



# MXnet

NETWORKED VIDEO ECOSYSTEM

## SETUP AND CONFIGURATION GUIDE



# Table of Contents

Welcome to MXNet .....	3
Technical Specifications.....	4
Network Cabling Tips.....	6
Getting Organized .....	7
Hardware.....	8
Control Box.....	8
Encoders, Inputs & Sources .....	9
What's in the box.....	11
Decoders, Outputs & Displays .....	11
What's in the box.....	13
MXNet Mentor - Construct, Configure, Create & Control.....	14
Home Page.....	15
Configure Page.....	16
Inputs/Encoders/Sources .....	16
Outputs/Decoders/Displays .....	17
Configure Page ~ Diagnostics.....	18
Encoder Diagnostics.....	18
Decoder Diagnostics .....	19
Auto-Matrix Page .....	20
Video Wall Page.....	21
Advanced Pages .....	22
CEC/HDMI & RS-232/IP Page.....	22
RS-232 & IR Direct Page .....	23
USB & KVM.....	24
Warranty.....	25



## Welcome to MXNet

MXNet is a fresh approach to the Audio/Video Over IP product category. We've taken our vast experience with video distribution solutions, conducted extensive research into current offerings, and re-engineered how Audio/Video Over IP is configured, constructed, deployed and controlled.

The result is a system which is remarkably easy to build any size system - from residences, classrooms, light commercial all the way up to casinos or even stadiums which hundreds of decoders/end point.

- The ease-of-use magic to this system begins with our advanced hardware engineering and industry leading software interface designs. Attention to every detail is evident with the design of our encoders and decoders. Some of the advancements include:
- an all-aluminum chassis which efficiently dissipates heat eliminating the need for cooling fans
- a proprietary front mini-OLED display "Data Window" providing critical system information such as the encoder/decoder IP address and Custom Name assignments.
- Light controls on each encoder and decoder: On, Flash, and Off ( including those pesky network data lights )!
- Only 3-6 Watts POE power consumption! ( 802.3af compliant )
- From 720P up to 4K/HDR/Dolby Vison® video output.
- JPEG 2000 video encoding/decoding

Our HTML5 Web GUI is a best-in-class effort with simply powerful features and unparalleled ease of use. It makes setting up an MXNet system a breeze.

# Technical Specifications

SKU	AC-MXNET-1G-E (& AVDM)	AC-MXNET-1G-D	AC-MXNET-CBOX
Category	Encoder (Transmitter)	Decoder (Receiver)	Controller
<b>Video</b>			
Signal Type	DVI 1.0, HDMI 2.0b	DVI 1.0, HDMI 2.0b	N/A
Video Resolution	<b>4K@60Hz 4:4:4*</b> 4K@30Hz 4:4:4 4K@60Hz 4:2:0	<b>4K@60Hz 4:4:4*</b> 4K@30Hz 4:4:4 4K@60Hz 4:2:0	N/A
HDR format	HDR 10, HLG, DV	HDR 10, HLG, DV	N/A
Chroma Subsampling	444, 422, 420	444, 422, 420	N/A
Bit Depth per Color	1080p (16 Bit) 4K (10, 12 Bit)	1080p (16 Bit) 4K (10, 12 Bit)	N/A
<b>Audio</b>			
Audio Format	PCM 2, 5.1, 7.1 Channel, Dolby Digital 5.1 Channel, Dolby Digital Plus, DTS 5.1 Channel, DTS-ES, DTS-HD High Resolution	PCM 2, 5.1, 7.1 Channel, Dolby Digital 5.1 Channel, Dolby Digital Plus, DTS 5.1 Channel, DTS-ES, DTS-HD High Resolution	N/A
Embedded Audio	Stereo analog audio	N/A	N/A
De-embedded Audio	Balanced analog audio	Stereo analog audio	N/A
<b>Ports</b>			
Ethernet	(1) × female RJ-45, PoE	(1) × female RJ-45, PoE	(2) × female RJ-45, one with PoE
SFP	(1) × SFP Slot	(1) × SFP Slot	0
HDMI	(2) × HDMI Type A 19-pin, female, one HDMI input, one HDMI loop out	(1) × HDMI Type A 19- pin, female, one HDMI output	N/A
Audio	(1) × 5 Pin Terminal Block, Balanced L/R Audio out (1) × 3.5 mm mini stereo jack, Audio in	(1) × 3.5 mm mini stereo jack, Audio out	N/A
IR	(3) × 3.5mm mini-stereo jack, one IR-Pass, one IR- EYE, one IR-out	(3) × 3.5mm mini-stereo jack, one IR-Pass, one IR-EYE, one IR-out	N/A
RS-232	(1) × 5 Pin Terminal Block	(1) × 5 Pin Terminal Block	(1) × 5 Pin Terminal Block for MXNET system control

USB	(1) × USB 2.0 Type-B for USB extension and KVM, (1) × USB Micro Type-B for MXNET service	(2) × USB 2.0 Type-A for USB extension and KVM, (1) × USB Micro Type-B for MXNET service	(1) × USB Micro Type-B for MXNET service
<b>Distance</b>			
Ethernet	100 Meters/ 330 Feet over CAT5e and above	100 Meters/ 330 Feet over CAT5e and above	100 Meters/ 330 Feet over CAT5e and above
SFP and Fiber	1000BASE-SX SFP Transceiver Module (MMF, 850nm, 550m, LC, DOM)	1000BASE-SX SFP Transceiver Module (MMF, 850nm, 550m, LC, DOM)	N/A
	1000BASE-LX/LH SFP 1310nm 10km Transceiver Module	1000BASE-LX/LH SFP 1310nm 10km Transceiver Module	N/A
<b>System</b>			
Max Power Consumption	6.5W (AVDM 9.5W)	9W	4.5W
PoE (Power over Ethernet)	IEEE 802.3af (15.4W)	IEEE 802.3af (15.4W)	IEEE 802.3af (15.4W)
Power Supply Unit	Input: AC 120-240V-50/60Hz 0.8A Output: DC 12V 2A	Input: AC 120-240V-50/60Hz 0.8A Output: DC 12V 2A	Input: AC 120-240V-50/60Hz 0.5A Output: DC 5V 2A
Operating Temperature	23 TO 125°F (-5 to 51°C)	23 TO 125°F (-5 to 51°C)	23 TO 125°F (-5 to 51°C)
Storage Temperature	-4 to 140°F (-20 TO 60°C)	-4 to 140°F (-20 TO 60°C)	-4 to 140°F (-20 TO 60°C)
Operating Humidity	5-90% RH (No Condensation)	5-90% RH (No Condensation)	5-90% RH (No Condensation)
Mounting	Rack and furniture mount support	Rack and furniture mount support	Rack and furniture mount support
Dimension (Unit/Width/Depth/Height)	MM: 200×104×20 Inches: 7.87×4.09×0.79	MM: 200×104×20 Inches: 7.87×4.09×0.79	MM: 136×86×40 Inches: 5.35×3.39×1.57
Dimension (Packaged/Width/Depth/Height)	MM: 310×180×54 Inches:12.20×7.09×2.13	MM: 310×180×54 Inches:12.20×7.09×2.13	MM: 310×180×54 Inches:12.20×7.09×2.13
Weight (Unit)	0.55KG	0.55KG	0.57KG
Weight (Packaged)	0.77KG	0.77KG	0.79KG
Regulatory	CE/FCC/UL	CE/FCC/UL	CE/FCC/UL
Product Warranty	10 Years	10 Years	10 Years

\*4K60 4:4:4/4K60 4:2:2 Use ICT Compression

# Network Cabling Tips

1. EVERYTHING about a successful MXNet installation revolves around the network cables including:
  - The quality of the cable
  - The distance of the connection
  - The handling of the cable
  - The video resolution expected
  - The higher the resolution, the better the cable should be
  - The longer the run, the better the cable should be
2. When terminating network cable do not untwist the wires unnecessarily.
  - Wires are twisted for good reasons:
  - Cancels out EMI (Electromagnetic Interference)
  - Cancels out crosstalk from neighboring conductors
  - Make sure not to untwist more than a  $\frac{1}{2}$  inch (preferably  $\frac{1}{4}$  inch)
  - Remove as little of the sheath as possible
  - Terminate with traditional connectors – avoid “EZ” types.
3. Handle cables with care
  - NO tight tie wraps
  - NO clamping or stapling
  - Tie cables loosely with appropriate cable wraps
  - If you need to pull, don't pull too hard – may cause pairs to untwist – degrade performance
  - Do not overbend cables –  $\frac{1}{4}$  inch cable radius = 2" bend radius
4. Keep network cables away from power sources
5. Do not use patch cords unnecessarily
6. Test, Test, Test
7. Be Organized

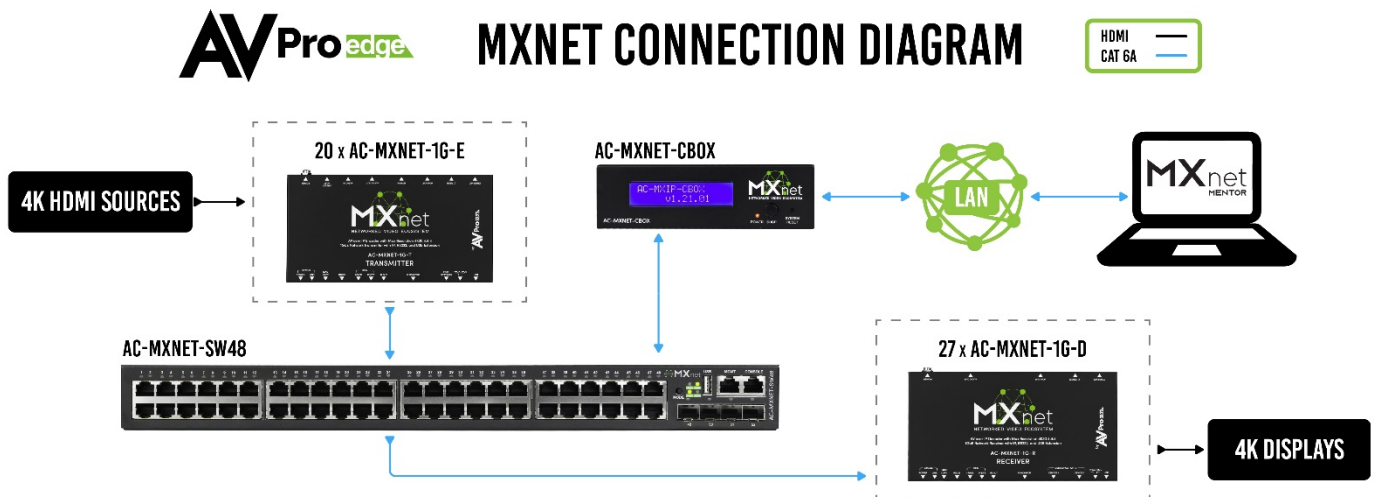
# Getting Organized

With MXNet, you are not required to connect the encoders and decoders in any specific order on the network switch. In fact, the system is extremely accommodating to the point that you could connect and place encoders and decoders on adjacent ports right next to each other, and MXNet would function as expected without issues.

However, for best results (especially with troubleshooting highly complex systems with dozens of end points/outputs) a certain degree of design and planning is required . . .

Here are some suggestions:

- Create a diagram/flow chart indicating the network cable run starting points and destinations.
- Label each cable run on both ends to indicate the location of source inputs and outputs.
- Use zip ties to neatly but loosely bundle together the encoder and decoder cable runs. This method will help with mitigating the “Spaghetti Effect”.
- Create any supporting “as-built” documentation to go with your schematics and diagrams, so that an Archeologist in the future will be able to understand what you were doing.
- Plan ahead . . .
- MXNet allows you to assign custom names for each Encoder and Decoder.
  - The Custom Names are limited to 12 characters, plus there is a 12 character “DESCRIPTION” field to provide further details about the INPUT or OUTPUT device.
  - With larger projects you may need to get a bit creative with how you assign a custom name to each Encoder and Decoder.
  - Although not required, best practices suggest that the Encoder cables be grouped next to each other on the network switch - followed by similarly grouping the Decoders.



# Hardware

## Control Box

( AC-MXNET-CBOX )

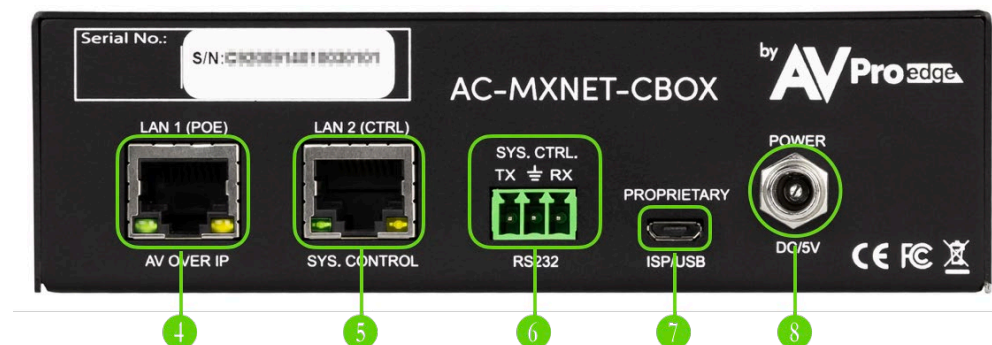
The MXNet CBOX (Control Box) is designed to provide multipoint AV over IP distribution and control routing capabilities for a wide variety of multicast ready network data switches. The state-of-the-art HTML 5 web based “MXNet Mentor” app provides a full featured environment for setting up an MXNet system with great efficiency.

(FRONT)



- 1 POWER indicator light
- 2 Toggle: DHCP / Static IP setting
- 3 SYSTEM RESET – use a paperclip or pen – click and hold for 7 seconds - RESET to factory defaults.

(BACK)



- 4 LAN 1 (POE) / AV OVER IP – supports a POE power source and is plugged into the designated Control Traffic port on the network switch.
- 5 LAN 2 (CTRL) / SYS. CONTROL – connects to the LAN or a control system CPU/Processor.
- 6 SYS. CTRL. / RS-232 – three pin terminal block for connecting to CBOX and controlling system using RS-232.
- 7 PROPRIETARY ISP/USB – service port – AVPro use ONLY.
- 8 Optional POWER - locking ring – 5V / 1A charging block (included in box). Not necessary when connected to a POE+ network switch which will provide the any power required.



(TOP)



## Encoders, Inputs & Sources ( AC-MXNET-1G-E )

The MXNet Encoder is the starting point where all sources and hosts are connected for distribution of audio and video signals to the end points at the other end of the connection. Video sources, audio sources, USB hosting for KVM functions, RS-232 encapsulated control, RS-232 direct passthrough, and IR passthrough all start at the Encoder. With only 3-5 watts of power usage, the POE powered AC-MXNET-1G-E sets a standard for efficiency. The only thing missing? The fan. That's correct, there's no cooling fan because both of our MXNet Encoders AND Decoders use an integrated metal chassis and chip-top heatsinks to efficiently disperse heat.. The entire internal frame acts like one giant heatsink. On the next few pages, we will breakdown the plethora of connections waiting to be discovered . . .

(FRONT)



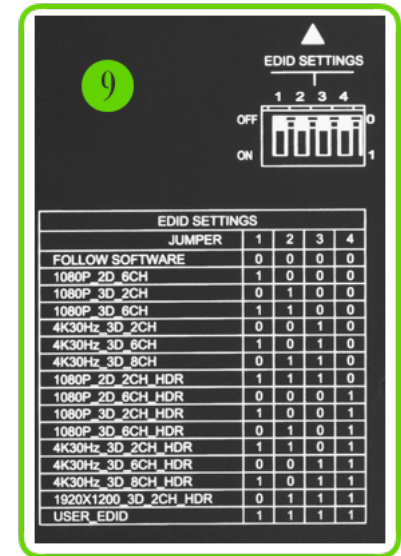
- 1 POWER indicator light. During booting, the light will slowly pulsate until the incoming power (POE or charger) stabilizes. At that point it will turn to a solid blue light.
- 2 LINK / SINK indicator light. This light will flash green until it connects to a Decoder at which point it will turn to a solid green light.
- 3 EDID COPY FROM HDMI LOOP OUT – copies the EDID of the display connected to the HDMI Loop Out connector on the back of Encoder.
- 4 RS-232 signal passthrough and routing from an RS-232 bridge to any Decoder.
- 5 IR IN / I-PASS / IR-EYE – IR signal passthrough using two methods: I-PASS which allows for a 3.5mm direct connect of an IR emitter from an IR bridge or control system CPU or processor.
- 6 IR IN / R-EYE supports taking a flashing IR emitter from

(BOTTOM)

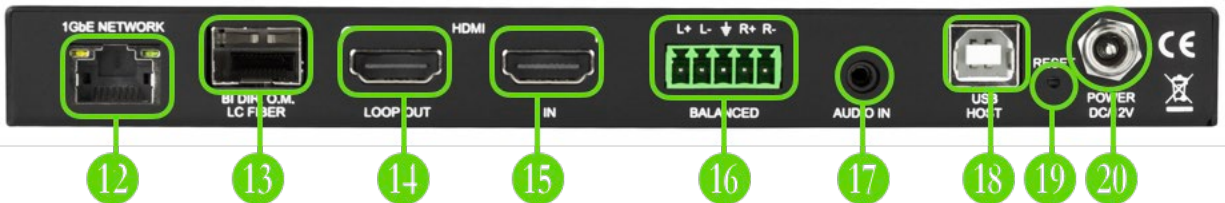
(BOTTOM)

an IR bridge or control system CPU and attaching the emitter to an IR decoder - which is plugged into the 3.5mm IR-EYE port - and then routed to any Decoder.

- 7 IR OUT – for receiving IR signals upstream from a Decoder
- 8 IP MONITOR – OLED “DATA WINDOW”. Displays the Encoder’S IP address and Custom Name or MAC address. MXNet / AVPro exclusive and proprietary.
- 9 EDID SETTINGS – Override the MXNet Mentor settings and permanently set a generic EDID. See EDID setting chart on bottom of the Encoder.
- 10 PROPRIETARY FPGA / MCU debug settings. AVPro service ONLY.
- 11 USB – AVPro service port ONLY.



(BACK)



- 12 1GbE NETWORK port. POE supported. Connected from the Encoder to the network switch. A network switch which supports POE is highly recommended.
- 13 BI DIR. O.M. LC FIBER – Fiber connection for extremely long runs. Requires a fiber extender kit or a network switch with fiber ports.
- 14 HDMI LOOP OUT – mirrored uncompressed signal to display.
- 15 HDMI IN – source input.
- 16 AUDIO OUT - BALANCED analog stereo.
- 17 AUDIO IN – 3.5mm
- 18 USB HOST - locking ring – 5V / 1A charging block (included in box). Not needed if the network switch is providing power via POE.
- 19 RESET port – use a paperclip or similar object. Resets the Encoder to factory configuration.
- 20 POWER – locking POWER supply / charger. Not required if the network switch is providing POE power. ( DC 12v/2a )

## What's in the box

- AC-MXNET-1G-E
- 1 x IR Tx Unit
- 1 x IR Rx Unit
- 2 x 3-Pin Terminal Blocks
- 1 x 5-Pin Terminal Blocks
- Mounting Ears
- Rubber Feet



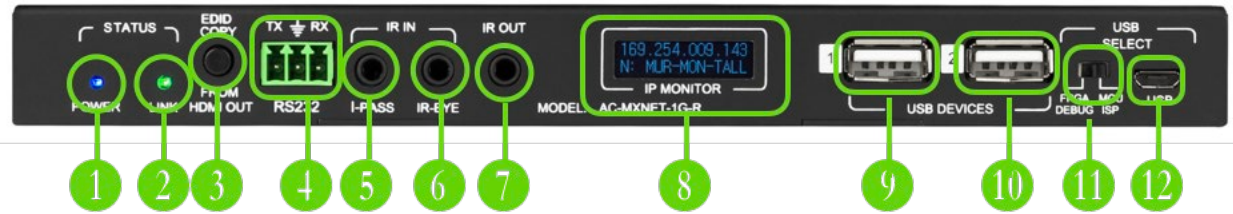
(TOP)



## Decoders, Outputs & Displays ( AC-MXNET-1G-D )

The MXNet Decoder receives all source and host data / signals as they arrive to the end point location. Distributed audio and video signals are first gathered at the starting point by the Encoder and then routed via the network switch to the end points at the other end of the connection. Video sources, audio sources, USB hosting for KVM functions, RS-232 encapsulated control, RS-232 direct passthrough, and IR passthrough all end at the Decoder. With only 3-5 watts of power usage, the POE powered AC-MXNET-1G-D sets a standard for efficiency. Again, there's no cooling fan because both of our MXNet Encoders and Decoders use an aluminum chassis to disperse heat **super efficiently**. The entire internal frame acts like one giant heatsink. On the next few pages, we will breakdown the function and utility of all the connections and ports . . .

(FRONT)



- 1 POWER indicator light and is plugged into the designated Control Traffic port on the network switch.
- 2 LINK / SINK indicator light. This light will flash green until it connects to a Decoder at which point it will turn to a solid green light.
- 3 EDID COPY FROM HDMI OUT – copies the EDID of the display connected to the HDMI OUT connector on the back of the Decoder.
- 4 RS-232 – outputs RS-232 signals which are generated using either the RS-232/IP method or via RS-232 direct passthrough.
- 5 **IR IN I-PASS allows for sending direct routing IR signals upstream.**
- 6 **IR IN IR-EYE allows for sending direct routing IR signals upstream.**
- 7 **IR OUT – incoming IR signals routed from a designated Encoder.**
- 8 IP MONITOR – OLED “DATA WINDOW”. Displays the Decoder’s IP address and Custom Name or MAC address. MXNet / AVPro exclusive and proprietary.
- 9 USB DEVICES -1 – supports routing the USB 2.0 signal from the Decoder to the designated HOST Encoder.
- 10 USB DEVICES -2 – supports routing the USB 2.0 signal from the Decoder to the same designated HOST Encoder.
- 11 PROPRIETARY FPGA / MCU debug settings. AVPro service ONLY.
- 12 USB – AVPro service port ONLY.

(BACK)



- 13 1GbE NETWORK port. POE supported. Connected from the Decoder to the network switch. A network switch which supports POE is highly recommended.
- 14 **BI DIR. O.M. LC FIBER – Fiber connection for extremely long runs. Requires a fiber extender kit or a network switch with fiber ports.**
- 15 HDMI OUT – output to HDMI port of the display.
- 16 AUDIO OUT -
- 17 POWER - locking ring – 5V / 1A charging block (included in box). Not required if the network switch is providing power to the Decoder via POE.

## What's in the box

- AC-MXNET-1G-D
- 1 x IR Tx Unit
- 1 x IR Rx Unit
- 2 x 3-Pin Terminal Blocks
- Mounting Ears
- Rubber Feet



# MXnet MENTOR

## MXNet Mentor - Construct, Configure, Create & Control



MXNet Mentor is AVPro's proprietary - state-of-the-art - HTML 5 based setup and control app. Mentor is a complete, full featured solution showcasing a large variety of simple, yet powerful features and functions. The following pages will provide a comprehensive guide to all the utilities that comprise the MXNet Mentor app and MXNet Ecosystem.

To experience MXNet Mentor, simply launch any modern web browser – ( Explorer, Safari, Chrome, etc. ) – on your ( Windows 10, Mac, iOS, or Android ) device, and enter the IP address of the MXNet Control Box.

The default factory IP address is: 192.168.1.239

Username: admin

Password: admin

On the left side of the screen, you will notice a column of icons representing each critical function and utility available. Simply click or tap on each icon to see. The next several pages extensively cover and explain each and every function of “MXNet Mentor” starting with the HOME / SYSTEM UTILITIES page.



## Home Page

The HOME page provides a variety of MXNet system information including the versions of currently installed application software and firmware as well as a firmware update/installation portal.

The screenshot shows the MXnet Mentor Home Page - System Utilities interface. The page is dark-themed with green accents. At the top left is the MXnet logo and a 'HELP' button. The main title is 'HOME PAGE - SYSTEM UTILITIES' and 'AVProedge' is in the top right. A sidebar on the left contains navigation icons for HOME SYSTEM UTILITIES, CONFIGURE (INPUTS/OUTPUTS), AUTO-MATRIX, VIDEO WALL, ADVANCED, CEC/HDMI, RS232/IP, RS-232, IR DIRECT, and USB, KVM. The main content area features the MXnet MENTOR logo and a red warning banner with 'RESTORE FACTORY' and 'REBOOT SYSTEM' buttons. Below this are four utility panels: 1. MXNET NETWORK SETTINGS: IP ADDR: 192.168.1.239, SUBNET: 255.255.255.0, ROUTER: 192.168.1.1, TCP PORT: 23. DHCP is unchecked, STATIC is checked. An 'APPLY CHANGES' button is present. 2. MXNET TRANSMITTER UPDATES: UPDATE FILE: MXNET\_16\_T\_FW\_V2.11.HEX (.HEX) FILE FORMAT. Buttons: TX SELECT TRANSMITTERS, BROWSE FOR UPDATE FILE. 3. MXNET SYSTEM UPDATES: CURRENT FW: V1.19.5, DISPLAY FW: 1.1. UPDATE FILE - CONTROL BOX: MXNET\_UPDATE\_V1.21.01.DMG (.DMG) FILE FORMAT. Buttons: CB UPDATE NOW, BROWSE FOR UPDATE FILE. 4. MXNET RECEIVER UPDATES: UPDATE FILE: MXNET\_16\_R\_FW\_V2.12.BIN (.BIN) FILE FORMAT. Buttons: RX SELECT RECEIVERS, BROWSE FOR UPDATE FILE.



## Configure Page

**NOTE:** You must connect an MXNet Control Box, MXNet Encoders/Encoders, and MXNet Decoders/Decoders to your network switch prior to attempting to input any information on the CONFIGURE pages. The CONFIGURE pages will remain blank until that equipment is connected.

### Inputs/Encoders/Sources

Looking at the page from left to right you will see the following columns:

INPUTS/TRANSMITTERS/SOURCES			OUTPUTS/RECEIVERS/DISPLAYS			DIAGNOSTICS	
NAME (AUTO)	CUSTOM NAME	DESCRIPTION	EDID MGMT	CHANNEL	IP ADDRESS (AUTO)	MAC ADDRESS (AUTO)	TRANSMITTER LIGHTS - ALL
Tx1	DTV-1	DirecTV-1 4K HDR		▲▼	169.123.205.120	0246D9E2E70C	OFF ●
Tx2	DTV-2	DirecTV-2 SDR		▲▼	169.123.205.123	0246D9E2E6FC	ON ●

**NAME (AUTO):** ( Example: Tx1, Tx2, Tx3, etc. ) This info is automatically generated by the MXNet control system for keeping internal track of the connected Encoders. This field is grayed out, and cannot be edited.

**CUSTOM NAME:** Assign any custom name to a Encoder. You have up to 12 characters available - no spaces.

**DESCRIPTION:** Enter any text desired. You have up to 12 characters available - no spaces.

**EDID MGMT:** Choose an EDID which will provide the highest level of compatibility with the target display. In most cases, a generic lower common denominator EDID such an 1080P 2CH will provide the best

**CHANNEL:** Each channel number must be unique. The MXNet control system will automatically assign channel numbers to each Encoder. If you notice a duplicate channel number ( highly unlikely ), then assign a unique number. You have 9,998 possible combinations.

**IP ADDRESS (AUTO):** The IP Address is automatically generated by the MXNet control system. This field is grayed out, and cannot be edited.

**MAC ADDRESS:** The MAC Address is pre-assigned to each Encoder. This field is grayed out, and cannot be edited.

**Encoder LIGHTS:** Encoder lighting controls ( mini-display, PWR, LINK, and Network link/activity ) are actuated using rotating toggle/clicks: Click once to cause all lights on the Encoder to FLASH, click again to Turn OFF all lights, and click once more to Turn ON all lights. You have the option to actuate this feature with individual Encoders or ALL Encoders.



## Outputs/Decoders/Displays

Looking at the page from left to right you will see the following columns:

INPUTS/TRANSMITTERS/SOURCES			OUTPUTS/RECEIVERS/DISPLAYS			DIAGNOSTICS	
NAME (AUTO)	CUSTOM NAME	DESCRIPTION	OUTPUT RESOLUTION	IP ADDRESS (AUTO)	MAC ADDRESS (AUTO)	OSD - ALL	RECEIVER LIGHTS - ALL
Rx1	BAR TV-1	LG left side Bar		169.123.105.120	0246D9E2E70C	OFF	OFF
Rx2	BAR TV-2	LG rt side Bar		169.123.105.123	0246D9E2E6FC	ON	ON

**NAME (AUTO):** ( Example: Rx1, Rx2, Rx3, etc. ) This info is automatically generated by the MXNet control system for keeping internal track of the connected Decoders. This field is grayed out, and cannot be edited.

**CUSTOM NAME:** Assign any custom name to a Decoder. You have up to 12 characters available - no spaces.

**DESCRIPTION:** Enter any text desired. You have up to 12 characters available - no spaces.

**OUTPUT RESOLUTION:** Choose an output resolution

**IP ADDRESS (AUTO):** The IP Address is automatically generated by the MXNet control system. This field is grayed out, and cannot be edited.

**MAC ADDRESS:** The MAC Address is pre-assigned to each Decoder. This field is grayed out, and cannot be edited.

**OSD ( On Screen Display ):** Click to toggle On or Off. The OSD feature will present the following information to the lower left corner of a display device:

- Decoder IP Address
- Custom Name or MAC address of the Decoder
- Switched content or media source

**Decoder LIGHTS:** Decoder lighting controls ( mini-display, PWR, LINK, and Network link/activity ) are actuated using rotating toggle/clicks: Click once to cause all lights on the Decoder to FLASH, click again to Turn OFF all lights, and click once more to Turn ON all lights. You have the option to actuate this feature with individual Decoders or with ALL connected Decoders.



## Configure Page ~ Diagnostics

### Encoder Diagnostics

Looking at the page from left to right you will see the following columns -

**NAME (AUTO):** ( Example: Tx1, Tx2, Tx3, etc. ) This info is automatically generated by the MXNet control system for keeping internal track of the connected Encoders. This field is grayed out, and cannot be edited.

**CUSTOM NAME:** The Encoder CUSTOM NAME listing is pulled from the CONFIGURE page, and cannot be edited within the ~SYSTEM DIAGNOSTICS~ overlay/page.

**NETWORK CONNECTION:** The NETWORK CONNECTION column is tied directly to the adjoining CONNECTION SPEED column, and indicates the quality of the network cable connection. You will see three ratings: GOOD (Green), MARGINAL (Yellow), and FAIL (Red).

**CONNECTION SPEED\*:** If the CONNECTION SPEED = "1G", the NETWORK CONNECTION column will indicate that you have a "GOOD" (Green) network connection. If the CONNECTION SPEED = 100MB or less, the NETWORK CONNECTION column will indicate that you have a "MARGINAL" (Yellow) connection. If the NETWORK CONNECTION function is unable detect any connection to a Encoder, then the NETWORK CONNECTION column will indicate "FAIL" (Red) and the CONNECTION SPEED column will display "NO SIGNAL".

**HDMI VIDEO:** This column indicates the outgoing HDMI VIDEO signal resolution and timing. For example a **4K 60Hz signal will display as "3840x2160/60Hz"**.

**HDR:** Response = "YES" or "NO". This column indicates if the HDMI VIDEO signal contains HDR metadata or not.

**COLOR DEPTH:** Response = 8 BIT or 10 BIT. If the HDR Response = "NO" and the COLOR DEPTH = "8 BIT", then the Encoder is sending an SDR signal. If the HDR Response = "YES", and the COLOR DEPTH = "8 BIT" then the Encoder is sending a Dolby Vision signal. Finally, if the HDR Response = "YES" and the COLOR DEPTH = " 10 BIT", then the Encoder is sending an HDR10, HDR10+, or HLG signal.

**HDMI AUDIO:** Response = "**PCM**" or "**NON PCM**". This column indicates the HDMI AUDIO encoding signal.

**HOT-PLUG DETECT/RESET:** Click on the "RESET" text to force reconnection. The Green light indicates that a **HOT-PLUG DETECT has been identified by the system.**

**HDCP VERS:** Response = "1.4" or "2.2". HDMI signals that require less than 10mb of bandwidth will use HDCP VERS. "1.4" and signals requiring 18gb of bandwidth will use HDCP VERS. "2.2".

**Encoder LIGHTS:** Encoder lighting controls ( mini-display, PWR, LINK, and Network link/activity ) are actuated using rotating toggle/clicks: Click once to cause all lights on the Encoder to FLASH, click again to Turn OFF all lights, and click once more to Turn ON all lights. You have the option to actuate this feature with individual Encoders or ALL Encoders. This is a very helpful tool when troubleshooting the MXNet system.

## Decoder Diagnostics

Looking at the page from left to right you will see the following columns -

**NAME (AUTO):** ( Example: Rx1, Rx2, Rx3, etc. ) This info is automatically generated by the MXNet control system for keeping internal track of the connected Decoders. This field is grayed out, and cannot be edited.

**CUSTOM NAME:** The Decoder CUSTOM NAME listing is pulled from the CONFIGURE page, and cannot be edited within the ~DIAGNOSTICS~ overlay/page.

**NETWORK CONNECTION:** The NETWORK CONNECTION column is tied directly to the adjoining CONNECTION SPEED column, and indicates the quality of the network cable connection. You will see three ratings: GOOD (Green), MARGINAL (Yellow), and FAIL (Red).

**CONNECTION SPEED\*:** If the CONNECTION SPEED = "1G", the NETWORK CONNECTION column will indicate that you have a "GOOD" (Green) network connection. If the CONNECTION SPEED = 100MB or less, the NETWORK CONNECTION column will indicate that you have a "MARGINAL" (Yellow) connection. If the NETWORK CONNECTION function is unable detect any connection to a Encoder, then the NETWORK CONNECTION column will indicate "FAIL" (Red) and the CONNECTION SPEED column will display "NO SIGNAL".

**HDMI VIDEO:** This column indicates the incoming HDMI VIDEO signal resolution and timing. For example, a 4K 60Hz signal will display as "3840x2160/60Hz".

**HDR:** Response = "YES" or "NO". This column indicates if the HDMI VIDEO signal contains HDR metadata or not.

**COLOR DEPTH:** Response = 8 BIT or 10 BIT. If the HDR Response = "NO" and the COLOR DEPTH = "8 BIT", then the Decoder is acquiring an SDR signal. If the HDR Response = "YES", and the COLOR DEPTH = "8 BIT" then the Decoder is getting a Dolby Vision signal. Finally, if the HDR Response = "YES" and the COLOR DEPTH = " 10 BIT", then the Decoder is acquiring an HDR10, HDR10+, or HLG signal.

**HDMI AUDIO:** Response = "PCM" or "BIT STREAM". This column indicates the HDMI AUDIO encoding signal. Identify actual CODEC.

**HOT-PLUG:** The Green light indicates that a HOT-PLUG DETECT has been identified by the system. Click on "RESET" to force a refresh of the HDMI signal.

**HDCP VERS:** Response = "1.4" or "2.2". HDMI signals that require less than 10mb of bandwidth will use HDCP VERS. "1.4" and signals requiring 18gb of bandwidth will use HDCP VERS. "2.2".

**CONNECTED SINK/DISPLAY:** Shows the manufacturer or model number of a display connected to a specific decoder.

**SOURCE Encoder:** Identifies the source signal routing to the Decoder.

**Decoder LIGHTS:** Decoder lighting controls ( mini-display, PWR, LINK, and Network link/activity ) are actuated using rotating toggle/clicks: Click once to cause all lights on the Encoder to FLASH, click again to Turn OFF all lights, and click once more to Turn ON all lights. You have the option to actuate this feature with individual Decoders or ALL Decoders. This is a very helpful tool when troubleshooting the MXNet system.



## Auto-Matrix Page

The INPUT/OUTPUT layout of the AUTO-MATRIX page is AUTOMATICALLY generated by the INPUT/OUTPUT information entered into the CONFIGURE pages. Please review that section of this guide as needed. Until you actually connect Encoders and Decoders, the AUTO-MATRIX page will be blank except for the outlines of the INPUT and OUTPUT buttons.

The Inputs/Outputs switching buttons are automatically populated with the following:

- System generated ( Tx/Rx ) names
- Custom Names or MAC addresses of both Encoders and Decoders
- Thumbnails of the actual content sourcing from the Encoders
- Visual feedback of the video switching configurations including which INPUT
- S are sending signals to specific OUTPUTS.

### TRY THIS ~

- Click on an INPUT button and it will highlight with an Orange border to indicate its selection.
- Click on an OUTPUT button, or several OUTPUT buttons and they will also highlight with an Orange border.
- You have now sent switching commands from the selected INPUT to the selected OUTPUT(s).
- Click on a different INPUT button and then choose a different set of OUTPUTS.
- Now, click back and forth on the two INPUTS and watch as the two sets of OUTPUTS highlight to reflect the different sets of switching settings.



## Video Wall Page

The VIDEO WALL page provides a fresh approach to creating, setting up, and generating video walls that it easy to understand and perform. You can create and recall any number of video wall arrays based on the number of outputs available. For example, if your MXNet system was comprised of 20 outputs, you could theoretically create as many as five 2x2 video wall arrays. And, depending on the number of content sources connected, each array can independently display discrete content.

To create a VIDEO WALL, do the following:

## Advanced Pages



### CEC/HDMI & RS-232/IP Page

The CEC over HDMI, and RS-232 over IP page provides simple power controls for display devices connected to Decoders throughout a MXNet installation. You can create up to six Routing Groups for specifying six different sets of targeted display groupings. Power controls are the most commonly requested and implemented commands in use at various venues. With that in mind, MXNet Mentor restricts the control commands available thru the app to POWER ON and POWER OFF. This applies to both CEC and RS-232/IP (encapsulated serial passthrough) control methods. If you require additional control commands for your display devices, then you should consider using a control system.

To actuate this feature, first click on the “EDIT CONTROL CONFIG” button within any of the six setup boxes. SELECT CONTROL METHOD:

- Next, choose the power control method – either **CEC** or **RS-232**.
- **CEC** - If you choose CEC, then click the “X” Close button and skip to the “EDIT ROUTING GROUP” section.
- **RS-232** - If you choose RS-232, you will now enter the BAUD RATE, \*DATA LENGTH, \*PARITY BIT, \*STOP BIT and \*FLOW CONTROL info. ( \*Almost always, the only setting you will change will be the BAUD RATE. The other settings will remain at default. Consult your display device’s owners manual as needed. )
- Next, enter the BAUD rate as specified by the display’s manufacturer.
- Enter the POWER ON AND POWER OFF COMMAND(s) as specified in the display’s owners manual.
- PREFIX: If the display requires a preceding carriage return or line feed or both prior to the control command being issued, then enter either or both of the following: \r = Carriage Return, \n = Line Feed.
- HEX: If the entire command is presented in HEX format, then check this box.
- TERMINATOR: Most control commands require either a carriage return or line feed. Enter either of the following: \r = Carriage Return, \n = Line Feed.
- Click the “X” Close box and go to the “EDIT ROUTING GROUP” section on the next page.

#### EDIT ROUTING GROUP

- Click on the “EDIT ROUTING CONFIG” button.
- Click to select each \*display you want to have as a member(s) of this group.
- Enter a name for your group. Be creatively descriptive. You have 17 characters available. This will make it more efficient to identify the group at a later time.
- Click on the “X” Close box and you have finish setting up.



## RS-232 & IR Direct Page

The RS-232 and IR DIRECT pages provide a simple way to route control signals to display devices or other equipment connected to either the RS-232 passthrough or IR passthrough and iPASS ports on an MXNet Encoder at the front end, and an MX Decoder at the end point.

The ROUTING pages closely resemble the AUTO-MATRIX page except that you will notice two tabs separating RS-232 ROUTING and IR ROUTING functions. To set a routing path, simply click on either the RS-232 ROUTING or IR ROUTING tab, and then click on an INPUT/Encoder button in the left column. Next, click on either single or multiple Decoder buttons to set the routing path. Each INPUT/Encoder can be independently configured route both signal types.

For the INPUTS/Encoders, start by using a control system processor/CPU or stand-alone RS-232 or IR bridge. Connect the appropriate cable to either the RS-232 Phoenix 3 pin detachable terminal block, or a 3.5mm stereo mini-phonon cable on the chosen Encoder. Next, connect the other end of the cable to either the control system processor/CPU or stand-alone bridge device and configure accordingly.

Next set the routing path(s) as described above, and you are done.



## USB & KVM

The USB, KVM page provides an easy user interface to setup signal routing of any type USB 2.0 device. The KVM routing configuration uses the USB\* ports on the Decoder which in turn provides the “INPUT” for keyboards, mice, video cameras, microphones, etc. The KVM Decoder “INPUT” is then routed directly to a “HOST” Encoder. Generally, the “HOST” will be a PC type computer with one of its USB ports connected to the Encoder’s USB “B” connector. The MXNet Mentor app supports up to six independent routing paths.

(\*Use a USB Hub to expand the number of available USB ports as needed.)

To setup a USB - KVM routing path follow these steps:

- Click on the “SET USB/KVM HOST” button within any ROUTING SETUP box.
- Select a “USB HOST DEVICE” from the list of Encoders. The available Encoders will appear in the list in Green. After selecting the Encoder “HOST”, click the “X” to close the popup.  
(NOTE: If you have previously setup a KVM routing path using a different ROUTING SETUP box, then any already selected Encoder will appear in the list as Gray, or unavailable.)
- Next, click on the “SET USB/KVM DEVICE INPUT” button (use the same ROUTING SETUP box as in the first step), and select the Decoder that you want to for USB device input.
- Available Decoders will appear in the list as Green. Click the “X” to close the popup.  
(NOTE: Just as with the “HOST” Encoder setup, a Decoder that was previously selected as an INPUT device will appear in the list as Gray or unavailable.)
- Notice that the “HOST” and “INPUT” data boxes will display the Custom Names or MAC addresses of the Encoders and Decoders.

Plug all the INPUT devices into the USB ports on the Decoder, and connect the PC to the USB “B” port on the Encoder, and you are set to go.



# Warranty

## The Basics.

AVPro Edge warranties its products that are purchased from all Authorized AVPro Edge Resellers or direct purchases. Products are guaranteed to be free from manufacturing defects and of sound physical and electronic condition.

AVPro Edge has developed a warranty that anyone can get behind. We really wanted to take all the "red tape" out of a warranty and just make it simple. Our 10 YEAR NO BS warranty hinges on 3 elements.

1. If you are having trouble, call us. We will attempt to troubleshoot your issue over the phone.
2. If it's broke - We'll replace it in advance on our dime. (We'll cover return shipping too.) Repair is an option too, but it's YOUR call.
3. We know you know what you are doing. We will not make you go through unnecessary steps to troubleshoot an extender...

## Coverage Details.

AVPro Edge will replace or repair (at customer choice) the defective product. If the product is out of stock or on back order it can either be replaced with a comparable product of equal value/feature set (if available) or repaired.

Your warranty begins at receipt of product (as confirmed by shipping firm tracking). If tracking information is unavailable for any reason, the warranty will commence 30 ARO (After Receipt of Order). The coverage continues for 10 YEARS.

## Red Tape.

AVPro Edge is not responsible for untraceable purchases or those that were made outside of an authorized channel.

If we conclude that a product or serial number has been tampered with - as identified by warranty seal or physical examination - the warranty will be void. Additionally, excessive physical damage (beyond normal wear & tear) the warranty may be voided or pro-rated based on the extent of the damage as examined by an AVPro Edge representative.

Damage caused by "acts of God" are not covered. They can include natural disasters, power surges, storms, earthquakes, tornadoes, sink holes, typhoons, tidal waves, hurricanes, or any other uncontrollable event related to nature.

Damage caused by incorrect installation will not be covered. Incorrect power supply, inadequate cooling, improper cabling, inadequate protection, static discharge are examples of this.

Products installed or sold by a third party to AVPro Edge will be serviced by the Authorized AVPro Edge Reseller.

Accessories (IR Cables, RS-232, Power Supplies, etc...) are not included in the warranty. We will make an acceptable effort to source and supply replacements for defective accessories at a discounted rate as needed.

### **Obtaining an RMA.**

Dealers, Resellers, and Installers can request an RMA AVPro Edge Tech Support Rep or their Sales Engineer. Or you may email [support@avproedge.com](mailto:support@avproedge.com) and/or fill out the general contact form at [www.avproedge.com](http://www.avproedge.com).

End users may not request an RMA directly from AVPro Edge and will be referred back to the Dealer, Reseller or Installer.

### **Shipping.**

For USA (not including Alaska and Hawaii). Shipping is covered on advanced replacements for FedEx Ground (some expressed exceptions may apply). Defective product return shipping is covered by AVPro Edge using an emailed return label. Item must be returned within 30 days of receipt of replacement product, after 30 days, the customer will be billed. Other return shipping methods will not be covered.

For International (and Alaska and Hawaii) return shipping costs will be the responsibility of the returnee. Once the unit is scanned for return shipping AVPro Edge will ship new unit for replacement.

### **Legal Stuff.**

#### Limitation on Liability

The maximum liability of AVPro Global Holdings LLC under this limited warranty shall not exceed the actual purchase price paid for the product. AVPro Global Holdings LLC is not responsible for direct, special, incidental or consequential damages resulting from any breach of warranty or condition, or under any other legal theory to the maximum extent permitted by law.

Taxes, Duties, VAT, and freight forwarding service charges are not covered or paid for by this warranty. Obsolescence or incompatibility with newly invented technologies (after manufacture of product) is not covered by this warranty.

Obsolescence is defined as:

Peripherals are rendered obsolete when current technology does not support product repair or re-manufacture. Obsolete products cannot be remanufactured because advanced technologies supersede original product manufacturer capabilities. Because of performance, price and functionality issues, product redevelopment is not an option.

Discontinued or out of production items will be credited at fair market value towards a current product of equal or comparable capabilities and cost. Fair market value is determined by AVPro Edge.

#### Exclusive remedy

To the maximum extent permitted by law, this limited warranty and the remedies set forth above are exclusive and in lieu of all other warranties, remedies and conditions, whether oral or written, express or implied. To the maximum extent permitted by law, AVPro Global Holdings LLC specifically disclaims any and all implied warranties, including, without limitation, warranties of merchantability and fitness for a particular purpose. If AVPro Global Holdings LLC cannot lawfully disclaim or exclude implied warranties under applicable law, then all implied warranties covering this product, including warranties of merchantability and fitness for a particular purpose, shall apply to this product as provided under applicable law.





Thank you for choosing AVPro Edge!

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

**AVPro** edge



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