



# **HDMI&VGA&AV mixed inputs**

## **Video Processing Matrix switcher 4x4**



### **LM-H944F**

## **Operation Manual**

# 1.Introduction

The matrix switcher is a high-performance with seamless switching output and mixed input 4x4 matrix switcher, 4 mixed input to support digital video signals and analog video signal, and 4 outputs with seamless switching function, seamless switching mode: fast switching, fade in/fade out, blinds and so on; the mixing matrix switcher adopts the advanced digital technology, with scaler function, and achieve a variety of formats to achieve a unified output signal, switching seamlessly perfect visual effects. At the same time it with infrared matrix function, analog video signal input with embedded audio function. Flexible control mode diversity, through the front panel button, remote control, RS-232 and TCP/IP control.

As a video wall processor, the matrix switcher is able to zoom in one input image four times to the outputs. And as a Multi-viewer processor, the matrix switcher can mix inputs with any combos to one image, and then transfer to all the outputs.

## 2.Features

- Compliant HDMI1.3, HDCP1.3 and DVI1.0
- Input video supports HDMI, VGA and C-video
- Supports input resolutions :  
HDMI: 480i to 1080p  
VGA: 1920 x 1080P@60Hz, 1360 x 768P@60Hz,  
1280 x 1024P@60Hz, 1024 x 768P@60Hz,  
1280 x 720P@60Hz, 1280 x 768P@60Hz, 800 x 600@60Hz,  
640 x 480P@60Hz  
CV: Supports PAL, NTSC3.58, NTSC4.43, SECAM, PAL/M, PAL/N  
standard TV formats
- Supports output resolutions : 1920x1080P@60Hz
- Supports seamless switching output, optional seamless switching mode: fast switching, fade in/fade out, blinds and so on
- The RS-232 for the firmware update

- Supports RS-232, remote control, on-panel control and TCP/IP Control
- Supports smart EDID management
- Picture Adjustment Settings
- Automatically adjust the VGA input video
- Supports power-off memory

### 3.Package Contents

- |   |      |
|---|------|
| ● HDMI 4 x4 mixed inputs seamless matrix switcher | 1pcs |
| ● 12V/2.5A DC power adapter                       | 1pcs |
| ● Operation Manual                                | 1pcs |
| ● Wideband IR Tx cable                            | 4pcs |
| ● Wideband IR Rx cable                            | 5pcs |
| ● Mixed Matrix IR Remote                          | 1pcs |
| ● Mounting ears                                   | 2pcs |
| ● RS232 cable                                     | 1pcs |

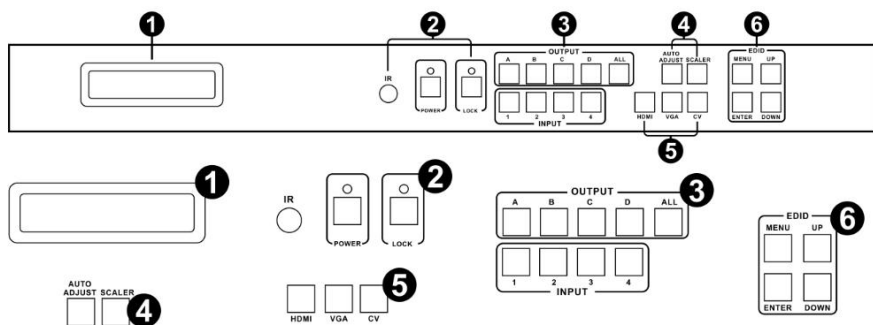
### 4.Specifications

Input Ports	4×HDMI, 4xVGA, 4xRCA, 1×RS-232, 1xRJ-45(Control), 5×IR INPUT, 4xAudio
Output Ports	4×HDMI, 4xIR OUTPUT
Input Resolutions Support	Up to 1920x1080P@60Hz
Output Resolutions Support	Up to 1920x1080P@60Hz
Control	IR , RS-232 , TCP/TP , Buttons
ESD Protection	Human-body Model: ± 8kV (Air-gap discharge) ± 4kV (Contact discharge)
Power Supply	12 V/2.5 A DC (US/EU standards, CE/FCC/UL certified)
Dimensions	440mm (W)×200mm (D)×44.5mm (H)
Weight	2380 g
Chassis Material	Metal
Silkscreen Color	Black

Operating Temperature	0 °C~40 °C/32 °F~104 °F
Storage Temperature	-20 °C~60 °C/-4 °F~140 °F
Relative Humidity	20~90 % RH (non-condensing)
Power Consumption	13.5 W(Max)/1.2W(Standby)

## 5. PANEL FUNCTIONS

### 5.1 Front Panel



- Part 1. **LCM:** Displays the information of each input and output setting and EDID management .
- Part 2. **IR:** IR Receiver window (accepts the remote control signal of this device only).
- POWER:** Press this button to power the device on/off. The LED will illuminate green when the power is on, red when it is in 'Standby' mode.
- LOCK:** Press this button to lock all the buttons on the panel, press again to unlock.
- Part 3. **OUTPUT/INPUT:** Press the OUTPUT and INPUT button to select the output corresponding input.  
For example: Press OUPUT ALL>INPUT 1, The OUTPUT A,B,C,D will be set to INPUT 1.
- Part 4. **Picture adjust:**Press the button to adjust the output picture.  
For example:Press output 1>SCALER, The output 1 video will be scaler adjust.

**Note: 1. Scaler adjust the step: six steps.**  
**2. The AUTO ADJUST button only work on VGA input.**

Part 5. **Sources input select:** Press the button to select source input.

For example: Press input 1>VGA, The input 1 will be select the VGA video input.

Part 6. **EDID:** Smart EDID management, the LCM will display the EDID operation.

Press the MENU button will enter the EDID management window, press UP or DOWN button to select the needed EDID setting, press ENTER button to select the download input source. it can easy download any EDID mode to any input source.

Note: The EDID mode table

EDID Mode	EDID Description
1	1080i, 2CH AUDIO
2	1080p, 2CH AUDIO
3	DVI 1920X1080

### **EDID. What is it and what is it used for?**

Under normal circumstances, a source device (digital and analog) will require information about a connected device/display to assess what resolutions and features are available. The source can then cater its output to send only resolutions and features that are compatible with the attached device/display. This information is called EDID (Extended Display Information Data)

and a source device can only accept and read one EDID from a connected device/display. Likewise, the source can only output one resolution for use by a connected device/display.

### **Why is EDID so important with the HDMI Matrix ?**

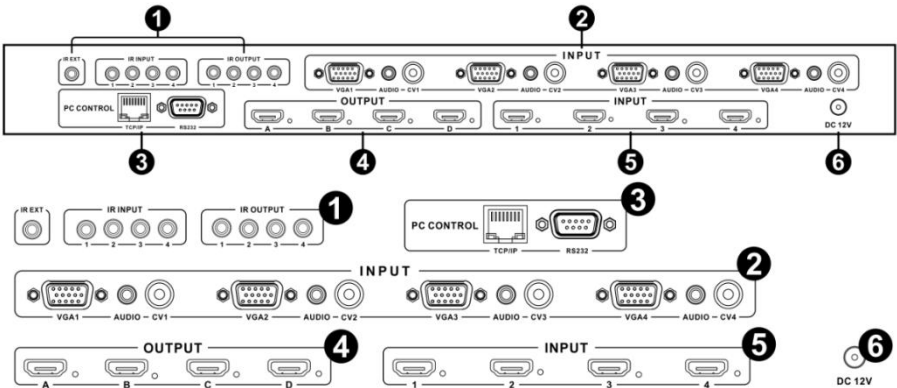
The Matrix is complex piece of technology that replicates and switches between multiple inputs and outputs. Each connected

source device will require one EDID to read. EDID management is carefully handled by HDMI Matrix to provide a single EDID for each source to read.

**What options do I have to manage the EDID in the HDMI Matrix ?**

First, it is important to note that each source device can only output one video/audio signal type. This includes resolutions and timings. When multiple devices/displays are used, such as with the HDMI Matrix, it is important to use devices/displays that have similar or compatible resolutions/features. This will ensure that the single video/audio signal produced by the source device is accepted by all of the connected output devices/displays. The user has the option, through the EDID management window, to choose how the unit will manage the EDID from multiple HDMI devices/displays. Therefore the user has some control over the resolutions/features that the source devices will output. The HDMI Matrix for has a multiple EDID management modes that will control how the EDID information from multiple devices/displays are combined, ignored, and routed.

**5.2 Rear Panel**



**Part1: IR Channel**

**IR EXT:** if the panel sensor is obstructed or the unit is installed in a closed area out of infrared line of sight, the IR RX receiver included can be inserted into the IR EXT port at the rear to

extend the IR sensor range and enable local control of the matrix.

**IR IN/OUT:** Super IR control system interface. for further details, please refer to the Super IR system control introduction.

## Part2: VGA CV AND AUDIO INPUT

Connect to the VGA or CV input source devices such as a DVD player, a Set-top Box or PC with VGA cable or RCA coaxial cable.Each VGA or CV input is accompanied with a 3.5mm stereo audio input.

## Part 3: PC CONTROL

**TCP/IP:** This port is the link for TCP/IP controls, connect to an active Ethernet link with an RJ45 terminated cable.

**RS232:** Connect to a PC or control system with D-Sub 9-pin cable for the transmission of RS-232 commands.

## Part4: OUTPUT

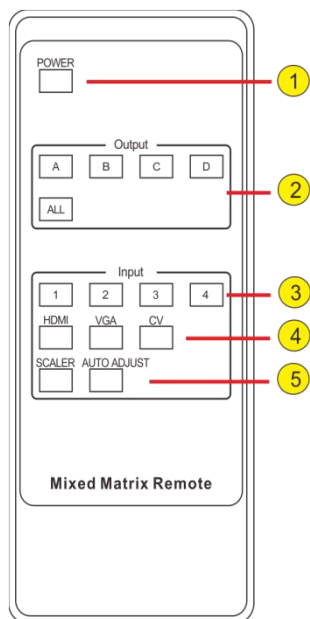
The HDMI OUTPUT connect to HDMI equipped TVs.

## Part5: HDMI INPUT

Connect to the HDMI input source devices such as a DVD player or a Set-top Box with HDMI cable.

## Part6: DC POWER INPUT

Plug the 12V/2.5A DC power supply into the DC12V power in.



## 6. Remote Control

(1). Press this button to power on the matrix or set it to standby mode.

(2).Output selection.Letters correspond with the outputs on the matrix.

(3).Input selection.Numbers correspond with the inputs on the matrix.

(4).Sources input selection.Press the button to select source input. For example:Press input 1>VGA,The input 1 will be select the VGA video input.

(5).Picture adjust.Press the button to

adjust the output picture. For example: Press output 1>SCALER, The output 1 video will be scaler adjust.

**Note: The AUTO ADJUST button only work on VGA input.**

## 7. IR Control system



At Matrix end: Insert the 3.5mm jacks of the IR TX Emitters included with the unit into the IR TX Emitter ports at the rear of the matrix according to input. The IR signal is added to the HDMI of the input device so, for example, if the user is watching Blu-ray on input 1, the IR signal will be directed through the IR TX1 socket to control the device.

As each IR TX port is allocated to an individual HDMI input port, if the user is unable to establish IR control of the device, care should be taken to check firstly, that the IR emitter and HDMI input ports match (Input 1-TX1, Input2-TX2 etc.) with plugs secured in correct ports, and secondly, that the IR TX emitter sensors are firmly attached directly to the front of inputs and covering infrared sensor windows of the source devices. Some later adjustment may be needed to the location of the sensor to achieve the best performance results - sometimes moving the sensor to different areas on the source can improve IR performance.

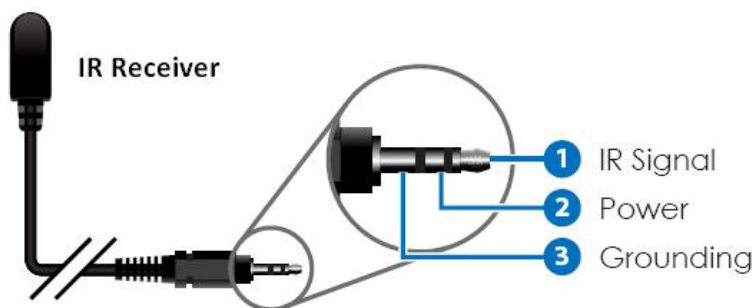
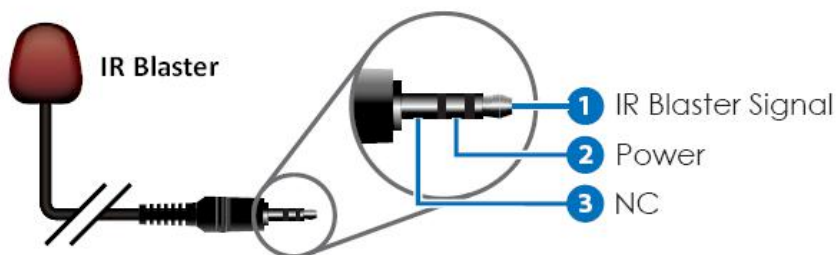
**NOTE:** Infrared receiving areas of devices can be located by shining a flashlight onto the front of the device – the sensor should be able to be seen through the plastic as a small, round object inside. Insert 3.5mm jacks of IR RX receivers into RX ports, making sure the receivers themselves are placed in clear view to receive an infrared signal from the remote handset used to control the display outputs.



## IR RECEIVER



## IR BLASTER



## 9. PC controller user guide

### Installation

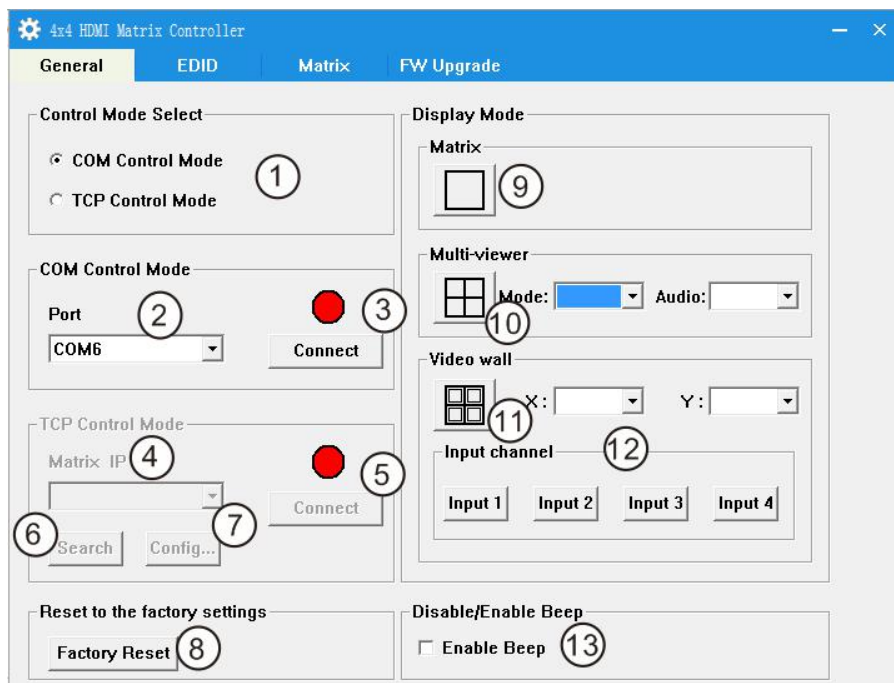
Matrix controller is a green software. Just copy Matrix Controller.exe to PC which is used to control the Matrix by RS232 COM port or TCP/IP to complete installation.

### Preparation

- Connect PC and Matrix by RS232 cable (headers of both sides of cable should be FEMALE) or TCP/IP(local area network)
- Power-up Matrix
- Double click Matrix Controller.exe icon to run it

### How to control Matrix

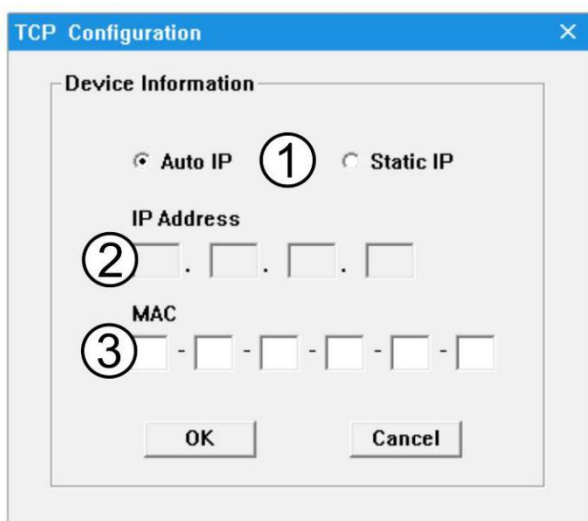
#### ◆ “General” page



1. Select RS232 COM or TCP mode
2. Select RS232 COM port
3. Click to connect or disconnect PC and Matrix
4. Select Matrix IP

5. Connect to Matrix IP
6. Search Matrix IP
7. Configure Matrix IP and MAC
8. Click to reset to the factory settings
9. Click to button system into the matrix mode
10. Click to button system into the Multi-viewer mode; for details, please refer to the Multi-viewer mode.
11. Click to button system into the video wall mode; for details, please refer to the video wall mode.
12. Click to button select one input image zoom in four times to the outputs.
13. Enable or disable Beep
  - Configure TCP

After action of 7 , edit form will pop-up as below:



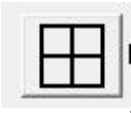
The image shows a 'TCP Configuration' dialog box with a blue title bar and a close button. It contains a 'Device Information' section with two radio buttons: 'Auto IP' (selected) and 'Static IP'. Below this is the 'IP Address' field, which consists of four input boxes separated by dots. At the bottom is the 'MAC' field, consisting of six input boxes separated by hyphens. At the very bottom are 'OK' and 'Cancel' buttons. Three numbered circles are overlaid on the dialog: circle 1 points to the 'Auto IP' radio button, circle 2 points to the first input box of the IP address, and circle 3 points to the first input box of the MAC address.

1. Select auto or static IP
2. Rewrite the Matrix IP
3. Rewrite the Matrix MAC

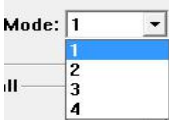
● **The Multi-viewer mode**

The Multi-viewer mode has a variety of display modes. All the display modes as below:

Detailed operations: While the PC software is running normally, click



on the button , via the mode of the drop-down box

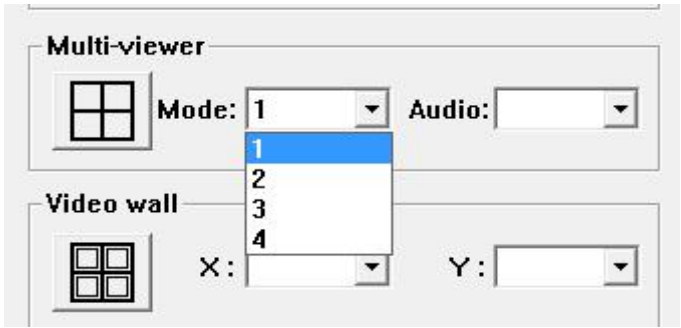


choose 1/2/3/4 mode, and via the audio of the



drop-down box

choose 1/2/3/4 input audio.



**Picture outside Picture (POP) Displaying**

Mode 1:



INPUT1



INPUT2



INPUT3



INPUT4



Mode 2:

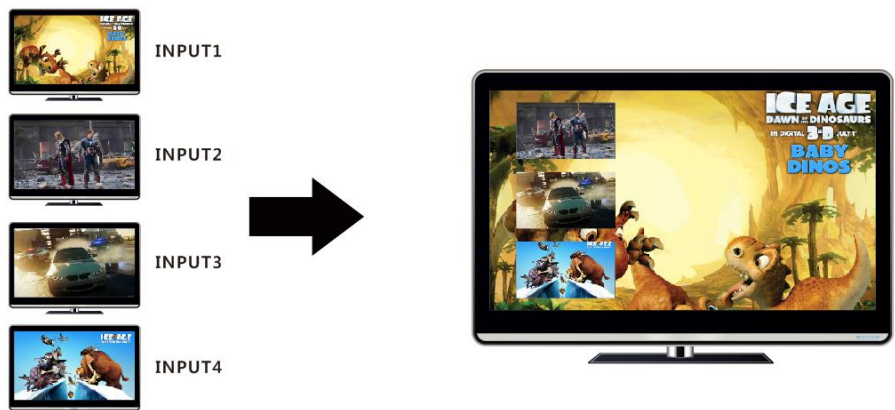


Mode 3:



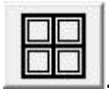
Picture in Picture (PIP) Displaying

Mode 4:



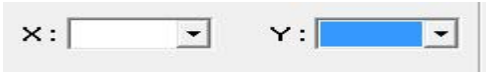
- **The video wall mode**

Detailed operations: While the PC software is running normally, click



on the button

In this area, users can set the bezel size of the adjacent images in zoom-in model, to make the whole image looks coherently. As



shown in:

Figure 1 and Figure 2 will show you the difference between the original image and the image adjusted.



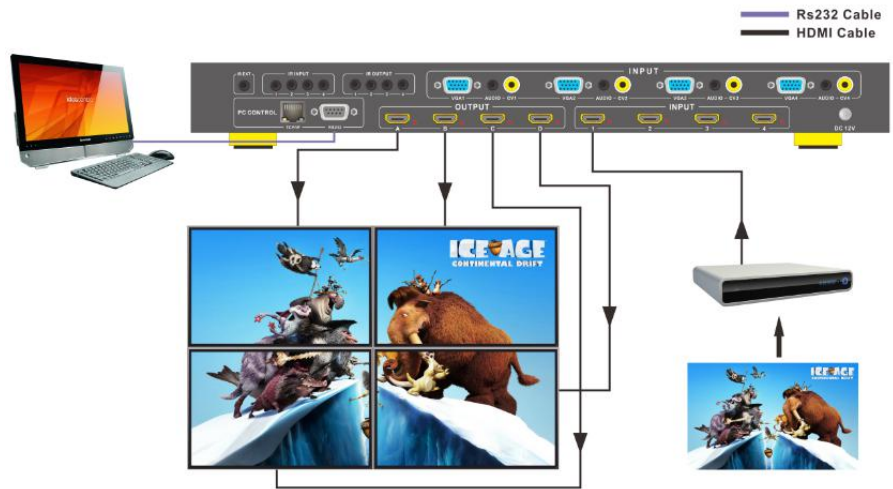
Figure 1 The Original Image



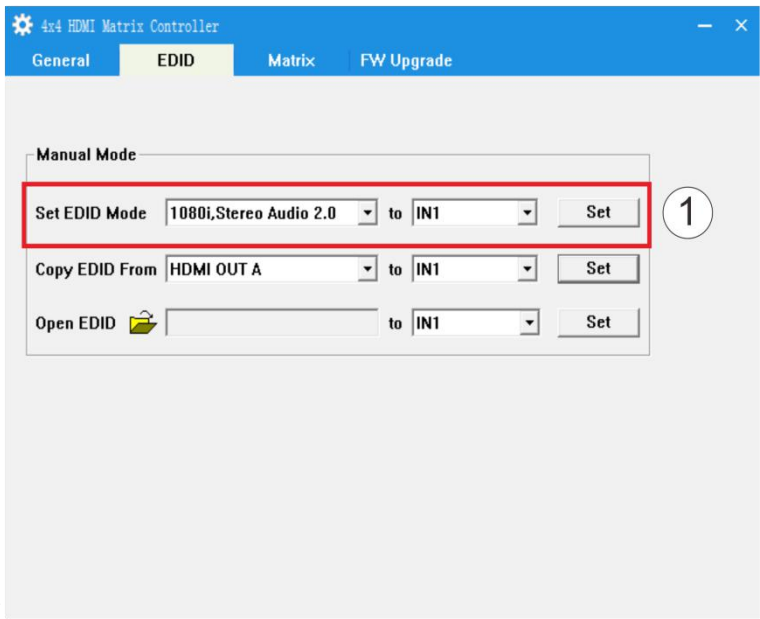
Figure 2 The Image Adjusted

# Diagram of Video Wall Displaying

4x Zoom-in: It means matrix switcher is able to zoom in the input image and spilt to 4 parts, and then full-screen display on the output displays one to one.



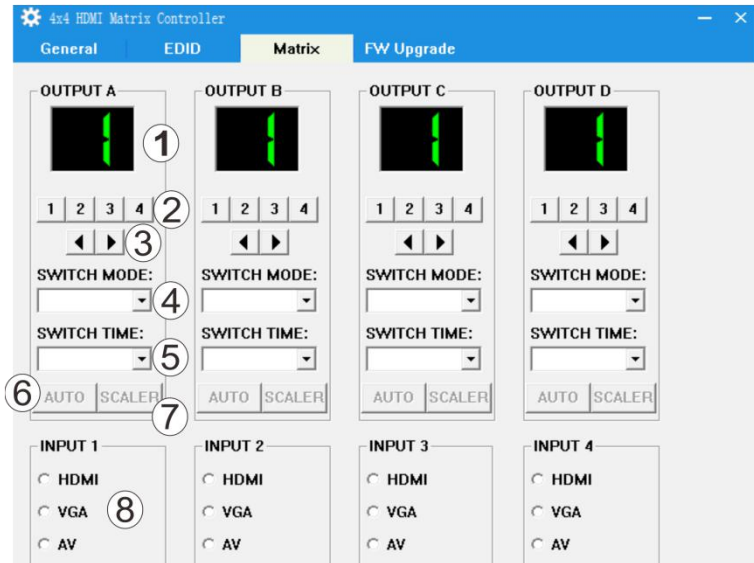
## “EDID control”



pag

1. Select the needed EDID to input port and click set button the EDID will write to the selected HDMI input ports.

### ◆ “Matrix” page

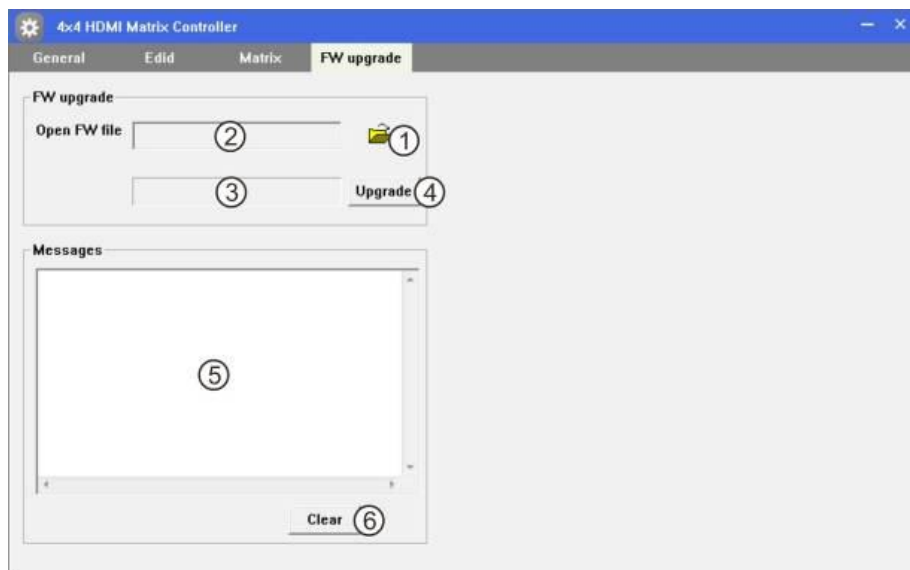


1. LED which display Input number for respective Output
2. Click to select Input port for respective Output port
3. Click to select previous or next Input port for respective Output port
4. Click to select the seamless switching output mode
5. Click to select the seamless switching time
6. Click to automatically adjust the output picture
7. Click to scaler the output picture
8. Click to select the input signal source

**Note: The signal source for the VGA input 6 can use.**

### ◆ “FW upgrade” page

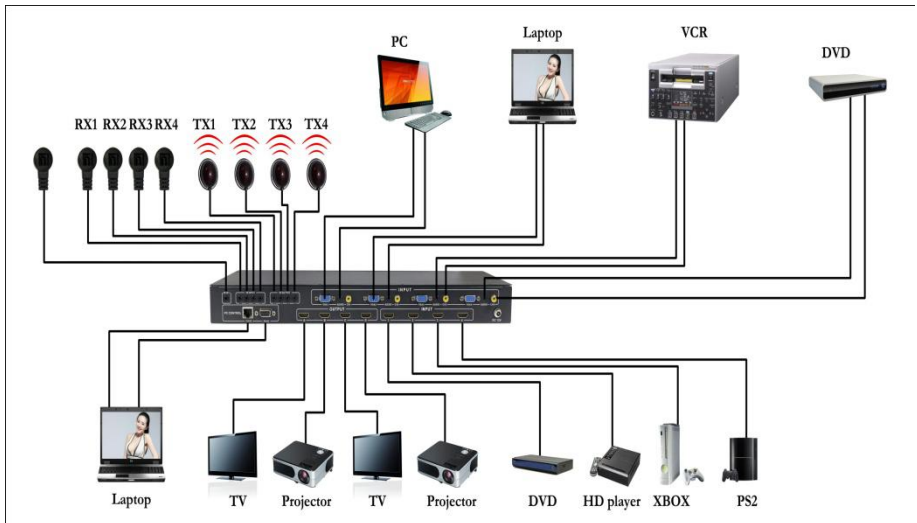




1. Click to open FW file(file extension is “.fw”)
2. Display the FW file path
3. Displaying the progress of the software upgrade
4. Click to upgrade the Matrix software
5. Display the message of the software upgrade
6. Clear the message of the software upgrade

**Note: The matrix after software upgrade required again to power supply.**

## 10. Connection and Installation



1. Connect up to 4 sources such as a Blu-Ray Player, game console, A/V Receiver, Cable or Satellite Receiver, etc. to the HDMI ,VGA or CV inputs on the unit. Insert and extract cables carefully with the power switch off. Connecting and disconnecting while the unit is powered can result in damage to circuitry.
2. Connect up to four HD displays using the output ports(A-D) on the matrix.
3. OPTIONAL:Connect the IR receiving extender to the IR EXT port on the matrix.
4. OPTIONAL:Connect an Ethernet cable from the TCP/IP port on the matrix to a local Area Network.
5. OPTIONAL:Connect an RS-232 cable from the RS232 port on the matrix.
6. OPTIONAL:Connect the IR receiving extender to the IR INPUT port and the IR emission extender to the IR output port on the matrix.
7. Connect the DC 12V Locking power supply to the power receptacle on the matrix.
8. Connect the power supply to an available electrical outlet.