

TESmart

User **4x4 HDMI Matrix** Manual

HMA404 Explorer 23S

To Enjoy Smart

HMA404 Explorer 23S

English



English



Preface

It's our great honor that you have chosen the Matrix produced by our company, Tesla Elec Technology Co.,Ltd. In this user manual, you will learn how to operate and use this product. Please read this user manual comprehensively before use. If you have any questions, comments or suggestions, please contact us via the following email:

support@tesmart.com.

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Product Information

For more information about TESmart products and how they can help you to enjoy your job, please visit the following TESmart website or contact an TESmart Authorized Reseller.

www.tesmart.com

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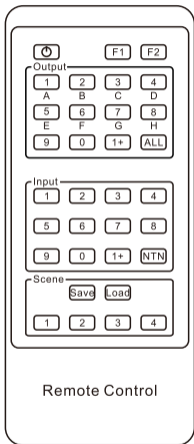
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1. Safety Tips and Warnings

Tips: Please read the safety tips and warnings for HDMI Matrix comprehensively before use. Use this produce in accordance with its instructions, safety tips and warnings to prevent unnecessary damage to the product and potential dangers to users.

- ⚠ Keep the product away from water.
- ⚠ Clean the product with dry cloth.
- ⚠ Use the product in accordance with its instructions and do not block its vents.
- ⚠ Keep the product away from ignition sources, such as heat sinks, heat accumulators, stovepipe and other heat production settings (including audio amplifiers).
- ⚠ Do not touch the product and the power cord with wet hands so as to lower the risk of electric shock and damage to the product. Do not let the product get wet or become damp.
- ⚠ Unplug the power supply of this product in thunderstorm days or when it has been not used for a long time.
- ⚠ Do not expose this product and its battery to open fire or overheating environment. Dispose the waste battery in accordance with instructions.
- ⚠ Users shall not remove and repair the product without authorization.

2. Battery Description



Remote Control



Tips: By default, the remote control is not equipped with batteries, due to the safety requirements of some express companies. Install CR2025 cell before use.

Caution: Improper disposal of the lithium battery may cause an explosion. Do not throw the battery into fire. Keep the battery away from children. Dispose the waste battery in accordance with local regulations.



3. Warranty Information

We warrant this product as free of defects in material and workmanship for a period of one (1) year from the date of shipment. If during the period of warranty this product proves defective under normal use, we will repair or replace this product, provided that this product has not been subjected to mechanical, electrical, or other abuse or modifications. If it fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for six (6) months from the day of reshipment to the buyer.

4. Preface

Dear Users,

HDMI Matrix can greatly facilitate your management of audio and video devices. If you have multiple sources and display devices like game consoles, streaming boxes, projectors and monitors, our HDMI Matrix can help you match your devices at will, eliminating the troublesome of unplugging cables and switching devices, and greatly simplifying the device management.

The 4x4 Matrix includes seamless switching that ensures continuous video streams and real-time control, giving viewers the best video and picture quality across all displays. It also supports audio separation to enable independent audio play with an extra audio output port in each HDMI output. Several informative features can help you locate switching targets more quickly, making your operation more convenient.

You can switch input ports with front panel buttons or the dial, IR signals, LAN port and RS232 port.

Tips: If you need to control more devices or conduct more complex and professional switching, you can also choose other products of our company. For more details, please visit our official website: www.tesmart.com.

5. Features

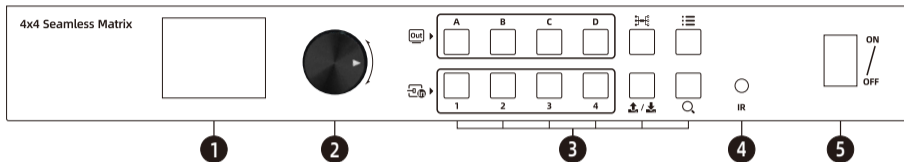
- With 4 HDMI inputs and 4 HDMI outputs
- All the HDMI outputs can share same input or select standalone inputs
- Support resolution up to 1920x1080@60Hz
- Support seamless switching
- Support audio separation which could play audio independently corresponding to the HDMI output port
- The LCD on the front panel supports real-time viewing of the screen on each port
- Support custom naming for each port
- Support one-key querying of the current routing status.
- Matrix status could be memorized after power down, automatically restore previous matrix status after next power on
- Support 4 configurable user preset connections
- Easy to control matrix via front panel buttons or the dial, IR receiver and PC (via LAN port or RS232 port)

6. Packing List

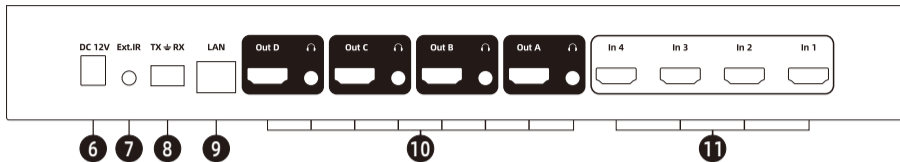
- 1 * 4x4 HDMI Matrix
- 1 * IR Remote Control
- 1 * IR Extension Cable
- 1 * 3 Pins Connector (For RS232)
- 1 * DC 12V Power Adapter
- 2 * Rack-ears
- 1 * User Manual

Tips: After receipt of the product, please check the packing list carefully to make sure that no components have been lost and no damage to the product has been caused during transportation. If you have any problems, please contact us at any time.

7. Panel Description



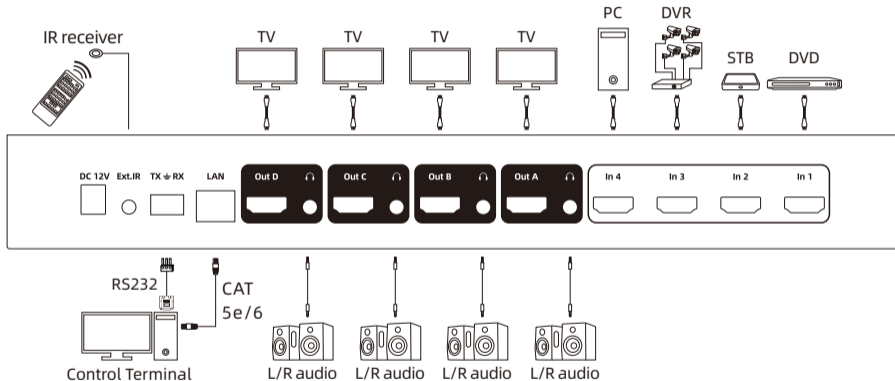
| ID | Name | Description | ID | Name | Description |
|----|--------------|--|----|-------------|--|
| 1 | LCD display | Display preview screens and menu options. | 2 | Dial | Rotate the dial to adjust between different options; press the dial to select. |
| 3 | Keypad | Press to operate the Matrix | 4 | IR receiver | Receive IR signal. |
| 5 | Power switch | Turn on or off power supply of the Matrix. | | | |



| ID | Name | Description | ID | Name | Description |
|----|--------------------|---|----|------------------|--|
| 6 | DC 12V | DC 12V power supply. | 7 | IR extension in | Connect IR extension cable to this port to receive IR signal even the Matrix is installed in a rack. |
| 8 | RS232 port | Connect this port to control termination. Use RS232 commands to control the Matrix. | 9 | LAN port | Connect this port to control termination. Use TCP/IP commands to control the Matrix. |
| 10 | Output ports group | Each group contains an HDMI output port and an audio jack. | 11 | HDMI input ports | Connect to HDMI source devices. |

8. Connection Description

8.1 Connection Diagram



Tips: Please refer to Chapter 10.3 for how to use RS232 port and LAN port.

8.2 Connection Steps

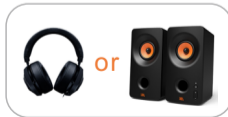
1. Connect 4 input devices to the HDMI input ports above each "In" logo of the Matrix using 4 HDMI cables.



2. Connect 4 display devices to the HDMI output ports above each "Out" logo of the Matrix using 4 HDMI cables.



3. Connect 4 external audio devices to the L/R out ports.



4. Connect the power cable to the HDMI Matrix's DC 12V port and plug it into a power socket.



5. By now, the connection has been completed. Turn on the power supply and the HDMI Matrix will begin to work.

Tips: 1. Please refer to Chapter 10 for detailed information about how to use the HDMI Matrix.
2. By default, the HDMI cables are not included in the package.

9. Function Description

9.1 Output Description

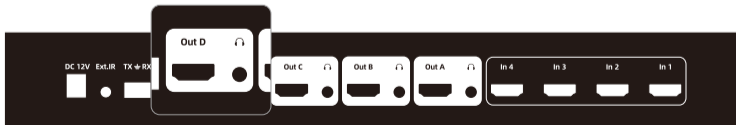
The 4x4 HDMI Matrix features seamless switch between multiple sources and multiple displays.

- **When switching:**

You can switch between the 4 input sources with the full screen view. Switching can achieve a seamless effect. There is no black screen during the switching and no need to wait until the next screen is displayed after switching.



Each output interface is equipped with an independent audio output port, and the audio output changes with the switching.

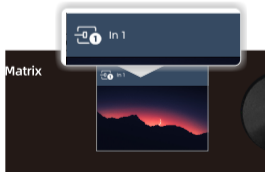


9.2 Preview Mode

Preview mode allows you to quickly observe the current display status of each port through the LCD screen, especially if the displays are far from the matrix. When the matrix is powered on, it can be previewed by turning the dial after it is displayed normally. The navigation bar at the top of the LCD screen will indicate which port is currently displayed. You can select preview input port only or preview output port only, or preview all ports in the menu.

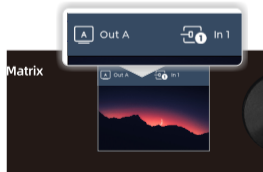
- **Preview In**

Turning the dial will cycle through the screen of all input sources in turn.



- **Preview Out**

Turning the dial will cycle through all monitors that are currently displayed.



- **Preview In&Out**

Turning the dial will cycle through all ports in turn.



9.3 Rename Port

The port renaming function can help you get familiar with and use our matrix more quickly. You can name all the input and output ports on the matrix to the name that is most convenient for you. After the rename setting is successful, all functions that display port information will display the renamed name.



Tips: The rename function requires that the number of characters is between 0~8, and more than 8 characters will prompt an error.

9.4 OSD Query Description

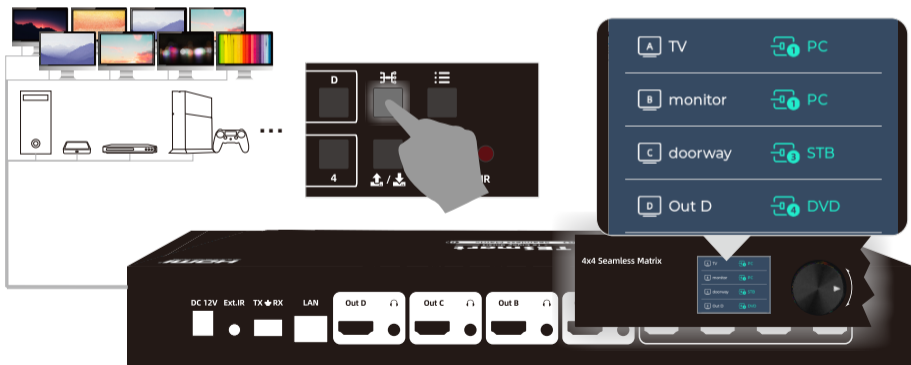
There are characters (OSD information) on each display to indicate the display correspondence and the current audio source, it will appear when each time you switch or press the “Q” button.



Tips: After pressing the button, the display OSD will not be displayed all at once, but will appear on each monitor in turn. When switching, only the switched monitor will show OSD.

9.5 Routing Status

The matrix supports querying the routing status through a button and displaying it on the LCD screen, allowing for clear understanding of the display relationships of various devices even without looking at all the display screens. It will be more convenient to use with the rename function.



9.6 Scene

The scene function allows you to customize multiple port connection profiles, which can be easily called in settings menu when other connection profiles need to be used in different scenes.

Scene Save

When you need to save the scene connection profile, just switch to the connection configuration you want and select the number option to save.



Scene Load







You can call any saved connection configuration at any time.

Tips: 1. Only supports saving 4 scene connection profiles.
2. Please refer to Chapter 10 for details on the different methods of using this function.

10. Operation Method

10.1 Front Panel Button Operation Method

Schematic table of buttons:

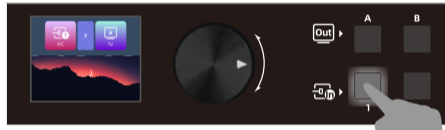
| Buttons | Meaning and function |
|---|---|
|  | Output buttons. Indicates each output port. |
|  | Routing status button. Press to show the routing status on LCD. |
|  | Menu button. Press to open the menu on LCD. |
|  | Input buttons. Indicates each input port. |
|  | Scenes function button. |
|  | OSD Query button. Press to show the OSD on each display. |

- **To switch the displayed picture:**

Regardless of the order in which the input and output buttons are pressed, the screen can be switched. The device name that has been pressed will be fixed on the left side of the navigation bar, and the name of the device to be selected flashes on the right side.



After pressing the output button first.



After pressing the input button first.

- **To save or load scenes:**

Press the “” button once to load the saved scenes, press twice to saves scenes.



Load scenes



Save scenes

- **Functions in the menu:**

Press the “:≡” button to enter the menu. In the menu, you can set preview mode, configure network port IP, restore factory settings, and so on. Rotate the dial to page down. Under various functions, select between various options through the dial, and press the dial to confirm.

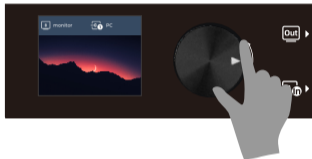


Tips: 1. When you want to return to the previous menu level, you can press the “:≡” button to return, or you can rotate the dial to the return button at the top right of the LCD and press to return.
2. Pressing any button other than inputs/outputs during the switching process can terminate the switching.

10.2 Dial Operation Method

Use the dial to choose from different options, and you can also use the dial to switch through the preview function. The specific steps are as follows.

1. Preview to any port you want to switch, then press the dial.



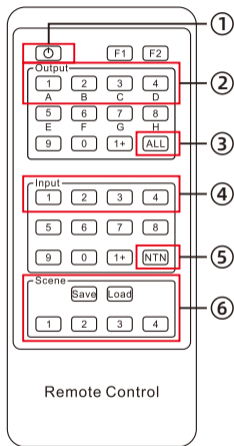
2. The LCD will pop up asking which port you want to switch to, choose the port then press the dial.



Tips: 1. Use the dial you can choose **Out All**, and you can switch all outputs to a certain input through the dial.

2. Panel buttons and the dial can be matched to switch.

10.3 IR Remote Control



Show OSD on displays:

Press the key ①, the OSD will be displayed on all displays in sequence.

Function settings:

1 to 1 switch:

Step 1: Press any key in ② to select the output port.

Step 2: Press any key in ④ to select the source which you want to be displayed on selected output.

It is also possible to reverse the operation order.

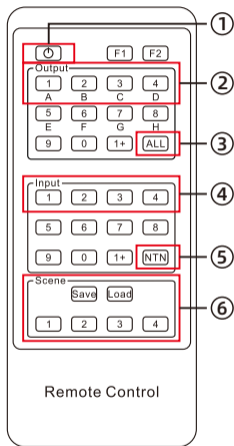
1 to all switch:

Step 1: Press the key ③ to select all the output ports.

Step 2: Press any key in ④ to select the source which you want to be displayed on all display devices.

It is also possible to reverse the operation order.

Tips: Uncircled buttons at above are non-functional.



Switch to mirrored connection:

Press the key ⑤, then the routing status will be changed to Input 1-Output A, Input 2-Output B, Input 3-Output C, Input 4-Output D.

Preset routing for scenes:

Save scene:

Step 1: Press the key **Save** in ⑥.

Step 2: Press any number key in ⑥ to save current routing status to user preset memory 1/2/3/4.

Load scene:

Step 1: Press the key **Load** in ⑥.

Step 2: Press any number key in ⑥ to load routing status from user preset memory 1/2/3/4 and apply to current routing.

Tips: Only the IR remote controller has the function of switching to mirrored connection.

10.4 RS232 and LAN Port Control

A. Connect RS232 port

Follow the diagram on the right to connect RS232 port on the HDMI Matrix to your Control Terminal.

B. Connect LAN port

Follow diagram on the right to connect the LAN port to local area network router or directly to PC with Cat5e/6 UTP/FTP cable.

C. Communication protocol

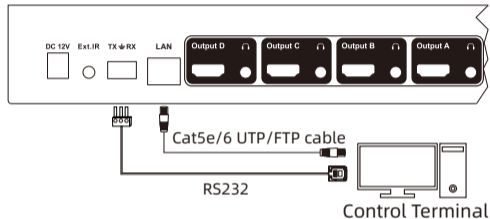
RS232 port configuration:

Baud rate: 9600 bps

Stop bit: 1 bit

Data length: 8 bits

Parity bit: None



LAN port configuration:

IP address: 192.168.1.10

Port: 5000

Gate way: 192.168.1.1

Mask address: 255.255.255.0

The commands are as the following form:

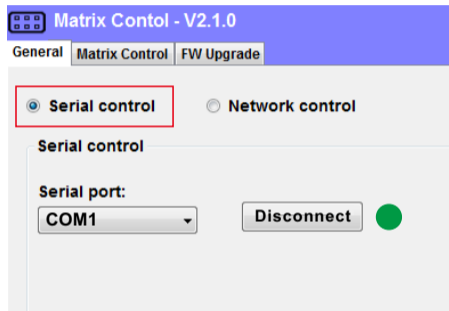
| Index | Command strings | Parameter description | Remark | Direction |
|-------|------------------------|---|---|------------|
| 1 | MT00SW0000NT | | Mirrored output 1→1, 2→2,3→3... | PC→ Matrix |
| 2 | MT00SWXXYYNT | XX: input port number (01~04) YY: output port number (00~04) 00: All outputs | Switch displayed screen. | PC→ Matrix |
| 3 | MT00RD00NMNT | | List the names of all ports. | Matrix→PC |
| 4 | MT00NMXYZZZZZ ZZZNT | X: Output port or input port (0 or 1) Y: Port serial number (1~4) Z: Renamed name | Rename any port. 8 characters must be entered, less than 8 characters must be filled with spaces. | PC→ Matrix |

Based on the above commends, we provide a controller on the Windows OS. You can visit our official website to download it: www.tesmart.com

You can also develop dedicated controllers for each platform by referring to the control protocol above.

D. Matrix Controller Connection steps: Rs232 port usage

- Step 1: Use RS232 cable connect PC to the HDMI Matrix.
- Step 2: Running the HDMI Matrix Controller. Select page '**General**' and click '**Serial control**'.
- Step 3: Select the serial communication port number which is connected to the HDMI Matrix.
- Step 4: Click '**Connect**' to connect to the HDMI Matrix. Then wait until the red indicator beside the button turns green.
- Step 5: Select page '**Matrix Control**', and click the button to Control the Matrix.



(RS232 serial port connection successful)

LAN port usage

Step 1: Use Network cable connect PC to the Matrix. Please make sure the PC and the Matrix both on the same network segment.

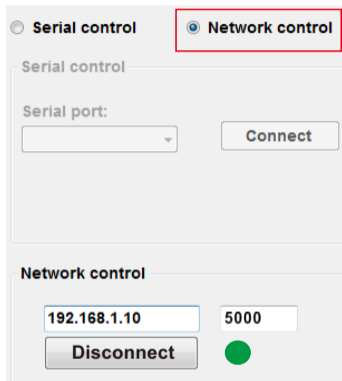
Step 2: Set the IP address of the network adapter on the PC which is running this software, make sure the IP address is between 192.168.1.2~192.168.1.254 except for 192.168.1.10. Please follow the picture on the next page to set.

Step 3: Running the Matrix Controller. Select page '**General**' and click '**Network control**'.

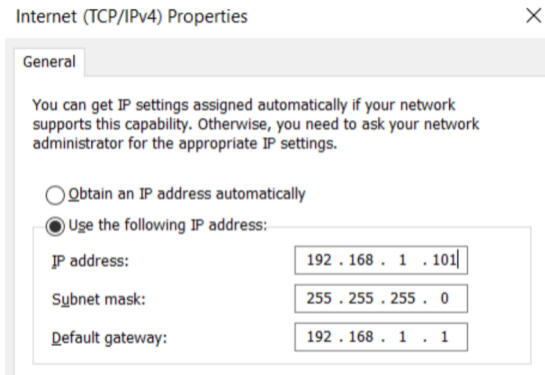
Step 4: Click button '**Connect**' in network control section, then wait until the red indicator beside the button turns green.

Step 5: After connecting, Select page '**Matrix Control**' , and click buttons to Control the Matrix.

- Tips:**
1. The default IP address is 192.168.1.10. The default port number is 5000.
 2. If the connection fails, please check if the Cat cable is connected to the PC, the Matrix is powered on and the IP address setting of the PC is correct.



(LAN port connection successful)



(IP address configuration)

E. Matrix Controller Page Description

Page 'General' :

This page is used to set the parameters to use RS232 commands and the LAN port to connect matrix. Also you can change IP address of the Matrix with the block 3.

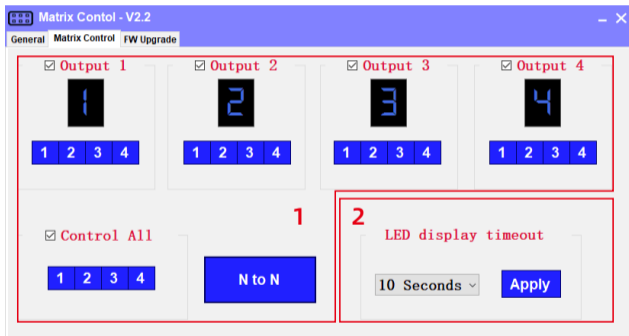
The screenshot shows the 'Matrix Control - V2.1.0' application window. The 'General' tab is active, with sub-tabs for 'Matrix Control' and 'FW Upgrade'. The interface is divided into four main sections, each highlighted with a red box and a red number:

- Block 1:** 'Serial control' section. It has a radio button selected for 'Network control'. Under 'Serial control', there is a 'Serial port:' dropdown menu, a 'Connect' button, and a red indicator light.
- Block 2:** 'Network control' section. It contains an IP address input field with '192.168.1.10', a port input field with '5000', a 'Connect' button, and a red indicator light.
- Block 3:** 'Network settings' section. It includes fields for 'IP Address: 192.168.1.10', 'Port: 5000', 'Gate way address: 192.168.1.1', and 'Mask address: 255.255.255.0'. An 'Apply' button is located to the right of the mask address field.
- Block 4:** A section with a 'Query' button.

- 1-Serial connect
- 2-Network connect
- 3-Matrix's LAN port settings
- 4-Query current IP configuration

Page 'Matrix Control' :

This page is used for switching and simple system setup. You can conveniently match input and output devices according to your needs.



1-Matrix control panel
2-LCD display timeout setting

Tips: The LCD display timeout setting control here has no effect.

TESmart

To Enjoy Smart

HMA404 Explorer 23S

Tesla Elec Technology Co.,Ltd

CE FC   HDCP 

WEEK-Reg.-Nr. DE 66784279