

## The HDMI & (USB) over Giga LAN Extender NVxMx-Series

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***DIREKTRONIK***

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Please read this manual thoroughly and follow the **Installation** procedures to prevent any damage to the unit or any connecting device.

- \* The final specifications are the actual product based.
- \* Features and functions are subject to change since the manual was written. Please visit the related website to download the latest version of manual for reference.
- \* Any other trademarks mentioned in this manual are acknowledged to be the property of the trademark owners



## ----- **Introduction**

This User's Manual is included 3 applications:

Application 1: **Unit-Cast Configuration**

→The Unit-Cast application is Plug-and-Play basis. It's easy to install in seconds.

Application 2: **Multi-Cast (Multi-to-Multi) Configuration**

Application 3: **Video Wall Configuration**

→The Multi-Cast application can be used as multi-to-multi and video wall which is suitable for digital signage.

**The HDMI & (USB) over Giga LAN Extender NVxMx-Series** is a perfect solution for audio and up to 4K UHD video signal extension via existing LAN (Local Area Network) system. Besides, **NxKMU-Series** is built in with a USB which could extend all the signals, including USB x 4, Audio signals and HDMI Video signals, over only single CATx cable. The 4 USB ports allow you to connect a keyboard, mouse, printer or other peripherals and it can also share USB peripherals with other users in the same channel.

The Plug-and-Play basis in **Uni-Cast application**, either GUI or serial control setup is required. As a result, you will need to set an identical ID number on the Rotary Switch for each Transmitter and Receiver unit. With **Multi-Cast technology**, one local unit can drive multiple remote units with no extra network load Via IGMP Giga Hub. There are 16 channels selectable and up to 4 channels can be transmitted simultaneously. Amazingly, each channel can be shown to an incredible 65536 displays using a standard IT Ethernet structure on a LAN system. Each source display device is required to match with a local unit and a remote unit is needed for each display device.

**The HDMI & (USB) over Giga LAN Extender NVxMx-Series** is up to 4K UHD 3840 x 2160@30Hz supported, HDCP 2.2 compliant and Blu-ray ready. Moreover, this has been commonly used in applications which require greater distance, high speed transmission, real-time high video resolution, security, and noise immunity, based on Giga LAN structure. It is ideal for situations that need Live presentation, such as public broadcasting, education center, boardrooms, etc.

## **Features**

- ◆ Extend HDMI video (4K UHD supported for NVKMx Series), Audio signals and 2 x USB 2.0, 2 x USB 1.1 signals over Giga LAN ( USB extension function is only available for NVxMU series products )
- ◆ 16 selections on the Rotary DIP Switch available for pairing
- ◆ Up to 4 pairings can be transmitted simultaneously over the Giga Ethernet Hub
- ◆ Each pairing can be broadcasted up to 1000 locations (TVs/ Projectors)
- ◆ Using Giga LAN system for low latency network and well-grouping management
- ◆ Automatic EDID Configuration
- ◆ Support HDMI with 2ch. Audio signal and Audio Embedded Function
- ◆ Support serial & IR bi-directional extension
- ◆ HDCP 2.2 & HDMI 1.4 compliant and Blu-ray ready
- ◆ Compatible with most popular screen resolutions to XGA, SXGA, UXGA, WSXGA...Full HD system
- ◆ HDTV compatible; support 4K UHD 3840 x 2160@30Hz, 1080p, 1080i, 720p, 720i
- ◆ Enable to rotate the video to 180° or 270°
- ◆ PoE function supported, if you use PoE hub switch, there is no need additional power supply for the extender unit (Only for NVKMU-M42, NVKM-M42, NVXMU-M32, NVXM-M32)

### **Video Wall Function**

- ◆ Assign video sources to any monitors of the video wall
- ◆ Support 2x2, 3x3, 4x4...8x8, 9x9 Screen Array (max. 9x9)
- ◆ Provide several cutting modes for 1xN (1x2, 1x3...) 2x3, 2x4, Max. 8x16 for wide variety of applications, such as commercial office buildings, exhibition hall and interactive digital signage

### **Package Content**

Description	Pair	Transmitter or Receiver
Transmitter & Receiver	1	
Single Unit		1
Bracket (1 set = 2 pcs)	2	1
Cat. 5e Cable	2	1
Power Supply	2	1
Plastic Screw Driver	1	1
User Manual CD	1	1
Quick Start Guide	1	1

\*One monitor needs one Receiver unit.

## System Requirement

1. HDCP 2.2 compliant monitors with HDMI interface for the HDCP video source
2. CAT5 / 5e / 6 UTP cable (EIA / TIA 568B industry standard compliant)
3. Ethernet Hub (Giga Ethernet Hub is recommended):

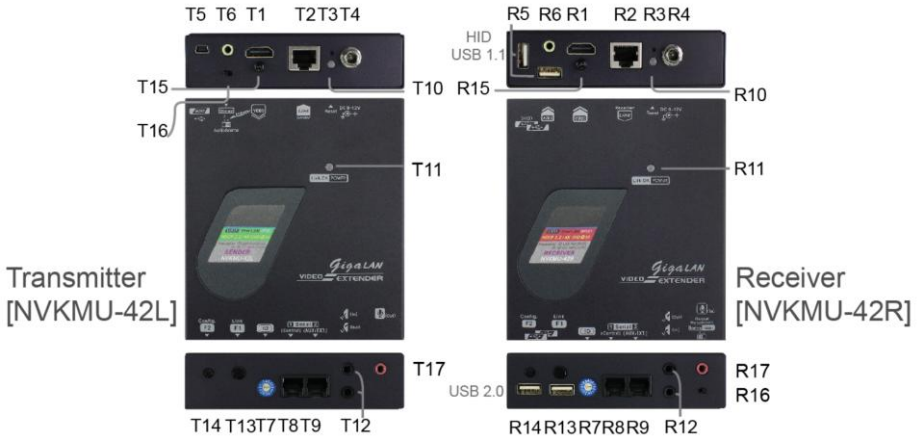
Application	Recommended Ethernet Hub
<b>1 to 1</b>	Giga Ethernet Hub with <u>IGMP, Snooping &amp; Jumbo Frame</u> function
<b>Multi to Multi (Multi Video Wall)</b>	Giga Ethernet Hub with <u>IGMP, Snooping, Jumbo Frame &amp; VLAN</u> function

Note: If user needs to apply more than two Ethernet Hubs, it is strongly recommended to connect with the ones which support 10G.

## System Requirement for PoE



1. Ensure that a PSE device supports PoE function.
2. Ensure that a PSE device can provide sufficient power on the Ethernet cable.
3. STP and FTP cabling are recommended

## ----- **Product Description**



### NVKMU-M42

T1		Video Connector	Connect to an HDMI source
	R1		Connect to an HDMI display
T2	R2	RJ-45 Port	Connect to Ethernet Hub
T3	R3	Reset Button	System reset
T4	R4	Power Supply	Apply the proper power to the unit (PoE)
T5	R5'	USB Connector	T5: Connect to a PC or HDMI device with USB port
			R5: Connect to USB HID devices
T6	R6	3.5 mm Audio Jack	T6: Connect to a PC or audio device
			R6: Connect to a speaker
T7	R7	Rotary Switch	Set up ID numbers
T8	R8	Serial Port 1	For system control
T9	R9	Serial Port 2	For data communication
T10	R10	Network Status LED	<u>Flashing</u> : Connected to network
			<u>Off</u> : Abnormal
T11		Power/Link LED	<u>Green</u> : Unlink / <u>Blue</u> : Link OK
			<u>Flash Blue + Green</u> : Linked but no video source input
			<u>Red</u> : Unlink / <u>Blue</u> : Link OK
	R11		<u>Flash Blue + Red</u> : Linked but no video source input

T12	R12	IR Connector	<u>Connect IR Receiver to "IN"</u> <u>Connect IR Transceiver to "OUT"</u>	
T13	R13	 Push Button	See Push Button Control section	
T14	R14	 Push Button		
T15	R15	HDMI Lock Screw	<u>Locking HDMI cable on the panel</u>	
T16		Audio Embed Switch	<u>Embed audio source into HDMI input</u>	
	R16	Resolution Switch	<u>Native (Left): Original Resolution</u> <u>Scaling (Right): 4K to 1080p (Suitable for video wall)</u>	NVKMU & NVKM Series
			<u>Native (Left): Original Resolution</u> <u>Scaling (Right): Display in 720p Resolution</u>	NVXMU & NVXM Series
T17		Microphone Out	<u>Connect to Equipment's audio input (For uni-cast only)</u>	
	R17	Microphone In	<u>Connect to Microphone (For uni-cast only)</u>	

# ----- **Installation**

## **1. Device Connection**

### **WARNING!**



- Ensure that all devices are powered off before connecting to the Unit.
- Make sure all devices you will connect are properly grounded.
- Place cables away from fluorescent lights, air conditioners, and machines that are likely to generate electrical noise..
- Please allow adequate space around the unit for air circulation.

1. Connect the video source to the Transmitter Unit.
2. Connect the monitor to the Receiver Unit.
3. Use CAT5 cables (EIA / TIA 568B industry standard compliant) for connection between Transmitter / Receiver and Giga Hub.
4. Set an identical ID number on Rotary DIP Switch for all Units of the same group.
5. Apply the proper power to all connecting devices.

### **NOTE:**

- A).The Factory Default Setting of video resolution for NVKMx Series is 4K. Therefore, it is recommended to turn the Resolution Switch to the right (Scaling) before connected to the Monitor in case the monitor blacks out.
- B).It is suggested using the proper Giga Ethernet Hub to ensure optimal transmission quality. (see *System Requirement* section in P.3)
- C).If users encounter no screen display in computer connection:
1. Make sure the device cables are correctly and firmly attached.
  2. Set your display device's (TV, monitor, etc.) input source as HDMI.
  3. Check the PC BIOS configuration about the video output setting.
  4. Connect your video source to the Display DIRECTLY to check if the video signal gets through.
  5. Set the Rotary DIP Switch to the correct position.
  6. Inappropriate EDID data. Apply EDID Copy to your display (see EDID Configuration section).
  7. HDCP issue. The system will disable the video output signal when it detects non-HDCP compliant display(s) on playing the HDCP video source. All the connected output displays MUST be HDCP compliant while the video source is HDCP compliant.

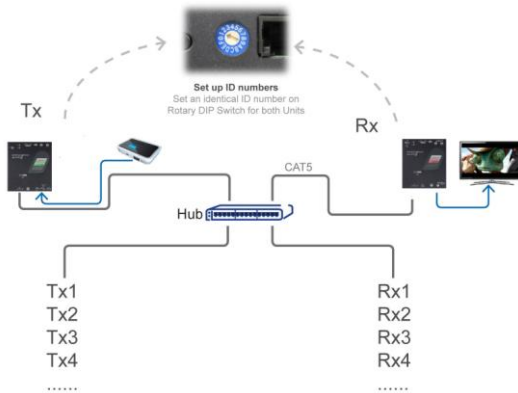


## 2. Connection Pattern

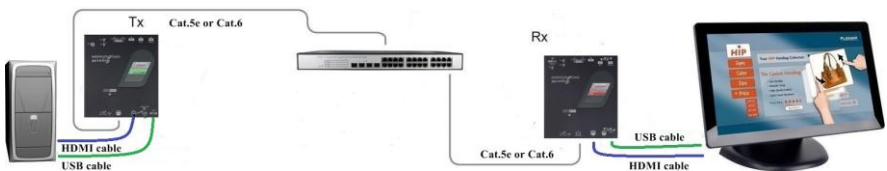
### Point-to-Point Application



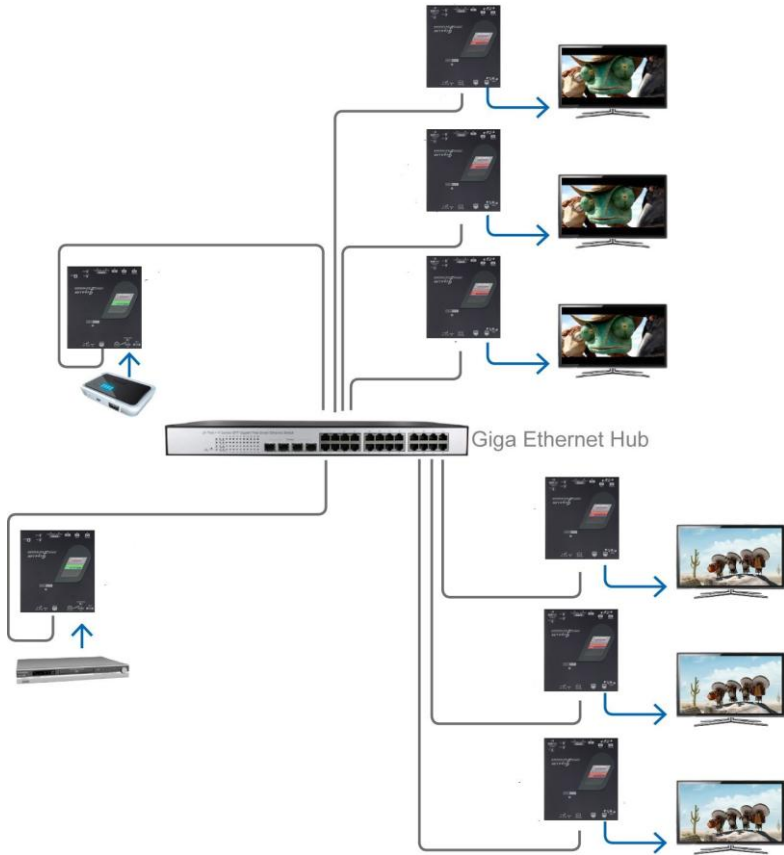
### Uni-cast Application



### USB Application



# Multi-to-Multi Application



## Video Wall Application



# ----- Operation

The LEDs on the Extender Units show the real-time status, indicating the linking and communication between the Transmitter and the Receiver Unit. Users can identify the current status through the LED indicators on the unit.

The quality of the output signal will depend largely upon the quality of video sources, cables and display devices. Low quality cables degrade output signal and cause elevated noise levels. Please use proper cables and make sure the display devices are capable of handling the resolution and the refresh rate selected.

**NOTE:**

The system will disable the video output signals when it detects non-HDCP compliant displays playing the HDCP video sources. All the connected output displays **MUST** be HDCP compliant, when the video sources are HDCP compliant.

## 1. Push Button Control

4K UHD HDMI Screen Array over Giga LAN	
Tx	<p><b>F1</b></p> <ul style="list-style-type: none"> <li>● Press once (click within 0.3 sec.) - Link/ Unlink video (also functions for all Tx &amp; Rx in the same channel)</li> <li>● Press and hold – Reserve for further version</li> <li>● Factory Default Setting for Tx: Power off the unit → Press and hold the button → Power on the unit → Release the button after 17 sec. (the Power/Link LED flashes green &amp; blue) → Re-power the unit</li> </ul>
	<p><b>F2</b></p> <ul style="list-style-type: none"> <li>● Press for 1 sec. - Select Graphic Mode or Video Mode (also functions for all Tx &amp; Rx in the same channel) (Factory default: Graphic Mode)</li> <li>● Press for 3 sec. – Enter Anti-Dither Adjustment Mode: Level 1 /Level 2 / Off (also functions for all Tx &amp; Rx in the same channel) (Factory Default: Off)</li> </ul>
	<p><b>Reset</b></p> <ul style="list-style-type: none"> <li>● Reboot the system</li> </ul>
Rx	<p><b>F1</b></p> <ul style="list-style-type: none"> <li>● Press once (click within 0.3 sec.) - Link/ Unlink video (also functions for all Tx &amp; Rx in the same channel)</li> <li>● Press and hold – Reserve for further version</li> <li>● Factory Default Setting for Rx: Power off the unit → Press and hold the button → Power on the unit → Release the button after 17 sec. (the Power/Link LED flashes red &amp; blue) → Re-power the unit</li> </ul>
	<p><b>F2</b></p> <ul style="list-style-type: none"> <li>● Press for 1 sec. - Select Graphic Mode or Video Mode (also functions for all Tx &amp; Rx in the same channel) (Factory default: Graphic Mode)</li> <li>● Press for 3 sec. – Enter Anti-Dither Adjustment Mode: Level 1 /Level 2 / Off (also functions for all Tx &amp; Rx in the same channel) (Factory Default: Off)</li> <li>● *EDID Copy: Power off the unit → Press and hold the button → Power on the unit → Release the button after 12 sec. (the Network Status LED flashes yellow)</li> </ul>
	<p><b>Reset</b></p> <ul style="list-style-type: none"> <li>● Reboot the system</li> </ul>

\* If you use HDMI-to-DVI converter, the copied DVI EDID data may not be applicable to HDMI monitors.

## 2. Uni-Cast Configuration

User needs to do the first thing setting Uni-cast mode in the browser because factory default is Multicast Mode.

### 2.1. How to set Uni-cast for Transmitter

#### A). **Domain Name**

The first thing users need to do is to set the unit as Uni-cast mode via the web browser because the factory default setting is Multi-cast mode. Identical ID setting on the rotary switch of both Transmitter and Receiver is essential. Open the web browser and insert the address. Please see the “Network Configuration” section.

#### B). **IP**

Open web browser and insert Transmitter’s IP address. If you don’t know IP address, you could find on the corner of Host Selection. Please see the “Network Configuration” section.

#### C). **Serial Command**

If you want to place serial command, please click “enable serial over IP”.

#### D). **USB**

If you want to enable USB signals extension, please click “enable USB over IP”

#### E) **IR Extension**

**NVxMx Series** supports bidirectional IR extension function, the user could use the remote controller to control the display or the source device from the transmitter side or receiver side.

### 2.2. How to set Uni-cast for Receiver

#### A). **IP**

Open web browser and insert Receiver’s IP address. If you don’t know IP address, you could find on the corner of Host Selection. Please see the “3.Network Configuration” section.

#### B). **Serial Command**

If you want to place serial command, please click “enable serial over IP”

#### C). **USB**

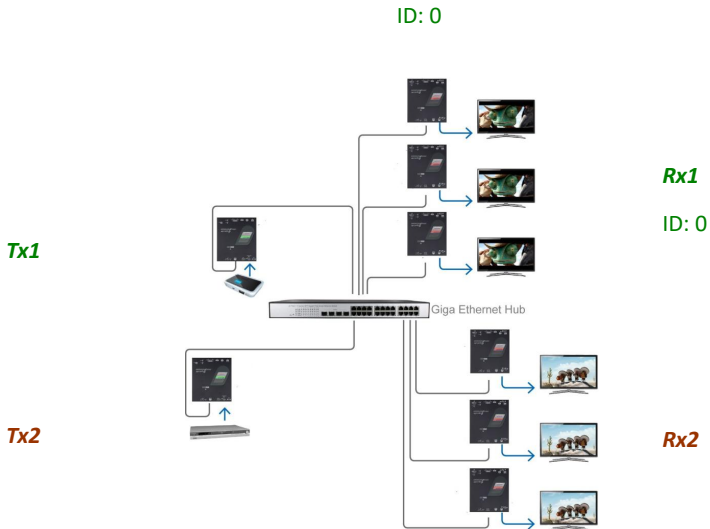
If you want to enable USB signals extension, please click “enable USB over IP”  
For more detail, please follow “Network Configuration.”

### 3. Multi-to-Multi Configuration

Set up an identical ID number for the connected units in the same channel.

For example, if the ID number on **Tx1** unit is 0, then the ID number of Rx units that display the same content as **Tx1** should be set up as 0 as well.

For the other **Tx2** unit, if the ID number is 5, its Rx units should also be 5.



## 4. Video Wall Configuration

### 4.1 Basic Setup:

Click on Video Wall Setup for Basic Setup first

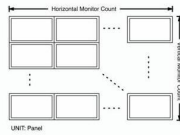
**Wall Size and Position Layout**

Vertical Monitor Count:

Horizontal Monitor Count:

Row Position:

Column Position:



**Preferences**

Stretch Type:

Clockwise Rotate:

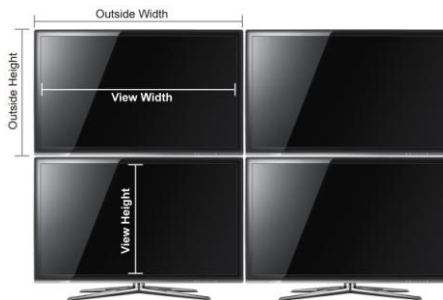
Apply To: "This" device connected by your browser

Show OSD

#### ◆ Bezel and Gap Compensation:

- \* OW = Outside Width      \* OH = Outside Height
- \* VW = View Width        \* VH = View Height

Adjust dimensions (mm) for the monitors of video wall. If you don't need this, just set all values "OW=VW, OH=VH." And please notice that the unit is 0.1mm and the value MUST be integer.



**Basic Setup:**

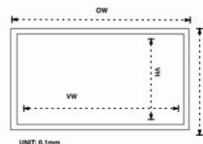
**Bezel and Gap Compensation**

OW:

OH:

VW:

VH:



UNIT: 0.1mm

## ◆ Wall Size and Position Layout:

### **Step 1.**

- Vertical Monitor Count x Horizontal Monitor Count: If the video wall is 2 x 2, then set up Vertical Monitor Count and Horizontal Monitor Count as 2. (maximum: 9 x 9)

### **Step 2.**

- Apply To: Select “All” and check “Apply” button for your settings and you will see all screens refreshing.



## ◆ Configure row and column position for each display

- \* OSD: On-Screen Display. The system automatically assigns a number to each monitor.
- \* Vertical Monitor Count: The number of monitors on vertical line
- \* Horizontal Monitor Count: The number of monitors on horizontal line
- \* Row Position: Set up row position for a monitor. For example, if the monitor situated on the 1<sup>st</sup> row, the row position should be 0; if the monitor situated on the 2<sup>nd</sup> row, the row position should be 1.
- \* Column Position: Set up column position for a monitor. For example, if the monitor situated on the 1<sup>st</sup> column, the column position should be 0; if the monitor situated on the 2<sup>nd</sup> column, the column position should be 1.

## Set-up Steps:

### **Step 1.**

- Show OSD: Check this item and all monitors will show its number on the screen.

### **Step 2.**

- Row Position / Column Position: Decide which part of the screen will be applied to a monitor.

### **Step 3.**

- Apply To: Select one of the clients (OSD number) for the following setting.

### **Step 4.**

For all monitors setup, please follow above steps 1 to 3.

- Show OSD: Uncheck this item if all settings are done.



**Wall Size and Position Layout**

Vertical Monitor Count:

Horizontal Monitor Count:

Row Position:

Column Position:

UNIT Panel

---

**Preferences**

Stretch Type:

Clockwise Rotate:

Apply To: "This" device connected by your browser

Show OSD

## ***Example of 2 x 2 Video Wall Setup***

### Part 1: Wall Size and Position Layout

**Wall Size and Position Layout**

Vertical Monitor Count:

Horizontal Monitor Count:

Row Position:

Column Position:

UNIT Panel

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**Preferences**

Stretch Type:

Clockwise Rotate:

Apply To: "This" device connected by your browser

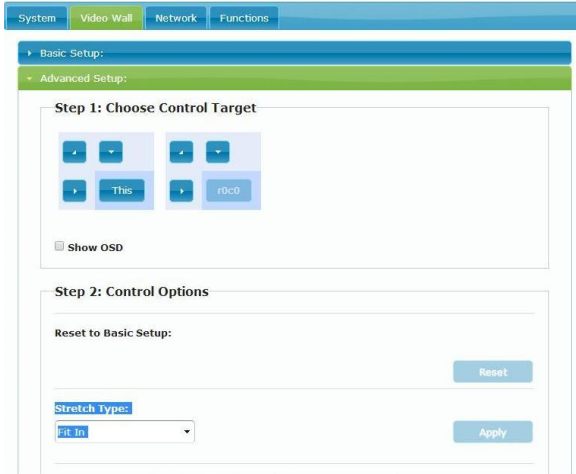
Show OSD

### Part 2: Configure row and column position for each display

## 4.2 Advanced Setup:

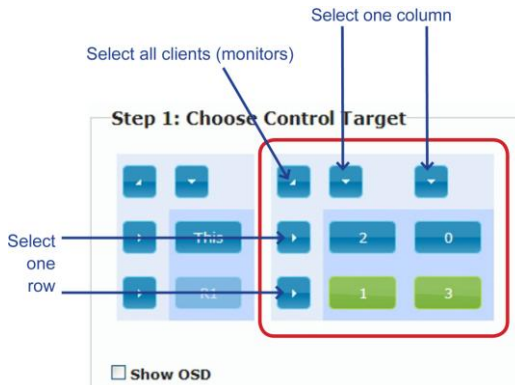
### 4.2.1 Software Solution

After the Basic Setup is done, users may enter this page for advanced setting. Please notice that each monitor should have its own part of screen section and do not overlap.



#### **Step 1: Choose Control Target**

- Show OSD: Check this item and all monitors will show its number on the screen



#### **Step 2: Control Options**

- Single Host Mode: MUST select this mode for single host application
- Horizontal Scale Up & Vertical Scale Up: It is NOT suggested to configure these two options for it may result in flickering images.

### Step 2: Control Options

---

**Reset to Basic Setup:**

---

**Stretch Type:**

Fit In

---

**Clockwise Rotate:**

0

---

**Screen Layout (Row x Column):**

2 x 2

---

**Row Position:**

0

---

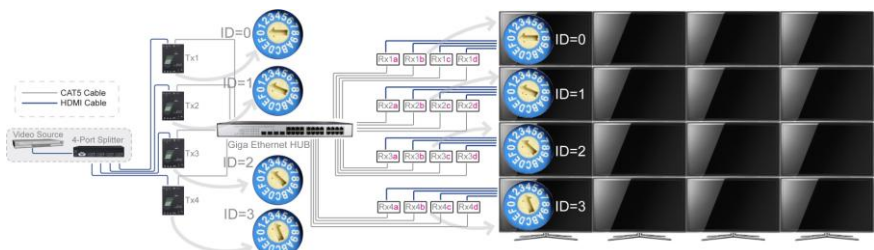
**Column Position:**

0

#### 4.2.2 Hardware Solution

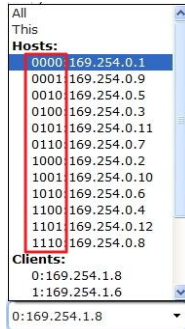
Hardware solution: use multiple Transmitter units. The following is a 4 x 4 example of hardware solution.

1. Add more Transmitter units to the system for each row, and set up the ID number for each Rx unit; see below.



2. Enter "Video Wall Setup"
3. Set up "Wall Size and position Layout"
4. Check "Stretch & Rotation"
5. Set up Vertical/Horizontal Monitor Count; for example, 4 x 4.
6. Set up Row/Column Position of Transmitter units

- a). Choose a host (Transmitter); the ID number (4 digits) should refer to rotary switch position (1~F); see *Rotary Switch* chart.



- b). The row & column positions of 1<sup>st</sup> row should be 0 & 0.  
The 2<sup>nd</sup> row is 1 & 0. The 3<sup>rd</sup> row is 2 & 0, and so forth.

**Row Position:**

0

**Column Position:**

0

For example, the ID number of “Transmitter 1 host” is 0000, and the row/column position should be 0 & 0.

- c). Press “Apply”

Set up Row/Column Position for each client; see *Video Wall Setting-Basic Setup*.

## 5. Network Configuration

User may want to exchange the casting mode between the uni-cast mode and the multi-cast mode, set up IP and use EDID Copy function. There are two ways to accomplish via the web browser and serial command.

5.1. To complete users' goal, configuration via browser is divided into two ways,

- Typing Domain Name in the address bar
- Typing IP in the address bar

Before you start, take notice of the difference between Domain Name and IP.

### 5.1.1. System configuration via Domain Name

- a. Domain Name is for Transmitter only.
- b. It is suggested to use “**Safari**” web browser or other web browsers like **Google Chrome**, **Firefox** or **IE...**, etc. If you use other web browsers which are not mentioned above, you’ll need to install “bonjour SDK”: Go to the website <http://developer.apple.com/opensource/> and look for “bonjour SDK download” for installation.
- c. The same pair of Transmitter and Receiver should have identical ID (Rotary Switch number)



- d. Open web browser and insert the address: <http://rehox-gateway0000.local>. The four digits after the word “rehox-gateway” depends on the position of the Rotary Switch you’ve set. Please refer to the form below. For example, if the position is set up as 7, then the address should be <http://rehox-gateway0111.local>

Rotary Switch	Four digits	Domain Name
0	0000	<a href="http://rehox-gateway0000.local">http://rehox-gateway0000.local</a>
1	0001	<a href="http://rehox-gateway0001.local">http://rehox-gateway0001.local</a>
2	0010	<a href="http://rehox-gateway0010.local">http://rehox-gateway0010.local</a>
3	0011	<a href="http://rehox-gateway0011.local">http://rehox-gateway0011.local</a>
4	0100	<a href="http://rehox-gateway0100.local">http://rehox-gateway0100.local</a>
5	0101	<a href="http://rehox-gateway0101.local">http://rehox-gateway0101.local</a>
6	0110	<a href="http://rehox-gateway0110.local">http://rehox-gateway0110.local</a>
7	0111	<a href="http://rehox-gateway0111.local">http://rehox-gateway0111.local</a>
8	1000	<a href="http://rehox-gateway1000.local">http://rehox-gateway1000.local</a>
9	1001	<a href="http://rehox-gateway1001.local">http://rehox-gateway1001.local</a>
A	1010	<a href="http://rehox-gateway1010.local">http://rehox-gateway1010.local</a>
B	1011	<a href="http://rehox-gateway1011.local">http://rehox-gateway1011.local</a>
C	1100	<a href="http://rehox-gateway1100.local">http://rehox-gateway1100.local</a>
D	1101	<a href="http://rehox-gateway1101.local">http://rehox-gateway1101.local</a>
E	1110	<a href="http://rehox-gateway1110.local">http://rehox-gateway1110.local</a>
F	1111	<a href="http://rehox-gateway1111.local">http://rehox-gateway1111.local</a>



### 5.1.2. System configuration via IP address

- a. Type a specific IP in the address bar and go to the setting page for each extender unit such as 169.254.xxx.xxx. It is suggested using “Safari” web browser or **Google Chrome, Firefox** or **IE**.
- b. If users do not know Transmitter s or Receivers IP address, please see OSD information.
- c. When you push **F1** on the receiver, you will see the frame.



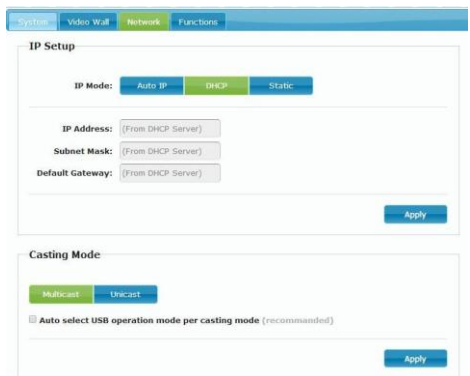
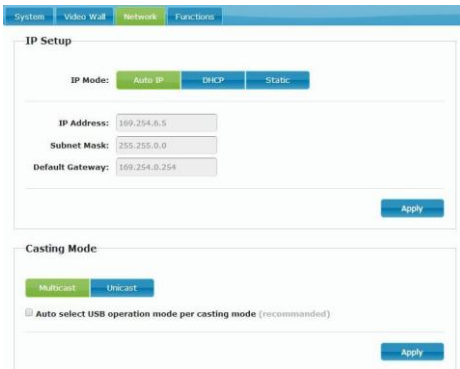
Local IP is Receiver's IP.  
Remote IP is Transmitter's IP.

### 5.2. Insert Domain Name / IP address to set up system

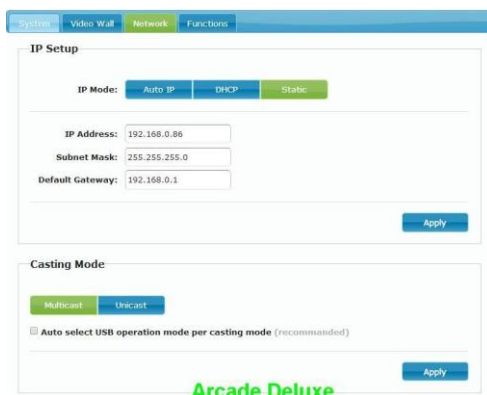
If you log in, you may see the following first. On System page, it shows the version information.



The LAN Extender can either have its IP address assigned dynamically (DHCP) or it can be given a fixed IP address.



If there is no DHCP you must assign a static IP for the unit. You can get it from the networking administrator.



On Function Page, it is divided into three sections, Video over IP, serial over IP and USB over IP.

In factory default setting, there are three item selected, Enable Video over IP, Enable Video Wall and Enable Serial over IP.

If users cancel "Enable Video over IP", Receiver Unit's Video Output Function will be off. If canceling "Enable Video Wall", the video wall function is not applicable. If canceling "Enable serial over IP", only serial 1 (control) will be working. Serial 2 (Aux./Ext.) won't work.

For the built-in scale function, user can select video output mode, such as pass through, output FHD 1080p@60Hz, 1080p@50Hz, 2160p@30Hz, 2160p@25Hz or customize your video output mode.

In default, "Copy EDID from this Video Output" will not be selected. If users select this item, it would automatically copy the EDID from the connected monitor.

System | System | Network | **Functions**

**Video over IP**

Enable Video over IP

Enable Video Wall

Copy EDID from this Video Output (Default disabled under multicast mode)

Scaler Output Mode: Full HD 1080p60  
Pass-Through  
**Full HD 1080p50**  
Full HD 1080p30  
Ultra HD 2160p30  
Ultra HD 2160p25  
Custom

Timeout for Detection: Full HD 1080p60

Turn off screen on

**USB over IP**

Enable USB over IP

**Compatibility Mode:**

K/M over IP (Uncheck when mouse/keyboard/touch panel not working as expected)

**Serial over IP**

Enable Serial over IP

**Operation Mode:**

Type 1 (Need extra control instruction. For advanced usage.)

Type 2 (Recommended. Dumb redirection.)

Type 1 guest mode

Type 2 guest mode

**Baudrate Setting for Type 2:**

Baudrate: 115200

Data bits: 8

Parity: None

Stop bits: 1



## **----- Specification**

### The 4K UHD HDMI & USB over Giga LAN Extender NVKMU-Series

Extender		Transmitter Unit	Receiver Unit
NVKMU-M41 (Non PoE)		NVKMU-41L	NVKMU-41R
NVKMU-M42 (PoE)		*NVKMU-42L	*NVKMU-42R
Input	Video	HDMI x 1	N/A
	Audio	Analog Stereo	Microphone
Output	Video	N/A	HDMI x 1
	Audio	Microphone	Analog Stereo
USB Interface		Mini-USB	USB-A x 4
RJ45 Connection		RJ45 x 1	RJ45 x 1
Control Method		Web (LAN), Serial,GUI,IR	
Serial	Control	Yes	
	Extension		
IR Control		Yes	
Audio Embedded Switch		x 1	N/A
Video Resolution Switch		N/A	Native / Scaling
Top Panel LEDs (Power / Connection Status)		x 1	x 1
Video Resolution (Max.)		4K UHD (3840 x 2160)@30Hz	
Maximum Distance		**Ethernet-based network	
LAN Type		Giga LAN	
System Expandability (Max.)		16	16
Power Supply		DC 9~12V, 1.5A	
Power Consumption		13.5W (Each Unit)	
Weight (g)		600~610 (Each Unit)	
H x W x D (mm)		28 x 117 x 130 (Each Unit)	

\*Power over Ethernet: PoE HUB required for PoE operation  
 Power- Nominal Input: 48VDC; Input Range: 36-57VDC

## The 4K UHD HDMI over Giga LAN Extender NVKM-Series

Extender		Transmitter Unit	Receiver Unit
NVKM-M41 (Non PoE)		NVKM-41L	NVKM-41R
NVKM-M42 (PoE)		*NVKM-42L	*NVKM-42R
Input	Video	HDMI x 1	N/A
	Audio	Analog Stereo	Microphone
Output	Video	N/A	HDMI x 1
	Audio	Microphone	Analog Stereo
RJ45 Connection		RJ45 x 1	RJ45 x 1
Control Method		Web (LAN), Serial,GUI,IR	
Serial	Control	Yes	
	Extension		
IR Control		Yes	
Audio Embedded Switch		x 1	N/A
Video Resolution Switch		N/A	Native / Scaling
Top Panel LEDs (Power / Connection Status)		x 1	x 1
Video Resolution (Max.)		4K UHD (3840 x 2160)@30Hz	
Maximum Distance		**Ethernet-based network	
LAN Type		Giga LAN	
System Expandability (Max.)		16	16
Power Supply		DC 9~12V, 1.5A	
Power Consumption		13.5W (Each Unit)	
Weight (g)		600~610 (Each Unit)	
H x W x D (mm)		28 x 117 x 130 (Each Unit)	

\*Power over Ethernet: PoE HUB required for PoE operation  
 Power- Nominal Input: 48VDC; Input Range: 36-57VDC

## The HDMI & USB over Giga LAN Extender NVXMU-Series

Extender		Transmitter Unit	Receiver Unit
NVXMU-M31 (Non PoE)		NVXMU-31L	NVXMU-31R
NVXMU-M32 (PoE)		*NVXMU-32L	*NVXMU-32R
Input	Video	HDMI x 1	N/A
	Audio	Analog Stereo	Microphone
Output	Video	N/A	HDMI x 1
	Audio	Microphone	Analog Stereo
USB Interface		Mini-USB	USB-A x 4
RJ45 Connection		RJ45 x 1	RJ45 x 1
Control Method		Web (LAN), Serial,GUI,IR	
Serial	Control	Yes	
	Extension		
IR Control		Yes	
Audio Embedded Switch		x 1	N/A
Video Resolution Switch		N/A	Native / Scaling
Top Panel LEDs (Power / Connection Status)		x 1	x 1
Video Resolution (Max.)		Full HD (1920 x 1080) WUXGA (1920 x 1200) @ 60Hz	
Maximum Distance		Point-to-Point: 100 meters	
LAN Type		Giga LAN	
System Expandability (Max.)		16	16
		16	Broadcast: 16000
Power Supply		DC 9~12V, 1.5A	
Weight (g)		600~610 (Each Unit)	
H x W x D (mm)		28 x 117 x 130 (Each Unit)	

\*Power over Ethernet: PoE HUB required for PoE operation  
 Power- Nominal Input: 48VDC; Input Range: 36-57VDC

## The HDMI over Giga LAN Extender NVXM-Series

Extender		Transmitter Unit	Receiver Unit
NVXM-M31 (Non PoE)		NVXM-31L	NVXM-31R
NVXM-M32 (PoE)		*NVXM-32L	*NVXM-32R
Input	Video	HDMI x 1	N/A
	Audio	Analog Stereo	Microphone
Output	Video	N/A	HDMI x 1
	Audio	Microphone	Analog Stereo
RJ45 Connection		RJ45 x 1	RJ45 x 1
Control Method		Web (LAN), Serial,GUI,IR	
Serial	Control	Yes	
	Extension		
IR Control		Yes	
Audio Embedded Switch		x 1	N/A
Video Resolution Switch		N/A	Native / Scaling
Top Panel LEDs (Power / Connection Status)		x 1	x 1
Video Resolution (Max.)		Full HD (1920 x 1080) WUXGA (1920 x 1200) @ 60Hz	
Maximum Distance		Point-to-Point: 100 meters	
LAN Type		Giga LAN	
System Expandability (Max.)		16	16
		16	Broadcast: 16000
Power Supply		DC 9~12V, 1.5A	
Weight (g)		600~610 (Each Unit)	
H x W x D (mm)		28 x 117 x 130 (Each Unit)	

\*Power over Ethernet: PoE HUB required for PoE operation  
Power- Nominal Input: 48VDC; Input Range: 36-57VDC

## ----- **EDID Configuration**

EDID (Extended Display Identification Data) is greatly important which contains information about manufacturer name and serial number, product type, maximum image size, color characteristics, factory pre-set timings, frequency range limits, etc. In some cases display problems may occur due to incorrect EDID communication between the display monitor and the unit or inappropriate EDID data programmed by display manufactures. Therefore, by adopting “EDID COPY” function, it will allow the system to copy EDID information from EDID compliant displays in order to assure accurate display performance.

- **EDID Copy** (on Receiver Unit only)

**Step 1.** Power off the unit

**Step 2.** Press and hold the button **F2**

**Step 3.** Power on the unit

**Step 4.** Release the button after 12 sec. (the Network Status LED flashes yellow)

However, owing to a variety of monitor model types, EDID data may not be usable to all. For example, if you use an HDMI-to-DVI converter to a REAL DVI monitor, the copied EDID (DVI) data may NOT be applicable to HDMI monitors. On the other hand, if using an HDMI-to-DVI converter to a DVI monitor (but in fact it's an HDMI monitor with DVI connector), the copied EDID (HDMI) data may be applicable to HDMI monitors.

**NOTE:**

1. Using HDMI or DVI for all monitors; do not mix them up in one system.
2. It is suggested using monitors with identical brand and type.

# ----- **Serial Configuration**

## 1. IP Setting

Telnet Host / client

telnet to IP 169.254.0.101 port 24

telnet 169.254.0.101 24

Use "root" to login.

List all boards' hostname and IP address : node\_list.

Configure IP setting

Autoip : 169.254.xxx.xxx private IP domain is used and auto-generated on boot.

Dhcp client : Use DHCP client to get IP address.

Static ip : Use static IP address.

To configure IP mode : astparam s ip\_mode mode

Where "mode" can be: autoip, dhcp, static

To configure static IP address :

IP : astparam s ipaddr xxx.xxx.xxx.xxx

Netmask : astparam s netmask xxx.xxx.xxx.xxx

If you want to save the setting into flash and keeps the setting after reboot:

astparam save

## 2. Change ID

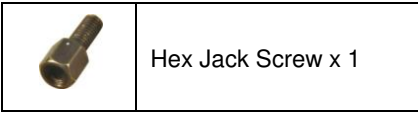
Function	Rx
Stop Link	
Change multicast ip	astparam s multicast_ip 225.0.10B0.B1B2B3
Change the hostname_id	
Change the ch_select to connect to	astparam s ch_select B0B1B2B3
Trigger hostname change	ast_send_event -1 e_chg_hostname
Restart Link	ast_send_event -1 e_reconnect
Save	astparam s reset_ch_on_boot n
	astparam save
Reboot	reboot

**B0,B1,B2,B3 are mapped to the 4-bits dip switch**

<b>B0</b>	<b>B1</b>	<b>B2</b>	<b>B3</b>	<b>ID</b>
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	0	0	0	8
1	0	0	1	9
1	0	1	0	A
1	0	1	1	B
1	1	0	0	C
1	1	0	1	D
1	1	1	0	E
1	1	1	1	F

# ----- **Optional HDMI Locking Connection**

## 1. Hex Jack Screw



Step 1. Install Hex Jack Screw on the unit.



Step 2. Install the HDMI Cable.



## 2. Cable Tie

**Step 1:** Fit the cable tie base around the cable and tighten it so that it is very snug and pushed up to the connector as possible.



**Step 2:** Attach the cable tie to the device with the locking screw on the device.



**Step 3:** Connect the HDMI cable to the device.



**Step 4:** Feed the cable tie through the cable tie base and pull snugly so that there is no slack to keep the HDMI connector from coming unplugged.







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