

# **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.**

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# 1. Introduction

The IP HD digital KVM matrix extender is a highly optimized KVM extender. When it is connected point-to-point through Ethernet cable, the transmission distance can be up to 120m, and resolution up to 3840x2160@30Hz. The extenders of this series connected to a Gigabit network switch can form a matrix switching system which supports Point-to-Point (P2P) mode and Matrix mode. Without using the centralized management platform, it can independently form a network system and supports up to 40 units of senders and receivers; Otherwise, it supports up to 9999 units based on the network bandwidth. The matrix switching system allows seamless switching. It can connect, operate and control multiple signal sources (such as servers, workstations, cameras and video TV walls) without the centralized management platform.

The matrix switching system allows computers and servers to locate in the central server room away from the workbench, which improve safety, reduce the temperature and noise of the working environment, and provide a quiet and friendly human-computer interaction environment.

The video compression algorithm of IP HD digital KVM matrix extender perfectly combine the high quality image together with low latency (16ms/1080P@60Hz). The USB and video signals are transmitted through CAT5e/6/7 cable or optical fiber cable.

The USB2.0 transparent transmission technology supports USB devices like touch screens, USB sound cards, printers, and USB storage devices.

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 Extender
- Visually lossless compression transmission; ultra-low latency (  $\approx 16\text{ms}@60\text{Hz}$ ); Typical transmission bandwidth: 50~300Mbps
- Graphical UI interface (Language in Chinese and English), which can realize human-computer interaction such as intuitive and convenient port switching
- Supports seamless, no black screen switching between PCs
- Supports USB2.0 transparent transmission with transfer rate up to 12MB/s
- Supports 1 channel RS232 asynchronous serial port transmission
- Supports analog and digital audio and microphone
- HDMI OUT loopback port on Transmitter (TX)
- Resolution up to 3840x2160@30Hz
- Supports single-mode and multi-mode optical fiber transmission. The transmission distance depends on the type of optical module
- Supports CAT5e/6/7 transmission. The longest point-to-point extension distance up to 120m
- Diversified connection:
  - ①Point-to-point connection allows 1 RX to control 4 PCs, or 4 RXs to share and control 1 PC;
  - ②Connect it to a standard Gigabit network switch (with IGMP multicast function) to form a matrix switching system. Without using of centralized management platform, it supports up to 40 units; With the centralized management platform, it supports up to 9999 units (RX & TX).
- Supports redundant network backup (optical port & network port)
- Supports screen lock
- Supports one administrator account (Admin) and one User account
- Supports multi-channel HDMI video synchronous switching (KFH251E-TX/KFH251E-RX)
- Supports VGA connection, local USB loop out, remote USB ON/OFF, remote powering on/off (KFH151L-TX/KFH151L-RX)
- Supports POE on transmitter (KFH151E-TX)
- Supports collaborative sharing - Push & Get

## 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

KFH151L\_TX    KFH151L\_RX



Front View



Rear View



KFH251S\_TX    KFH251S\_RX



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)

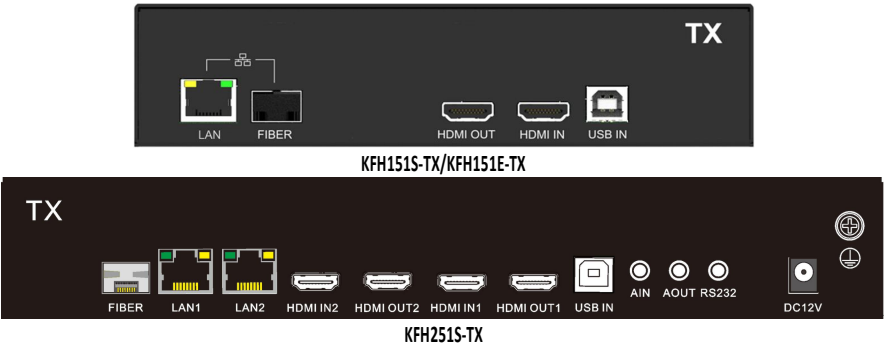



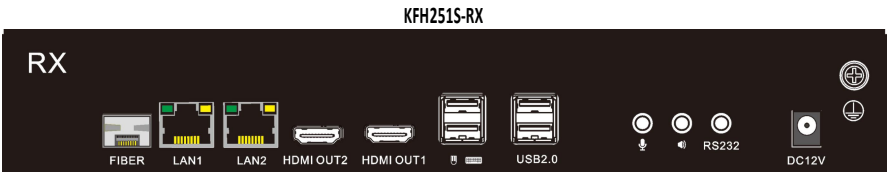
Table1.2:

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:

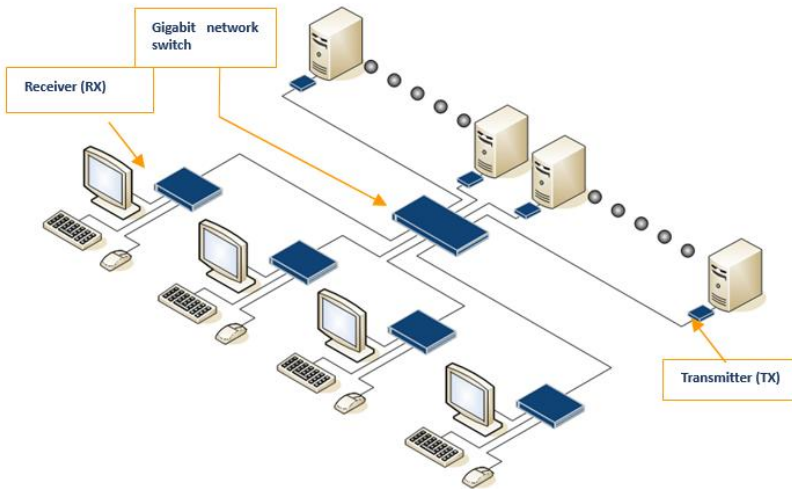
No	Name	Function
1	FIBER	Fiber network connector
2	LAN1	LAN1 connector
3	LAN2	LAN2 connector
4	HDMI OUT2	HDMI2 video signal output
5	HDMI OUT1	HDMI1 video signal output
6		Connect to a USB keyboard and mouse
7	USB2.0	Connect to USB2.0 peripherals
8		MIC input
9		Audio output
10	RS232	Serial Port
11	DC12V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

## 2. Installation

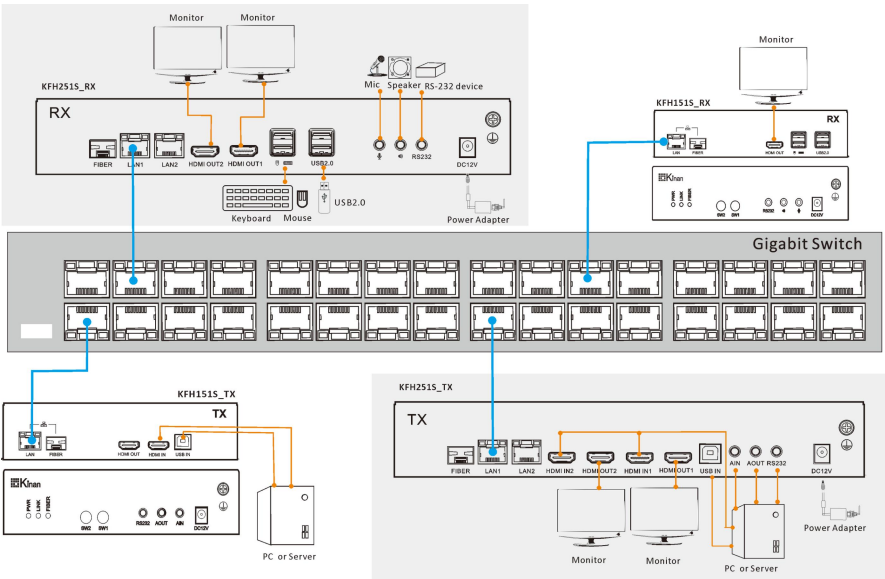
### 2.1 Installation of Extender

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

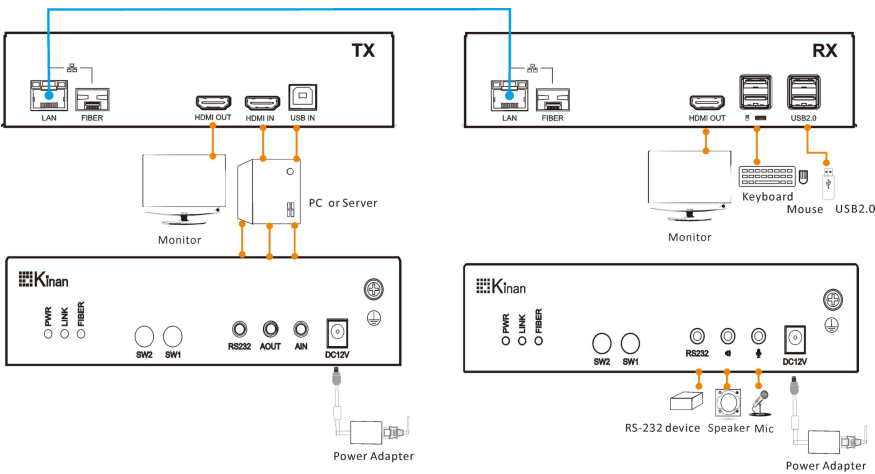


Matrix Connection Diagram

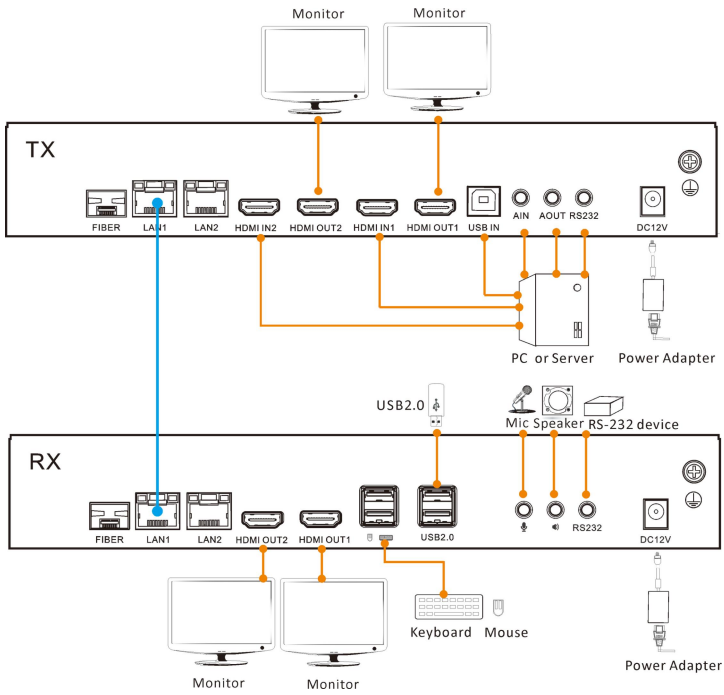


Configuration requirements: The electrical port of the network switch must reach a gigabit rate and support IGMP multicast.  
Huawei S5735 series and H3C-S5120 series network switches are recommended.

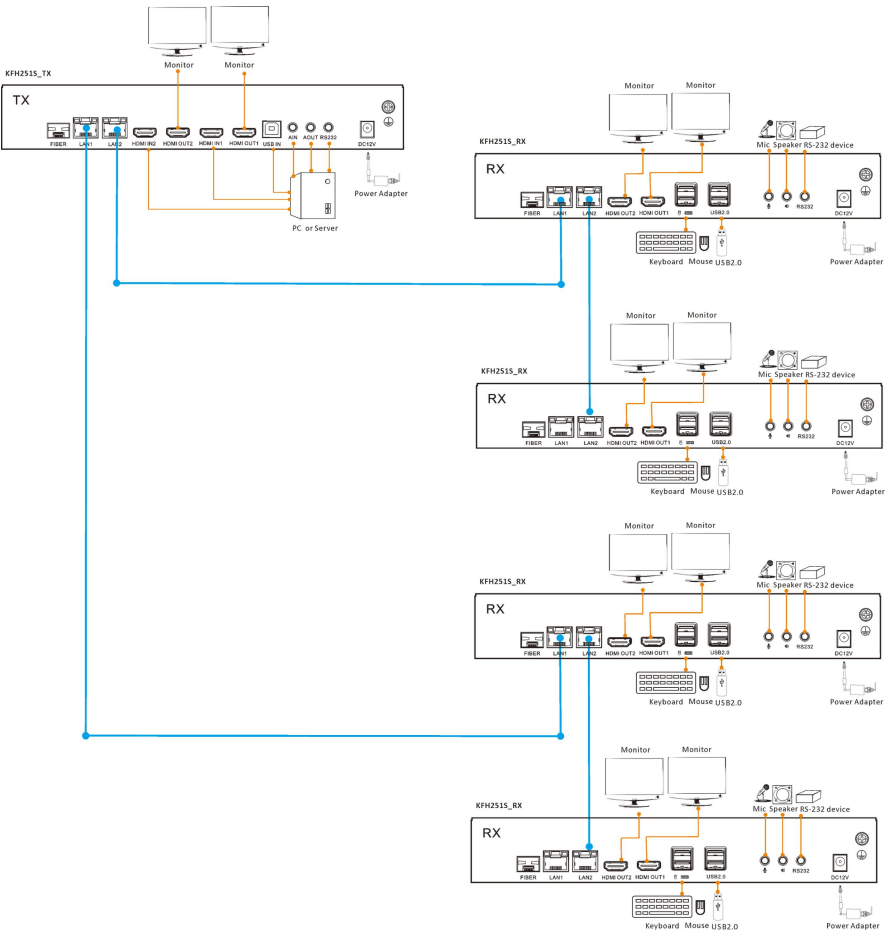
Single transmitter (TX) connected to a single receiver (RX)  
Connection Diagram of KFH151S



Connection Diagram of KFH251S

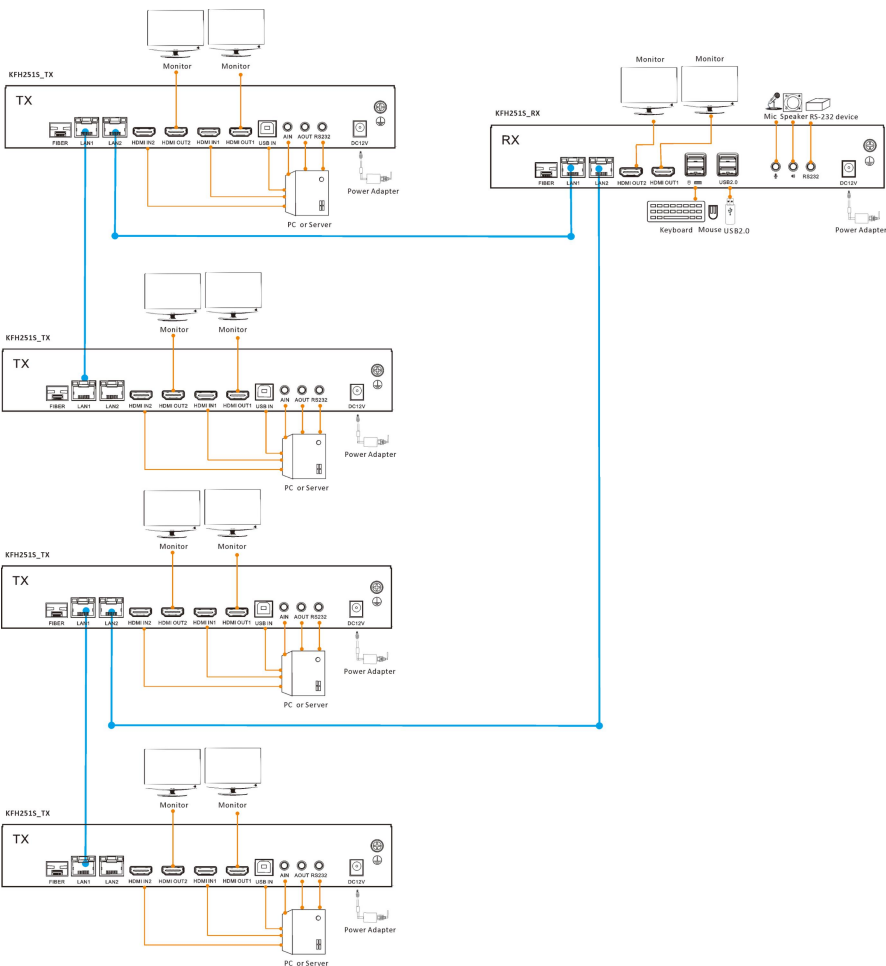


Single transmitter (TX) connected to multiple receivers(RX)





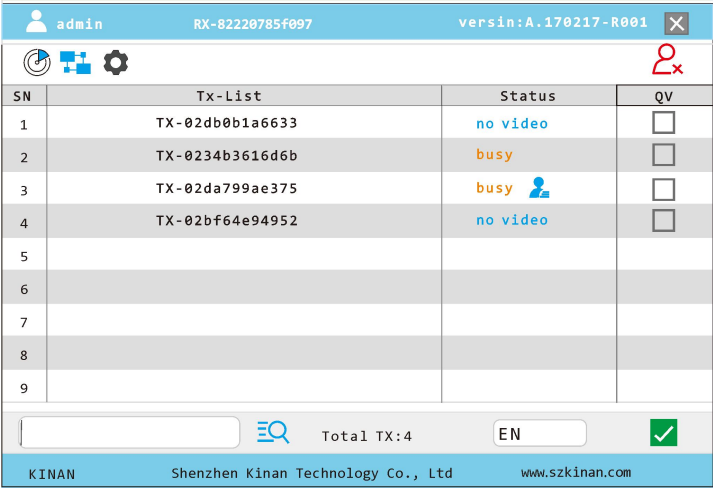
Multiple transmitters (TX) connected to a single receiver(RX)



### 3. Extender Configuration

#### 3.1 Use of UI Interface

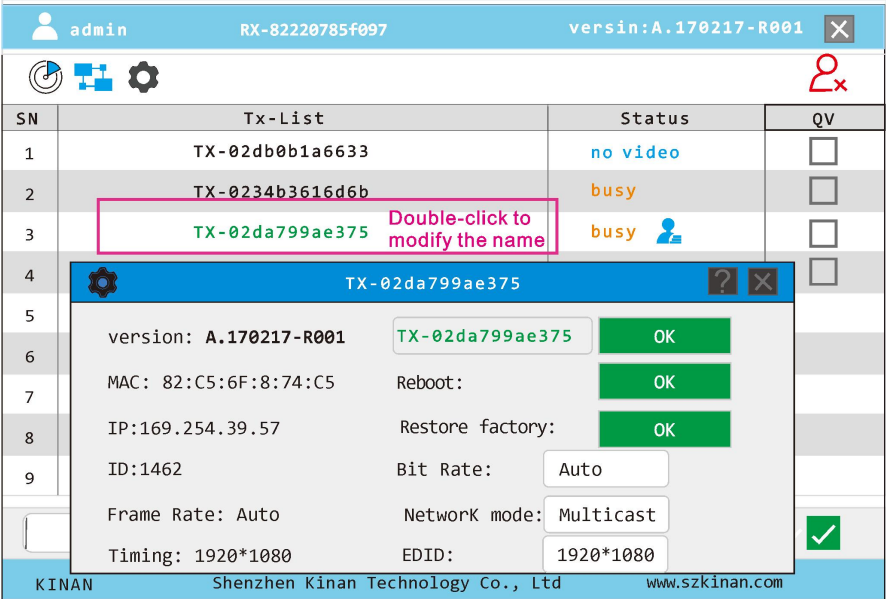
Press the left [Ctrl] key on the keyboard 3 times continuously, then the main UI interface will display.

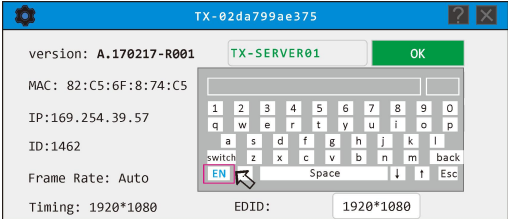


Function Name	Description
	Scan device list
	The list of matched transmitter and receiver
	Setting of function key
	Click 【Equipment setting】-【User Setting Pass】to logout user account
SN	Number of connected device
TX_List	List of transmitter
Status	Busy: Connected : The tx has been connected No video: 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	<p>Click to modify the TX name (support Chinese), then click OK to confirm</p>  <p>EN: English Version CN: Chinese Version</p>
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.

 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

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Hotkeys


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

【Equipment Setting】

 admin

RX-82220785F097

versin:A.170217-R001



system Setting:

RX-82220785F097

OK

System mode:

Matrix

Output timing:

1080p@60

Network mode:

Multicast

Reboot:

OK

Edid sync:

1920x1080

Restore factory:

OK

User Setting:

password mode:

☒

Equipment info

Equipment setting

Frame push

Frame Get

Update

Hotkeys



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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.

 adminRX-82220785f097

version:A.170217-R001



system Setting:

RX-82220785f097

OK

System mode:

Matrix

Output timing:

1080p@60

Network mode:

Multicast

Reboot:

OK

Edid sync:


1920x1080





Restore factory:

OK

User Setting:

password mode:



Name	Password	Permissions
admin	admin	<div><div></div> Usb2.0<div><div></div> Audio<div><div></div> Get</div></div></div> <div><div></div> Push</div>

| user | user | Usb2.0 Audio Get  Push |

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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, Frame Get, Frame Push










【Frame Push】

 admin		RX-82220785f097	version: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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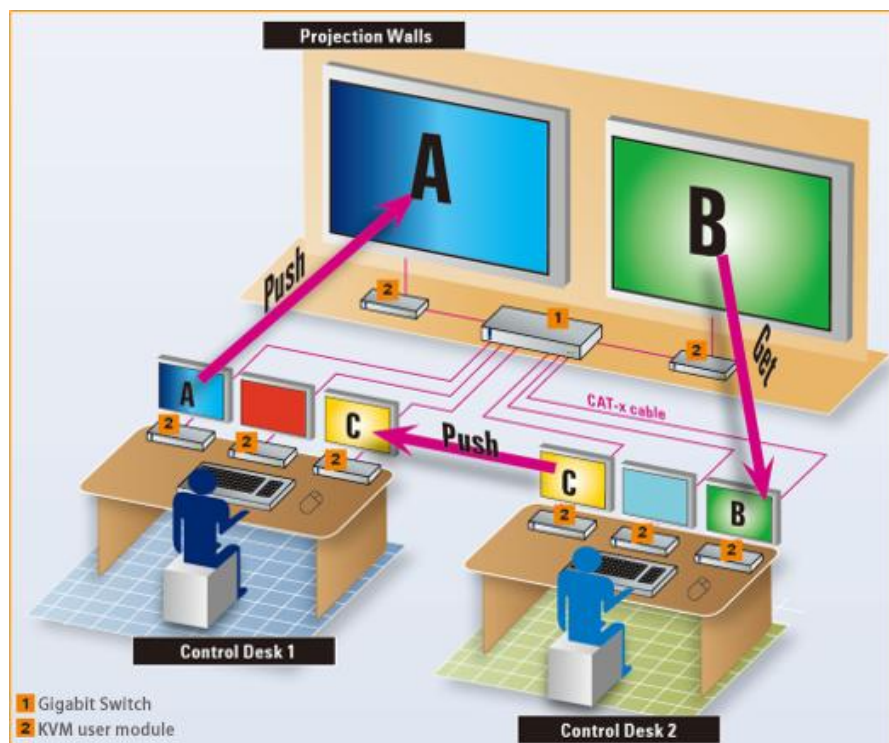
Click 【Push】 to push the video and USB signals from current receiver to the chosen receiver in the list.

【Frame Get】


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

 admin

RX-82220785f097

versin:A.170217-R001



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RX

TX


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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 mointonor 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 (Green)	Stereo	Jack	3.5MM Stereo Jack (Pink)			
	Speaker	3.5MM (Pink)	Stereo	Jack	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 ℃						
Storage temperature		-20—60 ℃						
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 ℃	
Storage temperature		-20—60 ℃	
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	