ST-IPFOUSB4K-L/R-LCVW

4K HDMI USB KVM Extender with Video Wall Support

Over IP via Two LC Singlemode/Multimode

Fiber Optic Cables

INTRODUCTION

The XTENDEX® 4K(30Hz) HDMI USB KVM Extender over IP via Fiber provides remote KVM (USB keyboard, USB mouse (USB1.x/USB2) and 4Kx2K UHD HDMI monitor) access to a USB computer up to 9,842 feet (3,000 meters) away via a duplex LC singlemode fiber optic cable and 1,804 feet (550 meters) using duplex LC multimode fiber optic cable.

Each KVM extender consists of a local unit that connects to a computer and also supplies video to a local monitor, and a remote unit that connects to an HDMI monitor, 3.5mm stereo audio speakers and microphone, RS232, and up to four USB devices (keyboard, mouse, flash drive, HDD, or touchscreen display). The local and remote units can be connected together for a Point-to-Point connection via fiber cable, or a Point-to-Many or Many-to-Many connection via a managed Gigabit network switch.

Features:
- ➢ Signal transmission via two-strand singlemode LC fiber optic cable.
    - o Using singlemode 9-micron cable, extend to 9,842 feet (3,000 meters).
    - o Using multimode 50-micron cable, extend to 1,804 feet (550 meters).
- ➢ Supports Ultra-HD 4Kx2K resolutions to 3840x2160 (30Hz), 2K resolution 2048x1080, HDTV resolutions to 1080p, and up to 1920x1200 (WUXGA).
- ➢ HDMI features supported:
    - o HDMI 1.4
    - o x.v.Color, sYCC601 color, Adobe RGB Color and Adobe YCC601 color
    - o Dolby TrueHD, LPCM 7.1, DTS-HD Master Audio, Dolby Digital, and DTS
    - o Bandwidth up to 340 MHz (10.2 Gbps)
    - o Lip Sync
    - o HDCP 1.4 compliant.
- ➢ USB ports for keyboard, mouse, flash drive, HDD or touchscreen display.
    - o Keyboard and mouse are hot-pluggable.
- ➢ Supports video wall installations from 1x2 to 8x16 screens.
    - o Displays can be rotated 180 and 270°.
- ➢ Plug-and-Play installation allows receivers to find the transmitter automatically on the same network. (Network configuration may be required for managed network switch.)
- ➢ Support for Point-to-Many or Many-to-Many connections requires a managed Gigabit network switch with IGMP support and Jumbo frame support.
    - o Manage transmitter/receiver connections and video wall configuration with web interface or network switch that supports VLAN; Each VLAN group acts as a separate HDMI Over IP Channel on the network.
- ➢ When using multiple remote units, there are two USB control modes - Exclusive Mode and Sharing Mode.
    - o USB Exclusive Mode: Only one remote unit can have USB control over the source computer at any time.
    - o USB Sharing Mode: Multiple remote units share the control of the source computer.
        - ▪ Up to 5 USB devices will be recognized by the computer.
- ➢ Full Infrared Remote (IR) control of HDMI source from remote HDTV using existing source remote control.
- ➢ Supports full-duplex RS232 up to 115200 baud.
- ➢ Customizable EDID table on local unit.
- ➢ Supports the DDC2B protocol.
- ➢ Easily expandable – add receivers as you add control stations.
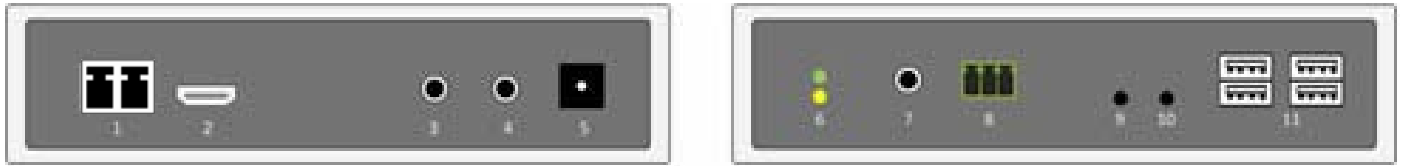- ➢ Integrated mounting brackets for easy surface/wall mounting.

FEATURES AND FUNCTIONS

ST-IPFOUSB4K-L-LCVW   Local Unit (TX)

No. Connector	Description
1 SFP Port	Connect to Ethernet Switch SFP port or directly to RX using duplex LC fiber optic cable with pre-installed transceiver
2 HDMI OUT	Local HDMI loop-out
3 HDMI IN	Supports HDMI input video source up to 4K30Hz
4 Line in	3.5mm input audio will be extended to the Line Out of RX
5 Line out	3.5mm Line Out audio is extended from Microphone of RX
6 USB-to-PC	USB-B to PC USB port for USB 2.0 Virtual HUB extension
7 DC 9~32V In	System power input.
8 System LED (Green) Link LED (Amber)	**Green Blinking/Amber Off:** System is starting up. **Green On/Amber Off:** System is ready, but TX/RX not connected. **Green On/Amber Blinking:** TX/RX connected, but waiting for video input. **Green On/Amber On:** TX/RX connected, video input is ready.
9 RS-232 (terminal block)	Serial-over-IP function, pin assignment: TxD-RxD-GND
10 IR Blaster	Connect to external IR Emitter
11 Button 1	**Press** and **Hold** at **Power ON** until Green and Amber LEDs are blinking: Reset to **Factory default** and enter **192.168.0.88** setup mode.
	Press and hold for 3 sec.: To Lock RX's keyboard and mouse.
12 Button 2	**Press:** To select Video/Graphic mode
	Press and hold for 3 sec.: To Enable/Disable Anti-Dither.

ST-IPFOUSB4K-R-LCVW Remote Unit (RX)

No. Connector	Description
1 SFP Port	Connect to Ethernet switch SFP port or directly to TX using duplex LC fiber optic cable with pre-installed transceiver
2 HDMI Out	Connect to HDMI screen by HDMI-to-HDMI cable
3 Mic. IN	3.5mm Mic. In, extended to Line Out of TX **(Unicast mode)**
4 Line OUT	3.5mm Line Out, can be Line In or HDMI audio of source TX
5 DC 9~32V In	System power input.
6 System LED(Green) Link LED (Amber)	**Green Blinking/Amber Off:** System is starting up. **Green On/Amber Off:** System is ready, but TX/RX is not connected. **Green On/Amber Blinking:** TX/RX connected, waiting for video source. **Green On/Amber On:** TX/RX connected, input video source is ready
7 IR Receiver	Remote Universal IR receiver(optional)
8 RS-232 (terminal block)	Serial-over-IP function. (Pin assignment: TxD-RxD-GND)
9 Mode button	**Press:** To select Video/Graphic mode
	Press and hold for 3 sec.: To Enable/Disable Anti-Dither
	Press and **Hold** at **Power ON** until Green LED is blinking: Set this RX as EDID Master
10 Link button	**Press:** To enter OSD Transmitter List menu
	Press and hold for 3 sec.: To request USB access right.
	Press and **Hold** at **Power ON** until Green and Amber LEDs are blinking: Reset to **Factory default** and enter **192.168.0.88** Setup mode
11 USB 1.1 Host	2 x USB 1.1 ports (left) for Keyboard, Mouse
11 USB 2.0 Host	2 x USB 2.0 ports (right) for Disk, Touchscreen, etc ...

CONFIGURATION

Use TX/RX Configuration Web page to configure. There are Setup mode and Operation mode for the Configuration Web page. Setup mode can be used in the event you change the IP address of the unit in Operation mode and forget what it is.   The Setup Mode IP address cannot be changed.   By entering Setup mode, the Version Information screen will tell you what the current Operation Mode IP address is.

Setup Mode Configuration

To enter TX/RX Setup Mode Configuration Web page, press and hold the Button 1 (on Tx) or Link button (on Rx) and Power ON until the Green and Amber LEDs start blinking, then release the button. This will force the TX/RX to enter **Setup mode**.

1. Directly connect TX/RX to a PC LAN port and set the PC IP to 192.168.0.1, Net Mask 255.255.255.0.
2. Open PC's Web Browser (we recommend Chrome) and enter IP address 192.168.0.88 to enter the Setup Mode Configuration Web page.

The Setup Mode Configuration Web page contains a System tab with sub-tabs Version Information, Update Firmware, Configuration, Utilities, and Statistics.   For determining the IP address, you only need the System tab and Version Information (below).
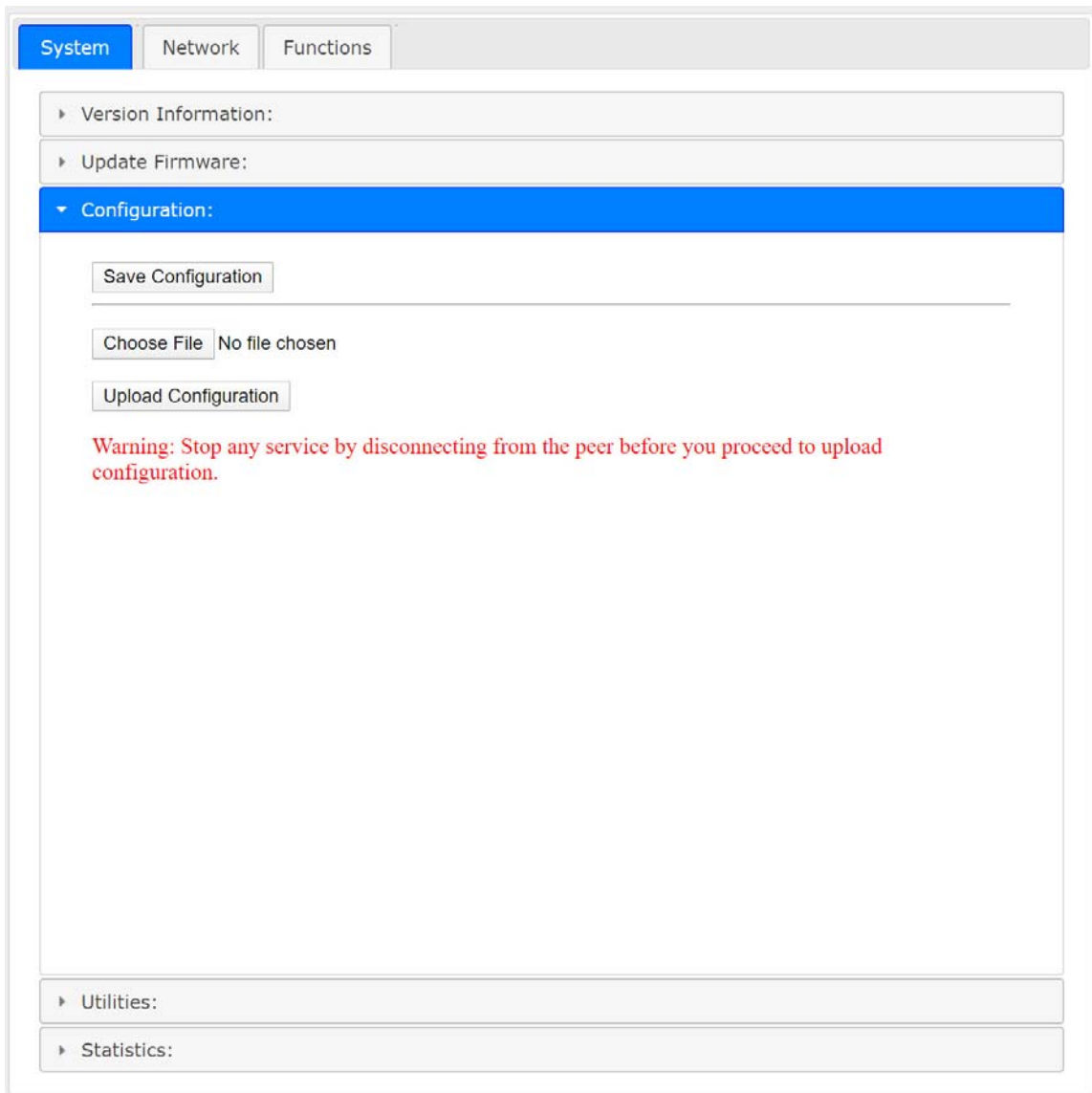
Version Information

Provides information for "Tx" or "Rx", Firmware version, IP address, MAC address:

Operation Mode Configuration

To enter TX/RX Operation mode Configuration Web page:

Set PC IP 10.0.1.1, Net Mask 255.0.0.0.

Open Browser (we recommend Chrome), then enter TX/RX IP address 10.xx.xx.xx (the IP address can be found on the bottom of the unit).

The TX Configuration Web Page contains 3 subtabs: **System , Network , Functions .**

The RX Configuration Web Page contains 4 subtabs: **System , Video Wall , Network , Functions .**

System

Version Information

Provides information for "Tx" or "Rx", Firmware version, IP address, MAC address:

Update Firmware

Enter **Update Firmware** ---> navigate to the firmware file (.bin) then click **Upload** to start a firmware upgrade. The firmware upgrade takes about 3 minutes, after which it will display "DONE Rebooting…" to indicate the unit has been upgraded and rebooted.

Configuration

You can export the current settings to a configuration file, or import configuration from an external file. Enter **Configuration** ---> Click **Save Configuration** to export configuration, click **Upload Configuration** to import configuration.

Utilities

Commands ---> **Factory Default** ---> To reset the device to the factory default.

Command ---> **Reboot** ---> To reboot the device.

Compatibility mode ---> Not applicable to this product

EDID (TX only, not in RX)

The TX provides flexible EDID selections:

Copy EDID from EDID Master --->TX will get EDID from the RX with EDID Master setting.

Copy EDID from 1st connecting RX after powered On--->TX will get EDID from the 1st connected RX.

Copy EDID from RX IP--->TX will get EDID from a specific RX, enter RX's IP here.

Resolution--->You can set TX with a specific resolution from the drop-down menu.

Available resolutions are 3840x2160 30Hz, 2560x1440 60Hz, 1920 x 1200 60Hz, 1920 x 1080 60Hz**(default)**, 1680 x

1050 60Hz, 1440 x 900 60Hz, 1366 x 768 60Hz, 1280 x 1024 60Hz, 1280 x 720 60Hz, 1024 x 768 60Hz, 720 x 480 60Hz.

Note: This Resolution option will be overwritten by the RX EDID Master if the TX is set on Unicast.

Console API Command --->Not applicable to this product

Statistics

Display system status for State Machine, Network, Video EDID, Video Screen attachment, Video Timing.

▾ Statistics:

State Machine

State: s_attaching

Network

ID (Host Name): 1004

IP Address: 192.168.3.46

Subnet Mask: 255.0.0.0

Default Gateway: 192.168.3.3

MAC Address: 0020FE005CE0

Casting Mode: Multicast Mode

Link Status: on

Link Mode: 100M

Video

EDID Used:

```
00 ff ff ff | ff ff ff 00 | 06 74 79 28 | 47 02 00 00 |
34 19 01 03 | 80 3e 22 78 | 2a 08 a5 a2 | 57 4f a2 28 |
0f 50 54 bf | ef 00 d1 c0 | b3 00 95 00 | 81 80 81 40 |
81 c0 01 01 | 01 01 02 3a | 80 18 71 38 | 2d 40 58 2c |
45 00 6d 55 | 21 00 00 1e | 02 3a 80 18 | 71 38 2d 40 |
58 2c 45 00 | 6d 55 21 00 | 00 1e 00 00 | 00 fd 00 17 |
50 1e 63 10 | 00 0a 20 20 | 20 20 20 20 | 00 00 00 fc |
00 55 32 38 | 37 39 47 36 | 0a 20 20 20 | 20 20 01 55 |
02 01 04 00 | 02 3a 80 18 | 71 38 2d 40 | 58 2c 45 00 |
6d 55 21 00 | 00 1e 01 1d | 00 72 51 d0 | 1e 20 6e 28 |
55 00 6d 55 | 21 00 00 1e | 8c 0a d0 8a | 20 e0 2d 10 |
10 3e 96 00 | 6d 55 21 00 | 00 18 8c 0a | d0 90 20 40 |
31 20 0c 40 | 55 00 6d 55 | 21 00 00 18 | 02 3a 80 18 |
71 38 2d 40 | 58 2c 45 00 | 6d 55 21 00 | 00 1e 00 00 |
00 00 00 00 | 00 00 00 00 | 00 00 00 00 | 00 00 00 00 |
00 00 00 00 | 00 00 00 00 | 00 00 00 00 | 00 00 00 67 |
```

Local Video Output:

attached=n

Video Timing Information:

Not Available

Network

IP Setup (TX/RX)

The system supports Auto IP, DHCP, and Static(default) for the IP configuration:

Auto IP ---> 169.254.xxx.xxx (Auto), Subnet Mask 255.2555.0.0, Default Gateway 192.168.0.1

DHCP ---> Get IP from DHCP Server

Static ---> Enter IP Address, Subnet Mask, Default Gateway, click Apply .

Casting Mode (TX)

  TX can be set in **Multicast (default)** or Unicast mode.
  In Multicast mode, the Multicast IP prefix can be configured:

Multicast IP prefix (default 225.0.10)
Multicast IP address (prefixed with 225.0.10x.x)

Casting Mode (RX)
The RX can be set in **Multicast (default)** or Unicast mode as the below.

In **Multicast mode**, you can setup the Multicast IP prefix and select the Connection Method from:
  First Available **(default)**,
  Multicast IP,
  OSD Transmitter List, and
  Direct Connection.

In **Unicast mode**, you can select the Connection Method from
    First Available,
    OSD Transmitter List,
    TX IP and
    Direct Connection.

RX supports the following Connection Methods:
    First Available: the RX will connect to the first available TX when powered on.

    Multicast IP 225.0.10x.xxx: the RX will connect to the TX with the same Multicast IP address specified here.

    OSD Transmitter List: the RX will display the available TXs in the OSD menu for user to select. Select "All Transmitters" if all of TXs are permitted. Select "Transmitter IP Range" and input the IP range with "-" and",". For example, "10.0.92.101 – 10.0.92.120, 10.0.92.135, 10.0.92.188, …"

    TX IP: the RX will connect to this specified TX only.

    Direct Connection: this setting enables RX to connect TX by the same subnet, same Casting Mode, Jumbo Frame and EDID Master will be automatically enabled.

Show TX Device name when connected (RX)
  This feature enables RX to display the TX name (or IP) when connected. Default is enabled with 5 seconds.

Jumbo Frame (TX/RX)
    The TX/RX supports Jumbo Frame (8K bytes) for better video quality, default **Enabled**.
    Note: The Ethernet Switch also must be set with Jumbo Frame enabled (at least 8K) if TX has been enabled.

Functions

Device Name (TX/RX)

To set TX/RX Device name, enter ---> **Functions** ---> **Device Name** --->input name (8 characters max) ---> **Apply** to save the Device Name.

Video over IP (TX)

Features Include:

Enable Video over IP (**Default: Enabled**)
Video/Graphic Mode : Select Video Mode for video play smoothly.
Select Graphic Mode for static picture KVM application.
Maximum Bit Rate : Options are "Best Effort", "200, 150, 100, 50, and 10 Mbps" for the TX bandwidth selection.
(Default: Best Effort).
Maximum Frame Rate : This provides the maximum % of the TX frames rate capture up **(Default: 100%)**.

| System | Network | **Functions** |

Device Name

| | Apply |

Video over IP

☑ **Enable Video over IP**
● **Video Mode**
○ **Graphic Mode**

Maximum Bit Rate: Best Effort ▼

Maximum Frame Rate: Capture up to 100% of frames

| | Apply |

Video over IP (RX)
    Functions ---> Video over IP :

Video over IP

☑ Enable Video over IP

☑ Enable Video Wall

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

Scaler Output Mode: Auto EDID ▾

Timeout for Detecting Video Lost: 10 seconds ▾
☑ Turn off screen on video lost

Enable Video over IP (**Default Enabled**).

Enable Video Wall : Enable this setting for the Video Wall output.

Copy EDID from this Video Output : To assign this RX as the EDID Master.

Scaler Output Mode : The RX includes a scaler feature.
The output resolution can be selected from these options:
        Auto EDID (**default**),
        Pass Through,
        2160p30, 2160p25, 1080p60, 1080p50, 1920x1200,
        Customize.

Auto EDID means the RX will output to screen resolution according to screen's EDID.

Timeout for detecting video lost : The timeout period for lost video detection (**default 10 sec.**)

Turn off screen on video lost : Stop the video output when video source is lost (**default Enabled**)

USB over IP (TX)

Enable USB over IP ---> Check to enable TX's USB over IP feature (**default Enabled**). It works as a 5-port Virtual HUB when TX is attached to a USB port on the PC.   Up to 5 Virtual USB ports will be sequentially linked to the connected RX USB devices. There are 4 USB ports on each RX, but only the ports with devices attached (up to 5 total) will occupy the TX's Virtual USB port.

Operation Mode --->The TX USB-over-IP supports the following 2 operation modes:

> **Exclusive Mode:** All of TX's 5 Virtual USB ports will be exclusively assigned to the RX which has the USB access right. The other RXs can request USB access right manually.

> **Sharing Mode:** The TX's 5 Virtual USB ports can be shared by multiple RXs. Depending on the number of USB devices on each RX, it is possible to have maximum 5 RXs sharing the same TX's Virtual USB. If more than 5 devices are connected, the TX will randomly select the 5 ports that will work.   The remaining devices will be ignored.

Note: In Sharing Mode, using more than one mouse or keyboard at the same time from two different RXs will have undesirable results, as the PC will try to respond to both.

Compatibility Mode

> **Mouse not responding well** ---> enable this setting when mouse is slow and not very responsive.

> **K/M over IP** ---> The TX also has built in K/M over IP HID emulation for multiple RXs to share the same TX's keyboard/mouse. This feature will occupy one TX's Virtual USB port when it is enabled **(default: Enabled)**.

USB over IP KMoIP ports (RX)

There are 2 x USB 1.1 and 2 x USB 2.0 ports on each RX. These 4 USB ports can be configured for USB-over-IP or KM-over-IP devices. The USB-over-IP devices will be virtually linked to the TX's 5 VirtualUSB ports; the KM-over-IP devices will be linked and shared with the TX's K/M over IP HID emulation port.

The advantage of USB-over-IP device have better USB compatibility, for example USB Touch, Disk, … devices must be configured with USB-over-IP. The advantage of KM-over-IP device is to have multiple RXs sharing the same TX'sK/M over IP HID emulation port. It is recommended to configure the 2 x USB 1.1 (keyboard/mouse) as KMoIP ports and 2 x USB 2.0 as USB over IP ports (for Touch, Disk).

The RX **USB over IP** Configuration Web page:

This **USB over IP** setting must be enabled for any USB devices to be attached with TX's Virtual USB HUB.

The RX **KMoIP ports** Configuration Web page:

Enable the port #1, 2, 3, 4 for the device to be linked with the TX's K/M over IP HID emulation port.**Default Port 1 and 2 KMoIP Enabled.**

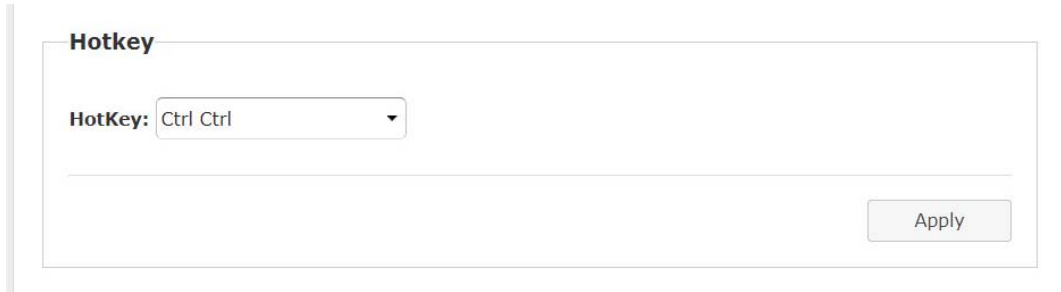**Note: All of RX's 4 x USB ports will be configured as KMoIP if the USB over IP is disabled.**

Hotkey (RX)

The RX supports Hotkey for OSD Menu.

To choose the RX OSD Hotkey:

Functions ---> **Hotkey** ---> select the Hotkey from the list: <Ctrl><Ctrl>, <Shift><Shift>, <Alt><Alt>, or <Scroll><Scroll> **(default: Ctrl Ctrl)**.

Serial over IP (TX/RX)

Serial over IP ---> Enable/Disable (default Enabled).

Operation Mode

     Type 1: for Unicast application where user can dynamically link with any target RX.

     Type 2: for Multicast application where TX RS-232 will link with all of connected RXs (default).

     Type 1 guest: similar to type 1 but using PC to link with RX's RS-232.

     Type 2 guest: similar to type 2 but using PC to link with RX's RS-232.

     Baudrate Setting for Type 2

     Set RS-232 Baudrate, Data bits, Parity, Stop bits. (default 115200, 8-n-1)

Point-to-Many connection via RS232

  If one local unit pairs with multiple remote units, then point-to-many RS232 is supported.

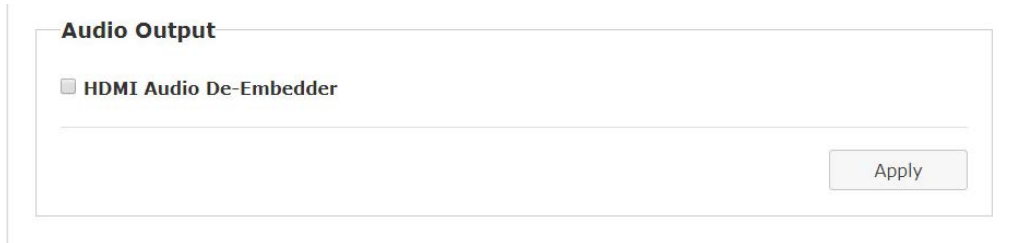   When the Tx unit sends RS232 message, all Rx units receive the same message.

     When multiple Rx units send an RS232 message at the same time, the fastest Rx will take control. The Tx unit will only receive that Rx's message and reject messages sent from other Rx units. Once the controlling Rx stops sending messages for about 1~2 seconds, the control authority will be released and all Rx units will be competing for priority again.

Audio Output (RX)

If the TX's input audio is in HDMI, you can route the audio output on Line Out of the RX:

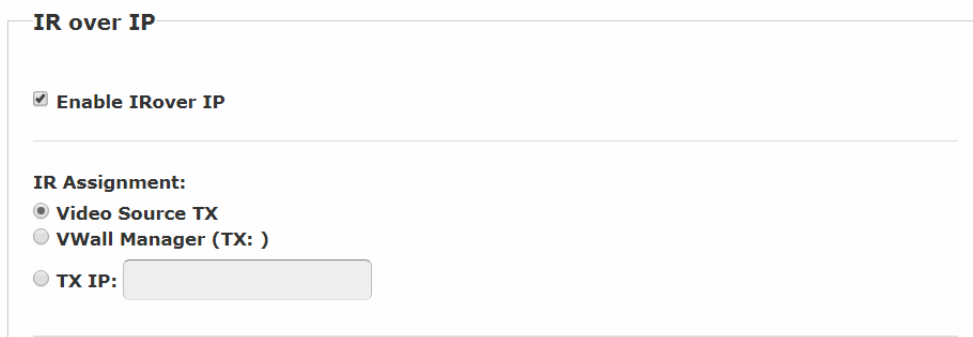 Functions ---> Audio Output ---> check "HDMI Audio De-Embedder".

Click Apply to save the setting and reboot. (default Disabled)

Audio Output

☐ HDMI Audio De-Embedder

Apply

IR over IP

☑ **Enable IRover IP**

IR Assignment:
◉ **Video Source TX**
○ **VWall Manager (TX:)**

○ **TX IP:**

IR over IP (RX)

It is possible to assign the IR signal routing path:

> Enable IR over IP (default Enabled)

> IR Assignment --->Select IR routing path from the following 3 options:

> Video Source TX --->Send the RX's IR input signals to the TX of current video source.

> VWall Manager (TX:) --->**Not applicable**

> TX IP: --->Send the RX's IR input signals to this specified TX.

Multi-Screen Setting (TX)

The system supports Multi-Screen feature which is useful for PC with multiple screen outputs. As above TX Multi-Screen Setting Web page:

   Main Video : Enable this setting if this TX is connected to the PC's main video output.

Note: Any TX with Main Video setting disabled will not be shown on the OSD Transmitter List.

   2nd Video TX IP : Type in another TX IP address which is connected to the PC's 2nd video output.

   3rd Video TX IP : Type in another TX IP address which is connected to the PC's 3rd video output.

   4th Video TX IP : Type in another TX IP address which is connected to the PC's 4th video output.

Multi-Screen Setting (RX)

Similar to the TX Multi-Screen Setting page, in the above RX Multi-Screen Setting Web page:

   2nd ScreenRX IP : Type in another RX IP address which is connected to the 2nd screen.

   3rd ScreenRX IP : Type in another RX IP address which is connected to the 3rd screen.

   4th ScreenRX IP : Type in another RX IP address which is connected to the 4th screen.

When the Main RX switches to a new TX, its associated RXs will also be switched to the new TX's associated TXs automatically.

Mirror (RX)

When the "Mirror" option is enabled, the associated RXs will connect to the same TX as the Main RX is connected to. This splitter function enables multiple RXs to display the same TX.

Video Wall Functions

Remote Unit function only (RX)

The RX comes with a Video-Wall feature. Multiple RXs can receive the same video stream and display on multiple screens in a grid. You can setup the Video-Wall either by using OSD (On Screen Display) or the Web page.

The following section provides information for the Web page method of Video Wall setup.
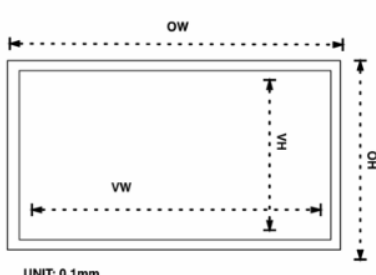
Basic Setup

Enter RX Web page ---> Video Wall ---> Basic Setup .

Bezel and Gap Compensation

Enter the value for OW (Outside Width), OH (Outside Height), VW (View Width), VH (View Height) in 0.1mm units ---> Apply .
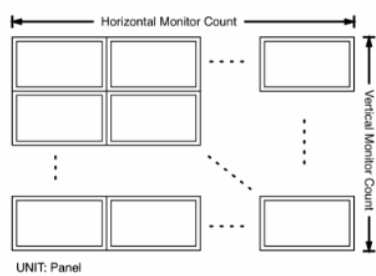
Wall Size and Position Layout

Select the value for Vertical Monitor Count, Horizontal Monitor Count, Row Position, Column Position from the drop-down menu ---> Apply .

Preferences

Stretch Type --->Select "Fit In" or "Keep Aspect Ratio" ---> Apply

Clockwise Rotation ---> Select 0, 180, 270 --> Apply

Note:

Fit In: Stretches or compresses the broadcast screen to fill the whole wall.

Keep Aspect Ratio: keeps strict picture aspect ratio. If there is a mismatch, some image may fall beyond screen edges.

The following screenshot shows couple examples of Fit In and Keep Aspect Ratio:
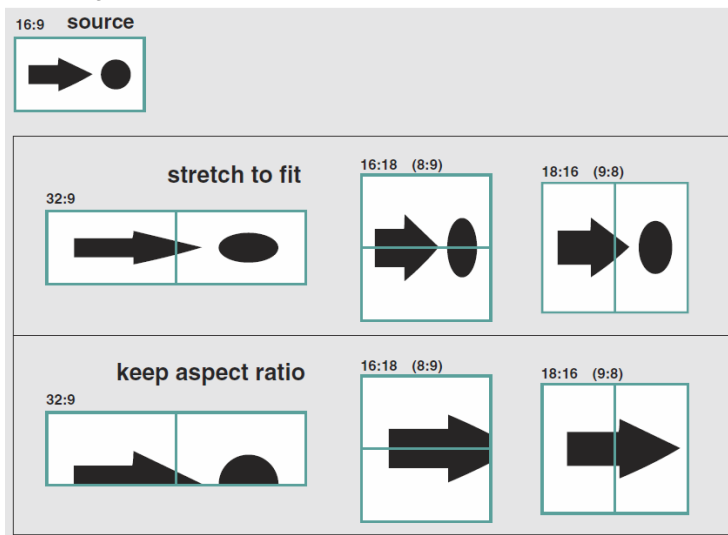
Show OSD

To identify the screen, check the "Show OSD" and select the device then click Apply button.

Video-Wall Advanced Setup

The Advanced Setup can be used for special effects which are not included in Basic Setup. There are two steps in advanced setup:

      Step 1: Choose one or more target RXs to apply setup to.

      Step 2: After the targets are selected, changes can be applied in Step 2.

Show OSD

To identify the screen, check the "Show OSD" and select the device then click Apply button.

Reset to Basic Setup --->Reset the target(s) to the setting of "Basic Setup".

Stretch Type

      Fit In: Stretch the full screen to the whole wall.

      Keep Aspect: keeps picture aspect ratio; some image may spill off screen if needed.

Clockwise Rotate

      0: No rotation

      180: clockwise rotate 180 degrees

      270: clockwise rotate 270 degrees

Screen Layout (Row x Column)

Define the Video Wall size, select the Row and Column count from the drop-down menu.

Row Position : Set the Row position for the selected target RX. (start from 0)

Column Position :Set the Column position for the selected target RX. (start from 0)

Horizontal Shift :Shift target screen horizontal to left/right in 1 pixel units.

Vertical Shift :Shift target screen vertically up or down in 1 pixel units.

Horizontal Scale Up (N pixels/column_count) : Scale up the target screen horizontally, by pixels (1/column count).

Vertical Scale Up (N pixels/column_count) : Scale up the target screen vertically, by pixels (1/row count).

INSTALLATION(TX/RX)

1. The factory default Connection Method for RX is "First Available", and TX is in Multicast mode with its default Multicast IP (shown on the label). It means all TXs will send packets with default Multicast IP (225.0.10x.xxx), and all RXs will find the first available TX for connection.

2. Use an Optical Fiber cable to directly connect TX/RX as a pair connection, or connect to an IGMP-enabled Gigabit Ethernet switch for many-to-many installation.
   Note: Each TX comes with individual factory default Multicast IP which is shown on the unit label.

3. Connect TX/RX to a video source/screen using an HDMI cable.

4. The TX factory default EDID setting is 1920x1080 @60Hz.
   You can change TX to "**Copy EDID from EDID Master**", and perform step 4.1/4.2 to assign a RX as the EDID Master.
   You can change TX to "**Copy EDID from the 1ˢᵗ connected RX**" or "**Copy EDID from RX IP**" and then perform steps 4.3 or 4.4.
   Or you can change and use the TX built-in EDID as instructed in step 4.5:

   4.1 Press and hold the **Mode** button of the specific RX unit and power ON until **Green** LED blinking then releasing the **Mode** button, this RX will be assigned as EDID Master (RX's **Green** LED will blink, then steady ON, and **Amber** LED Off to indicate it is ready and waiting for connecting with TX). Then power ON other RX units sequentially.
   4.2 Refer page 9, enable "**Copy EDID from this Video Output**" to assign a specific RX as EDID Master.
   4.3 Refer page 6, enable "**Copy EDID from 1ˢᵗ connecting RX**" to set TX EDID from the first connected RX.
   4.4 Refer page 6,enable "**Copy EDID from RX IP**" to set TX EDID from a specific RX.
   4.5 To use TX built-in EDID for specific Resolution, refer to page 7 "**Resolution Selection**".

5. The following start-up messages will be displayed during RX power on:
   FW: 02-Jan-2019 A6.6.0.8 (Firmware date and version)
   Local IP: 10.0.34.38 (RX's IP address)
   MAC: 0020FExxxxxx (RX's MAC address)
   Connection Method: First Available
   Remote IP: 10.0.x.x/ 225.0.x.x (Connecting target TX IP / Multicast IP)

6. **To get the best video performance, please refer to page 10 to enable TX/RX Jumbo Frame setting, and set Ethernet Switch Jumbo Frame with minimum 8K bytes.**

7. Attach HDMI/DVI source to the TX's HDMI In. Then power ON the TX unit. The **Green** LED will blink , then go steady ON to indicate ready and waiting for connecting with RX.

8. Until TX/RX connection is established, both TX and RX Amber LED will start to blink, indicating waiting for video input source (Green LED is ON).

9. If you are using PC as video source, verify the correct screen EDID is shown on PC's graphic control panel.

10. Activate the video with audio source connected to TX, then check if all RXs are correctly displayed. In this step, both Green and Amber LEDs should now be ON to indicate the unit is ready and video source is also ready.
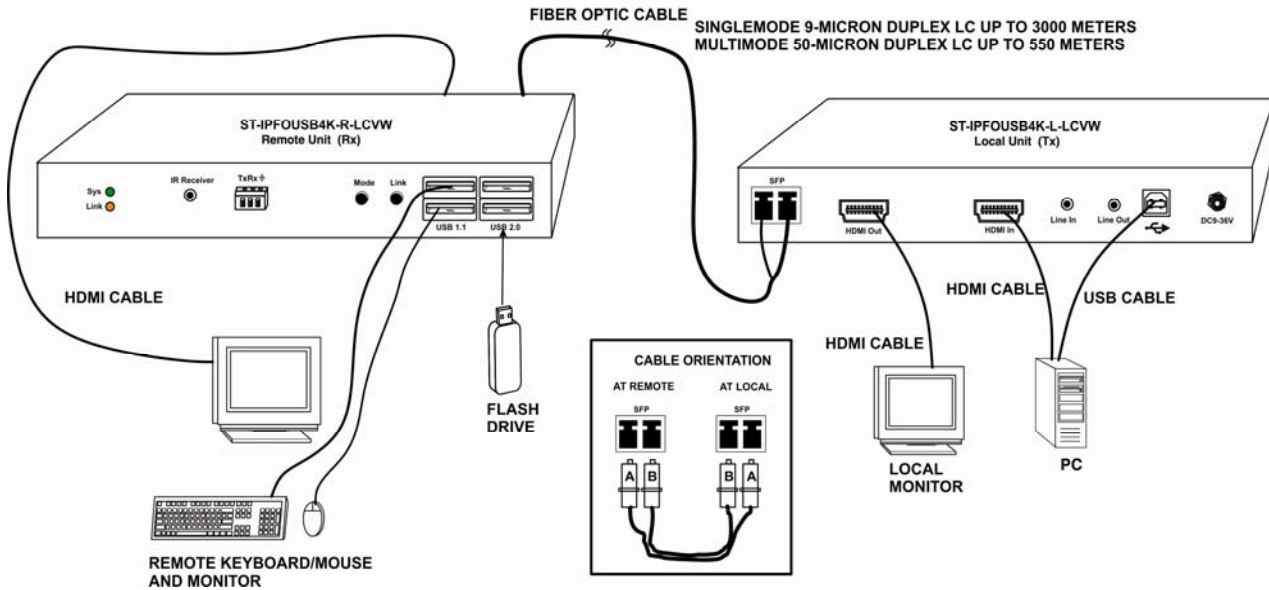
USB over IP and KM over IP installation

11. Connect TX USB-B port to the PC, the OS will detect a Generic USB 2.0 Virtual Hub Device.

12. Refer to the USB over IP , K/M over IP and KMoIP ports on page 13 to properly configure TX and RX for the USB devices such as keyboard, mouse, Pen Drive, Touch Screen, etc.
    Note: The RX KMoIP ports will be linked to TX's KM over IP HID emulation; RX USB-over-IP ports will be linked to TX's Virtual USB ports.
    It is not necessary to gain USB access rights for the KMoverIP port. The TX (PC) can be shared with multiple RXs for keyboard/mouse access in KMoverIP mode.

13. There are 4 USB-A ports on the RX. The factory default setting for the TX is both USB-over-IP and KM-over-IP enabled; all 4 RX USB ports are USB-over-IP enabled and KM-over-IP disabled.
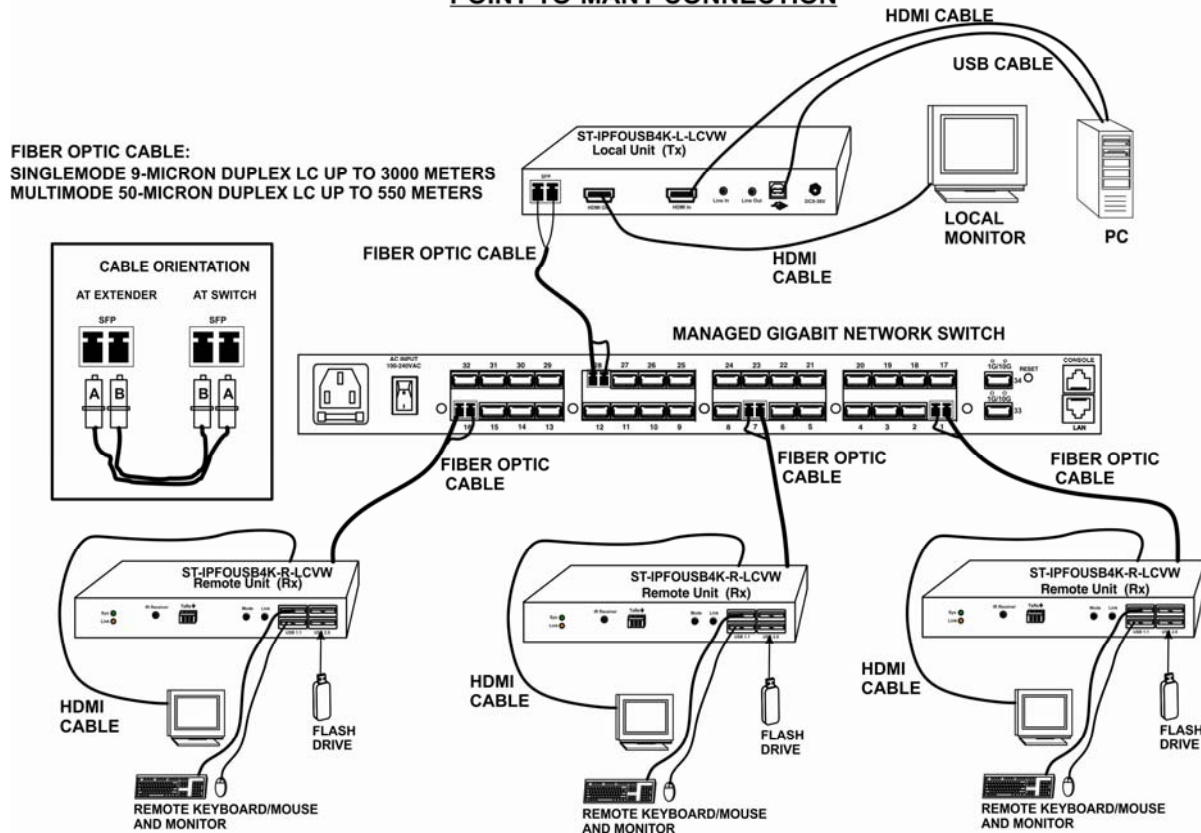
14. There are 2 methods to gain the access rights for a USB-over-IP port:
    14.1 Pressing and hold for 3 sec.the RX **Link button .**
    14.2 Press "U" key to toggle when the Transmitter List OSD menu is displayed.

    The RX monitor will display "Requesting USB" to indicate starting a USB-over-IP connection, and message of "Starting USB" will be displayed if it successfully gained the USB access rights. Meanwhile, the previous USB Master unit will show an OSD message of "USB Stopping".

POINT-TO-POINT CONNECTION

POINT-TO-MANY CONNECTION

MANY-TO-MANY CONNECTION

FIBER OPTIC CABLE:
SINGLEMODE 9-MICRON DUPLEX LC UP TO 3000 METERS
MULTIMODE 50-MICRON DUPLEX LC UP TO 550 METERS

MANAGED GIGABIT NETWORK SWITCH

CABLE ORIENTATION

AT EXTENDER   AT SWITCH

SFP   SFP

A B   B A
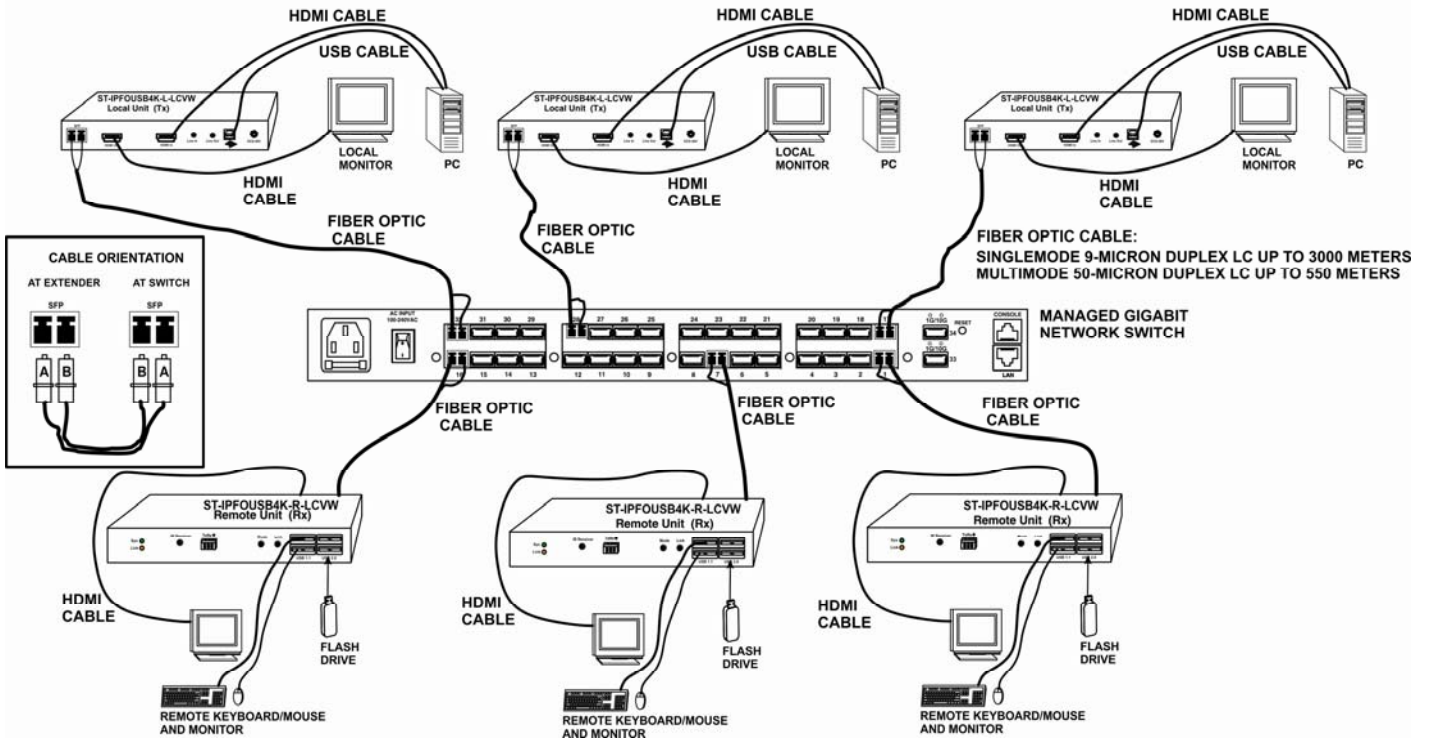
Panel Button and Hotkey Operation

Press TX "Button 1" button to lock/unlock RX

Keep pressing TX "Button 1" button for 3 seconds to lock/unlock the RX's USB and KMoIP ports. The RX will display "Locked by TX" OSD message on the screen when it is locked.

Press TX "Button 2" or RX "Mode" button to select Video/Graphic mode

Press TX "Button 2" or RX "Mode" button to set RX in Video or Graphic mode. The RX will display "Graphic Mode" or "Video Mode" OSD message on the screen.

Press and hold RX "Link" button for 3 seconds to request/release USB access rights
The RX user can manually request/release USB access rights when a TX is connected with multiple RXs. Press and hold RX "Link" button for 3 seconds to request USB access rights, the RX will display "Starting USB" OSD message. Pressing again will release and display "Stopping USB".

Press RX "Link" button for the "Transmitter List" and "Simple Configuration" OSD Menu

Press RX's "Link" button for the Transmitter List OSD Menu as shown in the below left screenshot. Briefly press the button again to move the highlighting arrow">"to select the TX. The RX will connect to the selected TX after 3 seconds.

From the Transmitter List OSD Menu, press and hold the "Link" button for 3 seconds to enter the Simple Configuration OSD Menu as shown in the below right screenshot. Briefly press the button to move the highlighting arrow">" to select the settings to change. You can change Casting Mode, TX Maximum bit rate, Connection Method and RX ON/OFF (temporary Connect/Disconnect with TX).

Move the highlighting arrow ">"to Hotkey Setting , wait a few seconds, and a sub-menu will show up with 4 possible selections: "Ctrl Ctrl", "Shift Shift", "Alt Alt", or "Scroll Scroll". Press the "Link" button to move the highlighting arrow ">"to the desired selection. The RX unit will be re-booted.
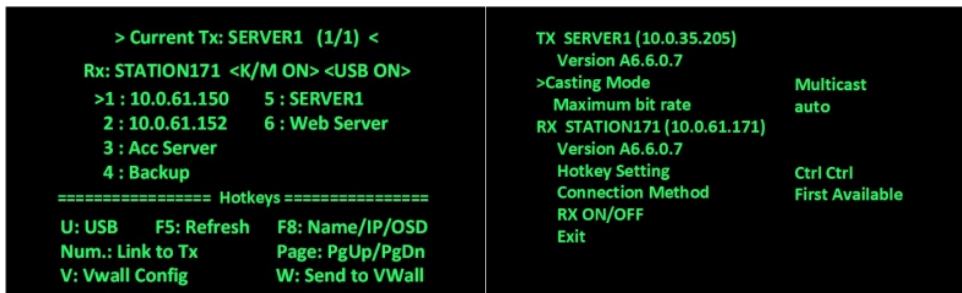
RX "Transmitter List OSD Menu" by Hotkey
Pressing <hotkey><hotkey> at the RX keyboard will activate the Transmitter List OSD Menu with a maximum of 8 Transmitters per page, as shown in the screenshot below. The top 2 lines are the current TX and RX IP or name. You can select the TX by pressing the↑↓keys, then press <Enter> to connect to the selected TX. You can also press keys 1 ~ 8 to immediately connect to the target TX.

While in the Transmitter List OSD Menu, you can:

Press **U** to request/release USB-over-IP.

Press **F5** to refresh the Transmitter List.

Press **F8** to switch in between Name/IP/OSD modes.

Press **V** to enter Video-Wall configuration.

Press **W** to send the current display to other RX or RXs with VWall ID.

While the Video Wall OSD menu is up (below), the characteristics of the RX with the video wall can be adjusted as needed. Keys to press for the desired changes are indicated at the bottom of the menu.

Don't forget to press **<F10>** to save any changes you make before you exit.

To exit the OSD without saving, press**<ESC>**

SPECIFICATIONS

Local Unit

- Compatible with a USB computer (PC, SUN and MAC) with Ultra-HD HDMI output.
- Multiplatform support: Windows 2000/XP/Vista/7/8/10, Windows Server 2000/2003/2008/2012, Solaris, Linux, FreeBSD, and MAC OS 9/10.
- One female HDMI connector for source.
- One female HDMI connector for display.
- One female USB Type B connector.
- Two female 3.5mm stereo jacks for audio out and mic in.
- Speaker only works when in a point-to-point connection.
- One female 3.5mm port for IR emitter (sold separately).
- Screw terminal for RS232.
- One duplex female LC fiber optic port for sending video/audio, USB, IR, and RS232 signals.

Remote Unit

- One female HDMI connector.
- Four female USB Type A connectors for keyboard, mouse, flash drive, HDD, or touchscreen display.
- Two USB 2.0 and two USB 1.1
- Two female 3.5mm stereo jacks for audio out and mic in.
- Microphone only works when in a point-to-point connection.
- One female 3.5mm port for IR receiver (sold separately).
- Screw terminal for RS232.
- One duplex female LC fiber optic port for sending video/audio, USB, IR, and RS232 signals.

Supported video resolutions:

- Ultra-HD 4Kx2K resolutions (3840x2160 @ 30Hz)
- 2K Cinema (2048x1080 @ 60Hz)
- HDTV resolutions to 1080p
- Up to 1920x1200 (WUXGA)
- Supports embedded digital audio through HDMI compatible TVs or audio receivers.

RS232

- Supports TXD and RXD.
- Baud rate: 9600/14400/19200/38400/57600/115200.

Power

- Local and Remote unit:
    - Input: 100 to 240 VAC at 50 or 60 Hz via AC adapter (included).
    - Output: 12 VDC, 2A

Dimensions

WxDxH (in): 6.1x4.33x1.18 (155x110x30 mm).

Environmental

- Operating temperature: 32 to 122°F (0 to 50°C).
- Storage temperature: -4 to 185°F (-20 to 85°C).
- Operating/storage relative humidity: 0 to 80% non-condensing RH.

Regulatory Approvals

- RoHS
- TAA compliant

Max Distance

- Using singlemode 9-micron cable, extend to 9,842 feet (3,000 meters).
- Using multimode 50-micron cable, extend to 1,804 feet (550 meters).

<div style="border:1px solid teal">

WARRANTY INFORMATION

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The warranty period on this product (parts and labor) is two (2) years from the date of purchase. Please contact Network Technologies Inc at **(800) 742-8324** (800-RGB-TECH) or **(330) 562-7070** or visit our website at http://www.networktechinc.com for information regarding repairs and/or returns. A return authorization number is required for all repairs/returns.

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