

4K60 JPEG2000 AV over IP Encoder/Decoder — Dante Ready

The KanexPro AVO-IPJP2K is a JPEG2000 AV over IP encoder/decoder that distributes visually lossless 4K60 4:4:4 HDMI 2.0b signals over standard 1G managed networks. A single encoder/decoder pair handles video, audio, USB KVM, bidirectional IR, RS-232, ARC/eARC audio return, relay/Digital I/O, and optional Dante AV-A on one 1G copper or fiber connection. Works with the AVO-IPCTL-JP2K IP Controller (sold separately) for matrix switching, 9x9 video wall, and KVM roaming.



Surge Protection Recommended — This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, or lightning strikes. Use of surge protection systems is highly recommended.

TABLE OF CONTENTS

1. Features	1
2. Package Contents	1
3. Specifications	2
4. Operation Controls	3-4
4.1 Encoder Panel	3
4.2 Decoder Panel	4
4.3 LED Screen & CH SELECT Operation	4
4.4 IR Pin Definition	4
5. EDID Settings	5
6. Configuration Mode Reference	5
7. Rack Mounting Instruction	6
7.1 6U V2 Rack Mounting	6
7.2 1U V2 Rack Mounting	6
8. MJPEG Substream Operation	7
8.1 Preview via Web Browser	7
8.2 VLC Media Player	7
9. Application Example	8
10. Troubleshooting	8
11. Switch Requirements	9
12. System Control — AVO-IPCTL-JP2K	9

1. FEATURES

- ✓ JPEG2000 visually lossless 4K@60Hz 4:4:4 over standard 1G managed networks — no 10G infrastructure required
- ✓ HDMI 2.0b, HDCP 2.2, 18Gbps video bandwidth
- ✓ HDR10, Dolby Vision, and HLG support
- ✓ LPCM 2.0/5.1/7.1CH, Dolby Digital/Plus/EX, Dolby TrueHD, DTS, DTS-96/24, DTS-EX, DTS-HD Master audio passthrough
- ✓ ARC, eARC, S/PDIF, and analog audio return function
- ✓ Optional Dante AV-A integration (license activated)
- ✓ USB 2.0 KVM with two-way IR and RS-232 pass-through
- ✓ 2-channel relay ports and 2-channel Digital I/O with configurable VCC (5V/12V)
- ✓ Copper (RJ45) + Fiber (SFP) with PoE 802.3af PD — single-cable deployment
- ✓ Unicast, multicast, point-to-point, matrix switching, and 9x9 video wall
- ✓ MJPEG sub-stream for real-time video preview on portable devices
- ✓ Web GUI, TCP/IP, Telnet, SSH, RS-232, IR, and front panel button control
- ✓ Works with AVO-IPCTL-JP2K IP Controller for matrix switching, video wall, and KVM roaming (sold separately)

2. PACKAGE CONTENTS

1x AVO-IPJP2K Encoder • 1x AVO-IPJP2K Decoder • 2x DC 12V/2.5A Power Adapters • 2x Mounting Ears • 1x Quick Start Guide

Recommended: AVO-IPCTL-JP2K IP Controller (sold separately) for matrix switching, video wall configuration, and KVM roaming.



3. Specifications

TECHNICAL	
Video Compression	JPEG2000
HDMI Compliance	HDMI 2.0b
HDCP Compliance	HDCP 2.2
Video Bandwidth	18Gbps
Max Resolution	4K@60Hz 4:4:4
Color Depth	Input: 8/10/12-bit — Output: 8-bit
Color Space	RGB 4:4:4, YCbCr 4:4:4 / 4:2:2 / 4:2:0
HDR Support	HDR10, Dolby Vision, HLG
HDMI Audio	LPCM 2.0/5.1/7.1CH, Dolby Digital/Plus/EX, Dolby TrueHD, DTS, DTS-96/24, DTS-EX, DTS-HD Master
Audio Return	ARC, eARC, S/PDIF, Analog
Dante	Optional AV-A (license activated)
Video Wall	Up to 9x9
Preview Stream	MJPEG sub-stream
IR Frequency	Wideband 20K–60KHz
IR Level	Default 12V, optional 5V (configurable)
ESD Protection	IEC 61000-4-2: ±8kV (air-gap) / ±4kV (contact)

CONNECTION — ENCODER	
Video I/O	1x HDMI IN (Type A) • 1x HDMI OUT loop (Type A)
Audio I/O	1x L/R Audio IN • 1x L/R Audio OUT • 1x SPDIF OUT (optical) — all 3-pin Phoenix
Network	1x LAN/PoE (RJ45) • 1x Fiber (SFP)
USB	1x USB 2.0 HOST (Type B) • 2x USB 2.0 DEVICE (Type A)
Control	1x RS-232 (3-pin Phoenix) • 2x Relay • 2x Digital I/O • 1x IR IN • 1x IR OUT (3.5mm)

CONNECTION — DECODER	
Video I/O	1x HDMI OUT (Type A)
Audio I/O	1x SPDIF IN (optical) • 1x L/R Audio IN • 1x L/R Audio OUT — all 3-pin Phoenix
Network	1x LAN/PoE (RJ45) • 1x Fiber (SFP)
USB	2x USB 1.1 DEVICE (Type A) • 2x USB 2.0 DEVICE (Type A)
Control	1x RS-232 (3-pin Phoenix) • 2x Relay • 2x Digital I/O • 1x IR IN • 1x IR OUT (3.5mm)

PHYSICAL	
Housing	Metal enclosure, Black
Dimensions (WxDxH)	8.03" × 5.35" × 1.00" (204 × 136 × 25.5mm)
Net Weight	Encoder: 1.39 lbs (631g) — Decoder: 1.38 lbs (626g)
Power Supply	AC100–240V 50/60Hz → DC 12V/2.5A CE / FCC / UL
Power Consumption	Encoder: 8.52W — Decoder: 7.08W (max)
Transmission Distance	Up to 328ft / 100m via CAT5E/6/6A/7
Operating Temperature	32–104°F (0–40°C)
Storage Temperature	–4–140°F (–20–60°C)
Humidity	20–90% RH (non-condensing)



4. Operation Controls

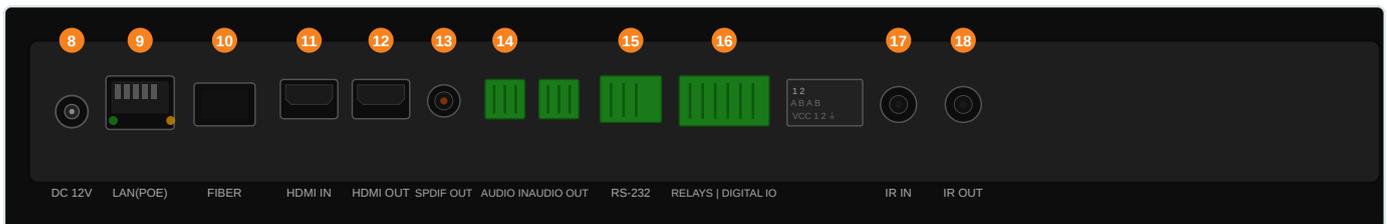
4.1 ENCODER PANEL

FRONT PANEL



#	Name	Function Description
1	RESET	Hold after power-on until POWER + LINK LEDs flash simultaneously, then release to restore factory defaults.
2	POWER LED (Red)	On: unit powered via PoE or DC 12V. Off: no power.
3	LINK LED (Green)	On: connected to decoder with active video. Flashing: connected, no video. Off: no connection.
4	LED Screen	Displays Encoder ID. Shows configuration options during setup (EDID, IP mode, IR level, audio mode, fiber/copper, multicast, audio return).
5	CH SELECT (▼/▲)	Sets Encoder ID and navigates configuration menus. Hold ▲ 5s = show IP. Hold ▲+▼ 5s = enter configuration mode.
6	USB 2.0 DEVICE ×2	Type-A. Connect USB 2.0 peripherals for KVM pass-through to decoder end.
7	USB HOST	Type-B. Connect PC host — keyboard, mouse, and USB devices at decoder are routed to this PC.

REAR PANEL



#	Name	Function Description
8	DC 12V	DC 12V/2.5A barrel jack. Also powered via PoE 802.3af from switch (PD mode).
9	LAN (PoE)	1G RJ45. Connect to managed switch (IGMP Snooping required). PoE 802.3af PD — DC adapter not needed when PoE provided.
10	FIBER	SFP slot. Insert optional fiber module for long-distance or fiber-switch connectivity.
11	HDMI IN	HDMI 2.0b input (Type A). Source device input — 4K@60Hz 4:4:4, HDCP 2.2, 18Gbps.
12	HDMI OUT	HDMI loop output (Type A). Local display monitoring of source signal.
13	SPDIF OUT	Optical S/PDIF output. Carries ARC/S/PDIF audio returned from decoder in C2C audio return mode.
14	AUDIO IN/OUT	3-pin Phoenix. IN: Analog audio input — embeds into HDMI or loops to AUDIO OUT. OUT: Extracted LPCM audio or Decoder AUDIO IN return (unicast).
15	RS-232	3-pin Phoenix. RS-232 pass-through and local serial control.
16	RELAYS DIGITAL IO	2-ch relay (1A/30VDC max) + 2-ch GPIO. Output control or input detection up to 12V. VCC: 12V default, 5V optional.
17	IR IN	3.5mm jack. Receives local IR commands to pass to decoder end. Level: 12V default, 5V optional.
18	IR OUT	3.5mm jack. Sends IR commands from decoder end to control source devices.



4.2 DECODER PANEL

FRONT PANEL



#	Name	Function Description
1	RESET	Hold after power-on until POWER + LINK LEDs flash simultaneously, then release to restore factory defaults.
2	POWER LED (Red)	On: unit powered via PoE or DC 12V. Off: no power.
3	LINK LED (Green)	On: connected to encoder with active video. Flashing: connected, no video. Off: no connection.
4	LED Screen	Shows selected Encoder ID. During configuration displays scaling, IP mode, IR level, audio mode, multicast settings.
5	CH SELECT (▼/▲)	Press ▲/▼ directly to select encoder channel (000–762). Hold ▲ 5s for IP address. Hold ▲+▼ 5s for configuration mode.
6	USB 1.1 DEVICE ×2	Type-A. Connect keyboard/mouse for KVM — routed to USB HOST on encoder.
7	USB 2.0 DEVICE ×2	Type-A. Connect USB 2.0 peripherals (flash drive, USB camera) for KVM pass-through.

REAR PANEL (PORTS 8–17 SAME AS ENCODER EXCEPT: SPDIF IN REPLACES SPDIF OUT; HDMI OUT ONLY, NO HDMI IN/LOOP)

#	Name	Function Description
8	DC 12V	DC 12V/2.5A or PoE 802.3af PD from switch.
9	LAN (PoE)	1G RJ45. Connect to managed switch. PoE 802.3af PD supported.
10	FIBER	SFP slot. Receive video from encoder via fiber module.
11	HDMI OUT	HDMI 2.0b output. Connect to display — 4K@60Hz 4:4:4 decoded output.
12	SPDIF IN	Optical S/PDIF input. Feeds S/PDIF audio into return path when both units set to S/PDIF return mode.
13–17	AUDIO / RS-232 / RELAYS / IR	Same ports and functions as Encoder rear panel items 14–18. See page 3.

4.3 LED SCREEN & CH SELECT OPERATION

Operation	Steps
View IP Address	Hold ▲ for 5 seconds. Screen shows IP mode then address octets in sequence.
Enter Config Mode	Hold ▲+▼ simultaneously for 5 seconds. “CFN” appears on screen.
Set Device ID	Config page 1. Hold ▲+▼ 5s to enter edit. Press ▲/▼ to select ID (000–762). Hold ▲+▼ 5s to confirm. Unit reboots.
Set EDID (Encoder)	Config page 2. Shows E00–E23 (see EDID table p.5) or COP (copy from display). Default: E15.
Set Output Scale (Decoder)	Config page 2. S00 = bypass. S01–S08 = forced resolution. S09+ = PC resolutions.
Set IR Level	Config page 3. IR1 = 5V • IR2 = 12V (default).
Set Audio Mode	Config page 4. HDI = HDMI audio embedding (default) • ANA = Analog audio embedding.
Set IP Mode	Config page 5. IP1 = Static (169.254.100.254) • IP2 = DHCP • IP3 = Auto IP (default). Unit reboots.
Set Fiber/Copper	Config page 6. CPP = Copper (default) • FIB = Fiber. Unit reboots.
Set Multicast Mode	Config page 7. CA1 = Unicast (default) • CA2 = Multicast. Unit reboots.
Set Audio Return	Config page 8. C2C = eARC/ARC/SPDIF return (default) • A2A = Analog audio return (unicast only).



5. EDID Settings

EDID is configured on the Encoder only. Default: **E15** (4K2K60 444 Stereo Audio 2.0 SDR). To copy EDID from a connected display, select **COP** in config page 2 while in CA1 unicast mode, then re-plug the Decoder HDMI cable.

ID	EDID Description	ID	EDID Description
E00	1080P_Stereo_Audio_2.0_SDR	E12	4K2K60_420_Stereo_Audio_2.0_SDR
E01	1080P_DolbyDTS_5.1_SDR	E13	4K2K60_420_DolbyDTS_5.1_SDR
E02	1080P_HD_Audio_7.1_SDR	E14	4K2K60_420_HD_Audio_7.1_SDR
E03	1080I_Stereo_Audio_2.0_SDR	E15	4K2K60_444_Stereo_Audio_2.0_SDR (Default)
E04	1080I_DolbyDTS_5.1_SDR	E16	4K2K60_444_DolbyDTS_5.1_SDR
E05	1080I_HD_Audio_7.1_SDR	E17	4K2K60_444_HD_Audio_7.1_SDR
E06	3D_Stereo_Audio_2.0_SDR	E18	4K2K60_444_Stereo_Audio_2.0_HDR_10-bit
E07	3D_DolbyDTS_5.1_SDR	E19	4K2K60_444_DolbyDTS_5.1_HDR_10-bit
E08	3D_HD_Audio_7.1_SDR	E20	4K2K60_444_HD_Audio_7.1_HDR_10-bit
E09	4K2K30_444_Stereo_Audio_2.0_SDR	E21	DVI_1280x1024
E10	4K2K30_444_DolbyDTS_5.1_SDR	E22	DVI_1920x1080
E11	4K2K30_444_HD_Audio_7.1_SDR	E23	DVI_1920x1200

6. Configuration Mode Reference

Enter config mode: hold ▲+▼ 5s (“CFN”). Navigate pages with ▲/▼. Enter each setting: hold ▲+▼ 5s (value flashes), select with ▲/▼, confirm with ▲+▼ 5s. Hold ▼ to exit any page.

Config Page	Setting	Options	Default
Page 1	Device ID	000–762	000
Page 2 (ENC)	EDID Mode	E00–E23, COP (copy from display)	E15
Page 2 (DEC)	Output Scaling	S00 bypass, S01–S08 HDTV, S09+ PC modes	S00
Page 3	IR Level	IR1 = 5V • IR2 = 12V	IR2
Page 4	Audio Embedding	HDI = HDMI audio • ANA = Analog audio	HDI
Page 5	IP Mode	IP1 = Static • IP2 = DHCP • IP3 = Auto IP	IP3
Page 6	Fiber/Copper Mode	CPP = Copper • FIB = Fiber	CPP
Page 7	Multicast Mode	CA1 = Unicast • CA2 = Multicast	CA1
Page 8	Audio Return Mode	C2C = eARC/ARC/SPDIF • A2A = Analog (unicast only)	C2C

Note — Device ID and IP Mode cannot be changed in Controller Box mode. Audio return mode cannot be changed via front panel in multicast mode. C2C and A2A must match on both encoder and decoder for audio return to function. A2A mode is available in unicast mode only.



7. Rack Mounting Instruction

7.1 6U V2 RACK MOUNTING

The AVO-IPJP2K can be mounted in a standard 6U V2 rack (contact your supplier for 6U V2 rack availability). Up to 6, 8, or 10 units can be installed vertically.

Step	Instruction
Step 1	Use the included screws to attach the two mounting ears to the sides of the encoder or decoder unit.
Step 2	Insert the unit with mounting ears into a 6U V2 rack slot. Units are installed vertically. Up to 6, 8, or 10 units fit per rack.
Step 3	Use screws to secure the mounting ears to the rack frame to complete installation.

7.2 1U V2 RACK MOUNTING

The AVO-IPJP2K can also be mounted in a standard 1U V2 rack. Two units can be installed side-by-side horizontally in a single 1U space using the optional 1U V2 rack brackets (sold separately).

Step	Instruction
Step 1	Use the included screws to fix a 1U V2 rack bracket to each of the two units respectively.
Step 2	Join the two 1U V2 rack brackets together using the provided screws so that both units are held side by side.
Step 3	Fasten the screws between the two brackets to secure the assembly, then insert into a standard 1U rack slot and secure to the rack.

Note — Always ensure adequate ventilation around mounted units. The AVO-IPJP2K operating temperature is 32–104°F (0–40°C). Do not block the sides of the enclosure. When powered via PoE, ensure the network switch PoE budget supports all connected units simultaneously.



8. MJPEG Substream Operation

The AVO-IPJP2K encoder generates a real-time MJPEG sub-stream that can be viewed in a web browser or media player for live preview of encoder video feeds without affecting the main JPEG2000 stream.

8.1 PREVIEW VIA WEB BROWSER

Step	Instruction
Step 1	Connect encoder, decoder, and PC to the same 1G managed switch. Connect HDMI source to encoder and apply power.
Step 2	Find the encoder IP address: hold ▲ on front panel for 5 seconds to read IP from LED screen, or use a Bonjour/mDNS browser tool. Encoder host names start with AST-ENC ; decoder host names start with AST-DEC .
Step 3	Set the PC IP address to the same network segment as the encoder.
Step 4	Open a web browser and enter the MJPEG stream URL: http://<IP>:<PORT>/?action=stream The sub-stream will display at default resolution (640×360 @ 30fps).
Step 5	To customize the stream, append parameters to the URL: http://<IP>:<PORT>/?action=stream&w=<W>&h=<H>&fps=<FPS>&bw=<BW>

MJPEG STREAM URL PARAMETERS	
w	Image width in pixels. Default: 640. Use 'x' to keep current value.
h	Image height in pixels. Default: 360. Use 'x' to keep current value.
fps	Frame rate (frames per second). Default: 30. Use 'x' to keep current value.
bw	Maximum bandwidth in Kbps. Default: 8000 (8Mbps). Use 'x' to keep current value.
as	Aspect ratio: 0 = stretch to W×H (default); 1 = maintain original ratio with letterbox/pillarbox.
mq	Minimum image quality (10–100, higher = better). Default: 10. If quality drops below this value, frames are dropped.

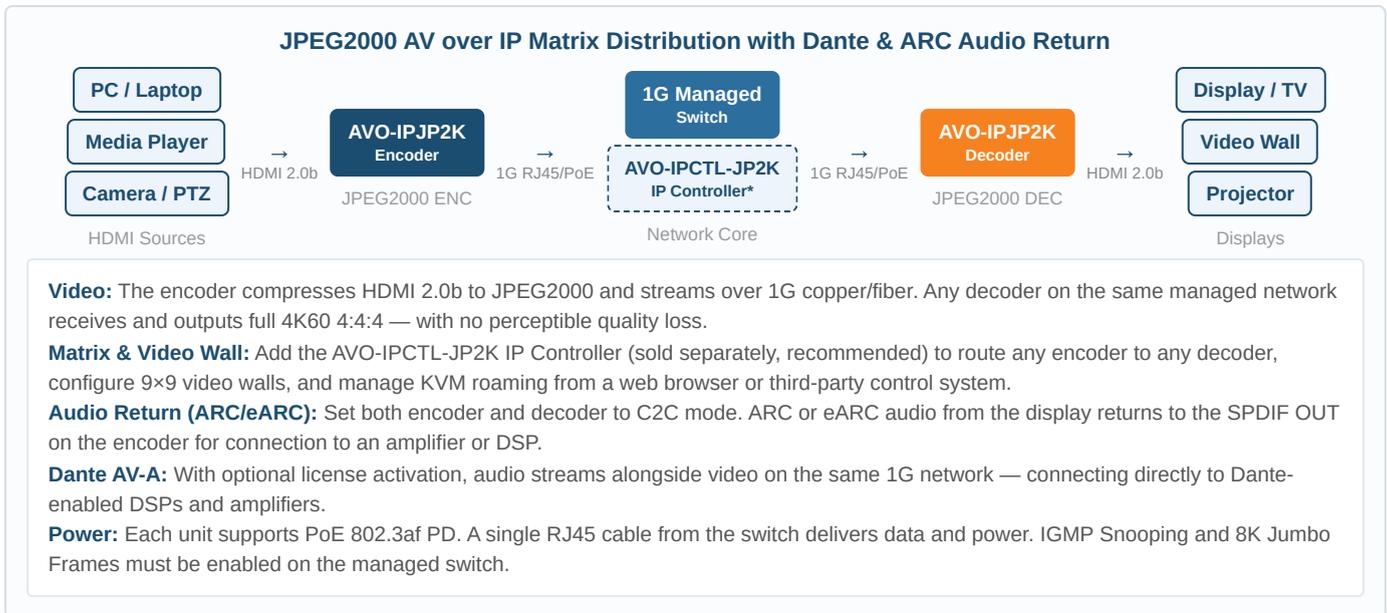
8.2 VLC MEDIA PLAYER

Step	Instruction
Step 1	Complete steps 1–3 from Section 8.1 (connect hardware and find encoder IP address).
Step 2	Open VLC Media Player on the PC. Click Media > Open Network Stream .
Step 3	Enter the MJPEG stream URL in the Network URL field: http://<IP>:<PORT>/?action=stream Click Play to start preview.
Step 4	To verify stream parameters, open Tools > Codec Information > Statistics in VLC to check current bitrate. Note: bitrate fluctuation during playback is normal.

Note — The MJPEG sub-stream is generated independently of the main JPEG2000 stream and does not affect 4K60 video distribution performance. It is useful for previewing all encoder sources from the AVO-IPCTL-JP2K controller web GUI or third-party control applications.



9. Application Example



10. Troubleshooting

Q: No video on the decoder display?

A: Verify the managed switch has IGMP Snooping and 8K Jumbo Frames enabled. Confirm both units are on the same network segment. Check that the decoder CH SELECT screen shows the correct encoder ID. Try setting the decoder output scaling to S00 (bypass) or S02 (1080P60) for compatibility testing.

Q: No audio return from display (ARC/eARC not working)?

A: Both encoder and decoder must be set to C2C audio return mode (Config page 8). Use an ARC-enabled amplifier on the encoder HDMI IN port and an ARC/eARC TV on the decoder HDMI OUT port. Enable ARC in the TV settings. In multicast mode, audio return mode must be set via the AVO-IPCTL-JP2K or API commands, not front panel buttons.

Q: USB KVM devices not detected at encoder?

A: Connect keyboard/mouse to USB 1.1 DEVICE ports on the decoder front panel. Connect the target PC to the USB HOST (Type-B) port on the encoder rear panel. Ensure both units are in unicast (CA1) mode for KVM roaming; multicast mode does not support KVM. The AVO-IPCTL-JP2K is required for KVM roaming across multiple encoder/decoder pairs.

Q: How do I access the Web GUI?

A: In Auto IP mode (IP3, default), the unit self-assigns a 169.254.xxx.xxx address. Hold ▲ for 5 seconds on the front panel to read the IP address from the LED screen. Open a browser and navigate to that address. For static IP, set IP1 mode via Config page 5 (default: 169.254.100.254).

Q: Dante AV-A is not available in the web GUI?

A: Dante AV-A requires a factory license activation. Contact KanexPro sales (sales@kanexpro.com) to obtain a license key for your unit's MAC address. The feature is not enabled by default.



11. Switch Requirements

The AVO-IPJP2K requires a 1G managed network switch. The following features must be enabled on the switch:

- ✓ Layer 3 / managed network switch (unmanaged switches are not supported)
- ✓ Gigabit (1G) bandwidth on all ports used for AV over IP endpoints
- ✓ 8K Jumbo Frame capability (8192-byte MTU or higher)
- ✓ IGMP Snooping enabled on all VLANs carrying AV traffic

The following switch models are verified compatible and recommended:

MANUFACTURER	MODEL
Cisco	SG500 Series
Cisco	Catalyst Series
Huawei	S5720S-28X-PWR-LI-AC
ZyXEL	GS2210 Series
Luxul	AMS-4424P

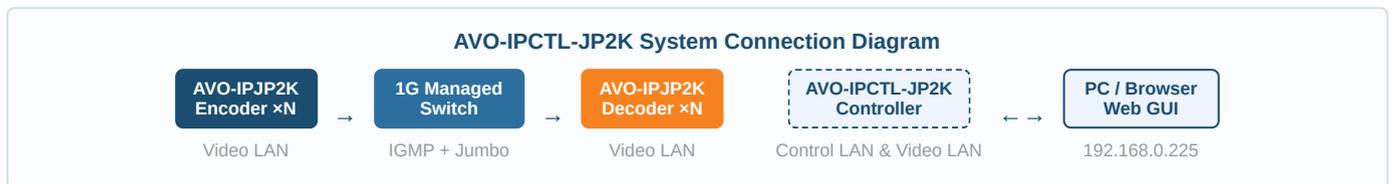
Note — When the network switch does not support PoE, the Encoder, Decoder, and AVO-IPCTL-JP2K Controller Box must each be powered by their included DC power adapters.

12. System Control — AVO-IPCTL-JP2K IP Controller

The AVO-IPJP2K can be controlled by the **AVO-IPCTL-JP2K IP Controller** (sold separately) or a third-party control system. The AVO-IPCTL-JP2K provides a web-based GUI for matrix switching, 9×9 video wall configuration, KVM roaming, and full system management. For complete system control setup, refer to the AVO-IPCTL-JP2K User Manual.

CONNECTION

Connect the AVO-IPCTL-JP2K to the same 1G managed switch as the encoders and decoders. Use the **Control LAN** port of the Controller Box for the web GUI connection. The **Video LAN** port is managed automatically by the controller and does not require manual configuration.



ACCESSING THE CONTROLLER WEB GUI

Scenario	Steps
DHCP available (default)	Connect Controller Box Control LAN port to network. Set PC to "Obtain IP automatically." Open browser and navigate to http://controller.local or the DHCP-assigned IP address.
No DHCP server	Controller defaults to 192.168.0.225 . Set PC IP to same subnet (e.g., 192.168.0.88). Navigate to http://192.168.0.225 in browser.
Video LAN port	No manual configuration needed. The Controller manages Video LAN port settings automatically.
No PoE switch	Power Encoder, Decoder, and Controller Box via included DC 12V/2.5A power adapters.

CONTROLLER CAPABILITIES

- ✓ Matrix switching — route any encoder to any decoder via web GUI or API
- ✓ Video wall configuration — up to 9×9 (81 displays) with bezel compensation
- ✓ KVM roaming — move keyboard/mouse control between encoder zones
- ✓ Third-party control — RS-232, TCP/IP, and API command support (Crestron, AMX, QSC compatible)
- ✓ MJPEG sub-stream preview — view all encoder feeds in the web GUI before switching
- ✓ Dante AV-A management — configure audio routing alongside video (license required)

Note — Device ID and IP Mode on encoders/decoders cannot be modified via front panel buttons when the system is operating in Controller Box mode. All routing and configuration is managed through the AVO-IPCTL-JP2K web GUI or API commands.

