VERTIV™ AVOCENT® VHX133

Virtual Matrix KVM over IP | Extender

Installer/User Guide

Ver. 1.0 | Nov. 2024

VHX133T/VHX133R

User's Manual

Version V1.0
Revision date 2024-11-12

We provide customers with total-solution technical support. Users may contact our nearest local sales office or service center, or directly contact our Corporate.

EMI Statements: Products which are certified for EMC in the regions or countries indicated will have the required marking or statement on the product label. The applicable statement for that country is listed below.

China warns the users that this is a Class A information product, which may cause radio frequency interference when used in the living environment. In this case, users will be required to take some appropriate countermeasures.

Technical Support Site: If you encounter any installation or operational issues with your product, check the pertinent section of this manual to see if the issue can be resolved by following outlined procedures. For additional assistance, please contact our technical department.

Thanks for purchasing this IP-based Virtual Matrix KVM Extender. With our highly reliable and quality product, you can enjoy countless benefits by using them.

Table of the Contents

Chapter 1 Introduction

VHX133 is an IP-based Virtual Matrix KVM extender which allows the user to remotely access HDMI, USB, Analog audio, RS-232 and IR signals at local sites over a Gigabit Local Area Network. This extender includes two main units, the transmitter (TX) unit, and the receiver (RX) unit. Both units own their unique IP address so that they can transfer and receive KVM signals over the Gigabit LAN. Multiple transmitters and multiple receivers connected to the Gigabit LAN can realize a virtual cross point matrix switching. In non-management (w/o HMXCC1 centralized controller) operation, the theoretical maximum total number of TX and RX units will be 65,536. In a management operation (with one HMXCC1 controller), the theoretical maximum total number of TX and RX units will be 65,535.

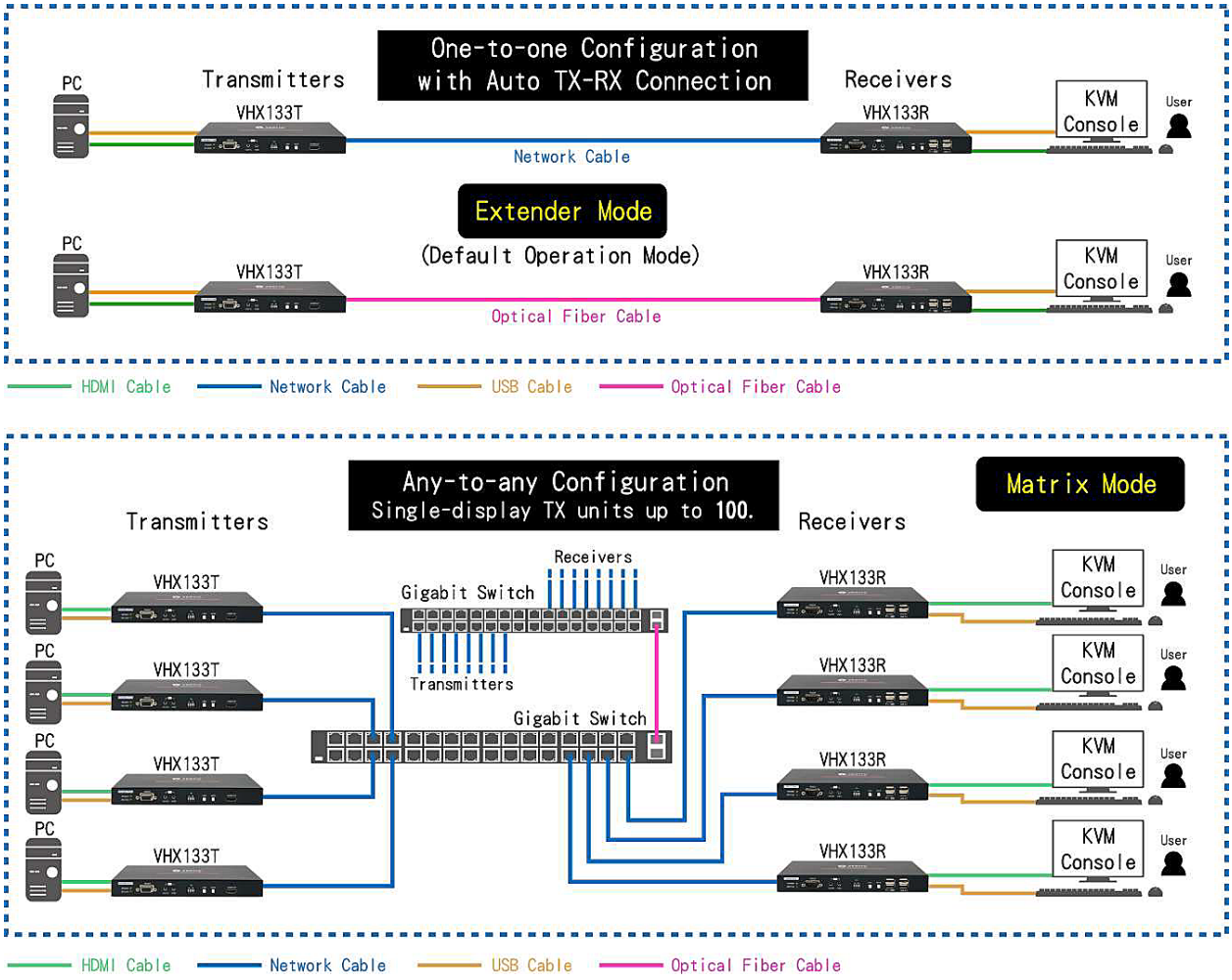


Figure 1-1VHX133 Extender One-to-one Configuration and Any-to-any Configuration

Chapter 2 Features

- VHX133 model supports 1 SFP Optical Module Socket
- USB 2.0 over IP for KVM application
- HDMI OUT loop-back port on Transmitter (Connected with local-site monitor)
- Supports high quality video streaming up to 3840 x 2160@30Hz
- Low latency time <1 frame/second
- Supports uncompressed and lossless multichannel audio formats
- Integrated RS232 port for remoted serial control

Chapter 3 Package Contents

The following tables show the packaging lists of VHX133 KVM extenders.

Table 3-1 VHX133 Package Contents

VHX133 KVM Extender	
VHX133T (Transmitter)	VHX133R (Receiver)
Transmitter (TX) unit x 1	Receiver (RX) unit x 1
12V/2A Power adapter x 1	12V/2A Power adapter x 1
User's manual x 1	User's manual x 1
RS-232 DB9 male to DB9 female cable 1.2M x 1	
USB Type-A male to Type-B male Cable 1.2M x 1	
3.5mm Audio + 3.5mm Mic. cable set 1.2M x 1	
HDMI (1.4b) male-to-male Video Cable 1.2M x 1	
* Optional IR Remote Control Unit Pack (Include: Wired IR Emitter/Receiver)	

Chapter 4 Specification

4.1 VHX133T/VHX133R Specification

Table 4-1 VHX133T/VHX133R Specification

Model No.	**VHX133T**	**VHX133R**
Component Type	Transmitter	Receiver
Connector	DB9 female connector (for PC RS232) x 1	DB9 male connector (for RS232 devices) x 1
	(Group A: RX controls TX) IR Output Jack (for IR Emitter) x 1	(Group B: TX controls RX) IR Output Jack (for IR Emitter) x 1
	(Group B: TX controls RX) IR Input Jack (for IR Receiver) x 1	(Group A: RX controls TX) IR Input Jack (for IR Receiver) x 1
	HDMI Output Port (for Local-site Loop-back) x 1	USB 1.1 Type-A Port (for keyboard and mouse) x 2
	RJ45 connector (for LAN) x 1;	USB 2.0 Type-A Port (for USB Devices) x 2
	SFP Optical Module Socket x 1; ***As an optical module is inserted in it, the RJ45 LAN port will be disabled.**	RJ45 connector (for LAN) x 1;
	HDMI Input Port (for PC HDMI output) x 1	SFP Optical Module Socket x 1; ***As an optical module is inserted in it, the RJ45 LAN port will be disabled.**
	USB Type-B Port (for PC) x 1	HDMI Output Port (for Remote Console) x 1
	VGA Input Port (for PC VGA output) x 1	VGA Output Port x 1
	3.5mm LINE IN Jack (for PC LINE OUT) x 1	3.5mm MIC IN Jack (for Console Microphone) x 1
	3.5mm MIC OUT Jack (for PC MIC IN) x 1	3.5mm LINE OUT Jack (for Console Speaker) x 1
	2.1mm Power Jack x 1	2.1mm Power Jack x 1
Button	Functional button (LINK) x 1	Functional button (LINK) x 1
	Functional button (MODE) x 1	Functional button (MODE) x 1
LED Indicator	Orange (POWER) x 1	Orange (POWER) x 1
	Green (STATUS) x 1	Green (STATUS) x 1
Dimension (L x W x H)	217.5 x 105 x 30 mm	217.5 x 105 x 30 mm
Weight	570g	570g
Resolution	3840 x 2160@30Hz	
Power Adapter	DC 12V/2A	
Operation Temperature	0℃ ~ 40℃	
Storage Temperature	-40℃ ~ 70℃	
Humidity	0~90% RH, Non-condensing	
Housing Material	Metal	
Certifications	CE, FCC , BIS	

* This specification is subject to change without prior notice.

Chapter 5 Product Overview

5.1 VHX133T/VHX133R Panels

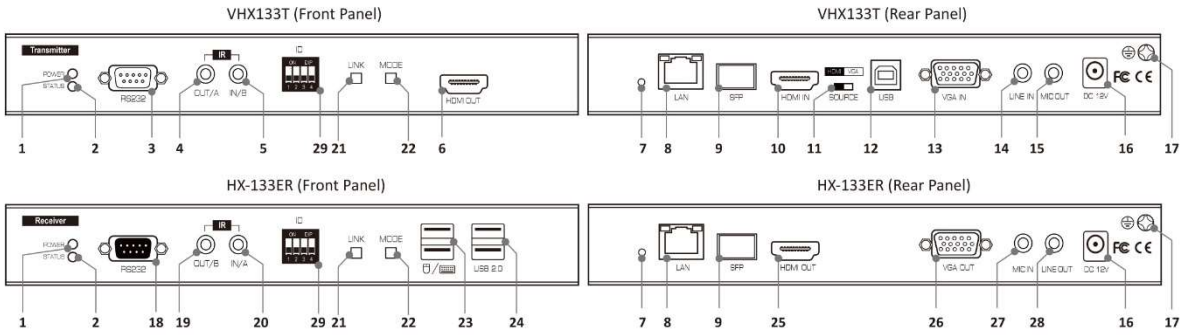


Figure 5-1 VHX133T/VHX133R Panels

Table 5-1 VHX133 Description

No.	Item	Description
1	POWER Indicator	Lights up when power is on.
2	STATUS Indicator	Lights up when the video source is available for transmitter/receiver. Flashes when the video source is unavailable for transmitter/receiver.
3	RS-232 Connector	Connect to the RS-232 port of PC.
4	IR Output Jack (Group A)	Connect to an IR emitter (IR Remote Control is in RX-to-TX direction).
5	IR Input Jack (Group B)	Connect to an IR receiver (IR Remote Control is in TX-to-RX direction).
6	HDMI Output Connector	Connect to an HDMI monitor (PC Local-site Loopback).
7	Recessed Reset Button	Reboot the extender unit.
8	LAN Port	Connect to the LAN port of TX, RX, or a Gigabit Ethernet Switch.
9	SFP Optical Module Socket	Connect to a Fiber Cable via an optional Optical Module. (*When an optical module is inserted, even without fiber cable connection, the LAN port will still be disabled responsively.)
10	HDMI Input Connector	Connect to an HDMI output of the PC.
11	Video Source Switch	Slide this switch to determine the video source to be from HDMI input (10) or VGA input (13). * As this switch slides to HDMI position, ensure that both the LINE IN jack (14) and the MIC OUT jack (15) don't have any 3.5mm phone plugs inserted. Otherwise, the digital audio signal of the HDMI connectors will be overridden by the analog audio signal.
12	USB Type-B Connector	Connect to a PC USB port.
13	VGA Input Connector	Connect to a VGA output of the PC.
14	3.5mm LINE IN Jack	Connect to a LINE OUT jack of the PC.
15	3.5mm MIC OUT Jack	Connect to a MIC IN jack of the PC.
16	2.1mm Power Jack	Connect to a DC 12V/2A Power Adapter.
17	Grounding Terminal	Screw a grounding cable to this terminal.
18	RS-232 Connector	Connect to the RS-232 device.
19	IR Output Jack (Group B)	Connect to an IR emitter (IR Remote Control is in TX-to-RX direction).
20	IR Input Jack (Group A)	Connect to an IR receiver (IR Remote Control is in RX-to-TX direction).
21	LINK Button	Press to enable/disable connection between a transmitter and a receiver.
22	MODE Button	Press to build up the connection of the USB 2.0 device of the RX unit to the local-site PC via the connected TX unit.
23	USB 1.1 Type-A Connector	Connect to a keyboard and a mouse to control the user remote console.
24	USB 2.0 Type-A Connector	Connect to USB devices.
25	HDMI Output Connector	Connect to an HDMI monitor (User Remote-site Console). * It synchronously outputs the same video content as the VGA output connector.
26	VGA Output Connector	Connect to an VGA monitor (User Remote-site Console). * It synchronously outputs the same video content as the HDMI output connector.

No.	Item	Description
27	3.5mm MIC IN Jack	Connect to a remote-site console microphone.
28	3.5mm LINE OUT Jack	Connect to a remote-site console speaker/headphone.
29	4P DIP Switch	Reserved.

Chapter 6 Connection Topologies

6.1 Before Connection

Before you configure the Virtual Matrix KVM over IP System, you should have these items on the checklist ready:

1. Plan the layout path and deploy the UTP cable for extension.

2. Plan the path through which the CAT5e/CAT6 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

Using good quality CAT5e/CAT6 cable can produce better video outcome with longer distance span.
The ideal location for the power outlets is near where you located the extenders.

The diagrams illustrated here are examples of Virtual Matrix KVM over IP, the actual applications may vary. All illustrated computers, 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.

6.2 Direct Connection Topology

In this topology (signal extender application), simply use a Cat.5e/Cat.6 cable or an optical fiber cable to connect the TX unit and RX unit in pair from a local-site PC to a remote-site user console.

* Note 1: The default <**Operation Mode**> setting of the TX/RX units are in <**Matrix**>. If you need them to serve as Signal Extender application, you should prompt the OSD menu from the RX unit and select a TX unit to be paired with this RX unit from the TX list of the OSD menu. Then enter the <**Operation Mode**> setting pages of TX and RX units to change them into <**Extender**>.

* Note 2: When an optional SFP optical module is inserted into the SFP module socket of the TX/RX unit, the RJ45 LAN port will be instantly overridden by the insertion action of the SFP optical module, even the optical fiber cable is not plugged into the optional SFP optical module.

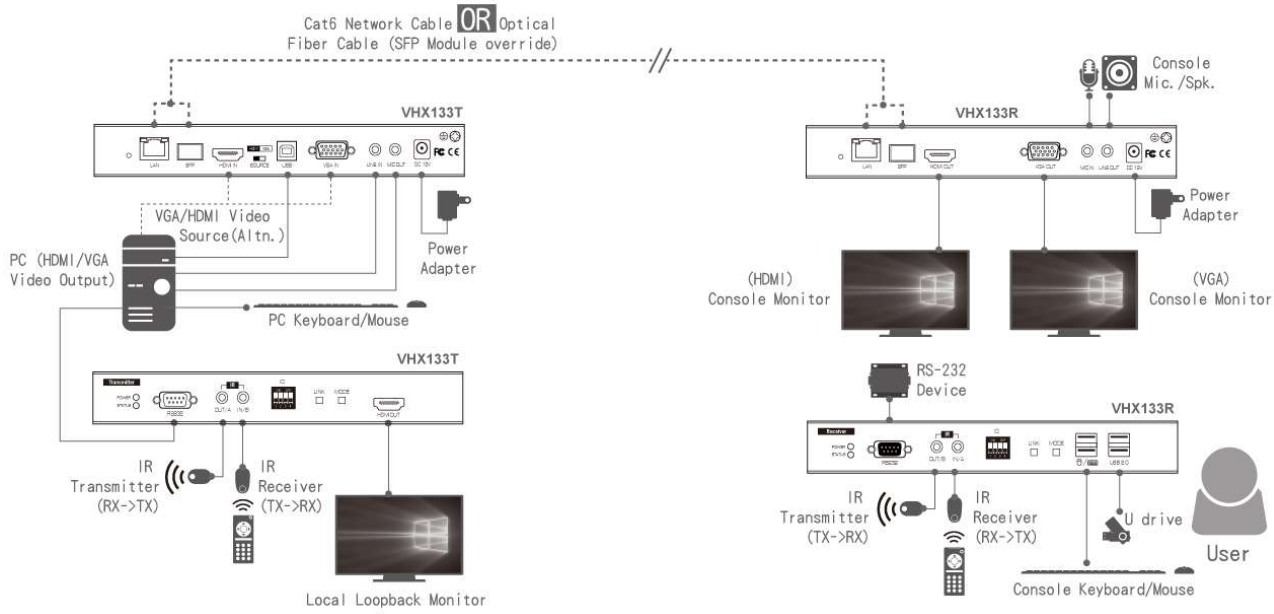


Figure 6-1 Direction Connection (Extender Mode)

6.3 Network Switch Connection Topology

In this topology, the TX/RX units could work in <**Matrix**> operation or <**Extender**> operation, depending on the <**Operation Mode**> setting you have assigned to each of them.

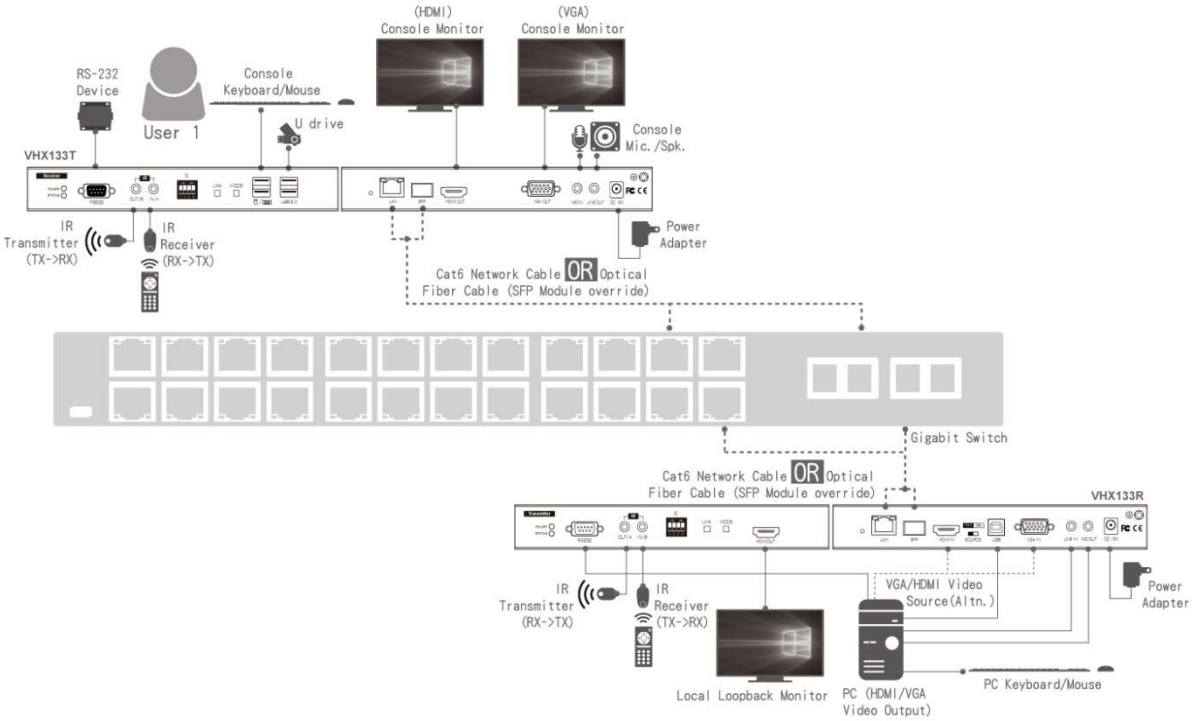


Figure 6-2 Connection with a Gigabit Network Switch (Matrix or Extender Modes)

6.4 Requirements of the Gigabit Network Switch

A Gigabit Ethernet Switch is necessary if your application includes more than one TX unit and one RX unit to be connected. However, some key requirements of Gigabit Switch need to be considered as follows:

(1) When grouping these TX/RX units, a Gigabit-class Ethernet Switch is necessary to guarantee good video streaming quality with its sufficient bandwidth. To ensure better quality of signal transmission, a reputable name brand switch is recommended.

(2)Some featured functions of Gigabit Ethernet Switch are especially required, for example, **IGMP V2 Snooping**, **Multicast Filtering** and **Jumbo Frame**, other specs like **IGMP Querier**, and **IGMP Fast Leave** are strongly recommended. As more than one TX unit are connected to the same LAN without supporting **IGMP Querier** by the Ethernet Switch, the System may work incorrectly. Following screenshots below are examples of their configurations, for more setting details, please refer to the instruction manual of your Hub/Switch.

[IGMP Snooping] Function

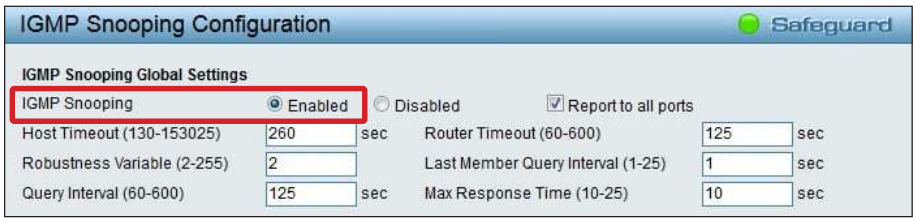


Figure 6-3 IGMP Snooping

[Jumbo Frame] Function

Figure 6-4 Jumbo Frame

*Note: The Jumbo Frame Setting of the TX/RX unit for HX system is 8000 bytes. Please ensure that your network switch supports at least 8000 bytes Jumbo Frame and enables this setting.

[Multicast Filtering] Function

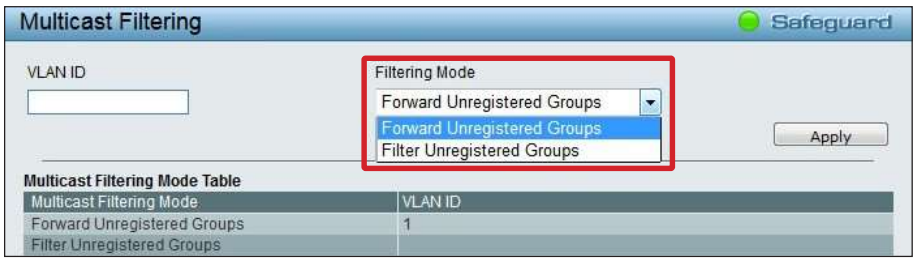


Figure 6-5 Multicast Filtering

Chapter 7 Operation

1. Power on the transmitters, receivers and all the connected devices.

2. Long press (for at least 3 seconds) the **LINK** button on the front panels of transmitters or receivers to make connections between TX and RX units. (***Note**: This button will not function if the TX/RX device hasn't been previously linked to another RX/TX device with the RX OSD menu.)

For more details, refer to the section description of *7.1 Front Panel Buttons and LED Indication*.

Note: This Matrix KVM over IP system allows multiple receiver users to access single computer connected via a transmitter; however, the access contention of mouse/keyboard may happen if multiple users are trying to access the same computer simultaneously. To avoid access contention, the system only grants the access right of keyboard/mouse to the first receiver user who accesses the computer first. If other receiver users want to access the keyboard/mouse, a time-out time will start from the moment which the first receiver user stopped operating his keyboard/mouse. As the time-out time elapses, the next receiver user who first operates his keyboard/mouse will gain the access right of the computer and the previous (first) receiver user will lose the same at the same time. Under this rule, there will be only one receiver user allowed to access the computer at any moment with his keyboard/mouse.

7.1 Front Panel Buttons and LED Indication

These buttons provide a simple and intuitional operation for users. It is easy to configure the transmitter/receiver by pressing the buttons directly.

7.1.1 Operation of Buttons LINK and MODE

1. Connect/Disconnect Device: Long press the **LINK** button to make TX/RX connection.

2. Resume Factory Default Settings: Unplug the unit power jack. Long press and hold the **LINK** button then plug in the power jack to power the unit on again. The orange **POWER** LED and green **STATUS** LED will first light up then extinguish at the same time. Next, orange **POWER** LED will start blinking. Keep the **LINK** button pressed util green **STATUS** LED and orange **POWER** LED turn constantly ON. Next, unplug and plug in the power jack again. The transmitter/receiver will be resumed to factory default settings.

3. Access USB Devices: Long press the **MODE** button on the receiver front panel then connects the USB device to the RX unit. When multiple receivers are connected to the same transmitter, a user can press the **MODE** button then insert his USB device to prioritize the USB device detection of the computer for this USB device.

7.1.2 LED Indication

1. LED Indications after Power is ON (VHX133T Transmitter units).

Table 7-1 TX Unit LED Indication

TX Operation	Power Jack Inserted	Starting up	Start-up Completed	Not Connected Yet	Connection Completed
Orange LED (POWER)	OFF	Blinking	Constantly ON	Constantly ON	Constantly ON
Green LED (STATUS)	OFF	OFF	OFF	Blinking	Constantly ON

2. LED Indications after Power is ON (VHX133R Receiver units).

Table 7-2 RX Unit LED Indication

RX Operation	Power Jack Inserted	Starting up	Start-up Completed	Not Connected Yet	Connection Completed
Orange LED (POWER)	OFF	Blinking	Constantly ON	Constantly ON	Constantly ON
Green LED (STATUS)	OFF	OFF	OFF	Blinking	Constantly ON

3. Ethernet LAN Port LED Indications

As VHX133T and VHX133R are connected successfully via the network switch, the LAN port Yellow LED is constantly ON and the LAN port Green LED is blinking.

7.1.3 Keyboard Hotkeys

To select different PCs connected with transmitters from the receiver console, several keyboard hotkeys are provided for use. Each keyboard hotkey includes at least three keystrokes.

Keyboard Hotkey = < **Scroll Lock**, **Scroll Lock** (the first two same keystrokes are the hotkey preceding sequence), **Command key(s)**>

More keyboard hotkeys and their corresponding command descriptions are listed below.

In addition, you can also define a preferred hotkey preceding sequence other than the **Scroll Lock** key if it's also been used as the hotkey in other programs.

User-definable hotkey preceding sequence keys: **Scroll Lock** key, **Num Lock** key, **Caps Lock** key, **Left Alt** key or **Right Alt** key.

Table 7-3 Keyboard Hotkey Table

Command and Description	Keyboard Hotkey
Switch to connect previous listed transmitter in the OSD menu.	<**Scroll Lock**, **Scroll Lock**, **Up**>
Switch to connect next listed transmitter in the OSD menu.	<**Scroll Lock**, **Scroll Lock**, **Down**>
Copy EDID to the selected transmitter.	<**Scroll Lock**, **Scroll Lock**, **M**>
USB connection (device port) at the front panel of the receiver Switch among USB devices connected to different receivers.	<**Scroll Lock**, **Scroll Lock**, **U**>
Transmitter Direct Connection Switching Directly switch to connect the current RX unit to a desired TX unit in any preset numbers. (*Preset numbers must be defined in <Advanced Setting> at the receiver OSD menu.)	<**Scroll Lock**, **Scroll Lock**, **Numbers**, **Enter**>
Receiver Output Resolution Setup Select the output resolution: **F1** (Pass-through) Default setting; **F2** (Fixed 1920 x 1200); and **F3** (Fixed 1920 x 1080).	<**Scroll Lock**, **Scroll Lock**, **F1/F2/F3**>
Resume the connection with the "previously connected" transmitter.	<**Scroll Lock**, **Scroll Lock**, **Backspace**>

*Note: For <**Scroll Lock**, **Scroll Lock**, **U**> hotkey, several USB devices may be plugged in different receiver consoles at the same time as the system is in matrix mode operation. You may use this keyboard hotkey to acquire the highest USB device detection priority by the PC connected to the TX unit which is being connected to the current RX unit.

7.2 OSD Menu

Once you have completed the connection (refer to Chapter 6 Connection Topologies), press <**Scroll Lock**, **Scroll Lock**, **Space**> hotkey to prompt the OSD menu from the operated receiver console. Note: You may also double press the left Ctrl key <**Ctrl**, **Ctrl**> to prompt the OSD menu quickly.

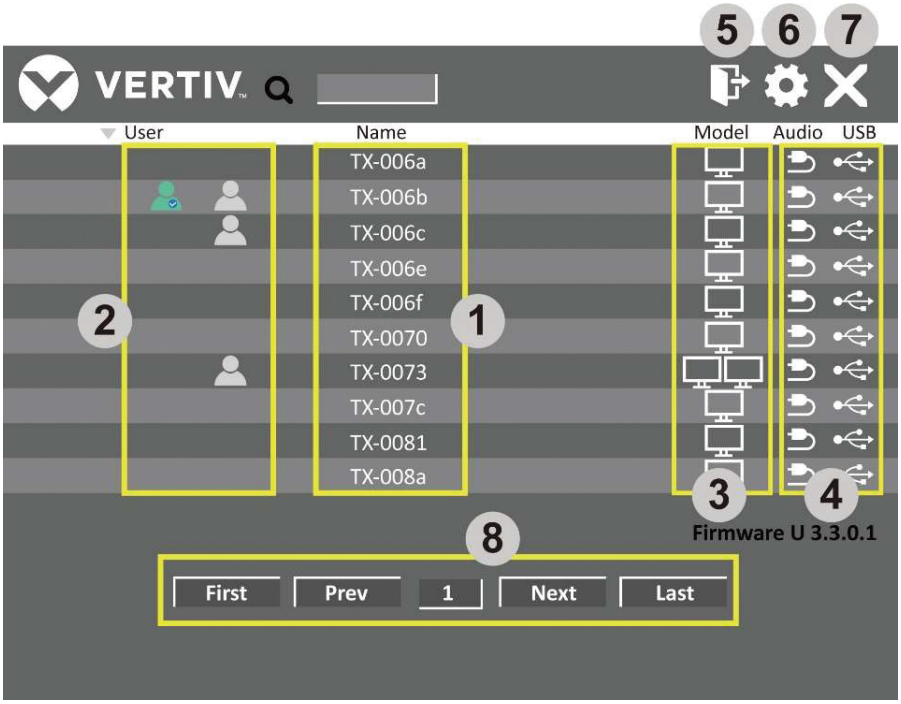


Figure 7-1 OSD Menu Transmitter List Page

The annotations in Figure 7-1 are as follows:

1. Double click any name of the TX units on the transmitter list you want to connect to. After the connection between selected transmitter and the current receiver is established, the receiver console monitor will display the video source from the computer connected to the selected transmitter. The OSD menu will be adjusted to an adaptive proportion to the computer desktop size after the computer connection is done. (*Note: When the receiver hasn't connected to any transmitters yet, the OSD menu will be in full-screen size).

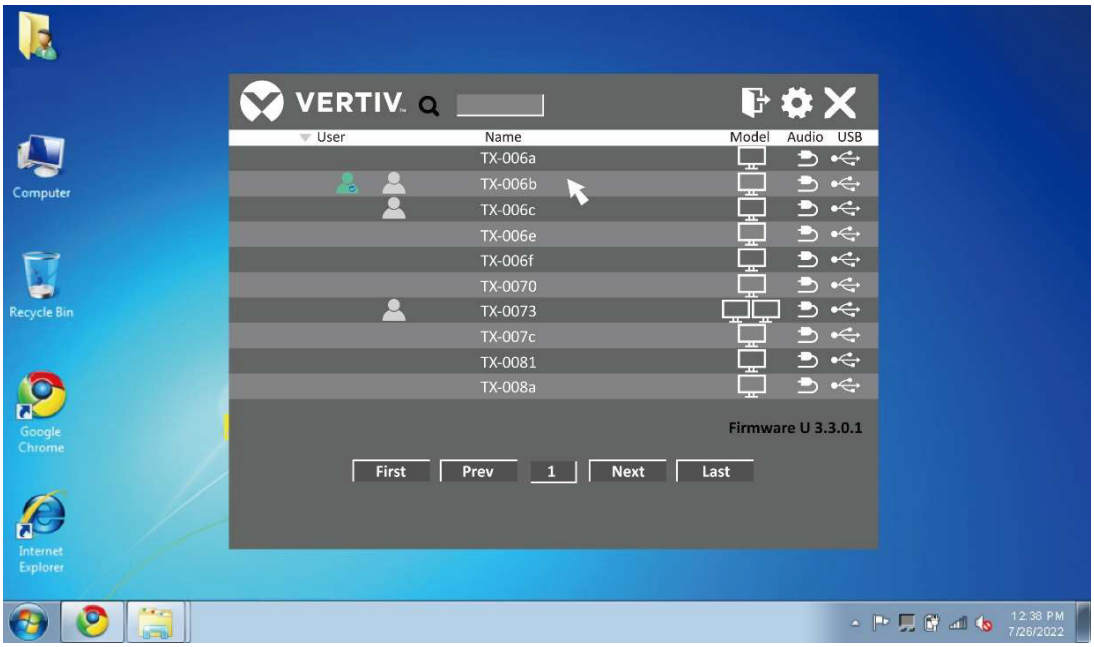


Figure 7-2 OSD Menu in Adaptive Proportion to Computer Desktop

2. It shows the status of all receiver users. The yellow user icon represents the user who is using the current receiver console. The grey user icons show other receiver users connecting to these listed transmitters. Take TX-006b transmitter for example, the OSD menu shows it is connected with the current receiver and other receiver(s).

3. Double click on any monitor-icon to configure the selected transmitter. Refer to section 7.4 Transmitter Configuration.

4. Click to log out of the OSD menu.

5. Click the gear-icon to configure the receiver. Refer to section 7.3 Receiver Configuration.

6. Click to close the OSD menu.

7. Find all listed transmitter devices page by page.

8. Click to enter Console Collaboration page.

9. The total number of TX and RX units deployed in the LAN. It is updated in real time manner.

7.3 Receiver Configuration

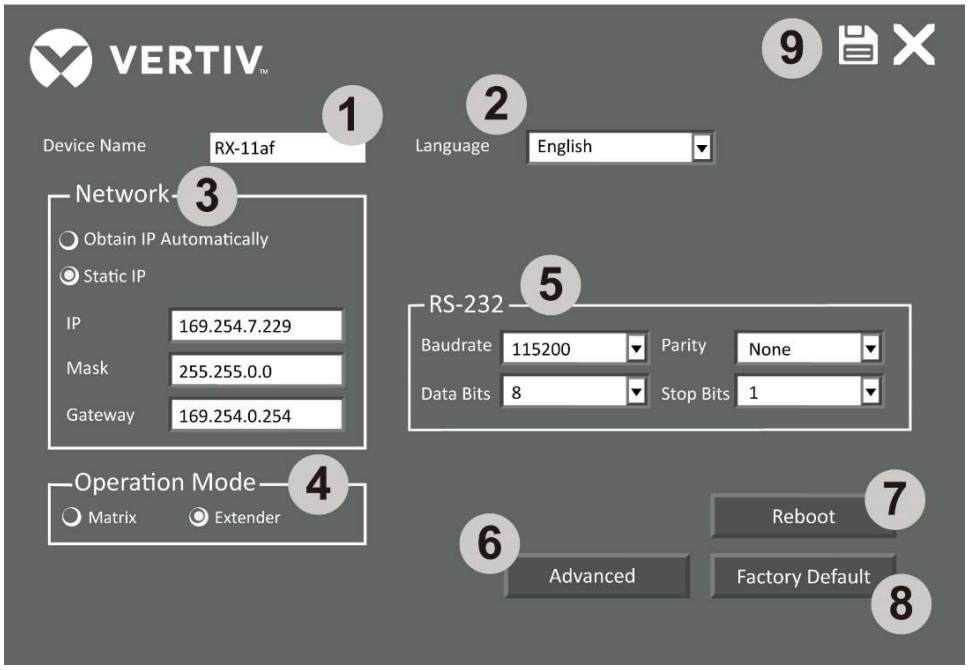


Figure 7-3 Receiver Setting Page

The annotations in Figure 7-3 are as follows:

1. **Device Name**: User can change the name of the receiver for easy recognition.

2. **Language**: Drop down the list to select a preferred language.

3. **Network**: Select ***Obtain IP Automatically*** (*receiver unit self-assigned algorithm, not DHCP approach) or set up ***Static IP*** manually.

4. **Operation Mode**: Select a preferred mode according to your requirement. Make sure this option match with that of the connected transmitter.

5. **RS-232**: Setup the serial parameters for the connected RS-232 device. Make sure these parameters must match the RS-232 settings of the connected transmitter. By default, the system settings are as follows:

Baud rate: 115200 Data bits: 8 Parity: None Stop bits: 1

6. **Advanced**: Refer to section 7.3.1 Advanced Settings for more details.

7. **Reboot**: Click to reboot the receiver, and then click <**OK**> button to confirm.

8. **Factory default**: Click to resume the receiver to factory default settings, and then click <**OK**> button to confirm.

9. **Save**: Click to save the settings after you have made any change to them.

***Note: (1) As you need to manually assign IP addresses for transmitter and receiver devices, please always set up TX device before setting up RX device and make sure their IP addresses are within the same network segment.**

(2) New settings will only be applied after the receiver reboots.

7.3.1 Advanced Settings

This Matrix KVM over IP system not only supports connecting a preferred transmitter on the receiver OSD menu, but also supports connecting transmitter by inputting the keyboard hotkey: <**Scroll Lock**, **Scroll Lock**, **Number key**> then pressing the <**Enter**> key at last. Users can also define their preferred hotkey preceding sequence (Hotkey Prefix) other than the <**Scroll Lock**> key.

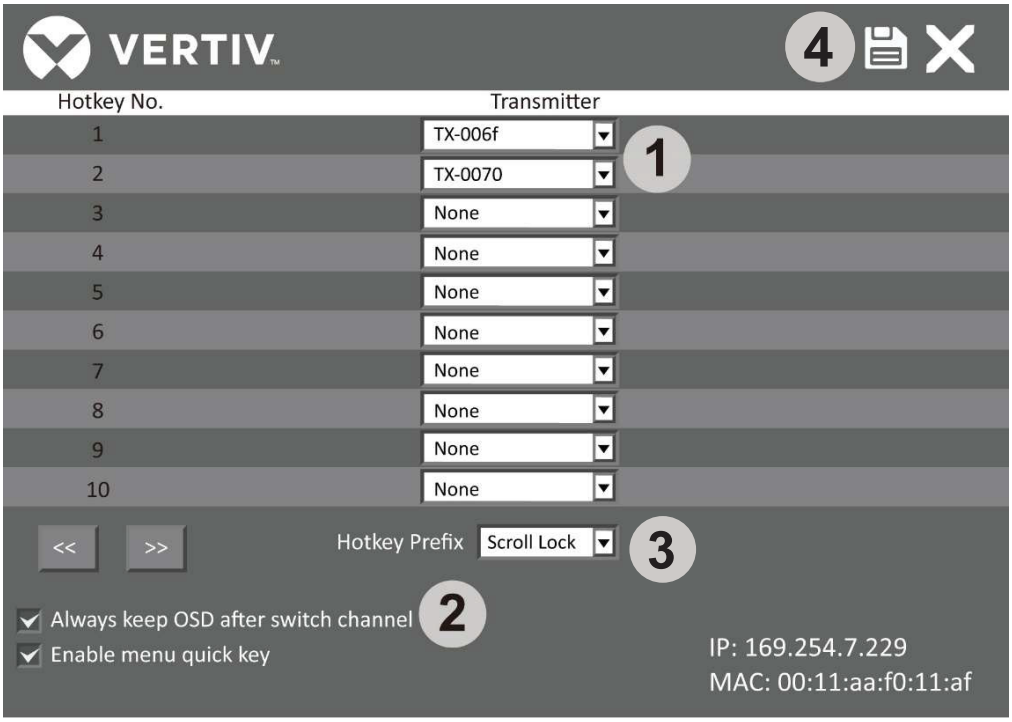


Figure 7-4 Advanced Setting Page

1. Click to drop down the transmitter list and select a desired transmitter to correspond its hotkey number.
2. **Always keep OSD after switch channel:** Check this box to continue displaying the OSD menu on the monitor after switching to another transmitter.
3. **Hotkey Prefix:** Users can change Hotkey Preceding Sequence from this drop-down list, the available options are: **Scroll Lock**, **Num Lock**, **Caps Lock**, **Left Alt** or **Right Alt**.
4. **Save:** Click to save the changed settings.

* Note: The transmitter list and the hotkey prefix of this page cannot be edited under management mode (RX unit is registered) but can be edited under non-management mode (RX unit is not registered).

7.3.2 Console Collaboration Function

(*This function must be carried out in the OSD menu of the receiver).

The VHX133 Receiver Unit supports Console Collaboration function. With intuitive push/pull operations on the OSD menu, users can share a transmitter signal source which is being connected to a first receiver unit to a second receiver unit. Such that the second receiver unit can also access the computer that is being connected to the transmitter unit, as the first receiver unit does.

The following example shows how to use Console Collaboration function to share a TX source of a RX unit to another RX unit.

a. Prompt the OSD menus of five RX units (RX-A/RX-B/RX-C/RX-D/RX-E) respectively. Then click the name of 5 TX units (TX-1/TX-2/TX-3/TX-4/TX-5) on the TX list of the OSD menu respectively to create connections as below:

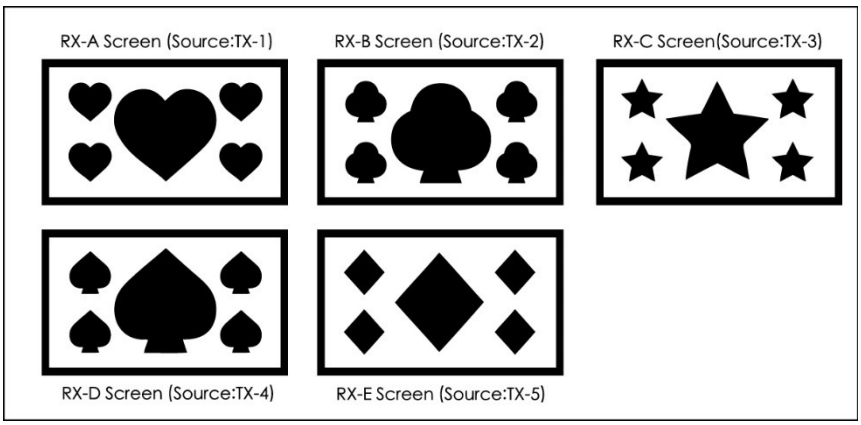


Figure 7-5 5 RX Monitors being Connected to 5 TX Video Sources

b. In the OSD menu of RX-D receiver, click the <**Collaborative Console Sharing**> icon to enter the following page:
(*Note: When this receiver is being managed by the controller HMXCC1, the device counts listed here might vary (mostly become lesser) from those under not-managed mode because of the access right HMXCC1 has granted to this logged-in user.)

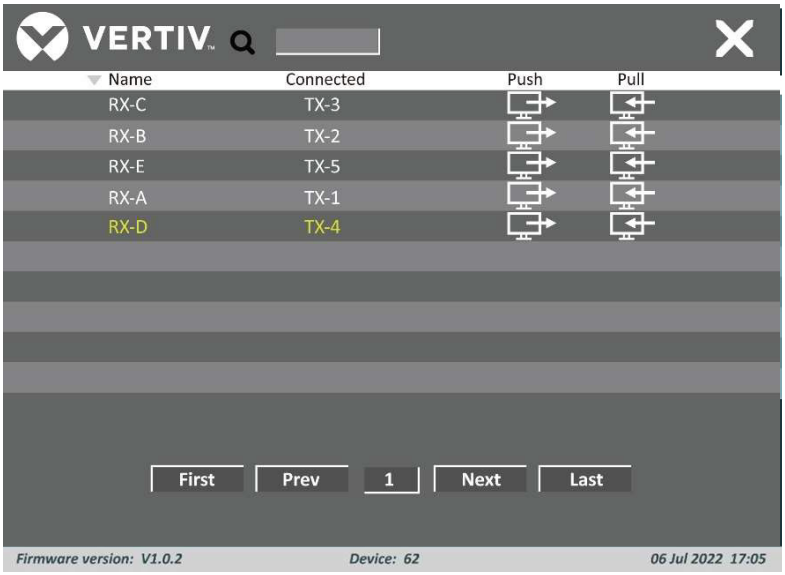


Figure 7-6 Console Collaboration Page

c. User can use the <**Push-sharing**> icon to push the TX-4 source that the RX-D receiver is connecting to any other available RX target units (e.g. RX-C, RX-B, RX-E, RX-A). Or use the <**Pull-sharing**> icon to pull any sources of TX-3, TX-2, TX-5, TX-1 to the currently used RX-D unit. Such that the RX-D user can remotely control the PC which provides the TX source. The following examples will respectively introduce two scenarios of push sharing and pull sharing.

d. (Push-sharing Scenario)

Click the <**Push-sharing**> icon of RX-E row in RX-D's OSD menu, the TX-4 source connected to RX-D will be pushed to display on RX-E's monitor. Please note that as RX-D sends out the push-sharing request to RX-E, a confirmation window will prompt to get RX-E user's approval. RX-E user can accept or decline it depending on his working condition.

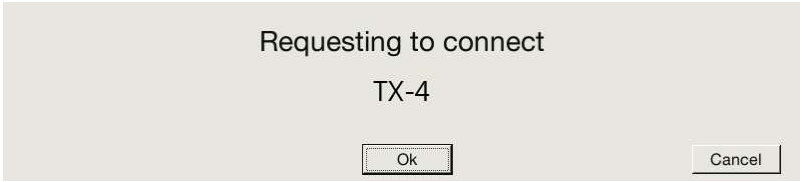


Figure 7-7 Connection Requesting Window

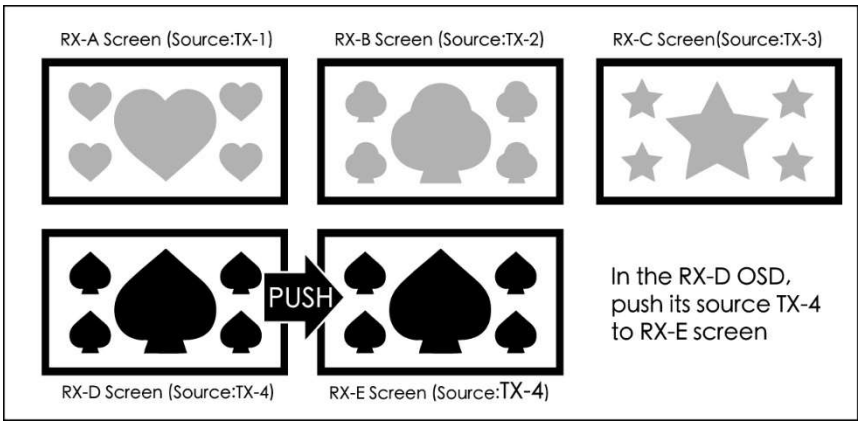


Figure 7-8 Push-operation Scenario (TX-4 to RX-E)

e. (Pull-sharing Scenario)

Click the <**Pull-sharing**> icon of RX-B row in RX-D's OSD menu, the TX-2 source connected to RX-B will be pulled back to display on RX-D's screen. Also note that, different from push-sharing scenario, system will not prompt any request window to ask RX-B user's approval.

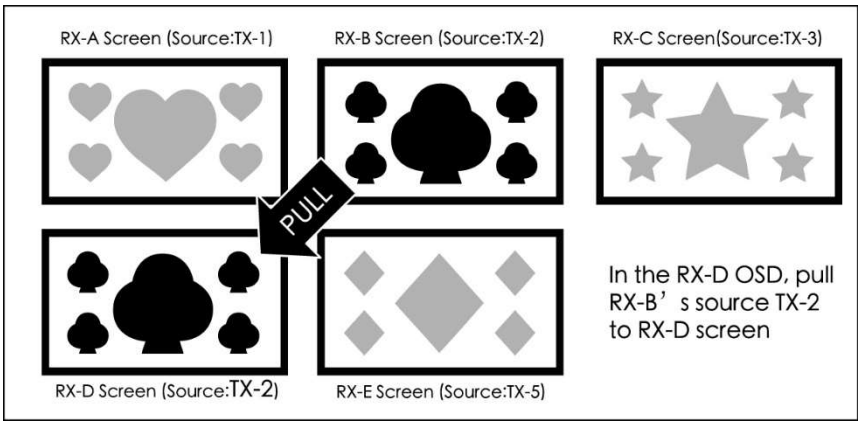


Figure 7-9 Pull-operation Scenario (TX-2 to RX-D)

7.3.3 Mouse Roaming Function

(*This function must be carried out by the centralized controller HMXCC1).

The VHX133 Receiver Unit supports Mouse Roaming function. Users can assign a Mouse-roaming task to group multiple receiver units. As the Mouse-roaming task is activated, the user can simply move his mouse cursor over any displayable monitor region of any computer then directly access it. This has eliminated the inconvenience of using different mouses attached to receiver units to control different computers connected to transmitter units. Refer to more details in the Mouse Roaming chapter in HMXCC1 user's manual.

7.3.4 Video Wall Function

(*This function can be either carried out by the extender web-based management interface or centralized controller HMXCC1).

The VHX133 Receiver Unit supports Video Wall function. Users can assign a Video-wall task to group multiple receiver units. As the Video-wall task is activated, a plurality of monitors connected to those Video-wall receiver units can collaborate to show a single video signal from one transmitter unit. Refer to more details in the web-based management interface chapter of this manual or the video wall chapter in HMXCC1 user's manual.

7.4 Transmitter Configuration

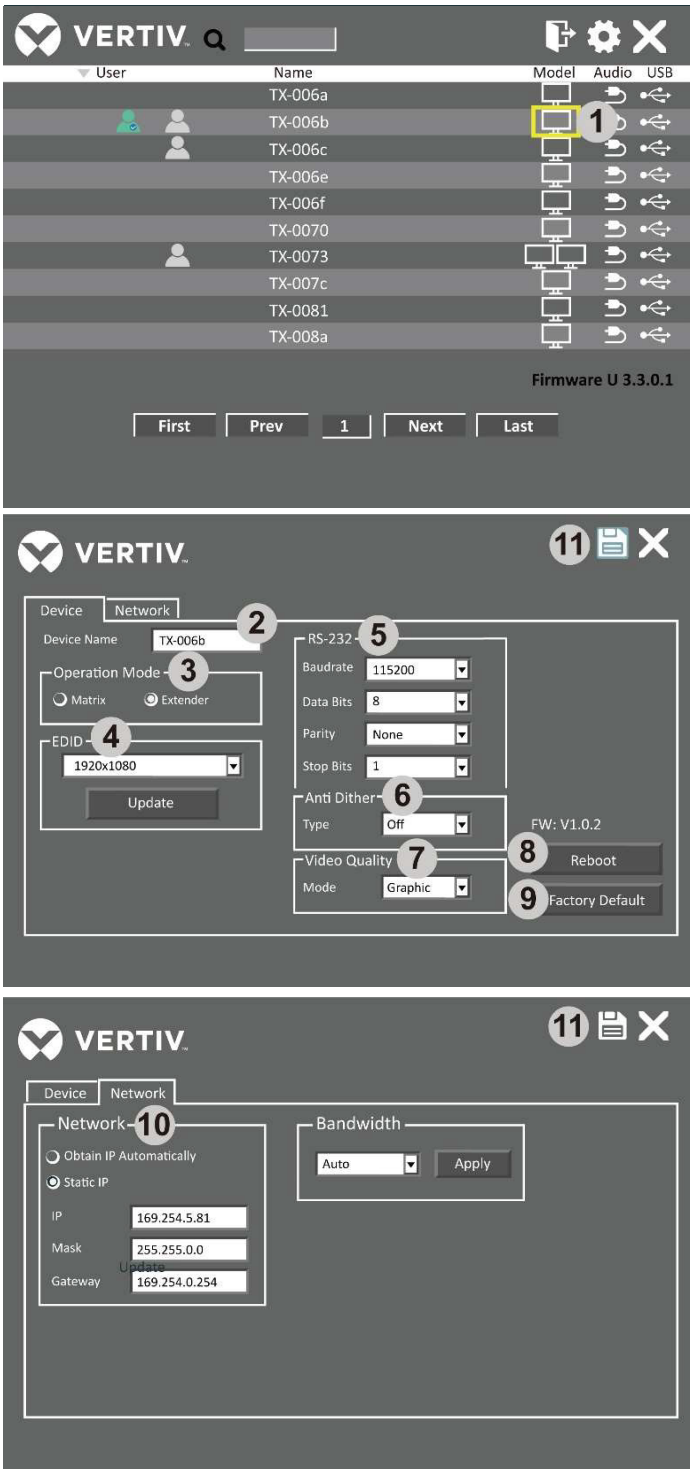


Figure 7-10 Transmitter Setting Page

The annotations in Figure 7-10 are as follows:

1. Double click on the monitor-icon of any desired transmitter to enter its setting page.

2. **Device Name**: User can change the name of the transmitter for easy recognition.

3. **Operation Mode**: Select a preferred mode according to your requirement. Make sure this option you selected match with that of the connected receiver.

4. **EDID:** Select the output resolution of the image source, or you can click <**Update**> button to upload the EDID of monitor.

5. **RS-232**: Setup the serial parameters for the connected PC RS-232 port. Make sure these parameters must match the RS-232 settings of the connected receiver. By default, the system settings are as follows:

Baud rate: 115200 Data bits: 8 Parity: None Stop bits: 1

6. **Anti Dither**: Apply when the video displayed on the monitor connected to the RX unit is abnormal. (Options: **Off**/**Mode 1**/**Mode 2**).
7. **Video Quality**: Adjust according to user's requirement. (Options: **Auto**/**Graphic**/**Video**).
8. **Reboot**: Click to reboot the transmitter, and then click <**OK**> button to confirm.
9. **Factory default**: Click to resume the transmitter to the factory default settings, and then click <**OK**> button to confirm.
10. **Network**: Select ***Obtain IP Automatically*** (*transmitter unit self-assigned algorithm, not DHCP approach) or set up ***Static IP*** manually.
11. **Save**: Click to save the settings after you have made any change to them.

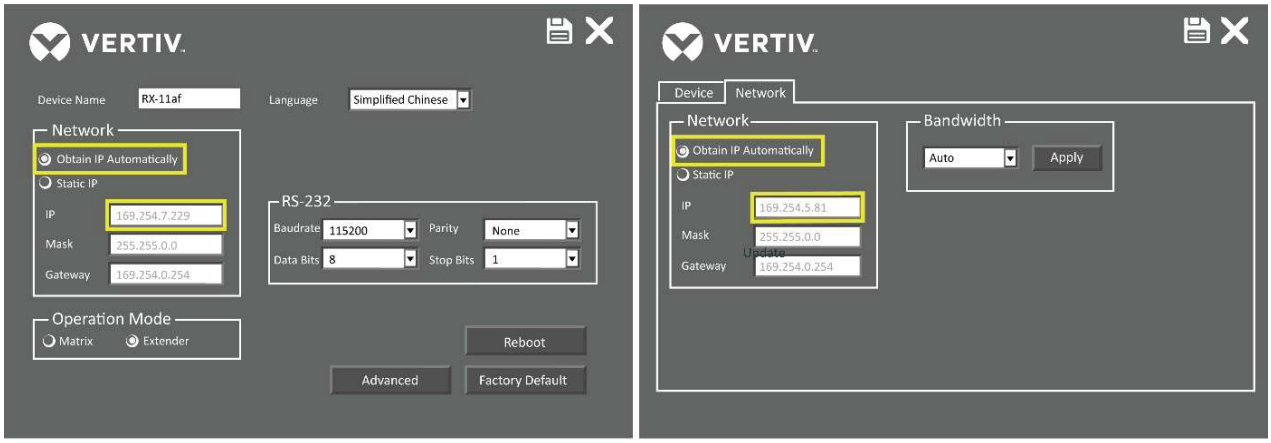
Note: (1) As you need to manually assign IP addresses for transmitter and receiver devices, please always set up TX device before setting up RX device and make sure their IP addresses are within the same network segment.

(2) New settings will only be applied after the transmitter reboots.

Chapter 8 Web-based Management Interface

8.1 Interface Introduction

VHX133 Virtual Matrix KVM Extenders build in a web-based management interface for users' device configuration.
To access the web-based management interface of the Extender units, please connect a PC with installed web browsers to the same LAN that TX/RX units are also connected to. Next, you need to collect the IP address information of each TX and RX units. Refer to the previous chapters and enter following network setting pages to respectively obtain their self-assigned auto IP addresses.



Auto IP address (Receiver Network Setting) Auto IP address (Transmitter Network Setting)

Figure 8-1 Auto IP Addresses of Receiver and Transmitter

To enter the web-based management interface of each extender unit, please open a web browser at the PC and directly input its IP address. Take the above RX unit **RX-11af** for instance, please input **169.254.7.229** at the web browser address bar, then press <**Enter**> key. The menu of the web-based management interface includes four tabs which are: **System** / **Video Wall** / **Network** / **Functions**.

Figure 8-2 Tabs of the Web-based Management Interface Menu

8.2 [System] Tab

There are four pages in the [System] Tab as the following table shows.

Page	Options	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 settings.
	Console API Command	Request technical support from the local distributors to learn what console commands are.
Statistics *	Display detailed information of network and video.	

Table 8-1 Introduction of Tabs of the web-based management interface menu

* [Update Firmware] Page

Keeping updating your extender firmware with the latest firmware version allows your extender units operating at best performance with new functions. Followings are exemplary steps to update the firmware of the above extender unit (**RX-11af**):

(1) Input the IP address, e.g. **169.254.7.229**, at the web browser address bar to enter **RX-11af** receiver's web-based management interface.

(2) Check the current unit firmware version (e.g. V1.0.5) before upgrading your extender units. If you have a newer firmware version than the shown version, go on the following steps.

*Figure 8-3 [**Version Information**] Page*

(3) Click on the **Update Firmware** tab.

(4) Click on the **Browse** button to select a target firmware file, and then click the **Upload** button.

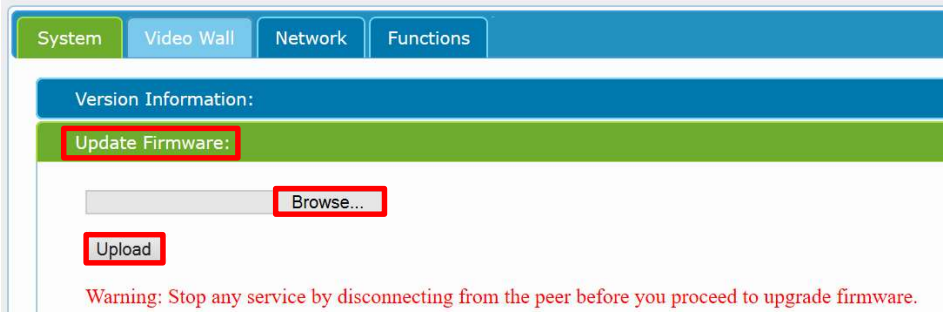


*Figure 8-4 [**Update Firmware**] Page*

(5) While the firmware of the extender is being upgraded, the above webpage will display the upgrading progress. In addition, when the firmware of the receiver is being upgraded on the webpage, the receiver OSD menu will also prompt a warning message: "Upgrading is in progress… DO NOT remove the power". This is to prevent the user misunderstanding the system is failed and deciding to remove the power of the receiver.

*Note: As the firmware is being upgraded, the system will disable user's keyboard/mouse operation. To avoid any data loss or hardware failure, please be patient and DO NOT remove the power of the extender unit during system upgrade is in progress.

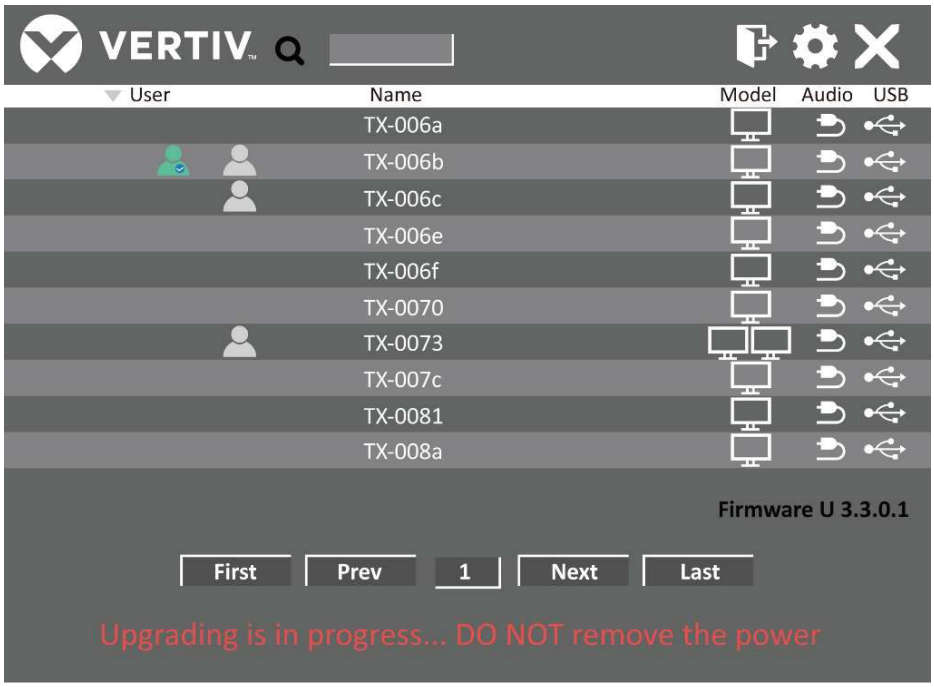


Figure 8-5 Receiver OSD Screenshot during System Upgrade

* [Statistics] Page

This page mainly displays detailed information of Network and Video. When you encounter network and video related issues, please send us a snapshot of this page for troubleshooting.

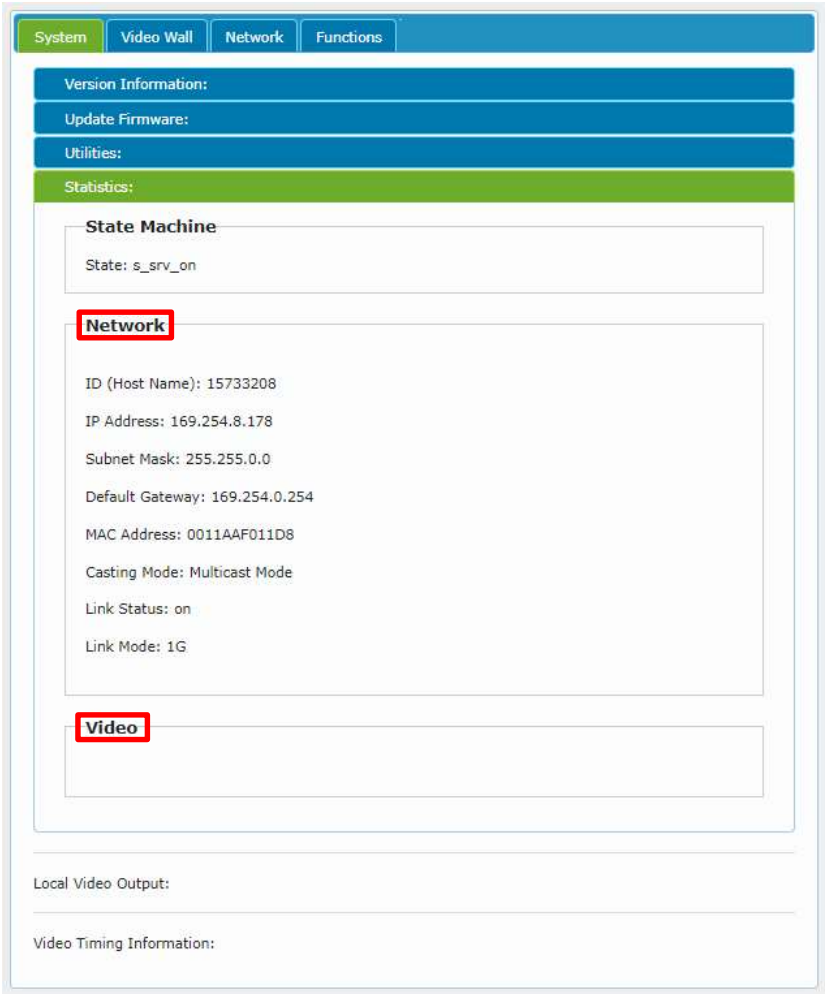


*Figure 8-6 [**Statistics**] Page for Network and Video Detailed Information*

8.3 [Video Wall] Tab

Note that the video wall settings are only applicable for receivers. However, besides configuring video wall settings in receiver's web-based management interface, you may also configure the receiver video wall settings in any web-based management interfaces of the detected extender units (even in the transmitter units) within the same LAN.

8.3.1 [Basic Setup] Page of [Video Wall] Tab

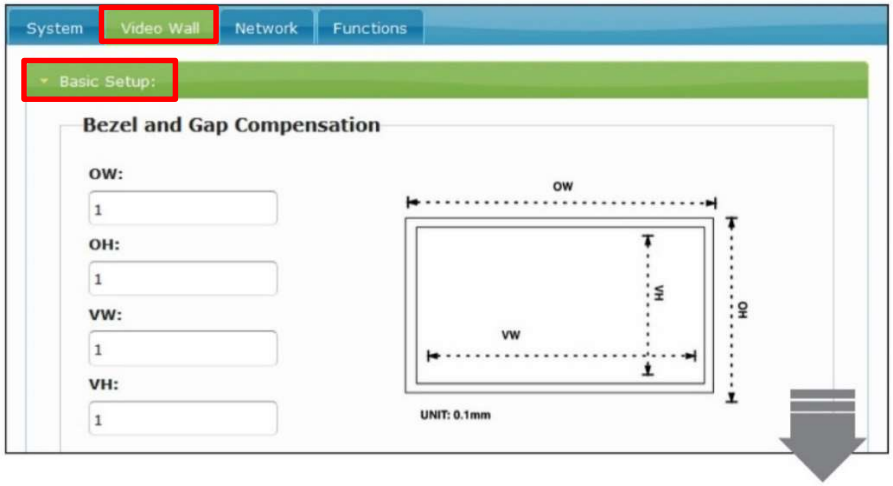


*Figure 8-7 [**Basic Setup**] Page of [**Video Wall**] Tab*

The [**Basic Setup**] page is focused on the settings of symmetric video wall. Note that all the settings here are only available on receivers, not transmitters.

Item	Option	Description
Bezel and Gap Compensation	OW	Fill in the width of the monitor outer frame. (e.g. 540, for 540mm)
	OH	Fill in the height of monitor outer frame. (e.g. 320, for 320mm)
	VW	Fill in the width of monitor inner viewable area. (e.g. 525 for 525mm)
	VH	Fill in the height of monitor inner viewable area. (e.g. 305, for 305mm)
Wall Size and Position Layout	Vertical Monitor Count	Set the number of vertical monitors (from 1 to 8).
	Horizontal Monitor Count	Set the number of horizontal monitors (from 1 to 16).
	Row Position	Specify the row position of monitor. The vertical row order number from top to bottom is 0-7.
	Column Position	Specify the column position of monitor. The horizontal column order number from left to right is 0-15.
Preferences	Stretch Type	Select a preferred display type (**Fit In**: keep original image size / **Stretch Out**: Force full-screen image display).
	Clockwise Rotate	Rotate the image when necessary (180°/270°).
Apply to: "All" device(s) in the list		Select the client (receiver) units to apply the settings you have changed.
Show OSD	Check/Uncheck to show/hide each receiver's number with OSD on connected monitors.	

*Table 8-2 Option Introduction of [**Basic Setup**] Page of [**Video Wall**] Tab*

Figure 8-8 Display Effect of Show OSD Checkbox

8.3.2 Example of Building up a 2 x 2 Video Wall

The following example guides you to build up a 2 x 2 Video Wall.

Step 1) Connect four RX units to four monitors which are arranged as a Video Wall Matrix.

Step 2) Bring up the OSD Menu of each RX units with <**ScrLk**>, <**ScrLk**>, <**Space**> keyboard hotkey. Click on the same TX unit name (e.g. **TX-006b**) from the TX list for each RX units.

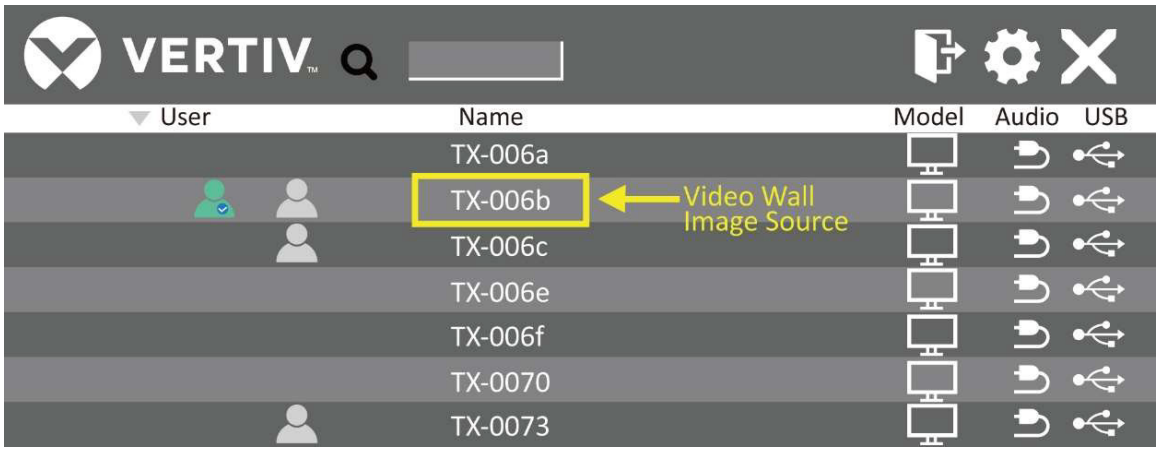
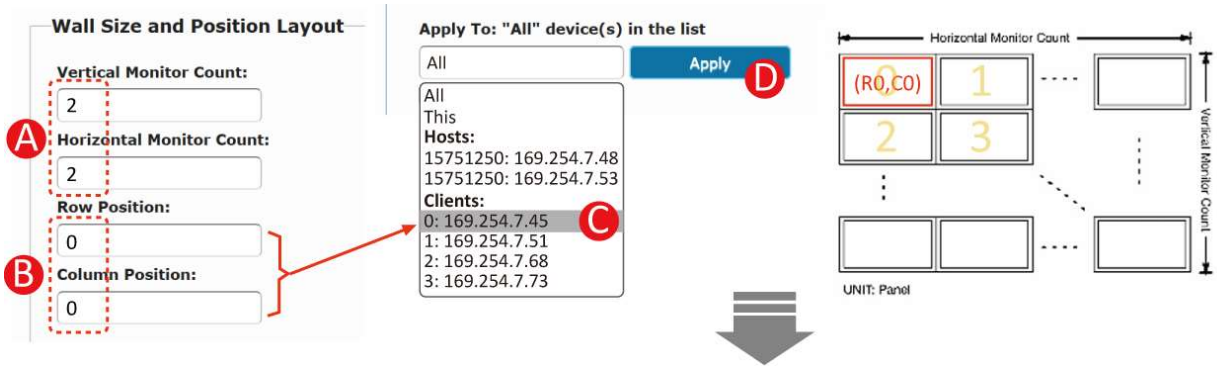


Figure 8-9 TX List Page of the Receiver's OSD Menu

Step 3) Designate corresponding positions of each receiver/monitor to complete the Video Wall layout.

In the [Basic Setup] page of the Video Wall Tab, please input the Vertical/Horizontal Monitor Count as 2 and 2, respectively. Repeat the same operation of steps (A), (B), (C) and (D) to finish setup for 4 Monitor (from position R0,C0 to position R1,C1). After that, the 4 monitors collaborate to display a complete image sourced from the TX-006b unit.



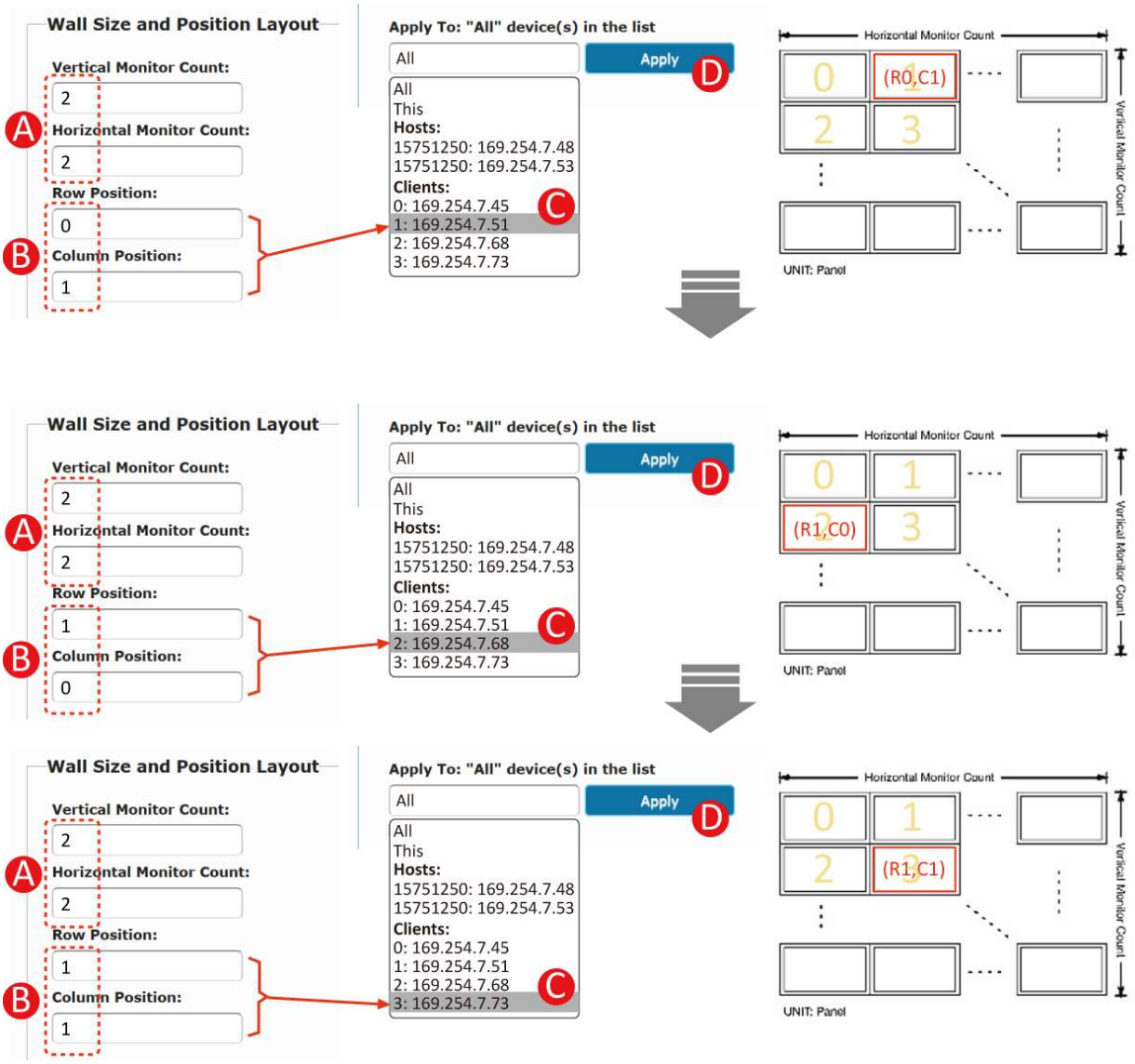


Figure 8-10 Steps to Designate the Receiver/Monitor Positions of a Video Wall

8.3.3 Example of Removing an Existing Video Wall Layout

To remove an existing Video Wall layout, simply input the default settings: Vertical/Horizontal Monitor Count: 1/1 and Row/Column position 0/0. Select the "All" option, then click on the "Apply" button.

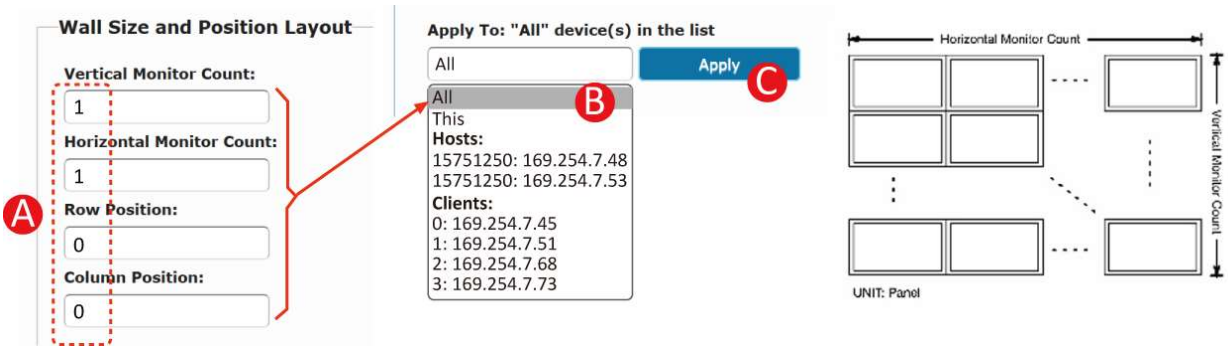


Figure 8-11 Steps to Remove the Existing Video Wall Layout

8.3.4 [Advanced Setup] Page of [Video Wall] Tab

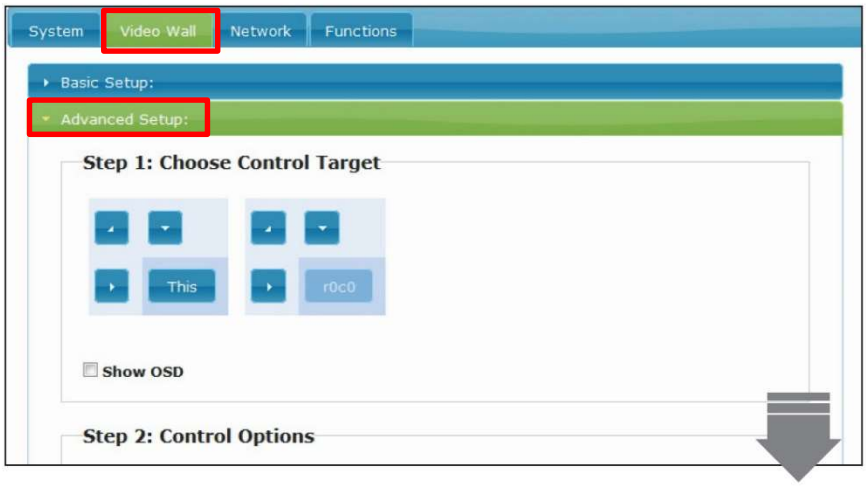
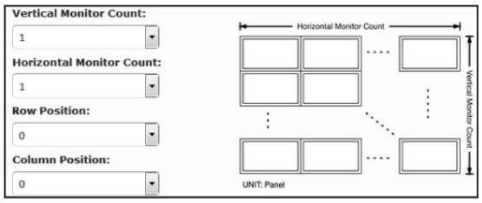


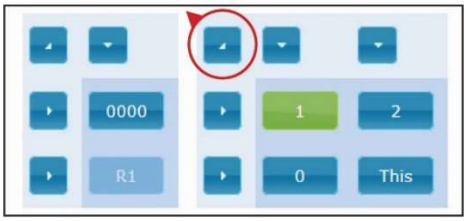
*Figure 8-12 [**Advanced Setup**] Page of [**Video Wall**] Tab*

The [**Advanced Setup**] page is focused on the settings of unique video wall application (refer to the following illustration) User can design an asymmetric video wall according to their requirement. Note that all the settings here are only available on receivers, not transmitters.

2. Before setting the [**Advanced Setup**] page, make sure the video wall layout has been set on the [**Basic Setup**] page; otherwise, all the options will be unable to select.



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



3. Control Options

Item	Options	Description
Show OSD	Check/Uncheck to show/hide each receiver's number with OSD on 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 (**Fit In**: keep original image size / **Stretch Out**: Force full-screen image display).
	Clockwise rotate	Rotate the image when necessary (180°/270°).
	Screen Layout	Set the layout of video wall. Make sure the layout settings here is same as that in the [**Basic Setup**] page.
	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 horizontally to left or right. Note that the screen will be displayed in loop horizontally if the image 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 image position. 
	Vertical Shift	Fine-tune the image position vertically to up or down. Note that the screen will be displayed in loop vertically if the image 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 image position. 
	Horizontal Scale up	Scale up the image from the receiver horizontally.
	Vertical Scale up	Scale up the image from the receiver vertically.
	Console API Command	Refer to the **UAPI commands** guide.

*Table 8-3 Option Introduction of [**Advanced Setup**] Page of [**Video Wall**] Menu*

8.4 [Network] Tab

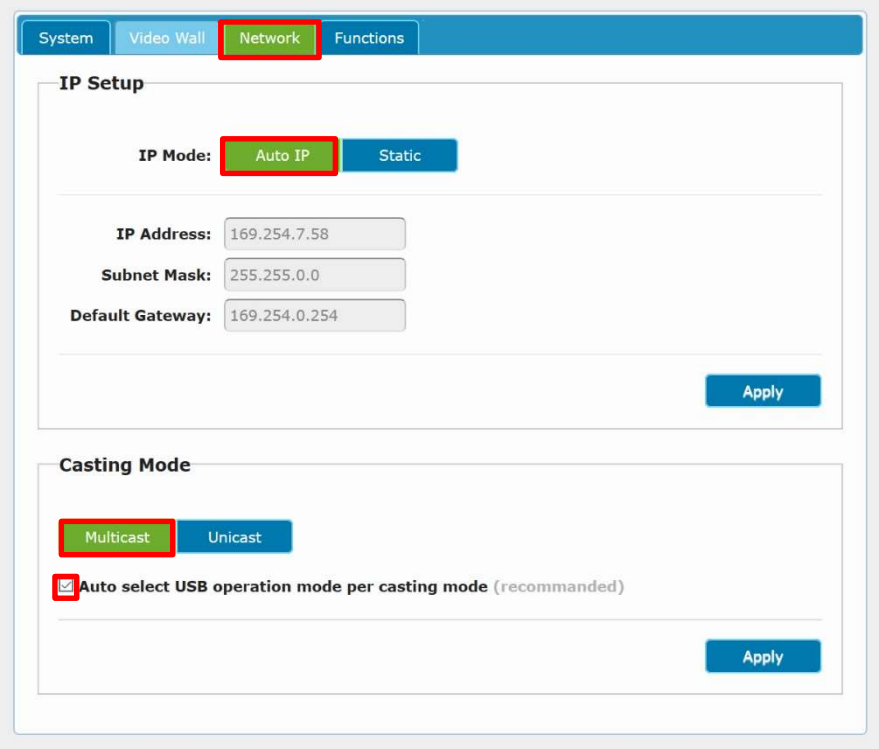


*Figure 8-13 [**Network**] Tab*

Item	Options	Description
IP Setup	Auto IP	Assign an IP address by system automatically (recommended).
	Static	Assign an IP address manually. After clicking the <**Apply**> button, all the settings will be stored even the unit is shut down.
Casting Mode	Multicast	Select this option if your extender's operation mode is set as "Matrix".
	Unicast	Select this option if your extender's operation mode is set as "Extender".
	Auto select USB operation mode per casting mode	Check this box to automatically apply a corresponding USB operation mode according to the selected extender's casting mode. This works the same as checking the "**Auto select mode**" box in the [**USB over IP**] item of the [**Functions**] tab.

Table 8-4 Option Introduction of [Network] Tab

8.5 [Functions] Tab

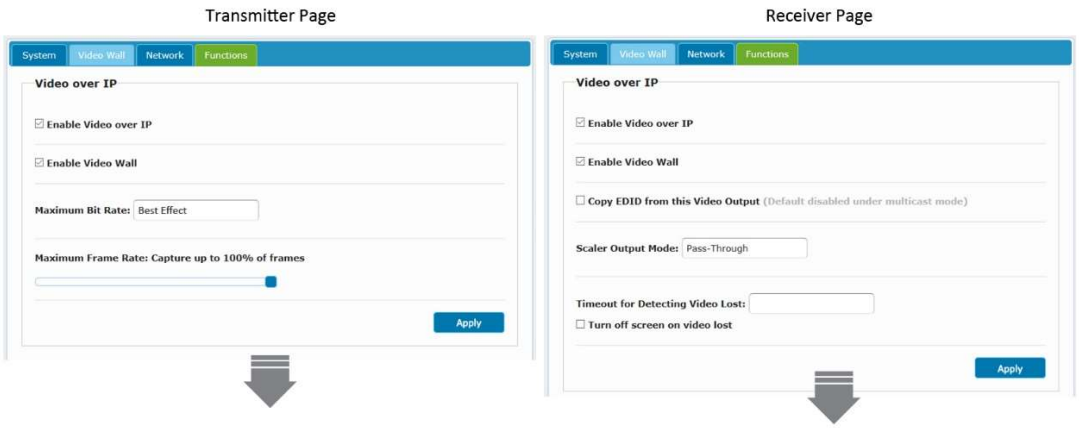


*Figure 8-14 [**Functions**] Tab*

Item	Options	Description
Video over IP	Enable Video over IP	Check/uncheck this box to enable/disable video transmission over IP.
	Enable Video Wall	Check/uncheck this box to show/hide [**Video Wall**] tab from the main menu.
	Copy EDID from this Video Output	Check this box to copy EDID from the monitor when booting (**only for unicast mode**). Default setting is unchecked.
	Maximum bit rate (for transmitter only)	Select an appropriate bitrate according to your network bandwidth. (Options: **Best Effect**/**300 Mbps**/**150 Mbps**/**100 Mbps**/**50 Mbps**/**10 Mbps**)
	Scaler Output Mode (for receiver only)	Options: **Pass-Through**/**Auto Detect (Per EDID)**/**Full HD 1080p60**/**Full HD 1080p50**/**Ultra HD 2160p30**/**Ultra HD 2160p25**/**Ultra HD 2160p24**/**Customize**.
	Timeout for detecting video lost (for receiver only)	Select the detection duration of video lost (Options: **3s**/**5s**/**10s**/**20s**/**30s**/**60s**/**Never**) or check the "**Turn off screen on video lost**" box to disable the video-lost detection.
USB over IP	Enable USB over IP	Check/uncheck this box to enable/disable USB transmission over IP.
	Operation mode	Select a preferred USB operation mode when connecting to a USB device. ● **Auto select mode:** Select this option to automatically apply a corresponding USB operation mode according to the detected extender operation mode. This works the same as checking the "**Auto select USB operation mode per casting mode**" box in the **Network** tab. ● **Active on link:** Select this option if your extender operation mode is set as "Extender". ● **Active per request:** Select this option if your extender operation mode is set as "Matrix".
	Compatibility mode	● **Mouse not responding well:** Check this box if the USB mouse responding is slow and queer. ● **K/M over IP:** Uncheck this box if the keyboard, mouse, touch panel don't work as expected. By default, this box is checked.
Serial over IP	Enable Serial over IP	Check/uncheck this box to enable/disable RS-232 data transmission over IP.
	Operation Mode	● **Type 1 mode (Incongruent baud rate):** Communicate with different RS-232 devices from host device through RS-232 port (Normally the host device is a PC). The communication baud rate (A) between the host PC and the transmitter can be unequal to the communication baud rate (B) between the receiver and the RS-232 device. The communication baud rate (C) of the network switch can also be unequal to (A) and (B). ● **Type 2 mode (Congruent baud rate):** Communicate with many RS-232 devices from host device through RS-232 port (Normally the host device is a PC). The communication baud rate (A) between the host PC and the transmitter is equal to the communication baud rate (B) between the receiver and the RS-232 device and the communication baud rate (C) of the network switch. *Type 2 mode is the recommended mode for serial transmission over IP. ● **Type 1 guest mode: (DO NOT use this mode)** ● **Type 2 guest mode:** We recommend you contact our local distributor for technical support.
	Baud rate Setting for Type 2	Set up baud rate settings for Type 2 operation mode.

*Table 8-5 Option Introduction of [**Functions**] Tab*

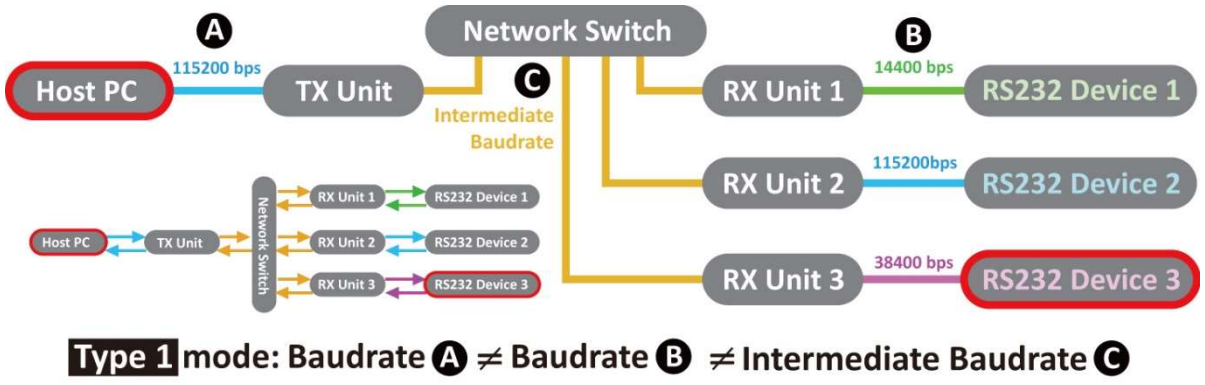


Figure 8-15 Type 1 Configuration of Serial Communication

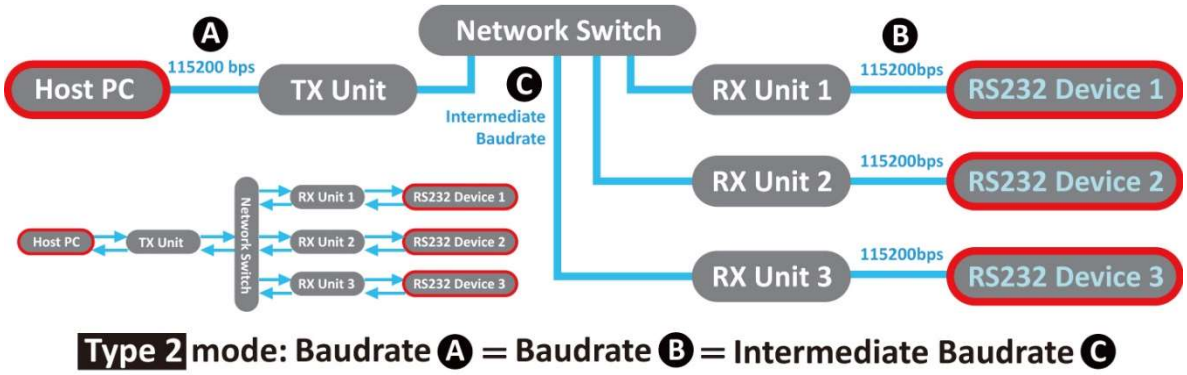


Figure 8-16 Type 2 Configuration of Serial Communication

Chapter 9 Technical Support

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

Chapter 10 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.

(This page is intentionally left blank)

(This page is intentionally left blank)

(This page is intentionally left blank)

(This page is intentionally left blank)

(This page is intentionally left blank)

Vertiv.com

Vertiv™ Avocent® VHX133_UM_EN_AP (R01/020725)