



Professional Matrix Switching System

User Manual

Before using this product, please read the instructions first
and keep it properly

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Preface

Chapter1. Preface

- Welcome to choose our products, thank you for the support of our products ! For the safety both of yourself and the equipment , please read the instruction manual carefully before using this equipment.
- Products are covered with a fragile label, please preserve it carefully which will serve as the warranty certificate.
- Please read this guide first when you have any problems;The text has a detailed description of the device operation. If you still have questions, please contact us and we will give you a satisfactory answer as soon as possible.
- If this manual has a version changes, we will not inform you specially, thank you for your understanding and cooperation!

Notices

Chapter2. Notices

In order to ensure the reliable use of the equipment and personnel safety, please observe the following items when installing, using and maintaining:

- 2.1 • Do not use this product in the following places: dust, fumes, conductive dust, corrosive gas and combustible gas places; exposure to high temperature, dew, rain occasion; vibration or shock situation; electric shock, fire and misoperation will result in product damage and deterioration;
- 2.2 • In the end of the installation work, the need to ensure that there is no foreign body on the ventilation surface, including dust and other packaging items, otherwise it may result in poor heat dissipation during operation, causing fire and error;
- 2.3 • To avoid of wiring and plug a electric cable plug, which would easily lead to electric shock or cause damage to the circuit;
- 2.4 • Installation and wiring must be solid and reliable, poor contact may lead to misoperation;
- 2.5 • For applications in interference is serious, input or output high frequency signal cable should be shielded cable, in order to improve the anti-jamming performance of the system; the external power supply must be completely cut off, to carry out the installation and wiring operation, otherwise it may cause electric shock or damage to equipment;
- 2.6 • This product is grounded through the grounding wire of the power supply line. In order to avoid the electric shock, the grounding wire must be connected with the earth;
- 2.7 • Please do not touch the terminal when the power is on, which may cause electric shock and misoperation;
- 2.8 • Please tighten and cleaning the terminals when the power is off, These operations may cause an electric shock when energized;
- 2.9 • After the power supply is closed, the connection or removal of the communication signal cable, the cable connection of the expansion module or the control unit, or the removal of the device can result in equipment damage and misoperation;
- 2.10 • Do not disassemble the equipment to avoid damage to the internal electrical components;
- 2.11 • Be sure to read this manual to fully confirm the safety, then the program change, commissioning, start and stop operation. If you can not solve the problem, please contact us.

Product Introduction

Chapter3. Product Introduction

- 3.1 • Matrix switcher is a professional switching device embedded intelligent control of a high performance, for the audio and video input signal synchronous switch to any output channels of audio and video;
- 3.2 • The unique processing method is adopted, which greatly improves the switching speed of the device. Support a variety of control methods, flexible operation switch, is widely used in radio and television engineering, multimedia conference hall, large screen display works, TV teaching, command and control center;
- 3.3 • Interface bandwidth 3.4Gbps (total bandwidth 10.2Gbps), support the highest resolution 3840*2160@30Hz;
- 3.4 • Support HDCP1.4 revision, provides outstanding security and digital content protection capabilities;
- 3.5 • Support fast switching operation; support infrared remote control;
 - The input and output board support card function, can be hot swappable;
- 3.6 • Supports basic matrix control instructions and basic matrix functions;
 - With power down memory function, with power off site protection function;
- 3.7 • Flexible control mode, with the crystal button panel operation, but also provides 2 standard RS-232 communication interface and RJ45 port, compatible with a variety of environments, user-friendly and a variety of remote control equipment with the use of;
 - One RJ45 interfacer use RS232, It is a serial port;
 - One RJ45 interfacer use TCP/IP, it is LAN port;
- 3.8 • Built in International standard power;
- 3.9 • Full metal chassis compatible with standard 19 inch cabinet;
- 3.10 • Support user defined matrix front panel LCD screen standby and control software LOGO;
- 3.11 • Support HDCP can decode Blue ray DVD and so on the corresponding equipment.

System Parameters

Chapter4. System Parameters

Matrix Specification	
Input numbers	4/8/12/16/20/24/28/32
Output numbers	4/8/12/16/20/24/28/32
Signal interface	HDMI\DVI\VGA\SDI\DP\AV\HDBaseT
HDMI protocol	Support HDCP1.4 and HDMI1.4, compatible with the DVI1.0
Bandwidth	3.4Gbps (total 10.2Gbps, each color 3.4Gbps)
HDMI resolution Max.	3840x2160@30Hz
DVI resolution Max.	1920x1200@60Hz
VGA resolution Max.	1920*1080@60Hz
SDI resolution Max.	1920*1080@60Hz
DP resolution Max.	3840x2160@30Hz
AV system	PAL, NTSC adaptive
HDBaseT resolution Max.	3840x2160@30Hz
Clock jitter	<0.15Tbit
Bit rise time	<0.3Tbit (20% - 80%)
Bit drop time	<0.3Tbit (20% - 80%)
Maximum transmiision delay	5ns (\pm 1ns)
Switching speed	200ns (Max.)
Signal intensity	T. M. D. S +/-0.4Vpp
Impedance	50 Ω
Input EDID	EDID can read and write only for some models
The maximum input distance	1920x1080@60hz@less then 30 meters(good cable)
The maximum output distance	1920x1080@60hz@less then 20 meters(good cable)
Serial port version(Standard)	RS232、Panel key、Remote
LAN port version(option)	TCP/IP、RS232、Panel key、Remote
Baudrate and protocol	Baudrate: 9600, databits: 8bits, stop: 1, no parity
RJ45 serial port	1 = TX, 2 = RX, 5 = GND
Power input	AC100 - 240V, 50/60hz
Temperature	Storage and use temperature: -20 $^{\circ}$ ~ +70 $^{\circ}$ C
humidity	Storage and use humidity:10% ~ 90%
Size	1U/2U/3U/7U with standard 19 inch box
Mean time between failures	30000hours

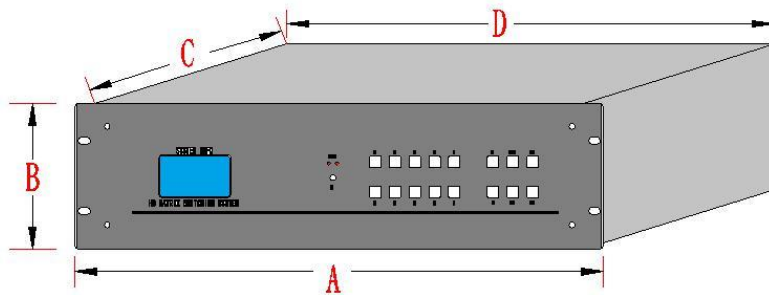
Packaging and panel and keys

Chapter5. Packaging an panel and keys

5.1. Matrix packing list

Name	Unit	Numbers
Matrix switcher	pcs	1
AC power cable cord	pcs	1
RS232 Serial communication cable	pcs	1
User manual	pcs	1
Data CD	pcs	1
Certificate	pcs	1
Warranty card	pcs	1

5.2. Structural representation

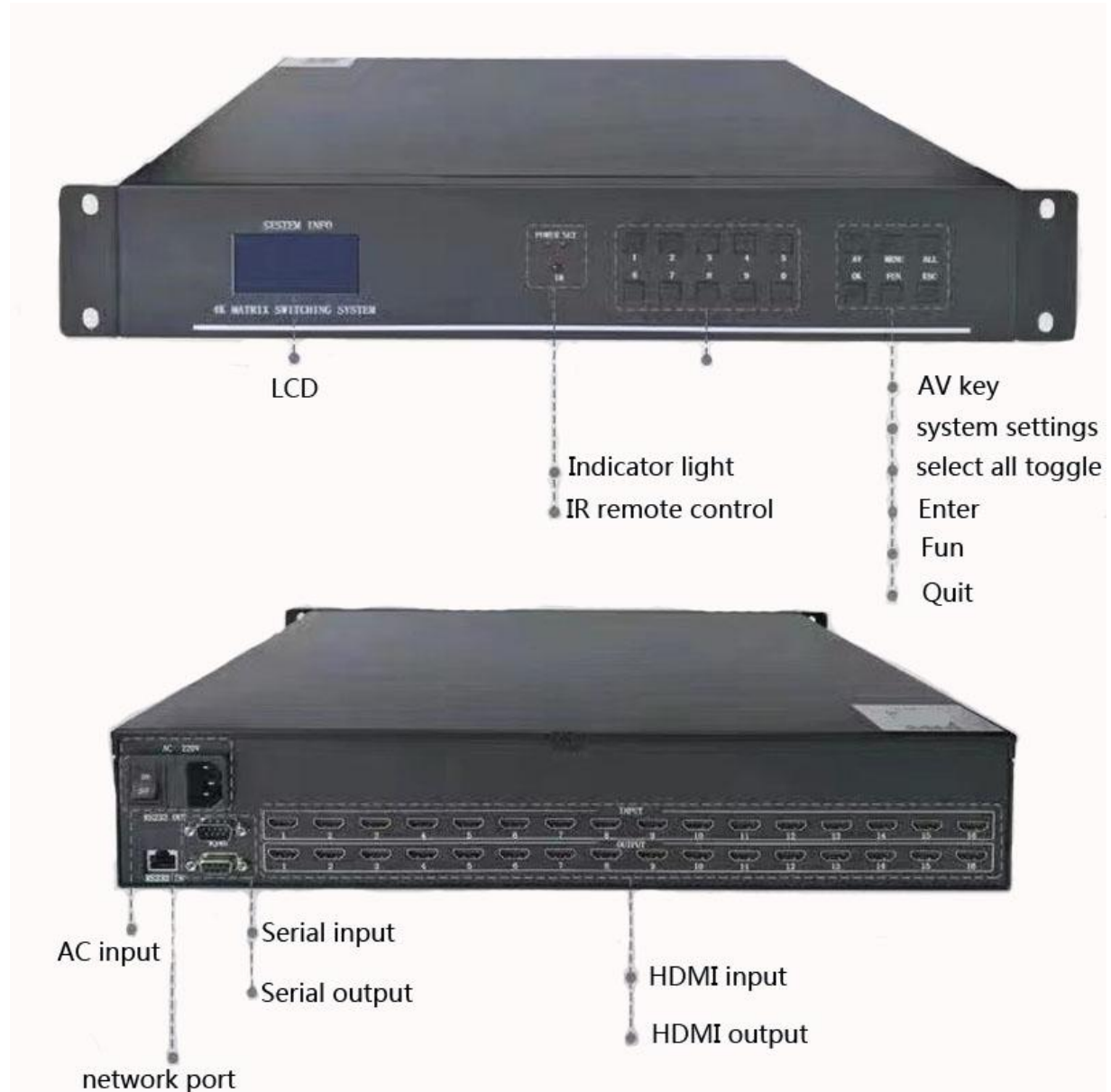


Size:

Lenth Model	A (mm)	B (mm)	C (mm)	D (mm)
0404/0808/0909 (Integral type)	480	44	240	440
0816/1616/1632 (Integral type)	480	88	310	440
0808(Plug type)	480	88	310	440
1616(Plug type)	480	132	320	440
3232(Plug type)	480	308	400	440
4040(Plug type)	480	308	400	440

Packaging and panel and keys

5.3. Panel description(08X08 Plug type as an example)



Note:

1. The machine does not have ALL keys, replaced by OK, all OK = Enter in the system;
2. The machine has no FUN key, instead of MENU, press the menu key menu of MENU, and then press the menu of function key.

Packaging and panel and keys

5.4. Remote control button



Name	Function
AV	Switch Audio & Video
FUN	System Operation
MENU	System Settings
OK	Confirm
	Exit
AUTO	All channels
0	channel 0
1	channel 1
2	channel 2
3	channel 3
4	channel 4
5	channel 5
6	channel 6
7	channel 7
8	channel 8
9	channel 9

Buttons below not used			

Change channel example :

1.Change Input 1 channel to Output 2 channle

Press AV 01 02 OK

2.Change Input 1 channel to Output 2 channle and Output 14 channel

Press AV 01 02 OK

Press AV 01 14 OK

Installation Instructions

Chapter6. Installation instructions

6.1. Signal connection

The matrix interface is divided into signal input and output interface, please use the corresponding cable to connect the input and output devices, the signal source (such as DVD, computer etc.) output terminal matrix input device (INPUT), the matrix output (OUTPUT) connected to the Input interface of signal equipment (such as projector, TV etc).

6.2. RS232 Communication interface connection

Matrix switch provides a standard RS-232 serial communication port and RJ45 communication port, users can use a variety of remote control equipment remote control. The RS-232 port of the matrix is a D shaped 9 pin male connector (the same as the serial port of the computer) Pin descriptions are as follows:

Serial number	Pin	illustration
1	NC	None
2	RXD	Transmit Exchange Data (RXD)
3	TXD	Receive Exchange Data (TXD)
4	NC	None
5	GND	Ground
6	NC	None
7	NC	None
8	NC	None
9	NC	None

Attention: matrix RS-232 port and the computer or the central control, should pay attention to the TXD and RXD line sequence, specifically to consider the other device pin definition.

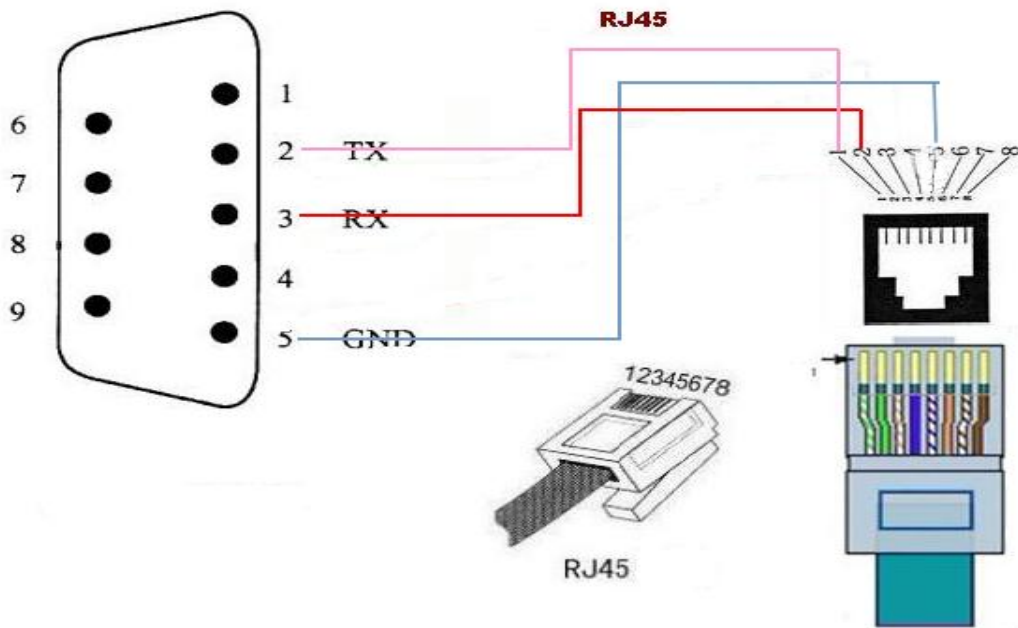
6.3. RJ45 for TCP/IP control

The network matrix is supported by the TCP/IP protocol. When the matrix is connected to a switch or router or PC directly, the matrix can communicate. The premise is to keep the IP address of the matrix and the LAN to be the same segment, otherwise the IP address of the set matrix should be entered first.

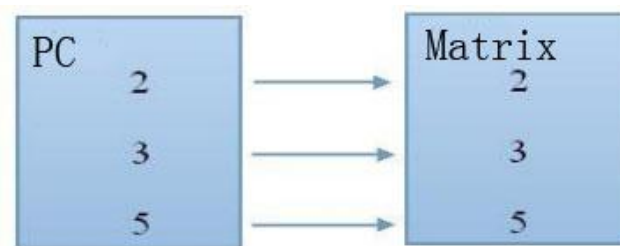
Installation Instructions

6.4. RJ45 for RS232 control

RJ45 to RS232



The diagram below is a schematic diagram of the connection with the computer:



6.5. Power connection **PC**

MATRIX

Please connect one end of the power cord to the back of the matrix with a power supply interface of AC100-240V 50/60HZ, which connects to the 100-240V 50/60HZ AC power supply. Note that in order to ensure the safety and normal operation of the equipment, a single-phase three wire AC power supply.

Communication control protocol

Chapter7. Communication protocol

7.1. TCP/IP LAN control parameter

1.1.Query IP instruction :HWC

HNW192.168.1.172,6800,255.255.255.0,192.168.1.1,54.82.52.115.119.23

1.2.Reset operation instruction: HWR

1.3.Setting up the IP instruction: HWS

For example: HWS192.168.1.172.255.255.255.0.192.168.1.1

After IP is set up, the communication of the host computer needs to be reconfigured and reconnected to normal communication control.

1.4: Port number support: Four 6800 / 6900 / 7000 / 7100

7.2. RS232 serial control parameter

The baud rate is set to 9600, 8 bit data bits, 1 bit stop bits, no parity bits, and communication mode: asynchronous half duplex serial communication.

7.3. Communication control protocol

The following protocols support all types of matrices: All protocol symbols must be entered in English, and English letters must be capitalized.

Input ID	switch	Output ID1	Delimiter	Output ID2	End character
IN	V	OUT1	,	OUT2	.

For example:

1V1,2,3.

Put the input channel 1 is switched to the output 1,2,3 channel sequentially.

12V1,2,12,14.

Put the input channel 12 is switched to the 1,2,12,14 channel of the output channel once.

Communication control protocol

Switch an input channel to all output channels

IDH	IDL	T	O	A	L	L
Input ID		Protocol identification				

01TOALL Switching input channel 1 to all output channels.

12TOALL Switching input channel 12 to all output channels.

Switch one to one

T	O	O	N	E
Protocol identification				

TOONE Switch the matrix input X to output X

Recall the mode

CALL	ID
Protocol identification	MODE ID

For example: CALL2 Recall the mode 2 of Matrix

Save the mode

S	A	V	E	ID
Protocol identification				Mode ID

For example: SAVE2 Save the mode 2 of Matrix

BUZON Matrix Buzzer on

BUZOFF Matrix Buzzer off

Operating Instructions

Chapter8. Operating instructions

◆ Standby Image (LCD Screen)

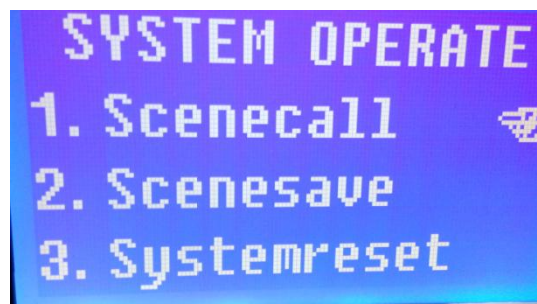
Any state press "ESC" to return to the screen (different models, slightly different).



◆ "AV botton" audio and video switch Press the AV button to enter the audio and video synchronization switch menu, as shown below; in this state, with the number keys to select the input channel number and output channel number, and then press the OK key to switch. Select the "ALL" key instead of all output channels. For example, to switch the 1 input channel to all output channels, press "AV" - "01" - "ALL" - "OK".

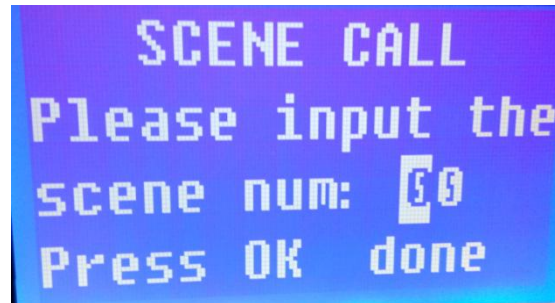


◆ "FUN" function key In standby mode, press "fun" button to enter the system operation menu, the menu can be stored in the scene and call function, and restore the factory settings.

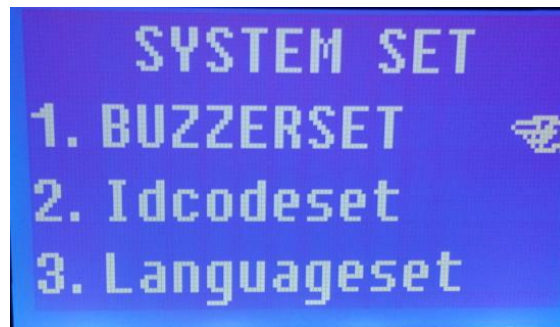


Operating Instructions

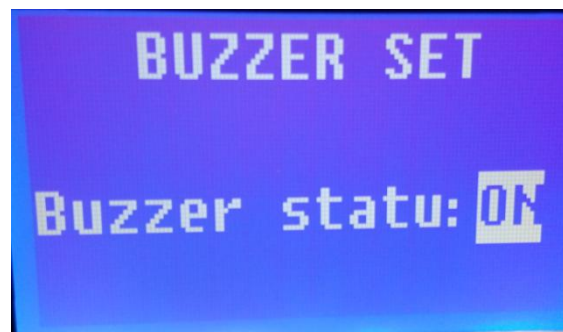
◆ For example, you can save a scene, and then call through the scene mode, select the save before the scene number, you can call directly, convenient and quick:



◆ "MENU" key In standby mode, press "MENU" to enter the system settings menu, the menu can be set for the buzzer switch, the identification code settings and language switch settings:



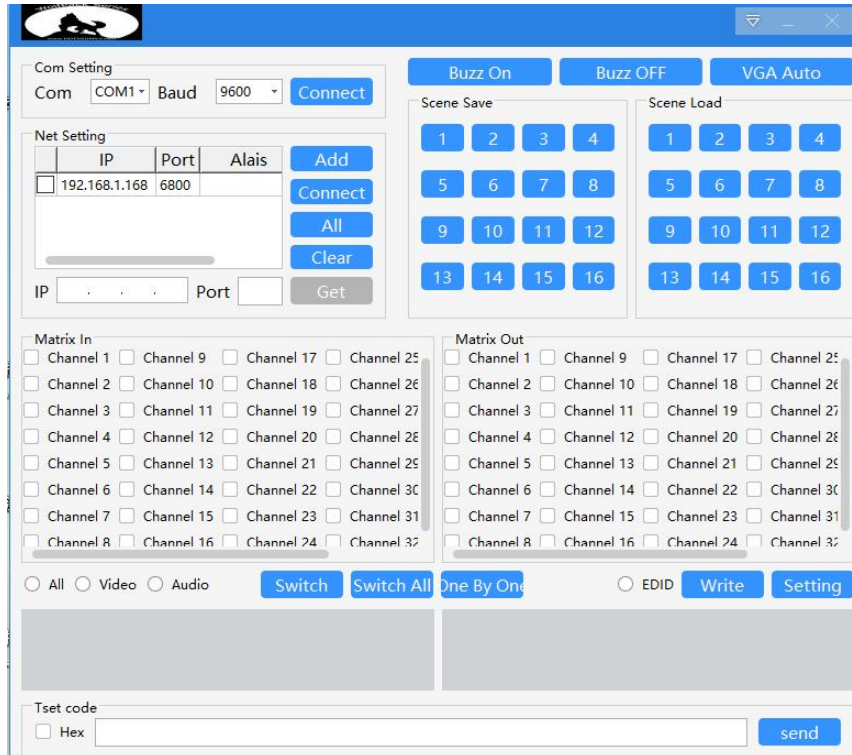
◆ For example, under this menu, press "1" to select the buzzer settings menu, and then press "OK" button to enter the menu. In the sub menu, press the "1" key to switch the state of the buzzer switch, press "OK" to determine the settings can be saved.



Control Software

Chapter9. Control software

- In the CD-ROM attached to the packing box, the control software and the documentation of the product are stored; the user can read the file only by placing the disc in the DVD drive.
- Copy the files in the CD to the PC computer of the windows system and double-click HDMatrixcontroller.exe to enter the matrix control software.



1. After confirming the serial port or network connection to the matrix, at the serial port selection point, select the serial port number needed, click on the connection, then the connection will be successful and the communication can begin; the network version chooses the corresponding IP address to click on the connection, and the network version settings refer to the computer IP address settings.
2. Click the drop-down menu in the upper right corner of the software to set the language and ID number of the software. There is no special definition. Please set the ID number of the matrix to 0.
3. Selecting the input channel number and output channel number, clicking on the switch can quickly complete the switch control of the matrix. By switching all of them, the input channel can be switched to all the output channels.
4. In addition, the current scenario can be saved. Next time you select the saved scenario number, click the call to restore immediately to the last saved scenario.
5. You can also rename the input and output channels and save the invocation mode.
6. Some models of EDID can support on-line writing, and advanced settings can set scene polling switch.

Common faults and maintenance

Chapter10. Common faults and maintenance

- ◆ When the matrix peripheral image display device has ghosting, such as ghosting when the projector is not the main problem, in general, may be adjusted without the right projector or wire quality standards, with the corresponding projector button to adjust or replace the wire.
- ◆ When the color loss or no video signal output, audio and video interface may be bad contact.
- ◆ When the remote control can not control the matrix:
 1. may be the battery is dead, please replace the battery.
 2. may be the remote control is broken, please repair.
- ◆ When the serial port can not control the matrix, check whether the communication port of the control software is corresponding to the serial port of the connected device.
- ◆ There is no corresponding image output when the matrix is switched:
 1. check whether the corresponding input signal. (can be used oscilloscope or multimeter for testing) if there is no signal input, it is possible that the input line broken or loose joints, try to replace the wire.
 2. check the corresponding output signal. (can be used oscilloscope or multimeter for testing) if there is no signal output, it is possible that the output line is broken or loose joints, try to replace the wire.
 3. check whether the output port number is consistent with the controlled port number.
 4. does not belong to the above three kinds of situations, may host internal fault, please send professional maintenance.
- ◆ If the POWER lamp does not light, and the LCD is not displayed, the operation is not responding, please check whether the power input is good.
- ◆ The output image is disturbed, it is possible that the input and output devices do not have good grounding.
- ◆ When pulling, inserting audio video interface, if you feel there is a clear static, it is possible that the equipment power supply ground wire is not a good grounding, according to the correct method of grounding, otherwise easy to damage the host, shorten the life of the mainframe.
- ◆ LCD display normal, the communication port has a return code, but no image output or no audio output
 1. audio and video interface may be loose, can be replaced.
 2. short circuit may be connected, try to replace the wire.
 3. possible wiring break, try to replace the wire.
- ◆ When buttons, communications, remote control can not be controlled, the host may have been damaged inside, please send for professional maintenance.

Warranty Description

Chapter11. Warranty description

◆ Please identify the user, from the date of purchase, can enjoy one year warranty service. In addition to postal, transportation and other miscellaneous charges, warranty services are provided free of charge.

◆ In the following circumstances, the company has the right to refuse to provide free warranty service, but can provide charge maintenance services:

1. can not provide the relevant purchase documents or product purchase certificate of the contents of the record does not match the product;
2. products damage due to bad weather, natural disasters caused by force majeure;
3. the product does not operate according to the installation instructions provided by the company to cause human damage;
4. products without the authorization of the company to repair the damage caused by unauthorized;
5. product failure and damage due to improper storage;
6. the appearance of the artificial scratch, break, stain, damage, etc..

◆ In addition: in addition to the product itself outside accessories and packaging, are not within the scope of the warranty; this warranty does not include transportation costs and provide door-to-door service; after the product packaging has been opened due to damage and damage and related accessories and the loss will lead to the value of the products have discounts, so businesses should pay attention to the return of the product, and due to the return of the packaging cost and the cost of parts, provided by the return party.