4K60 4:4:4 JPEG2000 AV over IP Encoder — Dante Dual LAN with Contact Control

Separate Dante Audio from JPEG2000 Video on Two Copper LANs — Relay/Digital I/O, RS-232 & ARC/eARC over Standard 1G

Distributes one HDMI source as visually lossless 4K60 4:4:4 across a matrix, video wall, or KVM system over the standard 1G copper network you already run. The encoder is a black metal endpoint powered by standard PoE or local DC 12V/2.5A, drawing 9.12W maximum, and folds dual RJ45 LAN ports, an HDMI loop-out, RS-232, IR, CEC, USB 2.0, and relay/digital-I/O contact control into a single rack-mountable device. It is the right choice for corporate, higher-education, control-room, and house-of-worship installations where full-chroma 4K60, Dante audio separation, and endpoint control matter more than the cost and switch replacement of a 10GbE/SDVoE fabric.

The AVO-IPJP2KD-ENC covers point-to-point, full matrix switching, and video wall up to 9x9 with intelligent video-wall class management, unicast and multicast, alongside USB 2.0 KVM, RS-232, bidirectional IR, CEC, and two relay plus two digital-I/O contact ports for room automation. Control runs through the front-panel buttons, IR, RS-232, TCP/IP, and a built-in web GUI with Telnet and SSH, and Dante AV-A is enabled by license activation rather than as a separate hardware SKU. Its defining feature is a dual copper LAN design: LAN Mode 2 carries JPEG2000 video on the PoE LAN 1 while Dante audio runs on LAN 2, physically separating the audio network from the video transport, or LAN Mode 1 consolidates both streams on LAN 1. Matching JPEG2000 decoder sold separately.

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.

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1. Features

- ✓ HDCP 2.2 compliant
- ✓ Supports 18Gbps video bandwidth
- ✓ Input and output video resolution up to 4K60 4:4:4, as specified in HDMI 2.0b
- ✓ Signal transmission distance extendable up to 328ft / 100m over CAT6/6A/7 cable
- ✓ Transmits video, analog/digital audio, IR, RS-232, CEC, and USB 2.0 over Ethernet
- ✓ ARC/eARC/S-PDIF/analog audio return transmission
- ✓ Dante AV-A mode supported when license-activated
- ✓ Supports analog/Dante audio embedding and analog/Dante audio de-embedding
- ✓ Channel configuration via front-panel buttons and LED screen
- ✓ Built-in two-channel relay ports and two-channel digital-I/O ports for contact control
- ✓ Supports unicast and multicast
- ✓ Supports point-to-point, video matrix, and video wall (up to 9x9)
- ✓ Intelligent video-wall class management
- ✓ Built-in dual copper LAN ports with two working modes: LAN Mode 1 transmits both the JPEG2000 video stream and the Dante audio stream through the LAN 1 (PoE) port; LAN Mode 2 (default) transmits the JPEG2000 video stream through the LAN 1 (PoE) port and the Dante audio stream through the LAN 2 port
- ✓ MJPEG substream for real-time video preview on portable devices
- ✓ Operates on a 1G managed network switch
- ✓ Standard PoE (PD mode) power
- ✓ Built-in web-page configuration and control, plus Telnet and SSH
- ✓ HDMI 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
- ✓ Flexible control via front-panel buttons, IR, RS-232, TCP/IP, and web GUI
- ✓ Smart networking design for easy and flexible installation

2. Specifications

VIDEO	
HDMI Compliance	HDMI 2.0b
HDCP Compliance	HDCP 2.2
Video Bandwidth	18Gbps
Video Compression Standard	JPEG2000
Video Network Bandwidth	1G
Video Resolution	Up to 4K@60Hz 4:4:4
Color Depth	Input: 8/10/12-bit (1080p@60Hz); Output: 8-bit
Color Space	RGB, YCbCr 4:4:4 / 4:2:2, YUV 4:2:0
HDR	Supported on both input and output
AUDIO	
HDMI 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	44.1–192kHz

continued

Dante	Dante AV-A supported when license-activated
SIGNAL & TRANSMISSION	
USB Bandwidth	USB 2.0 device to host: 480Mbps
Transmission Distance	100m over CAT6/6A/7
HDMI Cable Length vs. Resolution	4K60: 16ft / 5m; 4K30: 32ft / 10m; 1080p60: 50ft / 15m (premium high-speed HDMI recommended)
IR Level	12V default, 5V optional
IR Frequency	Wideband 20kHz – 60kHz
ESD Protection	IEC 61000-4-2: ±15kV (air discharge), ±8kV (contact discharge)
CONNECTIONS — INPUTS	
HDMI IN	1x HDMI Type A, 19-pin female
L/R Audio IN	1x 3-pin 3.81mm Phoenix, unbalanced 2CH, max 2Vrms
CONNECTIONS — OUTPUTS	
HDMI OUT	1x HDMI Type A, 19-pin female
L/R Audio OUT	1x 3-pin 3.81mm Phoenix, unbalanced 2CH
S/PDIF OUT	1x optical
CONNECTIONS — CONTROL	
RS-232	1x 3-pin 3.81mm Phoenix
LAN	2x RJ45 (LAN 1 supports PoE)
USB 2.0 Host	1x USB Type B, 4-pin female
USB 2.0 Device	2x USB Type A, 4-pin female
Relays	2x 3.81mm Phoenix (isolated, max 1A 30VDC, open by default)
Digital I/O	2x 3.81mm Phoenix (GPIO, output or input detection up to 12V)
IR IN	1x 3.5mm jack, 5V/12V
IR OUT	1x 3.5mm jack, 5V/12V
NETWORKING & CONTROL	
Topology	Point-to-point, video matrix, video wall (up to 9x9)
Casting	Unicast and multicast
LAN Modes	Mode 1: video + Dante on LAN 1 (PoE); Mode 2 (default): video on LAN 1 (PoE), Dante audio on LAN 2
Control Interfaces	Front-panel buttons, IR, RS-232, TCP/IP, web GUI, Telnet, SSH
Substream	MJPEG substream for real-time preview
Recommended Switch	L3/managed Gigabit, 8KB jumbo frame, IGMP snooping
Rack Mounting	6U V2 rack (6/8/10 units vertical) and 1U V2 rack (2 units horizontal); brackets and screws included
POWER	
Power Supply	Input: AC 100–240V 50/60Hz; Output: DC 12V/2.5A

continued

PoE	Standard PoE (PD mode); DC adapter not needed when switch supplies PoE
Power Consumption (max.)	9.12W
PHYSICAL	
Housing	Metal enclosure
Color	Black
Dimensions (W x D x H)	8.03" x 5.35" x 1.00" (204 x 136 x 25.5 mm)
Net Weight	1.39 lbs (0.63 kg)
ENVIRONMENTAL	
Operating Temperature	32–104°F (0–40°C)
Storage Temperature	-4–140°F (-20–60°C)
Relative Humidity	20–90% RH, non-condensing
CERTIFICATIONS	
Certifications	CE, FCC, UL (power supply); IEC 61000-4-2 ESD immunity

3. Introduction

This product is a JPEG2000-based AV-over-IP encoder built on the ASPEED AST1530 codec for image coding and low-latency KVM applications. The encoder input supports up to 4K60 4:4:4 with audio embedding or extraction. The system supports ARC/eARC/S-PDIF/analog audio return, USB 2.0 / KVM / camera, 1G Ethernet, bi-directional RS-232, two-way IR, and PoE. Guest-mode control of RS-232, IR and CEC is supported. Two channels of relay ports and two channels of I/O ports are built in for contact control. Dante AV-A mode is available when the product is license-activated.

The unit provides dual copper LAN ports for two working modes and can be controlled from the front-panel buttons, IR, RS-232, TCP/IP and Web GUI. A built-in MJPEG substream, addressable through a set of API commands, lets third-party control apps preview video content. The software is Linux-based and is designed around the intelligent networking of a 1G Ethernet switch.

4. Operation Controls and Functions — Encoder configuration modes

After the encoder is powered on, its LED screen shows the **ENC ID** (000 by default). To read the current IP settings, press and hold the **UP** button for 5 seconds; the screen shows, in sequence, the IP mode and the four octets of the encoder's IP address. To enter configuration mode, press and hold **UP + DOWN** together for 5 seconds and release — "CFN" appears. Inside configuration mode you step through the pages with **UP/DOWN**; on each page you hold UP + DOWN for 5 seconds to enter edit mode (the value flashes at 1Hz), select your value with UP/DOWN, then hold UP + DOWN for 5 seconds again to confirm. You can hold **DOWN** to exit a screen quickly, and if you do nothing for 5 seconds the unit returns to the previous screen automatically.

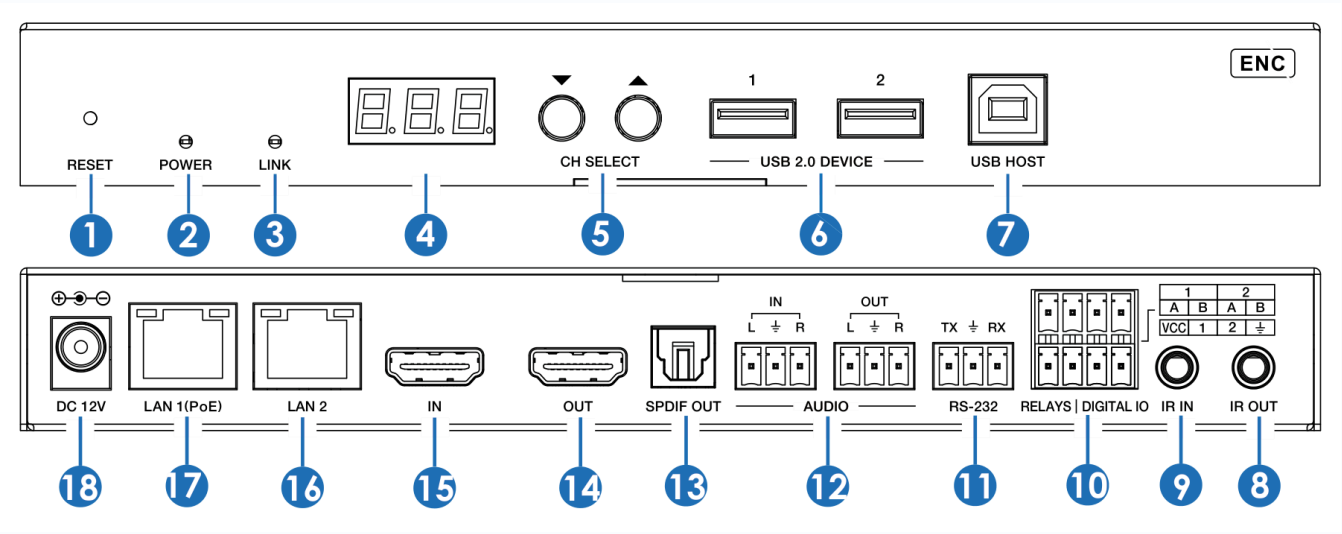
The encoder's eight configurable pages are:

1. **Device ID (page 1).** Set an ID in the range 000–762 (000 default). After you confirm, the unit reboots automatically. The device ID cannot be changed while in Controller Box mode. 2. **EDID (page 2).** Choose an EDID profile (E15 default) or "COP" to copy the display's EDID. The available profiles are listed in the EDID table below. Before using EDID copy in a point-to-point setup, set all codecs to CA1 (unicast); after setting, re-plug the decoder's HDMI cable so the TV's EDID is reported back to the encoder. 3. **IR level (page 3).** Select the IR wire voltage — IR1 is a 5V IR wire and IR2 is a 12V IR wire (IR2 default). 4. **Audio embedding (page 4).** Select where embedded audio comes from — HDI embeds the HDMI audio, ANA embeds the analog audio (HDI default). 5. **IP mode (page 5).** Select IP1 (static; default address 169.254.100.254), IP2 (DHCP), or IP3 (auto-IP; default network segment 169.254.xxx.xxx). IP3 is the default. The unit reboots after you confirm, and IP mode cannot be changed in Controller Box mode. 6. **Multicast (page 6).** The unit starts in unicast (CA1), which sends one stream to one display. Select multicast (CA2) when several displays show the same source. The unit reboots after you confirm. 7. **Audio return mode (page 7).** Select C2C or A2A (C2C default). In C2C, the eARC/ARC or S-PDIF audio from the decoder is returned to the encoder's HDMI IN or SPDIF OUT port. In A2A, the analog audio embedded at the decoder is returned to the encoder's AUDIO OUT port. The unit reboots after you confirm. Note that audio return works only when both encoder and decoder are set to matching modes in unicast; A2A is available only in unicast; and this mode cannot be changed from the front panel while in Controller Box or multicast mode. 8. **LAN mode (page 8).** Select L01 or L02 (L02 default). In L01 (LAN Mode 1) both the JPEG2000 video stream and the Dante audio stream travel through the LAN 1 (PoE) port and the LAN 2 port is non-functional. In L02 (LAN Mode 2) the video travels through LAN 1 (PoE) and the Dante audio travels through LAN 2. The unit reboots after you confirm.

Encoder EDID options (source table):

EDID ID	DESCRIPTION	EDID ID	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
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

5. Panel descriptions — Encoder



Encoder panel

The manual numbers each connector and control but does **not** label in text which callouts sit on the front versus the rear panel; that split must be confirmed against the panel artwork (see **Still needed**). The full numbered callout list for the encoder is:

No.	Name	Function
1	**RESET**	After power-on, press and hold RESET until the POWER LED and LINK LED flash together, then release to reset the unit to factory settings.
2	**POWER LED (Red)**	On when the system is powered (PoE or DC); off when unpowered.
3	**LINK LED (Green)**	Connection status. On: encoder and decoder are linked over LAN 1 (PoE)/LAN 2 and video is being sent to the decoder. Flashing: linked but no video is being sent. Off: not linked.
4	**LED screen**	Shows the Encoder ID by default; shows configuration options during setup.
5	**CH SELECT**	UP and DOWN buttons, used to set the Encoder ID and other settings.
6	**USB 2.0 DEVICE**	Connect to USB 2.0 devices.
7	**USB HOST**	USB host port, connected to a PC.
8	**IR OUT**	IR signal output. Level selectable 5V or 12V (default) via the panel buttons.
9	**IR IN**	IR signal input. Level selectable 5V or 12V (default) via the panel buttons.

continued

No.	Name	Function
10	RELAYS / DIGITAL IO	VCC power output (12V or 5V configurable; default 12V), max 12V@50mA / 5V@100mA. RELAYS: 2 independent, isolated low-voltage relay channels, max 1A 30VDC, contacts open by default. DIGITAL IO: 2 GPIO channels for level output control (default: low level) or input detection (up to 12V), with internal pull-up following VCC. Output mode: max sink current 50mA at low level; high-level drive 2mA at 5V VCC, 5mA at 12V VCC. Input mode: pulled up to VCC through a 2.2K-ohm resistor.
11	RS-232	RS-232 serial port, supporting command pass-through and local serial control.
12	AUDIO IN/OUT	AUDIO IN: analog audio input that can be embedded into the HDMI signal for pass-through to the HDMI output and audio out at the decoder, or looped out via AUDIO OUT on the encoder. AUDIO OUT: analog audio output; outputs audio extracted from HDMI IN (LPCM), or audio sent from the decoder's AUDIO IN in unicast (point-to-point).
13	SPDIF OUT	S/PDIF output; outputs the ARC or S/PDIF audio returned from the decoder when both ends are set to the matching return mode (set via Controller Box or API commands in multicast; via front-panel buttons in unicast).
14	HDMI OUT	HDMI local loop output, connected to a display such as a TV or monitor.
15	HDMI IN	HDMI input, connected to a source such as a Blu-ray player or set-top box.
16	LAN 2	1G LAN port to a network switch; transmits the Dante audio stream by default. Non-functional in LAN Mode 1. Yellow LED: flashes on data traffic. Green LED: on when linked.
17	LAN 1 (PoE)	1G LAN port with PoE, to a network switch; transmits the JPEG2000 video stream by default, and both video and Dante audio in LAN Mode 1. Yellow/green LEDs as above. When the switch delivers PoE, no DC adapter is needed.
18	DC 12V	Power input: local DC 12V/2.5A supply, or PoE from the switch (PD mode). When the switch supports PoE, DC is not needed.

6. IR Pin Definition

The manual includes an **IR Pin Definition** section, presented as artwork only.

7. Rack Mounting

The product can be rack-mounted two ways. Contact your supplier to purchase the V2 rack.

6U V2 rack mounting. First, use the included screws to fix the two mounting ears to the product. Insert the product with ears into the 6U V2 rack — 6, 8 or 10 units can be installed vertically. Then fasten the ears to the rack with screws to complete the mount.

1U V2 rack mounting. Two units mount horizontally in a 1U V2 rack. Fix a 1U V2 bracket to each of the two products with the included screws, join the two brackets together, and fasten the screws between them so both units are held in the 1U space.

8. Web GUI Operation

The product can be controlled from its built-in Web GUI.

Preparation. Connect the encoder, decoder and PC to the same switch, then connect an HDMI source, an HDMI display and power. Press and hold the front-panel **UP** button for 5 seconds to read the current IP address. Set your PC to the same network segment as that address, then enter the encoder's (or decoder's) IP address in a web browser to open its Web GUI.

Functions available in the GUI:

- **System** — Version Information (device software version); Update Firmware; Update Image (upload standby/logo images); Utilities (restore factory defaults, reboot, set EDID mode, console API command); Statistics (device status; separate views for encoder and decoder).
- **Video Wall** — Basic Setup (bezel, gap, size and position; stretch type, rotate, flip) and Advanced Setup.
- **Network** — set the IP and select the casting mode (multicast/unicast). Three IP modes: Auto IP (address assigned automatically, and re-randomized after a power cycle), DHCP (address assigned by the router), and Static.
- **Functions** — select the video, USB, serial-port and audio modes.
- **802.1X** — enable 802.1X authentication and validate the server certificate.
- **Sub-Streaming** — preview the source video in real time.

9. MJPEG Substream Operation

The product can play an MJPEG substream on a computer through software such as VLC, and you can configure the substream from the web page.

Preview and configure:

1. Connect the encoder, decoder and PC to the same switch, then connect an HDMI source, an HDMI display and power. 2. Install a Bonjour discovery tool (e.g. zeroconfServiceBrowser) on the PC to find the encoder/decoder IP address. In zeroconfServiceBrowser, select "Workgroup Manager" under Services, pick the host name under Service-Instances, and read the address under Instance-Info. 3. Set the PC to the same network segment as the discovered address. 4. Enter `http://IP:PORT/?action=stream` in the browser to view the substream at its default resolution. 5. To change the stream, use `http://IP:PORT/?action=stream&w=x&h=x&fps=x&bw=x&as=x&mq=x`, where:

- **WIDTH** — image width in pixels; `x` = no change; default 640.
- **HEIGHT** — image height in pixels; `x` = no change; default 360.
- **FRAMERATE (fps)** — `x` = no change; default 30.
- **BW** — max substream bandwidth in Kbps; `x` = no change; default 8000 (8Mbps).
- **AS** — aspect ratio; `x` = no change; default 0 (0 = stretch to configured width/height; 1 = keep original aspect ratio, centered with letter/pillarboxing — A1 only).
- **MINQ** — minimum image quality (10, 20 … 100; higher is better); `x` = no change; default 10. If quality would fall below MINQ, the driver drops the frame by returning a zero-size file.

VLC playback. Perform steps 1–3 above, then open VLC and choose **Media** → **Open Network Stream**, enter the substream URL, and click **Play**. To inspect the stream, use **Tools** → **Codec information**; to check the current bitrate, use **Tools** → **Codec information** → **Statistics**. The bitrate reading fluctuates up and down during playback — this is normal.

10. Recommended Network Switch

A switch used to build the system should be a **layer-3 / managed** switch with **gigabit** bandwidth, **8KB jumbo-frame** capability, and **IGMP snooping**. The manual highly recommends the following models:

MANUFACTURER	MODEL
CISCO	CISCO SG500
CISCO	CATALYST series

continued

MANUFACTURER	MODEL
HUAWEI	S5720S-28X-PWR-LI-AC
ZyXEL	GS2210
LUXUL	AMS-4424P

11. 4K over IP System Control

The product can be controlled by a Controller Box or a third-party controller. For full details of 4K-over-IP system control, the manual refers the installer to the separate **"Video over IP Controller"** user manual.

12. Application Example

The two LAN working modes govern how streams are carried: in **LAN Mode 1** both the JPEG2000 video and the Dante audio travel through the LAN 1 (PoE) port; in **LAN Mode 2 (default)** the video travels through LAN 1 (PoE) and the Dante audio travels through LAN 2. Mode switching is done by the Controller Box, through the Web GUI, or from the encoder/decoder front-panel buttons.

The Controller Box has two LAN ports — a **Video LAN** and a **Control LAN** — so the AV network can be isolated from the control network. This keeps the AV network independent and unreachable from the control side, for security and to keep AV traffic off the management network. The strongly recommended setup connects the Video LAN and all encoders/decoders to one switch, and the Control LAN and the PC to a second switch; controls arriving on the Control LAN (Web GUI, Telnet/SSH login, or API commands) are bridged by the Controller onto the Video LAN, and the two LANs stay isolated.

For simpler use, you may connect all encoders/decoders, the Video LAN and the PC into a single network and leave the Control LAN port floating, since the Video LAN also accepts Web GUI, Telnet/SSH and API control. This is only suitable where there is no network-isolation requirement and traffic is not sensitive. Connecting only the Control LAN while leaving the Video LAN floating is **not allowed**.

The Control LAN port defaults to DHCP, so the PC should also be set to obtain an address automatically, and a DHCP server (e.g. a router) is required. If there is no DHCP server, the Control LAN uses **192.168.0.225**; set the PC to the same segment (for example 192.168.0.88). You can then open the Web GUI by entering the Control LAN IP (192.168.0.225) or the URL **http://controller.local** in the browser. The Controller manages the Video LAN port settings automatically, so no manual configuration of it is needed. When the switch does not supply PoE, power the encoder, decoder and Controller Box from DC adapters.

13. Certifications

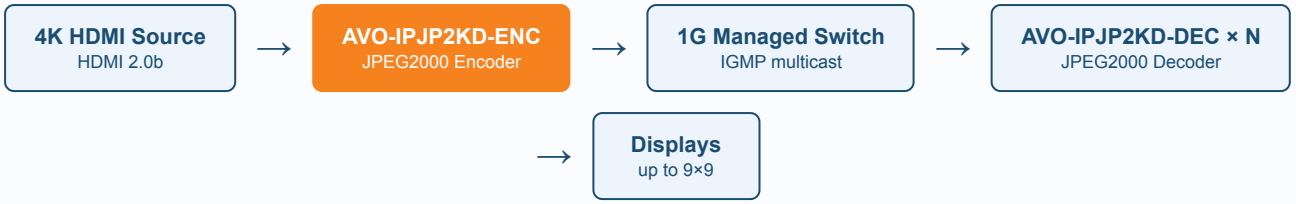
The following certifications appear in the manual (stated on the power-supply specification line, "US/EU standards, CE/FCC/UL certified"):

- **CE**
- **FCC**
- **UL**

No other certifications appear.

14. Application Example

4K60 4:4:4 JPEG2000 AV over IP Encoder — Dante Dual LAN with Contact Control



How it works: The AVO-IPJP2KD-ENC covers point-to-point, full matrix switching, and video wall up to 9x9 with intelligent video-wall class management, unicast and multicast, alongside USB 2.0 KVM, RS-232, bidirectional IR, CEC, and two relay plus two digital-I/O contact ports for room automation. Control runs through the front-panel buttons, IR, RS-232, TCP/IP, and a built-in web GUI with Telnet and SSH, and Dante AV-A is enabled by license activation rather than as a separate hardware SKU. Its defining feature is a dual copper LAN design: LAN Mode 2 carries JPEG2000 video on the PoE LAN 1 while Dante audio runs on LAN 2, physically separating the audio network from the video transport, or LAN Mode 1 consolidates both streams on LAN 1. Matching JPEG2000 decoder sold separately.

15. Troubleshooting

Q: There is no picture and the green LINK LED is off. What do I check?
A: LINK off means the unit is not linked; confirm both ends are cabled to LAN 1(PoE), that the managed switch has IGMP snooping enabled, and that the CAT6/6A/7 run is within 100m.

Q: The LINK LED is flashing green but I get no image. What is wrong?
A: A flashing LINK LED means the unit is linked but has no video, so check that the source is active at HDMI IN and that the HDMI cable is within its length limit for the resolution (16ft/5m at 4K60).

Q: The POWER LED is off. How do I bring it up?
A: The red POWER LED is off when there is no power; the unit runs from PoE on LAN 1 or from local DC 12V/2.5A, so confirm the switch supplies standard PoE or connect the DC adapter.

Q: Dante audio is not coming through on LAN 2. What should I confirm?
A: LAN 2 is nonfunctional in LAN Mode 1, so confirm the unit is in the default LAN Mode 2 where Dante audio runs on LAN 2, and that Dante AV-A mode has been license-activated.

Q: How do I reset the encoder to factory settings?
A: Hold the RESET button after power-on until the POWER and LINK LEDs flash together, then release to reset to factory settings.

Need help? — For additional support, contact KanexPro technical support at support@kanexpro.com or 888.975.1368, or scan the QR code below for the product page.