

IP KVM Matrix Extender

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 KFH251S IP KVM matrix extenders are highly optimized KVM extenders. The point-to-point connection supports transmission distance of 120m, and resolution up to 3840x2160@30Hz. This series of extenders can be connected to an 1G network switch to form a matrix switching system, which supports point-to-point (P2P) mode and matrix (Matrix) mode. The matrix switching system composed of extenders supports up to 9999 nodes by using a centralized management software, and it can support up to 40 nodes without using a centralized management software. It can connect multiple signal sources (such as servers, workstations, cameras and video walls).

With the matrix switching system, computers and servers can be located in the central server room far from the workstation to improve security, reduce the temperature and noise of the working environment, and achieve a quiet and friendly human-computer interaction environment.

The video compression algorithm of KFH251S matrix extender is a perfect combination of high-quality image and low latency (<16ms). The USB and video signals are transmitted through CAT5e/6/7 network cable.

It supports USB devices such as touch screen, USB sound card, printer, etc., it can also support USB storage devices.

1.1 Function

This product is intended to be used as a device to increase the distance that a keyboard, monitor and mouse can be placed from a computer. This product is intended for professional use. The product should not be used in potentially explosive environments.

The product may only be used according to the instructions as described in this manual. All use, other than that described in this manual, is seen as unintended use. In this product, the product connected to the host end is called the transmitter (TX), and the product connected to the display end is called the receiver (RX).

1.2 Feature

- HDMI / USB2.0/Audio/Rs232 - IP KVM Matrix Extender
- Single and Dual screen version
- Can be connected to a standard network switch to form a matrix switching system
- Support seamless switching
- Freeze the last image after the disconnection of transmitter and receiver
- Support resolution up to 3840x2160@30Hz
- USB transmission rate up to 12MB/s
- HDMI lossless real-time full HD transmission
- Support local (TX) HDMI interface loop-out
- Support transmission through fiber optic and network (CAT5e/6/7)
- Support one Administrator account and one User account
- The longest transmission distance is up to 120 meters with STP. (Cat5e supports 100 meters, Cat6a and above support 120 meters).
- Network cables must not be run alongside high-voltage power lines

1.3 Safety Instructions

WARNING! Read and understand all safety instructions.

- Please follow all instructions. This will avoid accidents, fire, explosions, electric shocks or other hazards that may result in damage to property and/or severe or fatal injuries. Please ensure that everyone who uses the product has read and followed these warnings
- Keep all safety information and instructions for future reference and pass them on to subsequent users of the 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 use 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 excessive 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 with radio or television reception or affect other electronic products in residential areas.
- 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 earthed AC wall socket.
- Protect cables from being strained, pinched or buckled 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.
- Protect the power adapter from use by third parties (particularly children).
- Keep the product away from heater.
- Do not drop or hit the product.

1.4 Product Overview



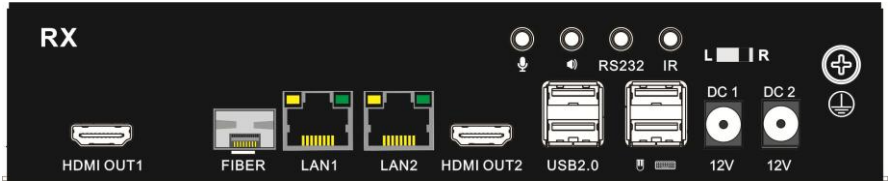
No	Name		Function
1	LED	LINK	Connection indicator
		STAT	System indicator
		PHY	PHY indicator
		LAN	Connection indicator of LAN
		FIBER	Connection indicator of FIBER

LED Explanations

	TX		RX	
LINK	Steady on	Video signal is OK	Steady on	TX connected
	Flashing	No video signal	/	/
STAT	Steady on	System operating normally	Steady on	System operating normally
	Flashing	Locating device	Flashing	Locating device
PHY	Steady on	PHY communication is OK	Steady on	PHY communication is OK
LAN	Flashing	The TX is connected to RX or switch	Flashing	The RX is connected to TX or switch
FIBER	Steady on	The TX is connected to RX or switch	Steady on	The RX is connected to TX or switch

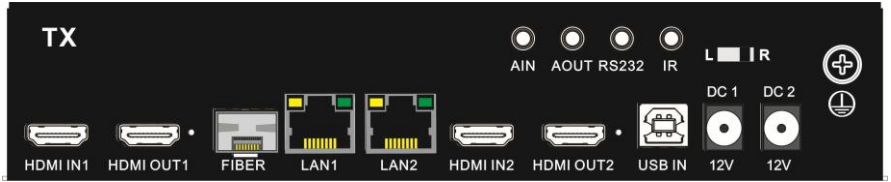
Assign any RX as the master control in the same network. The STAT indicator of this RX will flash for 5 seconds and then stay on for 5 seconds, flashing in a cycle.

KFH251S receiver (RX)



No	Name	Function
1	HDMI OUT1	HDMI1 video signal output
2	FIBER	Fiber network connector
3	LAN1	LAN1 connector Flashing yellow light: Network connected
4	LAN2	LAN2 connector Flashing yellow light: Network connected
5	HDMI OUT2	HDMI2 video signal output
6		MIC input
7		Audio output
8	RS232	Serial Port
9	USB2.0	Connect to USB2.0 peripherals
10	L  R	Debug interface L: Secondary Screen R: Main Screen
11		Connect to a USB keyboard and mouse
12	DC12V	Connect to the 12V power supply
13		Ground the device

KFH251S sender (TX)



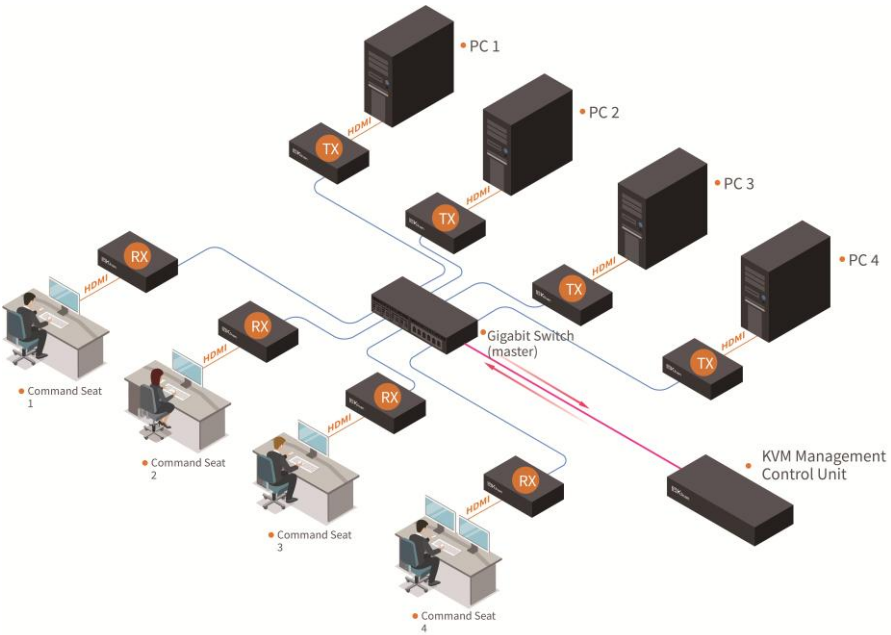
No	Name	Function
1	HDMI IN1	HDMI1 video signal input
2	HDMI OUT1	HDMI1 video signal loop out
3	FIBER	Fiber network connector
4	LAN1	LAN1 connector Flashing yellow light: Network connected
5	LAN2	LAN2 connector Flashing yellow light: Network connected
6	HDMI IN2	HDMI2 video signal input
7	HDMI OUT2	HDMI2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

2. Installation

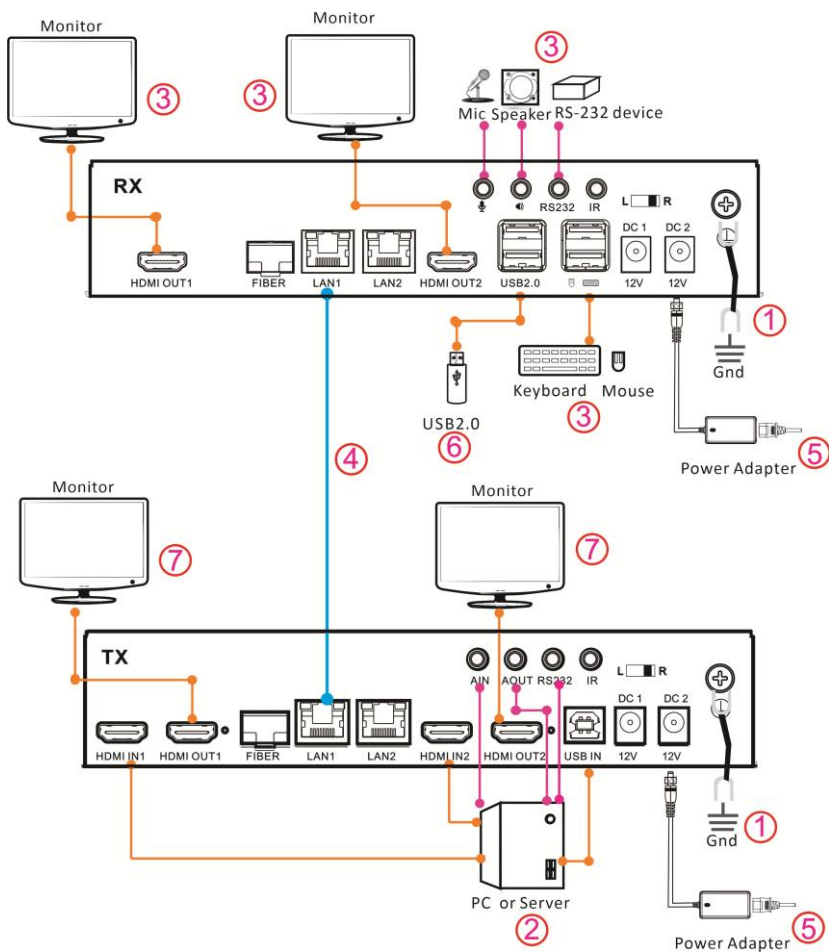
2.1 Installation of Extender

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

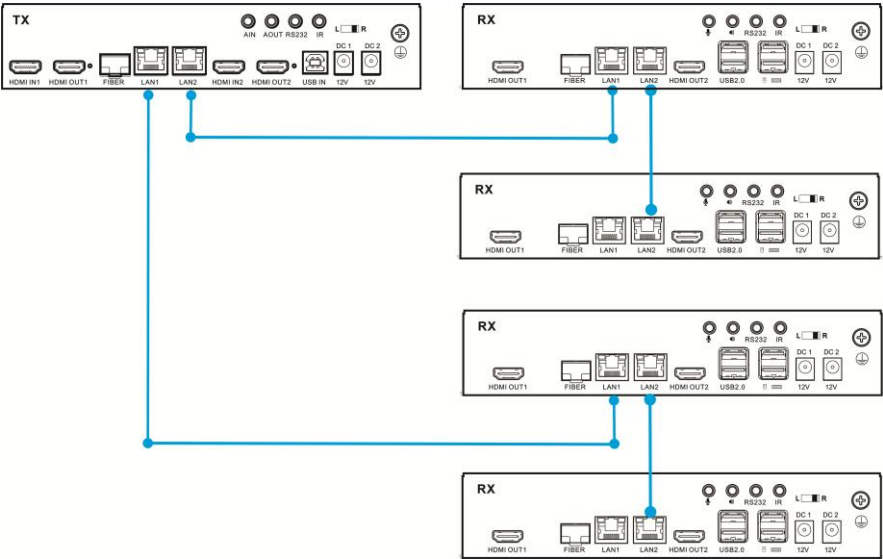


Connection Diagram of KF251S

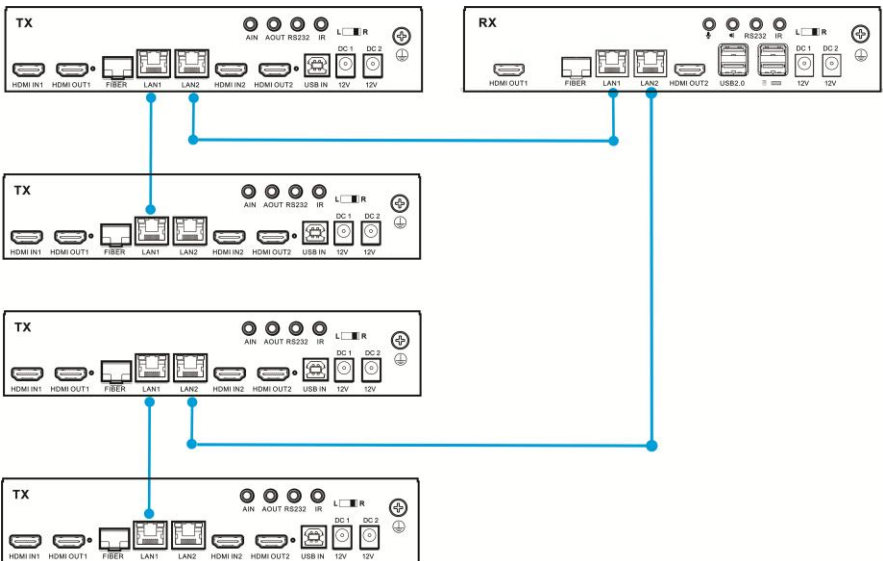


1. Make sure the KVM extender is grounded (See ① in the above diagram)
2. Connect the KF251S_TX to the HDMI video port, USB port and audio port of a computer. (See ② in the above diagram)
3. Connect the KF251S_RX to keyboard, mouse, monitor and audio device. (See ③ in the above diagram)
4. Connect the transmitter and receiver interfaces via optical fiber or CAT5E cable. (See ④ in the above diagram)
5. Power on the transmitter and receiver. (See ⑤ in the above diagram)
6. Connect the USB peripheral to the receiver (KF251S_RX) (See ⑥ in the above diagram)

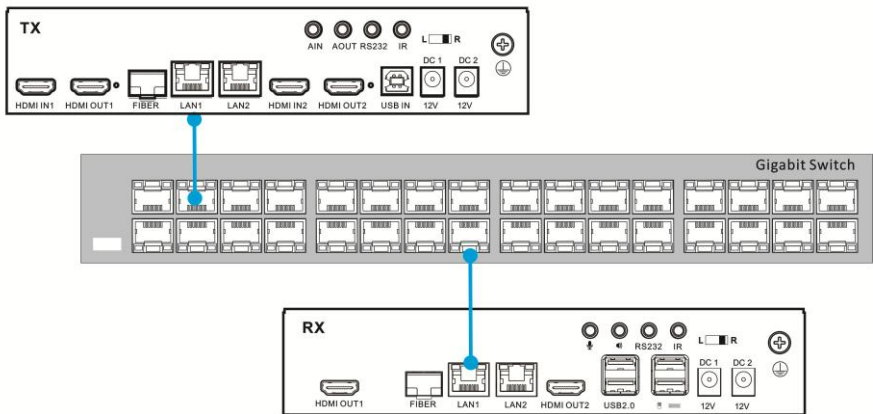
Multiple transmitters (TX) can be connected to a single receiver (RX). (1 to M).



A single transmitter (TX) can be connected to multiple receivers (RX) (M to 1).



Matrix Connection Diagram

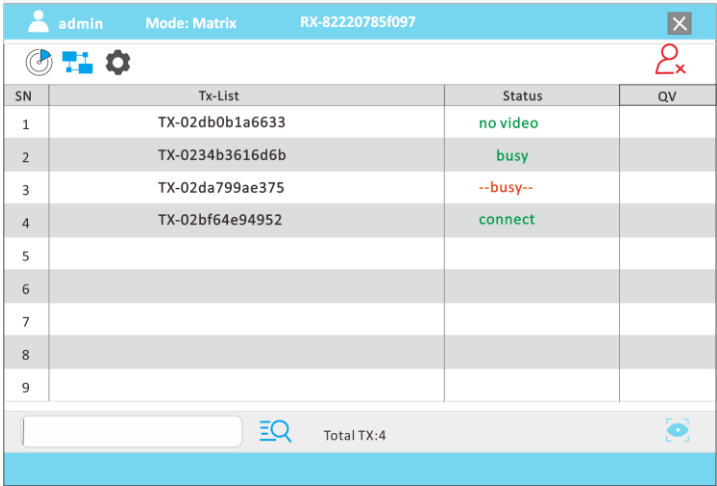


Configuration requirements: The electrical port of the network switch must reach a gigabit rate and support IGMP multicast.

3. Extender Configuration

3.1 Use of UI Interface

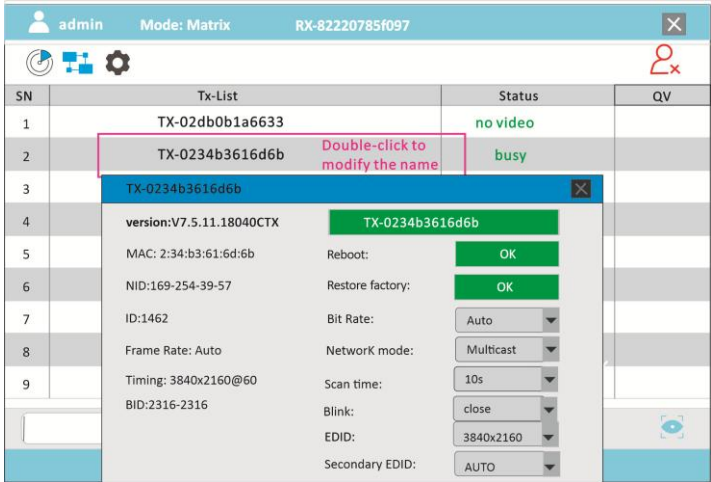
Press the left [Ctrl] key on the keyboard 3 times continuously, then the main UI interface will display.

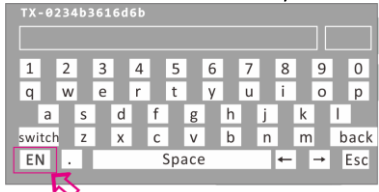


Function Name	Description
Mode	Node Matrix P2P
	Scan device list
	The list of matched transmitter and receiver
	Setting of function key
	Click 【Equipment setting】 - 【User Setting Pass】 to logout user account
SN	Number of connected devices
TX_List	List of transmitters
Status	Busy: TX and RX are paired --Busy-- : The RX has been connected to a TX No video: There is no video input from the host Connect: Can be connected
QV	Select Scan device
	Find the devices in the list
	Auto Scan

[Name Setting of TX_List]

Double-click the name of a TX, and then the following name setting window appears.



Function Name	Description
Modify the name of a TX	Click "TX-0234b3616d6b " to modify the TX name and then click "ESC" button to confirm your modification.  EN: English Version CN: Chinese Version
Reboot	Reboot the device
Restore factory	Restore Factory Defaults
Bit Rate	Auto, 10M ,50M, 100M, 150M, 200M
Network mode	Multicast mode Unicast mode
Scan time	10s, 20s, 30s, 60s, 90s ,120s, 150s, 180s, 210s, 255s
Blink	To set PWR flashing time, check TX connection status. You can choose from "Close, 1 min, 10 min, 30 min, 60 min, always".
EDID	AUTO, 1024x768, 1280x1024, 1366x768,1600x900,
Secondary EDID	1920x1080,1920x1200,3840x2160

[Auto Scan Setting]

Select TX devices, click the QV item, and then click “” to automatically scan the selected device (default scan time: 10s).

 admin Mode: Matrix RX-82220785f097 



SN	Tx-List	Status	QV
1	TX-02db0b1a6633	no video	Scan
2	TX-0234b3616d6b	busy	Scan
3	TX-02da799ae375	--busy--	Scan
4	TX-02bf64e94952	connect	Scan
5			
6			
7			
8			
9			

 Total TX:4 

Scan time: 10s, 20s, 30s, 60s, 90s, 120s, 150s, 180s, 210s, 255s

[User Login Interface]

The default setting mode is “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 [], and then the following menu appears:

 admin Mode: Matrix RX-82220785f097



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

When you see the device name in the TX list and the RX list, that means that the TX and RX are matched successfully.

3.2 Function Setting

Click the function key [], and then below menu appears:

 admin
 Mode: Matrix
 RX-82220785f097
 

Operating mode: Matrix

Equipment info
 Equipment setting
 Frame push
 Frame Get
 Update
 Hotkeys

system state:

 Usb
  Audio
  KM
  Share

Output timing: 1080p@60
 Total TX: 4 Total RX:2
 MAC: 82:22:7:85:f0:97
 MID: 169-254-39-57
 BID: 000000000000-0
 Version: V7.5.11.18040ERD

Function Name	Description
Equipment Info	To switch on/off USB, Audio, KM, 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 Setting]

admin
Matrix
RX-82220785f097

system Setting:

RX-82220785f097

System mode:
Matrix

All Blink:
close

Network mode:
Multicast

Reboot:
OK

Edid sync:
1920x1080

Restore factory:
OK

Output timing:
1080p@60

password mode:
☒

2nd Output:
AUTO PASS

Equipment info

Equipment setting

Frame push

Frame Get

Update

Hotkeys

Function Name	Description
RX-8220785f097	Click to change the name of RX, and then click “ESC” button to confirm your modification.
All Blink	To set PWR flashing time, check TX connection status. You can choose from “Close, 1 min, 10 min, 30 min, 60 min, always”.
Reboot	Reboot device
Restore factory	Restore factory defaults
System mode	Matrix mode P2P mode Node mode
Network mode	Multicast mode Unicast mode
Edid Sync	Synchronize TX EDID AUTO, 1024x768, 1280x1024, 1366x768,1600 x 900 , 1920x1080 ,1920x1200 , 2560 x 1440, 3840x2160, 1152 x 864
Output timing 2nd Output	For the display (output timing, secondary screen output timing) 1080P@60, 2160P@60, 640x480@60 , 800 x 600@60 , 1024x768@60, 1280x1024@60, 1366x768,1440 x 900 , 1920x1200 , STRICT PASS, AUTO PASS
Password mode	Modify user name and set permissions

User Setting:

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

You can't set the user name and password in Node mode, they can be set on the management control unit.

 admin

Matrix

RX-82220785f097



system Setting:

RX-82220785f097

System mode: Matrix

All Blink:

close

NetworkK mode: Multicast

Reboot:

OK

Edid sync: 1920x1080

Restore factory:

OK

Output timing: 1080p@60

password mode: 

2nd Output: AUTO PASS

Name	Password	Permissions		
admin	admin	☒ Usb	☒ Audio	☒ KM
		☒ share		
user	user	☒ Usb	☒ Audio	☒ KM
		☐ Share		

Equipment info

Equipment setting

Frame push

Frame Get

Update

Hotkeys

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

[Frame Push]

 admin Matrix RX-82220785f097 ✖			
SN	Rx-List	Get	
1	RX-826d9539bf91	Push	Equipment info Equipment settings Frame push Frame Get Update Hotkeys
2	RX-82220785f097	Push	
3	RX-82bcf4d41966	Push	
4	RX-828cd6901517	Push	

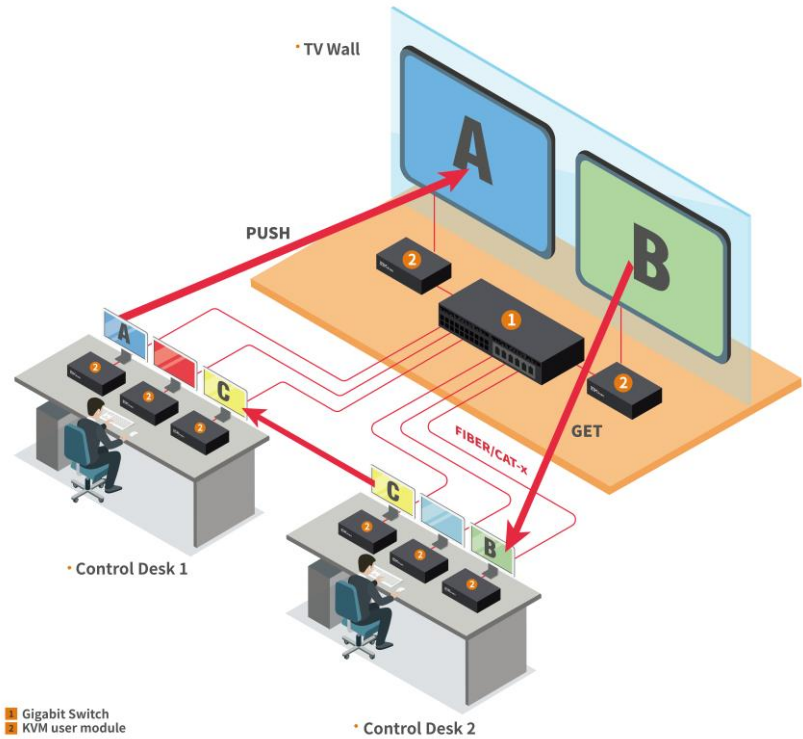
Click [Push] to push the video and USB signals from current receiver to the chosen receiver in the list.

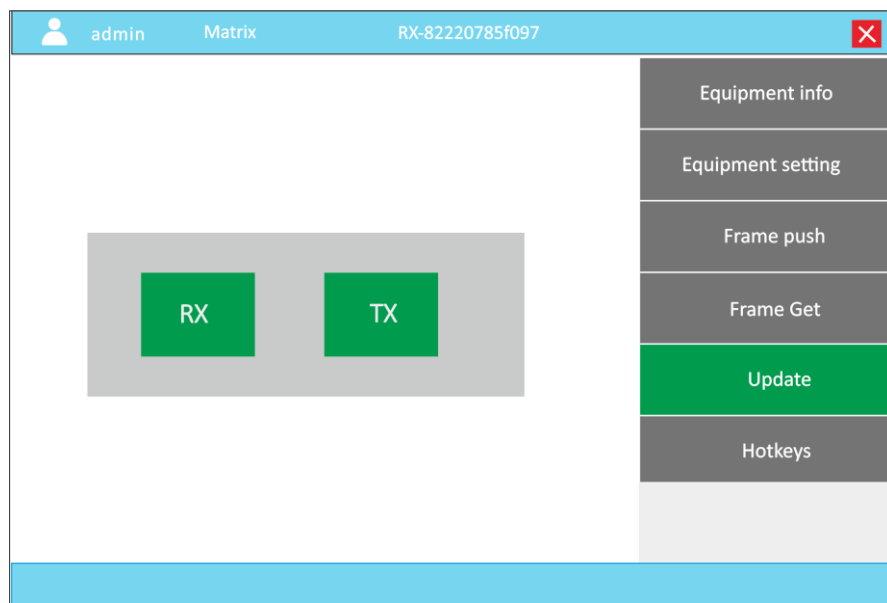
[Frame Get]

 admin Matrix RX-82220785f097 ✖			
SN	Rx-List	Get	
1	RX-826d9539bf91	Get	Equipment info Equipment settings Frame push Frame Get Update Hotkeys
2	RX-82220785f097	Get	
3	RX-82bcf4d41966	Get	
4	RX-828cd6901517	Get	

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 & Get



[Update]

Click **【RX】** to update RX

Click **【TX】** to update TX

[Hotkeys]

 admin Matrix RX-82220785f097 

Press the hotkey 3 time quickly

left Ctrl ----> Shows or Hides the UI

left Shift ----> Disconnect host

right Ctrl ----> Next or previous channels

Switch hotkey

hold down right Ctrl+ double -click1-0 --> Switch from channel 1 to10

Equipment info

Equipment setting

Frame push

Frame Get

Update

Hotkeys

Function Name	Description
Left _Ctrl	Shows or Hides the UI
Left_ Shift	Disconnect host
Right_ Ctrl	Next or previous channels
Right_Ctrl+Doulbe 【1-0】	Switch from channel 1 to 10

4. Specifications

Specifications of KFH251S

Specification		KFH251S_TX	KFH251S_RX
Connections	HDMI input	2	N/A
	HDMI output	2	2
	Power	12V x 2	12V x 2
	LAN port	RJ45 x 2	RJ45 x 2
	Optical Module	SFP x 1	SFP x 1
	Microphone	3.5MM Stereo Jack (Pink) x 1	3.5MM Stereo Jack (Pink) x 1
	Speaker	3.5MM Stereo Jack (Green) x 1	3.5MM Stereo Jack (Green) x 1
	USB Type B	1	N/A
	USB Type A	N/A	4
Resolution		3840x2160@30Hz	
Cable		Fiber optical or CAT5e/6/7 cable	
I/R value		DC12V /3A	DC12V / 3A
Power consumption		15W	11W
Operating temperature		0—50 °C	
Storage temperature		-20—60 °C	
Humidity		0—80% RH, non-condensing	
Material		Metal	
Net weight(kg)		1.1 kg	1.1kg
Product dimension (W×D×H)		215 mm x 172.7 mm x 44mm	
Package dimension (W×D×H)		395mmx274mmx110mm	395mmx274mmx110mm