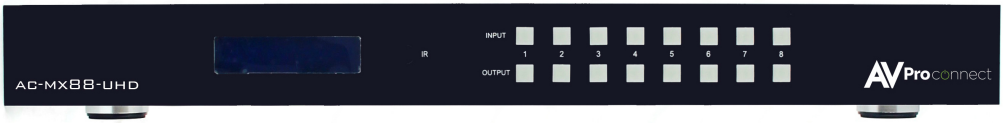
User Manual

AC-MX88-UHD

8x8 HDMI Matrix w/ Audio De-Embedding 4K 60Hz, HDMI 2.0 and HDCP 2.2 Compatible



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AC-MX88-UHD

The AC-MX88-UHD is a true 8x8 HDMI matrix switch. Supporting HDMI 2.0, HDCP 2.2, up to 4K video resolution, and up to 10.2 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.

This matrix equalizes and amplifies the output to ensure the HDMI signal can be transmitted through long HDMI cables without loss of quality. You can extend your distance further with the AC-EX70-UHD HDMI Extender. Full EDID management allows maximum flexibility with todays wide mixture of sources and displays.

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

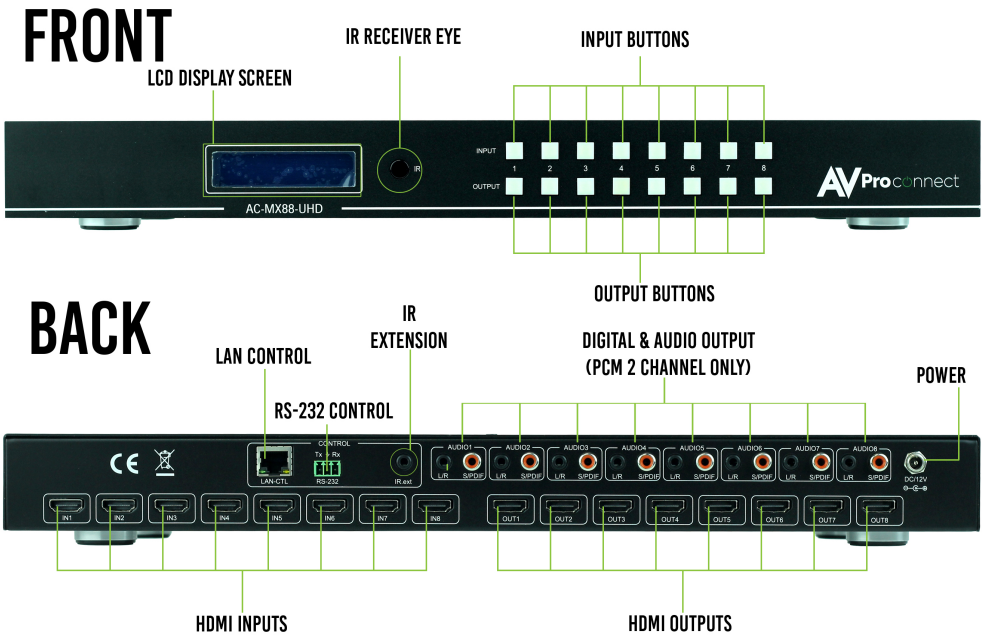
Features:

- HDMI 2.0 (10.2 Gbps)
- HDCP 2.2 compliant
- De-embed SPDIF audio on each output
- Independent source/display switching
- Up to 4K Resolution (4K60 4:2:0)
- HDR Supported
- IR & RS-232 Control

Easy to use:

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

Device Overview:



In The Box:

- AC-MX88-UHD Matrix Switch
- IR Remote Control
- IR Extension Cable
- 12V/3A Locking Power Supply
- Instruction Manual

Quick Installation:

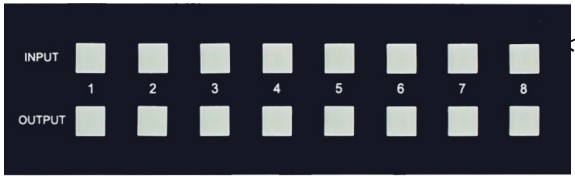
1. Connect the HDMI input sources (Blu-ray, Set Top Box, etc...) to the AC-MX88-UHD
2. Connect the HDMI output devices (AVR, Display, Distribution Amplifier, Extender) to the AC-MX88-UHD
3. Power on the sources
4. Connect the power supply into the AC-MX88-UHD
5. Turn on output devices/displays
6. You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

* For advanced programming please see the RS-232 commands on page 7

Front Panel Control:

The AC-MX-88-UHD front panel controls allow for the selection of the inputs to the various outputs. First press a button on the OUTPUT row to choose the output port, then press a button on the INPUT row to select the input signal for the selected output. (Output, then Input)

Select Output First -->



<-- Then Select Your Input

Figure 1 ~ AC-MX88-UHD Panel Controls

NOTE: There is an application diagram on page 11 of this manual.

IR Remote Control:

The HDMI routing of the matrix can also be controlled by using the IR remote supplied with the product.

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

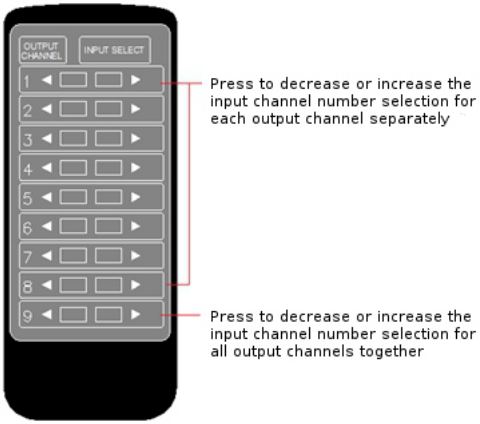


Figure 2 ~ AC-MX88-UHD IR Remote

Additionally, the supplied IR Extension Cable can provide a different receiver position. Just plug into the IR Extension Socket on the back of the matrix and place the receiver in a more convenient location.

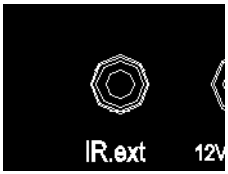


Figure 3 ~ AC-MX88-UHD IR Controls

Figure 4 ~ IR Extension Cable

EDID Management:

This matrix has 12 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 that read EDID will automatically store and overwrite the EDID in "USER EDID 1". We recommend uploading custom EDID settings to memory 2 or 3.

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 that input (or read from the display).

To Change the EDID setting:

1. **Press and hold the INPUT you want to change for 3 seconds**
2. **Now "click" desired INPUT to toggle through the available EDID options**
3. **Once you are on the EDID you want to select, press and hold for 3 seconds again.**

This will set the EDID for the desired input. Please see the example below for detailed instructions.

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

1 - 1080P 2CH (PCM)
2 - 1080P 6CH (5.1 Channel)
3 - 1080P 8CH (7.1 Channel)
4 - 1080p 3D 2CH (PCM)
5 - 1080P 3D 6CH (5.1 Channel)
6 - 1080P 3D 8CH (7.1 Channel)
7 - 4K30Hz 3D 2CH (PCM)
8 - 4K30Hz 3D 6CH (5.1 Channel)
9 - 4K30Hz 3D 8CH (7.1 Channel)
10 - 4K60Hz (Y420) 3D 2CH (PCM)
11 - 4K60Hz (Y420) 3D 6CH (5.1 Channel)
12 - 4K60Hz (Y420) 3D 8CH (7.1 Channel)
USER EDID 1
USER EDID 2
USER EDID 3
EDID from output 1
EDID from output 2
EDID from output 3
EDID from output 4
EDID from output 5
EDID from output 6
EDID from output 7
EDID from output 8

Bonus Feature!

Pressing and holding the any OUTPUT button will automatically read, store and apply the EDID from the display device to the current INPUT assigned. It will be stored in USER EDID 1.

The following is an example of how to change the EDID setting for input 3:

User Action	LCD Text after User Action
Press and hold INPUT button 3 for 3 seconds	[3] | 1080P EDID| 6CH
Continue to "click" INPUT 3 to toggle through the EDID settings. (Keep "clicking" to toggle through all of the EDID settings listed above.)	[3] | 1080P EDID| 8CH
Press and hold INPUT 3 for 3 more seconds to save the EDID as shown on the display	[3] | SETTING EDID| SUCCESS

EDID Management Cont:

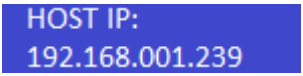
The first 12 EDID settings cannot be altered. The three USER EDID settings are programmed using RS-232 or the free PC Software. However, you can read an EDID from any output and it will automatically store in USER EDID 1. Remember, each INPUT has an independent EDID setting and you may need to program each one.

To read and set an EDID to a specified input the steps are the same as on PAGE 5. The only difference is that when you see a screen similar to FIGURE 5, you press and hold the INPUT button again for 3 seconds and this AUTOMATICALLY reads, stores and sets the EDID for that INPUT.

Figure 5 ~ Read EDID Screen

Display IP Data:

Press and hold INPUT 3 and INPUT 4 at the same time for three seconds to display the current IP settings. 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 prevent potential IP problems, most IP settings have to be managed in the Free PC Software or using RS-232 commands.

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

You can enable/disable DHCP mode directly from the front panel. When DHCP is enabled it will automatically gather an IP address from the network and it will be discoverable on said network. You can now view the assigned IP address by following the steps above. To toggle DHCP, press and hold INPUT 1 and INPUT 3 at the same time for three seconds. You will see this:

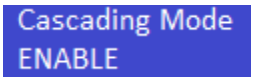
or

Cascade Mode:

When Cascade Mode is turned on, the signal is passed from the switch without reading EDID or Hot Plug. Many issues can be resolved in the field with this mode, including:

- Invalid/incorrect EDID coming from display (It happens more than you think)
- When you want to manage EDID in a device further down the chain (AVR or Distribution Amp)
- When running one or more outputs into additional peripherals before the display

We recommend you ONLY use cascade mode if you have exhausted all other troubleshooting options. To toggle Cascade Mode press and hold INPUT 1 and INPUT 2 at the same time for three seconds. When Cascade Mode is enabled you will see this:



RS-232 Commands:

The AC-MX44-UHD and AC-MX88-UHD can also be controlled using RS232 commands, and some configuration settings can only be performed using RS232 commands.

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.

In each of the following RS232 command the ↵ symbol represents the carriage-return character (0x0d). Where shown for a particular command, the square brackets [] are required for that command.

The commands normally reply with the same command that was sent, but with the fist character pointing left: e.g. the command: >@WVSO[1]I[2]↵ gives the command response: <@WVSO[1]I[2]↵

Switching Commands:

Change the input and output signal routing: Where x is the input number and y is the output number.	>@WVSO[y]I[x]↵
Set input x to all outputs	>@WVSOA[x]↵
Turn output y off	>@WVSO[y]OFF↵
Turn output y on	>@WVSO[y]ON↵

External Audio Commands:

Enable external (de-embedded) audio for output y	>@WASO[y]E EN↵
Disable external (de-embedded) audio for output y	>@WASO[y]E DIS↵
Enable All external (de-embedded) audio outputs	>@WASOAEON↵
Disable All external (de-embedded) audio for outputs	>@WASOAEOFF↵

EDID Commands:

Read the current EDID information from input x (3)	>@R8010[x]↵
Read the current EDID information from output y (3)	>@R8011[y]↵
Set input x to EDID from output y	>@WECO[y]I[x]↵
Set All inputs to EDID from output y	>@WECO[y]A↵
Set input x to Default EDID n – (n = 1 to 12)	>@WECD[n]I[x]↵
Set All inputs to Default EDID n – (n = 1 to 12)	>@WECD[n]A↵
Set input x to User EDID n – (n = 1 to 3)	>@WECU[n]I[x]↵
Set All inputs to Default EDID n – (n = 1 to 3)	>@WECU[n]A↵
Read EDID from output y and write to User EDID n of input x – (n = 1 to 3)	>@WEWI[x]U[n]O[y]↵
Read EDID from output y and write to User EDID n of All inputs – (n = 1 to 3)	>@WEWIAU[n]O[y]↵

Cascade Mode Commands:

Turn cascading mode on	>@WSDBGEN↵
Turn cascading mode off	>@WSDBGDIS↵

NOTE: To see a connection diagram of how connect to the matrix using RS-232, see the connection diagram at the end of the manual.

IP Set-Up Commands:

Set the Host IP address of the matrix switcher (Default: 192.168.001.239)	>@WIPH xxx.xxx.xxx.xxx↵
Set the subnet mask (Default: 255.255.255.000)	>@WIPN xxx.xxx.xxx.xxx↵
Set the Router IP address (Default: 192.168.001.001)	>@WIPR xxx.xxx.xxx.xxx↵
Set the TCP/IP port number (Default: 23)	>@WIPH zzzzz↵
Set DHCP on	>@WIPDP ON↵
Set DHCP off	>@WIPDP OFF↵

Get Status Commands:

Output a report giving the current status of the matrix switcher (2)	>@RSTA↵
Read the input connection status (4)	>@R8001↵
Read the output connection status (4)	>@R8002↵
Read input HDCP status (4)	>@R8003↵
Read output HDCP status (4)	>@R8004↵
Read output channel settings (4)	>@R8006↵
Read output On/Off states (4)	>@R8007↵
Read External (de-embedded) audio status (4)	>@R8008↵
Read input EDID setting (4)	>@R8009↵
Read all network settings (5)	>@R8012↵
Read cascade mode status (4)	>@R8017↵

Other Commands:

Power off the matrix switcher (enter standby mode)	>@WSPF↵
Power off the matrix switcher (exit standby mode)	>@WSPN↵
Help, list all available commands (2)	>@RH↵
Reset to factory defaults	>@WSDF↵

Notes:

(1) This command generate a large report giving detailed information about the current status of the matrix switcher.

(2) This command lists all the commands that the matrix switcher supports.

(3) These EDID commands output an ASCII data block that lists the values of the requested EDID data values in hexadecimal notation.

(4) These commands respond with a short message, usually one line, giving the requested information.

(5) The IP status command will respond with all the current IP settings: Host IP address, Subnet mask, Router IP address, TCP/IP port number and the DHCP setting.

Specifications:

Parameter	AC-MX88-UHD
HDMI Inputs	8
HDMI Outputs	8
SPDIF audio Outputs	8
Weight (Main Unit)	5.3lbs
HDCP Versions	HDCP 2.2 and earlier
Input Video Signal	0.5-1.0 volts p-p
Input DDC Signal	5 volts p-p (TTL)
Signalling Rate	10.2 Gbps
Video Format Supported	DTV/HDTV: 4K60/4k30/1080P/1080i/720P/576P/480P/576i/480i
Output Video	HDMI2.0 and HDMI 1.4
Audio Format Supported (HDMI)	DTS-HD, Dolby trueHD
Maximum Transmission Distance	Less than 15m
Communication Ports	RS232, IR, Ethernet
RS232 Settings	Baud rate: 57600 Data bits: 8 Parity: None Stop bits: 1 Handshaking: None
Supply voltage	12V DC
Power Consumption	15W (Max.)
Operating Temperature Range	0 to +35°C (32 to +95°F)
Operating Humidity Range	15 to 90 %RH (non-condensing)
Dimensions	L440 x W256 x H42 mm L17.3”xW10”xH1.65” 19” Rack height: 1U

NOTE: HDR (High Dynamic Range) is supported on these matrix switchers. you mus read EDID from and HDR capable display and store it to to the input where the HDR source resides.

Safety Instructions:

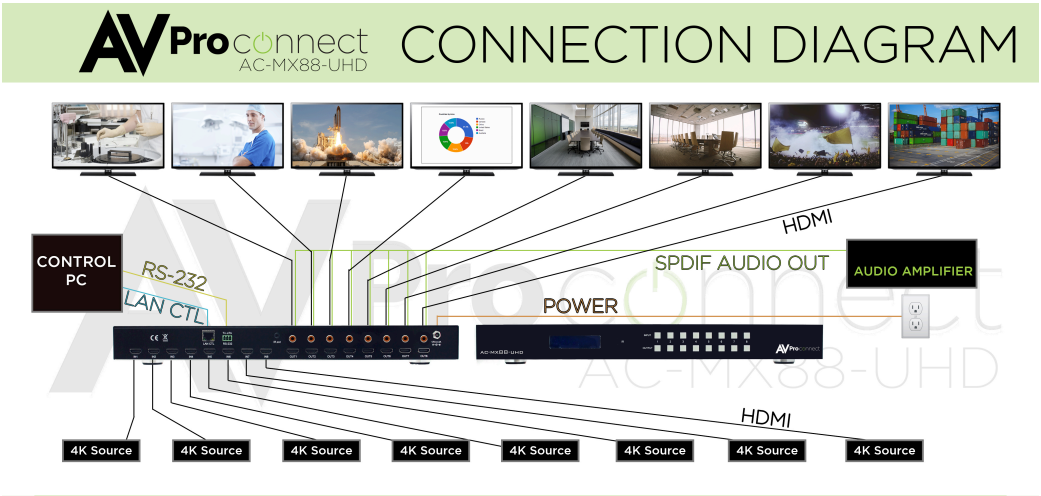
To ensure reliable operation of these product as well as protecting the safety of any person using or handling these devices while powered, please observe the following instructions.

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 it is connected to.
2. Do not operate these products 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 devices that may be damaged by any mistreatment.
5. Only use these products in a dry environment. Do not allow any liquids or harmful chemicals to come into contact with these products.
6. Due to the weight and physical size of some of these matrix switchers, correct Manual Handling and Lifting procedures should be observed at all times while handling these products in order to minimise the risk of injury.

After Sale Service

1. Should you experience any problems while using this product, firstly 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 and model number
    - Product serial number
    - Details of the fault and any conditions under which the fault occurs.
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 unauthorised repairs
    - Damage caused by mistreatment of the product
5. Please direct any questions or problems you may have to your local dealer before contacting AVProConnect.

Application Diagram:



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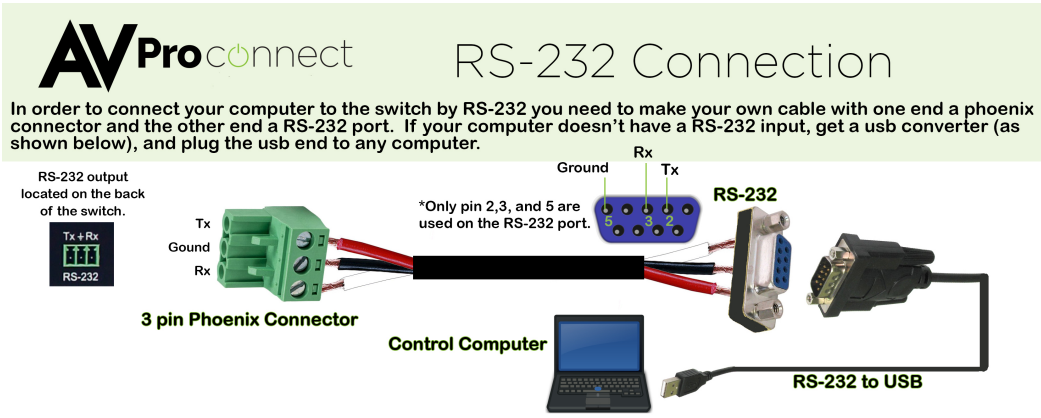
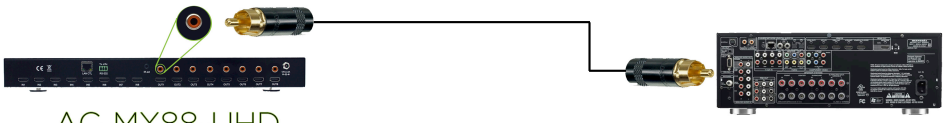
RS-232 Wiring Diagram:



Audio Wiring Diagram:

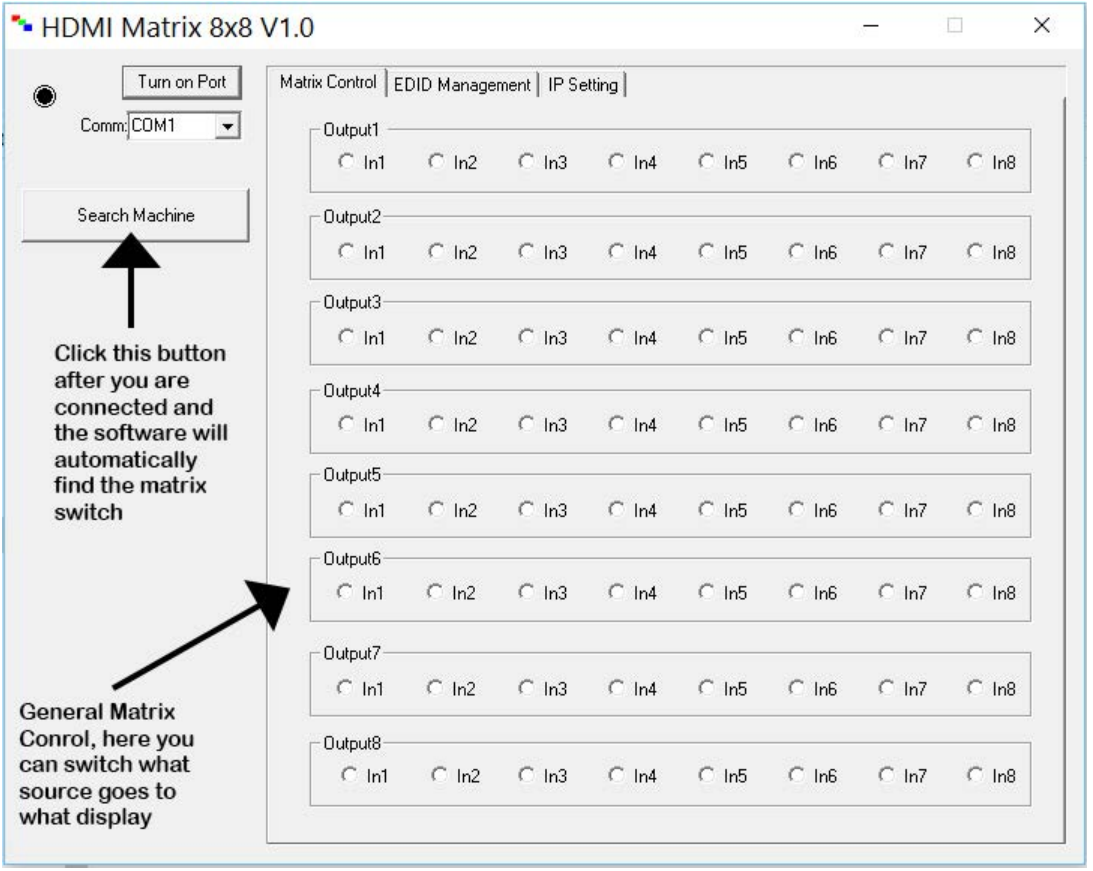
Audio De-Embedding Diagram



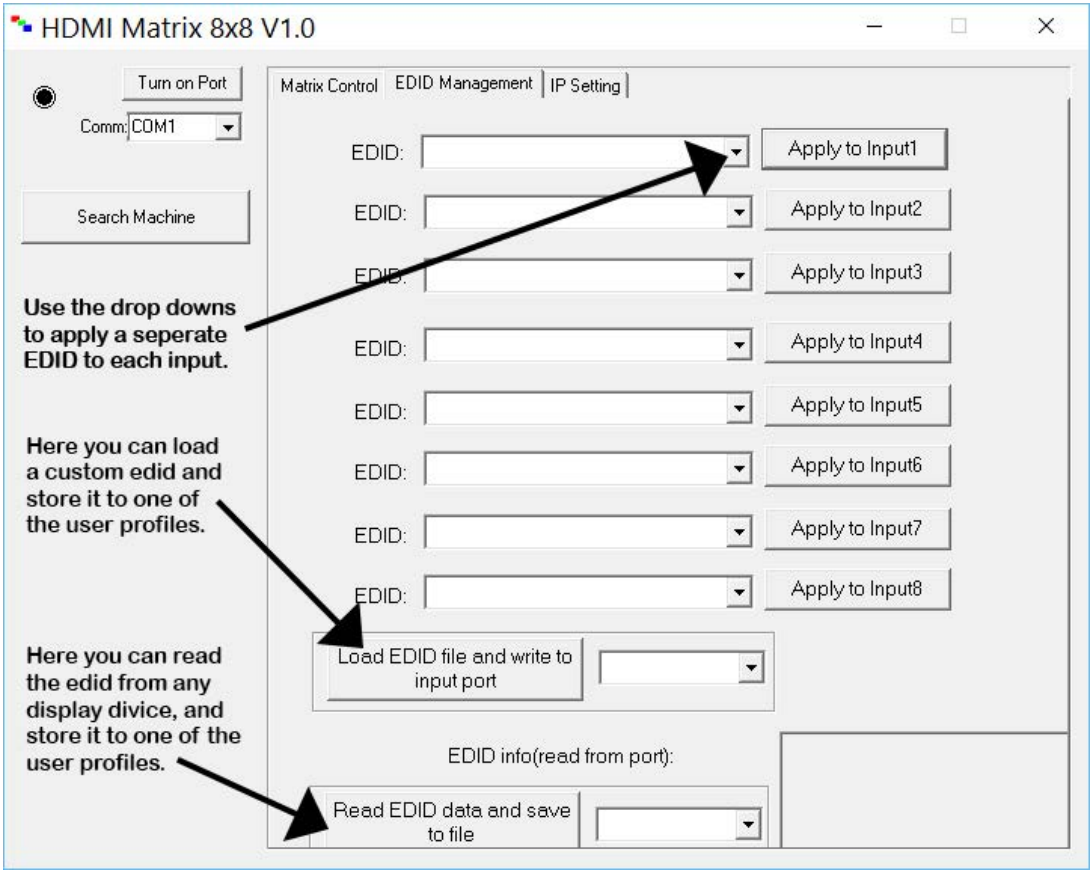
AC-MX88-UHD

Audio Receiver

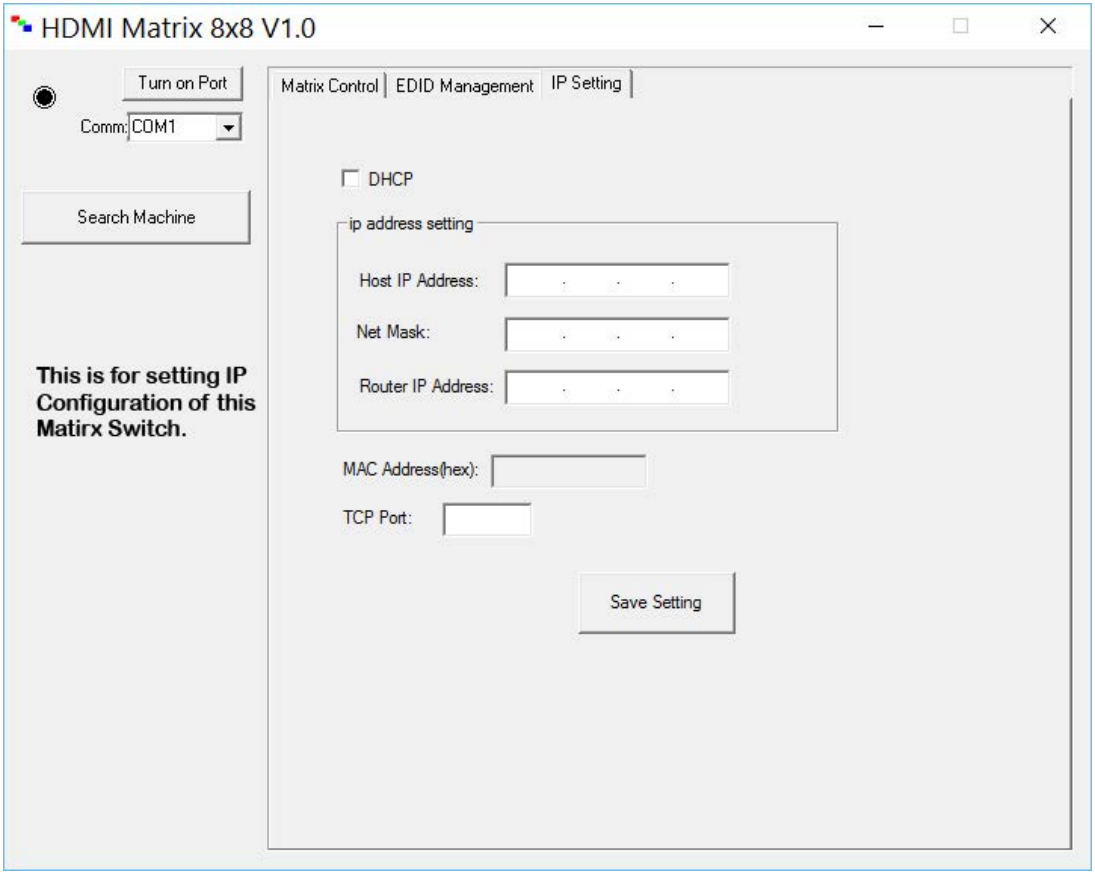
Using the Free PC Software: General Matrix Control



Using the Free PC Software: EDID Management



Using the Free PC Software: IP Settings



Thank you for choosing AVProConnect!

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

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