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HT-VERSA-4K Sender and Receiver

4K HDMI & USB over LAN

USER MANUAL

December 19, 2023

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Introduction

OVERVIEW

HT-VERSA-4K is a complete AV over IP solution, which can extend 4K video with one frame latency, USB 2.0, keyboard, mouse, IR, RS-232, and analog audio over a simple Gigabit Ethernet Network. Advanced features include video wall processing to expand and split 4K video onto multiple displays, video rotation and flipping (horizontal and vertical), USB device class filtering for excluding specific USB device types such as USB flash drives, automatic KVM switching, Dynamic Virtual Matrix (DVM) operation, PoE (Power over Ethernet) support, and more.

4K Video & USB over IP in a 1-to-1 setup (one sender to one receiver) does not require external network equipment. Simply connect a Cat6 cable up to 120 meters (400 ft) between the two ends. In a many-to-many setup, a dedicated gigabit Ethernet switch (with IGMP and Jumbo-frame support) is required.

The encoder in the sender (HT-VERSA-4K-S) uses visually lossless compression, which gives pixel perfect quality at the remote end. It can accept HDMI resolutions up to 4K@30Hz, 4:4:4 with HDCP 2.2. It includes a video loop output together with extracted HDMI audio in analog format for maximum flexibility and integration.

The receiver (HT-VERSA-4K-R) has a built-in scaler that not only supports a video wall up to 16x16, but can also change the orientation of the image. The receiver also includes extracted HDMI analog audio. Two USB ports are dedicated for use with keyboard and mouse (auto-switching based on user activity) and two general purpose USB 2.0 ports that support touch screens and memory devices, along with many other USB device functions.

FEATURES

- Extend and switch multiple 4K HDMI video and USB on a simple gigabit LAN
- Can be used directly (without LAN) for point-to-point HDMI/DVI video, USB 2.0, Audio, IR, and RS232 extension on Cat6 cable
- Low latency video and audio (<30ms)
- Video rotation and flipping (horizontal and vertical)
- User configurable video-wall processor
- Extends signals up to 120m (400ft)
- HDMI video loop output on the sender
- Extracted HDMI audio in stereo analog format on both sender and receiver
- 4 USB ports on the Receiver, 2 for keyboard and mouse plus 2 general purpose USB 2.0 ports
- PoE powered
- USB Device Class Filtering
- CEC, IR, and RS-232 Serial over IP for control

- Automatic KVM switching (when more than one receiver is routed to one source)
- Telnet and integrated Web UI control
- Front panel character LCD for configuration of IP parameters and status indication
- Receivers include small IR remote controller for switching channels
- Senders accept max resolution of 4K@30Hz 4:4:4 on its input and loop output
- Receivers output a max resolution of 4K@30Hz 4:4:4
- HDCP2.2 and 1.4 compliant

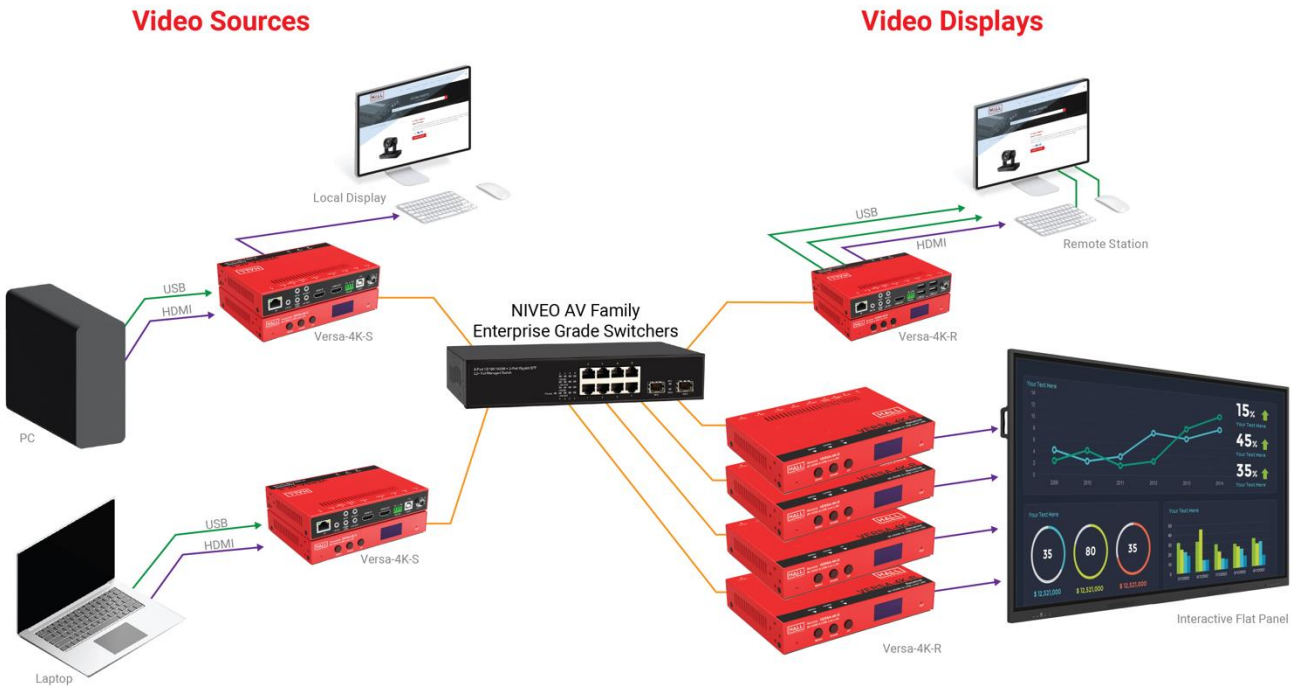
UPDATES MADE AT PRODUCT RELEASE (compared to VERSA-4K)

- Auto power on/off CEC commands created that trigger when a stream or no stream is detected in the receiver.
- Ability to trigger CEC for display power on/off from HT-VERSA-4K-R receivers using TCP API
- Commands created in API/CLI to allow for independent routing for Video, Audio, USB, USB, IR, and Serial.
- Commands created in API/CLI to control the line out level which is needed for HIVE control. Also updated API/CLI to broadcast any line out levels in the Web GUI to track feedback for HIVE.
- Updated the API/CLI to broadcast any changes to the decoder group ID. This change allows for tracking switching in HIVE and other control systems.
- IP default mode is set to DHCP (prior mode set to auto but could not obtain a DHCP address)
- Command created in API/CLI to set the RS-232 mode to either Guest Mode or Passthrough. This allows for better RS-232 control in HIVE.
- Command created in API/CLI to set the RS-232 Baud Rate. This allows for easier control setup using HIVE.
- Firmware for all components installed in the Web GUI (front USB firmware port removed)
- Full support for telnet API on TCP port 9999, Serial over IP (SoIP) on port 6752, and IR over IP (IRoIP) on port 59401 with additional API commands to support additional convenient control
- ASPEED chip updated to support 802.1x network security
- Fixed VERSA-R HDCP failed error after display is powered on or a source is switched

APPLICATIONS

HT-VERSA-4K is a one-stop scalable solution for your future AV needs, with 10,000 unique channels. This AVoIP solution not only extends video but also extends USB 2.0 devices. With incredibly low latency, HT-VERSA-4K can be integrated in multiple applications including:

- Conference Rooms
- Remote PC management
- Digital Signage
- K-12 and University Classrooms
- Auditoriums
- Bars, Restaurants, Hotels and Casinos
- Building or Campus-wide broadcasting
- Patient monitoring



Package Contents

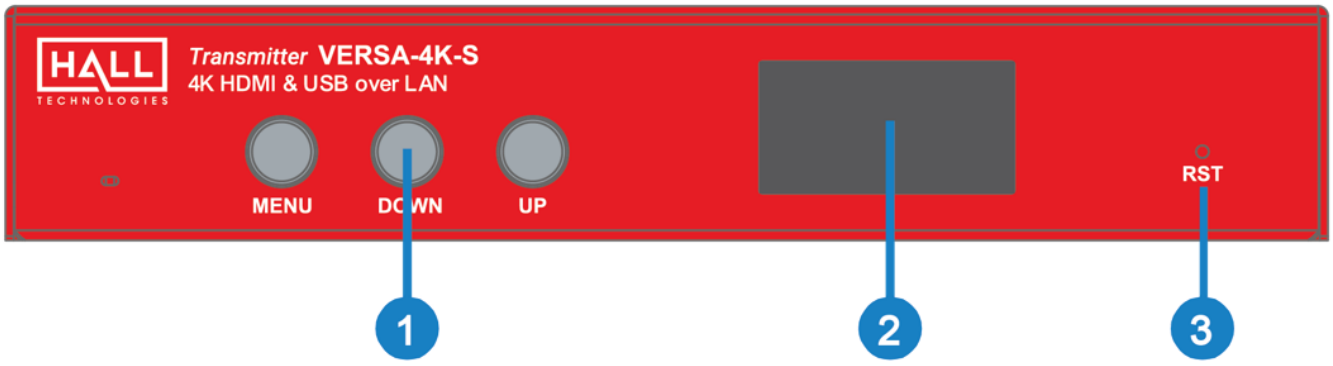
HT-VERSA-4K-S

- 1 x HT-VERSA-4K-S
- 1 x Wide Band IR Emitter
- 1 x Mounting Bracket (set)

HT-VERSA-4K-R

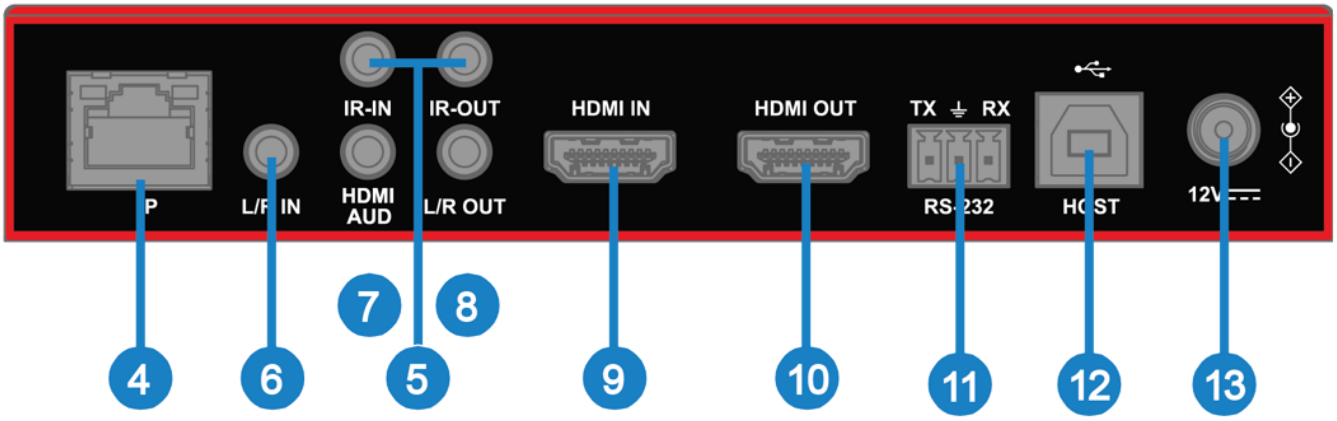
- 1 x HT-VERSA-4K-R
- 1 x Wide Band IR Detector
- 1 x Mounting Brackets (set)

HT-VERSA-4K-S FRONT PANEL



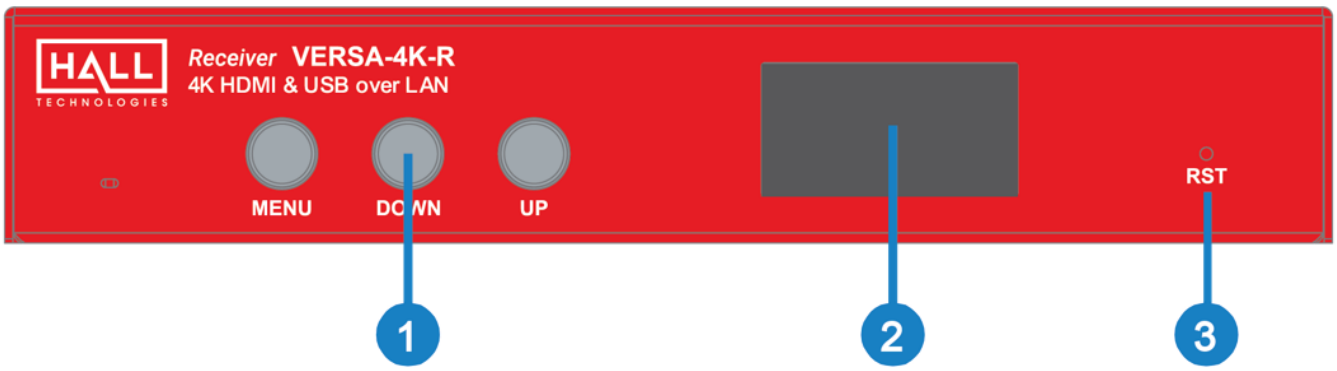
ID	Name	Description
1	MENU, UP, DOWN	User buttons for front panel operation
2	LCD	16x2 Character display for system configuration
3	RST	Factory reset button

HT-VERSA-4K-S REAR PANEL



ID	Name	Description
4	IP	RJ45 for 1G Ethernet, PoE
5	IR-IN, IR-OUT	IR Detector and IR Emitter connections for bi-directional pass-through
6	L/R IN	3.5mm stereo jack for analog line input
7	HDMI AUD	3.5mm stereo jack for analog line output for HDMI audio extraction
8	L/R OUT	3.5mm stereo jack for analog line output
9	HDMI IN	HDMI video input
10	HDMI OUT	HDMI video loop-through output
11	RS-232	Phoenix connector for full duplex serial communication
12	HOST	USB Type-B connector for host PC
13	12V DC	External power supply with locking connector (power accessory not included)

HT-VERSA-4K-R FRONT PANEL



ID	Name	Description
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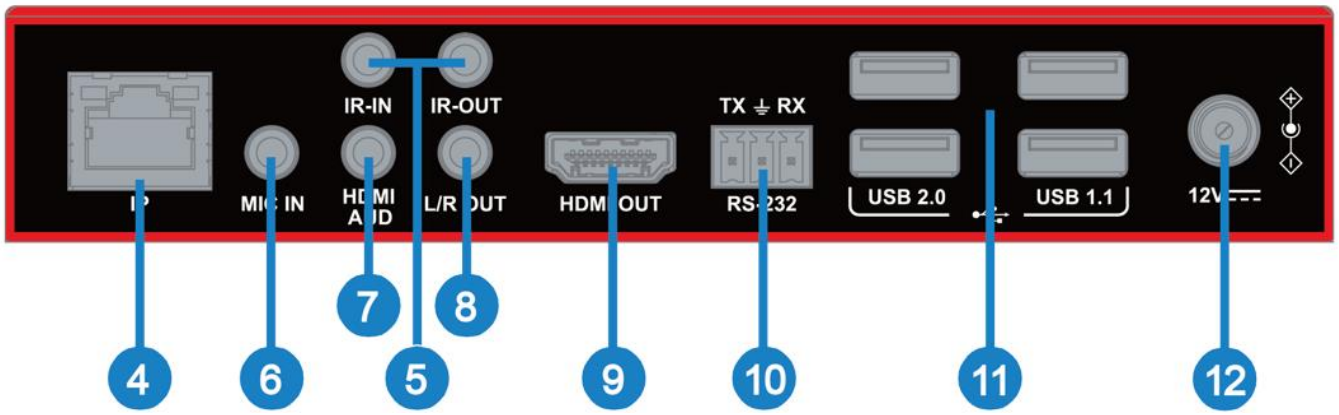
HT-VERSA-4K-R REAR PANEL



ID	Name	Description
4	IP	RJ45 for 1G Ethernet, PoE
5	IR-IN, IR-OUT	IR Detector and IR Emitter connections for bi-directional pass-through
6	MIC IN	3.5mm stereo jack for analog microphone input
7	HDMI AUD	3.5mm stereo jack for analog line output for HDMI audio extraction
8	L/R OUT	3.5mm stereo jack for analog line output
9	HDMI OUT	HDMI video output
10	RS-232	Phoenix connector for full duplex serial communication
11	USB 1.1, USB 2.0	USB Type-A for USB peripherals
12	12V DC	External power supply with locking connector (if switch does not support PoE)

Getting Started

1. Use a Gigabit Switch with IGMPV2 and Jumbo Frame Support.
2. Connect Sender(s) and Receiver(s) to the switch. A DHCP server is not required; by default Auto IP is enabled.
3. If the switch does not support PoE, use an external power supply (sold separately).
4. Assign a unique Group ID to each Sender. The Group ID can be changed from the Front Panel using UP and DOWN arrow keys or through the Web UI.
5. Connect HDMI Source(s) to Sender(s)
6. Connect HDMI Display(s) to Loop out as required.
7. Connect HDMI Display(s) to Receiver(s)
8. If Using RS-232, connect RS-232 cable from PC or automation system to the supplied phoenix connector, and then connect it to the "RS-232" port of VERSA-4K. See Serial over IP for more details.
9. To control the unit from WEB-GUI or PC-GUI change the IP address of the PC to Auto IP network.
10. Assign Device Name to Sender(s) and Receiver(s) from WEB-GUI or PC-GUI

ARCHITECTURE

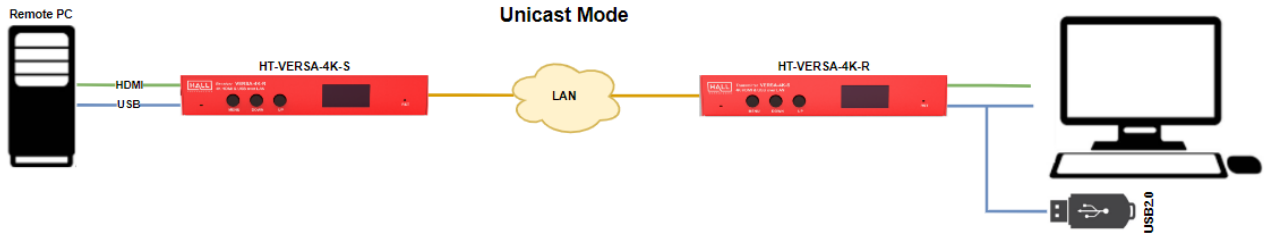
HT-VERSA-4K uses Client-Server architecture, where each function such as Video, Audio, USB, IR, and RS-232 is considered as a service. HT-VERSA-4K-S (Sender) acts as a server, and provides services independently under one Group ID. Each HT-VERSA-4K-R (Receiver) in the network acts a client and receives a service by joining in the group using Group ID.

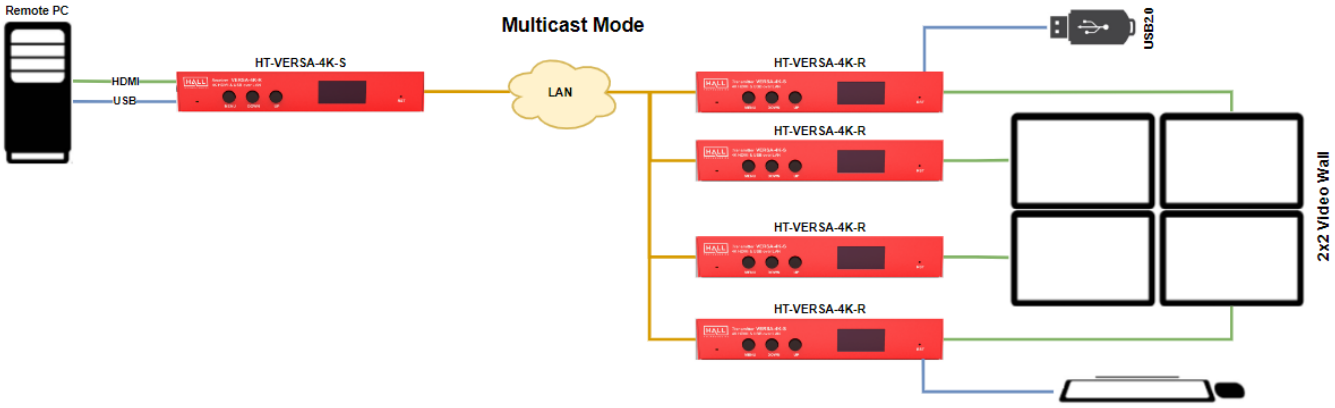
A Receiver should have the same Group ID as sender to receive a service. Among all the services only USB 2.0 is mutually exclusive, meaning only one receiver in a group can exclusively connect to the sender and exports all the USB2.0 attached to it. See USB over IP for more Details.

UNICAST VS. MULTICAST

Unicast is used in One-to-One Applications, where only one receiver is allowed in a group. Unicast offers simple and secure ways to extend Video and USB applications to only one receiver.

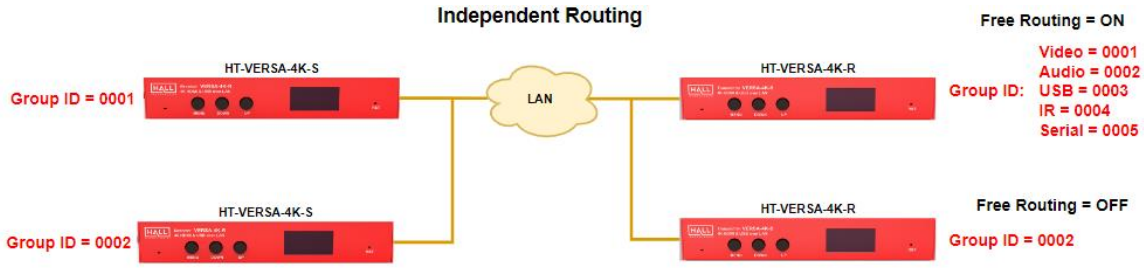
Unlike Unicast Mode, Multicast mode is used in One-to-Many Applications, where multiple receivers are allowed in a group and request services from a sender. Multicast gives true flexibility to scale the system. Also, enabling Independent Routing on the receiver allows choose and various services from multiples Sender in different groups.





INDEPENDENT ROUTING

Independent Routing is featured in the HT-VERSA-4K-R (Receiver), which allows multiplexing different services from multiple Senders. For example, a Receiver can receive video from Group 0001, audio from Group 0002 and USB from Group 0003.



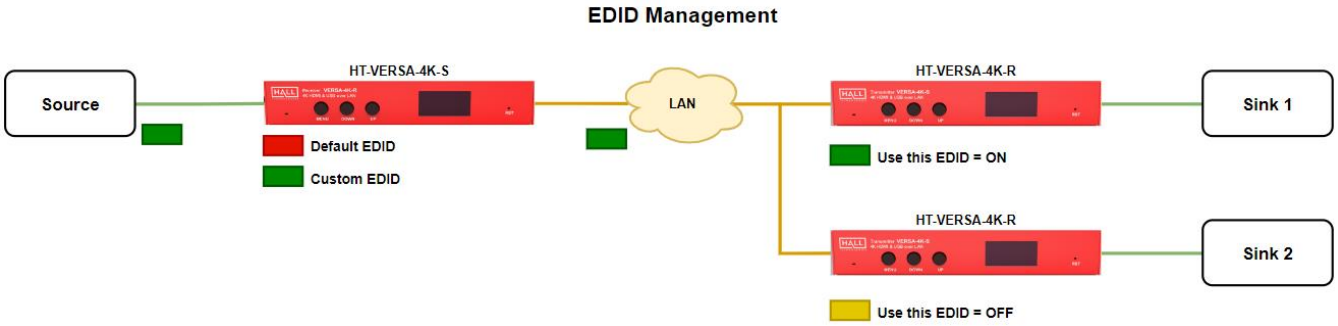
VIDEO OVER IP

HT-VERSA-4K-S uses visually lossless compression to encode 4K Video. Along with bit rate and frame rate adjustments, the Sender provides various quality modes and bit rate adjustments to minimize the network bandwidth.

EDID MANAGEMENT

HT-VERSA-4K Sender can save up to two EDIDs. One of them is default EDID, which cannot be modified and the other one is a custom EIDD, which can be updated from the receiver. The sender always serves a default EDID to the source in the absence of a custom EDID.

In multicast mode, a receiver in the group can send an EDID Update Request to replace the custom EDID with its attached Sink EDID. A receiver automatically sends an Update Request when a display is detected if "Use this EDID" option is enabled. When multiple receivers send an EDID update request, the last received EDID will be used. In multicast scenario it is recommended to enable "Use This EDID" option on only one receiver.



VIDEO SCALER

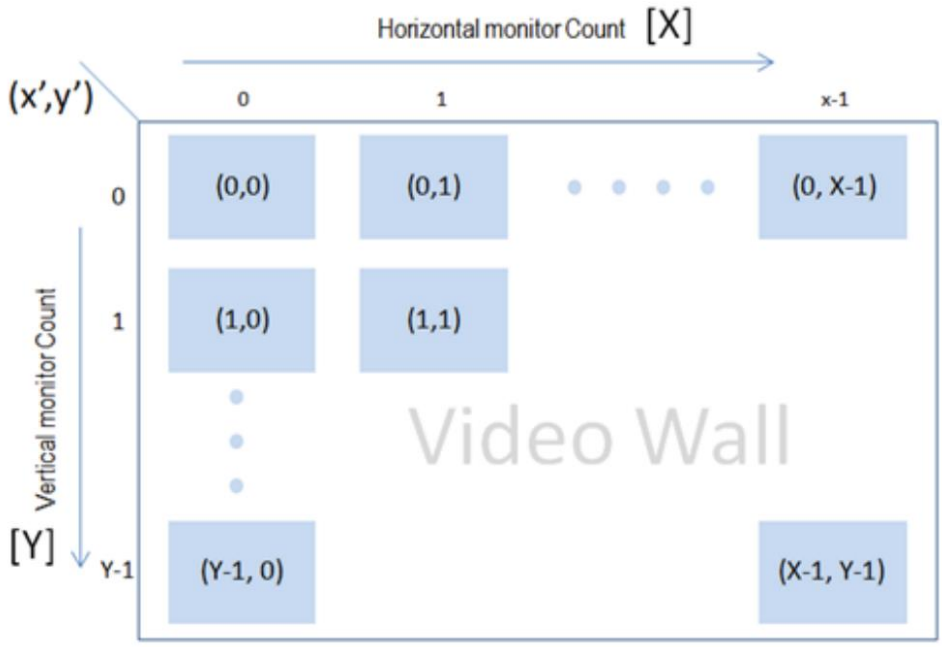
The HT-VERSA-4K-R receiver has a built-in video scaler. This video scaler supports up-scaling (low resolution to high resolution), down-scaling (high resolution to low resolution) and timing conversion (interlaced to progressive and vice-versa).

The video scaler can be set to "EDID Preferred", which will automatically scale the input video to the native resolution of the monitor as defined in its EDID. This feature provides the flexibility to use different kinds of monitors at the Receiver end regardless of brand and 4K resolution support.

VIDEO WALL

The HT-VERSA-R receiver has built-in video wall support with bezel and gap compensation, pixel-wise panning, image rotation and mirroring. The video wall layout is a rectangular array of monitors, where the position (x', y') of a monitor on the wall is identified with row and column number. The total number of rows indicates Vertical Monitor Count (Y) and the total number of columns indicates Horizontal Monitor Count (X).

For example, to build a 2x2 video wall, which has 2 rows and 2 columns, the horizontal monitor count is [X] = 2, and vertical monitor count is [Y] =2. A total of 4 receivers is required to build this wall and should be positioned at: (0,0) , (0,1) , (1,0), and (1,1). Each Receiver includes a video wall preview in its WEB UI, which helps to visualize the wall.

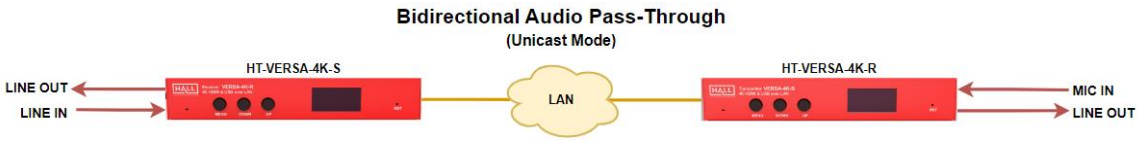


OSD

The HT-VERSA-4K-R receiver has a built-in hardware On Screen Display (OSD) controller, which supports alpha blending and transparent settings. A receiver can display an image and multi-color text at any position on the screen. Use PC GUI to upload images and display text as OSD.

AUDIO OVER IP

HT-VERSA-4K supports up to 7.1ch HDMI Audio. The sender also supports HDMI audio embedding from LINE IN, which is used for VGA sources. Bidirectional audio pass-through is only available in Unicast Mode, which makes it an ideal solution for Remote PC extension.



In Multicast Mode, the sender supports three input modes to select an audio source between HDMI audio and LINE IN audio. The selected audio source is embedded into the video and multicast to all the receivers in the group. The receiver also supports three output modes to route audio between LINE OUT and HDMI OUT.

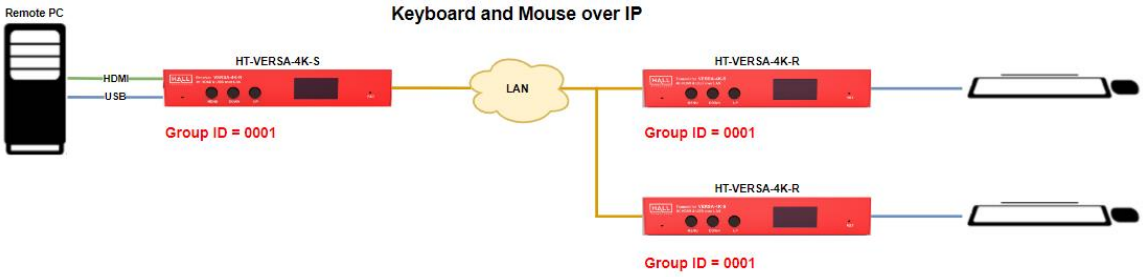
Note:

1. While using Independent Routing, the receiver must be a part of a working video group to output the audio.

2. Bidirectional Audio Pass-through is only supported in Unicast Mode and when LINE IN is selected.

KEYBOARD AND MOUSE OVER IP

A keyboard and mouse connected at the receiver end operates differently compared to other USB2.0 devices. To have instant access to the PC, both keyboard and mouse are always emulated by the sender and only key and mouse parameters are received from each receiver. As a result, no explicit connection or driver installation is needed. In multicast mode, a PC can be controlled using a mouse and keyboard from any receiver in the group. Each receiver has a dedicated keyboard and mouse ports to use this feature.



USB OVER IP

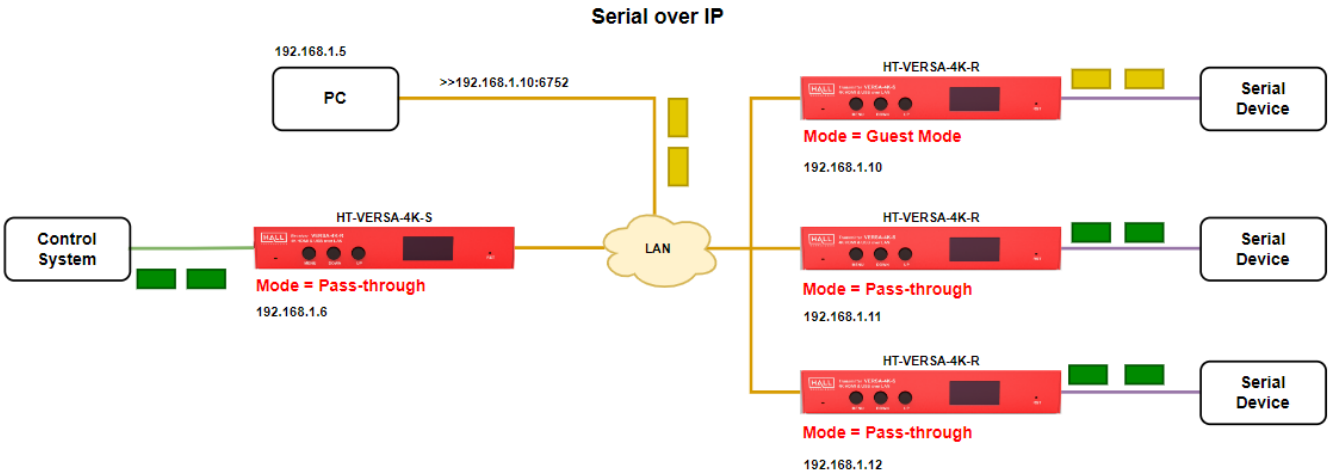
The HT-VERSA-4K-R receiver has a built-in USB2.0 HUB, which acts a USB2.0 host controller to all the USB devices connected to it locally. A Receiver needs to pair with a Sender explicitly to export its USB2.0 devices. The exported USB2.0 devices are enumerated by the sender to the Host PC

HT-VERSA-4K can serve up to four USB2.0 downstream devices over IP, meaning each receiver can only export four USB2.0 devices to the sender. Even though there are only two USB2.0 ports on the receiver, an external hub can be added to extend more USB2.0 devices. Unlike KMoIP, each receiver in a group should explicitly connect to a sender to export its USB2.0 devices. The receiver can be set up an export policy to filter USB2.0 devices based on Class or Product ID (PID) & Vendor ID (VID). Use PC-GUI to build custom USB policy and to view the Device Tree.

Note: USBoIP does not support asynchronous USB transfers such as Video Streaming devices.

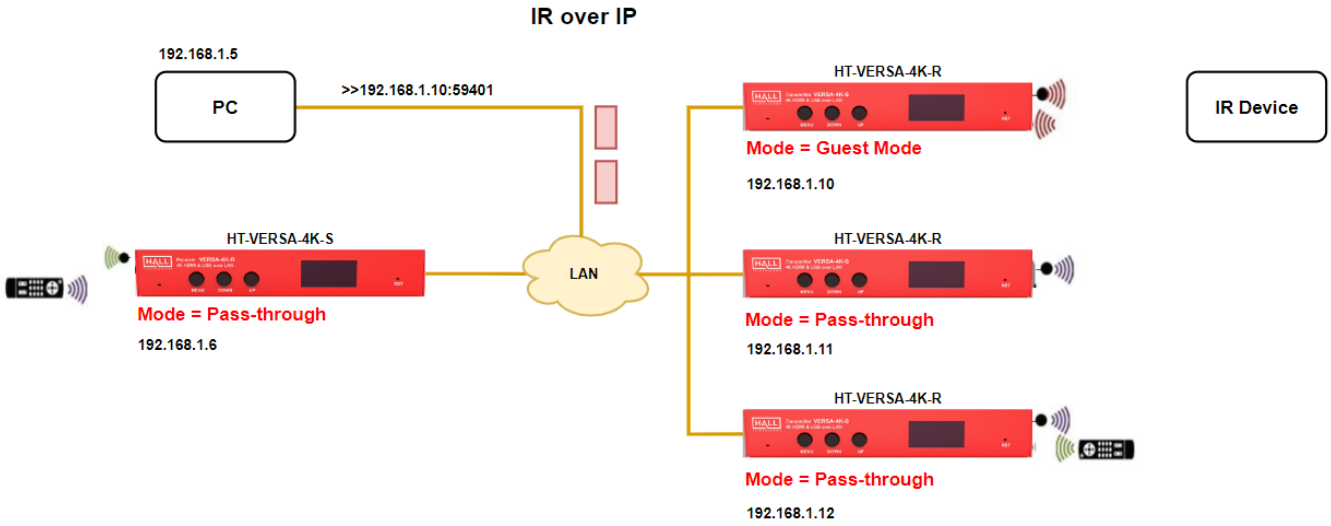
SERIAL OVER IP

Both the sender and receiver support two types of modes to control RS-232 devices. In Pass-through mode, all bytes from the senders are multicast to all receivers in the group. Likewise, all bytes from the receiver is directed to the sender in the group. The Guest Mode allows 3rd party control systems to control serial devices over IP. In Guest Mode, a control system can completely take control of the serial port and can have full duplex serial communication with attached serial devices over Telnet.



IR OVER IP

HT-VERSA-4K supports bidirectional Pass-through IR along with Guest Mode. Guest Mode allows 3rd party control systems to Send IR Commands over IP. Both Guest mode and Pass-through are enabled by default. (Guest mode telnet port: 59401)



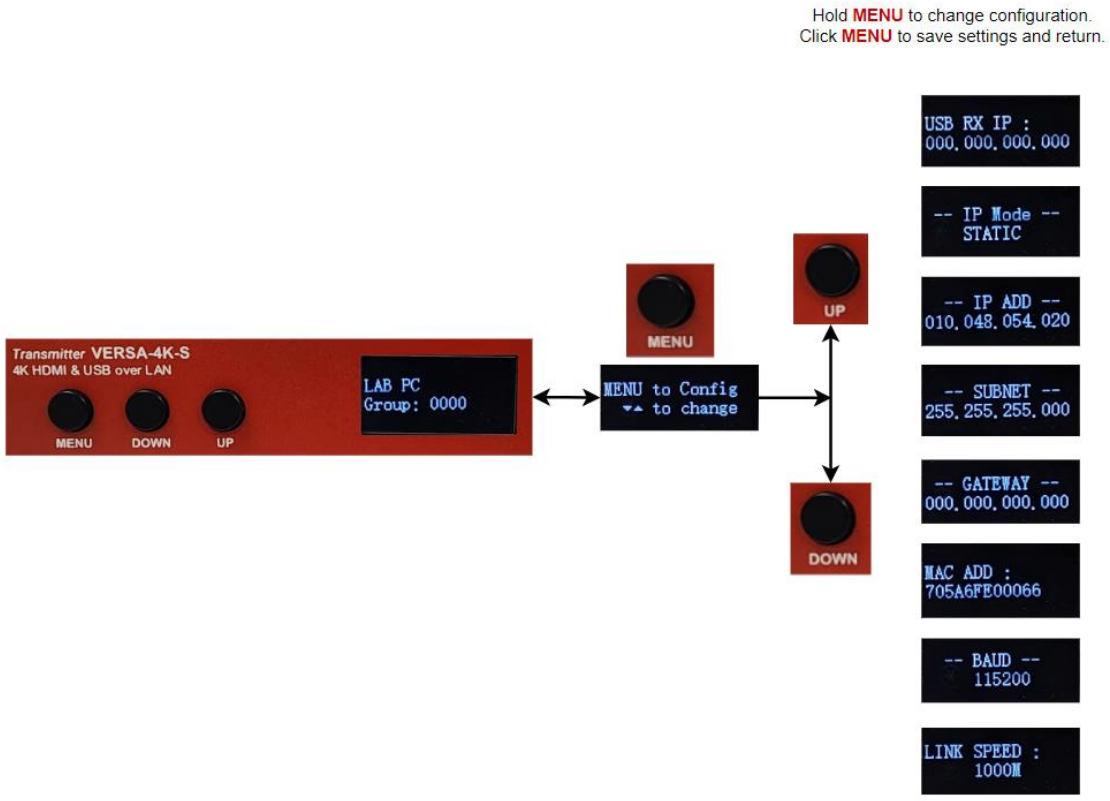
Control Interfaces

FRONT PANEL

HT-VERSA-4K features an LCD with three user buttons: MENU, UP and DOWN on the front panel, which allows the user to quickly change the Group ID and IP configuration. By default, Device Name and Group ID are shown on the Home Screen of the LCD. The UP and DOWN arrow keys can be used change the Group ID.

Changing configuration from front panel is a five-step process:

1. Press **MENU** button on Home Screen
2. Use **UP** and **DOWN** arrow keys to navigate to a configuration.
3. Hold the **MENU** button until the configuration starts blinking.
4. Use **UP** and **DOWN** keys to see the available Options/Settings.
5. 5. Press **MENU** again to apply the new configuration.



Configuration Name	Options
IP Mode	Mode of the IP {AUTO | DHCP | STATIC}
IP ADD	IP Address
SUBNET	Subnet Mask

GATEWAY	Gateway
BAUD	RS-232 Baud Rate {115200 | 38400 | 19200 | 9600 | 4800 | 2400 | 1200 | 600 | 300}
USB RX IP (Sender Only)	Shows the IP address of the Receiver to which USB 2.0 devices are connected.
USB TX IP (Receiver Only)	Shows the IP address of the Sender to which USB 2.0 devices are exported.
MAC ADD	Mac Address of the Device
LINK SPEED	Ethernet Link Speed {1000M | 100M | 10M | No Link!}

IR Detector cable for receiving IR signals. Connected to "IR-IN" port of VERSA.	
IR Emitter cable for Passthrough and for Guest Mode. Connected to "IR-OUT" port of VERSA.	

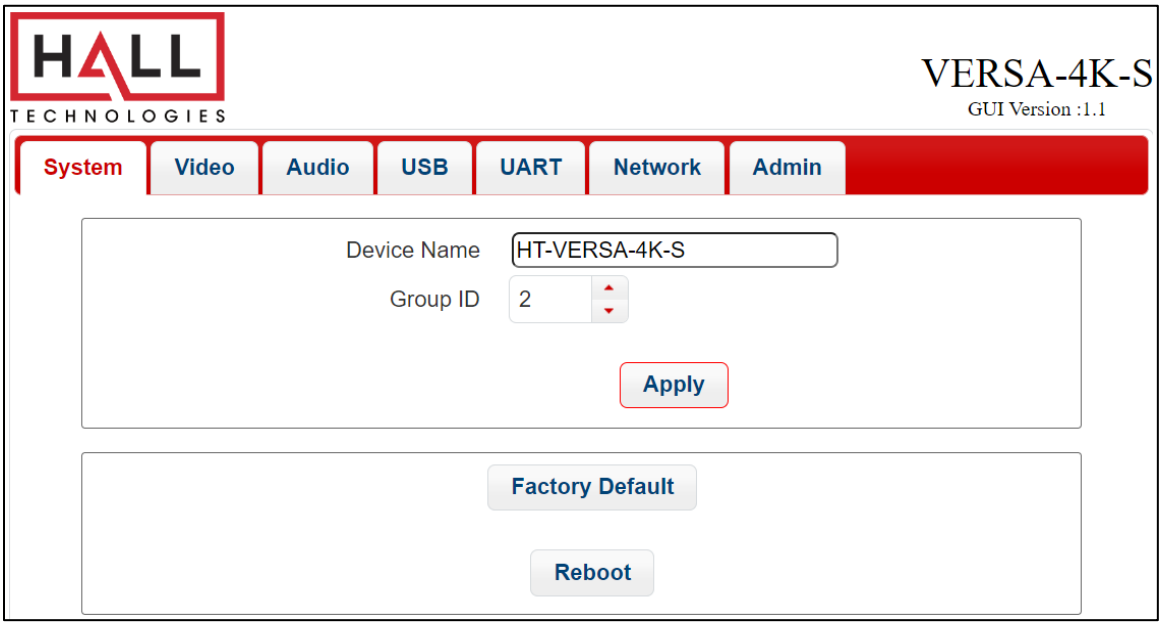
WEB GUI

Both Sender and Receiver host a WEB Application with intuitive Graphical User Interface (GUI), which can be accessed using any standard WEB browser. The WEB GUI can be used to change various systems setting such as Device Name, Group ID, USB Control, Audio Control, Video Wall, Independent Routing and Firmware Update over HTTP etc. This Web UI can be accessed through a modern browser, e.g. Chrome, Safari, Firefox, IE10+, etc.

To get access to the Web UI:

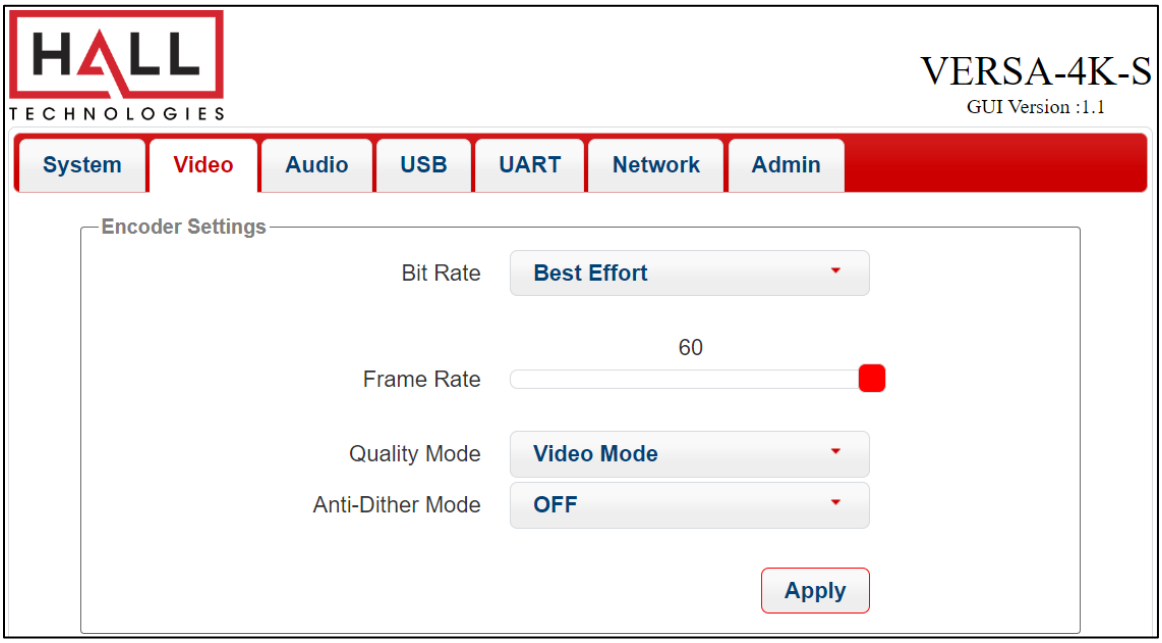
1. Connect the LAN port of the device to a local area network. Verify the device's IP Address using the front LCD panel.
2. Connect the PC to the same network as the device.
3. Input the device's IP address in the browser and press Enter.

HT-VERSA-4K-S: SYSTEM TAB



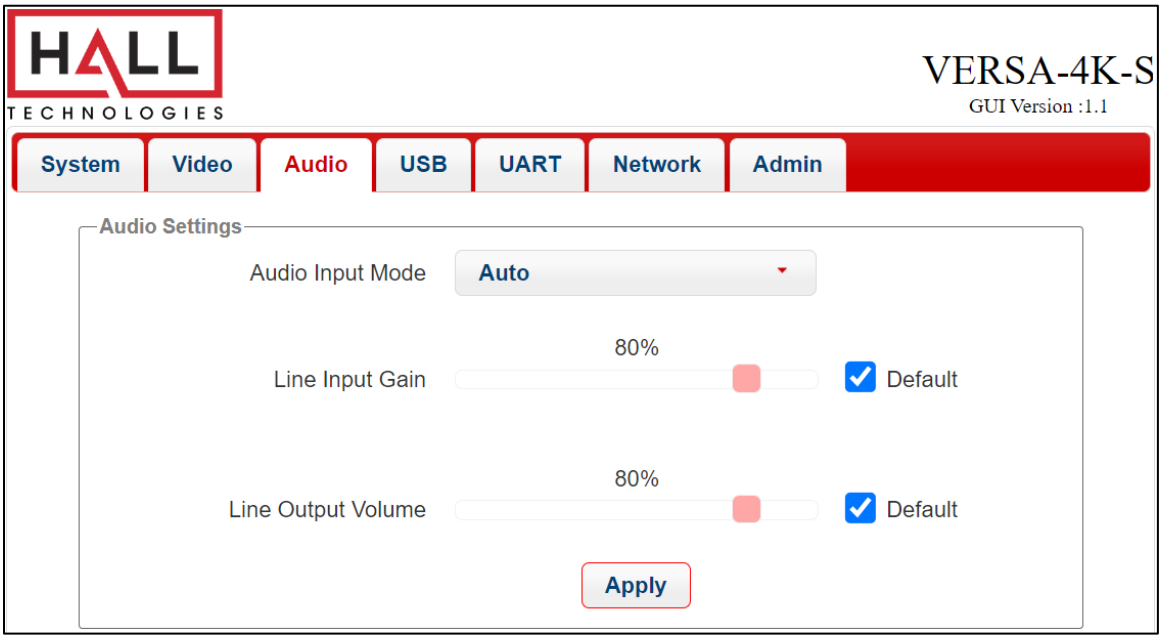
UI Element	Description
Device Name	A name can be assigned which can be used to identify its location or purpose.
Group ID	Sets the Group ID which acts as a streaming channel. This ID can be any number up to 4 digits (0 ~ 9999) but must be unique – no other sender in the system should have the same Group ID. A receiver can receive a service from a sender by having the same Group ID. **Note:** Group ID 4 and 0004 are the same.
Factory Default	Returns the device to the factory default settings.
Reboot	Reboots the device.

HT-VERSA-4K-S: VIDEO TAB



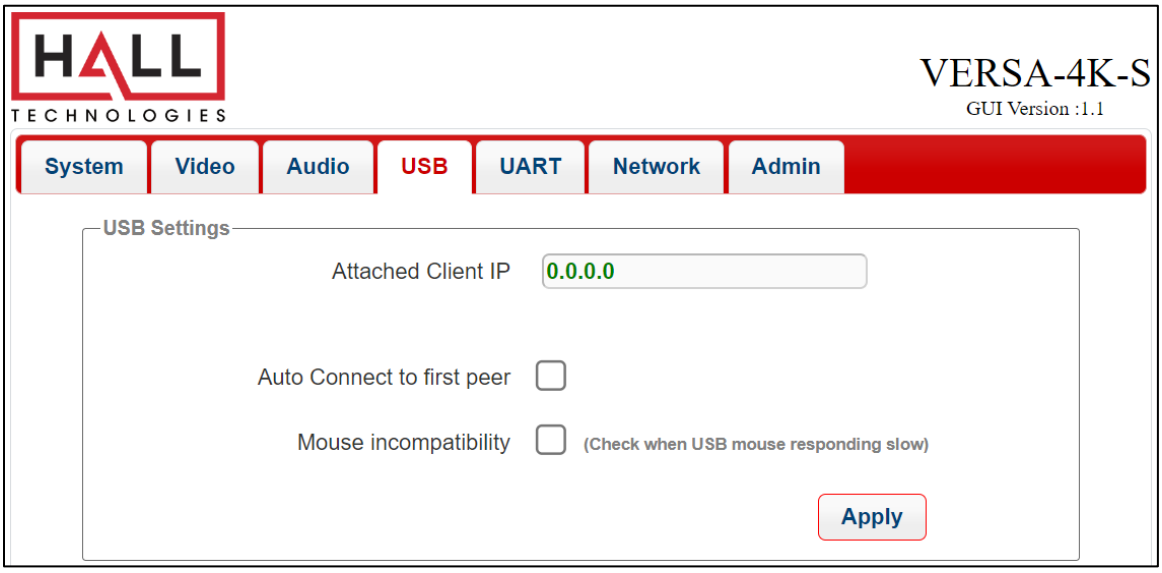
UI Element	Description
Bit Rate	Select the desired bit rate (bandwidth) of the group streams (Best Effort, 200Mbps, 150Mbps, 100Mbps, 50Mbps, or 10Mbps).
Frame Rate	Set the desired video frame rate. This can be used to minimize the bandwidth by reducing the number of frames that need to be encoded. Low frame rates can be used for static images.
Quality Mode	• **Video Mode:** this mode gives more priority to Frame Rate over the video quality. • **Graphic Mode:** this mode gives more priority to Video Quality over Frame Rate. • **1 to 5:** in this mode some of the frames might be dropped and is typically used for Static images.
Anti-Dither Mode	Anti-Dither mode removes the noise in the source video by averaging them with surrounding pixel data. Don't enable this if the source video is clean.

HT-VERSA-4K-S: AUDIO TAB



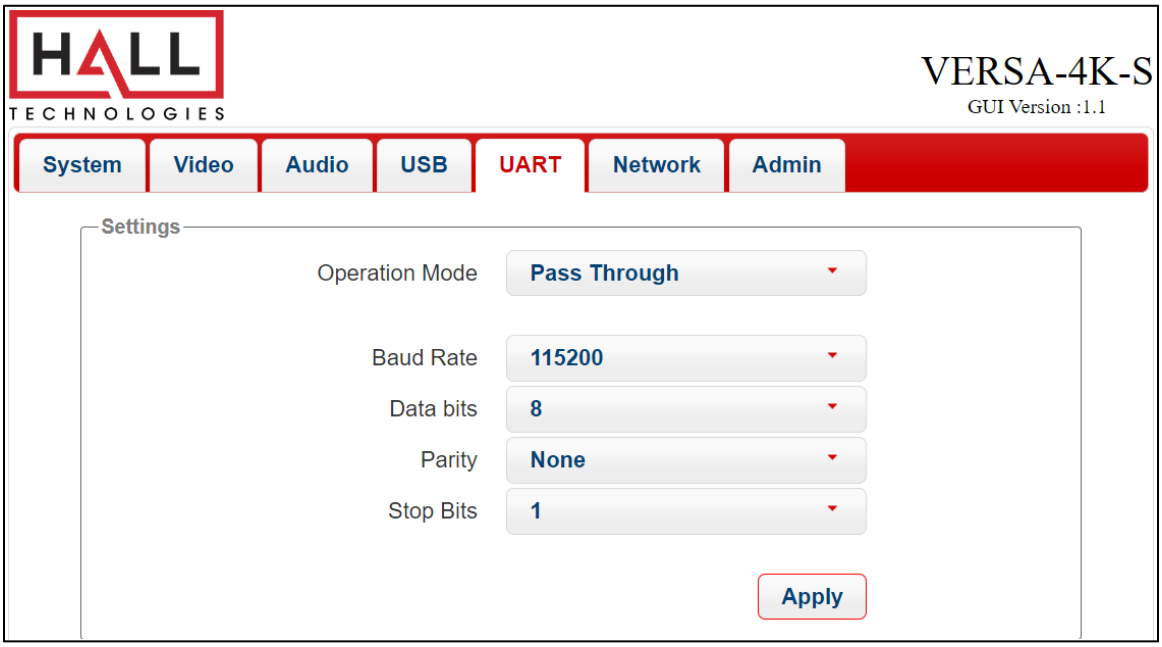
UI Element	Description
Audio Input Mode	• **Auto:** Auto selects LINE IN when Video Input is DVI or when LINE IN hot plug is detected. • **Auto 1:** Auto selects LINE IN when LINE IN hot plug is detected irrespective of the Video Input. • **Auto 2:** Always uses HDMI audio when Video Input is not DVI. Also, auto selects LINE IN when Video Input is DVI. • **HDMI:** Always uses HDMI audio. • **Analog:** Always uses LINE IN audio.
Line Input Gain	Sets the gain of the LINE IN.
Line Output Volume	Sets the gain of the LINE OUT.

HT-VERSA-4K-S: USB TAB



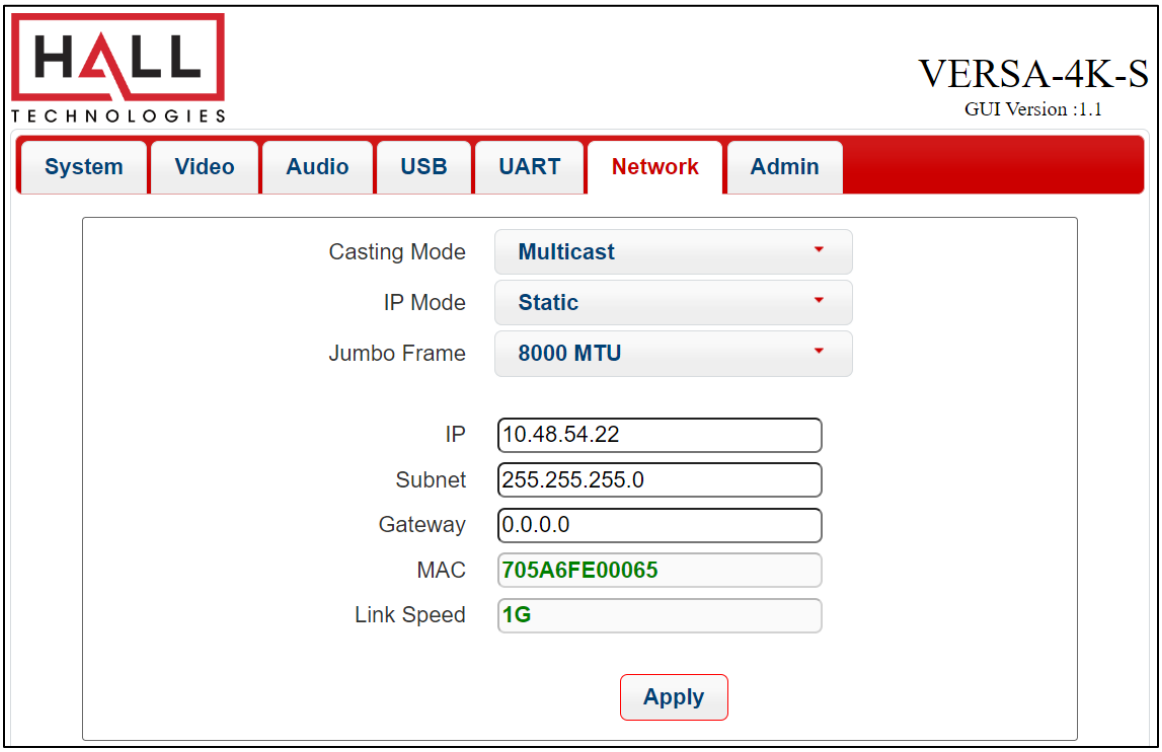
UI Element	Description
Attached Client IP	IP address of connected Receiver from which all USB2.0 devices are being exported.
Auto Connect to First Peer	USB2.0 will be automatically connected to the first Receiver seen in the group. (Typically used when there is only one receiver in the group.)
Mouse Incompatibility	Enable when the mouse is responding slow.

HT-VERSA-4K-S: UART TAB



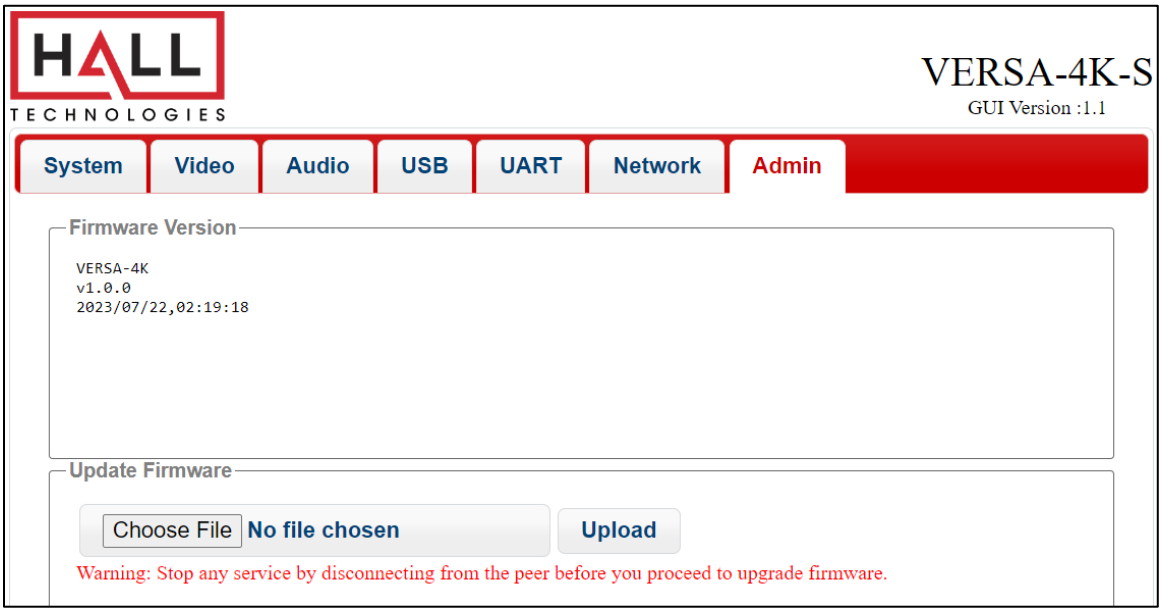
UI Element	Description
Operation Mode	• **Pass Through:** in this mode RS-232 control from a control system connected to the VERSA-4K-S is passed through the network to the VERSA-4K-R's RS-232 output. • **Guest Mode:** in this mode a PC on the network can send commands to a serial device connected to the RS-232 output of a VERSA-4K-R. Telnet port: 6752.
Baud Rate	Sets the baud rate for communication with a serial device. Supported baud rates include: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200.
Data Bits	Sets the data bits of the RS-232 command. Options include 5, 6, 7, or 8.
Parity	Sets the parity of the RS-232 command. Options include None, Odd, or Even.
Stop Bits	Sets the stop bits of the RS-232 command. Options include 1 or 2.

HT-VERSA-4K-S: NETWORK TAB



UI Element	Description
Casting Mode	• **Multicast Mode:** multicast is used in one-to-many applications where multiple receivers are allowed in a group and request services from a sender. • **Unicast Mode:** unicast is used in one-to-one applications where only one receiver is allowed in a group.
IP Mode	• **Auto:** the device selects a unique IP address in the absence of a DHCP server. This address is in the range of 169.254.x.y where x and y can range from 0 to 255. • **Static:** manually enter an IP address, Subnet, and Gateway. • **DHCP:** the device receives its IP address from a DHCP server.
Jumbo Frame	Jumbo frames reduce the number of packets sent over the network when sending large amounts of data. By default, each network packet can carry 1500 bytes of data. Changing the MTU (maximum transmission unit) from 1500 to 8000 increases the payload to 8000 bytes. **Note:** both sender and receiver need to have the same setting.
IP	Enter the desired IP address (in static mode).
Subnet	Enter the desired Subnet (in static mode).
Gateway	Enter the desired Gateway (in static mode).
MAC	Displays the MAC address of the device.
Link Speed	Displays the link speed of the device.

HT-VERSA-4K-S: ADMIN TAB



UI Element	Description
Firmware Version	Displays information about the firmware loaded to the device.
Update Firmware	Click to choose a file to upload to the device for updating the firmware.

HT-VERSA-4K-R: SYSTEM TAB

UI Element	Description
Device Name	A name can be assigned which can be used to identify its location or purpose.
Group ID	Sets the Group ID. This ID can be any number up to 4 digits (0~9999) but must be unique – no other sender in the system should have the same Group ID. A receiver can receive a service from a sender by having the same Group ID. **Note:** Group ID 4 and 0004 are the same.
Independent Routing	Allows multiplexing different services from multiple Senders. For example, a receiver can receive video from Group 1, audio from Group 2, and USB from Group 3.
Factory Default	Returns the device to the factory default settings.
Reboot	Reboots the device.

HT-VERSA-4K-R: VIDEO TAB – SCALER & ORIENTATION

UI Element	Description
Output Timing	• **Pass Through:** the output is the same resolution as the input. • **Custom Timing:** select a custom resolution. • **EDID Preferred:** automatically scales the video to the preferred EDID timing of the sink
Orientation	• **Default:** standard display orientation. • **Flip Vertical/Horizontal (Mirror):** the image is mirrored either vertically or horizontally. • **Rotate Clockwise (90/180/270):** the image is rotated clockwise by the degree selected. • **Rotate 90 + Flip Vertical:** rotates 90 degrees plus flips it vertically.
Stretch	• **Fill:** the image is stretched to fill the selected resolution. • **Fit In:** the image is minimized to fit in the selected resolution.

HT-VERSA-4K-R: VIDEO TAB – VIDEO WALL: TILE

UI Element	Description
Wall Type: Tile	Create a tiled video wall using a different receiver for each tiled display. • **Wall Size:** size is an (x,y) matrix with x being the total number of columns and y being the total number of rows, where x=1~16, and y=1~16. (16x16 max) • **Position:** select the position of the receiver in the created tiled matrix, (x',y'), where x'=0~15, and y'=0~15.
Bezel & Gap Compensation	In tile mode the displays bezel and gap between displays can be compensated so that the video transition between displays is seamless.

HT-VERSA-4K-R: VIDEO TAB – VIDEO WALL: ARTISTIC/MOSAIC

UI Element	Description
Artistic/Mosaic	Customize a layout for a more artistic approach.

HT-VERSA-4K-R: AUDIO TAB

UI Element	Description
Audio Output Mode	• **Dual Output:** audio is sent to both HDMI OUT and LINE OUT • **HDMI Only:** audio is only sent to HDMI OUT • **Line Out Only:** audio is only sent to LINE OUT
Mic Input Gain	Sets the gain of the MIC IN. **Note:** this audio only works in Unicast Mode between one sender and one receiver (bidirectional audio pass-through). LINE IN on the sender needs to be selected as well.
Line Output Volume	Sets the gain of the LINE OUT.

HT-VERSA-4K-R: USB TAB

UI Element	Description
USB 2.0	Click to pair the connected USB peripheral devices to the sender.
Host IP	When paired the IP address of the connected sender will appear.

HT-VERSA-4K-R: UART TAB

UI Element	Description
Operation Mode	• **Pass Through:** in this mode RS-232 control from a control system connected to the VERSA-4K-S is passed through the network to the VERSA-4K-R's RS-232 output. • **Guest Mode:** in this mode a PC on the network can send commands to a serial device connected to the RS-232 output of a VERSA-4K-R. Telnet port: 6752.
Baud Rate	Sets the baud rate for communication with a serial device. Supported baud rates include: 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200.
Data Bits	Sets the data bits of the RS-232 command. Options include 5, 6, 7, or 8.
Parity	Sets the parity of the RS-232 command. Options include None, Odd, or Even.
Stop Bits	Sets the stop bits of the RS-232 command. Options include 1 or 2.

HT-VERSA-4K-R: NETWORK TAB

UI Element	Description
Casting Mode	• **Multicast Mode:** multicast is used in one-to-many applications where multiple receivers are allowed in a group and request services from a sender. • **Unicast Mode:** unicast is used in one-to-one applications where only one receiver is allowed in a group. •
IP Mode	• **Auto:** the device selects a unique IP address in the absence of a DHCP server. This address is in the range of 169.254.x.y where x and y can range from 0 to 255. • **Static:** manually enter an IP address, Subnet, and Gateway. • **DHCP:** the device receives its IP address from a DHCP server.
Jumbo Frame	Jumbo frames reduce the number of packets sent over the network when sending large amounts of data. By default each network packet can carry 1500 bytes of data. Changing the MTU (maximum transmission unit) from 1500 to 8000 increases the payload to 8000 bytes. **Note:** both sender and receiver need to have the same setting.
IP	Enter the desired IP address (in static mode).
Subnet	Enter the desired subnet (in static mode).
Gateway	Enter the desired gateway (in static mode).
MAC	Displays the MAC address of the device.
Link Speed	Displays the link speed of the device.

HT-VERSA-4K-R: ADMIN TAB

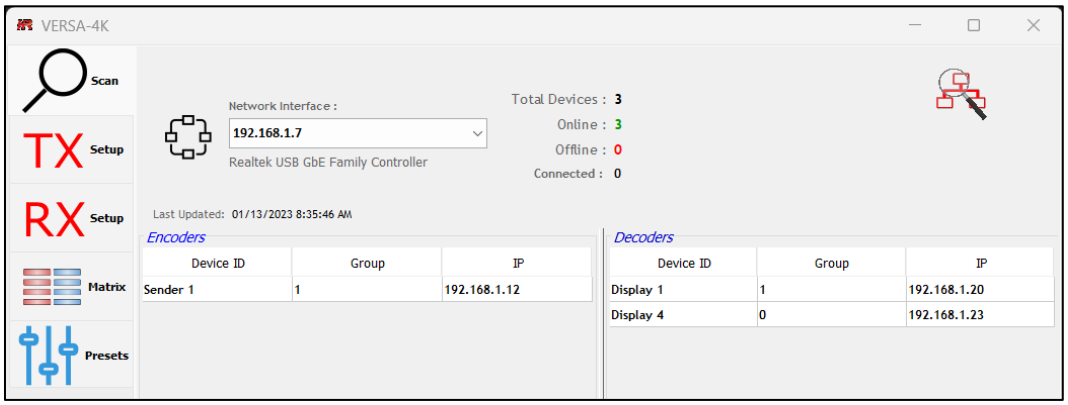
UI Element	Description
Firmware Version	Displays information about the firmware loaded to the device.
Update Firmware	Click to choose a file to upload to the device for updating the firmware.

PC UI

The PC UI is a software application that provides all control shown in the Web UI plus the following additional features. To run this software the JAVA Runtime Environment must be installed.

SCAN

In this tab users can select the correct Network Interface to scan all available encoders (senders) and decoders (receivers).

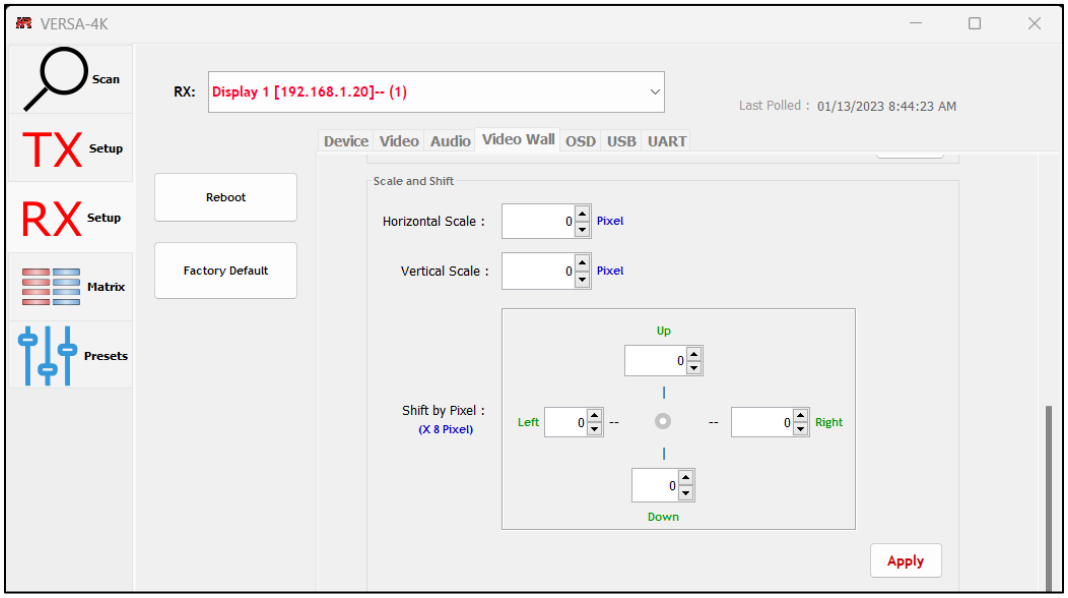


VIDEO – FRAME GRABBER

This feature, for both the sender and receiver, utilizes a frame grabber to see the video of the connected source.

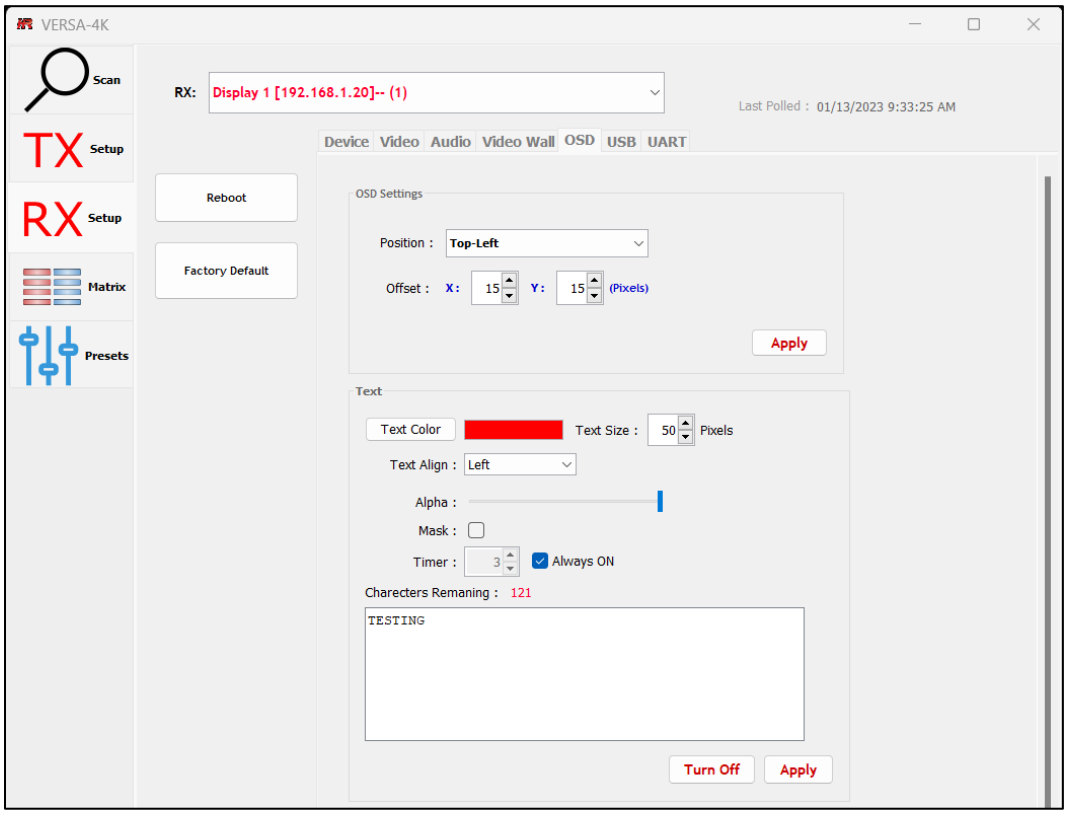
VIDEO WALL – SCALE AND SHIFT (HT-VERSA-4K-R)

This additional feature allows for fine tuning the scaling and shifting of the image on the display.



OSD – SETTINGS & TEXT (HT-VERSA-4K-R)

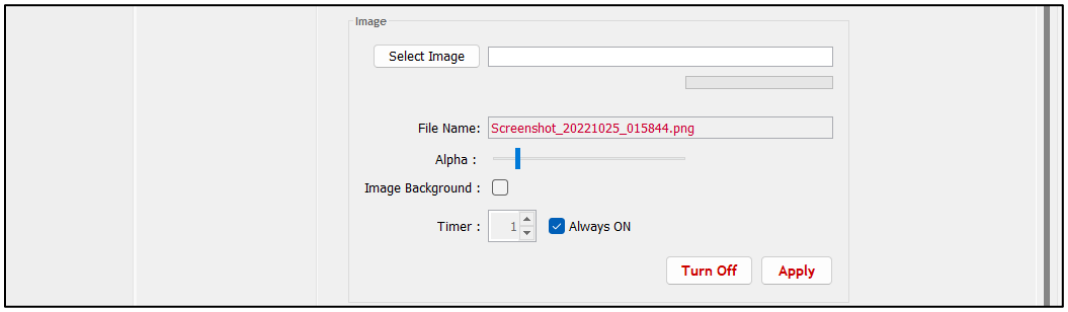
The PC UI software adds an OSD (On Screen Display) feature to add text over the video.



UI Element	Description
OSD Settings	• **Position:** select the desired position of the text or image overlay. • **Offset:** fine tune the position of the text or image overlay.
Text	• **Text Color:** select the color of the text, using swatches, HSV, HSL, RGB or CMYK. • **Text Size:** select the size of the text. • **Text Align:** select the alignment of the text (left or center). • **Alpha:** select the transparency of the text. • **Mask:** select this button to add a background mask to the text. • **Timer:** select a time for the text to disappear or check the box to keep it on. • **Text Box:** enter the desired text (128 max characters)
Turn Off	Turns off text.

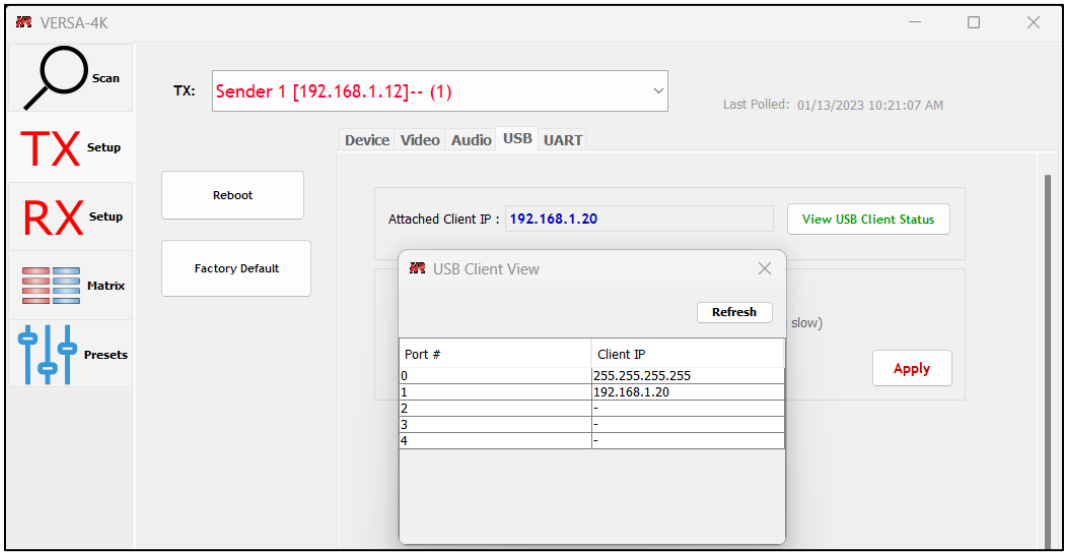
OSD – IMAGE (HT-VERSA-4K-R)

Rather than display text on the OSD, a 640x480 image can be uploaded and displayed over the video. Select the image (.jpg or .png) and apply the desired settings for the image.



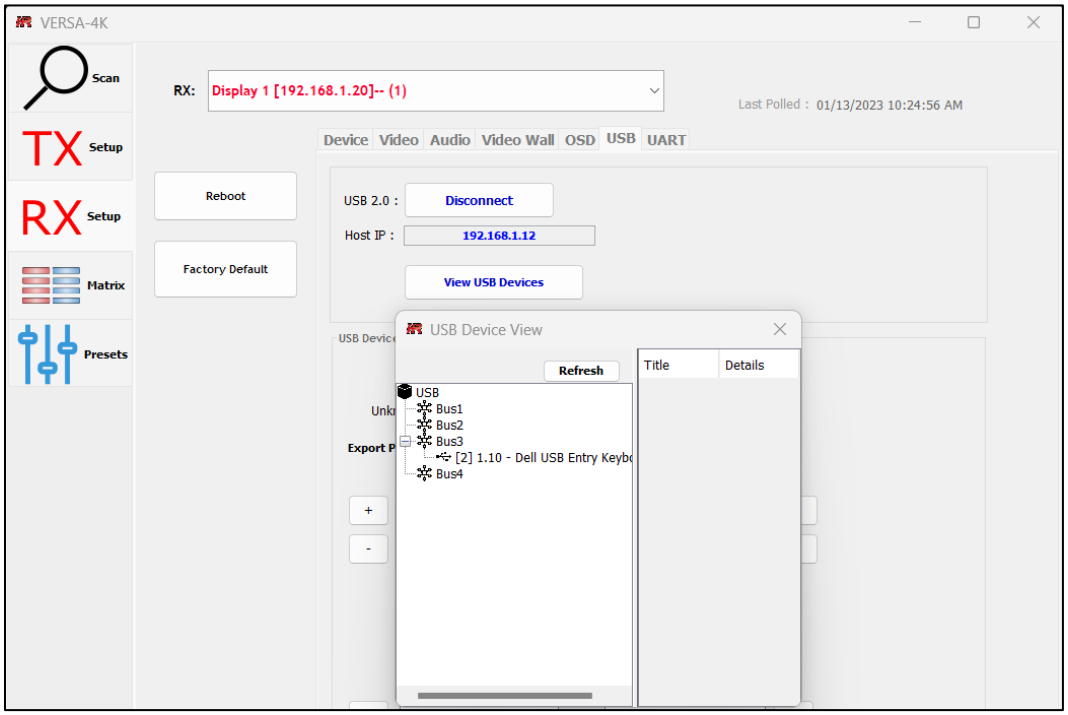
USB – (HT-VERSA-4K-S)

Click on the “View USB Client Status” button to have a pop-up show what is connected to the paired receiver.



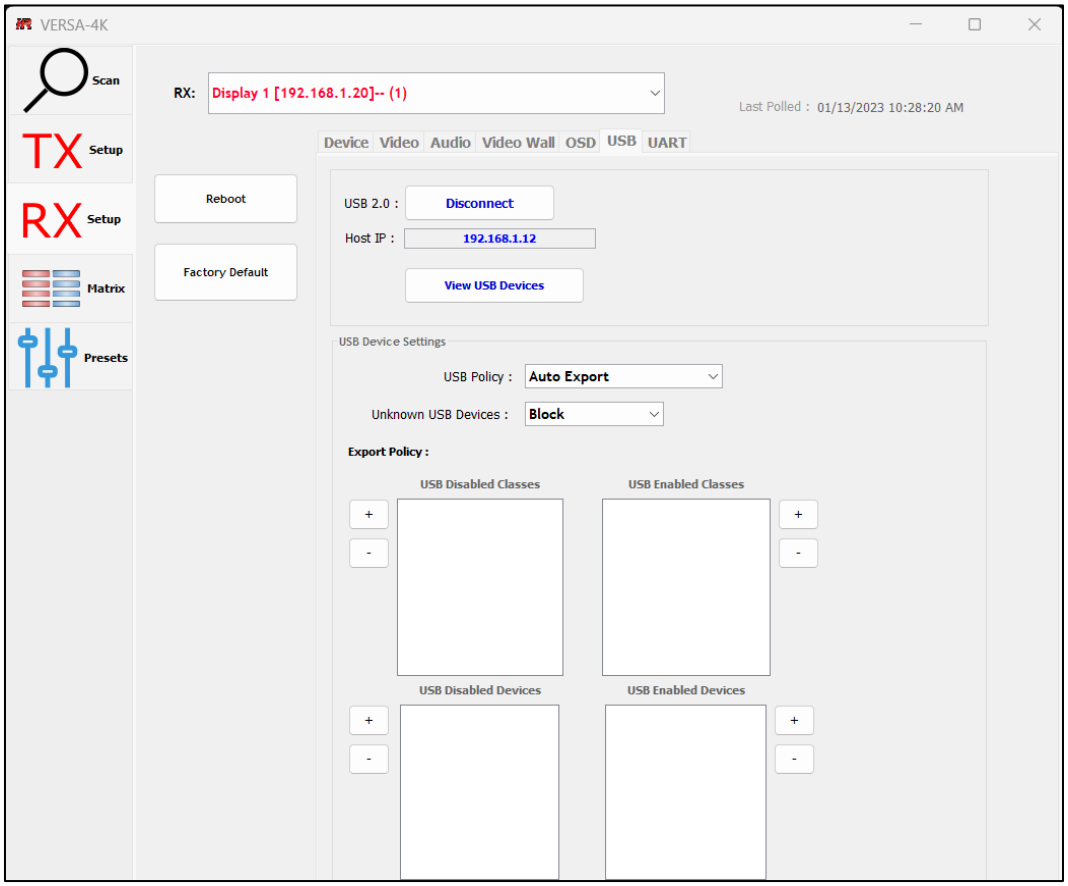
USB – (VERSA-4K-R)

Click on the “View USB Devices” button to have a pop-up show the devices connected to the receiver.



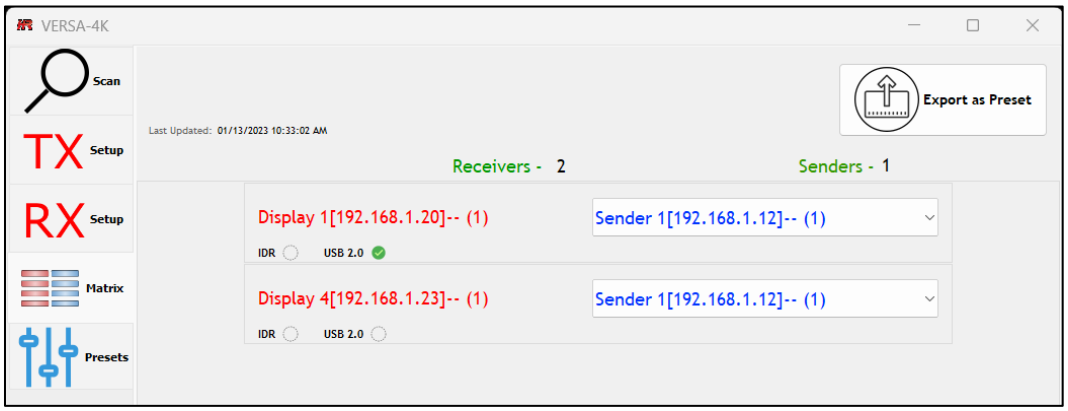
USB – POLICY FILTER (HT-VERSA-4K-R)

The receiver can setup an export policy to filter USB2.0 devices based on Class or Product ID (PID) & Vendor ID (VID).



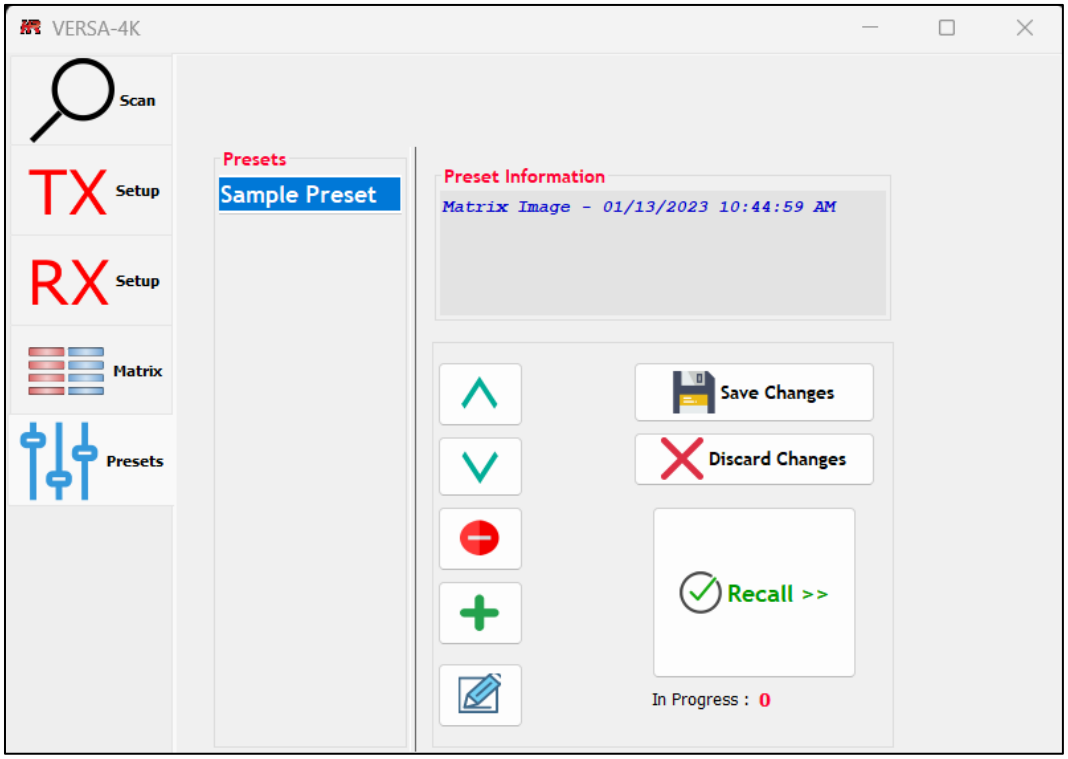
MATRIX

The Matrix tab provides a list of all devices and the group the receivers are subscribed to. In this screenshot, Sender 1 is on Group 1, designated by the (1), and Display 1 and Display 4 are both showing video from Sender 1. The settings can then be exported as a preset.



PRESETS

Presets can with different desired routings can be created, deleted, and recalled in this tab.



Default Configuration

Settings	Name	Value
Network	Casting Mode	Multicast
	IP Mode	Auto IP
	Jumbo Frame	8000 MTU
	IP	169.254.xxx.xxx
	Subnet	255.255.0.0
	Gateway	169.254.0.254
System	Device Name	VERSA
	Group ID	0000
	Independent Routing	Disabled
Encoder Settings (VERSA-4K-S Only)	Bit Rate	Best Effort
	Frame Rate	100%
	Quality Mode	Video Mode
	Anti-Dither Mode	OFF
Scaler Settings (VERSA-4K-R Only)	Output Timing	Pass-through
Video Wall Settings (VERSA-4K-R Only)	Wall Size	[1x1]
	Position	(0,0)
	Orientation	Default
	Stretch	Fit In
Audio Settings (VERSA-4K-S Only)	Input Mode	Auto
	Line Input Volume	Default
	Line Out Volume	Default
Audio Settings (VERSA-4K-R Only)	Output Mode	Dual Output
	MIC Input Volume	Default
	Line Output Volume	Default
USB Settings (VERSA-4K-S Only)	Operation Mode	Auto Select Mode
	Auto Connect to first peer	Disabled
	USB Compatibility Issue	Disabled
USB Settings (VERSA-4K-R Only)	USB 2.0	Disconnected
	USB Policy	Auto Export
RS-232 Settings	Operation Mode	Pass Through
	Baud rate	115200
	Data bits, Parity, Stop Bits	8,None, 1

HDMI Video Resolution Support List

VIC TIMINGS

DVIC	Short Name	Aspect Ratio	Resolution	VIC	Short Name	Aspect Ratio	Resolution
1	DMT0659	4:3	640x480p @ 59.94/60 Hz	35	480p4x	4:3	(2880)x480p @ 59.94/60 Hz
2	480p	4:3	720x480p @ 59.94/60 Hz	36	480p4xH	16:9	(2880)x480p @ 59.94/60 Hz
3	480pH	16:9	720x480p @ 59.94/60 Hz	37	576p4x	4:3	(2880)x576p @ 50 Hz
4	720p	16:9	1280x720p @ 59.94/60 Hz	38	576p4xH	16:9	(2880)x576p @ 50 Hz
5	1080i	16:9	1920x1080i @ 59.94/60 Hz	39	1080i25	16:9	1920x1080i @ 50 Hz* (1250 tot)
6	480i	4:3	720(1440)x480i @ 59.94/60 Hz	40	1080i50	16:9	1920x1080i @ 100 Hz
7	480iH	16:9	720(1440)x480i @ 59.94/60 Hz	41	720p100	16:9	1280x720p @ 100 Hz
8	240p	4:3	720(1440)x240p @ 59.94/60 Hz	42	576p100	4:3	720x576p @ 100 Hz
9	240pH	16:9	720(1440)x240p @ 59.94/60 Hz	43	576p100H	16:9	720x576p @ 100 Hz
10	480i4x	4:3	(2880)x480i @ 59.94/60 Hz	44	576i50	4:3	720(1440)x576i @ 100 Hz
11	480i4xH	16:9	(2880)x480i @ 59.94/60 Hz	45	576i50H	16:9	720(1440)x576i @ 100 Hz
12	240p4x	4:3	(2880)x240p @ 59.94/60 Hz	46	1080i60	16:9	1920x1080i @ 119.88/120 Hz
13	240p4xH	16:9	(2880)x240p @ 59.94/60 Hz	47	720p120	16:9	1280x720p @ 119.88/120 Hz
14	480p2x	4:3	1440x480p @ 59.94/60 Hz	48	480p119	4:3	720x480p @ 119.88/120 Hz
15	480p2xH	16:9	1440x480p @ 59.94/60 Hz	49	480p119H	16:9	720x480p @ 119.88/120 Hz
16	1080p	16:9	1920x1080p @ 59.94/60 Hz	50	480i59	4:3	720(1440)x480i @ 119.88/120Hz
17	576p	4:3	720x576p @ 50 Hz	51	480i59H	16:9	720(1440)x480i @ 119.88/120Hz
18	576pH	16:9	720x576p @ 50 Hz	52	576p200	4:3	720x576p @ 200 Hz
19	720p50	16:9	1280x720p @ 50 Hz	53	576p200H	16:9	720x576p @ 200 Hz
20	1080i25	16:9	1920x1080i @ 50 Hz	54	576i100	4:3	720(1440)x576i @ 200 Hz
21	576i	4:3	720(1440)x576i @ 50 Hz	55	576i100H	16:9	720(1440)x576i @ 200 Hz
22	576iH	16:9	720(1440)x576i @ 50 Hz	56	480p239	4:3	720x480p @ 239.76/240 Hz
23	288p	4:3	720(1440)x288p @ 50 Hz	57	480p239H	16:9	720x480p @ 239.76/240 Hz
24	288pH	16:9	720(1440)x288p @ 50 Hz	58	480i119	4:3	720(1440)x480i @ 239.76/240 Hz
25	576i4x	4:3	(2880)x576i @ 50 Hz	59	480i199H	16:9	720(1440)x480i @ 239.76/240 Hz
26	576i4xH	16:9	(2880)x576i @ 50 Hz	60	720p24	16:9	1280x720p @ 23.98/24 Hz
27	288p4x	4:3	(2880)x288p @ 50 Hz	61	720p25	16:9	1280x720p @ 25Hz
28	288p4xH	16:9	(2880)x288p @ 50 Hz	62	720p30	16:9	1280x720p @ 29.97/30 Hz
29	576p2x	4:3	1440x576p @ 50 Hz	63	1080p120	16:9	1920x1080p @ 119.88/120 Hz
30	576p2xH	16:9	1440x576p @ 50 Hz	64	1080p100	16:9	1920x1080p @ 100 Hz
31	1080p50	16:9	1920x1080p @ 50 Hz	65	720p24	64:27	1280x720p @ 23.98/24 Hz
32	1080p24	16:9	1920x1080p @ 23.98/24 Hz	66	720p25	64:27	1280x720p @ 25Hz
33	1080p25	16:9	1920x1080p @ 25 Hz	67	720p30	64:27	1280x720p @ 29.97/30 Hz
34	1080p30	16:9	1920x1080p @ 29.97/30 Hz	68	720p30	64:27	1280x720p @ 50Hz

VIC	Short Name	Aspect Ratio	Resolution	VIC	Short Name	Aspect Ratio	Resolution
69	720p	4:3	1280X720p @ 59.94/60 Hz	89	1080p50	1:1	2560x1080p @ 50 Hz
70	720p100	4:3	1280x720p @ 100 Hz	90	1080p	1:1	2560x1080p @ 59.94/60 Hz
71	720p120	4:3	1280x720p @ 119.88/120 Hz	91	1080p100	1:1	2560x1080p @ 100 Hz
72	1080p24	4:3	1920x1080p @ 23.98/24 Hz	92	1080p120	1:1	2560x1080p @ 119.88/120 Hz
73	1080p25	4:3	1920x1080p @ 25 Hz	93	2160p24	1:1	3840x2160p @ 23.98/24 Hz
74	1080p30	4:3	1920x1080p @ 29.97/30 Hz	94	2160p25	1:1	3840x2160p @ 25 Hz
75	1080p50	4:3	1920x1080p @ 50 Hz	95	2160p30	1:1	3840x2160p @ 29.97/30 Hz
76	1080p	4:3	1920x1080p @ 59.94/60 Hz	96	2160p50	1:1	3840x2160p @ 50 Hz
77	1080p100	4:3	1920x1080p @ 100 Hz	97	2160p	1:1	3840x2160p @ 59.94/60 Hz
78	1080p120	4:3	1920x1080p @ 119.88/120 Hz	98	2160p24	1:1	4096x2160p @ 23.98/24 Hz
79	720p24	64:63	1680x720p @ 23.98/24 Hz	99	2160p25	1:1	4096x2160p @ 25 Hz
80	720p25	64:63	1680x720p @ 25 Hz	100	2160p30	1:1	4096x2160p @ 29.97/30 Hz
81	720p30	64:63	1680x720p @ 29.97/30 Hz	101	2160p50	1:1	4096x2160p @ 50 Hz
82	720p50	64:63	1680x720p @ 50 Hz	102	2160p	1:1	4096x2160p @
83	720p	64:63	1680x720p @ 59.94/60 Hz	103	2160p24	4:3	3840x2160p @ 23.98/24 Hz
84	720p100	64:63	1680x720p @ 100 Hz	104	2160p25	4:3	3840x2160p @ 25 Hz
85	720p120	64:63	1680x720p @ 119.88/120 Hz	105	2160p30	4:3	3840x2160p @ 29.97/30 Hz
86	1080p24	1:1	2560x1080p @ 23.98/24 Hz	106	2160p50	4:3	3840x2160p @ 50 Hz
87	1080p25	1:1	2560x1080p @ 25 Hz	107	2160p	4:3	3840x2160p @ 59.94/60 Hz
88	1080p30	1:1	2560x1080p @ 29.97/30 Hz				

HDTV TIMINGS

S/No	HA	VA	Rate	HP	VP	Pix Clock	Scan Mode
0	640	480	60 Hz	-ve	-ve	252000	Progressive
1	720	480	60 Hz	-ve	-ve	270270	Progressive
2	720	480	60 Hz	-ve	-ve	270270(D)	Progressive
3	1280	720	60 Hz	+ve	+ve	742500	Progressive
4	1920	1080/2	60 Hz	+ve	+ve	742500	Interlaced
5	1440/2	480/2	60 Hz	-ve	-ve	270270/2	Interlaced
6	1440/2	480/2	60 Hz	-ve	-ve	270270/2(D)	Interlaced
7	1440/2	240	60 Hz	-ve	-ve	270270/2	Progressive
8	1440/2	240	60 Hz	-ve	-ve	270270/2(D1)	Progressive
9	1440/2	240	60 Hz	-ve	-ve	270270/2(D2)	Progressive
10	1440/2	240	60 Hz	-ve	-ve	270270/2(D3)	Progressive
11	1440	480	60 Hz	-ve	-ve	540450	Progressive
12	1440	480	60 Hz	-ve	-ve	540450(D)	Progressive
13	1920	1080	60 Hz	+ve	+ve	1485000	Progressive

14	720	576	50 Hz	-ve	-ve	270000	Progressive
15	720	576	50 Hz	-ve	-ve	270000(D)	Progressive
16	1080	720	50 Hz	+ve	+ve	742500	Progressive
17	1920	1080/2	50 Hz	+ve	+ve	742500	Interlaced
18	1440/2	576/2	50 Hz	-ve	-ve	270000/2	Interlaced
19	1440/2	576/2	50 Hz	-ve	-ve	270000/2(D)	Interlaced
20	1440/2	288	50 Hz	-ve	-ve	270000/2	Progressive
21	1440/2	288	50 Hz	-ve	-ve	270000/2(D)	Progressive
22	1440/2	288	50 Hz	-ve	-ve	270000/2(D1)	Progressive
23	1440/2	288	50 Hz	-ve	-ve	270000/2(D2)	Progressive
24	1440/2	288	50 Hz	-ve	-ve	270000/2(D3)	Progressive
25	1440/2	288	50 Hz	-ve	-ve	270000/2(D4)	Progressive
26	1440	576	50 Hz	-ve	+ve	540000	Progressive
27	1440	576	50 Hz	-ve	+ve	540000(D)	Progressive
28	1920	1080	50 Hz	+ve	+ve	1485000	Progressive
29	1920	1080	24 Hz	+ve	+ve	742500	Progressive
30	1920	1080	24 Hz	+ve	+ve	742500	Progressive

HDTV w/ WRONG POLARITY TIMINGS

S/No	HA	VA	Rate	HP	VP	Pix Clock	Scan Mode
31	1440/2	240	60 Hz	+ve	+ve	270270/2	Progressive
32	1440/2	480/2	60 Hz	+ve	+ve	270270/2	Interlaced
33	1440/2	576/2	50 Hz	+ve	+ve	270270/2	Interlaced
34	1440/2	288	50 Hz	+ve	+ve	270270/2	Progressive
35	720	480	60 Hz	+ve	+ve	270270	Progressive
36	720	576	50 Hz	+ve	+ve	270000	Progressive
37	1280	720	50 Hz	-ve	-ve	742500	Progressive
38	1280	720	60 Hz	-ve	-ve	742500	Progressive
39	1440	480	60 Hz	+ve	+ve	540450	Progressive
40	1440	576	50 Hz	-ve	-ve	540000	Progressive
41	1920	1080/2	50 Hz	-ve	-ve	742500	Interlaced
42	1920	1080/2	60 Hz	-ve	-ve	742500	Interlaced
43	1920	1080	24 Hz	-ve	-ve	742500	Progressive
44	1920	1080	25 Hz	-ve	-ve	742500	Progressive
45	1920	1080	30 Hz	-ve	-ve	742500	Progressive
46	1920	1080	50 Hz	-ve	-ve	1485000	Progressive
47	1920	1080	60 Hz	-ve	-ve	1485000	Progressive

CA-861-D TIMINGS

S/No	HA	VA	Rate	HP	VP	Pix Clock	Scan Mode
48	1280	720	24 Hz	+ve	+ve	594000	Progressive
49	1280	720	25 Hz	+ve	+ve	742500	Progressive
50	1280	720	30 Hz	+ve	+ve	742500	Progressive
51	720*2	240	60 Hz	-ve	-ve	310260	Interlaced
52	720*2	240	60 Hz	-ve	-ve	310260(D)	Interlaced
53	720*2	240	60 Hz	-ve	-ve	310260	Progressive
54	720*2	240	60 Hz	-ve	-ve	310260(D)	Progressive
55	720*4	240	60 Hz	-ve	-ve	620520	Interlaced
56	720*4	240	60 Hz	-ve	-ve	620520(D)	Interlaced
57	720*4	240	60 Hz	-ve	-ve	620520	Progressive
58	720*4	240	60 Hz	-ve	-ve	620520(D)	Progressive
59	720*2	288	50 Hz	-ve	-ve	270000	Interlaced
60	720*2	288	50 Hz	-ve	-ve	270000(D)	Interlaced
61	720*2	288	50 Hz	-ve	-ve	270000	Progressive
62	720*2	288	50 Hz	-ve	-ve	270000(D)	Progressive
63	720*4	288	50 Hz	-ve	-ve	540000	Interlaced
64	720*4	288	50 Hz	-ve	-ve	540000(D)	Interlaced
65	720*4	288	50 Hz	-ve	-ve	540000	Progressive
66	720*4	288	50 Hz	-ve	-ve	540000(D)	Progressive
67	720*2	576	50 Hz	-ve	-ve	540000	Progressive
68	720*2	576	50 Hz	-ve	-ve	540000(D)	Progressive
69	1920	1080	30 Hz	+ve	+ve	742500	Progressive
70	720*4	480	60 Hz	-ve	-ve	1081080	Progressive
71	720*4	480	60 Hz	-ve	-ve	1081080(D)	Progressive
72	720*4	576	50 Hz	-ve	-ve	1081080	Progressive
73	720*4	576	50 Hz	-ve	-ve	1081080(D)	Progressive
74	1920	540	50 Hz	+ve	+ve	720000	Interlaced

CEA-861-D TIMINGS

S/No	HA	VA	Rate	HP	VP	Pix Clock	Scan Mode
75	1920	540	100 Hz	+ve	+ve	1485000	Interlaced
76	1280	720	100 Hz	+ve	+ve	1485000	Progressive
77	720	576	100 Hz	-ve	-ve	540000	Progressive
78	720	576	100 Hz	-ve	-ve	540000(D)	Progressive
79	720	288	100 Hz	-ve	-ve	270000	Interlaced
80	720	288	100 Hz	-ve	-ve	270000(D)	Interlaced
81	1920	540	120 Hz	+ve	+ve	1485000	Interlaced
82	1280	720	120 Hz	+ve	+ve	1485000	Progressive

83	720	480	120 Hz	-ve	-ve	540540	Progressive
84	720	480	120 Hz	-ve	-ve	540540(D)	Progressive
85	720	240	120 Hz	-ve	-ve	270270	Interlaced
86	720	240	120 Hz	-ve	-ve	270270(D)	Interlaced
87	720	576	200 Hz	-ve	-ve	1080000	Progressive
88	720	576	200 Hz	-ve	-ve	1080000(D)	Progressive
89	720	288	200 Hz	-ve	-ve	540000	Interlaced
90	720	288	200 Hz	-ve	-ve	540000(D)	Interlaced
91	720	480	240 Hz	-ve	-ve	1081080	Progressive
92	720	480	240 Hz	-ve	-ve	1081080(D)	Progressive
93	720	240	240 Hz	-ve	-ve	540540	Interlaced
94	720	240	240 Hz	-ve	-ve	540540(D)	Interlaced

FRAME PACKING 3D TIMINGS

S/No	HA	VA	Rate	HP	VP	Pix Clock	Scan Mode
95	1280	1470	60 Hz	+ve	+ve	1485000	Progressive
96	1280	1470	50 Hz	+ve	+ve	1485000	Progressive
97	1280	1470	24 Hz	-ve	-ve	594000	Progressive
98	1280	1470	30 Hz	-ve	-ve	1485000	Progressive
99	1920	2205	24 Hz	+ve	+ve	1485000	Progressive
100	1920	2205	30 Hz	+ve	+ve	1485000	Progressive
101	1920	2205	50 Hz	+ve	+ve	2970000	Progressive
102	1920	2205	60 Hz	+ve	+ve	2970000	Progressive

4K (2160P) TIMINGS

S/No	HA	VA	Rate	HP	VP	Pix Clock	Scan Mode
103	3840	2160	24 Hz	+ve	+ve	2970000	Progressive
104	3840/2	2160	50 Hz	+ve	+ve	2970000	Progressive
105	3840	2160	25 Hz	+ve	+ve	2970000	Progressive
106	3840/2	2160	60 Hz	+ve	+ve	2970000	Progressive
107	3840	2160	30 Hz	+ve	+ve	2970000	Progressive

4K SMPTE TIMINGS

S/No	HA	VA	Rate	HP	VP	Pix Clock	Scan Mode
108	4096	2160	24 Hz	+ve	+ve	2970000	Progressive
109	4096/2	2160	50 Hz	+ve	+ve	2970000	Progressive
110	4096	2160	25 Hz	+ve	+ve	2970000	Progressive
111	4096/2	2160	60 Hz	+ve	+ve	2970000	Progressive

112	4096	2160	30 Hz	+ve	+ve	2970000	Progressive
113	2560	1080	24 Hz	+ve	+ve	990000	Progressive
114	2560	1080	25 Hz	+ve	+ve	990000	Progressive
115	2560	1080	30 Hz	+ve	+ve	1188000	Progressive
116	2560	1080	50 Hz	+ve	+ve	1856250	Progressive
117	2560	1080	60 Hz	+ve	+ve	1980000	Progressive

VESA DIGITAL TIMINGS

S/No	HA	VA	Rate	HP	VP	Pix Clock	Scan Mode
16384	640	350	85 Hz	+ve	-ve	315000	Progressive
16385	640	400	85 Hz	-ve	+ve	315000	Progressive
16386	720	400	85 Hz	-ve	+ve	315000	Progressive
16387	640	480	60 Hz	-ve	-ve	251750	Progressive
16388	640	480	72 Hz	-ve	-ve	315000	Progressive
16389	640	480	75 Hz	-ve	-ve	315000	Progressive
16390	640	480	85 Hz	-ve	-ve	360000	Progressive
16391	800	600	56 Hz	+ve	+ve	360000	Progressive
16392	800	600	60 Hz	+ve	+ve	400000	Progressive
16393	800	600	72 Hz	+ve	+ve	500000	Progressive
16394	800	600	75 Hz	+ve	+ve	495000	Progressive
16395	800	600	85 Hz	+ve	+ve	562500	Progressive
16396	848	480	60 Hz	+ve	+ve	337500	Progressive
16397	1024	384	87 Hz	+ve	+ve	449000	Interlaced
16398	1024	768	60 Hz	-ve	-ve	650000	Progressive
16399	1024	768	87 Hz	-ve	-ve	750000	Progressive
16400	1024	768	60 Hz	+ve	+ve	787500	Progressive
16401	1024	768	85 Hz	+ve	+ve	945000	Progressive
16402	1152	864	75 Hz	+ve	+ve	1080000	Progressive
16403	1280	768	60 Hz	+ve	-ve	682500	Progressive
16404	1280	768	60 Hz	-ve	+ve	795000	Progressive
16405	1280	768	75 Hz	-ve	+ve	1022500	Progressive
16406	1280	768	85 Hz	-ve	+ve	1175000	Progressive
16407	1280	960	60 Hz	+ve	+ve	1080000	Progressive
16408	1280	960	85 Hz	+ve	+ve	1485000	Progressive
16409	1280	1024	60 Hz	+ve	+ve	1080000	Progressive
16410	1280	1024	75 Hz	+ve	+ve	1350000	Progressive
16411	1280	1024	85 Hz	+ve	+ve	1575000	Progressive
16412	1360	768	60 Hz	+ve	+ve	855000	Progressive
16413	1400	1050	60 Hz	+ve	-ve	1010000	Progressive
16414	1400	1050	60 Hz	-ve	+ve	1217500	Progressive
16415	1400	1050	75 Hz	-ve	+ve	1560000	Progressive
16416	1400	1050	85 Hz	-ve	+ve	1795000	Progressive

16417	1440	900	60 Hz	+ve	-ve	887500	Progressive
16418	1440	900	60 Hz	-ve	+ve	1065000	Progressive
16419	1440	900	75 Hz	-ve	+ve	1367500	Progressive
16420	1440	900	85 Hz	-ve	+ve	1570000	Progressive
16421	1600	1200	60 Hz	+ve	+ve	1620000	Progressive
16422	1600	1200	65 Hz	+ve	+ve	1755000	Progressive
16423	1600	1200	70 Hz	+ve	+ve	1890000	Progressive
16424	1600	1200	75 Hz	+ve	+ve	2025000	Progressive
16425	1600	1200	85 Hz	+ve	+ve	2295000	Progressive
16426	1680	1050	60 Hz	+ve	-ve	1190000	Progressive
16427	1680	1050	60 Hz	-ve	+ve	1462500	Progressive
16428	1680	1050	75 Hz	-ve	+ve	1870000	Progressive
16429	1680	1050	60 Hz	-ve	+ve	2147500	Progressive
16430	1792	1344	75 Hz	-ve	+ve	2047500	Progressive
16431	1792	1344	60 Hz	-ve	+ve	2610000	Progressive
16432	1856	1392	60 Hz	-ve	+ve	2182500	Progressive
16433	1856	1392	75 Hz	-ve	+ve	2880000	Progressive
16434	1920	1200	60 Hz	+ve	-ve	1540000	Progressive
16435	1920	1200	60 Hz	-ve	+ve	1932500	Progressive
16436	1920	1200	75 Hz	-ve	+ve	2452500	Progressive
16437	1920	1200	75 Hz	-ve	+ve	2812500	Progressive
16438	1920	1440	60 Hz	-ve	+ve	2340000	Progressive
16439	1920	1440	75 Hz	-ve	+ve	2970000	Progressive
16440	2560	1600	60 Hz	-ve	+ve	2685000	Progressive

VESA NEW TIMINGS

S/No	HA	VA	Rate	HP	VP	Pix Clock	Scan Mode
16441	800	600	120 Hz	+ve	-ve	732500	Progressive
16442	1024	384	87 Hz	+ve	+ve	449000	Progressive
16443	1024	768	120 Hz	+ve	-ve	1155000	Progressive
16444	1152	864	85 Hz	-ve	+ve	1196500	Progressive
16445	1152	864	100 Hz	-ve	+ve	1434700	Progressive
16446	1152	864	60 Hz	-ve	+ve	816200	Progressive
16447	1280	768	120 Hz	+ve	-ve	1402500	Progressive
16448	1280	800	60 Hz	+ve	-ve	710000	Progressive
16449	1280	800	60 Hz	-ve	+ve	835000	Progressive
16450	1280	800	75 Hz	-ve	+ve	1065000	Progressive
16451	1280	800	85 Hz	-ve	+ve	1225000	Progressive
16452	1280	800	120 Hz	+ve	-ve	1462500	Progressive
16453	1280	960	120 Hz	+ve	-ve	1755000	Progressive
16454	1280	1024	120 Hz	+ve	-ve	1872500	Progressive

16455	1360	768	120 Hz	+ve	-ve	1482500	Progressive
16456	1366	768	60 Hz	+ve	+ve	720000	Progressive
16457	1366	768	60 Hz	+ve	-ve	720000	Progressive
16458	1366	768	60 Hz	+ve	-ve	855000	Progressive
16459	1366	768	60 Hz	+ve	+ve	855000	Progressive
16460	1400	1050	120 Hz	+ve	-ve	2080000	Progressive
16461	1440	900	120 Hz	+ve	-ve	1827500	Progressive
16462	1600	900	60 Hz	+ve	-ve	1080000	Progressive
16463	1600	1200	120 Hz	+ve	-ve	2682500	Progressive
16464	1680	1050	120 Hz	+ve	-ve	2455000	Progressive
16465	1920	1080	60 Hz	+ve	+ve	1485000	Progressive
16466	2048	1152	60 Hz	+ve	+ve	1620000	Progressive

VESA CVT TIMINGS

S/No	HA	VA	Rate	HP	VP	Pix Clock	Scan Mode
16468	640	480	50 Hz	-ve	+ve	197500	Progressive
16469	640	480	60 Hz	-ve	+ve	237500	Progressive
16470	640	480	75 Hz	-ve	+ve	307500	Progressive
16471	640	480	85 Hz	-ve	+ve	350000	Progressive
16472	640	480	60 Hz	+ve	-ve	235000	Progressive
16473	800	600	50 Hz	-ve	+ve	307500	Progressive
16474	800	600	60 Hz	-ve	+ve	382500	Progressive
16475	800	600	75 Hz	-ve	+ve	490000	Progressive
16476	800	600	85 Hz	-ve	+ve	567500	Progressive
16477	800	600	60 Hz	+ve	-ve	355000	Progressive
16478	1024	768	50 Hz	-ve	+ve	520000	Progressive
16479	1024	768	60 Hz	-ve	+ve	635000	Progressive
16480	1024	768	75 Hz	-ve	+ve	820000	Progressive
16481	1024	768	85 Hz	-ve	+ve	945000	Progressive
16482	1024	768	60 Hz	+ve	-ve	560000	Progressive
16483	1280	960	50 Hz	-ve	+ve	830000	Progressive
16484	1280	960	60 Hz	-ve	+ve	1012500	Progressive
16485	1280	960	75 Hz	-ve	+ve	1300000	Progressive
16486	1280	960	85 Hz	-ve	+ve	1482500	Progressive
16487	1280	960	60 Hz	+ve	-ve	852500	Progressive
16488	1400	1050	50 Hz	-ve	+ve	1000000	Progressive
16489	1400	1050	60 Hz	+ve	-ve	1010000	Progressive
16490	1600	1200	50 Hz	-ve	+ve	1315000	Progressive
16491	1600	1200	60 Hz	-ve	+ve	1610000	Progressive
16492	1600	1200	75 Hz	-ve	+ve	2047500	Progressive
16493	1600	1200	85 Hz	-ve	+ve	2350000	Progressive
16494	1600	1200	60 Hz	+ve	-ve	1302500	Progressive
16495	1920	1440	50 Hz	-ve	+ve	1922500	Progressive

16496	1920	1440	60 Hz	-ve	+ve	2335000	Progressive
16497	1920	1440	75 Hz	-ve	+ve	2980000	Progressive
16498	1920	1440	60 Hz	+ve	-ve	1847500	Progressive
16499	2048	1536	50 Hz	-ve	+ve	2190000	Progressive
16500	2048	1536	60 Hz	-ve	+ve	2672000	Progressive
16501	2048	1536	60 Hz	+ve	-ve	2092500	Progressive
16502	1280	1024	50 Hz	-ve	+ve	885000	Progressive
16503	1280	1024	60 Hz	-ve	+ve	1090000	Progressive
16504	1280	1024	75 Hz	-ve	+ve	1387500	Progressive
16505	1280	1024	85 Hz	-ve	+ve	1595000	Progressive
16506	1280	1024	60 Hz	+ve	-ve	910000	Progressive
16507	1280	768	50 Hz	-ve	+ve	652500	Progressive
16514	1064	600	50 Hz	-ve	+ve	407500	Progressive
16515	1064	600	60 Hz	-ve	+ve	505000	Progressive
16516	1064	600	75 Hz	-ve	+ve	652500	Progressive
16517	1064	600	85 Hz	-ve	+ve	752500	Progressive
16518	1064	600	60 Hz	+ve	-ve	452500	Progressive
16519	1280	720	50 Hz	-ve	+ve	605000	Progressive
16520	1280	720	60 Hz	-ve	+ve	745000	Progressive
16521	1280	720	75 Hz	-ve	+ve	957500	Progressive
16522	1280	720	85 Hz	-ve	+ve	1102500	Progressive
16523	1280	720	60 Hz	+ve	-ve	640000	Progressive
16524	1360	768	50 Hz	-ve	+ve	690000	Progressive
16525	1360	768	60 Hz	-ve	+ve	847500	Progressive
16526	1360	768	75 Hz	-ve	+ve	1090000	Progressive
16527	1360	768	85 Hz	-ve	+ve	1252500	Progressive
16528	1360	768	60 Hz	+ve	-ve	720000	Progressive
16529	1704	960	50 Hz	-ve	+ve	1105000	Progressive
16530	1704	960	60 Hz	-ve	+ve	1352500	Progressive
16531	1704	960	75 Hz	-ve	+ve	1727500	Progressive
16532	1704	960	85 Hz	-ve	+ve	1985000	Progressive
16533	1704	960	60 Hz	+ve	-ve	1102500	Progressive
16534	1864	1050	50 Hz	-ve	+ve	1327500	Progressive
16535	1864	1050	60 Hz	-ve	+ve	1625000	Progressive
16536	1864	1050	75 Hz	-ve	+ve	2075000	Progressive
16537	1864	1050	85 Hz	-ve	+ve	2380000	Progressive
16538	1864	1050	60 Hz	+ve	-ve	1310000	Progressive
16539	1920	1080	50 Hz	-ve	+ve	1415000	Progressive
16540	1920	1080	60 Hz	-ve	+ve	1730000	Progressive
16541	1920	1080	75 Hz	-ve	+ve	2207500	Progressive

16542	1920	1080	85 Hz	-ve	+ve	2532000	Progressive
16543	1920	1080	60 Hz	+ve	-ve	1385000	Progressive
16544	2128	1200	50 Hz	-ve	+ve	1750000	Progressive
16545	2128	1200	60 Hz	-ve	+ve	2137500	Progressive
16546	2128	1200	75 Hz	-ve	+ve	2725000	Progressive
16547	2128	1200	60 Hz	+ve	-ve	1695000	Progressive
16548	2560	1440	50 Hz	-ve	+ve	2562000	Progressive
16550	2728	1536	50 Hz	-ve	+ve	2917000	Progressive
16551	2728	1536	60 Hz	+ve	-ve	2737000	Progressive
16552	768	480	50 Hz	-ve	+ve	237500	Progressive
16553	768	480	60 Hz	-ve	+ve	287500	Progressive
16554	768	480	75 Hz	-ve	+ve	367500	Progressive
16555	768	480	85 Hz	-ve	+ve	425000	Progressive
16556	768	480	60 Hz	+ve	-ve	275000	Progressive
16557	960	600	50 Hz	-ve	+ve	370000	Progressive
16558	960	600	60 Hz	-ve	+ve	452500	Progressive
16559	960	600	75 Hz	-ve	+ve	587500	Progressive
16560	960	600	85 Hz	-ve	+ve	677500	Progressive
16561	960	600	60 Hz	+ve	-ve	415000	Progressive
16562	1152	720	50 Hz	-ve	+ve	545000	Progressive
16563	1152	720	60 Hz	-ve	+ve	667500	Progressive
16564	1152	720	75 Hz	-ve	+ve	857500	Progressive
16565	1152	720	85 Hz	-ve	+ve	990000	Progressive
16566	1152	720	60 Hz	+ve	-ve	582500	Progressive
16567	1224	768	50 Hz	-ve	+ve	622500	Progressive
16568	1224	768	60 Hz	-ve	+ve	760000	Progressive
16569	1224	768	75 Hz	-ve	+ve	977500	Progressive
16570	1224	768	85 Hz	-ve	+ve	1125000	Progressive
16571	1224	768	60 Hz	+ve	-ve	655000	Progressive
16572	1536	960	50 Hz	-ve	+ve	997500	Progressive
16573	1536	960	60 Hz	-ve	+ve	1212500	Progressive
16574	1536	960	75 Hz	-ve	+ve	1552500	Progressive
16575	1536	960	85 Hz	-ve	+ve	1785000	Progressive
16576	1536	960	60 Hz	+ve	-ve	1005000	Progressive
16577	1680	1050	50 Hz	-ve	+ve	1195000	Progressive
16578	1680	1050	60 Hz	+ve	-ve	1190000	Progressive
16579	1728	1080	50 Hz	-ve	+ve	1272500	Progressive
16580	1728	1080	60 Hz	-ve	+ve	1557500	Progressive
16581	1728	1080	75 Hz	-ve	+ve	1977500	Progressive
16582	1728	1080	85 Hz	-ve	+ve	2270000	Progressive

16583	1728	1080	60 Hz	+ve	-ve	1257500	Progressive
16584	1920	1200	50 Hz	-ve	+ve	1582500	Progressive
16585	1920	1200	85 Hz	-ve	+ve	2812000	Progressive
16586	1920	1200	60 Hz	+ve	-ve	1540000	Progressive
16587	2304	1440	50 Hz	-ve	+ve	2302500	Progressive
16588	2304	1440	60 Hz	-ve	+ve	2807000	Progressive
16589	2304	1440	60 Hz	+ve	-ve	2187500	Progressive
16590	2456	1536	50 Hz	-ve	+ve	625000	Progressive
16591	1456	1536	60 Hz	+ve	-ve	2477500	Progressive

PC TIMINGS

S/No	HA	VA	Rate	HP	VP	Pix Clock	Scan Mode
16592	640	350	70 Hz	+ve	-ve	251750	Progressive
16593	720	400	70 Hz	-ve	+ve	283200	Progressive
16594	1024	384	87 Hz	+ve	+ve	449000	Progressive
16595	640	480	67 Hz	-ve	-ve	302400	Progressive
16596	834	624	75 Hz	-ve	-ve	572800	Progressive
16597	1024	768	60 Hz	-ve	-ve	639900	Progressive
16598	1024	768	75 Hz	-ve	-ve	800000	Progressive
16599	1152	870	75 Hz	-ve	-ve	1000000	Progressive

SPWG PANEL TIMINGS

S/No	HA	VA	Rate	HP	VP	Pix Clock	Scan Mode
16600	1024	768	60 Hz	-ve	-ve	560000	Progressive
16601	1400	1050	60 Hz	-ve	-ve	1010000	Progressive
16602	1600	1200	60 Hz	-ve	-ve	1301990	Progressive
16603	1280	800	60 Hz	-ve	-ve	710000	Progressive
16604	1440	900	60 Hz	-ve	-ve	887500	Progressive
16605	1680	1050	60 Hz	-ve	-ve	1190000	Progressive
16606	1920	1200	60 Hz	-ve	-ve	1540000	Progressive
16607	2048	1536	60 Hz	-ve	-ve	2092000	Progressive

GTF

S/No	HA	VA	Rate	HP	VP	Pix Clock	Scan Mode
16608	1024	768	75 Hz	+ve	-ve	810079	Progressive
16609	1280	800	75 Hz	+ve	-ve	1070020	Progressive
16610	852	480	60 Hz	-ve	-ve	340252	Progressive
16611	1400	788	60 Hz	+ve	-ve	757500	Progressive
16612	1280	1024	96 Hz	+ve	+ve	1258291	Progressive
16613	1365	1024	60 Hz	+ve	+ve	1200000	Progressive

16614	1365	1024	75 Hz	+ve	+ve	1440000	Progressive
16615	1440	960	72 Hz	-ve	-ve	1290240	Progressive
16616	1920	1440	60 Hz	-ve	+ve	2340000	Progressive
16617	1920	1440	75 Hz	-ve	+ve	2970000	Progressive
16618	2048	1280	60 Hz	-ve	-ve	2213280	Progressive
16619	832	624	75 Hz	-ve	-ve	549360	Progressive
16620	1024	576	60 Hz	+ve	+ve	472032	Progressive
16621	1365	1024	60 Hz	-ve	-ve	1165152	Progressive
16622	1400	788	60 Hz	-ve	-ve	918000	Progressive
16623	1600	1024	60 Hz	-ve	-ve	1363580	Progressive

2560x1200 VESA CVT GENERATED TIMING

S/No	HA	VA	Rate	HP	VP	Pix Clock	Scan Mode
16624	2560	1200	30 Hz	-ve	+ve	1197500	Progressive
16625	2560	1200	60 Hz	-ve	+ve	2577500	Progressive
16626	2560	1200	60 Hz	+ve	-ve	2015000	Progressive

HDMI AUDIO FORMAT SUPPORT LIST

Dolby	DTS	Linear PCM
Dolby Digital Plus Dolby Digital Pro-Logic Dolby TrueHD Dolby Atmos	DTS 5.1 ch DTS 96/24 DTS-ES Discrete DTS-ES Matrix DTS-HD High Resolution Audio DTS-HD Master Audio DTS:X	Linear PCM 2 ch 44.1 kHz Linear PCM 2 ch 88.2 kHz Linear PCM 2 ch 176.4 kHz Linear PCM 2 ch 32 kHz Linear PCM 2 ch 48 kHz Linear PCM 2 ch 96 kHz Linear PCM 2 ch 192 kHz Linear PCM 5.1 ch 44.1 kHz Linear PCM 5.1 ch 88.2 kHz Linear PCM 5.1 ch 176.4 kHz Linear PCM 5.1 ch 32 kHz Linear PCM 5.1 ch 48 kHz Linear PCM 5.1 ch 96 kHz Linear PCM 5.1 ch 192 kHz Linear PCM 6.1 ch 44.1 kHz Linear PCM 6.1 ch 88.2 kHz Linear PCM 6.1 ch 176.4 kHz Linear PCM 6.1 ch 32 kHz Linear PCM 6.1 ch 48 kHz Linear PCM 6.1 ch 96 kHz Linear PCM 6.1 ch 192 kHz Linear PCM 7.1 ch 44.1 kHz Linear PCM 7.1 ch 88.2 kHz Linear PCM 7.1 ch 176.4 kHz Linear PCM 7.1 ch 32 kHz Linear PCM 7.1 ch 48 kHz Linear PCM 7.1 ch 96 kHz Linear PCM 7.1 ch 192 kHz

USB 2.0 SUPPORTED CLASS LIST

Communications and CDC Control
HID (Human Interface Device)
Physical
Image
Printer
Mass Storage
CDC Data
Smart Card
Content Security
Video (Video Streaming not supported)

Personal Healthcare
Audio/Video Devices
Diagnostic Device
Wireless Controller
Miscellaneous
Application Specific
Vendor Specific

BAUD RATE SUPPORTED LIST

300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200

Specifications

System	
Supports	Device Naming, IP Control, Built-in Web Server with Intuitive User Interface; Front panel with 16x2 Character display for System configuration IR Remote Control
Sender	Supports Independent routing
Receiver	Built-in OSD generator, which can display custom text and pictures; Built in Scaler with can support: • Low resolution <=> High Resolution timing conversion • Interlaced <=> Progressive Mode conversion
Video Wall Support	Wall Size up to 16x16; Bezel and Gap Compensation; Pixel Wise Panning, Image Rotation , Mirroring, and Stretch Video Pause and Black Out
Network	
Max Distance	120m UTP
Bandwidth	850Mbps +- 20Mbps *Varies with video pattern, USB activity, and WEB-GUI activity
Casting	Multicast (Groups 0 ~9999), Unicast Supports VLAN Switching
Supports	Bit rate and bandwidth Control; Static, DHCP and Auto IP (Zero Config) IGMPV2 1500 or 8000 MTU *Recommended 8K (8000MTU) for 4K video
Video	
Sender Input	Up to 4K@60 4:2:0, HDMI 2.0a, HDR, HDCP2.2
Sender Loop Out	Up to 4K@60 4:2:0, HDMI 2.0a, HDR, HDCP2.2
Receiver Output	Up to 4K@30 4:4:4, HDMI 2.0a, HDR, HDCP2.2
Video Over IP	
Video Codec	Mini Proprietary Visually Lossless Video Codec Supports Quality Control
Latency	1 Frame (< 30ms)
Supports	Video Snapshot; Anti-Dithering V3, Frame Rate Control
Audio	
HDMI Audio	2Ch, 5.1Ch, 7.1Ch LPCM 5.1Ch, 7.1Ch NLPCM
Supports	HDMI Audio Extraction (2Ch LPCM 32Khz ~96Khz)
Audio over IP	
Sender Analog Audio	Line In, Line Out for Audio Over IP Supports HDMI Audio Embedding
Receiver Analog Audio	Mic In, Line Out for Audio Over IP Supports HDMI Audio De-Embedding
Sender Analog Audio	Analog Volume Control. Bidirectional Audio extension in Unicast mode
IR Over IP	
IR	Universal IR
Supports	Bidirectional IR Pass-through Mode; Guest Mode (Software Decoding over dedicated Telnet port)
USB Over IP	
USB Extension	Up to 4xUSB 2.0 Downstream Devices USB 1.1 for Keyboard and Mouse Extension
Supports	USB Class and Device Filtering Touch Screen Device

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