



X2UH-KVM-ED

X2 Series (4K) Transceiver w/ KVM

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USER MANUAL

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Thank you for purchasing this product

For optimum performance and safety, please read these instructions carefully before connecting, operating, or adjusting this product. Keep this manual for future reference.

Important Safety Note - Surge Protection Recommended

This product contains sensitive electronic components that may be damaged by electrical spikes, surges, lightning strikes, or static discharge. To protect and extend the service life of your equipment, we strongly recommend using a surge protection device.

Warranty Registration

Activate your warranty by registering your product at:

→ www.orei.com/register

Need Technical Support? We're Here to Help.

Our experienced Technical Support Team is available to answer your questions, offer expert advice, and help troubleshoot any issues to keep your project on track—on time and on budget.

Live Support Hours (US/Canada/Mexico):

🕒 Monday–Friday | 9:00 a.m. – 5:00 p.m. Central Time

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Send us an instant message—our team typically responds within moments during live support hours.

Introduction

The X2UH-KVM-ED is a high-performance AV-over-IP solution for advanced video distribution, system control, and flexible display management. It supports HDCP 2.2 and delivers 4K@60Hz video with 18Gbps bandwidth, as specified in HDMI™ 2.0b, ensuring ultra-HD quality. With LPCM 2.0CH 48kHz audio, it also features audio routing with 6-pin phoenix analog input and output. The combined encoder/decoder design allows you to configure it as either a transmitter or receiver. It supports both Fiber optic and RJ45 for signal transmission up to 328ft/100m.

Each decoder handles up to 16 signals, allowing window roaming, splicing, overlay, and multi-window display—ideal for control rooms, command centers, and digital signage. The system features KVM seat management for one-to-one or one-to-many PC control.

It supports H.264/H.265 protocols for seamless IPC and camera integration, with point-to-point extension, character overlay, scrolling text, and HD video/image backgrounds. Over a 1G network, it enables distribution, multicast, matrix switching, and video wall setups with centralized user rights management. Control is flexible via KVM, mobile app, or control unit (X2UH-CB). Additional features include PoE, HDMI™ loop-out, and audio extraction, making the X2UH-KVM-ED a complete, scalable AV-over-IP solution.



Features

1. **HDCP 2.2 Compliant** – Ensures compatibility with protected UHD content.
2. **Video Resolutions up to 4K@60Hz** – Delivers crystal-clear visuals with 18Gbps bandwidth for uncompromised signal quality.
3. **Long distance transmission** – Transmit audio/video signals up to 328ft/100m.
4. **LPCM 2.0CH Audio Support** – Maintains high-fidelity sound at 48kHz sampling.
5. **Dual-Function Device** – Can be configured as either a transmitter or receiver, switchable based on application needs.
6. **Multi-Window Roaming and Splicing** – Each decoder supports up to 16 sources with dynamic window management and overlay.
7. **KVM Functionality** – Enables one-to-one or one-to-many PC control from a single user station.
8. **H.264/H.265 Protocol Support** – Seamless integration with IP cameras and surveillance systems.
9. **Scrolling Text & Character Overlay** – Supports on-screen alerts, labels, and dynamic content overlay.
10. **Video Wall & Signal Routing Over 1G Network** – Facilitates point-to-point extension, multicast, and matrix switching.
11. **User Rights Management** – Secure access control across all endpoints.
12. **Flexible Control Options** – Operate via KVM, mobile app, or supported control servers (X2UH-CB).
13. **Standard PoE (802.3af Class 3)** – Simplifies power delivery with no need for external adapters.
14. **HDMI™ Local Loop-Out & Audio Extraction** – Enhances system flexibility for local monitoring and audio routing.
15. **Integrated Encoder & Decoder Design** – Compatible with Fiber Optic and RJ45 for flexible transmission.

Specifications & Package Contents

Package Contents

1.	X2UH-KVM-ED Transceiver	1 pcs
2.	6pin-3.81mm Phoenix Connector (male)	2 pcs
3.	3pin-3.81mm Phoenix Connector (male)	1 pcs
4.	Screw	4 pcs
5.	Mounting Ear	2 pcs
6.	Power Adapter	1 pcs
7.	User Manual	1 pcs

Specifications

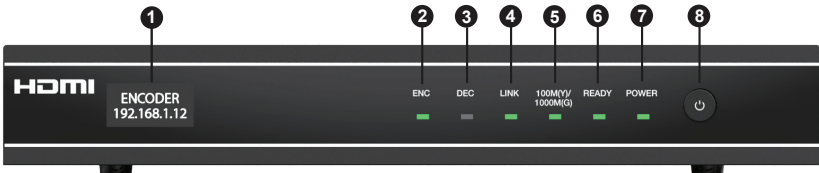
Technical	
HDMI™ Compliance	HDMI™ 2.0b
HDCP Compliance	HDCP 2.2
Video Compression Standard	H.264/H.265
Video Bandwidth	18Gbps
Network Port	1000M Base-T (supporting POE)
Video Resolution	Up to 4K@60Hz 4:4:4 (Note: The decoder supports custom resolution output.)
Color Space	RGB 4:4:4, YCbCr 4:4:4/4:2:2/4:2:0
Color Depth	8/10/12bit
Encoding Sampling Rate	48KHz
HDMI™ Audio Formats	LPCM 2.0CH, 16bit, 48k
Analog Audio Formats	Left and right stereo analog audio
ESD Protection	IEC 61000-4-2: ±8kV (Air-gap discharge) & ±4kV (Contact discharge)

Specifications

Connection	
Inputs	1 x HDMI™ [Type A, 19-pin female] 2 x AUDIO [3-pin phoenix connector]
Outputs	1 x HDMI™ [Type A, 19-pin female] 2 x AUDIO [3-pin phoenix connector]
Control	1 x LAN (POE) [RJ45] 1 x RS-232 [3-pin phoenix connector] 1 x USB HOST [Type B, 4-pin female] 2 x USB [Type A, 4-pin female] 1 x SFP [Fiber Optic]
Mechanical	
Housing	Metal Enclosure
Color	Black
Dimensions	L: 204mm / 8.03in W: 131.5mm / 5.17in H: 30mm / 1.18in
Weight	760g / 1.67lbs
Power Supply	Input: AC 100 - 240V 50/60Hz Output: DC 12V/2.5A (US/EU standards, CE/FCC/UL certified)
Power Consumption	Encoder: 10.22W; Decoder: 7.04W
Operating Temperature	0°C ~ 40°C / 32°F ~ 104°F
Storage Temperature	-20°C ~ 60°C / -4°F ~ 140°F
Operating Humidity	20%~80% relative humidity, non-condensing
Storage Humidity	10%~90% relative humidity, non-condensing

Operation Controls and Functions

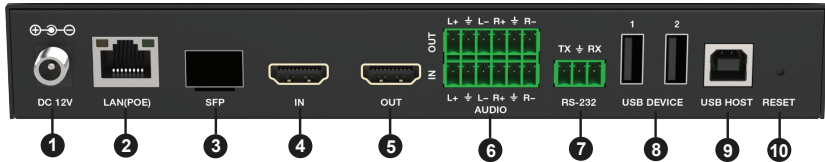
Front Panel



No.	Name	Function Description
1.	OLED display screen	The name and IP address of the device will be displayed after the device is turned on. The screen will go off after 90 seconds.
2.	ENC LED	When the device is in Encoder mode, the green LED will light up.
3.	DEC LED	When the device is in Decoder mode, the green LED will light up.
4.	LINK LED	When the network connection is normal, the green LED will flash.
5.	100M(Y)/1000M(G) LED	Network connection rate indicator: ▪ When the device is connected to a 100M network, the yellow indicator will light up. ▪ When the device is connected to a 1000M network, the green indicator will light up.
6.	READY LED	▪ When the system is running normally and no fault occurs , the green LED will light up. ▪ When the device is in standby mode, the green LED will light up. ▪ When a fault occurs while the system is running, the green LED will flash at a frequency of 1Hz.
7.	POWER LED	▪ When the device is working normally, the green LED will light up. ▪ When the device is in standby mode or powered off, the green LED will be turned off.
8.	Power button	The power button supports power-off memory function. ① When the device is working normally, power off and power on the device again, it will enter the system directly and work normally. ② When the device is in standby mode, power off and power on the device again, it will enter the standby mode automatically. Then short press the power button to turn on the device. ③ When the device is working normally, short press the power button to view the current encoder/decoder mode and IP address on the OLED display screen; press and hold the power button for more than 2 seconds to turn off the device.

Operation Controls and Functions

Rear Panel



No.	Name	Function Description
1.	DC 12V	Connect the included power adapter. If the LAN port is connected to a POE Switch, then the power adapter is not required. However, if both the LAN port and power adapter are being used, the device will take power from the power adapter.
2.	LAN (POE) port	Connect to a PoE Network Switch for audio/video transmission.
3.	SFP port	Connect to a fiber port on the Network Switch for audio/video transmission.
4.	IN port	Connect a media source device such as DVD Player, Streaming device, etc.
5.	OUT port	Connect a display device such as TV, Monitor, etc.
6.	AUDIO IN port	Connect to an audio source device through 6pin-3.81mm phoenix connector.
7.	AUDIO OUT port	Connect to an audio output device such as passive speakers, etc. through 6pin-3.81mm phoenix connector.
8.	RS-232 port	Connect to a PC/Laptop for RS-232 command control.
9.	USB DEVICE	Connect a USB peripheral such as Keyboard, Mouse, etc.
10.	USB HOST	Connect a USB host device such as PC, Laptop, etc.
11.	RESET button	System reset button. ▪ Long press the button for 5 seconds to reboot the device manually. The system will be restored to the factory default settings. ▪ Long press the button for 15 seconds, the software will be restored to the factory default version.

Main Functions and Characteristics

More Stable Architecture for AV over IP

H.264/H.265 Video Codec

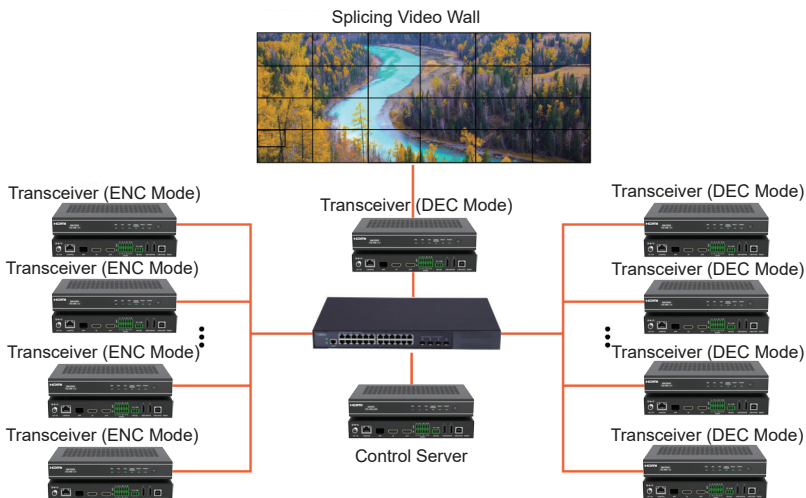
Utilizes advanced H.264/H.265 video encoding and decoding technology to deliver high-quality images with low bandwidth consumption and minimal latency.

Versatile Signal Management

Supports distribution, switching, extension, and matrix configurations over a Gigabit switch—allowing for unlimited device scalability. Offers flexible features such as audio-video switching, independent audio routing, and asynchronous AV output.

Seamless Security System Integration

Designed for smooth integration with H.264/H.265-based surveillance systems, enabling reliable video streaming from security cameras within the same AV network.



Main Functions and Characteristics

True 4K@60Hz (4:4:4) Output

Delivers ultra-high-definition 4K resolution with full 4:4:4 chroma subsampling for precise image clarity and vibrant detail—ideal for point-to-point display applications.

HDMI 2.0b Compliant

Fully supports the HDMI 2.0b standard, ensuring compatibility with modern displays and delivering a cinematic high-definition viewing experience.

Universal Display Compatibility

Supports synchronization within 100 μ s and is compatible with a wide range of display technologies—including LCD video walls, fine-pitch LED panels, and more. Offers customizable output resolution, input signal sharing, and output grouping for advanced display management.

Seamless Switching

Enables ultra-smooth source switching with no black screens, flickering, jitter, or screen tearing—delivering a flawless visual experience.



Traditional switching with black screen



Seamless switching



Instant switching with smooth visual experience

Main Functions and Characteristics

Integrated Design, Excellent Performance

Integrated Encoder/Decoder Design

Combines encoding and decoding functions into a single unit—simplifying inventory management, installation, and ongoing maintenance.

Broad Compatibility with IP Cameras

Supports direct access and decoding of various IP cameras (including Hikvision, Dahua, and Yushi) for display on video walls. Enables PTZ camera control and is ideal for integration with large-scale platforms, allowing unified management and centralized system scheduling.

Video Wall

Advanced Video Wall Functionality

Features powerful splicing capabilities for seamless video wall setups—delivers perfect edge alignment in both horizontal and vertical orientations.

High-Performance Video Signal Processing

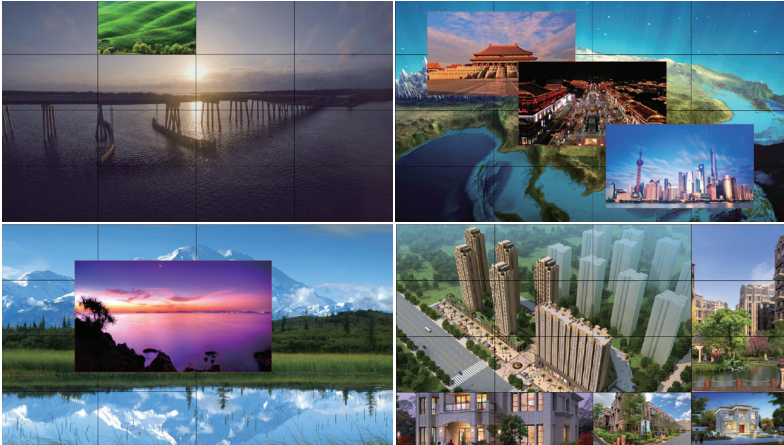
Equipped with premium image processing chips for reliable video capture, encoding, transmission, decoding, and frame synchronization. Ensures smooth playback without frame loss or lag, even during fast-moving scenes. Supports high-definition background images for enhanced display flexibility.

Free Window Display Output

Flexible Output Display

Each screen can handle up to 16 input signals simultaneously, supporting dynamic windowing, roaming, overlay, and splicing—offering complete layout customization.

Main Functions and Characteristics



Subtitle/Banner/Logo Display Output

Custom Text & Subtitle Overlay

Supports scrolling subtitles, character overlays on input/output, LED bar screen display, and more. Easily customize font, color, size, and position to match your display needs.

KVM Collaborative Management

Signal Push & Collaborative Management

Enables KVM-based signal push to large screens or other users for real-time collaborative scheduling and monitoring.

Visual Control Interface

Supports shortcut keys and OSD menus for fast signal switching, pushing, and control—simplifying centralized system management.

Multi-View Display (Seat Roaming)

Each screen can display 1, 4, 9, or 16 windows simultaneously, offering flexible visual layouts for operators.

Main Functions and Characteristics

Multi-Device Control

One operator can control multiple PCs with a single mouse and keyboard, while a single PC can output to multiple screens for extended or spliced display.

Centralized Operation (Man-Machine Separation)

All PCs are hosted in a secure central server room, enabling remote real-time access and reducing workstation clutter.



Additional Practical Functions

RS-232 Relay Control

Supports RS-232 commands from PCs or control systems for external device control.

HDMI Loop-Out

Enables signal cascading or connection to local monitoring displays.

PoE Support

Simplifies wiring and reduces installation costs by powering over Ethernet.

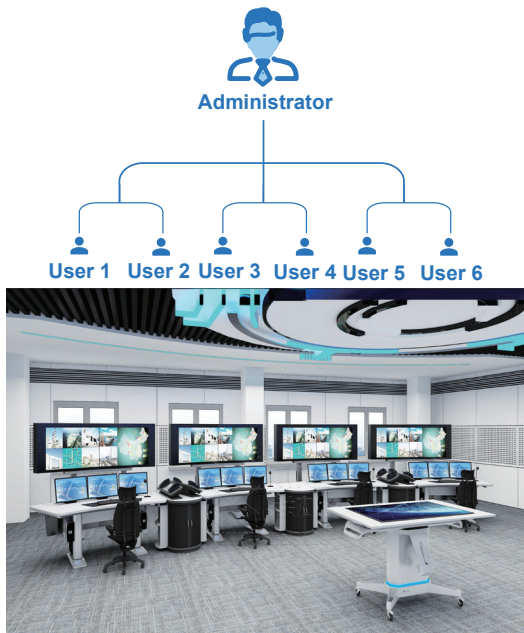
Audio Embedding/De-Embedding

Allows flexible audio signal integration or extraction for various applications.

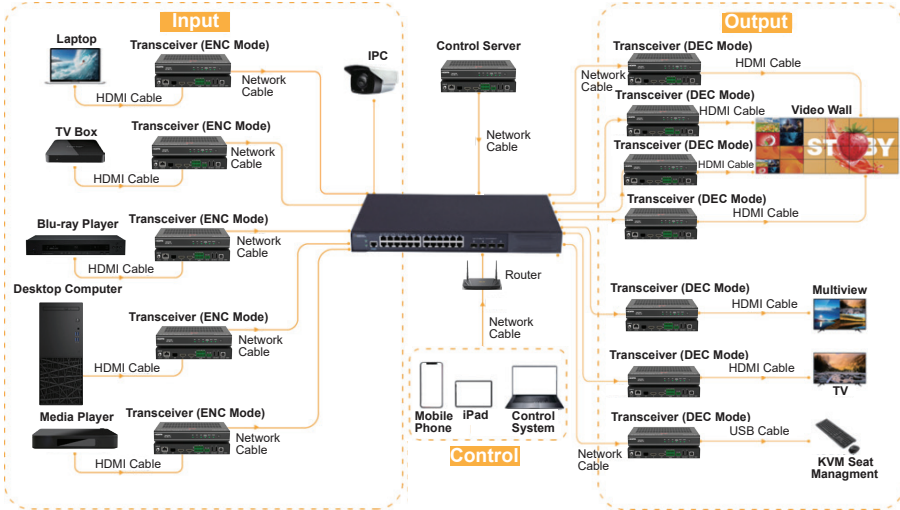
Main Functions and Characteristics

Multi-level User Rights Management

Supports multi-user online access with tiered permission levels to meet complex business management needs. Rights can be grouped and assigned systematically, ensuring a clear division of responsibilities. Through IP-based distribution and structured role allocation, the system enables precise control over access rights. User accounts are portable—following the individual across login locations—ensuring accountability is tied directly to each user.



Application Example



The terms HDMI, HDMI High-Definition Multimedia Interface, HDMI trade dress and the HDMI Logos are trademarks or registered trademarks of HDMI Licensing Administrator, Inc.

FAQs & Troubleshooting

1. How many Encoders and Decoders can be connected to a single network?

Up to 1000 encoders, 500 IPC, 1000 decoders.

2. Can I uplink another 48 port switch to connect more Transceivers as both Encoders and Decoders?

Switches cascading with 10G is supported.

The bandwidth of each encoder is almost 300Mbps, and you need to offer sufficient bandwidth when cascading.

3. What is the limit of video wall creation? How many displays can I connect to create a video wall?

Up to 50x50.

4. What are some popular network switches from the market that I can use with your products?

Common two-layer switches such as NETGEAR, CISCO, HUAWEI, H3C, TP-LINK.

Still have some questions?

Please feel free to contact us at: info@orei.com. OR Fill out the form on the 'Contact Us' page on the website.

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