

XTENDEX® Series

ST-IPUSBVD-L/R-VW

VGA/DVI USB KVM Extender Over IP with Video Wall Support User Manual



Transmitter (Local Unit)



Receiver (Remote Unit)

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Introduction

Description:

The XTENDEX® VGA/DVI USB KVM Extender Over IP provides remote KVM (USB keyboard, USB mouse, and VGA/DVI monitors) access to a USB computer up to 492 feet (150 meters) over a Gigabit network using a single CAT5e/6 cable. The extender consists of the ST-IPUSBVD-L-VW Local unit (Transmitter (TX)) that connects to a computer and also supplies video to local VGA and DVI monitors; and the ST-IPUSBVD-R-VW Remote unit (Receiver (RX)) that connects to VGA and DVI monitors, microphone, speakers, and up to four USB devices (keyboard, mouse, flashdrive, web camera, or touchscreen display).

The local and remote units can be connected together for a Point-to-Point connection via CAT5e/6 cable or a Point-to-Many connection via a Gigabit network switch. Support for multiple transmitters (Many-to-Many connections) requires a managed Gigabit network switch.

Features:

- Supports HDTV resolutions to 1080p, and up to 1920x1200 (WUXGA) at 60Hz.
 - Extend up to 492 feet (150 meters) in a Point-to-Point connection.
 - Extend up to 656 feet (200 meters) in a Point-to-Point or Point-to-Many connection via a Gigabit network switch.
 - The max distance between the switch and the local/remote unit is 328 feet (100 meters).
- Built-in video converter and switch - supports digital DVI and analog VGA.
- Connect a VGA USB computer and DVI USB computer, and switch between sources using the front panel buttons.
 - Both the transmitter and receiver support VGA and DVI monitors at the same time.
- Supports USB 2.0/1.1 devices.
 - Keyboard and mouse are hot-pluggable.
 - Connect a mouse, keyboard, flashdrive, web camera or touchscreen display.
- Supports video wall installations up to 8x16 screens.
- Displays can be rotated 180 and 270°.
- Bi-directional Infrared Remote (IR) control of HDMI source or display. IR transport channel can be forward or backward per the installation.
- Supports full-duplex RS232 up to 115200 baud.
- Manage transmitter/receiver connections and video wall configuration with built-in software or iOS/Android app.
- Applications using multiple transmitters and/or receivers require a managed Gigabit network switch with VLAN/IGMP and 8K Jumbo frame support.
- When using multiple remote units, only one unit can have USB control over the source at any time.
- HDCP 1.4 compliant.
- Easily expandable – add receivers as you add control stations.

Package Contents:

ST-IPUSBVD-L-VW (Transmitter)

Package Includes:

Transmitter x 1
USB A to B cable x 1
IR emitter cable x 1
DC 5V 2A power adapter x 1

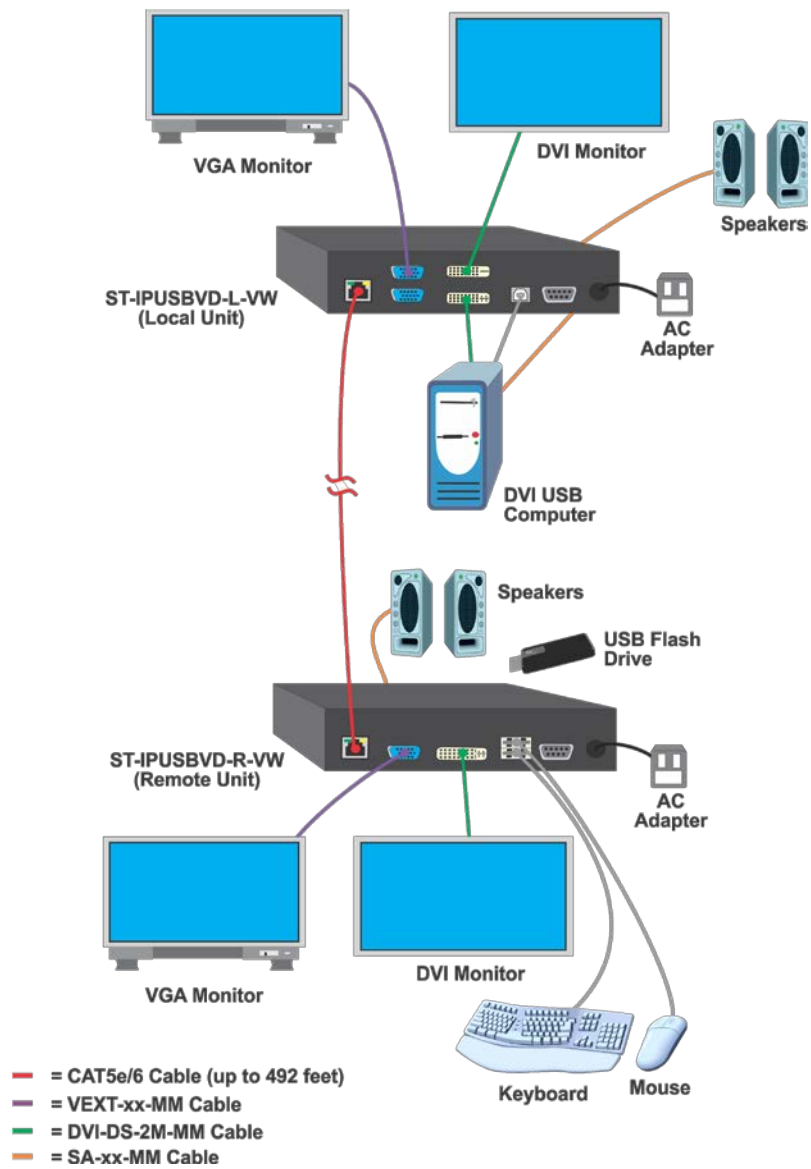
ST-IPUSBVD-R-VW (Receiver)

Package Includes:

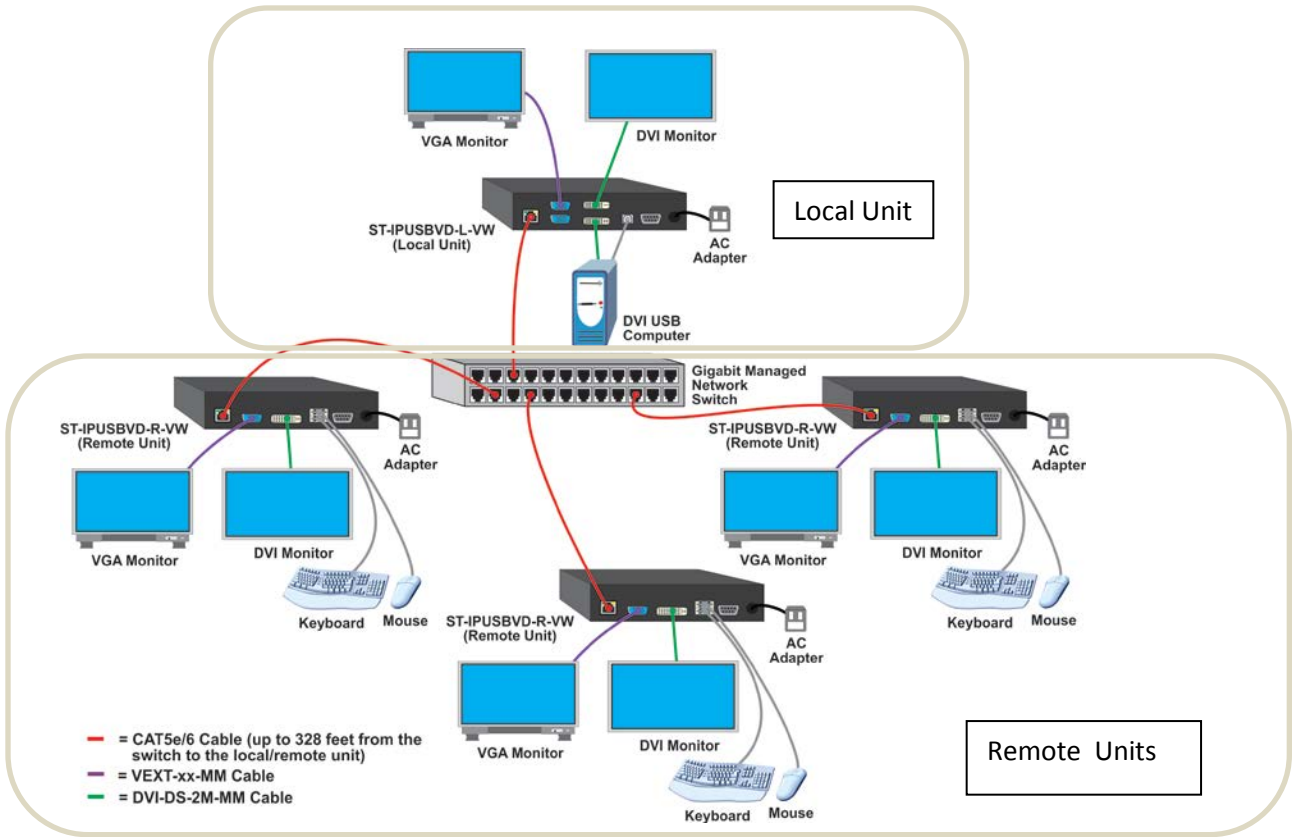
Receiver x 1
IR emitter cable x 1
IR Remote control x1
DC 5V 2A power adapter x 1

Applications:

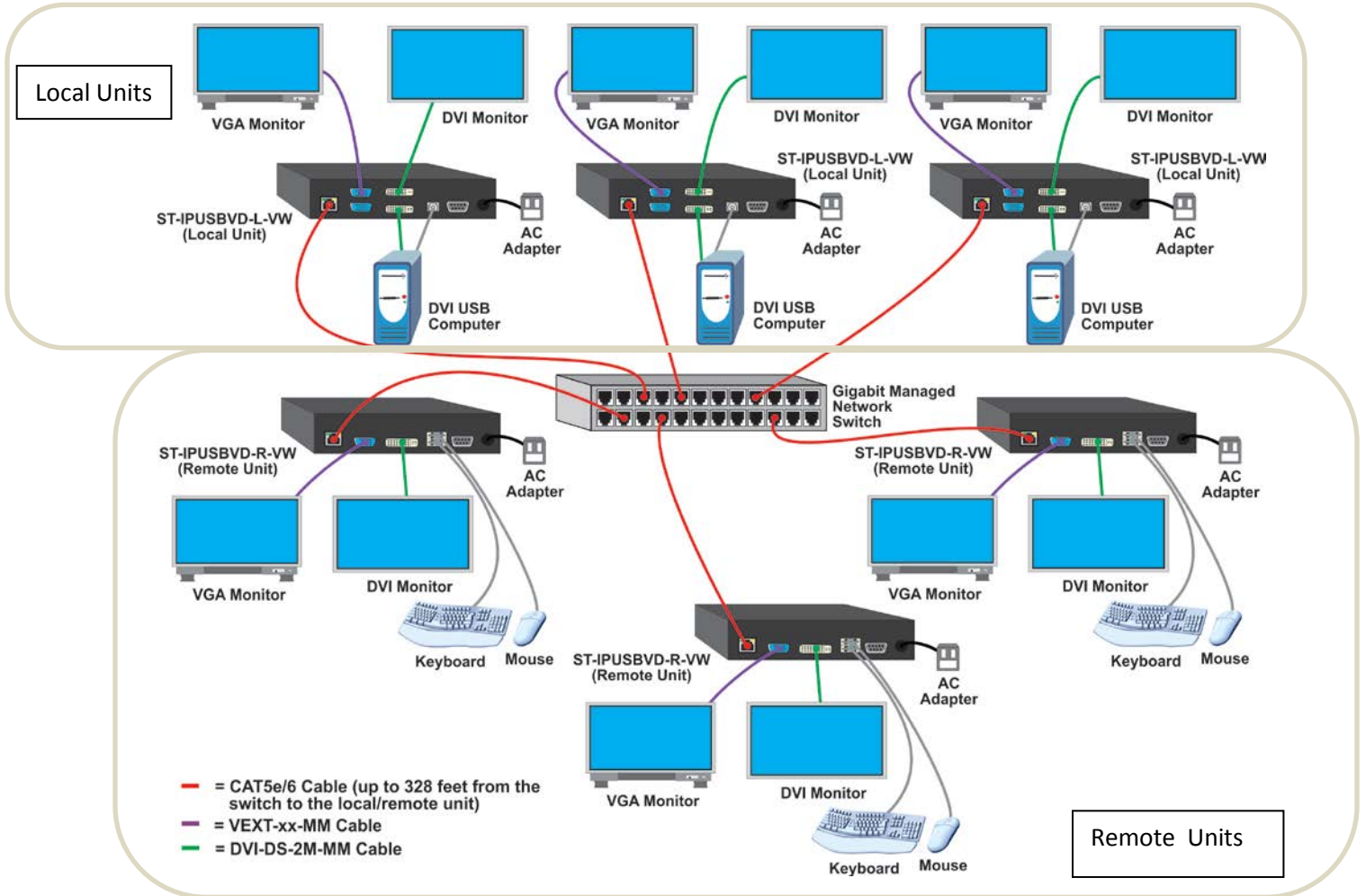
Point-to-Point Connection



Point-to-Many Connection



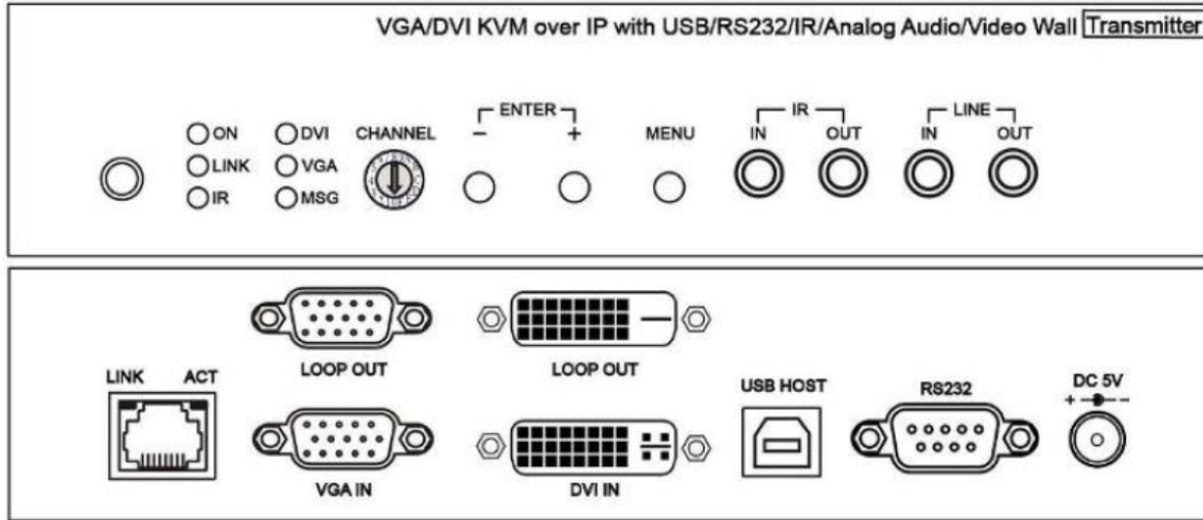
Many-to-Many Connection



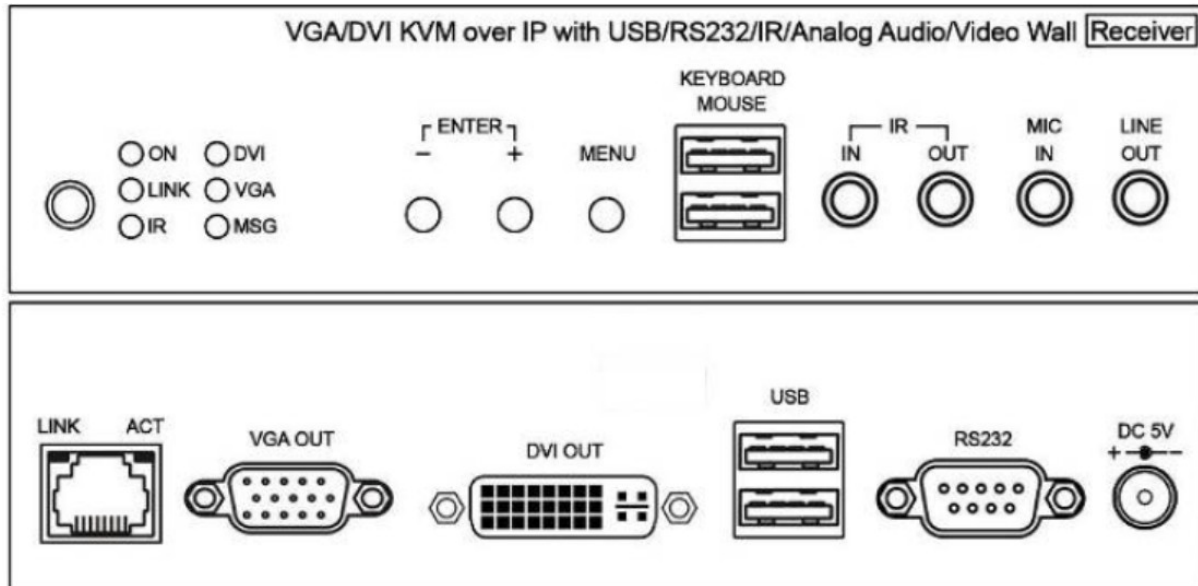
Operation

Panel View:

Transmitter (Local Unit)



Receiver (Remote Unit)



Panel Button Function:

Button	-	+	Menu
Short Press	Reduce Number	Increase Number	Menu/Cancel
Press for 1 second	Enter		
Press for 3 seconds	Carry	Decomposition	Lock/Unlock Panel Buttons (When OSD is not displayed)
Press and hold then power the unit ON	Factory Default	Engineering Mode	

Definitions:

Reduce Number: decrements the channel or the function number down (from IR Menu-Pg 8)

Increase Number: advances the channel or the function number up (from IR Menu-Pg 8)

Enter: once the channel or function is displayed on the screen from pressing + or - button, you must press both buttons to apply that selection.

Carry: Advances the selected channel in multiples of 10 (Switch channel 2 to 20, then to 200)

Decomposition: Decrements the selected channel in multiples of 10 (Switch channel 200 to 20, then to 2)

Lock/Unlock Panel Buttons: When locked, panel buttons will not respond to a momentary push. You must press the Menu button for 3 seconds to unlock the buttons and resume functionality.

Engineering Mode

In Engineering mode the “ON” and “Link” LEDs will flash together and the IP address of unit will be set to Static IP of 192.168.0.88 temporarily. If you find yourself in Engineering mode accidentally, power cycle the ST-IPUSBVD-VW to return to normal operation.

VGA/DVI input / output setting:

Button	Menu and -	Menu and +
Short Press together(TX only)	Switch to DVI of dual input mode	Switch to VGA of dual input mode
Press 3 seconds together(TX/RX) (Reboots automatically after setting)	Set to DVI single input / output mode	Set to VGA single input / output mode
	Set to VGA / DVI dual input / output mode (Menu and – and +)	

Front Panel LED Indication Status:

Panel LED	Status	Meaning	
ON (Green)	On	Boot completed	
	Flash Twice	Booting	
	Flash Slowly	Transmitter: stop link Receiver: video output is turned OFF	
	Breathing(Fading)	Screen saver mode (not available for transmitter)	
Link(Blue)	On	Connected & video is streaming	
	Flash	Trying to connect, or no source input from transmitter	
IR(Red)	On	Transmitting /receiving IR signal	
DVI(Green)	On	Transmitter: Video input from DVI Receiver: Video output to DVI	Transmitter: VGA/DVI dual input mode (when no video input) Receiver: VGA/DVI dual output mode
VGA(Blue)	On	Transmitter: Video input from VGA Receiver: Video output to VGA	
MSG(Red)	On	Control activity is occurring (IR, RS232, System setting...)	
	Flash 2~9 Times	System warning, Alert (Refer to MSG Status Indication)	

Rotary Switch Function:



The built in rotary switch to set channel numbers follow 16 HEX, could switch “ 0 ~ F “ total 16 channels, A = channel 10, B = channel 11, others channel same as 16 hex conversion. For channel numbers over “15” you could use panel button, IR remote, RS232, or APP on phone to set up.

RJ45 LED Indication Status:

RJ45 LED	Status	Description
LINK (Green)	On	Ethernet connected
ACT (Orange)	Flash	Data transmission

MSG LED Status Indication:

Times	Status
Always ON	IR control, RS232 control, system setting activity is occurring
2	IR Control disabled
3	Transmitters channel conflict
4	DHCP server not found
5	Restore to factory defaults
6	Engineering mode/Firmware update mode
7	Manufacture setting mode
8	Aux system stopped
9	Aux system firmware boot sector error
10	Aux system firmware type error

Note: Messages 7-10 are for factory use only. They are not likely to be seen in normal use.

Cable & Transmission Distance:

For the cable between the transmitter and receiver, use high quality CAT.5e UTP/STP/FTP or CAT.6 UTP cable. The transmission distance will be affected by equipment (router, Ethernet switch, hub), cable quality, routing the cable over noise generating devices, etc.

When using CAT.5e/CAT.6 cable to connect the transmitter and receiver directly (without an Ethernet switch), the maximum transmission distance is 150M.

You can also use a Gigabit Switch hub that supports **IGMP** protocol and **Jumbo Frame 8K** for signal distribution or extending the distance.

RJ45 pinout:

Link Cable (TIA/EIA-568-B)

1. Orange-white	Data 1 +	5. Blue-white	Data 3 -
2. Orange	Data 1 -	6. Green	Data 2 -
3. Green-white	Data 2 +	7. Brown-white	Data 4 +
4. Blue	Data 3 +	8. Brown	Data 4 -

Bandwidth Chart:

The bandwidth will vary based on different resolutions. The chart below provides the average bandwidth per resolution for reference.

Resolution (@60Hz)	Average Bandwidth (Mbps)	Resolution (@60Hz)	Average Bandwidth (Mbps)
1920x1080 (1080p)	133 (80~210)	1280x1024 (SXGA)	113 (79~150)
1280x720 (720p)	147 (112~177)	1024x768 (XGA)	81 (72~120)
1600x1200 (UXGA)	81 (57~105)	800x600 (SVGA)	66 (49~82)
		640x480 (VGA)	43 (29~56)

The above bandwidth chart does not include USB transmission. USB uses up to 50 Mbps when transferring mass data.

System scalability is limited only by uplink and stacking connector bandwidths. For example, under a Gigabit Ethernet network, the total flow must not exceed 1000Mbps to avoid any delay of video streaming. If the video plays with 1080p resolution, the transmitter will allow a maximum of up to 7 receivers for simultaneous video streaming.

For 8~16 sources: use switches which support 802.3ad Link Aggregation or smart (or intelligent) switches to get 2 Gbps or more bandwidth.

For over 16 sources: we recommend using a 10 gigabit switch.

System Default Settings:

Casting Mode:

The transmitter / receiver supports **Unicast** and **Multicast** modes (default is Multicast).

Use Multicast mode for one-to-one, one-to-multi, multi-to-one or multi-to-multi applications.

The analog audio output of the receiver going to the transmitter will be OFF in this mode, analog audio will only from pass from transmitters to receivers (one direction).

Unicast mode is suitable for one-to-one or multiple transmitters-to-one receiver applications. Analog audio with bi-direction transmission is only supported in **Unicast** mode.

IP Mode:

System default network IP setting is **Static IP**. **The address is assigned using the last 4 digits of the MAC address (Hex)**,

For example MAC XX:XX:XX:XX:12:AB, the default IP address will be 169.254.18.171

You could also set the units to **DHCP** or **Auto IP**. Please refer to web setting chapter: “**IP Setting**” (Page 20). In **Auto IP** mode it will assign **169.254.X.X** (subnet mask **255.255.0.0**) to transmitters and receivers when no DHCP server is present.

We recommend using Static IP mode when using APP or PC software control to prevent any IP change problems.

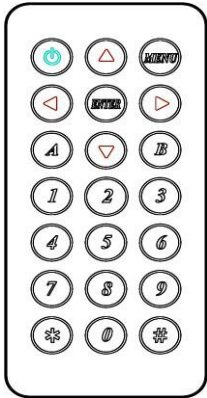
USB Hot Key Function:

Multicast mode supports multiple USB keyboard and mice in each receiver, but only one USB FLASH drive / hard disk can be used at the same time.

In order to establish a USB FLASH drive or hard disk connection,

1. Click the “Pause/Break” key three times on the keyboard connected to the receiver OR,
2. Using the IR remote, press MENU-1-4.

IR Remote Control Setting:
























The IR infrared remote control can be used to preset channel selection and other menu functions. Using the IR remote control, aim at the front panel of the receiver or the external IR receiver cable.

When first using the remote control or after changing the battery in the remote control, the IR remote control and the equipment Remote ID must be using same ID. The default Remote ID for the transmitter is 7, and for the receiver it is 8.

To set the Remote ID, Press and hold the power button, then press button 8 (for receiver, 7 for the transmitter) to complete the setting.

 +  . (point away from the transmitter or receiver)

IR Remote Control Button:

Symbol	Button	Receiver Function	Transmitter Function
	POWER	Turn Off/On Video Output	Connect/Disconnect Receiver
		Setup Remote Control ID	
	MENU	Menu selection, input numbers after press menu button	
	UP	Increase Value	
	DOWN	Reduce Value	
	LEFT	Carry	
	RIGHT	Decomposition	
	ENTER	Enter / Show Channel Information (When no other Menu is in view)	Enter
	ASTERISK	Cancel	
	NUMBER	Recall Previous Value	
	A	Favorite Channel Switching	Set RS232 to Auxiliary Mode to Receive Menu Message
	B	Back to Previous Channel	Set RS232 to Extender Mode
	1	Number 1	
	2	Number 2	
	3	Number 3	
	4	Number 4	
	5	Number 5	
	6	Number 6	
	7	Number 7	
	8	Number 8	
	9	Number 9	
	0	Number 0	

IR Remote Control Operation:

Select Channel:

Mode 1: use ◀ or ▲ or ▼ or ▶ to select channel and press **ENTER** to confirm. Mode 2: enter the channel number and press **ENTER** to confirm the input channel.

Select Menu Function:

Mode 1: press **MENU** then use ◀ or ▲ or ▼ or ▶ to select function, press **ENTER** to confirm. Mode 2: press **MENU**, then input function number as below, press **ENTER** to confirm.

Wake Up Receiver:

In screen saver mode (30 seconds without video input), press any button of IR remote/panel to wake up

Connect /Disconnect Connection for Transmitter:

Press **POWER** of IR remote to connect/discount connection.

Turn On/Off Video Output for Receiver:

Press **POWER** of IR remote to turn ON/OFF monitor, or press panel buttons **CH-** and **CH+** together to turn ON

IR Quick Block for Receiver:

Press ### for IR block mode; causes receiver to ignore IR control signal

Press *** to Quit IR block mode (you can also press any panel button to quit)

TV Wall Quick Switch for Receiver:

Press MENU+POWER: Switch between TV Wall/Single monitor modes immediately.

Add Favorite List for Receiver:

Press MENU+A: Add channel to favorite list in the menu, maximum 32 channels.

Remove Favorite List for Receiver:

Press MENU+B: Remove current channel from favorite list in the menu

Set RS232 Mode for Transmitter:

Press MENU+A: Switch to message mode to receive response instead of OSD.

Press MENU+B: Switch to extender mode.

IR Menu Function List:

No.	Menu	Description	Option / Remark	RX	TX
0	System Information	System Information		V	V
1	Network Information	Network Information		V	V
2	Function Information	Function Information		V	V
3	Control Information	Control Information		V	V
4	Video & Audio Information	Video & Audio Information		V	V
5	RS232 Control Information	RS232 Control Information		V	V
6	Channel Information	Channel Information		V	X
7	Favorites Information	Favorites Information		V	X
8	Routing Information	Routing Information		V	X
9	Video Wall Information	Video Wall Information		V	X
10	Advanced Menu	Display advance menu	0 = Hide 1 = Display	1	1
11	Reconnection	Reconnect with TX/RX		V	V
12	Disconnection	Disconnection (keep routing channel)		V	X
13	Stop Connection	Stop all connection (Include routing channel)		V	V
14	Starting USB	Get USB control priority (in multicast mode only)		V	X
15	Casting Mode	Casting Mode setting	0 = Unicast 1 = Multicast	1	1
16	Jumbo Frame	Jumbo Frame setting	0 = Disable 1 = Enable	1	1
17	Free Routing	Free Routing setting		1	1
20	Video Function	Video Extender setting		1	1
21	Audio Function	Audio Extender setting		1	1
22	USB Function	USB Extender setting		1	1
23	RS232 Function	RS232 Extender setting	0 = Disable 1 = Enable	1	1
24	IR Function	IR Extender setting		1	1

V = Available X = Not available Numbers = default value

25	Video Wall Function	Video Wall setting	0 = Disable 1 = Enable	1	1
26	CEC Function	CEC Extender setting (4K only)		1	1
27	Keyboard Mouse Function	Keyboard Mouse Extender setting		1	1
30	Button Control	Button Control setting	0 = Disable 1 = Enable	1	1
31	Button Lock	Button Lock		0	0
32	IR Control	IR Control setting		1	1
33	IR Control ID	IR Control ID setting	0 ~ 9 = IR Control ID 10 = User Defined Controller	8	7
34	RS232 Control	RS232 Control setting	0 = Disable 1 = Enable (Case Sensitive) 2 = Case Insensitive	1	1
35	HDMI 5V Control	Cut HDMI 5V when switching	0 = Disable 1 = Enable	0	X
36	CEC Control	Turn on/off TV by CEC (4K only)		0	X
37	Rotary Switch	HKM02BT/VDKM02B Channel Switch		X	1
40	Video Select	Video input /output setting(VDKM02B)	0 = DVI 1 = VGA 2 = DVI + VGA	2	2
41	Scaler Output Mode	Video output resolution setting	0 = Pass-Through 1 = Pass-Through (Strict) 2 = Auto Detect (Per EDID) 3 = Full HD 1080p 60Hz 4 = Full HD 1080p 50Hz 5 = Customize	0	X
42	Audio Select	TX Audio Input Select /RX Audio Output Select	0 = Digital 1 = Analog 2 = Auto	2	2
43	Analog Input Volume	Analog Input Volume	0 = Mute 1 ~ 100 = Volume %	85	85
44	Analog Output Volume	Analog Output Volume		85	85
45	Video Quality	Video Quality setting	0 = Graphic Mode 1 ~ 5 = Mode 1 ~ 5 6 = Video	X	6
46	Anti-Dither	Anti-Dither setting	0 = Disable 1 ~ 2 = Mode 1 ~ 2	X	0
47	EDID Update	Update EDID from TX or monitor of RX		V	V
48	EDID Select	Select default EDID of TX	0 = Default HDMI 1 = Default DVI 2 = Default VGA	X	1
49	HDCP Always On	HDCP setting	0 = Disable 1 = HDCP 1.4 Always On 2 = HDCP 2.2 Always On	0	0
50	RS232 Select	RS232 Port Mode Select	0 = Disable 1 = Extender 2 = Keypad 3 = Auxiliary 4 = Console	1	1
51	RS232 Baudrate	RS232 Extender Baudrate	0 = 115200 bps 1 = 57600 bps 2 = 38400 bps 3 = 19200 bps 4 = 9600 bps 5 = 4800 bps 6 = 2400 bps 7 = 1200 bps 8 = 600 bps 9 = 300 bps	0	0
52	RS232 Newline	RS232 Control Newline setting	0 = Linux (0x0A) 1 = Windows (0x0D, 0x0A) 2 = Mac (0x0D) 3 = Other (0x0A, 0x0D)	1	1
53	RS232 Trigger	RS232 Control Trigger setting		1	1

V = Available X = Not available Numbers = default value

54	Auxiliary Baudrate	Auxiliary Baudrate	0 = 115200 bps 1 = 57600 bps 2 = 38400 bps 3 = 19200 bps 4 = 9600 bps 5 = 4800 bps 6 = 2400 bps 7 = 1200 bps 8 = 600 bps 9 = 300 bps	0	0
55	Auxiliary Newline	Auxiliary Newline setting	0 = Linux (0x0A) 1 = Windows (0x0D, 0x0A) 2 = Mac (0x0D) 3 = Other (0x0A, 0x0D)	1	1
56	Auxiliary Trigger	Auxiliary Trigger setting		1	1
57	Device No	Device No. for RS232 control	0 ~ 999	0	X
58	Group No	Group No. for RS232 control	0 ~ 99	0	X
59	Party No	Party No. for RS232 control		0	X
60	Fast Switch	Switch without stop link	0 = Disable	1	1
61	Conflict Check	Check existing TX channel	1 = Enable	X	1
62	Channel Name	Display Channel Name	0 = Hide 1 = Display	0	X
63	Only Favorites	Only Favorites Channel Available	0 = Disable 1 = Enable	0	X
64	Lock Favorites	Lock Favorites Channel		0	X
65	Auto Sort Favorites	Auto Sort Favorites Channel		0	X
66	Sort Favorites	Sort Favorites Channel	Immediately sort favorite channel	V	X
67	Scan Channel To Favorites	Scan Channel To Favorites		V	X
70	Direct Access Menu	Run menu function even hide	0 = Disable 1 = Enable	1	1
71	Menu Item "Advanced Menu"	Display/Hide "Advanced Menu"		1	1
72	Screensaver	Screen Saver setting		0	X
73	Screen Off Option	Behavior After Screen Off	0 = No Option 1 = Mute Analog Audio 2 = Stop Connection	1	X
74	Diagnostic Information	Diagnostic Information	0 = Disable 1 = Enable	1	X
75	Message Redirect	Message Redirect to Auxiliary		X	1
76	Command Redirect	Command Redirect to Auxiliary		1	1
8	Video Routing	Video Routing setting	0 ~ 999 = Specific Channel 1000=Follow Channel	1000	X
8	Audio Routing	Audio Routing setting		1000	X
8	USB Routing	USB Routing setting		1000	X
8	RS232 Routing	RS232 Routing setting		1000	X
8	IR Routing	IR Routing setting		1000	X
8	CEC Routing	CEC Routing setting(4K only)		1000	X
8	GPIO Routing	GPIO Routing setting		1000	X
8	Load Routing Mapping	Load Free Routing Mapping		0~3	V
8	Save Routing Mapping	Save Free Routing Mapping		V	X
9	Video Wall Max Row	Rows of Video Wall(Vertical)	0~7 (0=row 1, 1=row 2...)	0	X
9	Video Wall Max Column	Columns of Video Wall(Horizontal)	0~15 (0=column 1, 1=column 2)	0	X
9	Monitor Row Position	Monitor Position in Row	0~7	0	X
9	Monitor Column Position	Monitor Position in Column	0~15	0	X

V = Available X = Not available Numbers = default value

9	Monitor Outside Width	Outer Width of Monitor	0~65000 (0.1mm)	0	X
9	Monitor Outside Height	Outer Height of Monitor		0	X
9	Monitor Viewable Width	Width of Viewable Area		0	X
9	Monitor Viewable Height	Height of Viewable Area		0	X
100	Stretch Type	Screen Stretch Type	0 = Auto 1 = Stretch Out 2 = Fit In	2	X
101	Rotate	Screen Rotation and Mirror	0 ~ 7	0	X
102	Vertical Shift	Screen Vertical Shift	400 = Default 399 ~ 0 = shift up 401 ~ 801 = shift down	400	X
103	Horizontal Shift	Screen Horizontal Shift	400 = Default 399 ~ 0 = shift left 401 ~ 801 = shift right	400	X
104	Vertical Scale	Screen Vertical Scale	0 ~ 255	0	X
105	Horizontal Scale	Screen Horizontal Scale		0	X
106	Load Video Wall	Load Video Wall Setting	0~15	V	X
107	Save Video Wall	Save Video Wall Setting		V	X
200	Backup Setting	Backup Setting to bank 0~3	0 ~ 3	V	V
201	Restore Setting	Restore Setting from bank 0~3		V	V
202	System Setting	System Setting	0~255 (For debug use, not recommended for general users)	V	V
203	Application Setting	Application Setting		V	V
333	Reset To Default	Reset to factory default		V	V
999	System Reboot	System Reboot		V	V

V = Available X = Not available Numbers = default value

Caution when using IR Menu:

- **Menu 17** Free Routing function only works in Multicast mode.
- **Menu 22** When the USB extender function is disabled it will also disable the keyboard/mouse function.
- **Menu 25** Displays or hides the TV wall setting in the webpage.
- **Menu 27** You could disable keyboard/mouse extender if there are any compatibility issues, and instead use the “USB” ports instead of “KEYBOARD MOUSE” ports.
- **Menu 33** To customize the IR remote, you need to be use RS232 commands described later in this manual
- **Menu 35** For monitors that detect HDMI 5V causing them to enter sleep mode.
- **Menu 36** Turn OFF monitor by CEC command via RX.
- **Menu 40** In VGA/DVI dual input mode:
When input video loss exceeds 8 seconds the Transmitter will switch to another input automatically.
When the input is from DVI source, the Transmitter will convert DVI to VGA loop out automatically.
- **Menu 41 Pass-Through** = the output resolution is determined by the Transmitter EDID,
Auto Detect (Per EDID) = the output resolution is determined by the monitor EDID connected to the Receiver
Customize= resolution needs to be setup using RS232 command or web page
- **Menu 47** Use default EDID at Transmitter side, or copy monitor EDID at Receiver side. (In Multicast mode)
- **Menu 48** Copying the EDID from the monitor connected to the Transmitter is not supported.
- **Menu 49** Monitor HDCP version setting, with incorrect HDCP version setting a black screen will display.

Option	Description
Disable	HDCP version follows source and Stream Type of content
HDCP 1.4 Always On	Monitor supports HDCP 1.4
HDCP 2.2 Always On	Monitor supports HDCP 2.2

- **Menu 50** Extender = RS232 extender,
Keypad = for RS232 keypad or number key in terminal software,
Auxiliary = auxiliary mode debug,
Console = system console debug
- **Menu 60** Fast Switch mode works best when all parameters on all units are the same: resolution, frame rate, scan mode (interlaced/non-interlaced), color depth, color space, interface (HDMI/DVI), HDCP mode (ON/OFF).
Disable: Stop a link before switching a channel, a black screen will appear between switching. If you switch to a channel that doesn't exist it will show diagnostic Information.
Enable: Keep the link when a channel is switched. If you switch to a channel that doesn't exist, the screen may freeze for 1~2 seconds and then show diagnostic Information.

- **Menu 61** Conflict Check will check the Transmitter channel number at bootup, reconnection and before switching. If channel number already exists the connection will be interrupted.
- **Menu 62** Channel Name will show full name instead of number only. The position of the channel name will be at center of screen. The Channel name can set by RS232 command or imported from telnet port.
- **Menu 75** Message Redirect forwards MENU message to Transmitter RS232 port (Auxiliary mode) instead of OSD.
- **Menu 76** Command Redirect runs RS232 command from Web or telnet port (Auxiliary mode).
- **Menu 80~86** With this you can force the selected feature not to follow the channel that is being switched to. This is only available when free routing is enabled.
 For example, you could set the audio to come from Transmitter#2 exclusively by set the audio routing function to 2. When you do this, and you switch the Receiver to view video from Transmitter#3, you will still hear audio from Transmitter#2. Default is 0 which means follow the channel number, meaning whatever source (Transmitter) you switch to, that feature will get its signal from that source.
- **Menu 90~107** Only available when video wall function is enabled..
- **Menu 200** This will not backup the parameters of menu function 107 "Save Video Wall".
- **Menu 333** This will clear the parameters of menu function 107 "Save Video Wall".

Keypad Control:

You can use a number pad to emulate the IR Remote Operation.

1. Use a DB9 cable to connect the RS232 port of the Local or Remote Unit and that of the PC. Make sure that the PC has a number pad or a keyboard with number pad connected. Pinouts for the DB9 cable are on page 40.

2. Then, use the IR Remote or front buttons to select Keypad in **Menu 50 RS232 Select**.

3. Open a terminal program (such as PuTTY) and make sure that the baud rate matches what is shown in IR **Menu 54 Auxiliary Baudrate** (See Page 8). Now you can use the number pad to emulate IR Remote Operation.

Key	Description
0~9	Enter number
+	Increase value
-	Reduce value
. or #	Previous value
Enter	Confirm
* or Esc or Clear	Cancel
/	Call MENU
Press Clear four times then press Enter	Call MENU

RS232 Control:

In RS232 extender mode, the user can use the RS232 port of the Transmitters to operate/setup the receivers at the same channel using a program like HyperTerminal or Putty.

HyperTerminal Setting: **115200 bps (8-N-1)**, **Flow control: None** (Properties -> Settings -> ASCII Setup and select **"Send line ends with line feeds"** & **"Echo typed characters locally"**)

★ **We recommend setting the RS232 routing for all receivers to one transmitter to avoid an RS232 connection break caused by video channel switching.**

Command format: >CMD_Address> Command Parameters
Address, command and parameters are characters, not hex code

Enter (LF or CR+LF) is required to execute the command

All associated receivers will run the command and parameters. We also add 3 kinds of user-defined numbers except MAC & IP (Device No, Group No, Party No) for application versatility:

Mxxxxxx	The last 6 digits of MAC Address of receiver The last 2 column of IP Address (HEX) of receiver Device No	e.g.: 2218688612AB = M8612AB lxxxx e.g.: 169.254.012.034 = I0C22 Dxxx e.g.: Device No 123 = D123
Gxx	Group No	e.g.: Group No 12 = G12
Pxx	Party No	e.g.: Party No 34 = P34
Cxxx	Channel No All receivers	e.g.: Channel 123 = C123 ALL
TX	Transmitter that is connected to RS232 port currently.	
RX	Receiver that is connected to RS232 port currently (for Auxiliary mode)	

Response format: <ACK_Address< Response character
Receivers will respond with a message to the transmitter in the above format

When sending a command to multiple receivers (when address is Gxx, Pxx, Cxxx, and ALL), no response back will be received.

Example:

Command:
>CMD_M8612AB> CHANNEL 12
(Set receiver whose last 6 digits of the MAC Address is 8612AB to Channel 12)

Response:
<ACK_M8612AB< OK
(Receiver whose last 6 digits of the MAC Address are 8612AB response is "OK")

RS232 Command and Parameters List:

Command	Parameters	Description	Remark
CHANNEL	?	Show current channel number	Transmitter does not support parameter NAME Receiver does not support parameter CHECK
	[0~999]	Switch to specified channel	
	[0~999] NAME ?	Check current channel name	
	[0~999] NAME "string"	Set channel name, 28 character MAX	
	NAME ?	Show channel name setting	
	NAME [ENABLE DISABLE]	Enable/disable channel name	
	NAME CLR	Clear all channel name	
	NAME IMPORT	Import channel name	
	FAST ?	Status of current fast switch	
	FAST [ENABLE DISABLE]	Enable/disable fast switch	
	CHECK ?	Status of channel conflict check	
	CHECK [ENABLE DISABLE]	Enable/disable channel conflict check	
FAVORITE	?	Usage of favorite channel (MAX.32)	Transmitter does not support parameter FAVORITE
	ADD	Add current to favorite channel	
	ADD [0~999]	Add specified channel to favorite	
	DEL	Delete current from favorite channel	
	DEL [0~999]	Delete specified channel from favorite	
	CLR	Clear favorite channel list	
	ONLY ?	Status of favorite channel only	
	ONLY [ENABLE DISABLE]	Enable/disable favorite channel only	
	AUTO ?	Status of auto sort favorite channel	
	AUTO [ENABLE DISABLE]	Enable/disable auto sort favorite	
SORT	Sort favorite channel immediately		
VIDEO	FUNC ?	Status of video extension	Transmitter does not support parameter ROUTING, SCALER, CUSTOMIZE, RESUME, PAUSE, and BLACK Receiver does not support parameter QUALITY and DITHER
	FUNC [ENABLE DISABLE]	Enable/disable video extension	
	ROUTING ?	Status of video routing	
	ROUTING [FOLLOW 0~999]	Set video routing follow or specified	
	SELECT ?	Status of video input / output mode	
	SELECT [0~2]	Set input / output, 0=DVI, 1=VGA,	
	SCALER ?	Status of video output resolution	
	SCALER [0~4 5]	Set output resolution, 5=customize	
	CUSTOMIZE ?	Status of customize resolution	
	CUSTOMIZE	Set customize resolution	
	QUALITY ?	Status of video quality	
	QUALITY [0 1~5 6]	Set video quality	
	DITHER ?	Status of video dither	
	DITHER [0 1~2]	Set video dither	
	EDID	Update EDID from TX or monitor of RX	
	RESUME	Resume stream	
PAUSE	Pause stream		
BLACK	Stop stream and send black screen		
VIDEOWALL	FUNC ?	Status of video wall function	Parameters with gray shading require a reboot to take effect. Transmitter supports FUNC only
	FUNC [ENABLE DISABLE]	Enable/disable video wall	
	MODE ?	Status of video wall mode	
	MODE [ENABLE DISABLE]	Set video wall mode/single mode	
	LOAD 0~15	Load video wall setting (all)	
	LAYOUT 0~15	Load video wall layout (MAX Row/MAX Column/Row/Column)	
	SAVE 0~15	Save video wall setting (all)	
	OW ?	Show outer width of monitor	
	OW [0~65535]	Set outer width of monitor	
	OH ?	Show outer height of monitor	
	OH ? [0~65535]	Set outer height of monitor	
	VW ?	Show width of viewable area	
	VW ? [0~65535]	Set width of viewable area	
	VH ?	Show height of viewable area	
	VH ? [0~65535]	Set height of viewable area	
	MAX_ROW ?	Show maximum row of video wall	
	MAX_ROW 0~7	Set the row 1~8 of video wall	
	MAX_COLUMN ?	Show maximum column of video wall	
	MAX_COLUMN [0~15]	Set the column 1~16 of video wall	
	ROW?	Show position in row	
ROW [0~7]	Set position in row		

VIDEOWALL	COLUMN [0~15]	Set position in column	Transmitter supports FUNC only
	STRETCH ?	Status of stretch type	
	STRETCH [0~2]	Set stretch, 0 = Auto, 1 = Stretch Out, 2 = Fit	
	ROTATE ?	Status of rotate type	
	ROTATE [0~7]	Set rotate, 0 = default	
	SHIFT_V	Status of vertical shift	
	SHIFT_V [0~399 400 401~801]	0~399: up, 400:default, 401~801: down	
	SHIFT_H ?	Status of horizontal shift	
	SHIFT_H [0~399 400 401~801]	0~399: up, 400:default, 401~801: down	
	SCALE_V ?	Status of vertical scale	
	SCALE_V [0~255]	Set vertical scale	
	SCALE_H ?	Status of horizontal scale	
	SCALE_H [0~255]	Set horizontal scale	
	ENABLE %1_%2_%3_%4	%1 = MAX_ROW, %2 = MAX_COLUMN, %3 = ROW, %4 = COLUMN	
MONITOR_INFO %1_%2_%3_%4	%1 = VW, %2 = OW, %3 = VH, %4 = OH		
AUDIO	FUNC ?	Status of audio extension	Transmitter does not support parameter ROUTING
	FUNC [ENABLE DISABLE]	Enable/disable audio extension	
	ROUTING ?	Status of audio routing	
	ROUTING [FOLLOW 0~999]	Set audio routing follow or specified	
	SELECT ?	Status of audio setting	
	SELECT [0~2]	Select audio of TX input or RX output (0=Digital, 1=Analog, 2=Auto)	
	IN ?	Status of audio input volume	
	IN [0 1~100]	Set audio input volume (%), 0 = Mute	
	OUT ?	Status of audio output volume	
OUT [0 1~100]	Set audio output volume (%), 0 = Mute		
USB	FUNC ?	Status of USB extension	Transmitter does not support parameter ROUTING and REQUEST
	FUNC [ENABLE DISABLE]	Enable/disable USB extension	
	ROUTING ?	Status of USB routing	
	ROUTING [FOLLOW 0~999]	Set USB routing follow or specified	
	REQUEST	Request USB access (multicast only)	
	KM FUNC ?	Status of keyboard mouse extension	
KM FUNC [ENABLE DISABLE]	Enable/disable keyboard mouse extension		
RS232	FUNC ?	Status of RS232 extension	Transmitter does not support parameter ROUTING
	FUNC [ENABLE DISABLE]	Enable/disable RS232 extension	
	ROUTING ?	Status of RS232 routing	
	ROUTING [FOLLOW 0~999]	Set RS232 routing follow or specified	
	SELECT ?	Status of RS232 setting	
	SELECT [0~4]	0=Disable, 1=Extender, 2=Keypad, 3=Auxiliary, 4=Console	
	CTRL ?	Status of RS232 control setting	
	CTRL [0~2]	0=disable, 1=enable, 2=insensitive	
	BAUD ?	Status of baud rate	
	BAUD [0~9]	0=115200, 1=57600, 2=38400... 9=300	
	NEWLINE ?	Status of newline format	
	NEWLINE [0~3]	0=Linux, 1=Windows, 2=Mac, 3=Other	
	TRIGGER ?	Status of trigger	
TRIGGER [0~3]	0=Linux, 1=Windows, 2=Mac, 3=Other		
IR	FUNC ?	Status of IR extension	Transmitter does not support parameter ROUTING
	FUNC [ENABLE DISABLE]	Enable/disable IR extension	
	ROUTING ?	Status of IR routing	
	ROUTING [FOLLOW 0~999]	Set IR routing follow or specified	
	CTRL ?	Status of IR control setting	
	CTRL [ENABLE DISABLE]	Enable/disable IR control	
	ID ?	Status of IR remote ID	
	ID [0~10]	Set IR remote ID	
	KEY [0~32] ?	Status of IR key setting	
	KEY [0~32] = address, command	Set mapping of third party IR remote	
	KEY IMPORT	Import IR key setting	
	BLOCK ?	Status of IR quick block	
BLOCK [ENABLE DISABLE]	Enable/disable IR quick block		
BUTTON	CTRL ?	Status of button control	
	CTRL [ENABLE DISABLE]	Enable/disable button control	
	LOCK ?	Status of button lock	
	LOCK [ENABLE DISABLE]	Enable/disable button lock	

EDID	UPDATE	Update from TX default or monitor of RX	Transmitter does not support parameter SELECT
	SELECT ?	Status of EDID setting	
	SELECT [0~3]	0=HDMI, 1=DVI, 2=VGA, 3=Loop Out	
HDMI	CTRL ?	Status of HDMI 5V control	Transmitter does not support parameter CTRL
	CTRL [ENABLE DISABLE]	Enable/disable HDMI 5V control	
	HDCP ?	Status of HDCP Always On	
	HDCP [0~2]	0=Disable, 1=HDCP 1.4, 2=HDCP 2.2	
SCREEN	?	Status of screen settings	Transmitter does not support this command
	[ON OFF]	Screen on/off	
	SAVER ?	Status of screen saver	
	SAVER [ENABLE DISABLE]	Enable/disable screen saver	
	OPTION ?	Status of behavior after screen off	
OSD	OPTION [0~2]	Set behavior after screen off	Transmitter does not support this command
	ON "string"	Show "string" on screen (30 seconds)	
	OFF	Turn off OSD immediately	
	OFF ?	Status of OSD duration (ms)	
ROUTING	OFF [0~65535]	Set duration of OSD (ms)	Transmitter does not support parameter LOAD and SAVE
	?	Status of free routing	
	[ENABLE DISABLE]	Enable/disable free routing	
	LOAD [0~3]	Load free routing setting	
DEVICE	SAVE [0~3]	Save free routing setting	Transmitter does not support this command
	?	Status of device number	
	[0~999]	Set device number	
GROUP	?	Status of group number	Transmitter does not support this command
	[0~99]	Set group number	
PARTY	?	Status of party number	Transmitter does not support this command
	[0~99]	Set party number	
NET	RECONNECT	Reconnect with TX/RX	Transmitter does not support parameter DISCONNECT
	DISCONNECT	Disconnection (keep routing channel)	
	STOP	Stop all connection (Include routing channel)	
	MULTICAST ?	Status of multicast	
	MULTICAST [ENABLE DISABLE]	Disable=unicast	
	JUMBO_FRAME ?	Status of Jumbo Frame	
	JUMBO_FRAME [ENABLE DISABLE]	Enable/disable Jumbo Frame	
	IP_MODE ?	Status of IP mode	
	IP_MODE [0~2]	0=Auto, 1=static, 2=DHCP	
	IP ?	Status of static IP address	
	IP [xxx.xxx.xxx.xxx]	Set static IP address	
	NETMASK ?	Status of subnet mask (static IP mode)	
	NETMASK [xxx.xxx.xxx.xxx]	Set subnet mask (static IP mode)	
GATEWAY ?	Status of gateway (static IP mode)		
GATEWAY [xxx.xxx.xxx.xxx]	Set gateway (static IP mode)		
QUERY	IP	Status of current IP address	
	MAC	Status of MAC address	
	RESOLUTION	Status of video resolution	
	VERSION	Status of firmware version	
AUXILIARY	BAUD ?	Status of auxiliary baudrate	
	BAUD [0~9]	0=115200, 1=57600, 2=38400... 9=300	
	NEWLINE ?	Status of auxiliary newline	
	NEWLINE [0~3]	0=Linux, 1=Windows, 2=Mac, 3=Other	
	TRIGGER ?	Status auxiliary trigger	
	TRIGGER [0~3]	0=Linux, 1=Windows, 2=Mac, 3=Other	
LOAD	VERSION	Status of auxiliary versions	Before loading defaults, use SAVE to save current settings
	DEFAULT	Load default to current setting	
SAVE	[0~3]	Load system setting from bank 0~4	
		Save current system setting	
REBOOT		Save system setting to bank 0~4	
CONSOLE	string	Reboot	
SYSTEM		Run console API command	For debug use, if you input incorrect value this will cause unpredictable results, for professional installers only.
	[0~255] ?	Status of system function	
APPLICATION	[0~255]	Set system function	
	[0~255] ?	Status of application function	
	[0~255]	Set application function	

※RS232 commands do not support backspace, delete or up, down, left, right to make modifications. If you enter a command or parameters incorrectly, re-enter the full command and parameters again on a clear line.

※Parameters with gray shading require a reboot to take effect.

※ The maximum OSD_ON string is 30 characters per line, 127 characters total, and unsupported characters include: comma sign「,」, colon「:」 and double quotation marks「"」; for unsupported characters, use the format \x## to (where ## is the ASCII HEX code representation of the character).

e.g.: \x0a = line feed, \x28 = (or left parenthesis character, \x22 = " or left quotation mark character

Examples:

>CMD_M861234> CHANNEL 12 (Set receiver where last 6 digits of the MAC Address is 861234 to Channel 12)
(HEX code: 3E 43 4D 44 5F 4D 383631323334 3E 20 43 48 41 4E 4E 45 4C 20 31 32 0D 0A)

<ACK_M861234< OK (Receiver with last 6 digits MAC Address is F01234 response "OK")
(HEX code: 3C 41 43 4B 5F 4D 38 36 31 32 33 34 3C 20 4F 4B 0D 0A)

>CMD_I0A12> CHANNEL 3 (Set receiver which IP Address is 169.254.10.18 to Channel 3)
(HEX code: 3E 43 4D 44 5F 49 30413132 3E 20 43 48 41 4E 4E 45 4C 20 33 0D 0A)

<ACK_I0A12< OK (Receiver which IP Address is 169.254.10.18 response "OK")
(HEX code: 3C 41 43 4B 5F 49 30 41 31 32 3C 20 4F 4B 0D 0A)

>CMD_G34> CHANNEL 5 (Set receivers whose Group No is 34 to Channel 5)
(HEX code: 3E 43 4D 44 5F 47 3334 3E 20 43 48 41 4E 4E 45 4C 20 35 0D 0A) (No response will come from multiple receivers)

>CMD_ALL> OSD ON "Hello! \x28123\x29 \x22ABC\x22" (Display 「Hello! (123) "ABC"」 on all monitors and send response)
(HEX code: 3E 43 4D 44 5F 41 4C 4C 3E 20 4F 53 44 20 4F 4E 20 22 48 65 6C 6C 6F 21 20 5C783238 31 32 33 5C783239 20 5C783232 41 42 43 5C783232 22 0D 0A) (No response will come from multiple receivers)

>CMD_ALL> OSD OFF 10000 (All receivers turn off OSD after 10 seconds)
(HEX code: 3E 43 4D 44 5F 41 4C 4C 3E 20 4F 53 44 20 4F 46 46 20 31 30 30 30 30 0D 0A)

Troubleshooting:

1. Transmitter/Receiver boot time requires 30 seconds and will be able to be controlled after booting, The first reboot after reset-to-default will be longer than 30 seconds.
2. We do not recommend using with existing LAN connections to avoid large video, data transmission or multicast packets which will slow down your other LAN devices.
3. When using a Gigabit Ethernet switch it must support IGMP and Jumbo Frame over 8K in order to achieve the best quality results.
4. If monitor shows green screen, check to see if the Ethernet switch is running under gigabit mode and if IGMP/Jumbo Frame function in the Ethernet switch is enabled.
5. If the video is not smooth, please check if IGMP function is enabled or if the bandwidth of the switch is close to maximum.
6. If the Ethernet cable is not connected it may cause unpredictable problems or OSD messages to error, please connect the Ethernet connection and reboot.
7. Default EDID is 1080p with 7.1 audio. You can use Menu function 44 to copy EDID from the monitor of the Receiver.
8. If the monitor of the Receiver displays briefly then turns black but OSD shows properly, check that the HDCP version supported by the monitor is adequate for the video source, and that the casting mode of Transmitter/Receiver are the same and the HDCP setting is correct.
9. If receiver switches to a transmitter with no video input, it will show a blank screen or the last still image for a few seconds.
10. Fast switch mode might cause the screen or audio to briefly behave abnormally when switching channels.
11. When output resolution is fixed, the screen or OSD might be cutoff a little if the source resolution is much different than the receiver output (like 1080p downscale to 720p).
12. For high resolutions (like 1080p) the OSD response will be delayed a little bit.
13. In video wall mode, the OSD may not be in the correct size and position
14. RS232 only supports data transmission (TXD, RXD), it does not support hardware handshake (RTS, CTS, DTR, DSR...)
15. When an AC adapter is used, that power has priority over power from PoE.
16. The front panel IR will be disabled when the external IR cable is plugged in.
17. If IR remote does not work properly, check the battery (especial in low temperature) and reset IR ID.
18. Audio in of Receiver only works in Unicast mode, and the audio in and audio out of Transmitter must be connected.
19. Audio in of Receiver is designed for mono Mic In, not for stereo Line In.
20. When using a computer or mobile APP for management of the IP address, these devices should be set in same subnet as the Transmitter/Receiver.
21. When TV wall setting parameters between APP/PC software and IR menu/Web are different they might conflict with each other. We recommend setting a TV wall by one of two ways to prevent conflicts.
22. When using PC software and APPs, refer to their respective software operating instructions.
23. We do not recommend controlling by the front panel, computer software and APP at the same time as this can cause conflicts.

APP Control Function:

APP name: Stream & Videowall Management



Google Play Download Link (For Android device)

<https://play.google.com/store/apps/details?id=com.sct.sctcontrolcenter1>

iTunes Download Link (For Apple Device)

<https://itunes.apple.com/us/app/stream-videowall-management/id1420342140?mt=8>

Google Play Download QR code



iTunes Download QR code



For APP instruction please download from our [website](#).

IP Setting:

The System provides access to changing settings over a web browser. Enter the IP address of transmitter / receiver (found on the label on the bottom of the unit) into the URL bar of your browser. If the label is missing or cannot be identified you can find the IP address as described below:

Methods to get the IP address of receiver:

1. Connect the monitor with the receiver. The **“local IP” displays** on the right bottom of the screen when the receiver is booting without the transmitter connected (or no video input)
2. Press IR Remote Control buttons **MENU, 1, ENTER** (Network Information). It will display the receiver IP Address on screen
3. Install Internet Explorer browser plug-in: Bonjour. Click the device name to enter web setting page and get the IP address (please refer **Bonjour plug-in installation: Page 21**)
4. Run “Device Manager” of **Stream Control Panel** program (attached in transmitter package), enter the **Client** page (please refer software instruction)

Methods to get the IP address of transmitter:

1. Connect the monitor with the receiver, connect the receiver with the transmitter and set them in the same channel. **Do not** connect video source to transmitter. , the **“remote IP” will display** on the right bottom of the screen
2. Install Internet Explorer browser plug-in: Bonjour. Click the device name to enter web setting page and get the IP address (please refer **Bonjour plug-in installation: Page 21**)
3. Run “Device Manager” of **Stream Control Panel** program (attached in transmitter package), enter the **Host** page (please refer software instruction)

System default IP setting is a Static IP. The IP is mapped to last 4 digits of the MAC address (Hex),

for example: For MAC XX:XX:XX:XX:**12:AB**, the IP address will be 169.254.**18.171**

If the IP address on the label of transmitters/receivers is incorrect (maybe changed by someone), it can be reset to the default using two methods:

1. Press and hold the channel button “-“ , then power ON (power and link LEDs will flash) to reset to default.
2. Press IR remote control **MENU, 3, 3, 3, ENTER** to reset to default.

Bonjour plug-in installation:

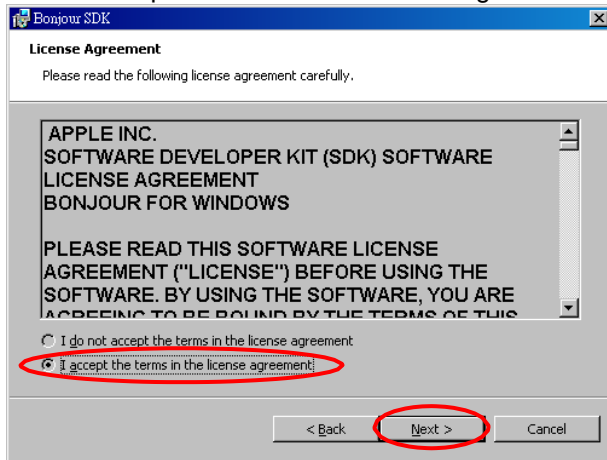
- a. Click "BonjourSDKSetup.exe" to install Bonjour plug-in for Internet Explorer browser.



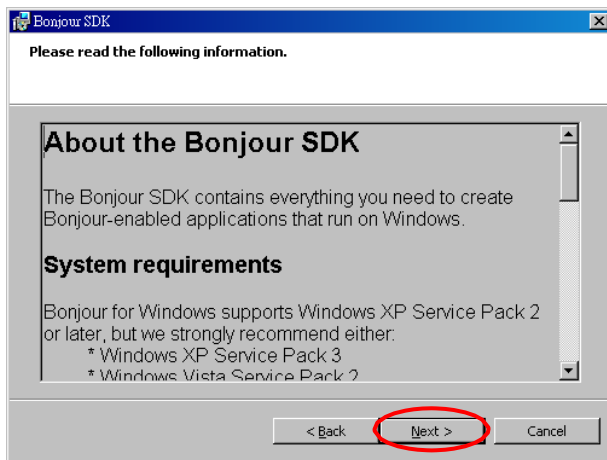
- b. Click "Next" to continue.



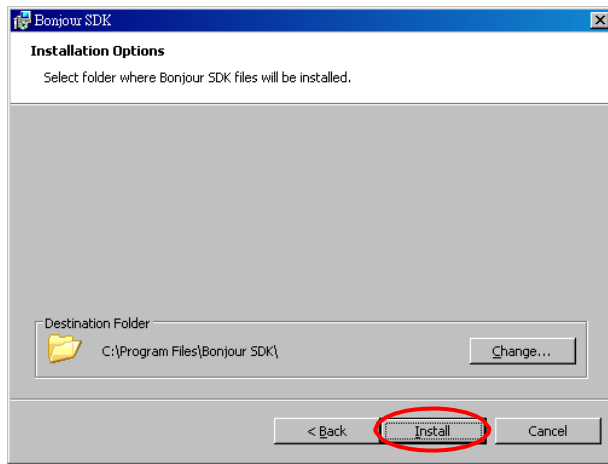
- c. Click "I accept the terms in the license agreement" and "Next" to continue.



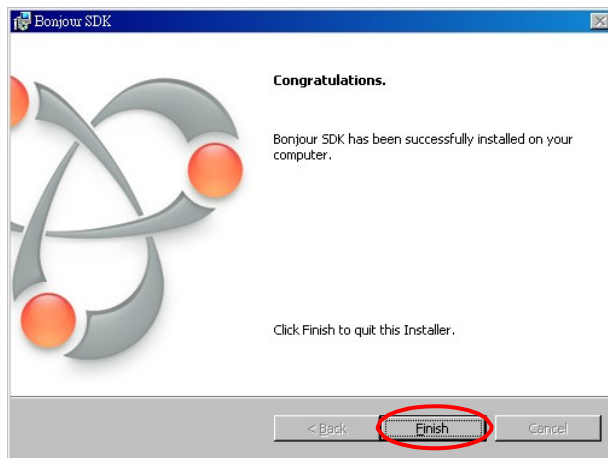
- d. Click "Next" to continue.



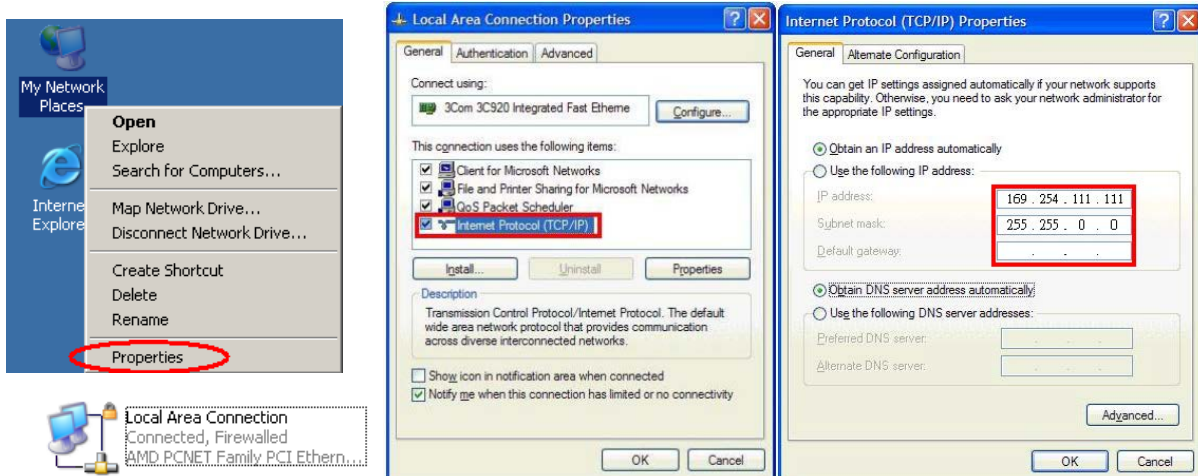
e. Click "Install" to start the installation.



f. Click "Finish" to exit the installation.



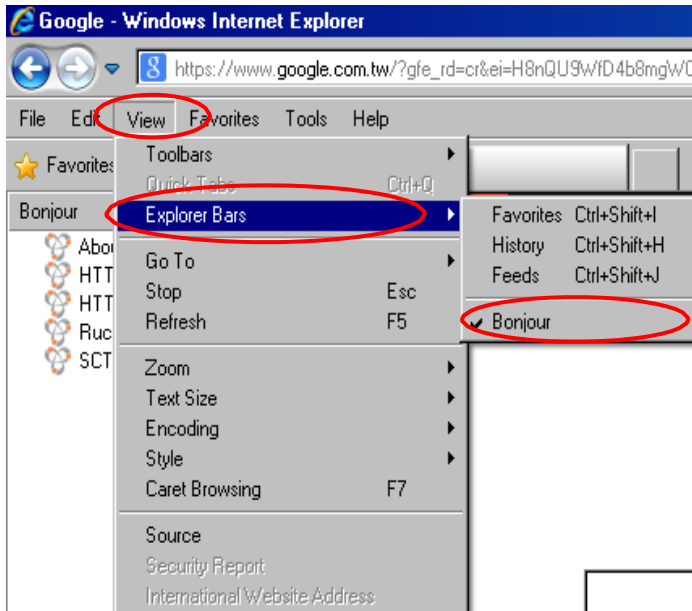
g. Right click on "My Network Place" → "Properties" then right click on "Local Area Connection" → "Properties" then double click on "Internet Protocol (TCP/IP)" to view the network settings of the PC, as below:
(IP address 169.254.111.111, sub mask 255.255.0.0)



h. Make note of the network settings for the PC. The PC should be on the same subnet as the Transmitters and Receivers.

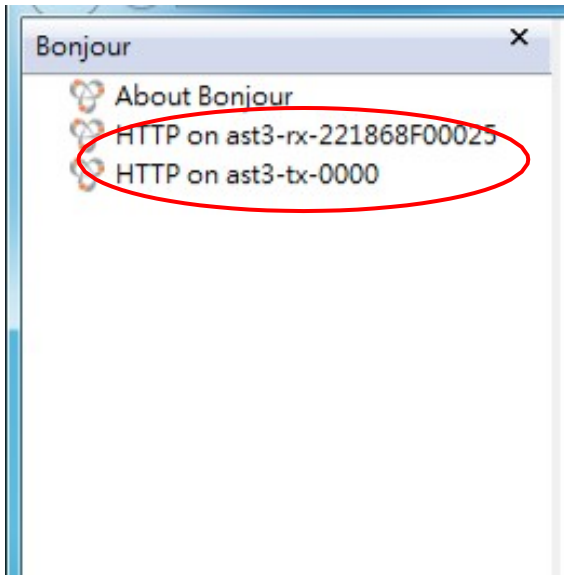
To use Bonjour to find the IP address of the transmitter/receiver:

Use a CAT5e cable to connect transmitter/receiver RJ45 port to PC LAN port and directly input known IP address of Transmitter/Receiver, or open IE browser and select View → Explorer Bars → Bonjour.



For newer versions of Internet Explorer, Bonjour will open as a side menu when you open IE (Windows 7/8/8.1/10)

Double click on "HTTP on ast3-tx-yyyy(where y= channel of transmitter)" or "HTTP on ast3-rx-yyyyyyyyyyyyy (where y= MAC address of receiver)". The configuration software in the transmitter or receiver will open.

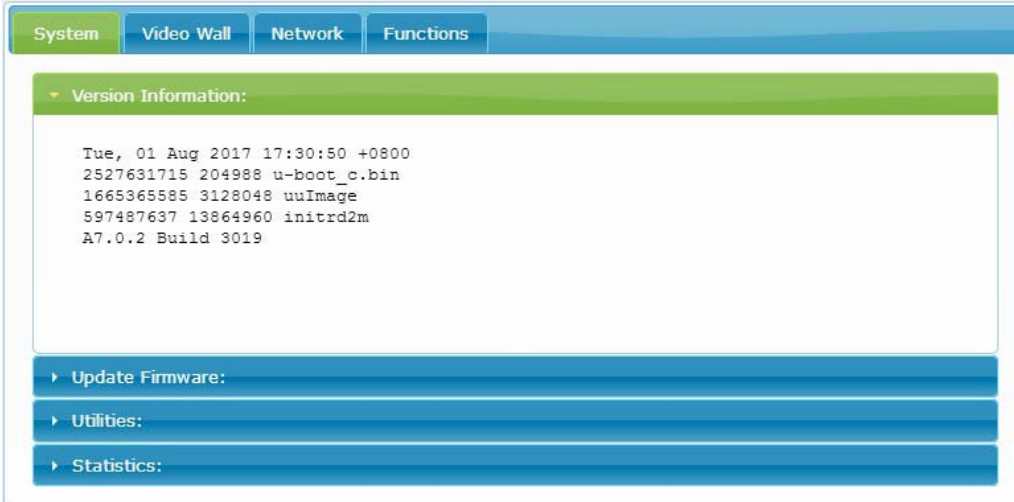


Click Network page to see the IP address of the transmitter or receiver. Make changes as needed. Restart to take effect.



Web configuration:

System:

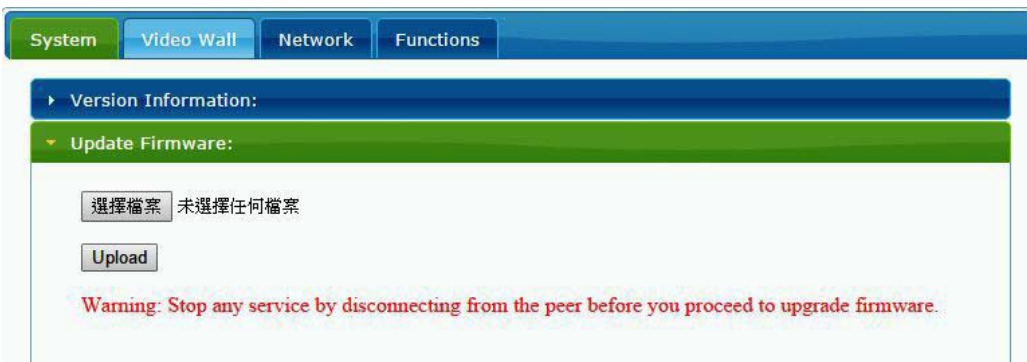


The screenshot shows the 'System' configuration page with tabs for 'System', 'Video Wall', 'Network', and 'Functions'. The 'System' tab is active. Under 'Version Information', the following text is displayed:

```
Tue, 01 Aug 2017 17:30:50 +0800
2527631715 204988 u-boot_c.bin
1665365585 3128048 uuImage
597487637 13864960 initrd2m
A7.0.2 Build 3019
```

Below the version information, there are three expandable sections: 'Update Firmware:', 'Utilities:', and 'Statistics:'.

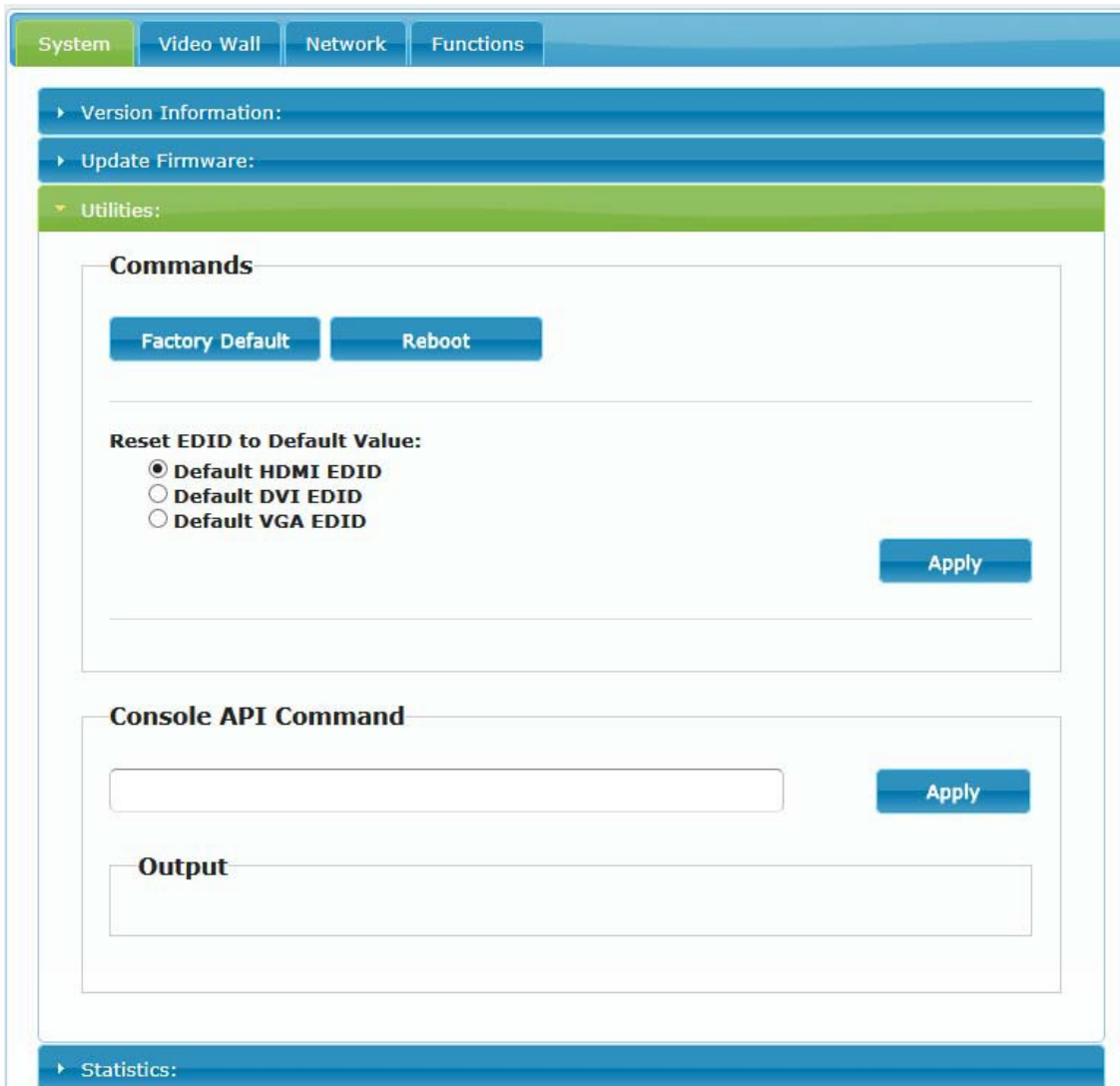
- Version Information
Firmware version and other information



The screenshot shows the 'System' configuration page with tabs for 'System', 'Video Wall', 'Network', and 'Functions'. The 'System' tab is active. The 'Update Firmware:' section is expanded, showing a file selection interface with the text '選擇檔案 未選擇任何檔案' and an 'Upload' button. A warning message is displayed below the interface:

Warning: Stop any service by disconnecting from the peer before you proceed to upgrade firmware.

- **Update Firmware**
To perform a firmware update, refer to the procedure on page 38. The web interface is not used for this feature.



● **Utilities**

- | | |
|-----------------------|--|
| ■ Factory Default | Set system to factory default |
| ■ Reboot | Reboot system |
| ■ Default EDID | Set EDID to default 1080p 7.1 channel audio |
| ■ Console API Command | Enter Console API command to change setting or control |

System | Video Wall | Network | Functions

- ▶ Version Information:
- ▶ Update Firmware:
- ▶ Utilities:
- ▼ Statistics:

State Machine

State: s_search

Network

ID (Host Name): 82CA8D853D73

IP Address: 169.254.6.167

Subnet Mask: 255.255.0.0

Default Gateway: 169.254.0.254

MAC Address: 82CA8D853D73

Casting Mode: Unicast Mode

Link Status: on

Link Mode: 1G

Video

Local Video Output:

attached=n

Video Timing Information:

timing=[34] 640x480p@60Hz H- V-

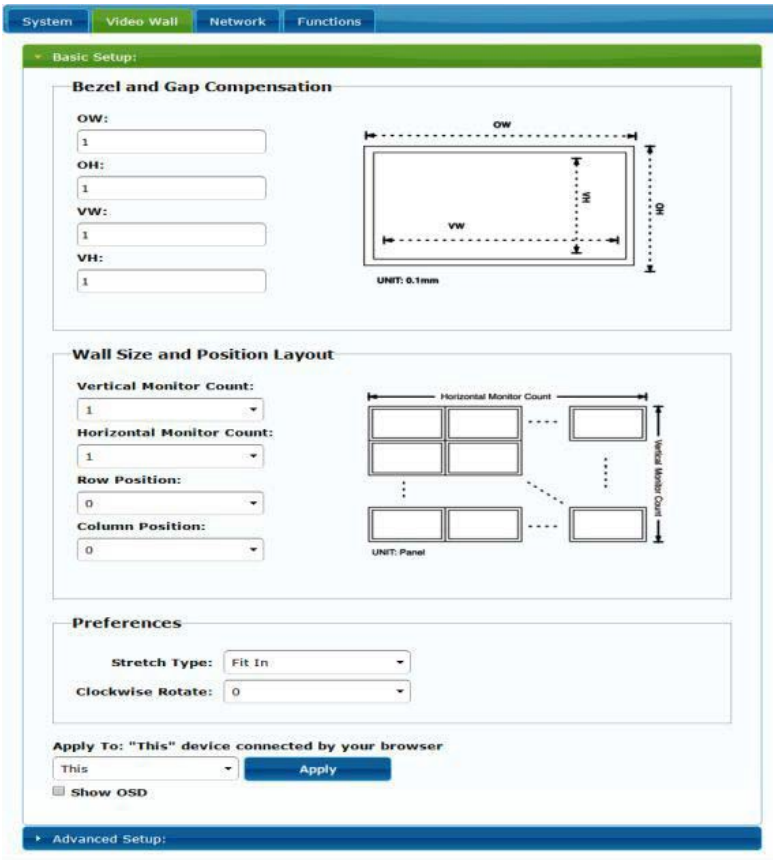
type=RGB

HDCP=n (Disable)

color depth=0

- Statistics
Indicates system status

Video Wall:



- **Basic Setup**

- Bezel and Gap Compensation: Set outer width/height of monitor and width/height of viewable area.
OW: outside width **OH:** outside height **VW:** viewable width **VH:** viewable height

Please note:

1. The viewable width/height must be less than the outside width/height.
2. Keep all values at 0 if you do not use this function.
3. The value is based on millimeter and MUST be an integer.

- Wall Size and Position Layout: Set scale of video wall and position of monitor
 Vertical monitor count: 1~8
 Horizontal monitor count: 1~16 Row position:
 0~7
 Column position: 0~15

- Preferences: Set extension way and rotation
 Select the video fit in the screen or stretch out and rotate angle

- Apply To:
 1. All: Configure all Transmitters and Receivers in the list.
 2. This (Local): Current device which you are logged into by web browser.
 3. Hosts or Clients: select which Transmitter or Receiver you want to configure.

- Show OSD:

Check this box to show receiver's specific number (follow list order) on the connected monitor

System Video Wall Network Functions

Basic Setup: Advanced Setup:

Step 1: Choose Control Target

Show OSD

Step 2: Control Options

Reset to Basic Setup:

Stretch Type:

Clockwise Rotate:

Screen Layout (Row x Column): x

Row Position:

Column Position:

Horizontal Shift:

Vertical Shift:

Horizontal Scale Up (N pixels/column_count):

Vertical Scale Up (N pixels/row_count):

Console API Command:

● **Advanced Setup:**

Before entering “Advanced Setup”, please complete the “Basic Setup” as follows:

1. In “Basic Setup”, select Vertical and Horizontal Monitor Count.

Wall Size and Position Layout

Vertical Monitor Count:
3

Horizontal Monitor Count:
5

Row Position:
0

Column Position:
0

UNIT: Panel

2. In “Advanced Setup”, choose the target unit in the video wall to control

Step 1: Choose Control Target

Show OSD

Step 2: Control Options

- Reset to Basic Setup:

Reset to Basic Setup:

Reset

Press “Reset” if mistakes are made in the configuration.

- Stretch Type:

Stretch Type:

Fit In

Fit In

Stretch Out

Apply

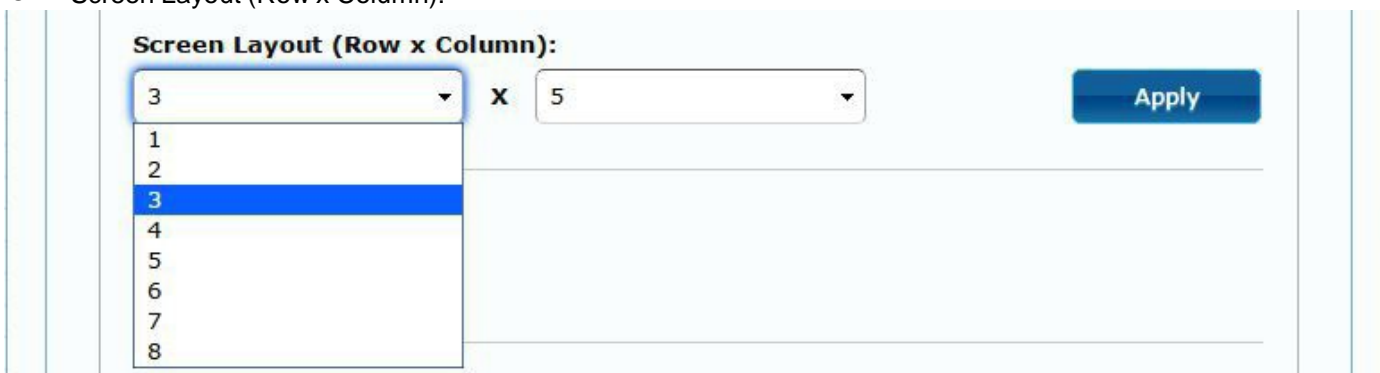
Setup the video output to “Fit In’ or “Stretch Out” mode on the screen

● Clockwise Rotate:



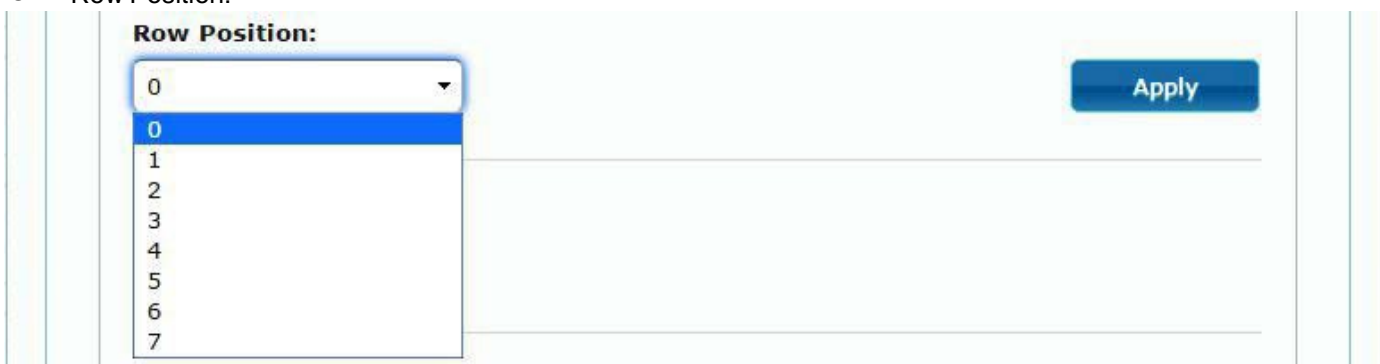
Setup the rotation angle to 0,180, 270 degrees of the video output

● Screen Layout (Row x Column):



Set up the number of vertical and horizontal monitors based on the video wall layout. Vertical number 1~8 and horizontal number 1~16.

● Row Position:



Setup the row position of monitor, number from 0 to the total number of vertical monitors.

● Column Position:

Column Position:

0

0

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

Setup the column position of monitor, number from 0 to the total number of horizontal monitors.

- Horizontal/Vertical Shift:
- Horizontal/Vertical Scale Up

Horizontal Shift:

Left Right

Vertical Shift:

Up Down

Horizontal Scale Up (N pixels/column_count):

Vertical Scale Up (N pixels/row_count):

Horizontal Shift: Set the video horizontal shift, Left or Right by pixels. **Vertical Shift:** Set the video vertical shift, Up or Down by pixels. **Horizontal Scale Up:** Set the video horizontal scale up by pixels. **Vertical Shift Scale Up:** Set the video vertical shift scale up by pixels.

● Console API Command:

Console API Command:

Input Linux command to perform an advanced setup.

Network:

The screenshot shows a web-based configuration interface for a device. At the top, there are four tabs: 'System', 'Video Wall', 'Network', and 'Functions'. The 'Network' tab is selected and highlighted in green. Below the tabs, there are two main sections: 'IP Setup' and 'Casting Mode'.
IP Setup: This section contains three radio buttons for 'IP Mode': 'Auto IP' (selected and highlighted in green), 'DHCP', and 'Static'. Below these are three input fields: 'IP Address' with the value '169.254.0.238', 'Subnet Mask' with '255.255.0.0', and 'Default Gateway' with '169.254.0.254'. An 'Apply' button is located at the bottom right of this section.
Casting Mode: This section contains two radio buttons: 'Multicast' (selected and highlighted in green) and 'Unicast'. Below these is a checkbox labeled 'Auto select USB operation mode per casting mode (recommended)', which is currently unchecked. An 'Apply' button is located at the bottom right of this section.

- **IP Setup:**

IP Mode could be set to Auto IP, DHCP, Static (three possible modes)

Host default setting is Static IP, client default setting is Auto IP

For mass deploying of transmitter/receivers please use Static or DHCP mode.

Notice: If there is no DHCP server in the network the host/client will keep rebooting. You need to set the host/client to factory default.

Press and hold Channel button “-”, then power ON (power and link LED will flash)

- **Casting Mode :**

Could be set to Multicast or Unicast mode (default is Multicast),

When using Multicast mode, please check the “**Auto select USB operation mode per casting mode**” box

Functions for Transmitter:

System Video Wall Network **Functions**

Video over IP

Enable Video over IP

Enable Video Wall

Maximum Bit Rate: Best Effort

Maximum Frame Rate: Capture up to 100% of frames

Apply

USB over IP

Enable USB over IP

Operation Mode:

Auto select mode (Recommended, choose per network casting mode)

Active on link (Unicast network's default mode)

Active per request (Multicast network's default mode)

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)

Apply

- **Video over IP**

- ◆ Enable Video over IP: This function sets up the video signals sent from over the network.
- ◆ Enable Video Wall: This function sets up the video wall (default is not checked).
- ◆ Maximum Bit Rate: Set maximum bit rate.
- ◆ Maximum Frame Rate: Set maximum frame rate.

- **USB over IP**

- ◆ Enable USB over IP: Enable/disable USB extender function.
- ◆ Operation Mode: Set USB operation mode. **Recommend Auto select mode.**
- ◆ Compatibility Mode: Set USB compatibility mode.

Serial over IP

Enable Serial over IP

Operation Mode:

- Type 1 (Need extra control instruction. For advanced usage.)
- Type 2 (Recommended. Dumb redirection.)
- Type 1 guest mode
- Type 2 guest mode

Baudrate Setting **for Type 2:**

Baudrate:	<input type="text" value="115200"/>
Data bits:	<input type="text" value="8"/>
Parity:	<input type="text" value="None"/>
Stop bits:	<input type="text" value="1"/>

Apply

- **Serial over IP :**

- ◆ Enable Serial over IP: sets up Serial (RS232) signal sent over the network
- ◆ Operation Mode: Default is "Type 2 (Recommended. Dumb redirection.)"
- ◆ Baudrate Setting for Type 2 : **default is 115200, 8, None, 1**

Functions for Receiver:

The screenshot shows a web-based configuration interface for a receiver. At the top, there are four tabs: 'System', 'Video Wall', 'Network', and 'Functions'. The 'Functions' tab is selected and highlighted in green. Below the tabs, there are two main sections: 'Video over IP' and 'USB over IP'. Each section contains several settings with checkboxes and dropdown menus, and an 'Apply' button at the bottom right.

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

USB over IP

- Enable USB over IP
- Operation Mode:
 - Auto select mode (Recommended, choose per network casting mode)
 - Active on link (Unicast network's default mode)
 - Active per request (Multicast network's default mode)
- Compatibility Mode:
 - K/M over IP (Uncheck when mouse/keyboard/touch panel not working as expected)

● Video over IP

- ◆ Enable Video over IP: This function sets up the video signals sent over the network.
- ◆ Enable Video Wall: This function sets up the video wall (default is not checked).
- ◆ Copy EDID from this Video Output: Copy EDID from TV when booting (**Unicast mode only**), Default is not checked.
- ◆ Scaler Output Mode: Select the required scaler output mode or select "Customize" and input 8 Hex values for more video output resolution and refresh rate selections.
 - 1) 80000004: HD 720p60
 - 2) 81000061: WXGA 1366x768@60
 - 3) 81000040: WXGA+ 1440x900@60
 - 4) 81000051: WUXGA 1920x1200@60
 - 5) 8100003C: SXGA+ 1400x1050@60
- ◆ Timeout for Detecting Video Lost: **Please do not change this.**
- ◆ Turn off screen on video lost: **Please do not check this box**

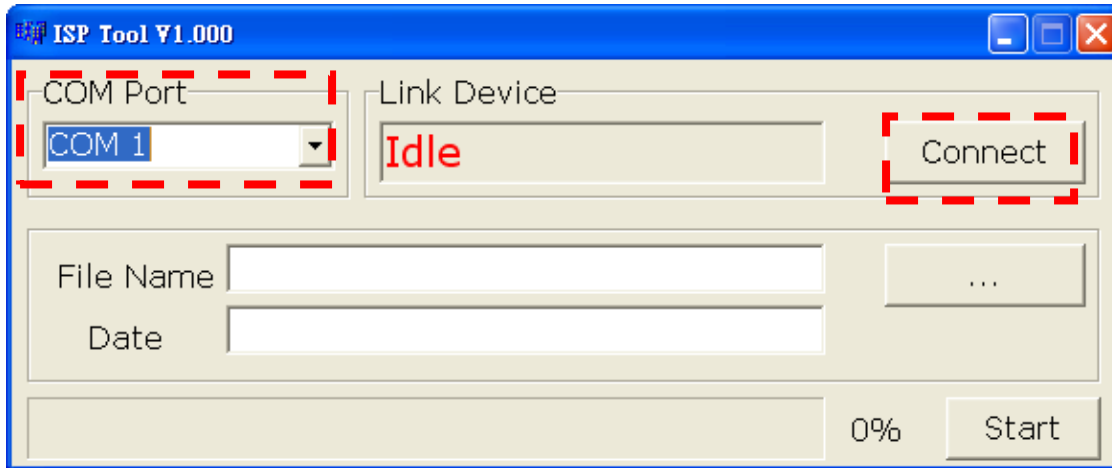
● USB over IP:

- ◆ Enable USB over IP: Enable/disable USB extender function.
- ◆ Operation Mode: Set USB operation mode. **Recommend Auto select mode.**
- ◆ Compatibility Mode: Set USB compatibility mode.

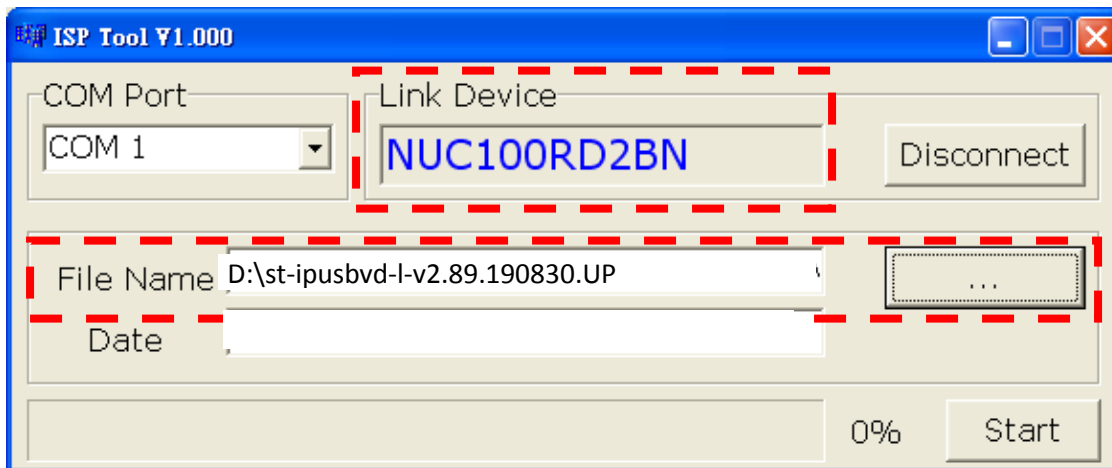
Firmware Update Instruction for ST-IPUSBVD-VW

To perform a firmware update, follow these steps using an RS232 connection to the Local and Remote units (one at a time).

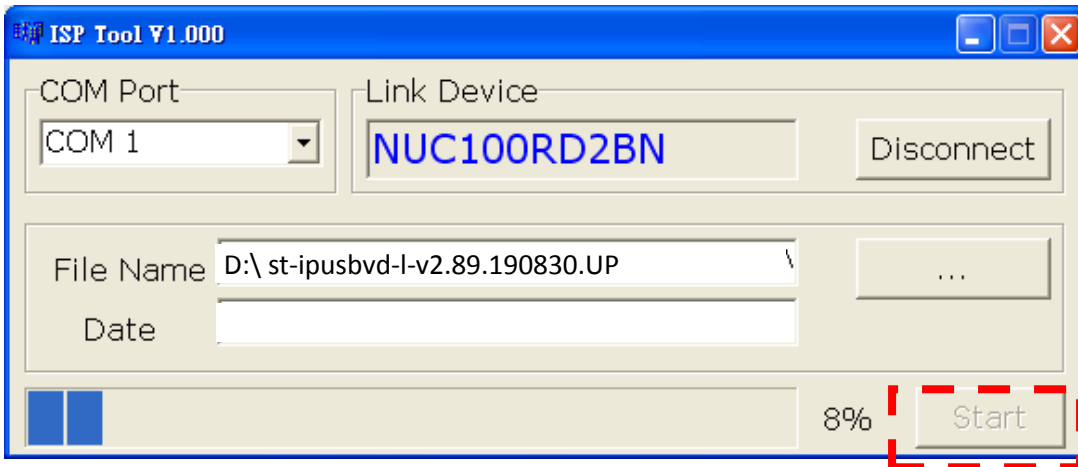
1. Copy the ISP.exe and firmware files st-ipusbvd-l(-r)-vxxxxxxx.UP from our website to your PC.
2. Use RS232 Cable (female to male, wired straight through, pins 2,3, and 5 connected) to connect the PC to the ST-IPUSBVD-VW (Local or Remote).
3. After the Local or Remote boots up, run the ISP.exe program, select the COM Port of the PC and click "Connect".



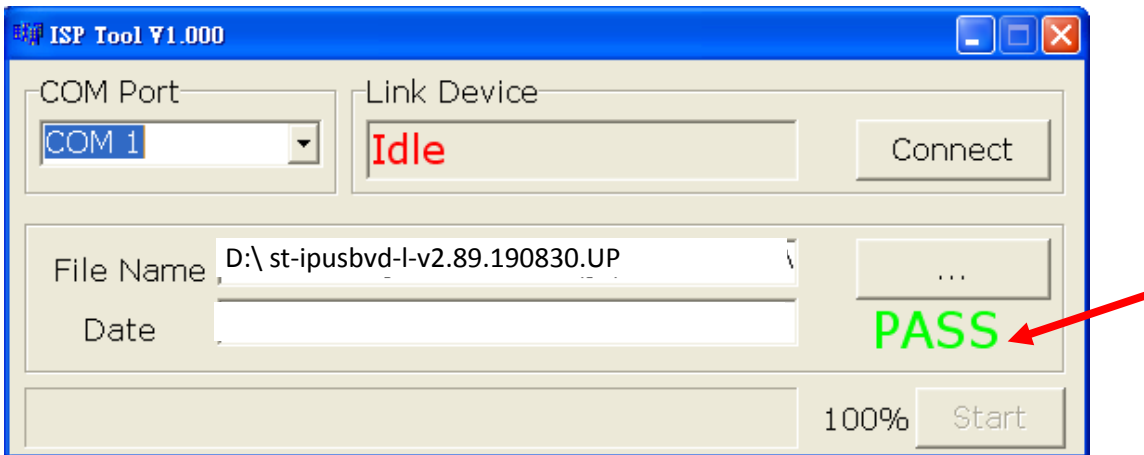
4. After making connection, the "Link Device" will show the name of MCU. Browse to the `st-ipusbvd-l-vxxxxxxx.UP` for the local unit (or `st-ipusbvd-r-vxxxxxxx.UP` for the Remote Unit) file on your PC.



5. Click "Start" to perform the update.



6. After the update is complete it will show "PASS"



7. After the update, the DVI, VGA and MSG LEDs will illuminate. The MSG LED will go dark after a few seconds.

8. Now restore the unit to default settings one of two ways:

A. On the front panel press "Menu", then "-" (Minus), then "-" (Minus) again, then "+" & "-" (plus and minus at the same time).

B. Using the IR remote, press Menu, then press 333, then press Enter. (This method only works on the Remote Unit).

The ST-IPUSBVD-VW will now be ready to use.

Specifications

ITEM	Transmitter	Receiver
Copper Distance	492 feet (150 meters) in a Point-to-Point connection. 656 feet (200 meters) in a Point-to-Point or Point-to-Many connection via a network switch. The max length between the switch and the local/remote unit is 328 feet (100 meters).	
Video Support	Up to 1080p, 1920x1200@60Hz	
HDCP Compliant	HDCP 1.4	
Audio Support	Stereo Audio	
Input	DVI-I (Digital only)/VGA	
Output	DVI-I (Digital only)/VGA	
Analog Audio Input	Line In, 3.5mm Stereo Audio Jack	Mic In, 3.5mm Mono Audio Jack
Analog Audio Output	Line Out, 3.5mm Stereo Audio Jack	
USB	USB 2.0 Type B x 1 (Rear)	USB 1.1 Type A x 2 (Front) USB 2.0 Type A x 2 (Rear)
IR Receiver (Internal)	20-60kHz / ±45° / 5M	
IR Emitter (External)	3.5mm Stereo Jack 20-60kHz / ±45° / 5M	
RS232	DB9 Female	DB9 Male
	(Does not support hardware handshake)	
Ethernet	RJ45	
Power Consumption	1350mA (Typical)	900mA (Typical, No USB Device)
Power Supply	100 to 240 VAC at 50 or 60Hz DC 5V 2A AC Adapter	
Operating Temperature	32 to 131°F (0 to 55°C)	
Storage Temperature	-4 to 185°F (-20 to 85°C)	
Operating/Storage RH	95%	
Dimensions WxDxH (in)	7.48x5.06x1.57 (190x129x40mm)	6.57x4.07x1.57 (167x104x40 mm)
Weight	650g	480g
Regulatory Approvals	CE, RoHS	

RS232 Cable Connector Pinout- PC to Local Unit:

DB9M(Male)

DB9F(Female)

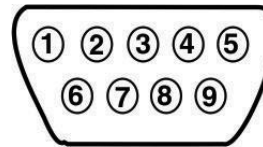
RS232		RS232	
Pin	Signal	Pin	Signal
Pin 2	TX In	Pin 2	TX Out
Pin 3	RX Out	Pin 3	RX In
Pin 5	GND	Pin 5	GND

RS232 Cable Connector Pinout- PC to Remote Unit:

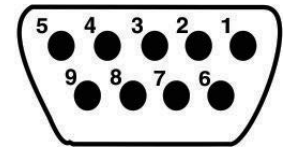
DB9F(Female)

DB9F(Female)

RS232		RS232	
Pin	Signal	Pin	Signal
Pin 2	TX Out	Pin 3	RX In
Pin 3	RX In	Pin 2	TX Out
Pin 5	GND	Pin 5	GND



Mating Face of DB9 Male



Mating Face of DB9 Female