User's Manual

HX130 4K Over IP

Version : 1.1

Introduction

Thanks for purchasing HX130 4K over IP. The HX130 4K over IP comprises two distinct units, the Transmitter and Receiver unit respectively. It's a LAN based extender and working in pairs to extend your HDMI video from local player to a remote display. To connect both units of transmitter and receiver, you can use either a direct CATx cable connection or through a Gigabit Ethernet Switch in between. The image can be delivered up to 100m, while still keeping a satisfying image quality.

The supported resolution can be up to 2160p@60Hz with 7.1 audio channel. Applicable either over an exhibition room, working floors, demo room, control center, or other mission-critical scenarios.

Features

- 4K Over Gigabit Network with Ultra low 1 frame latency
- Up to HDMI 2.0 2160p@60Hz 4:2:0 Video Input and HDCP2.2 supported
- Audio supports LPCM and Dolby Digital /Dolby Digital Plus/DTS/Dolby TruHD/DTS-HD bit stream
- Each receiver can choose different video format (choose input format or output)
- Max. Bit Rate control (10 Mbps ~ 800 Mbps)
- USB 2.0 pass-thru for IP KVM application
- webpage management
- RS-232 Serial control command management
- Https/Telnet command management
- Automatic EDID configuration
- Output video rotation
- Output video partial enlargement and shift for videowall and irregular video wall application
- 4-bit DIP switch for 16 stream channel selection
- Small size / VESA mount
- Rack-mount

Specification

Model No.	HX130T	HX130R
Component Type	Transmitter	Receiver
Dimension (L x W x H)	95 x 115 x 26 mm	115 x 115 x 26 mm
AV Interface	HDMI Female (In) x 1	HDMI Female (Out) x 1
	HDMI Female (Out, Loopback) x 1	
USB Port	USB Type Mini-B Female x 1	USB Type A Female x 4
TX/RX Connection	RJ45 Female x1	
Switch	4 Position Dip Switch x 1	
IR	3.5mm Jack Female x 1	
RS232	RJ12 Female x 1	
Image Resolution	3840 x 2160 @60Hz	
Power Adapter	DC 5V	
Operation Temperature	0 ~ 40°C	
Storage Temperature	-20 ~ 60°C	
Humidity	0~90% RH, Non-condensing	
Weight	310g	
Housing	Metal enclosure	
Safety / Emission	CE, FCC	

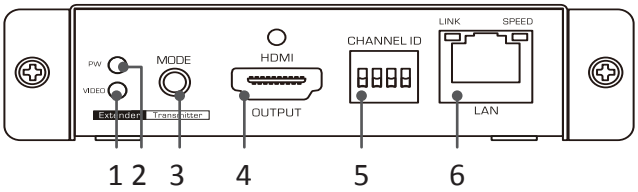
Package contents

HX130 Transmitter	HX130 Receiver
Transmitter unit x 1	Receiver unit x 1
Power adapter (DC5V) x 1	Power adapter (DC5V) x 1
User's manual x 1	User's manual x 1
RS-232 cable set x 1	
HDMI cable x 1	
USB Type-A male to USB Mini-B cable x 1	
IR Remote Control Unit Pack (Include: Wired Transmitter and Wired Receiver, Optional) x 1	

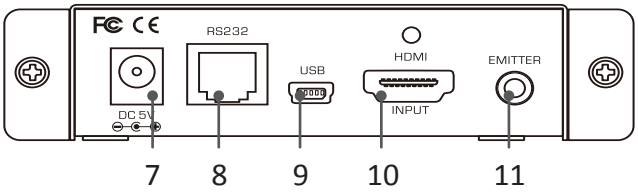
Product overview

Transmitter

Front panel

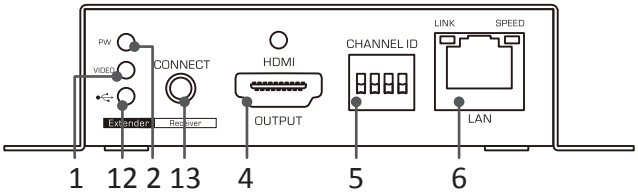


Rear panel

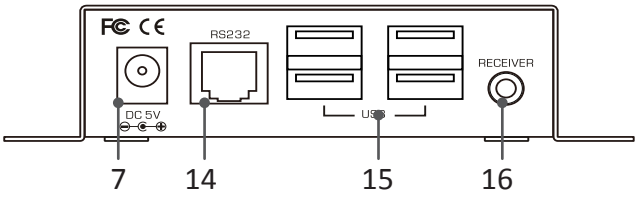


Receiver

Front panel



Rear panel



No.	Item	Description
1	Video indicator	Lights when video is transferring.
2	Power indicator	Lights when power is on.
3	Mode button	Press to select **Graphic mode** or **Video mode**.
4	HDMI output	Connect to a HDMI display device.
5	DIP switch	4-position dip switch for pairing with Transmitter and Receiver.
6	LAN port	Connect to Transmitter/Receiver.
7	Power jack	Connect to the power adapter.
8	RS232 connector	Connect to a RS232 device.
9	Mini USB connector	Connect to a USB device.
10	HDMI input	Connect to a video source/PC.
11	IR Emitter	Connect to a IR emitter.
12	USB indicator	Lights when a USB device is selected and connected.
13	RX Connect button	Re-connect the transmitter and receiver.
14	RS232 connector	Connect to a RS-232 device.
15	USB Type-A connector	Connect to USB devices.
16	IR receiver	Connect to a IR receiver.

Application

There are several usage scenarios provided by this extender, for example, point-to-point or multiple connections. Please select a desired mode depends on your request. Before you start the procedure of installation, you should have these items on the checklist ready:

- Plan the layout path and deploy the UTP cable for extension.
- Plan the path through which the CAT5E UTP cable (or higher category network cable) will be deployed across the distance between the transmitters and the receivers. You should choose the layout path not only based on shortest possible length consideration, but also on least electromagnetic interference.

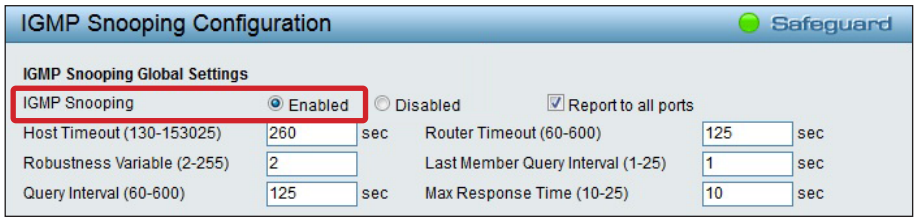
Notes:

1. Use good quality CAT5E cable can be produced the better video outcome with longer distance span.
2. The ideal location for the power outlets near where you located the extenders.

Requirement of Gigabit Ethernet Switch

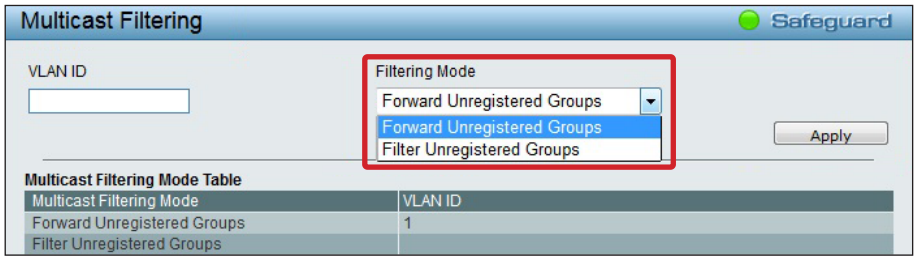
- When grouping these units of Transmitter and Receiver, a Gigabit Ethernet Switch is necessary due to the requirement of bandwidth. To ensure the better quality of transmission, a reputable name brand switch is recommended.
- Some features of Gigabit Ethernet Switch are required, for example, **IGMP Snooping**, **Multicast Filtering** and **Jumbo Frame**, other specs like **IGMP Querier**, **IGMP v2** and **IGMP Fast Leave** are strongly recommended. If more than one transmitter connects to the same network segment without support of IGMP Querier by Switch, the Extender System may work incorrectly. The images below are examples of the settings, for more setting details, please refer to the Switch's instruction manual.

IGMP Snooping



Jumbo Frame

Multicast Filtering



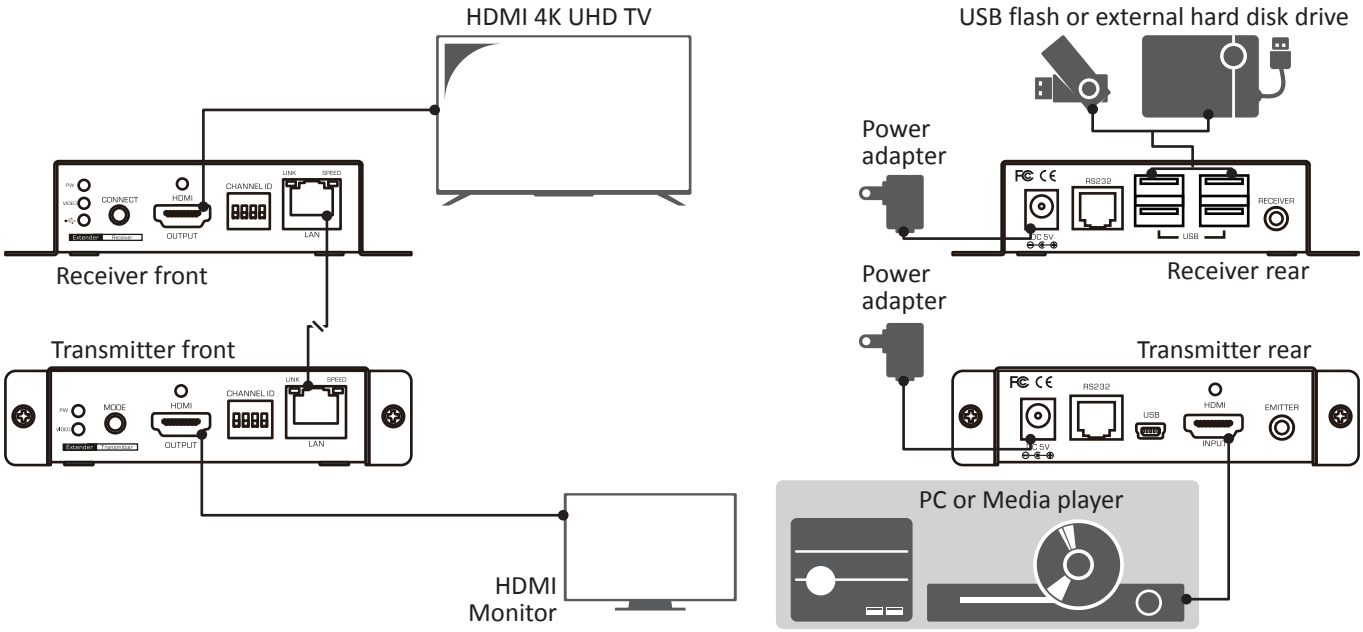
- Make sure you have enough available bandwidth between switches if the Network you connected is a cascading architecture, otherwise, the quality of stream video may poor.

Point-to-point

Point-to-point is a basic structure of this extender. You can extend the signal via connecting the transmitter to the receiver using a CATx cable directly.

Point-to-point connection diagram

Note that the diagram illustrated here is an example, the actual application may vary. All illustrated computer, accessories and monitors are not included in the package, it is for reference only. Make sure all the devices and peripherals are connected appropriately before using this unit.



Operation

1. Adjust the DIP switches of transmitter and receiver to the same positions.
2. Power the transmitter, receiver and all the connected devices to on.
3. Press the **CONNECT** button on the front panel of receiver unit once the DIP switch has been adjusted.
4. Press the **MODE** button on the front panel of transmitter to switch the image quality in streaming. Two different modes of streaming are provided, graphic and video more respectively. You may select an appropriate viewing mode depending on the bandwidth of connected network.

   Graphic mode: Delivers the streaming video in best quality.

   Video mode: Adjusts the streaming video quality automatically, it is based on your current Internet bandwidth.

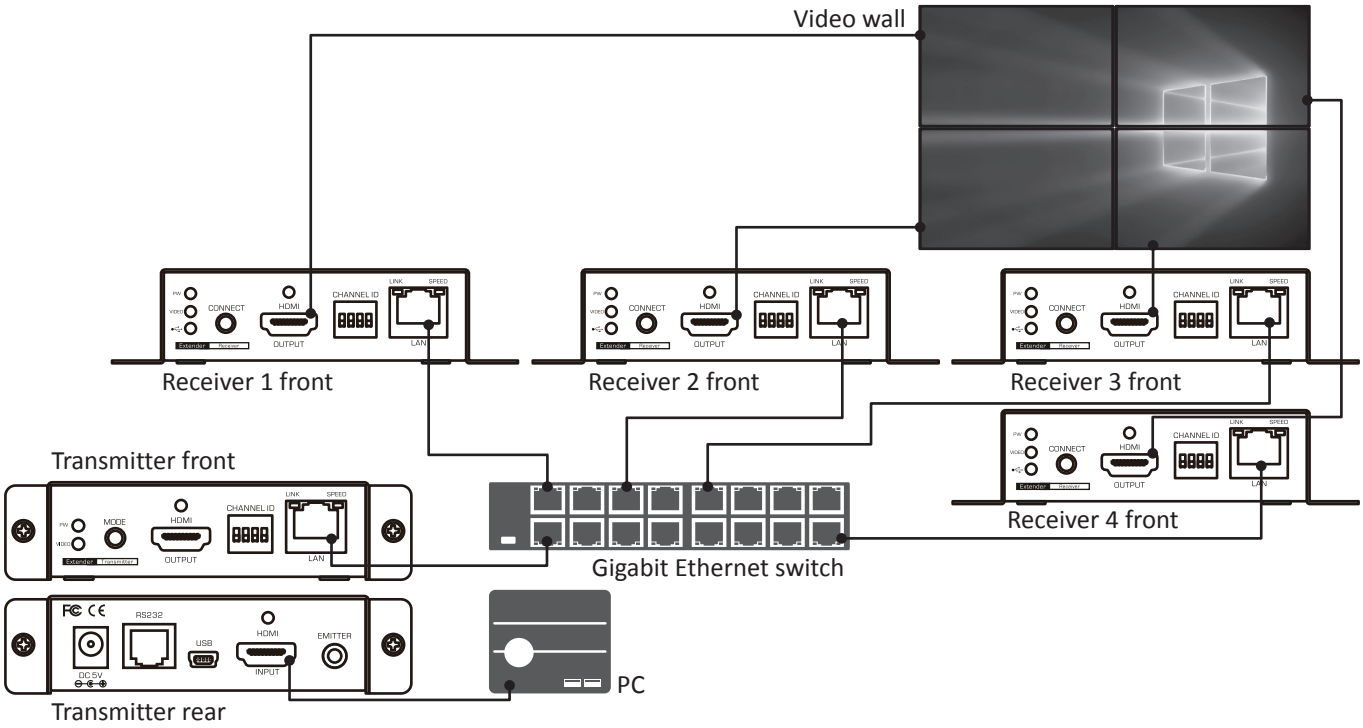
Multiple connection

Based on the various usage of the extender, you may select to connect a transmitter to multiple receivers and vice versa. Make sure a Giga Ethernet Switch is available if the extender structure is forward to multiple connection.

Single TX to multiple RX connection

The function of distributing one source to several screens is available. By this feature, you can assemble the extender as a video wall. You only need a transmitter and up to 128 receivers for 8x16 video wall.

Note that the diagram illustrated here is an example, the actual application may vary. All illustrated computer, accessories and monitors are not included in the package, it is for reference only. Make sure all the devices and peripherals are connected appropriately before using this unit.



Operation

1. Adjust the DIP switches of transmitter and receivers to the same positions.
2. Power the transmitter, receivers and all the connected devices to on.
3. Press the **CONNECT** button on the front panel of receiver unit once the DIP switch has been adjusted.
4. Press the **MODE** button on the front panel of transmitter to switch the image quality in streaming. Two different modes of streaming are provided, graphic and video more respectively. You may select an appropriate viewing mode depending on the bandwidth of connected network.

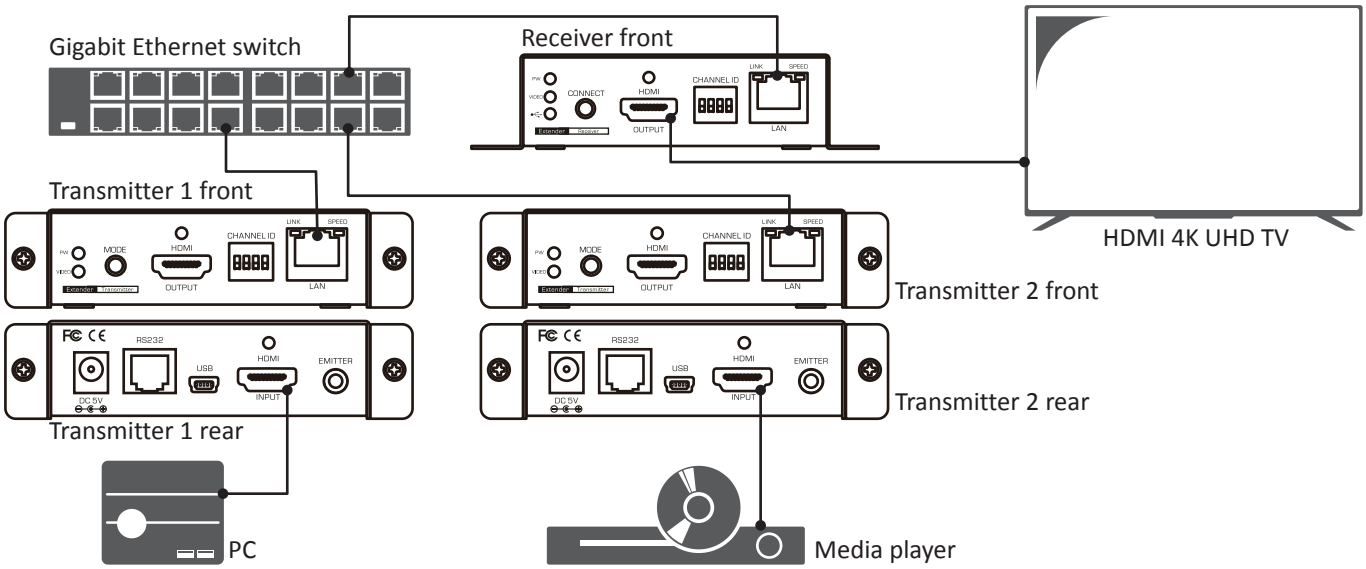
   Graphic mode: Delivers the streaming video in best quality.

   Video mode: Adjusts the streaming video quality automatically, it is based on your current Internet bandwidth.
5. For more advanced operation of video wall, refer to the chapter of **Web management**.

Multiple TX to single RX connection

Except the feature of video wall, you also can select one source to display from multiple transmitters.

Note that the diagram illustrated here is an example, the actual application may vary. All illustrated computer, accessories and monitors are not included in the package, it is for reference only. Make sure all the devices and peripherals are connected appropriately before using this unit.



Operation

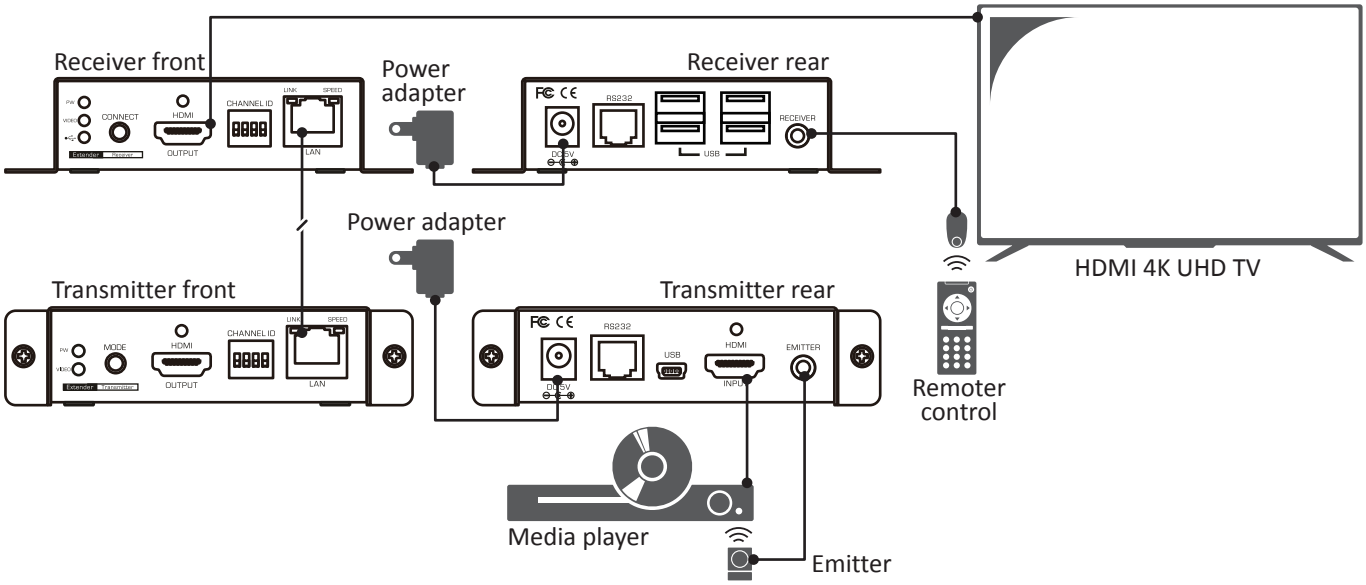
1. Power the transmitter, receivers and all the connected devices to on.
2. Adjust the DIP switches of receiver and the target transmitter to the same position. Make sure all DIP switches of transmitters are in different position.
3. Press the **CONNECT** button on the front panel of receiver unit to connect the target transmitter.
4. Press the **MODE** button on the front panel of transmitter to switch the image quality in streaming. Two different modes of streaming are provided, graphic and video respectively. You may select an appropriate viewing mode depending on the bandwidth of connected network.

   Graphic mode: Delivers the streaming video in best quality.

   Video mode: Adjusts the streaming video quality automatically, it is based on your current bandwidth.

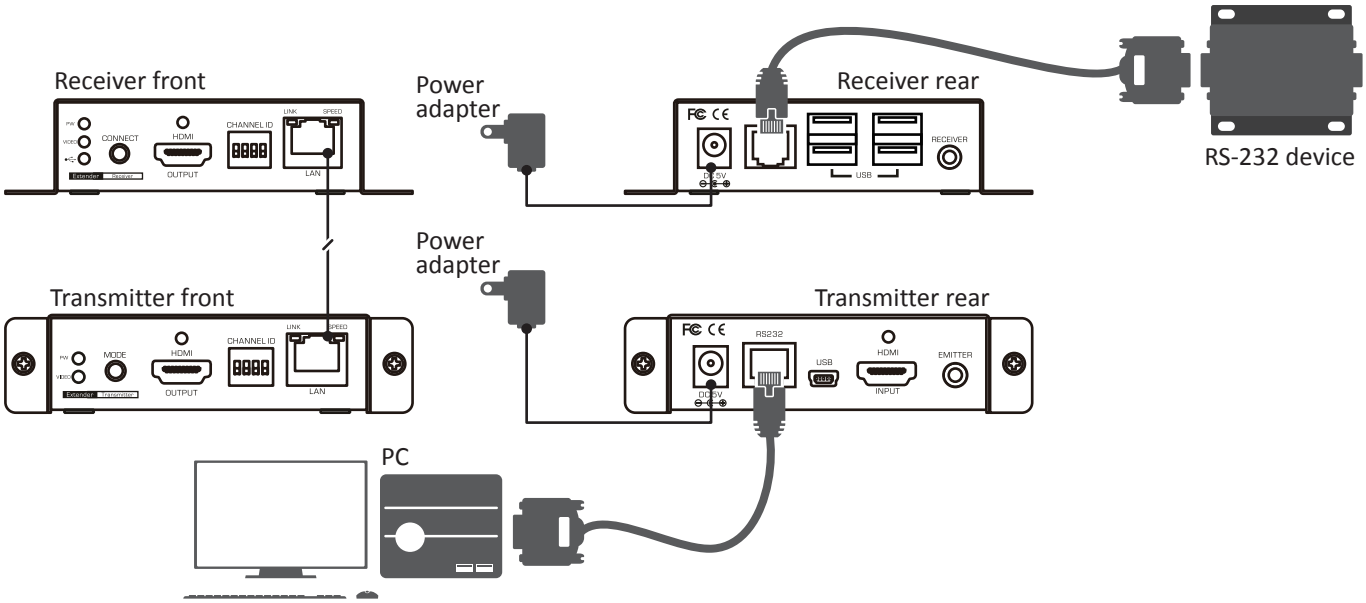
Remote control

To control the media player (if this function is supported by the media player) from console, the remote control function is available. Place the IR receiver near the console and the other end to the jack of IR receiver on the receiver unit. Place the IR emitter to somewhere face the IR receiver of the media player, and the other end to the jack of IR emitter on the Transmitter. You may refer to the illustration below to outline the connection between transmitter and receiver. The illustration below shows an example of a point-to-point connection, the mode of point-to-multipoint is similar as well.



RS232 connection

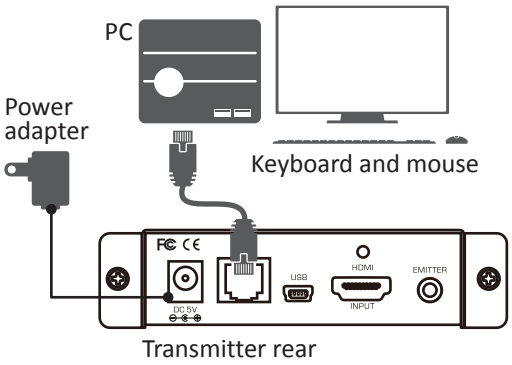
The extender provides not only HDMI signal but also RS-232 device extension. The illustration below shows an example of a point-to-point connection, the mode of point-to-multipoint is similar as well.

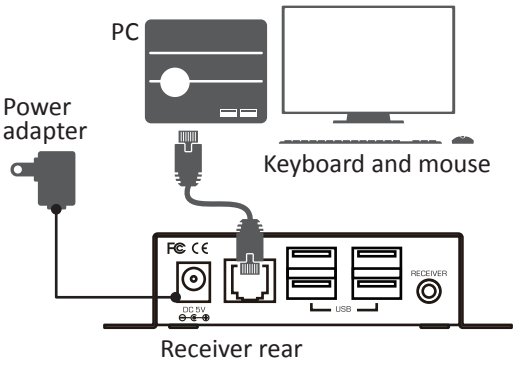


PC connection diagram

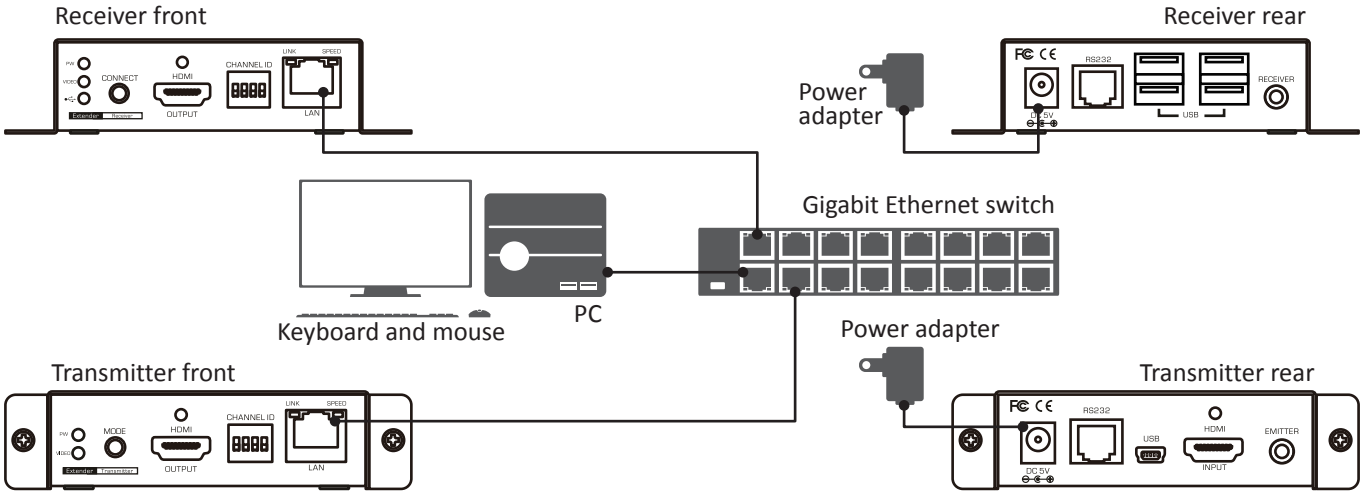
This extender supports the configuration via the web interface. To access the configuration pages, a PC is necessary to connect. Please select an appropriate mode of connection according to your network structure.

Connect directly





Connect via a switch



Supported format

The tables below show the supported audio output and video resolutions. If there are any problems with no image or abnormal display, suggest using a standard display mode from the list.

Audio format

Dolby: Dolby Digital 5.1 ch/Dolby Digital Plus/Dolby Digital Pro-Logic/Dolby TrueHD/Dolby Atmos

DTS: DTS 5.1 ch/DTS 96/24/DTS-ES Discrete/DTS-ES Matrix/DTS-HD High Resolution Audio/DTS-HD Master Audio/DTS:X

Linear PCM:

Linear PCM 2 ch 44.1 kHz/88.2 kHz/176.4 kHz/32 kHz/48 kHz/96 kHz/192 kHz/44.1 kHz/88.2 kHz

Linear PCM 5.1 ch 176.4 kHz/32 kHz/48 kHz/96 kHz/192 kHz/

Linear PCM 6.1 ch 44.1 kHz/88.2 kHz/176.4 kHz/32 kHz/48 kHz/96 kHz/192 kHz

Linear PCM 7.1 ch 44.1 kHz/88.2 kHz/176.4 kHz/32 kHz/48 kHz/96 kHz/192 kHz

Video format

Resolution	Refresh rates (HZ)
640x480	50/59/60/72/75
720x480 (720P)	56/59/60/72/75
720x576 (576P)	50/60/70/72/75
800X600	56/60/70/72/75
1024X768	60/70/72/75
1152X864	50/69/60/75
1280x600	50/59/60
1280X720 (720P)	50/59/60/75
1280X768	50/59/60/75
1280X800	50/59/60/75
1280X960	50/59/60
1280X1024	50/59/60/75
1360x768	50/59/60/75
1366x768	50/59/60/75

Resolution	Refresh rates (HZ)
1440X1050	50/59/60
1440X900	50/59/60/70/75
1600x900	50/59/60
1600x1024	59/60
1600X1200	50/60
1680x1050	59/60
1920X1080i	25/29/30
1920X1080 (1080P)	50/59/60
1920X1200	50/60
2560x1080*	24/25/30/60
2560x1200*	30/60
2560x1600*	60
3840x2160*	24/25/30/60
4096x2160 *	24/25/30/60

* Supports only YUV420 input and output. The output will be downscaled to YUV420 if the image source is YUV422 inputted.

Web management

This extender provides a web-based interface that user can access and configure easily. Refer to the **PC connection diagram** to connect a PC to the network before starting the web management.

IP detection

To check the IP of transmitter or receiver, press the **CONNECT** button on the front panel of receiver to disconnect the connection between transmitter and receiver, then the IP address will appear on the bottom-right corner of screen.

FW: Firmware version

Local IP: Transmitter's IP address

Remote IP: Receiver's IP address

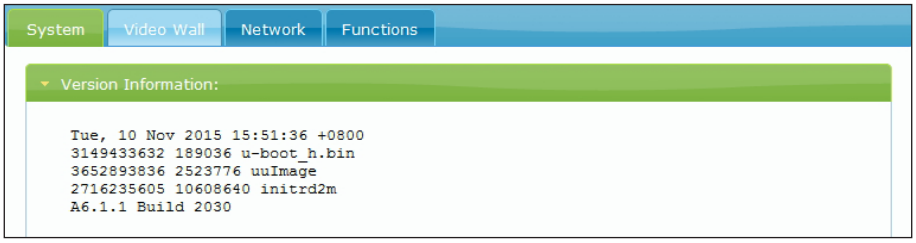
ID: Receiver's identification

Note: The IP address will be changed when replugging the power adapter of the unit (transmitter/ receiver). Once it happens, please repeat the steps above to detect the IP again.

System

Once you have connected to a PC and detected the IP address of target unit, open a browser and then enter the IP address to access.

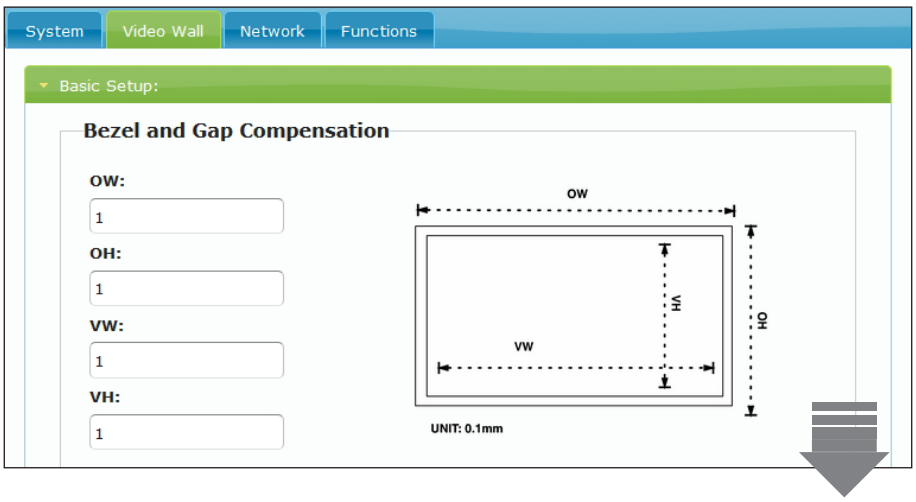
Click **Apply** once the settings have been changed.



Item	Option	Description
Version information	Display the information of unit.	
Update Firmware	Update the firmware. Click **Browse** to select the firmware file and click **Upload** to upgrade. The browser will be reloaded after updating. Please contact the technical support if you have problem to upload.	
Utilities	Factory Default	Restore to the factory default settings.
	Reboot	Restart the system.
	Reset EDID to Default Value	Reset EDID to factory default setting.
	Console API Command	Refer to the manufacture FAE or technical support If you don't know what console command is.
Statistics	Display the information of network.	

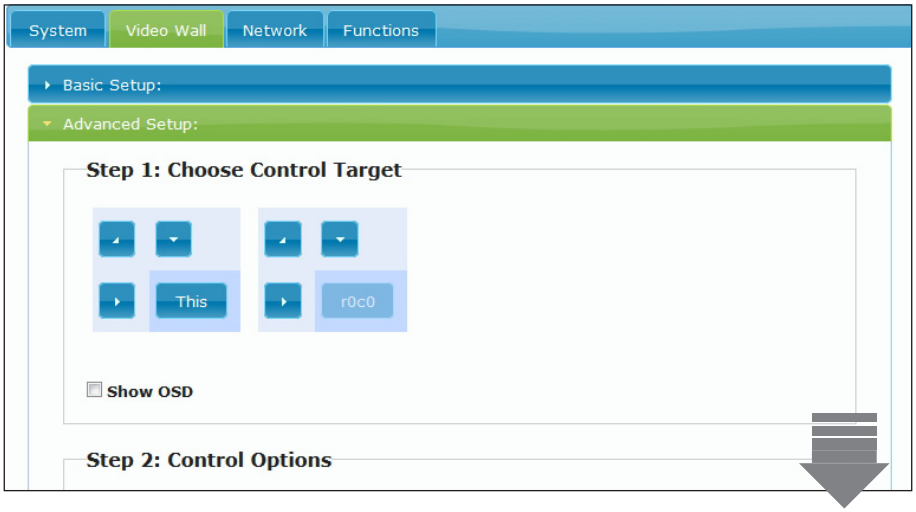
Video wall basic setup

Note that all the settings here are only available on receivers, it's invalid if applying to any transmitter.



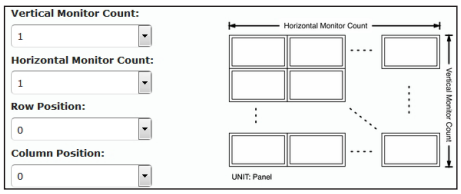
Item	Option	Description
Bezel and Gap compensation	OW	Adjust the width of outline.
	OH	Adjust the height of outline.
	VW	Adjust the width of visible.
	VH	Adjust the height of visible.
Wall Size and Position Layout	Vertical Monitor Count	Set the number of vertical monitors up to 8.
	Horizontal Monitor Count	Set the number of horizontal monitors up to 16.
	Row Position	Specify the row position of monitor. The row order from top to bottom is 0-7. The count number of row position is from 0.
	Column Position	Specify the column position of monitor. The row order from left to right is 0-15. The count number of column position is from 0.
Preference	Stretch Type	Select a preferred display type.
	Clockwise Rotate	Rotate the video if necessary.
Apply to this device connected by your browser	● Select the unit of client (receiver) to apply the settings you have changed. ● Tick to enable or untick to disable the on screen display function.	
Show OSD	Tick to display each receiver's number on all connected monitors.	

Video wall advanced setup

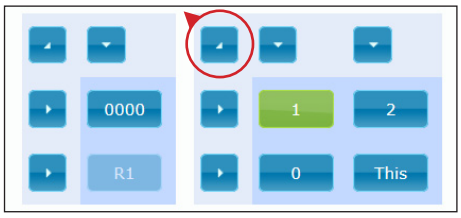


The advanced setup page is focused on the settings of unique video wall application (refer to the right illustration) User can design an asymmetric video wall according to their requirement. Note that all the settings here are only available on receivers, it's invalid if applying to any transmitter.

1. Before starting the setting on the **Advanced Setup** tab, make sure the video wall layout has been set on the **Basic Setup** tab, otherwise, all the options will unable to select.



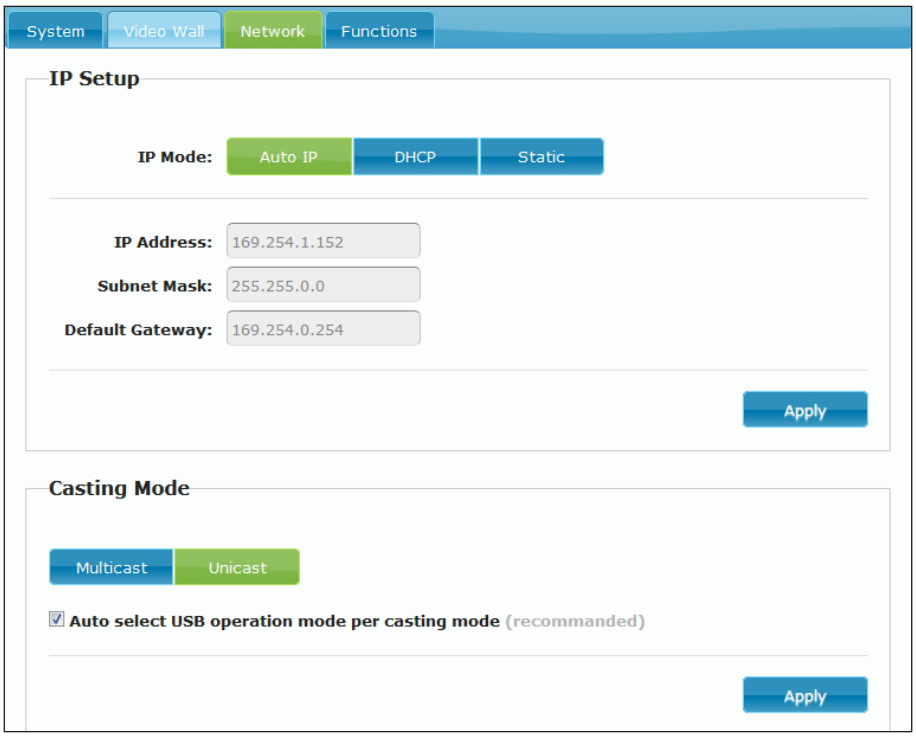
2. Click to select the desired unit you wish to configure, or click to select all units. Once the desired unit has been selected and clicked, the button will change to green from blue.



3. Control Options

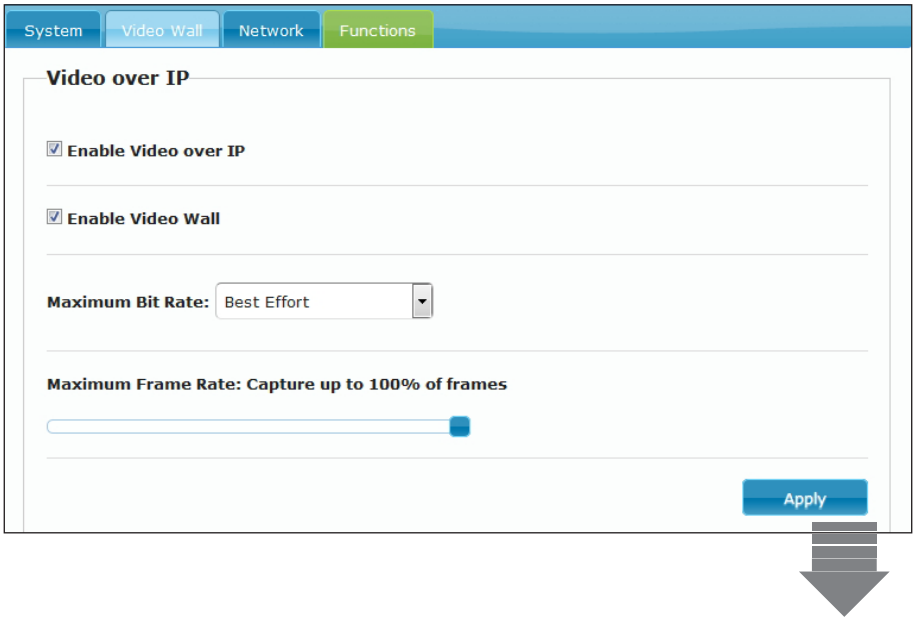
Item	Option	Description
Show OSD	Tick to display each receiver's number on all connected monitors.	
Control options	Reset to basic setup	You may click to restore if confusing all the video wall settings below. All the settings will restore to the settings on the Basic Setup.
	Stretch type	Select a preferred display type.
	Clockwise rotate	Rotate the video depending on the requirement.
	Screen layout	Set the layout of video wall. Make sure the layout settings here is same as the **Basic Setup** tab.
	Row position	Change the row position of the selected unit.
	Column position	Change the column position of the selected unit.
	Horizontal shift	Fine-tune the image position of horizontal to left or right. Note that the screen will be displayed in loop horizontally if the position is adjusted out of edge. It's recommended to enlarge the image from the option of **Horizontal/Vertical scale up** first before shifting the position. 
	Vertical shift	Fine-tune the image position of vertical to up or down. Note that the screen will be displayed in loop vertically if the position is adjusted out of edge. It's recommended to enlarge the image from the option of **Horizontal/Vertical scale up** first before shifting the position. 
	Horizontal scale up	Scale up the image from receiver horizontally.
	Vertical scale up	Scale up the image from receiver vertically.
	Console API command	Refer to the **UAPI commands** guide.

Network



Item	Option	Description
IP setup	Auto IP	Assign an IP by system automatically. It's an option of default and recommended.
	DHCP	Assign an IP by DHCP server automatically. A DHCP server is necessary.
	Static	Assign an IP manually. After pressing the **Apply** button, all the settings will be saved even the power is disconnected
Casting mode	Multicast	Select this option if your extender network structure is multi-connection.
	Unicast	Select this option if your extender network structure is point-to-point connection.
	Auto select USB operation mode per casting mode	Tick this option if there is a USB connected. The connection mode will be detected automatically.

Function



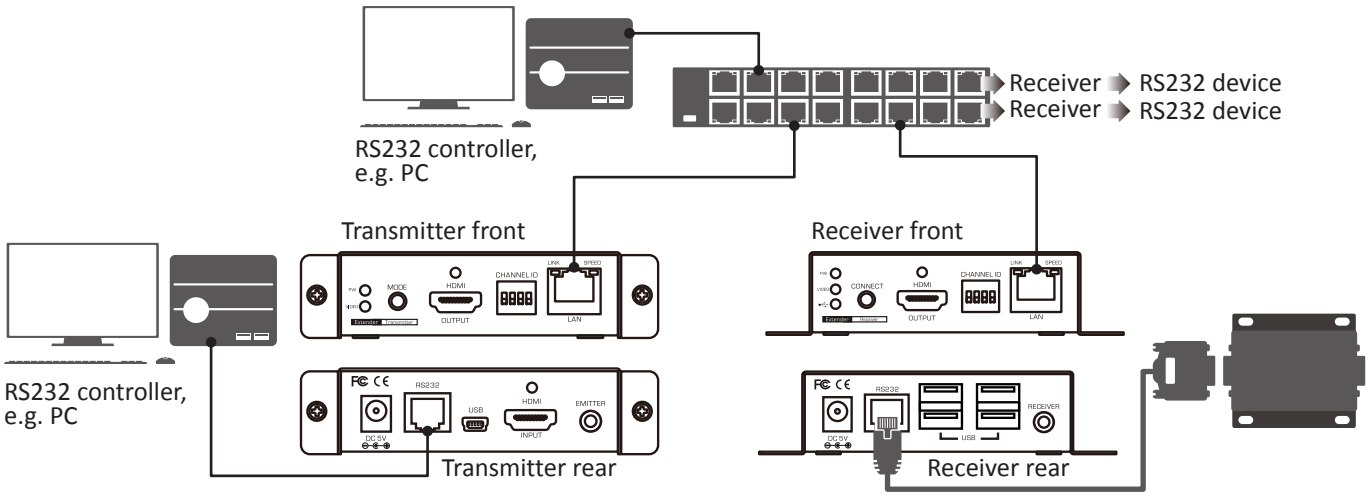
Item	Option	Description
Video over IP	Enable video over IP	Tick this option if your extender network structure is point-to-point connection.
	Enable video wall	Tick this option if your extender network structure is multi-connection.
	Maximum bit rate (transmitter)	Select an appropriate bitrate according to your network bandwidth.
	Maximum frame rate (transmitter)	Click and drag to adjust the video frame rate.
	Scale output mode (receiver)	Select a preferred output mode.
	Timeout for detecting video lost (receiver)	Setup the detective duration of video lost, or tick the "**Turn off screen on video lost**" to disable the detection.
USB over IP	Enable USB over IP	Tick this option if there is a USB device connected.
	Operation mode	Select a preferred mode when connecting to a USB device. ● **Auto select mode:** Detect the connection mode automatically by extender if there is a USB connected. This is the same function as “Auto select USB operation mode per casting mode” on the tab of **Network**. ● **Active on link:** Select this option if your extender network structure is point-to-point connection. ● **Active per request:** Select this option if your extender network structure is multi-connection.
	Compatibility mode	● **Mouse not responding well:** Tick this option if the USB mouse responding is slow and queer. ● **K/M over IP:** Untick if the keyboard, mouse, touch panel are not working as expected. By default, this option is enabled.
Serial over IP	Enable serial over IP	Tick if there is a RS-232 device connected.
	Operation mode	Type 1/Type 2/Type 1 guest mode/Type 2 guest mode*. By default, the option is Type 2 guest mode and recommended.
	Baudrate setting	Set the baudrate of the mode you selected above. By default, the system settings are as following: **Baudrate:** 115200 **Data bits:** 8 **Parity:** None **Stop bits:** 1

* **Type 1 (Dynamically baudrate):** Communicate with different RS232 devices from host device through RS232 port (normally the host device is a PC). Those RS232 devices may have different RS232 baudrate settings, and these baudrates can be configurable. It means each RS232 device can be adjusted individually by host device.

Type 2 (Static baudrate): Communicate with many RS232 devices from host device through RS232 port (normally the host device is a PC). The communication between clients and host is typically one way without extra RS232 control commands. Each RS232 device will share with same configurations from the host device.

Type 1 guest mode: Not suggested to use.

Type 2 guest mode: Communicate with one or many RS232 devices from host device through Ethernet network instead of RS232 port. It's convenient if the host device is no any RS232 port. The illustration below is an example for your reference.



Technical support

Please contact with your local distributor for more information or technical support.

FCC / CE Statements

FCC Statement : This equipment has been tested and found to comply with the regulations for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this User Guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case, the user will be required to correct the interference at his/her own expense.

CE Statement : This is a Class B product in a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.