



Comprehensive[®]
Cable and Connectivity Company

HDMI 4x4 True Matrix Switcher/Extender over single Cat5e/6 with EDID



Operation Manual CSW-HD440NEXT

1. Introduction

The Comprehensive CSW-HD440NEXT with simultaneous CAT5e/6/7 and HDMI outputs connects four HDMI sources to eight displays. This matrix features four HDMI outputs and each HDMI output is mirrored to provide a CAT-Cable output which runs simultaneously. It supports the transmission of video (resolutions up to 1080p Full HD) and supports high resolution digital audio formats such as LPCM 7.1CH, Dolby TrueHD, Dolby Digital Plus and DTS-HD Master Audio. Connect an IR Receiver to each of the CAT-Cable outputs to extend the HDMI signal up to 164ft for multi-room connectivity. It works with Blu-Ray players, Set-Top boxes, Home Theater PCs, and game consoles that connect to an HDMI display. Any source is accessible at all times by any display by selecting it via the supplied IR Remote Control, RS-232, TCP/IP or by using the selection buttons on the front panel. This device supports High Definition Audio, and 3D signal compatibility.

2. Features

- HDMI 1.3, HDCP 1.1 and DVI 1.0 compliant
- Supports HDMI 3D pass-through
- Supports resolutions from VGA~WUXGA and HD resolutions from 480i~1080p dependent upon the EDID settings
- Supports transmission distances up to 164ft through CAT5e/6/7 cable
- Supports simultaneous HDMI and CAT outputs
- Supports wideband IR(30-60Khz) matrix system, IR transport channel can be forward or backward
- Supports RS-232, remote control, on-panel control and TCP/IP Control
- Supports smart EDID management
- Supports LPCM 7.1CH, Dolby TrueHD, Dolby Digital Plus and DTS-HD Master Audio transmission

3. Package Contents

- 4x4 HDMI Matrix 1pcs
- HDMI CAT Receiver 4pcs
- 12V/5A DC power adaptor 2pcs
- Operation Manual 1pcs
- Wideband IR Tx cable 4pcs
- Wideband IR Rx cable 5pcs
- HDMI Matrix IR Remote 1pcs
- Mounting ears 2pcs
- RS232 cable 1pcs

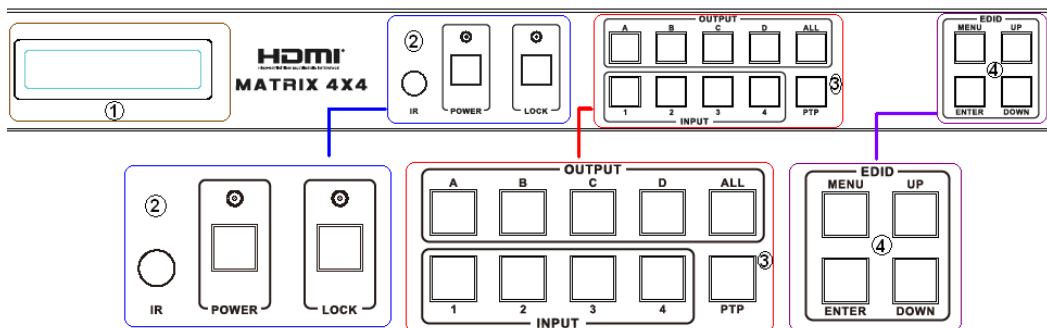
4. Specifications

Video Bandwidth	165 MHz
Support Video Resolution	480i,576i,480p,576p,720p,1080i, 1080p24/30/50/60.;
Input Ports	4×HDMI, 5×IR Receiver, 1×RS-232, 1xRJ-45(Control),4x RS232
Output Ports	4×CAT5e/6/7, 4×IR Blaster, 4×HDMI
HDMI connector	Type A 19 pin female
RJ-45 connector	WE/SS 8P8C
3.5mm connector	(TX and RX) IR Receiver/IR Blaster
ESD Protection	Human-body Model: ± 8kV (Air-gap discharge) ± 4kV (Contact discharge)
Power Supply	12 V/5 A DC (US/EU standards, CE/FCC/UL certified)
Dimensions	17.32” (W)× 7.87” (D)× 1.77” (H)
Weight	4.01 lbs
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	30 W(max)/0.5w(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.

Press PTP button, The OUTPUT A,B,C,D will corresponding INPUT 1,2,3,4.

Part 4. **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	1080i, DOLBY/DTS 5.1
3	1080i, HD AUDIO
4	1080p, 2CH AUDIO
5	1080p, DOLBY/DTS 5.1
6	1080p, HD AUDIO
7	3D,1080p, 2CH AUDIO
8	3D, 1080p,DOLBY/DTS 5.1
9	3D,1080p, HD AUDIO
10	4k*2k, 2CH AUDIO
11	4k*2k, DOLBY/DTS 5.1
12	4k*2k, HD AUDIO
13	DVI 1024x768
14	DVI 1920X1080
15	DVI 1920X1200
16	Copy from HDMI OUTPUT1
17	Copy from HDMI OUTPUT2
18	Copy from HDMI OUTPUT3
19	Copy from HDMI OUTPUT4

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.

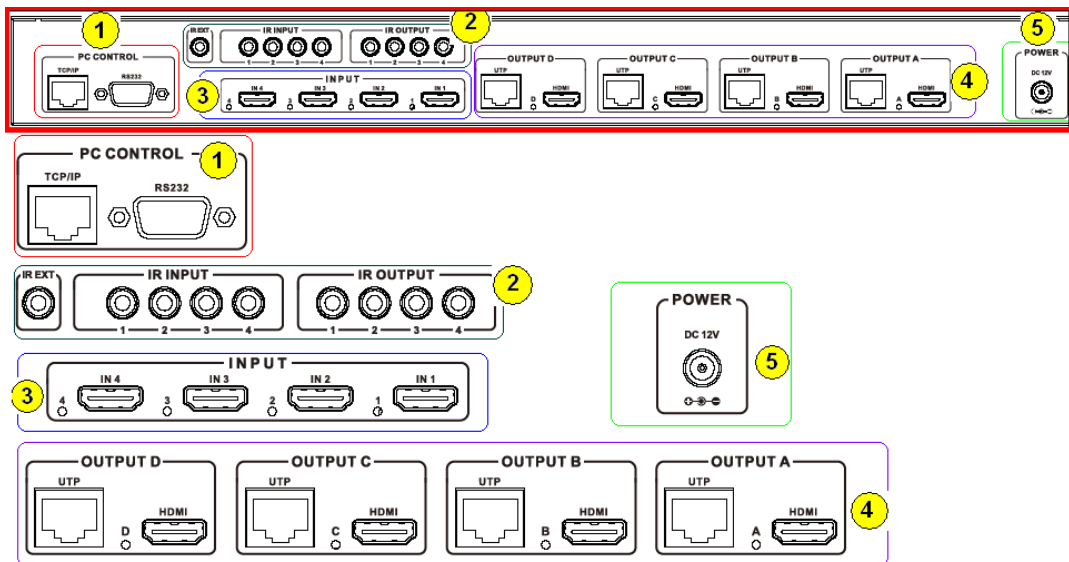
Why is EDID so important with the HDMI Matrix ?

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



Part 1: 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.

Part2: 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.

Part3: HDMI INPUT

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

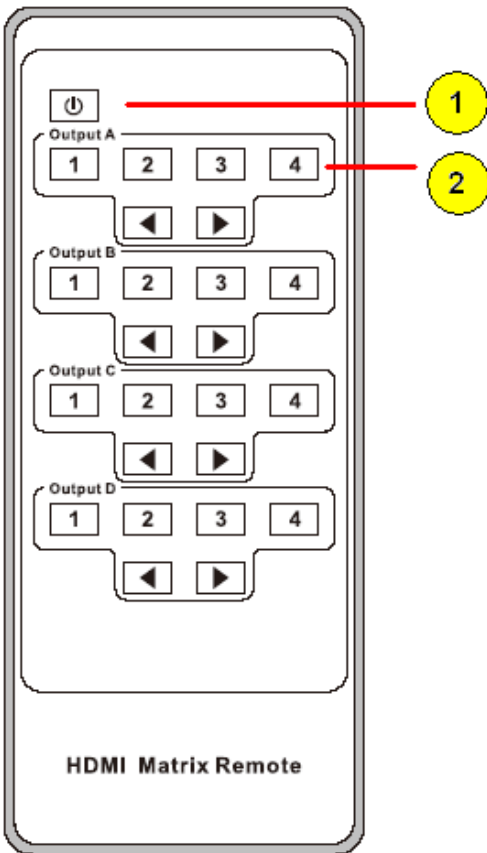
Part4: HDMI and CAT OUTPUT

The HDMI OUTPUT connect to HDMI equipped TVs or monitors and the CAT OUTPUT connect to the CAT Receiver.

Part5: DC POWER IN

Plug the 12V/2.5A DC power supply into the unit and connect the adaptor to an AC outlet.

6. Remote Control

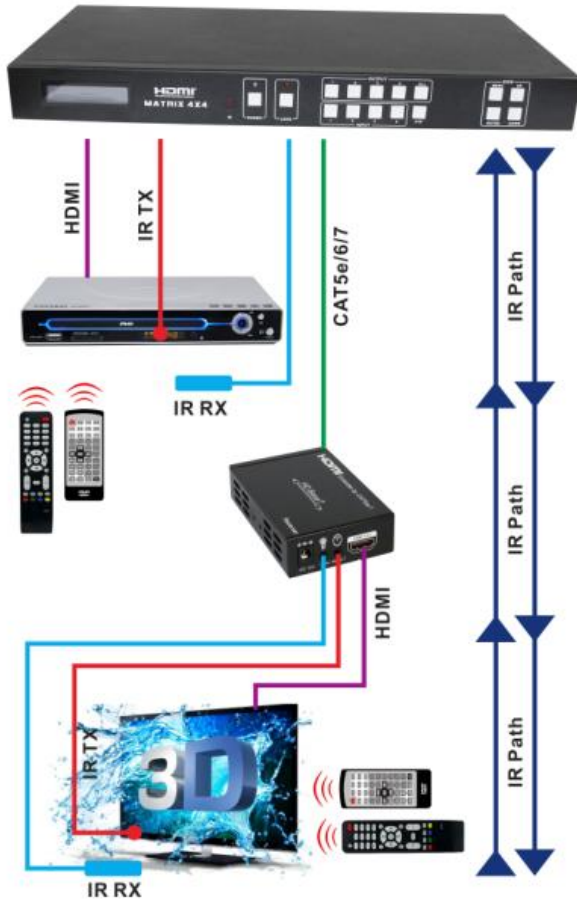


1. Press this button to power on the matrix or set it to standby mode.

2. Press these buttons to select output A,B,C,D for input 1,2,3,4 port.

7. Super IR Control

system (IR Call-back of Matrix and Source Devices)



The matrix is not only a switcher and extender of multiple HDMI signals to multiple HDMI receivers located remotely, it also passes IR control signals through the IR call-back system to the matrix and HDMI sources for full, independent control of all connected inputs from output locations.

Two-way IR Call-back Between matrix, Sources and Displays from Multiple Locations

A key feature on the matrix is discrete IR control of the matrix, sources and displays from any location – so inputs at the matrix end can be controlled at a display location and displays can be controlled at the matrix

location. This is accomplished by placing a series of IR Emitters on devices to control and IR Receivers at all locations you wish to control from to enable the IR signal to travel both ways via the single Cat5e/6/7 cable.



01. 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.



Gnd
Vcc
IR Signal

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.

02. At display end: Insert the IR RX Receiver jack into the IR RX port of the display receiver balun, with the receivers themselves placed in clear view on or

near the displays to receive an infrared signal from the remote handset used to control inputs. Insert the IR TX Emitter jack into the IR TX port of the display receiver balun, ensuring that the emitter sensor is securely attached to infrared sensor window of the display. Follow the same connection and positioning for all baluns/displays connected to the matrix. If all IR TX Emitters and IR RX Receivers are positioned and connected correctly with sources, displays and display receivers fully powered and the matrix set to IR call-back enabled and IR TX Swiich mode activated, two-way IR will now be possible.

Note: Misplaced or poorly secured IR Emitters and Receivers may result in intermittent IR control signals passed to and from the matrix. Check your placement and adjust if necessary.

ADVANCED OPERATION

Typically, unless alternative methods of controlling the matrix are chosen or problems with device communication through the matrix encountered, basic operation is all that is required to operate your matrix. However, the following information on advanced operation will detail how the matrix system can be configured and for advanced control and settings can be altered or data manually input should such problems arise, as well as configuring the system for third party control.

8. HDMI CAT Receiver





1. **HDMI OUT:** This slot is where you connect the HDTV or monitor with HDMI cable for input source display.
2. **POWER LED:** This blue LED illuminate when the device is connected with power supply.
3. **LOCK LED:** This blue LED illuminate when the signal locked.
4. **Coaxial OUT:** This slot is where you connect to the amplifier with coaxial cable.
5. **ARC SW:** Switch this sw to open or close the ARC fuction.
6. **DC 5V:** Plug the 5V DC power supply into the unit and connect the adaptor to AC wall outlet.
7. **IR RX:** This 3.5mm phone for super IR control system IR receiver .
8. **IR TX:** This 3.5mm phone for super IR control system IR Emitter.
9. **CAT5E/6:** This CAT5E/6 port connect to HDMI Matrix CAT OUTPUT with CAT5e/6/7 cable.

9. PC controller user guide

Installation

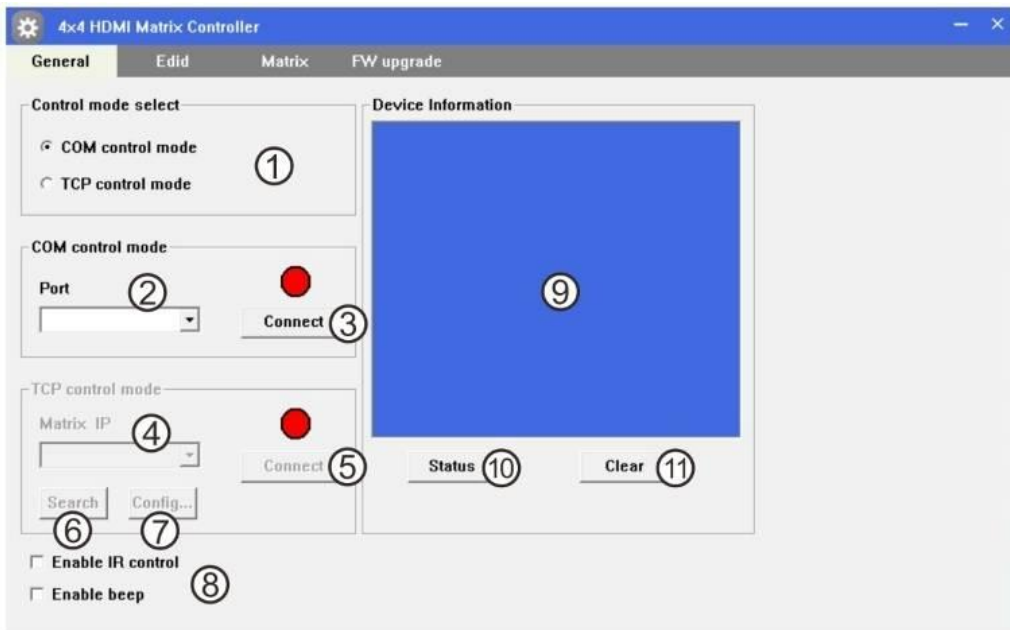
Matrix controller is a green software. Just copy MatrixController.exe to PC which is used to control the Matrix by RS232 COM port or TCP/IP to complete installation.

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 MatirxController.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 Connet to Matrix IP
- ⑥ Search Matrix IP
- ⑦ Configure Matrix IP and MAC
- ⑧ Enable or disable IR /beep
- ⑨ Device information display area
- ⑩ Click to refresh device status: include device information displayed in ⑨ area and Input/Output Settings on “Matrix” page

➤ Configure TCP

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

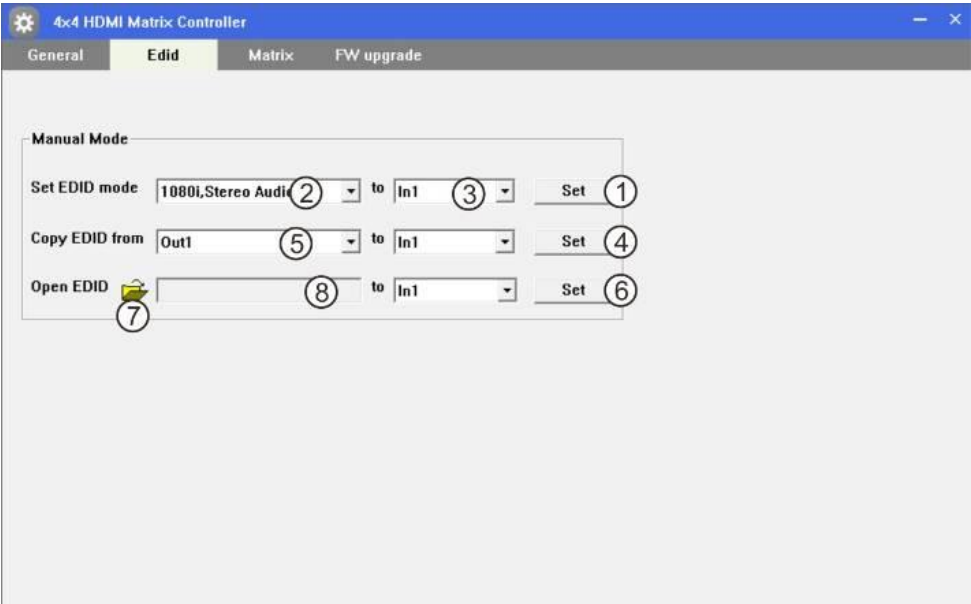
The screenshot shows a 'TCP configuration' dialog box. It features a blue title bar with a close button. The main content area is titled 'Device information' and contains two radio buttons: 'Auto IP' (selected) and 'Static IP'. A circled '1' is next to the 'Auto IP' button. Below this is the 'IP address' section with four input fields containing '192', '168', '8', and '118'. A circled '2' is next to the first field. Below that is the 'MAC' section with six input fields containing '00', '00', '15', '80', '6A', and '90'. A circled '3' is next to the first field. At the bottom are 'OK' and 'Cancel' buttons.

① Select auto or static IP

② Rewrite the Matrix IP

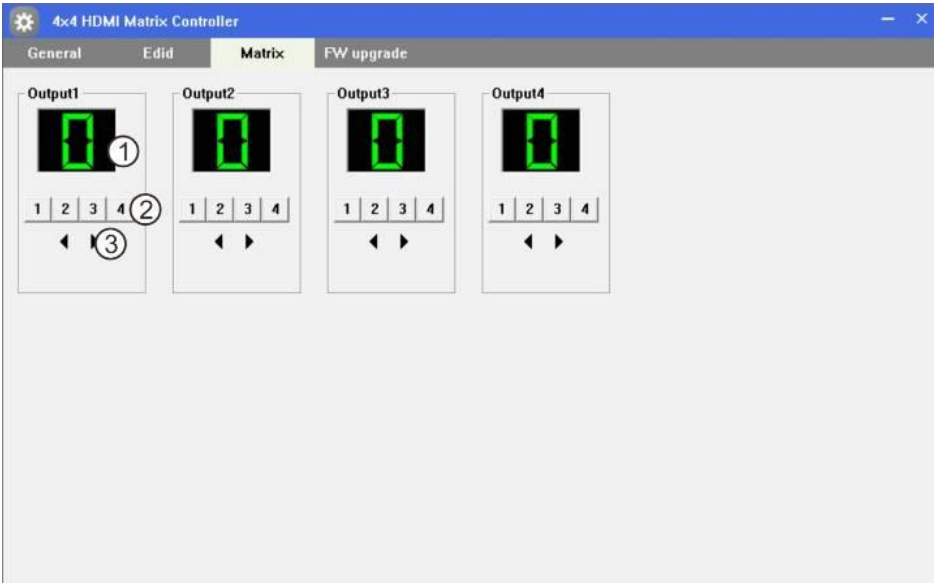
③ Rewrite the Matrix MAC

◆ “EDID control” page



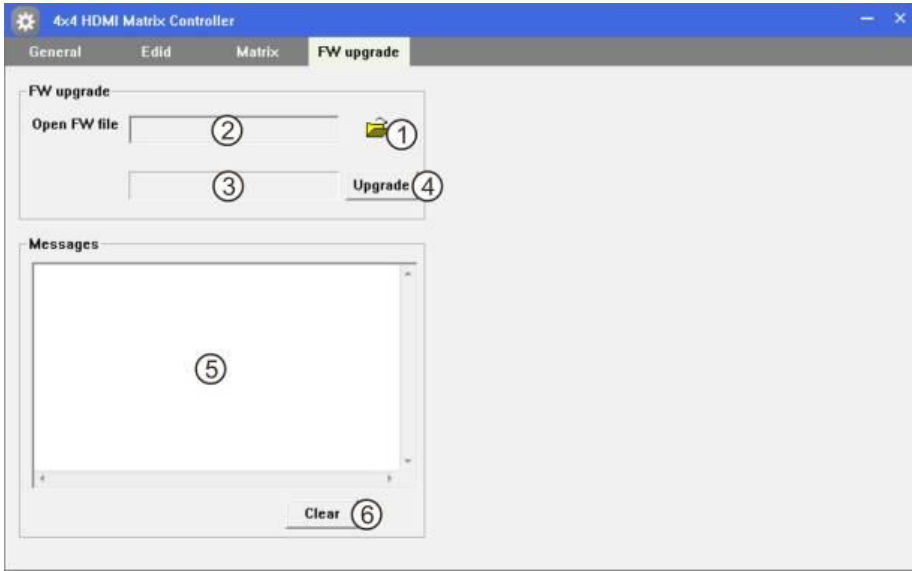
- ① Set EDID mode for selected Input port or All Input ports, click “Set” button to complete action
- ② Select EDID
- ③ Select Input port
- ④ Copy EDID from Output port to selected Input port or All Input ports, click “Set” button to complete action.
- ⑤ Select Output port
- ⑥ Download EDID content to selected Input port or All Input ports, click “Download” button to complete action.
- ⑦ Open EDID binary file
- ⑧ Display EDID binary file path

◆ “Matrix” page



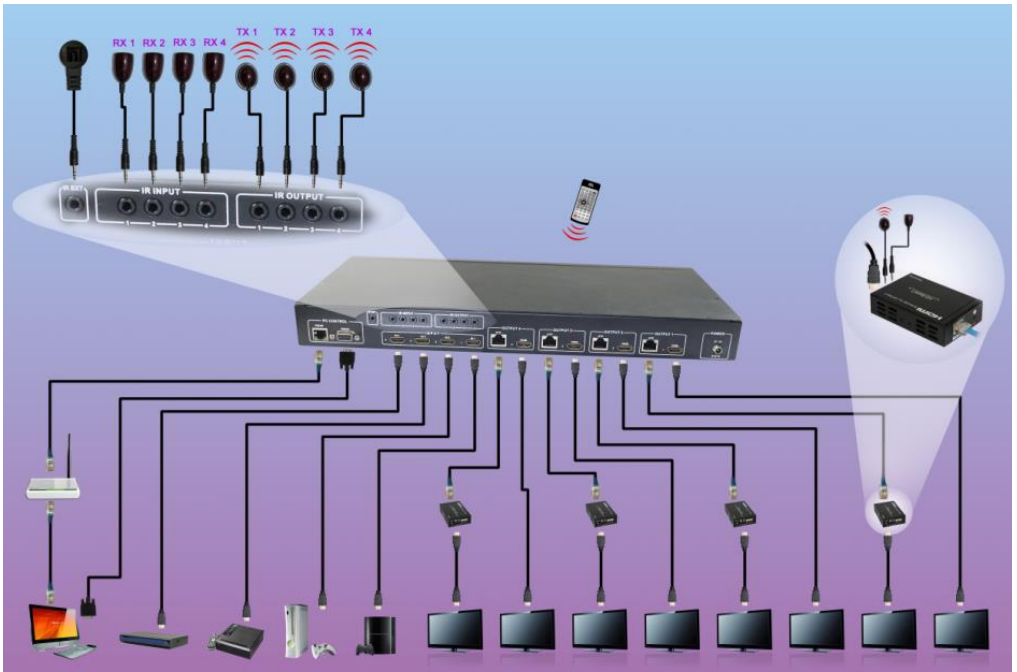
- ① LED which display Input number for respective Output
- ② Click to select Input port for respective Output port
- ③ Click to select previous or next Input port for respective Output port

◆ “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

10. Operate and Connect



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 inputs on the unit. Do not hotplug! Insert and extract cables carefully with the power SWITCHED OFF. Connecting and disconnecting while the unit is powered can result in damage to circuitry.
2. Connect the output UTP ports and/or HDMI output ports, starting with output 1, to the E50IR Receiver display receivers (sold separately) (using well terminated or pre-terminated Cat5e/6 cables no longer than 160 ft)
3. If utilizing UTP, connect the output HDMI ports of the E50IR Receiver display receivers (sold separately) to high-definition displays such as an HDTV

or HD projector that use HDMI inputs. Note that high-speed HDMI cables are recommended for the distances that are required for each connection.

4. Plug in IR transmitters to the back of the Matrix Selector Switcher unit (IR TX), the transmitters are labeled IR TX, place in front of the IR receiver of the source, ensure that each emitter is placed in front of the IR receiver eye. Double-sided adhesive tape provided.
5. Plug in IR receivers to the port of the E50IR Receiver display receivers (sold separately) ,the receivers are labeled IR RX, use provided double-sided adhesive tape to stick emitters at each display at a desired place that will receive a remote signal.
6. For power, plug in the source first, followed by the Matrix Selector Switcher (power supply included), followed by the display receivers, followed by each output connected.
7. Power on each device in the same sequence.

At this point each display connected should display the assigned source (input 1 at default when powered on initially), scroll through each of the sources on each display to ensure everything is in working order. Use included IR remote at each display receiver to test switching function between sources and IR function itself. If a display is having difficulty receiving a signal, access the display's menu and adjust the resolution (lowest to highest until signal is displayed). A 24 Hz vertical refresh rate may work better than 60 Hz or higher. If the IR remote function is not responding, check the emitters to ensure they are placed correctly and are plugged into the correct IR jacks on the Matrix Selector Switcher unit.

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