CUSB-V604H

4K UHD+ HDMI to USB Video Capture Recorder

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

VERSION HISTORY

REVISION	DATE	SUMMARY OF CHANGE
VS0	18/09/18	Initial technical review

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1. INTRODUCTION

This HDMI to USB video capture recorder with HDMI bypass can support resolutions up to 18Gbps (600MHz) 4K UHD with HDR (via the bypass path) while simultaneously streaming the audio and video signal at 1080p to a USB connected PC for capture or re-broadcast. HDMI sources up to 1080p60 are supported for capture without modification, while 4K sources will be automatically scaled down to 1080p. 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. Digital stereo audio from either HDMI (LPCM 2.0) or the 3.5mm analog audio input will be captured with the HDMI video source and is selectable within the configuration software.

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×HDMI to USB Video Capture Recorder
- 1×USB 3.0 Cable (Type-B to Type-A)
- 1×Shockproof Feet (Set of 4)
- 1×Operation Manual

4. SYSTEM REQUIREMENTS

- HDMI source equipment such as a media player, video game console 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.

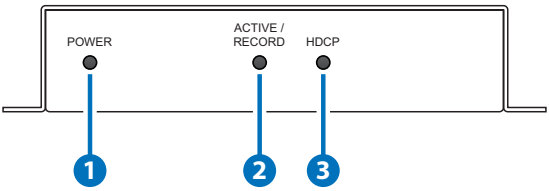
5. FEATURES

- HDMI input and output with HDR, 3D & 4K@60Hz support, DVI 1.0 compatible
- HDCP 2.2 and HDCP 1.x compliant
- Supports up to 4K UHD (18Gbps, 4K@50/60Hz 4:4:4, 8-bit) video input and output
- Supports Deep Color input and output up to 12-bit
- Supports 10-bit and 12-bit HDR (High Dynamic Range) input/output
- Automatically scales 4K sources to 1080p for USB capture
- Unit may be powered directly via USB 3.0 (When using USB 2.0, a Y-cable is required to provide additional power)
- Supports video timing stabilization to help ensure a reliable and stable USB capture stream
- Capturing over USB 3.0 allows uncompressed video and audio data capture (up to 1080p, LPCM 2.0)
- Capturing over USB 2.0 requires the application of minimal MJPEG compression to the video and audio data (up to 1080p, LPCM 2.0)
- Supports capturing 2 channel digital audio from either HDMI (LPCM 2.0) or the 3.5mm analog audio input (selectable via configuration software)
- Compliance with the UAC (USB Audio Class) and UVC (USB Video Class) standards, allows the unit to support most common capture and video streaming software

  Note: Availability and access to the controllable features of the unit depend on the capture software used.
- Support for the Free OBS (Open Broadcaster Software) streaming software which is available for Windows PC, macOS and Linux

6. OPERATION CONTROLS AND FUNCTIONS

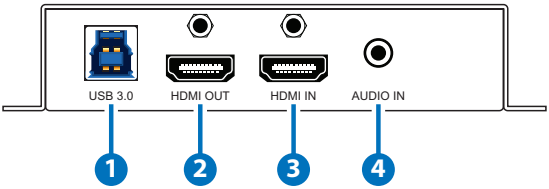
6.1 Front Panel



1. **POWER LED:** This LED will illuminate RED to indicate the unit is on and receiving power but does not yet have a live HDMI source. When a live HDMI source is detected, the LED will illuminate GREEN.
2. **ACTIVE/RECORD 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 indicates the HDCP state of the connected HDMI source. If the source is using HDCP 1.x, the LED will illuminate RED. If the source is using HDCP 2.2, the LED will illuminate BLUE. If the source is not using HDCP, the LED will remain off.

   Note: Recording video sources containing HDCP protection is not supported by this unit. Only HDMI bypass will be active with HDCP sources.

6.2 Rear Panel



1. **USB 3.0 PORT:** Connect directly to a PC's USB 3.0 port for control, video capture and power.

   Note: 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.

2. **HDMI OUT PORT:** Connect to an HDMI TV, monitor or amplifier for digital video and audio output.

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

4. **AUDIO IN PORT:** Connect to the stereo analog output of a device such as an audio player or PC.

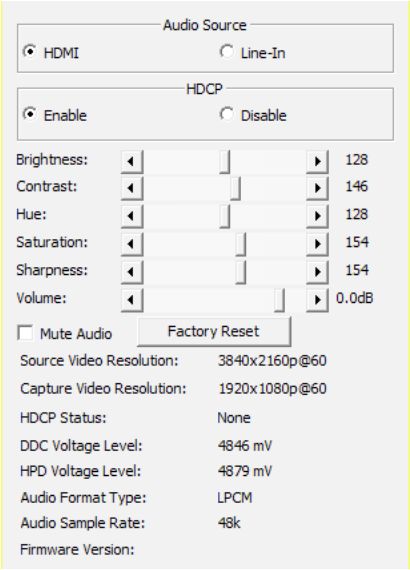
6.3 Configuration and Video Capture

6.3.1 Video Capture Configuration

The USB Video Capture Control software provides control over a selection of basic functions of the unit, including: audio source, HDCP, video settings and volume. An option to return the unit to its factory defaults is also provided.

Note: Please obtain the "USB Video Capture Control" software from your authorized dealer and save it in a directory where you can easily find it. Both Windows and macOS versions are available.

To use the software, connect the unit to your PC via the provided USB 3.0 cable and then execute the control application. A configuration window, similar to the screenshot below, will appear. All changes made to the video capture signal via this app will take effect immediately.



1) **Audio Source:** Switch the audio source to record between the embedded HDMI audio and the analog line input.

   Note: Only LPCM 2.0 audio can be recorded. Bitstream audio is not supported.

2) **HDCP:** Enable or disable HDCP support on the HDMI input.

Note: Disabling HDCP support may enable the recording of the output of some source devices (typically PCs/Macs) that enable HDCP encryption even when it is not required by the current video content. Once HDCP support is disabled on this unit, the connected device should automatically switch to a non-HDCP mode as long as the playing content allows it. Certain other source devices (such as most major video game consoles) enable HDCP output by default, but will not automatically disable HDCP based on the connected device's reported capabilities. In order to enable video recording of the output of these devices, HDCP must be manually disabled using the game console's own system menu.

3) **ProcAmp Controls:** This section provides direct control over a variety of video and audio settings when video capture is active.

   Note: Changes to these settings have no impact on the HDMI bypass output signal.

   - **Brightness:** Provides control over the overall brightness of the captured video.
   - **Contrast:** Provides control over the overall contrast of the captured video.
   - **Hue:** Provides control over the hue shift of the captured video.
   - **Saturation:** Provides control over the color saturation level of the captured video.
   - **Sharpness:** Provides control over the amount of sharpness processing to apply to the captured video.
   - **Volume:** Provides control over the audio volume of the captured video.
   - **Mute Audio:** Mutes or unmutes audio in the captured video.

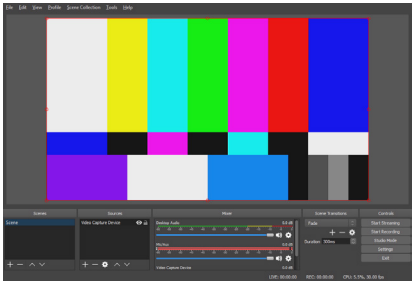
4) **Factory Reset:** Press the "Factory Reset" button to reset the unit to its factory default state. After the reset is complete, the unit will reboot automatically.

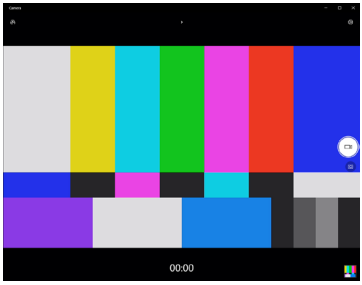
5) **Detailed Signal Information:** This section provides detailed information about the current source and capture resolution, HDCP state, DDC and hot-plug voltages, audio format and sample rate, and current firmware version.

6.3.2 Video Capture

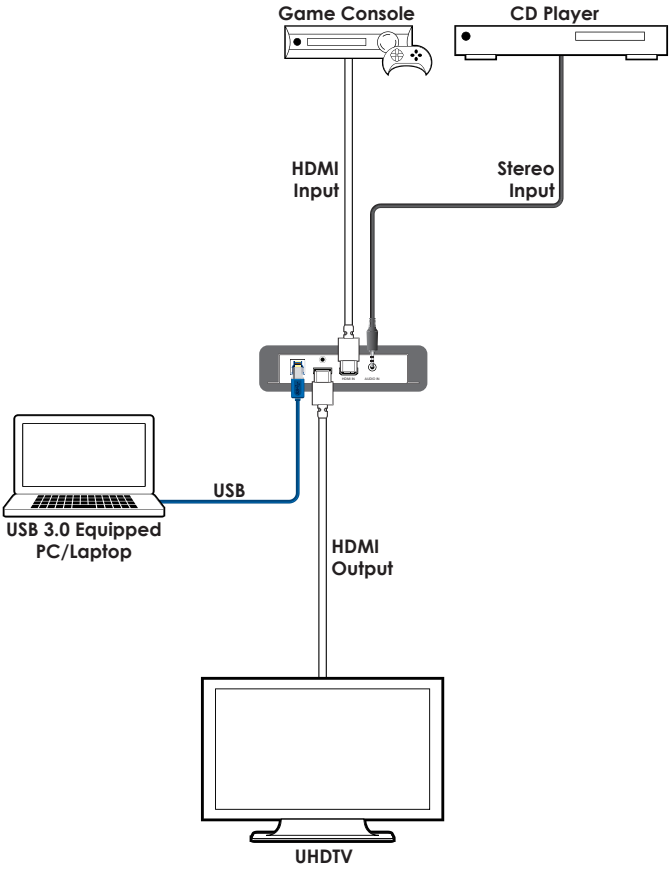
Video capture is accomplished using 3rd party software. The choice of video capture software is entirely up to the user. This unit adheres to the UAC (USB Audio Class) and UVC (USB Video Class) standards, allowing the unit to support most common video capture, chat, or streaming software, including support for the Free OBS (Open Broadcaster Software) streaming software, among many other choices. Availability and access to the controllable features of the unit (such as capture resolution, recording storage format, etc.) depends on which features the specific capture software package chooses to expose.

Note: Many source devices (such as most major video game consoles) force HDCP output by default, even when it is not required by the content currently being output. In order to enable video recording of the output of these devices, HDCP must be manually disabled using the game console's own system menu.





7. CONNECTION DIAGRAM



8. SPECIFICATIONS

8.1 Technical Specifications

HDMI Bandwidth	600MHz/18Gbps
Input Ports	1×HDMI 1×Stereo (3.5mm)
Output Ports	1×HDMI 1×USB 3.0 (Type-B)
Power Supply	Powered by USB
ESD Protection	Human Body Model: ±8kV (Air Discharge) ±4kV (Contact Discharge)
Dimensions	128mm×25mm×108mm (W×H×D) [Case Only] 128mm×25mm×117mm (W×H×D) [All Inclusive]
Weight	364g
Chassis Material	Metal (Steel)
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	7.15W

8.2 Video Specifications

Supported Resolutions (Hz)	Input	Output
	HDMI	HDMI Bypass
720×400@85	✓	✓
720×480p@60	✓	✓
640×480@60/72/75/85	✓	✓
720×576p@50	✓	✓
800×600@56/60/72/75/85	✓	✓
1280×720@50/60	✓	✓
1024×768@60/70/75/85	✓	✓
1280×768@60/75	✓	✓
1360×768@60	✓	✓
1366×768@60	✓	✓
1280×800@60	✓	✓
1152×864@75	✓	✓
1440×900@60	✓	✓
1280×960@60	✓	✓
1280×1024@60	✓	✓
1400×1050@60	✓	✓
1680×1050@60/60 (RB)	✓	✓
1920×1080i@50/60	✓	✓
1920×1080p@24/25/30/50/60	✓	✓
1600×1200@60	✓	✓
1920×1200@60 (RB)	✓	✓
2560×1600@60 (RB)	✓	✓
2560×1440@60 (RB)	✓	✓
3840×2160@24/25/30	✓	✓

Supported Resolutions (Hz)	Input	Output
	HDMI	HDMI Bypass
3840×2160@50/60 (4:4:4)	✓	✓
3840×2160@50/60 (4:2:0)	✓	✓
4096×2160@24/25/30	✓	✓
4096×2160@50/60 (4:4:4)	✓	✓
4096×2160@50/60 (4:2:0)	✓	✓

8.3 Audio Specifications

Analog Input	
Max Audio Level	2Vrms
Impedance	10kΩ
Type	Unbalanced

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

USB Output	
LPCM	
Maximum Channels	2 Channels
Sampling Rate (kHz)	32, 44.1, 48, 88.2, 96, 176.4, 192
Bitstream	
Supported Formats	None

8.4 Cable Specifications

HDMI Cable Length	1080p		4K30	4K60
	8-bit	12-bit	8-bit	8-bit
Input	15m	10m	5m	3m
Output	15m	10m	5m	3m

9. ACRONYMS

ACRONYM	COMPLETE TERM
ADC	Analog-to-Digital Converter
DDC	Display Data Channel
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
HDTV	High-Definition Television
LED	Light-Emitting Diode
LPCM	Linear Pulse-Code Modulation
MJPEG	Motion JPEG
PC	Personal Computer
UAC	USB Audio Class
UHD	Ultra-High-Definition
UHDTV	Ultra-High-Definition Television
USB	Universal Serial Bus
UVC	USB Video Class

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