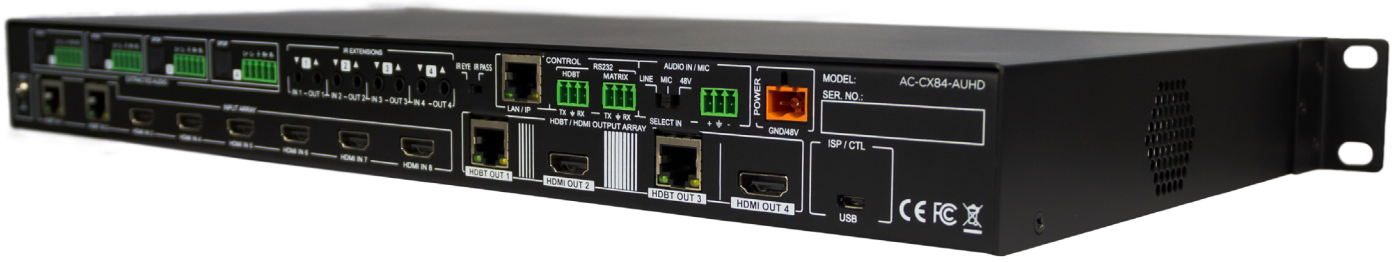
User Manual

8x4 HDMI/HDBaseT
Classroom/Conference Room Matrix switcher
Featuring Quick Switch

AC-CX84-AUHD



Introduction

The ConferX 8x4 Matrix Switcher is the ideal solution for any conference room, classroom or huddle space. This 4K switcher can display any of the eight sources through both the HDBaseT and HDMI output ports. All four of the outputs are completely independent of each other allowing the user to show four sources at the same time. With additional audio inputs and outputs, working with a microphone or intercom system will not be a problem. When you need a stable solution for video distribution, look to the entire line of ConferX products.

With two HDBaseT inputs this switch works alongside two directly connected ConferX Wall Plate Transmitters. You can have Mini DisplayPort, HDMI, VGA or USB-C inputs located up to 100 meters away from the AC-CX84-AUHD. With the Quick Switch feature, these remote sources still switch at the same time as a local HDMI source, keeping your system running smoothly. This allows a teacher or presenter to use their laptop directly at the podium or presenters' station without having to connect anything to the matrix switcher. The AC-CX84-AUHD gives any end user a simplified experience for sharing their ideas inside a classroom, conference room or huddle space.

Features

- HDMI 2.0(a/b)
- HDBaseT Audio Video Output connections
- 4K60 (HDMI and HDBaseT output)
- Quick Switch for faster Switching Speeds
- HDCP 2.2 (and all earlier versions supported)
- Advanced EDID Management
- 1080p > 4K Up Scaling on HDMI outputs
- 4K > 1080p Down Scaling on HDBaseT outputs
- Built-in Audio Delay for lip sync
- De-Embedded Audio Extraction
- Audio Input for line in, mic, or powered mic
- Built-in Web based control GUI
- Heavy Duty components for long lasting product life
- Internal fans for self-cooling in a rack
- Interoperable with HDBaseT products
- Works with 3rd party control (Control4, Crestron, Savant, etc)

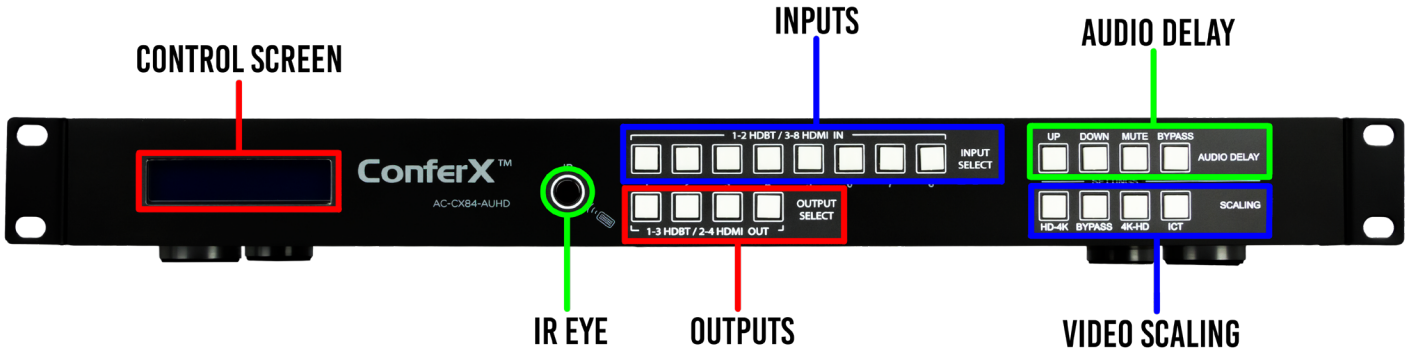
Whats in the box

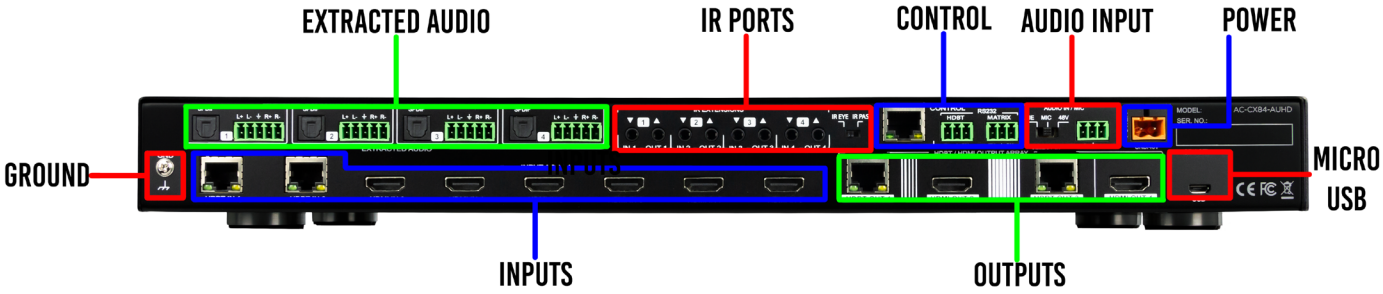
- AC-CX84-AUHD Matrix
- IR Remote Control (no battery included)
- 48V/2.7A Power Supply
- Rack Ears (installed)
- 5pin/3pin terminal connectors for Extracted Audio/Control
- Grounding Wire
- Rubber Feet

*3V CR2025 Battery Required For IR Remote Control

VIDEO:	
VIDEO RESOLUTIONS	UP TO 4K 60HZ 4:4:4
VESA RESOLUTIONS	UP TO DCI 4K (4096X2160)
HDR FORMATS/RESOLUTIONS	4K24 4:2:2 12 BIT, 4K24 4:2:0 10 BIT
COLOR SPACE	YUV (COMPONENT), RGB (CSC: REC. 601, REC. 709, BT2020, DCI, P3 D6500)
CHROMA SUBSAMPLING	4:4:4, 4:2:2, 4:2:0 SUPPORTED
DEEP COLOR	UP TO 16 BIT (1080), UP TO 12 BIT (4K)
AUDIO:	
AUDIO FORMATS SUPPORTED HDMI	PCM 2.0 CH, LPCM 5.1 & 7.1, DOLBY DIGITAL, DTS 5.1, DOLBY DIGITAL PLUS, DOLBY TRUEHD, DTS-HD MASTER AUDIO, DTS-X, DOLBY ATMOS
AUDIO FORMATS SUPPORTED EXTRACTED (TOSLINK)	PCM 2.0 CH, LPCM 6 CH, LPCM 7 CH, DOLBY DIGITAL, DOLBY DIGITAL PLUS, DTS- MASTER AUDIO
AUDIO FORMATS SUPPORTED EXTRACTED (2CH PORT)	PCM 2 CH (NO DOWNMIX)
AUDIO EXTRACTION LOCATION	BIND TO INPUT, BIND TO OUTPUT OR MATRIX (INDEPENDENT)
AUDIO DELAY (PER OUTPUT, EXTRACTED)	UP TO 630MS
DISTANCE:	
AC-CXWP-HDMO-T (10.2 GBPS)	100 METERS 1080P, 70 METERS 4K@10.2 GBPS (CAT 6A)
AC-CXWP-MDP-T (10.2 GBPS)	100 METERS 1080P, 70 METERS 4K@10.2 GBPS (CAT 6A)
AC-CXWP-VGA-T (10.2 GBPS)	100 METERS 1080P, 70 METERS 4K@10.2 GBPS (CAT 6A)
AC-EX100-UHD-T (10.2 GBPS)	100 METERS 1080P, 70 METERS 4K@10.2 GBPS (CAT 6A)
AC-EX100TT-UHD (10.2 GBPS)	100 METERS 1080P, 70 METERS 4K@10.2 GBPS (CAT 6A)
AC-CX100-RAMP (18 GBPS) AC-EX70-444-RNE (18 GBPS)	100 METERS 1080P, 70 METERS 4K@18 GBPS (CAT 6A) 100 METERS 1080P, 70 METERS 4K@18 GBPS (CAT 6A)
AC-EX100-UHD-R3 (10.2 GBPS)	100 METERS 1080P, 70 METERS 4K@18 GBPS (CAT 6A)
AC-CX70-UHD-R (10.2 GBPS)	70 METERS 1080P, 40 METERS 4K@10.2 GBPS (CAT 6A)
AC-EX70-SC2-R (18 GBPS)	100 METERS 1080P, 70 METERS 4K@18 GBPS (CAT 6A)
OTHER:	
BANDWIDTH HDMI BANDWIDTH HDBASET	18 GBPS UNCOMPRESSED (SEE OPTIONS UNDER DISTANCE DIRECTLY ABOVE)
HDCP	HDCP 2.2 AND EARLIER
POH FOR RECEIVERS (NO NEED TO POWER RECEIVERS)	YES, ALL OUTPUTS
CONTROL:	
PORTS	LAN, RS232, IR, MICRO USB
LAN WEB OS	YES
PORTS:	
HDMI	TYPE A
LAN	RJ45 W/ WEB INTERFACE/ CONTROL
AUDIO (EXTRACTED DIGITAL)	TOSLINK
AUDIO (EXTRACTED ANALOG)	5 PIN TERMINAL BLOCK (BALANCED)
IR RX	3.5MM STEREO (3-CONDUCTOR)
RS232	3 PIN TERMINAL BLOCK
ENVIRONMENTAL:	
OPERATING TEMPERATURE	23 TO 125°F (-5 TO 51°C)
STORAGE TEMPERATURE	-4 TO 140°F (-20 TO 60°C)
HUMIDITY RANGE	5-90% RH (NO CONDENSATION)
POWER:	
POWER CONSUMPTION (TOTAL)	65 WATTS MAX
POWER SUPPLY - MATRIX	INPUT: AC 100-240V ~ 50/60HZ OUTPUT: DC 48V 2.7A
DIMENSIONS:	
DIMENSIONS (UNIT ONLY - HEIGHT/DEPTH/WIDTH)	MM: 50.8 X 260.35 X 441.33 INCH: 2 X 10.25 X 17.375
DIMENSIONS (PACKAGED LENGTH/WIDTH/HEIGHT)	MM: 88.9 X 444.5 X 495.3 INCH: 3.5 X 17.5 X 19.5
RACK UNITS	1 UNIT
WEIGHT (UNIT)	7.4 LBS (3.36 KG)
WEIGHT (PACKAGED)	9.6 LBS (4.35 KG)
*SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE. MASS & DIMENSIONS ARE APPROXIMATE	

Front & Rear Panel Overview

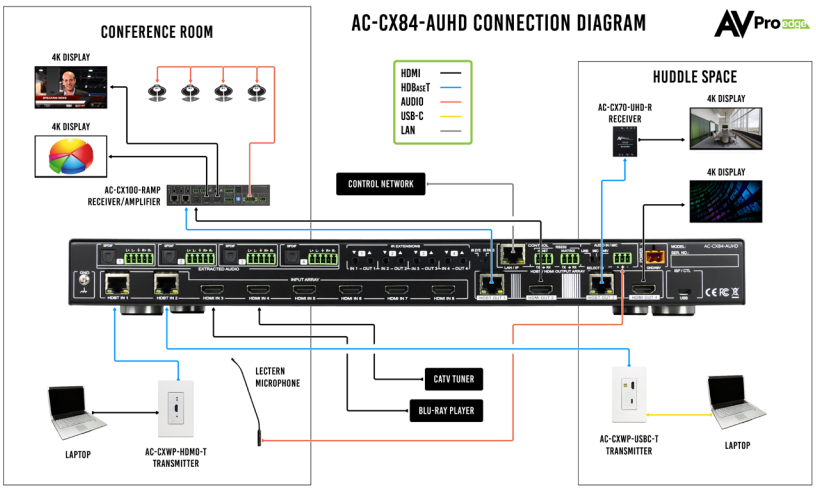




Basic Installation

The unit has an Auto-Config on boot up and reception of new sources and displays to maximize plug and play installation:

1. Plug in the display(s) or sink devices
2. Plug in the sources
3. Plug in the power supply to the AC-CX84-AUHD
4. Power on the Sources and Display(s)
   This will ensure proper EDID application across the device.



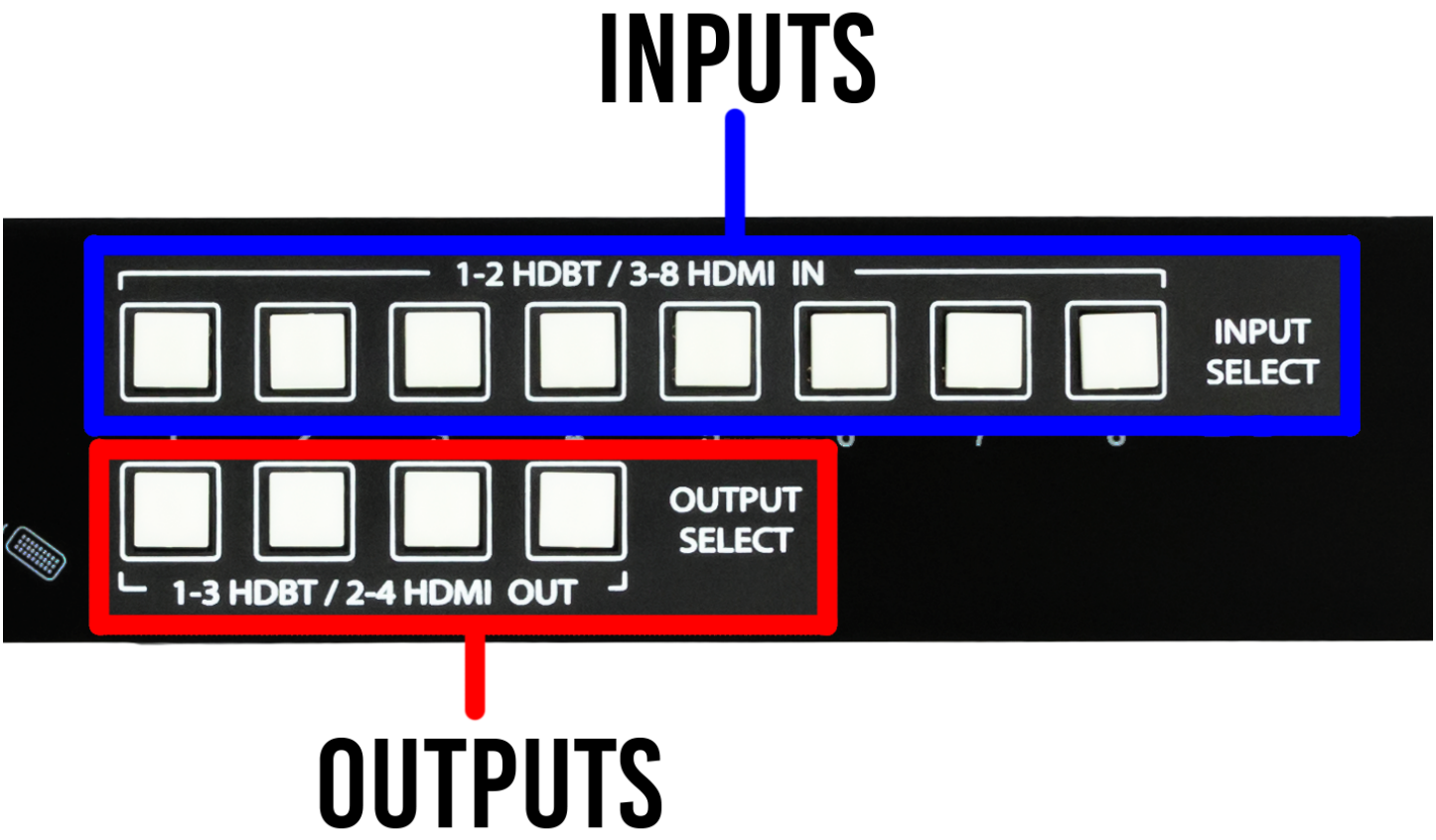
Front Panel Control: Buttons

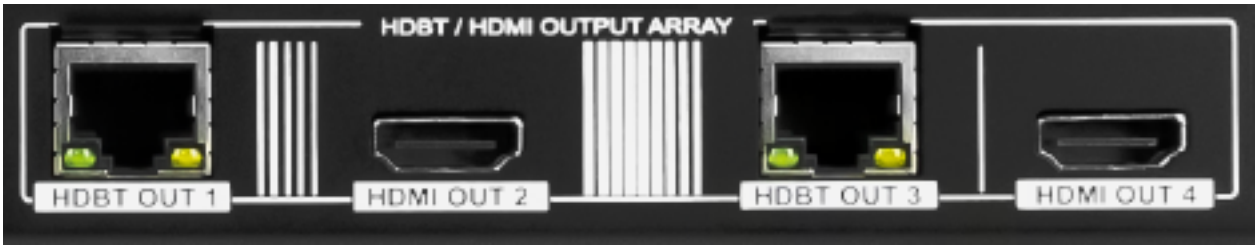
Parameter	How To	Options
Switching Control	1. Press the OUTPUT button you want to switch. 2. Press the desired INPUT button.	
EDID Setup	1. Press and hold (3 seconds) the INPUT button of the source you want to set the EDID for. 2. Use the "UP" & "DOWN" bottons that have lit up to navigate to your desired EDID setting. 3. Quick press the same INPUT button to lock in the selection.	See EDID Management in the manual for a full list of available EDIDs.
Scaling Control	1. Press and hold (3 seconds) the OUTPUT button that you would like to scale. 2. The Bottom row of buttons on the right hand side of the machine light up, allowing you to make your selection.	- HD -->4K - 4k --> HD - AUTO (Detetcs Display) - BYPASS (No Scaling)
Audio Delay Control	1. Press and hold (3 seconds) the OUTPUT button that you would like to delay/mute 2. The TOP row of buttons on the right hand side of the machine light up, allowing you to make your selection.	- UP - DOWN - MUTE (Turns off audio) - BYPASS (No Delay)
Set Extracted Audio Bindings	1. Press and hold (3 seconds) the BYPASS button on the audio settings (top right set of buttons). 2. Press the "UP" & "DOWN" buttons to switch between the desired settings. 3. Press the BYPASS button again to set the selection. Note: If "Matrix" is selected, you will be able to route audio. Please see "Extracted Audio Switching" 4. Press the BYPASS button again to exit.	- Bind to OUTPUT - Bind to INPUT - Matrix Note: Send switching commands from the front panel by selecting "Matrix" when in audio mode.
Extracted Audio Switching	1. Press and hold (3 seconds) the BYPASS button on the audio settings (top right set of buttons). 2. The screen will say "Matrix" 3. Quick press the BYPASS button again to enter Extracted Audio Switching, to switch - Press the OUTPUT you would like to change - Press the INPUT you would like to route to the previously selected OUTPUT 4. When finished, press the BYPASS button again in order to exit.	Note: Audio switching commads are ONLY available from the front panel when the audio mode is set to "MATRIX". Note: The web interface may be easier for active, live, switching.
Initialize Test Pattern Output	1. Press and hold (3 seconds) the desired INPUT & OUTPUT buttons together 2. Repeat step 1 to turn off the test pattern	Example: Pressing and holding INPUT 1 & OUTPUT 1 at the time for 3 seconds will generate a test pattern out of OUTPUT 1
Toggle DHCP Mode	1. Press and hold (3 seconds) INPUT 1 & INPUT 4 together	Toggles DHCP OFF/ON
View Network Settings	1. Press and hold (3 seconds) INPUT 3 & INPUT 4 together	The Screen will flash the following: - Device IP - Host IP - Subnet Mask - MAC Address
View Firmware Versions	1. Press and hold (3 seconds) INPUT 2 & INPUT 4 together	Displays Current Firmware
Factory Reset	1. Press and hold (10 seconds) HD->4k/4k->HD/MUTE/ and BYPASS buttons at the same time.	Resets to Factory Defaults

Front Panel: Switching Control

The AC-CX84-AUHD can be switched from the front panel by pressing the desired OUTPUT button first, then the desired INPUT button:

1. Press the desired OUTPUT button (1 & 3 are HDBT, 2 & 4 are HDMI).
2. That output button you pressed will be illuminated along with all the input buttons
3. Press the desired INPUT button to set the selection.





Auto-Switching Logic

When the AC-CX84-AUHD is in "Auto" mode the logic is to switch to the most recently plugged in device based on a Hot Plug Event. You can have either the HDMI, HDBaseT, or both be set to "Auto" mode. See command list on pages 16-17.

Front Panel: EDID Setup

This matrix has 29 factory defined EDID settings. It also has 3 user defined EDID memories. The user EDID memories are independent to each input and can be set differently. The user defined EDID can be uploaded using the free PC Control software or RS-232. In addition, you can choose to read the EDID from the desired output and the captured EDID will automatically store and overwrite the EDID in "USER EDID 1" and will be applied to the selected source.

By default, the matrix is set to a 1080P EDID, this is to maximize plug and play capability. When using 4K sources, you will want to define a 4K EDID on each input (or read from the display).

To Change the EDID setting:

1. Press and hold (for 3 seconds) the INPUT you want to change.
2. The "UP" and "DOWN" button's will illuminate, and the LCD will show the active EDID.
3. Toggle through the EDID options by pressing UP or DOWN repeatedly.
4. To set, press the same "INPUT" button you had selected in order to apply the EDID (this will still be illuminated).

These are the pre-defined EDID settings that you can toggle through:

1. 1080P_2CH
2. 1080P_6CH
3. 1080P_8CH
4. 1080P_3D_2CH
5. 1080P_3D_6CH
6. 1080P_3D_8CH
7. 4K30HZ_3D_2CH
8. 4K30HZ_3D_6CH
9. 4K30HZ_3D_8CH
10. 4K60HzY420_3D_2CH
11. 4K60HzY420_3D_6CH
12. 4K60HzY420_3D_8CH
13. 4K60HZ_3D_2CH
14. 4K60HZ_3D_6CH
15. 4K60HZ_3D_8CH
16. 1080P_2CH_HDR
17. 1080P_6CH_HDR
17. 1080P_8CH_HDR
18. 1080P_3D_2CH_HDR
19. 1080P_3D_6CH_HDR
20. 1080P_3D_8CH_HDR
21. 4K30HZ_3D_2CH_HDR
22. 4K30HZ_3D_6CH_HDR
23. 4K30HZ_3D_8CH_HDR
24. 4K60HzY420_3D_2CH_HDR
25. 4K60HzY420_3D_6CH_HDR
26. 4K60HzY420_3D_8CH_HDR
27. 4K60HZ_3D_2CH_HDR
28. 4K60HZ_3D_6CH_HDR
29. 4K60HZ_3D_8CH_HDR
30. User EDID 1
31. User EDID 2
32. User EDID 3

*You may also copy EDID from any output and apply to any input, simply select "Copy EDID from Output x" (x=1-4). This will copy the EDID from the display attached and store it into "User EDID 1" and apply it to the input you have selected.

Front Panel Control - Scaling

The AC-CX84-AUHD has scalers built into every output. The HDbaseT Ports can be DOWNSCALED and the HDMI Ports can be UPSCALED. The scalers are set on the OUTPUT side of the switch and each can have separate settings.

- HD-4K (Scales 1080P to 2160P - On HDMI Port Only)
- BYPASS (There will be no scaling set)
- 4K-HD (Scales 2160P to 1080P - On HDBT Port Only)
- ICT Mode (Enables ICT Compression mode on HDBT Port) - DEFAULT

NOTE: When using a non ICT receiver the unit automatically applies HDBT-C mode when ICT mode is selected, which reduces 10-18Gbps content to 9Gbps for legacy infrastructures. This mode maintains 4K resolution, but removes HDR.

To Change the scaler settings

1. Press and hold the desired OUTPUT number which you want to change the scaling setting on.
2. NOTE: The OUTPUT you selected and the SETTINGS buttons on the right will be lit up.
3. Press the desired scaling button (HD-4k, BYPASS, 4k-HD, or ICT).
4. The current setting will be indicated on the LCD screen.
5. Press the same OUTPUT button to set. You can also wait, after 5 seconds of inactivity the matrix will exit and keep any changes made.

Audio Control: Audio Delay

The AC-CX84-AUHD has an Audio Delay feature built-in. Audio Delay is set on the extracted audio OUTPUT (Digital and Analog) of the switch, and each can have separate settings.

The Audio Delay has 4 controls:

- UP (Increase Delay)
- DOWN (Decrease Delay)
- MUTE (The audio will be muted)
- BYPASS (There will be no delay set)

*Delay settings are in increments of 90 milliseconds.
Settings are: BYPASS (default) 90MS, 180MS, 270MS, 360MS, 450MS, 540MS, and 630MS

To Change:

1. Press and hold the desired OUTPUT number which you want to delay the audio.
2. NOTE: The OUTPUT you selected and the SETTINGS buttons on the right will be lit up.
3. Press UP, DOWN, MUTE of BYPASS to change the delay.
4. The current setting will be indicated on the LCD screen.
5. Press the same OUTPUT button to set. You can also wait, after 5 seconds of inactivity the matrix will exit and keep any changes made.

Audio Control: Audio Binding

The AC-CX84-AUHD has 3 settings for the Extracted Audio.

- BIND TO OUTPUT (extracted audio switches with the video, this is the default mode)
- BIND TO INPUT (extracted audio is fixed to the corresponding input by the same number)
- INDEPENDENT/MATRIX (extracted audio can be routed however you like and there are commands to allow it to function as a s`eparate matrix)

To Change:

1. Press and hold (3 sec) the BYPASS button by the Audio Delay settings (top far right button).
2. NOTE: The UP/DOWN/BYPASS buttons will now be lit up, current setting displayed on screen
3. Use the UP and DOWN buttons to change to the desired option
4. Press the BYPASS button again to set.
5. NOTE: Will automatically exit out of matrix mode after 10 seconds of inactivity. If you do not press the BYPASS button to set, after exiting the menu any selection/changes made will be lost.
6. Press the BYPASS button once more to exit.

Audio Control: Audio Switching

The Extracted Audio ports can be independently controlled while in MATRIX Mode.

To Contorl:

1. Press and hold (3 sec) the BYPASS button by the Audio Delay settings (top far right button).
2. NOTE: The UP/DOWN/BYPASS buttons will now be lit up, current setting displayed on screen.
3. Make sure the screen says "Matrix" then press the BYPASS button again in order to enter the AUDIO MATRIX.
4. NOTE: If correct, only the BYPASS button will be lit up.
5. Press the desired extracted audio OUTPUT you want to set.
6. Press the INPUT for the desired audio source you want to route to the previous OUTPUT selection.
7. Once set, press BYPASS button again to exit the audio matrix mode.
8. NOTE: Will automatically exit out of matrix mode after 10 seconds of inactivity. Any selection/changes made will stay as they are set once the INPUT/OUTPUT buttons are pressed.

Front Panel: Display IP Information

The Extracted Audio ports can be independently controlled while in MATRIX Mode.

In order to see the current IP settings, press and hold (for 3 secondsv) INPUT 3 and INPUT 4 buttons simultaneously. This screen will change every 3 seconds showing additional settings (host, net mask, router IP).

NOTE: This screen always starts with the current IP address of the matrix

Quick Network Connect to Web Interface:

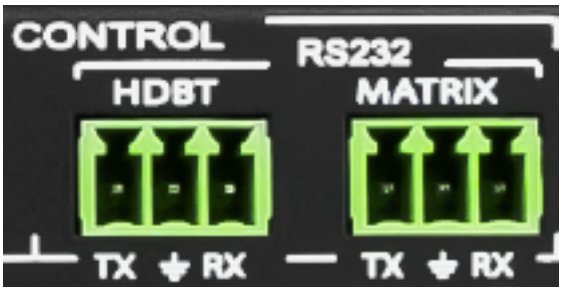
1. C onnect the LAN port into an active router port.
2. On most networks you can simply type the Default IP address into any web browser.

If you are on a closed network or non-standard, the following may work better when using DHCP:

1. Use an Ethernet cable to connect the LAN port on the switch to an unused, active port on the router.
2. Enable DHCP by pressing the INPUT 1 and INPUT 4 buttons simultaneously for 3 seconds.
3. Wait 5 seconds, then press and hold (for 3 seconds) the INPUT 3 and INPUT 4 buttons simultaneously. The display will show the assigned IP address.
4. Input the IP Address into any web browser.
   Setting a Static IP:

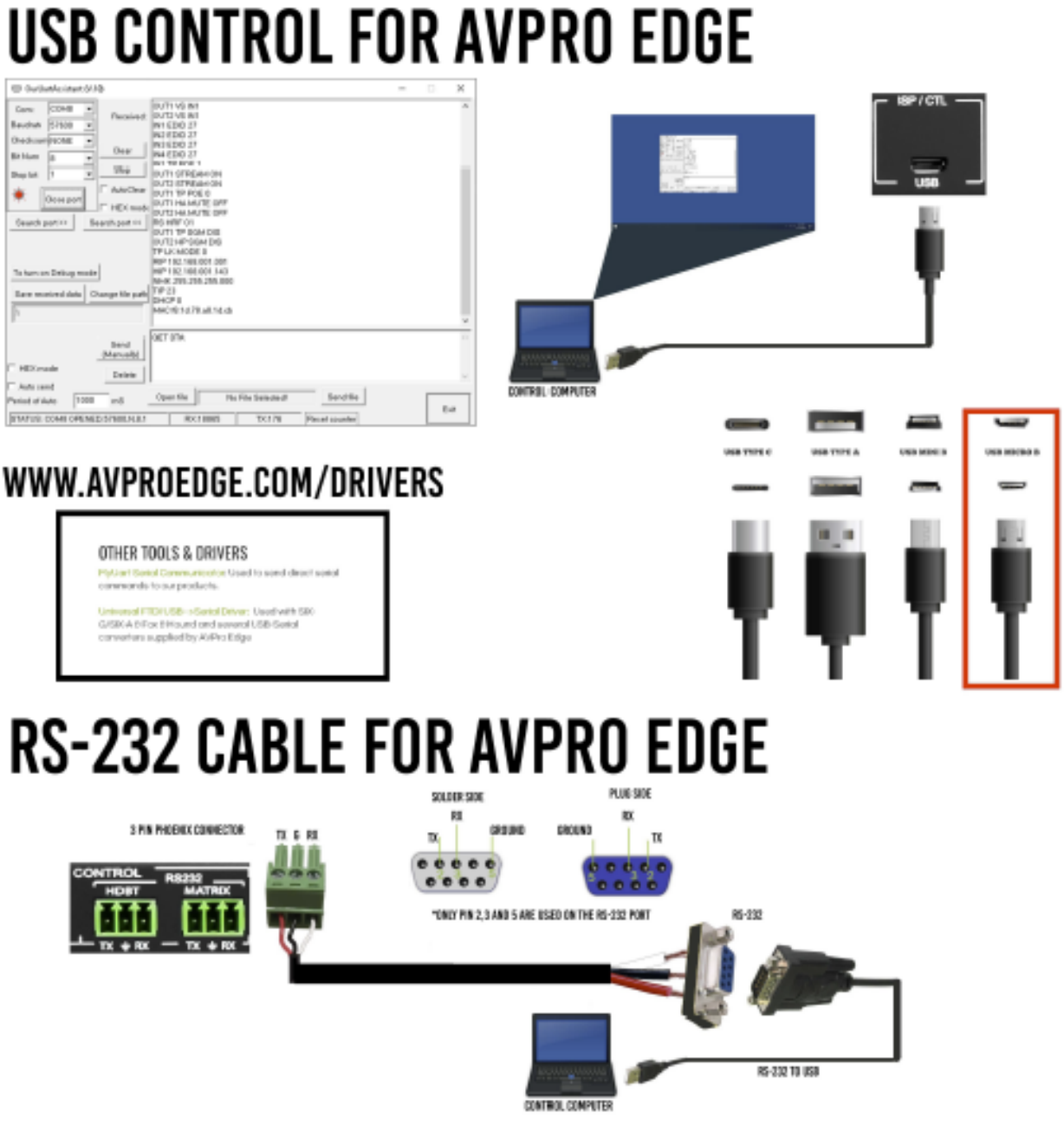
RS232 Configuration:

The AC-CX84-AUHD has two distinct RS232 Ports.



1. HDBT - This is for transmitting RS232 signals from the Matrix to the remote HDBaseT Receiver
2. MATRIX - This is for sending signals to the AC-CX84-AUHD Matrix for controlling the device. An example is shown on the next page. The complete command list is on page after that.

ISP / CONTROL
This ConferX switch can also be controlled using a computer and a micro USB cable, using the Micro USB Port on the front of the device.



RS232 and TCP/IP Commands:

The Matrix can be controlled with either RS-232 or TCP/IP commands. Certain switching or format configurations can only be done using these commands. We recommend using either the MyUART (RS-232 - free) or Hercules (TCP/IP - free) apps as they are very easy to use for sending commands to the machine.

For TCP/IP control commands use Telnet Port 23.

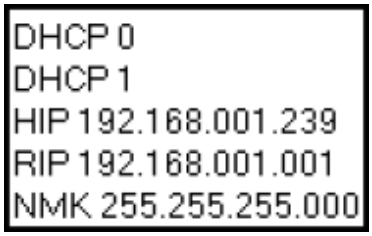
For RS-232, use a null modem serial cable adapter and set the serial communications to:

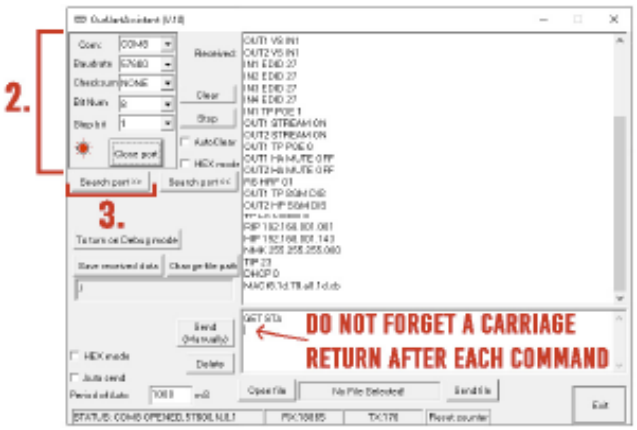
57600,n,8,1 (baud: 57600, no parity, 8 data bits and 1 stop bit) with no handshaking.

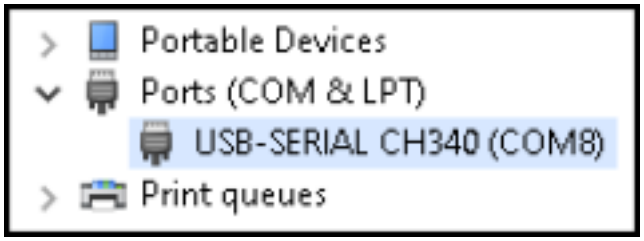
Please add a return (Enter key) after each command when using direct commands. The unified command list (ASCII) is listed on pages 14 and 15. You may also send "H" for HELP, this will return the entire command list.

Command Example: DHCP and setting the IP Address

1. Connect your computer to one of the control ports (Micro USB/3pin Terminal)
2. Open up MyUart and verify the correct settings
3. Baudrate: 57600, no parity, 8 data bits and 1 stop bit) with no handshaking.
4. On MyUart click Search Port>> (you will see a red indicator once connected)
5. You can verify the COM port by using Windows Device Manger. Both USB and 3pin connections should show up as a COM#.
6. Send "GET DHCP" with a carriage return (no " " and hit Enter/Return on keyboard).
7. Default is OFF so the return message should be "DHCP 0" (0=Off, 1=On)
8. Send "SET DHCP 1", the return message should read "DHCP 1"
9. This will also return the current IP Settings. If there is no connection it will reply with the Default Settings.
10. You can now connect to the WebUI by typing in the HIP address into a web browser. There you can alter the IP address of the Matrix to one of your choosing.
11. You can also set the address of the matrix by sending the following command
12. "SET HIP xxx.xxx.xxx.xxx" (SET HIP 192.168.1.143)
13. Once configured it is recommended to turn DHCP back off so the settings are set to Static and will not change (this can also be done from the WebUI).
14. "SET DHCP 0"
15. You can verify the settings by getting the status of the matrix
16. "GET STA"







Device Addresses When Using Serial Communication:

NOTE: Only set device address when cascading multiple units together and using RS232 as your control method! You also have to send the device address when doing advanced routing while sending commands by serial (next page) even if it is default "A00". You NEVER use device addresses when using IP control or TELNET

When using serial communication it is good to be aware of the devices "Address". You will want to know the device address as this will determine which Cloud 9 will receive a command. All of the drivers are built so that if you use serial communication you will use ONE instance of the driver and select the size. i.e 9x18, 9x27 etc...

All AC-CX84-AUHDs are address "A00" by default and if you are using just one device you do not need to place this in front of the serial command.

EX1: If you have a standalone unit and are using serial control you can just send a command without the address:

"SET OUT5 VS IN3" ----This will set Output 5 to Input 3

EX2: If you have two units in a "stack" you have to label them A01 and A02, so a command will look like:

"A02SET OUT5 VS IN3" ----This will set Output 5 to Input 3 ON SWITCH TWO. Also, please note that there is no "space" between the address and the command

To set and device address you can use the PC Control Software or send the command "SET ADDR xx" (xx = 01 through 99)

Advanced RS232 Routing:

In addition to doing RS232 "Broadcast" (Described in the beginning of the manual) you can route RS232 commands to a single specific output. This allow for finite control of displays and the ability to create specific zones. You can send advanced routing commands:

1. By directly plugging a serial cable into the "Matrix" port on the AC-CX84-AUHD
2. Sending Telnet commands via the LAN Port.

To do "Advanced" Routing, send RS232 signals here.

Send TELNET Commands through the LAN connection.

How to route RS232 Commands when using serial:

The routing command is very straight forward but you have to take care to make sure you format it correctly. The main thing to consider before you begin:

1. You are actually sending 2 commands (route & device command) so depending on what you are using to send the command the format varies slightly - We show some examples below.
2. You have to know the baud rate of the device you are sending the command to.
3. For "hybrid" ASCII commands, you may have to convert the numbers to the decimal value.

Example: If the command is "ka 00 01" you only send "ka 0 1"

The Command:

The fist command is your "route" and it looks like this: AxxSET RS PTH OUTx LENx BRx

A = Device Address (use this even if using a single unit, just put 00) OUT = The Output you want to rout the forthcoming command to

LEN = Forthcoming command length - for ASCII this includes EVERY character including spaces. For HEX it includes only the BYTE count.

Ex1: If the ASCII command is "ka 0 1" the length is 6. Count spaces.
NOTE: You can exceed the length by 2 if unsure. If you exceed the length by more than 2 it will not work.

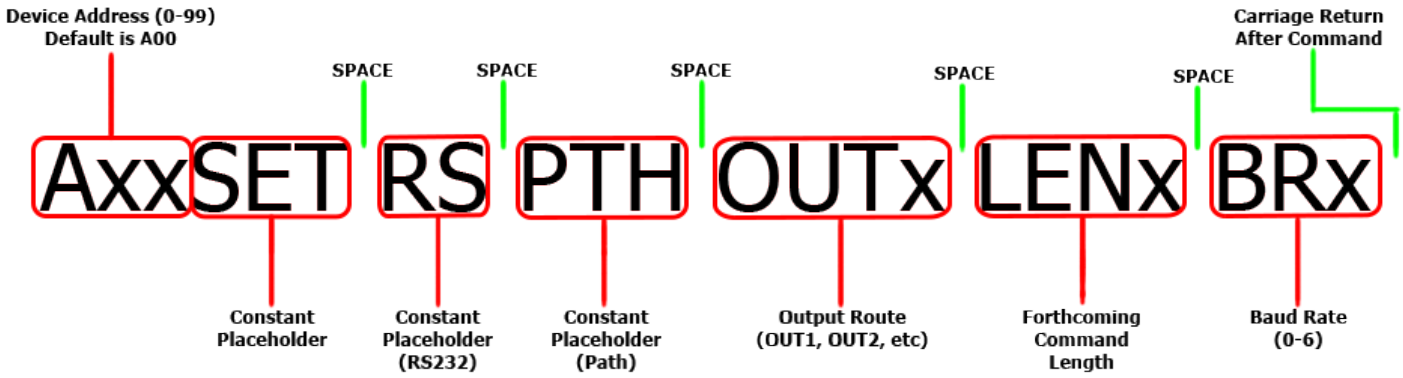
Ex2: If HEX command is "6B 68 20 30 20 31" the length is 6. Do not count spaces. Again, you can exceed by 2.

BR = Baud Rate of the device you are sending to
You use a single digit to replace "x" and they are:

0 - 9600	3 - 38400
1 - 14400	4 - 57600
2 - 19200	5 - 115200

There is a carriage return immediately following this command.

After this command you immediately follow it with the command you want to send to the device (no spaces). That command it then followed by another carriage return.



Command Examples:

Using A Terminal Program (RS232):

In the following example we are using a program called MYUART Assist. We make this program freely available form www.avproedge.com.

You will notice in the example that it is on 2 lines. This is because you have to separate the commands with a return.

The command below was sent through the HDBaseT Rx on Output 5 to successfully "Power On" a LG TV.

The firmware will send a command acknowledgment at 57600 to the extender. This shows up as "RS DEV MUX 0.0.0.0.0.0.0.0.0.0", if the end device is receiving at 57600. The Matrix itself also sends an acknowledgment commands SET RS PTH OUT5 LEN10 to confirm the rout was set and command sent.

Using TELNET (IP):

Using A Terminal Program (RS232):

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Using TELNET (IP): On Controls Examples

Green = Route Command

Red = Command to be sent to device

This first example is when sending an ASCII Command

\x0DA01SET RS PTH OUT1 LEN17 BR4\x0D\x0A\x0DSET OUT4 VS IN5\x0A\x0D\x0D

You can also convert to pure HEX and send a command this way:

\x0A\x41\x30\x31\x53\x45\x54\x20\x52\x53\x20\x50\x54\x48\x20\x4F\x55\x54\x31\x20\x4C\x45\x4E\x31\x37\x20\x42\x52\x34\x0D\x0A\x53\x45\x54\x20\x4F\x55\x54\x32\x20\x56\x53\x20\x49\x4E\x32\x0D\x0A

A hybrid ascii-hex combo:

Notice one less carriage return at the end of the string - because the device we were sending to did not require a carriage return at the end of the command:

\x0DSET RS PTH OUT1 LEN13 BR5\x0D\x0A\x0D\xAA\x02\x00\x07\x00\x00\x00\x00\x10\x03\x00\x3A\x0A\x0D

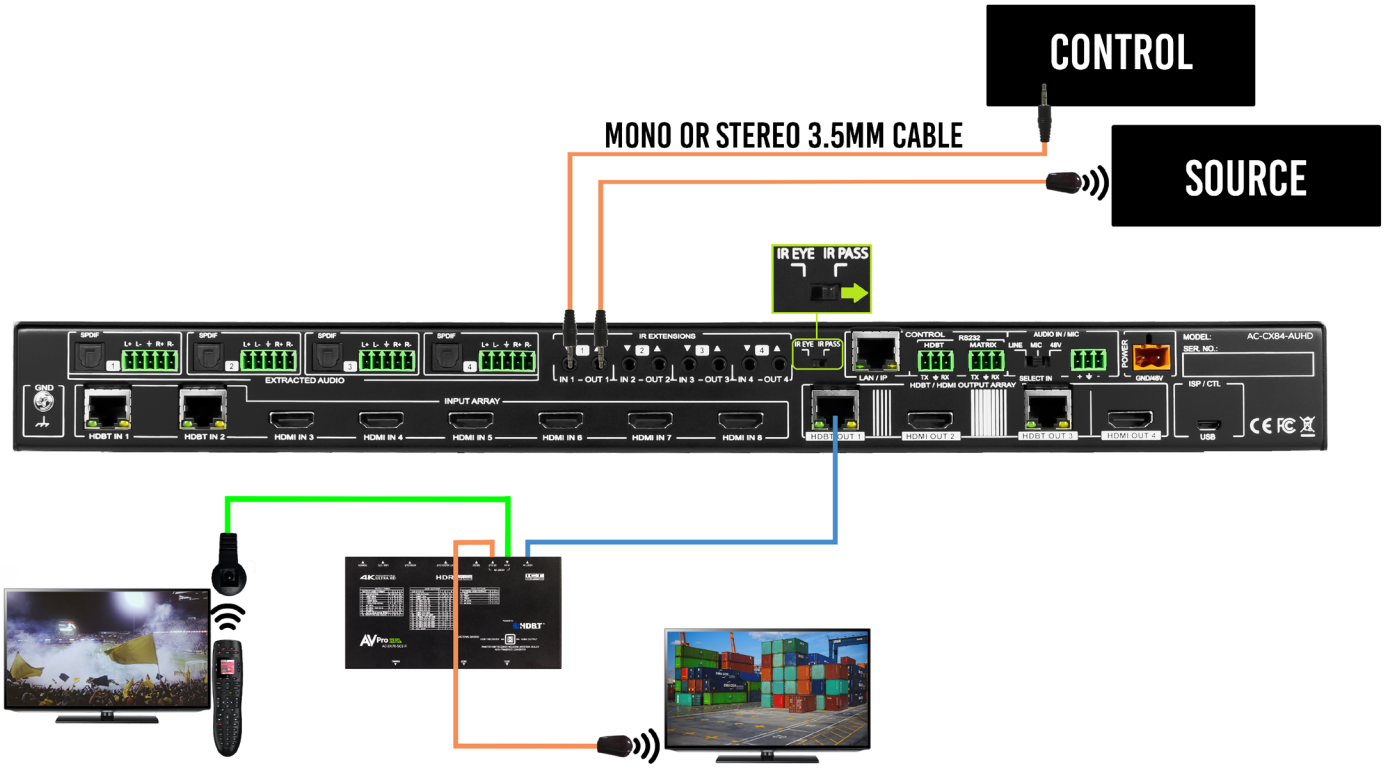
Command	Action
H	: Help
STA	: Show Global System Status
SET RST	: Reset to Factory Defaults
SET RBT	: System Reset to Reboot
SET LAN RBT	: SET LAN MCU Reset to Reboot
SET ADDR xx	: Set System Address to xx {xx=[00-99](00=Single)}
SET BAUDR x	: Set System BaudRate to x {x=[0~5](0=9600,1=14400,2=19200,3=38400,4=57600,5=115200)}
SET LCD ON Tx	: Set LCD Remain On Time{x=[0~3](0=Always ON,1=15,2=30,3=60Sec)}
SET KEY LOCK ON/OFF	: Set Key Lock On/Off
GET ADDR	: Get System Address
GET BAUDR	: Get System BaudRate Status
GET STA	: Get System Status
GET INx SIG STA	: Get Input x Signal Status {x=[0~8](0=ALL)}
GET LCD ON T	: Get LCD Remain On Time
GET KEY LOCK	: Get Key Lock Status
Command	**Action**
SET OUTx VS INy	: Set Output x To Input y{x=[0~4](0=ALL), y=[1~8]}
SET OUTx HP VIDEOy	: Set HDMI Output VIDEO Mode {x=[0,2,4](0=ALL), y=[1,3](1=BYPASS,3=2K->4K)}
SET OUTx TP VIDEOy	: Set HDBT Output VIDEO Mode {x=[0,1,3](0=ALL), y=[2,5](2=4K->2K,5=ICT Mode)}
SET SWITCH MODEx	: Set Switch Mode To Single Switch or Double Switch {x=[0~1],0-Single Switch ,1-Double Switch}
SET HDx AUTO EN/DIS	: Set HDMI Outputx To Auto Mode Enable Or Disable{x=[0~4](0=ALL)}
SET OUTx EXA MIC EN/DIS	: Set Ex-Audio Microphone Output Enable/Disable{x=[0~4](0=ALL)}
SET OUT1 EXA MIC LEVy	: Set Volume level of Microphone{y=[0~14]}
SET OUTx EXAUD LEVy	: Set Output x Ex-Audio(Balanced) Volume Levely{x=[0~4](0=ALL),y=[0~14]}
SET OUTx EXA EN/DIS	: Set Ex-Audio Output Enable/Disable{x=[0~4](0=ALL)}
SET OUTx EXADL PHy	: Set Ex-Audio Delay{x=[0~4](0=ALL), y=[0~7](0=Bypass,1~7=90,180,270,360,450,540,630MS)}
SET EXAMX MODEx	: Set Ex-Audio Matrix Mode{x=[0~2](0=Bind To Output,1=Bind To Input,2=Matrix}
SET OUTx AS INy	: Set Ex-Audio Output x To Input y{x=[0~4](0=ALL), y=[1~8]}
SET OUTx HP SGM EN/DIS	: Set HDMI Output Signal Generator Enable/Disable{x=[0,2,4](0=ALL)}
SET OUTx TP SGM EN/DIS	: Set HDBT Output Signal Generator Enable/Disable{x=[0,1,3](0=ALL)}
SET OUTx HP STREAM ON/OFF	: Set HDMI Output x Stream ON/OFF{x=[0~4](0=ALL)}
SET OUTx TP STREAM ON/OFF	: Set HDBT Output x Stream ON/OFF{x=[0~4](0=ALL)}
SET OUTx HP HA MUTE ON/OFF	: Set HDMI Output x Audio Mute ON/OFF{x=[0,2,4](0=ALL)}
SET OUTx TP HA MUTE ON/OFF	: Set HDBT Output x Audio Mute ON/OFF{x=[0,1,3](0=ALL)}
SET OUTx TP POE y	: Set Output x POE Mode{x=[0,1,3](0=ALL),y=[0~1](0=Auto,1=Force)}
GET OUTx VS	: Get Output x Video Route{x=[0~4](0=ALL)}
GET OUTx HP VIDEO	: Get HDMI Output x Video Mode{x=[0,2,4](0=ALL)}
GET OUTx TP VIDEO	: Get HDBT Output x Video Mode{x=[0,1,3](0=ALL)}
GET SWITCH MODE	: Get Switch Mode Status
GET HDx AUTO	: Get HDMI Outputx Auto Status
GET OUTx EXAUD LEV	: Get Output x Ex-Audio(Balanced) Volume Level{x=[0~4](0=all)}
GET OUTx HP EDID DATA	: Get HDMI Output x EDID DATA{x=[2,4]}
GET OUTx TP EDID DATA	: Get HDBT Output x EDID DATA{x=[1,3]}
GET OUTx EXA MIC	: Get Ex-Audio Microphone Output Enable/Disable Status{x=[0~4](0=ALL)}
GET OUT1 EXA MIC LEV	: Get Volume level of Microphone Status
GET OUTx EXAUD LEV	: Get Output x Ex-Audio(Balanced) Volume Level{x=[0~4](0=all)}
GET OUTx EXA	: Get Ex-Audio Output Enable/Disable Status{x=[0~4](0=ALL)}
GET OUTx EXADL PH	: Get Ex-Audio Output Delay Status{x=[0~4](0=ALL)}
GET EXAMX MODE	: Get Ex-Audio Matrix Mode
GET OUTx AS IN	: Get Output x Ex-Audio Route{x=[0~4](0=ALL)}
GET OUTx HP SGM	: Get HDMI Output Signal Generator Enable/Disable Status{x=[0,2,4](0=ALL)}
GET OUTx TP SGM	: Get HDBT Output Signal Generator Enable/Disable Status{x=[0,1,3](0=ALL)}
GET OUTx HP STREAM	: Get HDMI Output x Stream ON/OFF Status{x=[0,2,4](0=ALL)}
GET OUTx TP STREAM	: Get HDBT Output x Stream ON/OFF Status{x=[0,1,3](0=ALL)}
GET OUTx HP HA MUTE	: Get HDMI Output x Audio Mute ON/OFF Status{x=[0,2,4](0=ALL)}
GET OUTx TP HA MUTE	: Get HDBT Output x Audio Mute ON/OFF Status{x=[0,1,3](0=ALL)}
GET OUTx TP POE	: Get Output x POE Mode{x=[0,1,3](0=ALL)

Input Setup Commands:	(Note: Input number(x)=HDMI(x),x=1-4)	
SET INx EDID y	: Set Input x EDID{x=[0~6](0=ALL), y=[0~32]}	
0:1080P_2CH(PCM)	1:1080P_6CH	2:1080P_8CH
3:1080P_3D_2CH(PCM)	4:1080P_3D_6CH	5:1080P_3D_8CH
6:4k30Hz_3D_2CH(PCM)	7:4k30Hz_3D_6CH	8:4k30Hz_3D_8CH
9:4K60Hz(Y420)_3D_2CH(PCM)	10:4K60Hz(Y420)_3D_6CH	11:4K60Hz(Y420)_3D_8CH
12:4K60HZ_3D_2CH	13:4K60HZ_3D_6CH	14:4K60HZ_3D_8CH
15:1080P_2CH(PCM)_HDR	16:1080P_6CH_HDR	17:1080P_8CH_HDR
18:1080P_3D_2CH(PCM)_HDR	19:1080P_3D_6CH_HDR	20:1080P_3D_8CH_HDR
21:4K30Hz_3D_2CH(PCM)_HDR	22:4K30Hz_3D_6CH_HDR	23:4K30Hz_3D_6CH_HDR
24:4K60Hz(Y420)_3D_2CH(PCM)_HDR	25:4K60Hz(Y420)_3D_6CH_HDR	26:4K60Hz(Y420)_3D_8CH_HDR
27:4K60Hz_3D_2CH(PCM)_HDR	28:4K60Hz_3D_6CH_HDR	29:4K60Hz_3D_8CH_HDR
30:USER1_EDID	31:USER2_EDID	32:USER3_EDID
SET INx EDID CY OUTy HP	: Copy HDMI Output y EDID To Input x(USER1 BUF){x=[0~8](0=ALL), y=[2,4]}	
SET INx EDID CY OUTy TP	: Copy HDBT Output y EDID To Input x(USER1 BUF){x=[0~8](0=ALL), y=[1,3]}	
SET INx EDID Uy DATAz	: Write EDID To User y Buffer of Input x{x=[0~8](0=ALL), y=[1~3],z=[EDID Data]}	
SET INx TP POE y	: Set INx POE Mode{x=[0~2](0=ALL),y=[0~1](0=Auto,1=Force)}	
GET INx EDID	: Get Input x EDID y Data{x=[1~8],y=[0~32]}	
GET INx EDID y DATA	: Get Input x EDID y Data{x=[1~8],y=[0~32]}	
GET INx TP POE	: Get INx POE Mode{x=[0~2](0=ALL)}	
Network Setup Command:	**: (xxx=[000-255], zzzz=[0001~9999]**	
Network Setup Commands:	(xxx=[000-255], zzzz=[0001~9999]	
SET RIP xxx.xxx.xxx.xxx	: Set Route IP Address to xxx.xxx.xxx.xxx	
SET HIP xxx.xxx.xxx.xxx	: Set Host IP Address to xxx.xxx.xxx.xxx	
SET NMK xxx.xxx.xxx.xxx	: Set Net Mask to xxx.xxx.xxx.xxx	
SET TIP zzzz	: Set TCP/IP Port to zzzz	
SET DHCP y	: Set DHCP {y=[0~1](0=Dis,1=Enable)}	
GET RIP	: Get Route IP Address	
GET HIP	: Get Host IP Address	
GET NMK	: Get Net Mask	
GET TIP	: Get TCP/IP Port	
GET DHCP	: Get DHCP Status	
GET MAC	: Get MAC Address	
RS232 Route Setup Command:		
SET RS HRF Ix	: Set HDBT RS232 RX From Input Port x{x=[1-2](I=Input,O=Output)}	
SET RS HRF Ox	: Set HDBT RS232 RX From output Port x{x=[1,3](I=Input,O=Output)}	
SET RS PTH OUTx LENy BRz	: Set RS232 Pass Through to Output x {x=[1-2],y=[1~100], z=[0~5](0=9600,1=14400,2=19200,3=38400,4=57600,5=115200)}	
SET RS PTH INx LENy BRz	: Set RS232 Pass Through to Input x {x=[1-2],y=[1~100], z=[0~5](0=9600,1=14400,2=19200,3=38400,4=57600,5=115200)}	
GET RS HRF	: Get HDBT RS232 RX From Port State	
IR Code Setup Command:		
SET IR SYS xx.yy	: Set IR Custom Code{xx=[00-FFH],yy=[00-FFH]}	
SET IR OUTx INy CODE zz	: Set IR Data Code{x=[1~8],y=[1~8],zz=[00-FFH]}	
GET IR SYS	: Get IR Custom Code	

IR Configuration

IR Mode Slide Switch: (On Back) This is used to select a preferred IR Mode - There are two modes:

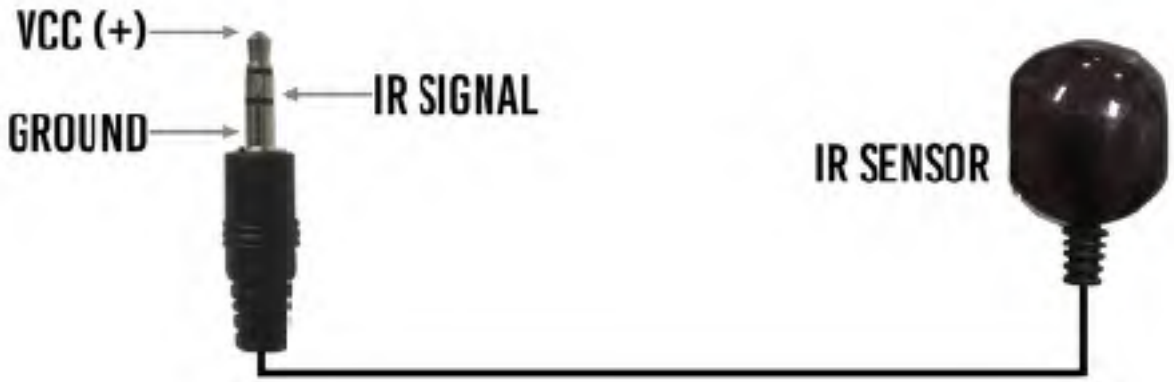
- IR-EYE - The IR Input will be configured to operate with an IR Receiver Eye.
- IR PASS - The IR Input will be configured to safely operate with a direct connection from a control system using a mono or stereo 3.5mm cable. It's protected @ 3v-20v. Default mode is IR-EYE.

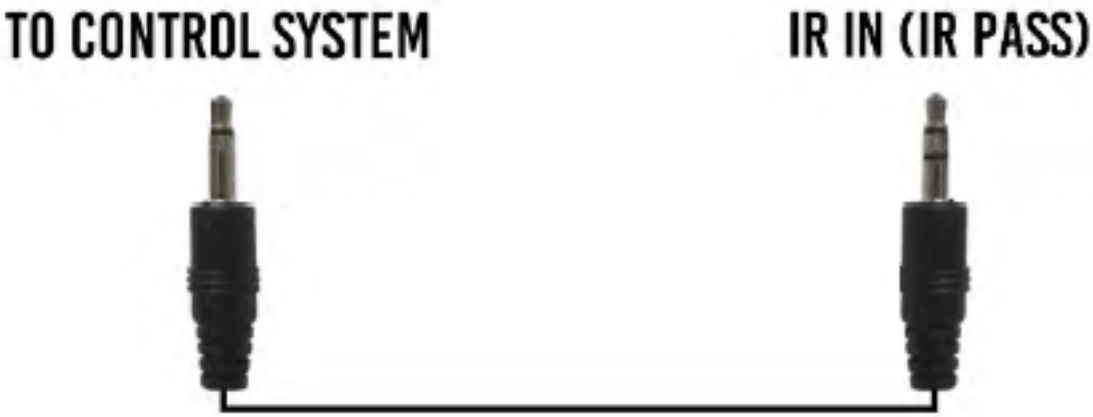


IR Configuration Continued

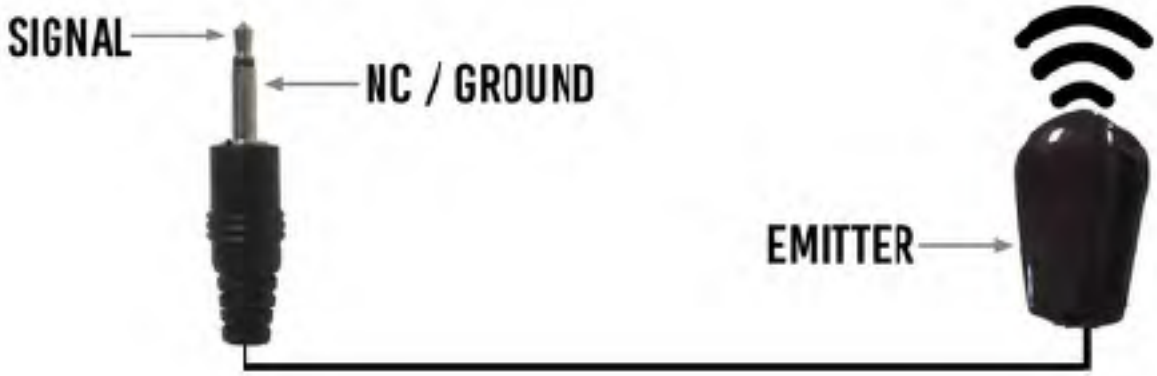
The IR OUT port is send IR signals out of an IR Emitter (Pictured below) that originate at the HDBaseT Receiver OR HDBaseT Transmitter

IR Sensor





IR Emitter



Audio Output Logic and Cable Prep:

You can extract audio from toslink or balance 2CH Audio. Audio outputs are an un-decoded output. This means that what goes in, is what goes out.

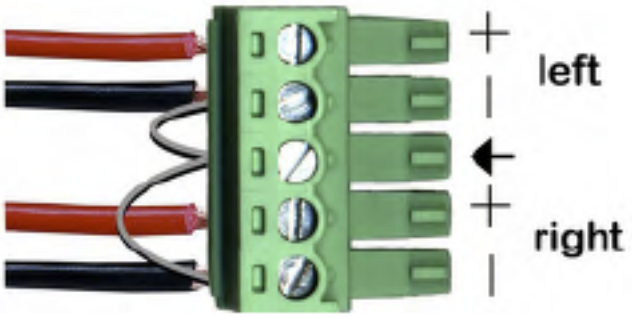
2CH Balanced Audio Port - Supports 2CH PCM audio only, which is ideal for 2 Channel systems and zoned audio systems.

Toslink Audio Port - Supports PCM, LPCM (up to 7CH), Dolby Digital, Dolby Digital Plus, DTS, DTS-HD, DTS Master Audio, which is ideal for multi-channel audio systems and older AVR's that do not support 18Gbps.

Need to down-mix for combination, uncompressed and 2CH systems? Check out the AC-ADM-AUHD and AC-ADM-COTO.

You can use balanced analog outputs in a balanced system, but you can also prep a cable as shown below toto convert to a traditional 2CH unbalanced (L/R) system.

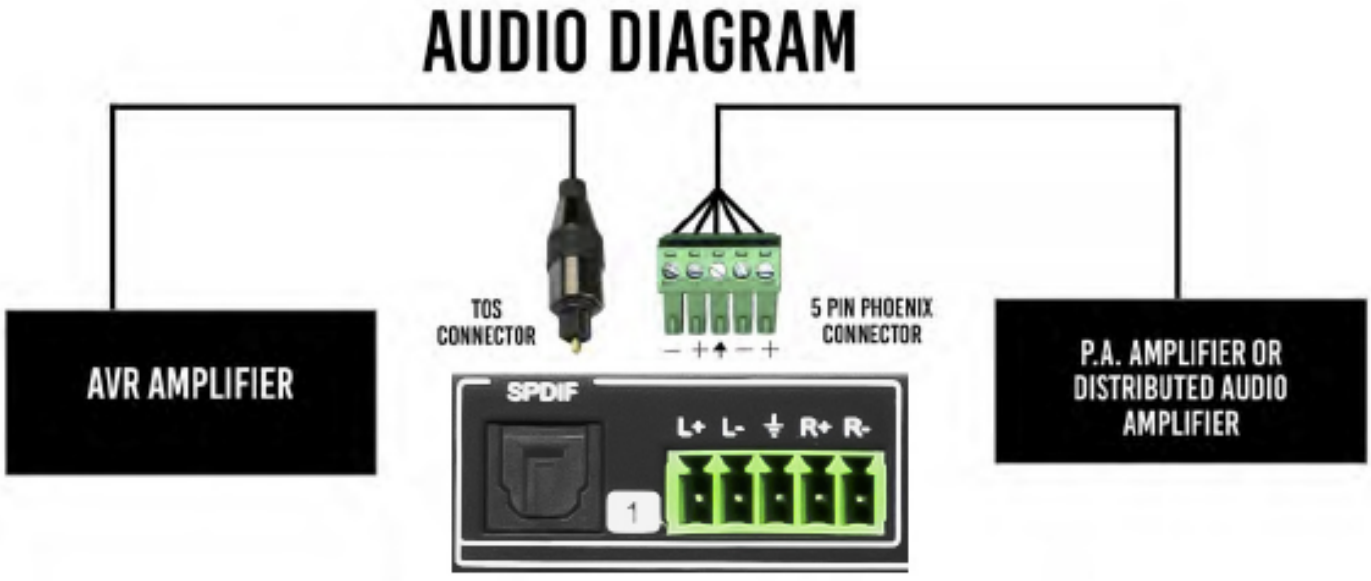
You can also purchase pre-made cables (AC-CABLE-5PIN-2CH)



NOTE: Make sure ground is always connected

AC-CABLE-5PIN-2CH

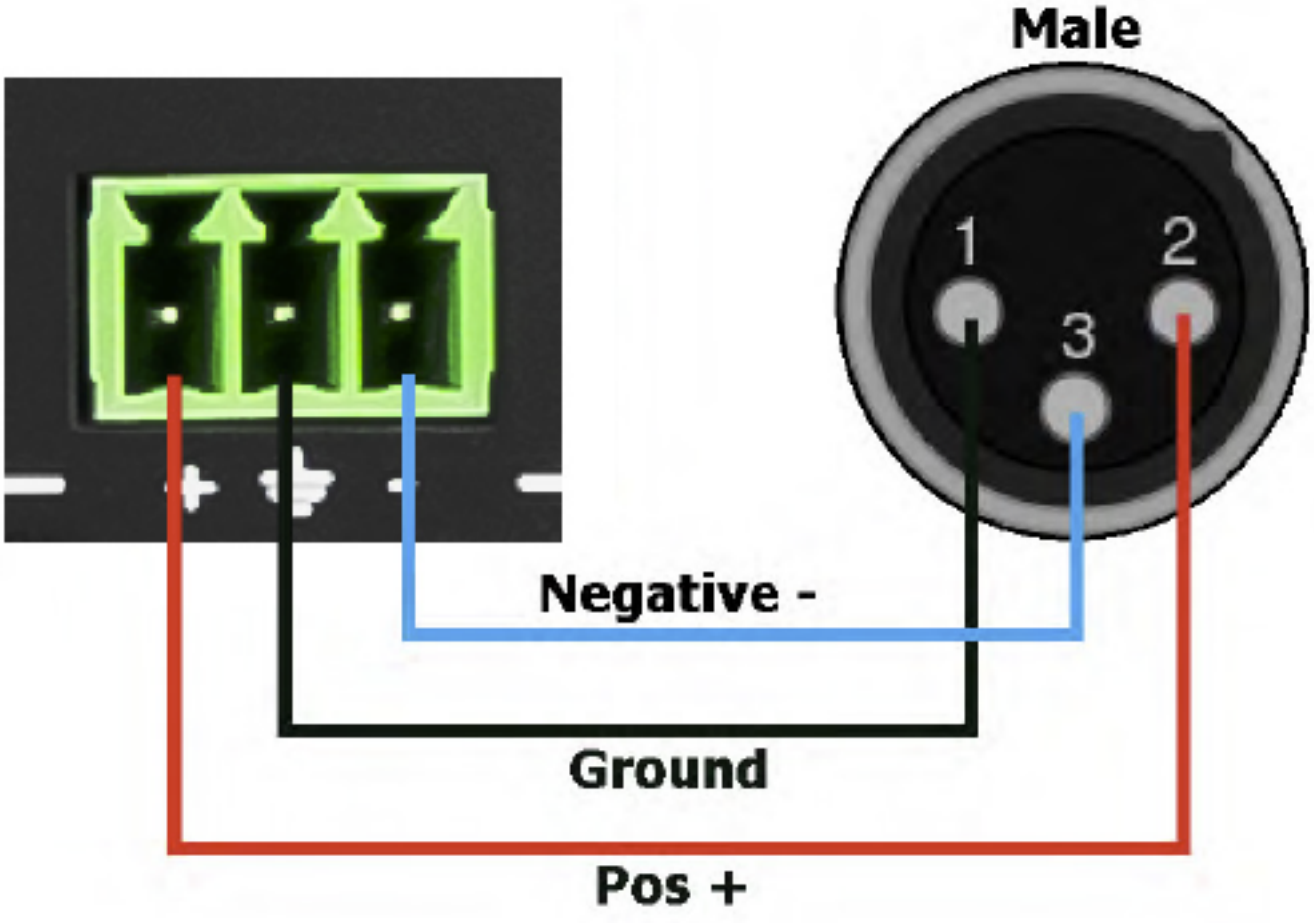
Audio Wiring Diagram:



Microphone IN and Cable Prep:

The Microphone/Line InputThere are 3 settings for the Microphone Input, they are

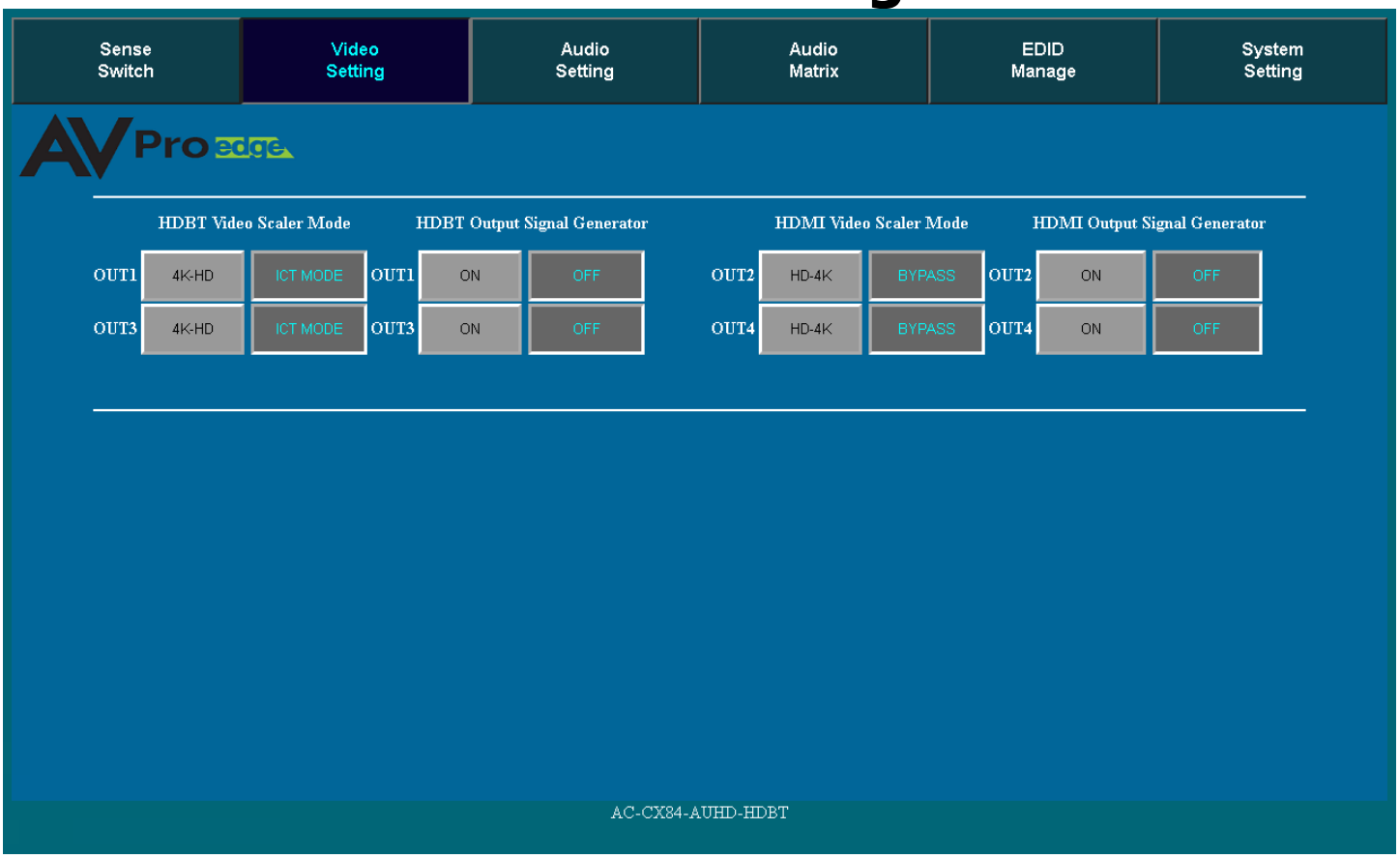
1. LINE IN - Mono connection (use + and Ground ⏚)
2. MIC - Select this for non-powered or Dynamic microphones.
3. 48V - This if for Microphones that require Phantom Power.



Web Interface: Switching

Use this page to switch between inputs and outputs from the web interface.

Web Interface: Video Setting



Video Scaler Modes:

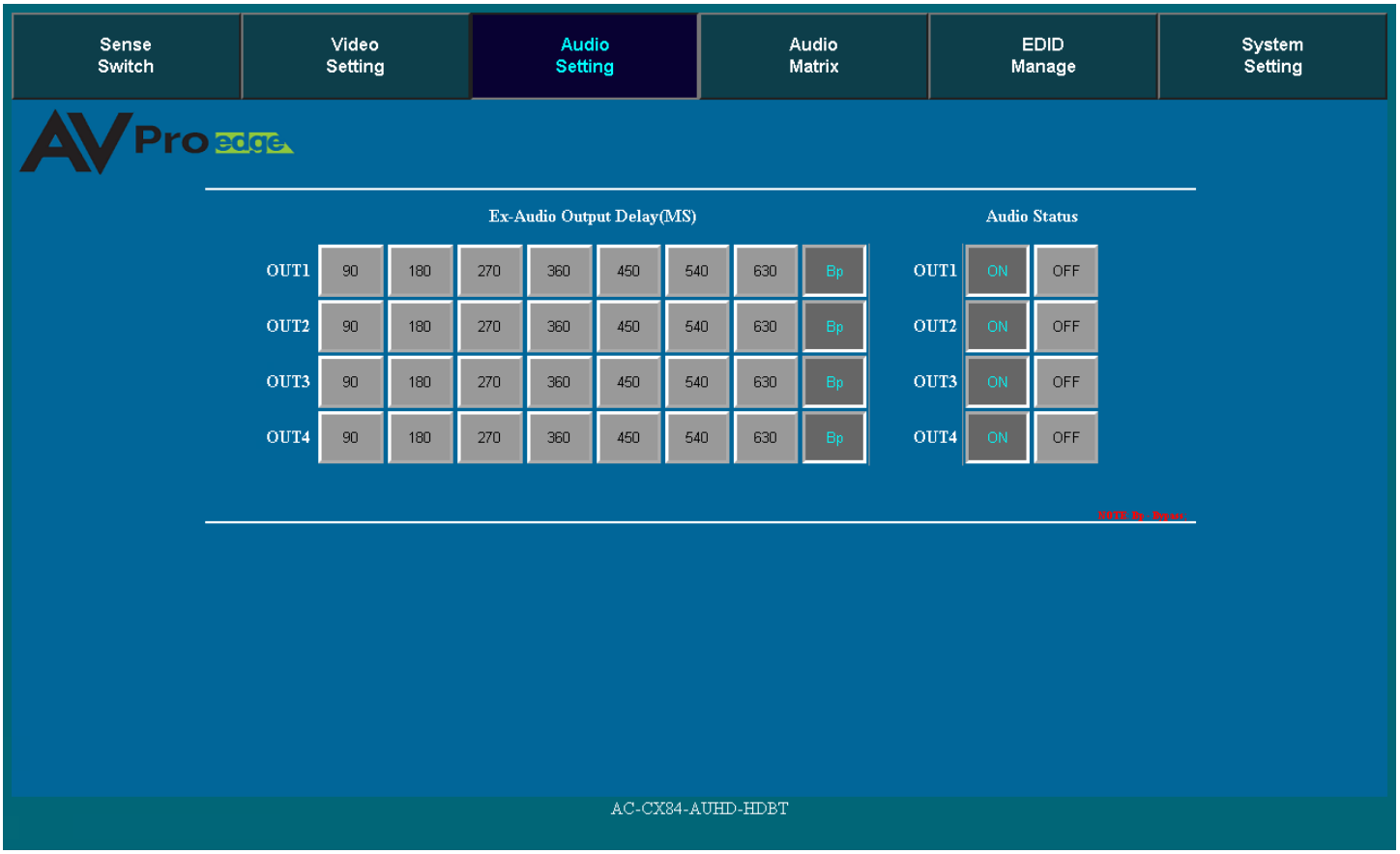
The AC-CX84-AUHD has video scaling features built-in. The HDBT outputs can downscale a 4k signal to a HD signal (1080P). And the HDMI outputs can upscale HD signals (1080p) to 4k. Default settings shown above.

- **4k - HD**: For the HDBT outputs only, will downscale 4k signals to HD (1080p).
- **ICT**: For HDBT outputs only. Default setting, ICT (Invisible Compression Technology) our proprietary compression algorithm for our HDBT products designed to compress high bandwidth HDMI signals into a more manageable size to transfer of Category cable.
- **HD - 4k**: For the HDMI outputs only, will upscale a HD signal (1080p) signal up to 4k
- **BYPASS**: For the HDMI outputs only, will disable the scaling on HDMI outputs.

Output Signal Generator:

The Output Signal Generator will output an internally stored 1080p color bar test pattern (see the image on the right) to test infrastructure. It can be turned on and off for each output, but remember to turn it off to resume normal functionality.

Web Interface: Audio Setting



EX-Audio Delay:

This setting allows the user to change the audio delay to overcome lip-sync issues when using audio separate from HDMI. The user can choose from the above options in milliseconds. Bp = Bypass or No Delay (default). Delay can be different per audio output port.

Audio Status:

This allows the user to turn ON and OFF the extracted audio output. When this is set to OFF the audio is muted from the extracted port.

Web Interface: Audio Matrix

Audio Matrix:

This allows the user to route the audio in a matrix fashion for the extracted audio ports.

*NOTE: The Audio Matrix Function only works if "MATRIX" is selected on the right (See next explanation).

Audio Status:

This allows the user to turn ON and OFF the extracted audio output. When this is set to OFF the audio is muted from the extracted port.

Web Interface: EDID Manage

Using the built-in EDID manager, a multitude of EDID's can be set for each input, and each input can be assigned a different EDID. This should be used to optimize sources or to manage infrastructure.

The EDID options are:

1. 1080P_2CH
2. 1080P_6CH
3. 1080P_8CH
4. 1080P_3D_2CH
5. 1080P_3D_6CH
6. 1080P_3D_8CH
7. 4K30HZ_3D_2CH
8. 4K30HZ_3D_6CH
9. 4K30HZ_3D_8CH
10. 4K60HzY420_3D_2CH
11. 4K60HzY420_3D_6CH
12. 4K60HzY420_3D_8CH
13. 4K60HZ_3D_2CH
14. 4K60HZ_3D_6CH
15. 4K60HZ_3D_8CH
16. 1080P_2CH_HDR
17. 1080P_6CH_HDR
17. 1080P_8CH_HDR
18. 1080P_3D_2CH_HDR
19. 1080P_3D_6CH_HDR
20. 1080P_3D_8CH_HDR
21. 4K30HZ_3D_2CH_HDR
22. 4K30HZ_3D_6CH_HDR
23. 4K30HZ_3D_8CH_HDR
24. 4K60HzY420_3D_2CH_HDR
25. 4K60HzY420_3D_6CH_HDR
26. 4K60HzY420_3D_8CH_HDR
27. 4K60HZ_3D_2CH_HDR
28. 4K60HZ_3D_6CH_HDR
29. 4K60HZ_3D_8CH_HDR
30. User EDID 1
31. User EDID 2
32. User EDID 3

*You may also copy EDID from any output and apply to any input, simply select "Copy EDID from Output x" (x=1-4). This will copy the EDID from the display attached and store it into "User EDID 1" and apply it to the input you have selected.

Web Interface: System Settings

IP Settings:

Set network settings such as:

- Static IP
- Subnet Mask
- Router IP
- TCP Port
- Enable DHCP

Port Alias Settings:

Rename inputs and outputs for easy management. Each custom name is limited to eight (8) characters.

Troubleshooting

1. Verify Power - Pg. 7
2. Ensure the Power cord is properly connected, front panel screen and buttons will light up when pressed or on power up.
3. Verify Connections - Check that all cables are fully seated.
4. Not passing video, this may be an EDID issue. Out of the box the default is 1080P 2CH. Try a canned EDID or copy the connected displays EDID - Pg. 8, 15, and 24.
5. IR Issues - Verify correct connections - P. 15 -17
6. Visibly flashing Emitters may not function properly, try the IR Cables that come in the box if you are experiencing issues
7. Audio Issues - Pg. 9, 10, 14, 15, 18, 22, and 23.
8. Verify Source is set to output 8ch if using TOSLINK
9. Note: This unit does NOT Down-Mix, for 2Ch port to function source must be set to 2Ch.
10. Still having issues, contact us
11. Support Direct - +1-605-977-3477
12. All inquiries - 1-605-274-6055
13. Submit a support request ticket
14. https://support.avproedge.com/hc/en-us/requests/new

Maintenance

To ensure reliable operation of this product as well as protecting the safety of any person using or handling this device while powered, please observe the following instructions.

- Use the power supplies provided. If an alternate supply is required, check voltage, polarity and that it has sufficient power to supply the device it is connected to.
- Do not operate these products outside the specified temperature and humidity range given in the above specifications.
- Ensure there is adequate ventilation to allow this product to operate efficiently.
- Repair of the equipment should only be carried out by qualified professionals as these products contain sensitive components that may be damaged by any mistreatment.
- Only use this product in a dry environment. Do not allow any liquids or harmful chemicals to come into contact with these products.
- Clean this unit with a soft, dry cloth. Never use alcohol, paint thinner or benzene to clean this unit.

Damage Requiring Service

The unit should be serviced by qualified service personnel if:

- The DC power supply cord or AC adaptor has been damaged
- Objects or liquids have gotten into the unit
- The unit has been exposed to rain
- The unit does not operate normally or exhibits a marked change in performance
- The unit has been dropped or the housing damaged

Support

Should you experience any problems while using this product, first, refer to the Troubleshooting section of this manual before contacting Technical Support. When calling, the following information should be provided:

- Product name and model number
- Product serial number
- Details of the issue and any conditions under which the issue is occurring
- Clean this unit with a soft, dry cloth. Never use alcohol, paint thinner or benzene to clean this unit.

Warranty

If your product does not work properly because of a defect in materials or workmanship, AVProEdge (referred to as "the warrantor") will, for the length of the period indicated as below, (Parts/Labor (10) Years), which starts with the date of original purchase ("Limited Warranty period"), at its option either (a) repair your product with new or refurbished parts, or (b) replace it with a new or a refurbished product. The decision to repair or replace will be made by the warrantor. During the "Labor" Limited Warranty period there will be no charge for labor. During the "Parts" warranty period, there will be no charge for parts. You must mail-in your product during the warranty period. This Limited Warranty is extended only to the original purchaser and only covers product purchased as new. A purchase receipt or other proof of original purchase date is required for Limited Warranty service.

This warranty extends to products purchased directly from AVPro or an authorized dealer. AVPro is not liable to honor this warranty if the product has been used in any application other than that for which it was intended, has been subjected to misuse, accidental damage, modification or improper installation procedures, unauthorized repairs or is outside of the warranty period. Please direct any questions or issues you may have to your local dealer before contacting AVPro.

Thank you for choosing AVProEdge!

Please contact us with any questions, we are happily at your service!

AVProEdge
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support@avproedge.com