



X2H-KVM-ED

**X2 Series (1080p) 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 X2H-KVM-ED is a high-performance AV-over-IP solution for advanced video distribution, system control, and flexible display management. It supports HDMI 1.4 & HDCP 1.4 and delivers 4K@30Hz & 1080p@60Hz video with 4.95Gbps bandwidth, 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 X2H-KVM-ED a complete, scalable AV-over-IP solution.

Features

1. **HDCP 1.4 Compliant** – Ensures compatibility with protected UHD content.
2. **Video Resolutions up to 4K@30Hz & 1080p@60Hz** – Delivers crystal-clear visuals with 4.95Gbps bandwidth for uncompromised signal quality.
3. **Long distance transmission** – Transmit audio/video signals up to 328ft/100m.
4. **4:2:2 encoding/decoding** – Delivers accurate color restoration for vivid imagery.
5. **Dual-Function Device** – Can be configured as either a transmitter or receiver, switchable based on application needs.
6. **High-definition background images and multi-screen splicing** – Allows flexible, expansive display setups.
7. **LPCM 2.0CH Audio Support** – Maintains high-fidelity sound at 48kHz sampling.
8. **Multi-Window Roaming and Splicing** – Each decoder supports up to 16 sources with dynamic window management and overlay.
9. **KVM Functionality** – Enables one-to-one or one-to-many PC control from a single user station.
10. **H.264/H.265 Protocol Support** – Seamless integration with IP cameras and surveillance systems.
11. **Scrolling Text & Character Overlay** – Supports on-screen alerts, labels, and dynamic content overlay.
12. **Video Wall & Signal Routing Over 1G Network** – Facilitates point-to-point extension, multicast, and matrix switching.
13. **User Rights Management** – Secure access control across all endpoints.
14. **Flexible Control Options** – Operate via KVM, mobile app, or supported control servers (X2UH-CB).
15. **Standard PoE (802.3af Class 3)** – Simplifies power delivery with no need for external adapters.
16. **HDMI™ Local Loop-Out & Audio Extraction** – Enhances system flexibility for local monitoring and audio routing.
17. **Integrated Encoder & Decoder Design** – Compatible with Fiber Optic and RJ45 for flexible transmission.

Specifications & Package Contents

Package Contents

1.	X2H-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

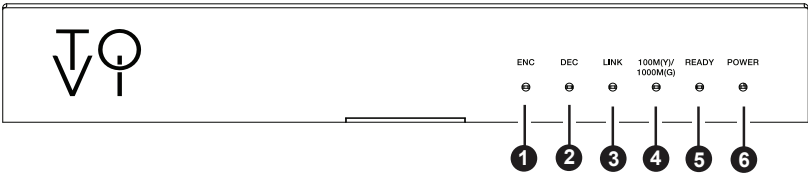
Technical	
HDMI™ Compliance	HDMI™ 1.4
HDCP Compliance	HDCP 1.4
Video Compression Standard	H.264/H.265
Video Bandwidth	4.95Gbps
Network Port	1000M Base-T (supporting POE)
Video Resolution	Up to 4K@30Hz/1080P@60Hz (Note: The decoder supports custom resolution output.)
Color Space	RGB 4:4:4, YCbCr 4:4:4/4:2:2/4:2:0
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	1x IN [HDMI™ Type A, 19-pin female] 2x AUDIO IN [3-pin phoenix connector, stereo balanced linear interface]
Outputs	1x OUT [HDMI™ Type A, 19-pin female] 2x AUDIO [3-pin phoenix connector, stereo balanced linear interface]
Control	1x LAN (PoE) [RJ45, supporting PoE] 1x RS-232 [3-pin phoenix connector] 1x USB HOST [Type B, 4-pin female] 2x USB DEVICE [Type A, 4-pin female] 1x SFP [Fiber slot]
Mechanical	
Housing	Metal Enclosure
Color	Black
Dimensions	L: 204mm / 8.03in W: 130mm / 5.12in H: 30mm / 1.18in
Weight	682g
Power Supply	Input: AC 100 - 240V 50/60Hz Output: DC 12V/1A (US/EU standards, CE/FCC/UL certified)
Power Consumption	Encoder: 6.6W (Max.); Decoder: 5.28W (Max.)
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

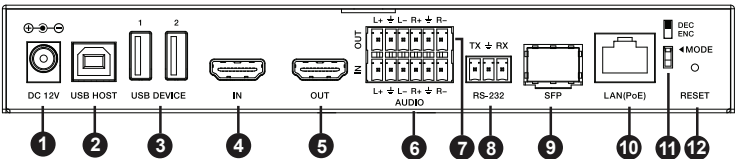
Operation Controls and Functions

Front Panel



No.	Name	Function Description
1.	ENC LED	When the device is in Encoder mode, the green ENC LED is on.
2.	DEC LED	When the device is in Decoder mode, the green DEC LED is on.
3.	LINK LED	When the network is connected normally, the green LINK LED flashes.
4.	100M(Y)/ 1000M(G) LED	Network connection rate indicator: ▪ When the device is connected to a 100M network, the yellow indicator is on. ▪ When the device is connected to a 1000M network, the green indicator is on.
5.	READY LED	▪ Encoder mode: When the encoder is powered on and not connected to the decoder, the green LED is off; When connected to the decoder, the green LED is on. ▪ Decoder mode: When the decoder is powered on and not connected to the encoder, the green LED is off; When connected to the encoder, the green LED is on.
6.	POWER LED	▪ When the device is working normally, the green POWER LED is on. ▪ When the device is in standby mode or powered off, the green POWER LED is off.

Rear Panel



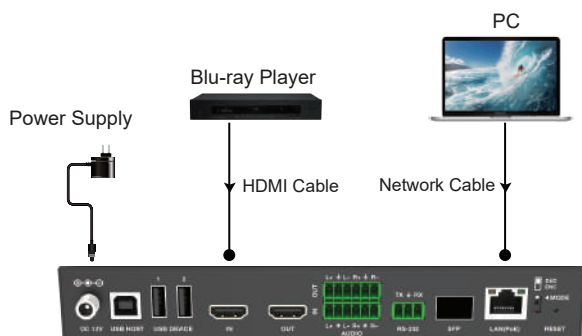
Operation Controls and Functions

No.	Name	Function Description
1.	DC 12V	DC 12V/1A power input port. Note: The device can be powered via two methods: ① Local DC 12V power supply. ② PoE from Network Switch. Device acts as PD mode. When the two power supply modes are used at the same time, the local DC 12V power supply is preferred.
2.	USB HOST	USB Host port, connected to computer in ENC mode.
3.	USB DEVICE	USB 1.1 device ports, connected to keyboard and mouse in DEC mode.
4.	IN port	HDMI signal input port, connected to HDMI signal source device such as PC or PS4 with HDMI cable.
5.	OUT port	HDMI signal output port, connected to HDMI display device such as TV or monitor with HDMI cable.
6.	AUDIO IN port	Stereo balanced through 6pin-3.81mm phoenix connector. line input port, connected to audio source device
7.	AUDIO OUT port	Stereo balanced line output port, connected to audio playback device through 6pin-3.81mm phoenix connector.
8.	RS-232 port	RS-232 serial port, relay RS-232 command transmission from the Control Server.
9.	SFP port	1G fiber port, connected to Switch for audio/video transmission.
10.	LAN(PoE) port	1G network port, connected to Switch for audio/video transmission. This port supports PoE power supply.
11.	MODE switch	Encoder/decoder mode switch. Switching to DEC: The unit is switched to the decoder mode. Switching to ENC: The unit is switched to the encoder mode. Each switching requires rebooting the unit to take effect.
12.	RESET button	System reset button. ▪ Long press this button for 5 seconds and reboot the device manually, the system will be restored to the factory default setting. ▪ Long press this button for 15 seconds, the software will be restored to the factory default version.

VLC Pull Streaming Operation Guide

This transceiver supports playing MainStream/Substream on computer through the software such as VLC media player, the operation steps are as following.

Step 1: Connect the transceiver (in encoder mode) with a PC, HDMI source device and power supply. The connection diagram is shown as below.

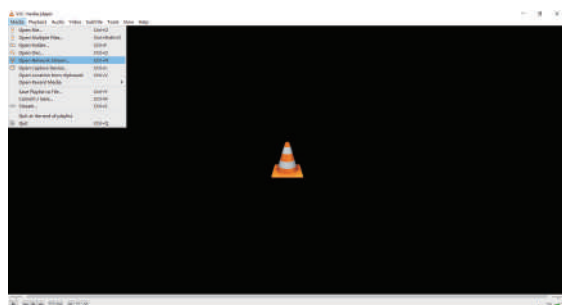


Step 2: Use the a bonjour protocol checking tool (such as zeroconfServiceBrowser) on PC to find the the IP address of the transceiver (in encoder mode).

Step 3: Set the PC's IP address to be in the same network segment as the IP address of the transceiver (in Encoder mode).

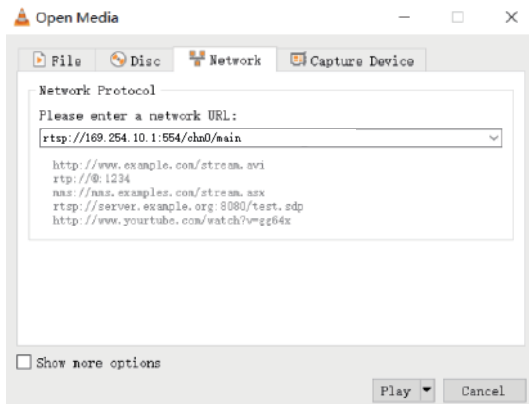
Step 4: Start the VLC media player on PC.

Step 5: Click "Media > Open Network Stream".



VLC Pull Streaming Operation Guide

After clicking the “Open Network Stream” option, the following window will appear.

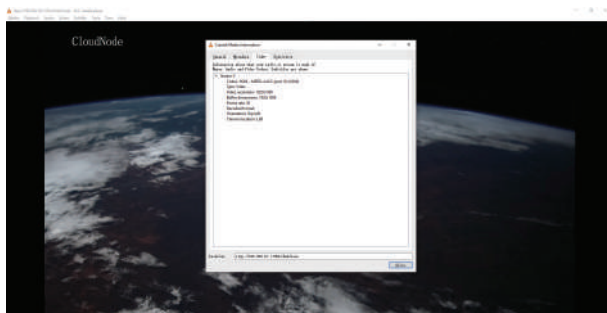


Step 6: Enter a MainStream or SubStream network URL, and then click “Play” button.

Video Stream	Network URL	Resolution
MainStream	rtsp://169.254.10.1:554/chn0/main	1080P30
SubStream	rtsp://169.254.10.1:554/chn0/sub	720P30

On the VLC media player, you can check the settings of Secondary Main Stream or Sub Stream. Select “Tools>Codec information”, or tap the shortcut key “Ctrl+J”, to view the Stream information (such as the current codec and resolution), as shown in the figure below.

Main Functions and Characteristics



More Stable Architecture for AV over IP

- **H.264/265 codec**

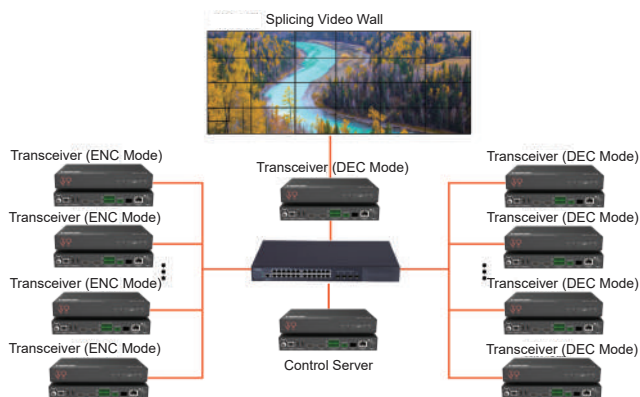
Standard H.264/H.265 video encoding and processing technology, with high image quality, small bandwidth and low latency.

- **Signal distribution, switching, extension and matrix mode**

Equipped with Gigabit Switch, unlimited device quantity.

Arbitrary switching, extension, audio independent switching, audio and video asynchronous switching, etc.

- **Seamless integration of H.264/265 encoding and decoding for security camera**



Main Functions and Characteristics

High Quality Image

- **4K@30Hz/1080P@60Hz image**

True 4K@30Hz/1080P@60Hz image resolution, 4:2:2 encoding and decoding for true color restoration, supporting high resolution point-to-point display.

- **HDMI™ 1.4**

Comply with the HDMI™ 1.4 standard, enjoy the high-definition visual feast of a large screen cinema.

- **Adapt to all types of screens**

Synchronization within 100μ s., supporting all types of display terminals, including LCD screen splicing, small pitch LED, etc. Output resolution can be customized. Support output grouping management and input signal source sharing.

Seamless Switching

- **Instant switching**

The image switches seamlessly and instantaneously without black screen, flash screen, jitter or tearing. The visual experience is smooth.



Traditional switching with black screen



Seamless switching



Instant switching with smooth visual experience

Main Functions and Characteristics

Integrated Design, Excellent Performance

- **Integrated design of encoder and decoder**

The integrated design of encoder and decoder, convenient for stock management, install and maintain.

- **Good compatibility**

Support IPC access. Directly connect and decode all kinds of IPC such as Hikvision, Dahua and Yushi in the network to display on the wall.

Support the PTZ control of the camera.

It is suitable for multi-platform docking in large system, realizing unified management and scheduling of multi-system.

Video Wall

- **Video wall function**

High-performance splicing processing capability, perfect splicing in both horizontal and vertical directions.

- **Video signal processing**

Adopt top-notch image processing chips for acquisition, encoding, transmission, decoding and frame synchronization. Ensure that each video signal has no frame loss or lag, and can withstand the test of fast moving video.

Support high definition background image.

Free Window Display Output

- **Free output display**

A single screen can process up to 36 signals, enabling arbitrary windowing, roaming, overlaying and splicing.

Main Functions and Characteristics



Subtitle/Banner/Logo Display Output

- **Supports scrolling subtitles, input/output character overlay, LED bar screen, and scrolling subtitle display.**

You can freely define the font, color, size and position of overlay characters.

KVM Collaborative Management

- **Signal push management**

KVM collaborative management can push the current signal to other personnel and large screens for quick collaborative scheduling.

- **Visual takeover**

The system supports shortcut keys and OSD menu, which can quickly realize the functions of signal switching, push, control, etc., so as to achieve centralized control.

- **Seat roaming**

A single display can achieve 1/4/9/16 split screen display.

Main Functions and Characteristics

- **One person with multiple machines, one machine with multiple screens**

The seat operator can control multiple PCs through a set of mouse and keyboard, and a single PC can be spliced and displayed on multiple displays.

- **Man-machine separation**

All PCs are centrally managed in the computer room, achieving real-time operation and remote control.



Additional Practical Functions

- **RS-232 relay command**

Connected to PC or control system for RS-232 relay control command.

- **HDMI™ loop out**

Convenient for signal cascading or connecting to local signal monitoring equipment.

- **PoE power supply**

Reduce construction wiring and reduce costs.

- **Audio embedding and de-embedding**

With audio embedding and de-embedding function, it is convenient for users to use audio signal processing for various purposes.

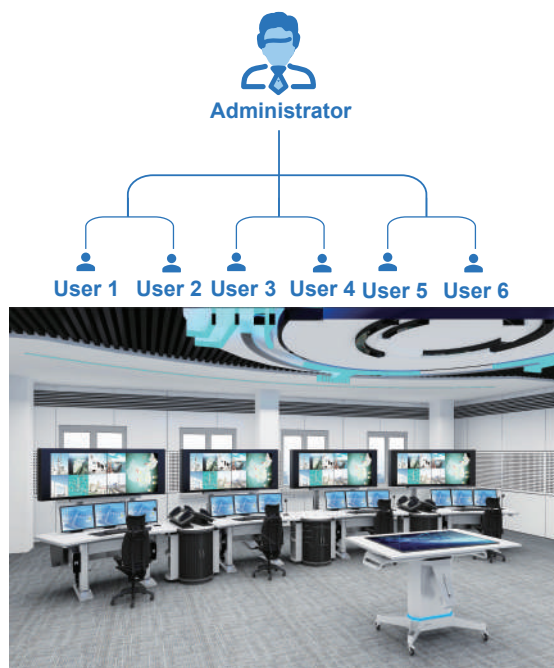
Main Functions and Characteristics

Multi-level User Rights Management

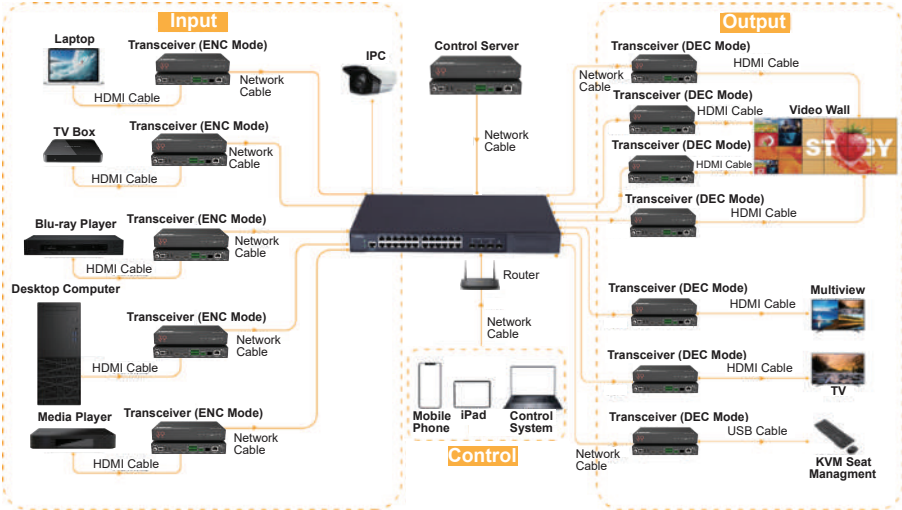
- **Supports hierarchical management of user rights and simultaneous online management of multiple users**

Fully meets customers' multi-level management needs for rights and match the business management process. Through the IP distribution, systematic, scientific and rigorous right management mechanism, the hierarchical and grouped rights are defined and allocated to form a detailed right list, so that the rights and responsibilities are clearly defined.

The account follows the person and can move according to the user's login position, ensuring that responsibility is assigned to the person.



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

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.

Our team will be more than happy to help you.

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