



CPLUS-VHHI

4K UHD+ HDMI to HDMI Enhancer
with EDID Management



Operation Manual

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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 install 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
RDV1	16/03/17	Preliminary release



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1. INTRODUCTION

This 4K UHD HDMI to HDMI Enhancer with EDID Management is designed to enhance and stabilize high-bandwidth HDMI signals for cleaner transmission while also providing the utility of customized EDIDs. The built in EDID management support allows the user to easily switch between three distinct EDIDs (Internal, External, and User). With the use of the optional PC software it is possible to create, edit, upload or download the customized User EDID. The unit's included hot key and simple LED design allows the user to quickly switch between different configurations while viewing EDID status information.

2. APPLICATIONS

- HDMI signal extension
- EDID management

3. PACKAGE CONTENTS

- 1×HDMI to HDMI Enhancer
- 1×5V/2.6A DC Power Adaptor
- 1×Operation Manual

4. SYSTEM REQUIREMENTS

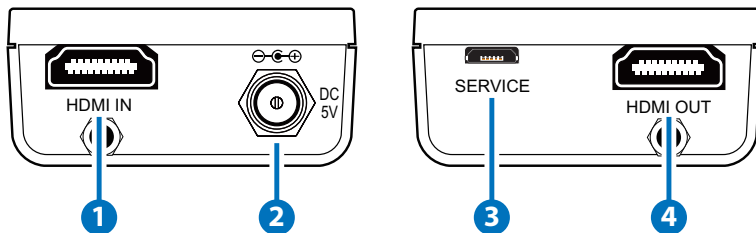
- HDMI source equipment such as media players, video game consoles or set-top boxes.
- HDMI receiving equipment such as HDTVs, monitors or audio amplifiers.
- The use of "Premium High Speed HDMI" cables is highly recommended.

5. FEATURES

- HDMI input and output with 18Gbps (600MHz) 4K UHD support
- DVI 1.0 compliant with the use of an HDMI-DVI adaptor
- HDCP 1.4 and 2.2 compliant
- Supports HD resolutions up to 3840×2160@60 Hz (4:4:4, 8-bit) & 4096×2160@60 Hz (4:4:4, 8-bit)
- Supports 48-bit Deep Color up to 1080p@60Hz and 36-bit Deep Color up to 4k@60Hz (YUV 4:2:0)
- Supports pass-through of LPCM 7.1, bitstream and HD bitstream audio formats
- EDID selectable between internal, external and user's custom EDID
- PC based EDID management tool support via the Micro-USB port.
- LED display providing an easy view of the current EDID and unit status

6. OPERATION CONTROLS AND FUNCTIONS

6.1 Front and Rear Panels



- 1 HDMI IN:** Connect to HDMI source equipment such as a media player, game console or set-top box. DVI sources are supported with the use of an HDMI to DVI adaptor.

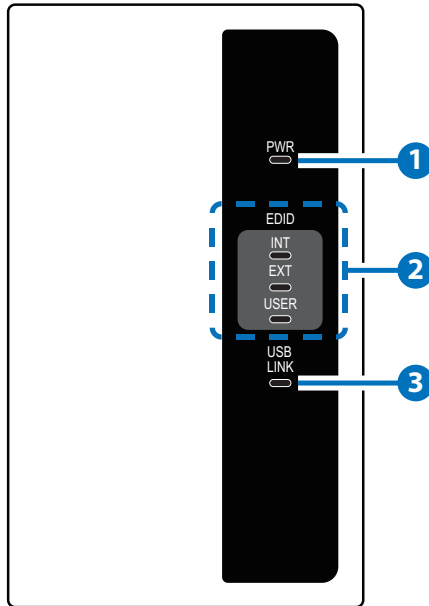
Note: 4K UHD sources with HDR or equivalently high-bandwidth signals require an appropriate compatible display and HDMI cables in order to achieve the best image quality. The use of "Premium High Speed HDMI" cables is highly recommended.

- 2 DC 5V:** Plug the 5V DC power adapter into the unit and connect it

to an AC wall outlet for power.

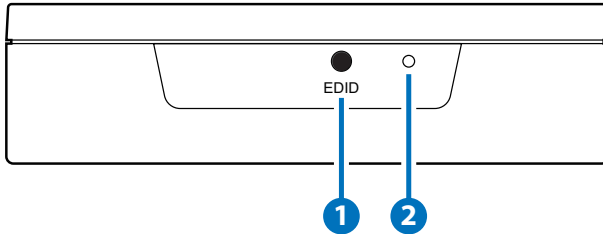
- 3 **SERVICE:** This slot is used for PC software control, EDID upload and firmware updates (see section 6.4).
- 4 **HDMI OUT:** Connect to an HDMI TV, monitor or amplifier for digital video and audio output.

6.2 Top Panel



- 1 **PWR LED:** The LED will illuminate to indicate the unit is on and receiving power.
- 2 **EDID LEDs:** These will LEDs illuminate to indicate which EDID mode is currently selected.
- 3 **USB LINK LED:** This LED will illuminate when the unit has an active connection with the PC Control Software via the Micro-USB port.

6.3 Side Panel



- 1 EDID:** Press this button to select the EDID to send to the HDMI source. The available choices are: Internal, External, and User. The internal EDID is set to 1080p60 with LPCM 2.0 audio. The External EDID setting passes the EDID directly from the connected display to the source. The User EDID is a customized EDID that has been uploaded to the unit from the PC software. By default, the User EDID is set to 4K@60 (YUV 4:2:0) with LPCM 2.0 audio.
- 2 PINHOLE:** This recessed button is reserved for factory use only.

6.4 EDID Management

This unit uses an EDID Management application which allows the user to copy the EDID from an attached display, edit an existing EDID file stored on the PC or create a basic EDID from scratch. The EDID can then be uploaded to the unit for use. Please obtain the EDID Management software from your authorized dealer and save it in a directory where you can easily find it.

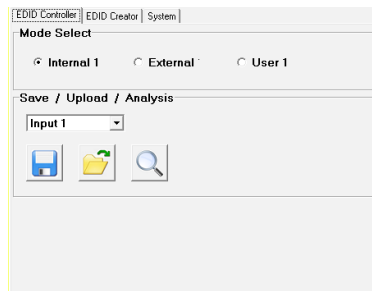
Before connecting the unit to your PC, please install the appropriate Virtual COM Port Driver depending on your Windows version. Next, install the EDID Management software. After the installation has successfully completed an icon for it will appear on the windows desktop. Launch the software by double-clicking on the icon and the EDID Management device detection window will open up on your screen.

#	Interface	Product	Description	IP Address	MAC Address
1	COM6	EDID M	HDMI2.0 enhancer	NC	NC

After launching the software, power the unit on and then connect it to the PC/laptop using a USB cable. Click on the "Search" button and any detected units will be displayed in the list. Clicking on a detected unit will open the EDID Commander window.

6.4.1 EDID Controller

Mode Select: Under the EDID Controller tab the user may select the EDID to be sent to the connected HDMI source from Internal, External (bypass) or User EDID options. When selected, the LED lights on the unit will change accordingly.



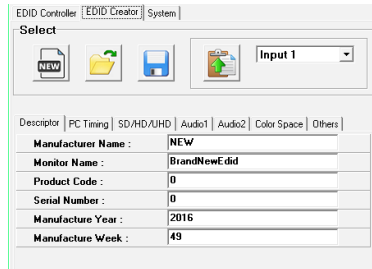
Save/Upload/Analysis: EDIDs may also be saved, uploaded or analyzed.

EDID Information	
EDID Header :	Good
EDID Checksum :	Good
Manufacturer Name :	STD
Monitor Name :	ENHANCER
Max Resolution :	1080p@60Hz
Max Color Depth :	8bit
Support 3D :	No
Support YUV420 :	No
Support SDCDC :	No
Support 600MHz :	No
Support HDR :	No
Audio Formats :	2PCM
Audio Max Channel :	2CH
CEC Address :	0100

- Any EDID from the unit or a connected HDMI display can be saved to your PC as a *.bin file by selecting the EDID source from the drop down menu and then clicking the “Save” icon.
- Previously saved EDID files (*.bin format) can be re-uploaded into the “User” EDID slot by selecting the User EDID to replace from the dropdown and then clicking the “Upload” icon. Before accepting the upload, the software will check and verify that the EDID’s header and checksum values are acceptable.
- To analyze any EDID stored within the unit, select the EDID to view from the dropdown and click on the “Analysis” icon. From the Analyzer window it is possible to open the currently analyzed EDID in the EDID Creator by clicking the “Edit” button.

6.4.2 EDID Creator

Click on the EDID Creator tab to begin designing a new EDID from scratch (select the “New” icon), to modify an existing EDID stored on the PC as a *.bin file (select the “Load” icon) or to edit an EDID copied from the unit via the EDID Analyzer’s edit option. Selecting “New” will automatically populate the various EDID fields with basic information that can be easily edited to match the user’s preferences. Clicking on the “Load” icon will open a file load window and after the *.bin file has been selected and loaded the EDID fields will be populated with the information from that file. The same will happen when the EDID is copied from the EDID Analyzer window.



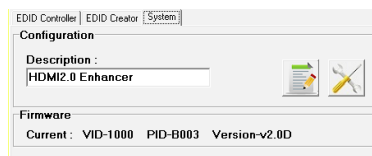
The following tabs provide access to a wide range of EDID information which can be edited:

- **Descriptor:** This tab allows for the editing of various description and information fields within the EDID file such as Manufacturer Name, Monitor Name, etc.
- **PC Timing & SD/HD/UHD:** These tabs allow for the selection of the resolutions and refresh rates that the EDID will report as supported.
- **Audio1 & Audio2:** These tabs allow for the selection of which audio formats, audio frequencies, channels and speaker locations are supported.
- **Color Space:** This tab allows for the selection of which color formats and bit depths are supported, including BT.2020 and HDR support options.
- **Others:** This tab contains options for supporting 3D and defining the CEC Address.

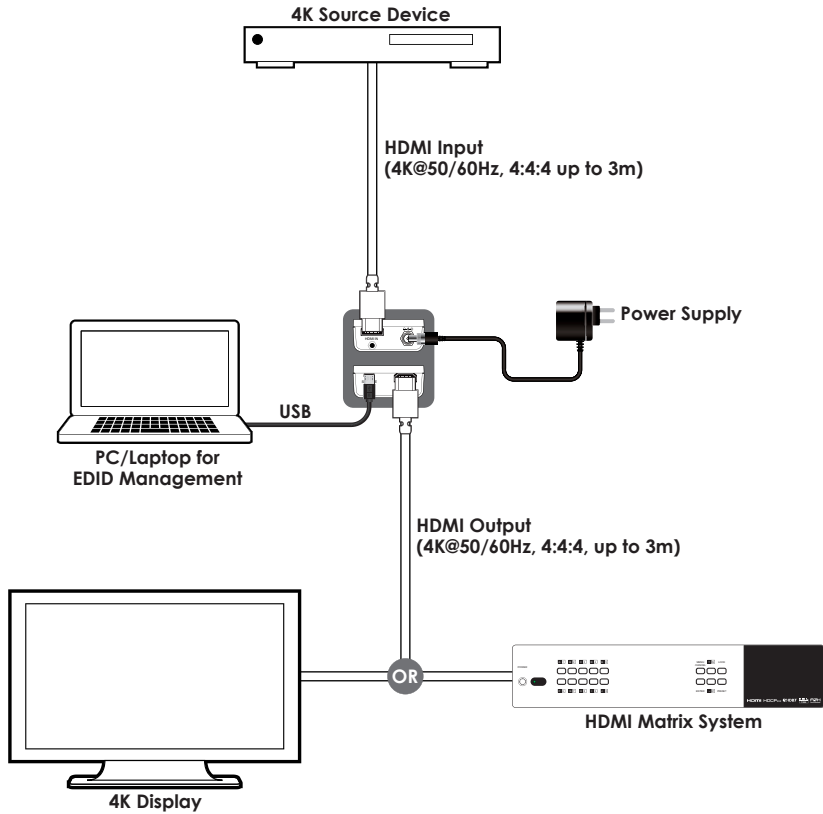
Once the user is finished editing or creating an EDID it can be saved to a *.bin file locally or uploaded directly to the unit using the “Save” and “Upload” icons respectively.

6.4.3 System

Select the System tab to edit the software's description, to reset the unit to factory defaults and to view the unit's current hardware and firmware version information.



7. CONNECTION DIAGRAM





8. SPECIFICATIONS

8.1 Technical Specifications

Video Bandwidth	600MHz/18Gbps
Input Port	1×HDMI
Output Port	1×HDMI
Control Interface	1×USB Micro-B
Supported Resolutions	480i@60Hz - 4K@60Hz (4:4:4, 8-bit) VGA@60Hz - WUXGA@60Hz (RB)
HDMI Cable Length	15m (1080p@60Hz, 8-bit) 10m (1080p@60Hz, 12-bit) 5m (4K@60Hz, 4:2:0, 8-bit) 3m (4K@60Hz, 4:4:4, 8-bit)
Power Supply	5V/2.6A DC (US/EU standards, CE/FCC/UL certified)
ESD Protection	Human Body Model: ±12kV (Air Discharge) ±8kV (Contact Discharge)
Dimensions	50mm×22.5mm×85mm (W×H×D) [Case Only] 52mm×22.5mm×97mm (W×H×D) [All Inclusive]
Weight	60g
Chassis Material	Plastic
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	1.54W

8.2 Video Specifications

Supported PC Resolutions (Hz)	Input	Output
640×480@60/72/75/85	✓	✓
720×400@85	✓	✓
800×600@56/60/72/75/85	✓	✓
1024×768@60/70/75/85	✓	✓
1152×864@75	✓	✓
1280×720@60	✓	✓
1280×768@60/75/85	✓	✓
1280×800@60	✓	✓
1280×960@60	✓	✓
1280×1024@60	✓	✓
1360×768@60	✓	✓
1366×768@60	✓	✓
1400×1050@60	✓	✓
1440×900@60	✓	✓
1600×900@60	✓	✓
1600×1200@60	✓	✓
1680×1050@60	✓	✓
1920×1080@60	✓	✓
1920×1200@60	✓	✓
1920×1440@60	✓	✓
2560×1600@60	✓	✓

Supported TV Resolutions (Hz)	Input	Output
720×576i@50	✓	✓
720×480i@59.94/60	✓	✓
720×480p@59.94/60	✓	✓
720×576p@50	✓	✓
1280×720p@50/59.94/60	✓	✓
1920×1080i@50/59.94/60	✓	✓
1920×1080p@23.97/24/25/29.97/30/50/59.94/60	✓	✓
3840×2160p@24/25/30/50/60	✓	✓
4096×2160p@24/25/30/50/60	✓	✓

9. ACRONYMS

ACRONYM	COMPLETE TERM
DVI	Digital Visual Interface
EDID	Extended Display Identification Data
HD	High-Definition
HDCP	High-bandwidth Digital Content Protection
HDMI	High-Definition Multimedia Interface
HDR	High Dynamic Range
LPCM	Linear Pulse-Code Modulation
PC	Personal Computer
UHD	Ultra-High-Definition
USB	Universal Serial Bus
VGA	Video Graphics Array (640×480@60Hz)
WUXGA	Wide Ultra Extended Graphics Array (1920×1200@60Hz)



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