

# ST-IPUSBD-L/R-DH

## Dual head DVI-I with USB KVM Extender over IP Setup Guide



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## INTRODUCTION

The XTENDEX® Dual Monitor DVI USB KVM Extender provides remote KVM (USB keyboard, USB mouse and two 1080p DVI monitors) access to a dual-head USB computer up to 472 feet (144 meters) away via two CAT6/6a/7 cables.

Each KVM extender consists of a local unit that connects to a dual-head computer, and a remote unit that connects to two DVI monitors, 3.5mm stereo audio speakers and microphone, and up to eight 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 CAT6/6a/7 cable, or a Point-to-Many or Many-to-Many connection via a managed Gigabit network switch.

- Multiplatform support: Windows 7/8/10, Windows Server 2008/2012/2016/2019, Solaris, Linux, FreeBSD and MAC OS 10/11
- Two female DVI-I connectors
  - Signal type: single link digital DVI.
- Signal transmission via two CAT6/6a/7 cables up to 472 feet (144 meters).
- Supports HDTV resolutions to 1080p, and up to 1920x1200 (WUXGA).
  - Extend up to 472 feet in a Point-to-Point connection.
  - Extend up to 944 feet in a Point-to-Point, Point-to-Many, or Many-to-Many connection via a managed Gigabit network switch.
    - The max length between most switches and the local/remote unit is 472 feet.
    - The switch itself will determine the maximum distance.
- HDCP 1.4 compliant.
- USB type A ports for keyboard, mouse, flash drive, HDD or touchscreen display.
  - Four USB 2.0 and four USB 1.1 connectors.
  - Keyboard and mouse are hot-pluggable.
- Supports video wall installations from 1x2 to 4x4 screens.
  - 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.
  - Manage transmitter/receiver connections and video wall configuration with web interface or network switch that supports VLAN.
    - Each VLAN 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.
  - USB Exclusive Mode: Only one remote unit can have USB control over the source computer at any time.
  - USB Sharing Mode: Multiple remote units share the control of the source computer.
    - Up to 5 USB devices will be recognized by the computer.
- Customizable EDID table on local unit.
- Supports the DDC2B protocol.
- Extracts audio from an HDMI video source connected to the transmitter using DVI-HD-xx-MM cable and outputs through the 3.5mm stereo audio port on the receiver.
  - Selectable through the web interface.
- Easily expandable – add receivers as you add control stations.
- Integrated mounting brackets for easy surface/wall mounting.

**Note: The top layer of the transmitter(s) only pairs with the top layer of the receiver(s), and the bottom layer of the transmitter(s) only pairs with the bottom layer of the receiver(s). For example, the top and bottom layers of one receiver unit cannot display the same video from a single video source connected to a transmitter.**

## **Materials Included with this kit:**

### **Local Unit Package:**

- 1 x Local Unit
- 1 x USB A to B Cable (71.38 in (1,812.93 mm))
- 2 x HDMI to DVI Cable (47.24 in (1,200.00 mm))
- 1 x 12VDC 5A power supply
- 1 x Country-specific line cord
- URL Slip with path to this manual

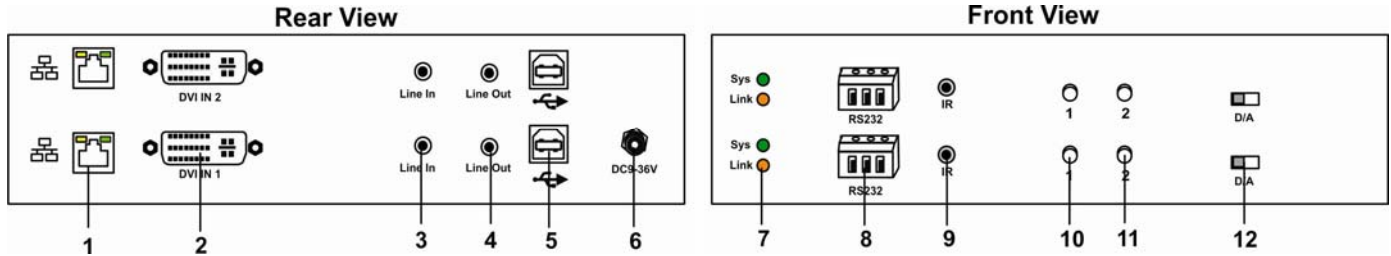
### **Remote Unit Package:**

- 1 x Remote Unit
- 1 x 12VDC 5A power supply
- 1 x Country-specific line cord
- URL Slip with path to this manual

## Features and Functions

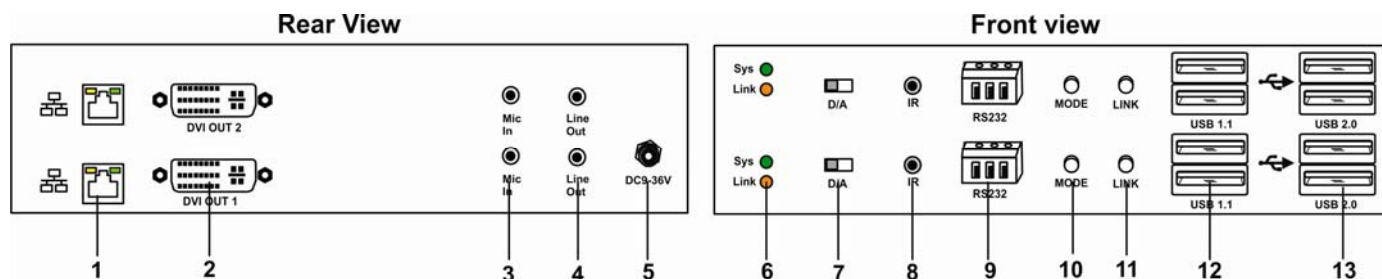
**Note:** The Local and Remote units each contain 2 processors (A on bottom and B on top). Both support the extension of Video (DVI only), USB and IR. The A is referred as “Main” and B is referred as “2nd” throughout this manual.

### ST-USB-L-DH Dual Head Transmitter (Local Unit)



| No. Connector   | Description   |
|---|---|
| 1 Ethernet  | Main and 2 <sup>nd</sup> Gigabit Ethernet ports   |
| 2 DVI-I In  | Main and 2 <sup>nd</sup> DVI-I input ports  |
| 3 Line In   | Main and 2 <sup>nd</sup> 3.5mm Stereo Audio input ports   |
| 4 Line Out  | Main and 2 <sup>nd</sup> 3.5mm Stereo Audio output ports (from Mic. In of Rx)   |
| 5 USB-to-PC   | Main and 2 <sup>nd</sup> USB Upstream port, Virtual USB HUB extension   |
| 6 DC Power input  | System power input, DC 12V.   |
| 7 (Main/2 <sup>nd</sup> )<br>Green: System LED<br>Amber: Link LED | <p><b>Green Blinking/Amber Off:</b> System is starting up.</p> <p><b>Green On/Amber Off:</b> System is ready, TX/RX not connected.</p> <p><b>Green On/Amber Fast Blinking:</b> Main/2<sup>nd</sup> processors are connecting.</p> <p><b>Green On/Amber Slow Blink:</b> Main/2<sup>nd</sup> processors are internally connected, TX/RX is externally connected, waiting for video input.</p> <p><b>Green On/Amber On:</b> TX/RX connected, video input is ready.</p> |
| 8 RS232   | Not supported at this time  |
| 9 IR Emitter  | Connect Universal IR Emitter (sold separately)  |
| 10 Button 1   | <p><b>Press and Hold</b> at <b>Power ON</b> until Green and Amber LEDs blink.</p> <p>This will Reset the unit to Factory defaults and enter 192.168.0.88 <b>Setup</b> mode.</p>   |
| 11 Button 2   | <p><b>Press momentarily</b> to select Video /Graphic mode.</p> <p><b>Keep pressing for 3 seconds</b> to enable/disable Anti-Dither feature.</p>   |
| 12 D/A Switch   | Not supported- leave in position "D" (to the left)  |

## ST-USBD-R-DH Dual Head Receiver (Remote Unit)



| No. Connector  | Description  |
|--|--|
| 1 Ethernet   | Main and 2 <sup>nd</sup> Gigabit Ethernet ports  |
| 2 DVI-I Out  | Main and 2 <sup>nd</sup> DVI-I output ports  |
| 3 Mic. In  | Main and 2 <sup>nd</sup> Microphone Input, extend to the Line Out of Tx  |
| 4 Line Out   | Main and 2 <sup>nd</sup> 3.5mm Stereo Audio output port  |
| 5 DC Power input   | System power input, DC 12V.  |
| 6 Main/2 <sup>nd</sup><br>Green: System LED<br>Amber: Link LED | <p><b>Green Blinking/Amber Off:</b> System is starting up.</p> <p><b>Green On/Amber Off:</b> System is ready, TX/RX not connected.</p> <p><b>Green On/AmberFast Blinking:</b> Main/2<sup>nd</sup> processors are connecting.</p> <p><b>Green On/AmberSlow Blink:</b> Main/2<sup>nd</sup> processors are internally connected, TX/RX is externally connected, waiting for video input.</p> <p><b>Green On/Amber On:</b>TX/RX connected, video input is ready.</p> |
| 7 D/A Switch   | Not supported- leave in position "D" (to the left)   |
| 8 IR Receiver  | Connect Universal IR Receiver (sold separately)  |
| 9 RS232  | Not supported at this time   |
| 10 MODE  | <p><b>Press momentarily</b> to select video/graphic mode</p> <p><b>Keep pressing for 3 seconds</b> to enable/disable Anti-Dither feature</p> <p><b>Press and Hold at Power ON</b> until the Green LED blinks to set this RX as EDID Master</p>   |
| 11 LINK  | <p><b>Press momentarily</b> to enter OSD Transmitter List menu</p> <p><b>Keep pressing for 3 seconds</b> to request USB access rights</p> <p><b>Press and Hold at Power ON</b> until the Green and Amber LEDs blink to reset this RX to factory default settings and enter 192.168.0.88 <b>Setup</b> mode.</p>   |
| 12 USB 1.1 Host  | Main and 2 <sup>nd</sup> 2x USB-A 1.1 device ports   |
| 13 USB 2.0 Host  | Main and 2 <sup>nd</sup> 2x USB-A 2.0 device ports   |

# CONFIGURATION

Use the **Configuration Web page in the Local (TX) and Remote (RX) Units** to configure them. There are **Setup mode and Operation mode** on the Configuration Web page.

- To enter TX/RX **Setup Mode** Configuration Web page:
1. Use 192.168.0.88 to access it from your browser
  2. Only the System tab (pages 5-8) will be available from Setup Mode.

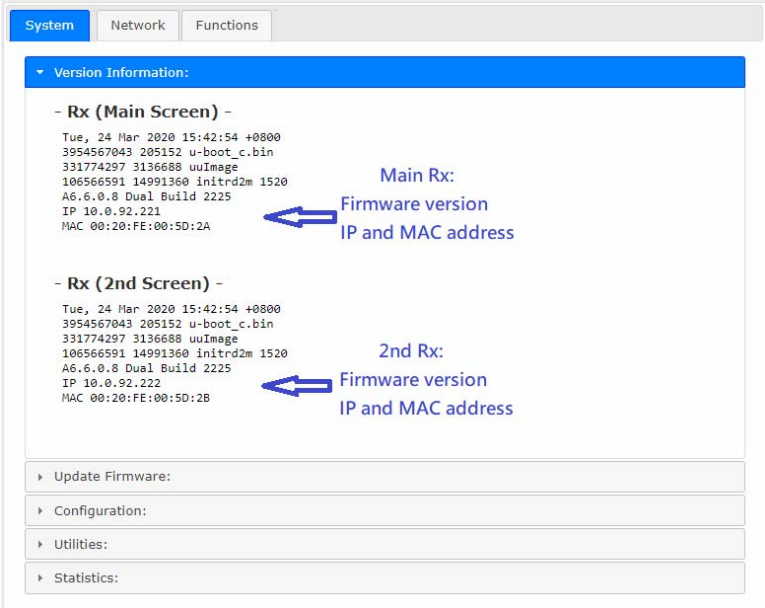
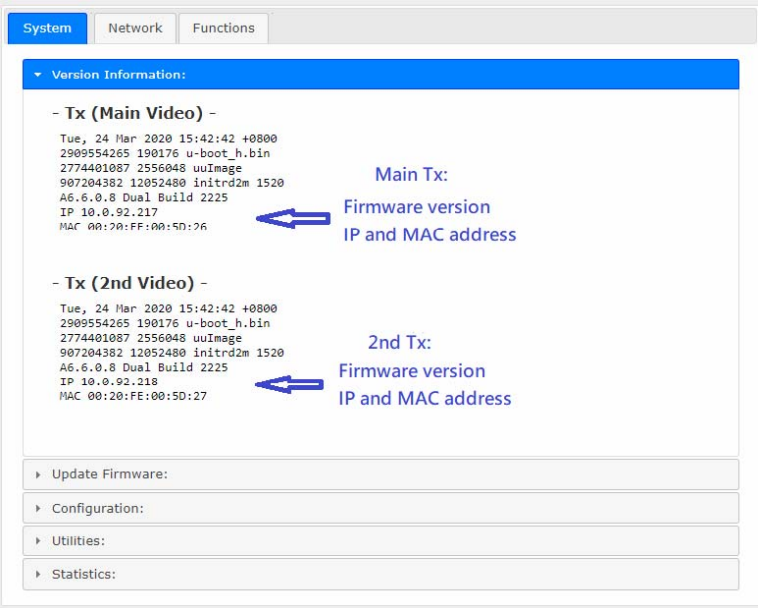
- To enter TX/RX **Operation mode** Configuration Web page:
1. Directly connect the TX/RX to a PC LAN port. Set the PC IP address to 10.0.1.1, with Net Mask 255.0.0.0.
  2. Open the PC's web browser (we recommend Chrome) and enter TX/RX IP address 10.xx.xx.xx (address is on the bottom of the unit) to enter the units web interface.

The TX/RX Operation mode contains 3 subtabs **System, Network, Functions**.

## System

### Version Information

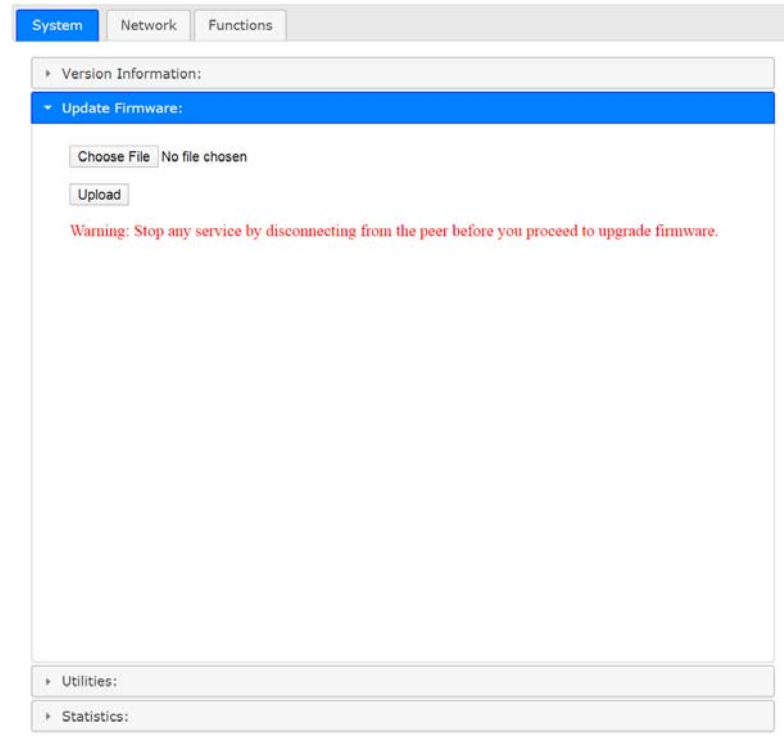
Provides information for "Tx" or "Rx", Firmware version, IP address, and MAC address:



## Update Firmware

### Update Firmware

To update firmware in both processors simultaneously, navigate to the firmware file (.bin) then click **“Upload”** to start 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.

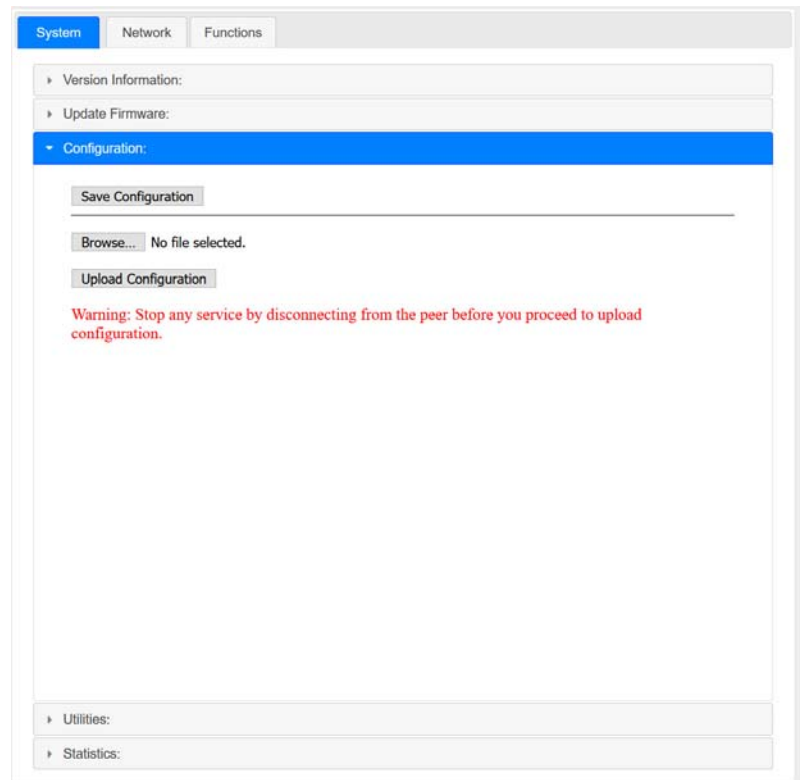


## Configuration

You can export the current settings to a configuration file, or import configuration from an external file.

Enter Main/2<sup>nd</sup> **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.

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

### EDID (TX Main only)

The TX provides flexible EDID selections:

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

**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 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.**

The screenshot displays a web-based configuration interface with a top navigation bar containing 'System', 'Network', and 'Functions'. The 'System' tab is active. Below the navigation bar, there are several expandable sections: 'Version Information', 'Update Firmware', 'Configuration', and 'Utilities'. The 'Utilities' section is expanded and highlighted in blue. It contains three main panels: 1. 'Commands' panel with two buttons: 'Factory Default' and 'Reboot'. 2. 'EDID' panel with two columns labeled 'Main' and '2nd'. Under 'Main', there is a radio button for 'Get from EDID Master' and a text input for 'Copy EDID from Rx IP'. Under '2nd', there is a radio button for 'Get from EDID Master' and a text input for 'Copy EDID from Rx IP'. Below these are two 'Resolution' dropdown menus, both set to '1920 x 1080 60Hz'. An 'Apply' button is at the bottom right of this panel. 3. 'Console API Command' panel with a text input field and an 'Apply' button. Below it is an 'Output' text area. At the bottom of the interface, there is a 'Statistics' section which is currently collapsed.

**Console API Command** --->This feature is not supported.

## 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 tab

### IP Setup (TX/RX)

The system supports **Static** setup for the IP configuration:

Manually enter an IP Address, Subnet Mask, and Default Gateway for both the Main and 2<sup>nd</sup> processors. Click “Apply” to save.

|                  | Main        | 2nd         |
|------------------|-------------|-------------|
| IP Address:      | 10.0.92.217 | 10.0.92.218 |
| Subnet Mask:     | 255.0.0.0   | 255.0.0.0   |
| Default Gateway: | 192.168.0.1 | 192.168.0.1 |

Apply

### Casting Mode (TX Main only)

The dual head 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)

**The Main and 2<sup>nd</sup> Multicast IP addresses share the prefix but must be configured with different last 4 digits** (as seen below).

Multicast Unicast

Multicast IP prefix: 225.0.10 (default 225.0.10)

Multicast IP: (Main) 225.0.10 1 . 027 (2nd) 225.0.10 1 . 028

Apply

## Casting Mode (RX Main only)

The dual head RX Main can be set in **Multicast (default)** or Unicast mode.

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.

The screenshot shows the 'Casting Mode' configuration window. At the top, there are two tabs: 'Multicast' (selected) and 'Unicast'. Below the tabs, the 'Multicast IP prefix' is set to '225.0.10' with a note '(default 225.0.10)'. Under 'Connection Method', there are four radio button options: 'First Available' (selected), 'Multicast IP: 225.0.10' (with a dropdown showing '0' and a text field '000'), 'OSD Transmitter List' (with a sub-option 'All Transmitters' selected and a 'Transmitter IP Range' field), and 'TX IP:'. At the bottom, there is a checked checkbox 'Show TX Device Name when connected' with a '5' in a text field and the text 'sec (0-99 sec, 0 means always show)'.

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

**First Available:** the dual head RX will connect to the first available TX when powered ON.

**Multicast IP 225.0.10x.xxx:** the dual head RX will connect to the TX with the Multicast IP address that is specified here.

**OSD Transmitter List:** the dual head RX will display the available TXs in the OSD menu for user to select from.

Select "**All Transmitters**" if all of the 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 dual head RX will connect to this specified TX only.

**Direct Connection:** this setting enables dual head RX to connect to TX in the same subnet and 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) for the specified period of time when connected. Default is enabled with a 5 second period.

## Jumbo Frame (TX/RX)

The TX/RX supports Jumbo Frame (8K bytes) for better video quality. This is enabled by default.

**Note: The Ethernet Switch also must be set with Jumbo Frame enabled (at least 8K) if this has been enabled in the TX.**

The screenshot shows the 'Jumbo Frame' configuration window. It contains two radio button options: 'Enabled' (selected) and 'Disabled'. At the bottom right, there is an 'Apply' button.

## Functions

The screenshot shows a web interface with three tabs: 'System', 'Network', and 'Functions'. The 'Functions' tab is selected. Below the tabs are two main sections. The first section is titled 'Device Name' and contains two input fields labeled 'Main' and '2nd', with an 'Apply' button to the right. The second section is titled 'Video over IP' and contains a checked checkbox 'Enable Video over IP', two radio buttons for 'Video Mode' (selected) and 'Graphic Mode', a 'Maximum Bit Rate' dropdown menu set to 'Best Effort', and a 'Maximum Frame Rate' slider set to 100%. There is an 'Apply' button at the bottom right of the 'Video over IP' section.

Figure 1- Video over IP Functions for the TX (Local Unit)

### **Device Name (TX/RX)**

To set TX/RX Device name, enter up to 10 characters for Main and 2nd and click “Apply” to save.

### **Video over IP (TX Main and 2nd)**

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

**Video/Graphic Mode:** Select Video Mode for video to play smoothly.  
Select Graphic Mode for static KVM picture 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 to 100%.  
**(Default: 100%)**

**Video over IP**

Enable Video over IP

---

Enable Video Wall

---

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

---

Scaler Output Mode:

---

Timeout for Detecting Video Lost:

Turn off screen on video lost

---

**Figure 2- Video over IP Functions for the RX (Remote Unit)**

**Video over IP (RX Main Only)**

**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 Main and 2nd as the EDID Master.

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

**Timeout for detecting video lost:** The timeout period for detecting the video has been lost (**default is 10 sec.**)

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

## USB over IP (TX)

**USB over IP**

**Enable USB over IP**

---

**Operation Mode:**

**Exclusive Mode**

**Sharing Mode (Maximum 4 Virtual ports)**

---

**Compatibility Mode:**

**Mouse not responding well (Check when USB mouse responding is slow and queer)**

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

### **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 PC USB. These 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 port with device attached 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.

### **Compatibility Mode**

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

**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 (KMolP ports) (RX)**

There are 2 x USB 1.1 and 2 x USB 2.0 ports on the Main of 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 Virtual USB 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's K/M over IP HID emulation port. It is recommended to configure the 2 x USB 1.1 (keyboard/mouse) as KMolP ports and 2 x USB 2.0 as USB over IP ports (for Touch, Disk).

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

**USB over IP**

**Enable USB over IP**

---

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

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

**KMoIP ports**

1. 3.

2. 4.

USB 1.1                      USB 2.0

Please select the ports you want to be KMoIP ports:

1     2     3     4

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 is Port 1 and 2 KMoIP Enabled.**

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

### **Hotkey (RX Main only)**

The dual head 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**).

**Hotkey**

HotKey:

### **Audio Output (RX)**

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

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

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

**Audio Output**

HDMI Audio De-Embedder

The DVI Out on the RX will not pass audio through to an HDMI monitor's speakers if one is connected. You must use the "Line Out" port with self-powered speakers to hear audio from an HDMI audio input.

When this feature is disabled, Local Audio Input and Remote Audio Output always work together. Remote Input and Local Output only works when extender units are in Unicast (one Tx pairs with only one Rx) mode.



## **Multi-Screen Setting (TX Main only)**

**Multi-Screen Setting**

**Main Video**

**2nd Video TX IP:**

**3rd Video TX IP:**

**4th Video TX IP:**

The system supports Multi-Screen feature which is useful for PC with multiple HDMI screen outputs (above):

**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.**

**2<sup>nd</sup> Video TX IP:** Type in another TX IP address which is connected to the PC's 2<sup>nd</sup> video output. (This 2<sup>nd</sup> TX IP will be set when the dual head TX is powered ON.)

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

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

## **Multi-Screen Setting (RX Main only)**

**Multi-Screen Setting**

**2nd Screen RX IP:**   **Mirror**

**3rd Screen RX IP:**   **Mirror**

**4th Screen RX IP:**   **Mirror**

As above in the RX Main Multi-Screen Setting Web page:

**2<sup>nd</sup> Screen RX IP:** Type in another RX IP address which is connected to the 2<sup>nd</sup> screen. (This 2<sup>nd</sup> RX IP will be set when the dual head RX is powered ON.)

**3<sup>rd</sup> Screen RX IP:** Type in another RX IP address which is connected to the 3<sup>rd</sup> screen.

**4<sup>th</sup> Screen RX IP:** Type in another RX IP address which is connected to the 4<sup>th</sup> 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 only)**

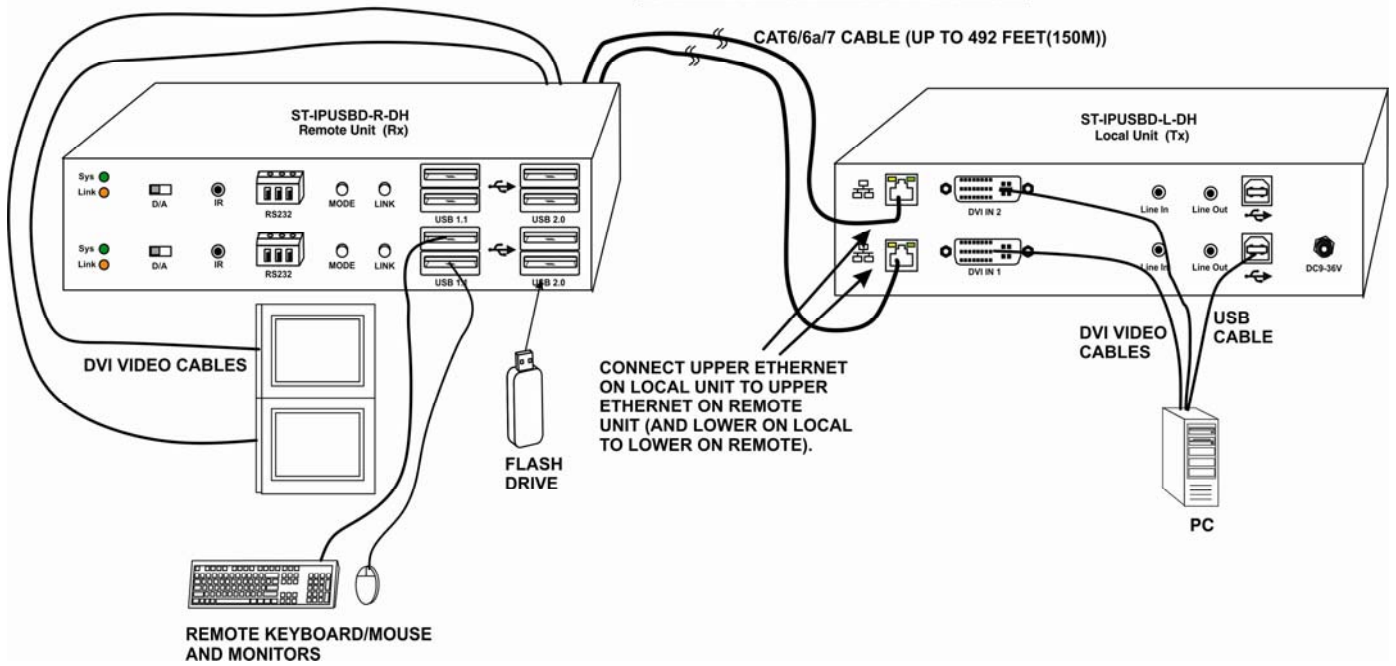
When the "**Mirror**" option is enabled, the associated RXs will connect to the same TX as the Main RX is connected to. This splitter function enables multiple RXs to display the same TX video.

## INSTALLATION(TX/RX)

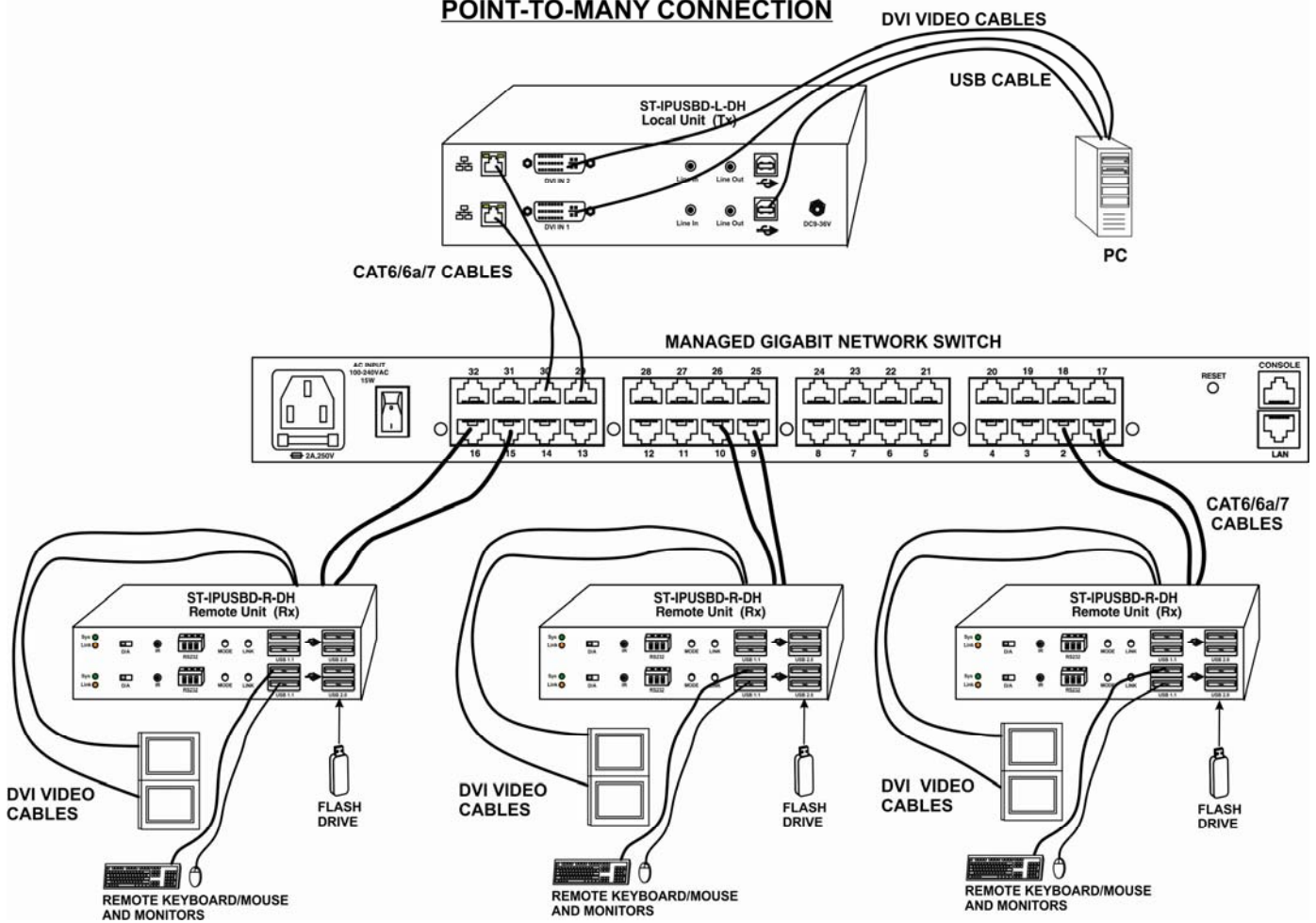
1. The factory default Connection Method for the dual head RX is “OSD Transmitter List”, and TX is in Multicast mode with its default Multicast IP (shown on the label). It means all TXs will send packets with default Multicast IP (225.0.10x.xxx), and all RXs will find the TX with last connection. If the last connected TX is not found in the network, the RX will display the OSD menu for the user to select the TX.
2. Use a CATx cable (straight, EIA 568B) to directly connect TX/RX as a pair connection, or connect to 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. Make sure to adjust the TX/RX D/A switch to "D" for HDMI/DVI installation. Connect the TX to a video source and the RX to a screen.
4. The TX factory default EDID setting is 1920x1080 60Hz.  
You can change TX to “**Copy EDID from EDID Master**”, refer to page 7 to enable RX as the EDID Master.  
You can change TX to “**Copy EDID from RX IP**” refer to page 7 to enable TX to get EDID from a specific RX.  
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: OSD Transmitter List**  
**Remote IP: 10.0.x.x/ 225.0.x.x** (Connecting target TX IP / Multicast IP)
6. **Enable TX/RX Jumbo Frame setting (refer to page 10) and set Ethernet Switch Jumbo Frame with minimum 8K bytes.**
7. Attach HDMI/DVI source to the TX’s Main and 2nd DVI-I connector. 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. As long as TX/RX connection 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 a PC as video source, check the correct screen EDID is shown on PC graphic control panel.
10. Activate video with audio source to TX, then check if all RXs are correctly displayed. In this step, both Green and Amber LEDs should be ON to indicate the unit is ready and video source is also ready.
11. Connect the user keyboard/mouse as needed to the USB 1.1 ports on the RX, and connect a USB type A to type B cable between the type B connector on the TX and a USB port on the computer.
12. If you are controlling a device that uses an IR remote control, plug an IR emitter to the TX and point the emitter at the video source. Plug an IR receiver into the RX IR port and set the receiver close to the display device.

**Note: The display and speakers connected to the 2nd set of ports will not display video or play audio unless a connection is made to the Main set of ports first. The Main head of a dual head TX and RX must be connected before the 2nd head will work.**

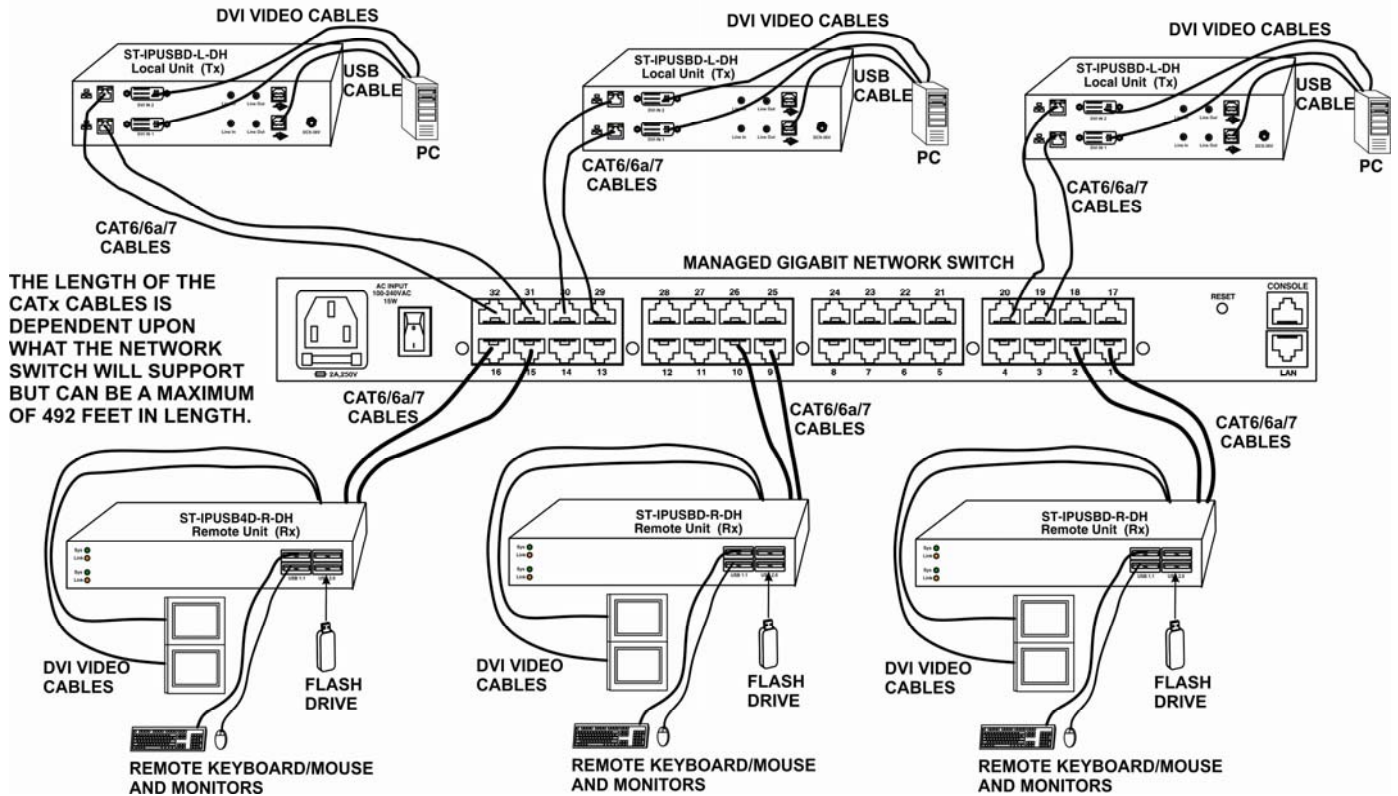
## POINT-TO-POINT CONNECTION



## POINT-TO-MANY CONNECTION



## MANY-TO-MANY CONNECTION



## USB over IP and KM over IP installation

1. Connect TX Main USB-B to PC, OS will detect a Generic USB 2.0 Virtual Hub Device.
2. Refer to the USB over IP, K/M over IP and KM over IP ports on page 12 to properly configure TX and RX for the USB devices such as keyboard, mouse, Pen Drive, Touch Screen, etc.

**Note: The RX's KM over IP 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 right for the KM over IP port. The TX (PC) can be shared with multiple RXs for keyboard/mouse access in KM over IP mode.

3. 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; RX USB-over-IP enabled, USB 1.1 KM over IP enabled and USB 2.0 KM over IP disabled.
4. To gain the access rights for a USB-over-IP port:

Press "U" key to toggle during Transmitter List OSD menu.

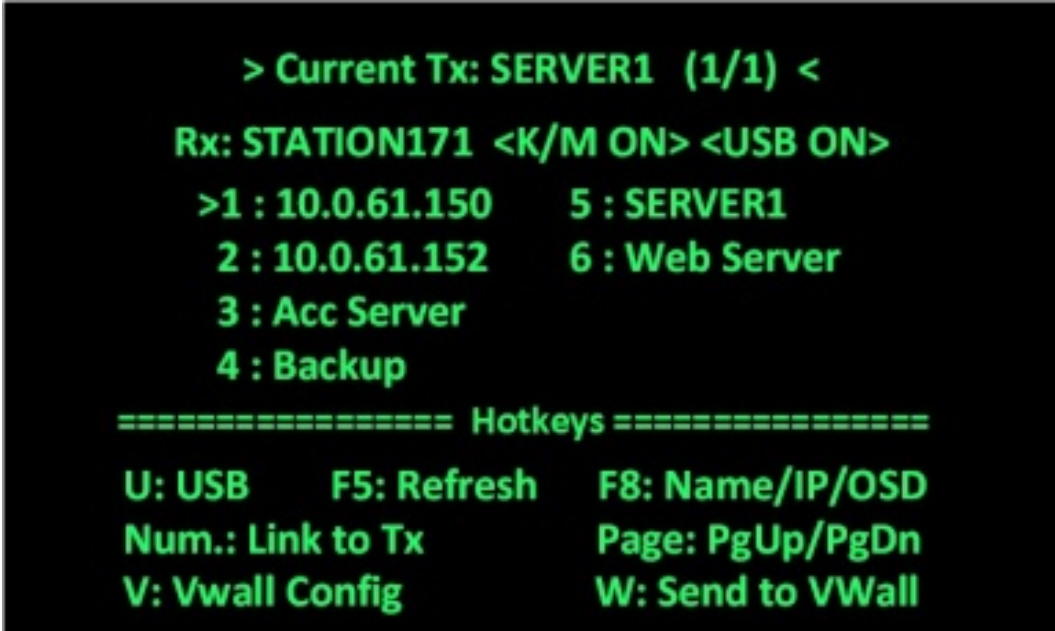
The RX display "Requesting USB" to indicate starting USB-over-IP connection, and message of "Starting USB" will be displayed if it successfully gained the USB access rights. Meanwhile, the previous USB Master unit will show an OSD message of "USB Stopping".

## Hotkey Operation

### RX “Transmitter List OSD Menu” by Hotkey

Pressing <hotkey><hotkey> at the RX keyboard will activate the Transmitter List OSD Menu with maximum 8 Transmitters per page (see image 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.



```
> Current Tx: SERVER1 (1/1) <
Rx: STATION171 <K/M ON> <USB ON>
>1 : 10.0.61.150    5 : SERVER1
 2 : 10.0.61.152    6 : Web Server
 3 : Acc Server
 4 : Backup
===== Hotkeys =====
U: USB    F5: Refresh    F8: Name/IP/OSD
Num.: Link to Tx    Page: PgUp/PgDn
V: Vwall Config    W: Send to VWall
```

While in the Transmitter List OSD Menu, you can:

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

Press **F5** to refresh Transmitter List.

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

Press **V** to enter Video Wall configuration (below).

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

To end the OSD, press<ESC>

While the Video Wall OSD menu is up (below), the characteristics of the RX with the video wall can be adjusted as needed. A video wall with a 4x4 configuration can be configured. The user can go into this page and configure the entire video wall system from any receiver's OSD. Keys to press for the desired changes are indicated at the bottom of the menu.

```

VWall RX          10.0.92.227
=> Source TX      [10.0.92.225]
IR Dest.         DISABLE
VWall ID         0
Screen Rows      2
Screen Cols      1
Position         1-Top
Stretch Type     Fit In
Rotation         0

===== Hotkeys =====
Up/Down:Move    Left/Right:Change
F5:TX Refresh   F8:Name/IP/OSD
ESC:Exit        F10:Save & Exit

```

**Using the Vwall Config Menu**

1. VWall RX: Use ← and → on the keyboard to toggle between RX's on the network and choose which screen is to be configured. The selections include all IPs for the top and the bottom layer of RX units on the network.
2. Source TX: Use ← and → on the keyboard to toggle between TX's source that this screen will use.
3. VWall ID: Use the same ID for all screens configured for the Video Wall being configured.
4. Screen Rows: How many rows are on this video wall.
5. Screen Cols: How many columns are on this video wall.
6. Position: Select which position this screen will be on the video wall.  
 For 1x2 (rows:2, cols:1) VW, the choice will be "1-Top" and "2-Bottom".  
 For 2x1 VW, the choice will be "1-Left" and "2-Right".  
 For 2x2 VW, the choice will be "1-TopLeft", "2-TopRight", "3-BottomLeft", and "4-BottomRight"  
 Configurations up to 4 rows and 4 columns can be configured.
7. Stretch Type- Select "Fit In" to have the image fill your screen, or "Keep Aspect" to keep the image aspect ratio proportions the same as they were transmitted.
8. Rotation: Select between rotating the image 0,180 or 270 degrees.

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

To exit the OSD without saving, press<ESC>

## TECHNICAL SPECIFICATIONS

### Local Unit

- Compatible with a dual-head USB computer (PC or MAC) with DVI or HDMI output.
- Multiplatform support: Windows 7/8/10, Windows Server 2008/2012/2016/2019, Solaris, Linux, FreeBSD, and MAC OS 10/11.
- Two female DVI-I connectors.
  - Signal type: single link digital DVI
- Two female USB Type B connector.
- Four female 3.5mm stereo jacks for audio out and mic in.
  - Speaker only works when in a point-to-point connection.
- Screw terminals for RS232 (not supported at this time)
- Two female RJ45 ports for sending/receiving video, audio, and USB signals

### Remote Unit

- Two female DVI-I connectors.
  - Signal type: single link digital DVI
- Eight female USB Type A connectors for keyboard, mouse, flash drive, HDD, or touchscreen display.
  - Four USB 2.0 and four USB 1.1
- Four female 3.5mm stereo jacks for audio out and mic in.
  - Microphone only works when in a point-to-point connection.
- Screw terminals for RS232 (not supported at this time)
- Two female RJ45 ports for sending/receiving video, audio, and USB signals.
- Supported video resolutions:
  - HDTV resolutions to 1080p
  - Up to 1920x1200 (WUXGA)

### Power

- Local and Remote unit:
  - Input: 100 to 240 VAC at 50 or 60 Hz via AC adapter (included).
  - Output: 12 VDC, 5A
- Power consumption:
  - Local unit: 7.2W
  - Remote unit: 28.8W

### Dimensions

WxDxH (in): 6.3x4.33x1.97 (160x110x50 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

- CE, FCC, RoHS
- TAA compliant

## WARRANTY INFORMATION

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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