

TESmert TESmart

User Manual

4x4 HDMI Matrix



HMA0404A60

To Enjoy Smart

HMA0404A60

English

TESmert TESmart



English

Preface

It's our great honor that you have chosen the HDMI 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, you can contact us via the following email:
support@tesmart.com.

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Address of Manufacture

Tesla Elec Technology Co.,Ltd
2F, Building C, Xingzhisheng Industrial Park, No.12,
Xiawei Industrial Zone, Zhangkengjing Road,
Guanlan Street,
Longhua District, Shenzhen City, Guangdong
Province, China

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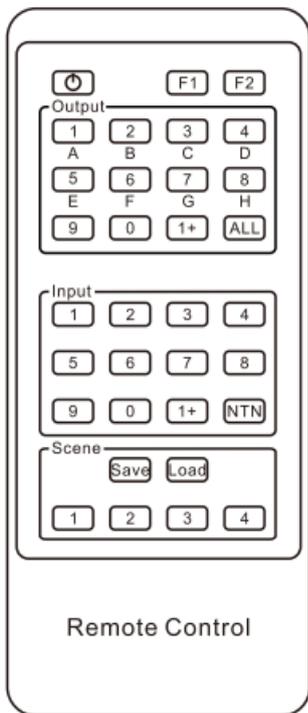
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1. Safety Tips and Warnings

Tips: 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 the 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



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. You can choose which output device to display which input device as you want, and you can also display one input device on multiple output devices at the same time, eliminating the troublesome of unplugging cables and switching devices, and greatly simplifying the device management. You can switch input ports with front panel buttons, IR signals and RS232 port.

This product also supports Quad Multi-Viewer mode, can be applied to engineering, security, media and other scenarios.

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, you can visit our official website: www.tesmart.com.

5. Features

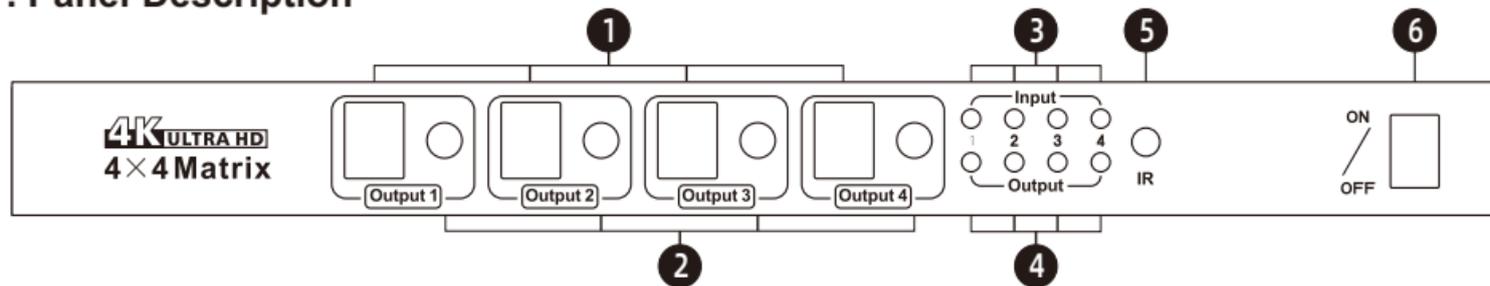
- With 4 HDMI inputs and 4 HDMI outputs
- Each HDMI output can share same input or select standalone input
- Support resolution up to 3840x2160@30Hz
- HDCP1.4 compliant
- Each HDMI output support Quad Multi-Viewer mode
- Supports two different resolutions in Quad Multi-Viewer mode: 1280x720@60Hz or 1920x1080@60Hz
- Matrix status could be memorized after power down, automatically restore previous matrix status after next power on
- Smart EDID management, make it compatible with most display devices
- Support 4 configurable user preset connections
- Easy to control matrix via IR receiver, front panel key and RS232 port

6. Packing List

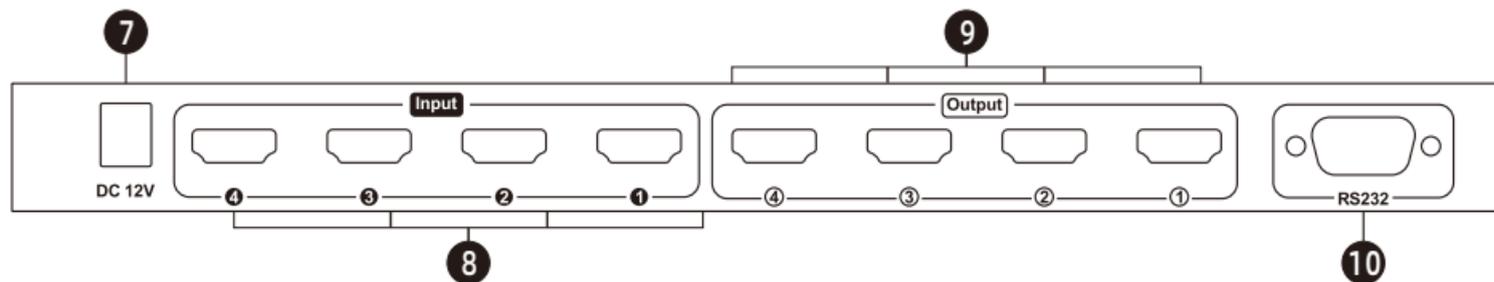
- 1 * 4x4 HDMI Matrix
- 1 * IR Remote Control
- 1 * DC 12V Power Adapter
- 1 * User Manual

Tips: After received the product, you should 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, you can contact with us.

7. Panel Description



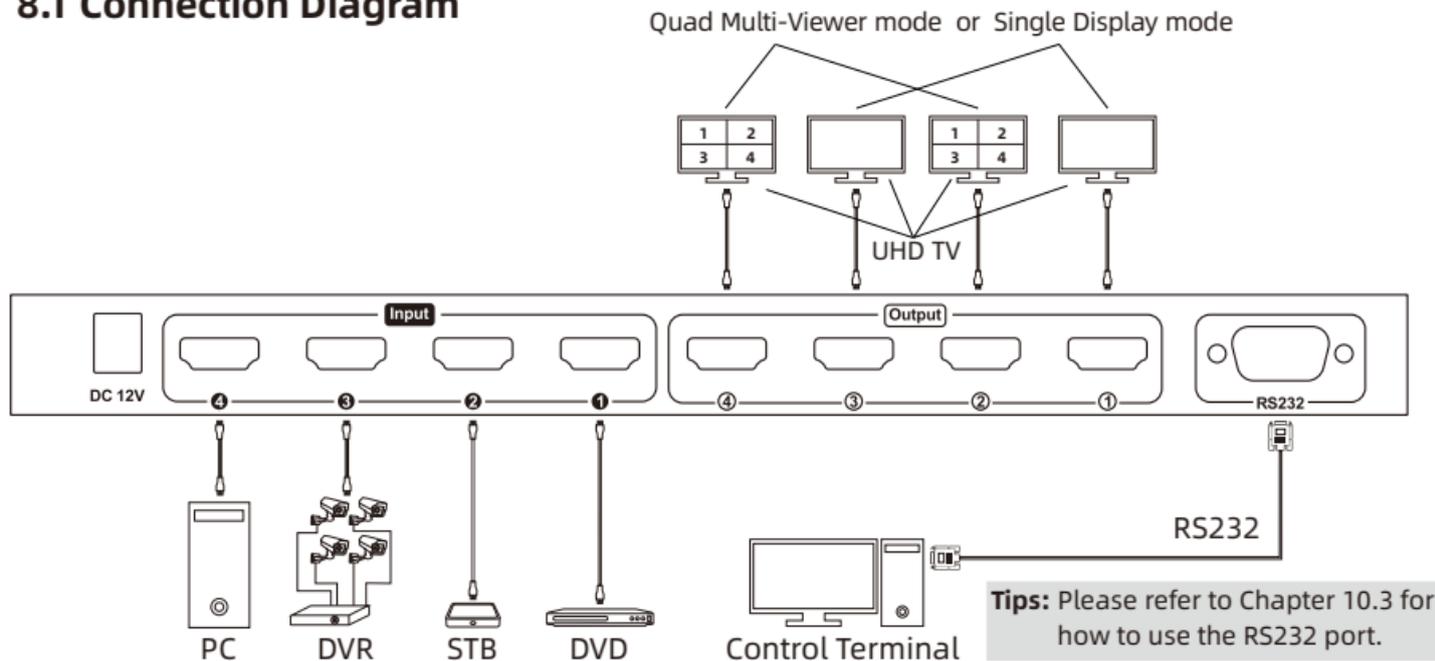
ID	Name	Description	ID	Name	Description
1	Digital display	Display current selected input source number. 1-4 indicates the corresponding input port number; 0 indicates entering Quad Multi-Viewer mode.	4	Output selection status	LED will be lit if HDMI Output port connected to HDMI display.
2	Input selection button	Select input port or enter Quad Multi-Viewer mode.	5	IR receiver	Receive IR signal.
3	Input selection status	LED will be lit if HDMI Input port connected to HDMI source device.	6	Power switch	Turn on or off power supply of the matrix.



ID	Name	Description
7	DC 12V	DC 12V power supply.
8	HDMI input ports	Connect HDMI source devices.
9	HDMI output ports	Connect to HDMI displays.
10	RS232 port	Connect this port to control terminal. Use RS232 commands to select input sources.

8. Connection Description

8.1 Connection Diagram



8.2 Connection Steps

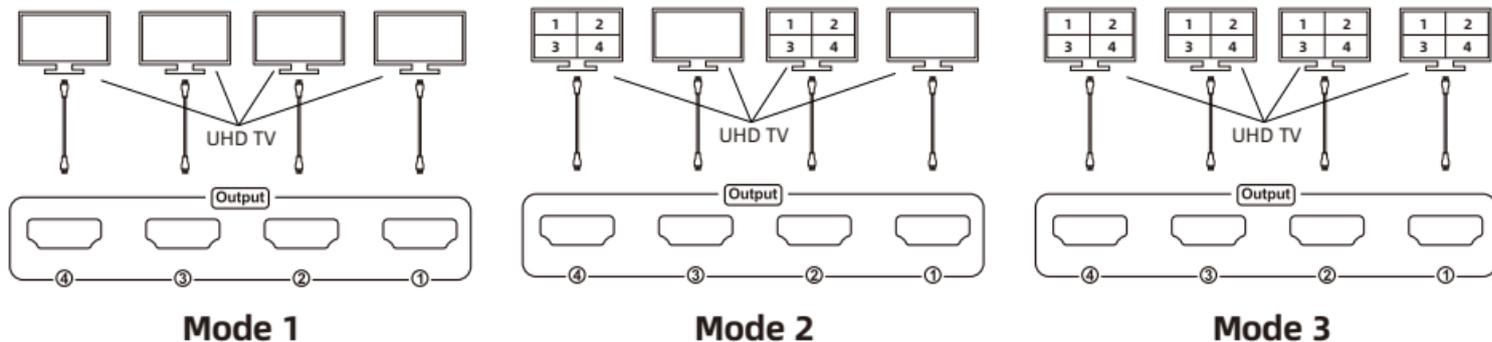
1. Connect the input devices to the input ports using 4 HDMI cables.
2. Connect the output ports to the display devices using 4 HDMI cables.
3. Connect DC 12V power supply to the HDMI Matrix.
4. By now, the connection has been completed. Turn on the power supply and the HDMI Matrix will begin to work.



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

9. Quad Multi-Viewer Mode Description

Each HDMI output port on our HDMI Matrix supports Quad Multi-Viewer mode. So you can set the Quad Multi-Viewer mode or Single Display mode for each HDMI output port.



Mode 1: All of HDMI output ports are Single Display mode.

Mode 2: Some of HDMI output ports are Single Display mode, the others are Quad Multi-Viewer mode.

Mode 3: All of HDMI output ports are Quad Multi-Viewer mode.

Tips: Please refer to Page 13, Page 15 and Page 16 for detailed information about how to use the Quad Multi-Viewer mode

9.1 Select Display Resolution

The HDMI Matrix will do some special handling in Quad Multi-Viewer mode. We offer two different resolutions in Quad Multi-Viewer mode: 1280x720@60Hz or 1920x1080@60Hz. You can choose the appropriate display resolution according to your requirements.

Tips: The blue mark on the screen is to note the input channel number and the resolution of the current input source. The note will disappear automatically after 5 seconds of display.

9.2 Select Audio Output

Audio switching is supported under the Quad Multi-Viewer mode. You can choose the input device which you want to play the sound on.

Tips: The blue "Audio" mark will appear in the upper right corner of the split screen where the current audio is played.

When you select display resolution or select audio output in Quad Multi-Viewer mode, all of the HDMI displays which in Quad Multi-Viewer mode will be changed at the same time.

10. Operation Method

10.1 Front Panel Button Switching Method

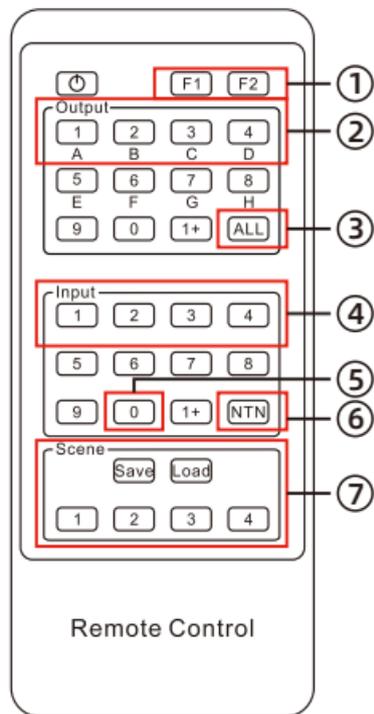


The digital display shows the input port number selected by the current output port, and the button beside every digital display is the input selection button.

Select the output channel you want to control on the front panel (one of "Output 1~Output 4"), continuously press the input selection button beside its digital display, the digital display will cycle from 0 to 4, until the digital display of the output channel shows the input port number you want.

Tips: The number "0" indicates the corresponding output entering Quad Multi-Viewer mode.

10.2 IR Remote Control



1 to 1 switch:

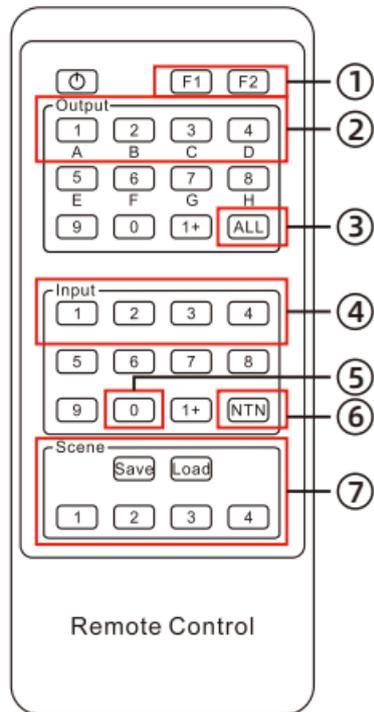
Step 1: Press any key in ② to select the output port.

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

1 to all switch:

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

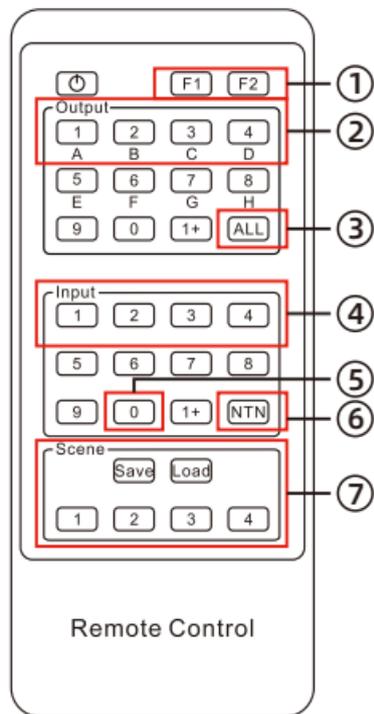
Step 2: Press any key in ④ to select the source which you want to be displayed on all outputs.



Quad Multi-Viewer mode switch:

- Single display enter Quad Multi-Viewer mode:
 - Step 1: Press any key in ② to select the output port.
 - Step 2: Press the key ⑤ to enter Quad Multi-Viewer mode on the selected output.
- All displays enter Quad Multi-Viewer mode:
 - Step 1: Press the key ③ to select all the output ports.
 - Step 2: Press the key ⑤ to make all displays enter Quad Multi-Viewer mode.
- Switch resolution on Quad Multi-Viewer mode:

Continuously press the key **F1** in ① to make the display resolution switch between 720p60Hz and 1080p60Hz , until the display resolution you want is switched.

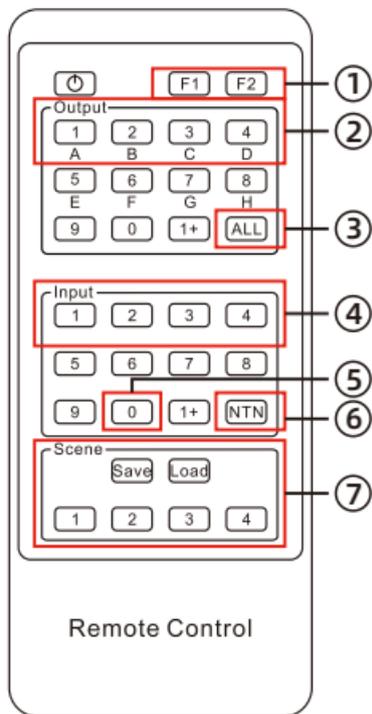


4. Switch audio on Quad Multi-Viewer mode:

Continuously press the key **F2** in **1** to switch the audio in the four segmented pictures. Audio switches synchronously when multiple output ports are in Quad Multi-Viewer mode.

Switch to mirrored connection:

Press the key **6**, 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 preset:

Step 1: Press the key **Save** in ⑦.

Step 2: Press any key in ⑦ to save current routing status to user preset memory 1/2/3/4.

Load preset:

Step 1: Press the key **Load** in ⑦.

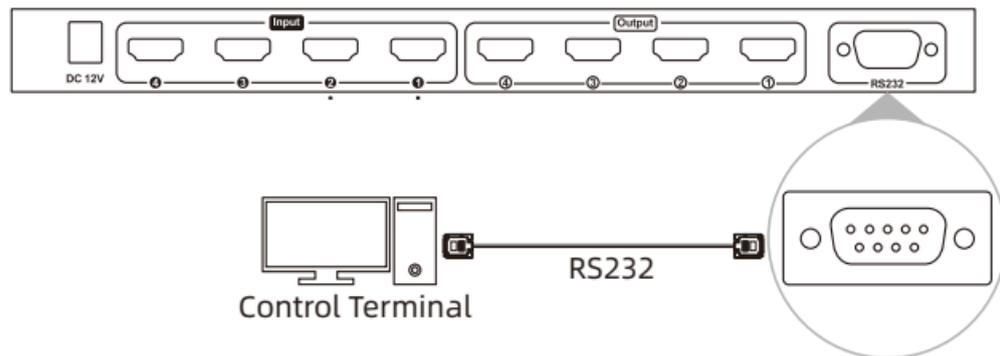
Step 2: Press any key in ⑦ to load routing status from user preset memory 1/2/3/4 and apply to current routing.

Tips: Unspecified buttons at above are non-functional.

10.3 RS232 Control

A. Connect RS232 port

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



B. Communication protocol

Baud rate: 9600 bps

Stop bit: 1 bit

Data length: 8 bits

The commends are as the following form:

Index	Commend strings	Parameter description	Remark	Direction
1	MT00SW0000NT		Mirrored output 1→1, 2→2...	PC→ Matrix
2	MT00SWXX00NT	XX: input port number (01~04/+)	1 input to all outputs	PC→ Matrix
3	MT00SWXXYYNT	XX: input port number (01~04/+) YY: output port number (01~04)	Connect input XX to output YY	PC→ Matrix
4	MT00RD0000NT		Request Matrix return current connection status.	PC→ Matrix
5	MT00SW0Y0+NT	Y: output port number (1~4)	Make output Y enter Quad Multi-Viewer mode	PC→ Matrix
6	MT00SW000+NT		Make all outputs enter Quad Multi-Viewer mode	PC→ Matrix
7	LINK:OYIX;END	X: input port number (1~4/+) Y: output port number (1~4)	Matrix return current connection status to console	Matrix→ PC

C. 4X4 HDMI Matrix Controller

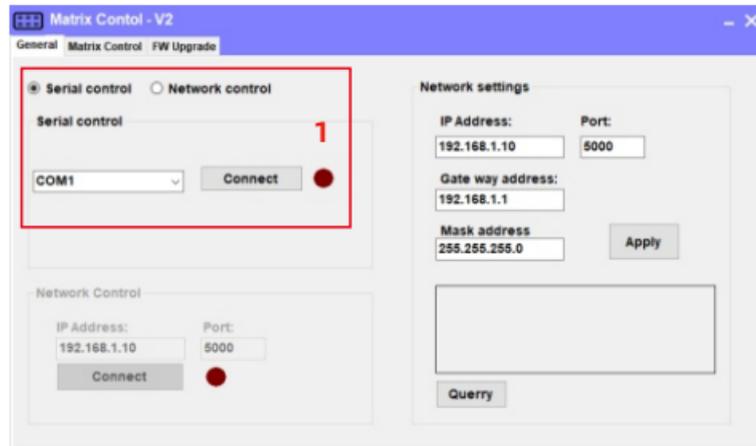
Based on the communication protocol in Section C, we provide a controller on the Windows OS. you can visit our official website to download it: www.tesmart.com.

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

Page description

Page 'General' :

This page is used to set up the parameters to use RS232 commends and the LAN port to connect matrix.

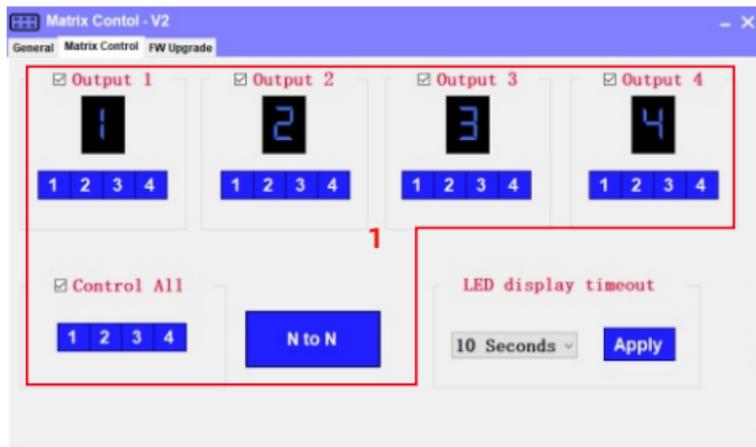


1-Serial connect

Tips: This product has no LAN port, so the network connection and control part of the software has no practical function.

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.

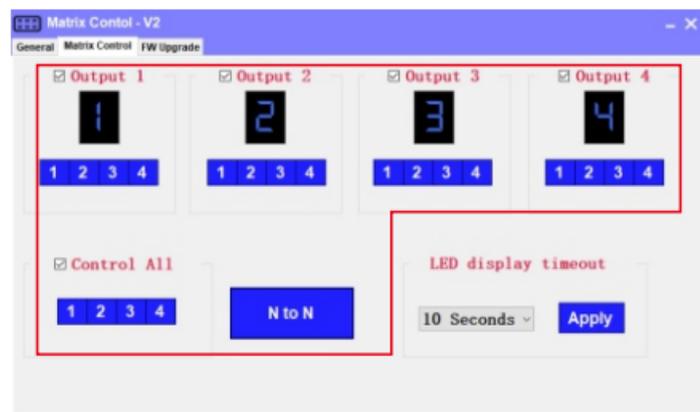
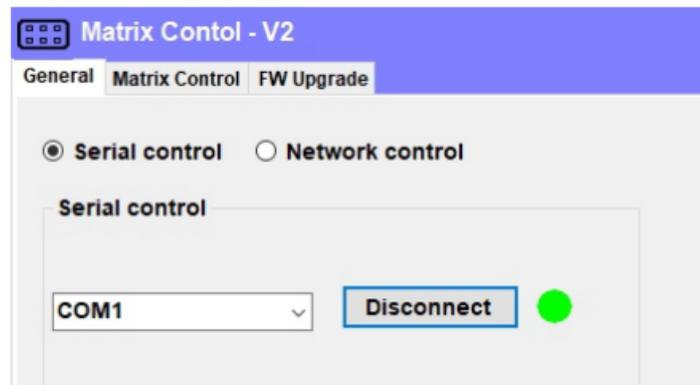


1-Switch control panel

Tips: The LED display timeout part of the software has no practical function.

D. RS232 port usage:

- Step 1: Use RS232 cable connect PC to 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 connected to the HDMI Matrix. .
- Step 4: Click 'Connect' to open the serial port and connect to the HDMI Matrix.
- Step 5: Click 'Connect' to enter page "Matrix Control" , and click the button to Control the Matrix.



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