



EL-5500-HBT

8 x 4 HDBaseT™ / HDMI / VGA Presentation Switch
(with switchable digital bypass output)

OPERATION MANUAL

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Version 1.1

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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.

REVISION HISTORY

VERSION NO.	DATE	SUMMARY OF CHANGE
v1.00	24/09/2014	First release
v1.01	25/06/2019	Updated diagram

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1. INTRODUCTION

This HDBaseT™ capable 8 by 4 Digital Presentation Scaler can switch and scale HDMI/HDBaseT/PC/Composite Video signals from any one of its eight inputs and simultaneously display it on any of its HDMI or HDBaseT outputs. The unit has an HDMI bypass output, allowing local monitoring of any of the HDMI or HDBaseT inputs, and features full 5play™ convergence for easy integration of compatible transmitters and receivers. It has the added benefit of control via IR remote control, RS-232, IP/Telnet and WebGUI, with all information including system status presented on its comprehensive LCD display.

2. APPLICATIONS

- /// Home Cinema/Entertainment
- /// Lecture Room/Hall Presentation
- /// Show Room/Demo Room
- /// Public Commercial Display
- /// Information Board

3. PACKAGE CONTENTS

- /// 1 x 8 by 4 Presentation Scaler
- /// 1 x IR Extender Cable
- /// 1 x IR Receiver Cable
- /// 1 x Remote Control with Battery
- /// 1 x 24V/ 2.7A DC Power Adaptor
- /// 1 x Power Cord
- /// Operation Manual

4. SYSTEM REQUIREMENTS

Input source equipment such as Blu-ray/DVD/PS3 player or Set-Top-Box and output HDMI TV/Display and or audio amplifier with connection cables.

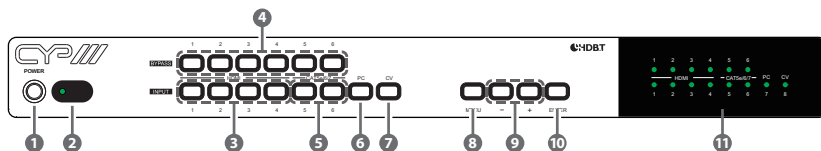
5. FEATURES

- /// HDMI, HDCP and DVI compliant
- /// Full 5Play™ convergence: Video, Audio, LAN serving, Power over Cable (PoC) and Control (IR & RS-232 bypass)
- /// Supports distances of up to 100 metres over industry standard CAT5e/6/7 cable
- /// Supports scaling of any input signals to a wide range of HDTV and PC output resolutions up to 1080p and WUXGA (RB)
- /// Digital to Analogue and Analogue to Digital Audio conversion (DAC/ADC)
- /// Simultaneous video output of the selected source through the HDBaseT and HDMI outputs and audio output through the digital coaxial and analogue L/R outputs
- /// Features four HDMI inputs with corresponding L/R audio inputs (3.5mm mini-jack), two HDBaseT CAT5e/6/7 inputs, PC (15-pin D-Sub) with L/R audio (3.5mm mini-jack) and Composite Video and L/R audio (3 RCA)
- /// Features two HDMI outputs, one HDBaseT CAT5e/6/7 outputs, one Digital Coaxial audio output and one L/R audio 3.5mm mini-jack output
- /// Supports switchable HDMI bypass allowing local monitoring of any of the HDMI or HDBaseT inputs
- /// Supports Power over Cable on the CAT5e/6/7 output to a compatible Receiver
- /// Supports control via IR, Remote control, RS-232, Telnet WebGUI and on-panel controls
- /// Supports HDBaseT LAN serving function to compatible Receivers

Note: *The PoC function is only designed for powering compatible Receiver units only, non-PoC Receivers will need their own power supply. Receivers of another brand may not be compatible.*

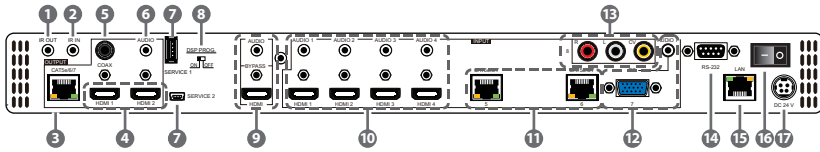
6. OPERATION CONTROLS AND FUNCTIONS

6.1 Front Panel



- 1 **POWER:** Press this button to turn ON the device and the LED will illuminate.
- 2 **IR Window:** This IR receiver receives only the remote control signal from the packaged included remote control.
- 3 **INPUT HDMI 1~4 & LED:** Press the IN buttons to select an input source signal from the 4 HDMI input sources to be display for output ports. The LED will illuminate according to the selection.
- 4 **BYPASS & LED:** Press these buttons to select an input source signal from the 6 input sources to be display for BYPASS output port. The LED will illuminate according to the selection.
- 5 **INPUT CAT5e/6/7 5~6 & LED:** Press the IN buttons to select an input source signal from the 2 CAT5e/6/7 input sources to be display for output ports. The LED will illuminate according to the selection.
- 6 **INPUT PC & LED:** Press this button to select PC input source signal to be display for PC output port. The LED will illuminate according to the selection.
- 7 **INPUT CV & LED:** Press this button to select CV input source signal s to be display for CV output port. The LED will illuminate according to the selection.
- 8 **MENU:** Press this wheel to enter into the menu and press it again to confirm the selection.
- 9 **+/-:** Press these buttons to move up/down under menu selection or under volume control to adjust audio volume up/down.
- 10 **ENTER:** Press this button to confirm menu selection.
- 11 **LED Display:** The LED will illuminate to confirm selection.

6.2 Rear Panel



- 1 **IR OUT:** Connect to the supplied IR Blaster cable for IR signal transmission. Place the IR Blaster in direct line-of-sight of the equipment to be controlled.
- 2 **IR IN:** Connect to the supplied IR Extender cable for IR signal reception. Ensure that remote being used is within the direct line-of-sight of the IR Extender.
- 3 **OUTPUT CAT5e/6/7:** Connect to the Receiver unit with a Single CAT5e/6/7 cable for transmission of all data signals.
- 4 **OUTPUT HDMI:** Connect to a HDMI equipped TV/monitor for display of the HDMI input source signal.
- 5 **OUTPUT COAX:** Connect to audio sound equipment such as speaker or amplifier for audio sound output.
- 6 **OUTPUT AUDIO:** Connect to audio sound equipment such as speaker or amplifier for audio sound output.
- 7 **SERVICE 1 & 2:** These slots are reserved for firmware update use only.
- 8 **DSP PROG Switch:** This switch is reserved for firmware update use only. Default setting is on OFF.
- 9 **BYPASS:** Connect to a HDMI equipped TV/monitor or DVI equipped monitor with audio sound equipment such as speaker for both video and audio output display.
- 10 **INPUT HDMI 1~4 & AUDIO 1~4:** Connect to HDMI source equipment such as DVD or Blu-ray player along or to DVI source equipment along with audio source signal.
- 11 **INPUT CAT5e/6/7:** Connect this port to HDMI to CAT5e/6/7 Transmitter with CAT5e/6/7 cable to extend the signal up to 100m.
- 12 **INPUT PC & AUDIO:** Connect this port to PC/Laptop with audio signal for input signal selecting.
- 13 **INPUT CV:** Connect this port to source equipment such as video player or Set-Top-Box for input signal selecting.

- 14 **RS-232:** Connect from PC/Laptop for RS-232 command sending to control the device.
- 15 **LAN:** Connect from PC/Laptop with active internet service for Web GUI control with RJ-45 terminated cable.
- 16 **POWER Toggle:** Switch this toggle to turn ON and OFF the device's power.
- 17 **DC 24V:** Connect the adaptor with power cord included in the package and connect to AC wall outlet for power supply.

6.3 Remote Control

1 POWER:

Press this button to switch the device ON or to put the device into Standby mode.

2 MUTE:

Press this button to mute output audio sound.

3 INPUT:

Press these buttons one time each to select input source for outputs display.

4 MENU:

Press this button to enter into the On-Screen Menu.

5 EXIT:

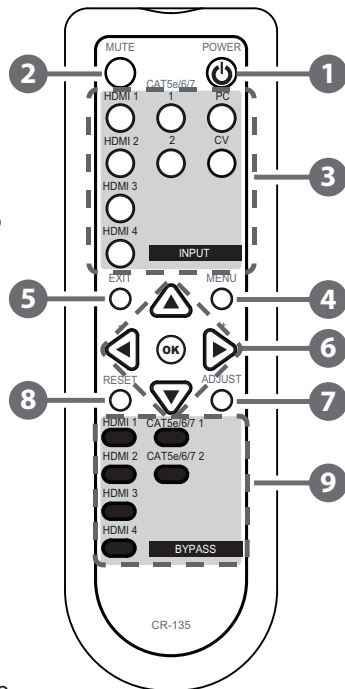
Press this button to exit menu selection.

6 ▲ ▼ ◀ ▶ & OK:

Press OK to confirm the selection or use the directional buttons to navigate the On-Screen-Menu.

7 ADJUST:

Press this button when output image is not fitting the display's screen perfectly. The device will auto adjust the image to full screen.

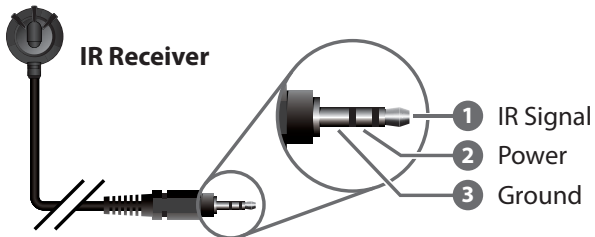
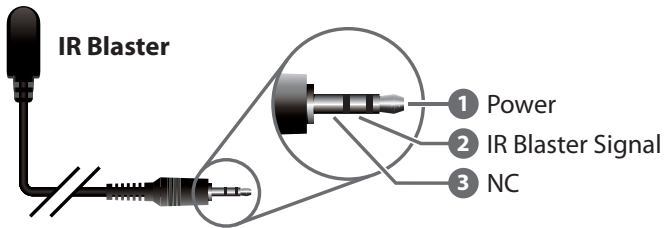


8 RESET:

Press this button to set the device back into the factory default setting.

9 BYPASS:

Press these buttons to select an input source for Bypass output port to display.

6.4 IR Pin Assignment

6.5 RS-232 Pin Assignment

Scaler			Remote Control	
PIN	Assignment		PIN	Assignment
1	NC		1	NC
2	Tx		2	Rx
3	Rx		3	Tx
4	NC	▶	4	NC
5	GND	◀	5	GND
6	NC		6	NC
7	NC		7	NC
8	NC		8	NC
9	NC		9	NC

Baud Rate: 19200bps

Data Bit: 8 bits

Parity: None

Flow Control: None

Stop Bit: 1

6.6 RS-232/Telnet Commands

COMMAND	DESCRIPTION
S SOURCE 1~8	1=HDMI 1 2=HDMI 2 3=HDMI 3 4=HDMI 4 5=HDBT 1 6=HDBT 2 7=PC 8=VIDEO
R SOURCE	Reports the numerical equivalent for SOURCE setting (as above)
S OUTPUT 0~21	0=640×480 1=800×600 2=1024×768 3=1280×768 4=1360×768 5=1280×720 6=1280×800 7=1280×1024 8=1440×900 9=1400×1050 10=1680×1050 11=1600×1200 12=1920×1080 13=1920×1200 14=480p 15=720p@60 16=1080i@60 17=1080p@60 18=576p 19=720p@50 20=1080i@50 21=1080p@50
R OUTPUT	Reports the numerical equivalent for OUTPUT setting (as above)
S SIZE 0~6	0=OVERSCAN 1=FULL 2=FOLLOW INPUT 3=PAN SCAN 4=LETTER BOX 5=UNDER 2 6=UNDER 1
R SIZE	Reports the numerical equivalent for SIZE setting (as above)
S INPUTHDCP 0/1	0=OFF 1=ON
R INPUTHDCP	Reports HDMI support HDCP status
S CONTRAST 0~60	Sets up the numerical equivalent for CONTRAST setting (as left)
R CONTRAST	Reports the numerical equivalent for CONTRAST setting

COMMAND	DESCRIPTION
S BRIGHTNESS 0~60	Sets up the numerical equivalent for BRIGHTNESS setting (as left)
R BRIGHTNESS	Reports the numerical equivalent for BRIGHTNESS setting
S HUE 0~60	Sets up the numerical equivalent for HUE setting (as left)
R HUE	Reports the numerical equivalent for HUE setting
S SATURATION 0~60	Sets up the numerical equivalent for SATURATION setting (as left)
R SATURATION	Reports the numerical equivalent for SATURATION setting
S SHARPNESS 0~30	Sets up the numerical equivalent for SHARPNESS setting (as left)
R SHARPNESS	Reports the numerical equivalent for SHARPNESS setting
S NR 0~3	0=OFF 1=LOW 2=MIDDLE 3=HIGH
R NR	Reports the numerical equivalent for the NOISE REDUCTION setting (as above)
S VOLUME 0~100	Volume Value
R VOLUME	Reports Volume value
S AUDIO DELAY 0~3	0=OFF 1=40ms 2=110ms 3=150ms
R AUDIO DELAY	Reports the numeric equivalent for AUDIO DELAY setting (as above)
S AUDIO MUTE 0/1	0=ON 1=MUTE
R AUDIO MUTE	Reports the numeric equivalent for AUDIO MUTE setting (as above)
S HDMIAUDIO 0/1	0=AUTO 1=EXT.
R HDMIAUDIO	Reports HDMI AUDIO Status
S KEY LOCK 0/1	0=Disable 1=Enable
R KEY LOCK	Reports the numeric equivalent for KEY LOCK setting (as above)
S FREERUNCOLOR 0/1	0=Black 1=Blue

COMMAND	DESCRIPTION
R FREERUNCOLOR	Reports the numeric equivalent for FREERUN Coloursetting (as above)
S HDBTUART 0/1 R HDBTUART	0=HDBT1 1=HDBT2 Reports the numeric equivalent for HDBT UART setting (as above)
S AUTO SCAN 0/1 R AUTO SCAN	0=OFF 1=ON Reports the numeric equivalent for AUTO SCAN setting (as above)
S BYPASS 1~6 R BYPASS	1=HDMI 1 1=HDMI 2 3=HDMI 3 4=HDMI 4 5=HDBT 1 6=HDBT2 Reports the numeric equivalent for BYPASS setting (as above)
S RESET 1	Setups the numerical equivalent for RESET setting (as left)
S POWER 0/1 R POWER	0=OFF 1=ON Reports the numeric equivalent for POWER setting (as above)
PORT 0~8	1=HDMI 2=HDMI 2 3=HDMI 3 4=HDMI 4 7=PC 5=HDBT 1 6=HDBT 2 8=VIDEO 0=Last Memory
VOL +	Volume Value
VOL -	Volume Value
ST	FW Version & Source

Note:

1. Only LPCM 2 channel digital audio is supported, please ensure that the source audio is set to LPCM 2 channel audio in order to avoid unnecessary audio noise.
2. RS-232 commands will be not executed unless followed with a carriage return and LF. Commands are case-insensitive.

6.7 OSD Menu

1 st Layer	2 nd Layer	3 rd Layer	Remark
DISPLAY	OUTPUT	640x480 60	
		800x600 60	
		1024x768 60	
		1280x768 60	
		1360x768 60	
		1280x720 60	
		1280x800 60	
		1280x1024 60	
		1440x900 60	
		1400x1050 60	
		1680x1050 60	
		1600x1200 60	
		1920x1080 60	
		1920x1200 60	
		720x480p 60	
		1280x720p 60	
		1920x1080i 60	
		1920x1080p 60	
		720x576p 50	
		1280x720p 50	
	1920x1080i 50		
	1920x1080p 50		
	SIZE	OVER SCAN	
		FULL	
		FOLLOW INPUT	
		PAN SCAN	
		LETTER BOX	
		UNDER 2	
	MODE INFO	UNDER 1	
		OFF	
		INFO	
	INPUT HDCP (HDMI mode only)	ON	
		OFF	
		ON	

1 st Layer	2 nd Layer	3 rd Layer	Remark
DISPLAY (Cont.)	PC (PC mode only)	AUTO SETUP	Yes/No(No)
		H_POSITION	0~60
		V_POSITION	0~60
		PHASE	0~31
		CLOCK	
		WXGA/XGA	XGA/WXGA(XGA)
		RESET	Yes/No(No)
COLOR	CONTRAST		0~60(30)
	BRIGHTNESS		0~60(30)
	COLOR	R	0~1023(512)
		G	0~1023(512)
		B	0~1023(512)
		R OFFSET	0~1023(512)
		G OFFSET	0~1023(512)
		B OFFSET	0~1023(512)
	HUE		0~60(30)
	SATURATION		0~60(30)
	SHARPNESS		0~30(0)
	NR.	OFF	
		LOW	
MIDDLE			
HIGH			
AUDIO	VOLUME		0~100(100)
	DELAY	OFF	
		40mS	
		110mS	
		150mS	
	SOUND	ON	
		MUTE	
SOURCE (HDMI mode only)	AUTO		
	EXT.		
SETUP	FACTORY RESET		OSD Setting back to factory default
	KEY LOCK	OFF	
		ON	
	POWER SAVE	OFF	
		ON	

1 st Layer	2 nd Layer	3 rd Layer	Remark
	IP MODE	DHCP	
		STATIC	
	SET STATIC IP	IP ADDRESS	0.0.0.0~ 255.255.255.255 (192.168.0.1)
		SUBNET MASK	0.0.0.0~ 255.255.255.255 (255.255.255.0)
		Def. GATEWAY	0.0.0.0~ 255.255.255.255 (192.168.0.254)
	FREERUN COLOR	BLUE	
		BLOCK	
	MISC.	HDBTOUT (UART1)	HDBT1~2(HDBT1)
		Auto Scan	OFF
			ON
INFORMATION	INPUT:		
	OUTPUT:		
	REVISION:		
	IP ADDRESS:		

Default settings are in brackets ().

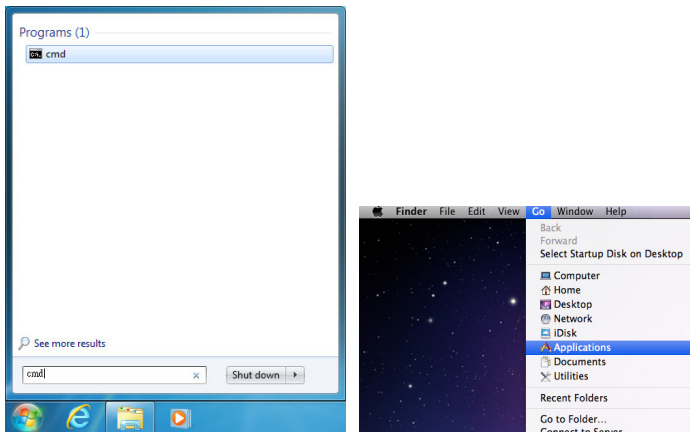
6.8 Telnet Control

Before attempting to use the Telnet control, ensure that both the Scaler (via the LAN port) and the PC/Laptop or control system being used are connected to the same active network.

To access the Telnet control in Windows 7, click on the 'Start' menu and type 'cmd' into the Search field then press Enter (see below for reference). Under Windows XP, go to the 'Start' menu and click on 'Run', type 'cmd' then press Enter.

Under Mac OS X, go to the file menu then navigate to

Go→Applications→Utilities→Terminal (see below for reference).



Once in the command line interface (CLI) type 'telnet' along with the IP address of the unit you wish to control (see below for reference).

This will bring us into the device which we wish to control.

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

C:\Users\Administrator>telnet 192.168.5.80 23
```

Note: The IP address can be obtained from the OSD menu under Information. If the IP is changed then the IP Address required for Telnet access will also need to be change accordingly.

Type '?' to list all the available commands (see below for reference).

```

=====
Telnet command service
command '?' for help
command 'quit' for quit
=====
?
=====
command
=====
$ POWER n // n:0~1 ,0:0ff 1:0n
R POWER //
$ SOURCE n // n:1~8
R SOURCE //
$ OUTPUT n // n:0~21
R OUTPUT //
$ SIZE n // n:0~6
R SIZE //
$ INPUTHDCP n // n:0~1 ,0:0ff 1:0n
R INPUTHDCP //
$ CONTRAST n // n:0~60
R CONTRAST //
$ BRIGHTNESS n // n:0~60
R BRIGHTNESS //
$ HUE n // n:0~60
R HUE //
$ SATURATION n // n:0~60
R SATURATION //
$ SHARPNESS n // n:0~30
R SHARPNESS //
$ NR n // n:0~3
R NR //
$ VOLUME n // n:0~100
R VOLUME //
$ AUDIODELAY n // n:0~3
R AUDIODELAY //
$ AUDIOMUTE n // n:0~1 ,0:0n 1:Mute
R AUDIOMUTE //
$ HDMIAUDIO n // n:0~1 ,0:Auto 1:Ext.
R HDMIAUDIO //
$ KEY LOCK n // n:0~1 ,0:0ff 1:0n
R KEY LOCK //
$ FREERUNCOLOR n// n:0~1 ,0:Black 1:Blue
R FREERUNCOLOR //
$ HDBTUART n // n:0~1 ,0:HDBT1 1:HDBT2
R HDBTUART //
$ AUTOSCAN n // n:0~1 ,0:0ff 1:0n
R AUTOSCAN //
$ BYPASS n // n:1~6
R BYPASS //
$ RESET n // n:1
PORI n // n:0~8
ST // Show Status & fw version
VOL + // Volume Up
VOL - // Volume Down
GETIP // Show IP Config
=====
OK

```

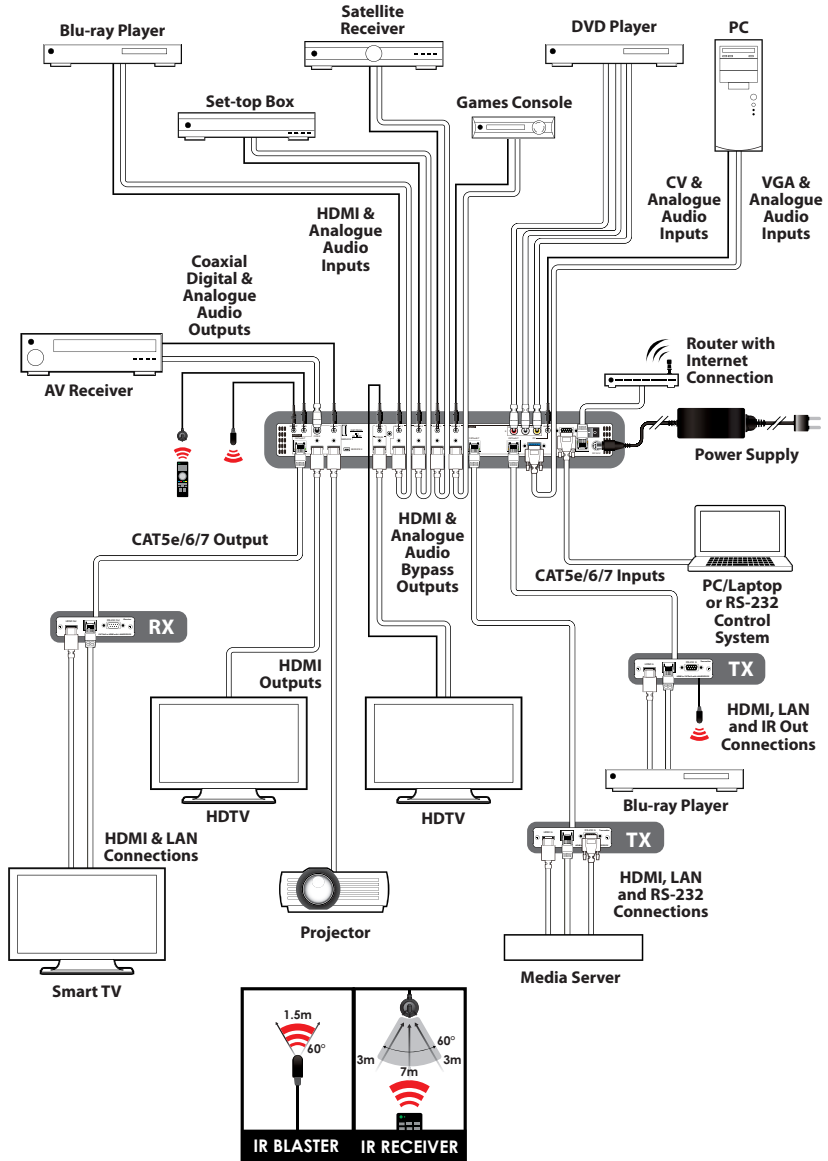
Note: All commands will not be executed unless followed by a carriage return. Commands are case-insensitive.

6.9 WebGUI Control

On a PC/Laptop that is connected to same active network as the Scaler, open a web browser and type device's IP address on the web address entry bar. The browser will bring up the control page of the Scaler (see below for reference).

Note: The IP address can be obtained from the OSD menu under Information. If the IP is changed then the IP Address required for Telnet access will also needs to be changed accordingly.

7. CONNECTION DIAGRAM



8. SPECIFICATIONS

Frequency bandwidth	Up to 10.2Gbps
Input Ports	4x HDMI, 4x L/R, 2x CAT5e/6/7, 1x PC + L/R, 1x CV+L/R, 2x USB (Service only), 1x LAN, 1x RS-232, 1 x IR
Output ports	2x HDMI, 1x HDMI Bypass, 1x CAT5e/6/7, 1x Coaxial, 1x L/R
Resolution	480i~1080p@50/60, 1080p@24, VGA~WUXGA(RB)
Audio Format	LPCM 2CH
ESD Protection	Human body model: ±8kV (air-gap discharge) ±4kV (contact discharge)
Power Supply	24VDC/2.7A (US/EU standards, CE/FCC/UL certified)
Dimensions	438mm (W) x 269mm (D) x 44mm (H)/Jack Excluded 438mm (W) x 275mm (D) x 44mm (H)/Jack Included
Weight	3410g
Chassis Material	Metal
Silkscreen Colour	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 (no condensation)

8.1 Input Resolution Support

INPUT RESOLUTION	CV	PC	HDMI
NTSC/PAL	✓	-	-
480i/576i	-	-	✓
480p/576p	-	-	✓
720p@50/60 Hz	-	-	✓
1080i@50/60 Hz	-	-	✓
1080p@50/60 Hz	-	-	✓
VGA@60/72/75 Hz	-	✓	✓
SVGA@56/60/72/75 Hz	-	✓	✓
XGA@60/70/75 Hz	-	✓	✓
SXGA@60/75 Hz	-	✓	✓
UXGA@60 Hz	-	✓	✓
1280×800@60 Hz	-	✓	✓
1680×1050RB@60 Hz	-	✓	✓
1920×1080@60 Hz	-	✓	✓
1920×1200@60RB		✓	✓
1080p@24/25/30 Hz			✓

8.2 Output Resolution Support

OUTPUT RESOLUTION	HDMI
480p/576p	✓
720p@50/60 Hz	✓
1080i@50/60 Hz	✓
1080p@50/60 Hz	✓
VGA@60 Hz	✓
SVGA@60 Hz	✓
XGA@60 Hz	✓
SXGA@60 Hz	✓
UXGA@60 Hz	✓
1280×768@60 Hz	✓
1280×800@60 Hz	✓
1360×768@60 Hz	✓
1400×1050@60 Hz	✓
1440×900@60 Hz	✓
1680×1050@60 Hz	✓
1920×1200@60 Hz	✓

9. ACRONYMS

ACRONYM	COMPLETE TERM
COMP	Component Video
CV	Composite Video
DVI	Digital Visual Interface
EDID	Extended Display Identification Data
HDCP	High-Bandwidth Digital Content Protection
HDMI	High-Definition Multimedia Interface
IR	Infrared
OSD	On-screen Display (Menu)
USB	Universal Serial Bus
UXGA	Ultra Extended Graphics Array
VGA	Video Graphics Array
XGA	Extended Graphics Array
WUXGA	Wide Ultra Extended Graphics Array



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