



CUSB-V606H

UHD+ HDMI to USB-C Capture with HDMI Bypass



Operation Manual

HDMI[®]
HIGH-DEFINITION MULTIMEDIA INTERFACE

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

VERSION HISTORY

REV.	DATE	SUMMARY OF CHANGE
RDV1	2022/10/11	Preliminary release



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1. INTRODUCTION

This HDMI to USB video capture recorder with HDMI bypass can support resolutions up to 4K UHD* (18Gbps) with HDR via the bypass path while simultaneously streaming the audio and video signal at up to 4K@30Hz to a USB connected PC for capture or re-broadcast. In addition to the embedded HDMI audio, a second audio stream can also be captured from the line input, mic input, or both mixed together for use in your streaming projects. The use of a special video timing stabilization feature helps to ensure that the USB capture stream won't lock up or drop, even if the HDMI input source is intermittent or becomes disconnected.

USB capture is accomplished using the UAC (USB Audio Class) and UVC (USB Video Class) standards, allowing the unit to support most common video capture, chat, or streaming software, including support for the Free OBS (Open Broadcaster Software) streaming software which is available for Windows PC, macOS and Linux. The unit is powered directly by the USB 3.0 port so an external power supply is not required (A Y-cable is required when connected via USB 2.0 in order to deliver the necessary power). Availability and access to the controllable features of the unit depend on the capture software used.

2. APPLICATIONS

- Live video stream recording for broadcast
- Security camera recording
- Gameplay video archival

3. PACKAGE CONTENTS

- 1× UHD* HDMI to USB-C Capture with HDMI Bypass
- 1× Shockproof Feet (Set of 4)
- 1× Operation Manual

4. SYSTEM REQUIREMENTS

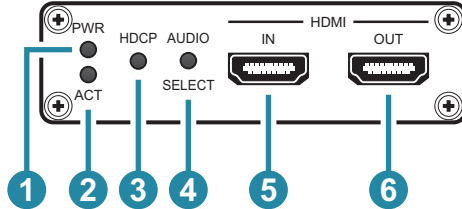
- HDMI source equipment such as a media player, video game console, PC, or set-top box.
- HDMI receiving equipment such as an HDTV, monitor, or audio amplifier.
- Personal computer (Windows or macOS) with a USB 3.0 port and plenty of available hard drive space.

5. FEATURES

- HDMI input and output supports up to 4K@60Hz with HDR bypass
- HDCP 2.2 and HDCP 1.x compliant
Note: Video capture of sources using HDCP encryption is not supported.
- USB 3.0 connection allows uncompressed video and audio data capture (up to 4K@30Hz, LPCM 2.0)
Note: 4K sources with framerates higher than 30Hz are automatically converted to 4K@30Hz for USB capture.
- 2 additional analog audio inputs via 3.5mm ports
- Supports capture of stereo audio from the HDMI input (LPCM 2.0) as a part of the primary stream, as well as audio from one or both of the analog audio inputs as a secondary audio stream
- Integrated audio mixer provides a way to combine the line and mic analog audio inputs
- Complies with the UAC (USB Audio Class) and UVC (USB Video Class) standards, allowing the unit to support most common capture and video streaming software
Note: Access to many of the software controllable features of the unit, beyond simple video capture, requires the use of the USB Video Capture Control software which is only available for Windows 10 or later PCs.
- Supports video timing stabilization to help ensure a reliable and stable USB capture stream
- Capturing over USB 2.0 requires the application of minimal MJPEG compression to the video and audio data (up to 720p@30Hz, LPCM 2.0)
- Unit may be powered directly via USB 3.0 (When using USB 2.0, a Y-cable is required to provide additional power)
- Supports the Free OBS (Open Broadcaster Software) streaming software which is available for Windows 10 (or later), macOS, and Linux

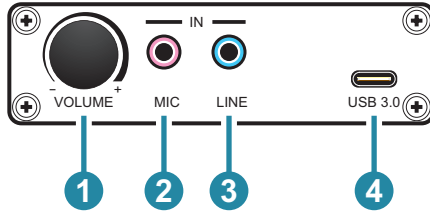
6. OPERATION CONTROLS AND FUNCTIONS

6.1 Front Panel



- 1 PWR LED:** This LED will illuminate to indicate the unit is on and receiving power.
- 2 ACT LED:** When software on the connected PC is actively receiving video from the unit via USB, this LED will illuminate green.
- 3 HDCP LED:** This LED will illuminate when the source has HDCP content. Green = HDCP 1.4, Blue = HDCP 2.2, Off = No HDCP.
- 4 AUDIO SELECT LED:** This LED's color indicates the source or state of the secondary audio capture channel. Blue = Line In, Red = Mic In, Purple = Line In + Mic In mixed, Off = Audio muted.
- 5 HDMI IN Port:** Connect to HDMI source equipment such as a media player, game console, PC, or set-top box.
- 6 HDMI OUT Port:** Connect to an HDMI TV, monitor, or amplifier for digital video and audio output.

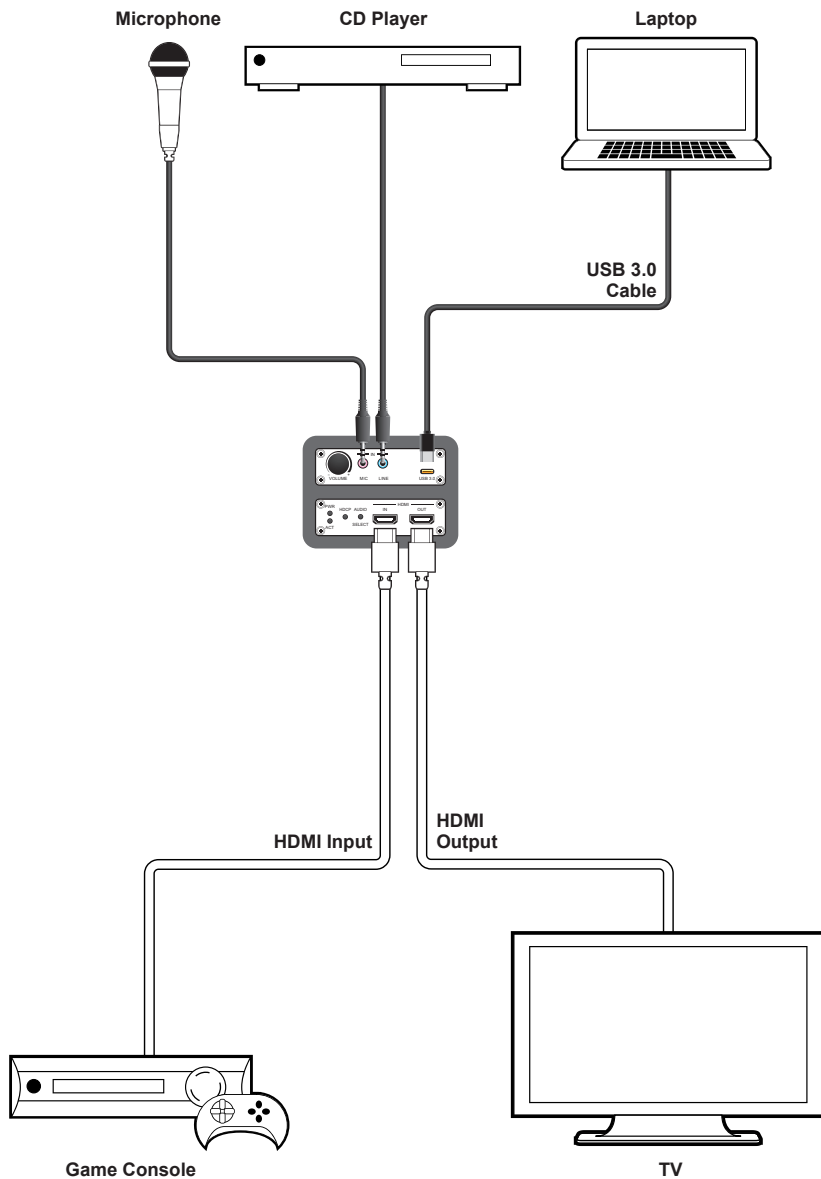
6.2 Rear Panel



- 1 VOLUME Knob:** Press the knob to toggle the secondary captured audio channel source between the Line, Mic, and Line+Mic modes. Turn the knob to adjust the volume of the currently selected source. Press and hold the knob to mute the selected source.
- 2 MIC IN Port:** Connect to the analog mono output of a standard PC microphone.
- 3 LINE IN Port:** Connect to the stereo analog output of a device such as an audio player or PC.
- 4 USB 3.0 Port:** Connect directly to a PC's USB 3.0 port for control, video capture and power.

Note: Video capture of sources using HDCP encryption is not supported. If connected via USB 2.0, use of a Y-cable connected to 2 USB 2.0 ports is required in order to properly power the unit.

7. CONNECTION DIAGRAM



8. SPECIFICATIONS

8.1 Technical Specifications

HDMI Bandwidth	18Gbps
USB-C Bandwidth	21.6Gbps
Input Ports	1×HDMI (Type-A) 1×Analog Stereo (3.5mm) 1×Analog Mono (3.5mm)
Output Ports	1×HDMI (Type-A) 1×USB 3.0 (Type-C)
Power Supply	Provided via USB 3.0
ESD Protection (HBM)	±8kV (Air Discharge) ±4kV (Contact Discharge)
Dimensions (W×H×D)	84mm×23mm×113mm [Case Only] 84mm×23mm×128mm [All Inclusive]
Weight	307g
Chassis Material	Metal (Steel)
Chassis 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	4.1283W

8.2 Video Specifications

Supported Resolutions (Hz)	Input	Output	
	HDMI	HDMI	USB-C
720×400p@70/85	✓	✓	✓
640×480p@60/72/75/85	✓	✓	✓
720×480i@60	✓	✓	✓
720×480p@60	✓	✓	✓
720×576i@50	✓	✓	✓
720×576p@50	✓	✓	✓
800×600p@56/60/72/75/85	✓	✓	✓
848×480p@60	✓	✓	✓
1024×768p@60/70/75/85	✓	✓	✓
1152×864p@75	✓	✓	✓
1280×720p@50/60	✓	✓	✓
1280×768p@60/75/85	✓	✓	✓
1280×800p@60/75/85	✓	✓	✓
1280×960p@60/85	✓	✓	✓
1280×1024p@60/75/85	✓	✓	✓
1360×768p@60	✓	✓	✓
1366×768p@60	✓	✓	✓
1400×1050p@60	✓	✓	✓
1440×900p@60/75	✓	✓	✓
1600×900p@60RB	✓	✓	✓
1600×1200p@60	✓	✓	✓
1680×1050p@60	✓	✓	✓
1920×1080i@50/60	✓	✓	✓
1920×1080p@24/25/30	✓	✓	✓

Supported Resolutions (Hz)	Input	Output	
	HDMI	HDMI	USB-C
1920×1080p@50/60	✓	✓	✓
1920×1200p@60RB	✓	✓	✗
2560×1440p@60RB	✓	✓	✗
2560×1600p@60RB	✓	✓	✗
2048×1080p@24/25/30	✓	✓	✗
2048×1080p@50/60	✓	✓	✗
3840×2160p@24/25/30	✓	✓	✓
3840×2160p@50/60 (4:2:0)	✓	✓	✗
3840×2160p@24, HDR10	✓	✓	✗
3840×2160p@50/60 (4:2:0),HDR10	✓	✓	✗
3840×2160p@50/60	✓	✓	✗
4096×2160p@24/25/30	✓	✓	✗
4096×2160p@50/60 (4:2:0)	✓	✓	✗
4096×2160p@24, HDR10	✓	✓	✗
4096×2160p@50/60 (4:2:0),HDR10	✓	✓	✗
4096×2160p@50/60	✓	✓	✗

8.3 Audio Specifications

8.3.1 Digital Audio

HDMI Input / Output	
LPCM	
Max Channels	8 Channels
Sampling Rate (kHz)	32, 44.1, 48, 88.2, 96, 176.4, 192
Bitstream	
Supported Formats	Standard & High-Definition

USB-C Capture	
LPCM	
Max Channels	2 Channels
Sampling Rate (kHz)	32, 44.1, 48, 88.2, 96, 176.4, 192
Bitstream	
Supported Formats	None

8.3.2 Analog Audio

Analog Line Input	
Max Audio Level	1Vrms
Impedance	10kΩ
Type	Unbalanced

Analog Mic Input	
Max Audio Level	0.3Vrms
Impedance	10kΩ
Type	Unbalanced

8.4 Cable Specifications

Cable Length	HD	FHD	4K UHD	4K UHD ⁺	8K UHD
High Speed HDMI Cable					
HDMI Input	15m	10m	5m	3m	×
HDMI Output	15m	10m	5m	3m	×
USB-C Output					
	2m			×	

Bandwidth Category Examples:

- **HD Video**
 - 720p@60Hz
 - HDMI transmission rates lower than 3Gbps
 - HD-SDI (SMPTE 292M, 1.485Gbps)
- **FHD Video**
 - 1080p@60Hz
 - HDMI transmission rates between 3Gbps and 5.3Gbps
 - 3G-SDI (SMPTE 424M, 2.970Gbps)
- **4K UHD Video**
 - 4K@24/25/30Hz (8-bit color) & 4K@50/60Hz (4:2:0, 8-bit color)
 - HDMI transmission rates between 5.3Gbps and 10.2Gbps
 - 6G-SDI (SMPTE ST 2081, 6Gbps)
- **4K UHD⁺ Video**
 - 1080p@120Hz (10/12-bit HDR)
 - 4K@50/60Hz (4:4:4, 8-bit) & 4K@50/60Hz (4:2:0, 10/12-bit HDR)
 - HDMI transmission rates between 10.2Gbps and 18Gbps
 - 12G-SDI (SMPTE ST 2082, 12Gbps)
- **8K UHD Video**
 - 4K@120Hz (10/12-bit HDR)
 - 8K@24/25/30Hz (10/12-bit HDR) & 8K@50/60Hz (4:2:0, 8-bit color)
 - HDMI transmission rates between 18Gbps and 48Gbps
 - 24G-SDI (SMPTE ST 2083, 24Gbps)

9. ACRONYMS

ACRONYM	COMPLETE TERM
4K UHD	4K Ultra-High-Definition (10.2Gbps max)
4K UHD⁺	4K Ultra-High-Definition (18Gbps max)
ADC	Analog-to-Digital Converter
AVR	Audio/Video Receiver or Recorder
Cat.5e	Enhanced Category 5 cable
Cat.6	Category 6 cable
Cat.6A	Augmented Category 6 cable
Cat.7	Category 7 cable
dB	Decibel
DVI	Digital Visual Interface
Gbps	Gigabits per second
HDCP	High-bandwidth Digital Content Protection
HDMI	High-Definition Multimedia Interface
HDR	High Dynamic Range
LED	Light-Emitting Diode
LPCM	Linear Pulse-Code Modulation
MHz	Megahertz
TMDS	Transition-Minimized Differential Signaling
UAC	USB Audio Class
USB	Universal Serial Bus
UVC	USB Video Class
VGA	Video Graphics Array
WUXGA (RB)	Widescreen Ultra Extended Graphics Array (Reduced Blanking)
XGA	Extended Graphics Array
Ω	Ohm



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