4K60 JPEG2000 AV over IP BYOD Encoder — USB-C & HDMI

Based on JPEG2000 technology with ASPEED AST1530 codec. Features HDMI and USB-C dual inputs with auto-switching and up to 4K60 4:4:4 resolution. USB-C IN 1 supports video/audio/USB data transmission; USB-C IN 2 delivers PD charging up to 100W back to the source device. Supports ARC/eARC/S/PDIF/analog audio return, USB 2.0 KVM, 1G Ethernet, bidirectional RS-232, two-way IR, PoE, and optional Dante AV-A. Encoder only.

Surge Protection Recommended — Use surge protection systems to protect sensitive electrical components.

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2. FEATURES

- ✓ HDMI and USB-C dual inputs with automatic source switching
- ✓ USB-C IN 1: video/audio/USB data from laptop — USB-C IN 2: PD charging up to 100W back to source
- ✓ JPEG2000 visually lossless 4K60 4:4:4 distribution over standard 1G — no 10G required
- ✓ HDR10, Dolby Vision, HLG support on input and output
- ✓ LPCM 2.0/5.1/7.1CH, Dolby Atmos, DTS:X, Dolby TrueHD, DTS-HD Master, and all major audio formats
- ✓ ARC, eARC, S/PDIF, and analog audio return
- ✓ Optional Dante AV-A (license activated)
- ✓ USB 2.0 KVM, two-way IR, RS-232, CEC — HDCP 2.2, 18Gbps, unicast/multicast, video wall up to 9×9
- ✓ PoE (802.3at PD) or DC 12V/2.5A — MJPEG sub-stream preview — Encoder only

3. Package Contents 4. Specifications

1× AVO-IPJP2KUC-ENC Encoder | 1× IR Receiver cable (1.5m) | 1× DC 12V/2.5A locking power supply | 2× Mounting ears | 4× Machine screws (KM3×4)

SPECIFICATION	
	Technical
HDMI / HDCP	HDMI 2.0b | HDCP 2.2 | 18Gbps | JPEG2000 | 1G network
Input Resolution	480i–1080p50/60, 4K×2K@24/30Hz, 4K2K@50/60Hz 4:4:4
Output Resolution	Auto, 4K60/50, 4K30/25, 1920×1200, 1080p60/50, 1360×768, 1280×800, 1280×720, 1024×768
Color Depth / Space	8/10/12-bit | RGB, YCbCr 4:4:4/4:2:2/4:2:0
HDR Support	HDR10, Dolby Vision, HLG
Audio Formats	LPCM 2.0/5.1/7.1CH, Dolby Digital/Plus/EX, Dolby TrueHD, Dolby Atmos, DTS, DTS-96/24, DTS-EX, DSD, DTS High Res, DTS-HD Master, DTS:X
Audio Sample Rate	32–192kHz | SNR: 96dB@0dB, 1kHz | Freq Response: ±0.146dB, 20Hz–20kHz
Audio Return	ARC, eARC, S/PDIF, Analog (analog return: unicast only)
Dante	Optional AV-A (license activated)
Video Wall / Preview	Up to 9×9 (81 displays) | MJPEG sub-stream
	Connection
Video Input	1× HDMI IN (Type A) | 1× USB-C IN 1 — video/audio/USB data (Type C) | 1× USB-C IN 2 — PD charging up to 100W (Type C)
Video Output	1× HDMI OUT loop (Type A)
Audio	1× L/R Audio IN (3-pin Phoenix, max 1Vrms) | 1× L/R Audio OUT | 1× S/PDIF OUT (optical)
Network	1× LAN/PoE (RJ45, 802.3at PD)
USB	1× USB 2.0 HOST (Type B) | 2× USB 2.0 DEVICE (Type A)
Control	1× RS-232 (3-pin) | 2× Relay | 2× Digital I/O | 1× IR IN | 1× IR OUT
	Control & Power
Methods	Two-way IR, RS-232, CEC, TCP/IP, Web GUI, Telnet, SSH | Controller: AVO-IPCTL-JP2K (sold separately)
Power	PoE 802.3at PD or DC 12V/2.5A | IR: default 12V, optional 5V | 20K–60KHz
Transmission	Up to 328ft / 100m via CAT6/6A/7
	Physical
Housing / Color	Metal enclosure, Black
Dimensions (W×D×H)	8.03″ × 5.35″ × 1.00″ (204 × 136 × 25.5mm)
Net Weight	1.39 lbs (632g)
Power Supply	AC100–240V 50/60Hz | Output: DC 12V/2.5A (CE/FCC/UL)
Temperature / Humidity	Operating: 32–104°F (0–40°C) | Storage: -4–140°F | 20–90% RH non-condensing

5. Operation Controls and Functions

5.1 ENCODER PANEL

Front Panel

#	Name	Function
1	**RESET**	Hold until POWER + LINK LEDs flash simultaneously to reset to factory defaults.
2	**POWER LED (Red)**	On: powered via PoE or DC. Off: no power supplied.
3	**LINK LED (Green)**	On: connected with active video. Flashing: connected, no video. Off: not connected.
4	**LED Screen**	Shows Encoder ID by default. Displays configuration options during setup.
5	**CH SELECT (▲▼)**	UP/DOWN buttons for setting Encoder ID and navigating configuration pages.
6	**USB 2.0 DEVICE ×2**	Connect USB 2.0 peripherals (keyboard, mouse, USB drive).
7	**USB HOST**	USB Type B — connect to PC/laptop for KVM host functionality.

Rear Panel

#	Name	Function
8	**DC 12V**	DC 12V/2.5A input. Not required when PoE switch is used.
9	**LAN (PoE)**	1G RJ45 — transmits JPEG2000 video. Supports PoE 802.3at PD.
10	**USB-C IN 1**	USB-C video/audio/USB data input from laptop. Supports DisplayPort Alt Mode. Source auto-switches to this input when signal is detected.
11	**USB-C IN 2 ⚡**	USB-C power delivery input — connect PD adapter to deliver up to 100W charging back to the USB-C IN 1 source device.
12	**HDMI IN**	HDMI 2.0b input — connect HDMI source device. Auto-switches when USB-C input is inactive.
13	**HDMI OUT**	HDMI loop output — connect local confidence monitor or display.
14	**SPDIF OUT**	Optical output — outputs ARC/S/PDIF audio returned from decoder in C2C mode.
15	**AUDIO IN/OUT**	L/R Audio IN: analog audio embedded into HDMI. L/R Audio OUT: de-embedded LPCM audio.
16	**RS-232**	3-pin Phoenix — RS-232 pass-through and local control.
17	**RELAYS | DIO**	2× relay ports (1A 30VDC) + 2× GPIO with configurable VCC output (5V/12V).
18	**IR IN / OUT**	3.5mm IR ports. Level: default 12V, configurable 5V. Wideband 20K–60KHz.

5.2 IR PIN DEFINITION

IR IN and IR OUT use 3.5mm audio jack. Pin assignment: **Tip** = IR signal | **Ring** = VCC (5V or 12V selectable) | **Sleeve** = GND. Default IR level: 12V. Configurable to 5V via front panel page 3 or API.

FRONT PANEL CONFIGURATION GUIDE

Hold UP+DOWN 5 seconds → Config Mode (LED: **CFN**). UP/DOWN to navigate pages. Hold UP+DOWN 5s → edit mode (value flashes). UP/DOWN to select. Hold UP+DOWN 5s to confirm. Unit reboots where noted.

PAGE	SETTING	OPTIONS	DEFAULT
1	Device ID	000–762 (reboot)	000
2	EDID	E00–E23 (E15=4K60 444 Stereo SDR default)	E15
3	IR Mode	IR1=5V | IR2=12V	IR2
4	Audio Embedding	HDI=HDMI audio | ANA=Analog audio	HDI
5	IP Mode	IP1=Static (169.254.100.254) | IP2=DHCP | IP3=Auto IP (reboot)	IP3
6	Multicast Mode	CA1=Unicast | CA2=Multicast (reboot)	CA1
7	Audio Return	C2C=eARC/ARC/SPDIF return | A2A=Analog return (unicast only, reboot)	C2C

Note — Device ID and IP Mode cannot be modified via front panel in Controller Box mode. Audio return cannot be changed via front panel in Controller Box or Multicast mode.

6. Signal Switching Mode

The AVO-IPJP2KUC-ENC supports two input switching modes for the HDMI and USB-C inputs:

Mode	Behavior
Auto Switch (default)	Encoder automatically switches to whichever input has an active signal. When USB-C IN 1 is connected and detected, it takes priority. When USB-C is disconnected, the encoder switches back to HDMI IN. When neither input is active, the last active input is held.
Manual Switch	Input is fixed to HDMI IN or USB-C IN 1 regardless of signal presence. Configured via Web GUI (Functions page) or API command.

Note — Switching mode can be set through API commands or the Web GUI configuration of the Controller Box. In Auto Switch mode, briefly disconnecting and reconnecting USB-C will trigger a source switch — allow 2–3 seconds for re-detection.

USB-C IN 2 (Charging) — USB-C IN 2 is exclusively for power delivery (up to 100W PD). It does not carry video or data. Connect a USB-C PD power adapter to USB-C IN 2 to enable laptop charging via USB-C IN 1.

7. Rack Mounting Instruction

7.1 6U V2 RACK MOUNTING

Attach the included mounting ears to the product using the provided screws. Insert the product vertically into a standard 6U V2 rack — 6, 8, or 10 units can be installed per rack. Secure mounting ears to the rack rails with screws.

Step 1: Use included screws to fix two mounting ears on the product sides.

Step 2: Insert the product with mounting ears vertically into the 6U V2 rack.

Step 3: Use screws to fix mounting ears to the rack to complete mounting.

7.2 1U V2 RACK MOUNTING

Attach 1U V2 rack brackets to two units individually. Join the two brackets together with screws so the units sit side by side. Fasten the assembly into a standard 1U rack slot (2 units per 1U).

Step 1: Use included screws to fix 1U V2 rack brackets on two products respectively.

Step 2: Use screws to fix the two 1U V2 rack brackets together.

Step 3: Fasten screws between the brackets to secure both units in a 1U assembly.

Note — 6U V2 and 1U V2 rack accessories are sold separately. Contact your KanexPro dealer for availability. Use only included screws for mounting ears.

8. Web GUI Operation Guide

8.1 PREPARATION BEFORE ENTERING THE SYSTEM

Step 1: Connect the Encoder and PC to the same network switch. Connect HDMI and/or USB-C source, display, and power.

Step 2: Hold the UP button on the front panel for 5 seconds to display the current IP address on the LED screen.

Step 3: Set the PC IP address to the same network segment as the encoder.

Step 4: Enter the encoder's IP address in a web browser to access the Web GUI.

8.2 FUNCTIONS AND OPERATION

Section	Function
System	Firmware version, firmware update, standby/logo image upload, factory reset, reboot, EDID configuration, console API commands, device statistics.
Video Wall	Basic Setup (bezel, gap, size, position, stretch, rotate, flip) and Advanced Setup for video wall configurations up to 9×9.
Network	Set IP mode (Auto IP / DHCP / Static) and casting mode (unicast/multicast).
Functions	Configure video input mode (Auto Switch / Manual HDMI / Manual USB-C), USB mode, serial port, and audio modes.
802.1X	Enable 802.1X network authentication and server certificate validation.
Sub-Streaming	Preview encoder video feed in real time via MJPEG sub-stream.

IP Address Display — Hold UP button 5 seconds: LED shows IP mode (IPx) then each IP octet in sequence.

9. MJPEG Substream Operation Introduction

9.1 MJPEG SUBSTREAM PREVIEW/CONFIGURATION VIA WEB PAGE

The AVO-IPJP2KUC-ENC supports real-time MJPEG sub-stream preview via browser or VLC. Use a Bonjour browser (e.g., zeroconfServiceBrowser) to discover the encoder IP. Encoder host names start with **AST-ENC**.

Steps 1–3: Connect encoder and PC to same switch. Find IP via Bonjour tool. Set PC to same subnet.

Step 4: Enter `http://[IP]:PORT/?action=stream` in browser. Stream displays at default 640×360 @ 30fps.

Step 5: Append parameters to customize:

PARAMETER	DESCRIPTION	DEFAULT
w / h	Width / Height in pixels	640 / 360
fps	Frame rate (frames/second)	30
bw	Max bandwidth (Kbps)	8000 (8Mbps)
as	Aspect ratio: 0=stretch | 1=letterbox/pillarbox	0
mq	Min quality (10–100)	10

9.2 VLC MEDIA PLAYER INSTRUCTION

After completing Steps 1–3 above, open VLC on PC.

Step 1: Click **Media** → **Open Network Stream**.

Step 2: Enter the MJPEG URL: `http://[IP]:PORT/?action=stream`

Step 3: Click **Play**. Stream begins at default resolution.

Step 4: Use **Tools** → **Codec Information** for stream details. Use **Tools** → **Statistics** to monitor bitrate.

> **Note —** Bitrate will fluctuate during monitoring — this is normal for MJPEG variable bitrate streams.

10. Switch Model

The network switch must support: Layer 3 / managed, Gigabit (1G) bandwidth, 8K Jumbo Frame (8192-byte MTU), IGMP Snooping on all VLANs carrying AV traffic.

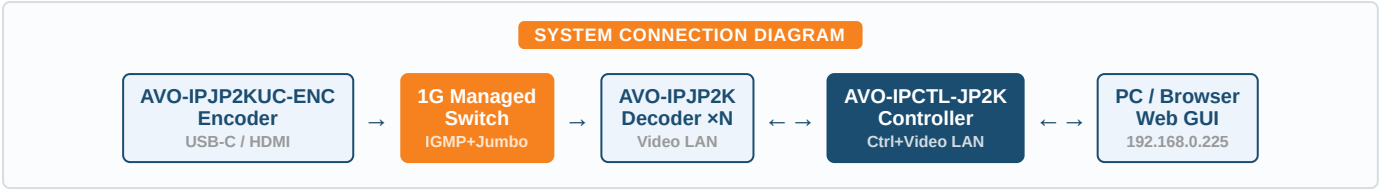
Manufacturer	Recommended Model
Cisco	SG500 Series
Cisco	Catalyst Series
Huawei	S5720S-28X-PWR-LI-AC
ZyXEL	GS2210 Series
Luxul	AMS-4424P

> **Note —** When the network switch does not support PoE, the encoder and AVO-IPCTL-JP2K must be powered by included DC power adapters.

11. 4K over IP System Control

The AVO-IPJP2KUC-ENC can be controlled by the **AVO-IPCTL-JP2K Controller Box** (sold separately) or a third-party control system. Refer to the AVO-IPCTL-JP2K User Manual for full system control setup.

The Controller Box has two LAN ports — Video LAN and Control LAN. Recommended setup: connect Video LAN and all encoders/decoders to one managed switch; connect Control LAN and PC to another. Controls from Control LAN are bridged to Video LAN by the controller.



Accessing the Controller Web GUI

Scenario	Steps
DHCP available (default)	Connect Control LAN to network. Set PC to "Obtain IP automatically." Navigate to **http://controller.local** or DHCP-assigned IP.
No DHCP server	Controller defaults to **192.168.0.225**. Set PC to same subnet. Navigate to **http://192.168.0.225**.
No PoE switch	Power encoder and controller via included DC 12V/2.5A adapters.

Controller Capabilities

- ✓ Matrix switching — route any encoder to any decoder via web GUI or API
- ✓ Video wall — up to 9×9 (81 displays) with bezel compensation
- ✓ KVM roaming — move keyboard/mouse between encoder zones
- ✓ Third-party control — RS-232, TCP/IP, API (Crestron, AMX, QSC compatible)
- ✓ MJPEG sub-stream preview — view all encoder feeds before switching
- ✓ Dante AV-A management (license required)
- ✓ Input switching — set Auto/Manual USB-C/HDMI mode per encoder

Note — Device ID and IP Mode cannot be modified via front panel in Controller Box mode. Only Control LAN connected while Video LAN floating is not allowed.

12. Application Example

BYOD CONFERENCE ROOM — USB-C LAPTOP SOURCE

Single USB-C cable: video + USB KVM + PD 100W charging. JPEG2000 distributes 4K60 to all decoder endpoints.

BYOD Setup: Presenter connects USB-C cable to laptop — auto-switches to USB-C input, starts distributing 4K60 JPEG2000 to all decoder endpoints, routes KVM via USB HOST, and charges the laptop at up to 100W. When the presenter disconnects, the encoder auto-switches back to HDMI IN (if connected). No IT support required.

HDMI SOURCE MODE — FIXED AV SOURCE

Standard HDMI source connected. USB-C inactive. Operates identically to AVO-IPJP2K encoder.

HDMI Mode: When no USB-C source is connected, the encoder operates in HDMI input mode — identical to any other AVO-IPJP2K encoder. Can be set to Manual HDMI via Web GUI to prevent auto-switching.

DUAL-MODE ROOM — AUTO-SWITCH BETWEEN HDMI & USB-C

Auto-Switch: Room has a resident HDMI PC and a BYOD USB-C connection point. When a presenter plugs in USB-C, the encoder auto-switches. When they leave, it reverts to HDMI. AVO-IPCTL-JP2K controller manages routing across all rooms.