User Guide

# 4K UHD HDMI USB 2.0 KVM extender

**Product: 4K-5W155**
**4K USB 2.0 KVM**

## Comprehensive KVM solution using Cat 6 or Fibre for 4K UHD HDMI, USB 2.0, RS232 signals & bi-directional IR


DESIGN
INNOVATE
ORIGINATE

smart-e.co.uk

# SYMBOLS

To ensure the safe and correct use of equipment, we use a range of symbols on the equipment and in the manuals. These symbols demonstrate the risk of physical harm or possible damage to property for the user or others and provide guidance on standards and disposal. Symbol indications and their meanings are as follows. Please ensure that you correctly understand these instructions before reading the manual and operating the equipment.

| | |
|---|---|
|  | WARNING. This symbol is used to indicate where important instructions are provided to ensure the correct operation of the equipment and user safety. |
|  | To prevent fire or shock hazards, do not expose this equipment to rain or moisture. Also, do not use this equipment's polarized plug with an extension cord receptacle or other outlets unless the prongs can be fully inserted. Refrain from opening the cabinet as there are high voltage components inside. Please refer all servicing to qualified service personnel. |
|  | This symbol warns user that uninsulated voltage within the unit may have sufficient magnitude to cause an electric shock. Therefore, it is dangerous to make any kind of contact with any part inside this unit. |
|  | This is a WiFi product, which may cause or be susceptible to radio interference. Users may need to take additional measures to mitigate the interference. |
|  | This is a Bluetooth product, which may cause or be susceptible to radio interference. Users may need to take additional measures to mitigate the interference. |
|  | This is an RF Radio product, which may cause or be susceptible to radio interference. Users may need to take additional measures to mitigate the interference. |
|  | This is an Infrared product, which may cause or be susceptible to frequency interference. Users may need to take additional measures to mitigate the interference. |
|  | This is a product which conforms to HDbaseT specification. |
|  | This product supports full High Definition 1080p resolution. |
|  | This product supports 4K Ultra High Definition resolution. |
|  | This product supports 3D definition display. |
|  | CE certification means that the product has reached the directive safety requirements defined by the European Union. |
|  | SGS certification means that the product has reached the quality inspection standards proposed by the world's largest quality standards body - SGS. |
|  | This product has passed the ISO9001:2000 international quality certification |
|  | EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your equipment, please follow the guidance of your local authority, or ask the agent where you purchased the product. If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method. |

# WARNING


In order to ensure the reliable performance of the equipment and the safety of the user, please observe the following matters during the process of installation, use and maintenance. :

**INSTALLATION**

- Please do not use this product in the following places: places with high levels of dust or soot; places with high electric conductivity; places with corrosive or combustible gas; places exposed to high temperature, condensation, wind or rain; places subject to the occasion of vibration or impact.
- When installing screw or wiring, make sure that metal scraps and wire heads will not fall into the screw shaft of the equipment, as it could cause a fire, fault, or incorrect operation.
- When the installation work is completed, ensure there is nothing left on the ventilated vents of the equipment, including packaging items. Blocked vents may cause a fire, fault, incorrect operation.
- Avoid wiring and inserting cable plugs in a charged state, otherwise it is easy to cause shock, or electrical damage.
- The installation wiring should be strong reliable and earthed.
- For installations in areas of high interference, the installer should choose shielded cable as the high frequency signal input or output cable, so as to improve the anti-interference ability of the system.
- Switch off and disconnect the equipment from all power sources prior to handling, installation or wiring, otherwise it may cause electric shock or equipment damage.
- This product grounds to earth by the grounding wires. To avoid electric shocks, grounding wires and the earth must be linked together. Before the connection of input or output terminals, please make sure this product is correctly grounded.
- All terminals and wiring should be fully sheathed or otherwise covered before connecting the equipment to a power supply so as to avoid cause electric shock.

**OPERATION AND MAINTENANCE**

- Be sure to read this manual, and fully comply with the safety recommendations, before undertaking maintenance or operation.
- Do not touch terminals whilst the equipment is in a powered state, or it may cause a shock, incorrect operation.
- Switch off and disconnect the equipment from all power sources prior to cleaning or tightening terminals or connections. These operations can lead to electric shock in a live current state.
- Switch off and disconnect the equipment from all power sources prior to the connection or disconnection of communication signal cables, expansion modules, or other adapters, or it may cause damage to the equipment, incorrect operation, or lead to electric shock in a live current state.
- Do not dismantle the equipment and avoid damaging the internal electrical components. Please refer all servicing to qualified service personnel.

**DISPOSAL**

- Be sure to dispose of the equipment in accordance with local regulations.

# CONTENTS

# 1 FUNCTION

The 4K HDMI & USB over IP Extender is a solution for audio, video and USB signal extension via Local Area Network (LAN). It can be used as audio, video and KVM extender over IP and applied to point to point,
point to multi-point, multi-point to multi-point and screen wall broadcast system controlled by USB, RS232, IR and configured the 4K HDMI & USB over IP Extender by web browser. An easy installation system built up with Giga Ethernet switch which has IGMP function and CATx cable for extension or broadcast.

## 1.1 FEATURES

- 4K UHD HDMI over IP extension
- USB 2.0 over IP extension
- RS232 bi-directional extension and RS232 control
- 4 bits switch for 16 stream channel selection
- Supports Dolby True HD, DTS-HD Master Audio
- Supports two way Wide Band IR extension (38khz-56khz)
- Transmit over single Cat5e/6 cable up to 120m
- Transmitter over Fiber Optical cable up to 60km (Single Mode)
- Networking environment under Giga Ethernet switch and CAT5e cable
- Point to point extension, Unicast, Multicast and Video Wall system (Max 8x1)
- Output video rotation
- Output video partial enlargement
- HDCP 1.4 compliant

## 1.2 SPECIFICATION

| **Performance** | |
|---|---|
| Protocol | TCP, UDP, RTSP, RTP, DHCP, IGMP, Multicast, IPV4 |
| Support Video format | 4K@30HZ, 1080P/1080i/720P/576P/576i/480P/480i |
| Support Audio format | Stereo 192Kbps |
| HDCP | Compliant |
| IR Frequency | 38 -56 KHZ |
| RS232 Baud rate | Default 115200bps, total 8 kinds optional |

| | |
|---|---|
| **IP setting &Group ID setting** | |
| Default IP | Automatic allocation |
| Group ID | (Group 00 ~ group 15) by DIP Switch |
| Request for Switch/Router | Support IGMP, support DHCP |
| **Connectors on Transmitter** | |
| Input | 1xHDMI Female port, 1xUSB B type |
| Output | 1x RJ45 output, 1x Fiber output |
| RS232 | Phoenix RS232 port |
| IR | 1x IR TX port; 1x IR RX port<br>Support 38K-56KHz |
| **Connectors on Receiver** | |
| Input | 1xRJ45 input, 1x Fiber input |
| Output | 1x HDMI Female port, 2x USB A type |
| RS232 | Phoenix RS232 port |
| IR | 1x IR TX port; 1x IR RX port<br>Support 38K-56KHz |
| **Environmental & Power Requirements** | |
| Operating temperature | -5 to +35 ℃ （+23 to +95℉） |
| Operating Humidity Range | 5 to 90%RH (No Condensation) |
| Power supply | DC 5V |
| Power consumption | Max 3 watt |
| **Physical** | |
| Dimension | TX: 160x103.2x30 mm ; RX: 160x103.2x30 mm |
| Net Weight | TX: 472.8G ; RX:472.3G |

Note1: Specifications are subject to change without notice. Mass and dimensions are approximate.

Note2: **When transmitted over Fibre, 4Kx2K requires 3.125G module.**

## 1.3 PACKAGE CONTENTS

1). Main Unit. HDMI Extender (Transmitter & Receiver)

2). 2x Power adapter DC 5V

3). 2x IR TX cables, 2x IR RX cables

4). 2x Phoenix plugs for RS232 cable termination

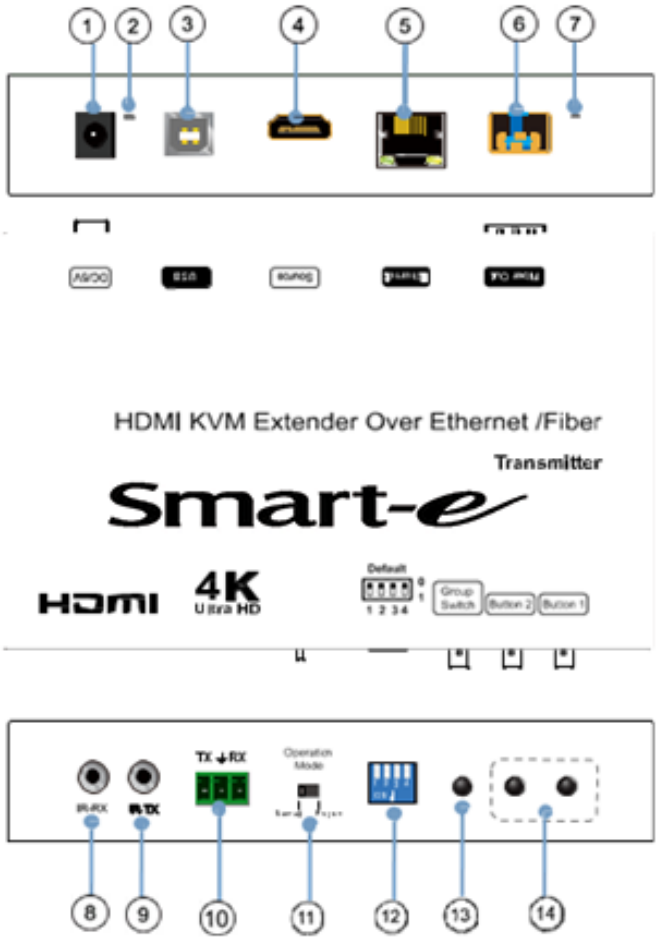
5). 8x screws

6). 4x detachable mounting ears

7). Operating Instruction manual

# 2 CHASSIS PANEL DESCRIPTION

## 2.1 TRANSMITTER




1) Power input port 2) Power input indicator 1 3) USB

4) HDMI input 5) Ethernet port 6) Fiber Out

7) Indicator of status 2 8) IR-RX port 9) IR-TX port

10) RS232 port

11) Normal: For serial over IP;
Program: For serial control or getting the debug information

12) 4 bit Dip switch 13) Group Switch 3 14) Button 1 & 2 4

1 *A. Green LED: Link LED, when the connection has established over Cat5e/6 cable or Fiber cable, the Green LED will illuminate.*

*B. Yellow LED: When the yellow LED is blinking, it indicates the conne ction has been established over Cat5e/6 cable.*

2 *When the green LED illuminates, it indicates the connection has bee n established between transmitter and receiver over fiber cable.*

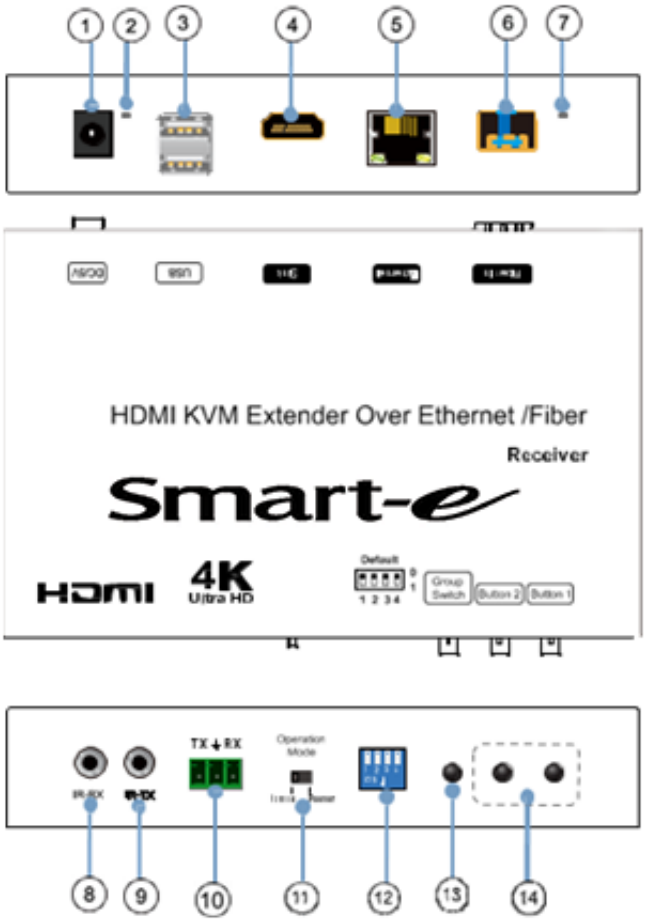
3 *After select the DIP switch, press "Group Switch" button for 1 second.*

4 *Please refer to 5.3.*

4 bits DIP Switch:

Use 4bits DIP switch to select 16 groups ID (such as 0001, 0010, 0101 etc)

## 2.2 RECEIVER




1) Power input port 2) Power input indicator 1 3) USB

4) HDMI output 5) Ethernet port 6) Fiber In

7) Indicator of status 2 8) IR-RX port 9) IR-TX port

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4 *Please refer to 5.3.*

4 bits DIP Switch:
Use 4bits DIP switch to select 16 group ID (such as 0001, 0010, 0101 etc)

## 2.3 BUTTON DESCRIPTION:

(Host: Transmitter; Client: Receiver)

**Button State for Unicast Mode: HDMI Extender:**

Default Mode will be highlighted in GREEN

* Item will be described in Descriptions

| Unicast Digital | Button State | | | |
|---|---|---|---|---|
| | Transmitter | | Receiver | |
| | **Button One :** | **Button Two :** | **Button One :** | **Button Two :** |
| Short Press | Remote/Loopback* | Video Mode/ Graphic Mode* | Link on : Link Link off : Unlink | Video Mode/ Graphic Mode* |
| Long Press(3 sec) | Snoop (on/off)* | Anti-Dither (1/2/off)* | N/A | Anti-Dither (1/2/off)* |
| Short Press when Ethernet Link is Off | BYPASS | BYPASS | BYPASS | BYPASS |
| Long Press when Ethernet Link is Off | BYPASS | Ethernet Jumbo Frame | BYPASS | Ethernet Jumbo Frame |
| Long Press on Boot (Press until Red LED Blinking) | Engineering Mode* | N/A | Engineering Mode* | N/A |
| Long Press on Boot (Press until both Red LED and Green LED Blinking) | Engineering Mode and Reset to default* | N/A | Engineering Mode and Reset to default* | N/A |

## Descriptions:

| Feature /Button Feature | Descriptions |
|---|---|
| Remote/Loopback | When System is all setup, short press this button will change between remote / local loopback |
| Snoop (on/off) | When System is all setup and video is displayed at the client side. Long Press this button wi for |
| Video Mode/ Graphic Mode | User can select to change between Video Mode / Graphic Mode using this button. The buttor state will be save to flash, and remember after rebooting.<br>Video Mode: FW will automatically trade-off between bandwidth and video quality to ensure smooth video playing experience.<br>Graphic Mode: FW will fix the trade-off to ensure best graphic/text viewing experience. |
| Anti-Dither (1/2/off) | Anti-Dithering Mode is design to work with ATI graphic cards that provide dithering output. Dithering output is used to make colouring looks better than it's original colour depth. It uses visual transient to create a half-tone effect. However, this presents great difficulty for Video Compression to maintain low bandwidth even if the source display seems static.<br>Currently, we only see Dithering Output with ATI graphic cards.<br>To resolve this issue, AST1500 provides Anti-dithering for 1 bit, 2 bit, or off.<br>If the source content does not generate dithering output and this feature is turn on. It will create a blocking effect because Video Engine are unable to detect pixel changes. User can avoid this issue by turning this feature to off. |
| Engineering Mode | 1. Static IP: 192.168.0.88<br>2. User can connect to http://192.168.0.88 webpage for firmware update.<br>3. Firmware update file name will be:<br>Host: webfwh.bin<br>Client: webfwc.bin |
| Reset to Default | 1. Reset Any changes in SPI flash setup flag.<br>2. Re-generate Random mac to avoid any possible MAC collision. After Reset to Default and reboot cycle, a new random mac will be generated. |
| Ethernet Jumbo Frame | 1. This feature is only available on AST1510 and above. AST1500 will be by pass this event.<br>2. Enable/Disable Ethernet jumbo frame.<br>3. If link LED is solid then jumbo is enabled. If link LED is blinking then jumbo is disabled. |

**Buttons that shall not be removed for this setup:**

Depending on customer feature needs.

Example: If customer have loopback feature, than button one is required.

**Button State for Multicast Mode: HDMI Extender:**

Default Mode will be highlighted in GREEN

* Item will be described in Descriptions

| Multicast Digital | Button State | | | |
|---|---|---|---|---|
| | Transmitter | | Receiver | |
| | **Button One:** | **Button Two:** | **Button One:** | **Button Two:** |
| Short Press | Remote/Loopback* | Video Mode/ Graphic Mode* | Link on: Link Link off: Unlink | Video Mode/ Graphic Mode* |
| Long Press (3 sec) | Snoop (on/off)* | Anti-Dither (1/2/off) | USB Link (on/off) | Anti-Dither (1/2/off)* |
| Short Press when Ethernet Link is Off | BYPASS | BYPASS | BYPASS | BYPASS |
| Long Press when Ethernet Link is Off | BYPASS | Ethernet Jumbo Frame (on/off)* | BYPASS | Ethernet Jumbo Frame (on/off)* |
| Long Press on Boot (Press until Red LED Blinking) | Engineering Mode* | Use Loopback EDID (>A1.2)* | Engineering Mode* | Update EDID* |
| Long Press on Boot (Press until Red LED and Green LED Blinking) | Engineering Mode and Reset to default* | N/A | Engineering Mode and Reset to default* | N/A |

## Descriptions:

| Feature /Button Feature | Descriptions |
|---|---|
| Remote/Loopback | When System is all setup, short press this button will change between remote / local loopback |
| Snoop (on/off) | When System is all setup and video is displayed at the client side. Long Press this button will for the local loop back port to be enabled for Snooping feature. |
| Video Mode/ Graphic Mode | User can select to change between Video Mode / Graphic Mode using this button. The button state will be save to flash, and remember after rebooting.<br>Video Mode: FW will automatically trade-off between bandwidth and video quality to ensure smooth video playing experience.<br>Graphic Mode: FW will fix the trade-off to ensure best graphic/text viewing experience. |
| Anti-Dither (1/2/off) | Anti-Dithering Mode is design to work with ATI graphic cards that provide dithering output. Dithering output is used to make coloring looks better than it's original color depth. It uses visual transient to create a half-tone effect. However, this presents great difficulty for Video Compression to maintain low bandwidth even if the source display seems static.<br>Currently, we only see Dithering Output with ATI graphic cards.<br>To resolve this issue, AST1500 provides Anti-dithering for 1 bit, 2 bit, or off.<br>If the source content does not generate dithering output and this feature is turn on. It will create a blocking effect because Video Engine are unable to detect pixel changes. User can avoid this issue by turning this feature to off. |
| Use Loopback EDID(>A1.2) | This feature should be considered with the client side "Update EDID" feature. |
| Update EDID | "Use Loopback EDID" & "Update EDID" feature is used for Multicast Mode to select which monitor/TV EDID is used for system wide EDID usage.<br>During multicast setup, there may be monitor/TV that has lower resolution. For example, 1 monitor/TV with 720p resolution with mostly 1080p solutions. Please select the monitor/TV with lowest resolution, to ensure all can be displayed correctly.<br>For customer that are using 1 pair of Host/Client with Multicast mode, the end user must update EDID correctly. If not, it will cause many compatibility issues.<br>Operation:<br>Once the button event is triggered correctly at the client side, when system is setup correctly for Multicast. The selected EDID will be update to Host Side EEPROM (HU7).<br>The same operation applies for Loopback EDID.<br>In the system setup, the last EDID updated will stay in the EEPROM. If customer setup this button even many times, the last one triggered will be applied. |
| USB Link (ON/OFF) | This feature is used for USB with Multicast Mode setup.<br>The selected client can gain control by pressing USB Link, and release control by pressing USB Link again.<br>Other clients can also gain control by pressing USB Link. The control will be transfer to whichever client requests USB Link. |

| | |
|---|---|
| Engineering Mode | 1. Static IP: 192.168.0.88<br>2. User can connect to http://192.168.0.88 webpage for firmware update.<br>3. Firmware update file name will be:<br>Host : webfwh.bin<br>Client : webfwc.bin |
| Reset to Default | 1. Reset Any changes in SPI flash setup flag.<br>2. Re-generate Random mac to avoid any possible MAC collision. After Reset to Default and reboot cycle, a new random mac will be generated. |
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# 3 INSTALLATION

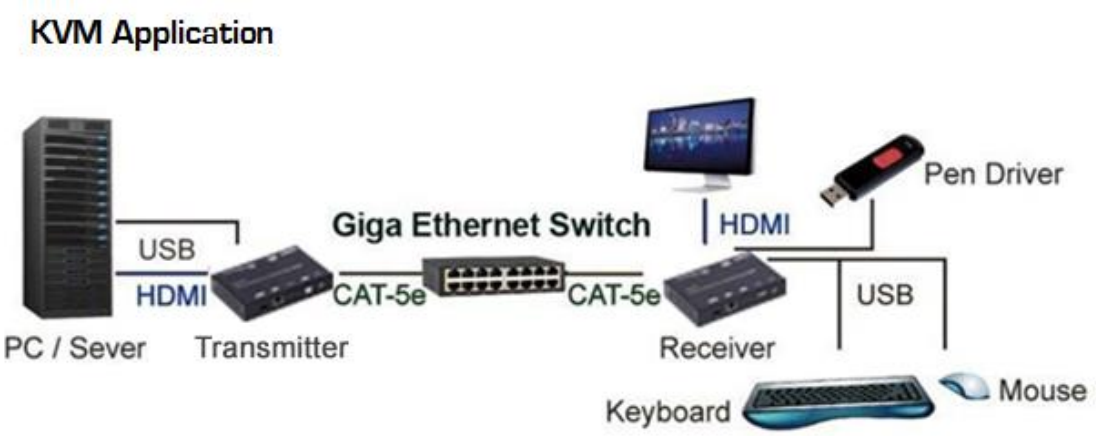
## 3.1 DEVICE CONNECTION

- Check the power supply is unplugged.
- Set up the group of the transmitter with the correspondent receiver for signal extension and display.
- Connect the Transmitter to video source with HDMI cable, and connect
- Receiver to a monitor or display with HDMI cable.
- Connect the USB cables from Transmitter to PC, and connect the USB additional devices such as USB mouse, USB keyboard and USB pen drive to Receiver.
- Connect Transmitter and Receiver to the Ethernet switch with network cable.
- Power on the Transmitter, Receiver and all the connected devices.
- Power on and activate all the connected devices.
- Connect the IR extension cable with Transmitter and the IR receiver cable with Receiver for remote control.


### ◆ Configuration

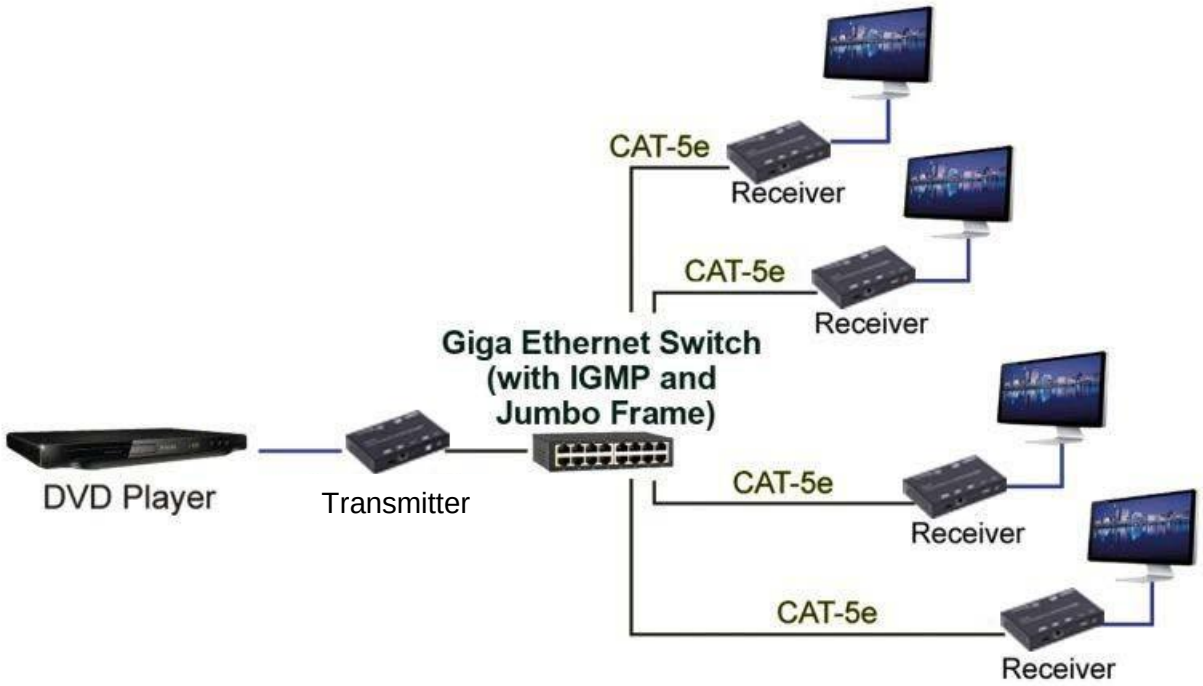

## ◆ Application Pattern

### ■ Unicast

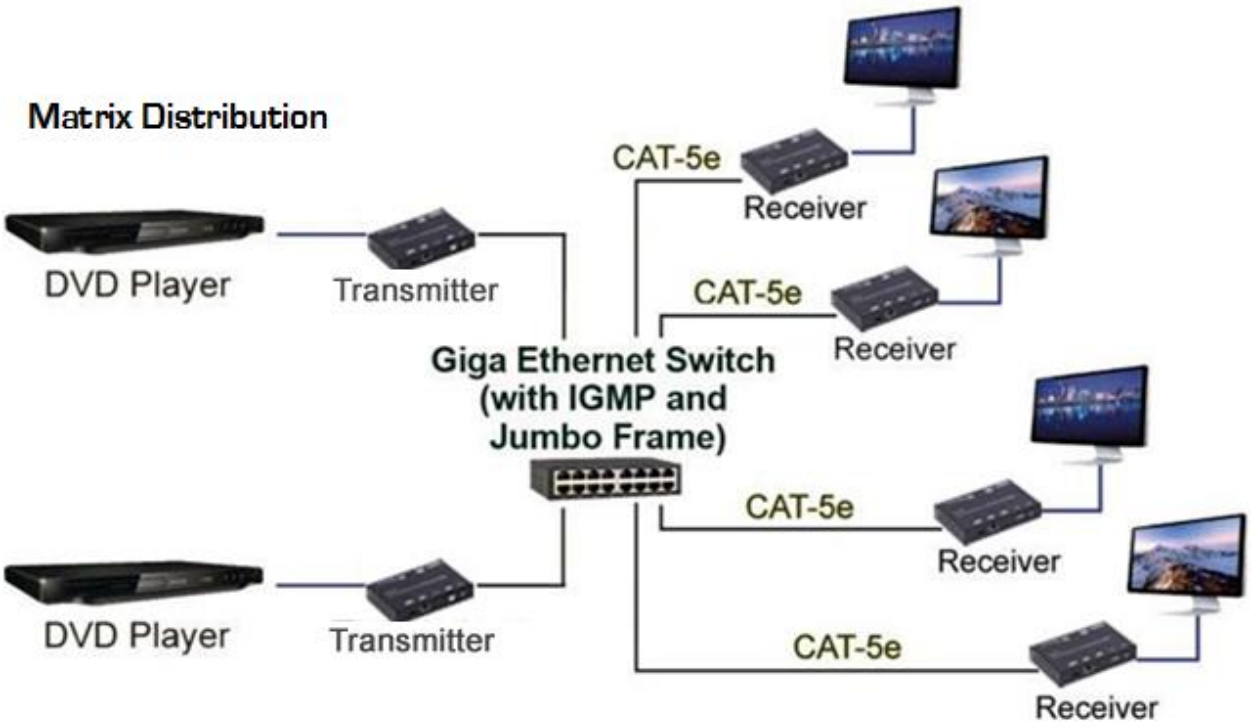



### ■ Multicast

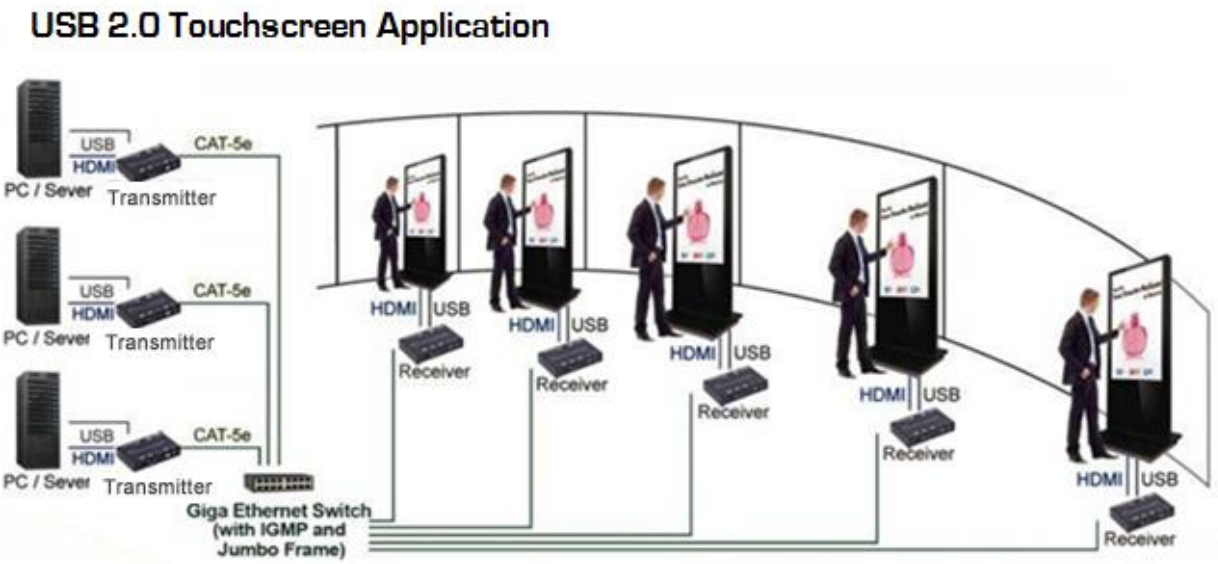
a. Video Distribution



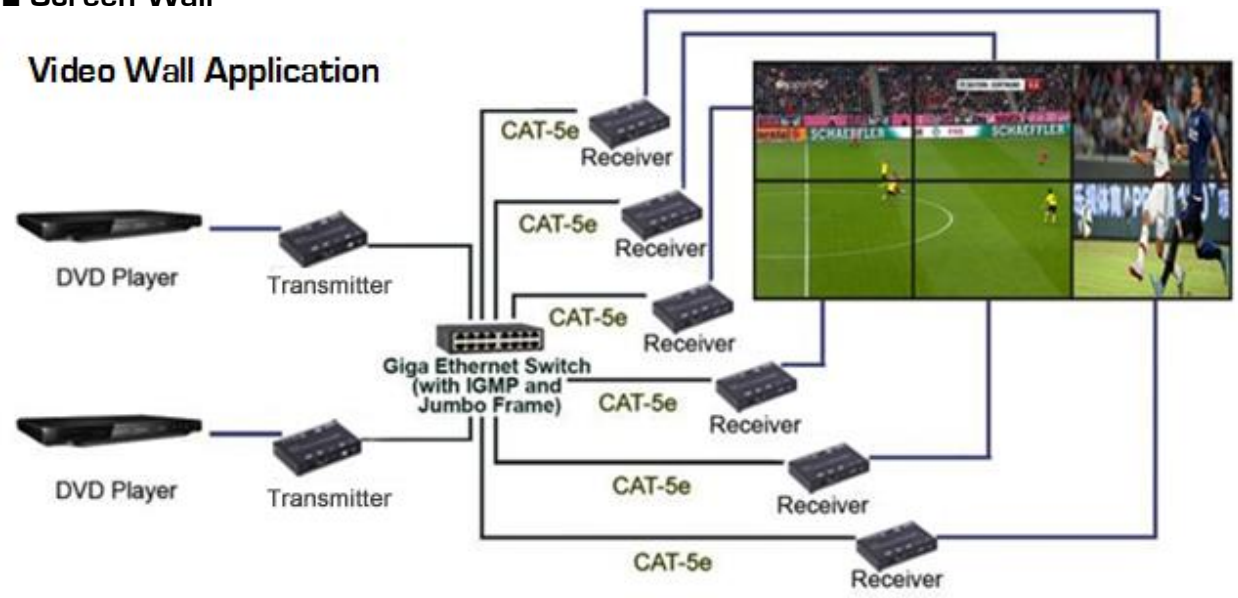
b. Matrix Distribution




c. Billboard & Kiosk, PC to HDMI and USB Interactive Monitor



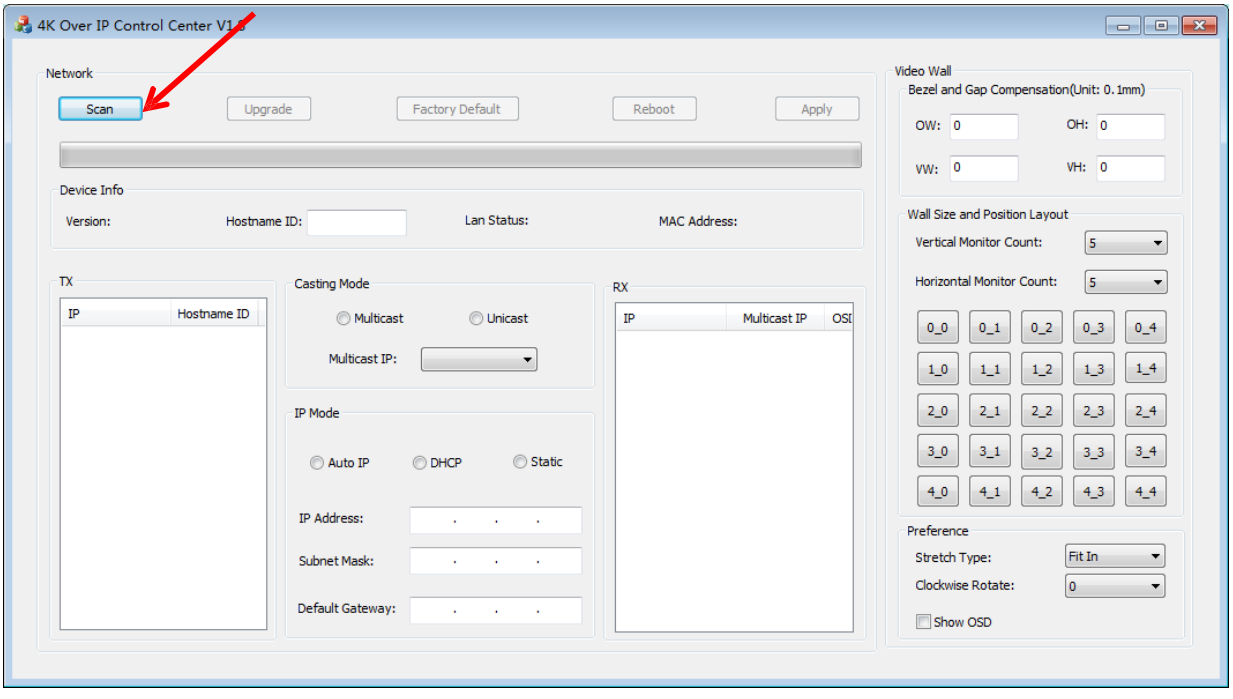
■ **Screen Wall**



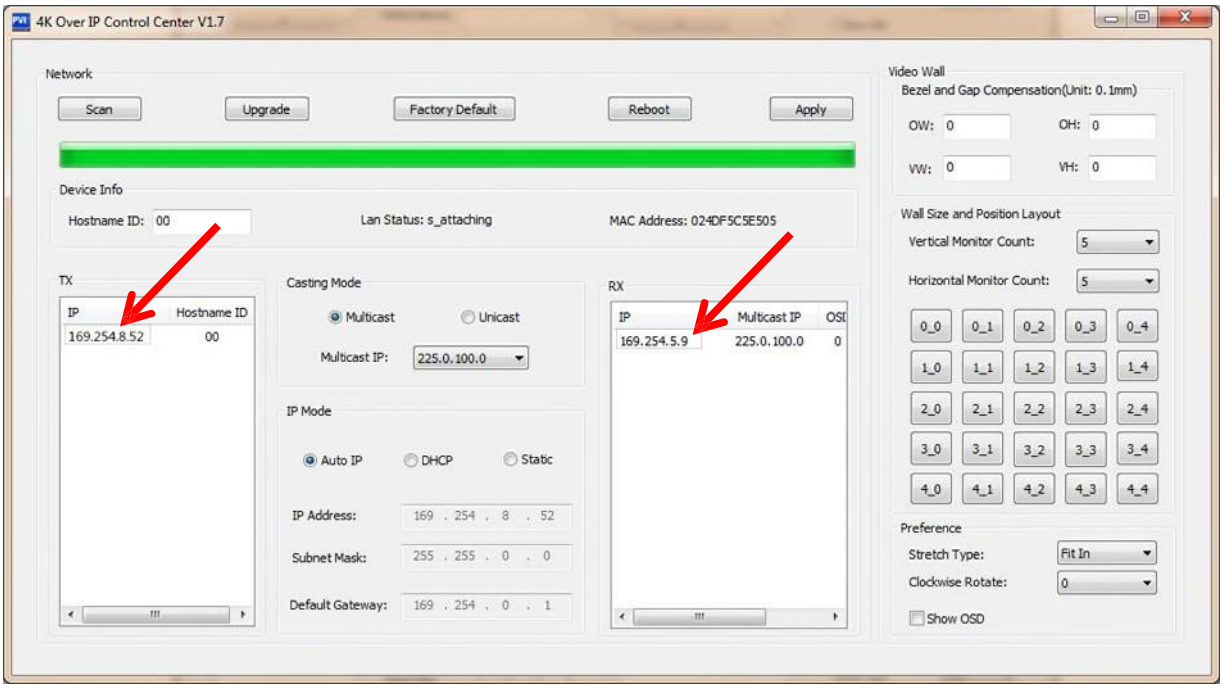

## 3.2 PC TOOL INSTRUCTIONS

Step 1: Make sure the HDMI extender and and PC are in the same domain. (Refer to 6.3)
Step 2: Open the PC Tool.


Step 3: Click “Scan”.

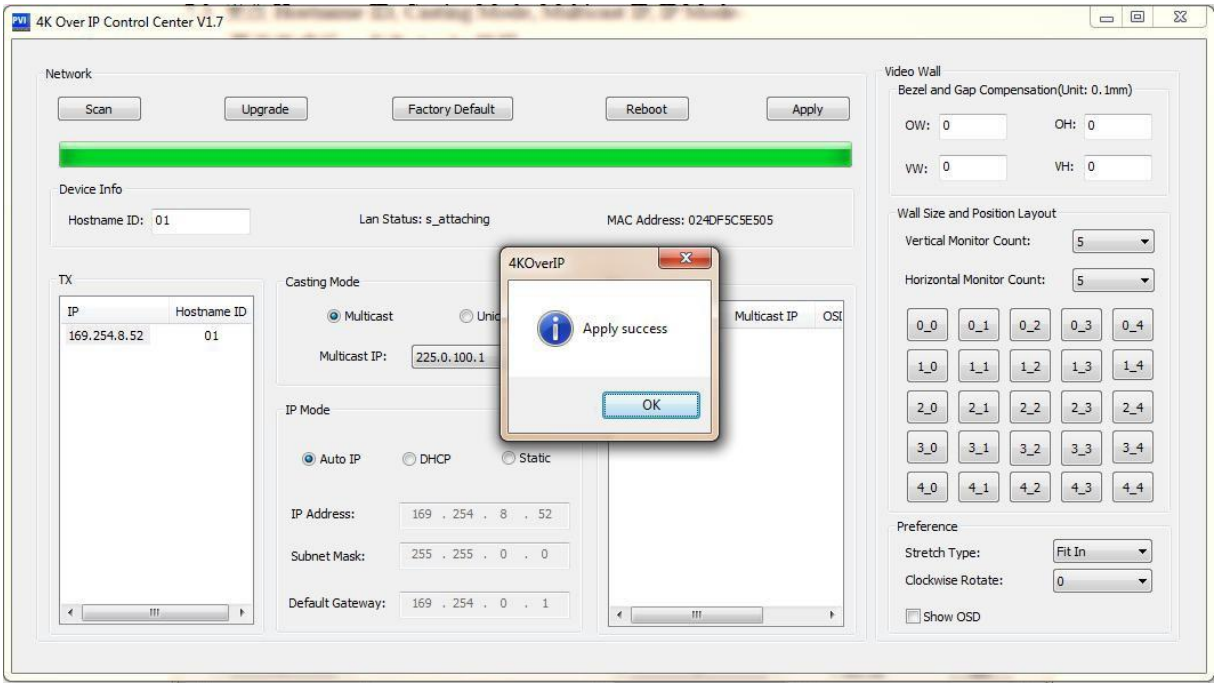


Step 4: Choose the TX or RX name.



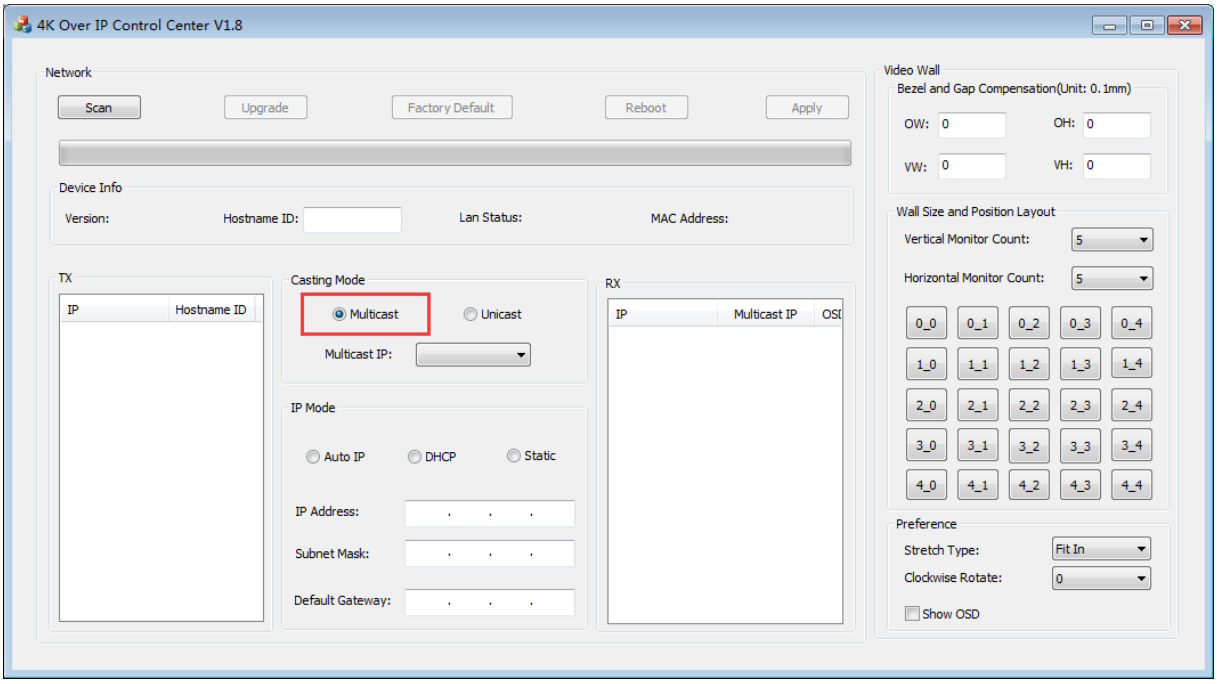

Step 5: Change the IP/Host name ID/Casting Mode/Multicast IP/IP Mode/ Device name on the PC tool interface.

Step 6: Click "Apply".



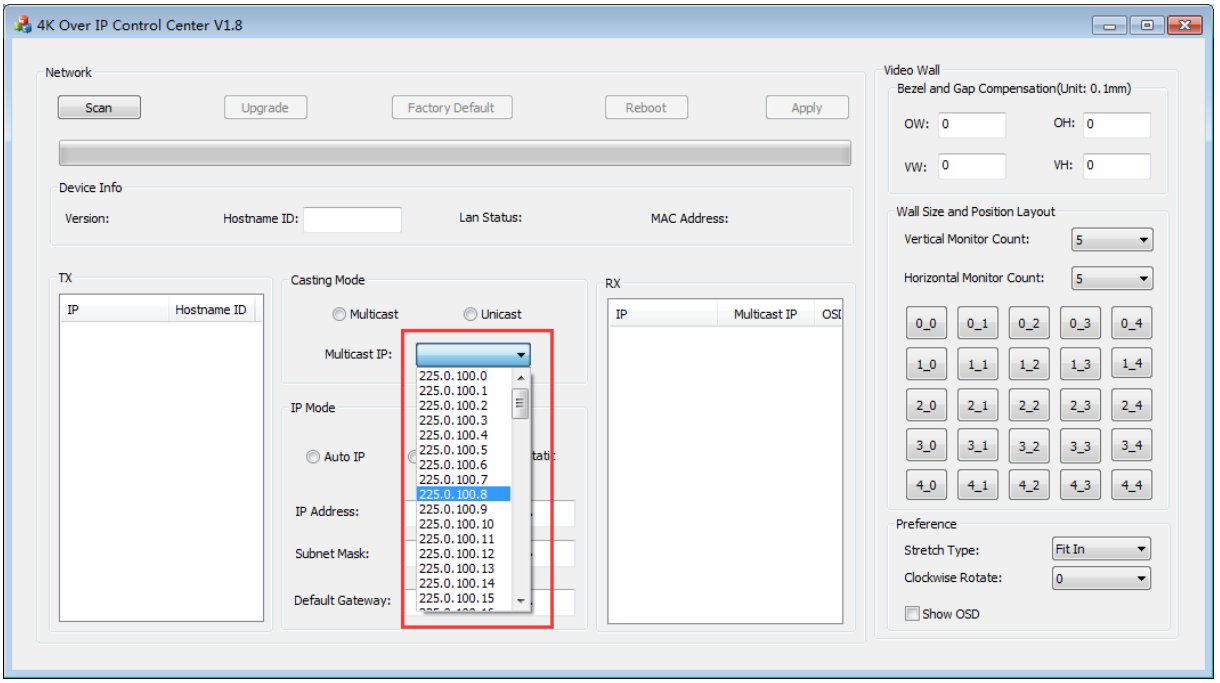
### 3.2.1 MULTICAST

Please Click "Multicast" on the PC tool under One to Many or Many to Many Mode.




### 3.2.2 GROUP ID

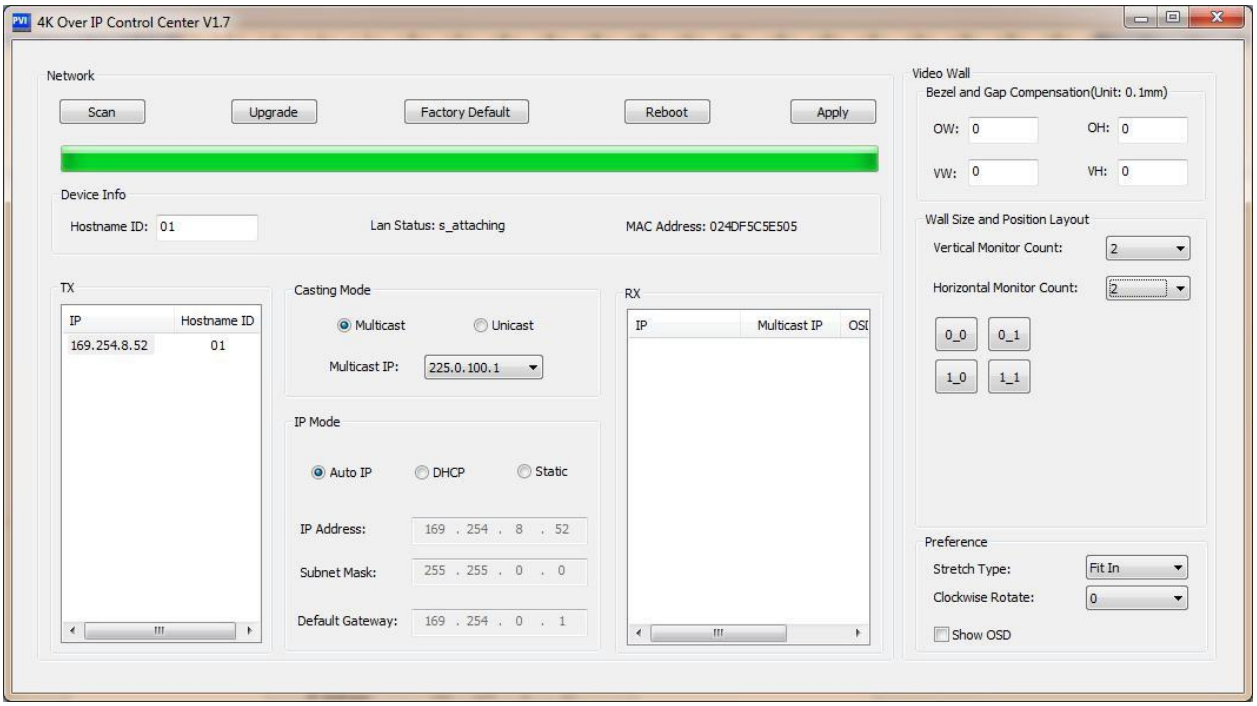
Change the Group ID to view the same or different source.



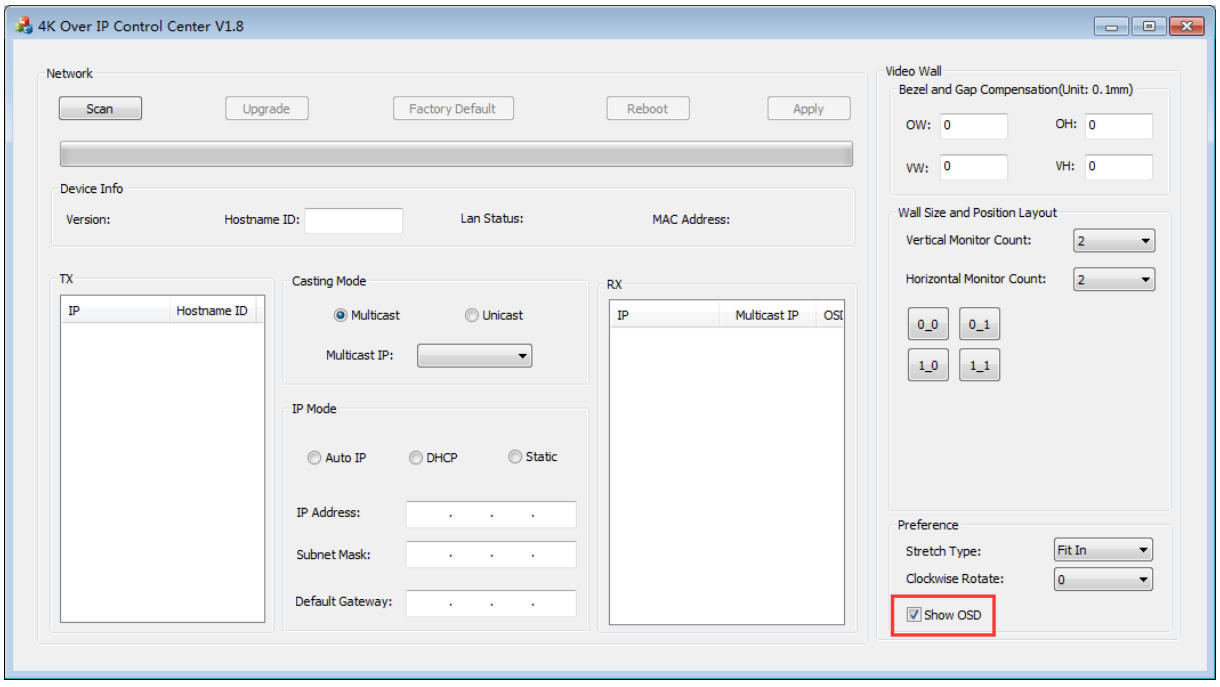
### 3.2.3 VIDEO WALL

1. Set the transmitter and Receiver with same multicast IP.
2. Change the "Vertical Monitor Count" and "Horizontal Monitor Count" the create video wall.

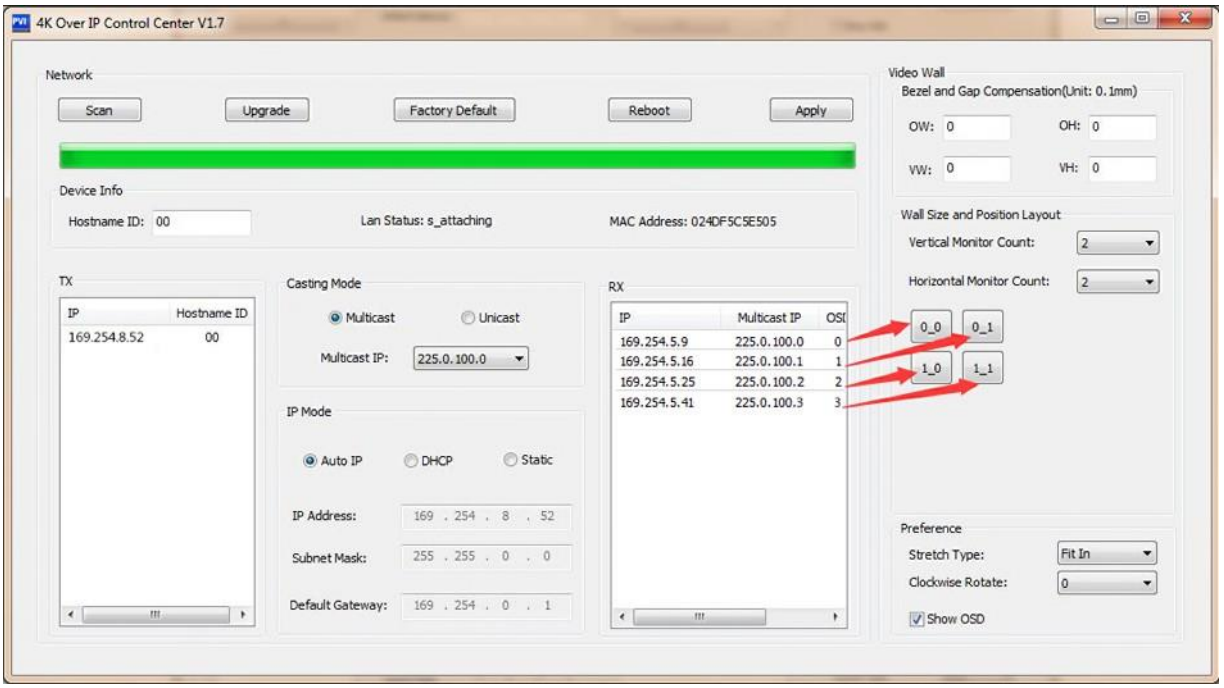
For example, if you need create a 2x2 video wall, please set the "Vertical Monitor Count" and "Horizontal Monitor Count" as "2".




3. Click "Show OSD".



4. Select the RX and drag it to the corresponding position according to OSD shows on the TVs.




## 3.3 IP CONFIGURATION

The 4K HDMI & USB Over IP Extender can configure via LAN in the same subnet.

1. Assign a LAN IP address to the computer in the same subnet. The IP address default of the Transmitter and Receiver is B class Networking: 169.254.xxx.xxx.

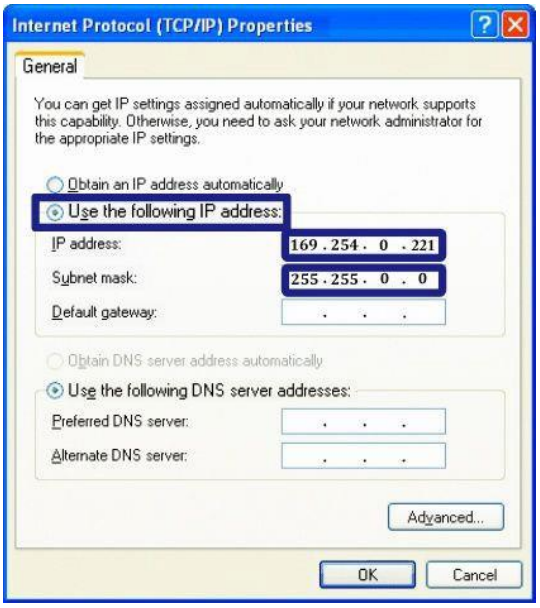
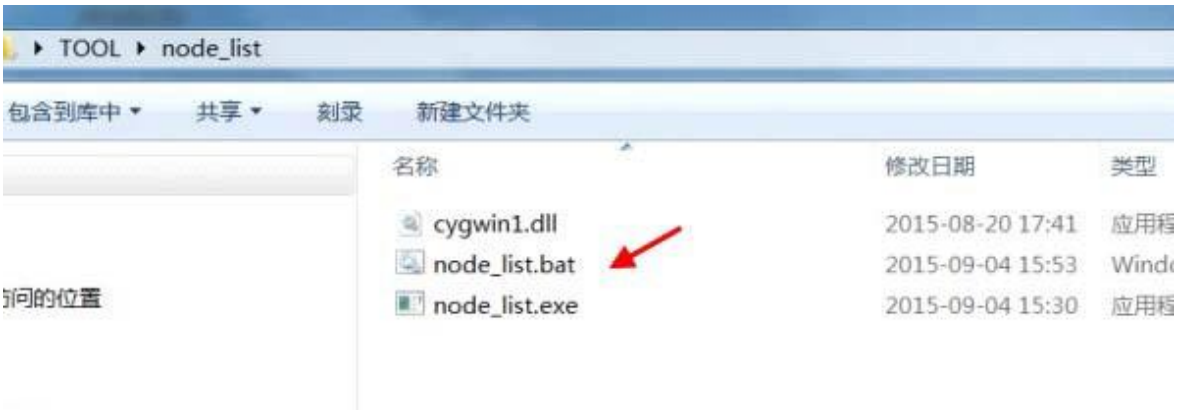



Figure 1. Internet Protocol (TCP/IP) Properties

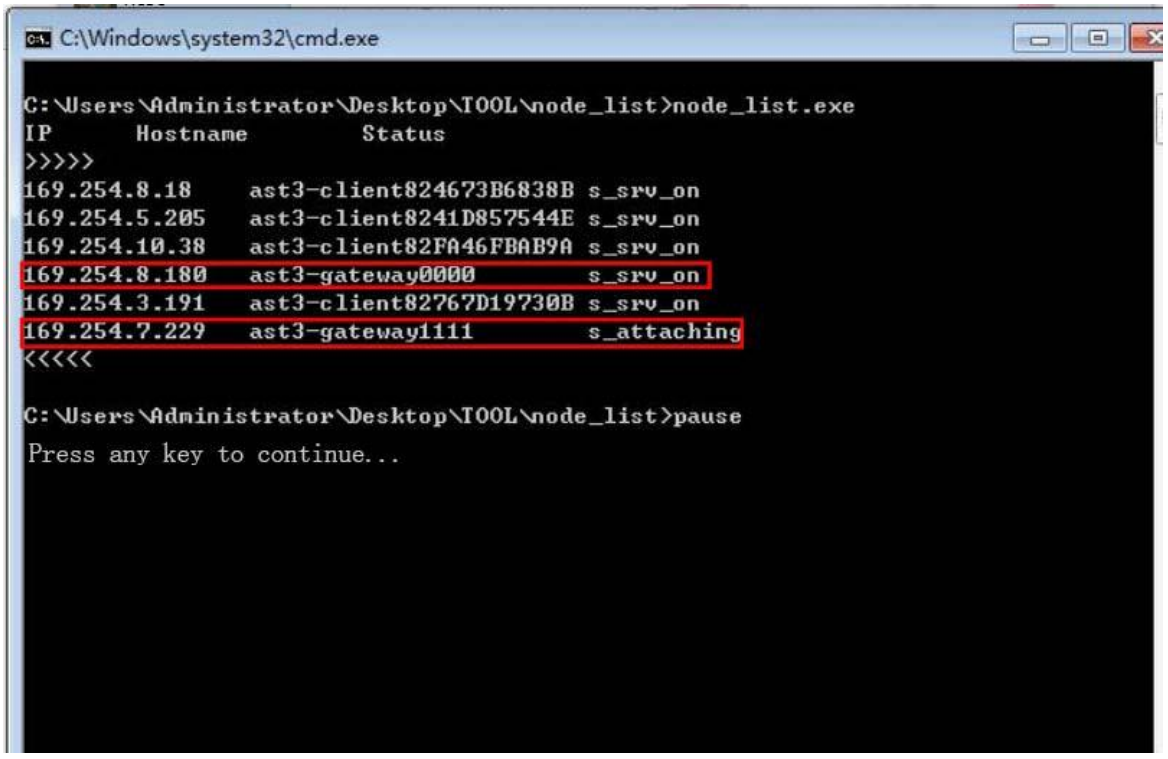
2. Connect the TX and RX with the Ethernet switch, ,then connect the PC with the Ethernet switch. Because this unit support DHCP, Different unit with different IP address of the factory reset, so the first thing we need know the IP address of each unit.

There is two way to get the IP address
1) Via "Node List"

Open the "Node List "in the "Tool" file, Press "Node_list.bat" twice to enter the dialog box




Then we can see all the IP address of both the TX and RX as shown below




Remark: If the IP address with "Client", It's the IP address of the RX
If the IP address with "Gateway", It's the IP address of the TX.

2) The second way.

Connect all devices with proper cables except video source, please refer to Figure 2

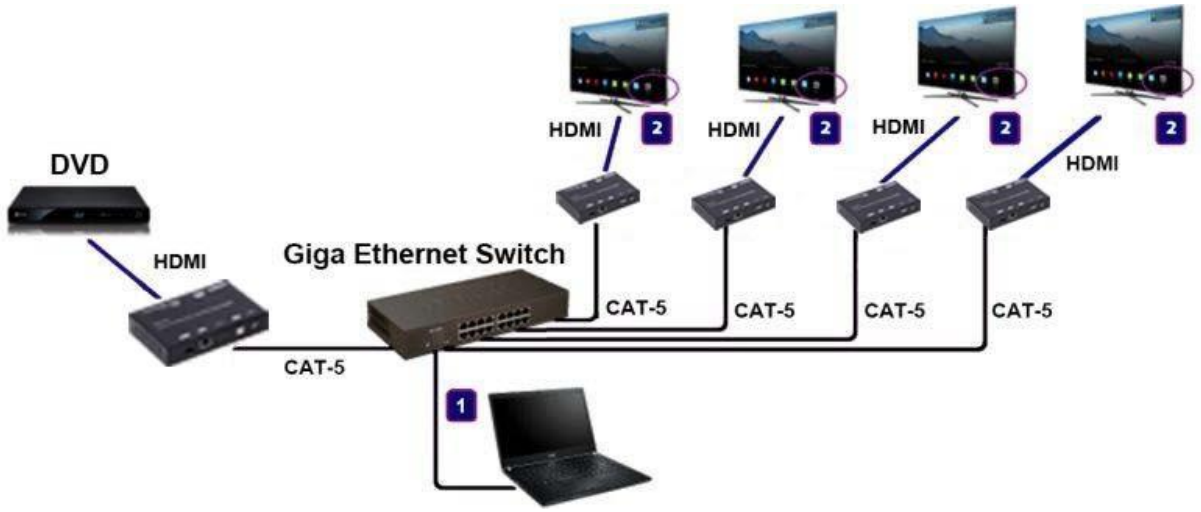



Figure 2. Demonstration of the 4K HDMI & USB Over IP Extender

3) After activation, the device information including the Transmitter and Receiver IP address will be shown in the lower right corner. Remember the Transmitter and Receiver IP address on monitor screen and then plug HDMI video source cable into Transmitter.

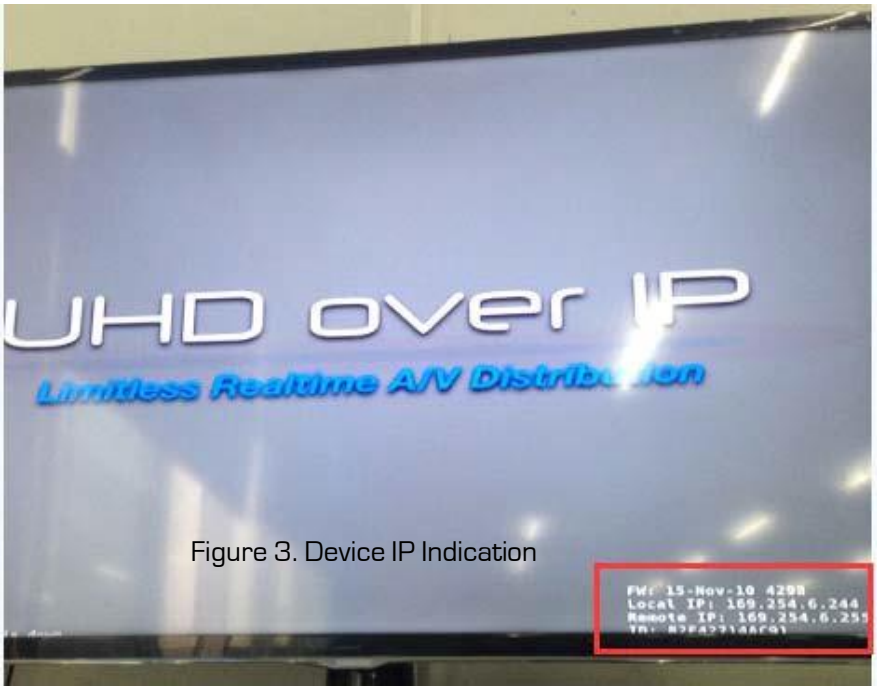



Figure 3. Device IP Indication

3. The administrator can input Transmitter or Receiver IP address into the address bar of a web browser (Recommend Google Chrome) to enter the Extender Web UI.
If successful, the administrator will see the Web UI as shown in Figure 4.

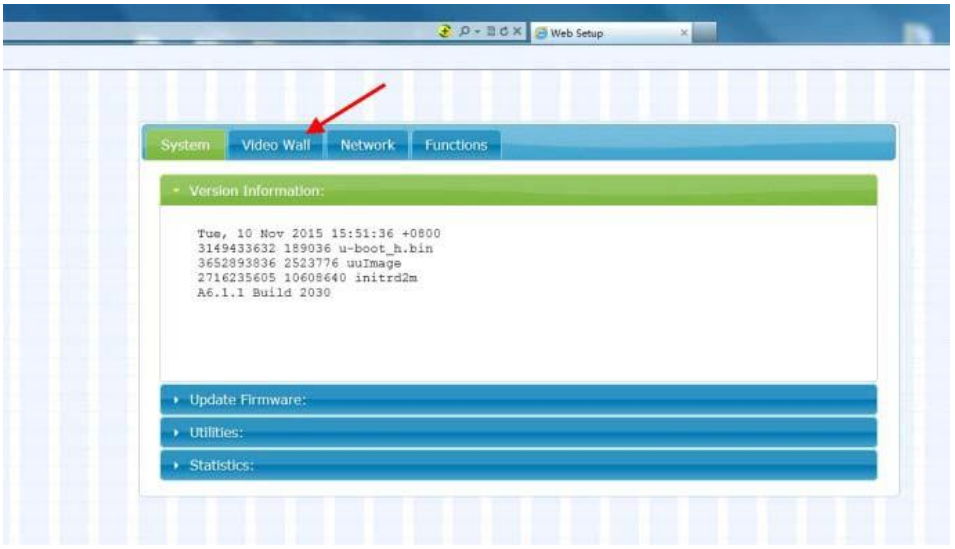



Figure 4. Web User Interface

# 4 WEB USER INTERFACE CONFIGURATION

## 4.1 SYSTEM

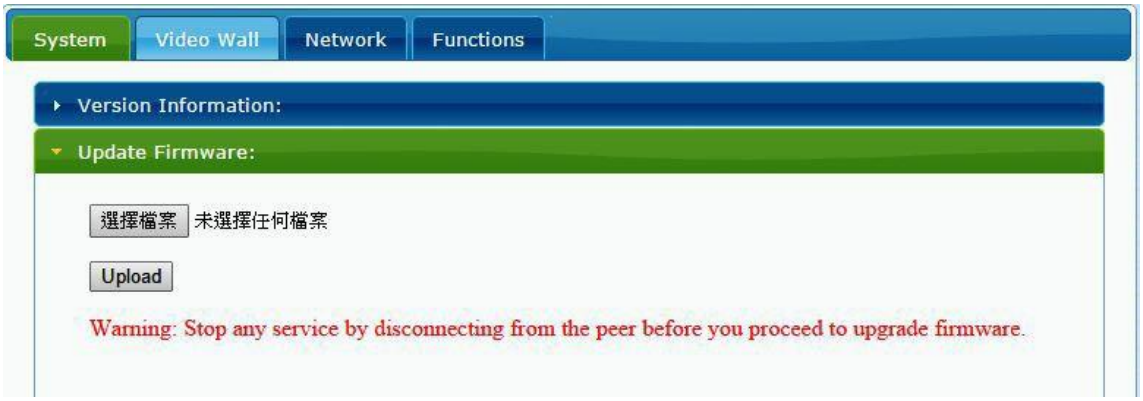
How to set up the connected extender and setting

### 4.1.1 [VERSION INFORMATION]

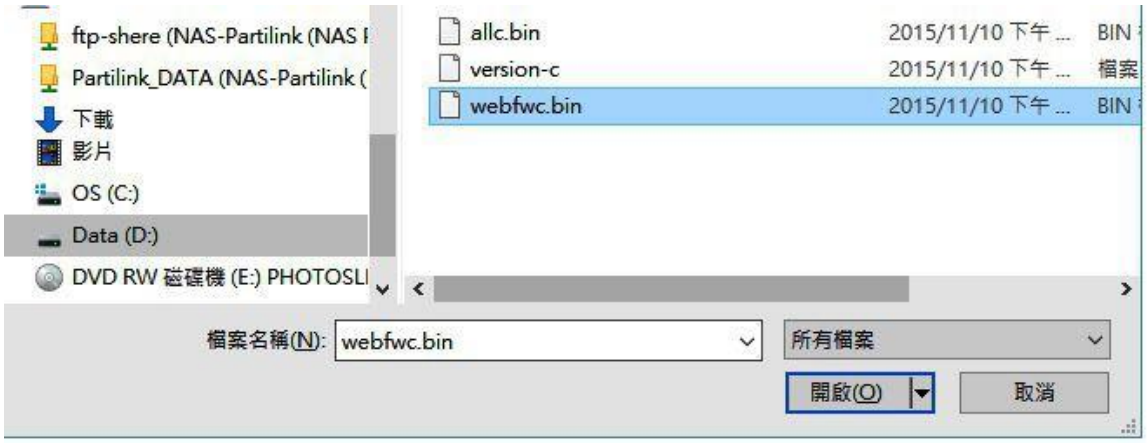
Indicating the firmware version and relevant information of the devices

### 4.1.2 [UPDATE FIRMWARE]

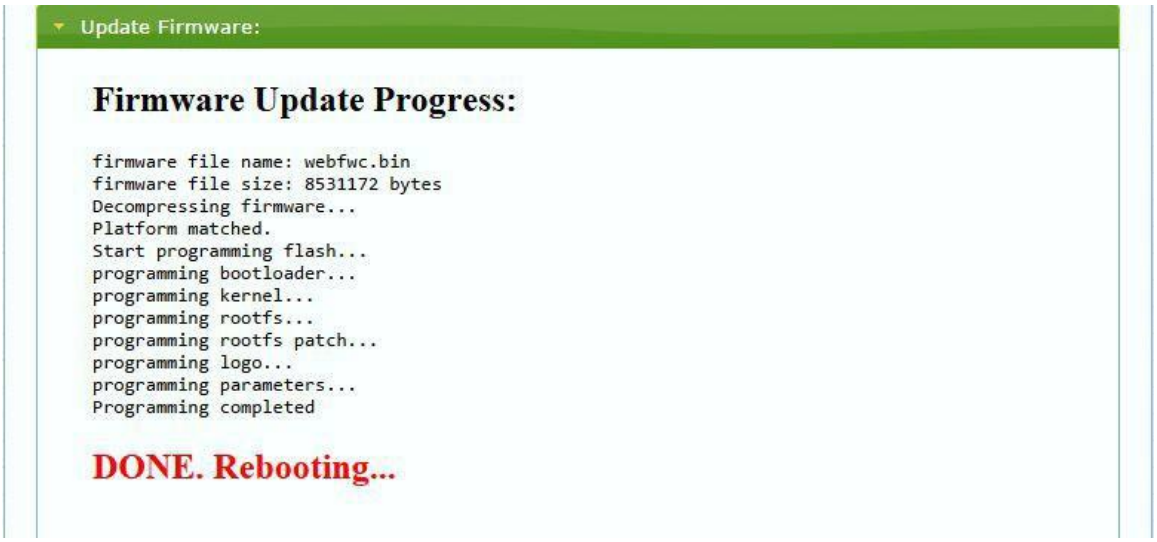
To update the firmware of the connected extender, please click on the [Select File] to select the firmware and click on [Upload] to upload the firmware and update accordingly.




- Transmitter Firmware Update: please select [webfwh.bin] to update
- Receiver Firmware Update: please select [webfwc.bin] to update




It takes time to update the firmware. During the process of update, the Web user interface shows the status as below diagram. The extender system will reboot automatically after updating firmware. If it doesn't reboot automatically, please reboot to apply the new firmware manually.



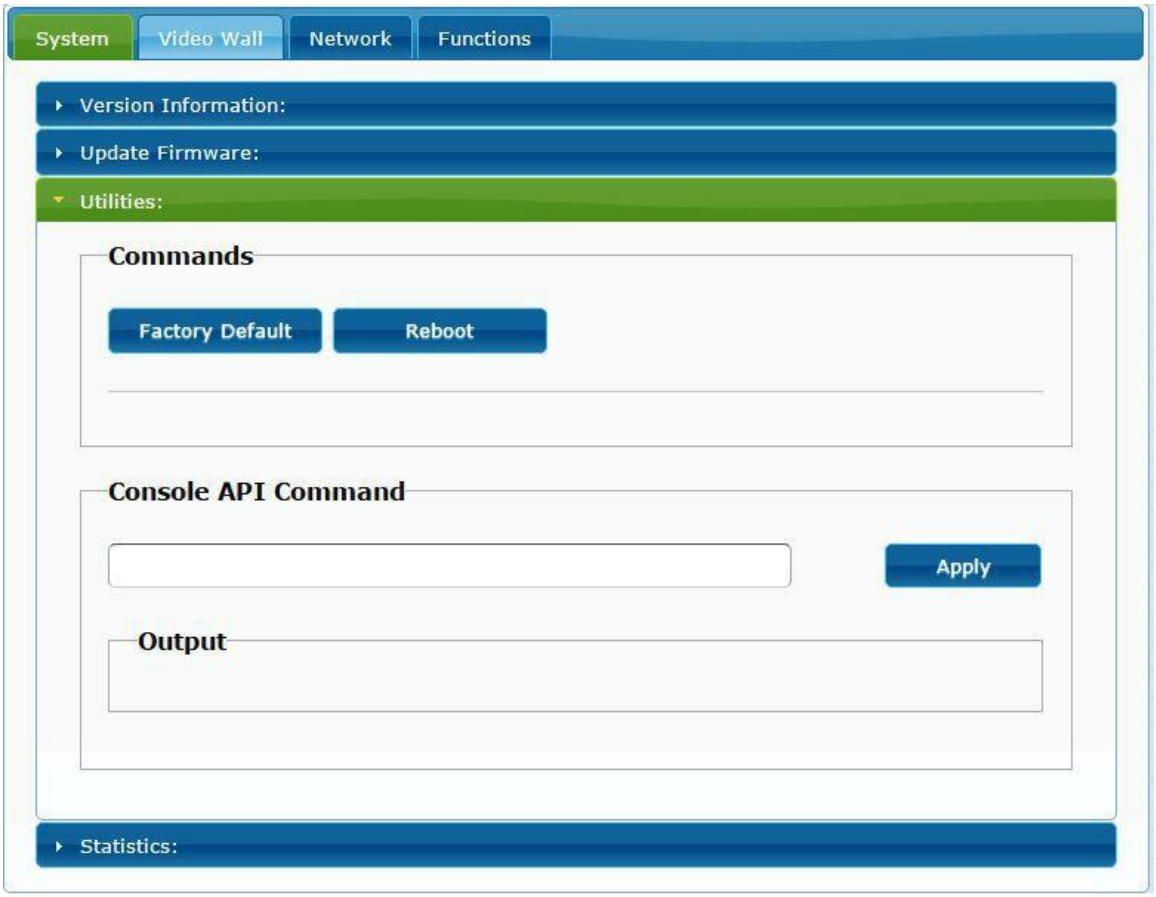

### 4.1.3 [UTILITIES]

There are some functions

**Factory D e f a u l t :** Click on to return to the factory default when necessary

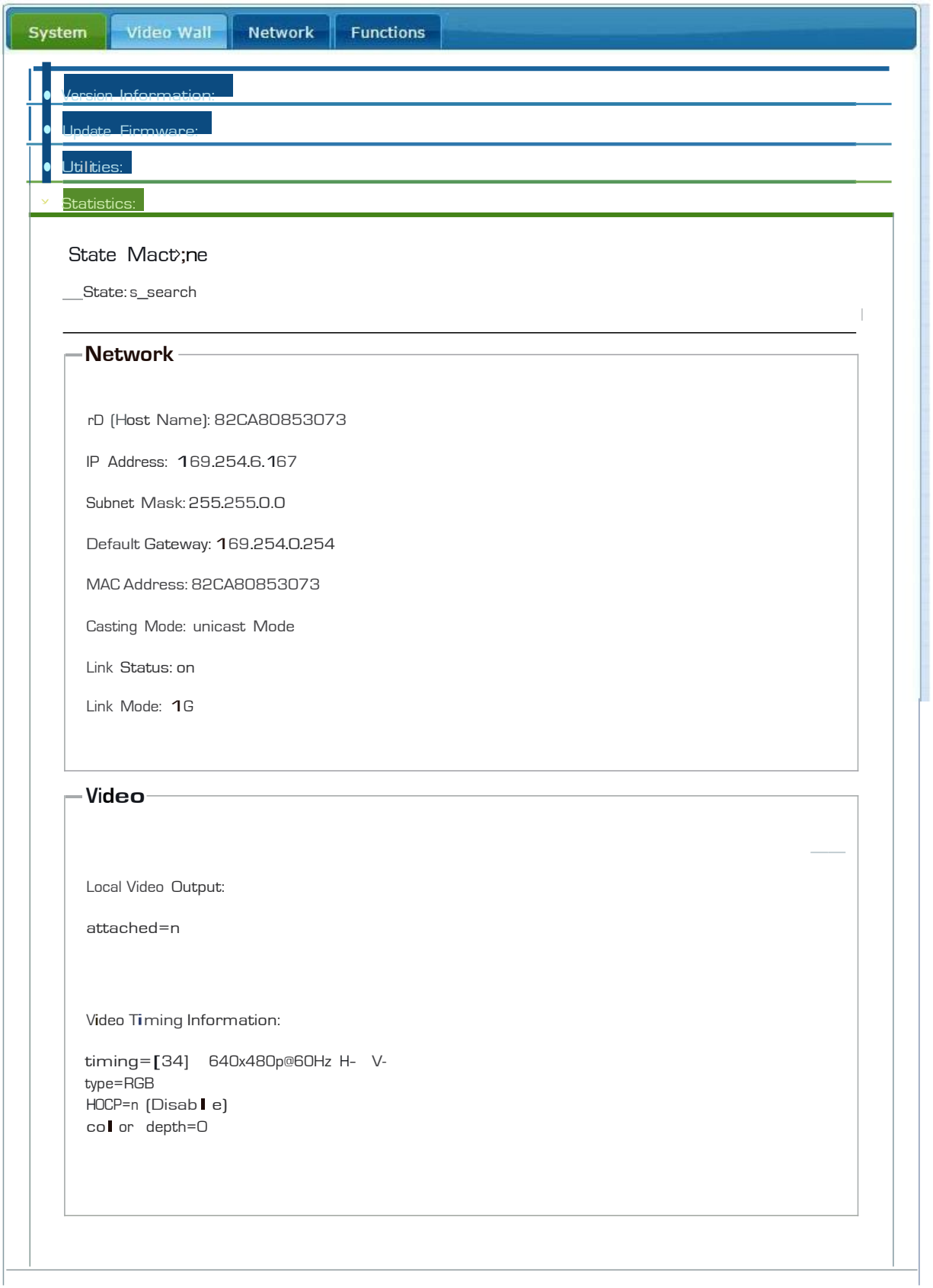
**Reboot:** Click on to reboot the extender system

**Console API Command:** Input Linux command for advanced setting



### 4.1.4 [STATISTICS]

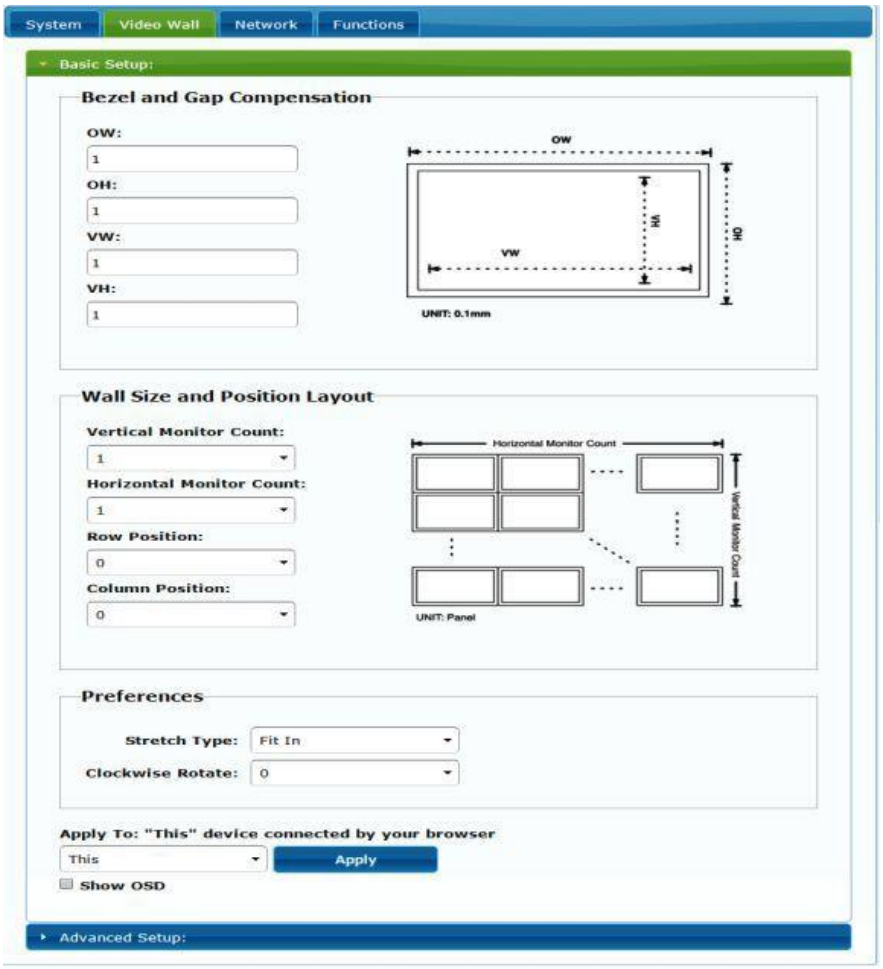
Indicating the extender linking and working status



## 4.2 VIDEO WALL

To set up the video wall application

### 4.2.1 [BASIC SETUP]




**Bezel and Gap Compensation:**

Dimension of the screen (inside and outside width and height)

**OW:** outside width **OH:** outside height

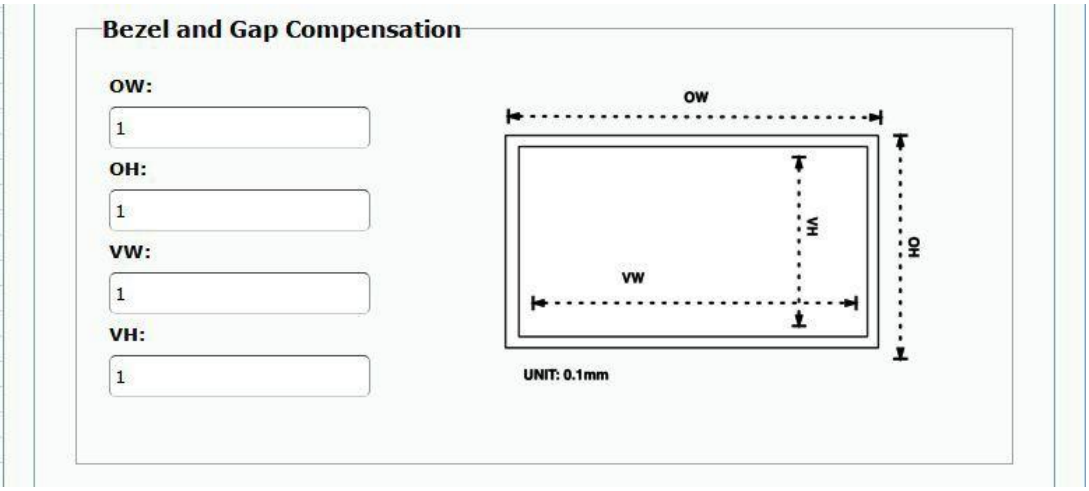
**VW:** viewable width **VH:** viewable height

Please NOTE:

1) The viewable width must be less than the outside width, and the viewable height must be less than the outside height.

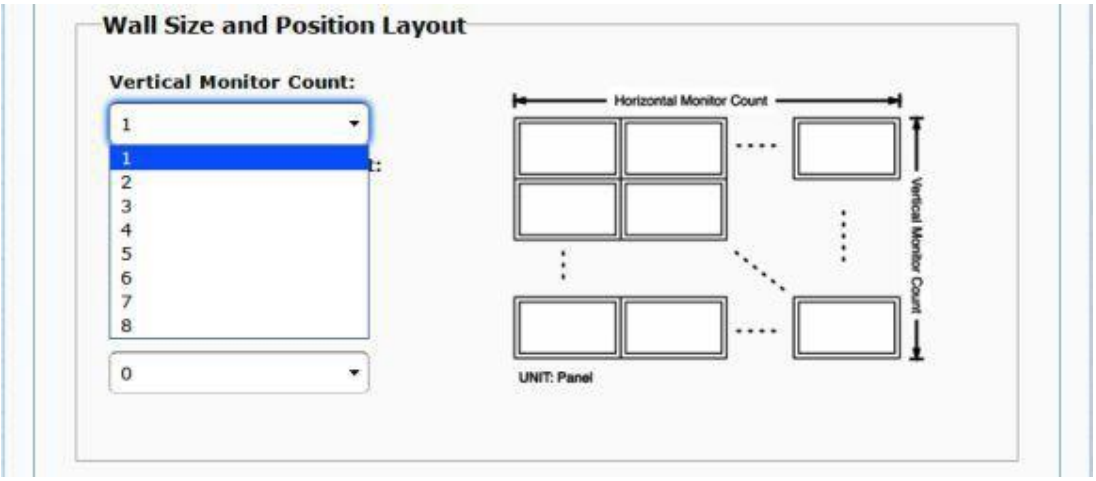
2) If administrator doesn't need this, just set all values to 0.

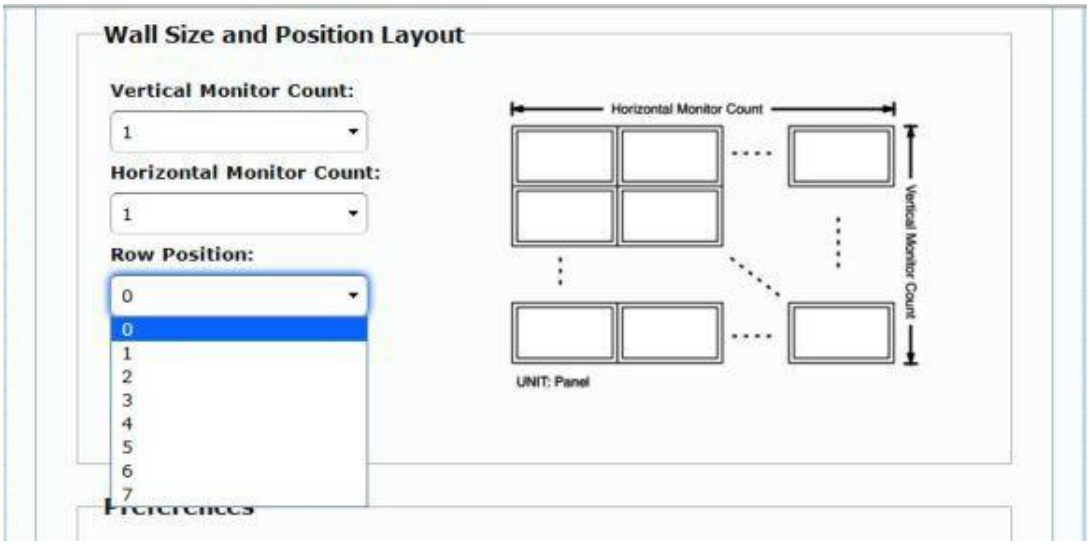
3) The unit is 0.1mm and the value MUST be integer.

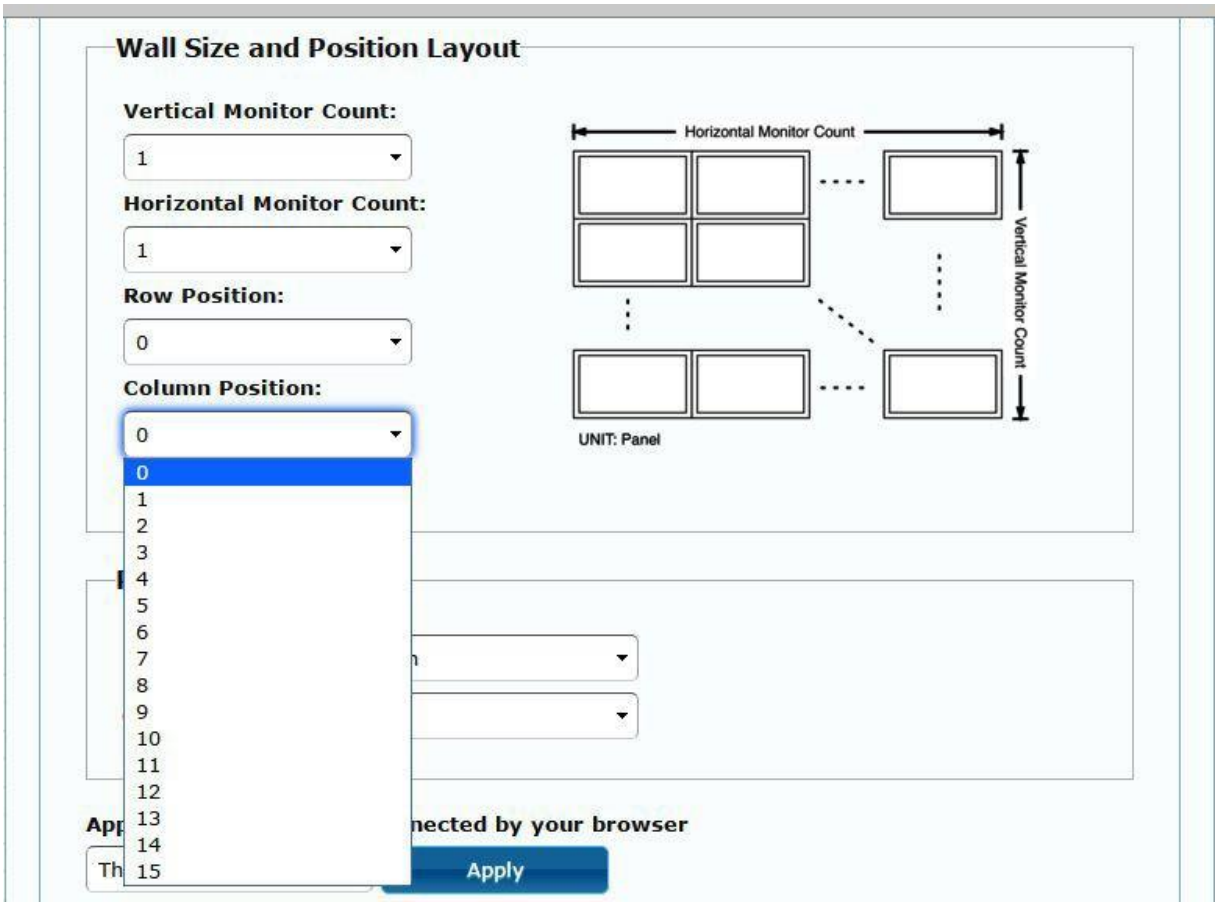



### Wall Size and Position Layout:

Select number of vertical and/or horizontal monitors, row position and column position. Vertical monitor number 1~8, horizontal monitor number 1~16.





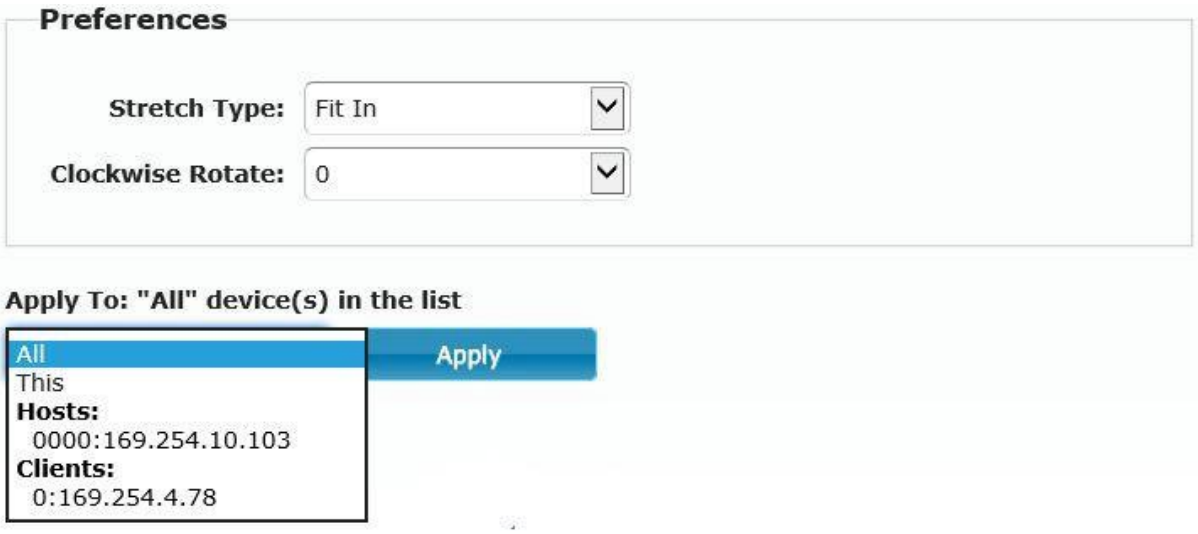

**Preferences:** Select the video fit in the screen or stretch out and the rotate angle


**Apply To:**

1) All: Configure all Transmitter and Receiver in the same Group IP.

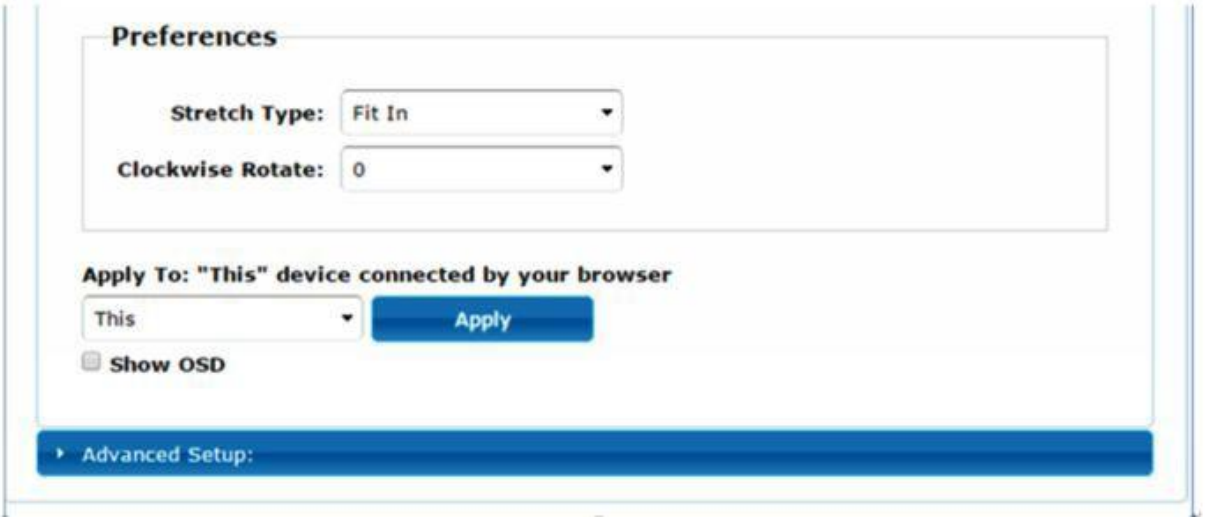
2) This (Local): The IP you input into address bar of web browser.

3) Hosts or Clients: select which Transmitter or Receiver you want to configure.

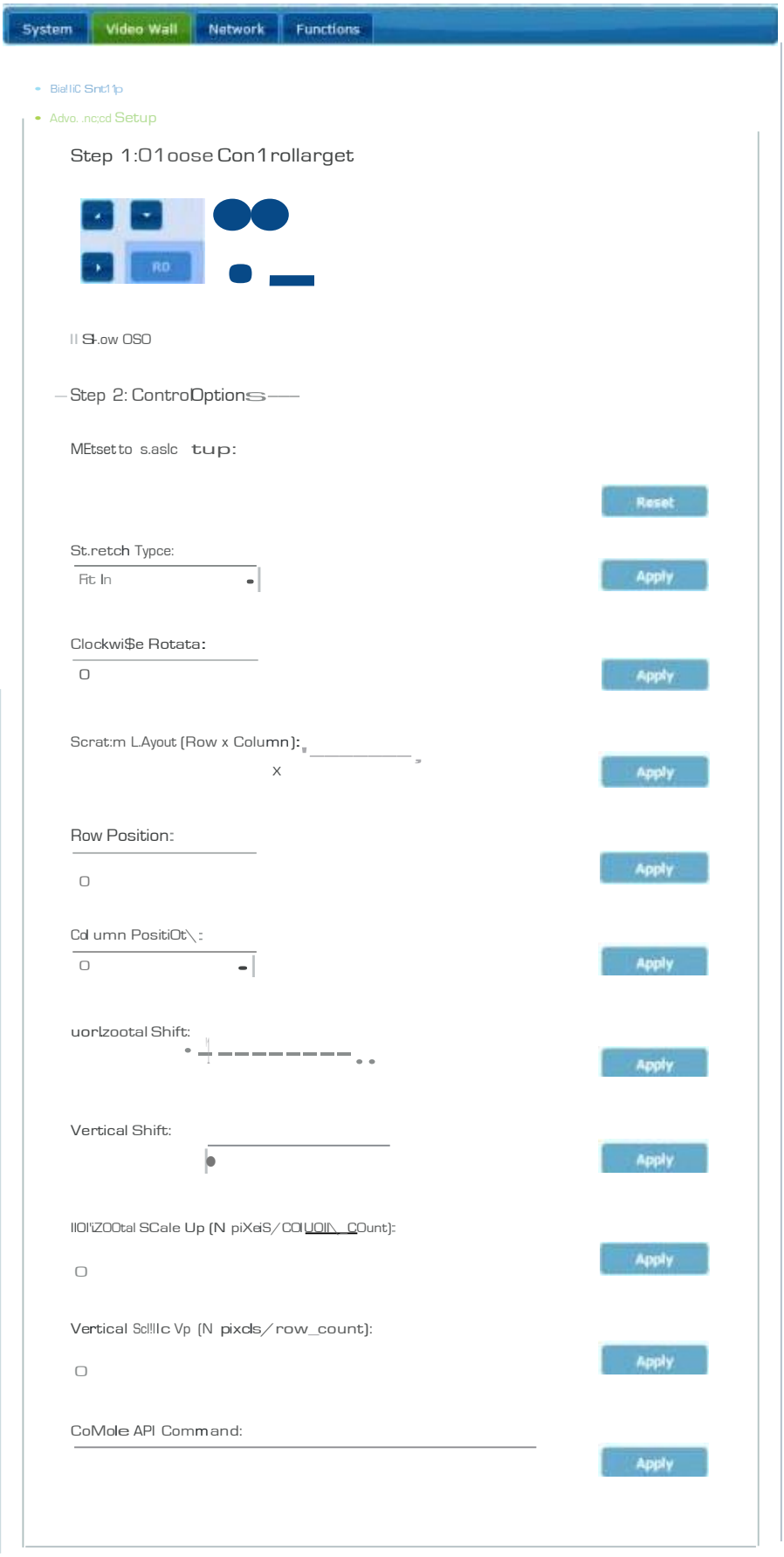



**Show OSD:**

Check this box to output each receiver's specific number to the connected monitor

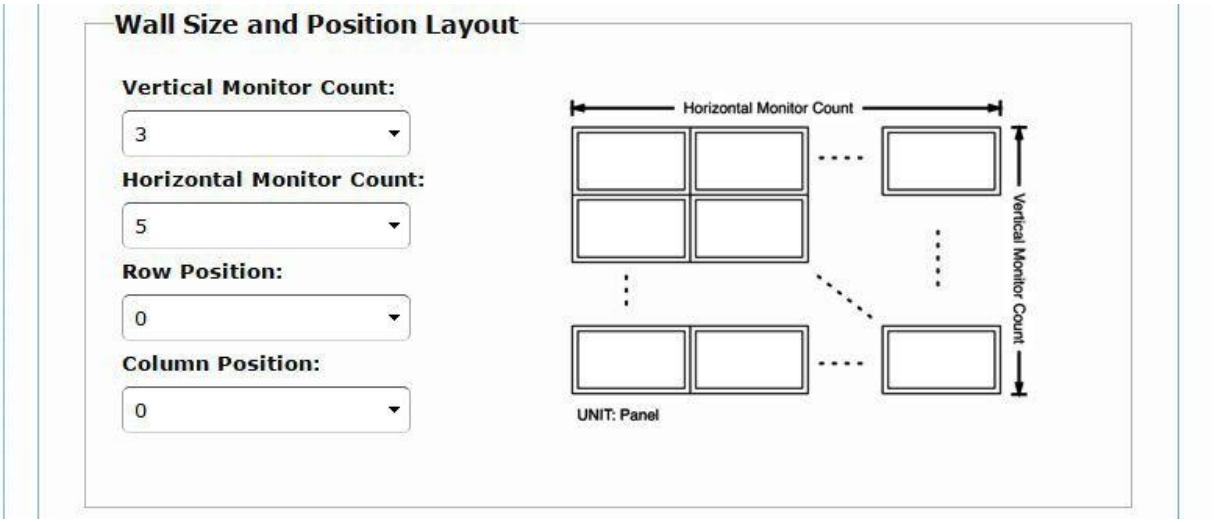


## 4.2.2 [ADVANCE SETUP]

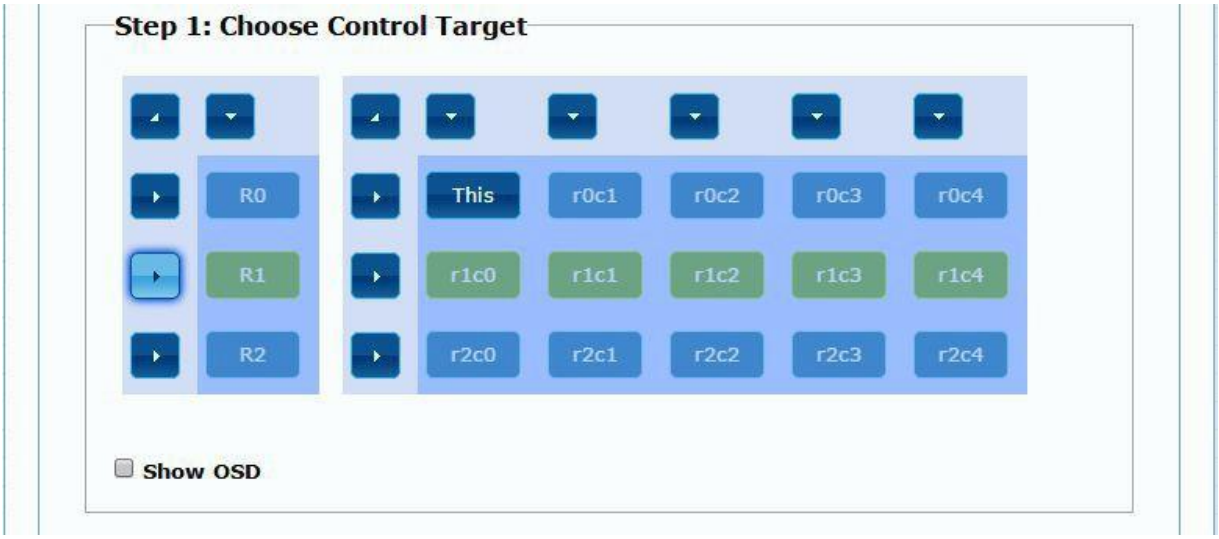


Before you enter “Advanced Setup”, please complete the “Basic Setup” as follows:

Step1: In “Basic Setup”, select Vertical and Horizontal Monitor Count. For example Vertical Monitor Count = 3, Horizontal Monitor Count = 5




Sept2: In “Advanced Setup”, choose the target of the video wall to control



If user make incorrect operations, press "Reset" in Reset to Basic Setup function.

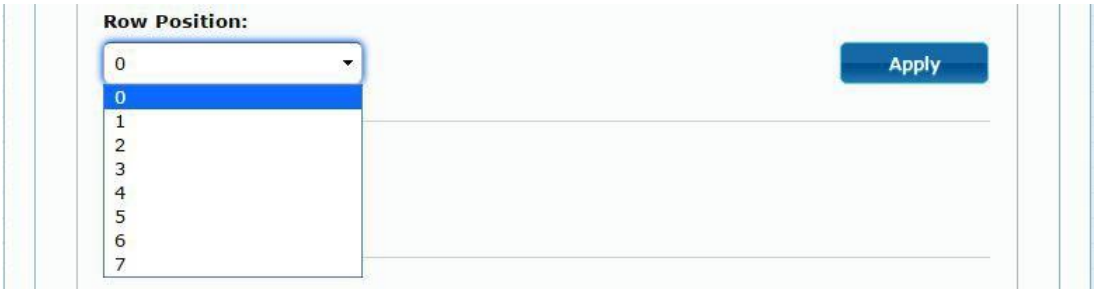

Setup the video output to "Fit In' or "Stretch Out" mode in the screen


Setup the rotation angle of the video output


Set up the number of vertical and horizontal monitor based on the video wall layout. Vertical number 1~8 and horizontal number 1~16.

Setup the row position of monitor, number from 0 to the total number of vertical monitor.

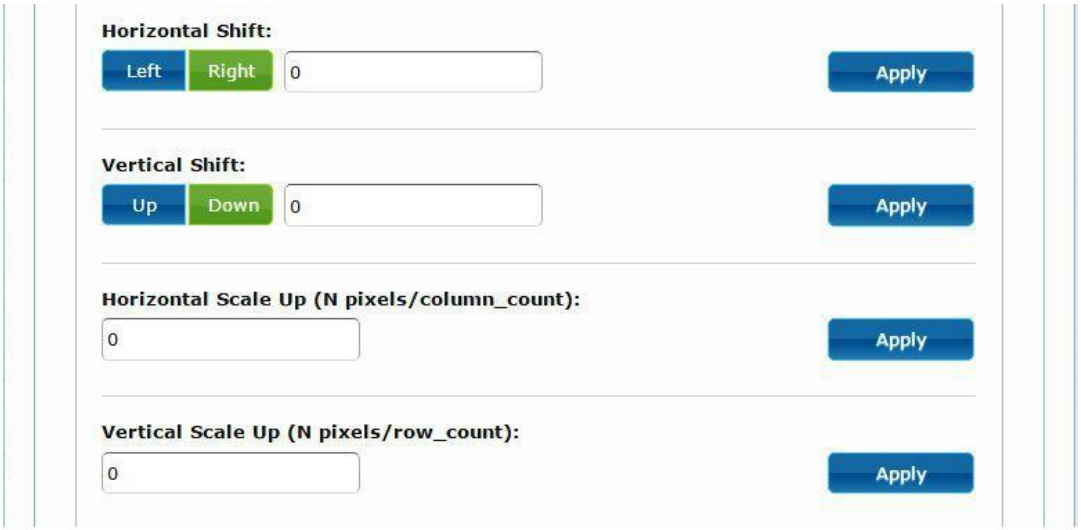
Setup the column position of monitor, number from 0 to the total number of horizontal monitor.





Setup the video position shift and video enlarge.

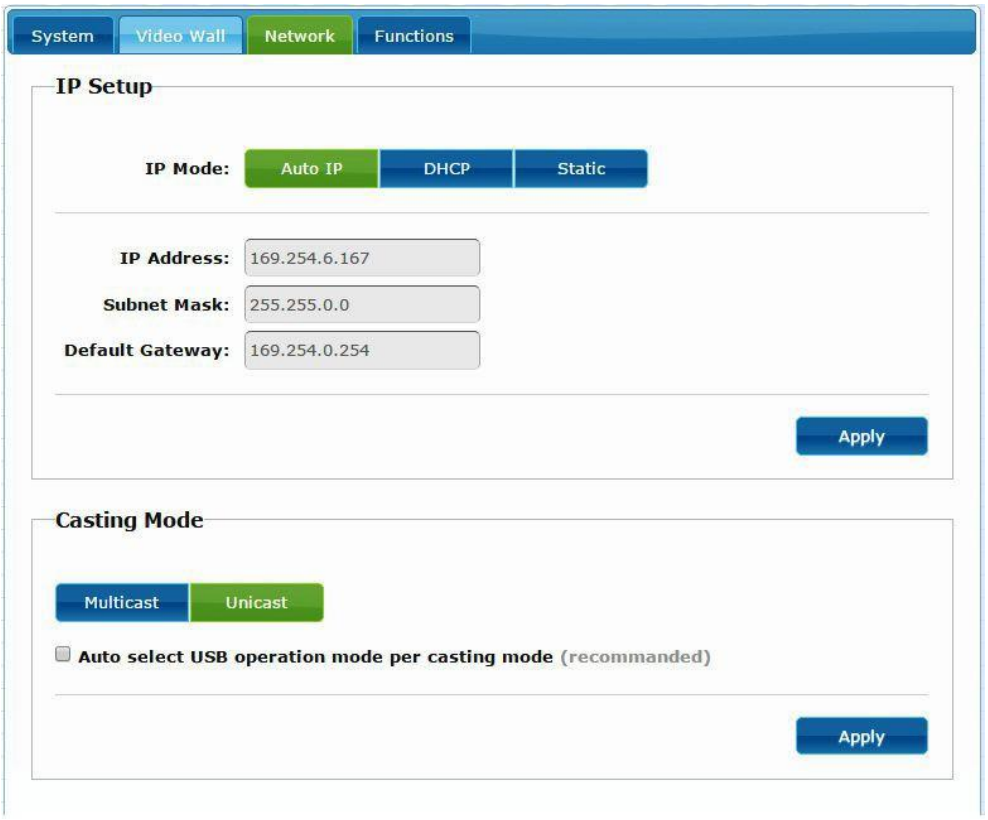
**Horizontal Shift:** Setup the video horizontal shift, Left or Right
**Vertical Shift:** Setup the video vertical shift, Up or Down
**Horizontal Scale Up:** Setup the video horizontal scale up
**Vertical Shift Scale Up:** Setup the video vertical shift scale up.



**Consol API Command:** Input Linux command to do advanced setup.


## 4.3 NETWORK:

Update the network setup of the extender system

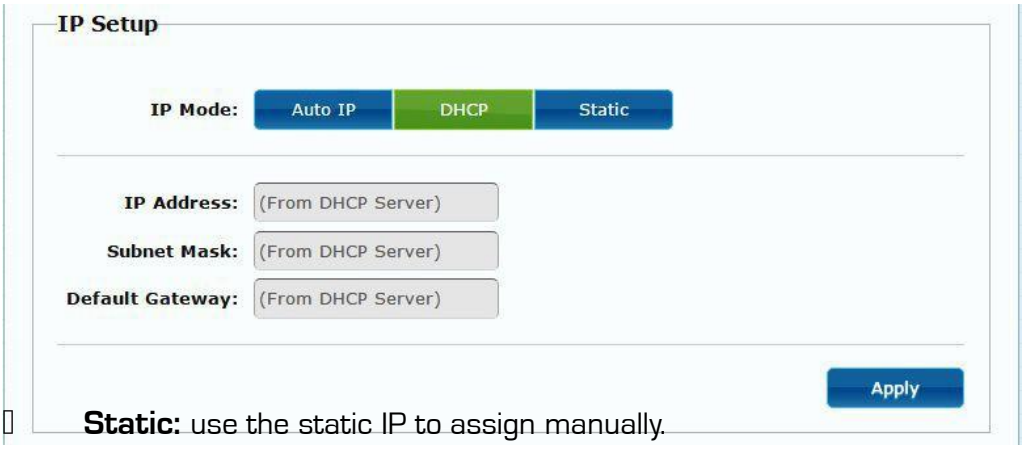



### 4.3.1 [IP SETUP]

**Auto IP:** use automatically Extender assign IP system for example: 169.254.xxx.xxx.


IP Setup
IP Mode:
Auto IP
DHCP
Static
IP Address:
169.254.6.167
Subnet Mask:
255.255.0.0
Default Gateway:
169.254.0.254
Apply

**DHCP:** use the DHCP of the external device such as the IP sharer to assign IP.




**Static:** use the static IP to assign manually.


### 4.3.2 [CASTING MODE]

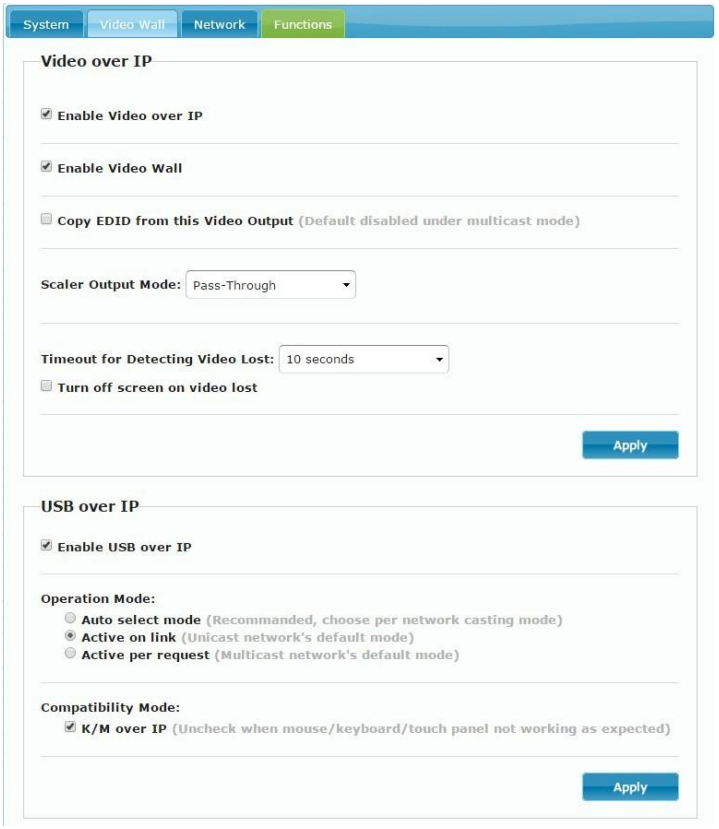
**Select the broadcast mode of the extender application**

**Multicast:** point to multiple points or multiple point to multiple points broadcast

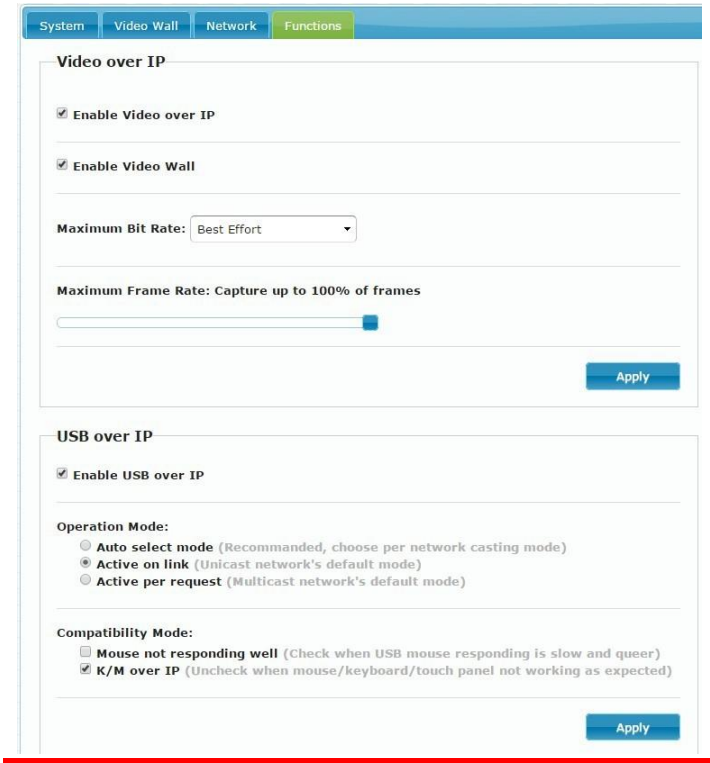
**Unicast:** point to point broadcast

## 4.4 FUNCTIONS:

Setup the video output and USB extension mode for Transmitter




Setup the video output and USB extension mode for Receiver



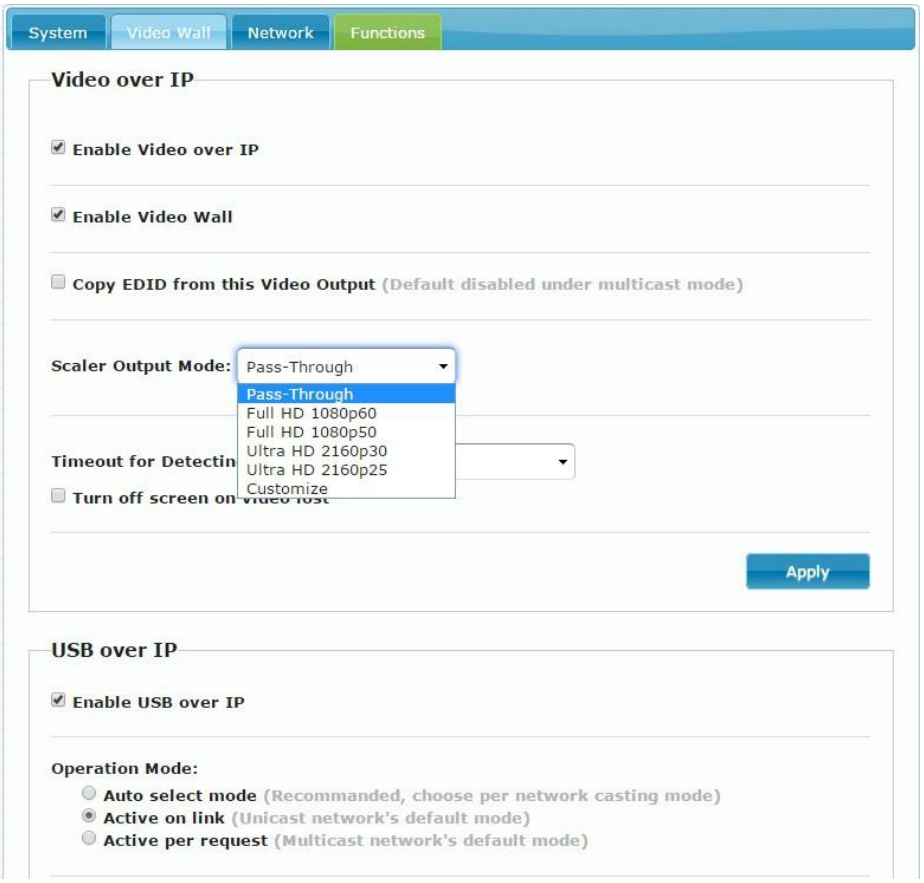
### 4.4.1 [VIDEO OVER IP]: Setup the video output mode

**Enable Video over IP:** Check to enable video extension over IP
**Enable Video Wall:** Check to enable the video extension for building up video wall
**Enable EDID Copy:** This function is limited to copy one of the receivers.
**Scaler Output Mode:** Select the required scalar output mode or select "customize" and input 8 Hex values for more video output resolution and refresh rate selections.

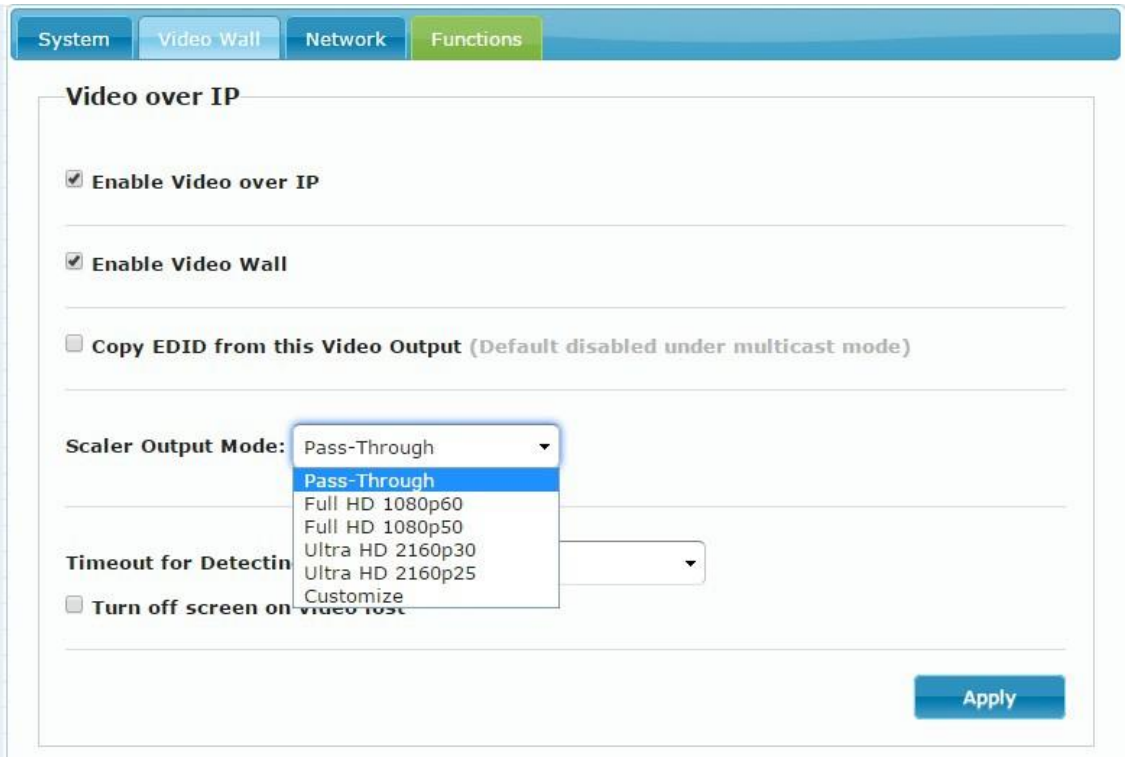
1) 80000004: HD 720p60
2) 81000061: WXGA 1366x768@60
3) 81000040: WXGA+ 1440x900@60
4) 81000051: WUXGA 1920x1200@60
5) 8100003C: SXGA+ 1400x1050@60

**Timeout for Detecting Video Lost:** Setup the time of stop the video storage when detecting video lost to transmit

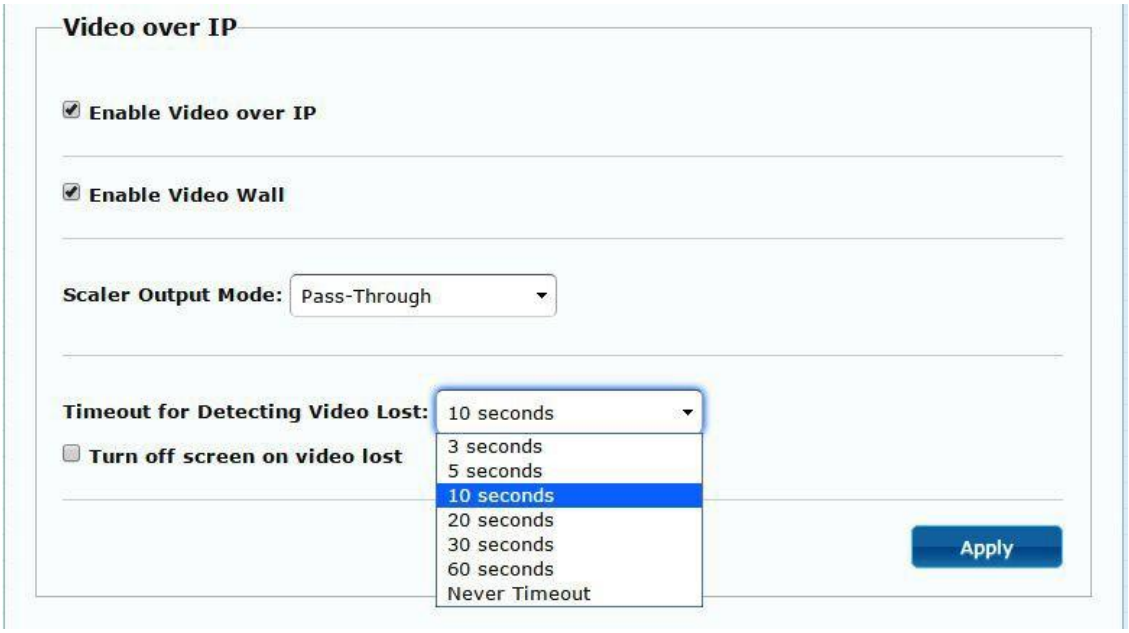
**Customize Scalar Output Mode for Transmitter**



Customize Scalar Output Mode for Receiver




Timeout for Detecting Video Lost

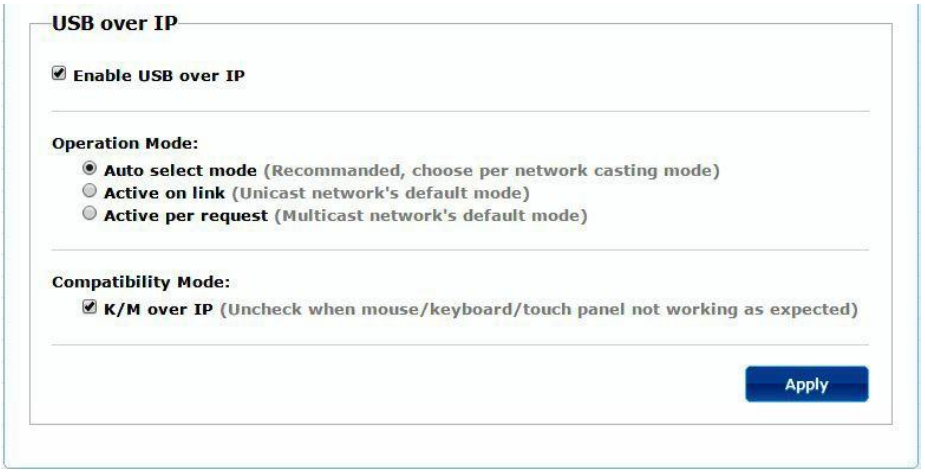



### 4.4.2 [USB OVER IP]: Setup the USB extension mode

**Enable USB over IP:** Check to enable USB extension mode over IP

**Operation Mode:** Including "auto select mode", "active on line" and "active per request" modes for option.

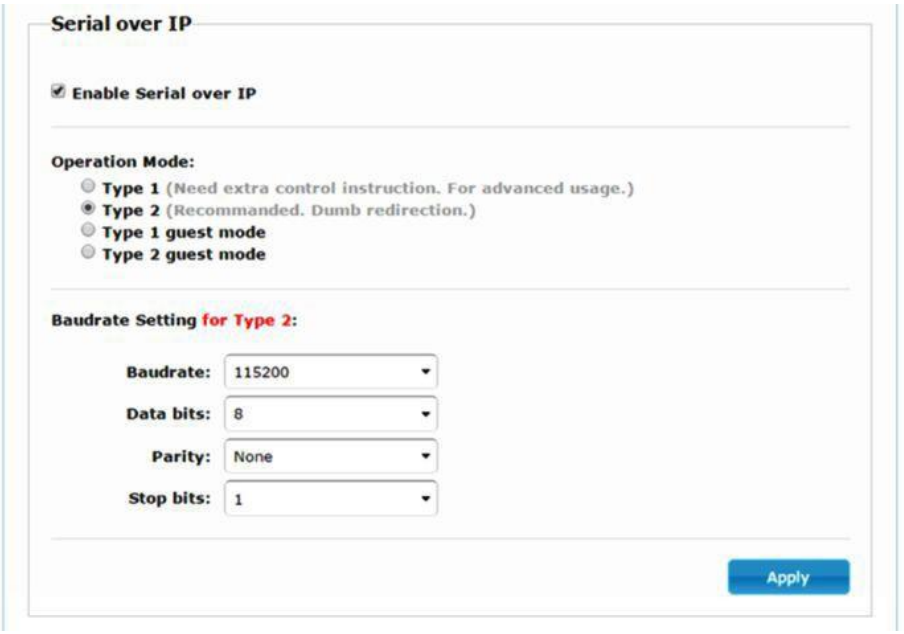
**Compatibility Mode:** Check to enable USB keyboard, USB mouse transmission mode.




### 4.4.3 [SERIAL OVER IP]

1. Set up the serial extension mode
2. Select Type 2 as operation mode
3. Set up the baud rate for Type 2.

**Serial Over IP**




**Broadcast Mode Setting**

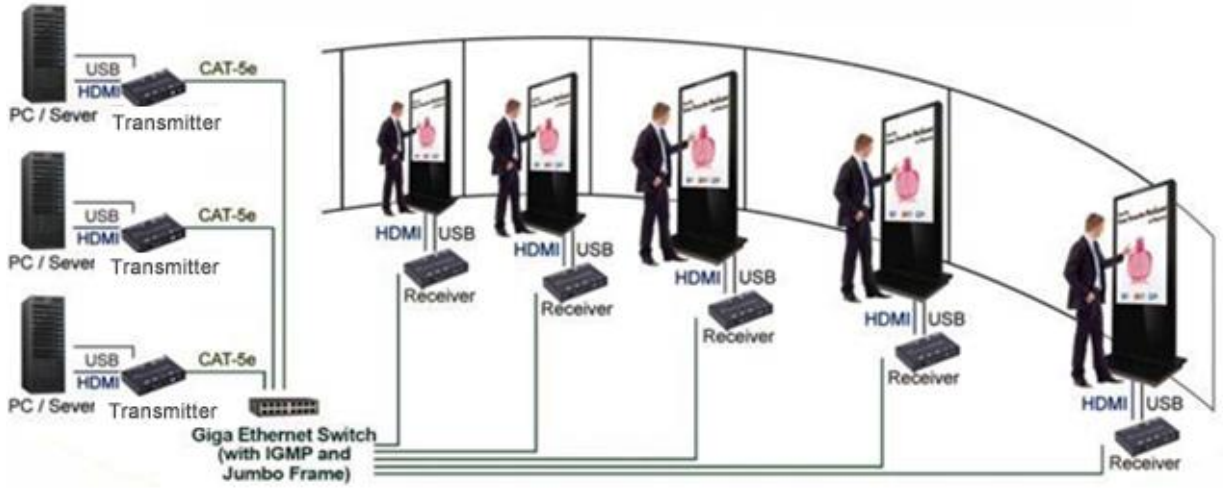

Casting Mode
Multicast
Unicast
Auto select USB operation mode per casting mode (recommanded)
Apply

# 5 BROADCAST CONFIGURATION SETTING

Here are some examples to show the setup for unicast, multicast, matrix and video wall. Broadcast setting including unicast and multicast

## 5.1 MULTICAST:

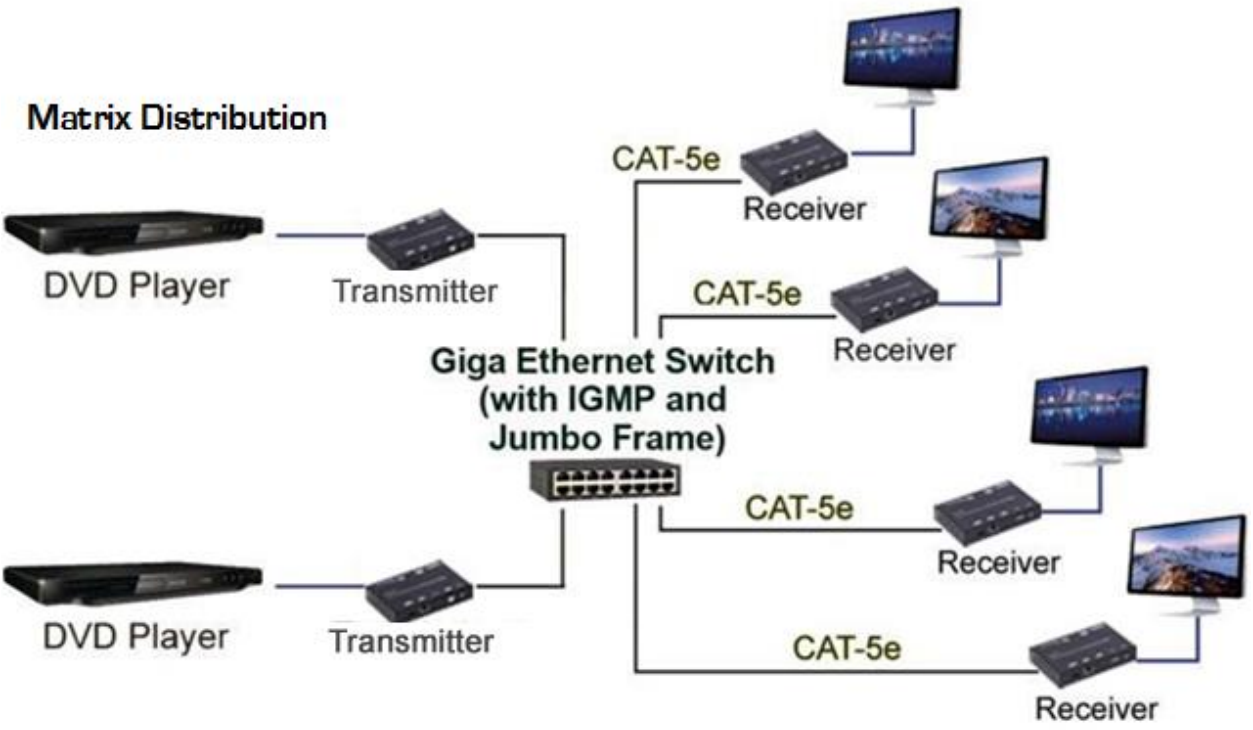
To enable the USB interactive devices controlled by turns, please check "Auto select USB operation mode per casting mode"




## 5.2 UNICAST:


## 5.3 MATRIX:

Install multiple transmitters and setting ID of these transmitters individually, edit the group of transmitters and receivers. The correspondent receivers will output the video from the transmitter belonged to the same group ID.




## 5.4 VIDEO WALL:

A 3X5 (row x column) video wall setting example here for reference. In multicast and matrix application mode, access the Web user interface of correspondent receiver to setup.

### 5.4.1 (BASIC SETUP)

Please refer to "Section 6.2.1 Basic setup" and follow the steps as below. Step1: Set up the vertical monitor count to "3"

Step 2: Set up the horizontal monitor count to "5" Step 3: Set up

the row position of the monitor to 0

Step 4: Set up the column of the monitor to 0

Step 5: Apply the setting to the extender system

The administrator can complete each Extender position setting after following the 5 steps above. And then follow the above steps to set the other extenders to the rest of row and column positions from 0x1, 0x2, 0x3 to 3x5

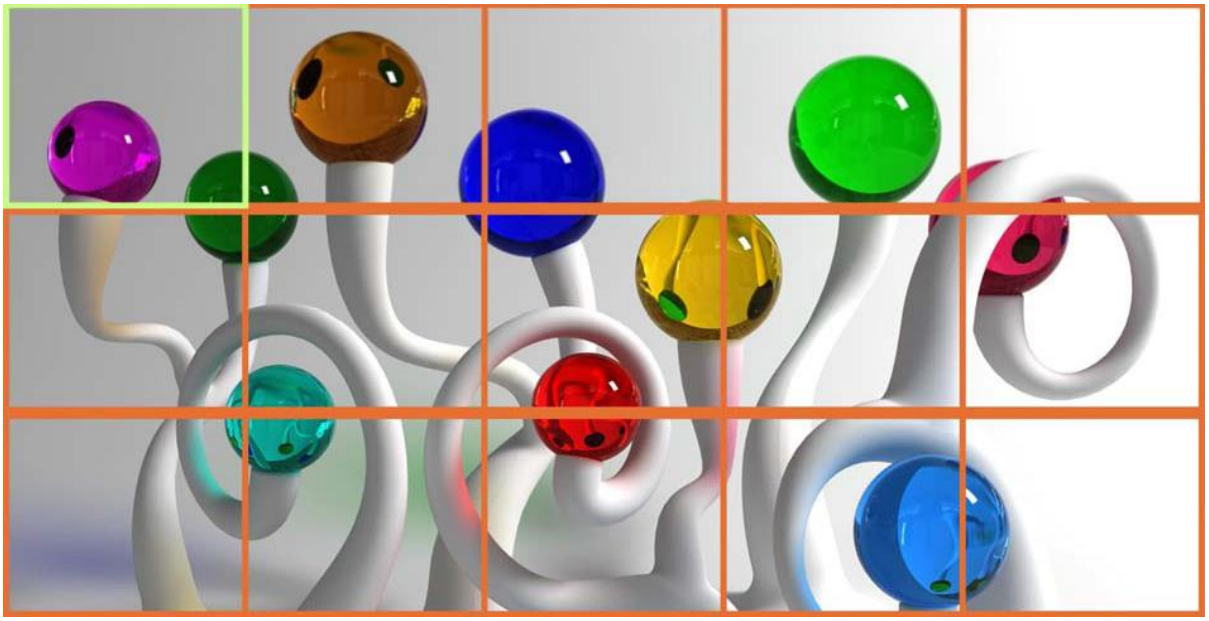
After the basic setup of the video wall, please access the advanced setup to proceed other detailed setting of the video output.

### 5.4.2 ADVANCED SETUP

Select the monitor you want to control. The one you select will be coloured green in the video wall matrix layout. Take the diagram below for example, the monitor selected to control here is the monitor in the upper left corner.


Example for the video wall control

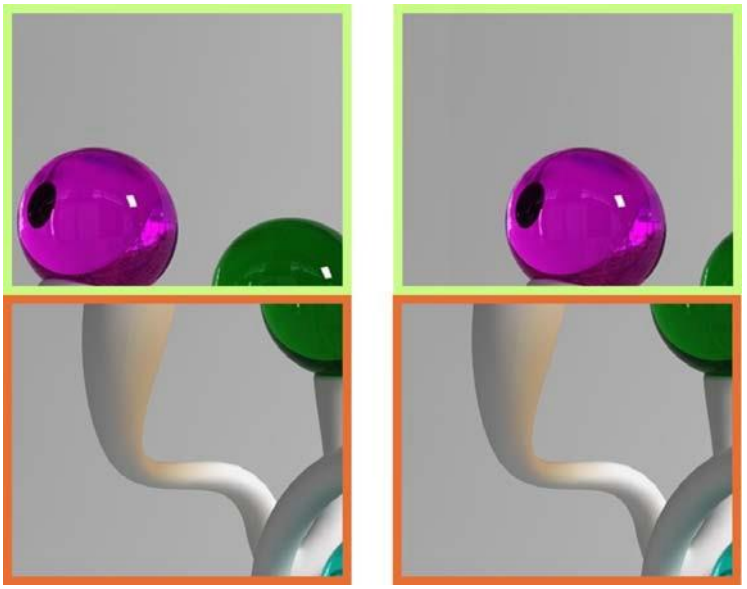
Here's the diagram of the actual video wall layout showing the selected monitor in the upper left corner with green outline.



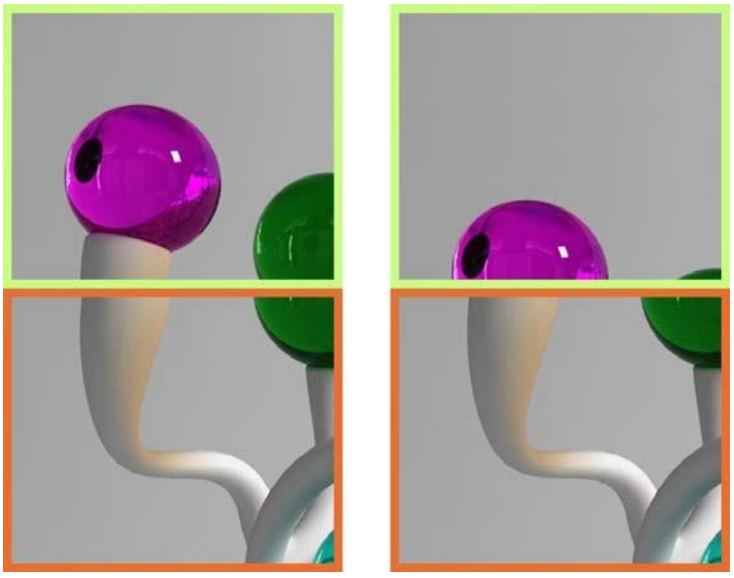
Returned to the previous setup of video wall quickly when incorrect operation was input


Reset

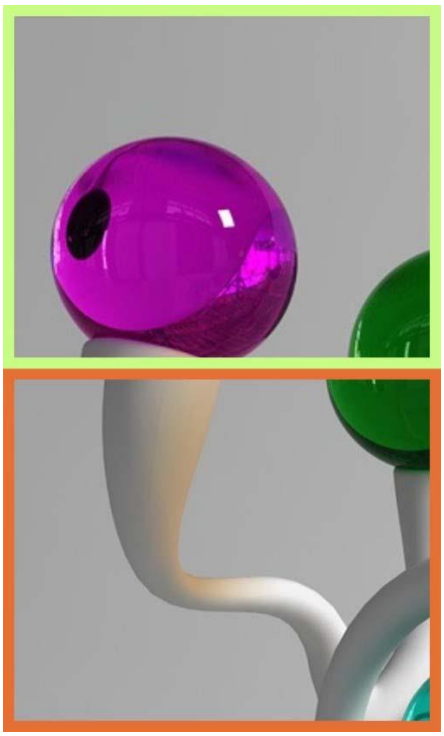
Adjust the horizontal position of the video output, “Left/Right Shift”, the selected monitor to adjust is shown with green outline.



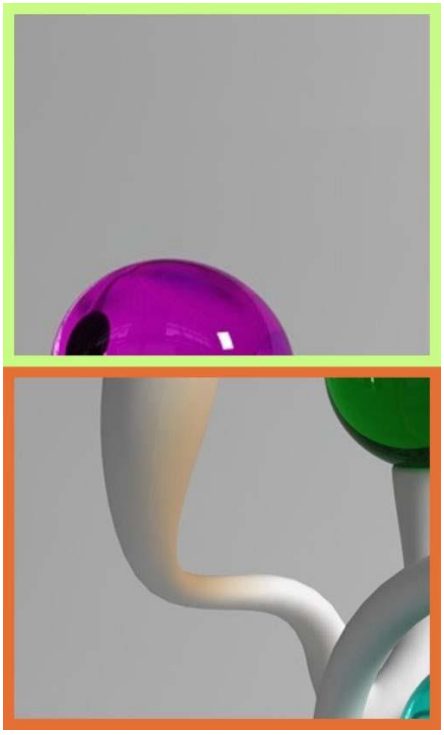
Adjust the vertical position of the video output, “Up/Down Shift”, the selected monitor to adjust is shown with green outline.



Horizontal Scale Up: To scale up the video output horizontally as the monitor shown with green outline



Vertical Scale Up: To scale up the video output vertically as the monitor shown with green outline



# 6 WARRANTY

## 6.1 SMART-E 3 YEAR LIMITED WARRANTY STATEMENT

A. Extent of limited warranty

1. Smart-e (UK) Ltd warrants to the end-user customers that Smart-e product specified above will be free from defects in materials and workmanship for the duration of 3 years, which duration begins on the date of purchase by the customer. The customer is responsible for maintaining proof of date of purchase.

2. Smart-e warranty covers only those defects which arise as a result of normal use of the product, and do not apply to any: a. Improper or inadequate maintenance or modifications b. Operations outside product specifications c. Mechanical abuse and exposure to severe conditions

3. If Smart-e receives during applicable warranty period notice of defect, Smart-e will at its discretion replace or repair defective product. If Smart-e is unable to replace or repair defective product covered by the Smart-e warranty within reasonable period of time Smart-e shall refund the cost of the product.

4. Smart-e shall have no obligation to repair, replace or refund unit until customer returns defective product to Smart-e.

5. Any replacement product could be new or like new, provided that it has functionality at least equal to that of the product being replaced.

6. Smart-e's limited warranty is valid in any country where the covered product is distributed by Smart-e.

B. Limitations of warranty

TO THE EXTENT ALLOWED BY LOCAL LAW NEITHER SMART-E NOT ITS THIRD PARTY SUPPLIERS MAKE ANY OTHER WARRANTY OR CONDITION OF ANY KIND WHETHER EXPRESSED OR IMPLIED WITH RESPECT TO THE SMART-E PRODUCT AND SPECIFICALLY DISCLAIM IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY SATISFACTORY QUALITY AND FITNESS FOR A PARTICULAR PURPOSE

C. Limitations of liability To the extent allowed by local law the remedies provided in this warranty statement are the customers sole and exclusive remedies TO THE EXTENT ALLOWED BY LOCAL LAW EXCEPT FOR THE OBLIGATIONS SPECIFICALLY SET FORTH IN THIS WARRANTY STATEMENT IN NO EVENT WILL SMART-E OR ITS THIRD PARTY SUPPLIERS BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES WHETHER BASED ON CONTRACT TORT OR ANY OTHER LEGAL THEORY AND WHETHER ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

D. Local law

To the extent that this warranty statement is inconsistent with local law, this warranty statement shall be considered modified to be consistent with such law