

MXnet

NETWORKED
VIDEO
ECOSYSTEM

AC-MXNET-1G-E | ENCODER

MXNET 1G ENCODER/TRANSMITTER DEVICE

The MXNet Ecosystem is an AV over IP platform of products that uses traditional networking infrastructure to route video and audio signals through large scale systems with unlimited numbers of sources and displays, all switching independently and seamlessly. Designed and developed by AVPro Edge to be truly “plug and play”, MXNet provides the complete end-to-end solution for stability, interoperability, and easy deployment of the entire ecosystem.



OVERVIEW

The MXNet 1G Encoder is the starting point for all sources and hosts, ready to distribute audio and video signals to the other end of the connection. Audio and video sources, USB hosting for KVM functions, RS232 encapsulated control and direct passthrough, and IR passthrough all start at the Encoder. With only 3-7 watts of power usage, the PoE powered MXNet Encoder sets a standard for efficiency, as well as eliminating the need for internal cooling fans as both the Encoders and Decoders use an integrated metal chassis and ship-top heatsinks to effectively disperse heat.

The Encoder will encode 4K HDMI video signals—along with audio, control, and power – and route them to any Decoder endpoints via multicast routing through an MXNet or other compatible L3 managed network switch. All this is done with nearly zero latency, due to the signals being encoded into IP packets using an optimized JPEG2000 codec at a flexible data rate. Plus, it also supports standalone point-to-point applications when connected directly to an MXNet 1G Decoder.

FEATURES

<p>1 Gigabit Ethernet Network Port, Supports PoE (1G maximum data rate)</p>	<ul style="list-style-type: none"> • 8-pin RJ-45 female connector, 1000BASE-T copper Ethernet port • Supports standard PoE power, IEEE 802.3AF (15.4W), maximum power consumption of 6.5 watts • 10/100/1000Mbps auto-negotiation, MDI/MDI-X cable mode auto-negotiation • Maximum distance 100m (330ft) over Cat5e and higher • Compatible with all MXNet network switches or point-to-point applications with MXNet decoder • Optional DC 12V local power supply
<p>Bidirectional SFP Port Fiber Optic Connector (SFP transceiver modules sold separately)</p>	<ul style="list-style-type: none"> • Supports single mode or multimode SFP modules for extremely long cable runs • Recommended standard single mode fiber: LC to LC 1310nm, up to 40km (24.85 miles) • Recommended standard multimode fiber: LC to LC 850nm, up to 550m (1804 feet) • Compatible with most SFP transceiver modules available on the US market
<p>HDMI Input Port</p>	<ul style="list-style-type: none"> • 19-pin HDMI® Type A female connector • Source device input for HDMI connection
<p>HDMI Output Loop Out Port</p>	<ul style="list-style-type: none"> • 19-pin HDMI Type A female connector • Sends HDMI signal pass-through from locally connected input source • Copy EDID functionality in conjunction with front panel button <i>EDID COPY FROM LOOP OUT</i>

Audio Input Port	<ul style="list-style-type: none"> • 3.5mm stereo jack (TRS) audio input port • Auto-detects input once directly connected, will override HDMI input audio stream
Audio Output Port (de-embedded audio)	<ul style="list-style-type: none"> • 5-pin terminal block connector • Extracts balanced analog 2-channel PCM audio
USB Host Port	<ul style="list-style-type: none"> • USB 2.0 Type B female connector • USB extension for connection to a computer or other USB 2.0 devices • Supports KVM routing and hosting
Mini-OLED Data Window <i>*Exclusive and Proprietary Feature from AVPro Edge!</i>	<ul style="list-style-type: none"> • Built-in front panel mini-OLED screen • Displays encoder's custom name or MAC address (if no custom name is assigned) and IP address • Toggle options allow screen on, off, or flashing for visibility
IR Input Ports for I-PASS and IR-EYE	<ul style="list-style-type: none"> • (2x) 3.5mm stereo jack (TRS) IR receiver ports • I-PASS port sends IR signals via a direct connection from a control processor to the IR output of the desired endpoint(s) • IR-EYE port supports use of an IR eye to capture IR signals from a control system processor or third-party remote to send IR signals to the IR output of the desired endpoint(s)
IR Output Port	<ul style="list-style-type: none"> • 3.5mm mono jack (TS) IR transmitter port • Sends encapsulated/virtualized IR signals upstream via the MXNet API
RS-232 Port	<ul style="list-style-type: none"> • 3-pin terminal block connector port • Sends encapsulated/virtualized RS-232 (serial pass-through) over IP via the MXNet API • Supports serial routing with direct connection to a control system processor
Integrated Metal Chassis Device Casing	<ul style="list-style-type: none"> • Chip-top heatsink specifically designed to efficiently disperse heat • Entire internal frame functions as one giant heatsink • Eliminates the need for internal cooling fans
Unlimited and Expandable End Points with Auto-device Discovery	<ul style="list-style-type: none"> • Unlimited number of sources, displays, USB devices, and video walls • Once all MXNet Ecosystem devices are properly connected and powered on, Mentor auto-detects each endpoint device and replicates the physical MXNet Ecosystem in a digital space • A Link-local IP address is self-assigned to each encoder by factory default • The MAC address and multicast channel are pre-assigned to each encoder
Custom Video Walls	<ul style="list-style-type: none"> • Supports unlimited number of video walls, each up to 64 panels • Layouts include standard arrays (2x2, 3x3, 1x2, etc.) and mosaic-style (artistic) with overlapping displays of various sizes • Panels may be rotated 180 or 270 degrees • JPEG 2000 supports GEN LOCK for tear-free video wall images
JPEG 2000 Video Encoding	<ul style="list-style-type: none"> • Progressive decoding delivers both lossy and lossless compression within a code stream • Supports GEN LOCK, frames of a video source are synced to all decoders for tear-free video walls • Bit rate errors are minimized by packetizing data into smaller blocks for higher quality image fidelity • Content-specific flexible data rates from 200Mbps to 850Mbps, allows managing bandwidth usage • Utilized by DCI for motion pictures, live HD broadcasting, and DICOM® for medical imaging communications

Built-in Scaling / Output Resolution Settings	<ul style="list-style-type: none"> • Select video resolutions from 720p 50Hz to 4K 30Hz • Downscale one or multiple decoders to lower-resolution sink devices while maintaining high-quality video to other zones • Interlaced formats are converted to progressive when output scaling is enabled (Note: scaler usage will affect switching times, often reducing switching times in most cases)
Fast Switching Times	<ul style="list-style-type: none"> • Switching times range between 4-7 seconds for pass-through content of the same format, or 5-10 seconds between content of different formats • Switching times of 2 seconds achievable with proper scaling and formats • Ultra-low, nearly zero latency
Oversee HDR Metadata	<ul style="list-style-type: none"> • Select HDR metadata to always be enabled, disabled, or native pass-through with scaling enabled

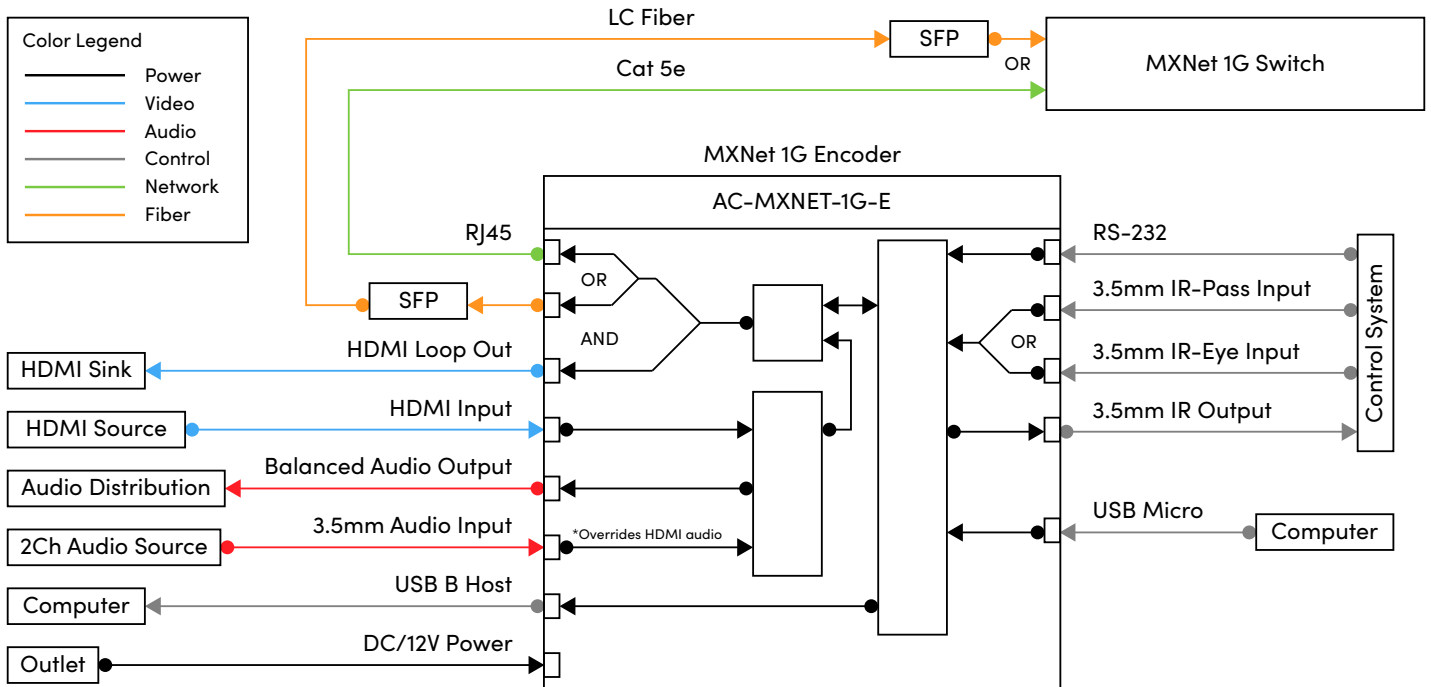
BENEFITS

MXNet Mentor Web Interface	<ul style="list-style-type: none"> • Mentor is MXNet's proprietary setup, configuration, and testing web interface that comes pre-installed on every AC-MXNET-CBOX • Features simple, yet powerful and advanced tools and settings to provide a complete setup and control solution for every MXNet installation • Customizable configurations allow EDIDs, custom names, and descriptions assigned to every encoder • Live Diagnostics provide real-time status feedback for HDMI and network cable connections for monitoring link quality and speed • View the source video resolution, color bit depth, HDCP version, hot-plug events, and preview source images as thumbnails that update every 10 seconds
Full Control of External Front Panel Lights	<ul style="list-style-type: none"> • Toggle options allow front panel LEDs and mini-OLED screen stay lit on, continuously flash for quick visibility and troubleshooting when locating devices, or completely off for real-time dark mode
Supports Third-Party Control Systems	<ul style="list-style-type: none"> • Drivers available for third-party control systems, such as Control4®, Crestron®, Savant, RTI®, ELAN®, Q-SYST™, URC®, etc.
Reliable Serviceability	<ul style="list-style-type: none"> • Compatible with most remote monitoring software, such as OvrC®, Xyte, Domotz, etc. • On-site components are "hot-swappable" for faster servicing and troubleshooting • Industry-leading technical support assistance from AVPro Edge
Quiet Operation and Low Power Consumption	<ul style="list-style-type: none"> • MXNet encoders operate quietly and without any internal cooling fans • Requires only 3-7 watts of power consumption • Runs cooler than competitive products, contributing to system stability and device longevity
Intuitive Configuration and Easy Expandability	<ul style="list-style-type: none"> • MXNet Mentor configuration, monitoring, and diagnostic software included • Auto-discovery and auto-cataloging features greatly save time while assuring flawless accuracy
Distance Capabilities	<ul style="list-style-type: none"> • Fiber SFP options allow distances up to 40km (24.85 miles)
Multifaceted Market Appeal	<ul style="list-style-type: none"> • Versatile applications for a multitude of AV installations, such as corporate enterprises, education, hospitality, medical, financial, and government applications • Provides a unique alternative as an AV distribution system for the luxury home market
10-Year Warranty	<ul style="list-style-type: none"> • AVPro Edge warrants its products that are purchased from all authorized AVPro Edge resellers or direct purchases

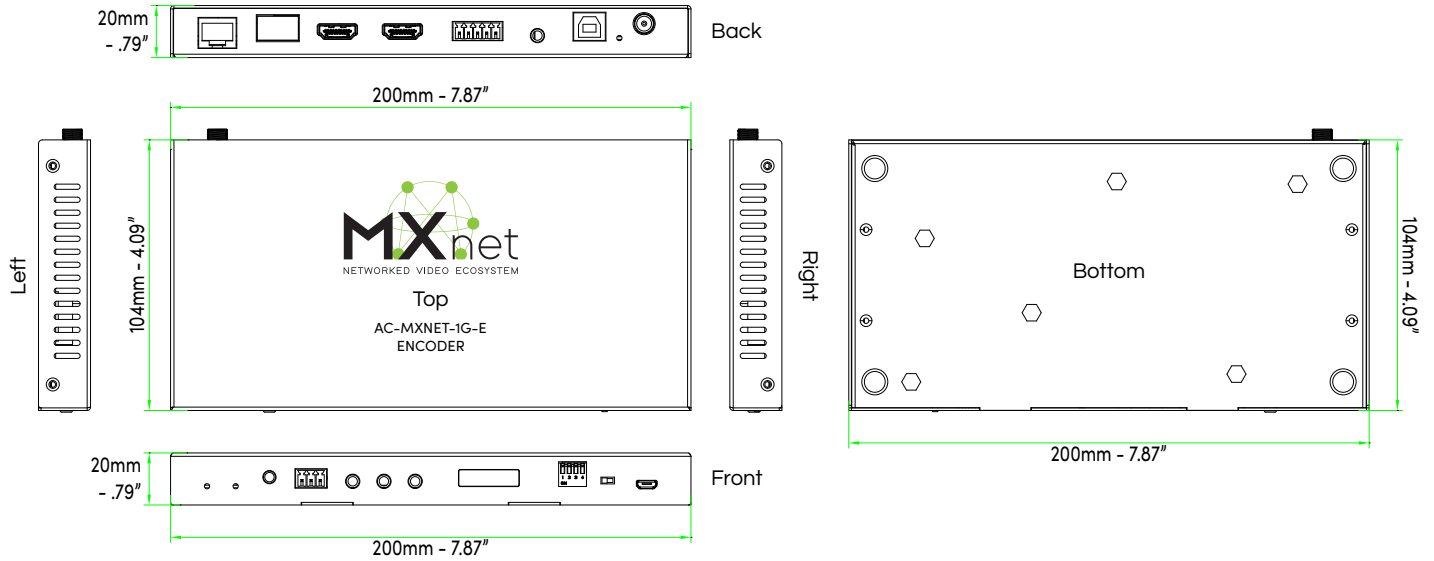
SPECIFICATIONS

ENCODING:	
Video Codec	Proprietary Codec based on M-JPEG
Audio Codec	Proprietary Codec
Latency	16ms@60Hz
Streaming Protocols	TCP, UDP, IP, IGMP, V2
Copy Protection	HDCP 2.2 and earlier
VIDEO:	
Signal Type	DVI 1.0, HDMI 2.0b
Video Resolution	4K@30Hz 4:4:4, 4K@60Hz 4:2:0
HDR Format	HDR 10, HLG, DV
Chroma Subsampling	444, 422, 420
Bit Depth per Color	1080P (16Bit), 4k (10, 12 Bit)
AUDIO:	
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
Audio Format (HDMI Loopout)	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, Dolby MAT 8CH
Embedded Audio	Stereo Analog Audio
De-Embedded Audio	Balanced Analog Audio
COMMUNICATION/CONTROL OF EXTERNAL DEVICES:	
USB	HID-Compliant
Serial / RS-232	Bi-directional Device Control / Monitoring
IR	Bi-directional Device Control / Extension
HDMI	HDCP 2.2, EDID Management (Encoder), CEC (Decoder)
PORTS:	
Ethernet	(1) x female RJ-45, PoE
SFP	(1) x SFP Slot
HDMI	(2) x HDMI Type A 19-pin, female, one HDMI input, one HDMI loop out
Audio	(1) x 5 Pin Terminal Block, Balanced L/R Audio out (1) x 3.5 mm mini stereo jack, Audio in
IR	(3) x 3.5mm mini-stereo jack, one IR-Pass, one IR-EYE, one IR-out
RS232	(1) x 5 Pin Terminal Block
USB	(1) x USB 2.0 Type-B for USB extension and KVM, (1) x USB Micro Type-B for MXNET service
DISTANCE:	
Ethernet	100 Meters/ 330 Feet over CAT5e and above
SFP and Fiber	1000BASE-SX SFP Transceiver Module (MMF, 850nm, 550m, LC, DOM) 1000BASE-LX/LH SFP 1310nm 10km Transceiver Module
ENVIRONMENTAL:	
Operating Temperature	23 to 125°F (-5 to 51°C)
Storage Temperature	-4 to 140°F (-20 to 60°C)
Operating Humidity	5-90% RH (No Condensation)
Cooling	Fanless Cooling
Acoustic Noise Level	0dB
COMPLIANCE:	
Regulatory	CE/FCC/UL
POWER:	
Max Power Consumption	6.5W
PoE (Power over Ethernet)	IEEE 802.3af (15.4W)
Power Supply Unit	Input: AC 120-240V-50/60Hz 0.8A Output: DC 12V 2A
DIMENSIONS:	
Mounting	Rack and Furniture mount support
Dimensions (Unit Only Width/Depth/Height)	mm: 200 X 104x 20 inch: 7.87 X 4.09 X 0.79
Dimensions (Packaged Width/Depth/Height)	mm: 310 X 180x 54 inch: 12.2 X 7.09 X 2.13
Weight (Unit)	1.2 LBS/0.55 KG
Weight (Packaged)	1.7 LBS/0.77 KG
Product Warranty	10 Years
Specifications subject to change without notice. Mass & dimensions are approximate. *4K60 4:4:4/4k60 4:2:2 Uses ICT Compression	

WIRING DIAGRAM



CAD DIAGRAM



MXNet 1G Encoder: AC-MXNET-1G-E

by AVPro Edge

