User's manual

User's manual

HD mixed matrix switcher

WolfPack Lite Modular Matrix

Call 833-WOLFPACK

Professional Matrix Series Rev.1.0

Watch out

Please read this manual carefully before using this device

User's manual of HD mixed matrix switcherused 1616、mixed matrix 3232 for examples, can be used as a reference for other types of matrix.

This manual is only used as a user's operation instruction, is not used as a maintenance service. This manual belongs to the copyright owner of the matrix

Safety operation guide

Please follow the points below during installing, using and repairing to ensure the safety of user and the devise being used reliably:

1．The switcher must grounded completely, otherwise, it causes not only signal interference, unstable or mechanical damage, but also may causes personal accidents due to leakage of electricity. Please use standard three wire power outlet, its grounding resistance of ground-wire should be less than 1Ω。

2．It is forbidden to change the original design. Please don't change or add any parts to the mechanical and electrical design of this product. Otherwise, our company is irresponsible for the consequences.

3．Do not use two-core plug, to ensure the input power of the equipment is 220V50Hz AC.

4．Do not open the shell to avoid electric shock because there are 220V high voltage components inside.

5．Don't put the machine in a too cold or overheated place.

6．The power supply of the equipment will heat up as working, make sure the working environment is ventilated to prevent the machine from being damaged because of high temperature.

7．The total gate of power supply should be closed during wet weather or the device will not be used for a long time.

8．The AC power supply line of the equipment must be removed from the AC power supply socket before the following operation： a. Remove or

reload any part of the device b. Disconnect or reconnect any power plug of this device and other connection.

9 . If you are not professional person, please do not open the chassis, do not maintain private maintenance to avoid accidents or aggravate the degree of damage to the equipment without permission.

10 . Do not spill any chemicals or liquids on the equipment or nearly.

Catalog

1.Product instruction

1.1 . About HD matrix series switcher

HD digital matrix can transmit and switch the 1080P signal under the 10.2Gb/s bandwidth, and the highest output resolution can support 3840 x 2160/30Hz. The optional EDID information management function automatically extracts the EDID information of the display terminal, transmits and switches to the device terminal, ensures that output signal of every channel reads the EDID information of the display terminal completely and shows the best display effect.

HD mixed matrix supports HDMI, DVI, CVBS, YpbPr, VGA input cards, HDMI, DVI output cards.

HD digital matrix support infrared remote control, RS-232, TCP/IP control. It is suitable for the transmission application of standard digital video signals with any size.

HD digital matrix can adopt to 7 x 24 hours' uninterrupted working state, and the average working time without fault is more than 40000 hours. It provides a stable and reliable signal transfer and switch center for the system. Application range includes digital video, multiple screen display system, radio and television system, medical teaching system, command and control system and so on.

The front panel of HD digital matrix is manipulated with touch key, with LCD display, and has a good human-computer interactive experience.

1.2 . Classification of HD matrix switchers

According to the needs of different occasions and customers, HD digital matrix and HD mixed matrix series are divided into the following models: HD digital matrix has two types, HDMI and DVI, support 32 channel input and 32 channel out.

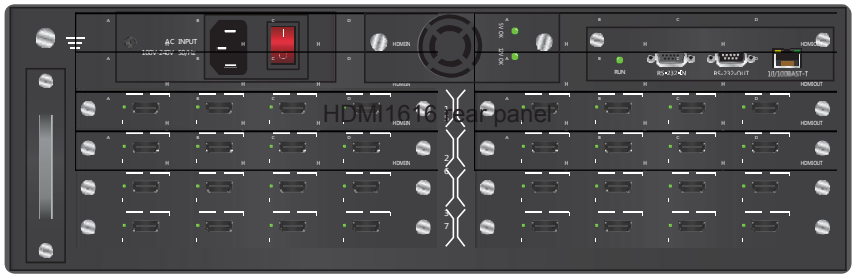
HD mixed matrix support HDMI, DVI, CVBS, VGA, YpbPr input, HDMI, DVI output, maximum support 32 channel input and 32 output.

2. HD matrix packing instruction

	HD digital matrix host
	DVI/HDMI connector
	RS232 connector
	Power cord
	Application software CD
	Remote-control
	Switcher user’s manual & certificate

3.Diagram of front and rear panel

HDMI 1616 front panel



HDMI1616 rear panel

4. Connection between HD matrix and peripherals

Take HD digital matrix as an example

4.1 Introductions of Input and output interface

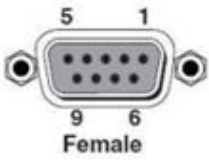
According to different types of matrix, the signal input and output interfaces are composed of 4, 8, 16 and 32 channel DVI/HDMI terminals. For channel numbering please check the sixth chapter functional introduction of the rear panel.

4.2 Communicating port and connected method

HD digital matrix provides the standard RS232 serial communicating port and LAN network control port , in addition to the touch button control panel by switching operation, also allows users to use a variety of control systems (the company control system, control system and other manufacturers) to control or remote control via ethernet.

4.2.1 Connection between HD matrix and control system

The HD digital series matrix can be controlled by a variety of control systems, and controlled through the RS232 serial port or Ethernet control port.

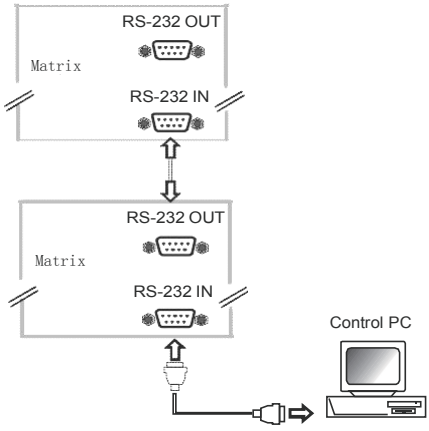


RS-232 Interface is 9-pin female connector,Pin Instructions is as follows:

Pin	Pin	Instruction
1	N/u	No
2	Tx	Send
3	Rx	Receive
4	N/u	No
5	Gnd	Public land
6	N/u	No
7	N/u	No
8	N/u	No
9	N/u	No

4.2.1 Connection between HD matrix and control system

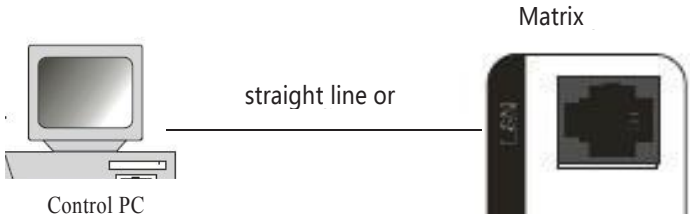
HD digital matrix supply 2 standard RS232 communication ports, 1 RS232 IN, connected to computer or RS232 OUT of another matrix. RS232 interface of multiple matrices can be connected in series. Only a single computer's RS232 interface is used to control and set up the these multiple matrices.



4.2.3 Ethernet hardware connection mode

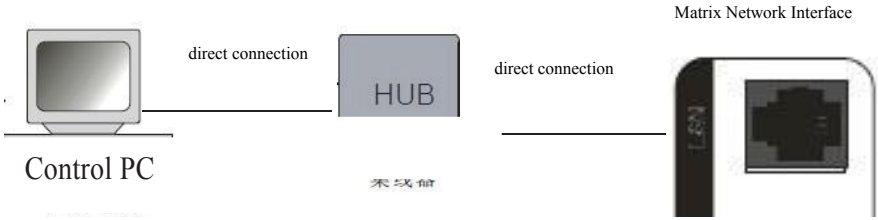
A.Connection of interior extrapolation method

HD digital matrix LAN port and the Ethernet port of the computer are connected across by 8 bit CAT-5 or connected directly by straight network line



B. Straight connection

HD digital matrix LAN network port and HUB are connected by 6 bit CAT-5 directly. Then connect HUB to the Ethernet interface of the computer through this 6 bit CAT-5 directly.



4.2.4 Connection of straight line and cross line

This system uses CAT-5 (5 type line) as wire rod and connects network equipment through RJ45 (crystal port) connector at both ends of the network line. control PC

Twisted pair has two connected ways:EIA/TIA568B standard and EIA/TIA568A standard

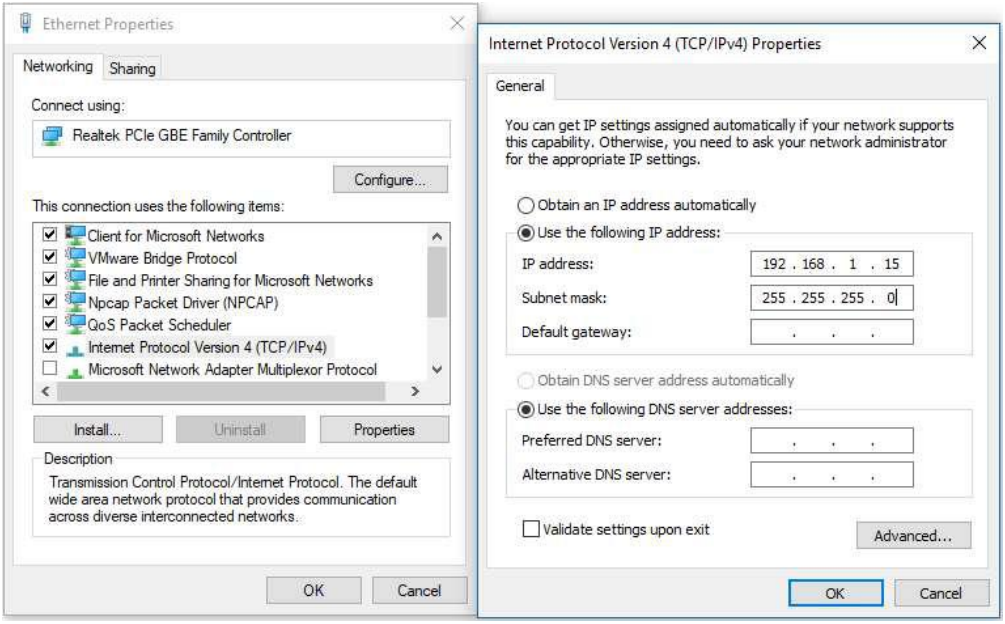
T568A							
1	2	3	4	5	6	7	8
green white	green	orange white	blue	blue white	orange	brown white	brown
T568B							
1	2	3	4	5	6	7	8
orange white	orange	green white	blue	blue white	green	brown white	brown

Direct cable:Both ends are connected by T568B cable standard

Cross cable:One is connected by T568A line sequence, another is connected by T568B line sequence

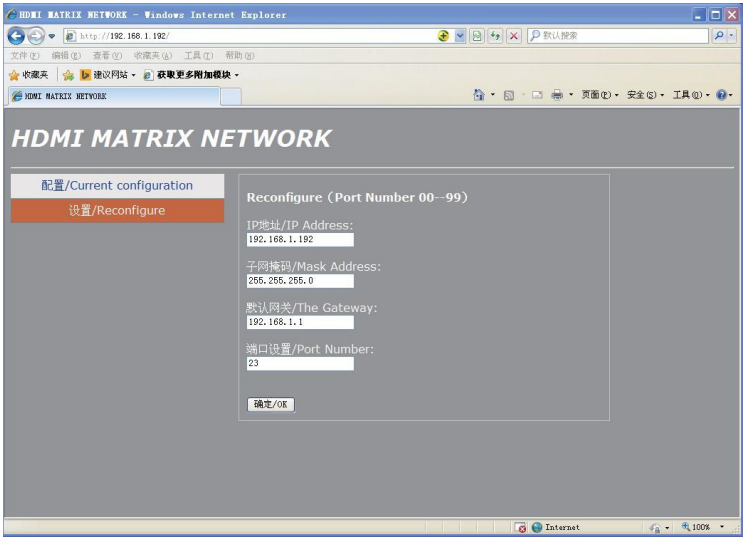
4.2.5 Instructions of Ethernet adapter configuration

The default static IP address of factory setting is 192.168.1.192. The landing port is: 23, and need to make the computer and the device under the same segment to communicate. As shown in the following picture:



In practical application, if you need to change the IP address and modify the MAC address as multiple matrix control, enter the current IP address in the browser address bar (default 192.168.1.192), land the network module interface. As shown in the following picture:

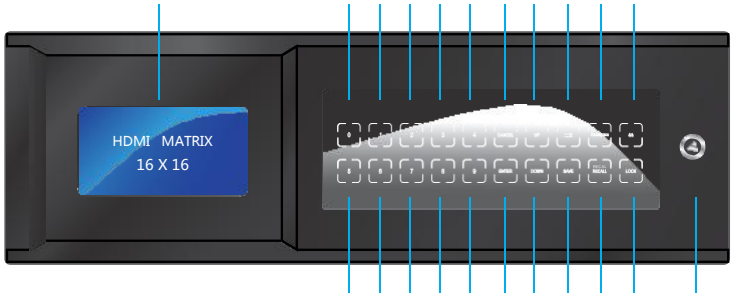
Click "set /Reconfigure", enter the static IP setting interface, type in the required IP and click “OK”on the right side of the Reconfigure option. As shown in the following picture:



5. HD matrix panel functional key

Take HD digital matrix as an example

5.1 Panel diagram：



5.2 Instruction of functional key：

- 1 shown as LCD display, functional display
- （2/3/4/5/6/12/13/14/15/16）is 0- 9，input/ output path, digital control key 7 shown as CANCEL key
- Menu functional interface exit key
- 8 shown as UP menu direction key
- 9 shown as Input channel hops key
- 10 shown as Backspace Backspace key，If input / output the wrong channel, backspace can be reentered
- 11 shown as & & Multi - channel functional selection key, when entering multi channel
- 17 shown as Enter menu key，and confirmation key
- 18shwon as DOWN menu DOWN direction key
- 19shwon as SAVE preplanned saving key
- 20shwon as RECALL preplanned calling key
- 21 shown as LOCK key, Prevention of key mis operation
- 22 shown as matrix machine lock, used for maintenance

5.3 Channel switching instruction :

Example 1：Switch sixth channel video input signal to eighth channel output, the operation is as below： 06+08+Enter or 6+ ⇌ +8+Enter

Example 2: Switch tenth channel video input signal to the eighth channel output, the operation is as below：
10+08+Enter or 10+8+Enter

Example 3: switch the eighth channel video input signal to all channel output. The operation is as below: 08+00+Enter or 8+ ⇌ +0+Enter

5.4 Enter Menu functional instruction :

1. Channel setting
2.EDID management
3. Preplan setting
4. System setting
5. Software setting
6. Activate device

1. Enter (Channel setting) child menu, functions are as below:

1. Multi channel switching （ Used for multiple input and output signals Switching ）
2. Open specified channel (to specify the opening of input and output channel)
3. Close specified channel (to specify the closing of input and output channel)
4. Check current state (to check current state of input and output channel)

2 . Enter (EDID management) child menu, functions are as below:

(1) . **Update port EDID**：Used for display EDID，Read back to the front end device to make the display show the best effect. Press “Enter ”to enter the update port EDID, type in the port number that needs updating, and press“Enter” to confirm。For example：Type in 01 press Enter (The port number refers to the connect position of the display on the output end of the matrix)

(2) . **Delete saved EDID**： used to delete the saved EDID inside the matrix

(3) . **Save current EDID**:
The configured EDID for the input port is saved in a matrix so that it can be used next time, for example：type in port number 01, storage serial number 01, press “Enter” to confirm.
(The port number refers to the device that is connected to the input side of the matrix. The storage number is equivalent to the stored address, with a total of 1 to 16 storage number addresses, equivalent to the storage of 16 EDID)

(4) . **Extract saved EDID**： Used to extract the EDID that saved in matrix. For example: Type in port number 01, storage serial number 01, press “Enter“to confirm.
(The port number here is: the device connected by the input side configuring the stored EDID in the matrix to the signal source device to make the output signal display perfectly)

(5) . **Check saved EDID**: Used to check and call saved EDID in matrix. For example: 01--refers to storage serial number, 02-refers to Temporarily unstored EDID.

3 . Enter (preplan setting) child menu, functions are as below ：

(1). Delete preplan：
Press“Enter” into the delete plan interface, and type in the preplan number to delete. For example, type in 01and press “ Enter” (can save 1 to 16 plans)

(2). Add preplan：
Press “Enter” into the add- preplan interface, and save the set channel as preplan format in advance . For example, type in 01 and press Enter (can save 1 to 16 plans)

(3). Extract preplan
Press “Enter” to enter the extract-preplan interface, and call a saved channel preplan for use. For example,type in 01 and press “Enter” (can extract 1 to 16 plans)

. Saved Preplan
Press “Enter”to enter saved-preplan interface to check the current preplan. For example, 01 - * * refers to storage serial number, and 02 refer to temporary unstored preplan (can extract 1 to 16 plans)

4.Enter (system setting) child menu, functions are as below:

(1) Version information： Press“Enter”to check matrix version number

(2) Set baud rate:

Press “Enter” to set the baud rate between matrix serial port and devise （4800bps, 9600bps, 56000bps, 57600bps, 115200bps ）

(3) Set key tone： Press Enter to enter UP keys, DOWN key to set tone switch

(4) Restore factory settings： Press “Enter” to restore to the factory default settings

(5) Language： Press Enter to enter the choice of Chinese and English menu

(6) Specify device ID：Press “Enter” to enter into ID matrix’s setting for multiple matrix use

5. Enter (network setting) child menu, functions are as below：

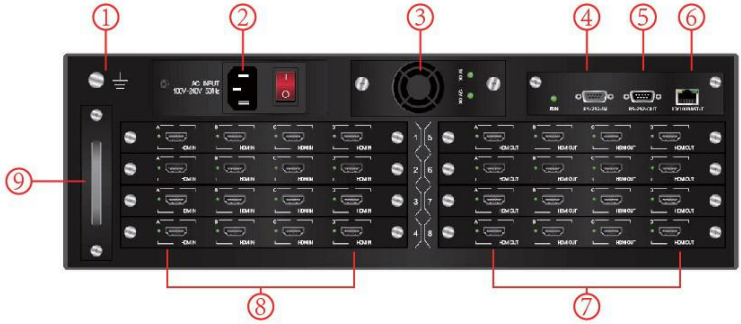
(1). Press”Enter”to enter network setting interface，reset network IP, port number to factory default setting.

6. Enter (activate device) child menu, functions are as below：

(1)．Mainly aimed at matrix encryption setting, 7 days for probation. When the working time is over 7 days, the matrix will be automatically stopped working, and the matrix device number need to be provided to the customer for long-term use. Customers can also set two passwords and use-days。 For example, press “Enter”to activate the device to check the four double- digits: 12-32-15-42, and generate the registration code to the customer through this device number. The second password setting must be set up by matrix that used after the registration code, to set the use days and passwords. The matrix can be used for a long time only if the password is removed. And if you don't set second password, it can be also used for a long time.

6 .Rear panel functions

6.1Panel diagram：



6.2 Function instructions：

- 1 shows the access matrix connected to the earth, the screw fixed the earth wire
- 2 shows the matrix 220V AC interface, and the power switch.
- 3 shows the matrix pluggable power supply
- 4 shows the input interface of the matrix RS232 serial port
- 5 shows the output interface of the matrix RS232 serial port

- 6 shows the matrix TCP/ IP network control port
- 7 shows matrix pluggable signal output board card, 1-card-4-channels board card from left t right, A/B/C/D shows:1/2/3/4 increased with the board card. For example: The first board car is 1/2/3/4，the second is 5/6/7/8, and so on. The port light will be lighten when there is a signal.

- 8 shows matrix pluggable signal input board card, 1-card-4-channels board card from left t right, A/B/C/D shows:1/2/3/4 increased with the board card. For example: The first board car is 1/2/3/4，the second is 5/6/7/8, and so on. The port light will be lighten when there is a signal 9 shows matrix pluggable fan box.

6.3 HD mixed matrix panel diagram:

6.4 Function instructions：

- 1--8 shows the part of mixed matrix input card : VGA board card（1、5），DVI board card（2），HDMI board card（3、8），YpbPr board card(4、6)，CVBS board card（7）
- 9 shows matrix pluggable fan box
- 10 shows matrix pluggable signal output board card 1-card-4-channels board card from left t right, A/B/C/D shows:1/2/3/4 increased with the board card. For example: The first board car is 1/2/3/4，the second is 5/6/7/8, and so on. The port light will be lighten when there is a signal.
- 11 shows the access matrix connected to the earth, the screw fixed the earth wire
- 12 shows the matrix 220V AC interface, and the power switch.
- 13 shows the matrix pluggable power supply
- 14 shows the input interface of the matrix RS232 serial port
- 15 shows the output interface of the matrix RS232 serial port
- 16 shows the matrix TCP/ IP network control port

6. 《MATRIX 4.3.1》Matrix control software

7.1. Software instructions

Matrix control software is an application tool to match the test and application of HD video matrix series. The software can not only complete the normal handover operation of HD digital matrix and HD mixed matrix, but also can test related functions of matrix.

Software running environment：WindowsXP/Vista/WIN7operating system 32M above memory
10 M above hard disk space
CD-ROM1
At least one serial communication interface integrated network Card

1. Installation of control software

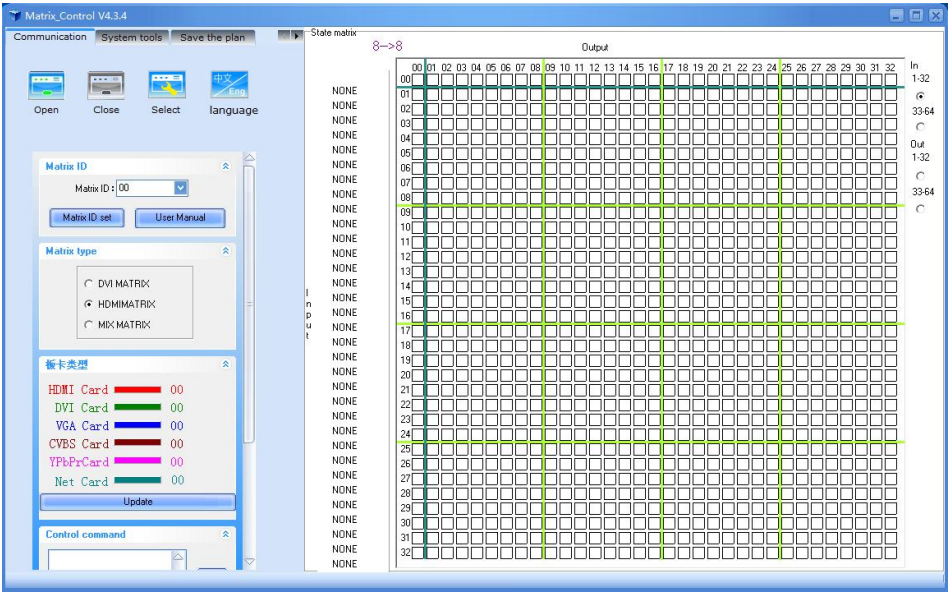
The matrix series random CD-ROM provides the test and application software of 《MATRIX 4.3.1》. Users can directly use the software to operate the matrix. Put the machine's random CD-ROM into the CD-ROM drive, and install the matrix software 《MATRIX 4.3.1》directly.

2. Start of software

First close the matrix and computer power, connect the randomly distributed communication line to the RS232 interface of the matrix and the RS232 communication port of the computer, and connect the matrix and the computer power supply.
You can start the control software by double clicking the "MATRIX 4.3.1" on the control computer. After setting up serial port, matrix ID and selecting matrix type, corresponding control operations can be carried out.

7.2．Operation interface functional instructions

Operation interface window as below:



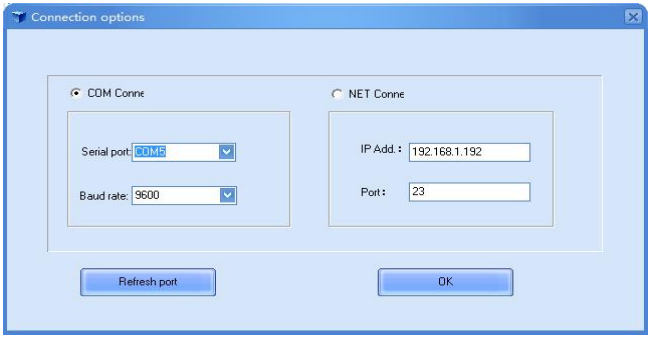
1. Function instructions

Communication setting (1)

Open connections (2)

Close connections (3)

Serial port baud rate selection and network connection settings as below:

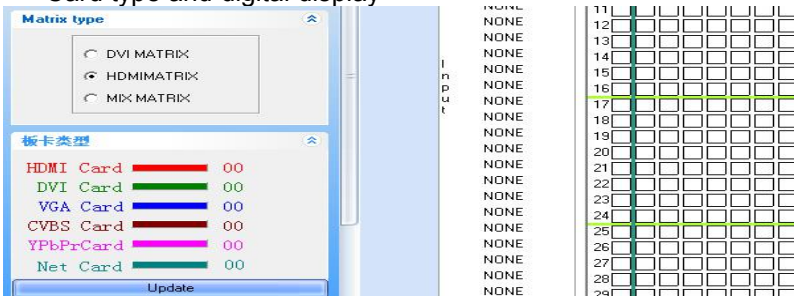


■ System tools

- It mainly includes baud rate modification, standby, boot, restore factory settings, network IP reset.

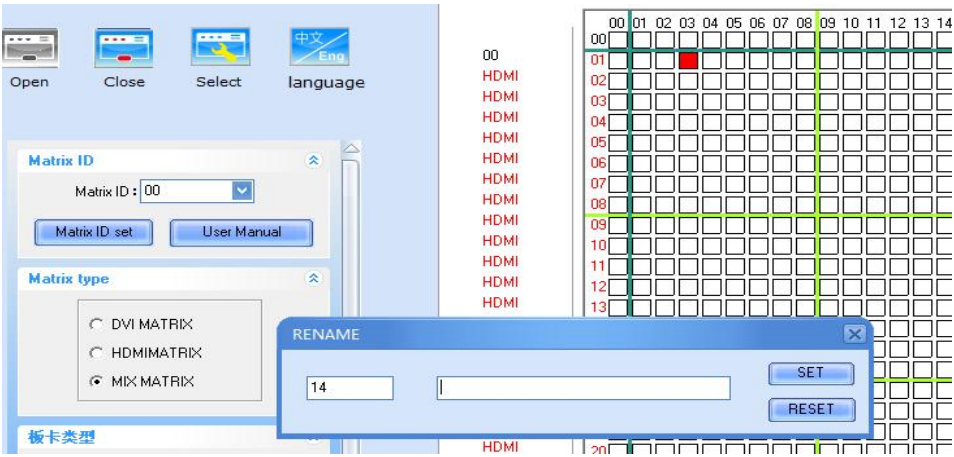
- Preservation, transfer, and deletion of a plan

- Card type and digital display



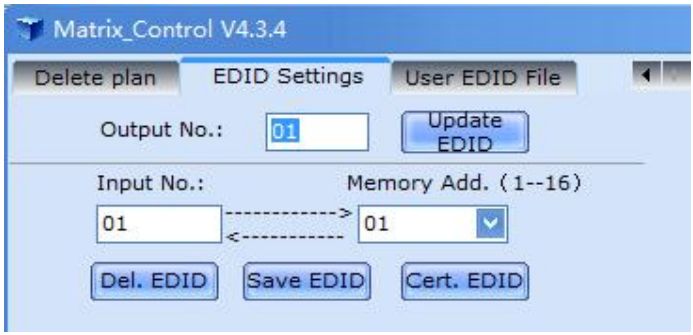
When selecting the mixed matrix, we can get the type and number of input cards, and the right part will list the video types of each input in turn.

- Signal source renaming



Double click on the left margin of the input type (above the red box), you can rename the source name.

- EDID setting

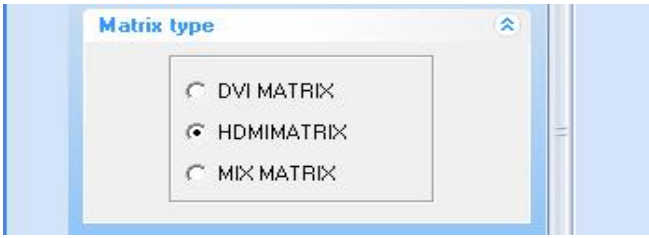


EDID updates the port number of the display. Type in the output number and update the EDID. Delete the EDID into the deleted storage address, delete the EDID that has been stored in the matrix, save EDID to save some of the configured EDID of input ports into matrix for next time use.

For example, the input port number is 01, the storage address 01, and saved EDID input number is the location of the device connected to the matrix input.
Retrievaing EDID, used to transfer the stored EDID out, and fill in the input number and storage address.

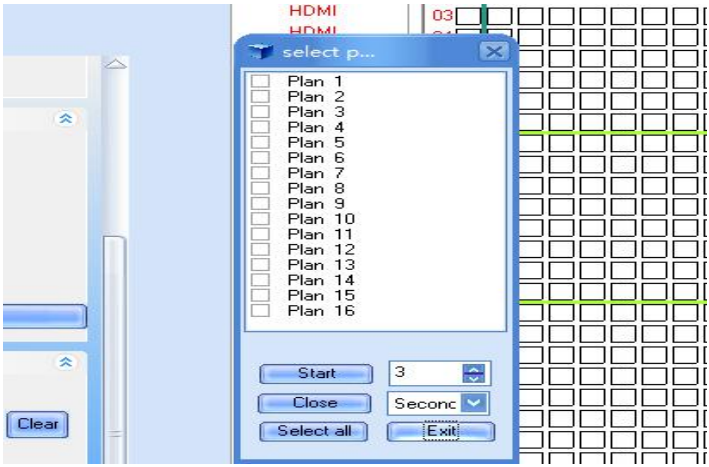
Set the matrix ID code to be controlled. 00 is a general ID means indicate all the controlled matrices. And the ID indicate the specified matrix when it is not 00.

■ Matrix types



Matrix types: DVI HD digital matrix, HDMI HD digital matrix, HD mixed matrix

- Preplan cyclin



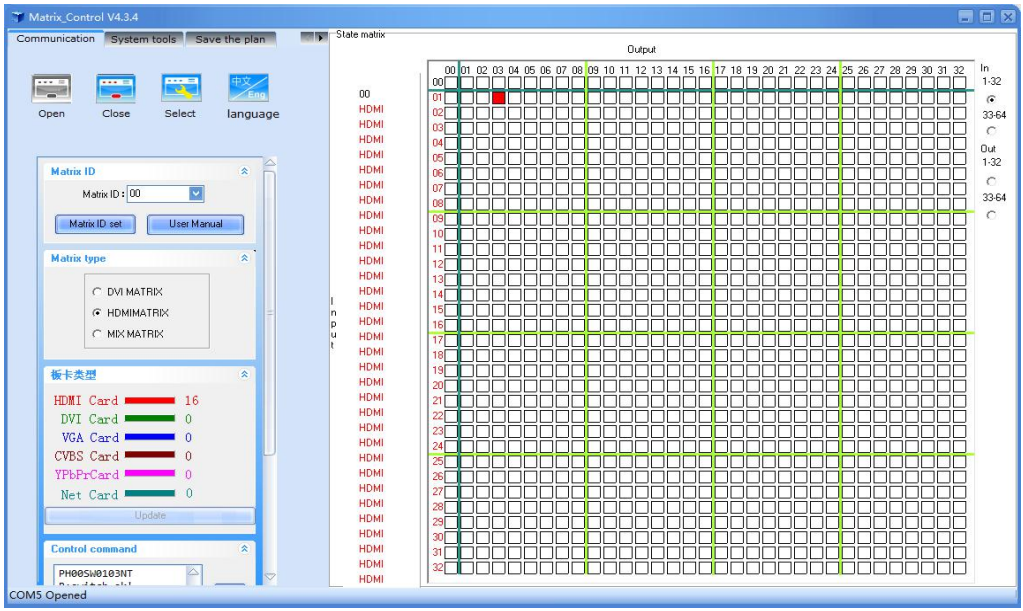
Choose a plan that requires cycling, and set a time to start

Specific operation as example: output channel: output channel number of matrix, 0 represents switch to all output channel input channel: input channel number of matrix, 0 represents closed channel.

Example 1：The HD mixed matrix has been connected with the serial port 1 and want to switch the first channel signal of 1 matrix to the third channel output projection.

Carry out the steps below:
Serial port: COM1; matrix ID:01; matrix type: HD hybrid matrix. In this case, the type and number of the input card will be obtained. If the matrix is not yet started and can not get the correct information, you can click "refresh card information" after the matrix is started.

Then click directly on the grid between input channel 1 and output channel 3. Show as the following diagram:



7.3 Android phone control software

Matrix control software is an application tool to match the test and application of HD matrix series. The software not only can complete the operation of HD matrix switching, but also has the function of preplan retrieval. Scanning below QR code to download.

1. Connect the matrix and the picture above as a reference, the specific IP and port number are filled according to the actual situation.

2. Select matrix ID and matrix type (for example, if you use mixed matrix, it is mainly output signal type).

3. You can rename it to long press preplan name and input channel selection.

8. RS232 Communication protocol

Communication format: 1 start bit, 8 data bits, 1 stop bit, no parity in Potter

Rate：9600bps

Communication way：Asynchronous semi duplex serial communication

Summary: the matrix has a cascaded RS232 control interface, which can be controlled by a computer or a central host RS232 interface, and uses the same protocol to distinguish different devices from the font and ID code.

Command format：

Prefix	Device ID	Command word	DATA1	DATA2	Ending word	
PH	00 - 99	CMD	DATA1	DATA2	NT	

Support command list：

Command word	Data1	Data 2	Description
SW	Input channel number	Output channel number	Switch channel
PB			Modified baud rate
ST			Standby
ON			Power on
CL			Restore factory settings
IP			Network reset
SF			Save preplan
RF			Call preplan
DE			Delete preplan
UE			Update port EDID
SE			Save EDID
RE			Call EDID

DD			Delete saved EDID
ID	Designated ID	00	Modify device's ID code to specified ID
RN			Data 00 preplan cycling closure 01 open A unit of seconds is a direct representation of time DATA2=input time+0X80

Word head: PD: corresponding DVI matrix

PH：corresponding HDMI matrix

PS：corresponding SDI matrix

Input chanel number：

01～Maximum input channel number: corresponds to the actual input channel.

00：Close the specified output channel

>Maximum input channel number: invalid, return error command, output channel number.

01～The maximum output channel number corresponds to the actual output channel.

00：Switch the specified input channel number to all output channel numbers.

>Maximum output channel number: invalid, return error command.

Preset state number：

01～16：It supports 16 preset States, and saves video and audio at the same time.

Device ID： 00：General ID. When more than two devices are controlled by the same serial port, do not use the ID. If you don't know the ID of the current device, you can use the computer serial port to connect the device individually, and use the general ID to modify the ID of the device to the designated ID.

01~99: Valid ID of the device

Designated ID：01～99 If the ID code of a HDMI16X16 matrix is 08, and need to switch the second way input to the fifth output, then the command is PH08SW0205NT.If The ID code is set to 26, and we want to switch the third way input to all output, then the command is PH26SW0300NT.

9.Product parameters

Category		Descriptions
Functions	Type of transmission signal	HDMI/DVI signal；mixed matrix VGA, DVI, HDMI, YpbPr, CVBS
	Transmission cable	HDMI/DVI ，AWG26 HDMI1.3 cable standard
Power supply	Power supply mode	Pluggable，AC165～265V，DC12V 300W power supply
	Power consumption	<60W，according to quantity of
HDMI/DVI Performance and interface	Support HDMI version	HDMI1.3 1.4
	Support HDCP version	HDCP1.4
	HDMI resolution	1080p/1080i/720p/576p/576i/480p/480i，3D，4K ×2K/30Hz
	Support video color format	24 bits/30 bits/36 bits/48bits
	Support audio format	DTS-HD/Dolby-true HD/LPCM7.1/DTS/Dolby-AC3/DSD
	Maximum transmission rate	10.2Gbps
	Input-output TMDS signal	0.5～1.5Vp-p（TMDS）
	Input cable length	≤10m（AWG26 HDMI1.3 cable standard）
	Output cable length	≤15m（AWG26 HDMI1.3 cable standard）
Remote control	RS232，TCP/IP	9600 potter，8 bit, 1 bit stop position, invalid check bit; LAN

Protection level	Electrostatic protection	1a Contact discharge level 3 1b air discharge level 3
Operating environment	Working temperature	0℃~60℃ non-condensing
	Storage temperature	-20℃~75℃
	Humidity (no condensation)	20%~70%RH
Operating response	Channel switching speed	<200ns
Operating software	PC control software	MATRIX 4.3.1， apply to Windows XP/Vista/WIN7
Host property	Material / color	Electrolytic plate, black
	Selection component	1U/3/5U Chassis， apply to 19 inch cabinet
Reliability	Average fault interval time	>40000 hours

10. Common faults and maintenance

1. When the computer can't communicate with the matrix, it may be that the serial port parameters are not set correctly. We should confirm if the serial number and other parameters are correct.

2. When the output video signal is flickering or sometimes absent, it may be that the wire is not fully connected with the matrix, so it should be reconnected.

3. When the matrix is connected with the peripheral display device, there is ghost or the disturbance point appears on the image, it is generally not a host problem, maybe the wire quality is not up to standard, and the wire should be replaced.

4. When there is color loss or no video signal output, it may be that the DVI signal is not connected to the DVI1.0 standard differential line.

5. If LCD is not displayed and the operation is unresponsive, check if matrix power input is in good contact.

6. If the output image is disturbed, it may be that the input and output devices did not ground well.

7. When the video interface is plugged, if there is an obvious static electricity, it is possible that the equipment is not well grounded. Please connect the ground according to the correct method, otherwise it will damage the host's life easily.

8. When the matrix panel buttons, communication ports and network ports are unable to control, it may be damaged inside the host. Please send professionals to repair.