1G H.265 AV over IP System Controller

The KanexPro AVO-IPCTL-265 is an H.264/H.265 AV over IP system controller for managing distributed video systems over standard 1G managed networks. Powered by an ARM Cortex-A55 2GHz processor, it provides drag-and-drop matrix switching, video wall with window roaming, seamless switching, mouse collaboration, and IP camera import from a browser-based web GUI. Dual 1G network ports isolate AV traffic from the IT control network.

Surge Protection Recommended — Use surge protection systems to protect sensitive electrical components from spikes, surges, and lightning strikes.

TABLE OF CONTENTS

1. FEATURES

- ✓ ARM Cortex-A55 2GHz processor for fast, reliable system management
- ✓ Centralized web GUI control of H.264/H.265 AV over IP encoders and decoders
- ✓ Matrix switching — drag-and-drop source routing without physical recabling
- ✓ Video wall with window roaming and marquee display support
- ✓ Seamless switching — zero-interruption source transitions
- ✓ Mouse roaming/collaboration — one operator manages multiple PCs across zones
- ✓ IP camera import as video source alongside H.265 encoder sources
- ✓ High-definition background image and multi-screen splicing display
- ✓ Dual 1G network ports — VIDEO LAN (PoE PD) + CONTROL LAN for AV/IT isolation
- ✓ Two RS-232 ports + 4-channel GPIO + IR IN/OUT for third-party device control
- ✓ HTTPS and SSH security with 8-digit alphanumeric password
- ✓ PoE 802.3af PD via VIDEO LAN — DC 12V/2.5A adapter also included
- ✓ Compatible with 1U/6U V2 rack installation — 7×24 hour reliable operation

2. PACKAGE CONTENTS

1× AVO-IPCTL-265 Controller • 1× IR Receiver Cable 20kHz–60kHz 12V 1.5m • 1× IR Blaster Cable 1.5m • 2× 3-pin 3.81mm Phoenix Connectors • 1× 6-pin 3.81mm Phoenix Connector • 2× Mounting Ears • 4× Machine Screws KM3×6 • 1× DC 12V/2.5A Locking Power Adapter • 1× User Manual

3. Specifications

TECHNICAL	
CPU	ARM Cortex-A55 2GHz
Network Bandwidth	1G
Transmission Distance	Up to 100m via CAT5E/6/6A/7
Control Methods	Web GUI, TCP/IP, RS-232, IR, SSH, HTTPS
Supported Systems	H.264/H.265 AV over IP encoders and decoders
IP Modes (Video LAN)	Auto (controller-managed) • Static
Default Control LAN IP	192.168.6.100 (DHCP fallback) • http://controller.local
Default Video LAN IP	169.254.8.100 (static default, auto-managed)
Password Length	6–8 alphanumeric characters (special characters not supported)
EDID Options	1080P 2.0CH, 1080I 2.0CH, 4K30 444 2.0CH, 4K60 420 2.0CH, 4K60 444 2.0CH, DVI modes

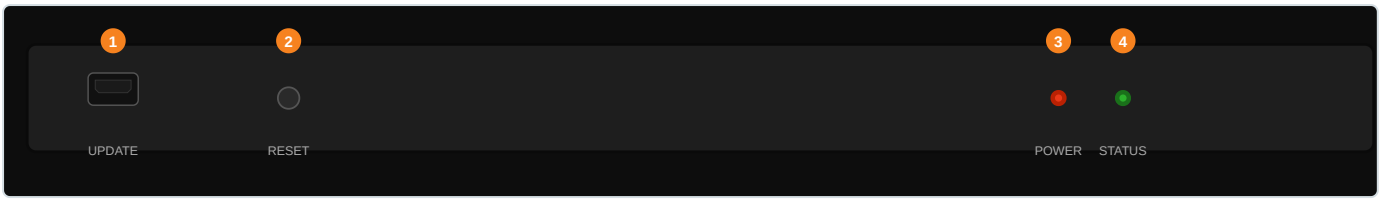
CONNECTION	
LAN Ports	2× 1G RJ45 — VIDEO LAN (PoE PD) + CONTROL LAN
RS-232	2× 3-pin 3.81mm Phoenix — default 57600 / 8-bit / 1 stop / no parity
Digital I/O	1× 6-pin 3.81mm Phoenix — 4-ch GPIO, GND, VOUT 5V or 12V/0.5A (DIP switch)
IR IN	1× 3.5mm jack (12V level, 20kHz–60kHz wideband)
IR OUT	1× 3.5mm jack (**5V level**)
Firmware Update	1× Micro USB (UPDATE port) — disconnect during normal operation

PHYSICAL	
Housing	Metal enclosure, Black
Dimensions (W×D×H)	8.03″ × 4.63″ × 0.85″ (204 × 117.5 × 21.5mm)
Net Weight	1.32 lbs (597g)
Power Supply	DC 12V/2.5A locking adapter or PoE via VIDEO LAN port
Power Consumption	6.84W max
Operating Temperature	32–104°F (0–40°C)
Storage Temperature	−4–140°F (−20–60°C)
Humidity	20–80% RH operating / 10–90% RH storage (non-condensing)

PACKAGE CONTENTS	
Included	1× Controller • 1× IR Receiver Cable (12V, 1.5m) • 1× IR Blaster Cable (1.5m) • 2× 3-pin Phoenix connectors • 1× 6-pin Phoenix connector • 2× Mounting ears • 4× Machine screws KM3×6 • 1× DC 12V/2.5A locking adapter

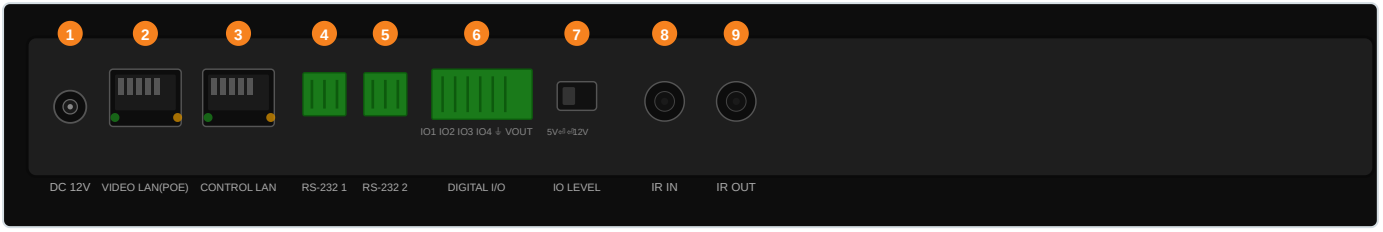
4. Operation Controls

4.1 FRONT PANEL



#	Name	Function Description
1	**UPDATE (Micro USB)**	Firmware update port. **Must remain disconnected during normal operation.**
2	**RESET Button**	Press and hold approximately 5–6 seconds, then release. POWER and STATUS LEDs will flash. Wait approximately 1 minute until both LEDs become steady — reset and reboot complete.
3	**POWER LED (Red)**	On: powered via DC 12V or PoE. Off: no power.
4	**STATUS LED (Yellow-Green)**	Flashes every 1 second during boot. Solid when Control LAN is ready and controller has fully booted.

4.2 REAR PANEL



#	Name	Function Description
1	**DC 12V**	DC 12V/2.5A locking barrel input. Also powered via PoE through VIDEO LAN port.
2	**VIDEO LAN (PoE)**	1G RJ45. Connect to managed switch shared with H.265 encoders and decoders. PoE 802.3af PD supported. Default: 169.254.8.100 static (auto-managed).
3	**CONTROL LAN**	1G RJ45. TCP/IP control network port. Connect to IT LAN or PC. Default: DHCP, fallback 192.168.6.100. Web GUI: http://controller.local.
4	**RS-232 Port 1**	3-pin 3.81mm Phoenix. Default: 57600 / 8-bit / 1 stop / no parity.
5	**RS-232 Port 2**	3-pin 3.81mm Phoenix. Second independent RS-232 port for additional serial device control.
6	**Digital I/O (6-pin)**	IO1–IO4 (4-ch GPIO), GND, VOUT (up to 12V/0.5A). For relay triggers and automation.
7	**IO LEVEL DIP Switch**	Switch left = 5V I/O & VOUT. Switch right = 12V (default).
8	**IR IN**	3.5mm jack (12V level, 20kHz–60kHz). Connect included IR receiver cable.
9	**IR OUT**	3.5mm jack (**5V level**). Connect included IR blaster cable. Verify target device accepts 5V IR before connecting.

4.3 IR PIN DEFINITION

PIN	SIGNAL	DESCRIPTION
Tip (T)	Signal	IR carrier signal line (20kHz–60kHz)
Ring (R)	GND	Ground reference
Sleeve (S)	GND	Shield / Ground

5. Rack Mounting Instruction

5.1 6U V2 RACK MOUNTING

The AVO-IPCTL-265 can be mounted in a standard 6U V2 rack. Up to 6, 8, or 10 units can be installed vertically.

Step	Instruction
Step 1	Use the included machine screws to attach the two mounting ears to the sides of the controller unit.
Step 2	Insert the controller with mounting ears into a 6U V2 rack slot. Units are installed vertically.
Step 3	Use screws to secure the mounting ears to the rack frame to complete installation.

5.2 1U V2 RACK MOUNTING

Two AVO-IPCTL-265 units can be installed side-by-side horizontally in a standard 1U space using optional 1U V2 rack brackets.

Step	Instruction
Step 1	Attach 1U V2 rack brackets to each of two controller units using the included screws.
Step 2	Fasten the two brackets together so both units are side-by-side.
Step 3	Insert the assembly into the rack and secure to the rack frame.

Note — Ensure adequate ventilation. Operating temperature: 32–104°F (0–40°C). Do not block sides of the enclosure. When powered via PoE, verify the switch PoE budget supports all connected units simultaneously.

6. Web GUI Setup

6.1 INITIAL LOGIN & SYSTEM SETUP

Step	Instruction
Step 1 — Access	Navigate to **http://controller.local** or the Control LAN IP (192.168.6.100 if no DHCP, or DHCP-assigned). Enter username **admin** and initial password **admin**. Click Login.
Step 2 — Set Password	On first login, you are prompted to set a new password. Use 6–8 alphanumeric characters (no special characters). Special characters are not supported. Use the new password for all subsequent logins.
Step 3 — System Setup	Click **Close** to load an existing system, or **Next** to run the setup wizard. The wizard sets the Video LAN IP mode and discovers encoders and decoders.
Step 4 — Add Devices	Select **Automatically add Encoders and Decoders** to auto-discover and add all devices, or **List all discovered** to manually select which devices to add. Click Add or Add All Into System.
Re-run Wizard	To change Video LAN IP mode later, click **Search Device Via Wizard** on the Device page to return to the IP mode selection interface.

6.2 VIDEO LAN IP MODES

Mode	Description
Mode 1 — Auto	Controller automatically assigns IP addresses to the Video LAN port, all encoders, and all decoders. Recommended for most installations. No manual IP configuration required for endpoints.
Mode 2 — Static	User manually sets the IP address, subnet mask, and gateway for the Video LAN port and the IP range for encoders/decoders. Required when Video LAN must integrate with an existing static IP network. **Note:** Video LAN subnet must be different from Control LAN subnet.

Note — Video LAN port IP settings are managed automatically by the controller in Mode 1 — do not configure Video LAN manually in this mode. Only Control LAN requires manual network configuration. Only Control LAN connected while Video LAN is floating is not supported.

7. Web GUI Functions

The web GUI consists of seven sections: **Device, Matrix, Video Wall, User, Controller Settings, Firmware Update, Password**. Click the icon on the left navigation to enter each section.

7.1 DEVICE

Displays all encoders and decoders in the system with their ID, type, name, MAC address, IP address, firmware version, online/offline status, and uptime. Click the drop-down icon next to a device ID to configure it.

Setting Group	Key Options
Basic Settings	Name (max 16 chars, no special chars), Change ID (1–762, no duplicates), ENC LED Flashing (Show me function), Preview thumbnail
A/V Settings	EDID selection (1080P/4K30/4K60 444/420/DVI modes), Copy EDID from a decoder, Audio source (HDMI or Analog)
Video Advanced	Encoder Format, Encoder Mode (Video/Text — text optimizes for KVM), Encoder Delay (1–500ms, default 50/67ms), Video Stream (Main/Sub/KVM Preview/RTSP Main/RTSP Sub), Stream Type (H264/H265), Frame Rate (1–60Hz), Bitrate Type (Fix/Variable), Image Quality (1–100, default 65)
Audio Advanced	Encode Format (PCM/AAC), Audio Selection (HDMI/Analog)
RS-232 Settings	Command Relay On/Off, Parity (None/Odd/Even), Baud Rate (9600–115200), Data Bits (5–8), Stop Bits (1–2)
Info OSD	Enable/disable OSD overlay, content text, size, position (X/Y), BG/FG color, transparency
Other Settings	KVM OS select (Linux/Windows/Mac OS — default Windows)
Device Actions	Reboot, Replace (swap offline unit with online unit preserving configuration), Remove from system

7.2 MATRIX

Function	Operation
One-to-One Switch	Left-click an encoder/IPC preview and drag it to a decoder. Release mouse to route.
One-to-Many Switch	Drag encoder preview to multiple decoders in sequence.
One-to-All Switch	Drag encoder preview to the All Decoders zone. Routes the source to every decoder simultaneously.
Disconnect Signal	Drag the “No Source” image to a decoder to disconnect. Drag to All Decoders and type YES to disconnect all (use with caution).
Matrix Preset	Click Matrix Preset tab → Create → Set preset ID and name → Add encoder/decoder pairs → Save. Recall presets instantly to restore full routing configuration.

7.3 VIDEO WALL & MULTIVIEW

Feature	Description
Video Wall Creation	Set display layout (rows × columns), assign decoders to each cell, configure bezel compensation, set output resolution. Resolutions up to 3840×2160@60Hz supported. Custom resolution available.
Window Roaming	Content windows can be moved, resized, and positioned freely across any display in the video wall. Multiple source windows can coexist on a single display or span displays.
Marquee	Add scrolling text overlays to video wall displays. Configure text content, direction, speed, and color.
Seamless Switching	Sources pre-load before the switch completes. Zero black frames or signal interruption during live source changes.
Multiview	Create a 1×1 video wall as a multiview canvas. Configure multi-source layout, create presets, and set windowing or marquee using the same video wall workflow.
Background Image	Set a high-definition PNG background image for the video wall. Image must be PNG format, 960×360 to 3840×2160, 500KB–25MB.
IP Camera (IPC)	Import IP cameras as RTSP sources. Routed to any decoder display using the same drag-and-drop matrix workflow as encoder sources.
Mouse Collaboration	Move mouse cursor seamlessly across multiple decoder display zones. Supports management of multiple PCs by a single operator without KVM switching.

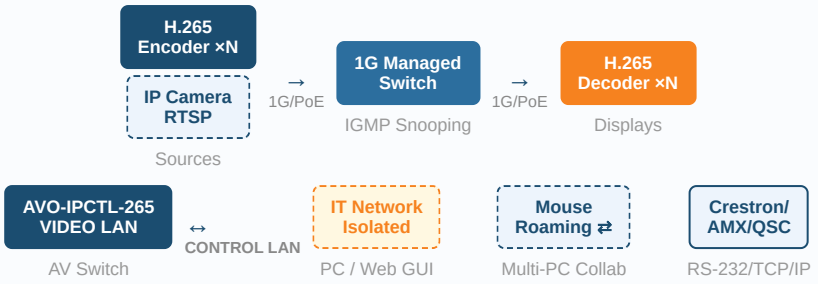
7.4 USER / FIRMWARE / PASSWORD

Section	Description
User	Add user accounts with individual control privileges. Limit access to specific inputs, outputs, or features per user. Create via: User page → Create → Set username and permissions.
Firmware Update	Upload User EDID files (binary, future support), upload Decoder Logo Picture (PNG, 500KB–25MB, 960×360 to 3840×2160), upload Controller firmware, upload Encoder/Decoder firmware. Click Update All or Update for individual devices. System validates firmware compatibility before enabling Update button.
Password	Change password: input Old Password, New Password, Confirm Password → Apply. Requirements: 6–8 alphanumeric characters, no special characters, new password cannot match old. System returns to login page after password change.
Logout	Click the logout icon in the upper right corner of any page to exit the web GUI and return to the login interface.

RTSP Stream URLs — Main stream: **rtsp://<encoder_IP>:554/chn0/main** (up to 1080p30Hz). Sub stream: **rtsp://<encoder_IP>:554/chn0/sub** (up to 720p30Hz). Compatible with VLC and standard RTSP clients.

8. Application Example

H.265 AV over IP System with Dual-Network Isolation, IP Camera & Mouse Collaboration



Dual-Network Isolation: VIDEO LAN connects to the AV switch with all encoders and decoders. CONTROL LAN connects to the IT network or PC. AV multicast traffic stays isolated from IT. Controls from CONTROL LAN are bridged by the controller to the AV network. For simple installs without isolation requirements, connect everything to one switch and leave CONTROL LAN to PC only.

IP Address Notes: Default Control LAN is DHCP; fallback to **192.168.6.100** (no router). Access web GUI at **http://controller.local**. Video LAN is auto-managed — no manual configuration needed. When the switch does not support PoE, power encoders, decoders, and the controller via included DC adapters.

9. Troubleshooting

Q: Encoders and decoders are not discovered after initial setup?
A: Verify the VIDEO LAN port is connected to the same managed switch as all encoders and decoders. Confirm the switch has IGMP Snooping enabled. Use **Search Device Via Wizard** on the Device page to re-scan. If using Static IP mode, confirm encoder/decoder IP ranges are within the configured Video LAN subnet.

Q: STATUS LED is not becoming solid after boot?
A: STATUS LED flashes every 1 second during boot and becomes solid when Control LAN is ready. If it continues flashing, verify the CONTROL LAN port has an active network connection. Disconnect any cable from the UPDATE (Micro USB) port — it must remain disconnected during normal operation.

Q: Cannot access the Web GUI?
A: With DHCP present, set PC to auto-IP and navigate to **http://controller.local**. Without DHCP, controller defaults to **192.168.6.100** — set PC to same subnet (e.g. 192.168.6.88). Verify CONTROL LAN is connected to the same network as the PC.

Q: How do I reset the controller to factory defaults?
A: Press and hold the **RESET** button for approximately 5–6 seconds, then release. POWER and STATUS LEDs will flash. Wait approximately 1 minute until both LEDs become steady — reset and reboot are complete. All device lists, routing presets, and user accounts will be cleared.

Q: Video wall or matrix routing not working as expected?
A: Confirm the managed switch has IGMP Snooping enabled. Verify all endpoints involved are online in the Device page. For video wall, confirm the correct layout is applied and all decoders are assigned. Note: If video wall resolution is set to 4K24Hz or 4K25Hz and a 50/60Hz source is used, video stuttering may occur — set resolution to 4K30Hz or higher.

Q: IP camera (IPC) feed is not showing in the matrix?
A: Verify the IP camera is accessible on the same network segment as the VIDEO LAN port. Confirm the RTSP URL is correct and the camera is online. Re-import the camera via the Device page. Ensure the camera stream format is compatible (H.264 or H.265 RTSP).

Q: Mouse roaming is not working across displays?
A: Mouse roaming requires the KVM OS setting to match the operating system of the target PC. Go to Device page → Encoder configuration → Other Settings → **KVM OS select**. Set to Windows, Linux, or Mac OS as appropriate. Default is Windows.

Q: RS-232 commands are not reaching the connected device?
A: Verify RS-232 settings match the target device (baud rate, parity, data bits, stop bits) in the Device page RS-232 Settings. Ensure **RS-232 Command Relay** is set to On. Check 3-pin Phoenix wiring: TX, RX, GND. Default baud rate is 57600.