



X1H-ETX & ERX

**X1 Series (1080p)
w/ Video Wall
USER MANUAL**

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Table of Contents

Introduction	04
Features	05
Package Contents	06
Specifications	07
Operation Controls and Functions	09
Encoder Panel	09
Decoder Panel	13
Rack Mounting Instruction	17
4U Rack Mounting	17
1U Rack Mounting	18
Encoder and Decoder Matching Settings	19
WebGUI User Guide	20
VLC Pull Streaming Operation Guide	28
Switch	31
Control Box Compatibility	31
Application Example	32
FAQs & Troubleshooting	33

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

Contact Us:

 Email: info@orei.com

 Phone: 877-290-5530

 Chat Live: www.orei.com

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

Introduction

The X1H-ETX & ERX is designed to distribute high-definition video and audio signals across standard 100M/1G network infrastructure.

Utilizing configurable H.265/H.264 compression, it delivers high-quality, low-bandwidth video with resolutions up to 1920×1200@60Hz 4:4:4, ideal for commercial AV, digital signage, and control room applications.

It supports signal transmission up to 328ft (100m) over CAT5e/6/6a/7 cables, with advanced features like audio embedding/extraction, RS-232 control, and video wall capabilities (up to 9×9 layout).

With intelligent Web GUI management, flexible control options (through X1H-CB control box), and Power over Ethernet (PoE) support, it offers a reliable, scalable, and easy-to-install AV distribution solution.



1. **HDCP 1.4 Compliant** – Ensures compatibility with standard HDMI™ sources and displays.
2. **1920×1200@60Hz 4:4:4 Video Resolution** – Delivers crisp, high-quality video with vivid color accuracy.
3. **4.95Gbps Video Bandwidth** – Supports smooth and stable AV transmission.
4. **328ft/100m Signal Extension** – Extend signals over CAT5e/6/6a/7 cables for long-distance installations.
5. **Flexible AV Distribution** – Supports distribution, multicast, matrix switching, and video walls up to 9×9 over a 1G network.
6. **Intelligent Video Wall Management** – Allows novel layouts and easy video wall configuration.
7. **LPCM 2.0CH (32/44.1/48KHz) Audio Support** – Transmits clear stereo audio for various applications.
8. **Audio Embedding & Extraction** – Integrates or separates audio signals as needed.
9. **RS-232 Control** – Offers pass-through, guest mode, and single-device control options.
10. **Main & Sub Stream Encoding** – Supports multiple stream formats for varied network conditions.
11. **Web GUI & Control Box (X1H-CB) Configuration** – Stream parameters and settings easily adjustable.
12. **Multiple Control Options** – Operate via panel buttons, RS-232, TCP/IP, Web GUI, or Control Box (X1H-CB).
13. **Power over Ethernet (PoE)** – Simplifies installation with single-cable power and data transmission.
14. **Smart Network Design** – Ensures quick, flexible, and reliable system setup.

Package Contents

For X1H-ETX

1.	X1H-ETX	1pcs
2.	3-pin 3.81mm Phoenix Connector (male)	2pcs
3.	Mounting Ear	2pcs
4.	Machine Screw (KM3*4)	4pcs
5.	Power Adapter	1pcs
6.	User Manual	1pcs

For X1H-ERX

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Specifications

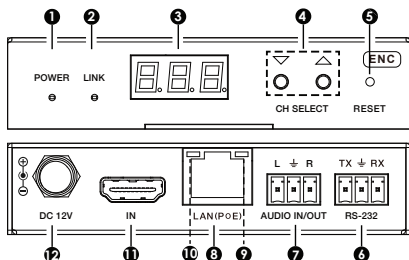
Technical	
HDMI™ Compliance	HDMI™ 1.3
HDCP Compliance	HDCP 1.4
Video Bandwidth	4.95Gbps
Video Compression Standard	H.265/H.264
Transmission Distance	328 ft (100 m) via CAT5e/6/6a/7 cables
Video Resolution	Up to 1920x1200@60Hz 4:4:4
Color Space	RGB 4:4:4, YCbCr 4:4:4, YCbCr 4:2:2
Color Depth	Input: 8-bit, 10-bit, 12-bit (1080p@60Hz); Output: 8-bit
Audio Formats	LPCM 2.0CH (32/44.1/48KHz)
Connection	
Encoder	1x HDMI™ IN [Type A, 19-pin female] 1x AUDIO IN/OUT [3-pin phoenix connector] 1x RS-232 [3-pin phoenix connector] 1x LAN [RJ45 connector, PoE]
Decoder	1x HDMI™ OUT [Type A, 19-pin female] 1x LAN [RJ45 connector, PoE] 1x AUDIO OUT [3-pin phoenix connector] 1x RS-232 [3-pin phoenix connector]

Specifications

Mechanical	
Dimensions	Encoder / Decoder: L: 120mm / 4.72in W: 95mm / 3.74in H: 21.5mm / 0.85in
Housing	Metal Enclosure
Color	Black
Weight	Encoder & Decoder: 295g / 10.40oz
Power Supply	Input: AC100 - 240V 50/60Hz, Output: DC 12V/1A
Power Consumption	Encoder: 2.88W; Decoder: 2.88W
Operating Temperature	-10°C ~ 45°C / 14°F ~ 113°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

Encoder Panel



No.	Name	Function Description
1.	POWER LED (Red)	The LED flashes at 1 Hz during the system startup, and the LED is always on after the startup is complete.
2.	LINK LED (Green)	Network connection status LED. - Light on: Network is connected well, and there is compatible signal (the resolution is less than 1920*1200, and the frame rate is less than or equal to 60) access. - Light flashes at 1Hz: Network is connected well, but there is not video input. - Light flashes at 10Hz: Network is connected well, but the accessed signal is incompatible (resolution is greater than 1920*1200, or the frame rate is greater than 60). - Light off: Network is not connected.
3.	LED screen	Displays IP address, ID etc information. Note: When clicking the SHOW ME option of the corresponding machine on the Controller, the LED screen of the corresponding machine will flash "SHO", so that you can find the corresponding machine in the system.

Operation Controls and Functions

No.	Name	Function Description
4.	CH SELECT	Used to set Encoder ID and other settings.
5.	RESET	Press and hold for 5 seconds, the system will restart and the device will restore to factory settings.
6.	RS-232	RS-232 serial port, supporting signal pass-through and local serial port control.
7.	AUDIO IN/ OUT	AUDIO IN: Analog stereo audio input port. Connect to an audio input source device. AUDIO OUT: Analog stereo audio output port. Connect to an audio output device.
8.	LAN (PoE)	Connect to a PoE Network Switch for audio/video transmission.
9.	Link Signal Indicator lamp (Green)	▪ Light on: Receiving PoE power. ▪ Light off: Not receiving PoE power.
10.	Data Signal Indicator lamp (Yellow)	▪ Light flashing: Data transmission working. ▪ Light off: Data transmission not working.
11.	HDMI IN	Conned a media source device such as DVD player, streaming device, etc.
12.	DC 12V	Connect the included power adapter. If the LAN port is connected to a POE Switch, then the power adapter is not required.

Operation Controls and Functions

Notes:

Encoder can choose HDMI audio input or external audio embedding. It can be set through the CH SELECT buttons on the front panel of the Encoder. (The default setting is HDMI audio input.) If it is set to HDMI audio input, the L/R OUT output of Encoder is HDMI audio loop out. If it is set to external audio embedding, the L/R IN input of Encoder is the input of external audio embedding, and the L/R OUT output is the external audio embedding loop out.

Operation description of the LED screen and CH SELECT buttons (For Encoder).

1. **ENC ID:** After the system is powered on, the Encoder's LED screen will show the ENC ID (000 by default if not set).
2. **IP address:** Press and hold the UP button for 5 seconds, the Encoder's LED screen will show in sequence "IP:", "xxx", "xxx", "xxx", "xxx", which is the IP address of Encoder.
3. **Configuration mode:** Press and hold UP + DOWN buttons at the same time for 5 seconds, then release to enter the configuration mode with "CFN" displaying on the LED screen.
4. **Channel ID settings:** After entering the configuration mode, press the UP/DOWN button to display the current ID number (e.g. 001) on the LED screen. Press and hold UP + DOWN buttons for 5 seconds, then release to enter the "ID Settings" mode. The ID number (e.g. 001) on the LED screen will flash at 1Hz, then press the UP or DOWN button to select the Channel ID you desired, then press and hold UP + DOWN buttons for 5 seconds to confirm the setting and stop flashing.

Operation Controls and Functions

5. **EDID settings:** After entering the configuration mode, press the UP/DOWN button until the LED screen shows “E00” (in which “E” refers to EDID, “00” to EDID ID). Press and hold UP + DOWN buttons for 5 seconds, then release to enter the “EDID Settings” mode. The EDID ID number (e.g. E01) on the LED screen will flash at 1Hz, then press the UP or DOWN button to select the EDID ID you desired, then press and hold UP + DOWN buttons for 5 seconds to confirm the setting and stop flashing.

The corresponding EDID ID is as follows:

EDID ID	EDID Description
00	H1080P60_2CH
01	H720P60_2CH
02	D1024P60
03	D1080P60
04	D1200P60
05	H1200P60_2CH
06	COPY
07	USER1
08	USER2

Notes:

- (1) H refers to HDMI; D refers to DVI. (The default EDID of 1080p60 will be used if you have not previously copied the EDID to ID 06 or downloaded EDID to ID 07/08 on the controller box web page.)
- (2) EDID ID 06/07/08 is not available without Controller Box.

Operation Controls and Functions

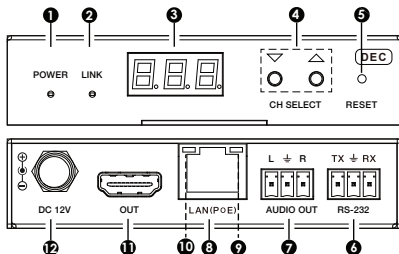
6. **Audio settings:** After entering the configuration mode, press the UP/ DOWN button until the LED screen shows "AHE" (in which "A" refers to Audio and "HE" to HDMI EMB). Press and hold UP + DOWN buttons for 5 seconds, then release to enter the "AUDIO Settings" mode. The audio option (AHE or AEI) on the LED screen will flash at 1Hz, then press the UP or DOWN button to select the AUDIO option, then press and hold UP + DOWN buttons for 5 seconds to confirm the setting and stop flashing.

The corresponding audio options are as follows:

AHE: Use HDMI Audio

AEI: Use external Audio In

Decoder Panel



Operation Controls and Functions

No.	Name	Function Description
1.	POWER LED (Red)	The LED flashes at 1 Hz during the system startup, and the LED is stays on after the startup is complete.
2.	LINK LED (Green)	Network connection status LED. ▪ Light on: Network is connected well, and there is video data. ▪ Light flashes: Network is connected well, but there is no video data. ▪ Light off: Network is not connected.
3.	LED screen	Displays IP address, ID etc information. Note: When clicking the SHOW ME option of the corresponding machine on the Controller, the LED screen of the corresponding machine will flash "SHO", so that you can find the corresponding machine in the system.
4.	CH SELECT	Used to set Decoder ID and other settings.
5.	RESET	System reset button. Press and hold for 5 seconds, the system will restart and the device will restore to factory settings.
6.	RS-232	RS-232 serial port, supporting signal pass-through and local serial port control.
7.	AUDIO OUT	Connect to an audio output device such as passive speakers, etc. through a 3pin-3.81mm phoenix connector.
8.	LAN (PoE)	Connect to a PoE Network Switch for audio/video transmission.
9.	Link Signal Indicator lamp (Green)	▪ Light on: Receiving PoE power. ▪ Light off: Not receiving PoE power.

Operation Controls and Functions

No.	Name	Function Description
10.	Data Signal Indicator lamp (Yellow)	▪ Light flashing: Data transmission working. ▪ Light off: Data transmission not working.
11.	HDMI OUT	Connect a display device such as TV, Monitor, etc.
12.	DC 12V	Connect the included power adapter. If the LAN port is connected to a POE Switch, then the power adapter is not required.

Operation description of the LED screen and CH SELECT buttons (For Decoder).

1. **Connected ENC ID:** After the system is powered on, the Decoder's LED screen will show the ID of the connected Encoder (000 by default if not set).
2. **IP address:** Press and hold the UP button for 5 seconds, the Decoder's LED screen will show in sequence "IP:", "xxx", "xxx", "xxx", "xxx", which is the IP address of the Decoder.
3. **Configuration mode:** Press and hold UP + DOWN buttons at the same time for 5 seconds, then release to enter the configuration mode with "CFN" displaying on the LED screen.
4. **Channel ID settings:** After entering the configuration mode, press the UP/DOWN button to display the current ID number (e.g. 001) on the LED screen. Press and hold UP + DOWN buttons for 5 seconds, then release to enter the "ID Settings" mode. The ID number (e.g. 001) on the LED screen will flash at 1Hz, then press the UP or DOWN button to select the Channel ID you desired, then press and hold UP + DOWN buttons for 5 seconds to confirm the setting and stop flashing.

Operation Controls and Functions

5. **Output Resolution settings:** After entering the configuration mode, press the UP/DOWN button until the LED screen shows "S00" (in which "S" refers to Scaler and "00" to resolution ID), then press and hold UP+DOWN buttons for 5 seconds, then release to enter the "Output Resolution Settings" mode. The Resolution ID number (e.g. S01) on the LED screen will flash at 1Hz, then press the UP or DOWN button to select the Resolution ID you desired, then press and hold UP + DOWN buttons for 5 seconds to confirm the setting and stop flashing. The corresponding output resolution is as follows:

Resolution ID	Resolution Description	Resolution ID	Resolution Description
00	Pass-through (default)	10	640X480P60
01	1080P60	11	800X600P60
02	1080P50	12	1024X768P60
03	1080P30	13	1280X800P60
04	1080P25	14	1280X1024P60
05	1080P24	15	1366X768P60
06	720P60	16	1440X900P60
07	720P50	17	1600X1200P60
08	576P50	18	1680X1050P60
09	480P60	19	1920X1200P60

Rack Mounting Instruction

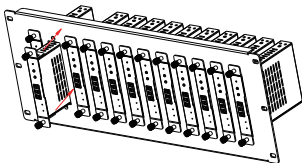
4U Rack Mounting

This product can be mounted in a standard 4U rack (Please contact your supplier for 4U rack sale). The mounting steps are as follows:

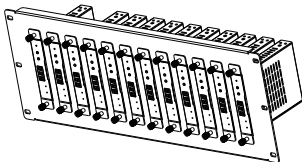
Step 1: Use included screws to fix two mounting ears on the product, as shown in the figure below:



Step 2: Insert the product with mounting ears into a 4U rack (up to 12 units can be installed vertically), as shown in the figure below:



Step 3: Use screws to fix mounting ears on the rack to complete the mounting, as shown in the figure below:

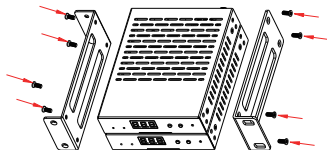


Rack Mounting Instruction

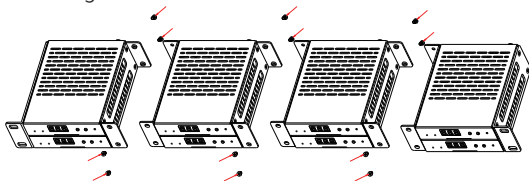
1U Rack Mounting

This product also can be mounted in a standard 1U rack (up to 8 units can be installed horizontally). The mounting steps are as follows:

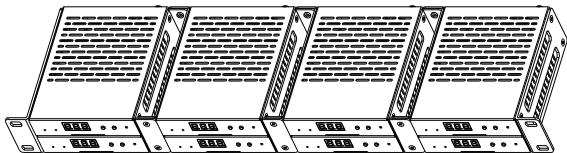
Step 1: Stack two products on top of each other, then use included screws to fix two 1U rack panels on the products, as shown in the figure below:



Step 2: Fix two 1U rack panels on another two stacked products in the same way, then use screws to fix two 1U rack panels together, as shown in the figure below:



Step 3: Fasten screws between two 1U rack panels, so that eight products are mounted in a 1U rack, as shown in the figure below:



Encoder and Decoder Matching Settings

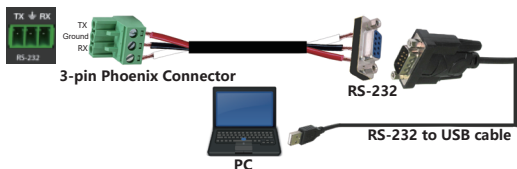
When multiple Encoders and Decoders are used in the system without a Controller Box, it is necessary to match them well firstly. You can match all Encoders and Decoders in following three methods.

Method 1: Use the CH SELECT buttons on the front panel of the Encoder/Decoder.

Use the LED screen and front panel buttons to set the ID of Encoder, then set the ID of Decoder, finally set the Encoder ID from which to subscribe the stream. Match all Encoders and Decoders in the same way.

Method 2: Use the RS-232 serial port command control.

Connect the RS-232 port of Encoder/Decoder to a PC or control system, as shown in the figure below. Then use a Serial Command tool on PC to send the RS-232 command code: `!OUT xxx FR yyy\r\n`. The function of this command is to connect the Decoder (ID:xxx) to the Encoder (ID:yyy). Match all Encoders and Decoders in the same way.

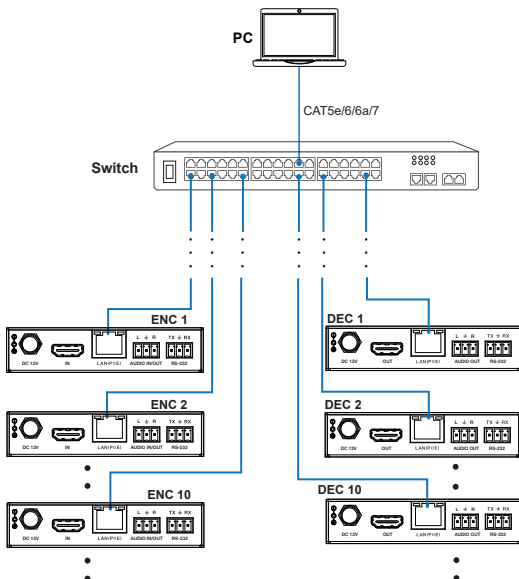


WebGUI User Guide

You can use the built-in Web GUI to configure all IP products through a Switch. The operation method is shown as below.

Step 1: Match all Encoders and Decoders as described in the above chapter.

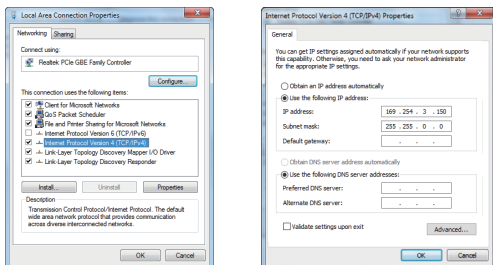
Step 2: Connect the PC, Encoders and Decoders you need to configure to a Switch. The connection diagram is shown as below



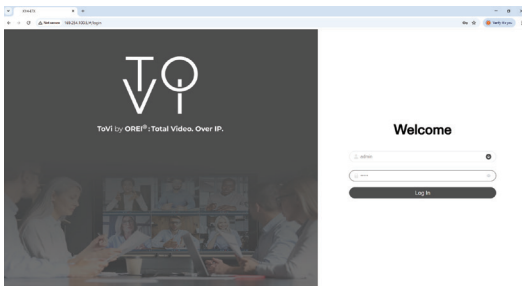
WebGUI User Guide

Step 3: Press and hold the (CH SELECT) UP button on the front panel of the Encoder/Decoder for 5 seconds to check the IP address.

Step 4: Set the PC's IP address to be in the same network segment with the Encoder/Decoder, for instance, set the IP address to be 169.254.3.150 and Subnet mask to be 255.255.0.0.



Step 5: Input the IP address of the Encoder/Decoder into the browser on PC to enter the Web GUI login interface.



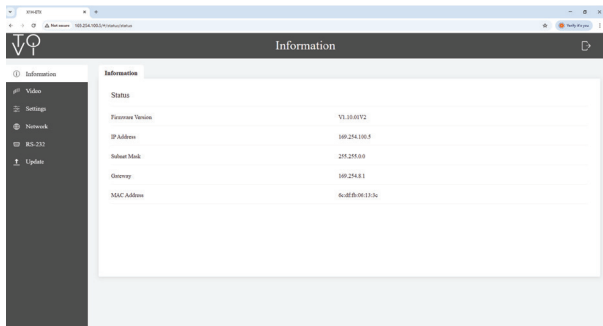
WebGUI User Guide

Step 6: Input the default User “admin” and the default Password “admin”, and then click “Log In” to enter the Web GUI interface.

The Web GUI function pages are shown as below:

Device Information Page

The Status page provides basic information about the Encoder/Decoder, such as Firmware Version, IP Address, Subnet Mask, Gateway and MAC Address.



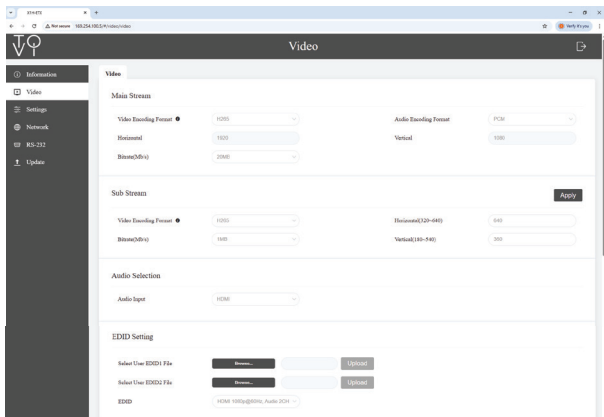
Video Configuration Page

On this page, you can configure the video properties as required.

Encoder Video Configuration

Encoder video configuration page includes Main Stream, Sub Stream, Audio Selection and EDID Setting.

WebGUI User Guide



Main Stream: You can configure Video Encoding Format, Audio Encoding Format and Bitrate. Video Encoding Format supports H.264 and H.265 (H.265 by default). Audio Encoding Format supports PCM and AAC (PCM by default). Encoding Resolution cannot be set, it follows the input resolution. The default Bitrate is 8Mb/s.

Sub Stream: You can configure Video Encoding Format, Resolution and Bitrate. Video Encoding Format supports H.264 and H.265 (H.265 by default). The default Encoding Resolution is 640*360. The default Bitrate is 1Mb/s.

Audio Selection: You can configure the Audio Input (HDMI/Analogue).

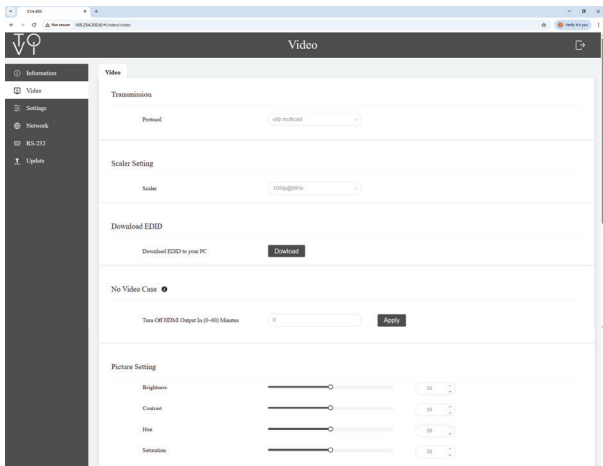
WebGUI

User Guide

EDID Setting: You can choose an EDID option from the drop-down list. Besides, User EDID 1 and User EDID 2 can be uploaded in Select User EDID1 File and Select User EDID2 File, and the content of the uploaded binary file is EDID. (This file can be downloaded from the Download EDID of the Decoder Video page.)

Decoder Video Configuration

Decoder video configuration page includes Transmission Protocol, Scalar Setting, Download EDID, No Video Case and Picture Setting.



Transmission Protocol: You can select “udp unicast” or “udp multicast” (udp multicast by default).

Scaler Setting: You can set the output resolution (Pass-through by default).

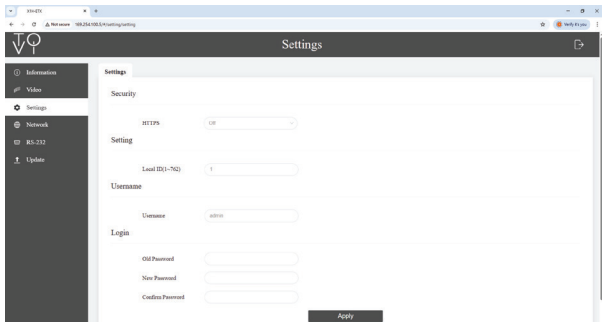
Download EDID: You can download the EDID binary file of the display device connected to the Decoder. The EDID file can be used as the User EDID file to be uploaded to the Encoder.

No Video Case: You can set the timeout to turn off the HDMI output when no input video signal is detected. 0 means never close.

Picture Setting: You can configure the picture parameters (Brightness, Contrast, Hue and Saturation).

Settings Page

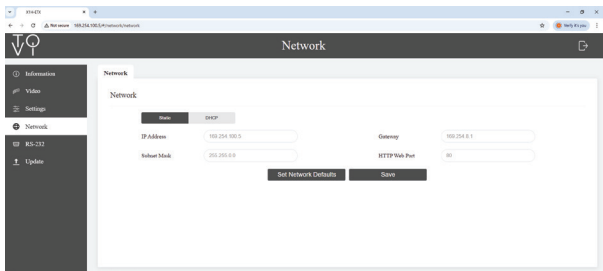
On this page, you can turn on/off HTTPS for security setting, set Local ID (1-762), modify username and Login Password as required.



WebGUI User Guide

Network Page

On this page, you can configure Network settings as required.



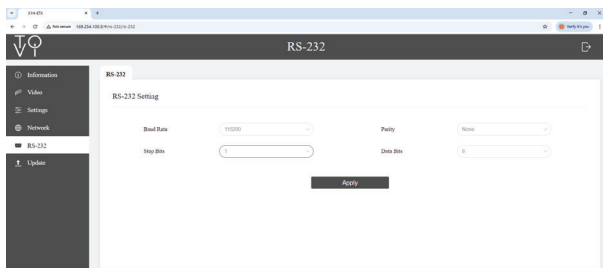
Notes:

- (1) The Network Settings can be set only when the Static IP mode is selected.
- (2) All changes will take effect by clicking "Save" below.
- (3) After any changes to the Network Settings, it will redirect to the Web browser home page or the Web GUI login interface. You need to log in the Web GUI again with the new settings.

RS-232 Page

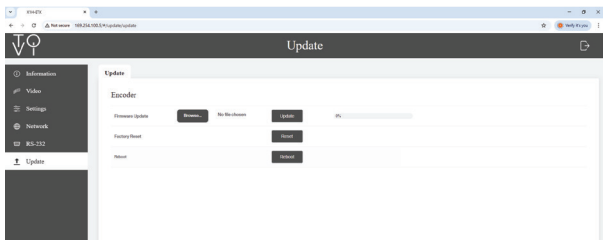
On this page, you can configure RS-232 settings (baud rate, parity, stop bits, data bits) as required.

WebGUI User Guide



Update Page

Click "Browse.." to import the upgrade file and click "Update" to start upgrade. There will be a progress bar prompt during the upgrade process. When the progress bar reaches 100%, it indicates the upgrade is successful, and the device will be restarted automatically. Clicking "Reset" can reset the device to factory default settings. Clicking "Reboot" can reboot the device.

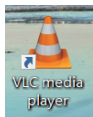


VLC Pull Streaming Operation Guide

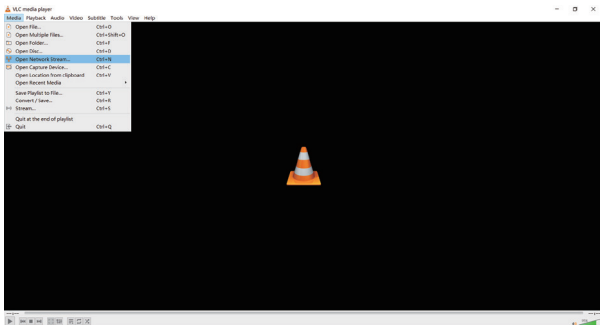
This product supports playing MainStream/Substream on computer through the corresponding software such as VLC media player, simultaneously you can access the build-in Web GUI to configure the MainStream/Substream.

After successfully logging into the Web GUI following the instructions in the previous chapter, proceed with the VLC pull streaming operation by following the steps below.

Step 1: Open the VLC media player on PC. Please see the following icon.

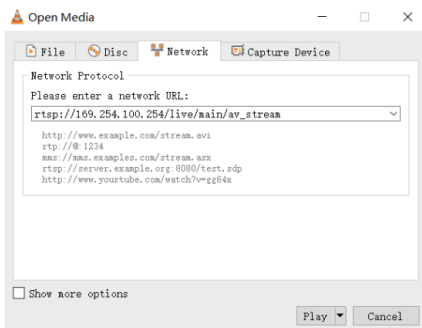


Step 2: Click "Media > Open Network Stream".



Then the following window will appear.

VLC Pull Streaming Operation Guide



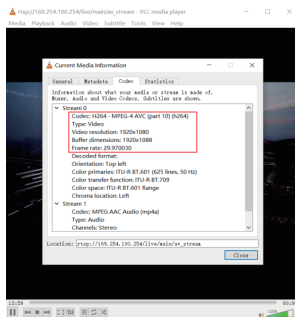
Step 3: Enter a MainStream or SubStream network URL, then click “Play” button.

Video Stream	Network URL
MainStream	rtsp://169.254.100.254/live/main/av_stream
SubStream	rtsp://169.254.100.254/live/sub/av_stream

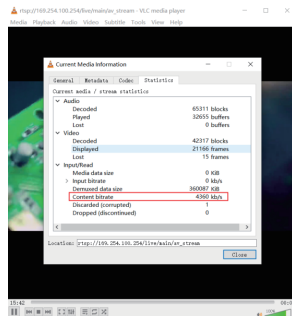
Note: The default IP address of device is 169.254.100.254. If there is a router in the system, you can use the front panel buttons and LED screen to check the current IP address of the device, and use the current IP address as the network URL.

On the VLC media player, you can check Secondary Main Stream or Sub Stream settings that are configured on the “Video Page” (Please refer to “Web GUI Operation Guide” for details). Choose “Tools>Codec information”, a pop-up window will display and show you Stream information, as shown in the figure below.

VLC Pull Streaming Operation Guide



Choose "Tools>Codec information>Statistics" to check the current Bitrate, as shown in the figure below.



Note: The Bitrate is floating up and down when you check it. This is a normal phenomenon.

Switch & Control Box Compatibility

Switch

A network switch with below features is recommended:

1. Type of layer 3/managed network Switch.
2. Gigabit bandwidth. (1G or 10G)
3. 8KB jumbo frame capability.
4. ICMP snooping.

The Encoder and Decoder can be controlled using a Control Box/ Video Network Hub. Use the X1H-CB video network hub to control all ToVi X1 models on a single network.

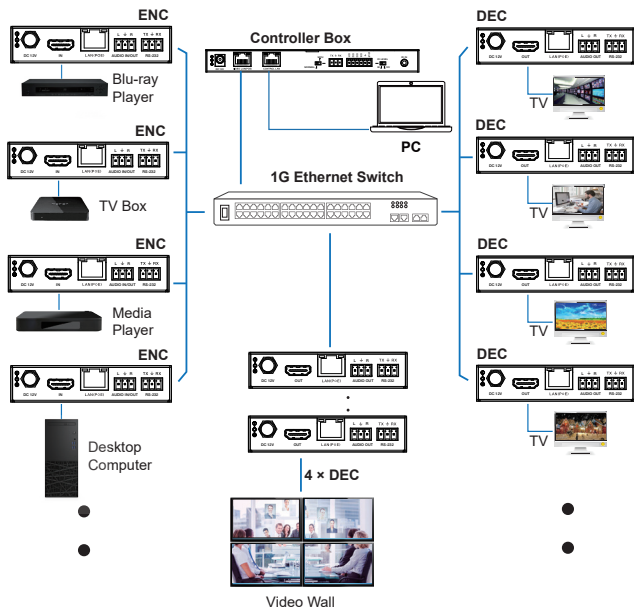
The following Switch models are highly recommended.

Manufacturer	Model Number
ToVi	NS-1G24
ToVi	NS-1G48
HUAWEI	S5720S-28X-PWR-LI-AC
NETGEAR	S3300

Control Box Compatibility

The Encoder and Decoder can be controlled using a Control Box/ Video Network Hub. Use the X1H-CB video network hub to control all ToVi X1 models on a single network.

Application Example



HDMI™
HIGH-DEFINITION MULTIMEDIA INTERFACE

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FAQs & Troubleshooting

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

Up to 762 encoders, 762 decoders.

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

Switches cascading with 10G is supported.

The bandwidth of each encoder is almost 20Mbps, 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 9x9.

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.

Our team will be more than happy to help you.

OREI Live Technical Support Hours

US team (US/Canada/Mexico): Monday-Friday, 9 a.m. - 5 p.m. Central Time
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X1 Series (1080p) w/ Video Wall

X1H-ETX & ERX

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