4K60 SDVoE AV over IP System Controller

The KanexPro AVO-IPCTL-SDV manages SDVoE AV over IP systems with zero-frame latency matrix switching, video wall (9×9), multi-view (25 windows), USB KVM, and dual-network isolation from a browser-based web GUI. Works with AVO-IPSDV-4K SDVoE transceivers on a 10G managed network.

UPDATE Port — The UPDATE (Micro USB) port is for firmware upgrade only. **Must remain disconnected during normal operation.**

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1. FEATURES

- ✓ Zero-frame latency matrix switching for SDVoE systems — 4K60 4:4:4 visually lossless routing
- ✓ Video wall up to 9×9 with seamless switching — multi-view up to 25 windows per display
- ✓ USB 2.0 KVM — keyboard, mouse, and peripheral routing across SDVoE zones
- ✓ Built-in web GUI with drag-and-drop operations and image preview
- ✓ Video, audio, RS-232, IR, and KVM control and management of distributed system
- ✓ Dual 1G network ports — VIDEO LAN (PoE) for AV network, CONTROL LAN for IT isolation
- ✓ Two RS-232 ports + 4-channel GPIO + IR IN/OUT for automation and third-party control
- ✓ HTTPS and SSH security compatible
- ✓ UPDATE port (Micro USB) for firmware upgrade — disconnect during normal operation
- ✓ Works with AVO-IPSDV-4K SDVoE AV over IP transceivers on 10G managed network
- ✓ Multiple circuit protections — lightning protection and ESD design (IEC 61000-4-2)
- ✓ 7×24 reliable and stable operation

2. PACKAGE CONTENTS

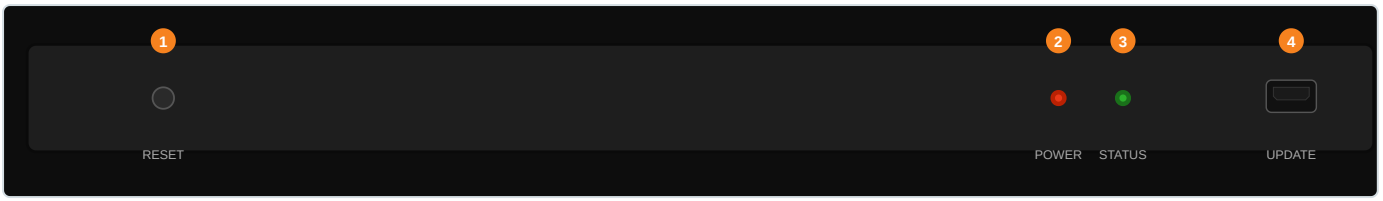
1× AVO-IPCTL-SDV Controller • 1× IR Receiver Cable 20kHz–60kHz 12V 1.5m • 1× IR Blaster Cable 1.5m • 2× 3-pin 3.81mm Phoenix Connectors • 1× 6-pin 3.81mm Phoenix Connector • 2× Mounting Ears • 4× Machine Screws KM3×6 • 1× DC 12V/1A Locking Power Adapter • 1× User Manual

3. Specifications

TECHNICAL	
Supported Protocol	SDVoE (AVP2000 chipset ecosystem)
Endpoint Network	10G managed switch (required for SDVoE endpoints)
Network Bandwidth	100M/1G (controller ports)
Transmission Distance	Up to 100m via CAT5E/6/6A/7
Compatible Endpoints	AVO-IPSDV-4K (HDN-EB100AT) — SDVoE AVP2000 Transceiver
Video Wall	Up to 9×9
Multi-View	Up to 25 windows per display
Control Methods	Web GUI, TCP/IP, RS-232, IR, SSH, HTTPS
Default Control LAN IP	192.168.6.100 (DHCP fallback) • http://controller.local
ESD Protection	IEC 61000-4-2: ±8kV (Air-gap) • ±4kV (Contact)
CONNECTION	
LAN Ports	2× 1G RJ45 — VIDEO LAN (PoE PD) + CONTROL LAN
RS-232	2× 3-pin 3.81mm Phoenix connectors
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)
IR OUT	1× 3.5mm jack
Firmware Update	1× Micro USB (UPDATE port) — **disconnect during normal operation**
PHYSICAL	
Housing	Metal enclosure, Black
Dimensions (W×D×H)	8.03″ × 3.88″ × 0.85″ (204 × 98.5 × 21.5mm)
Net Weight	508g
Power Supply	DC 12V/1A (locking adapter) or PoE via VIDEO LAN
Power Consumption	1.8W 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)

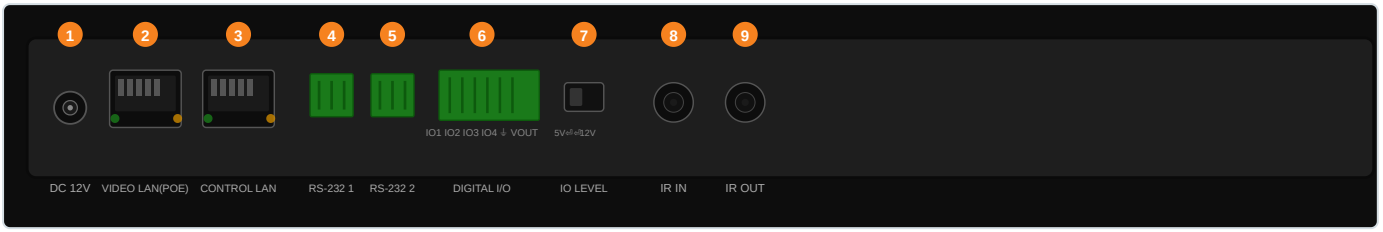
4. Operation Controls and Functions

4.1 FRONT PANEL



#	Name	Function Description
1	**RESET Button**	Press and hold approximately 10 seconds until STATUS LED starts flashing. Controller resets to factory defaults automatically.
2	**POWER LED (Red)**	On: powered via DC 12V or PoE. Off: no power.
3	**STATUS LED (Yellow-Green)**	Flashes every 1 second during boot. Solid when Control LAN is ready and controller has fully booted.
4	**UPDATE (Micro USB)**	Firmware update port. **Must remain disconnected during normal operation.**

4.2 REAR PANEL



#	Name	Function Description
1	**DC 12V**	DC 12V/1A locking barrel input. Also powered via PoE through VIDEO LAN port.
2	**VIDEO LAN (PoE)**	1G RJ45. Connects to the AV network switch (same switch as SDVoE endpoints). PoE PD supported.
3	**CONTROL LAN**	1G RJ45. TCP/IP control port. Default: DHCP, fallback 192.168.6.100. Web GUI: http://controller.local.
4	**RS-232 Port 1**	3-pin 3.81mm Phoenix. Serial control port.
5	**RS-232 Port 2**	3-pin 3.81mm Phoenix. Second independent RS-232 port.
6	**Digital I/O (6-pin)**	IO1–IO4 (4-ch GPIO), GND, VOUT (5V or 12V/0.5A). For relay triggers and automation.
7	**IO LEVEL DIP Switch**	Left = 5V I/O & VOUT. Right = 12V (default).
8	**IR IN**	3.5mm jack (12V level, 20kHz–60kHz). Connect included IR receiver cable.
9	**IR OUT**	3.5mm jack. Connect included IR blaster cable.

4.3 IR PIN DEFINITION

PIN	SIGNAL	DESCRIPTION
Tip (T)	Signal	IR carrier signal (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-SDV mounts in a standard 6U V2 rack. Up to 10 units can be installed vertically.

Step	Instruction
Step 1	Attach the two mounting ears to the sides of the controller using included machine screws.
Step 2	Insert controller with mounting ears into a 6U V2 rack slot (vertical orientation). Up to 10 units can be installed vertically.
Step 3	Secure mounting ears to rack frame with screws.

5.2 1U V2 RACK MOUNTING

Two AVO-IPCTL-SDV units can be mounted side-by-side horizontally in one 1U space using optional 1U V2 rack brackets.

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

Note — Ensure adequate ventilation. Operating temperature: 32–104°F (0–40°C). When powered via PoE, verify the switch PoE budget supports all connected units.

6. Web GUI Operation Guide

6.1 PREPARATION BEFORE ENTERING THE SYSTEM

Step	Instruction
Step 1 — Access	Navigate to **http://controller.local** or the Control LAN IP (192.168.6.100 if no DHCP). Enter username **admin** and password **admin**. Click Login.
Step 2 — Set Password	On first login, set a new password. Minimum 6 characters, maximum 8 characters. Special characters 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 Video LAN IP mode and discovers all endpoints.
Step 4 — Add Devices	Select **Automatically add Encoders and Decoders** to auto-discover all SDVoE endpoints, or **List all discovered** to manually select. Click Add or Add All Into System.
Re-run Wizard	Click **Search Device Via Wizard** on the Device page to change Video LAN IP mode.

6.2 VIDEO LAN IP MODES

Mode	Description
Mode 1 — Auto	Controller automatically assigns IP addresses to VIDEO LAN port and all endpoints. Recommended. No manual IP configuration required.
Mode 2 — DHCP	Router automatically assigns IP addresses. Requires DHCP server on the AV network.
Mode 3 — Static	User manually sets VIDEO LAN IP, subnet mask, gateway, and endpoint IP range. Note: VIDEO LAN subnet must differ from CONTROL LAN subnet.

Note — VIDEO LAN settings are managed automatically in Auto/DHCP modes. Control LAN connected while VIDEO LAN is floating is not supported. For simple installs, connect all devices and VIDEO LAN to a single switch with CONTROL LAN to the PC only.

7. Functions and Operation

The web GUI consists of: **Device, Matrix, Video Wall, Multiview, User, Controller Settings, Firmware Update, Password Update**.

7.1 DEVICE

Displays all SDVoE encoders and decoders with ID, name, MAC, IP, 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 (Show Me function), IR Voltage selection
A/V Settings	EDID selection, Copy EDID from decoder, Video stream type (Main/Sub/KVM Preview/RTSP), Encoder format, Encoder delay (1–500ms), Audio source (HDMI/Analog)
RS-232 Settings	Command Relay On/Off, Parity, Baud Rate, Data Bits, Stop Bits → Apply. Note: when RS-232 Command Relay is On, Decoder locked signal routing is disabled.
Device Actions	Reboot — Restart device. Replace — swap offline unit with online unit preserving configuration. Remove — remove from system. Switch to Encoder/Decoder — change operating mode.
Signal Routing Lock	Video, audio, RS-232, IR, and USB sources can each be independently locked to a specific encoder on a decoder, allowing different sources for each signal type.

7.2 MATRIX

Function	Operation
One-to-One Switch	Left-click encoder preview and drag to a decoder. Release to route.
One-to-All Switch	Drag encoder preview to All Decoders zone. Routes to every decoder simultaneously.
One-to-Many Switch	Drag encoder preview to multiple decoders in sequence.
Disconnect Signal	Drag “No Source” to a decoder to disconnect. Drag to All Decoders + type YES to disconnect all (caution).
Signal Routing Query	Double-click a decoder preview to inspect Video/Audio/IR/RS-232/USB signal routing relationship between encoder and decoder.
Matrix Preset	Click Matrix Preset tab → Create → Set Preset ID and Name → Add encoder/decoder pairs → Save. Recall via Load on the Matrix interface. Save current routing as preset via Save As.

7.3 VIDEO WALL

Step / Feature	Description
Create Video Wall	Video Wall page → Create → Set ID, Name, Row, Column → Go. Multiple video walls supported.
Assign Decoders	Select wall → Assign Decoder → Click each cell to assign decoder → Apply. Each decoder can only be assigned to one video wall.
Class Preset	Class Preset → Click each screen to assign class (same class name = one tile) → Apply. Create, rename, and delete presets. Supports regular and irregular layouts.
Seamless Switching	Zero-frame transitions between sources on the video wall. Source pre-loads before switch completes — no black frames during live changes.

7.4 MULTIVIEW

Feature	Description
PIP Multiview	Create a PIP multiview preset with foreground and background windows. Up to 25 windows per display. Assign encoder sources to foreground and background windows separately.
Configure Multiview	Step 1: Select background resolution. Step 2: Click a window in Window Assignment to assign as foreground. Step 3: Drag encoders to foreground window. Step 4: Assign background source. Step 5: Select target decoders → Apply. Step 6: Click Yes to apply.
Multiview Source	Switch to Multiview Source tab to preview multiview on decoder displays. Drag encoders to change sources in real time. Click Switch to Matrix to return decoder to single-source mode.

7.5 USER

Step / Option	Description
Create User	Create → Enter username (6–12 chars, no special chars) and password (6–8 chars) → Confirm Password → Go.
Assign Devices	Select encoders and decoders the user can access → Apply.
Manage Users	Click Password to change a user's password. Click Remove to delete the user.

7.6 CONTROLLER SETTINGS

Setting	Description
System Config	Save: export config JSON. Load: import JSON (back up first). Clear: wipe all config and restart setup.
General	Controller/GUI version, Telnet/SSH port, domain name. Set IR Control, RS-232 BaudRate, Web Control, HTTPS, Telnet, SSH.
GPIO	Set GPIO 1–4 output level individually via drop-down.
Control Network	DHCP On: auto IP. DHCP Off: manually set IP, subnet, gateway → Apply. PC must be in same subnet.
Video Network	DHCP On: auto IP. DHCP Off: manual settings. Encoder/decoder IPs must match Video LAN subnet.
Controller Reset	Settings Reset: all settings except network. Network Reset: network only. Reset All: full factory reset.

7.7 FIRMWARE UPDATE

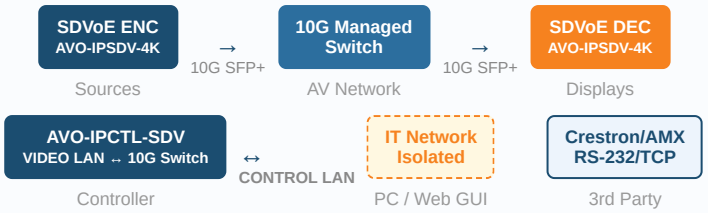
Item	Description
Upload User EDID 1/2	Upload binary EDID file to User EDID slot 1 or 2.
Upload Decoder Logo	Upload JPG (4KB–512KB, ≤1920×1080). Click Update All or Update per device.
Upload Controller Firmware	Upload controller firmware update file.
Upload Encoder/Decoder Firmware	Upload endpoint firmware. Click Update All or Update per device. Incompatible models greyed out.

7.8 PASSWORD UPDATE

Item	Description
Change Password	Enter New Password and Confirm Password → Apply. Requirements: 6–8 alphanumeric characters, no special characters. System returns to login page after change.
Logout	Click the logout icon in the upper right corner of any page to exit the web GUI.

8. Application Example

SDVoE AV over IP — Zero-Frame Latency with Dual-Network Isolation



Dual-Network Isolation: The AVO-IPCTL-SDV has two LAN ports. VIDEO LAN connects to the same 10G managed network switch as all SDVoE encoders and decoders. CONTROL LAN connects to the IT control network or PC. AV multicast traffic is isolated from the IT control network. Controls from CONTROL LAN are bridged by the controller to the AV network.

For simple usage: Connect all SDVoE endpoints, VIDEO LAN, and PC to a single switch. Leave CONTROL LAN floating. Note: CONTROL LAN connected while VIDEO LAN is floating is not supported.

IP Address Notes: Default CONTROL LAN is DHCP; fallback to **192.168.6.100**. Access web GUI at **http://controller.local**. VIDEO LAN is auto-managed — no manual IP configuration needed in Auto mode.

Power: When the 10G switch does not support PoE, power the AVO-IPCTL-SDV via the included DC 12V/1A adapter. SDVoE endpoint power requirements vary by model.

9. Troubleshooting

Q: SDVoE endpoints are not discovered after initial setup?
A: Verify the VIDEO LAN port is connected to the same 10G managed switch as all SDVoE endpoints. Confirm the switch has IGMP Snooping and Jumbo Frames enabled. Use **Search Device Via Wizard** on the Device page to re-scan. In Static IP mode, confirm endpoint 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 CONTROL LAN has an active network connection. Also verify the UPDATE (Micro USB) port is disconnected — it must remain disconnected during normal operation.

Q: Cannot access the Web GUI?
A: With DHCP: 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 on the front panel for approximately 10 seconds until the STATUS LED starts flashing. Release — the controller resets and reboots automatically. All device lists, routing presets, matrix presets, multiview configurations, and user accounts will be cleared.

Q: Video wall or matrix routing not working correctly?
A: Confirm all SDVoE endpoints are online in the Device page. Verify the 10G managed switch has IGMP Snooping enabled. For video wall, confirm decoders are correctly assigned in the Assign Decoder interface and the correct Class Preset is applied. If displays show “No Source,” re-assign the encoder source from the Matrix page.

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

Q: GPIO outputs are not triggering?
A: Verify the **IO LEVEL DIP switch** is set to the correct voltage (5V or 12V) for the target device. Confirm the 6-pin Phoenix connector wiring is correct: IO1–IO4, GND, VOUT. VOUT max output is 12V/0.5A.