User Manual

AC-MX88-AUHD-GEN2
&
AC-MX44-AUHD

18 Gbps True 4K60 4:4:4 8x8 HDMI Matrix w/ Dual Audio De-Embedding, Scaling & Delay.

AVProConnect ~ 3518 N Casco Ave. Sioux Falls, SD 57104~ 1.877.886.5112 ~ +1.605.274.6055 ~ support@avproconnect.com

AC-MX88/44-AUHD

The AC-MX88/44-AUHD is a true 4K60 4:4:4 8x8/4x4 HDMI matrix switch. Supporting HDMI 2.0, HDCP 2.2, HDR and up to 18 Gbps bandwidth. This switch allows any source (Blu-ray, UHD Blu-ray, satellite receiver, game consoles, PCs, etc...) to be shown on any of the connected displays.

Audio Delay is "On-Board" so lip-sync issues are able to be managed before they become a problem. Also, with built-in scalers there is no need to forfeit 4K signals just because there are a couple of older displays. Additionally, full EDID management allows maximum flexibility with today's wide mixture of sources and displays.

This matrix equalizes and amplifies the output to ensure that HDMI signals can be transmitted through long HDMI cables without loss of quality. For long runs, stretch your distance further with the AC-EX70-UHD or AC-EX40-444 HDMI Extenders.

This is an ideal solution for digital entertainment centers, HDTV retail, show sites, data centers, schools, conference and training centers and more!

Features:

- Advanced equalization and amplification of outputs for smooth switching
- 1080p > 4K & 4K > 1080p Up /Down Scalers on each output
- Advanced EDID Management
- HDMI 2.0
- 4K60 4:4:4 Support
- Full HDR Support
- HDCP 2.2
- IR, RS-232 and LAN Control Options
- Digital Toslink Out
- Balanced Analog Out
- Audio Delay for Digital & Analog Out
- Extracted Audio Matrixing

Easy to use:

- Install in seconds
- Feature rich
- Powerful EDID management
- Front Panel Control
- IR Remote
- IR & RS-232 Control
- LAN Control

In The Box:

- AC-MX88-AUHD-GEN2/AC-MX44-AUHD Matrix Switch
- IR Remote Control
- IR Extension Cable
- 12V/4A Locking Power Supply
- RS-232 Control Cable
- Instruction Manual

Quick Installation:

1. Connect the HDMI input sources (Blu-ray, Set Top Box, etc...) to the AC-MX88-AUHD-GEN2/AC-MX44-AUHD.
2. Connect the HDMI output devices (AVR, Display, Distribution Amplifier, Extender) to the AC-MX88-AUHD-GEN2/AC-MX44-AUHD.
3. Power on the sources.
4. Connect the power supply into the AC-MX88-AUHD-GEN2/AC-MX44-AUHD.
5. Turn on output devices/displays.
6. Use the front panel controls, supplied IR remote or free PC software to control the switch.

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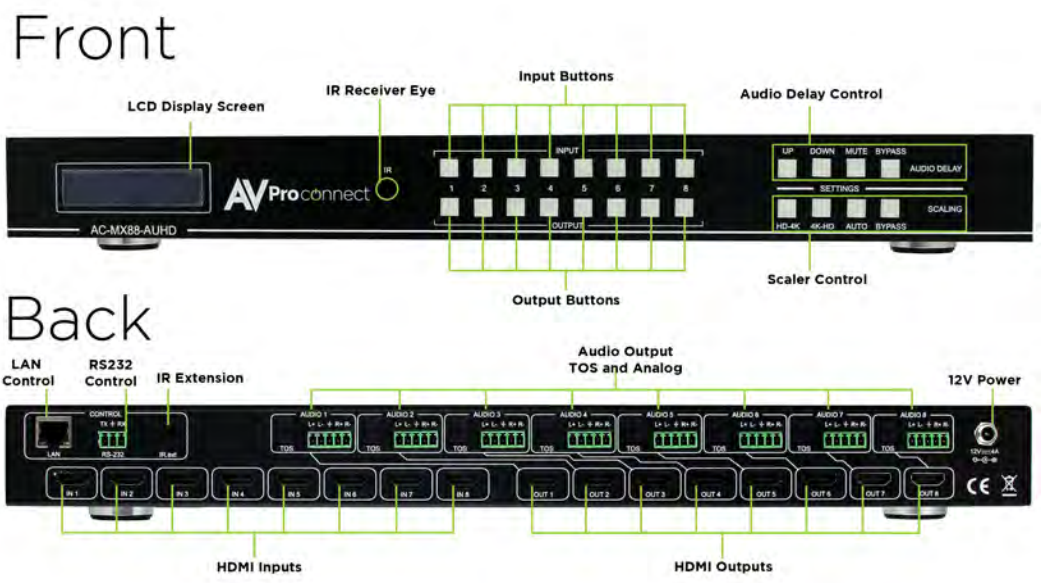
Device Overview:

- Definition - Matrix switches provide the ability to route any input to any output or to multiple outputs at any time. Depending on the model, a matrix switch can route HD, UHD or AUHD content in this manner. Additionally, since most venues have both, audio zones and video zones, the requirement to breakout or strip off the audio is often necessary and has become almost a standard feature on most matrix switches.
- Control – Matrix switches are generally controlled via a third-party controller (like Control 4, RTI, Crestron, etc...). Many integrators want ready-made drivers for their control system in order to make programming and deployment easier.
- Matrix Switches are widely used in both, Commercial and Residential Applications.



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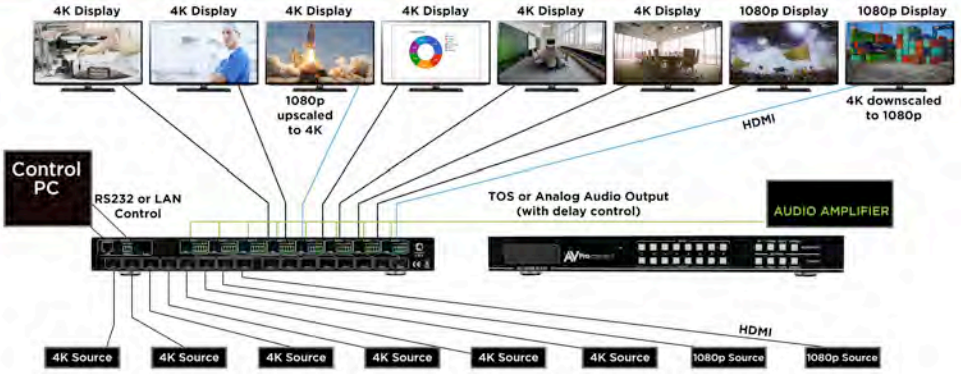
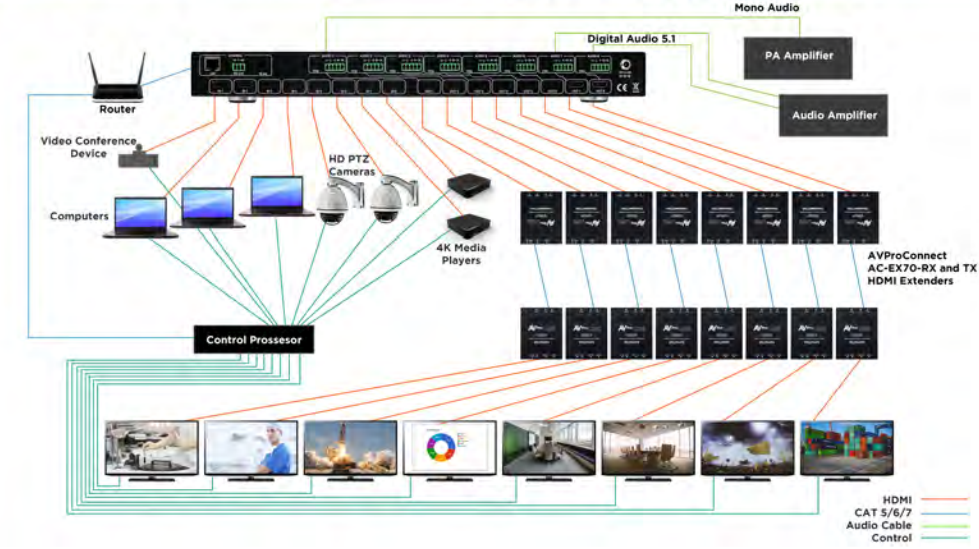
AVProconnect AC-MX88-AUHD CONNECTION DIAGRAM



AVProconnect AC-MX88-AUHD 18GBPS 8x8 Matrix System Application



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Full List of Quick Commands From Front Panel:

AC-MX88-AUHD-GEN2 & AC-MX44-AUHD Quick Setup Control		
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 sec) the INPUT button of the source you want to set EDID for. 2. Use the "UP" & "DOWN" buttons that have lit up to navigate to your desired EDID setting. 3. Quick press the same INPUT button to lock in the selection	See PAGE 7 in the manual for a full list of available EDIDs
Scaling Control	1. Press and hold (3 sec) the OUTPUT button that you would like to scale. 2. The BOTTOM row of buttons on the righthand side of the machine light up, allowing you to make your selection.	- HD-->4K - 4K-->HD - AUTO (Detects Display) - BYPASS (No Scaling)
Audio Delay Control	1. Press and hold (3 sec) the OUTPUT button that you would like to scale. 2. The TOP row of buttons on the righthand 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 Sec) the BYPASS button on the audio settings buttons (top right set of buttons). 2. Press the "UP" & "DOWN" buttons to switch between desired settings. 3. Press BYPASS button again to set mode. NOTE: if "Matrix" is selected, you will be able to route audio. Please see "Extracted Audio Switching", Step 3. 4. Press BYPASS 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 Sec) the BYPASS button on the AUDIO SETTINGS buttons (top right set of buttons) 2. The screen will say "Matrix". 3. Quick press the BYPASS button again to enter Extracted Audio Switching. Now you can switch by: -Press the OUTPUT you'd like to change Press the INPUT you'd like to route to the previously selected audio port 4. When finished, press the BYPASS button again, in order to exit.	NOTE: Audio Switching commands are ONLY available from 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 Sec) the INPUT & OUTPUT together. 2. Repeat to turn off test pattern	Ex. Pressing and holding INPUT 1 & OUTPUT 1 (for 3 seconds) will generate test patterns out of OUTPUT 1.
Toggle DHCP Mode	1. Press and hold (3 sec) INPUT 1 & INPUT 4 together	Toggles DHCP OFF/ON NOTE: The default mode is OFF, and the default IP Address is 192.168.1.239.
View Network Settings	1. Press and hold (3 Sec) INPUT 3 & INPUT 4 together	The screen will flash the following: - Device IP - Host IP - Subnet Mask - MAC Address
View Firmware Version	1. Press and hold (3 Sec) INPUT 2 & INPUT 4 together	

NOTE: A factory reset may be performed by pressing and holding 4 buttons together for 10 seconds. Press and hold:

- HD-->4K (Scaler Settings)
- 4K-->HD (Scaler Settings)
- MUTE (Audio Delay Settings)
- BYPASS (Audio Delay Settings)

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Front Panel Control

Switching:

The AC-MX88-AUHD-GEN2/AC-MX44-AUHD can be switched from the front panel by selecting the OUTPUT button first and then selecting the INPUT button:

1. Press the button (1 through 8) on the bottom row that corresponds with the OUTPUT (Display, or Sink Device) you would like to send to a source.
2. Once pressed, the switch will illuminate the OUTPUT button that you have selected, along with the INPUT row (as pictured), indicating that it is ready for you to select the INPUT.
3. Select the desired INPUT.

Figure 1 – Switching with the front panel controls. NOTE: Select the OUTPUT and then the INPUT.

Scaler Control:

The AC-MX88-AUHD-GEN2/AC-MX44-AUHD has scalers built into every output. The scalers are set on the OUTPUT side of the switch and each can have separate settings. Control the scaler in four ways:

- HD-4K (Scales 1080P to 2160P)
- 4K-HD (Scales 2160P to 1080P)
- AUTO (Automatically detects capabilities of attached display)
- BYPASS (There will be no scaling set)

*NOTE: There is additional control when using the web interface. Also, with LAN control, you can set HDBT-C mode, which reduces 10-18Gbps content to 9Gbps for legacy infrastructures. This mode maintains 4K resolution, but removes HDR.

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Audio Binding Setup:

The AC-MX88/44-AUHD can be configured to extract audio in 3 ways:

- Bind to OUTPUT (Default)
- Bind to INPUT
- Matrix

To Set:

1. Press and hold (3 sec) BYPASS from the audio settings (top right of machine).
2. Toggle selection by pressing the "UP" and "DOWN" buttons, which are now lit up.
3. Once a desired selection is found, quick press the BYPASS button again.

Audio Matrix Control:

Once in "Matrix" mode for audio, the extracted audio routing on the AC-MX88-AUHD-GEN2/AC-MX44-AUHD can be controlled from the front panel:

To Control:

1. Press and hold (3 sec) BYPASS button from the audio settings (top right of machine).
2. Make sure the screen says "Matrix" and quick press the BYPASS button again in order to enter the AUDIO MATRIX.
3. Press the desired extracted audio OUTPUT.
4. Press the INPUT for the desired audio source.
5. Quick press BYPASS button again to exit audio matrix .

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Audio Delay Control:

The AC-MX88/44-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: 90MS, 180MS, 270MS, 360MS, 450MS, 540MS or 630MS.

Control this feature from the front panel:

1. Press and hold the OUTPUT number for which you want to delay the audio.
2. The available options will light up (as pictured).
3. Press UP, DOWN, MUTE or BYPASS to control the delay.
4. The current setting will be indicated on the LCD screen.

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 to convert to a traditional 2CH unbalanced (L/R) system. You can also purchase pre-made cables (AC-CABLE-5PIN-2CH) at www.avproconnect.com.

*make sure ground is always connected

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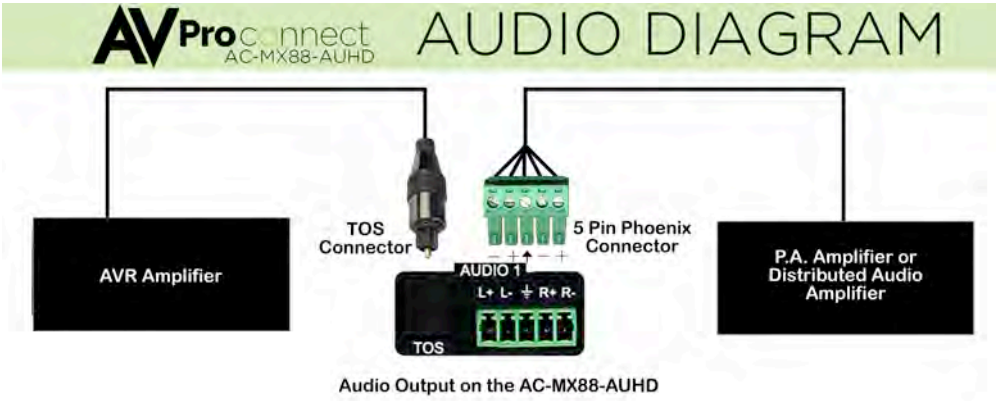
Audio Wiring Diagram:



Audio Output on the AC-MX88-AUHD

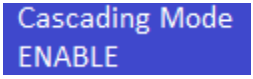
Cascade Mode:

Cascade Mode ignores hot plug all together. This is designed to make connections smoother when connecting into many repeater devices like AVRs, DA's, Splitters, etc. Cascade mode can also be use to help solve common issues. It is a good thing to try if you are having sync issues. Some of the issues resolved by Cascade Mode:

- Invalid/incorrect EDID coming from display. When Cascade Mode is ON, EDID is managed at the switch and down stream EDID will be completely ignored.
- If you have a display or projector that has difficulty changing between resolution or in and out of HDR, Cascade Mode can stabilize the project.
- Any flashing and instability from devices in the system when running one or more outputs into additional peripherals before the display

Since sync time will increase slightly, we recommend you ONLY use cascade mode if you have exhausted all other troubleshooting options.

To toggle Cascade Mode press and hold (3 seconds) INPUT 1 and INPUT 2 at the same time. When Cascade Mode is enabled you will see this:



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EDID Management:

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 (as pictured below), and the LCD will show the active EDID.
3. Toggle through the EDID options by pressing up or down repeatedly.
4. Press the “INPUT” 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:

0. 1080P_2CH
1. 1080P_6CH
2. 1080P_8CH
3. 1080P_3D_2CH
4. 1080P_3D_6CH
5. 1080P_3D_8CH
6. 4K30HZ_3D_2CH
7. 4K30HZ_3D_6CH
8. 4K30HZ_3D_8CH
9. 4K60HzY420_3D_2CH
10. 4K60HzY420_3D_6CH
11. 4K60HzY420_3D_8CH
12. 4K60HZ_3D_2CH
13. 4K60HZ_3D_6CH
14. 4K60HZ_3D_8CH
15. 1080P_2CH_HDR
16. 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=1-8). 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.

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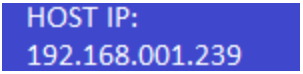
Display IPData:

In order to see the current IP settings, press and hold (for 3 seconds) 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:



In order to toggle DHCP on and off, press and hold (for 3 seconds) the INPUT 1 and INPUT 4 buttons simultaneously.

In order to prevent potential IP problems, most IP settings have to be managed in the Free PC Software or by using RS-232 commands.

NOTE: The default IP address is 192.168.001.239 (as pictured above).

Quick Network Connect to Web Interface:

Use the following steps to quickly and immediately connect to the matrix switch:

1. Connect the LAN port into an active router port.
2. On most networks you can simply type the Default IP address into any web browser. The Default IP Address is 192.168.1.239.

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:

- Once connected, you can use the web interface to set a static IP address.
- A static IP can also be set by using the RS-232 software or a direct command (see RS-232 below for more information).

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Web Interface: Switching

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

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Web Interface: Video Setting

Video Scaler Modes:

With the video scaler mode, you can scale each HDMI output independently

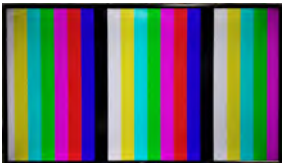
- **BP** = Bypass - Scaler is disabled (Default)
- **2K** = 4K --> 2K - If incoming signal is 4K, it will be downscaled to 1080P or 1900x1200 depending on the input format.
- **4K** = 2K --> 4K - If the incoming signal is 1080P it will be upscaled to 4K.
- **HDBT** = HDBaseT Compatibility Mode - If incoming 4K signal is above 9Gbps, it can be compressed to fit through legacy (non-18G) infrastructures. 4K resolution will still come through, but HDR will not.
- **AUTO** = Auto detect - Scaler will be set based on the connected display's EDID (ie, if the EDID is 1080P the scaler will be set to 2K).

Image Enhancement:

The Image Enhancement feature will add extra sharpness to edges in the image. This effect may be desirable for presentations in corporate or classroom environments. **NOTE:** Image Enhancement only works when upscaling from 2k to 4k.

- **W** = Weak - Minimum level of enhancement
- **M** = Medium - Medium level of enhancement
- **S** = Strong - Strongest setting for image enhancement
- **OFF** = None - Feature disabled

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.

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Web Interface:Audio Settings

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. 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.

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Web Interface: Audio Matrix

AudioMatrix:

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).

Ex-Audio Matrix Mode:

This allows the user to set a binded audio setting or set the extracted audio to Matrix. The options are:

Bind to Input - The extracted audio port is always fixed to a specific input. For example, when a source is plugged into INPUT 1, OUTPUT 1 will always have the audio signal from INPUT 1. This will happen regardless of which input is selected for OUTPUT 1.

Bind to Output (Default) - The extracted audio always follows the corresponding HDMI output. For example, in this mode AUDIO OUT 1 and HDMI OUT 1 are the same (Switched Together).

Matrix - You can set to "Matrix" and it will allow routing of the audio as a separate, stand-alone "Matrix". This allows use of the "Audio Matrix" buttons pictured above.

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Web Interface: EDID Manage

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:

0. 1080P_2CH
1. 1080P_6CH
2. 1080P_8CH
3. 1080P_3D_2CH
4. 1080P_3D_6CH
5. 1080P_3D_8CH
6. 4K30HZ_3D_2CH
7. 4K30HZ_3D_6CH
8. 4K30HZ_3D_8CH
9. 4K60HzY420_3D_2CH
10. 4K60HzY420_3D_6CH
11. 4K60HzY420_3D_8CH
12. 4K60HZ_3D_2CH
13. 4K60HZ_3D_6CH
14. 4K60HZ_3D_8CH
15. 1080P_2CH_HDR
16. 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 can copy the EDID from any output and apply it to any input. Select "Copy EDID from Output x" (x=1-8). This will copy the EDID from the display and apply it to the selected input. This new EDID will be stored as "USER EDID 1".

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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.

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IR Control:

For IR Control there is an IR Window on the front face of the device. The supplied IR Extension Cable can also provide a different receiver position. If needed, plug the IR Extension Cable into the IR Extension Socket on the back of the matrix and place the receiver in a more convenient location.

Figure 3 ~ AC-MX88-AUHD IR Controls

Figure 4 ~ IR Extension Cable

IR Remote Control:

When routing HDMI, the matrix can be controlled by using the IR remote supplied with the product.

The labels on the left are the OUTPUT numbers.

The left arrow button decrements to the next input port, and the right arrow increments to the next input port.

Figure 2 ~ AC-MX88-AUHD-GEN2 IR Remote

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RS-232 Commands:

The AC-MX88/44-AUHD can be controlled with RS-232 commands. Some configurations can only be completed by using these commands. We recommend using MyUART software (free of charge) as it is very easy to use in order to send commands to the machine.

The same commands can be sent to the matrix using Ethernet as IP commands.

The serial port settings should be set 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 below.

```
*************************************************Systems HELP*************************************************
-------------------------------------------------------------------------------------------------------------
=                      System Address = 00          F/W Version : 1.00                                      =
=  Azz                 :  All Commands start by Prefix System Address zz, if [01-99]                        =
-------------------------------------------------------------------------------------------------------------
=  H                   : Help                                                                               =
=  STA                 : Show Global System Status                                                          =
=  SET RST             : Reset to Factory Defaults                                                          =
=  SET ADDR xx         : Set System Address to xx {xx=[00~99](00=Single)}                                   =
=  SET CAS EN/DIS      : Set Cascade Mode Enable/Disable                                                    =
=  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 STA             : Get System System Status                                                           =
=  GET CAS             : Get Cascade Mode 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                                                                =
-------------------------------------------------------------------------------------------------------------
=Output Setup Commands:                                                                                     =
=  SET OUTx VS INy     : Set Output x To Input y{x=[0~8](0=ALL), y=[1~8]}                                    =
=  SET OUTx HDCPy      : Set Output HDCP Mode{x=[0~8](0=ALL), y=[0~4](0=AUTO,1=BYPASS,2=H14,4=H22))         =
=  SET OUTx VIDEOy     : Set Output VIDEO Mode                                                              =
=                        {x=[0~8](0=ALL), y=[0~4](0=AUTO,1=BYPASS,2=4K->2K,3=2K->4K,4=HDBT C Mode))        =
=  SET OUTx IMAGE ENH y : Set Output Image Enhancement{x=[0~8](0=ALL), y=[0~3](0=OFF,1=WEAK,2=MEDIUM,3=STRONG)}=
=  SET OUTx EXA EN/DIS : Set Ex-Audio Output Enable/Disable{x=[0~8](0=ALL)}                                  =
=  SET OUTx EXADL PHy  : Set Ex-Audio Delay{x=[0~8](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=[0~8](0=ALL), y=[1~8]}                           =
=  SET OUTx SGM EN/DIS : Set  Output Signal Generator Enable/Disable{x=[0~8](0=ALL)}                        =
=  SET OUTx STREAM ON/OFF : Set Output x Stream ON/OFF{x=[0~8](0=ALL)}                                       =
=  GET OUTx VS         : Get Output x Video Route{x=[0~8](0=ALL)}                                           =
=  GET OUTx HDCP       : Get Output x HDCP Mode{x=[0~8](0=ALL)}                                             =
=  GET OUTx VIDEO      : Get Output x Video Mode{x=[0~8](0=ALL)}                                            =
=  GET OUTx IMAGE ENH  : Get Output Image Enhancement Mode{x=[0~8](0=ALL)}                                  =
=  GET OUTx EDID DATA  : Get Output x EDID DATA{x=[1~8]}                                                    =
=  GET OUTx EXA        : Get Ex-Audio Output Enable/Disable Status{x=[0~8](0=ALL)}                          =
=  GET OUTx EXADL PH   : Get Ex-Audio Output Delay Status{x=[0~8](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 SGM        : Get  Output Signal Generator Enable/Disable Status{x=[0~4](0=ALL)}                 =
=  GET OUTx STREAM     : Get Output x Stream ON/OFF Status{x=[0~8](0=ALL)}                                  =
-------------------------------------------------------------------------------------------------------------
=Input Setup Commands:                                                                                      =
=  SET INx EDID y      : Set Input x EDID{x=[0~8](0=ALL), y=[0~32]}                                         =
=                        0:1080P_2CH          1:1080P_6CH          2:1080P_8CH          3:1080P_3D_2CH    =
=                        4:1080P_3D_6CH       5:1080P_3D_8CH       6:4K30HZ_3D_2CH      7:4K30HZ_3D_6CH   =
=                        8:4K30HZ_3D_8CH      9:4K60HzY420_3D_2CH  10:4K60HzY420_3D_6CH 11:4K60HzY420_3D_8CH=
=                        12:4K60HZ_3D_2CH     13:4K60HZ_3D_6CH     14:4K60HZ_3D_8CH     15:1080P_2CH_HDR  =
=                        16:1080P_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:USER1_EDID             31:USER2_EDID             32:USER3_EDID             =
=  SET INx EDID CY OUTy : Copy Output y EDID To Input x(USER1 BUF){x=[0~8](0=ALL), y=[1~8]}                 =
=  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]}   =
=  GET INx EDID        : Get Input x EDID  Index{x=[0~8](0=ALL)}                                            =
=  GET INx EDID y DATA : Get Input x EDID y Data{x=[1~8],y=[0~32]}                                          =
-------------------------------------------------------------------------------------------------------------
=Network Setup Command: ( 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                                                              =
-------------------------------------------------------------------------------------------------------------
=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                                                            =
=  GET IR OUTx INy CODE     : Get IR Data Code                                                              =
-------------------------------------------------------------------------------------------------------------
*************************************************************************************************************
```


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RS-232 Wiring Diagram:

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Specifications:

Video:	
Video Resolutions	Up to 4K 60Hz 4:4:4
VESA Resolutions	Up to DCI 4K (4096x2160) 5K (up to 5120x3200)
HDR Formats/Resolutions	420, 422, 444 (10 and 12 Deep Color) HDR10, HDR10+, Dolby Vision, HLG
Color Space	YUV (Component), RGB (CSC: Rec. 601, Rec. 709, BT2020, DCI, P3 D6500)
Chroma Subsampeling	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 Digtal, DTS 5.1, Dolby Digital Plus, Dolby TrueHD, DTS-HD Master Audio, DTS-X, Dolby Atmos
Audio Formats Supported Extracted (Toslink)	PCM 2 Ch, LPCM 6 Ch, LPCM 7 Ch, Dolby Digital, Dolby Digital Plus, DTS-HD Master Audio
Audio Formats Supported Extracted (2CH Port)	PCM 2 CH
Audio Extraction Location	Bind to Input, Bind to Output or Matrix (Independent)
Audio Delay (Per Output, Extracted)	Up to 630MS
Distance:	
HDMI In/Out (4K60 4:4:4)	Up to 50 Feet (using Bullet Train HDMI)
HDMI In/Out (w/ AOC Cable) (4K60 4:4:4)	Up to 130 Feet (using Bullet Train AOC)
Other:	
Bandwidth	18 Gbps
HDCP	HDCP 2.2 and Earlier
Control:	
Ports	LAN, RS232, IR
Drivers	C4, RTI, ELAN, Crestron, URC (for more - see Drivers Page)
PC Software	YES
LAN WebOS	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 Temprature	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)	38 Watts Max
Power Supply - Matrix	Input: AC 100-240V ~ 50/60Hz Output: DC 12V 4A
Dimensions:	
Dimensions (Unit Only Height/Depth/Width)	mm: 50.8 x 256 x 441.33 inch: 2 x 10.07 x 17.375
Dimensions (Packaged Height/Depth/Width)	mm: 88.9 x 393.7 x 495.3 inch: 3.5 x 15.5 x 19.5
Rack Units	1 Unit
Weight (Unit)	8 lbs/3.5 kg
Weight (Packaged)	11 lbs/5 kg
*Specifications subject to change without notice. Mass & dimensions are approximate	

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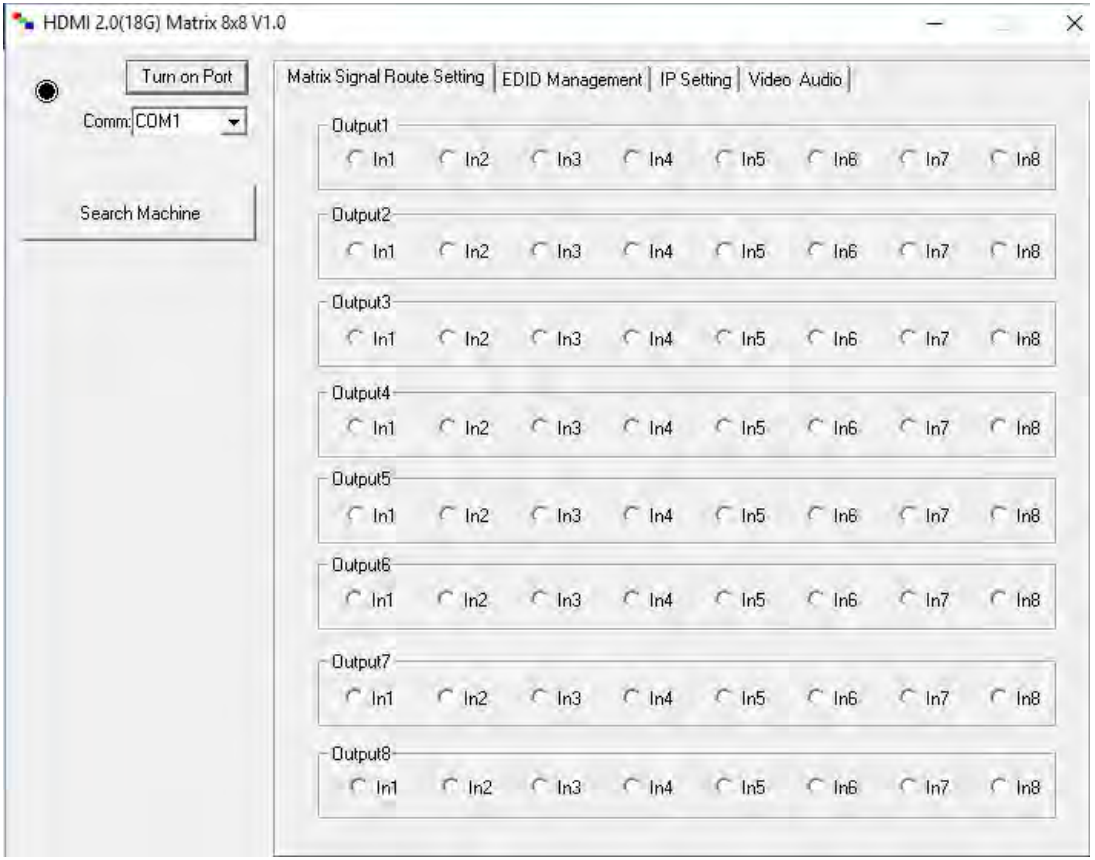
Using the Free PC Software: General Matrix Control



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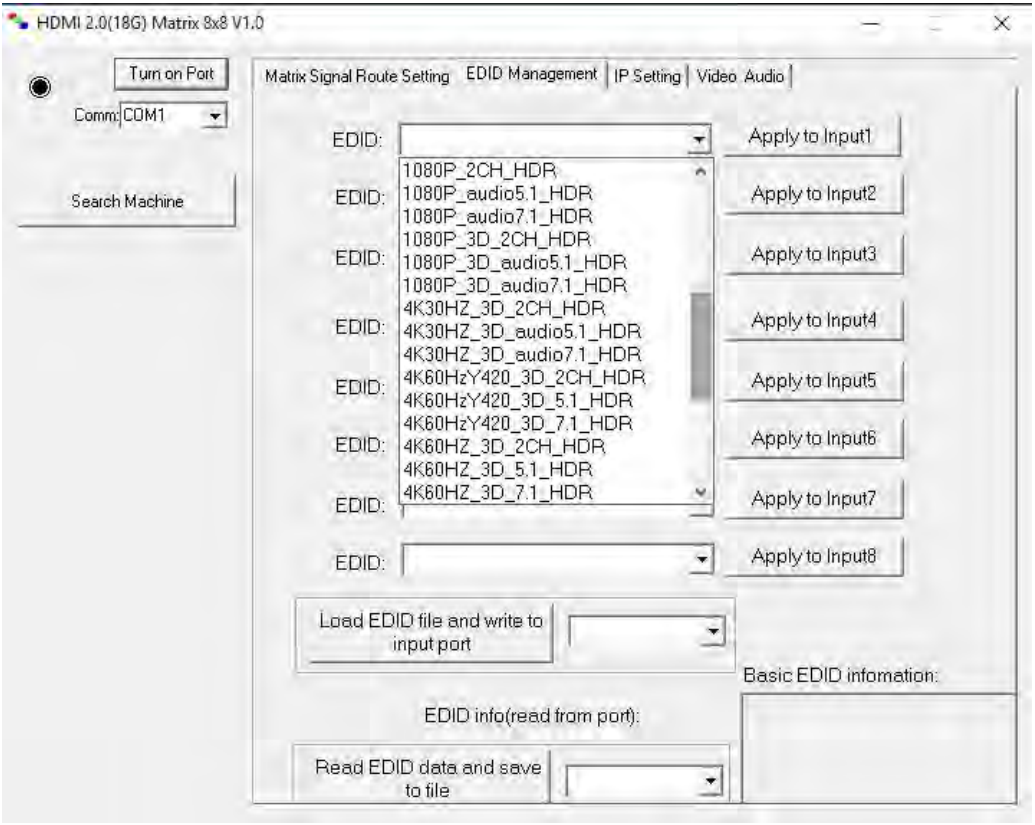
Using the Free PC Software: EDID Management



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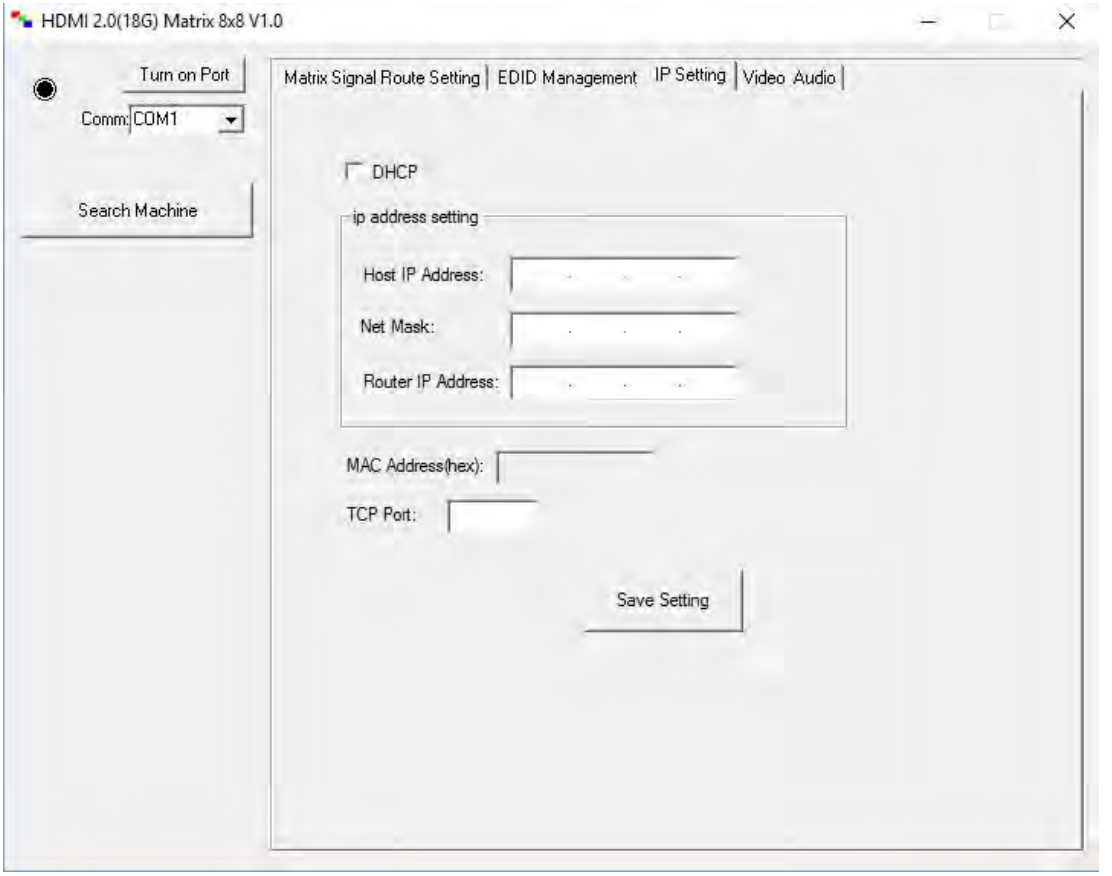
Using the Free PC Software: IP Settings



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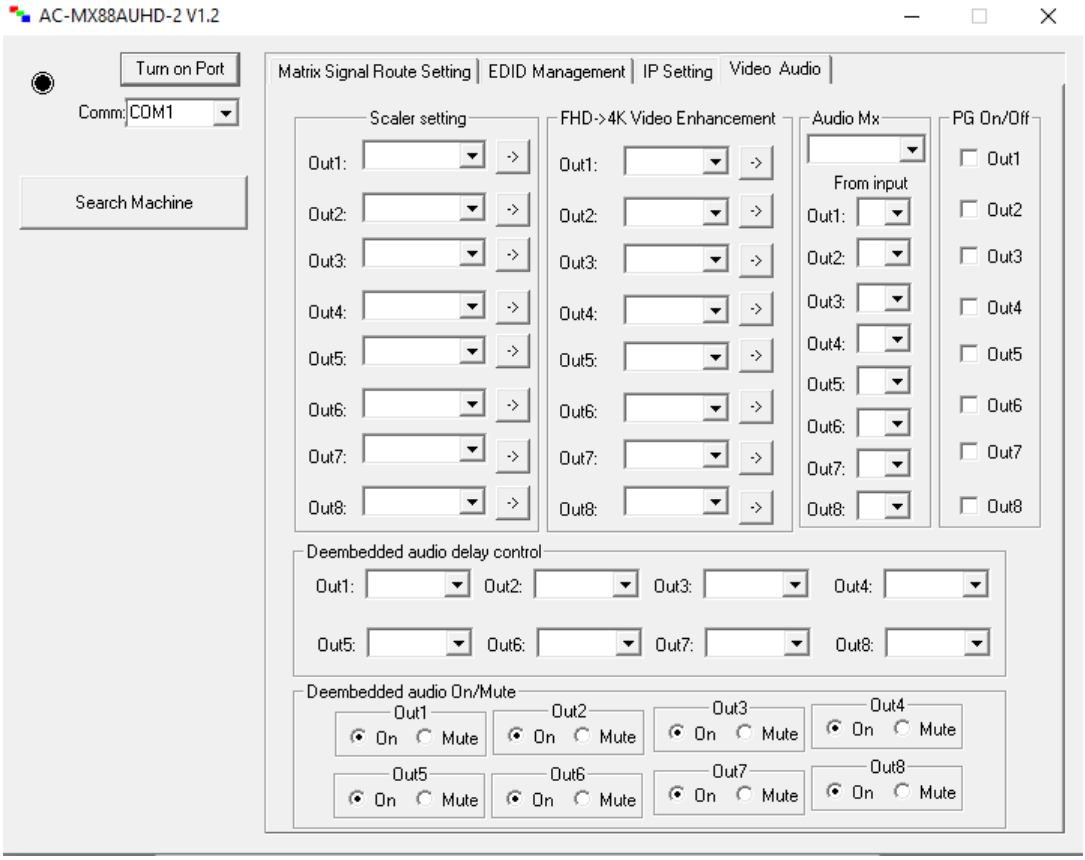
Using the Free PC Software: Video and Audio Control



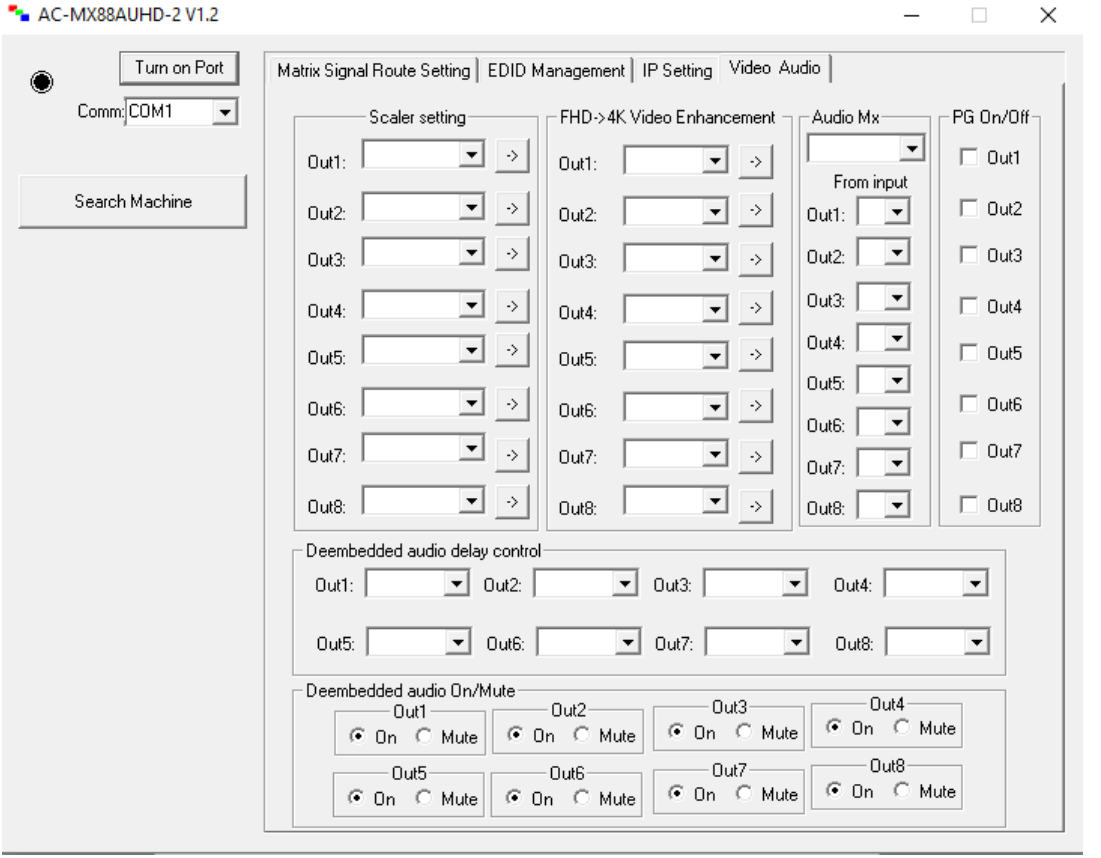
Scaler Setting -- This setting scales the HDMI output. You can also scale each output independently.

- **BP** = Bypass - Scaler will be disabled (Default).
- **2K** = 4K --> 2K - If incoming signal is 4K, it will be downscaled to 1080P or 1900x1200 depending on the input format.
- **4K** = 2K --> 4K - If the incoming signal is 1080P it will be upscaled to 4K.
- **HDBT** = HDBaseT Compatibility Mode - If incoming 4K signal is above 9Gbps, it can be compressed to fit through legacy (non-18G) infrastructure. 4K resolution will still come through, but HDR will not.
- **AUTO** = Auto detect - Scaler will be set based on the connected displays EDID (ie, If the EDID is 1080P the scaler will be set to 2K).

Video Enhancement is ONLY functional when upscaling from 2K-->4K. It adds sharpness and edges to the image. The effect can be desirable in corporate environments for presentations.

- **W** = Weak - Minimum level of enhancement
- **M** = Medium - Medium level of enhancement
- **S** = Strong - Strongest setting for image enhancement
- **OFF** = None - Feature disabled

Using the Free PC Software: Video and Audio Control cont.



Audio Mx -- Set audio binding (FROM INPUT, FROM OUTPUT, MATRIX) and chose audio route when in MATRIX Mode.

PG On/Off -- Enables and disables the internal 1080P test pattern per output.

De-embedded audio delay control -- Allows user to set delay for each output, available options are:

De-embedded audio mute -- This feature allows the user to mute or enable de-embedded audio ports.

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Safety Instructions:

To ensure reliable operation of this product and to protect the safety of any person(s) handling this device while powered, please observe the following instructions:

1. Use the power supplies provided. If an alternate supply is required, check voltage, polarity and that it has sufficient power to supply the device that it's connected to.
2. Do not operate this product outside the specified temperature and humidity range given in the above specifications.
3. Ensure there is adequate ventilation to allow this product to operate efficiently.
4. Repair of the equipment should only be carried out by qualified professionals as these products contain sensitive equipment that may be damaged by mistreatment.
5. Only use this product in a dry environment. Do not allow any liquids or harmful chemicals to come into contact with this product.
6. Due to the weight and physical size of this matrix switch, correct handling and lifting should be observed at all times in order to minimize the risk of injury.

After Sale Service

1. Should you experience any problems while using this product, first, refer to the Troubleshooting section in this manual before contacting Technical Support.
2. When calling Technical Support, the following information should be provided:
    - Product name an model number
    - Product serial number
    - Details of the issue and any conditions under which the issue is occuring.
3. This product has a two-year standard warranty, beginning from the date of purchase as stated on the sales invoice. Online registration of this product is required to activate the full three-year extended warranty. For full details please refer to our terms and conditions.
4. Product warranty is automatically void under any of the following conditions:
    - The product is already outside of its warranty period.
    - Damage to the product due to incorrect usage or storage.
    - Damage caused by unauthorized repairs.
    - Damage caused by mistreatment of the product.
5. Please direct any question or issues you may have to your local dealer before contacting AVProConnect.

Thank you for choosing AVProConnect!

Please contact us with any questions! We are happy to be of service!

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