

MA3000 Series
Modular Matrix Switcher
User Manual

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Chapter 1 Preface

- Welcome to choose our company's products, thank you for your support! For the safety of you and the equipment, please be sure to read the product manual carefully before using the equipment.
- The product is affixed with a fragile label, please protect it, it will serve as a warranty certificate.
- This manual is only used as a user operation instruction, not for maintenance service purposes; if there are any changes in the functions or related parameters in the future, additional instructions will be given later.
- If you have any questions during use, please read this manual first; there is a detailed description of the equipment operation in the text, please follow the standard operation described in the book; if you still have questions, please contact us, we will give you a satisfactory answer as soon as possible.
- If there are any version changes in this manual, we will not notify you separately, please forgive me!

Chapter 2 Precautions

To ensure the reliable use of the equipment and the safety of personnel, please observe the following matters during installation, use and maintenance:

- Do not use this product in the following places: places with dust, oil smoke, conductive dust, corrosive gas, flammable gas; places exposed to high temperature, condensation, wind and rain; places with vibration and impact; electric shock, fire, and misoperation can also cause product damage and deterioration;
- After the installation of the product, it is necessary to ensure that there are no foreign objects on the ventilation surface, including packaging items such as dustproof paper, otherwise it may cause poor heat dissipation during operation, causing fire, malfunction, and misoperation;
- Avoid wiring and plugging and unplugging cable plugs in the live state, otherwise it is easy to cause electric shock or circuit damage;
- The installation and wiring must be firm and reliable, and poor contact may cause misoperation;
- For applications with severe interference, shielded cables should be used for input or output cables of high-frequency signals to improve the anti-interference performance of the system; installation, wiring and other operations must be carried out only after all external power supplies are cut off, otherwise it may cause electric shock or equipment damage;
- This product is grounded through the grounding wire of the power cord. To avoid electric shock, the grounding wire must be connected to the earth. Before connecting the input or output of this product, be sure to properly ground this product;
- Do not touch the terminals when the power is on, otherwise it may cause electric shock or wrong operation;
- Please clean and tighten the terminals after turning off the power. These operations may cause electric shock when the power is on;
- Please connect or remove the communication signal cable, the cable of the expansion module or control unit after turning off the power, otherwise it may cause equipment damage or wrong operation;
- Do not disassemble the equipment to avoid damaging the internal electrical components;
- Be sure to read this manual carefully and make full confirmation of safety before changing the program, trial running, starting and stopping operations. Please contact us if you have any problems that cannot be solved.

Chapter 3 Product Overview

Modular matrix switcher is a high-performance embedded intelligent control of professional switching equipment, for the various channels of audio and video input signals synchronously switched to the audio and video of any output channel; the use of a unique processing method, greatly improving the switching speed of the device. Support a variety of control methods, flexible operation of the switcher, widely used in broadcasting and television projects, multimedia conference rooms, television teaching, command and control centers and other scenes.

Chapter 4 Packaging, Panel and Buttons

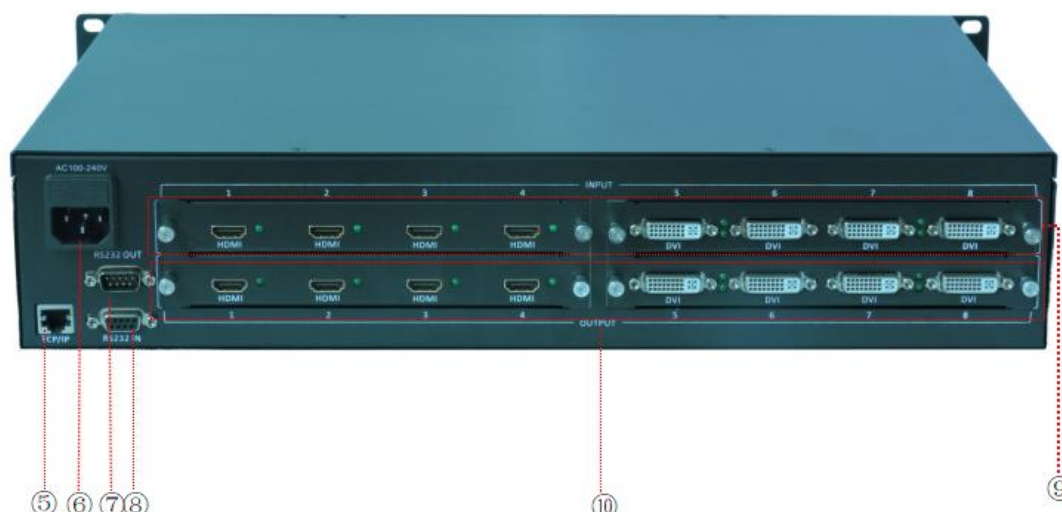
4.1 Matrix Packaging List

Name	Quantity
Matrix switcher	1
220V power cord	1
RS232 serial communication extension cable	1
Instruction manual	1
Software CD	1
Certificate of conformity	1
Warranty card	1

4.2 Matrix Front and Rear Panel Description

Matrix Front Panel (08X08)





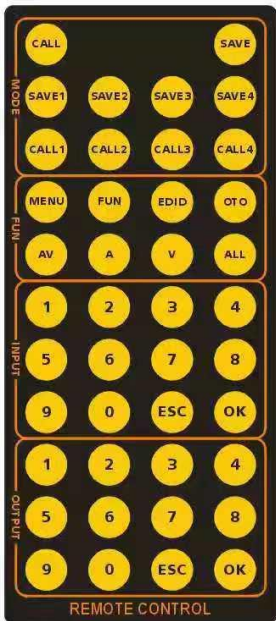
① Liquid crystal display	② LED1 power indicator and LED2 operation prompt light
③ IR receiving window	④ Front panel keys
⑤ RJ45 serial control or TCP/IP control input port	⑥ DC100-220V power socket switch
⑦ RS-232 serial port control output port	⑧ RS-232 serial control input port
⑨ Signal input channel	⑩ Signal output channel

Remarks:

If the machine does not have ALL button, it will be replaced by OK, all OK=Enter in this system;

If the machine does not have FUN button, it will be replaced by MENU, press MENU to get out the menu key menu, and then press it to get out the function key menu;

4.3 Remote Control Button Description

	Name	Functions
	CALL	Direct access to recall options
	SAVE	Direct access to save options
	SAVE1-SAVE4	Quick save to 1-4 mode
	CALL1-CALL4	Quick Recall to 1-4 Mode
	MENU	System Menu
	FUN	Function Menu
	EDID	EDID writing (available on some models)
	OTO	One-to-one mode one-key switching
	AV	Enter audio/video switching system
	A	Enter pure audio switching system (some models have this function)
	V	Enter pure video switching system (some models

		have this function)
	ALL	All output ports
	ESC	Return (both input and output keys are used)
	OK/Enter	Acknowledge (attached to both input and output keys)
	0-9	Numeric keys (for both input and output)

Chapter 5 Installation Instructions

5.1 Signal Connection

The matrix interface is divided into signal input and output interfaces. The INPUT part is the signal input end, and the OUTPUT part is the signal output end. Please use the corresponding cables to connect the input and output devices, connect the output end of the signal source (such as DVD player, computer, etc.) to the matrix input end (INPUT), and connect the matrix output end (OUTPUT) to the input interface of the signal using device (such as projector, TV, etc.).

5.2 RS232 Communication Interface Connection

The matrix switcher provides standard RS-232 serial communication port and RJ45 communication port. Users can use various remote control devices for remote control. The matrix's RS-232 port is a D-shaped 9-pin male connector (the definition of sending and receiving is the same as the serial port of the computer). The pin description is as follows:

Pin Number	Pinout	Description
1	NC	Void
2	RXD	Signal receiving end, receiving end of matrix control signal (RXD)
3	TXD	Signal transmitting end, transmitting end of matrix control signal (TXD)
4	NC	Void
5	GND	Ground wire
6	NC	Void
7	NC	Void
8	NC	Void
9	NC	Void

Special attention should be paid to the wire sequence of TXD and RXD when the matrix RS-232 port is connected to a computer or central control, taking into account the pin definition of the other device.

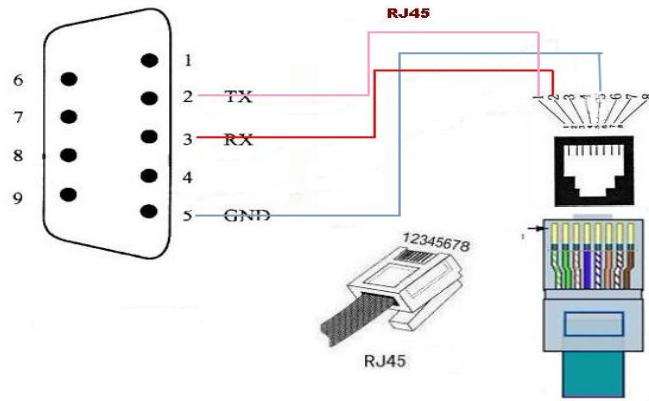
5.3 RJ45 TCP/IP Communication interface connection

Network version of the matrix is to support TCP / IP protocol, at this time the matrix will be connected to the switch or router or PC direct connection, you can communicate, the premise is to keep the IP

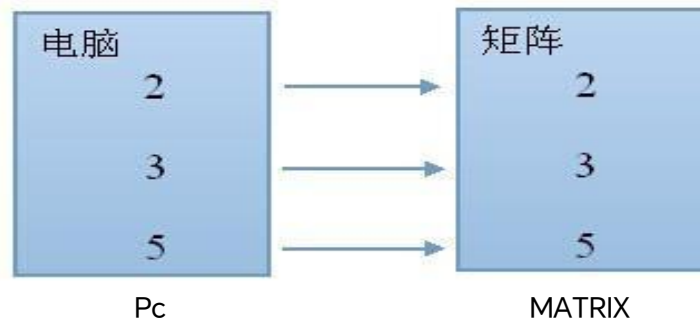
address of the matrix and the LAN is the same network segment, otherwise you have to enter the computer to set up the IP address of the matrix first.

5.4 RJ45 RS232 communication interface connection

RJ45 to Serial Port Schematic



The diagram below shows the connection to the computer:



5.5 Power connection

Please use the female end of the power cord to connect to the power connector labeled AC100-220V 50/60HZ on the back of the matrix, and the male end to connect to 220V 50/60HZ AC power. Attention, in order to ensure the safety and normal operation of the equipment, you must use a single-phase three-wire AC power supply with a protective ground.

Chapter 6 Communication control parameter protocol

6.1 Network control parameters

1.1 Query IP Command:HWC

HNW192.168.1.172,6800,255.255.255.0,192.168.1.1,54.82.52.115.119.23

1.2.Reset Operation Command:HWR

1.3.Set IP Command:HWS

For example: HWS192.168.1.172.255.255.255.0.192.168.1.1

After setting the IP, the host computer communication needs to be reconfigured and reconnected in order to communicate and control normally.

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

6.2 Serial port control parameters

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

6.3 Communication control protocol

The following protocols can support all models of matrices without an ID number in front of them (all protocol symbols must be entered in English, and English letters must be capitalized):

Matrix ID	ID identifier	Input ID	Toggle identifier	Output ID1	Separator	Output ID2	Terminator
ID	D	IN	V	OUT1	,	OUT2	.

Example:

1D1V1,2,3. This protocol can only be received by matrices with ID number 1, and is only supported by some matrix models.

1V1,2,3. This protocol is common to all matrix models.

The protocol means: input channel 1 switches to output channel 1,2,3 in turn.

12V1,2,12,14.

Switches matrix input channel 12 to output channels 1,2,12,14 in sequence.

Switch one input channel to all output channels

Matrix ID	ID identifier	IDH	IDL	T	O	A	L	L
ID	D	Input ID		protocol identifier				

01TOALL Switches matrix input channel 1 to all output channels.

12TOALL Switch matrix input channel 12 to all output channels.

Switching one input channel to another

Matrix ID	T	O	O	N	E
ID	protocol identifier				

TOONE Match the matrix input channels one by one to the output channels

Invoking Profiles

Matrix ID	CALL	ID
ID	protocol identifier	Scenario ID

Example: CALL2 Call Matrix Scenario 2

Save Profiles

Matrix ID	S	A	V	E	ID
ID	protocol identifier				Scenario ID

Example: SAVE2 Save Matrix Scenario 2
 BUZON Matrix buzzer on.
 BUZOFF Matrix buzzer off.

Chapter 7 Operation instructions

Standby Image (LCD Screen)

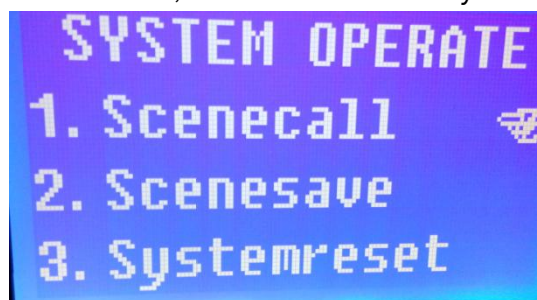
Any state press "ESC" to return to the screen (different models, slightly different).



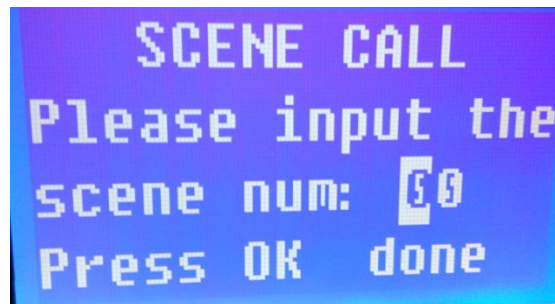
"AV botton" audio and video switch Press the AV button to enter the audio and video synchronization switch menu, as shown below; in this state, with the number keys to select the input channel number and output channel number, and then press the OK key to switch. Select the "ALL" key instead of all output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



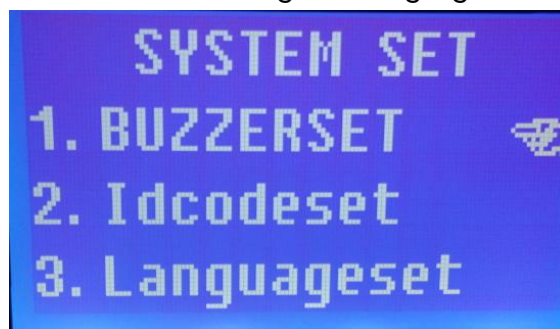
"FUN" function key In standby mode, press "fun" button to enter the system operation menu,the menu can be stored in the scene and call function, and restore the factory settings.



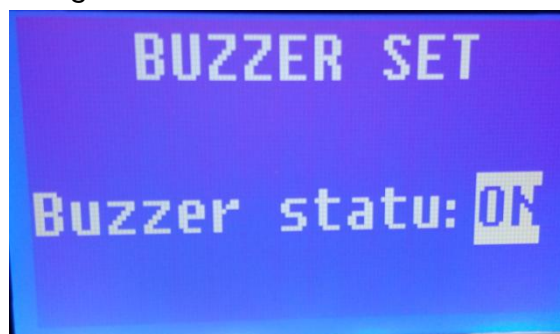
For example, you can save a scene, and then call through the scene mode, select the save before the scene number, you can call directly, convenient and quick:



"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:



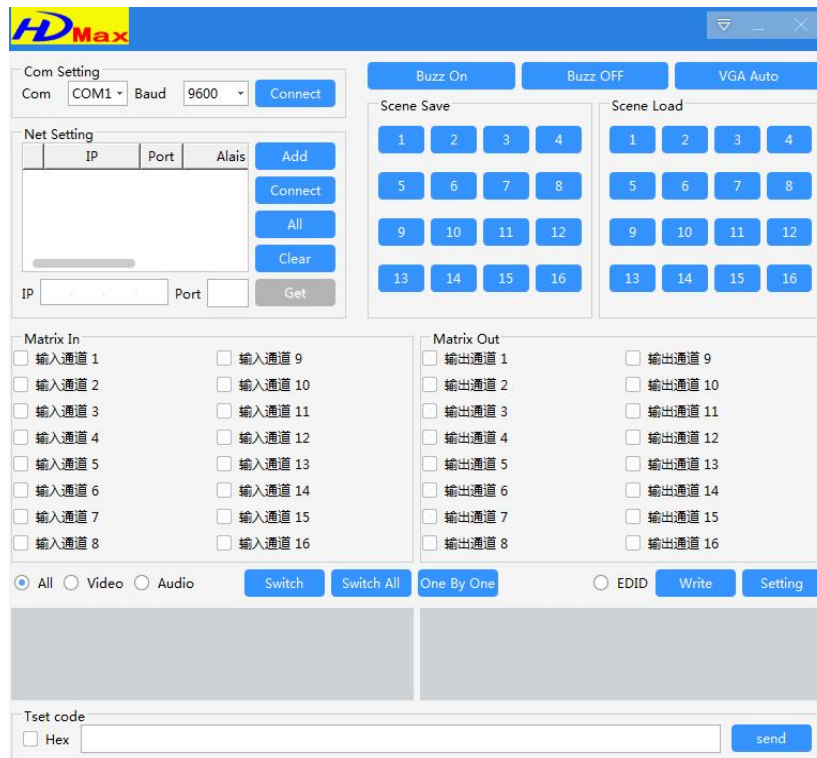
For example, under this menu, press "1" to select the buzzer settings menu, and then press "OK" button to enter the menu. In the sub menu, press the "1" key to switch the state of the buzzer switch, press "OK" to determine the settings can be saved.



Chapter 8 Control software

The control software and documentation are stored in the CD-ROM included in the product box; users can read the files by placing the CD-ROM in the DVD drive.

Copy the files in the CD-ROM to a PC with Windows system and double click HD Matrix controller.exe to enter the matrix control software.



- A. Confirm the serial port or network connection to the matrix, in the serial port selection, click the desired serial port number, click connect, you can connect successfully, you can start communication; network version of the corresponding IP address to select click to connect, the network version of the setup with reference to the computer IP address way to set.
- B. Click the drop-down menu in the upper-right corner of the software, you can set the language and ID number of the software, no special definition, please set the ID number of the matrix to 0.
- C. select the input channel number and output channel number, click switch to quickly complete the switching control of the matrix. Switch all to switch the input channel to all output channels.
- D. in addition to the current scenario can be saved, the next time you select the saved scenario number, click the call can be immediately restored to the last saved scenario.
- E. You can also rename the input and output channels as well as the save and recall mode.
- F. EDID some models can support online writing, enter the advanced settings can be set to set the scene polling switch.

Chapter 9 Common faults and maintenance

- When the image of the peripheral display device connected to the matrix has double images, such as the projector has double images, it is generally not a problem with the host. It may be that the projector is not adjusted correctly or the cable quality is not up to standard. The corresponding buttons of the projector should be adjusted or the cables should be replaced.
- When color loss or no video signal output occurs, it may be that the audio and video interface is in poor contact or the cable is not good.
- When the remote control cannot control the matrix:
 1. First, bring the infrared light in front of the remote control close to the IR in front of the machine. If it still doesn't work, it may be that the battery is dead. Please replace the battery.
 2. The remote control may be broken, please repair it.
- When the software cannot control the matrix, check whether the communication port set by the control software corresponds to the communication port of the connected device; check whether the communication port of the computer is good.
- No corresponding image output when the matrix is switched:
 1. Check whether there is a signal at the corresponding input end. (You can use an oscilloscope or a multimeter to detect) If there is no signal input, it may be that the input line is broken or the connector is loose. Just replace the wiring.
 2. Check whether there is a signal at the corresponding output end. (You can use an oscilloscope or multimeter to test) If there is no signal output, it may be that the output line is broken or the connector is loose, just replace the wiring.
 3. Check whether the output port number is consistent with the controlled port number.
- If it does not belong to the above three situations, there may be an internal fault in the host. Please send it to a professional for repair.
- If the LED1 light is not on, the LCD has no display, and the operation has no response, please check whether the power input of the device is in good contact.
- The output image is disturbed, and the input and output devices may not be well grounded.
- When unplugging and plugging the audio and video interface, if you feel obvious static electricity, it is possible that the power ground wire of the device is not well grounded. Please ground it in the correct way, otherwise it is easy to damage the host and shorten the life of the host.
- The LCD display is normal, and there is a return code on the communication port, but there is no image output or no audio output
 1. The audio and video interface may be loose, just replace it.
 2. The wiring may be short-circuited, just replace it.
 3. The wiring may be broken, just replace it.
 4. If the matrix panel buttons, communication port, and remote control cannot be controlled, the host may be damaged internally. Please send it to a professional for repair.

Chapter 10 Warranty instructions

All users should be aware that they can enjoy one-year warranty service from the date of purchase. Except for miscellaneous expenses such as postage and transportation, the warranty service is provided free of charge.

In the following cases, the company has the right to refuse to provide free warranty service, but can provide paid repair service:

- a. Failure to provide relevant purchase receipts or the content recorded in the product purchase receipt is inconsistent with the product;
- b. Product damage caused by force majeure such as bad weather and nature;
- c. Man-made damage caused by failure to operate the product according to the installation instructions provided by the company;
- d. Damage caused by unauthorized repair of the product without the authorization of the company; product failure and damage caused by improper storage; appearance has artificial scratches, breaks, stains, damage, etc.

Note: Accessories, packaging, etc. other than the product itself are not covered by the warranty; this warranty does not include transportation costs and does not provide door-to-door service; since the product packaging is opened and damaged and the related accessories are damaged and lost, the value of the product will be discounted, so the merchant who returns the product should note that the packaging costs and accessories costs incurred by the return of the product shall be provided by the returnee.