PROFESSIONAL MATRIX SWITCH

4K HDMI MATRIX SWITCH

User manual

Pack List

The complete matrix switch package consists of the following components:

1. Matrix switch
2. Power cable
3. Power adapter
4. RS232 serial communication cable
5. Instruction manual
6. Data CD
7. Remote control

Please check to make sure our products have not been damaged in transit before use, if there is damage, please contact your seller directly.

Please read this manual completely before use, please use and install carefully to prevent damage to the matrix switch.

Safety Operation Guide

In order to ensure the reliable use of equipment and personnel safety, in the installation, use and maintenance, please observe the following matters:

1: Please use a single-phase three-wire power supply with protective ground, and ensure that the whole system uses the same protective ground, the matrix The final grounding of the matrix should be connected to the true earth, and its grounding resistance should be less than 1ohm. Do not use the power supply without a protective ground! The power source, the grounding foot of the power cord should not be destroyed. No perfect grounding, easy to cause signal interference, instability, but also It may cause personal accidents due to leakage.
2: When you need to move equipment or other work that requires power off, turn off all power, including external power outlets, and unplug the power. The external power outlet should be turned off and the power should be unplugged.
3: Non-professionals should not attempt to disassemble the equipment chassis or repair it without permission, in order to avoid damage to the internal precision parts or accidents or aggravate the degree of damage to the equipment.
4: When plugging or unplugging signal lines from the equipment, the equipment needs to be powered off to avoid breaking the circuit. Damage caused by plugging with electricity Not covered by the warranty. Pay attention to moisture and dust, and do not make the ambient temperature too high or too low.
5: Do not press heavy objects on the machine to avoid damage. If you encounter any problem, please refer to this instruction in detail first, if If you cannot solve the problem, please contact us.

catalogue

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Overview

HD matrix is a new generation of 4K HDMI matrix that our company is dedicated to create, supporting HDMI1.4 standard,support EDID management resolution up to 4K@30HZ,1080@60HZ HDMI matrix. Support audio and video synchronization switching,suitable for conference rooms,command centers,multimedia rooms and other application scenarios.

HDMI Matrix Panel Description

1) Numeric Key

Input and output channel selection keys are used to set the input and output channelsof audio and video signals or to query the current matrix status, EDID selection, etc.

2) Function Key

● ALL--"All" indicates that all input or output ports are selected (different states are indicated). Toggle selection and execute all toggle commands.

● EDID - EDID Learning Key

Pressing the EDID key automatically displays the input sources that can be learned, and you can select one or all of them.You can select a particular input or all inputs to read.Internal EDIDs are available in various formats. (USER1-USER5、OUT1-OUT4、HD8Stereo、HD8DOLBYDTS、HD8LOSSLESS、HD2STEREO3D、HD12DOLBYDTS、HD8SuperHk、4K30Stereo、4K30_5.1、4K30_AC3、4K30_DTS) ,Do not unplug theHDMI cable and read the EDID automatically.

For example:
1. press the EDID key.

```
EDID ADJUST
SELECT INPUT:
```


2. To set the EDID data for a particular input, select the 1-8 input buttons ("x" indicates that 1 to 8 are available) and press UP/DOWN to select the internal EDID and then press ENTER to confirm.

```
INPUTPORT:X
SELECT:NONE
```

If you want to set all the EDID data in the input, select the ALL button, press UP/DOWN to select up or down, and press Enter to confirm after selecting the internal EDID.

```
INPUTPORT:ALL
SELECT:NONE
```

● ENTER - OK Key

● MENU - menu key (If the operation is wrong, press the matrix screen menu key to re turn the device LCD to the main screen)

1. Save the scene mode: press MENU 1 time, the screen can save 16 modes (1~16), press UP/DOWN up and down to select, press Enter to confirm after selecting the mode.

```
STORE SCENE:
1
```

```
STORE SCENE:
1 DONE
```

2. Press the MENU key twice to adjust the faceplate operation to 16 modes (1~16), press UP/DOWN to select up or down, and press ENTER to confirm after selecting the mode.

```
RECALL SCENE:
1
```

```
RECALL SCENE:
1 DONE
```


3. Switching buzzer sound: Press MENU button 3 times to set the buzzer sound on/off UP/DOWN up and down Select switch buzzer sound

```
BeepEnable:
Enable
```
Turn on the beeping sound

```
BeepEnable:
Disable
```
Turn off the beeping sound

4. One-by-one correspondence display mode: press MENU 4 times, press Enter to confirm; all input channels and output channels are displayed one by one (e.g. the first input channel is displayed on screen 1).

```
SWITCH 0 TO 0
```

5. Restoring factory settings: restoring the default factory settings.

```
FACTORY RESET
```

6. Scene polling: For saved scene modes, simply press this option and then press UP/DOWN to select polling.

```
SCENE Loop
Enable
```
Polling On

```
SCENE Loop
Disable
```
Pulling Off

● UP/DOWN are up and down selection keys

1. Query the state of the matrix corresponding to the current input and output

```
OUT   12345678
IN    22222222
```

2. Query the inline status of the corresponding input to the matrix ("Y" indicates a source input is connected, "N" indicates no source input is connected.)

```
IN    12345678
CON   YYNNNNNN
```

3. Query the online status of the corresponding output of the matrix ("Y" indicates that the output is connected to a display device, "N" indicates that no output is con nected to the screen.)

```
OUT   12345678
CON   YYYYYYNN
```

4. Query the matrix IP address, the default IP address is 192.168.1.200

```
IP  ADDRESS
192.168.1.200
```

5. Query matrix sub-grid mask

```
MASK
255.255.255.0
```


6. Query matrix default grid off

```
GateWay
192.168.1.1
```

7. Query Matrix First DNS Server

```
DNS
144.144.144.144
```

8. Query matrix device version number (based on the actual item version)

```
FIRMWARE
02.00.06
```

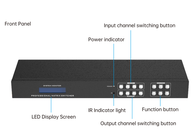
- IN PUTHDMI video input connector, using the HD 15pin connector, is used to connect the HD 15pin video connector to incoming devices such as PCs, DVDs, HD players,etc. 15-pin video connector to incoming devices such as PCs, DVDs, HD players, etc
- OUT PUT - HDMI video output port, using the HD 15pin connector, is used for output devices such as monitors, TVs, projectors, etc. that are connected to the HD 15pin video connector.The HDMI connectors of each signal cable must correspond to each other, otherwise there will be color loss or even no signal output.
- IR - matrix IR remote control receiving port;
  RS232 - IN / RS232-OUT - provides 2 independent RS232 interfaces, which can be used to connect to a computer or central control equipment to control the matrix system.
  LAN - One RJ45 port is provided for connecting to a computer or central control device
- to control the matrix system.
  ON/OFF - Can be used for matrix system switching control. DC12V - DC12V at the matrix power input port.

Product Features

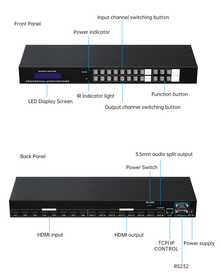
1. All hardware architecture without CPU and operating system, faster response time for operation.
2. Modular design of all boards, hot swappable, stable and reliable system.
3. 3.4G high-bandwidth original switching chip is used, so that all signals can be switched synchronously.
4. Each signal supports HDCP decoding, Blu-ray, 3D.
5. Supports signal timing reordering and 36-bit true color technology.
6. Support for fast channel switching, one-to-one correspondence and fast saving and retrieval of scene modes.
7. Supporting maximum resolution: 4K x 2K@30Hz, 1080P 3D @60Hz.
saves the current scene status.
8. Wireless power-grade switching cores, image switching can be done with o single core for higher integration.
9. Supports keypad, infrared remote control, RS232 serial port.
10. Support EDID rewritable and EDID self-adaptive function, better adapt to the diversified display devices in the field and improve compatibility.
11. High quality HDMI version 1.4 cables, the transmission distance can be up to 15 m for incoming and 15 m for outgoing.
12. Input supports receive delay, which effectively compensates for the time when the differential pairs are not long enough.
13. 16 built-in scene modes in the software, which can be used in any scene.
14. Power failure memory field protection function, which automatically
15. The host display adopts a high-resolution English display and supports LOGO and model burn-in customization.
16. The matrix series are used in a wide range of applications such as projection display, e-learning, command and control centers, and multimedia conference rooms.

Explanation of the operation of the panel: (Take 4 port 8 port as an example)

4 port



8 port



8 port Front Panel Description

No.	Name	Description
①	LCD Display screen	Blue backlight, white font, display system real-time operation status.
②	Power-off indicator	● Turning on the power, the indicator light is green. ● Power failure, light off.
③	IR receiver head	The built-in infrared receiver of the machine receives infrared signals sent by the infrared remote control and facilitates the control of the machine.
④	OUTPUT	Output channel switching buttons: 1- 8from left to right respectively.
⑤	INPUT	Input channel switching buttons: 1- 8from left to right, respectively.
⑥	MENU - function but ton area	**ALL** : Select All key, including sending an input signal to all output channels, and switching all input channels to the corresponding output channel. channel to the corresponding output channel. **ENTER** : Confirmation key,to confirm the selected channel and function,in the execution of the operation, must be executed to confirm before the relevant ope ration. **EDID** : EDID learning keys, built-in a variety of EDID can be written directly in. **MENU** : menu button, switch beep sound, savehecall scene mode, one-to-one display, etc.; **UP** : Upward selection keys, query matrix current input and output correspondi ng states. **DOWN** : Selecting the key down, querying the current input and output status of the matrix.

8 port Back Panel Description

No.	Name	Description
①	INPUT	Signal input 1 - 8 ports.
②	OUTPUT	Signal output 1 - 8 ports.
③	TCP/IP CONTROL	RJ45 port, for TCP/IP network port control.
④	Audio Output	Support left and right analog stereo sound
⑤	RS232 IN RS232 OUT	RS232input, for matrix connection to computer and central control device co nnect RS232Output, for matrix connection large screen linkage control
⑥	Power port	Connection of DC12V power supply.
⑦	Matrix Switch	For switching on and off of matrix equipment.

Note: 8 port and 16 port supports output signal amplitude, there are 0-31 amplitude adjustable,
the default amplitude is 10 (default).
This manual uses the 8*8 matrix as an example to explain the use of other models of matrix, please refer to the 8*8 instructions for use.
Use the front panel keys to HDMI matrix for fast switching operation of audio and video (please refer to "Front Panel Function Key Description" for detailed description of each key function), the operation method is as follows: input channel + output channel + ENTER Input channel The channel to which the source is currently connected is switched. The IN PUT "1 to 8" buttons on the front panel represent 1 to 8 input channels, respectively. Output channels The peripheral display shows the channels connected to the device. The OUT PUT "1 to 8" buttons on the front panel represent 1 to 8 output channels respectively.

Switching example

Example 1: The operation of synchronizing the 1st audio/video signal to the 3rd output channel, step by step as follows:

1. Press the input channel "1" key, its LCD screen display as follows:

```
SWITCH:1->
```

2. Press the output channel "3" key, its LCD screen display as follows:

```
SWITCH:1->
3
```

3. Press the Enter Key and its LCD screen displays as follows:

```
SWITCH:
DONE
```

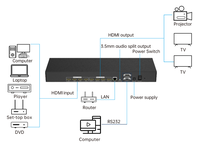
To switch 1 channel audio and video signal to multiple output channels (such as output 1-1,2,3,4 channels), press the output key "1, 2, 3, 4" directly after completing step 1, and then press Enter; to switch to all output channels, press the "ALL" key directly after completing step 1. "ALL" key and then press Enter.
1.2.2 Storage and recall example Example 1: The first channel of audio and video signals are switched to all output channels synchronously. Store the operation of synchronizing the first channel of audio and video signals to all output channels in e.g., all output channels are 8) as Scene 1, as follows:
1. Press 1 MENU key,panel operation can save 16 modes(1~16)by UP/DOWN up and down to choose, press Enter to determine after the selection, the figure is stored under the scene 1

```
STORE SCENE:
1
```

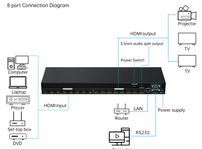

Connection diagram

(Take 4 port 8 port as an example)

4 port Connection Diagram



8 port Connection Diagram



Software Operation

(1)Software Settings

1.Double-click "MatrixController" to open the application, connection settings: the control type is divided into "serial, network", the network default IP: 192.168.1.200, the following serial port as an example, as shown below:

2.Click"serial port options" to enter the establishment of the matrix and software connection to the computer to connect to the serial port "com3" for example, baud rate of 115200, after the completion of the operation, click"Connect" to confirm. After the operation is completed, click "Connect" to confirm that the matrix will emit a "drop." sound after successful connection to indicate a successful connection, and if there is no sound, the connection is not successful. As shown in the figure below:

3. The software can be successfully connected to the matrix to modify the IP, switch the beep, restore factory settings, language selection for operation, as follows:

Software control input and output channel correspondence
a) After selecting an input channel, click on itto display it on all screens (e.g., input channel 5 is displayed on all screens).
b) One-to-one: Quickly correspond to the display button (equivalent to the OTO button) all input channels and output channels are displayed one by one (e.g. the 4th input channel is displayed on the 4th screen).
c) OK: After selecting the input channel, click on the desired output channel to display 1 channel video on 1 or more screens
d) Close output: Close the display screen(close the output screen that does not need to be displayed)
e) Open output: open the display screen (open the output screen that was previously close filefresh: Check the current latest status

(2) Control of display operations
1. Click on the "Channel Switching" screen (using the first input to output "1.2.3.4" as an example) and select input channel "1" and output channel "1.2.3.4". "1.2.3.4" and click "OK" as shown in the figure below:

To switch one audio/video signal to all output channels simultaneously (e.g., all output s are 8 channels), select the input channel and click "Pair All" directly. Switching screen s are displayed one by one (e.g. 1-1, 2-2, 3-3, 4-4 .....) Click "One to One" directly.

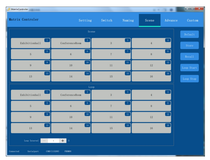
2. Close the screen that you do not want to display, click the corresponding output channel (e.g., output "1.2.3.4"), and then click "Close Output", the number of the output channel will turn "red" to indicate that the output is not displayed, as follows The figure shows:

If you need to open output channel "1.2.3.4",select output channel "1.2.3.4" and click"Open Output", the number of the output channel will change to "blue", indicating that the output is displayed. The output channel number will turn "blue"and the output will be displayed as shown in the following figure:

(3) Channel Naming

1, click the "channel naming" interface, click directly enter the name to be changed: input channel, output channel, scene, click "Save" after the operation is complete. If you want to restore the factory default, click "Default" and then click "Save" toretore the factory settings.

To restore the factory default, click "Default" and then "Save" to restore the factory settings. The software supports copy and paste function, as shown in the following figure:



(4) Scene

4.1 Saving Scenes: The current matrix state is saved, such as switching from input to all output operations, clicking "Scene Mode" (for example, saving in a scene) and then clicking "Save". As shown in the following figure:

4.2 Calling Scenes: To call the currently saved scene mode, click "Scene Mode" (to call a scene, for example) and click on scene "1" and then click "Call". The following figure shows:

4.3 Restore the default scene mode: directly click "Default" to restore the factory scene mode.

4.4 Polling setting: The current saved scene mode is switched cyclically, and the longest time between the two modes can be set to "9999" seconds. Take the saved scene mode as an example, select "1.2.3.4" for polling switching, and set the time to 5 seconds.

As shown in the figure below:

4.5 Stop Polling: Click "Stop Polling" to stop the polling switch.

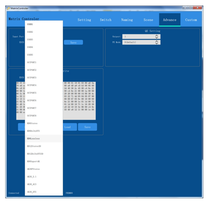
(5) Advanced Setting

5.1 EDID setting (Input source EDID that can be learned), EDID reading and writing (carread, write, export, save)

As shown in the figure below:

5.2 EDID setting: select the EDID port you need to read, then select the EDID you need, click "Save", enter the port for a road to read, click "All" for all ports.

As shown in the figure below:



EDID Citation

No.1	EDID Name	Function
1 – 8	Input1 – 8	Input port EDID
9–15	User 1– 5	Save the user's EDID data, where the user can save the EDID
16–21	output 1 – 8	Reads the EDID from the corresponding 1-8 output
22	HD8Stereo	1920x1080p,60HZ,8bit,Stereo
23	HD8DOLBYDST	1920x1080p,60HZ,8bit,DolbyDTS
24	HD8LosLess	1920x1080p,60HZ,8bit,Lossless
25	HD12StereoSD	1920x1080p,60HZ,12bit,SD,Stereo
26	HD12DolbyBs	1920x1080p,60HZ,12bit,SD,Dolby,DTS 1920x1
27	HD8SuperHk	080p,60HZ,support4K
28	4K30Pstereo	3840x2160,30HZ,8bit,Stereo
29	4K30_5.1	3840x2160,30HZ,8bit,5.1
30	4K30_AC3	3840x2160,30HZ,8bit,AC3
31	4K30_DTS	3840x2160,30HZ,8bit,DTS

(6)Customization

According to customer demand, you can modify the equipment LCD display information, and click "Save" directly after modification, the password is "654321" as shown below

WEB control: (Web control method is the latest and most convenient way to switch, in a local area network, cell phones, computers, tablets can open the browser for control) Use WEB control method and step by step operation as follows:
1. In the same LAN, connect the cell phone, tablet to Wi-Fi, and connect the control computer and matrix to the same router or switch.
2. Open the web browser of the cell phone, tablet or computer, and enter the IP address of the matrix at the URL: 192.168.1.200.
192.168.1.200 (the IP address of the matrix can be queried by down).
3. Enter the account number: admin, password: admin, and log in. If the IP address of the router is not 192.168.1.XX, but 192.168.2.XX, you need to modify the IP address of the matrix or the IP address of the Internet.

① Modify the IP address of the matrix: directly use the "MatrixController" software to modify the matrix IN using a serial cable, open the software, modify the IP address to 192.168.2.XX, note that the modified IP address, in the LAN, is not occupied. After the modification, repeat the previous steps 1-3.

② Modify the IP address of the Internet: take a router or switch, connect a computer, open the router settings, modify the IP address of the router to 192.168.1.XX, and then repeat steps 1-3.

Note: Account password is not recommended to change, forget the password, you need to restore the factory settings.

Remote control operation instructions

1–On/off button
2–On/off buzzer sound
3–Save Save scene key
4–Recall Calling the scene key
5–Fun Menu function key
6–Cancel Return key
7–ALL All keys, execute all switching commands when switching
8–EDID Learning Key
9–Up and down keys in the menu function can turn the page operation
10–OK key to confirm the operation
11–0–9 key numeric key area

Note: Left and right keys have no role, F1-F8 keys are reserved function keys;

For example:
For 1-to-1 operation steps: 1–1–OK 1 to all operation steps: 1–ALL–OK
Steps for storing scenes: Save–up and down keys (1-16 modes)–OK
Operation steps to call up a scene mode: Recall–up and down keys (1-16 modes)–OK

EDID learning operation steps: 1.
1, u way EDID--number keys (1-8) - up and down keys to select the mode
-OK 2、All EDIDs--ALL--up and down keys to select the mode--OK

IR code corresponding to the remote control

QD21D-1PCB code table OOFF

45	46	47
44	40	43
07	15	09
16	19	0D
0C	18	5E
08	1C	5A
42	52	4A

User Code: OOFF

A8		88
90	83	98	82
93	9C	8C	D6
97	95	96
98	9E	99
91	9A	A4
87	86	85
8B	8A	89
8F	8E	8D
84	92	94

Technical Parameter

Matrix switch parameters			
Name	HDMI HD Matrix		
Output Port	4*HDMI	8*HDMI	16*HDMI
Input Port	4*HDMI	8*HDMI	16*HDMI
Equipment height	1U		2U
Support Resolution	480i/480p/576i/576p/720p/1080i/1080p@25.30.50.60hz/ 1080p30@60/4K*2K@30hz		
Control Interface	RS232 IN *1&RS232 OUT*1LAN*1		
HDMI Version	HDMI 1.4		
HDCP Version	HDCP 1.2		
Color Space	Support R GB, YUV, YUV colorspace, support X.VOLOffers tendedc olor gamutstandard		
Audio Out put	Supportiefhandrighttond ugsterea sound		
Static pr otect on	Human body discharge mode: ± 8KV (air gap discharge) ± 4KV (electric co)		
Cont r ol meth od	Standard : but t on, RS, rem ote cont r ol swit ch Opti onal: WEB cont r ol, APP cont r ol		
Power supply	DC12V2A		DC12V3A
Input Volt age Ra	AC100V~240AVC,50Ø60HZ		
wer consumpti on	8W	15W	30W
Dimensions	430.8*136.5*45mm (Without lugs)	430.8*136.5*45mm (Without lugs)	439*251*88mm (Without lugs)
Operating temperat ure	0℃~40℃(32℉~104℉)		
St orage temperat ure	-20℃ ~ 60℃ / -4℉ ~ 104℉		

Control Protocols

Rs232 communication protocol and central control command code
description:Direct connection (if USB-RS232 conversion cable is used, it can be directly inserted into the matrix serial port for control)
Communication protocol: (baud rate 115200, stop bit 1, data bit 8, check bit NONE) 232 communication protocol and central control command code description:

Type	Control command	Function Description
Operation instruction	[x1]ALL	Switching the input of [X1] road t o all road outputs
	[x1]ALL:	Turn all outputs off
	[x1]OUT[X1]	Turn off Output [X1]
	ALL[1]	Set all channels t o corresp ond one t o anot her , eg. 1->1,2->2 ,3->3 ...
	[x1]X[X2]	Switching [x1] input t o [X2] output
	[x1][X2],&[X3][X4]	Switches [x1] t o [X2] , [X3] and [X4] outputs
	Save[Y]:	Save t he current document stat us t o t he [Y] memory cell, [Y] is the number key fr om 1 t o 9
	Recall[Y]:	Calling the input and output switching status of the [Y] memory c ell (1) for 1-9 numeric keys
	Beep[ON]:	Turn on the buzzer
	Beep[OFF]:	Turn off t he buzzer

Notes:
1.[x1], [x2], [x3], [x4] are the number of input and output channels, depending on the matrix controlled, such as the matrix controlled is 8*8 matrix, then their valid range is 1-10, such as out of range, it is treated as a command input error, the "[" and "]" in the command " are not sending characters.
2.The ending character of each instruction cannot be omitted, and there is a " . " at the end of each instruction. punctuation in the English input method.
3.Letters are not case sensitive. Examples of some instruction codes:
① To switch the input of [x1] channel to all channels of output: [x1]ALL.
Example: To switch the 3rd input to all channels of output, enter "3ALL.
Switching [x1] to [x2], [x3], [x4] outputs
②Set to all channels one by one: ALL[1]. Example: For example, a 10*10 mixed matrix, after running, the status is: 1->1, 2->2, 9->. Enter "ALL1.

3. Video switching command: [x1]X[x2]. Example: To switch the 3rd input to the 5th output, just input "3X5.", if you want to switch the 3rd input to the 5th, 6th, 7th and 8th outputs, just input "3X5&6&7&8.
4. Save the current state command: Save[Y].
Example: To save the current state to the 7th memory cell, input "Save7.
5. Recall the stored cell command: Recall[Y].
Example: To call the state of the 7th memory cell to configure the input and output state of the matrix, enter "Recall7.
6. the buzzer on and off:
Example: BeepON., the buzzer open, switch can hear the buzzer sound BeepOFF., the buzz er off, switch will not hear the buzzer sound.

Common faults and maintenance

1. Large signal interference: check whether the signal connection cable and plug are good, whether the cable meets the specification requirements, whether the system grounding is good, and whether the AC power ground system between the devices is consistent.
2. When there is a loss of color or no video signal output, it may be that the signal line connectors at both ends do not correspond well.
3. When the serial port (refers to computer or central control serial port) can not control the matrix, please check the software serial port port number selection is correct;
4. If the matrix input and output signals can be switched, but there is no drop sound, it may be that you turn off the buzzer sound;
5. The matrix switch, the buzzer sounded, but no corresponding projection image output: (1)See if there is a signal at the corresponding output. (Available oscilloscope or multimeter to detect) If there is no signal input, it is possible that the input wiring is broken, or the connector is loose, replace the line can be.
(2) See if there is a signal at the corresponding output. (Use an oscilloscope or multimeter to test) If there is no signal output, the output wire may be broken or the connector may be loose, so replace the wire.
(3) If both of the above cases do not work after replacement, the main unit may have an internal fault, so please send it to a professional for repair.

6. If the LED display is not displayed and the operation is not responsive, the power supply may not be normal.
7. When connecting the connector, if you feel that the static electricity is strong, it is possible that the power ground is not connected to the earth, please connect it normally, otherwise it is easy to damage the host and shorten the life of the host.
8. The matrix panel keys, serial ports, remote control can not be controlled, the host may have been damaged internally, please send professionals for repair.