MX4K44BT-TW

4K/18G 4x4 HDMI/HDBaseT Matrix w/ Audio Breakout

4x4 4K HDBaseT Matrix - HDMI2.0

FOURKAY
HD EVERYWHERE

Thank you for purchasing this product. For optimum performance and safety, please read these instructions carefully before connecting, operating or adjusting this product. Please keep this manual for future reference.

SURGE PROTECTION DEVICE RECOMMENDED

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lightning strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

SAFTY NOTICE

1. The transmission distances of HDMI over UTP cables are measured using TE CONNECTIVITY 1427071-6
2. EIA/TIA-568-B termination (T568B) for CAT cables is recommended for better performance.
3. DO NOT use 568A/568B standard mixed CAT cable (cross-over cable) because there are 2 pairs swapped, this will make POE OVER-CURRENT and damage POE components. Please use straight-through CAT cable (both RJ45 headers are 568A or 568B standard).
4. It is recommended that power up the device after connections of source, sink and CAT cable.
5. To reduce the interference among the unshielded twisted pairs of wires in CAT cable, do not run HDBaseT / Zone Cat5e/6/6a cabling with or in close parallel proximity to mains power cables. Shielded CAT cables can be used to improve EMI problems, which is worsen in long transmission.
6. Because the quality of the CAT cables has the major effect on how long the transmission limit can achieve and how good is the received picture quality, the actual transmission range is subject to one's choice of CAT cables.
7. Do not substitute or use any other Power Supply other than the enclosed unit, or a Factor Electronics approved Replacement Part. Doing so will void the warranty and potentially expose the user to dangerous voltages resulting in an electrical shock.
8. Do not disassemble the device for any reason. Doing so will void the manufacturer's warranty. Also, our unique case is an integral part of the design of this unit and is responsible for cooling and circuitry shielding. Any modifications to this case will potentially cause malfunction and product failure.
9. Do not expose the device to water, moisture, or liquid. Possible electric shock may result as well as failure of the unit to operate.

Table of Content

Introduction

The MX4K44BT is a HDMI/HDBaseT matrix which can routes four Hi-Def sources to any four HDTV displays, supporting 1080p Full HD up to 4K@60Hz HDR plus all 3D formats, along with multichannel digital audio formats such as Dolby® True HD and DTS-HD® Master Audio™. Embedded audio extractors can extract the audio and output via L/R or Coaxial. Volume can be controlled for analogue audio out. Based on HDBaseT Lite chipset inside, the output distance can reach up to 70m via Cat5e/Cat6. Each source can be routed to any display using the front-panel push buttons, IR remote control, RS-232 interface, or via TCP/IP.

Features

- 4x HDMI inputs, 4x HDBT outputs and 1x HDMI loop output
- Supports 4K@60Hz 4:4:4, HDR and full 3D
- HDBT output 1 supports conversion from 4K to 1080P
- Supports 4K resolution up to 40m, and 1080p to 70m over single CAT cable
- Smart CSC technology supports outputting 6G or 3G video depends on sink device
- IR/RS232 signal can pass through to the corresponding receiver (1 to 1, 2 to 2, 3 to 3, 4 to 4) via HDBaseT.
- Supports IR extension to control the matrix via remote control away from 10m
- Supports IR Matrix function to control the sinks or sources.
- Support IDIR function to separately control each sink connected to HDBT Output.
- 1x L/R audio input, can be embedded into any HDMI input
- Analogue/ digital audio output simultaneously
- Push buttons, IR, RS-232, TCP/IP and Web GUI for control
- EDID management
- HDCP 2.2 compliant
- Volume control on analogue audio outputs
- 12V POC

## Panel Descriptions

Front Panel
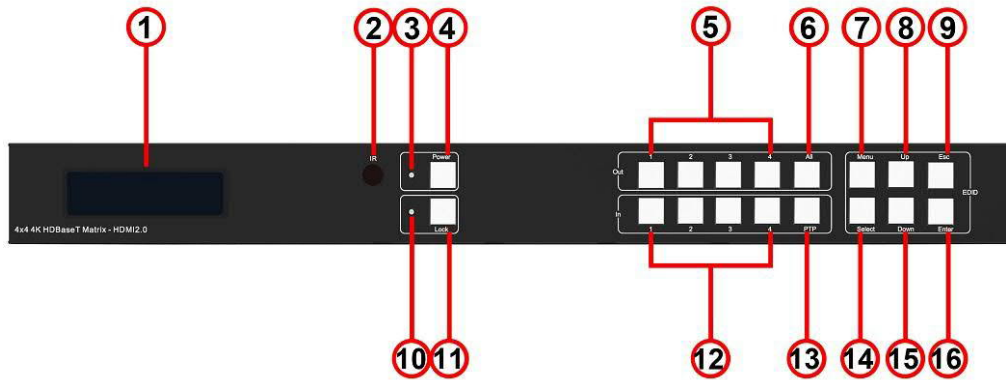
1. LCD display---Shows the status of input-output selection, EDID info and so on.

2. IR receiver window----Receives the IR from the remote control of the HDBaseT-4x4Matrix.

3. Power LED indicator---Indicates the power status for the matrix.

4. Power button---Press to power on/off the matrix.

5. HDMI output selection buttons 1 to 4---Press to select the outputs from 1 to 4.

6. All button for HDMI outputs---Press to select all of the outputs from 1 to 4.

7. Menu button---Press to enter EDID set mode. Three EDID segments will display on the LCD

panel formatted as: INPUT VIDEO AUDIO, for example: IN1 1080P 2.0CH, means to set

1080P 2.0CH EDID to INPUT1. The blinking segment can be changed currently. Segment

content items listed below:

INPUT	VIDEO	AUDIO	Note
IN1	1080P	2.0CH.	
IN2	1080I	5.1CH	
IN3	3D	7.1CH	
IN4	4K303G		HDMI 4K@30Hz 444
ALL	4K603G		ALL=Set EDID to ALL INPUTs HDMI 4K@60Hz 420
	4K606G		HDMI 4K@60Hz 444

	D1024		D1024=DVI 1024 x 768
	D1080		D1080=DVI 1920 x 1080
	D1200		D1200=DVI 1920 x 1200
	OUT1		OUT1=Copy OUTPUT1 EDID to INPUTx
	OUT2		OUT2=Copy OUTPUT2 EDID to INPUTx
	OUT3		OUT3=Copy OUTPUT3 EDID to INPUTx
	OUT4		OUT4=Copy OUTPUT4 EDID to INPUTx

8. Up selection button--- Press to change a segment's value.

9. ESC---Press to quit EDID set mode.

10. Lock LED indicator---Indicates the status of Lock.

11. Lock button---Press to lock the buttons of the front panel.

12. HDMI input selection button 1 to 4---Press to select the inputs from 1 to 4.

13. PTP button---Press to mirror all inputs and outputs (e.g. output 1 to input1, output 2 to input2 and so on).

14. Selection button---Press to select a segment to change settings. The selected segment will be blinking.

15. Down select button---Press to change segment's value.

16. Enter button--- Press to set the EDID to a specified INPUT or copy the EDID from a specified OUTPUT to a specified INPUT.

Back Panel
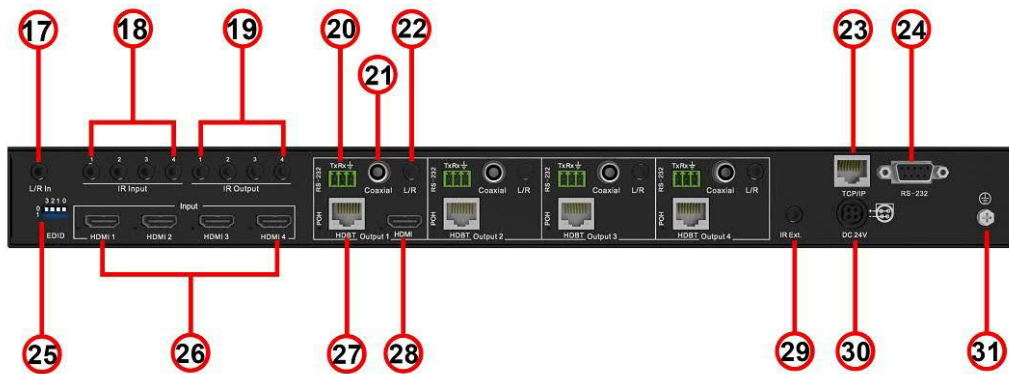
17. L/R in – 3.5mm Analogue audio input for embedding audio onto HDMI outputs.

18. IR inputs 1 to 4--- 3.5mm stereo phone-jack, connect to an IR receiver

19. IR outputs 1 to 4 --- 3.5mm mono phone-jack, connect to an IR transmitter cable.

20. RS232 port with each HDBT out--- 3-pin phoenix terminal connector. Connect to a PC,

RS232 extension to the Balun.

21. Coaxial digital audio output ---Extracted audio corresponds with the HDMI video output

22. L/R analog audio output---Extracted audio corresponds with the HDMI video output.

23. TCP/IP port – RJ45 connector, TCP/IP control

24. RS232 port –DB9 connector, to control the matrix from a PC or control processor

25. DIP switches–Used for global EDID settings

26. HDMI inputs 1 to 4---Connect HDMI sources

27.HDBT outputs 1 to 4--- Connect to remote baluns via CAT cable

28. HDMI loop output 1--- Connect to HDMI display device.

29. IR extension receiver input --- 3.5mm stereo phone-jack, connects to the IR receiver cable

to receive the IR from the HDBaseT-4x4Matrix remote.

30. Power port---Use the included 24V/3.5ADC adaptor to power the matrix.

31. GND – Connect to ground if necessary

Remote Control Description

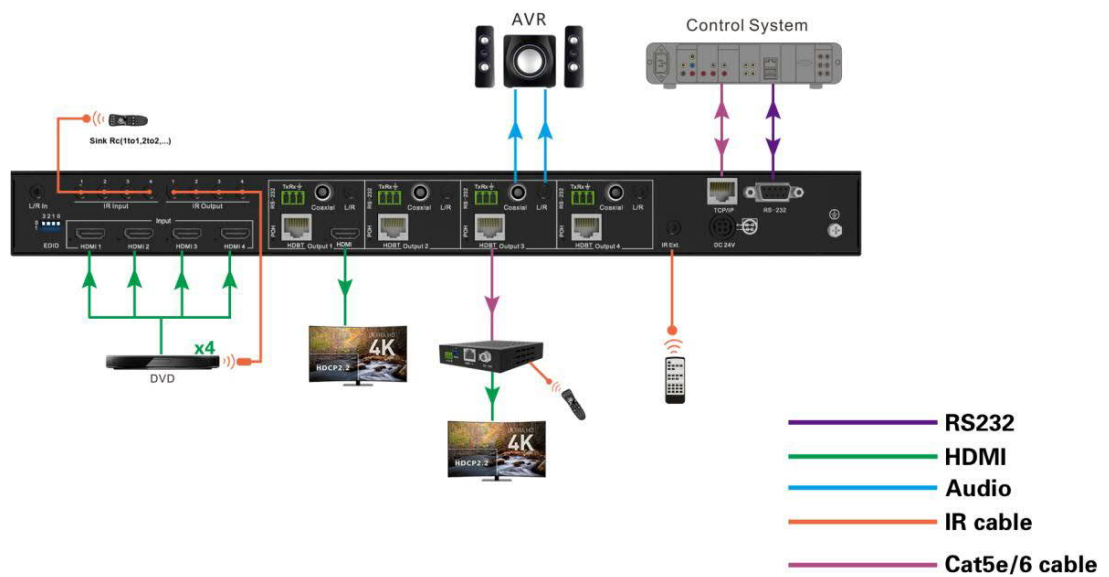**Master Remote Control**
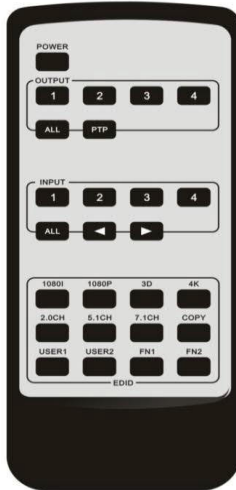
Output and Input select

A. OUTPUT-X select INPUT-Y:

1. Press OUTPUT-X (X = outputs1 to 4)→Press INPUT-Y (Y = inputs 1 to 4)

2. Press OUTPUT-X (X= outputs 1 to 4)→ press the left and right arrow buttons to select the input.

B. All outputs select INPUT-Y: Press ALL button in zone OUTPUT→Press INPUT-Y button (Y means 1 to 4 of inputs), then INPUT-Y switched to ALL OUTPUTS

C. Mirror all inputs and outputs (Ex. Input 1 to output 1, input 2 to output 2, etc): Press PTP button in the Zone OUTPUT

EDID Set Up

A. Fixed EDID to INPUT-Y/ALL

Press 1080I/1080P/3D/4K→Press 2.0CH/5.1CH/7.1CH→INPUT-Y/ALL button in Zone INPUT

B. Copy EDID of OUTPUT-X to INPUT-Y/ALL

Press COPY button→Press OUTPUT-X button→Press INPUT-Y/ALL button

C. User defined EDID to INPUT-Y/ALL

Press USER1/USER2 button→Press INPUT-Y/ALL

NOTE: Pressing button sequence should be finished in 5 seconds, otherwise, operation discarded.

Application Diagram

Note: There is three IR Control Modes

1. Via IR extension to control the matrix using matrix remote control

2. Via IR input cable on HDBT Receiver and IR output cable on matrix to return control the DVD.

3. Via IR input on matrix to control the TV.

Specifications

Bandwidth	18Gbps (4K@60Hz 4:4:4 8bit)
Video Input Connectors	4xHDMI Type A, 19-pin, female
Video Output Connectors	1x HDMI Type A, 19-pin, female, 4x RJ45 Connector
Audio Input Connectors	1x L/R
Audio Output Connectors	4x RCA(SPDIF), 4x L/R
RS232 Serial port	1x DB-9, female 4x 3-pin phoenix terminal connector.
TCP/IP Control	1x RJ45, female
IR input ports	5x3.5mm stereo jack
IR output ports	4x3.5mm mono jack
Rack-Mountable	rack ears included
Dimensions(Lx WxD)	440mm x 235mm x 43mm, w/o feet
Shipping Weight	2.7KG
Operating Temperature	32°F to 104°F (0°C to 40°C)
Storage Temperature	-4°F to 140°F(-20°C to 60°C)
Power Supply	24V/3.5A DC

Package Contents

1) 1x MX4K44BT-TW
2) 1x 24V/3.5A DC Power Supply
3) 1x Power Cord
4) 1x Master Remote Control
5) 4x IR Transmitter
6) 5x IR Receiver
7) 1xRack-mount kit

RS-232 Pin Assignment

MX4K44BT-TW DCE)		Remote Control Console (DTE)	
PIN	Assignment	PIN	Assignment
1	NC	1	NC
2	**Tx**	**2**	**Rx**
3	**Rx**	**3**	**Tx**
4	NC	4	NC
5	**GND**	**5**	**GND**
6	NC	6	NC
7	NC	7	NC
8	NC	8	NC
9	NC	9	NC

Baud Rate: 57600 bps

Data Bits: 8-bit

Parity: None

Stop Bit: 1-bit

Flow Control: None

NOTE: Use a **Straight Through DB9 Cable** to connect the matrix with a computer, **DO NOT** use a Crossover Cable (Null Modem Cable).

RS232 and Telnet Commands

No.	Command	Action
0	?	Print Help Information
1	HELP	Print Help Information
2	STATUS	Print System Status And Port Status
3	PON	Power On, System Run On Normal State
4	POFF	Power Off, System Run On Power Save State
5	PMD xx	Power Deep Off Mode Control For "POFF" Command, xx=ON: Only Panel And IR Can Wake Up System, xx=OFF: RS232, Network, Panel And IR Can Wake Up System,
6	IR ON/OFF	Set System IR Control On Or Off (Only for IR Extension)
7	KEY ON/OFF	Set System KEY Control On Or Off
8	BEEP ON/OFF	Set Onboard Beep On Or Off
9	LCD ON/OFF	Set LCD Always On Or Auto Turn Off In Power On State
10	RESET	Reset System And Network To Default Setting (Should Type "Yes" To Confirm, "No" To Discard)
11	RSB x	Set RS232 Baud Rate to x bps x=[0:115200 1:57600, 2:38400, 3:19200, 4:9600]
12	RESET ALL	Reset System And Network To Default Setting
13	OUT xx ON/OFF	Set OUTPUT:xx On Or Off
14	OUT xx FR yy	Set OUTPUT:xx From INPUT:yy
15	POH xx ON/OFF	Set OUTPUT:xx POH On Or Off xx=00: Select All OUTPUT Port xx=[01...04]: Select One OUTPUT Port yy=[01...04]: Select One INPUT Port
16	EDID xx CP, yy	Set Input:xx EDID Copy From Output:yy
17	EDID xx DF zz	Set Input:xx EDID To Default EDID:zz xx=00: Select All Input Port xx=[01...04]: Select One Input Port yy=[01...04]: Select One Output Port zz=00: HDMI 1080p@60Hz, Audio 2CH PCM

		zz=01: HDMI 1080p@60Hz, Audio 5.1CH DTS/DOLBY
		zz=02: HDMI 1080p@60Hz, Audio 7.1CH DTS/DOLBY/HD
		zz=03: HDMI 1080i@60Hz, Audio 2CH PCM
		zz=04: HDMI 1080i@60Hz, Audio 5.1CH DTS/DOLBY
		zz=05: HDMI 1080i@60Hz, Audio 7.1CH DTS/DOLBY/HD
		zz=06: HDMI 1080p@60Hz/3D, Audio 2CH PCM
		zz=07: HDMI 1080p@60Hz/3D, Audio 5.1CH DTS/DOLBY
		zz=08: HDMI 1080p@60Hz/3D, Audio 7.1CH DTS/DOLBY/HD
		zz=09: HDMI 4K@30Hz 4:4:4, Audio 2CH PCM
		zz=10: HDMI 4K@30Hz 4:4:4, Audio 5.1CH DTS/DOLBY
		zz=11: HDMI 4K@30Hz 4:4:4, Audio 7.1CH DTS/DOLBY/HD
		zz=12: DVI 1280x1024@60Hz, Audio None
		zz=13: DVI 1920x1080@60Hz, Audio None
		zz=14: DVI 1920x1200@60Hz, Audio None
		zz=15: User EDID 1
		zz=16: User EDID 2
		zz=17: GUI Download EDID
		zz=18: HDMI 4K@60Hz 4:2:0, Audio 2CH PCM
		zz=19: HDMI 4K@60Hz 4:2:0, Audio 5.1CH DTS/DOLBY
		zz=20: HDMI 4K@60Hz 4:2:0, Audio 7.1CH DTS/DOLBY/HD
		zz=21: HDMI 4K@60Hz 4:4:4, Audio 2CH PCM
		zz=22: HDMI 4K@60Hz 4:4:4, Audio 5.1CH DTS/DOLBY
		zz=23: HDMI 4K@60Hz 4:4:4, Audio 7.1CH DTS/DOLBY/HD
18	PRESET pp SET aa,bb,cc,dd	Set Preset: pp Config
19	PRESET pp SAVE	Save Current Output Connection To Preset: pp Config
20	PRESET pp APPLY	Apply Preset: pp Config To Output Connection pp=[01..08]: Select Preset Index aa=[01..04]: Output 01 From aa, [00]: Not Set bb: Output 02 ... dd: Output 04
	PRESET STATUS	Print Preset Config Status
21	MUTE mm TX yy	Set Output(TX):yy Audio Mute ON Or OFF
22	VOL xx TX yy	Set Output(TX):yy Audio Volume to xx xx=[00...30]: Volume Value xx=+: Volume Increase xx=-: Volume Decrease mm=ON: Mute On

		mm=OFF: Mute Off
		yy=00: Select All Output Port
		yy=[01...04]: Select One Output Port
		AUD RX xx ORG Input Port:xx Use Orginal Receive HDMI/DVI Signal
		AUD RX xx ANA Input Port:xx Embeded Analog L/R To HDMI/DVI Signal
		AUD RX xx AUTO Input Port:xx Embeded Analog L/R When DVI
		Signal,mm=ON: Mute On
		mm=OFF: Mute Off
		yy=00: Select All OUTPUT Port
		yy=[01...04]: Select One OUTPUT Port
		xx==[00]: All Input Port, [01...04]: Input Port
23	NET DHCP ON/OFF	Set Auto IP(DHCP) ON Or OFF
24	NET IP xxx.xxx.xxx.xxx	Set IP Address
25	NET GW xxx.xxx.xxx.xxx	Set Gateway Address
26	NET SM xxx.xxx.xxx.xxx	Set Subnet Mask Address
27	NET TN XXXX	Set Telnet Port
38	NET RB	Set Network Reboot and Apply New Config!!!

GUI Control

PC System:

Microsoft Windows Operation System

Installation

The HDBaseT4x4 Matrix software controller is green software.Simply copy the "4x4 HDMI Matrix Controller vx.x.exe" to your PC which is used to control the Matrix by connecting an RS232 COM or TCP port to complete the installation.

Preparation

1. Connect the PC and Matrix with the included RS232 cable or UTP cable
2. Power up Matrix (It will take approx 5 seconds to be ready with a "Di" beep sound)
3. Double click the "4x4 HDMI Matrix Controller vx.x.exe" icon to run it

Common information

General | Port Tag | Setting | EDID control | IR Configuration | FW upgrade

Click to select tab page

Connected: 192.168.1.121 Done ... 2013-05-03 10:17

   ①   ②   ③   ④
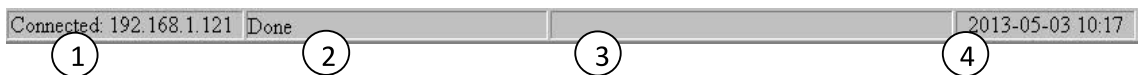
① COM port or TCP connect status
② Control command process status
③ Prompt message display area
④ Date and Time display

"General" page
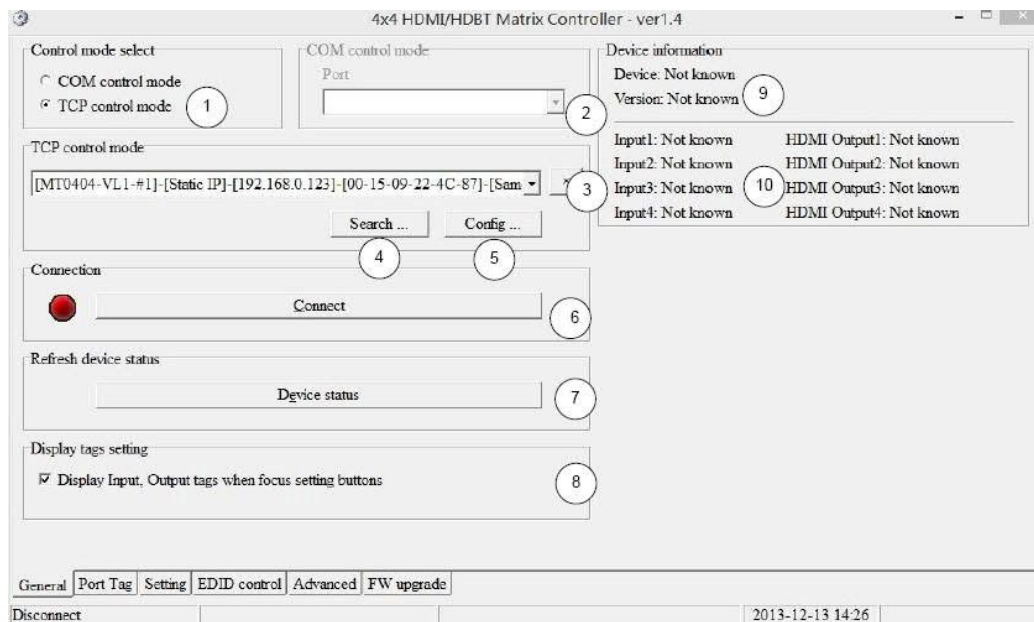
① Select control mode: RS232 COM mode (Auto COM ports detected) or TCP mode

② List detected COM ports

③ List all Matrix devices after search operation

④ Click to search all Matrix devices that connected in same subnet

⑤ Click to configuration the selected Matrix's TCP control configurations

⑥ Click to connect or disconnect the PC and Matrix (Connection will be established automatically before the control commands transmit)

⑦ Click to refresh the device status: include device information displayed in⑨ area and Input/output port connection status in ⑩ area.

NOTE: Tab pages cannot be changed while the control command is processing.

⑧ To enable or disable Input/output tags displaying when setting buttons on the "Settings" page focused

⑨ Device information display area

⑩ Input/output port connection status

Set TCP control configuration

Click the Config button to show the TCP configuration window.
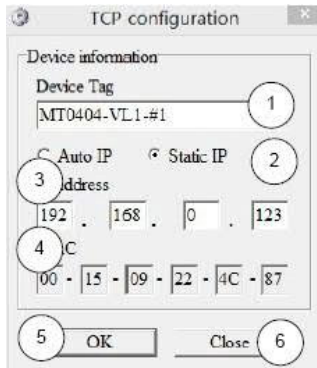
① Set the tag to identify Matrix device

② Set IP mode: Subnet should support DHCP protocol when set Auto IP mode, then Matrix device will obtain IP automatically. Otherwise, set Static IP mode and designate a useable IP for Matrix device

③ Set IP address, not editable when Auto IP mode selected.

Note: The last IP BYTE's range is 2-252.

④ Matrix device MAC address

⑤ Click OK to set the configuration. If the configuration is set to OK, the Matrix devices will be searched out again

⑥ Click to Close the window and cancel the configuration

"Port Tag" page

① Input port tags
② Click to edit Input port tags
③ Output port tags
④ Click to edit Output port tags
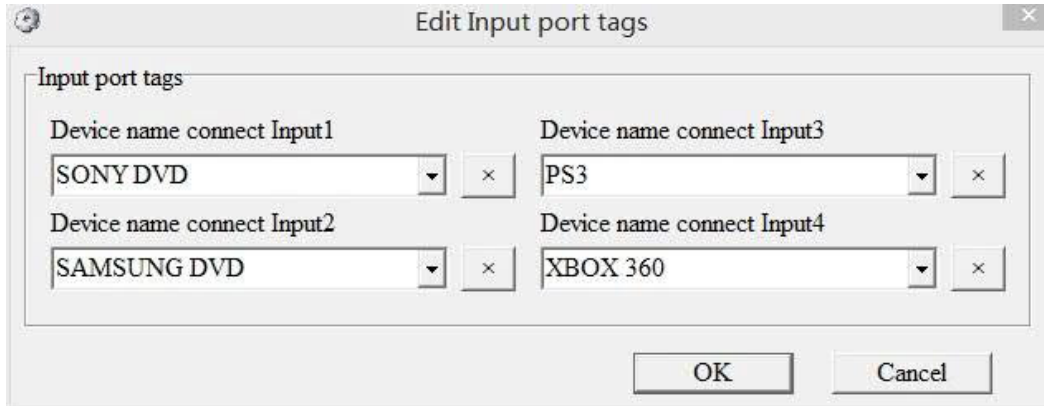
NOTE: Edit boxes are read only, click the "Edit" button to edit the tags in the pop up window .

One set of Input/output port tags can be set for the Matrix device when the COM control mode is selected.

Input/output port tags can be set for each respective Matrix device according to the device's MAC address.

Edit Input port tags

After action of②, edit form will pop-up as below:
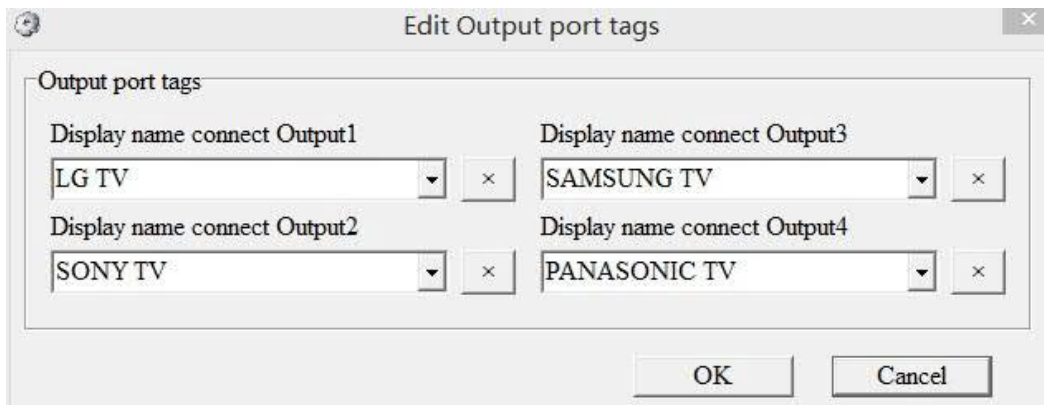
Define tags for respective Input port, then devices connect the Input ports can be easily remembered.

Click buttons with "×" caption to delete the tag that you want to delete, if a tag is still used by any other Input port, the delete action will be discarded.

Edit Output port tags

After action of ④, edit form will pop-up as below:

Define the tags for each respective Output port, the Output ports will be easily remembered.

Click buttons with "×" caption to delete a tag. If a tag is still being used by any other Output port, the delete action will be discarded.

"Settings" page
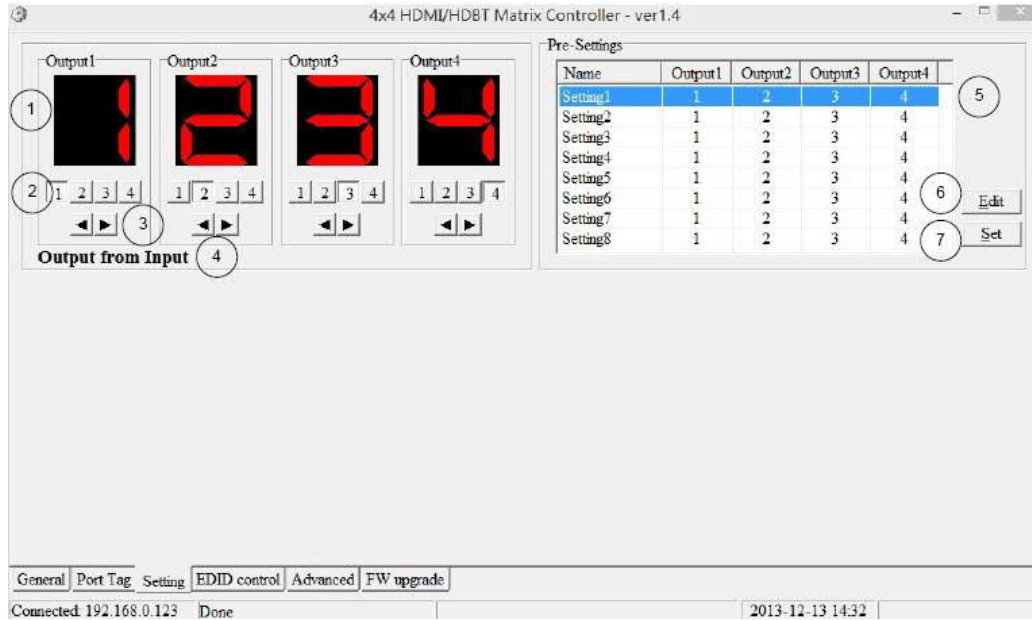
① LED displays the Input number for respective Output port

② Click to select the Input port for the respective Output port

③ Click to select previous or next Input ports for the respective Output port

④ Displays the IN/OUT with tag information when a mouse moves cursors over ② buttons

⑤ Pre-Setting items: Default is Port to Port

⑥ Click to edit selected pre-setting item

⑦ Set selected pre-setting item to Matrix

NOTE: When you Change to this "Settings" page, the software will try to refresh the source selection status of the Output port.

Pop-up tag messages

When the "Display Input, Output tags setting buttons are on" The "General" page is checked and the Input/output port tag has been defined, tag messages will pop up like this:
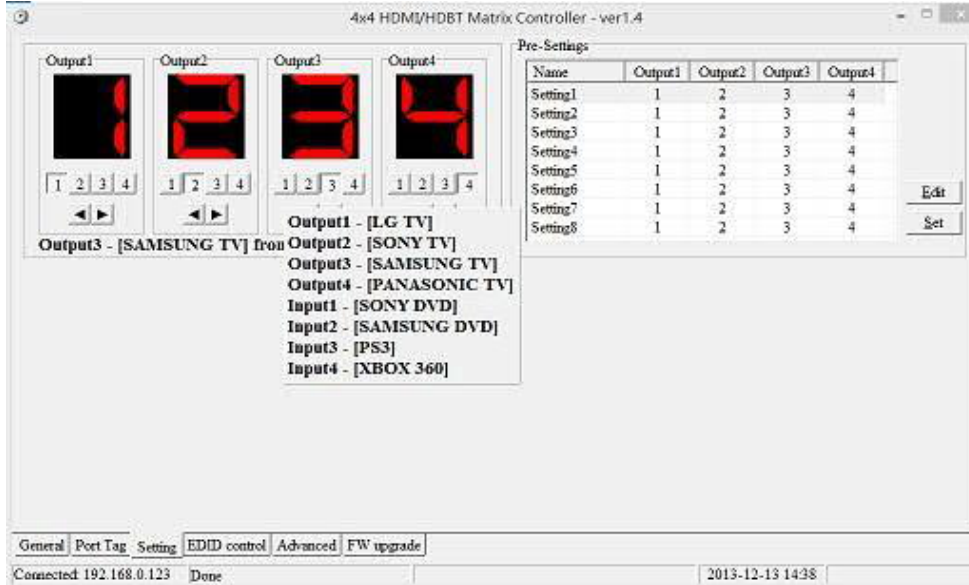
Pop-up Menu

When the mouse cursors over the② setting buttons right click the mouse and the menu will pop up like this:
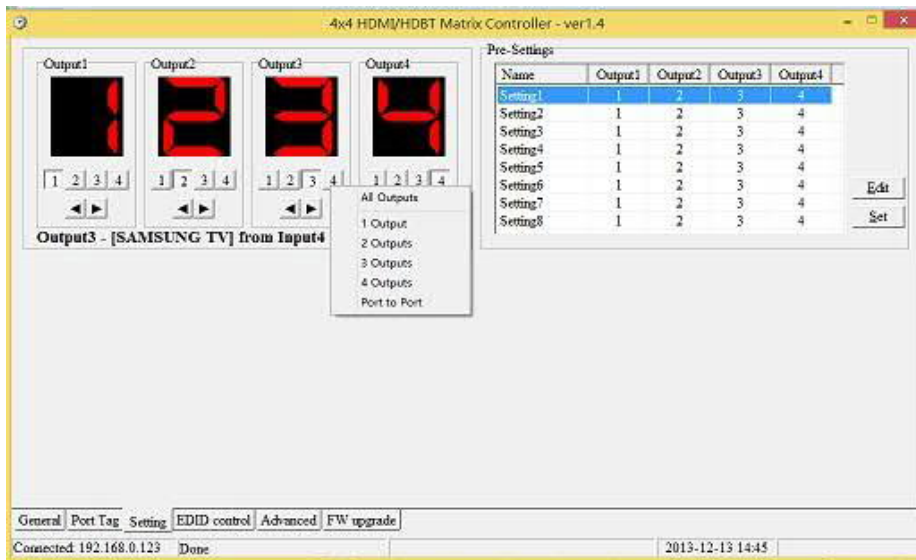
All Outputs: All Outputs from the same Input

"1 Output" to "4 Outputs": Set the current Output (right click the mouse) and the next x-1 (x range is from 1 to 4, set total x Outputs at the same time)all Output(s) from the same Input

Port to Port: Output1 from Input1, Output2 from Input2, Output3 from Input3, etc.

Edit the selected pre-set

After the action of⑥, the edit output form will pop-up below:

① Pre-Set name

② Set all Output ports from the same Input

③ Select the Input for the respective Output

"EDID control" page

① Set the EDID mode for the selected Input port or All Input ports, click the "Set" button to complete the action.

   NOTE: When setting User1/User2 EDID mode, download the EDID content to the User1 Memory/User2 Memory first. The User1/User2 default EDID content is 1080p, Stereo Audio 2.0.

② Copy the EDID from an Output port to a selected Input port or All Input ports, click the "Copy" button to complete the action.

③ Read the EDID content from an Output port and display in the grid, click the "Read" button to complete the action.

④ Save the EDID content which is displayed in the grid to a binary file (file extension is ".bin")

⑤ Open the EDID binary file and display in grid

⑥ Download EDID content which is displayed in the grid to selected Input port or All Input ports, click "Download" button to complete action. When User1 Memory/User2 Memory selected, download EDID content to respective memory then User1/User2 EDID mode can be set.

⑦ EDID content displaying grid

   **NOTE**: EDID content displayed in grid is read only.

⑧ Click to clear EDID content displayed in grid

"IR Configuration" page
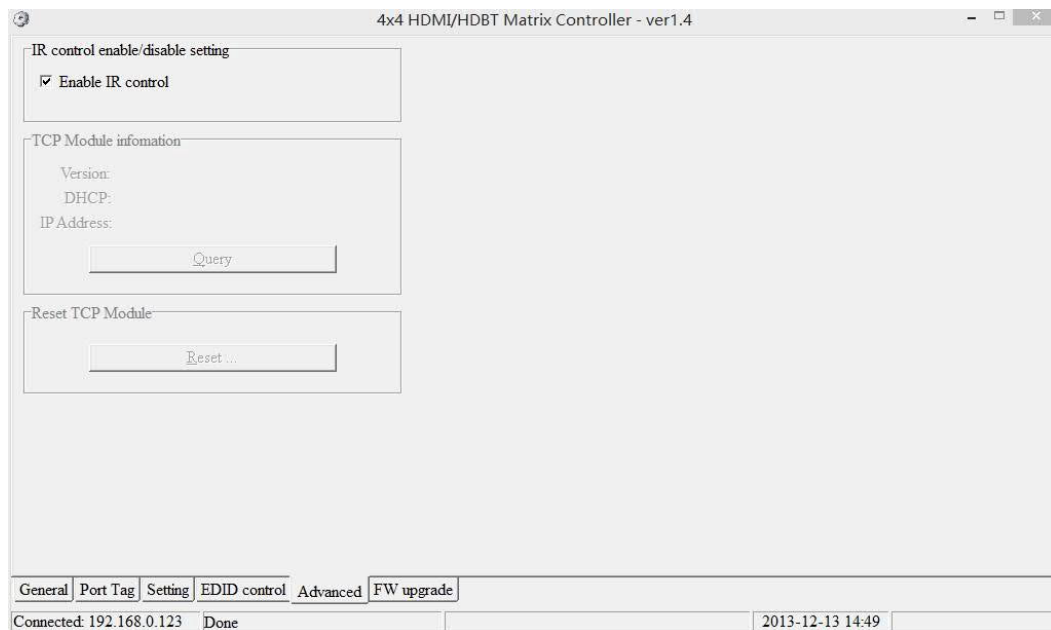
To enable or disable the IR control functions. When the box is checked the IR control functions are enabled, otherwise the IR control functions are disabled. This setting is not memorized. IR control function is always enabled after power up.

"FW upgrade" page
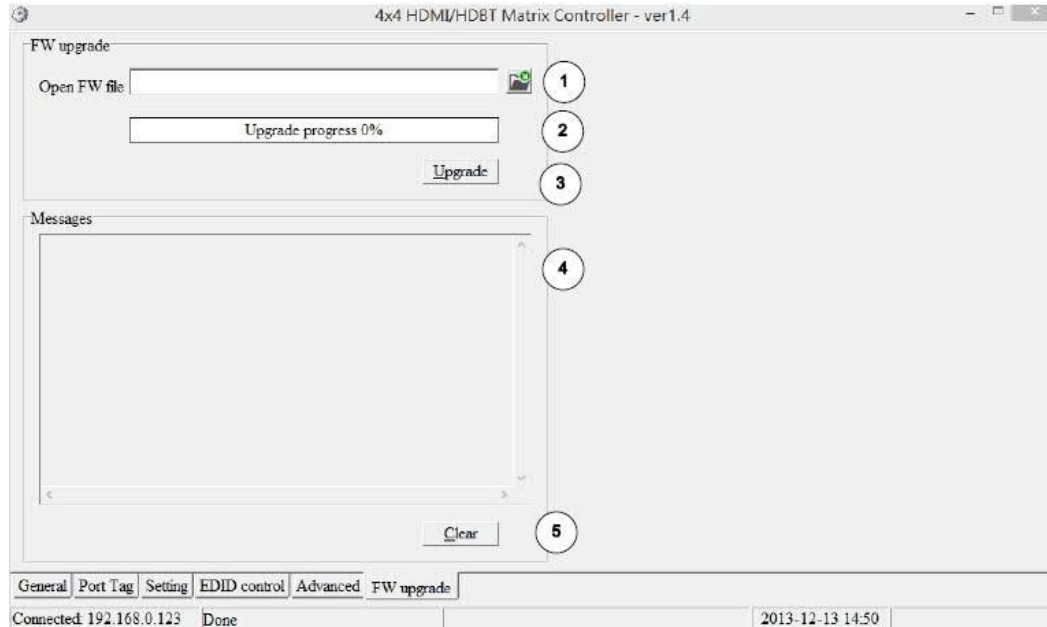
① Click to open firmware file (file extension is ".fw").
② Firmware upgrade progress
③ Click the button to upgrade the firmware.

NOTE: If a failure occurs during the upgrading firmware process, the following steps SHOULD be completed sequentially to establish the next upgrade procedure:

1) Power down the Matrix
2) Close the 4x4 HDMI Matrix Controller
3) Re-power up the Matrix, then wait for 10 seconds to ensure the Matrix is ready
4) Run 4x4 HDMI Matrix Controller, open firmware file and upgrade again

④ Firmware upgrading messages display

Click to clear the messages displayed in the memo box.

Maintenance

Clean this unit with a soft, dry cloth. Never use alcohol, paint thinner or benzene to clean this unit.