



# CSC-5500CVE

Multi-format to HDMI/HDBaseT Scaler (PSE)



Operation Manual



**HDMI**<sup>®</sup>  
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.

## REVISION HISTORY

VERSION NO.	DATE	SUMMARY OF CHANGE
RDV1	27/03/18	Preliminary release
VS1	20/04/18	Final technical review



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## 1. INTRODUCTION

This multi-input scaler has HDMI, as well as Composite Video, Component Video, and PC (VGA) inputs which can be freely selected for output at a scaled resolution of the user's choosing over the mirrored HDMI, HDBaseT and VGA outputs. This unit also includes analog and digital audio outputs to provide additional playback flexibility. Support for HDMI output resolutions up to 1080p/WUXGA (RB) and Analog to Digital Conversion (ADC) functionality combine to allow for a wide range of AV signals to be displayed on the connected displays.

The HDBaseT output provides a great solution to extend your audio and video up to 70 meters over a single run of Cat.5e/6/7 cable. The HDBaseT output can provide 48V PoH power to compatible HDBaseT Receivers. The unit can be controlled via front panel buttons with an On-Screen Display (OSD), WebGUI, IR remote, Telnet, and RS-232 making it exceptionally versatile.

## 2. APPLICATIONS

- Analog and digital source integration
- Upscaling standard definition video for high-definition displays
- Conference centers
- Lecture halls
- Schools and universities

## 3. PACKAGE CONTENTS

- 1×Multi-format to HDMI/HDBaseT Scaler
- 1×24V/2.7A DC Power Adapter
- 1×Power Cord
- 1×15-pin D-sub to 3-RCA Cable
- 1×3.5mm to IR Extender Cable
- 1×Remote Control (CR-122)
- 1×Rackmount Ears (Set of 2)
- 1×Operation Manual

## 4. SYSTEM REQUIREMENTS

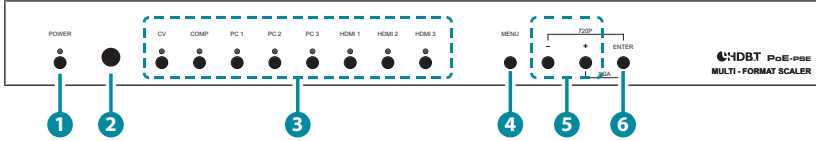
- HDMI, VGA, component or composite video source equipment such as media players, video game consoles, PCs, or set-top boxes.
- HDMI or VGA receiving equipment such as HDTVs, monitors or audio amplifiers.
- A compatible HDBaseT receiver with 48v PoH support is strongly recommended.
- The use of “Premium High Speed HDMI” cables is highly recommended.
- The use of industry standard Cat.6, Cat.6a or Cat.7 cable is highly recommended.

## 5. FEATURES

- HDMI 1.3 and DVI 1.0 compatible
- HDCP 1.x compliant
- Multiple video and audio inputs: 3 HDMI, 3 VGA, 1 Component Video, 1 Composite Video, and 8 Stereo audio
- Supports switching and scaling of multiple AV inputs for display over mirrored HDMI, HDBaseT and VGA outputs
- Supports input and output resolutions up to 1080p/WUXGA(RB)
- Supports pass-through of LPCM 2.0 audio
- Supports 3D de-interlace, noise reduction, and 3D comb filtering for composite video sources
- Frame rate conversion support
- Supports analog to digital (ADC) and digital to analog (DAC) audio conversion, insertion and extraction
- Quick output resolution switching via hot keys
- HDBaseT feature support: HD Video and Audio, Ethernet, 48V PoH, and Control (bidirectional IR/RS-232 pass-through)
- HDBaseT output provides 48V PoH (PSE) power to compatible HDBaseT Receivers (PD)
- Supports EDID and HDCP management
- Remote control provides discrete input source selection
- Controllable via front panel controls with OSD, RS-232, Telnet, WebGUI, and IR remote

## 6. OPERATION CONTROLS AND FUNCTIONS

### 6.1 Front Panel



**1 POWER Button & LED:** Press this button to power the unit on or place it into stand-by mode. The LED will be lit when the unit is receiving power.  
*Note: The power switch on the back of the unit must also be in the “On” position for the unit to receive power.*

**2 IR Window:** Accepts IR signals from the included IR remote for control of this unit only.

**3 CV/COMP/PC 1~3/HDMI 1~3 Buttons & LEDs:** Press any of these buttons to switch immediately to the corresponding input. An LED will illuminate to indicate which source is currently selected.

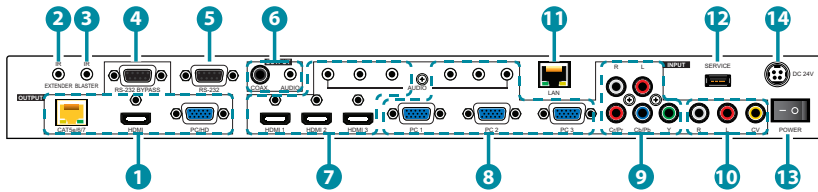
**4 MENU Button:** Press to enter the OSD menu, or to back out from menu items.

**5 – & + Buttons:** Press to navigate or to adjust selections within the OSD menu.

**6 ENTER Button:** Press to confirm a selection within the OSD or to go deeper into a menu item.

*Note: Pressing “ENTER” and “+” together will reset the output resolution to XGA (1024×768@60Hz). Pressing “ENTER” and “-” together will reset the output resolution to 720p@60Hz.*

## 6.2 Rear Panel



- 1 CAT5e/6/7 OUT:** Connect to a compatible HDBaseT Receiver with a single Cat.5e/6/7 cable for transmission of all data signals.

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

**PC/HD OUT:** Connect to a monitor/display for video output. For HD (Component) output, use the supplied D-Sub 9-pin to 3 RCA adaptor cable for HD resolutions from 480p~1080p.

*Note: When the selected HDMI input source signal has HDCP content the VGA/Component output will not display any image.*
- 2 IR EXTENDER:** Connect to the provided IR Extender to extend the IR control range of remotely located devices. Ensure that the remote being used is within direct line-of-sight of the IR Extender.
- 3 IR BLASTER:** Connect to an IR Blaster to transmit IR signals to devices within direct line-of-sight of the IR Blaster.
- 4 RS-232 BYPASS:** Connect to a PC, laptop or other serial control device for the extension of RS-232 signals across the HDBaseT connection.
- 5 RS-232:** Connect directly to a PC, laptop or other serial control device to send RS-232 commands to control the unit.
- 6 COAX OUT:** Connect to an amplifier or active speakers for digital audio output.

*Note: When the AUDIO SOURCE setting is set to “AUTO” the coaxial output supports passing standard HDMI 1.2 bitstream formats.*

**AUDIO OUT:** Connect to an amplifier or active speakers for audio output in stereo format.

*Note: If the source format is bitstream, this output will be muted automatically.*
- 7 HDMI IN 1~3:** Connect to HDMI source equipment such as media players, game consoles or set-top boxes.

**AUDIO IN 1~3:** Connect to the stereo analog output of the device connected to the paired HDMI input port.

*Note: If the AUDIO SOURCE setting is set to "AUTO" and the HDMI input contains audio, it will have priority over the analog input.*

**8 PC IN 1~3:** Connect to VGA source equipment such as a PC or laptop.

**AUDIO IN 4~6:** Connect to the stereo analog output of the device connected to the paired VGA input port.

**9 YPbPr & L/R IN:** Connect to component (YPbPr) video source equipment with stereo audio such as DVD players or set-top boxes.

**10 CV & L/R IN:** Connect to composite video source equipment with stereo audio such as DVD players or VCRs.

**11 LAN:** Connect directly, or through a network switch, to your PC/ laptop to control the unit via Telnet/WebGUI and to extend the network to both ends of the HDBaseT connection.

**12 SERVICE:** Reserved for manufacturer use only.

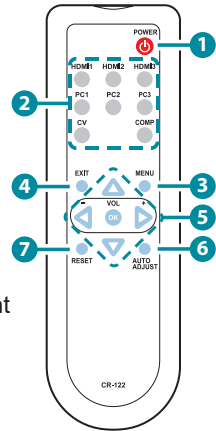
**13 POWER Switch:** Flip this switch to provide power to the unit or to turn it completely off.

*Note: This unit's power stand-by functionality will not work if this switch is in the "Off" position.*

**14 DC 24V:** Plug the 24V DC power adapter into this port and connect it to an AC wall outlet for power.

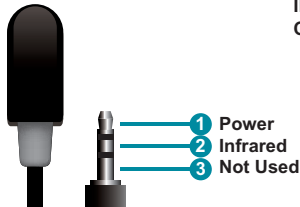
## 6.3 Remote Control

- 1 **POWER:** Press this button to power the unit on or place it into stand-by mode.
- 2 **HDMI 1~3/PC 1~3/CV/COMP:** Press any of these buttons to switch immediately to the corresponding input.
- 3 **MENU:** Press this button to enter the OSD menu.
- 4 **EXIT:** Press this button to exit the menu or the current selection in the OSD menu.
- 5 **OK/▲/▼/◀/▶ & VOL/-/+:** Press OK to confirm the selection or press the arrow buttons to navigate the OSD menu. When the OSD menu is not active, use the LEFT/RIGHT (◀/▶) buttons to control the volume level.
- 6 **AUTO ADJUST:** Press this button to activate the Auto Adjust function for VGA sources.
- 7 **RESET:** Press this button to reset the device back to the default settings.

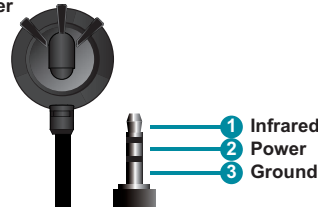


## 6.4 IR Cable Pinouts

IR Blaster Cable



IR Extender Cable



## 6.5 OSD Menu

All functions of this unit can be controlled by using the OSD (On Screen Display) which is activated by pressing the MENU button on the front of the unit. Use the + (Plus), - (Minus), and ENTER buttons to navigate the OSD menu. Press the MENU button to back out from any menu item and then press it again to close the menu.

MAIN MENU
<b>Display</b>
<b>Color</b>
<b>Audio</b>
<b>Setup</b>
<b>Information</b>

The individual functions of the OSD will be introduced in the following section. Items marked in **BOLD** are the factory default settings.

DISPLAY		
2ND LEVEL	3RD LEVEL	4TH LEVEL
Output	640×480 60	
	800×600 60	
	1024×768 60	
	1280×768 60	
	1360×768 60	
	1280×720 60	
	1280×800 60	
	1280×1024 60	
	1440×900 60	
	1400×1050 60	
	1680×1050 60	
	1600×1200 60	
	1920×1080 60	

DISPLAY			
2ND LEVEL	3RD LEVEL	4TH LEVEL	
	1920×1200 60		
Output	<b>1280×720p 60</b>		
	1920×1080i 60		
	1920×1080p 60		
	720×576p 50		
	1280×720p 50		
	1920×1080i 50		
	1920×1080p 50		
Size	Over Scan		
	<b>FULL</b>		
	Follow Input		
	Pan Scan		
	Letter Box		
	Under 2		
	Under 1		
Mode Info	Off		
	<b>INFO</b>		
	On		
Input HDCP	Off		
	<b>ON</b>		
PC (PC Sources Only)	Auto Setup		
	H Position		
	V Position		
	Phase		
	Clock		
	WXGA/XGA		<b>XGA</b>
			WXGA
Reset			

- 1) **Output:** Selects the scaled output resolution to use.
- 2) **Size:** Selects the aspect ratio to use when outputting the source. “Full” stretches the source to fill the output resolution, regardless of the original aspect ratio, while “Follow Input” will always attempt to retain the original source’s correct aspect ratio by adding black bars if necessary.
- 3) **Mode Info:** Enable or disable the information OSD. Selecting “INFO” will result in the information display being visible after a source or resolution change for only a short while.
- 4) **Input HDCP:** Enables or disables HDCP support for all HDMI inputs.
- 5) **PC:** These settings control the input specifications to use with the VGA inputs. Activating the Auto Setup function forces the unit to attempt to detect the correct values. Selecting reset will reset all VGA input settings.

*Note: The "Auto Setup" function requires a VGA source with a bright, edge-to-edge, image to accurately judge the dimensions of the signal.*

COLOR		
2ND LEVEL	3RD LEVEL	4TH LEVEL
Contrast	0~60 <b>(30)</b>	
Brightness	0~60 <b>(30)</b>	
Color	R	0~1023 <b>(512)</b>
	G	0~1023 <b>(512)</b>
	B	0~1023 <b>(512)</b>
	R Offset	0~1023 <b>(512)</b>
	G Offset	0~1023 <b>(512)</b>
	B Offset	0~1023 <b>(512)</b>
Hue	0~60 <b>(30)</b>	
Saturation	0~60 <b>(30)</b>	
Sharpness	0~30 <b>(0)</b>	
NR	<b>OFF</b>	
	Low	
	Middle	
NR	High	

- 1) **Contrast:** Provides control over the overall contrast of the scaled output image.
- 2) **Brightness:** Provides control over the overall brightness of the scaled output image.
- 3) **Color (R/G/B):** These controls provide control over the red, green, and blue color level of the scaled output.  
**Color (R/G/B Offset):** These controls provide control over the red, green, and blue color offset level of the scaled output.
- 4) **Hue:** Provides control over the hue shift of the scaled output image.
- 5) **Saturation:** Provides control over the color saturation level of the scaled output image.
- 6) **Sharpness:** Provides control over the amount of sharpness processing to apply to the scaled output image.
- 7) **NR:** Provides control over the aggressiveness of the digital noise reduction processing when applied to the scaled output image. Selecting “Off” disables all noise reduction processing.

AUDIO	
2ND LEVEL	3RD LEVEL
Volume	0~100 ( <b>100</b> )
Delay	<b>OFF</b>
	40ms
	110ms
	150ms
Sound	<b>ON</b>
	Mute
Source (For HDMI inputs only)	<b>AUTO</b>
	Ext.

- 1) **Volume:** Provides control over the volume level of all audio outputs.
- 2) **Delay:** This control sets the amount of audio delay to use, in milliseconds. Selecting “Off” will disable audio delay completely.
- 3) **Sound:** Mutes or unmutes all audio outputs.
- 4) **Source:** Selects the audio source selection method for the HDMI inputs.

Selecting “Auto” will prioritize HDMI audio, if present, over audio from the associated analog audio inputs. Selecting “EXT.” will force the HDMI inputs to use the associated analog audio inputs.

SETUP	
2ND LEVEL	3RD LEVEL
Factory Reset	
Key Lock	<b>OFF</b> On
Power Save	<b>OFF</b> On
IP Mode	<b>DHCP</b> Static
Set Static IP	IP Address: <b>192.168.0.1</b> Subnet Mask: <b>255.255.255.0</b> <b>Def. Gateway: 192.168.1.254</b>
Free Run Color	Black <b>BLUE</b>

- 1) **Factory Reset:** Selecting this will reset the unit’s settings back to their factory defaults.
- 2) **Key Lock:** Enable or disable the front panel key lock. When enabled, no inputs or settings can be adjusted using the front panel buttons other than disabling the key lock setting itself.
- 3) **Power Save:** Enabling this function will cause the unit to automatically switch into stand-by mode if there is no live signal, and no user interaction for a period of 3 minutes.
- 4) **IP Mode:** Select the IP address acquisition mode. When the unit is set to DHCP mode it will attempt to automatically obtain an IP address from a DHCP server. When set to Static mode the unit will use the user defined static IP information.
- 5) **Set Static IP:** Manually set the IP address, netmask and gateway address to use when the unit is in Static IP mode.
- 6) **Free Run Color:** Selects the free run color to use when no live input source is detected.

INFORMATION	
2ND LEVEL	3RD LEVEL
Input	[Current Status Details]
Output	
Revision	
IP Address	

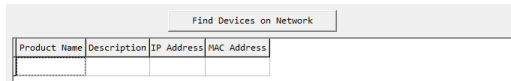
- 1) Information:** This screen displays information about the unit's current state, input and output status, IP address, as well as the current firmware version.

## 6.6 WebGUI Control

### • Device Discovery APP

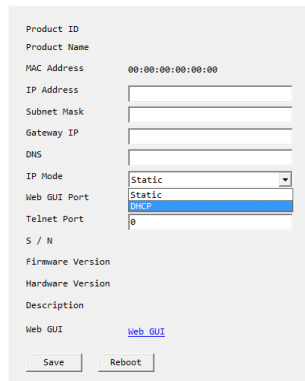
Please obtain the “Device Discovery” software from your authorized dealer and save it in a directory where you can easily find it.

Connect the unit and your PC/Laptop to the same active network and execute the “Device Discovery” software. Click on “Find Devices on Network” and a list of devices connected to the local network will show up indicating their current IP address.



Product Name	Description	IP Address	MAC Address

By clicking on one of the listed devices you will be presented with the network details of that particular device.



Product ID  
Product Name  
MAC Address 00:00:00:00:00:00  
IP Address  
Subnet Mask  
Gateway IP  
DNS  
IP Mode Static  
Web GUI Port Static  
Telnet Port 0  
S / N  
Firmware Version  
Hardware Version  
Description  
Web GUI [Web GUI](#)  
Save Reboot

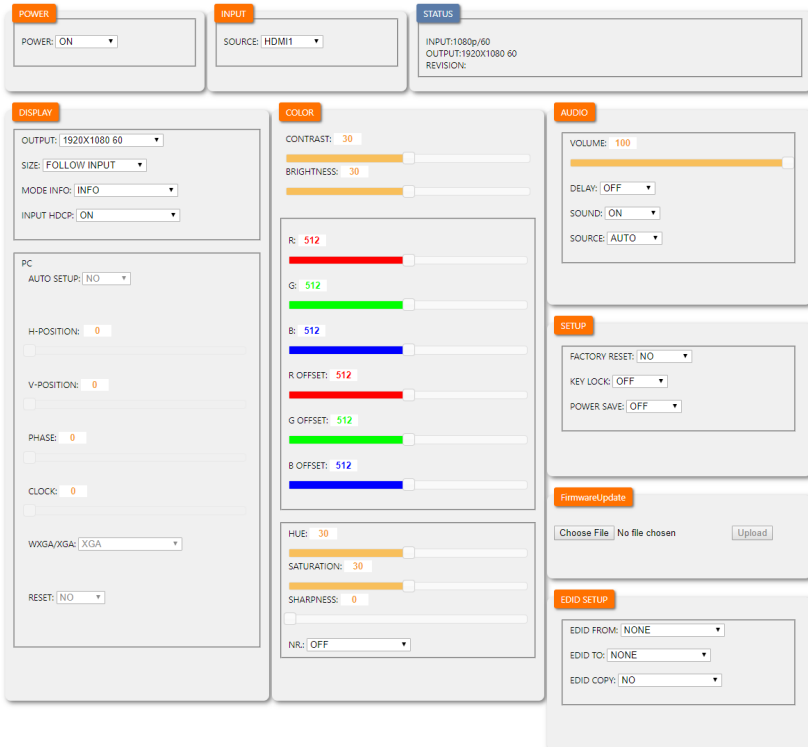
- 1) IP Mode:** If you choose, you can alter the static IP network settings for the device, or switch the unit into DHCP mode to automatically obtain proper network settings from a local DHCP server. To switch to DHCP mode, please select DHCP from the IP mode drop-down, then click “Save” followed by “Reboot”.
- 2) WebGUI Hotkey:** Once you are satisfied with the network settings, you may use them to connect via Telnet or WebGUI. The network information window provides a convenient link to launch the WebGUI directly.

*Note: The unit's default IP address is 192.168.1.50.*

## • WebGUI Overview

All primary functions of this unit are controllable via the built-in WebGUI. These controls are presented within a single main page. After connecting to the unit's IP address in a web browser, the main control web page will display, allowing direct control of the unit. If desired, the numerical value for many of the items can be entered directly by typing it in the box above the slider bar. Press "Enter" to accept the newly entered value.

*Note: If the IP address is changed then the IP address required for WebGUI or Telnet access will also change accordingly. Consult the OSD's Information tab to view the current IP settings if necessary.*



The screenshot displays the WebGUI interface with the following sections:

- POWER:** POWER: ON
- INPUT:** SOURCE: HDMI1
- STATUS:** INPUT:1080p/60, OUTPUT:1920X1080 60, REVISION:
- DISPLAY:** OUTPUT: 1920X1080 60, SIZE: FOLLOW INPUT, MODE INFO: INFO, INPUT HDCP: ON, PC AUTO SETUP: NO, H-POSITION: 0, V-POSITION: 0, PHASE: 0, CLOCK: 0, WXGA/XGA: XGA, RESET: NO
- COLOR:** CONTRAST: 30, BRIGHTNESS: 30, R: 512, G: 512, B: 512, R OFFSET: 512, G OFFSET: 512, B OFFSET: 512, HUE: 30, SATURATION: 30, SHARPNESS: 0, NR: OFF
- AUDIO:** VOLUME: 100, DELAY: OFF, SOUND: ON, SOURCE: AUTO
- SETUP:** FACTORY RESET: NO, KEY LOCK: OFF, POWER SAVE: OFF
- FirmwareUpdate:** Choose File, No file chosen, Upload
- EDID SETUP:** EDID FROM: NONE, EDID TO: NONE, EDID COPY: NO

## • POWER

This section allows for the unit to be powered ON or placed into stand-by mode (OFF).

- **INPUT**

This section allows for control of input selection.

- **STATUS**

This section provides information about the unit's current input, and output as well as the current Firmware Revision.

- **DISPLAY**

This section allows for control over the output resolution, aspect ratio, HDCP behavior of the HDMI inputs, as well as configuring the information OSD's behavior.

- **PC**

This section is only active when a PC source is selected. These settings control the input specifications to use with the VGA inputs. Activating the Auto Setup function forces the unit to attempt to detect the correct values. Selecting reset will reset all VGA input settings.

*Note: The "Auto Setup" function requires a VGA source with a bright, edge-to-edge, image to accurately judge the dimensions of the signal.*

- **COLOR**

This section provides detailed controls for the output R/G/B levels, contrast, saturation, brightness, hue, and sharpness as well as controlling noise reduction.

- **AUDIO**

This section provides control over all audio output of the unit. The universal output volume level, audio delay, and muting. The audio source priority for all HDMI inputs is also made here. Selecting "Auto" will prioritize HDMI audio, if present, over audio from the associated analog audio inputs. Selecting "EXT." will force the HDMI inputs to use the associated analog audio inputs.

- **SETUP**

This section provides access to control over the front panel key lock and the unit's power save mode. It also allows for resetting the entire unit to its factory defaults.

- **KEY LOCK:** When key lock is enabled, no inputs or settings can be adjusted using the front panel buttons other than disabling the key lock setting itself.
- **POWER SAVE:** Enabling the power save function will cause the unit to automatically switch into stand-by mode if there is no live signal, and no user interaction for a period of 3 minutes.

- **FIRMWARE UPDATE**

This section allows for new firmware to be uploaded into the unit. To update the unit's firmware click the "Choose File" button to open the file selection window and then select an appropriate firmware update file (\*.bin format) located on your local PC. After selecting the file, click the "Upload" button to begin the firmware update process. Once the firmware update process has completed the unit will reboot.

- **EDID SETUP**

This section allows the user to choose the EDID source to be used with each HDMI input. Select the EDID source (EDID FROM), the EDID target (EDID TO), and then change the EDID Copy setting to "Yes" to assign the new EDID.

## 6.7 RS-232 Control

UNIT		TERMINAL	
Pin	Pinout	Pin	Pinout
1		1	
2	TxD	2	RxD
3	RxD	3	TxD
4		4	
5	GND	5	GND
6		6	
7		7	
8		8	
9		9	

SERIAL PORT SETTINGS	
Baud Rate	19200
Data Bits	8
Parity Bit	None
Stop Bits	1
Flow Control	None

## 6.8 Telnet Control

Before attempting to use Telnet control, please ensure that both the unit and the PC are connected to the same active networks.

To Access the Command Line Interface (CLI)	
Windows 7	Click <b>Start</b> , type “cmd” in the search field, and press <b>Enter</b> .
Windows XP	Click <b>Start &gt; Run</b> , type “cmd”, and press <b>Enter</b> .
Mac OS X	Click <b>Go &gt; Applications &gt; Utilities &gt; Terminal</b> .

Once in the Command Line Interface (CLI) type “telnet” followed by the IP address of the unit (and the port number if it is non-standard) and then hit “Enter”. This will connect us to the unit we wish to control. Type “help” to list the available commands. See below for reference.

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\Administrator>telnet 192.168.1.50 23
```

*Note: If the IP address is changed then the IP address required for Telnet access will also change accordingly.*

## 6.9 RS-232 and Telnet Commands

COMMAND
DESCRIPTION & PARAMETERS
<b>?</b>
Show the full command list.
<b>HELP</b>
Show the full command list.
<b>S POWER N1</b>
Turn the unit on or off (stand-by mode).
Available values for <b>N1</b> :
0 [Off (Stand-by mode)]
1 [On]
<b>R POWER</b>
Shows the current power state of the unit.
<b>S SOURCE N1</b>
Select the input source to display.
Available values for <b>N1</b> :
1 [HDMI 1]
2 [HDMI 2]
3 [HDMI 3]
4 [YPbPr]
5 [Composite video]
6 [PC 1]
7 [PC 2]
8 [PC 3]
<b>R SOURCE</b>
Shows the currently selected input source.
<b>S OUTPUT N1</b>
Set the scaled output resolution.

COMMAND	
DESCRIPTION & PARAMETERS	
Available values for <b>N1</b> :	
0	[640×480@60Hz]
1	[800×600@60Hz]
2	[1024×768@60Hz]
3	[1280×768@60Hz]
4	[1360×768@60Hz]
5	[1280×720@60Hz]
6	[1280×800@60Hz]
7	[1280×1024@60Hz]
8	[1440×900@60Hz]
9	[1400×1050@60Hz]
10	[1680×1050@60Hz]
11	[1600×1200@60Hz]
12	[1920×1080@60Hz]
13	[1920×1200@60Hz]
14	[480p@60Hz]
15	[720p@60Hz]
16	[1080i@60Hz]
17	[1080p@60Hz]
18	[576p@50Hz]
19	[720p@50Hz]
20	[1080i@50Hz]
21	[1080p@50Hz]
<p><i>Note: Resolutions 0~13 are encoded using the RGB color space. Resolutions 14~21 are encoded using the YUV color space.</i></p>	
R OUTPUT	
Show the currently selected output resolution.	
S SIZE N1	
Set the output aspect ratio.	

COMMAND	
DESCRIPTION & PARAMETERS	
Available values for <b>N1</b> :	
0	[Overscan]
1	[Full]
2	[Follow Input]
3	[Pan & Scan]
4	[Letterbox]
5	[Underscan 2]
6	[Underscan 1]
<b>R SIZE</b>	
Show the current output aspect ratio.	
<b>S INFO MODE N1</b>	
Enable, disable, or set a short timeout for the OSD information display.	
Available values for <b>N1</b> :	
0	[Always off]
1	[Short display]
2	[Always on]
<b>R INFO MODE</b>	
Show the current OSD information display setting.	
<b>S INPUTHDCP N1</b>	
Enable or disable HDCP support on all HDMI inputs.	
Available values for <b>N1</b> :	
0	[On]
1	[Off]
<b>R INPUTHDCP</b>	
Show the current HDCP support setting.	
<b>S PC AUTO 1</b>	
Activate the VGA auto setup function for the current VGA input.	

COMMAND	
DESCRIPTION & PARAMETERS	
<b>S PC H POSITION N1</b>	
Set the horizontal position for VGA inputs.	
Available values for <b>N1</b> :	
<b>N1</b> = 0 ~ 60	[Horizontal position]
<b>R PC H POSITION</b>	
Show the current horizontal position for VGA inputs.	
<b>S PC V POSITION N1</b>	
Set the vertical position for VGA inputs.	
Available values for <b>N1</b> :	
<b>N1</b> = 0 ~ 60	[Vertical position]
<b>R PC V POSITION</b>	
Show the current vertical position for VGA inputs.	
<b>S PC PHASE N1</b>	
Set the phase for VGA inputs.	
<b>N1</b> = 0 ~ 31	[PC phase]
<b>R PC PHASE</b>	
Show the current PC phase for VGA inputs.	
<b>S PC CLOCK N1</b>	
Set the clock for VGA inputs.	
<b>N1</b> = 700 ~ 2300	[PC clock]
<b>R PC CLOCK</b>	
Show the current PC clock for VGA inputs.	
<b>S PC WXGA XGA N1</b>	
Set whether XGA or WXGA has detection priority. (VGA inputs only)	
Available values for <b>N1</b> :	
0	[WXGA has priority]
1	[XGA has priority]

COMMAND	
DESCRIPTION & PARAMETERS	
<b>R PC WXGA XGA</b>	Show the current XGA/WXGA detection priority setting.
<b>S CONTRAST N1</b>	Set the output's contrast level. N1 = 0 ~ 60 [Contrast]
<b>R CONTRAST</b>	Show the output's current contrast level.
<b>S BRIGHTNESS N1</b>	Set the output's brightness level. N1 = 0 ~ 60 [Brightness]
<b>R BRIGHTNESS</b>	Show the output's current brightness level.
<b>S COLOR RED N1</b>	Set the output's red level. N1 = 0 ~ 1023 [Red level]
<b>R COLOR RED</b>	Show the current red output level.
<b>S COLOR GREEN N1</b>	Set the output's green level. N1 = 0 ~ 1023 [Green level]
<b>R COLOR GREEN</b>	Show the current green output level.
<b>S COLOR BLUE N1</b>	Set the output's blue level. N1 = 0 ~ 1023 [Blue level]
<b>R COLOR BLUE</b>	Show the current blue output level.
<b>S COLOR RED OFFSET N1</b>	

COMMAND	
DESCRIPTION & PARAMETERS	
	Set the output's red offset level. <b>N1</b> = 0 ~ 1023 [Red offset]
<b>R COLOR RED OFFSET</b>	
	Show the current red offset output level.
<b>S COLOR GREEN OFFSET N1</b>	
	Set the output's green offset level. <b>N1</b> = 0 ~ 1023 [Green offset]
<b>R COLOR GREEN OFFSET</b>	
	Show the current green offset output level.
<b>S COLOR BLUE OFFSET N1</b>	
	Set the output's blue offset level. <b>N1</b> = 0 ~ 1023 [Blue offset]
<b>R COLOR BLUE OFFSET</b>	
	Show the current blue offset output level.
<b>S HUE N1</b>	
	Set the output's hue adjustment value. <b>N1</b> = 0 ~ 60 [Hue]
<b>R HUE</b>	
	Show the output's current hue adjustment value.
<b>S SATURATION N1</b>	
	Set the output's saturation level. <b>N1</b> = 0 ~ 60 [Saturation]
<b>R SATURATION</b>	
	Show the output's current saturation level.
<b>S SHARPNESS N1</b>	
	Set the output's sharpness level. <b>N1</b> = 0 ~ 30 [Sharpness]

COMMAND	
DESCRIPTION & PARAMETERS	
<b>R SHARPNESS</b>	
Show the output's current sharpness level.	
<b>S NR N1</b>	
Set the amount of noise reduction to apply to the output.	
Available values for <b>N1</b> :	
0	[Off]
1	[Low]
2	[Middle]
3	[High]
<b>R NR</b>	
Show the current noise reduction setting.	
<b>S VOLUME N1</b>	
Set the audio output volume level.	
<b>N1</b> = 0~100	[Volume level]
<b>R VOLUME</b>	
Show the current volume level.	
<b>S AUDIODELAY N1</b>	
Set the global audio delay setting.	
Available values for <b>N1</b> :	
0	[Off]
1	[40ms]
2	[110ms]
3	[150ms]
<b>R AUDIODELAY</b>	
Show the current global audio delay setting.	
<b>S AUDIOMUTE N1</b>	
Enable or disable audio muting for the output.	

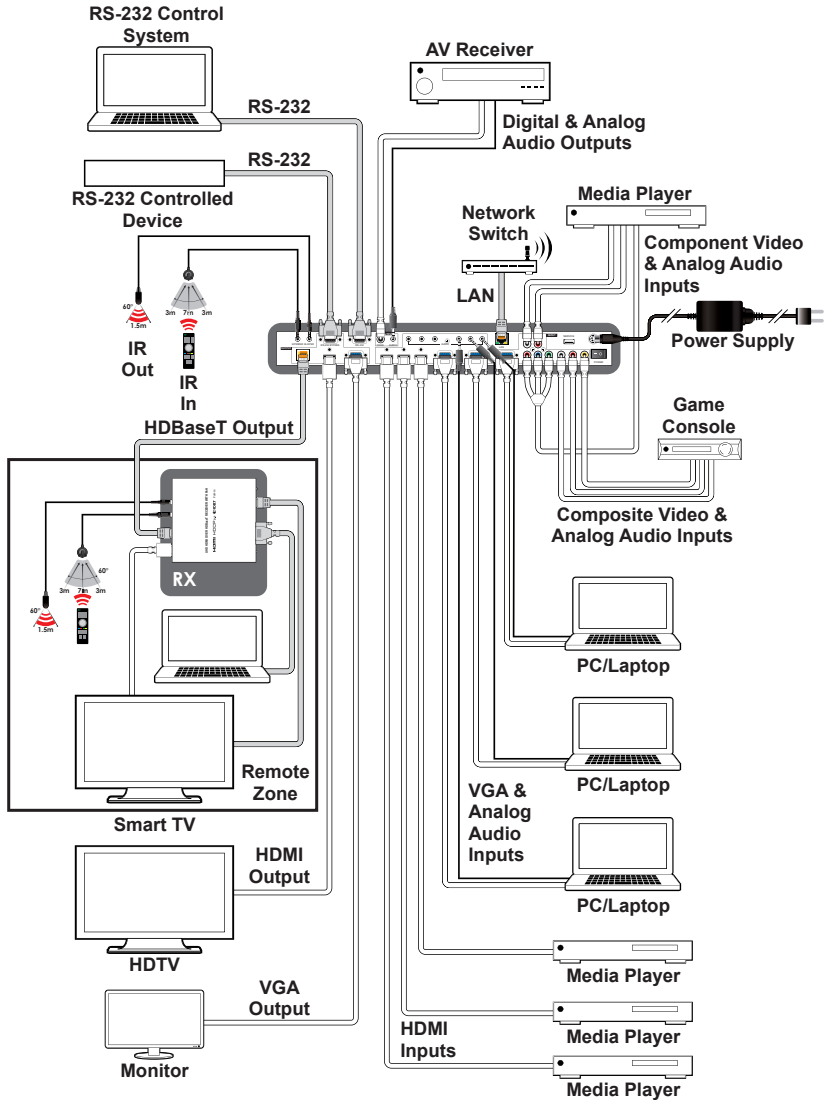
COMMAND	
DESCRIPTION & PARAMETERS	
Available values for <b>N1</b> :	
0	[Mute off]
1	[Mute on]
<b>R AUDIOMUTE</b>	
Show the current audio mute setting.	
<b>S HDMIAUDIO N1</b>	
Set the audio source selection method for the HDMI inputs.	
Available values for <b>N1</b> :	
0	[Auto]
1	[External audio]
<b>R HDMIAUDIO</b>	
Show the current HDMI audio source selection setting.	
<b>S KEY LOCK N1</b>	
Enable or disable the front panel key lock function.	
Available values for <b>N1</b> :	
0	[Enable Key Lock]
1	[Disable key lock]
<b>R KEY LOCK</b>	
Show the current front panel key lock state.	
<b>S FREERUNCOLOR N1</b>	
Set the free run color to use when there is no live source.	
Available values for <b>N1</b> :	
0	[Black]
1	[Blue]
<b>R FREERUNCOLOR</b>	
Show the currently selected free run color.	
<b>S IP MODE N1</b>	
Set the IP address assignment mode.	

COMMAND	
DESCRIPTION & PARAMETERS	
Available values for <b>N1</b> :	
0	[Static IP mode]
1	[DHCP mode]
<b>R IP MODE</b>	
Show the current IP mode.	
<b>S STATIC IP ADDR N1</b>	
Set the static IP address.	
<b>N1 = X.X.X.X</b>	[X = 0 ~ 255]
<b>R STATIC IP ADDR</b>	
Show the current IP address.	
<b>S SUB MASK N1</b>	
Set the static netmask address.	
<b>N1 = X.X.X.X</b>	[X = 0 ~ 255]
<b>R SUB MASK</b>	
Show the current netmask.	
<b>S GATE WAY N1</b>	
Set the static gateway address.	
<b>N1 = X.X.X.X</b>	[X = 0 ~ 255]
<b>R GATE WAY</b>	
Show the current gateway.	
<b>S RESET 1</b>	
Reset all configurations to the factory defaults.	
<b>ST</b>	
Shows the current firmware version and selected input.	
<b>VOL+</b>	
Raises the output volume level one step.	
<b>VOL-</b>	
Lowers the output volume level one step.	

COMMAND
DESCRIPTION & PARAMETERS
<b>QUIT</b>
Disconnect from the current session. <i>Note: Telnet only.</i>

*Note: Commands will not be executed unless followed by a carriage return.  
Commands are not case-sensitive.*

## 7. CONNECTION DIAGRAM



## 8. SPECIFICATIONS

### 8.1 Technical Specifications

<b>HDMI Bandwidth</b>	165MHz/4.95Gbps
<b>HDBaseT Bandwidth</b>	340MHz/10.2Gbps
<b>Input Ports</b>	3×HDMI 3×VGA (HD-15) 1×YPbPr (RCA) 1×CV (RCA) 6×Stereo (3.5mm) 2×Stereo (4×RCA)
<b>Output Ports</b>	1×HDMI 1×HDBaseT (Cat.5e/6/7) 1×VGA (HD-15) 1×S/PDIF (RCA) 1×Stereo (3.5mm)
<b>Pass-through Ports</b>	1×IR Extender (3.5mm) 1×IR Blaster (3.5mm) 1×RS-232 (9-pin D-sub)
<b>Pass-through/Control Port</b>	1×LAN (RJ-45)
<b>Control Port</b>	1×RS-232 (9-pin D-sub)
<b>IR Frequency</b>	30–50kHz (30–60kHz under ideal conditions)
<b>Baud Rate</b>	Up to 19200bps
<b>Power Supply</b>	24/2.7A DC (US/EU standards, CE/FCC/UL certified)
<b>ESD Protection</b>	Human Body Model: ±8kV (Air Discharge) ±4kV (Contact Discharge)

<b>Dimensions</b>	432mm×44mm×174mm (W×H×D) [Case Only] 432mm×49mm×183mm (W×H×D) [All Inclusive]
<b>Weight</b>	2,150g
<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 (Non-condensing)
<b>Power Consumption</b>	24.77W

## 8.2 Video Specifications

Resolution/Timing (Hz)	Support		
	HDMI Input	PC Input	Output
640×480p@60/72/75	✓	✓	60Hz
800×600p@56/60/72/75	✓	✓	60Hz
1024×768p@60/70/75	✓	✓	60Hz
1152×864p@75	✓	✓	x
1280×720p@60	✓	✓	✓
1280×768p@60/75	✓	✓	60Hz
1280×800p@60/60 (RB)	✓	✓	60Hz
1280×960p@60	✓	✓	x
1280×1024p@60	✓	✓	✓
1360×768p@60	✓	✓	✓
1366×768p@60	✓	✓	x
1400×1050p@60/60 (RB)	✓	✓	60Hz
1440×900p@60/60 (RB)	✓	✓	60Hz

Resolution/Timing (Hz)	Support		
	HDMI Input	PC Input	Output
1600×900p@60 (RB)	✓	✓	x
1600×1200p@60	✓	✓	✓
1680×1050p@60/60 (RB)	✓	✓	60Hz
1920×1080p@60	✓	✓	✓
1920×1200p@60 (RB)	✓	✓	✓
1440×576i@50	✓	x	x
1440×480i@59.94/60	✓	x	x
720×480p@59.94/60	✓	x	x
720×576p@50	✓	x	✓
1280×720p@50/59.94/60	✓	x	50/60Hz
1920×1080i@50/59.94/60	✓	x	50/60Hz
1920×1080p@50/59.94/60	✓	x	50/60Hz

## 8.3 Audio Specifications

Analog Inputs	
Max Audio Level	1Vrms
Input Impedance	>47kΩ
Analog Outputs	
Max Audio Level	1Vrms
THD+N	0.1%
SNR	> 60dB@0dBFS
Frequency Response	< ±1dB@20Hz~20kHz
Crosstalk	< -50dB@20Hz~20kHz
Optical (S/PDIF) Input	
Sampling Rate (kHz)	32, 44.1, 48
Optical (S/PDIF) Output	
Sampling Rate (kHz)	48

## 9. ACRONYMS

ACRONYM	COMPLETE TERM
<b>ADC</b>	Analog-to-Digital Converter
<b>Cat.5e</b>	Category 5 (enhanced) cable
<b>Cat.6</b>	Category 6 cable
<b>Cat.7</b>	Category 7 cable
<b>CEC</b>	Consumer Electronics Control
<b>CLI</b>	Command-Line Interface
<b>COMP</b>	Component Video
<b>DAC</b>	Digital-to-Analog Converter
<b>DVI</b>	Digital Visual Interface
<b>EDID</b>	Extended Display Identification Data
<b>GUI</b>	Graphical User Interface
<b>HD</b>	High-Definition
<b>HDCP</b>	High-bandwidth Digital Content Protection
<b>HDMI</b>	High-Definition Multimedia Interface
<b>HDR</b>	High Dynamic Range
<b>HDTV</b>	High-Definition Television
<b>IP</b>	Internet Protocol
<b>IR</b>	Infrared
<b>LAN</b>	Local Area Network
<b>LPCM</b>	Linear Pulse-Code Modulation
<b>NTSC</b>	National Television System Committee
<b>OSD</b>	On-Screen Display
<b>PAL</b>	Phase Alternating Line
<b>PC</b>	Personal Computer
<b>PD</b>	Powered Device
<b>PoH</b>	Power over HDBaseT
<b>PSE</b>	Power Sourcing Equipment
<b>S/PDIF</b>	Sony/Philips Digital Interface Format

<b>ACRONYM</b>	<b>COMPLETE TERM</b>
<b>SNR</b>	Signal-to-Noise Ratio
<b>THD+N</b>	Total Harmonic Distortion plus Noise
<b>UHD</b>	Ultra-High-Definition
<b>UHDTV</b>	Ultra-High-Definition Television
<b>USB</b>	Universal Serial Bus
<b>VGA</b>	Video Graphics Array
<b>WUXGA (RB)</b>	Widescreen Ultra Extended Graphics Array (Reduced Blanking)



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