geratech®

EGE-UHD-444

4x4 4K UHD HDMI Matrix

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SAFETY PRECAUTIONS

Please read all instructions before attempting to unpack, install or operate this equipment and before connecting the power supply.

Please keep the following in mind as you unpack and install this equipment:

• Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.

• To prevent fire or shock hazard, do not expose the unit to rain, moisture or nstall this product near water.

• Never spill liquid of any kind on or into this product.

• Never push an object of any kind into this product through any openings or empty slots in the unit, as you may damage parts inside the unit.

• Do not attach the power supply cabling to building surfaces.

• Use only the supplied power supply unit (PSU). Do not use the PSU if it is damaged.

• Do not allow anything to rest on the power cabling or allow any weight to be placed upon it or any person walk on it.

• To protect the unit from overheating, do not block any vents or openings in the unit housing that provide ventilation and allow for sufficient space for air to circulate around the unit.

REVISION HISTORY

VERSION NO.	DATE DD/MM/YY	SUMMARY OF CHANGE
VR0	03/09/15	Preliminary Release
	19/09/16	update Function Descriptions

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1. INTRODUCTION

The 4 by 4 HDMI 4K UHD Matrix is capable of switching and routing an HDMI signal from any of its four sources to any of four connected HDMI displays, allowing any source to be shown independently on any display. It supports 3D, 'Deep Color' and high-definition lossless audio formats. Control of inputs and outputs can be easily operated through the on-panel buttons, IR remote control, RS-232 or Telnet/WebGUI control.

2. APPLICATIONS

• Showroom display control
• Educational demo
• Installation usage
• Advertising display

3. PACKAGE CONTENTS

• 1×4 by 4 HDMI 4K UHD Matrix
• 1×IR Extender
• 1×Remote Control (CR-33)
• 1×USB Type to Mini USB OTG Adaptor
• 1×5V/4A DC Power Adaptor
• 1×Power Cord
• 1×Operation Manual

4. SYSTEM REQUIREMENTS

HDMI source devices such as Blu-ray/DVD player, games consoles or set-top boxes and HDMI equipped output display (HDTV/monitor) and HDMI High Speed cables.

5. FEATURES

• HDMI (with 3D & 4K2K supported), HDCP and DVI compliant
• Supports up to 7.1 channels of high-definition audio (LPCM, Dolby TrueHD, Dolby Atmos and DTS-HD Master Audio)
• Supports HDTV resolutions up to 4K2K (3840×2160@24/25/30 Hz & 50/60 Hz with YUV420, 4096×2160@24 Hz & 50/60Hz with YUV420)
• Support Internal/External/Custom EDID management.
• Supports controls through on-panel buttons, IR remote control, RS-232, Telnet and WebGUI
• Input port HDCP support Standard and Apple mode. The Apple mode selection to guarantees the use of Apple devices

6. OPERATION CONTROLS AND FUNCTIONS

6.1 Front Panel
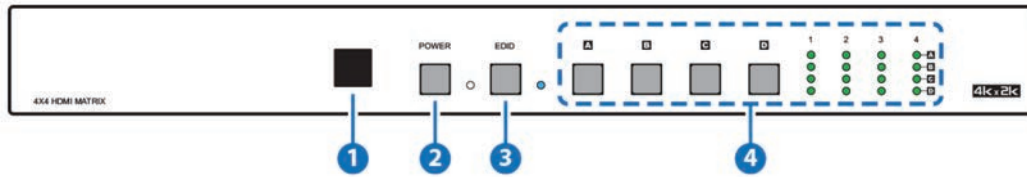
1 **IR Window:** Accepts the remote control signal of this matrix only.

2 **POWER Button and LED:** Press this button to power the matrix on/off. The LED will light up in green when the power is on and in red when put it into standby mode

3 **EDID Button and LED:** Press this button to select external or standard EDID. When the LED illuminate it represent the external EDID is selected. External EDID is base on output A to inputs 1 and output B to input 2 and so on... For example, when all outputs select input 1, the source will based on output A's highest EDID and send out the signal correspsively. Under this same scenario, if only output A supports 4K2K then other outputs will have no image. Select standard EDID which supports 720p/2CH to allows all outputs with image display.

4 **OUTPUT A~D Buttons and LEDs:** Press the 'A', 'B', 'C' or 'D' button to select the source (1~4) for that output, the corresponding LED will light to indicate the selected source.

6.2 Rear Panel
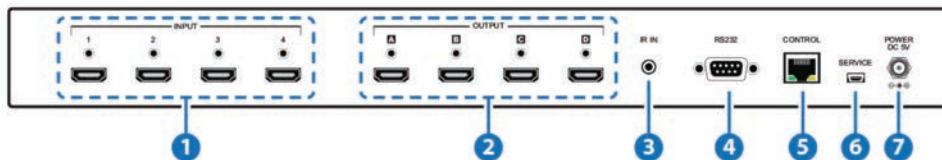
1 **INPUT 1~4:** Connect to HDMI equipped source devices such as DVD/Blu-ray players, set-top boxes or games consoles.

2 **OUTPUT A~D:** Connect to an HDMI TVs/displays or monitors for display of the selected source signal.

3 **IR IN:** Connect the supplied IR extender for IR signal reception from the remote control included in the package. Ensure that the remote is within the direct line-of-sight of the IR Extender.

4 **RS-232:** Connect to a PC/laptop or RS-232 control system with a D-sub 9-pin male cable to control the unit with RS-232 commands (see Section 6.6).

5 **CONTROL:** Connect to an active Ethernet link with an RJ45 terminated cable to control the unit with WebGUI.

6 **SERVICE:** This slot is for firmware update use only. Power on the unit and connected to PC/Laptop, use Telnet/RS232 command to type "update mcu", then connect the USB flash driver which content firmware file in Root directory. then the power LED will be blinking which represent the update is being processed. Once the update is done the device will be reboot automatically.

7 **DC 5V:** Connect the 5V DC power supply to the unit and plug the adaptor into an AC outlet.

6.3 Remote Control

1 **POWER:** Press this button to switch the unit ON or to put it into standby mode.

2 **OUTPUT A and 1~4:** Press buttons 1~4 to select the required source for Output A.

3 **OUTPUT B and 1~4:** Press buttons 1~4 to select the required source for Output B.

4 **OUTPUT C and 1~4:** Press buttons 1~4 to select the required source for Output C.

5 **OUTPUT D and 1~4:** Press buttons 1~4 to select the required source for Output D.
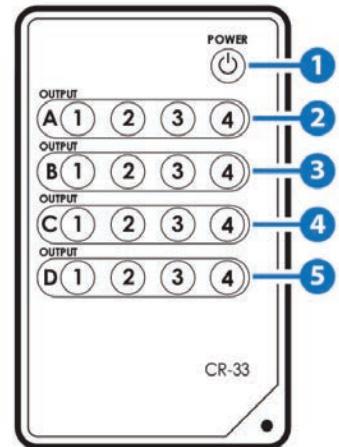
6.4 IR Cable Pin Assignment

1 IR Signal
2 Power
3 Grounding
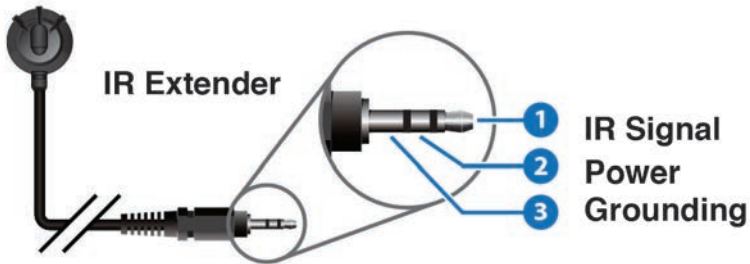
6.5 RS-232 Protocol

MATRIX	
Pin	Assignment
1	NC
2	TX
3	RX
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

MATRIX	
Pin	Assignment
1	NC
2	TX
3	RX
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

Baud Rate: 115200bps

Data bit: 8 bits

Parity: None

Flow Control: None

Stop Bit: 1

6.6 RS-232 and Telnet Commands

COMMAND	DESCRIPTION	PARAMETER
P0	Power off	NONE
P1	Power on	NONE
IPCONFIG	Display the current IP configuration	NONE
SIPADDR XXX. XXX. XXX.XXX	Set Ethernet IP address	XXX=0~255
SNETMASK XXX.	Set Ethernet netmask	XXX=0~255
SGATEWAY XXX.	Set Ethernet gateway	XXX=0~255
HTTPPORT N	Set Ethernet port	N=0~65535
TELNETPORT N	Set Telnet Port Number	N=0~65535
IPMODE N	Set IP mode	N=0 (STATIC)/1 (DHCP)
VA N	Set output A video source	N=1-4
VB N	Set output B video source	N=1-4
VC N	Set output C video source	N=1-4
VD N	Set output D video source	N=1-4
VI N	Set all outputs video source	N=1-4
VABCD N	Set each output video	N=1111~4444
EDIDMODE	Show EDID mode type	
EDIDMODE N	Set EDID mode type	N=1 (STD)/0 (EXT)
EDIDALL	Show EDID All content	
EDIDALL N	Set EDID ALL content	N=0~15 0:8/2D/2CH/720p, 1:8/2D/MCH/720p, 2:8/2D/2CH/1080p, 3:8/2D/ MCH/1080p, 4:8/2D/2CH/4K3G, 5:8/2D/ MCH/4K3G, 6:8/2D/2CH/ Y420, 7:8/2D/MCH/ Y420, 8~11:CUSTOM 1~4 12~15:OUTPUT A~D
EDIDIN N1	Show EDID Appoint content	N1=1~4
EDIDIN N1 N2	Set EDID Appoint content	N1=1~4 N2=0~15 0:8/2D/2CH/720p, 1:8/2D/MCH/720p, 2:8/2D/2CH/1080p, 3:8/2D/ MCH/1080p, 4:8/2D/2CH/4K3G, 5:8/2D/ MCH/4K3G, 6:8/2D/2CH/ Y420, 7:8/2D/MCH/ Y420, 8~11:CUSTOM 1~4 12~15:OUTPUT A~D
HDCPIN N1	Show input N1 HDCP	N1=1~4

HDCPIN N1 N2	Set input N1 HDCP on/off	N1=1~4, N2=0 (OFF)/1 (ON)
SOURCEDET	Show all input signal	NONE
SOURCEDET N1	Show input n1 signal	N1=1~4
SINKINFO	Show all output information	NONE
SINKINFO N1	Show output N1 information	N1=A~B
INNAME	Show all input name	NONE
INNAME N1	Show input N1 name	N1=1~4
INNAME N1 N2	Set input N1 name	N1=1~4, N2=ABCDEFGH(Max 8 characters)
OUTNAME	Show all output name	NONE
OUTNAME N1	Show output N1 name	N1=A~B
OUTNAME N1 N2	Set output N1 name	N1=A~B, N2=ABCDEFGH(Max 8 characters)
CUSTOMNAME N1	Show Custom name	N1=1~4
CUSTOMNAME N1 N2		N1=1~4 N2= ABCDEFGH(Max 8 characters)
VER	Display Firmware Version	NONE
STATUS MAT	Show Matrix status	NONE
REBOOT	System reboot	NONE
FADEFAULT	Set All Configurations to FACTORY DEFAULT	NONE
HELP	Show command list	NONE
HELP N	Show descript of command	N=COMMAND NAME

Note: Any commands will not be executed unless followed by a carriage return. Commands are case-insensitive.

6.7 Software Application

Please download the software from www.geratech.com.tr with file name CDPS V2.000 and save it in a directory where you may use it later.
Note: The default IP setting is 192.168.1.50

Connect the Control System with PC/Laptop through the Ethernet port through an active network system and open the CDPS V2.000 application. Click on Find Devices on Network and a list of the devices connected to the Control System will show up.

```
                    ┌──────────────────────────┐
                    │  Find Devices on Network │
                    └──────────────────────────┘
┌──────────────┬─────────────┬────────────┬─────────────┐
│ Product Name │ Description │ IP Address │ MAC Address │
├──────────────┼─────────────┼────────────┼─────────────┤
│              │             │            │             │
└──────────────┴─────────────┴────────────┴─────────────┘
```

Then user may use the IP Address to find the control device through Telnet or WebGUI tools.

MAC Address	F8:22:85:00:04:65
IP Address	192.168.1.50
Subnet Mask	255.255.255.0
Gateway IP	192.168.1.254
DNS	0.0.0.0
IP Mode	Static
Web GUI Port	80
Telnet Port	23
S / N	SN:2236
Firmware Version	v1.06
Hardware Version	v1.06

6.8 Telnet Control

To access the Telnet control in Windows 7, click on the 'Start' menu and type "cmd" in the Search field then press enter. Under Windows XP go to the 'Start' menu and click on "Run", type "cmd" with then press enter.
Under Mac OS X, go to Go→Applications→Utilities→Terminal See below for reference.
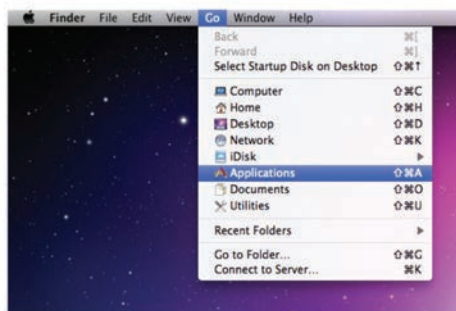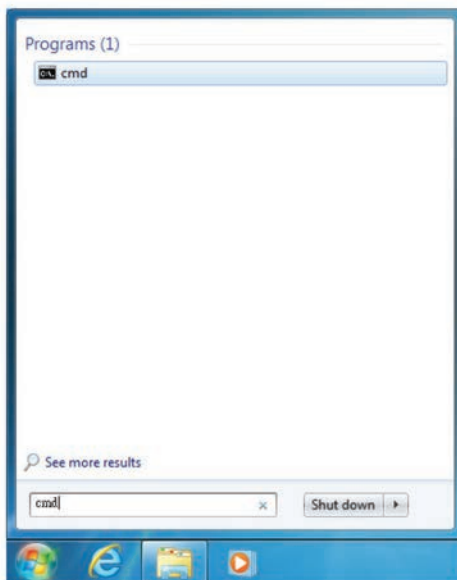
Once in the command line interface (CLI) type "telnet", then the IP address of the unit and "23", then hit enter.


```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation.  All rights reserved.

C:\Users\Administrator>telnet 192.168.5.80 23
```

This will bring us into the unit which we wish to control. Type "help" to list the available commands.

```
Welcome to TELNET.
?

Command List
--------------------
HELP
P0
P1
VABCD
VA
VB
VC
VD
VI
EDIDMODE
EDIDALL
EDIDIN
HDCPIN
SOURCEDET
SINKINFO
INNAME
OUTNAME
CUSTOMNAME
IPCONFIG
IPMODE
SIPADDR
SNETMASK
SGATEWAY
HTTPPORT
TELNETPORT
FADEFAULT
REBOOT
VER
STATUS
CYP
@MAC
Update
```

Note: *Commands will not be executed unless followed by a carriage return. Commands are case-insensitive. If the IP is changed then the IP Address required for Telnet access will also change accordingly.*

6.9 WebGUI Control

On a PC/Laptop that is connected to the same active network as the Matrix, open a web browser and type the Matrix's IP address on the web address entry bar (The IP Address can be obtained via RS-232 by using the 'help' command or use the default IP: 192.168.1.50). The browser will display the Matrix's Switch, EDID and System setting pages.


Switch Settings
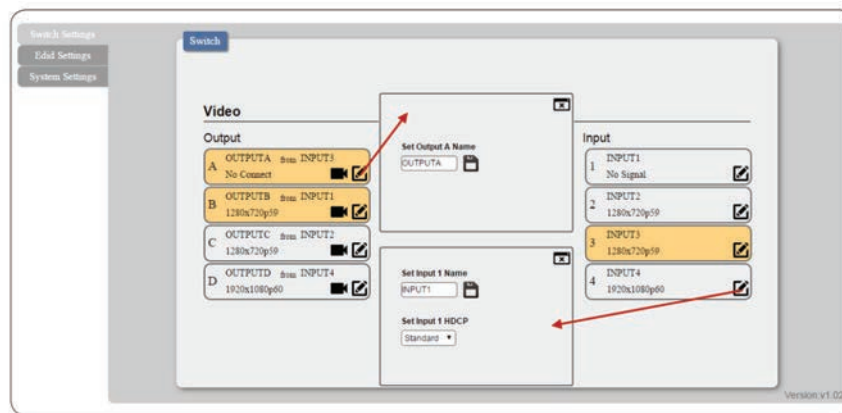
Click on OUTPUT A~D to select output display with INPUT 1~4 source selection, multi-outputs can select an input or an output with an input selection. Once the selection is made on both output and input successfully, the background color will return back to white/gray.

Click on ◼ to mute video output allowing only audio only on HDMI output. You may rename outputs and inputs devices by click on ✎ to bring out the rename window. Type in the new name under Set OUTPUT/ INPUT Name and click on ▤ to save it.
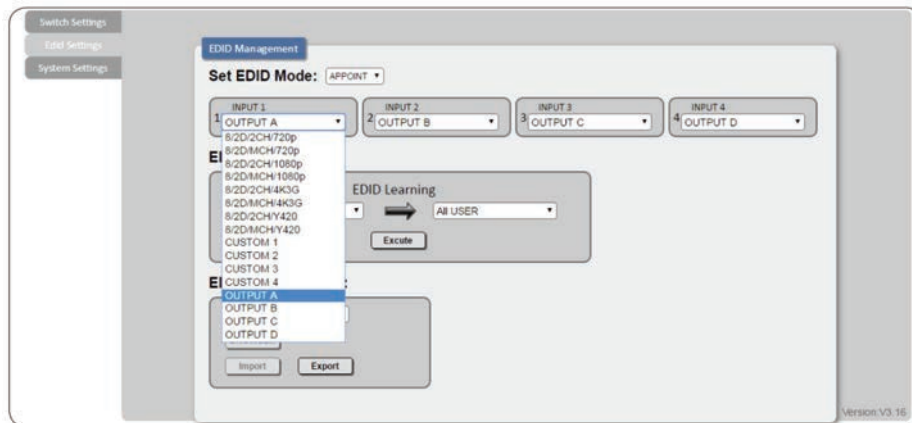
EDID Settings
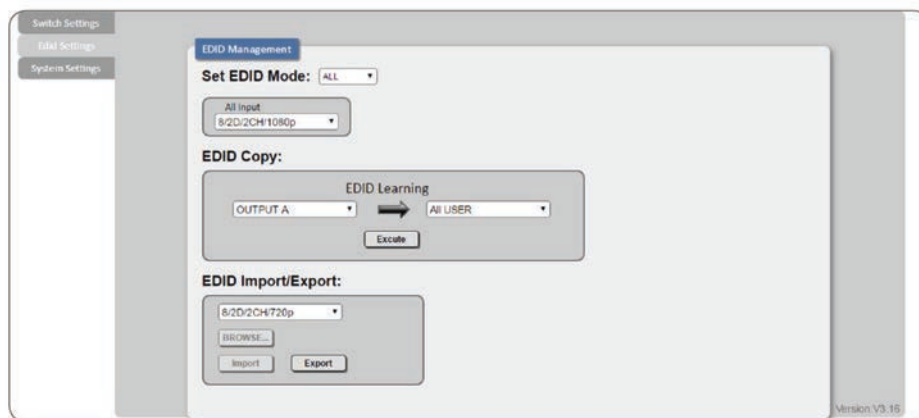
EDID setting could select EDID mode from the list, also it has four set of "USER", allows user to upload custom EDID bin file.
Set EDID Mode allows to set to "ALL" or "APPOINT", when selected to "ALL", you could select one set of EDID from dropdown menu to set to all input.
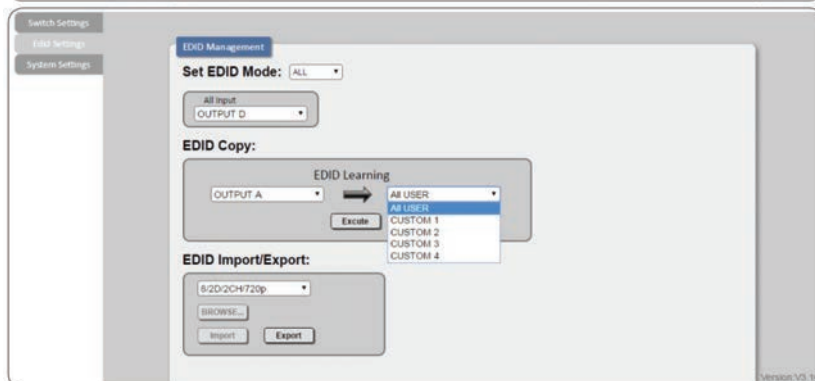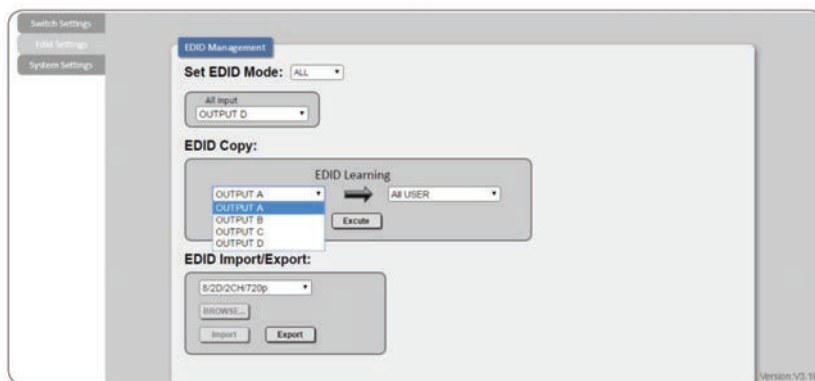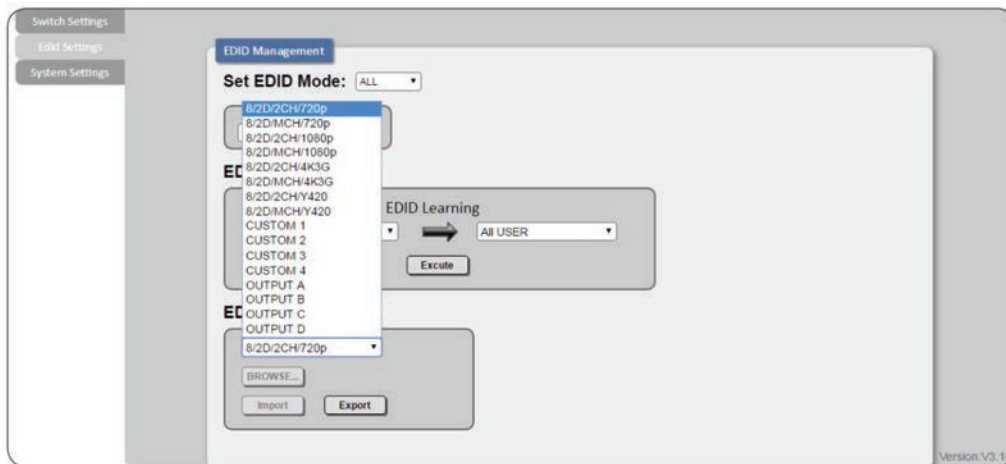
System Settings
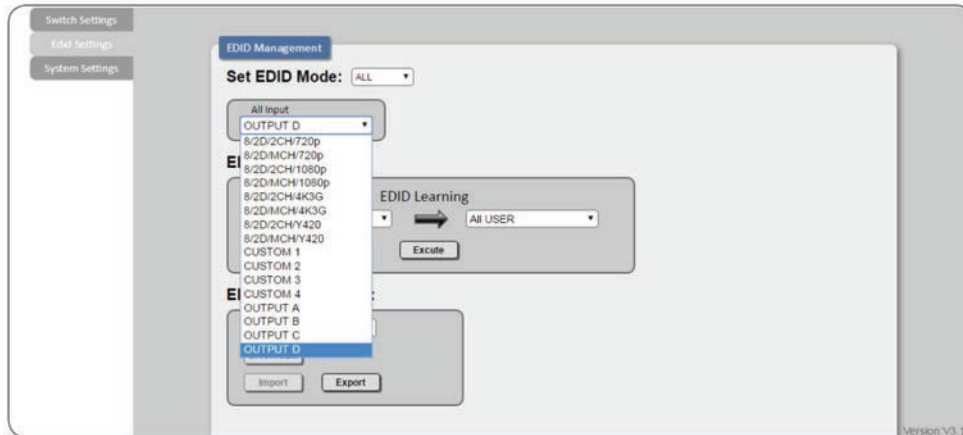
selected to "APPOINT", that allows you to select different EDID to each input.
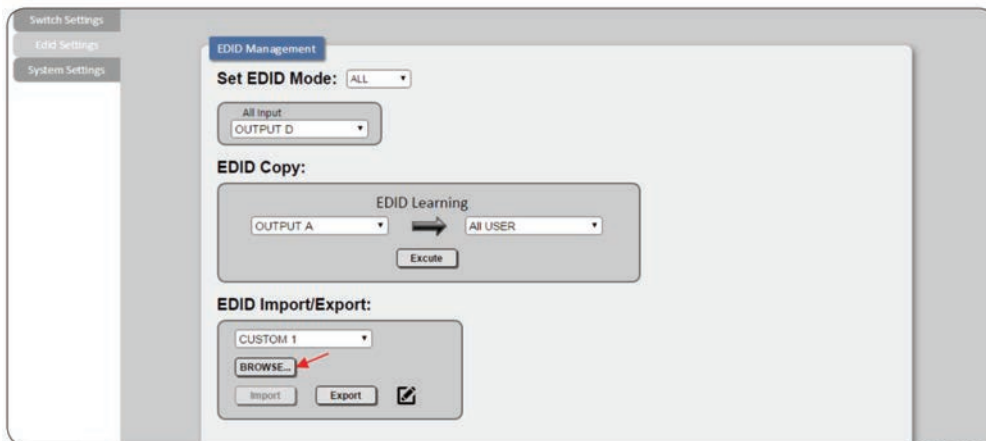

EDID copy allow user to execute single output EDID to assign position.

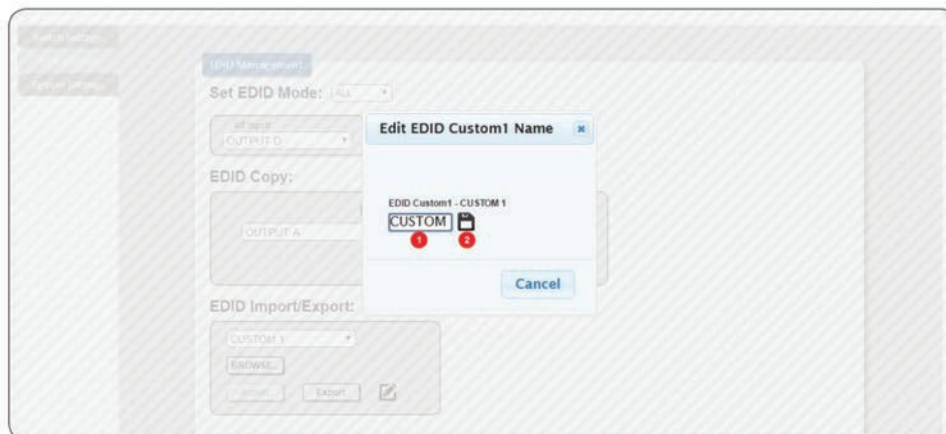EDID Import/Export could import or export EDID from Internal to custom EDID.

Four custom slots allow user to upload edit EDID, simply select to custom slot and click browse, it allows you to select EDID file from user's connected PC/Laptop.

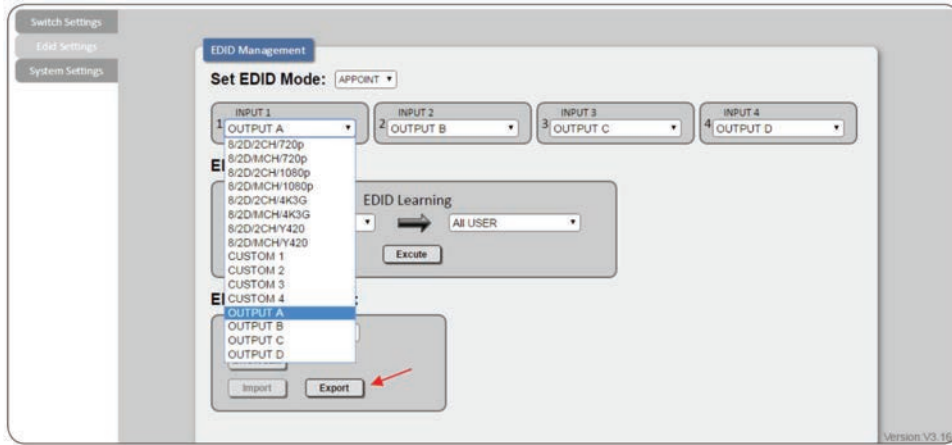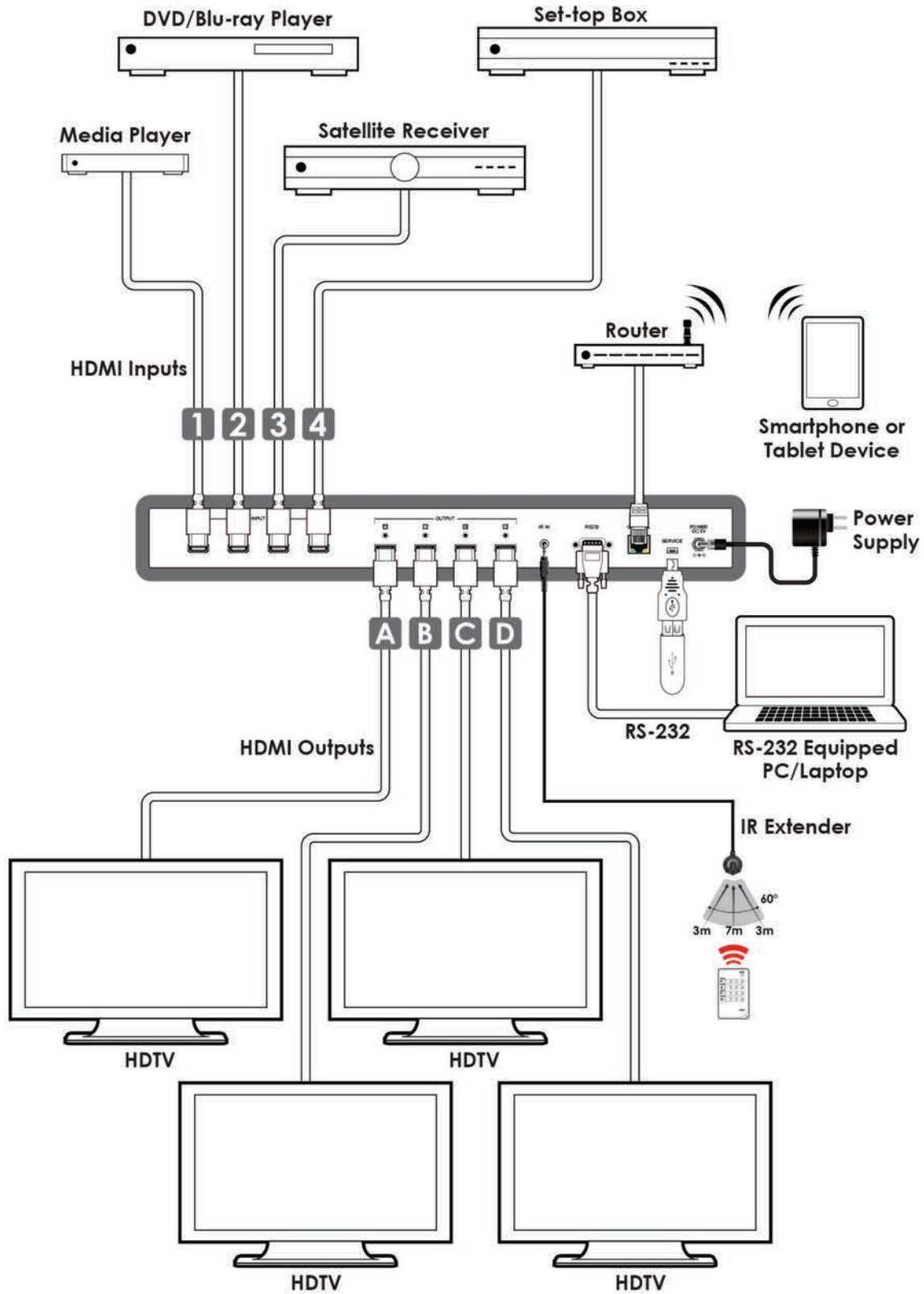Click ✐ will enter EDID naming window, where allow user to rename custom EDID.

Type the custom name on ● , then press ●to save.

Select an EDID from dropdown menu then click Export to download EDID to your connected PC/Laptop.

7. CONNECTION DIAGRAM

8. SPECIFICATIONS

8.1 Technical Specifications

Video Bandwidth	300 MHz/9 Gbps
Input Ports	4×HDMI, 1×IR (3.5 mm),1×RS-232 (9-pin D-sub), 1×Control (RJ-45), 1×USB (Service only)
Output Ports	4×HDMI
Video Resolutions	480i~1080p@24/50/60, 4K@24/25/30, 4K@50/60 (YUV420) & VGA~WUXGA
HDMI Cable Length	10m@8-bit, 10 m@12-bit, 5 m@4K2K
Power Supply	5V/4A DC (US/EU standards, CE/FCC/UL certified)
ESD Protection	Human body model: ±8kV (air-gap discharge) ±4kV (contact discharge)
Dimensions	114 mm (W)×65 436 mm (W)×160 mm (D)×44 mm (H)/ Jack Excluded 436 mm (W)×167 mm (D)×48 mm (H)/ Jack Included (D)×26 mm (H)
Weight	1945 g
Chassis Material	Metal
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	12.87 W

8.2 Supported Resolutions

Resolution	Input	Output
640×480@60/72/75	√	√
720×480@60	√	√
720×576p@50	√	√
800×600@60/72/75	√	√
1024×768@60/70/75	√	√
1280×720@50/60	√	√
1280×720p@60	√	√
1280×1024@60	√	√
1366×768@60	√	√
1600×1200@60	√	√
1920×1080i@50/60	√	√
1920×1080p@24/25/30/50/60	√	√
1920×1200@60 (RB)	√	√
3840×2160@24/25/30	√	√
4096×2160@24/25/30	√	√
4096×2160@50/60(YUV420)	√	√

9. ACRONYMS

ACRONYM	COMPLETE TERM
CLI	Command Line Interface
DTS	Digital Theater System
DVI	Digital Visual Interface
EDID	Extended Display Identification Data
GUI	Graphical User Interface
HDCP	High-bandwidth Digital Content Protection
HDMI	High-Definition Multimedia Interface
HDTV	High-Definition Television
IP	Internet Protocol
IR	Infrared
LCM	Liquid Crystal Module
USB	Universal Serial Bus
VGA	Video Graphics Array
WUXGA (RB)	Widescreen Ultra Extended Graphics Array (Reduce Blanking)