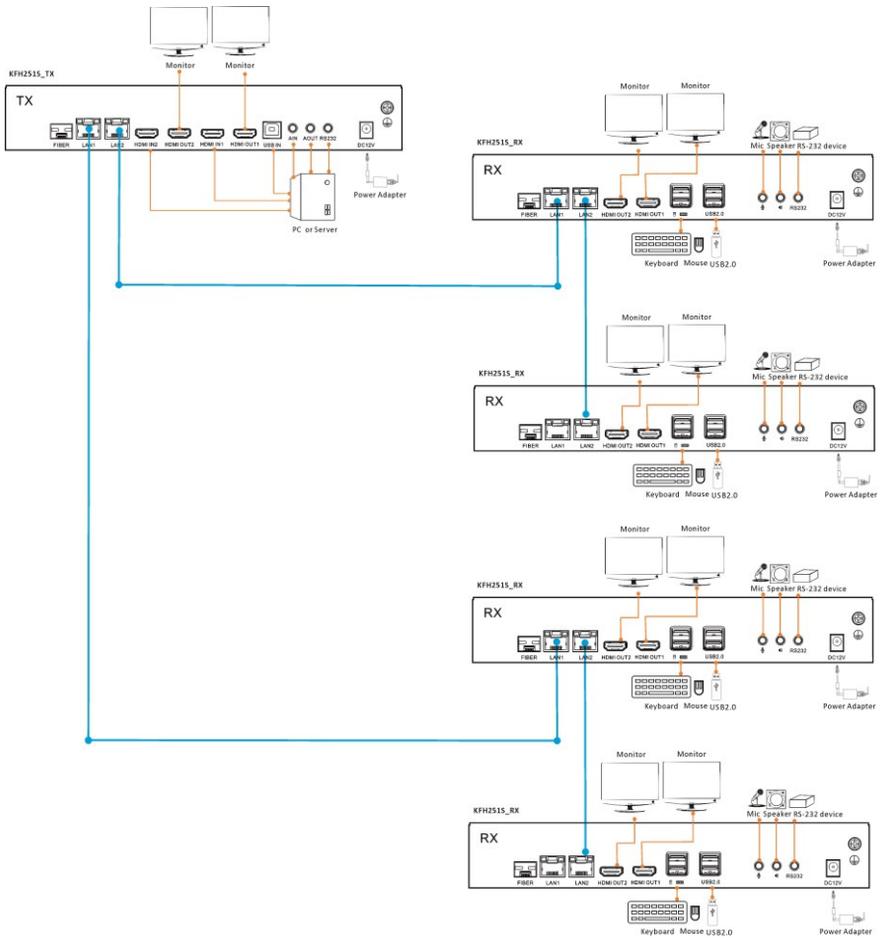
Connection Diagram of KFH151S



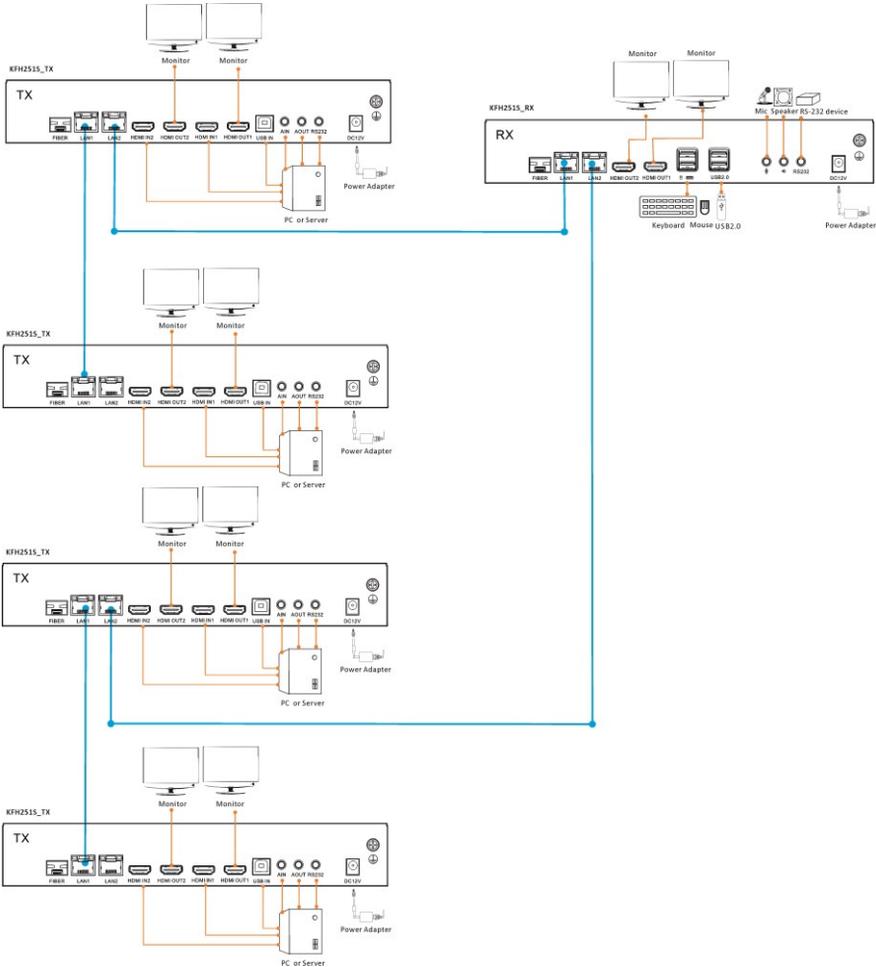
Connection Diagram of KFH251S



Single transmitter (TX) connected to multiple receivers(RX)



Multiple transmitters (TX) connected to a single receiver(RX)



### 3. Extender Configuration

#### 3.1 Use of UI Interface

Press the left [Ctrl] key on the keyboard 3 times continuously, then the main UI interface will display.

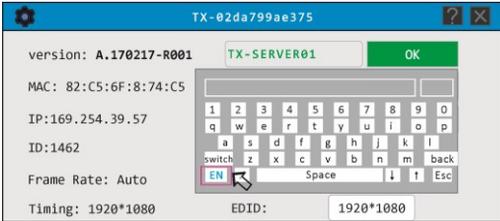


Function Name	Description
	Scan device list
	The list of matched transmitter and receiver
	Setting of function key
	Click <b>【Equipment setting】</b> - <b>【User Setting Pass】</b> to logout user account
SN	Number of connected device
TX_List	List of transmitter
Status	Busy: Matched Busy  : The tx has been connected No video: The input video of TX is not available Connect : Can be connected
QV	Reserved
	Find the devices in the list
CN	EN: English version CN: Chinese version

**【Name Setting of TX\_List】**

Double-click the name of [Central Manage Server 1], then the following name setting appears.



Function Name	Description
CentralManage Server 1	Click to modify the TX name (support Chinese), then click OK to confirm  EN: English Version CN: Chinese Version
Reboot	Reboot the device
Restore factory	Restore Factory Defaults
Bit Rate	Bit Rate, Auto , 10M ,50M, 100M, 150M, 200M
Network mode	Multicast mode Unicast mode

**【User Login Interface】**

This model was set as password mode:  (See User Setting on Page 16), the login interface will only appear after clicking the icon 

UserName:

Password:

login

User Name:	admin
Password:	admin

**【The list of matched TX/RX】**

Click function key , then the following menu will appear:

 admin
RX-82220785f097
versin:A.170217-R001
✖

TX	RX
TX-02db0b1a6633	RX-826d9539bf91
TX-0234b3616d6b	
TX-02da799ae375	RX-82220785f097
TX-02bf64e94952	RX-82bcf4d41966

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The device name in the TX list and the RX list: it means that the TX and RX are matched successfully, and the device name in green is the connected device of this machine.

3.2 Function Setting

Click the function key  ,

then below menu will appear:

 admin
RX-82220785f097
versin:A.170217-R001
✕

Operating mode: Matrix

system state: ✔ Usb2.0 ✔ Audio ✔ Get ✔ Push

Output timing: 1080p@60

Total TX: 4      Total RX:2

MAC: 82:C5:6F:8:74:C5

IP: 169.254.39.57

Version: A.170217-R001

Equipment info

Equipment setting

Frame push

Frame Get

Update

Hotkeys

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Function Name	Description
Equipment Info	To switch on/off USB, Audio, Get, Push
Equipment Setting	System and User Settings
Frame Push	Push the video and USB signals from current receiver to the chosen receiver in the list
Frame Get	Get the video and USB signals from any receiver in the list to the current receiver
Upgrade	Update device
Hotkey	Hotkeys of device

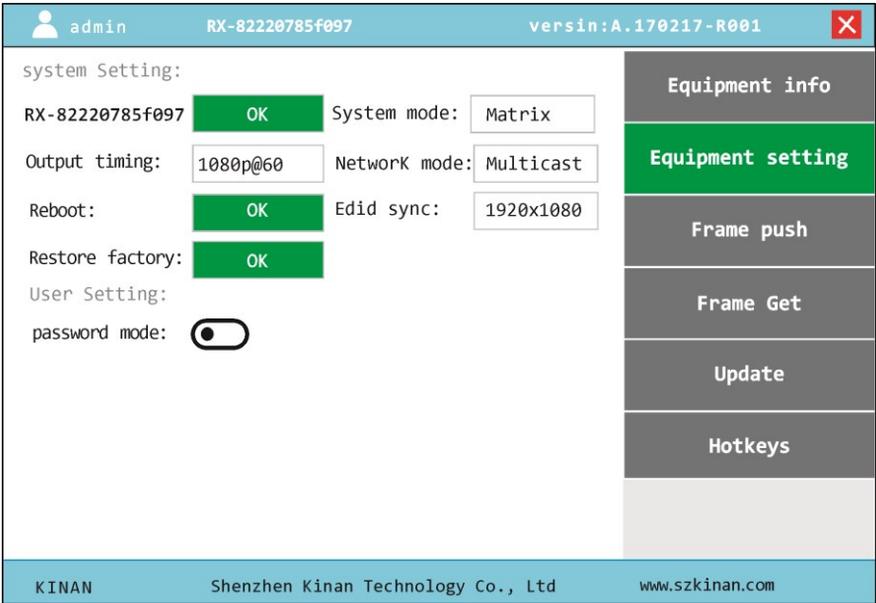
**【Equipment Info】**

Choose  , the system status can be switched.

The screenshot shows a web interface for an IP KVM Matrix Extender. At the top, there is a header bar with a user icon and the name 'admin', a device ID 'RX-82220785f097', and the version 'versin:A.170217-R001'. Below the header, the main content area is divided into two sections. On the left, the 'system state' is displayed, showing 'Operating mode: Matrix' and a list of four checked status items: 'Usb2.0', 'Audio', 'Get', and 'Push'. Below these are system details: 'Output timing: 1080p@60', 'Total TX: 4', 'Total RX:2', 'MAC: 82:C5:6F:8:74:C5', 'IP: 169.254.39.57', and 'Version: A.170217-R001'. On the right, there is a vertical sidebar with a green 'Equipment info' button at the top, followed by buttons for 'Equipment setting', 'Frame push', 'Frame Get', 'Update', and 'Hotkeys'. At the bottom of the interface, a footer bar contains the company name 'KINAN', 'Shenzhen Kinan Technology Co., Ltd', and the website 'www.szkinan.com'.

Function Name	Description
Usb2.0	USB2.0 function
Audio	Audio function
Get	Get video
Push	Push video

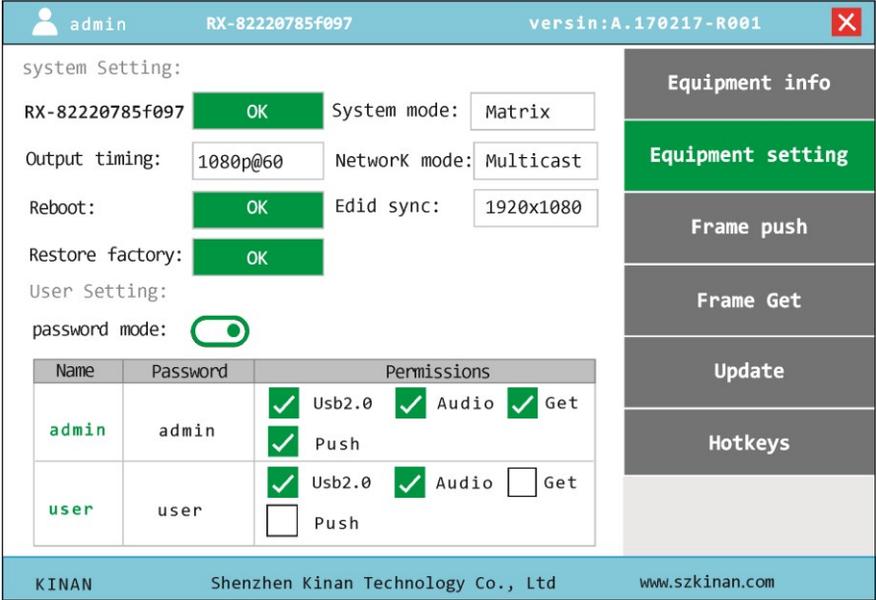
**【Equipment Setting】**



Function Name	Description
RX-8220785F097	Click to change the name of RX, then click on OK button to confirm your modification.
Output timing	Resolution 1080P@60, 1080P@50, 2160@30, 2160@25, 720P@60, 1366x768, 1440x900, 1920x1200, 1400x1050
Reboot	Reboot device
Restore factory	Restore factory defaults
System mode	Matrix mode P2P mode
Network mode	Multicast mode Unicast mode
Edid Sync	EDID Sync AUTO, 1024x768, 1280x1024, 1366x768, 1600x900, 1920x1080, 1920x1200, 3840*2160
Password mode	Modify user name and set permissions

User Setting:

Click “  ”, swipe right to “  ”, then the following menu will appear. You can modify user password and set permissions.



The screenshot shows a web interface for the IP KVM Matrix Extender. At the top, it displays 'admin', 'RX-82220785f097', and 'versin:A.170217-R001'. The main content area is divided into 'system Setting:' and 'User Setting:'. Under 'system Setting:', there are fields for 'RX-82220785f097' (OK), 'System mode:' (Matrix), 'Output timing:' (1080p@60), 'Network mode:' (Multicast), 'Reboot:' (OK), 'Edid sync:' (1920x1080), and 'Restore factory:' (OK). Under 'User Setting:', there is a 'password mode:' toggle switch (ON). Below this is a table with columns 'Name', 'Password', and 'Permissions'. The table lists two users: 'admin' and 'user'. The 'admin' user has permissions for 'Usb2.0', 'Audio', 'Get', and 'Push'. The 'user' user has permissions for 'Usb2.0', 'Audio', and 'Push'. On the right side, there is a vertical menu with options: 'Equipment info', 'Equipment setting' (highlighted in green), 'Frame push', 'Frame Get', 'Update', and 'Hotkeys'. At the bottom, it shows 'KINAN', 'Shenzhen Kinan Technology Co., Ltd', and 'www.szkinan.com'.

Function Name	Description
Password	Double click the name in the Password list to modify the password of corresponding user
Permissions	Set permissions for USB2.0, Audio, Get, Push

**【Frame Push】**

admin		RX-82220785f097		versin:A.170217-R001		✖	
SN	Rx-List	Push	▲				
1	 RX-826d9539bf91	Push		Equipment info			
2	 RX-824970a75774	Push		Equipment setting			
3	 RX-82bcf4d41966	Push		Frame push			
4				Frame Get			
5				Update			
6				Hotkeys			
7							
8							
9							
10							
11							
12							

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Click **【Push】** to push the video and USB signals from current receiver to the chosen receiver in the list.

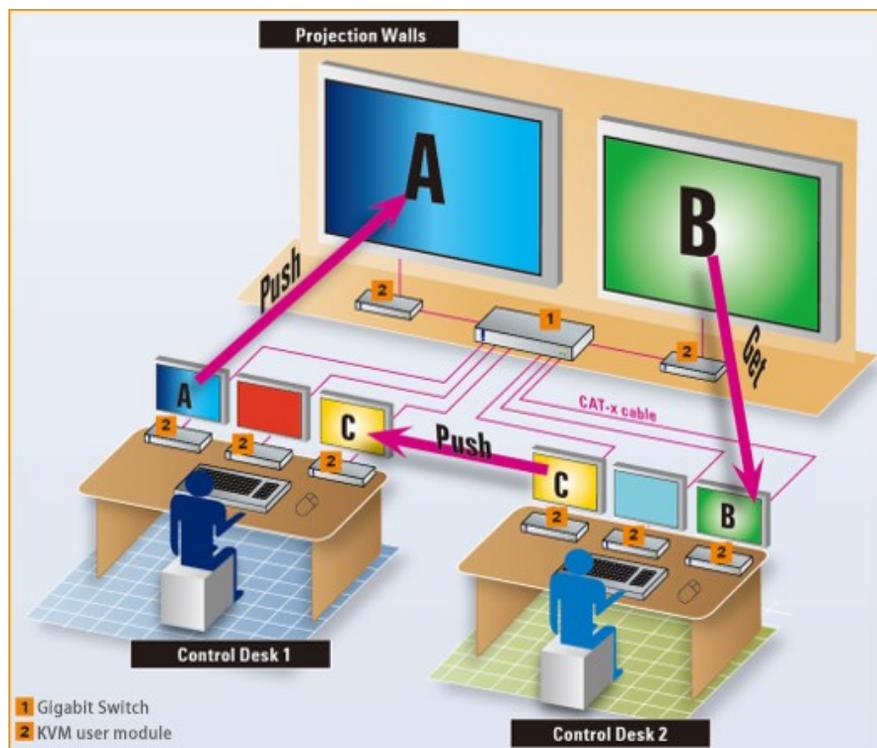
**【Frame Get】**

admin		RX-82220785f097		versin:A.170217-R001		✖	
SN	Rx-List	Get	▲				
1	 RX-826d9539bf91	Get		Equipment info			
2	 RX-824970a75774	Get		Equipment setting			
3	 RX-82bcf4d41966	Get		Frame push			
4				Frame Get			
5				Update			
6				Hotkeys			
7							
8							
9							
10							
11							
12							

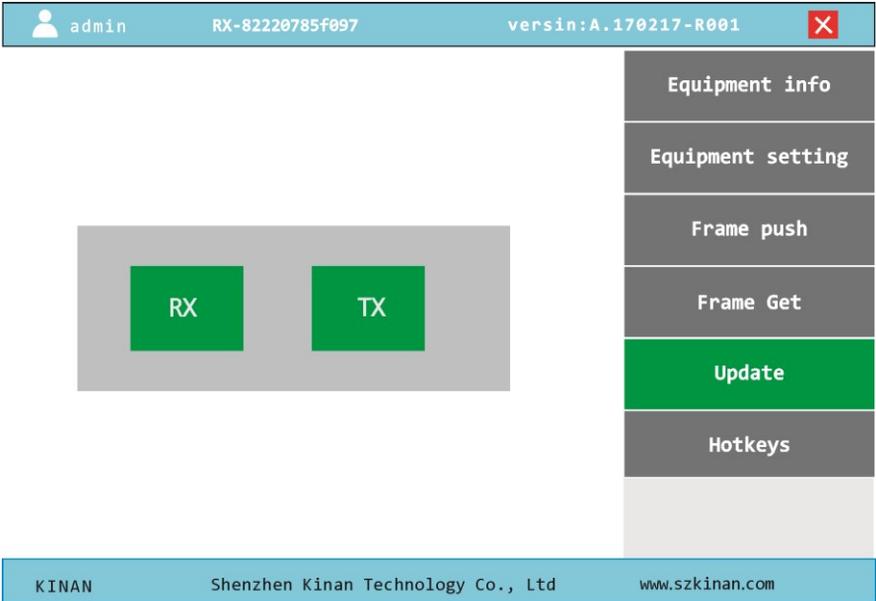
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Click **【Get】** to get the video and USB signals from any receiver in the list to the current receiver.

## Connection Diagram of Collaborative Sharing Push &amp; Get



**【Update】**



Click **【RX】** to update RX

Click **【TX】** to update TX

**【Hotkeys】**

 admin
RX-82220785f097
versin:A.170217-R001
✕

Press the hotkey 3 time quickly

left Ctrl ----> UI Display

left Shift ----> Disconnect SVR

right Ctrl ----> Pause the frame

right Shift ----> Turn off the mointor output

Equipment info

Equipment setting

Frame push

Frame Get

Update

Hotkeys

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Function Name	Description
Left Ctrl	Display the UI interface
Left Shift	Disconnect
Right Ctrl	Lock/Unlock the current screen
Right shift	Turn off/on the display output (black screen)

## 4. Specifications

### Specifications of KFH151S

Specifications		KFH151S/E_TX	KFH151S_RX
Connections	HDMI input	1	N/A
	HDMI output	1	1
	Power	12V	12V
	LAN port	RJ45 x 1	RJ45 x 1
	Optical Module	SFP+ x 1	SFP+ x 1
	Mic	3.5MM Stereo Jack (Green)	3.5MM Stereo Jack (Pink)
	Speaker	3.5MM Stereo Jack (Pink)	3.5MM Stereo Jack (Green)
	Square USB	1	N/A
	USB 2.0	N/A	USB x 4
	POE	KFH151E_TX	N/A
Resolution	3840*2160@30Hz		
Cable	CAT5e/6/7 Or Optical Fiber Cable (mode is up to optical module)		
I/R Value	DC12V / 2A	DC12V / 2A	
Power consumption	6W	6W	
Operating temperature	0—50 °C		
Storage temperature	-20—60 °C		
Humidity	0—80% RH, non-condensing		
Material	Metal		
Net weight(kg)	0.72 kg	0.72kg	
Product dimension (W × D × H)	180mm x 123.5 mm x 44mm		
Package dimension (W × D × H)	395 mm x 274 mm x 110mm		

## Specifications of KFH151L

Specifications		KFH151L_TX	KFH151L_RX
Connections	HDMI input	1	N/A
	HDMI output	N/A	1
	VGA in	1	N/A
	VGA out	N/A	1
	Power	12V	12V
	LAN port	RJ45 x 1	RJ45 x 1
	Optical Module	SFP+ x 1	SFP+ x 1
	Microphone	3.5MM Stereo Jack (Green)	3.5MM Stereo Jack (Pink)
	Speaker	3.5MM Stereo Jack (Pink)	3.5MM Stereo Jack (Green)
	Square USB	1	N/A
	USB 2.0	USB x 2	USB x 4
	RS485	1	1
Resolution		3840*2160@30Hz	
Cable		CAT5e/6/7 Or Optical Fiber Cable (mode is up to optical module)	
I/R Value		DC12V / 2A	DC12V / 2A
Power consumption		6W	6W
Operating Temperature		0—50 °C	
Storage temperature		-20—60 °C	
Humidity		0—80% RH, non-condensing	
Material		Metal	
Net weight (kg)		0.75 kg	0.75kg
Product dimension (W × D × H)		180mm x 123.5 mm x 44mm	
Package dimension (W × D × H)		395 mm x 274 mm x 110mm	

**Specifications of KF251S**

Specification		KFH251S_TX	KFH251S_RX
Connections	HDMI input	2	N/A
	HDMI output	2	2
	Power	12V	12V
	LAN port	RJ45 x 2	RJ45 x 2
	Optical Module	SFP+ x 1	SFP+ x 1
	Microphone	3.5MM Stereo Jack (Green)	3.5MM Stereo Jack (Pink)
	Speaker	3.5MM Stereo Jack (Pink)	3.5MM Stereo Jack (Green)
	Square USB	1	N/A
	USB 2.0	N/A	USB x 4
Resolution	3840*2160@30Hz		
Cable	CAT5e/6/7 Or Optical Fiber Cable (mode is up to optical module)		
I/R value	DC12V / 2A	DC12V / 2A	
Power consumption	12W	12W	
Operating temperature	0—50 °C		
Storage temperature	-20—60 °C		
Humidity	0—80% RH, non-condensing		
Material	Metal		
Net weight(kg)	1 kg	1kg	
Product dimension (W × D × H)	272 mm x 115.5 mm x 44mm		
Package dimension (W × D × H)	395 mm x 274 mm x 110mm		