



# CSC-6013

4K UHD+ HDMI to HDMI Scaler



**4Kx2K** **HDCP 2.2**

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 2016 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.

## REVISION HISTORY

VERSION NO.	DATE (DD/MM/YY)	SUMMARY OF CHANGE
RDV1	16/12/16	Draft



# CONTENTS

<b>1. Introduction</b> .....	<b>1</b>
<b>2. Applications</b> .....	<b>1</b>
<b>3. Package Contents</b> .....	<b>1</b>
<b>4. System Requirements</b> .....	<b>2</b>
<b>5. Features</b> .....	<b>2</b>
<b>6. Operation Controls and Functions</b> .....	<b>3</b>
6.1 Front Panel .....	3
6.2 Rear Panel.....	4
6.3 OSD Menu .....	5
6.4 EDID Management .....	7
<b>7. Connection Diagram</b> .....	<b>9</b>
<b>8. Specifications</b> .....	<b>10</b>
8.1 Technical Specifications .....	10
8.2 Video Supports Specification .....	11
<b>9. Acronyms</b> .....	<b>12</b>





## 1. INTRODUCTION

This 4K UHD HDMI to HDMI Scaler is designed to convert and scale a wide range of HDMI sources for output to an equally wide array of HDMI resolutions. Input sources are supported at resolutions up to and including 4K@60Hz (4:4:4, 8-bit). Supported output resolutions range from SVGA to 3840x2160@60Hz (4:4:4, 8-bit). The friendly and simple design ensures that the user can set the unit up and quickly get a high quality picture on their display. Additionally, this unit provides analog stereo breakout audio (LPCM 2.0 sources only) to support the easy application of external powered speakers. A perfect tool for your HD and UHD signal conversion needs. The unit can be controlled via front panel buttons with an On-Screen Display (OSD).

## 2. APPLICATIONS

- Showing HD video on UHD displays
- Showing UHD video on HD displays
- Showing HDMI sources on DVI displays with analog audio breakout to external speakers
- Video signal quality and level management

## 3. PACKAGE CONTENTS

- 1 x 4K UHD HDMI to HDMI Scaler
- 1 x 5V DC Power adaptor
- Operational 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.

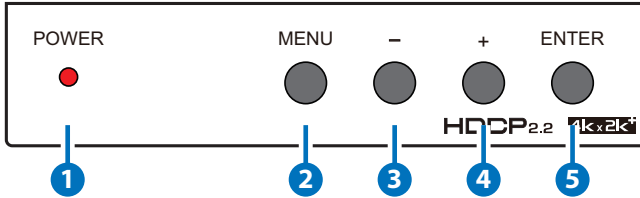
## 5. FEATURES

- 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 3840x2160@60 Hz (YUV 4:4:4, 8-bit) & 4096x2160@60 Hz (YUV 4:4:4, 8-bit)
- Supports 48-bit Deep Color up to 1080p60
- Supports pass-through of LPCM 7.1, bitstream and HD bitstream audio formats over HDMI
- Provides EDID management via EDID bypass, 6 built-in EDIDs and 1 user modifiable EDID
- Supports up and down scaling of a wide variety of HDMI source resolutions, from 480p to 4K@60Hz.
- Controllable via front-panel buttons with OSD

**Note:** 4K UHD sources 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.

## 6. OPERATION CONTROLS AND FUNCTIONS

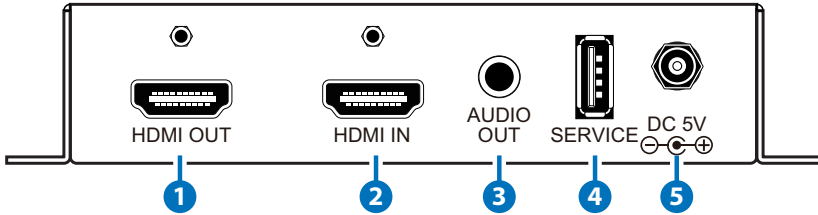
### 6.1 Front Panel



- 1 POWER LED:** This LED will illuminate when the unit is receiving power. When a valid HDMI source is detected the LED will be green, if there is no valid HDMI source, the LED will be red.
- 2 MENU:** Press to enter the OSD menu, or to back out from menu items.  
**Note:** Press and hold the "MENU" button for 3 seconds while connecting the power supply to reset all settings to the factory defaults. Pressing "MENU" and "-" together will reset the output resolution to 720p@60Hz. Pressing "MENU" and "+" together will reset the output resolution to XGA (1024x768@60Hz).
- 3 -/+:** Press to move up and down or adjust selections within OSD menus.
- 4 ENTER:** Press to confirm a selection within the OSD or to go deeper into a menu item.



## 6.2 Rear Panel



- 1 HDMI OUT:** Connect to HDMI TVs, monitors or amplifiers for digital video and audio output.

**Note:** If no valid HDMI input source is detected the unit will output blank video using the selected free run color.

- 2 HDMI IN:** Connect to HDMI source equipment such as a media player, game console or set-top box.

- 3 AUDIO OUT:** Connect to powered speakers or an amplifier for stereo analog audio output.

**Note:** Supports LPCM 2.0 audio only. Bitstream formats will be muted.

- 4 USB:** Connect a USB thumb drive to this slot to upload a user EDID or to perform a firmware update.

- 5 DC 5V:** Plug the 5V DC power adapter into this port and connect it to an AC wall outlet for power.

## 6.3 OSD Menu

1 <sup>st</sup> layer	2 <sup>nd</sup> layer	3 <sup>rd</sup> layer
Output Resolution	800x600@60Hz 1024x768@60Hz 1280x768@60Hz 1360x768@60Hz 1280x800@60Hz 1440x900@60Hz 1280x1024@60Hz 1400x1050@60Hz 1680x1050@60Hz 1600x1200@60Hz 1920x1200@60Hz(RB) 720x480P@60Hz 720x576P@50Hz 1280x720P@50Hz 1280x720P@60Hz 1920x1080i@50Hz 1920x1080P@50Hz 1920x1080i@60Hz <b>1920x1080P@60Hz</b> 3840x2160@24Hz 3840x2160@25Hz 3840x2160@30Hz 3840x2160@50Hz(Y420) 3840x2160@60Hz(Y420) 3840x2160@50Hz 3840x2160@60Hz Bypass	Yes/No
Output Color Format	Format	<b>Auto</b> /HDMI/DVI
	Color Space	<b>Auto</b> /YUV444/YUV422/YUV420 (YUV420 is only available for 4K@50Hz & 60Hz)
	Color Depth	<b>Auto</b> /8/10/12/16-bit

Output Image Adjust	Brightness	0~100 <b>(50)</b>
	Contrast	0~100 <b>(50)</b>
	Saturation	0~100 <b>(50)</b>
	Hue	0~100 <b>(50)</b>
	Aspect Ratio	<b>Full</b> /16:9/16:10/4:3/Keep
	Default	
Output Audio Control	HDMI Audio	<b>Unmute</b> /Mute
	Ext Audio	<b>Unmute</b> /Mute
HDMI Information	Notify	5Sec/ <b>10Sec</b> /15Sec/30Sec/ Always/ Never
	Input Information	
	Output Information	
EDID Control	Mode	<b>Int FHD 2CH</b> / Int FHD MCH/ Int UHD 2CH/ Int UHD MCH/ Int UHD+ 2Ch/ Int UHD+ MCH/ External/ User
	User	Copy External/ Copy From USB/ No Change
	EDID Preview	
HDCP Control	Mode	Apple Mode/Refer Source/ <b>Refer Display</b>
	HDCP Status	

OSD Setting	Auto Off	5 Sec/10 Sec/15 Sec/ <b>30 Sec</b> /60 Sec/ Never
	Horizontal	0~100% ( <b>2%</b> )
	Vertical	0~100% ( <b>3%</b> )
	Transparency	0~7 ( <b>3</b> )
	Panel Size	Normal/Large/ <b>Auto</b>
	Panel Color	Red/Green/Blue/ <b>Gray</b>
	Font Color	White/Yellow/Cyan/Magenta/ <b>Blue</b> / Black
	Free Run Color	Red/Green/Blue/ <b>Black</b>
	Default	
System Setting	VID	
	PID	
	SN	
	FW Version	
	FW Update	No/Yes
	Factory Mode	No/Yes

**Note:**Default settings are in Bold.

## 6.4 EDID Management

Within the EDID Control section of the OSD menu are 2 menu items, Mode & User, along with a details section displaying the content of the currently selected EDID.

Mode: The current EDID may be changed by selecting and changing the Mode option. There are 6 pre-defined "Internal" EDIDs, an "External" EDID which passes the EDID from the connected display, and a "User" EDID which is user-replaceable. To return the User EDID to its original value, please perform a factory reset on the unit.

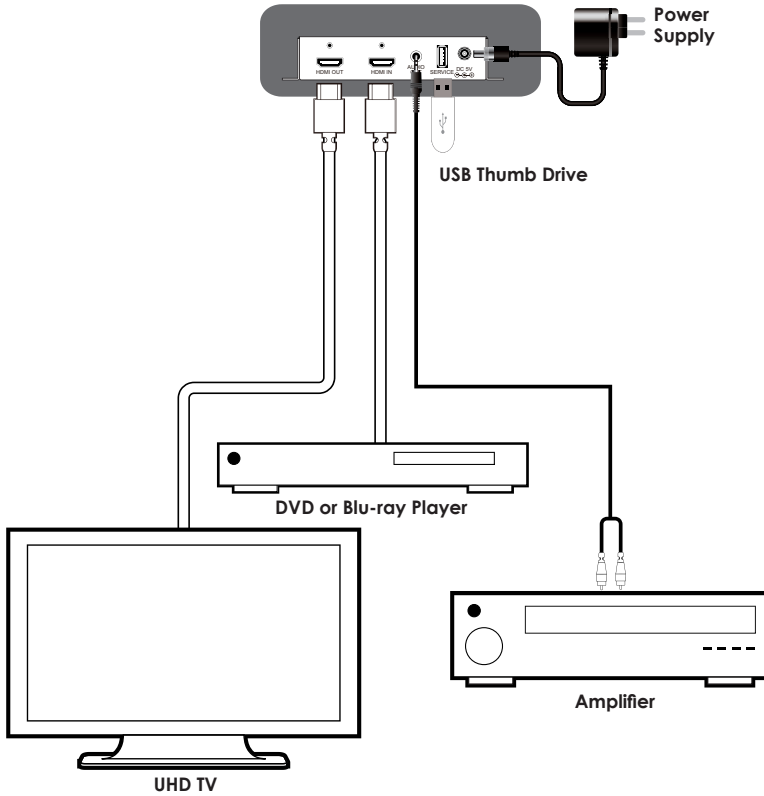
The 6 Internal EDIDs are:

1. FHD (1080p60Hz) with LPCM 2.0
2. FHD (1080p60Hz) with LPCM 7.1 & Bitstream
3. 4K UHD (4K@30Hz) with LPCM 2.0
4. 4K UHD (4K@30Hz) with LPCM 7.1 & Bitstream
5. 4K+ UHD (4K@60Hz, 4:4:4, 8-bit) with LPCM 2.0
6. 4K+ UHD (4K@60Hz, 4:4:4, 8-bit) with LPCM 7.1 & Bitstream

**User:** The User EDID may be copied from a currently connected display, or uploaded from a USB thumb drive plugged into the USB slot on the unit.

- Any EDID from a connected HDMI display can be stored as a User EDID by selecting "Copy External" from the User OSD menu and pressing the ENTER button. If the EDID was copied successfully the OSD will display a "Copy OK" message.
- Previously saved EDID files (USER\_EDID\_\*.bin format) can be uploaded into the unit by inserting a USB thumb drive containing the new EDID file in the root directory, selecting "Copy from USB" from the User OSD menu, and pressing the ENTER button. If the EDID was copied successfully the OSD will display a "Copy OK" message.

## 7. CONNECTION DIAGRAM



## 8. SPECIFICATIONS

### 8.1 Technical Specifications

<b>Video Bandwidth</b>	18Gbps (600Mhz)
<b>Input Ports</b>	1 x HDMI, 1 x USB (Service)
<b>Output Ports</b>	1 x HDMI, 1 x 3.5mm mini-jack (stereo audio)
<b>Power Supply</b>	5V/2.6A DC (US/EU standards, CE/FCC/UL certified)
<b>ESD Protection</b>	Human Body Model: ±8KV (Air Discharge), ±4KV (Contact Discharge)
<b>Dimensions</b>	128mm x 25mm x 108mm (W×H×D) [Case Only] 128mm x 25mm x 117mm (W×H×D) [All Inclusive]
<b>Weight</b>	368g
<b>Chassis Material</b>	Metal
<b>Silkscreen Color</b>	Black
<b>Operating Temperature</b>	0°C - 40°C/32°F - 104°F
<b>Storage Temperature</b>	-20°C - 60°C/-4°F - 140°F
<b>Relative Humidity</b>	20 - 90% RH (no condensation)
<b>Power Consumption</b>	6w



## 8.2 Video Supports Specification

Supported Timings (Hz)	Input	Output (bypass)	Output (scaled)
<b>640x480@60/72/75/85</b>	✓	✓	
<b>720x480@60</b>	✓	✓	✓
<b>720x576p@50</b>	✓	✓	✓
<b>800x600@56/60/72/75/85</b>	✓	✓	60Hz only
<b>1024x768@60/75/85</b>	✓	✓	60Hz only
<b>1280x720@50/60</b>	✓	✓	
<b>1280x720p@60</b>	✓	✓	✓
<b>1280x768@60/70/75/85</b>	✓	✓	60Hz only
<b>1280x800@60</b>	✓	✓	✓
<b>1280x1024@60</b>	✓	✓	✓
<b>1360x768@60</b>	✓	✓	✓
<b>1600x1200@60</b>	✓	✓	
<b>1920x1080i@50/60</b>	✓	✓	✓
<b>1920x1080p@24/25/30/50/60</b>	✓	✓	50/60Hz only
<b>1920x1200@60(RB)</b>	✓	✓	✓
<b>3840x2160@24/25/30/50/60 (4:4:4)</b>	✓	✓	✓
<b>3840x2160@50/60 (4:2:0)</b>	✓	✓	✓
<b>4096x2160@24/25/30/50/60 (4:4:4)</b>	✓	✓	
<b>4096x2160@50/60 (4:2:0)</b>	✓	✓	



## 9. ACRONYMS

ACRONYM	COMPLETE TERM
<b>DVI</b>	Digital Visual Interface
<b>EDID</b>	Extended Display Identification Data
<b>Gbps</b>	Gigabits per second
<b>HD</b>	High-Definition
<b>HDCP</b>	High-bandwidth Digital Content Protection
<b>HDMI</b>	High-Definition Multimedia Interface
<b>LPCM</b>	Linear Pulse-Code Modulation
<b>SVGA</b>	Super Video Graphics Array (800x600@60Hz)
<b>UHD</b>	Ultra-High-Definition







**CYPRESS TECHNOLOGY CO., LTD.**

[www.cypress.com.tw](http://www.cypress.com.tw)