



CPLUS-VSE2DD

HDMI 2.0 with HDCP2.2 Audio Converter with Dolby Digital and DTS 2.0+ Digital Out Decoder



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 2015 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. Manufactured under license from Dolby Laboratories. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories.

Manufactured under license under U.S. Patent Nos: 5,956,674; 5,974,380; 6,487,535 & other U.S. and worldwide patents issued & pending. DTS, the Symbol, & DTS and the Symbol together are registered trademarks & DTS 2.0+Digital Out is a trademark of DTS, Inc. Product includes software. © DTS, Inc. All Rights Reserved.





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	17/07/15	Preliminary release
	30/07/15	Updated text
	19/08/15	Updated text



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.....	3
7. Connection Diagram	5
8. Specifications	6
8.1 Technical Specifications	6
8.2 Video Resolutions	7
8.3 Audio Specifications	8
8.4 Input to Output Audio Formats	8
9. Acronyms	9





1. INTRODUCTION

With support for the transmission of 6G video (resolutions up to 4K2K@60Hz Ultra HD, and HDCP 2.2) through High Speed HDMI cables, this HDMI Audio Converter with Dolby® Digital/DTS® 2.0+Digital Out Decoder allows an HDMI audio signal to be de-embedded and simultaneously split to both digital and analog audio outputs providing high quality audio and video performance.

This unit allows you to make the most out of your audio signal when relaying it to external speakers or to further extend the audio pathway to another location.

2. APPLICATIONS

- Home entertainment installation
- Audio extraction and extension.
- Connect to non-HDMI AV receivers or wider audio systems

3. PACKAGE CONTENTS

- 1 x HDMI 2.0 with HDCP 2.2 Audio Converter with Dolby Digital and DTS 2.0+ Digital Out Decoder
- 1×5V/2.6A Power Adaptor
- 1×Operation Manual

4. SYSTEM REQUIREMENTS

HDMI equipped source device and display (TV/monitor) and/or amplifier/active speakers with analog or digital audio connection cables.

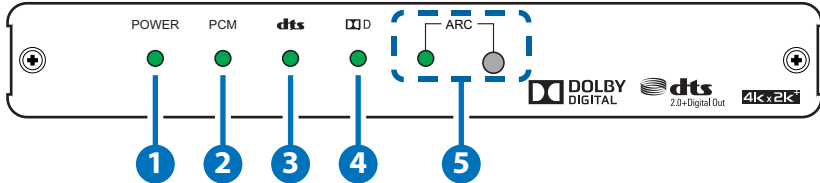
5. FEATURES

- HDMI 6G video (resolutions up to 4K2K@60Hz with YUV444) and HDCP2.2 compliant
- HDMI 1080p video with 12-bit 'Deep Color', 3D video, and HDCP1.4 compliant
- Dolby Digital Decoder technology embedded
- DTS 2.0+Digital Out Decoder technology embedded
- Integrated digital interpolator filter and Digital-to-Analog Converter (DAC)
- Supports HDTV resolutions up to 4K2K (3840×2160@24/25/30, 4096×2160@24/25/30, 3840×2160@50/60 with YUV444 & 4096×2160@50/60 with YUV444)
- Supports simultaneous audio output on HDMI, analog L/R, Coaxial and Optical outputs
- Supports Dolby Digital sampling rates up to 48kHz
- Supports DTS sampling rates up to 96kHz
- Supports LPCM input sampling rates up to 96kHz
- Supports coaxial and optical output audio sampling rates up to 96kHz
- Supports de-embedding the audio signal from an HDTV's ARC (Audio Return Channel) connection



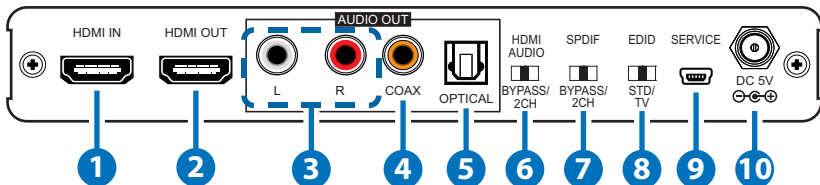
6. OPERATION CONTROLS AND FUNCTIONS

6.1 Front Panel



- 1 POWER:** This LED will illuminate when the unit is connected to an active power supply.
- 2 PCM LED:** This LED will illuminate when the audio source is encoded in LPCM 2CH audio format.
- 3 DTS LED:** This LED will illuminate when the audio source is encoded in DTS 2.0+Digital Out audio format.
- 4 Dolby LED:** This LED will illuminate when the audio source is encoded in Dolby Digital audio format.
- 5 ARC Button & LED:** Use this button to select the HDMI ARC (Audio Return Channel) function. Push this button to enable the HDMI ARC function, the LED will turn on; push this button again to disable the HDMI ARC function, the LED will turn off. When no ARC source is detected, the unit will automatically switch back to the HDMI input.

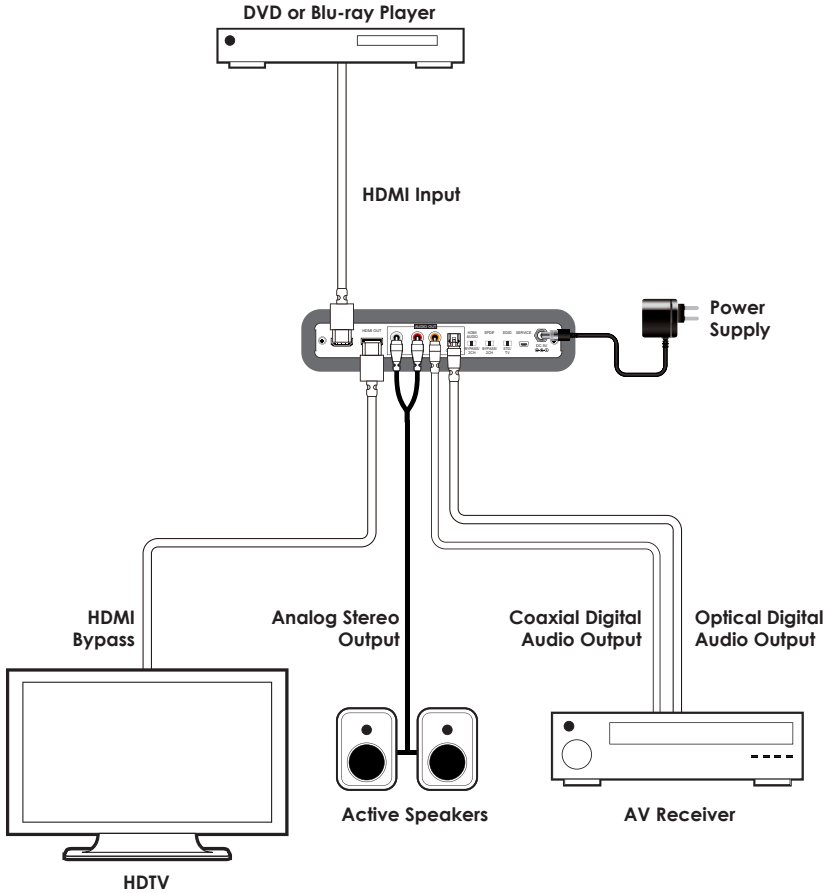
6.2 Rear Panel



- 1 HDMI IN:** Connect to an HDMI source device such as a blu-ray player, set-top box or any HDMI equipped source device.

- 2 **HDMI OUTPUT:** Connect to an HDMI Ultra HD display (TV/monitor) or UHD AV receiver for video and audio output.
- 3 **L/R OUTPUT:** Connect to the analog line-level input of an amplifier or active speakers for audio output.
- 4 **COAX OUTPUT:** Connect to the digital optical input of an AV receiver for audio output.
- 5 **OPTICAL OUTPUT:** Connect to the digital coaxial input of an AV receiver for audio output.
- 6 **HDMI AUDIO BYPASS/2CH:** Use this switch to select the audio format of the HDMI output. Switch to 'BYPASS' to allow the audio to pass-through from the HDMI input port; switch to '2CH' to enable audio decoding and LPCM 2CH down-mixing of Dolby Digital or DTS audio signals from the HDMI audio source.
- 7 **SPDIF BYPASS/2CH:** Use this switch to select the audio format of the Coaxial and Optical outputs. Switch to 'BYPASS' to allow the audio to pass-through from the HDMI input port; switch to '2CH' to enable audio decoding and LPCM 2CH down-mixing of Dolby Digital or DTS audio signals from the HDMI audio source.
- 8 **EDID STD/TV:** Use this switch to select the EDID mode, 'STD (Standard) mode' or 'TV mode'. When in 'TV mode', the unit will automatically detect and store the EDID settings of the display connected to the HDMI output. If there is no picture or a distorted image, please switch to 'STD mode' which will use video up to 1080p at 60Hz and audio up to LPCM 2CH at 48kHz, Dolby Digital 5.1CH and DTS 5.1CH.
- 9 **SERVICE:** Manufacturer use only.
- 10 **DC 5V:** Connect the adaptor included in the package to an AC wall outlet for power supply.

7. CONNECTION DIAGRAM



8. SPECIFICATIONS

8.1 Technical Specifications

Video Bandwidth	600MHz/6 Gbps
Input Ports	1×HDMI, 1×USB (Service only)
Output Ports	1×HDMI, 1×Coaxial, 1×Optical, 1×L/R (2 RCA)
HDMI Cable Length	Input: 10m@1080p, 3m@4K2K Output: 10m@1080p, 3m@4K2K
Power Supply	5V/2.6 A DC(US/EU standards, CE/FCC/UL certified)
ESD Protection	Human body model: ±8kV (air-gap discharge) ±4kV (contact discharge)
Dimensions	180 mm (W)×104 mm (D)×25mm (H)/Jacks Excluded 180mm (W)×112.75 mm (D)×25 mm (H)/Jacks Included
Weight	374g
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	5.06W



8.2 Video Resolutions

HDMI/DVI RESOLUTIONS	INPUT	OUTPUT
640×480@60/72/75/85	✓	✓
720×400@85	✓	✓
800×600@56/60/72/75/85	✓	✓
1024×768@60/70/75/85	✓	✓
1280×720@60	✓	✓
1280×768@60/75/85	✓	✓
1280×800@60	✓	✓
1360×768@60	✓	✓
1440×900@60	✓	✓
1600×900@60	✓	✓
1600×1200@60	✓	✓
1920×1080@60	✓	✓
1920×1200@60	✓	✓
1440×576i@50	✓	✓
1440×480i@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	✓	✓
3840×2160@24/25/30/50/60 (YUV444)	✓	✓
4096×2160@24/25/30/50/60 (YUV444)	✓	✓
3840×2160@60 (YUV420)	✓	✓
4096×2160@60 (YUV420)	✓	✓

8.3 Audio Support Specification

Input Level/ Freq.	Output	Output Level Vrms/db±10%	THD+N	Frequency Response	SNR >90db	Crosstalk <-90dB
HDMI 0dB/1kHz 48~96kHz	Analog	2 Vrms	< 0.01%	±1 dBFS	>104dB	<-110dB
	Coaxial	0 dB	< 0.00001%	±1 dBFS	>141dB	<-164dB
	Optical	0 dB	< 0.00001%	±1 dBFS	>141dB	<-163dB
	HDMI	0 dB	< 0.00001%	±1 dBFS	>141dB	<-164dB

8.4 Input to Output Audio Format

Audio Input	Input Format	Audio Output				
		Analog L/R	HDMI		S/PDIF	
			Switch Status		Switch Status	
			BYPASS	2CH	BYPASS	2CH
HDMI	LPCM 2CH	Analog 2CH	LPCM 2CH	LPCM 2CH	LPCM 2CH	LPCM 2CH
	Dolby Digital	Decoded Lt/Rt	Bitstream Pass-through	LPCM Lt/Rt	Bitstream Pass-through	LPCM Lt/Rt
	DTS	Decoded Lo/Ro	Bitstream Pass-through	LPCM Lo/Ro	Bitstream Pass-through	LPCM Lo/Ro
HDMI ARC	LPCM 2CH	Analog 2CH	HDMI Pass-through		LPCM 2CH	LPCM 2CH
	Dolby Digital	Decoded Lt/Rt			ARC Bitstream Pass-through	LPCM Lt/Rt
	DTS	Decoded Lo/Ro			LPCM Lo/Ro	

9. ACRONYMS

ACRONYM	COMPLETE TERM
DTS	Digital Theater System
DVI	Digital Visual Interface
EDID	Extended Display Identification Data
HDCP	High-bandwidth Digital Content Protection
HDMI	High-Definition Multimedia Interface
HDTV	High-Definition Television
USB	Universal Serial Bus
VGA	Video Graphics Array
WUXGA	Wide Ultra Extended Graphics Array



CYPRESS TECHNOLOGY CO., LTD

Home page: <http://www.cypress.com.tw>