

**4K HDMI IP Video Wall Controller
29-0112/29-0112
IPVDS-500-ED
User's Manual**



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1. Product Description

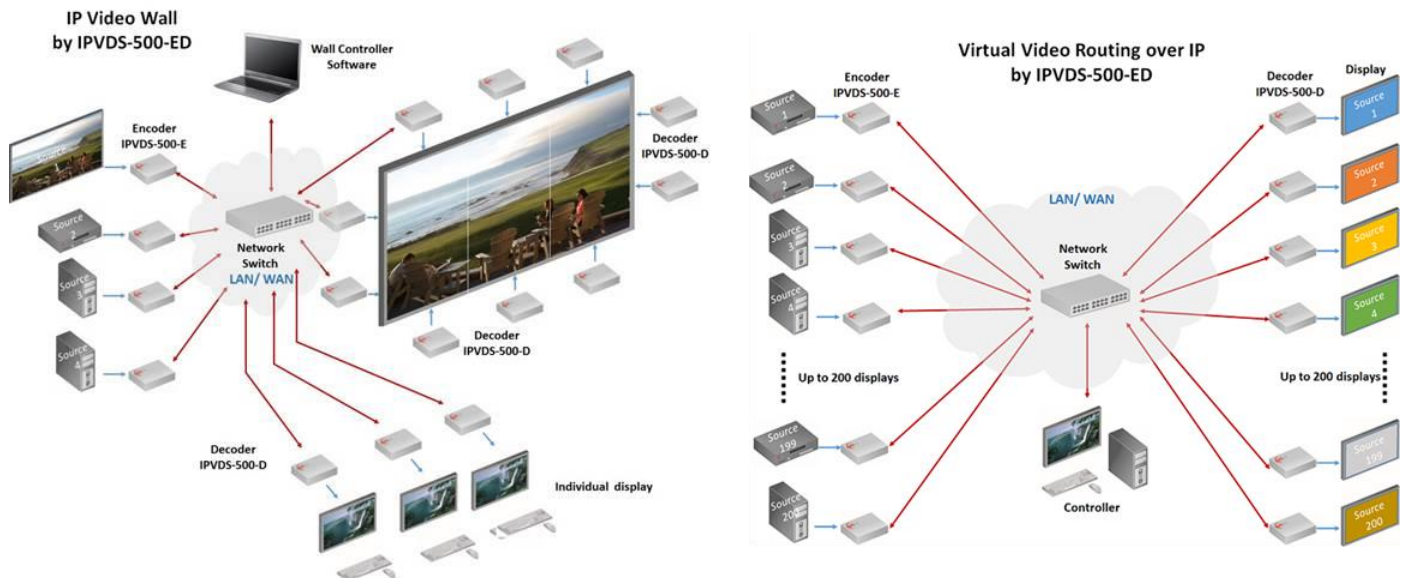
4K HDMI IP Video Wall Controller IPVDS-500-ED is an integrated control solution for playing audio/video of multi-sources (such as PC, Media player, DVD or Blu-ray) on video wall displays and many individual displays simultaneously.

It offers advanced wall management service in order to give perfect solution for accommodating medium-sized and larger multi-board configurations such as control room, security, traffic management and small-scale single-board systems for conference and classroom presentations.

The transmitter, IPVDS-500-E (Encoder) connected to a HDMI source, encodes the video with data and transmits it over Ethernet. The receiver, IPVDS-500-D (Decoder) connected to a display, receives the encoded signal over network and decodes it to regenerate the video and data for users.

The provided PC program “Layout Manager” makes the creation, editing, overlay, saving and pre-set mode of wall layouts possible. It has an easy-to-use graphics user interface where any operation can be set up by simple mouse clicks and drags.

IPVDS-500-ED also makes the transmitters and receivers units in the network to be configured to individual IP address and helps the any of receivers to be connected simultaneously to any transmitter within the network to create a virtual cross point matrix system as well as audio and video system widely used in Pro-AV installation.



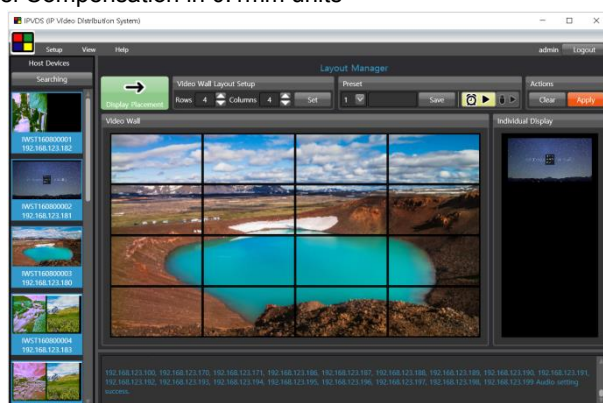
[Figure 1 - Connection diagram]

2. Main Features

- TCP/IP based IP network: 100/1000 Base-T Ethernet with CAT5e or CAT6 cables
- Up to 4K resolution (3840x2160 at 30Hz) or 1080p at 60Hz.
- Up to 8 x 8 (up to 64 displays) Video Wall with multi-sources.
- Provides merge, overlay, and split Video Wall layouts via PC program.
- Provides preset mode for user defined layout (save and loading).
- Provides scheduling action with presets in weekly mode or sequential mode.
- M:N Virtual Matrix supported: multicasting up to 200 clients
- Provides Analog/HDMI audio input and output.
- Fast switching time / Low video latency
- Transmits HDMI/DVI, USB, RS-232, Audio, DIO signals via IP Network.
- Provides HDMI loop-thru port for Local display.
- Provides Mounting bracket (model: OPSCB): VESA 75,100 standard, Optional.
- Provides 1U rack (4 in 1 rack) and power rack (PR5V-16) with 16*5V output, Optional

◆ Video Wall Controller SW

- Provides PC Program for users
 - * Control PC apps for Video Wall and Individual displays
 - * Drag and drop operation of mouse for host allocation and preview
 - * Allocation, merge, split, overlay, and etc on Layout Manager
 - * Provides preview scene before to apply it to real monitors.
 - * Provides 99 presets for user defined layout (save and loading).
 - * Provides preset scheduling function in weekly mode or sequential mode (based on dwell time).
 - * Bezel Compensation in 0.1mm units



[Figure 2 –Video Wall software]

◆ Application

- Control Room
- Traffic Control System
- Security and Education
- Digital Signage / Pro AV for Video Wall & individual display

3. Supporting Video Resolutions for Input / Output

- 1) HDMI 1.4 3840x2160p/24/25/30Hz
- 2) HDMI 1.4/HDTV up to 1920x1280p60Hz
- 3) VESA Digital up to 1920x1200p60Hz

Note: Some PC resolutions may not work properly.

4. Shipping Group

- IPVDS-500-E: TX (Encoder) or IPVDS-500-D: RX (Decoder)
- AC / DC power adaptor: One (1) unit of 5V / 2A
- One (1) HDMI male to male cable (1.2m)
- One (1) Mini-USB Cable for PC
- User's manual

- IPVDS-500-ED Power Adaptor HDMI Cable 1.2m Mini-USB Cable Manual



As an option,

- RS-232 cable: DB-9 male to 3Pin terminal block
- Mounting bracket (OPSCB) complying with VESA 75, 100.
- 1U rack (4 in 1 rack) and power rack (PR5V-16) with 16*5V output, Optional



5. Systems Requirements for Setup

◆ Hardware requirements

- ▶ You must have a HDMI graphic controller or card having a HDMI or DVI port in your PC or any other equipment being used.
- ▶ It should support the maximum graphic resolution of displays.
- ▶ No special requirements for memory size, CPU speed and chipsets, if you've already properly installed your HDMI graphic controllers or cards.

◆ Software requirements

- ▶ You need to check OS version of your PC or any other equipment being used. [TBD]

◆ Network requirements

- ▶ You may need Ethernet switch as a switching hub or router for connecting multiple IPVDS -500-EDs on Local LAN or Intranet. Because IP Video Wall Controller, IPVDS-500-ED is based on multicast protocol for A/V streaming, the network switch has to support Gigabit Ethernet, Jumbo frame, and IGMP snooping with L2 Switch and Gigabit Ethernet, Jumbo frame, IGMP and multicasting protocol with L3 Switch.

Note: In some network switches, there may be a problem with video streaming because of capacity performance, even though they support these functions.

* Opticis tested and confirmed the performance of L2 & L3 switches as below. So, opticis recommends user to use the switches for easy set-up.

- ▶ List of L2 switches

NO	Product Model	Description
Netgear		
1	GS724T	10/100/1000 24Port + SFP 2Port, VLAN, jumbo frame, IGMP snooping
2	GS7224	10/100/1000 24Port + SFP 4Port, VLAN, jumbo frame, IGMP snooping
3	GS7248	10/100/1000 48Port + SFP 4Port, jumbo frame, IGMP snooping
HP (3com)		
1	HP 1620-8G	10/100/1000 8PORT (no SFP port), Jumbo frame, IGMP snooping, web management
2	HP 1620-24G	10/100/1000 24Port (no SFP port), Jumbo frame, IGMP snooping, web management
3	HP 1620-48G	10/100/1000 48Port (no SFP port), Jumbo frame, IGMP snooping, web management
4	HP 1910-48G	10/100/1000 48Port +2 SFP port, Jumbo frame, IGMP snooping, web management
Cisco SB		
1	SG300-10	8-port 10/100/1000 Gigabit Switch + 2 COMBO Mini-GBIC / SFP port IGMP snooping, Jumbo frame (Bandwidth - 20G / throughput - 14.88M)

2	SG220-26	26-Port Gigabit Smart Plus Switch (ACL , CLI)+ 2 COMBO Mini-GBIC / SFP port jumbo frame, IGMP snooping, (Bandwidth - 52G / throughput - 38.69 M)
3	SG220-50	50-Port Gigabit Smart Plus Switch (ACL , CLI 지원) + 2 COMBO Mini-GBIC / SFP port jumbo frame, IGMP snooping,, (Bandwidth - 100G / throughput - 74.4 M)

▶ List of L3 Switches

- (1) Cisco WS-C3560X-24(48)
- (2) Alcatel-Lucent OS6850-24(/48)
- (3) Huawei S5720-28(24/48)p
- (4) 3com (HP) 3CR17254-91 (HP5500G-24(/48)G)

- ▶ For more technical support including bandwidth design, network topology, and selection & setup with Network Switch (L2/L3), visit Opticis web site, www.opticis.com, or contact techsupp@opticis.com

◆ **Control PC requirements**

- ▶ Requirements: Window7 or higher version (Optionally including Window XP)

◆ **AC / DC Power Adapter Technical Advisory**

- ▶ The IPVDS-500-ED is designed to use mainly external +5V AC / DC power adaptor. The internal power supplied through a HDMI pin (#18) from the graphic source is used to identify normal connection between a source and TX, IPVDS-500-E.

6. Connector descriptions

- ▶ 5V AC / DC Power (TX & RX):
Connect the 5V AC / DC Power Adaptor to the connector of each device. When the 5V AC/DC Power Adaptor is connected to the device, the power LED is turned on. For more information on LEDs, refer to “LED indication”.
- ▶ HDMI IN (TX)
: Connect a video source (such as a PC) to HDMI IN receptacle over HDMI cable.
- ▶ HDMI OUT (RX)
: Connect a digital display to HDMI OUT receptacle over HDMI cable.
- ▶ Local Display (TX)
: Connect a digital display to Local Display receptacle over HDMI cable.

- ▶ RJ-45 (TX & RX)
 - : Connect a RJ-45 network cable (CAT5e / CAT6) to the connector.

- ▶ mini USB port (TX)
 - : Connect a USB port in PC to this connector for HID mouse or Keyboard.

- ▶ USB A Type (TX)
 - : Connect a mouse and/or a keyboard with 2 port USB hub.

- ▶ Dual USB A Type (RX)
 - : Connect a mouse and/or a keyboard to these connectors.

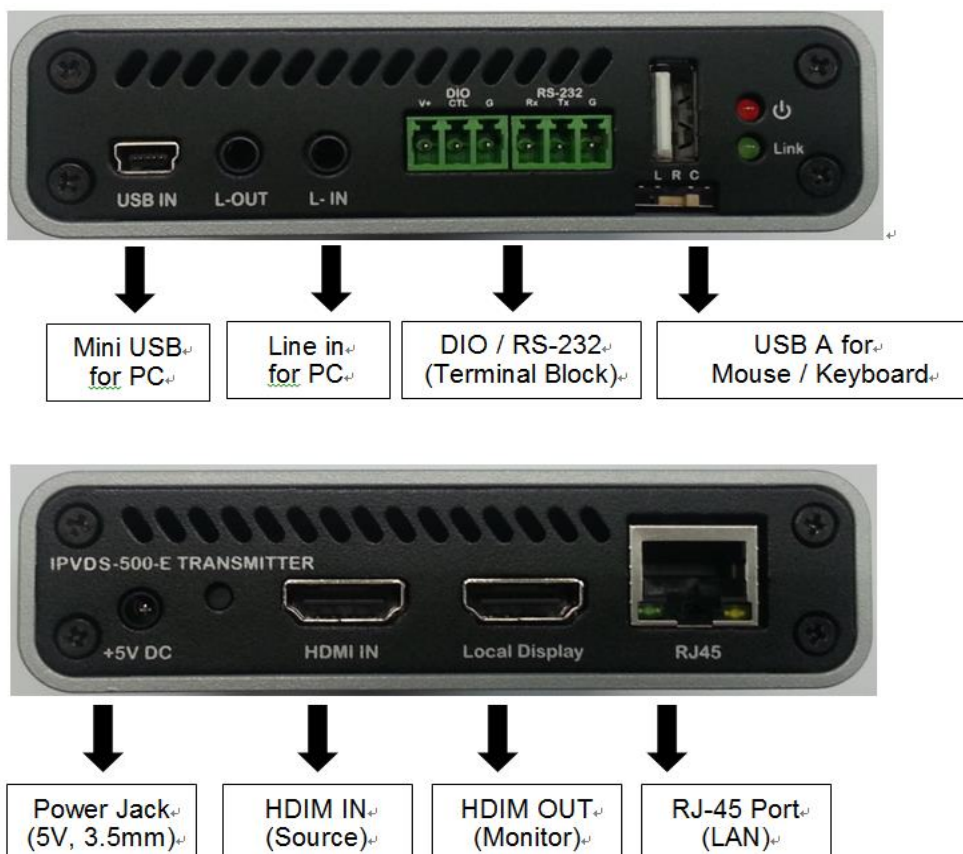
- ▶ RS-232 (TX & RX): Optional

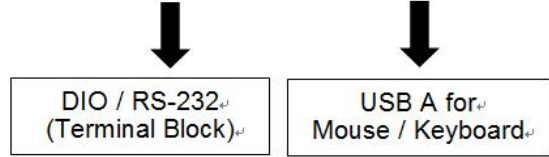
- ▶ DIO (TX & RX): Optional

Note1: If you change a video source to another one, you have to reset the power of all TXs and RXs by re-plugging of the +5V power adaptor.

Note2: If you want to use the function of RS-232 & DIO, please contact sales@opticis.com.

◆ IPVDS-500-E, TX Front & Back





7. LED Indication

The two (2) LEDs on the front panel of IPVDS-500-ED indicate power and network status.

- ◆ Power status LED (Red)
 - The red LED will be turned on when 5V power is applied.
- ◆ Link LED (Green)
 - If the green LED turns on at TX and RX, IPVDS-500-ED is ready to operate as Video Wall display.

8. Connection (Installation)

Important: Please follow the installation procedure below. Improper or no operation may be resulted, if the start-up sequence is not followed correctly.

Step 1

Carefully unpack the contents of the shipping group.

Step 2

Turn on the PC, display, and network switch.

Step 3

Turn on the PC for Video Wall control SW and connect network cable (CAT5e or CAT6) to network switch.

Step 4

Connect HDMI IN port in IPVDS-500E (TX) to the PC by supplied HDMI cable.

Step 5 (Optional)

Connect mini USB port in IPVDS-500-E (TX) to USB port in PC with supplied USB cable. You may skip Step 4 if you don't need local and remote control with Keyboard and mouse.

Step 6 (Optional)

Connect Local Display port in IPVDS-500-E (TX) to local HDMI display by HDMI cable.

Step 7

Connect LAN port (RJ-45) in IPVDS-50-0E (TX) to LAN port in Network switch with LAN cable.

Step 8

Connect HDMI OUT port in IPVDS-500-D (RX) to remote HDMI display by supplied HDMI cable. Then, attach keyboard and mouse for remote control.

Important: You have to connect IPVDS-500-D (RX) to each video wall display according to order of serial numbers of IPVDS-500-Ds (RXs). Refer to OSD Numbers for video wall displays

Step 9

Connect LAN port (RJ-45) in IPVDS-500-D (RX) to LAN port in Network switch with LAN cable.

Step 10

Plug the +5V power adaptors to both IPVDS-500-E (TX) and IPVDS-500-D (RX).

Note1: If you change an input source to another source, you have to reset the power of all TXs and RXs by re-plugging of the +5V power adaptor.

9. SW & Factory Reset

- ◆ SW Reset: Press the Reset switch on the back of devices shortly to reset.
- ◆ Factory Reset: To recover the Factory setting, press and hold the Reset switch on the Back of devices until the LED is turned off after blinking (approx.5sec).
 - ▶ DHCP IP mode
 - ▶ default values on device setup & system configuration
 - ▶ default values on HDMI EDID

10. PC Program (Video Wall Control Software)

PC Program is easily used for host video preview and host allocation to MxN Layout. User can merge, split overlay, and clear by dragging & dropping the mouse for host allocation and see preview scene on the 'Layout Manager' in advance, before applying it to display.

It has three sections; 1) 'Menu items' for device setup and system configuration 2) 'Layout Manager' for layout and apply action 3) 'Display Placement' for installation and display configuration.

Note: IPVDS-500-ED supports static fixed IP address, auto IP address and DHCP IP (Dynamic Host Configuration Protocol: default) in IP network. Users can change auto IP to static IP with host & client device setup of PC Program if there is no DHCP server.

Important: Without DHCP IP, Static IP 'Class' of Control PC should be the same as IP 'Class' of network switch or devices (TX or RX).

10.1 PC Program Installation and Login / Logout

1) Downloading the PC program

(1) Visit our website, www.opticis.com.

(2) Click the PRODUCTS bar at the top of the page.

(3) Click IPVDS and IPVDS-500-ED step by step.

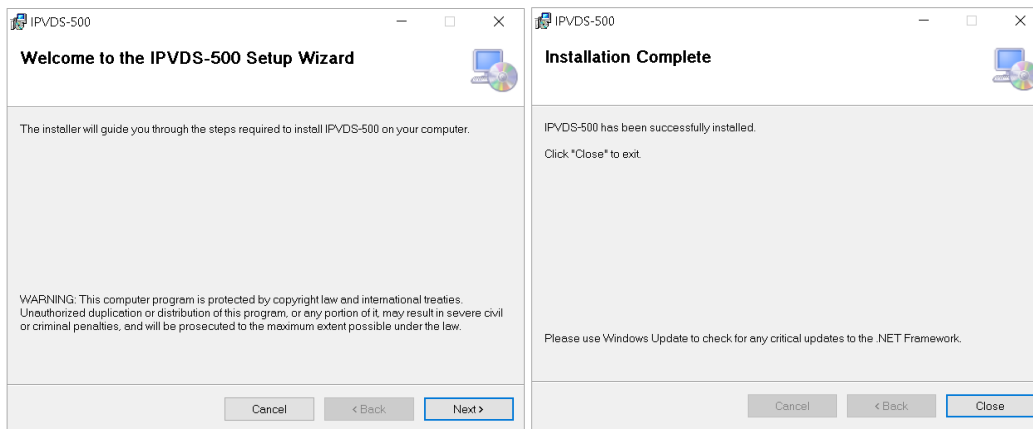
(4) Click and download the PC program file.

(5) To download it, please enter the password (number): 0315

2) PC Program Installation

Important: If you use IPVDS-500-EDs in intranet between routers, you need to check the IP addresses, Gateway and Subnet Mask of the PC.

- (1) Run the setup.exe in the Window Operating System.
- (2) Follow on-screen instructions.

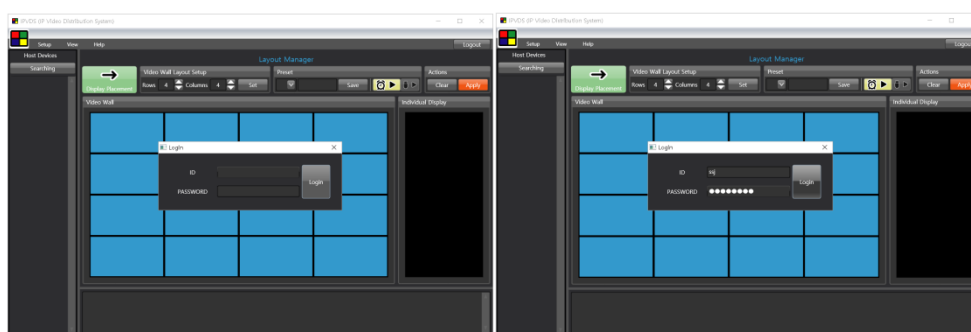


[Figure 3 – Program Installation]

* To re-install or upgrade the PC Program, please delete the previous PC program on the Control Panel of Window OS.

3) Access to PC Program: Login & Logout

- (1) Run the PC program (Video Wall Controller SW).
- (2) Insert Password & Confirm Password for admin ID when you login initially in your PC.
- (3) Change Password of admin ID or add user ID and password.
Refer to user configuration in ribbon menu to add new user ID and password.
- (4) Click Logout menu bar at the top right for another user to login or quit this program.
- (5) Login with admin ID or a user ID.



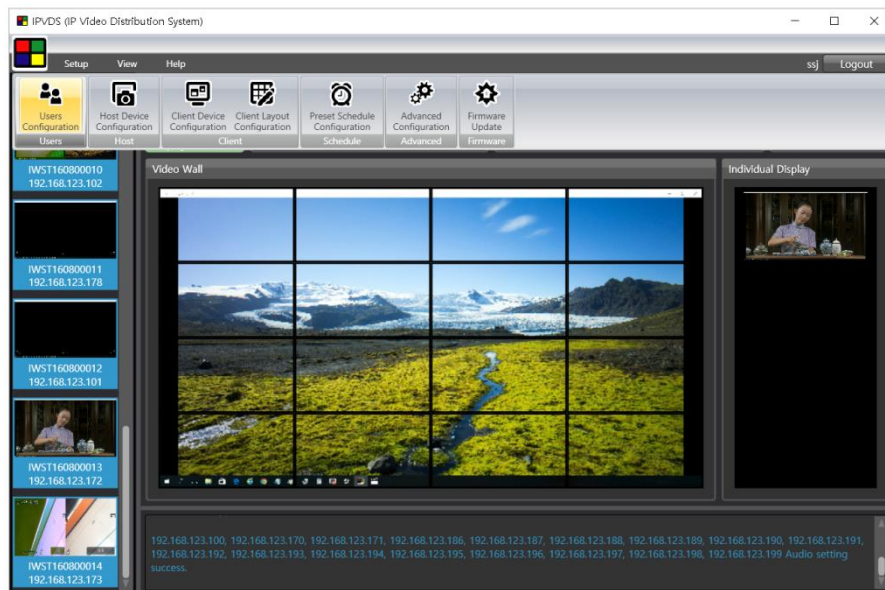
[Figure 4 – Log in]

10.2 Menu items for device setup and system configuration

There are 3 menu items for device setup and system configuration: Ribbon menu, Application icon menu, and context menu (mouse right click menu).

1) Ribbon menu

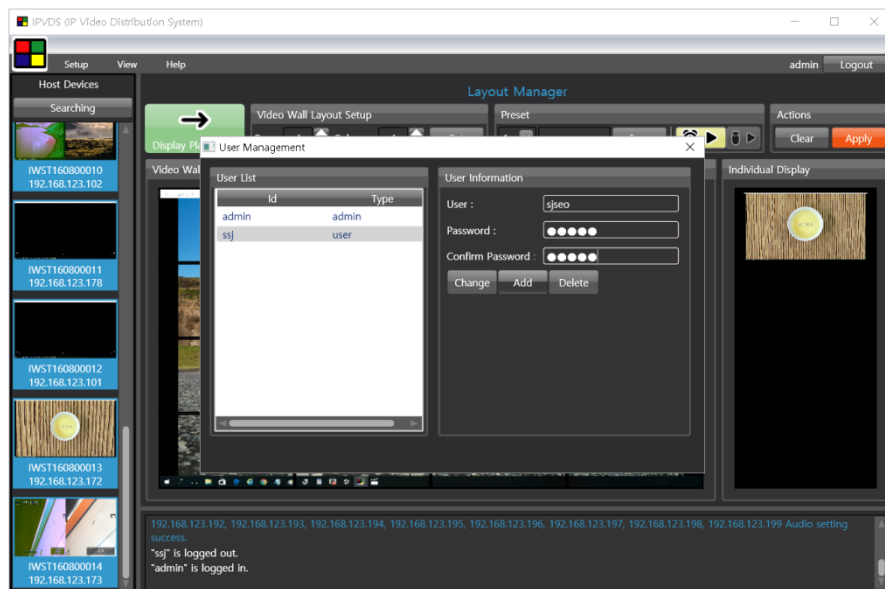
: Users configuration, Host device configuration, Client device configuration, Client layout configuration, Advanced Configuration, Preset Schedule Configuration, and Firmware upgrade.



[Figure 5 – Ribbon menu]

◆ User configuration

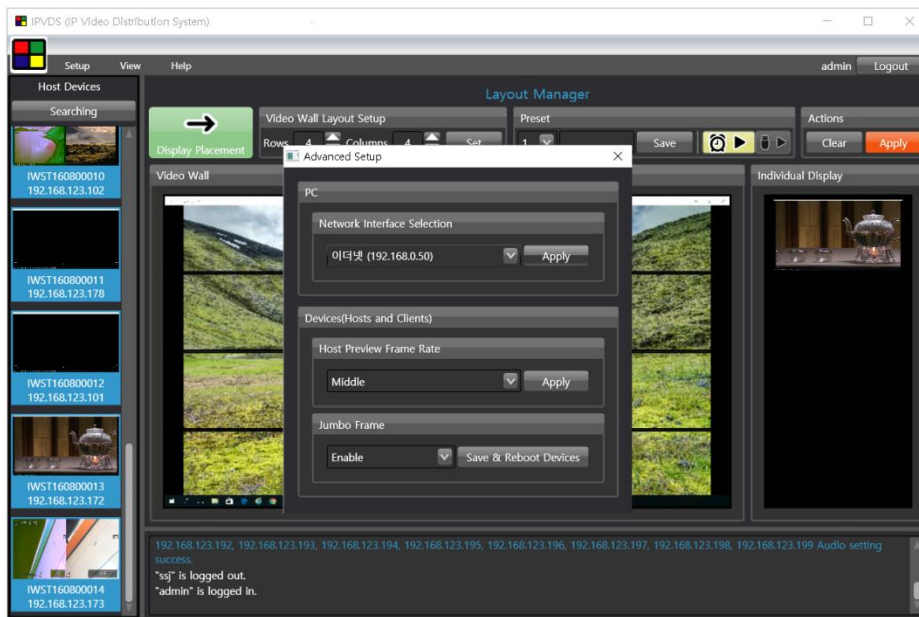
The 'admin ID' is given to each PC and you can only change password. With admin ID, you can add, change or delete user ID and password.



[Figure 6 – User setup]

- ◆ Host Device configuration: Refer to Host Device setup & Configuration of 'Layout Manager'
- ◆ Client Device configuration: Refer to Client Device setup & Configuration of 'Display Placement'
- ◆ Client Layout configuration: Refer to Display Configuration of 'Display Placement'
- ◆ Advanced Configuration: It supports user to set up in special cases as below;

- ▶ Frame rate: Preview frame rate is related to performance of HID Keyboard & Mouse. Please set 'Low' if you want to focus on KVM function.
- ▶ Jumbo frame: Please set 'Disable', if L2/L3 network switch does not operate well with Jumbo frame 'Enable'.
- ▶ Network Interface Selection: Please set Ethernet or WiFi if there are some problems with device searching



[Figure 7 – Advanced setup]

◆ Firmware Upgrade

- ▶ Upgrade Firmware by using PC Program
 - (1) Click 'Searching' button to find devices to upgrade through the network or directly with PC on Device section of 'Layout Manager' or 'Display Placement'.
 - (2) From the list on the left, select a device to upgrade.
Please check the IP address and Gateway of the PC. It must have same IP class as all of TXs and RXs.

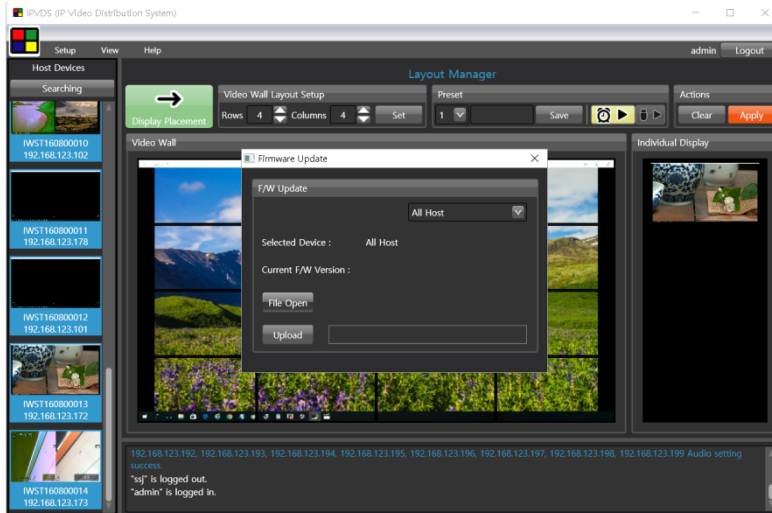
Note: If IP address class and Gateway of PC are different from the selected device, change IP address and Gateway of PC on the control panel.

- (3) Click 'File Open' button and then, search and select a firmware file.

Note: User can see the present Firmware version of the selected device on the right area.

- (4) Click 'Upload' button (Do not unplug +5V power adapter until it is completed).
Please wait until LED blinking stops and then the device will be rebooted.

Note: You can see a pop up message when it is completed. It takes about 3 minutes for TX and 5 minutes for RX.

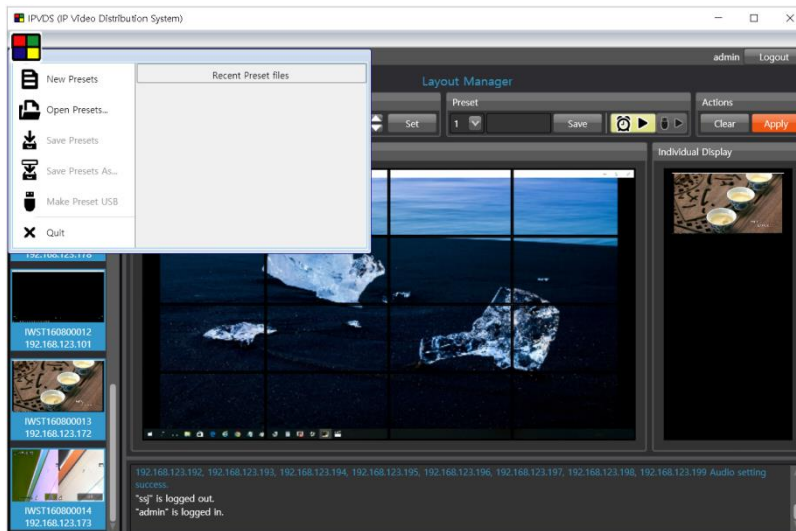


[Figure 8 – Firmware upgrade]

- ▶ Upgrade Firmware by using USB
 - (1) Copy “IPVDS-500.bin” into an USB memory stick.
 - (2) Insert the USB memory stick into any USB A ports on the selected TX or RX.
 - (3) Re-plug the +5V power adapter into the power jack of selected TX or RX (IPVDS-500-E or D).
 - (4) Please wait until LED blinking stops and then the device will be rebooted. It takes about 3 minutes for TX and 5 minutes for RX (Do not unplug DC power until it completes).
 - (5) Remove the USB memory stick from TX or RX (IPVDS-500-E or D).
- ◆ View: There are Device, Layout, and Log section and user can change set size of each section.
- ◆ Help: User can check the version of Video Wall Controller SW (PC Program).

2) Application icon menu

This menu is used to save presets in clipboard memory in a folder or to load presets saved in a folder to clipboard memory. Refer to 'Layout Manager' to learn how to use presets in clipboard memory.



[Figure 9 – Icon menu]

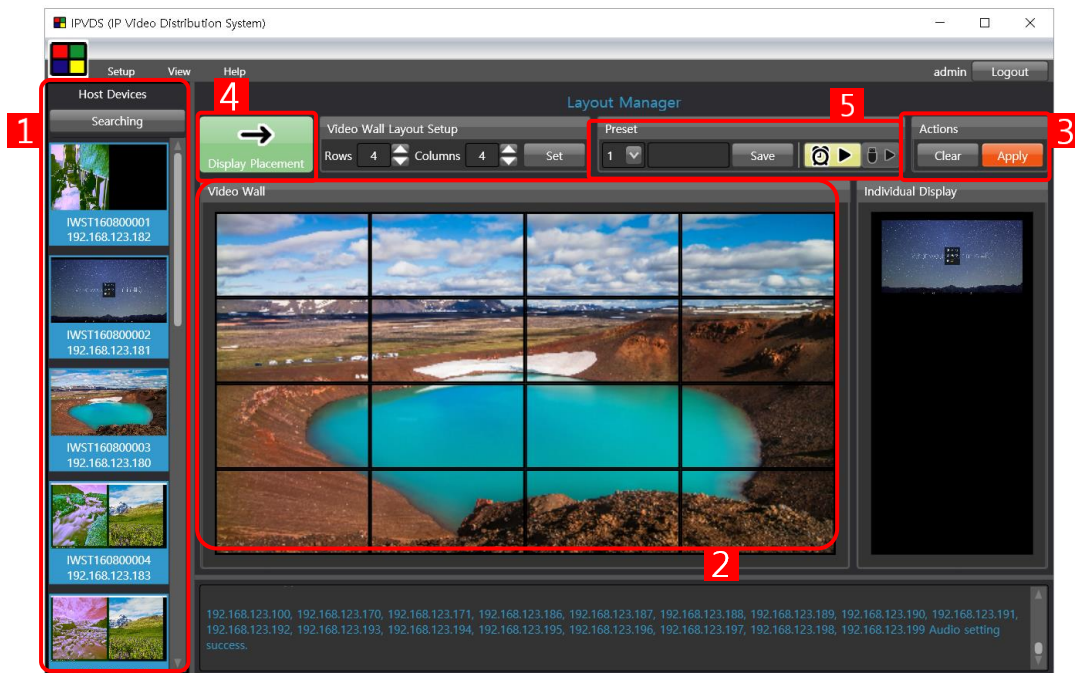
3) Context menu (Mouse right click menu)

Host Device Setup, Client Device Setup, Display Configuration, and Layout Editing for Overlay



- ◆ Host device setup: Refer to Host Device setup & Configuration of 'Layout Manager'
- ◆ Client Device configuration: Refer to Display Configuration of 'Display Placement'
- ◆ Client Display configuration: Refer to Display Configuration of 'Display Placement'
- ◆ **Overlay Editing: Refer to Layout Editing (Overlay)**

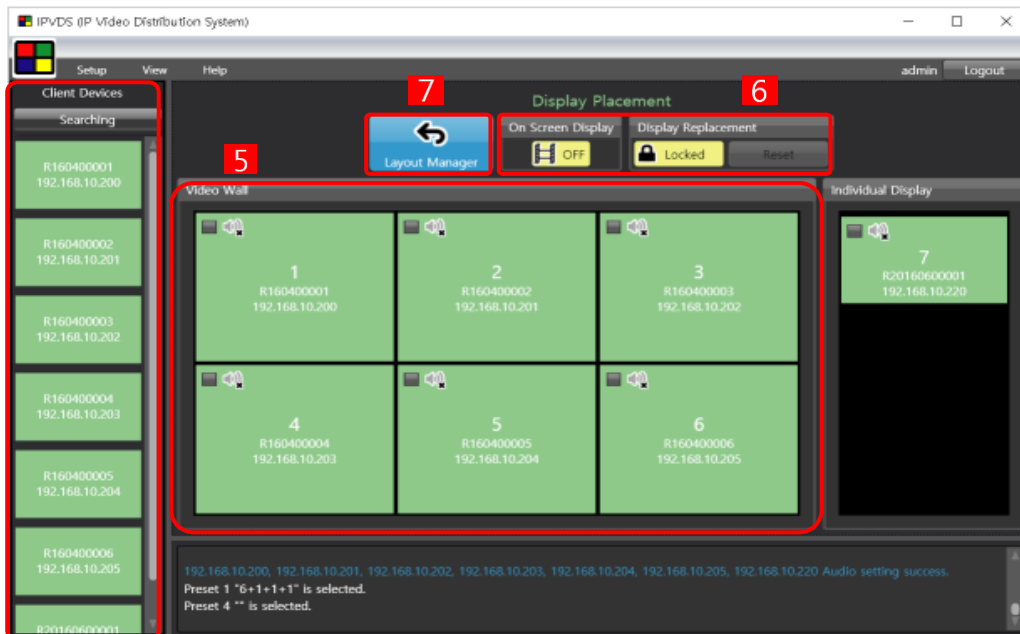
10.3 Getting Started for Video Wall

You can set up and control up to 8x8 Video Wall displays and lots of other individual displays simultaneously on 'Layout Manager'. It means that you can use this PC Program as Video Wall Controller or Virtual IP Matrix system as well as both on M x N settings. For example, if you set 0x0 set, all displays set as individual displays such as IP Matrix system.



[Figure 10 – Layout Manager]

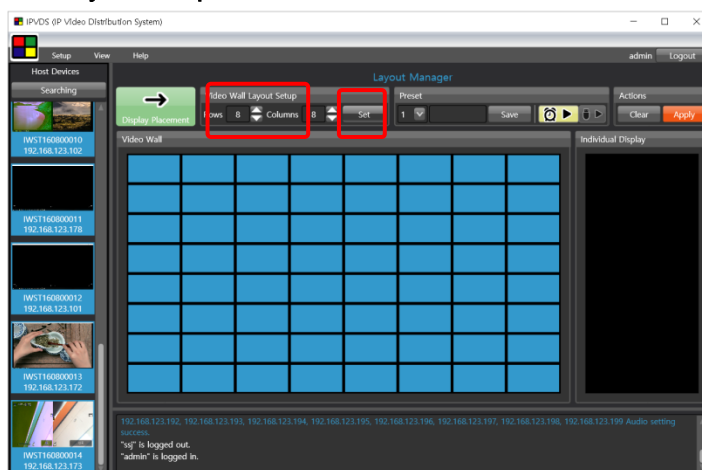
- 1** Host device section (Device Searching): Firstly, set MxN Layout for Video Wall system, and then search devices connected to IP network and check host device configuration. You can preview videos connected to A/V sources such as PCs, cameras, or media players on the host devices section.
- 2** Layout edit: You can allocate host devices on MxN layout and edit the layout if displays are correctly set up.
- 3** Apply action: If you press apply () button, you can see what you setup to Layout section on real displays.
- 4** Display Placement: Please click "Display Placement" section for installation of Video Wall system for the first time or change MxN Layout setup.
- 5** Preset open/save and Scheduling action: You can save preset which you edited Layout for Video Wall and load from backup folder of your PC. And Please click scheduling action () button to play pre-saved presets automatically after set time scheduling on the preset scheduling configuration of Ribbon menu.



[Figure 11 – Display Placement]

- 4 5** 6) Client device and Display section: You can set client device and display configuration on 'Display Placement' Page.
- 6** 7) Display Replacement: You can set OSD on / off on 'Display Placement' Page and check display order at OSD On mode. Also you can make a replacement in unlocked mode for real display monitors on 'Display Replacement' Page.
- 7** 8) Layout Manager: Return to 'Layout Manager' page.

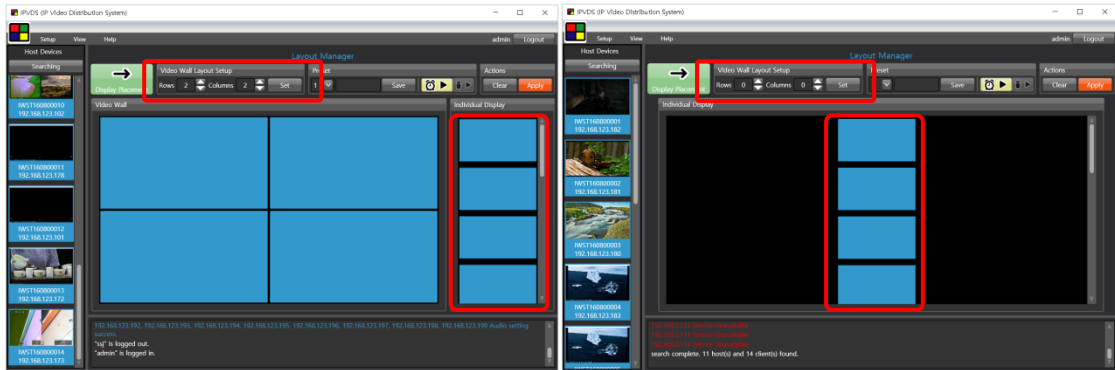
1) MxN Layout setup



[Figure 12 – Layout setup]

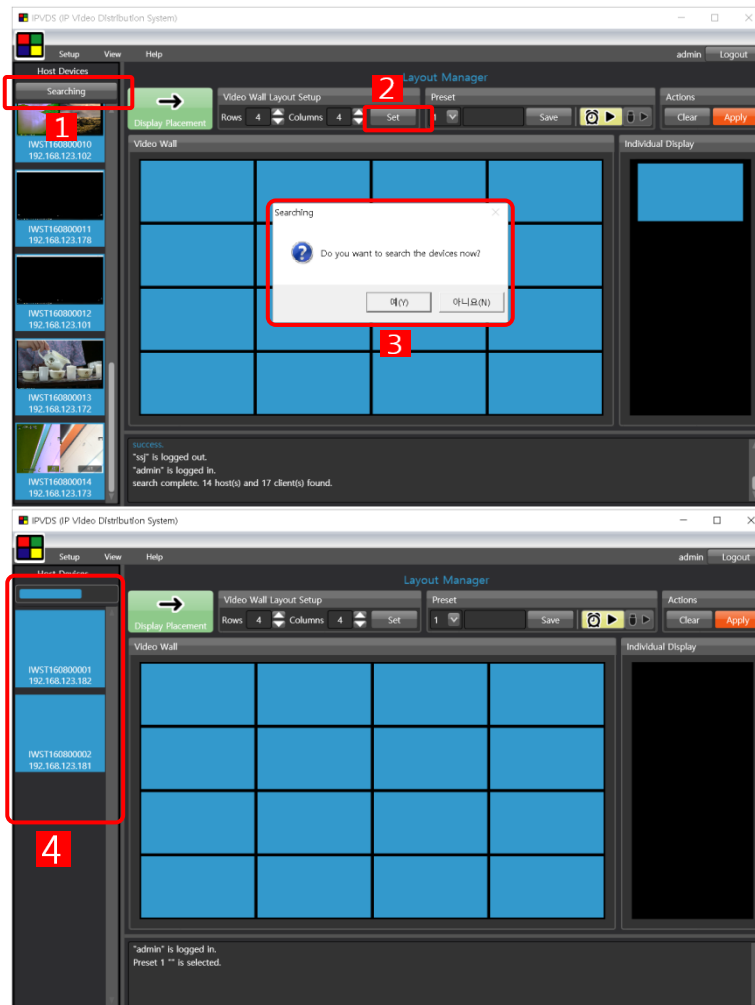
- (1) Select Row 'M' using up/down button.
- (2) Select Column 'N' using up/down button
- (3) Press 'set' button.

Note: If you set MxN Layout for Video Wall, remain displays are going to be on the individual displays in the IP Network. For example, if there are 7 Rx's which are connected to displays and you set 2x2 Video Wall displays, 3 remaining displays are going to be on the individual displays as below. And also if you set MxN to 0, all Rx's operate individual displays. That is why this controller can be called as IP Matrix system.



2) Device Searching & Host Device configuration

◆ Device searching



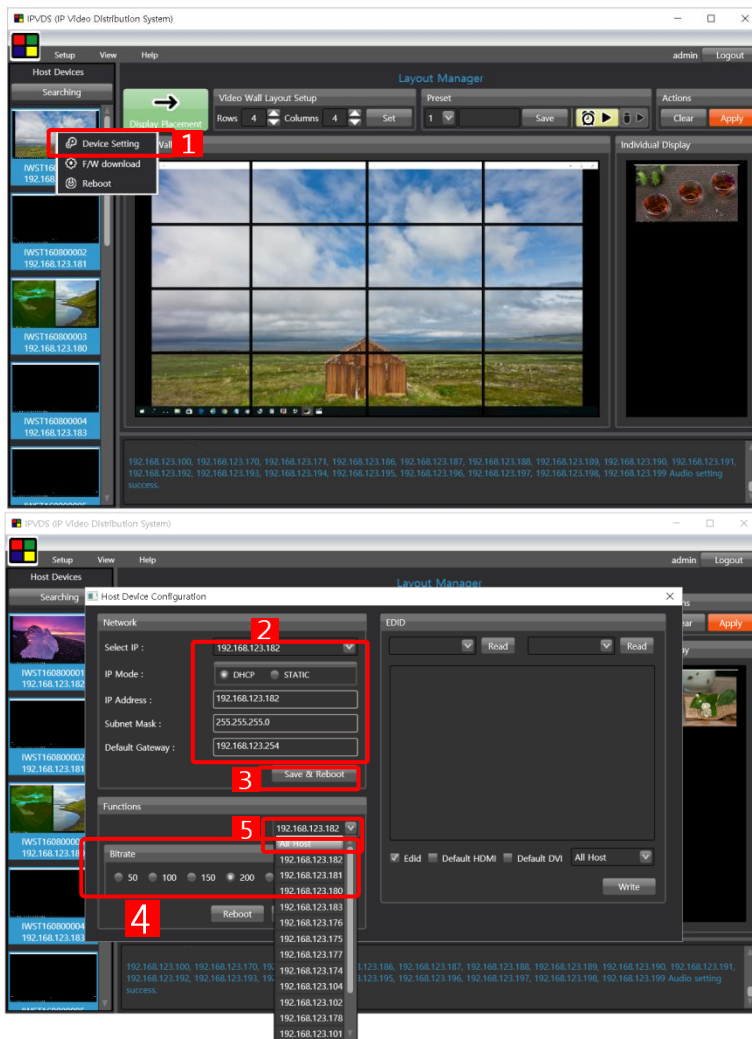
[Figure 13 – Searching]

- a) Click 'Searching' button (1) then, PC Program will automatically detects host devices connected to IP network. Click 'Set' button (2) or re-start the PC Program, window pop-up will show up (3) and by clicking 'Y', it will automatically detect host device.
- b) A list of host devices will be shown on the section (4). You can preview each videos of A/V sources connected to a host device.

Note: Device searching is also available at 'Client Device section of 'Display Placement' Page. In fact, if you click 'Searching' button, PC program detects both host device and client simultaneously.

◆ Host device setup

You can edit host devices with Context menu (with mouse right click 1) on the left section or on Ribbon menu.



[Figure 14 – Device setting]

► Network information setup (2)

(1) Select one of DHCP IP and Static IP. If you select DHCP IP mode, network information of selected device is set automatically.

(2) To change network information of host devices, select one of listed devices, and modify IP address, gateway, and subnet mask of the devices in static IP mode.

(3) Click 'Save & Reboot' button (3) to save the new information in a host device (TX).

(4) Repeat (2)~(3) to change network information of all host devices.

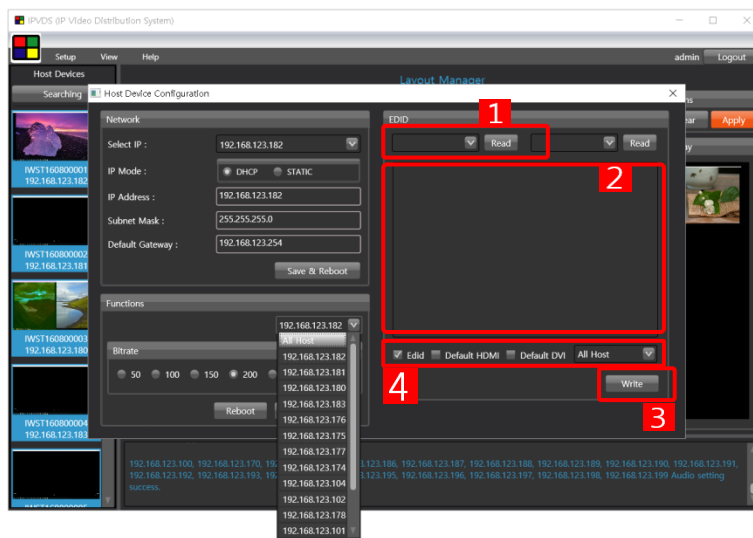
► Bit rate setup

It is able to choose bit rate between 50~200Mbps or Best, according to required image quality and bandwidth limitation of the network (If best bit rate, IPVDS-500-EDs are in 'Visually lossless compression').

(1) Select one between 50MHz~Best (4).

(2) Click 'Save & Reboot' to save and apply to TXs (All hosts recommended 5).

► EDID read



[Figure 15 – EDID setup]

(1) Select (1) one of host devices on the list whose HDMI OUT receptacle was connected to a display.

(2) Click 'Read' button.

You can see temporarily saved EDID data on the clipboard (2) but, if the host device (TX) is not connected with a display, you may see the 'Fail' message.

► EDID write (all hosts recommended)

After reading EDID data from a host, you can write the saved EDID data on clipboard memory to all TXs or selected one.

Note: Please be aware while using 'EDID write' function. It may be black out with unsuitable EDID data to displays.

(1) Select (1) all TXs or one (all hosts recommended).

(2) Click 'EDID write' button.

► EDID write from default EDID data

After checking the default EDID data on either HDMI or DVI on the top right (4), you can write the default EDID data to all TXs or selected one.

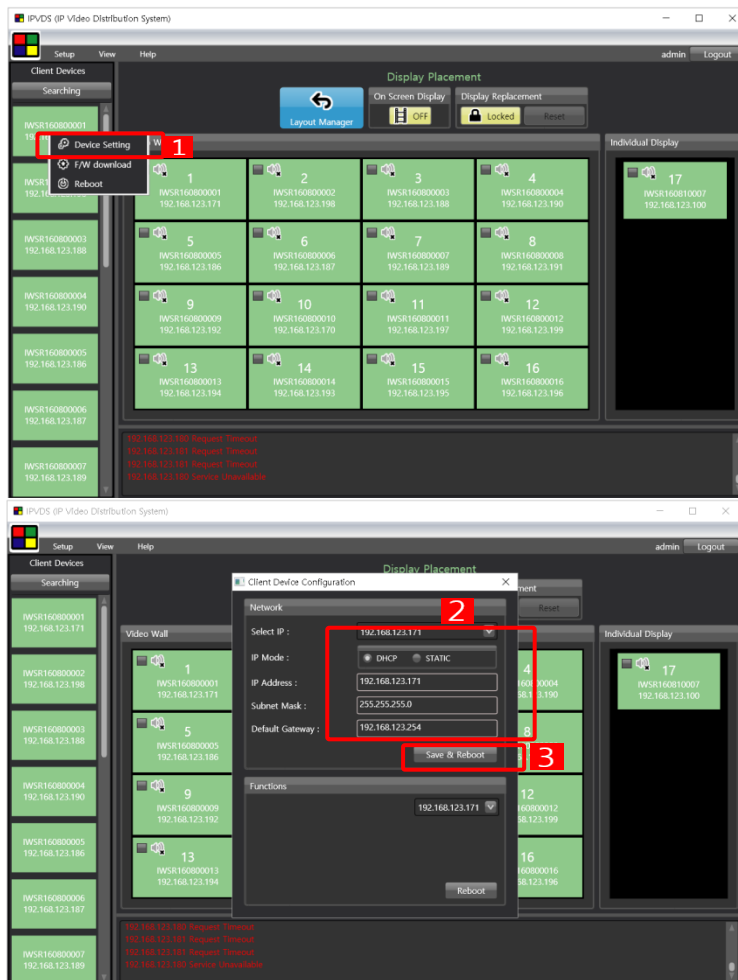
(1) Select and check Default value either HDMI or DVI. (4)

(2) Click 'EDID write' button to (3) all TXs (all hosts recommended).

► 'Reboot' button: Possible to re-boot selected device on the network if necessary

3) Client device setup and Display configuration on 'Display Placement' Page

If its first time installing the Video Wall displays or trying to change MxN set, you need to visit 'Display Placement' Page.



[Figure 16 – Display Placement page setup]

◆ Client Device Setup (Network setup **2**)

You can edit and setup client devices with Context menu (with mouse right click **1**) on the left section or on Ribbon menu.

(1) Select one of DHCP IP and Static IP. If you select DHCP IP mode, network information of selected device is set automatically.

(2) To change network information of client devices, select one of listed devices, and modify IP address, gateway, and subnet mask of the devices in static IP mode.

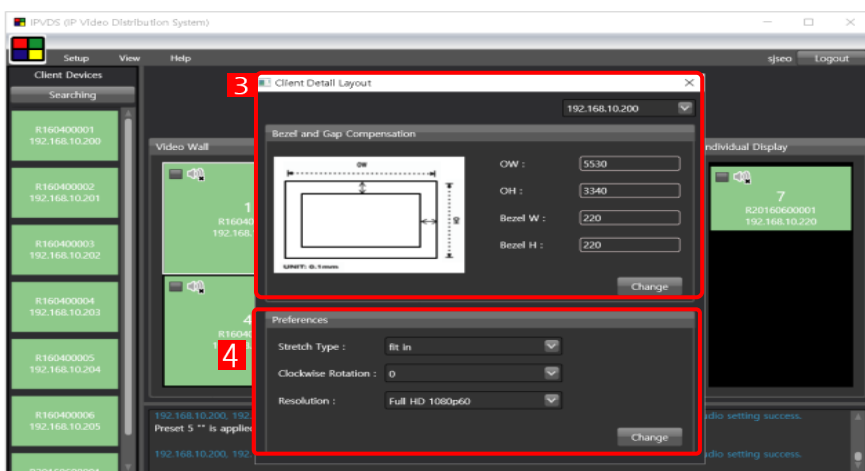
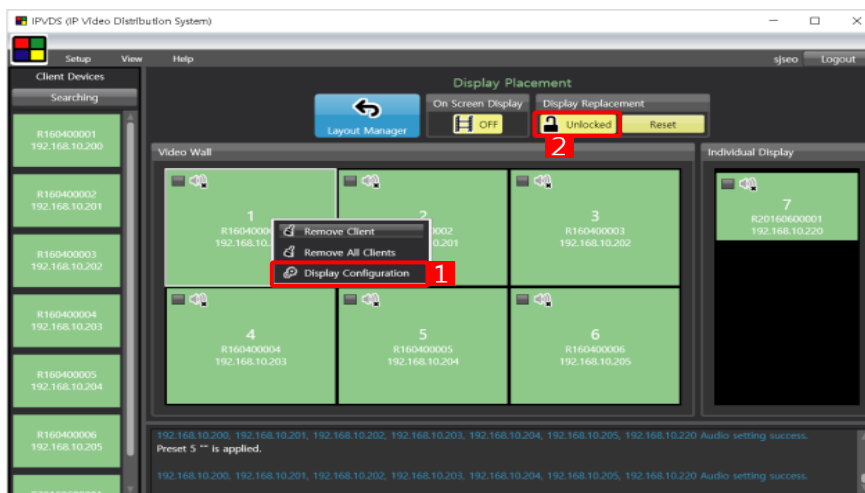
(3) Click 'Save & Reboot' button (**3**) to save the modification in client devices (RX).

(4) Repeat (2)~(3) to change network information of all client devices.

▶ 'Reboot' button: Possible to re-boot selected device on the network if necessary.

◆ Display Configuration (all displays recommended)

You can set display configuration on the 'Display Placement' Page with Ribbon menu or Context menu (mouse right click menu **1**).



[Figure 17 – Display setup]

- (1) Click 'locked' button (**2**) to change into 'unlocked mode'.
- (2) Select a display and click 'Display Configuration' with mouse right click (**1**).
- (3) Set or change OW, OH, Bezel W, and Bezel H in 0.1mm units with your display (**3**).
- (4) Click 'Change' button.

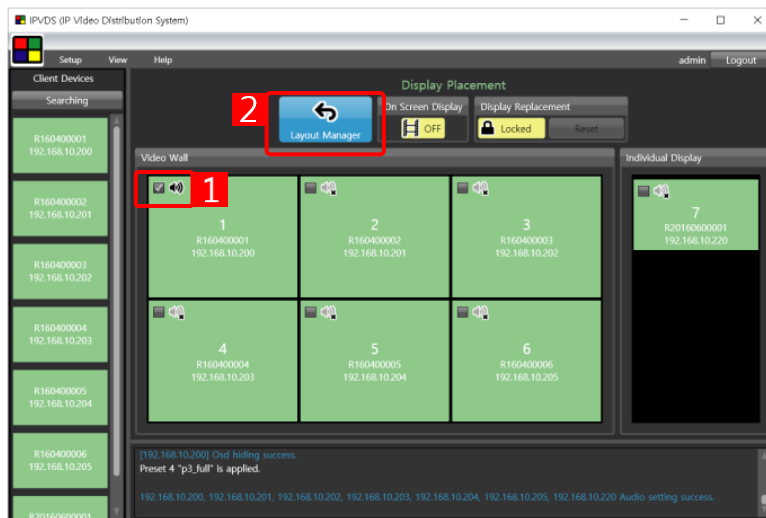
Important: It is recommended to apply to all displays because it is assumed that all displays more the same Spec. in Video Wall system.

- (5) Set stretch type, rotation, or a resolution for fixed output (**4**), if necessary.
- (6) Click 'Change' button.
- (7) Click 'unlocked' button (**2**) to change into 'locked mode'.


◆ Operation with Audio Port

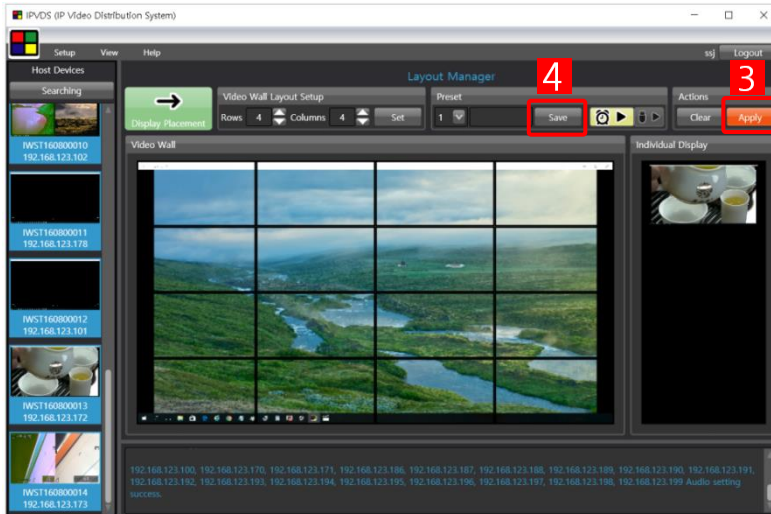
Note: Because Audio input port of a host device has more priority to Analog line-in input than to HDMI input, an operation with audio input port depends on whether Analog Line-in is inserted or not. However, regardless of input port selection, an operation with audio output port works with both HDMI audio and Analog Line-out on the client (Dual output).

Important: In the Video Wall system, default is in inactive mode with audio output. So, you need to apply a specific client into active mode in order to operate a speaker in a client display in specific preset.



[Figure 18 – Audio setup]

- (1) Mark the check box (**1**) of an audio icon on 'Display Placement'.
- (2) Click the icon ( **2**) of 'Display Placement' to go back to 'Layout Manager' Page.



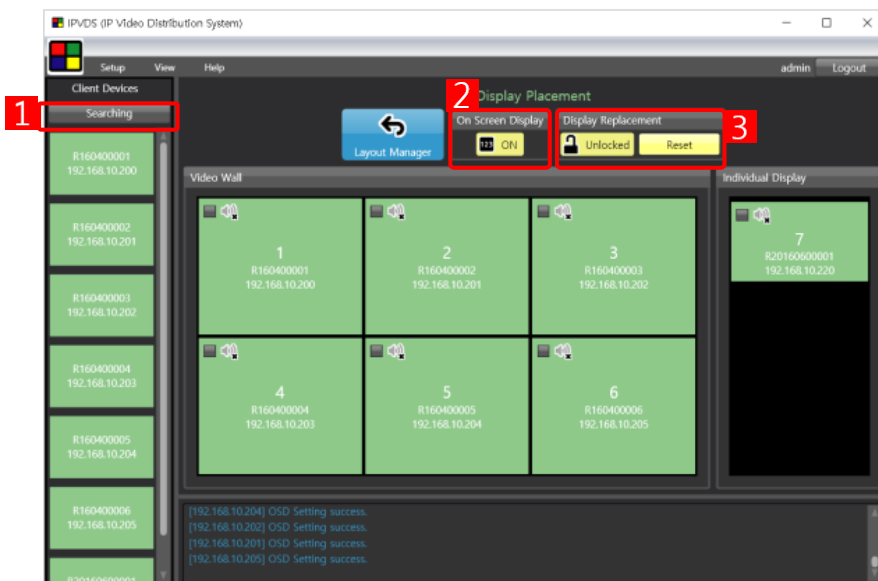
[Figure 19 – Audio setup apply]

Note: When you save current preset (4), this audio setup need to be included together.
 (3) Click 'Apply' button (Apply 3) on 'Layout Manager'.

4) Installation for real displays on 'Display Replacement' Page

If its first time installing the Video Wall displays or trying to exchange client devices (RXs), you may check display order in OSD On mode. OSD numbering criteria is based on last 5 digit of the 'Serial Number' which is stuck on the bottom of each client device (RX) and you can see information about 'Serial Number' of client devices on this 'Display Placement'.

Note: If the orders on Video Wall displays are incorrect, or the client device (RX) have been changed with other RXs, re-set on 'Display Replacement' mode of this PC program is needed.



[Figure 20 – Client device setup]


- ◆ Exchange with another client device (RX)
 - (1) Exchange with another client (RX) within OSD numbering order.
 - (2) Click 'Searching button' (1).
 - (3) Make sure whether display order is correct or not in OSD On mode (2) with real displays.

- ◆ Replace with another client device (RX) on 'Display Replacement' mode of this PC Program
 - (1) Click 'locked' button (3) to change into 'unlocked mode'.
 - (2) Replace with another client (RX) on 'Display Replacement' mode of this PC Program.
 - (3) Click 'unlocked' button (3) to change into 'locked mode'.
 - (4) Make sure whether display order is correct or not in OSD On mode with real displays.

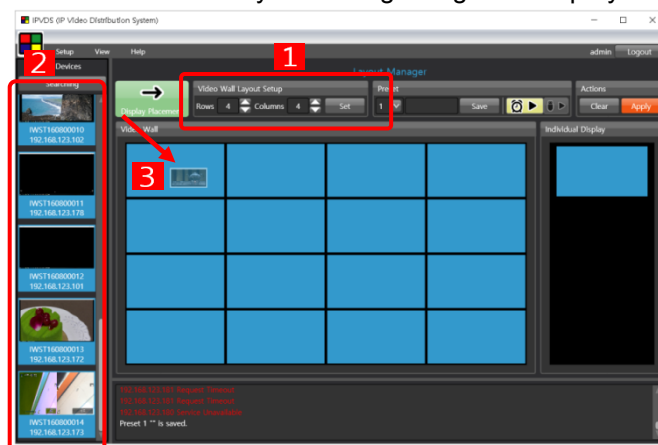


[Figure 21 – Real displays with OSD on]

5) Layout Editing

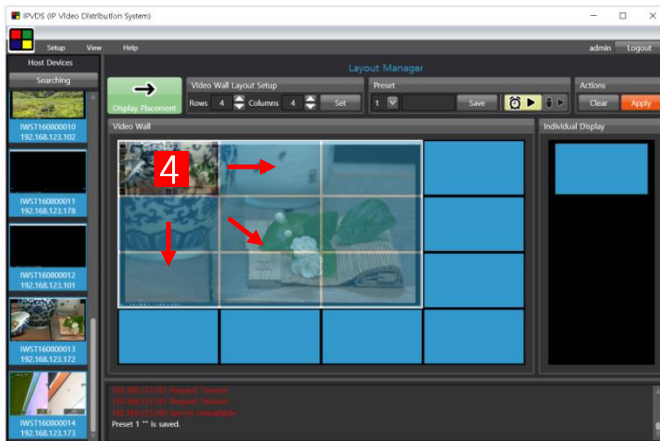
If you complete the setting on 'Display Placement', please click icon () of 'Display Placement' to go back to 'Layout Manager'.

- ◆ Host allocation and Layout Editing: Drag and Drop by mouse



[Figure 22 – Layout setup]

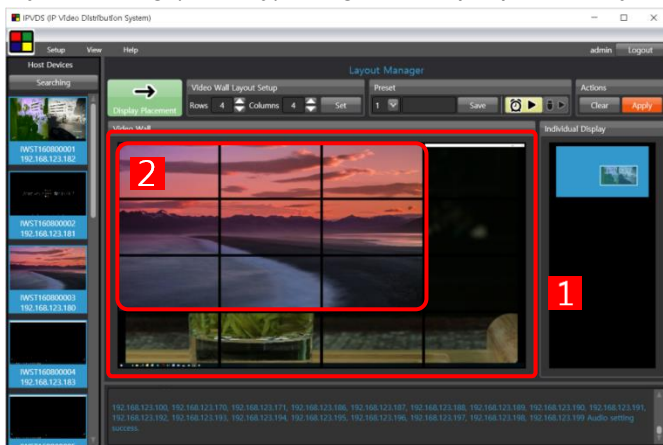
- (1) Set MxN Layout.
- (2) You can preview each video of A/V sources connected to a host device on left section 2.
- (3) Set 'Drag & Drop' by mouse from 2 section to Layout section (3).



[Figure 23 – Stretch Layout]

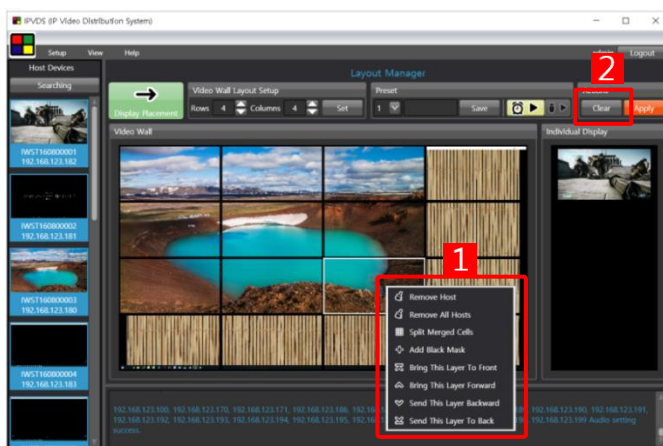
(4) You can drag and extend a host video on layout section in eight directions with mouse

◆ Layout Editing (Overlay): Drag and Drop Operation by mouse



[Figure 24 – Video overlay]

(1) You can additionally overlay host videos to any position of layout section with hold, drag, stretch and drop operation using mouse, after allocating host videos to layout section.



[Figure 25 – Video overlay setup]

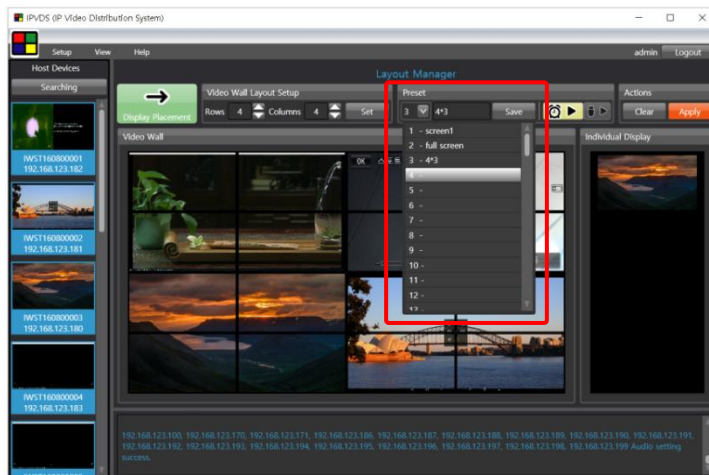
(2) Using context menu (mouse right button **1**), you can remove, split or bring host images to front/forward/back/backward. These overlay functions can help you to make more Layout.

(3) Also, It is available to re-start layout editing if you press 'Clear' button (**Clear** **2**) on the 'Actions' section.

◆ Presets


1) After completing the Layout editing, you can save it up to maximum of 99 Presets, 2) possible to load the saved presets from 'Preset Open/Save', 3) possible to back-up and copy the saved presets to a PC folder, 4) apply to the file of the saved presets on another PC.

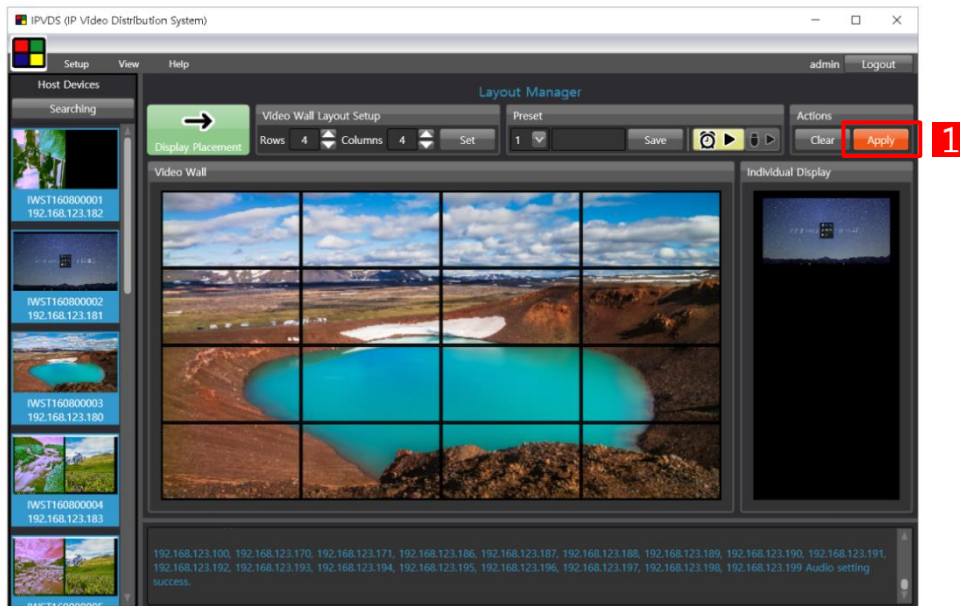
Refer to 7) Scheduling Action to know more Preset Scheduling configuration and Scheduling Action



[Figure 26 – Preset open/save]

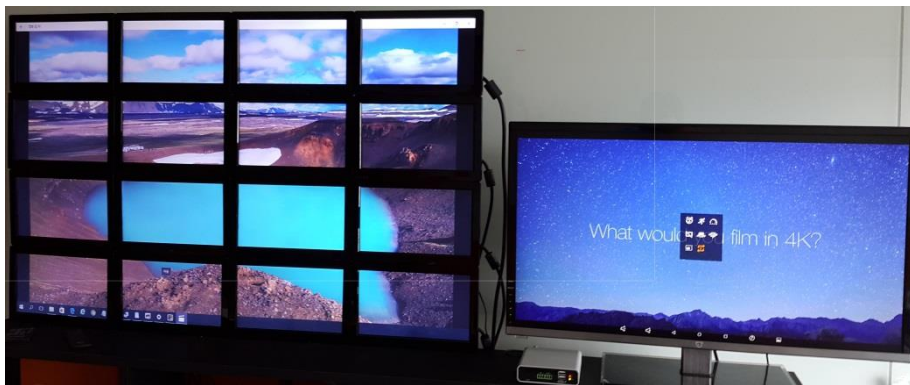
6) Apply Action

(1) If you click apply button ( **1**), the edited Layout is applied to real displays.



[Figure 27 – Apply]

(2) You can see 4x4 Video wall displays and 1 individual display after layout edit and apply.

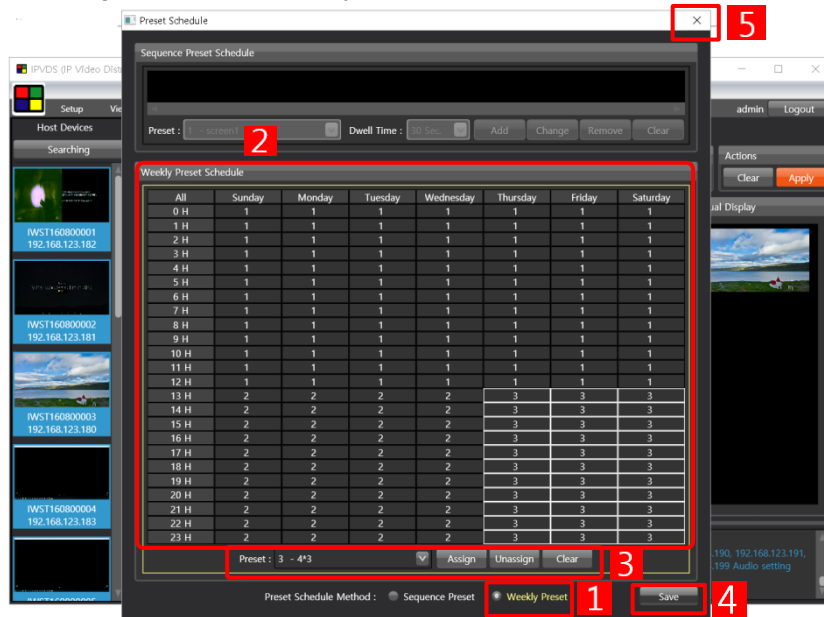


[Figure 28 – on real display monitor]

7) Scheduling Action

You can save preset which you edited Layout for Video Wall and load from backup folder of your PC. After saving Presets and setting time scheduling on the preset schedule configuration, you can operate scheduling action automatically.

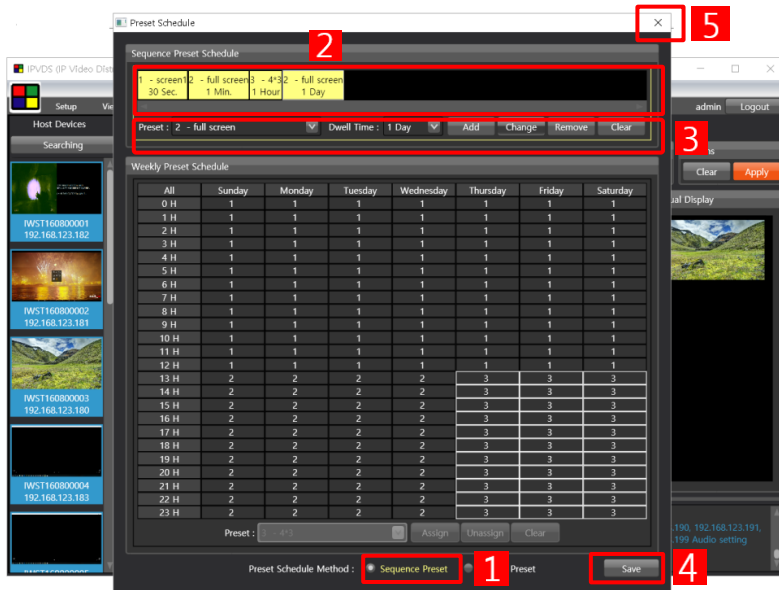
◆ Configuration in the weekly mode



[Figure 29 – configuration in the weekly mode]

- (1) Select Preset Schedule Configuration on the Ribbon menu.
- (2) Select Weekly mode from **1** section.
- (3) Assign, unassign or clear pre-saved presets on Weekly Preset schedule **2** from **3** section (by 1 hour).
- (4) Click 'Save' button **4** to save current configuration.
- (3) Click (**5**) button to complete Preset Scheduling Configuration.

◆ Configuration in the sequential mode

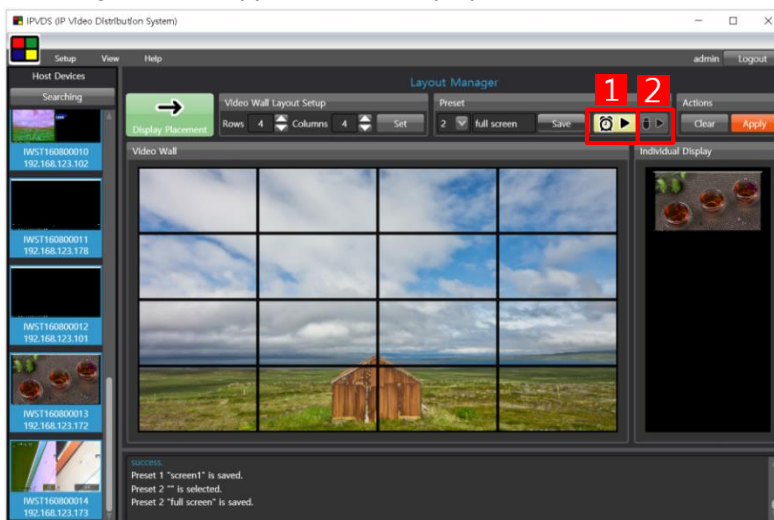


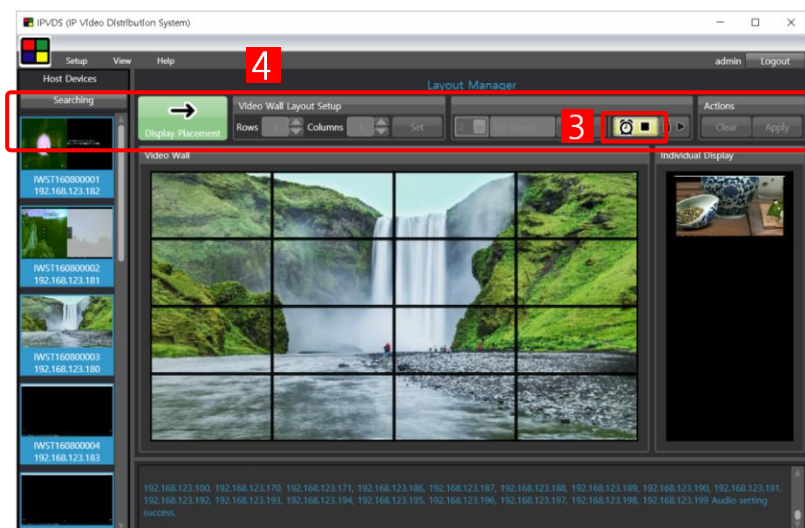
[Figure 30 – configuration in the sequential mode]

- (1) Select Preset Schedule Configuration on the Ribbon menu.
- (2) Select Sequential mode from **1** section.
- (3) Add, change or remove pre-saved presets on Sequential Preset schedule **2** from **3** section (by 30sec ~ up to 1 day).
- (4) Click 'Save' button **4** to save current configuration
- (5) Click (**5**) button to complete and exit Preset Scheduling Configuration.




◆ Scheduling Action

- (1) If you click 'Scheduling Action' button ( **1**), the saved preset schedule configuration is applied to real displays.





[Figure 31 – Scheduling Action]

- (2) If you want stop Scheduling Function, click stop button ( 3) which is toggle button between  & .

Note: you cannot use other functions as you see section 4 , when you execute 'Scheduling Action'.

Important: To operate Scheduling Action, please keep the control PC on the network. And be careful not to use many PCs simultaneously.

◆ Operation with USB ports


IPVDS-500-ED has 1 x USB port for a transmitter and 2 x USB ports for a client. These USB port usages can be HID Keyboard & Mouse, USB storage, USB Scheduling Action and an interface for touch screen (optional)

- ▶ HID KVM mode on remote site: After connecting between a host and a client over IP network, you can use a keyboard and a mouse in the HID KVM mode at the remote site.
- ▶ HID KVM mode on the local site: You can also use a USB port in the HID KVM mode at the local site which can be connected to with external 2-port USB hub.

Note: IPVDS-500-ED can supports Maximum 6 USB ports (including both host and client USB ports) to each PC source at 1:N connection.

Important: It is recommend that you use USB ports of IPVDS-500-ED in temporary cases for control or setup when there are 1:N connections on video wall system or multiple individual displays.

- ▶ USB Scheduling Action without a Control PC (TBD).

Note: The icon () from Section 2 is for Preset Scheduling without a Control (TBD).

11. Product Specifications

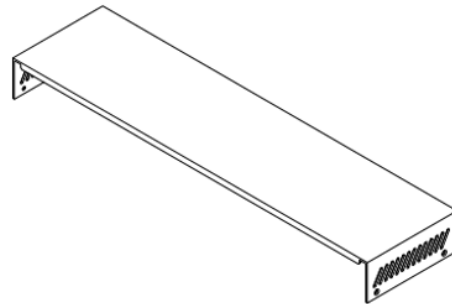
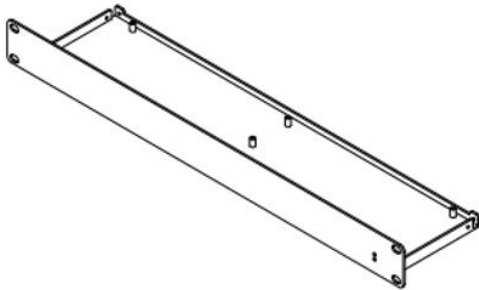
Item	Description
Network	TCP/IP based IP network: 100/1000 Base-T Ethernet with CAT5e/ CAT6 Cables
Resolution	Up to 4K resolution (3840x2160 at 30Hz) or 1080p at 60Hz
Video Wall	Up to 8x8 Video Wall with multi-sources
Virtual IP Matrix	Supports MxN Virtual Matrix with individual displays
Multicast streaming	1 to N (up to 200 RXs)
Video latency & Fast switching	< 1 frame / < 2 seconds
Bit rate (changeable)	50~200Mbps(default) and Best At Best bit rate, IPVDS-500-EDs are in 'Visually lossless'.
Video Wall Control PC Program for users	<ul style="list-style-type: none"> - Video Wall Controller SW Apps for Video Wall and Individual Displays - Provides device configuration, connection, preview, layout editing, and apply action - Drag and Drop operation of Mouse for Host Allocation and Preview - Allocation, merge, split, overlay and clear on Layout Manager - Provides preview scene before to apply it to real monitors. - Provides 99 Presets for user defined layout (Save and Loading) - Provides Preset Scheduling function with sequential and weekly mode - Bezel Compensation in 0.1mm units
Video Interface Standard	HDMI 1.4 and DVI1.0
HDCP / LAN Port	HDCP 1.4 and 2.2 / RJ-45 (TX/RX 1 port)
TX Video Interface	Input: 1 HDMI/DVI Input, Output: 1 HDMI/DVI Output (Loop-Through)
RX Video Interface	Output: 1 HDMI/DVI Output
Keyboard/Mouse (TX)	1 x mini USB B type to PC 1 x USB A type (for Local HID Keyboard/Mouse)
Keyboard /Mouse (RX)	2 x USB A type (for Remote HID Keyboard/Mouse)
Audio Input (TX)	HDMI Audio or Analog Line-in
Audio Output (RX)	HDMI Audio and Analog Line-Out (Dual output)
RS- 232 Port (optional)	3 Pin Terminal block for Knob & alarm interface
Digital I/O Port (optional)	3 Pin Terminal block for Control Authority (Externally)
Reset Switch	SW reset & Factory reset
EDID	Built-in EDID & EDID Read/Write
Dimension	TX: 112 x 28 x 104mm (WHD), RX: 112 x 28 x 104mm (WHD)
Power	100-240VAC, 50-60Hz / 5V/2A Adaptor
Power Consumption (TBD)	TX < 5W RX < 5W
Operating Temperature	0 ~ 50°C / -20 ~ 60°C (Storage Temperature)
Certification	FCC, CE, KC

12. Power Rack (PR5V-16) General Specification

PR5V-16 (Power Rack): up to 16 output with 5V DC			
Block A	Power Supply	100-240VAC, 50-60Hz 12V/4.2A Adaptor (Locking Type)	
	Output voltage	5V	+/- 10%
	Output current	1A	5V standard
	Port	8 DC output or 8 USB output	
	Output Type	DC Jack	3.5mm
		USB Jack	A type
Block B	Power Supply	100-240VAC, 50-60Hz 12V/4.2A Adaptor (Locking Type)	
	Output voltage	5V	+/- 10%
	Output current	1A	5V standard
	Port	8 DC output or 8 USB output	
	Output Type	DC Jack	3.5mm
		USB Jack	A type
Operating Temp.	0~50°C		
Storage Temp.	-20~60°C		
Size[WxHxD]	482x44x113mm		

*Image

[Rear side]



[Front]



[Rear]

13. Troubleshooting

Problem	Remedy	Causes
<p>No video on the display (General case)</p> <ul style="list-style-type: none"> - When devices is rebooted in current setting & apply - When you press 'apply' button for new layout 	<ul style="list-style-type: none"> - Wait several seconds for the system booting. After the power is applied, Power status LED will turn on (Red). - Check the connection of all cables. - Check the connection of the LAN cable to RJ-45 connector. - Check if the graphic resolution of Source PCs is set properly. Go to the display properties and setting tap. 	<p>Cables are connected incorrectly.</p>
<p>Video quality: - Freezing or collapse - Mosaic pattern - Jitter (General case)</p>	<ul style="list-style-type: none"> - Check network connectivity (check status 'On' of Green LED). - Reset the power of all TXs and RXs again by re-plugging the power adaptor or by reboot on the PC program. - Go to Ribbon menu and advanced configuration, and change jumbo frame to another value. 	<p>Network connectivity issues</p>
<p>Keyboard or Mouse doesn't work properly. (General case)</p>	<ul style="list-style-type: none"> - Ensure the USB cables are connected properly between Source PC and USB port of a TX. - Reset the power of all TXs and RXs again by re-plugging the power adaptor or by reboot on the PC program. - Change USB cable, if it doesn't work properly after reconnecting the cable and reset. 	<p>Cables are connected incorrectly.</p>
<p>When 4K source is connected with 2K monitor, there is no display.</p>	<ul style="list-style-type: none"> - change video resolution of PC source to 1080p60 - connect PC with the host or client through network switch or directly and run PC Program And then, read/write EDID from connected monitor on the local or remote display. - Go to Client display setup of PC program, change output resolution to 1080p60Hz 	<p>Advanced setup with graphic card of the PC Source.</p>
<p>There is no video after you change to another input Source PC</p>	<ul style="list-style-type: none"> - Check if the graphic resolution of Source PCs is properly set. Go to the display properties and tap the settings. - check resolution and frame rate - Reset the power of the host device (TX) by re-plugging the power adaptor or by reboot on the PC program. 	<p>Setup In Source PC</p>

Abnormal video on the local display	<ul style="list-style-type: none"> - apply latest graphic card driver to a source PC - Use as DVI mode (setting DVI EDID to TX) - It is available to support up to 1920x1200 at 60Hz in local display - For technical support, visit Opticis web site, www.opticis.com or contact techsupp@opticis.com 	Incompatible issue in TV monitor & graphic
Abnormal operation occurs in playing audio/video or USB Keyboard/Mouse	<ul style="list-style-type: none"> - When IPVDS-500ED is first connected, it may need some more time (2~3 minutes) for recognizing USB driver on PC. - When two or more user access to a host(TX), it is given USB priority to first user (about 3 seconds) 	Abnormal case
In case of Device Searching' on PC Program, you cannot find host devices (TXs) or see preview on host device section	<ul style="list-style-type: none"> - Check LAN cables - Check host devices (TXs) - Check Network setting of a control PC (IP 'class'). → go to control panel & properties (IP address) - wait several minutes when the control PC is connected last to IP network. → Run the control PC Program again. → Press 'Searching' button in PC program again. → reboot the control PC → Check Advanced Configuration → Check L2/L3 Network Switch Setup 	Network connectivity issue
Despite of proper searching and Layout editing, there are no video displays or abnormal displays after apply action	<ul style="list-style-type: none"> - check if there are wrong display order on 'Display Placement' - check connected client devices(RXs) or cables 	Client devices(RX)
Slow in switching time (more than 5 seconds)	<ul style="list-style-type: none"> - different FW version - different resolutions between host devices (TXs) - different frame rates between host devices (TXs) - different video types between host devices (TXs) (HDMI/DVI) - different scan types (Interlace/Progressive), 2D/3D 	Same video condition
Slow in HID mouse or preview video on PC Program	<ul style="list-style-type: none"> - Set frame rate 'low' for fast HID mouse in advanced configuration of Ribbon menu. - Or set frame rate 'high' for fast preview speed on PC Program. 	Trade-off between HID mouse speed and preview frame rate

USB Device operation	- Maximum 6 USB ports (including local USB ports) are supported to each PC source	Limited number of USB ports at 1: N
There is no audio when you mark check box of an audio in display placement and apply	- check the display monitor external speakers - go to control panel>hardware and sound check default setting - After apply action, check audio ack in 'Log' window	Setup In Source PC
The video clip does not play, after changing input source.	- Execute window media player again. - Reset the power of all TXs and RXs again by re-plugging the power adaptor.	In PC

14. Warranty Information

1 (One) Year Warranty

Opticis warrants this IPVDS-500-ED HDMI extender to be free from defects in workmanship and materials, under normal use and service, for a period of one (1) year from the date of purchase from Opticis or its authorized resellers.

If a product does not work as warranted during the applicable warranty period, Opticis shall, at its option and expense, repair the defective product or part, deliver to customer an equivalent product or part to replace the defective item or refund to customer the purchase price paid for the defective product.

All products that are replaced will become the property of Opticis. Replacement products may be new or reconditioned.

Any replaced or repaired product or part has a ninety (90) day warranty or the remainder of the initial warranty period, whichever is longer.

Opticis shall not be responsible for any software, firmware, information, or memory data of customer contained in, stored on, or integrated with any products returned to Opticis for repair under warranty or not.

Warranty Limitation and Exclusion

Opticis shall have no further obligation under the foregoing limited warranty if the product has been damaged due to abuse, misuse, neglect, accident, unusual physical or electrical stress, unauthorized modifications, tampering, alterations, or service other than by Opticis or its authorized agents, causes other than from ordinary use or failure to properly use the product in the application for which said product is intended.

Dispose of Old Electrical & Electronic Equipment

(Applicable in the European Union and other European countries with separate systems)



This symbol on the product or on its packaging indicates that this product shall not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product.

The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.



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For order support, please contact your Distributor or Reseller.

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