



CED-2M

4K UHD+ EDID Manager



Operation Manual

DISCLAIMERS

The information in this manual has been carefully checked and is believed to be accurate. Cypress Technology assumes no responsibility for any infringements of patents or other rights of third parties which may result from its use.

Cypress Technology assumes no responsibility for any inaccuracies that may be contained in this document. Cypress also makes no commitment to update or to keep current the information contained in this document.

Cypress Technology reserves the right to make improvements to this document and/or product at any time and without notice.

COPYRIGHT NOTICE

No part of this document may be reproduced, transmitted, transcribed, stored in a retrieval system, or any of its part translated into any language or computer file, in any form or by any means—electronic, mechanical, magnetic, optical, chemical, manual, or otherwise—without express written permission and consent from Cypress Technology.

© Copyright 2017 by Cypress Technology.

All Rights Reserved.

TRADEMARK ACKNOWLEDGMENTS

All products or service names mentioned in this document may be trademarks of the companies with which they are associated.





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.
- Please completely disconnect the power when the unit is not in use to avoid wasting electricity.

REVISION HISTORY

| VERSION NO. | DATE (DD/MM/YY) | SUMMARY OF CHANGE |
|-------------|-----------------|--------------------------|
| VR0 | 16/02/17 | Preliminary release |
| VS1 | 17/03/17 | Updated diagrams |
| VS2 | 04/10/18 | Updated Section 6.3, 8.2 |



CONTENTS

| | |
|--|-----------|
| 1. Introduction | 1 |
| 2. Applications | 1 |
| 3. Package Contents | 1 |
| 4. System Requirements | 1 |
| 5. Features | 2 |
| 6. Operation Controls and Functions | 3 |
| 6.1 Front Panel | 3 |
| 6.2 Rear Panel..... | 4 |
| 6.3 OSD Menu | 5 |
| 6.4 EDID Management | 7 |
| 6.4.1 EDID Controller | 7 |
| 6.4.2 EDID Creator..... | 8 |
| 6.4.3 System | 9 |
| 7. Connection Diagram | 10 |
| 8. Specifications | 11 |
| 8.1 Technical Specifications | 11 |
| 8.2 Video Specifications | 12 |
| 9. Acronyms | 13 |





1. INTRODUCTION

This 4K UHD HDMI EDID Emulator is designed to manage and manipulate the EDID information provided to a connected HDMI source device. EDID contains critical information about the capabilities of the connected display, including audio and video format support, HDMI feature support, etc. and this unit aims to simplify the technical complications that often arise when performing video system integration, home theater installation, display room setup, or audio/video equipment testing. This unit provides the ability to not only select between the display's native EDID and pre-made EDIDs, but it also allows the user to copy EDIDs from other displays and use them, or to create their own customized EDID using the PC-based EDID management software.

2. APPLICATIONS

- HDMI/DVI EDID management
- AV system integration and home theater installation
- AV equipment testing

3. PACKAGE CONTENTS

- 1×HDMI EDID Emulator
- 1×5V/2.6A DC Power Adaptor
- 1×Operation Manual

4. SYSTEM REQUIREMENTS

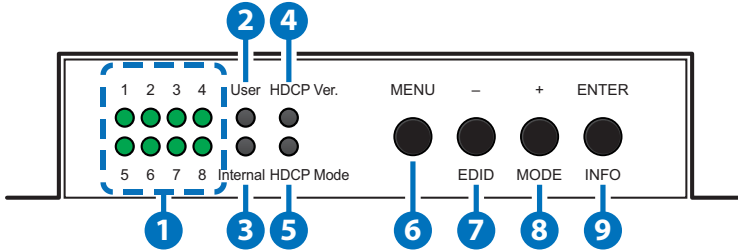
- HDMI source equipment such as media players, video game consoles or set-top boxes.
- HDMI receiving equipment such as HDTVs, monitors or audio amplifiers.
- The use of "Premium High Speed HDMI" cables is highly recommended.

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@60Hz (4:4:4, 8-bit) & 4096×2160@60Hz (4:4:4, 8-bit)
- Supports 48-bit Deep Color up to 1080p@60Hz
- Supports pass-through of LPCM 2.0/5.1/7.1, Bitstream, and HD Bitstream audio formats
- Supports CEC pass-through
- Supports four distinct EDID functions:
 - Read: Read and copy the connected display's EDID into the unit
 - Write: Overwrite connected display's EDID (only available on displays which explicitly support the overwrite function)
 - Emulation: The HDMI input device reads the EDID stored within the unit (built-in, learned, or created)
 - Bypass: The HDMI input device reads the EDID directly from the connected display
- 8 built-in standard EDIDs, 8 slots for user-created or learned EDIDs, and EDID bypass support
- PC-based EDID management tool support

6. OPERATION CONTROLS AND FUNCTIONS

6.1 Front Panel



1 LEDs 1~8: These LEDs illuminate to indicate which EDID from the currently selected EDID mode is active.

2 User: This LED will illuminate when the unit is in User EDID mode.

3 Internal: This LED will illuminate when the unit is in Internal EDID mode.

Note: When both the User and Internal LEDs are lit, the unit's EDID is in External bypass mode.

4 HDCP Ver.: This LED illuminates to indicate the HDCP version used by the connected source. A red LED indicates that the source is using HDCP v1.x (1.0~1.4). A green LED indicates that the source is using HDCP v2.2. When the LED is not illuminated it indicates that the source does not require, or use, HDCP.

5 HDCP Mode: This LED illuminates to indicate the current HDCP management mode selected for the HDMI input port. A red LED indicates "Follow In" mode, and the unit will enforce HDCP based on the requirements of the connected source. A green LED indicates "Follow Out" mode, and the unit will enforce HDCP based on the capability of the connected display. An un-lit LED indicates that HDCP support has been completely disabled.

6 MENU: Press to enter the OSD menu, or to back out from menu items.

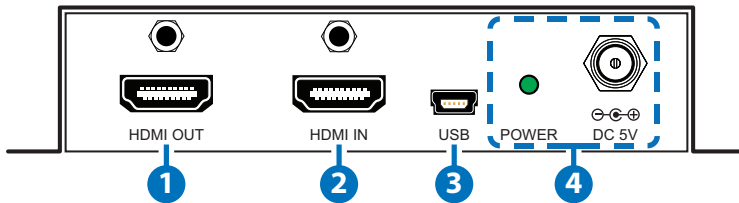
Note: Press and hold the menu button for 3 seconds to reset the unit to factory defaults.

7 -/EDID: Press to move down or adjust selections within OSD menus. While not in a menu, press this button to sequentially switch

through the available EDIDs from 1 to 8.

- 8 **+ /MODE:** Press to move up or adjust selections within OSD menus. While not in a menu, press this button to sequentially switch through the available EDID modes (User, Internal and External bypass).
- 9 **ENTER/INFO:** Press to confirm a selection within the OSD or to go deeper into a menu item. While not in a menu, press this button to display basic information about the currently connected source on the OSD. When nothing is connected to the HDMI output, pressing this button switches the HDCP management mode between "Follow In", "Follow Out" and "Apple Mode".

6.2 Rear Panel



- 1 **HDMI OUT:** Connect to HDMI TVs, monitors or amplifiers for digital video and audio output. If there is no valid HDMI source the output will display a blue screen.
- 2 **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 adapter.

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.

- 3 **USB:** This slot is used for PC software control, EDID upload and firmware updates (see section 6.4).
- 4 **POWER LED & DC 5V:** Plug the 5V DC power adapter into the unit and connect it to an AC wall outlet for power. The LED will illuminate to indicate the unit is on and receiving power.

6.3 OSD Menu

| LEVEL 1 | LEVEL 2 | LEVEL 3 |
|----------------------------|------------------------------------|-----------------------------------|
| EDID MANAGER | EDID MODE | INTERNAL |
| | | USER |
| | | EXTERNAL |
| | EDID SELECT (Internal EDIDs) | 1: 1080p@60/8/RGB/LPCM |
| | | 2: 4K2K@30/8/RGB/LPCM |
| | | 3: 4K2K@30/8/YUV/Bitstream |
| | | 4: 4K2K@30/12/RGB/HDR/LPCM |
| | | 5: 4K2K@30/12/YUV/HDR/Bitstream |
| | | 6: 4K2K@60_Y420/8/LPCM |
| | | 7: 4K2K@60_Y420/8/Bitstream |
| | | 8: 4K2K@60/8/RGB/LPCM |
| | COPY TV EDID (User EDIDs) | 1: DVI/1920×1080p@60/STD/Emulator |
| | | 2: 2560×1440p@59/STD/Emulator |
| | | 3: 2560×1600p@59/STD/Emulator |
| | | 4: 3840×2160p@60/STD/Emulator |
| 5: 3840×2160p@30/STD/Star | | |
| 6: 3840×2160p@60/STD/Lucky | | |
| 7: 1920×1080P@60/STD/Sunny | | |
| 8: 3840×2160p@60/STD/Sonic | | |
| PROGRAM EDID TO TV | INTERNAL 1~8 (INTERNAL 1) | |
| | USER 1~8 | |
| OUTPUT SETTING | UHD TO 1080P | BYPASS |
| | | FIXED |
| HDCP SETTING | APPLE MODE | |
| | FOLLOW IN | |
| | FOLLOW OUT | |

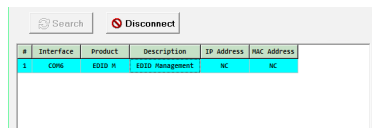
| LEVEL 1 | LEVEL 2 | LEVEL 3 |
|-----------------|---------------------|----------------------------|
| OSD SETTING | DISPLAY INFORMATION | ON |
| | | OFF |
| | OSD TIMEOUT | OFF |
| | | 5~40 SEC (10 SEC) |
| INFORMATION | RESOLUTION | |
| | HDCP MODE | |
| | HDCP OUTPUT | |
| | HDMI IN +5V | |
| | EDID MODE | |
| | FIRMWARE | |
| | SINK INFO. | |
| FACTORY SETTING | YES | |
| | NO | |

Note: Values in **Bold** are factory default settings.

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.

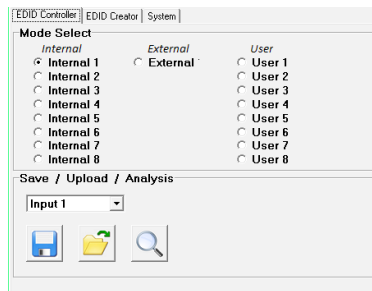
Before connecting the unit to your PC, please install the appropriate Virtual COM Port Driver depending on your Windows version. Next, install the EDID Management software. After the installation has successfully completed an icon for it will appear on the windows desktop. Launch the software by double-clicking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



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 8 Internal, 1 External (bypass) or 8 User EDID options. When selected, the LED lights on the unit will change accordingly.



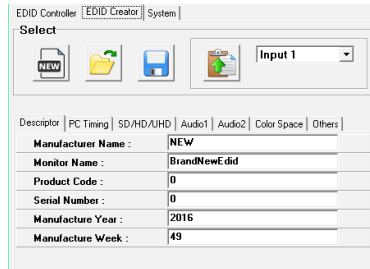
Save/Upload/Analysis: EDIDs may also be saved, uploaded or analyzed.

| EDID Information | |
|---------------------|-------------------|
| EDID Header : | Good |
| EDID Checksum : | Good |
| Manufacturer Name : | STD |
| Monitor Name : | Emulator |
| Max Resolution : | 2160p@30Hz |
| Max Color Depth : | 12bit |
| Support 3D : | No |
| Support YUV420 : | No |
| Support SDCDC : | Yes |
| Support 600MHz : | Yes |
| Support HDR : | 8bit,10bit,12bit. |
| Audio Formats : | 2PCM. |
| Audio Max Channel : | 2CH |
| CEC Address : | 1000 |

- 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 any of the “User” EDID slots 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.



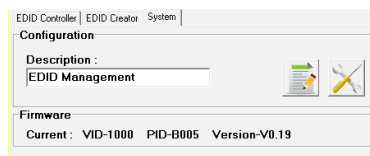
The following tabs provide access to a wide range of EDID information which can be edited:

- **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.

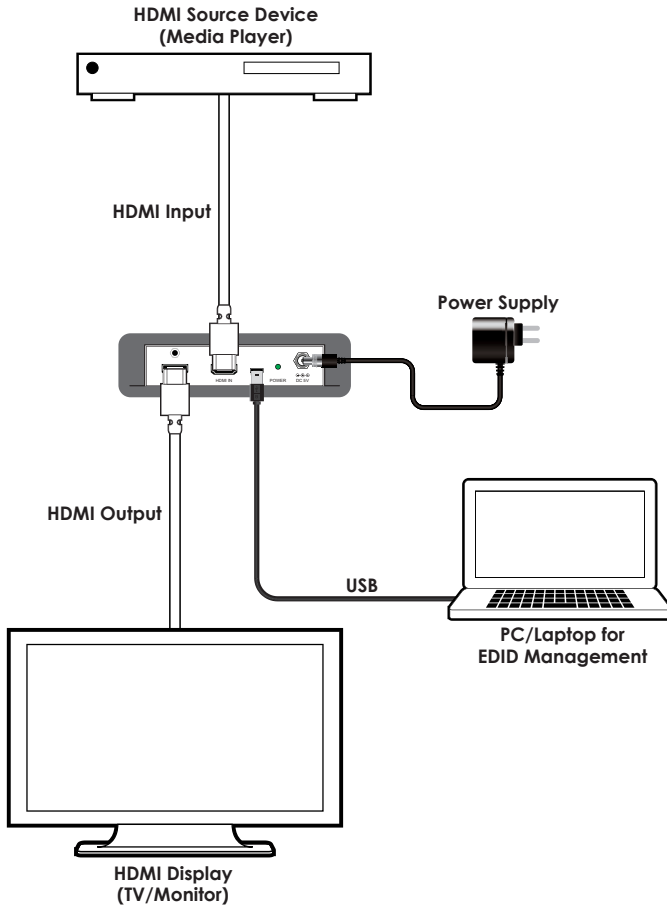
Once the user is finished editing or creating an EDID it can be saved to a *.bin file locally or uploaded directly to the unit using the “Save” and “Upload” icons respectively.

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 Ports | 1×HDMI |
| Output Ports | 1×HDMI |
| Control Interface | 1×USB Mini-B |
| Supported Resolutions | 408i@60Hz - 4K@60Hz (4:4:4, 8-bit) VGA@60Hz - WUXGA@60Hz (RB) |
| HDMI Cable Length | 10m (1080p@60Hz, 12-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 | 110mm×25mm×75mm (W×H×D) [Case Only] 128mm×25mm×83mm (W×H×D) [All Inclusive] |
| Weight | 268g |
| 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 (No-condensing) |
| Power Consumption | 2.8W |

8.2 Video Specifications

| Supported Resolutions (Hz) | Input | Output |
|-----------------------------|-------|--------|
| 640×480@60/72/75/85 | ✓ | ✓ |
| 720×480@60 | ✓ | ✓ |
| 720×576@50 | ✓ | ✓ |
| 800×600@56/60/72/75/85 | ✓ | ✓ |
| 1024×768@60/75/85 | ✓ | ✓ |
| 1280×720@50/60 | ✓ | ✓ |
| 1280×768@60/70/75/85 | ✓ | ✓ |
| 1280×800@60 | ✓ | ✓ |
| 1280×1024@60 | ✓ | ✓ |
| 1360×768@60 | ✓ | ✓ |
| 1600×1200@60 | ✓ | ✓ |
| 1920×1080i@50/60 | ✓ | ✓ |
| 1920×1080p@24/25/30/50/60 | ✓ | ✓ |
| 1920×1200@60 (RB) | ✓ | ✓ |
| 2560×1440p@59 | ✓ | ✓ |
| 2560×1600p@59 | ✓ | ✓ |
| 3840×2160@24/25/30/50/60 | ✓ | ✓ |
| 3840×2160@50/60 (YUV 4:2:0) | ✓ | ✓ |
| 4096×2160@24/25/30/50/60 | ✓ | ✓ |
| 4096×2160@50/60 (YUV 4:2:0) | ✓ | ✓ |

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 |
| PC | Personal Computer |
| SD | Standard-Definition |
| UHD | Ultra High-Definition |
| USB | Universal Serial Bus |



CYPRESS TECHNOLOGY CO., LTD.

www.cypress.com.tw