GeoBox

S901 User Guide

5x1 Seamless UHD switcher with Quad Split Views

Please note that if the monitor does not support the output resolution, the user will not see the image on the screen.

Sales & Technical support

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Introduction

Introducing the S901: The Ultimate Video Processor for Seamless Switching and Enhanced Visual Experience!

We are thrilled to present the S901, a cutting-edge video processor that revolutionizes how you experience visuals. With its extensive features and unrivaled performance, the S901 is the ideal solution for seamless switching, format conversion, scaling, image manipulation, video wall creation, PIP/POP, 3D format conversion, and multi-viewer functions.

Designed to cater to the demanding needs of extensive display systems, the S901 serves as an exceptional front-end processor capable of handling 4K/60 input and output. Equipped with 5 input ports (3x HDMI, 2x DP) and 1x HDMI output, the S901 supports a wide range of input sources and timings. HDMI inputs accommodate resolutions up to 40962160 @60Hz and 76802160 @30Hz, while DisplayPort inputs can handle resolutions up to 7680*4320 @30Hz, all with impeccable 4:4:4 chroma sampling. Additionally, the S901 supports non-VESA standard input timings of 600 MHz.

Enjoy complete flexibility with programmable output resolutions, offering up to 40962267 @60Hz or 76801234 @60Hz. The horizontal range spans from 800 to 7680 (with 8-pixel steps under 230 MHz and 16-pixel steps above 230 MHz), while the vertical range extends from 600 to 3840 (with 1-pixel steps). The maximum resolution is capped at an impressive 600 MHz. You can select the desired output refresh rate from various options, including 24/30/50/60/100/120Hz.

The S901 integrates a state-of-the-art 10-bit processor, motion adaptive de-interlace, low-angle smooth algorithm, and 3:2/2:2 pull-down cadence for outstanding video processing. Its programmable EDID ensures optimized input timing, guaranteeing the best possible video quality.

Experience precise color adjustment with brightness, contrast, hue, saturation, sharpness, color temperature, and discrete RGB gain adjustment options. The S901 automatically detects and processes HDR BT.2020 input signals, delivering full-color 4:4:4 RGB SDR output signals. Users can select the deep color mode for an even more impressive color display, enabling true 10-bit color output for smooth gradient color reproduction.

With its advanced video wall function, the S901 can crop specific locations and resolutions within the source image for a customizable output. The overlap function empowers users to change image positions, aspect ratios, and cropping areas with up to ±1800 pixels adjustment in each edge. The S901 offers versatile aspect ratio adjustment and image positioning capabilities. You can flip and rotate images at 90/180/270 degrees, making it an ideal front-end solution for LED and large display systems.

User Guide

1.   System Connection

The user will not see the image if the monitor does not support the output resolution. Please select the output resolution in the remote controller to 1080P to see the image.
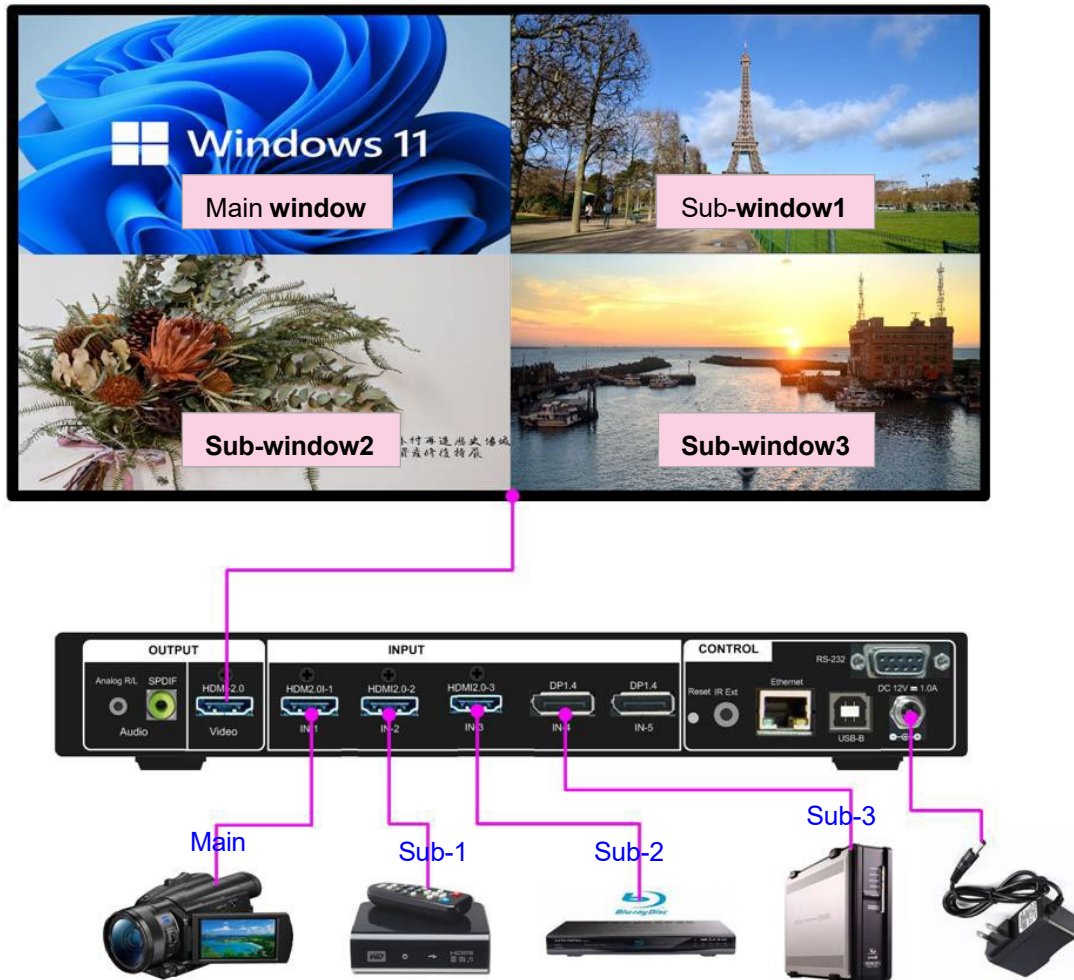
After Powering on the S901, the user will see an LED indicator light up.
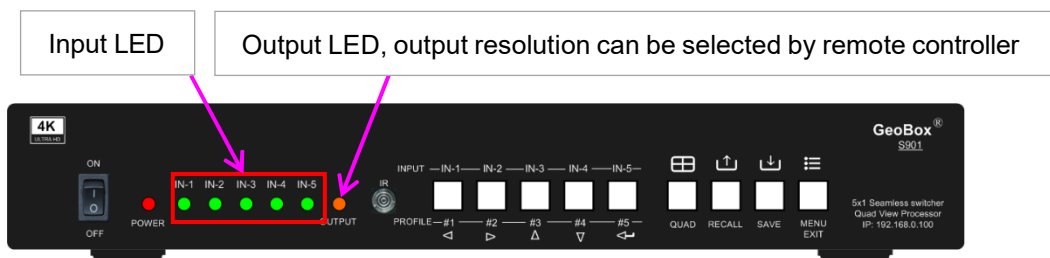
Input LED	Output LED, output resolution can be selected by remote controller

- ➤   The input LED will turn red when S901 has detected the input signal.
- ➤   When the user selects the input for display, the LED will turn green.
- ➤   The output LED will turn orange when S901 has detected the display device in the output.

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2.   Seamless switching for the main input

- ➢ The seamless switching function is the only function for the main input.
- ➢ Click the input selection button on the front panel to switch the input port. The LED light will turn green when the input port has been selected. Users can select the input source through the remote control, WebGui, or GCT PC tool. The default input is HDMI-1.
- ➢ Only the input port with a signal connection can be selected from the front panel buttons.
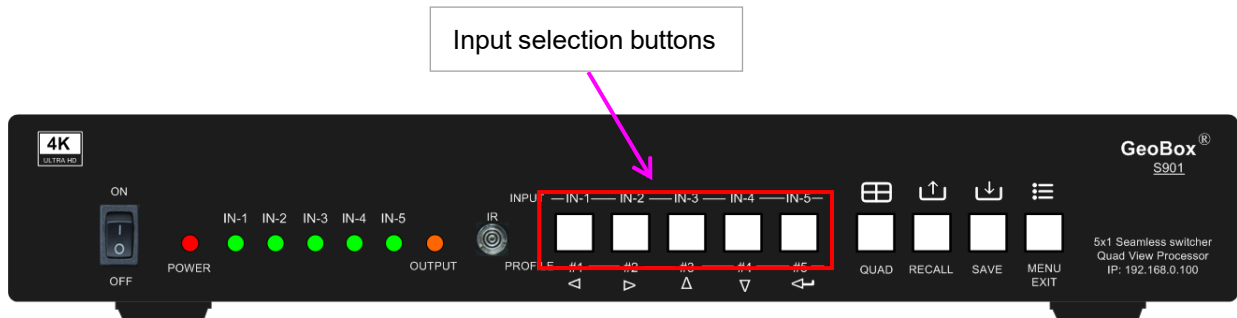
Users can also select the main input port from the remote controller.
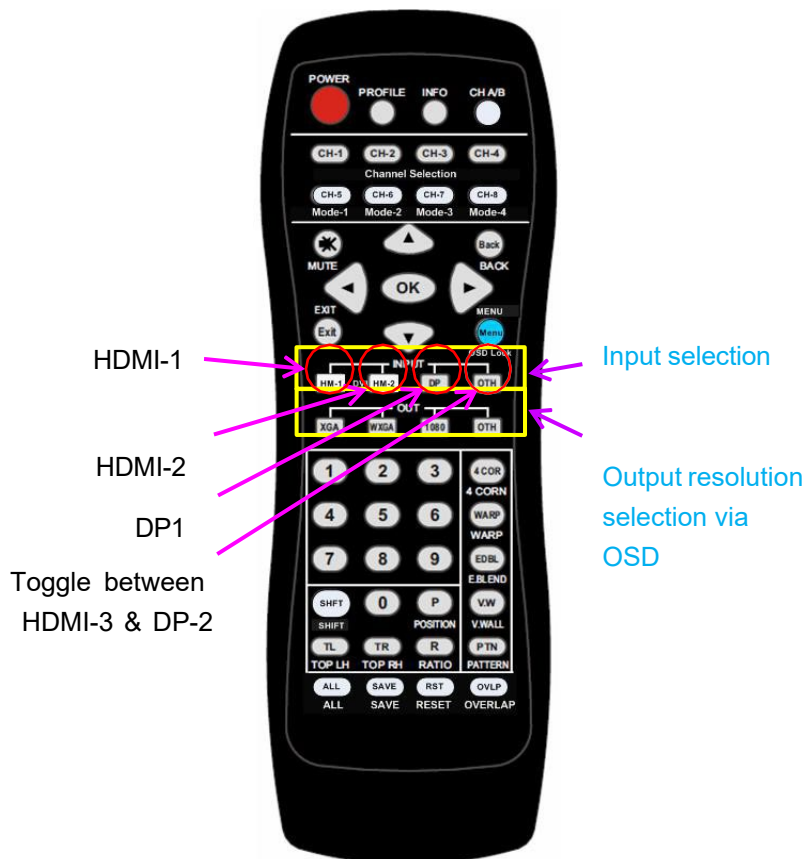
- ➢ When implementing a seamless switching function, the [Frame Sync] function is set at the [Disable] and

Users can check the input/output resolution from the [INFO] key on the remote control.

3. Front panel

Three functions
1. Seamless input selection
2. OSD function key
3. Index for Profile Save and Load

Custom setting
Profile RECALL

Custom setting
Profile SAVE

Input LED

Output

IR Receiver

Quad split view
ON/OFF hotkey
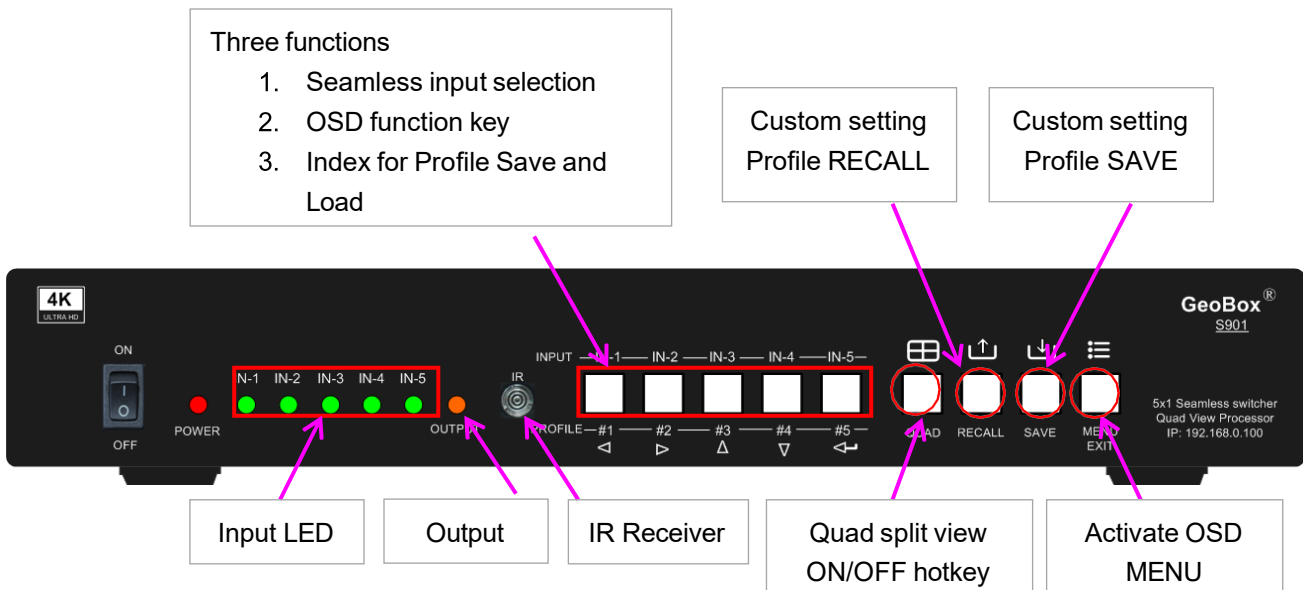
Activate OSD
MENU

OSD menu operation

➢ Activate the OSD menu through the MENU key

➢ Manipulate the OSD function through the INPUT keypads (same as input selection keys). The function symbol is under each input selection button.

Profiles Save and Load (Custom setting Save and Recall)

➢ Press the [Save] key, then select a Profile Index # (same as Input selection keys)

➢ Press the [Recall] key, then select a Profile Index # (same as Input selection keys)

➢ The Index # is under each input selection key.

LED Indicator

➢ The input LED will turn red when S901 has detected the input signal.

➢ When the user selects the input for display, the LED will turn green.

➢ The output LED will turn orange when S901 has detected the display device in the output.

➢ Power LED:

   ✓ Green Power LED: the system is powered on.

   ✓ Red Power LED: Power is turned on and has been turned off by the remote control. Need to turn on the remote control again.

   ✓ Green Power LED flashing at 1.0s interval: OSD locks through remote controller 85x command. Press 850 on the remote controller number keys to unlock OSD.

   ✓ Green Power LED flashing at 0.5s interval: OSD Lock through press MENU for 5 seconds. Hold the Menu key for 5 seconds to unlock the system.

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4.   Preset Quad split view

Quad split view Hotkey
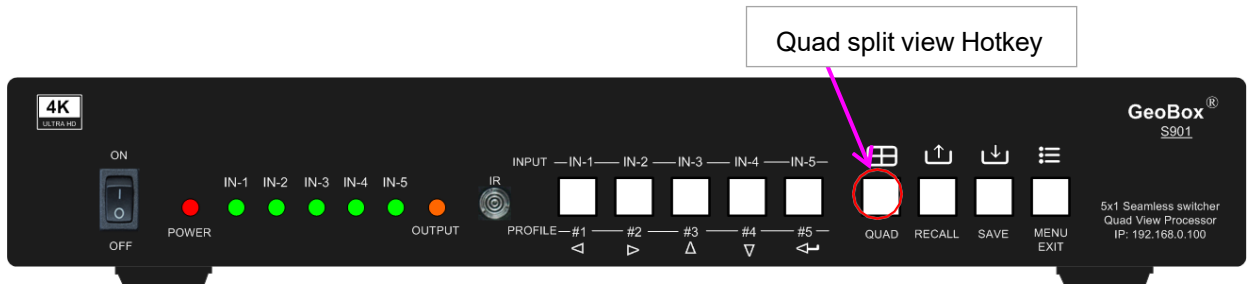
- ➢   Click the [Quad] key to implement a quad-split view.
- ➢   It will assign the below input signals: HDMI-1➔Main window. HDMI-2➔ Sub-win1, HDMI-3➔ Sub-win2, DP1➔ Sub-win3
- ➢   Users can swap the above input port or PIP settings and save to a different Profile Index. It can be recalled from the front panel keypad or the remote control.

5.   More display patterns selected from OSD

- ➢   **Step 1**

     Click the MENU key to open OSD➔ [Image Properties]➔ [PIP setting]➔ [Display]

- ➢   **Step 2**

     -   Select a required display pattern➔ Select a signal source➔ Save to a Profile Index #.
     -   Please see section 7 for an input source selection.

6. Back panel

Users can connect the signal source to the input ports for the main display and sub-window.

Analog R/L audio Output

Input Ports, HDMI2.0 & DP1.4

System control
RS232, USB, Ethernet

SPDIF Output

Video Output

Reset Hole

IR Extender connector

DC 12V/1A connector
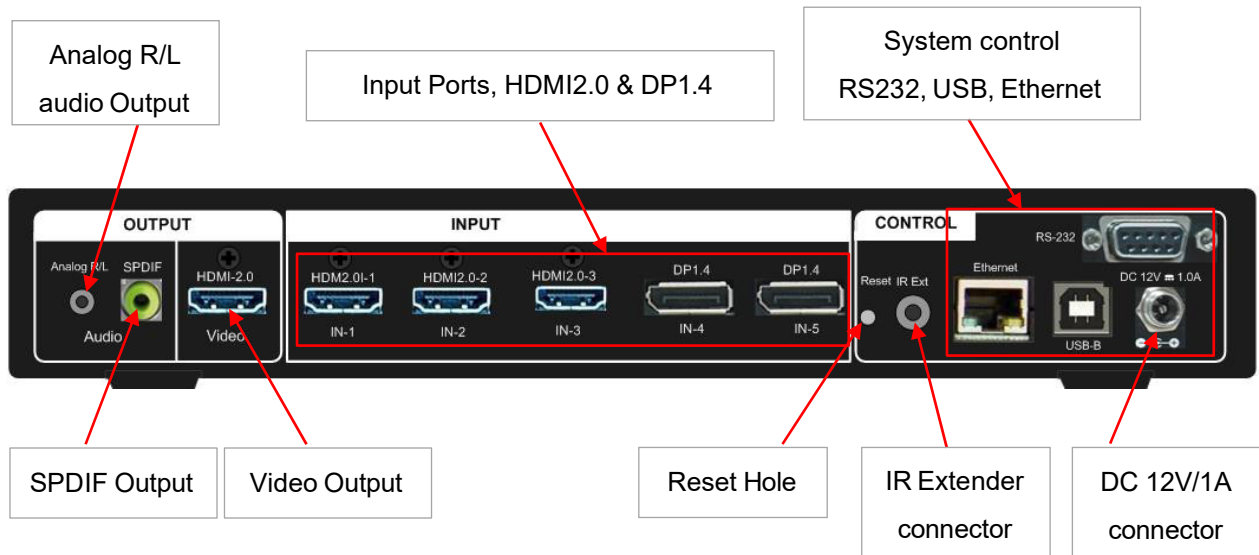
7. Input source selection

- ➢ The main input source can be selected from the front panel keypad, remote controller, OSD, or PC Tool.
- ➢ Sub-window input signal can't be selected from the front panel keypad. It shall go through the OSD menu or WebGui and PC Tool.
- ➢ Any input port can be selected as the primary or sub-window input source.
- ➢ Users can set the cropping area of the input source through the [Video Wall]➔ [Overlap] function.

7.1. Main input source selection

- ➢ Directly click the input selection button on the front panel.
- ➢ Activate the OSD MENU ➔ [Image Properties]➔ [Input Signal]➔ select input port.

Select the main window input port from the front panel keypads.

- ➢ The LED indicators will show a red light when the input has detected an input signal.
- ➢ Users can click the input selection button to select the input port. When the input port is selected, the LED will change to green.
- ➢ Only input connected with the input signal can be selected.

Input LED

Input selection button
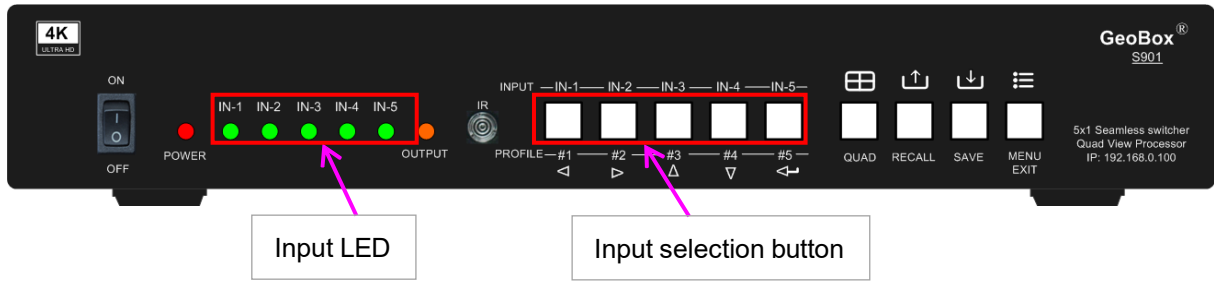
Select primary input from. SD

➤ Click Menu key to open OSD➔ [Image properties]➔ [Input Signal]➔ select input port

➤ Default is HDMI-1
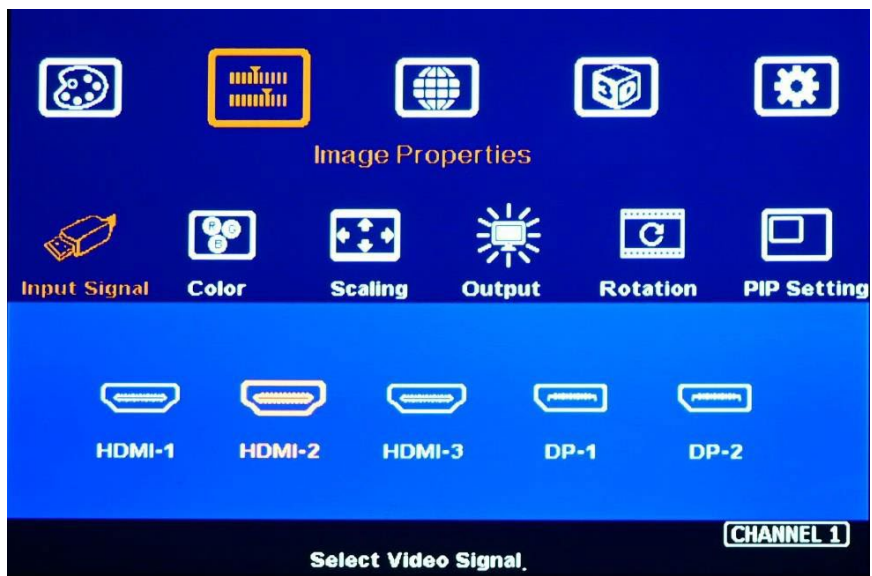
Select the main input from the remote controller.

➤ Direct click the input selection key. Users can select the main window input port directly. The default input is HDMI-1.

HDMI-1   HDMI-2

DP-1   Toggle input between HDMI-3 & DP-2
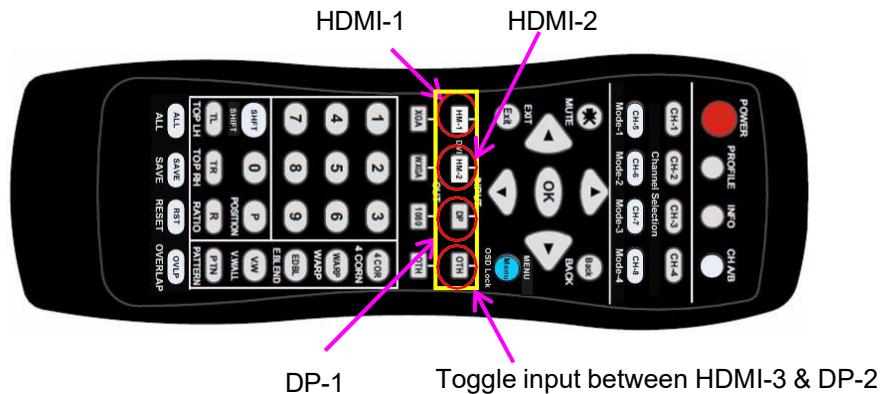
7.2.   Select Sub-window input

➢ Sub-window input should be selected from the OSD Menu. Please click the MENU key on the front panel or remote control to activate OSD.

➢ Click [MENU] key➔ [Image Properties]➔ [PIP Setting]➔ [Source]➔ select [Sub-Win #]➔ Select [input port].
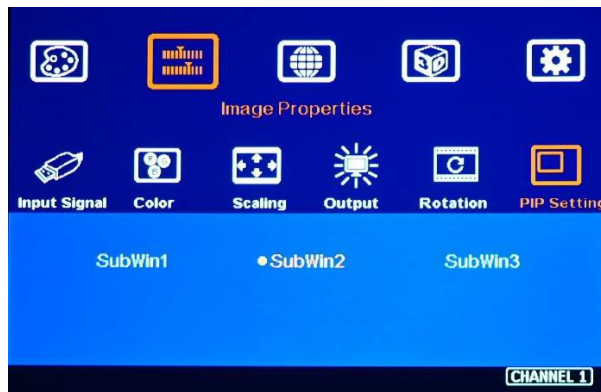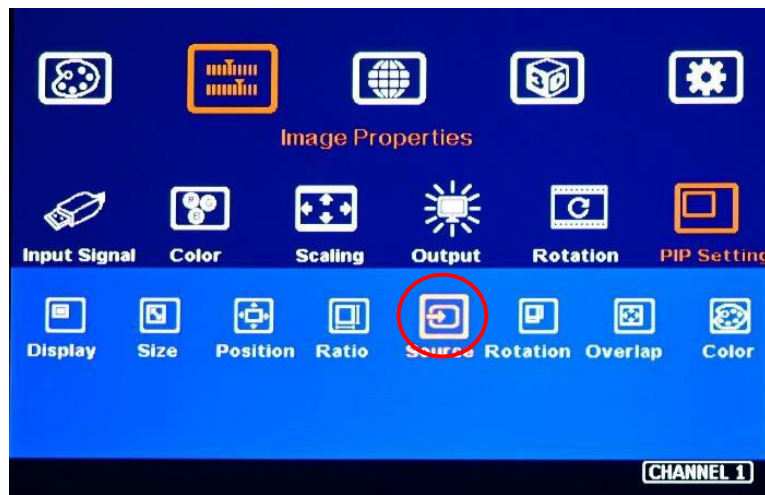
Under this example, Sub-win1 selects HDMI-2.

8.   Custom settings saved and recalled

➢ Custom settings will be saved under the Profile Index. It will be erased only when the user resets the system by inserting a pin into Reset Hole on the back of the panel for 5 seconds.

➢ Custom settings [Save] and [Load] can be implemented through front panel keypads, remote controller, RS232, WebGui, and GCT PC tool by USB or Ethernet.

➢ 5 Profile Indexes can be saved through front panel buttons. 10 indexes can be saved in the remote controller and through the OSD menu.

8.1.   Save system settings

➢   **Save system settings through the front panel buttons.**

Click the [Save] key, then select Index # to save custom settings.

| (2) Select Profile Index # | | (1) Click [Save] key |
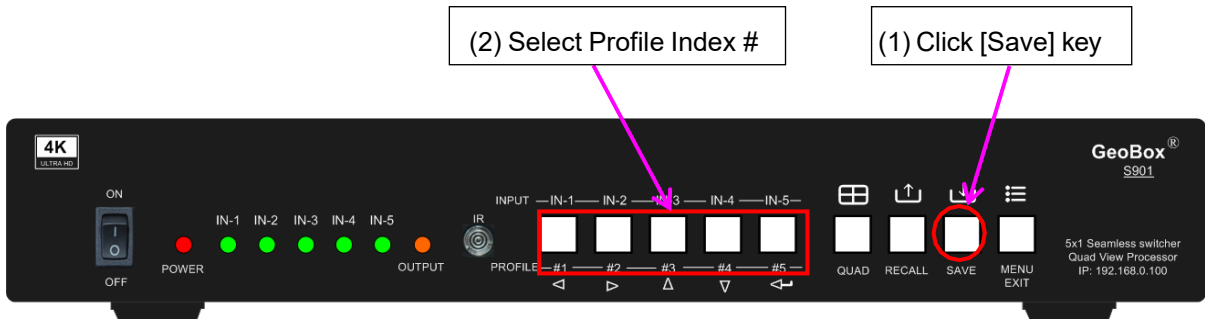
➢   **Save system settings through IR remote controller.**

–   Click the [Save] key on the remote controller, then select the # key to save custom settings.

–   10 profile Indexes can be saved from the remote controller 0-9. "0" represents Index #10.

Click [Save] key, then select index number

8.2.   Recall system settings

➢   **Recall system settings through front panel buttons**

Click the [Recall] key, then select Index # to load custom settings.

| (2) Select Index # | | (1) Click [Recall] |
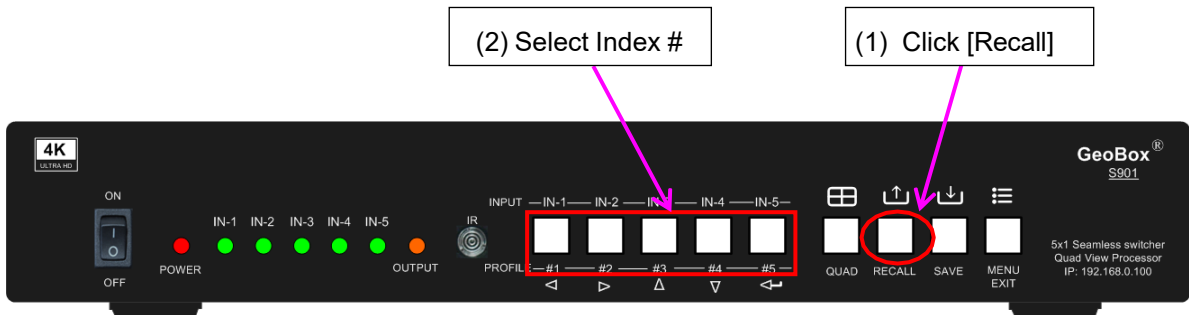
➢ **Recall system settings through the remote controller**

  – Click the [Profile] hotkey on the remote controller, then select # to load custom settings.
  – "0" represents Index #10.

Click [Profile] key, then select number key
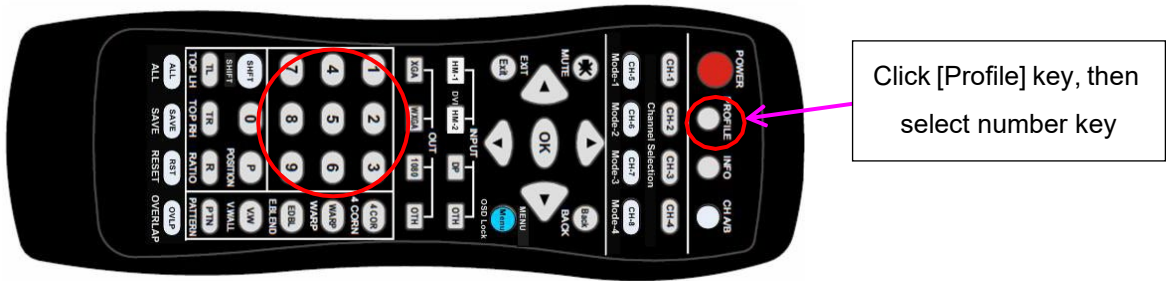
9.   Output resolution and property setting

➢ Users can set output resolution from the below methods:
  ▪ Remote controller hotkey.
  ▪ 17 preset resolutions from the OSD menu.
  ▪ Programmable output for non-VESA standard output timing and refresh rate.
➢ All default output is FHD with a 60Hz refresh rate, full-color RGB 4:4:4, and progressive.
➢ If the output resolution is set at 4k/2k, the full HD monitor will not show any image.
➢ Users can click the [Info] key to get system information and input/output signal resolution.
➢ The 10-bit deep color is selectable.
➢ Support HDR signal. Users can check the status from system information.

9.1. Select output resolution from the remote controller

➢ Four output resolutions are preset in the remote controller--1080P, WXGA, XGA, and [OTH] (4k/2k) progressive output with a 60Hz refresh rate.
➢ Select the [OTH] key for 4k/2k/60Hz output resolution.
➢ Other output resolutions and programmable output resolutions should be selected through OSD.

Select Output resolution
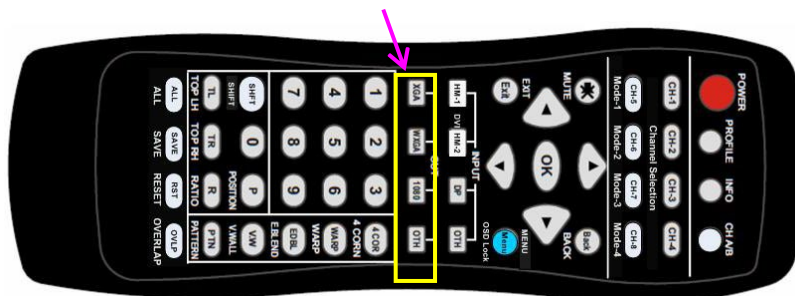
9.2. Select output resolution from OSD preset modes

➢ 17 preset output modes are embedded in OSD.

➢ Preset modes without refresh rate description are VESA standard resolution at 60Hz.

➢ Open OSD via remote controller➔ [Image Properties]➔ [Output]➔ Select [Output resolution].

➢ The default output resolution is FHD 60Hz, RGB 4:4:4 format, and progressive.

➢ If the user selects a time that the monitor cannot support, the user will not see anything,

➢ If the input refresh rate is different from the output, it is possible to see a synchronization issue when executing a display with multiple units cascaded.
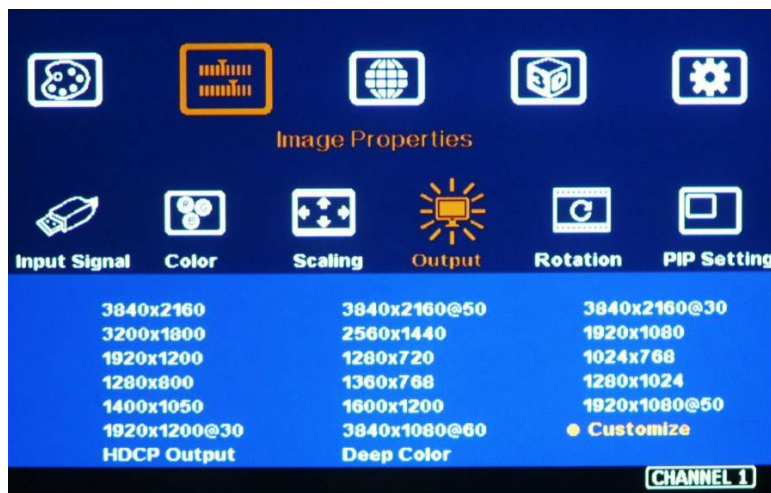
9.3. Programmable output resolution and refresh rate

➢ Programmable output resolution is embedded in S901. Users can activate OSD [Image Properties]➔ [Output]➔ [Customize]➔ [Width] / [Height] / [Refresh Rate]

➢ The maximum output resolution range is H: 800-7680 (8 pixels/step under 230MHz, 16 pixels/step above 230MHz), V: 600-3840 (1 pixel/step), Max. output resolution is 4096*2267/60Hz or 7680*1234/60Hz. The max pixel rate is 600 MHz.

➢ Users can change the refresh rate, horizontal and vertical pixels to know the limitation. Once the value is shown on the OSD, S901 can support this output timing.

➢ [Refresh Rate] is under the [Customize] menu. Users can select from 24/30/50/60/100/120Hz.

➢ Customizable output timing allows reduced blanking with fewer pixels than the standard VESA timing. ~~Some customized output timing is reduced blanking with less pixel rate than standard VESA timing.~~ If the user selects output timing from preset mode at 4k/2k 50Hz with [Deep Color] enable, the system will remain at 8-bit color. If the user selects from [Customize] mode, S901 can support 4k/2k 50Hz with [Deep Color] 10-bit output.
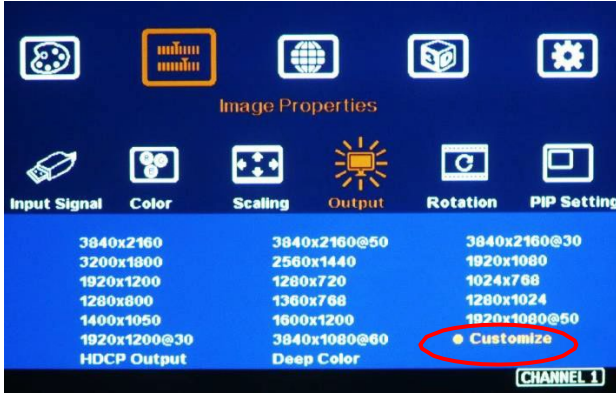
Activate OSD [Image Properties]➔ [Output]➔ [Customize]➔ [Width] / [Height] / [Refresh Rate]
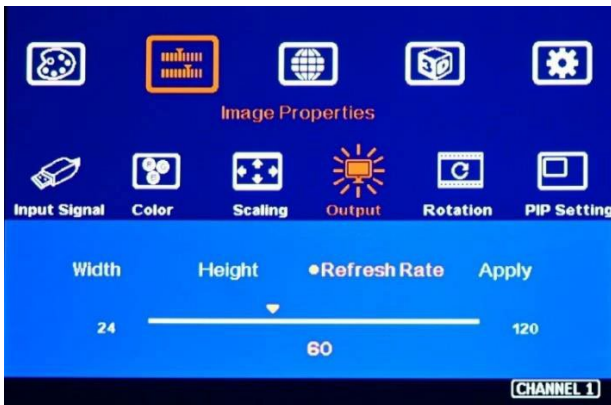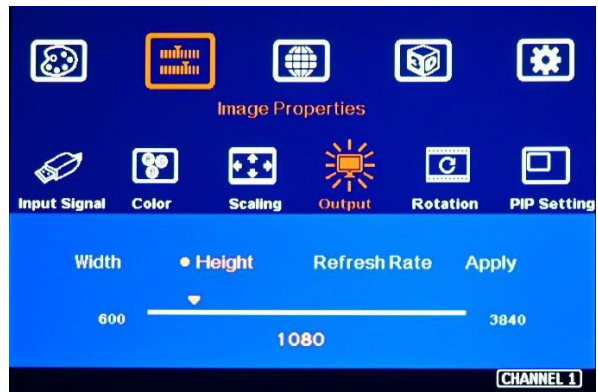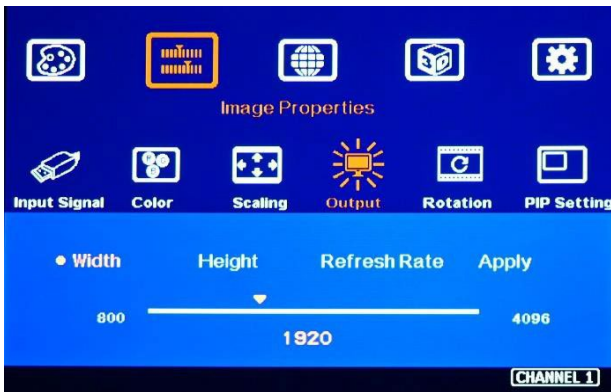
The output refresh rate can be selected from 24/30/50/60/100/120 Hz.

9.4. Enable 10-bit deep color output

➢ 10-bit color will give a smooth display in a gradient color image.

➢ If the input source is not 10-bit, it will have no 10-bit effect.

➢ Users can select 10-bit deep color through OSD [Image Properties]➔ [Output Mode]➔ [Deep Color]➔ On

➢ Please check the result on the remote controller's [INFO] hotkey.

➢ Enable 10-bit color may reduce the input and output maximum resolution. HDMI2.0 maximum is 600 MHz (18Gb/s).

- If the user selects output timing from preset mode at 4k/2k 50Hz with [Deep Color] enable, the system will remain at 8-bit color. If the user selects from [Customize] mode, S901 can support 4k/2k 50Hz with [Deep Color] 10-bit output.

- Max. output resolution is 4096*2160 @60Hz 8 bits or 4096*2160 @50Hz 10 bits (600MHz). If the output setting exceeds this resolution, it will turn to 30Hz or automatically reduce color to 8 bits.
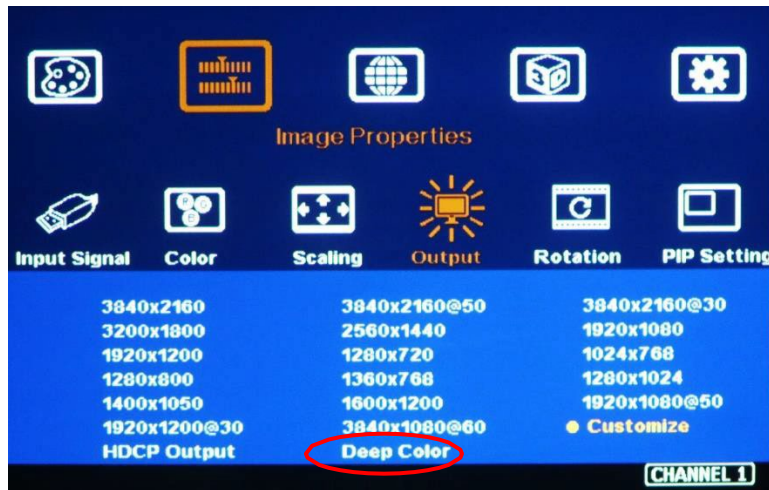
10. HDR (BT.2020) processing

- S901 can process HDR input signal and output full-color RGB 4:4:4 progressive SDR signal up to 4096*2160 @60Hz.

- If the system detects an HDR input signal, it will automatically process the HDR signal. Users can check System Information through the INFO key in the remote controller to confirm the status.

- The HDR input signal will improve video quality after S901 processing.
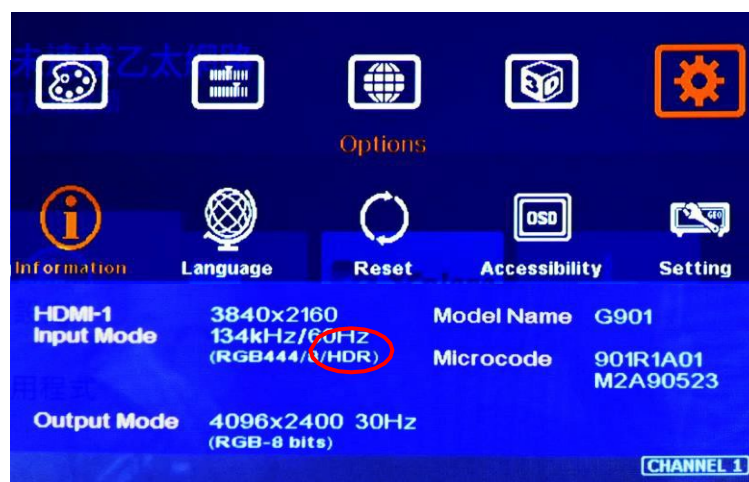
11. How to check system information

➢ The picture shown below is the system information.

➢ The content shown in System Information will include below items:

    ✓ Two Inputs and one output resolution

    ✓ Color depth and HDR status

    ✓ Model No.

    ✓ FW and MCU code version

    ✓ PIP/POP input signal status (If PIP/POP is enabled)
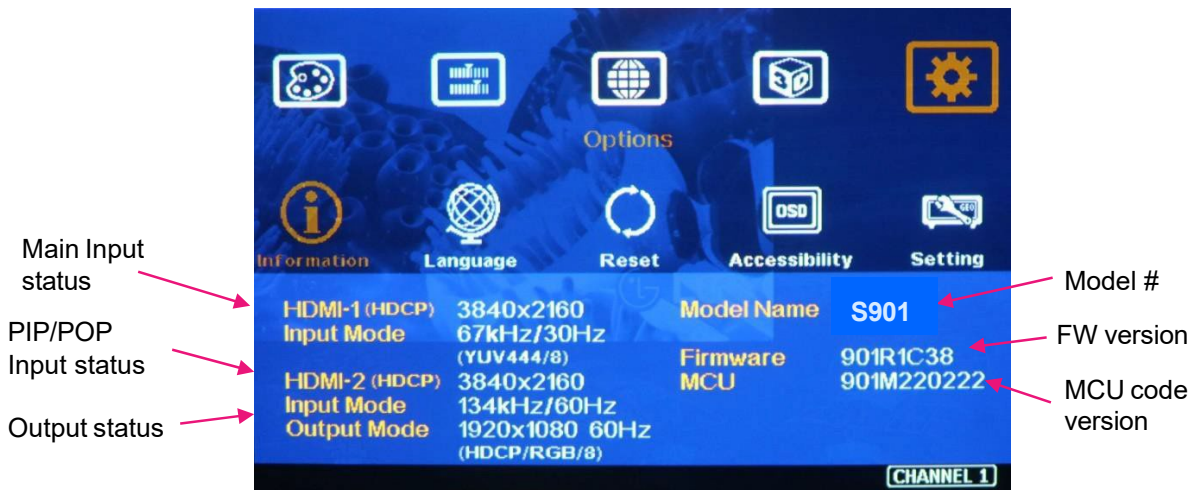
11.1. Check by OSD menu

Open OSD Menu➔ [Options]➔ [Information]

It will show the same window.

11.2. Check by remote controller
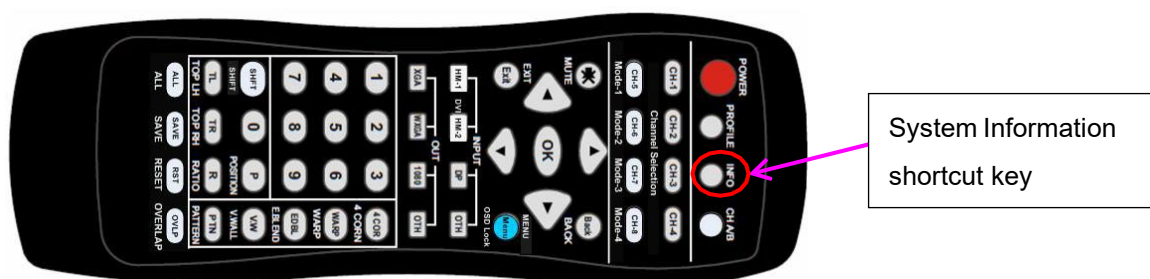
12. System Reset

When a user meets or runs into an unexpected issue, please reset the system, then do further check. A hot plug or external interference may cause unexpected issues during some setup procedures. Once the user finishes the setup, the system will be set.

12.1. Complete system reset through Reset hole

➢ Insert the small pin into the RESET hole on the back panel for 5 seconds will reset the system to default settings. The user will see the "Reset to Default" message.

➢ Reset through the RESET hole will erase all the settings, including Profile Index Data.
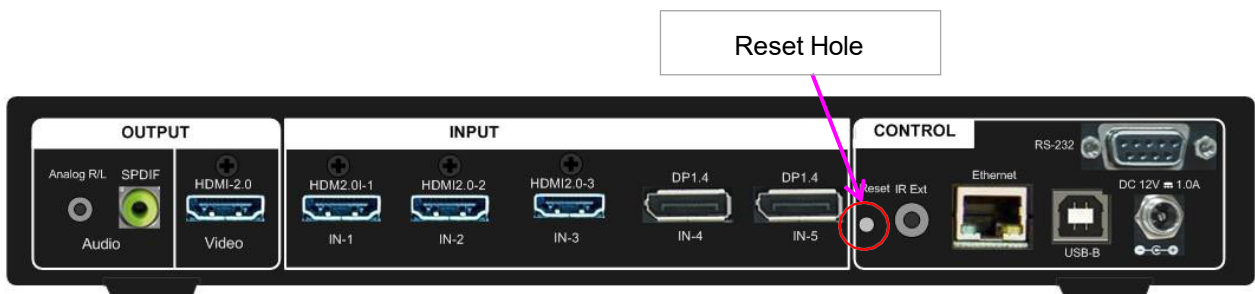
12.2. Reset through the remote controller

Clicking the [RESET] key will show the system reset OSD window. It will not erase Profile data.

12.3. Reset the system and keep custom settings in Profile Index

➢ Users can Reset through the OSD menu under: [Options]➔ [Reset]➔ [Reset All] without erasing custom settings saved in Profile Indexes.

12.4. Reset the system through GCT or WebGui

➢ Users can also reset the system through GCT or WebGui. Users can select to reset settings without deleting profile data or reset all settings, including Profile Data.

➢ Please see more details in the GCT user guide.

13. How to Use IR Remote Controller

13.1. IR controller Key function and extension cable

➢   The IR remote controller has full functions for the operation of S901.

➢   IR receiver is on Front Panel. One 3.5ø mm audio connector for the IR extender is located at ack the Panel of S901. A 1.8m IR extension cable comes with the packaging. Users can add a 2.5Ø audio cable to extend the control distance to 20 meters.

Audio connector for IR extender

Profile recall shortcut key

System information.

Power on/off

Quick PIP on/off

OSD Menu operation keypads

Activate OSD Menu,

Input selection

HDMI-1

Output resolution options: different selections are offered in the OSD menu

HDMI-2

DP1

Toggle between HDMI-3 & DP-2

Video Wall Menu shortcut key

Image freeze shortcut key

Video Wall Overlap shortcut key

Profile Save shortcut key

System Reset shortcut key

13.2. Change OSD language

Users can change OSD language through below OSD menu:

[Options]➔ [Language]➔ select [English], [繁體中文], or [簡體中文]

13.3. Individual OSD control in multiple unit application

When multiple units and IR extender receivers are installed together, the user can then control the individual units through the below method:

➢ To set Box ID in each box through [Options]➔ [Setting]➔ [Box ID]. The # is 1-9 for IR control.

➢ Press the 851 number keys on the remote control, then all the following operations in the remote control will take effect only in ID #1 GeoBox and lock all other GeoBox. Users can see a flashing green PWR LED on the Front Panel of the locked units. The flashing interval is one second.

➢ Press 853 will only unlock ID # 3 GeoBox for further OSD operation and lock all the others.

➢ Press 850 will unlock all GeoBox OSD menus. A remote controller can access all GeoBox simultaneously.

➢ The OSD Lock will turn off when powering it off, but Box ID will remain set.

13.4. OSD Lock and Unlock

Pressing the MENU key on the remote controller for 5 seconds will LOCK the OSD. Users will see PWR LED flashing, and a [Menu is locked] message will appear on the screen. The flashing interval is 0.5 seconds. Pressing another 5 seconds on the MENU key will UNLOCK the OSD. The user will then see the [Menu is Unlocked] message.

13.5. Change OSD location

➢ Users can use the OSD menu to change the location of the OSD menu as below.

➢ Click the [Position] hotkey key on the remote controller to activate the OSD position adjustment menu.
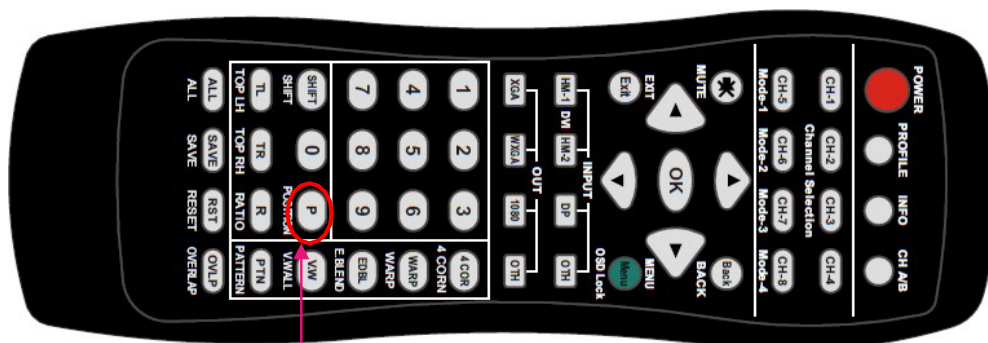
Please click [Position] hotkey to activate OSD position shift menu, then use Direction key to shift OSD position to desire location.
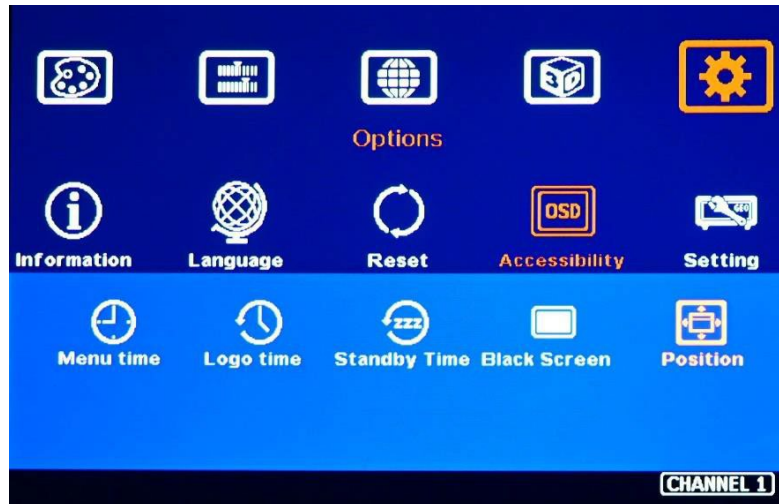
14.   System control and setup

> Control the S901 directly via keypad, IR controller, and WebGui. The GCT PC tool can also control S901 through USB or Ethernet connection.
> The default static IP address is 192.168.0.100.
> Users can set different IP addresses or BIDs IDs for each unit so that users can execute independent control to each GeoBox directly.

14.1.   Box ID

> The Box ID is required for the application with multiple units of GeoBox.
> Box ID range is from #1 - #99. When a user uses a remote controller to control the system through OSD, the maximum ID setting for the remote controller is #1 - #9.
> Please set Box ID through OSD [Options]➔ [Setting]➔ Box ID]➔ select number.
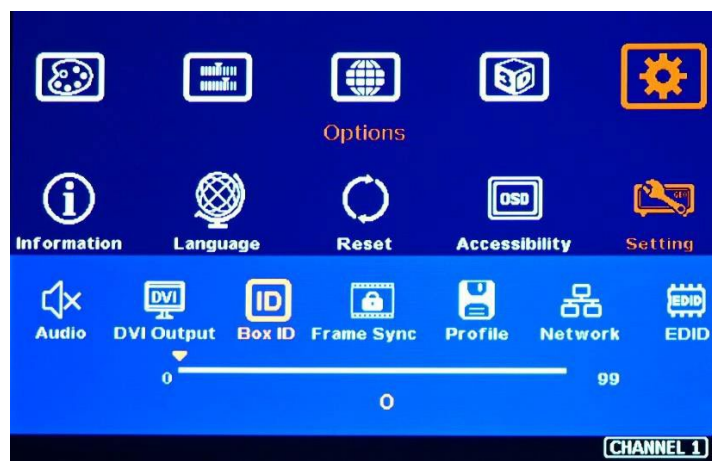
14.2. <u>Multiple units controlled by one Remote Controller</u>

Please see more details in Chapter 13.

14.3. <u>RS232 Setting</u>

➤ The RS232's interface is designed with a DB-9 connector. Users can select 11520 or 9600 baud rates.

➤ Download the UART Protocol between GeoBox and a Host computer from the website under the [Support] tab. Executed the protocol via RS232 or Ethernet.

➤ Please change the RS232 baud rate setting through OSD, WebGui, or GCT.

14.4. <u>Ethernet setting</u>
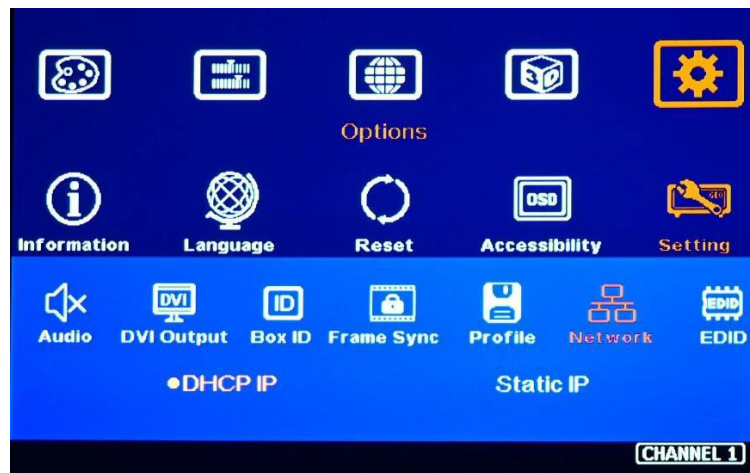
➤ Users can control and set up S901 through a network connection.

➤ UTP cable can be used for direct connection between PC and GeoBox through RJ45. The user needs to set PC TCP/IPv4 with the same domain segment as GeoBox (for instance, to set the IP address at (192.168.0.105) and subnet mask at (255.255.255.0).

➤ Open the web browser (Google Chrome or Internet Explorer) and input the S901 IP address (default is 192.168.0.100); the user can see GeoBox WebGui and a menu with virtual keys like the OSD for further system operation. There is no additional software required.

➤ If the user cannot connect, please power off/on S901 again to let the PC detect the S901 network.

➤ If the connection is gone through a Wi-Fi router or switch/hub through RJ45 to Lan port, the user can set DHCP IP or Static IP for the connection.

➤ If necessary, please [Renew] DHCP to get an IP address for the network connection.

➤ GCT PC Tool is another web tool with full functions for system settings and operations. It can also update Firmware or MCU code. GCT can be downloaded from the VIGILLINK website.

➤ Each S901 can set a different IP address for independent operation and control.

- ➤ Please use < > OSD keys to select OSD menu items and use ∧ ∨ OSD keys to change the IP address.
- ➤ If S901 relates to Wi-Fi Router (through a LAN port), the user can control S901 through Wi-Fi via PC, iPad, or mobile phone through the identical SSID.
- ➤ The default TCP server port is 1266.
- ➤ [GeoBox IP-TCP application note] is available at
  https://drive.google.com/file/d/1iw3mgLmqzsJ8m1KYarYasZbGlvp0vtK7/view

15.   PIP/POP/3/4 multiple window display

- ➤ Important notice: At least one is the main window in a multi-window display. The primary window input selection, color adjustment, image rotation, image cropping, and position setting are under the regular OSD menu. The adjustment and setting for the sub-window are all under [Image Properties]➔ [PIP Settings] OSD menu.
- ➤ If the S901 changes the ZOOM set through the [Video Wall] Menu, the sub-window will not be affected. If S901 is used as a front-end processor and the ZOOM setting is changed by the back-end device, the main window and sub-window scaling factor will change at the same time. Users can use S901 [overlap] under [PIP setting] Menu to further adjust the aspect ratio (scaling factor) of the sub-window to make it display normally.
- ➤ Customizing all kinds of multi-view patterns from the factory for bulk purchase is possible.

15.1   Main menu

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15.1.1.   [Display]—select different multi-window display types
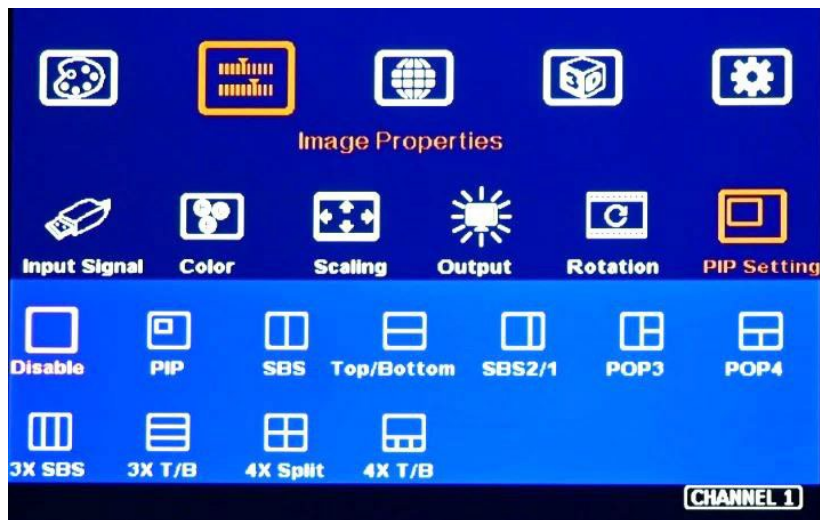
➢   [Disable]: Disable multi-view. Show single content.

➢   [PIP]: Picture in Picture display with any two inputs.

➢   [SBS]: Horizontal side-by-side display.

➢   [Top/Bottom]: Top/Bottom display.

➢   [SBS 2/1]: 2/3:1/3 side-by-side display. It can be swapped to a 1/3:2/ side-by-side display by image rotation and changing the monitor installation direction (top/down direction).

➢   [POP3]: One image on the LH side and top/bottom two images on the RH side. Swap RH/LH display by changing the monitor installation direction (top/down).

➢   [POP4]: One image at the Top and two at the bottom. Swap the Top/ Bottom position by image rotation and change the monitor installation direction (top/down direction).

➢   [3X SBS]: Three split views of the landscape. The center image size is adjustable from 1/6 to 5/6 screen width through [Size] under [PIP Setting]. The minimum image size on both side windows is 1/12 screen width. Each window can be rotated to display on a monitor in portrait position.

➢   [3X T/B]: Three split views in portrait direction.

➢   [4x Split]: Four equal size split views (Monitor at landscape only).

➢   [4x T/B]: Display 4 split views with one image at the top and 3 at the bottom. Below 3 windows, keep a 16:9 aspect ratio.

➢   PIP (picture in picture): with flexible PIP size (320*180 to 1920*1200), location, and aspect ratio.

➢   Except for [4x split] and [4x T/B] functions, all the other multiple window functions can support monitor at portrait and landscape positions. The main image and the sub-window support 90/180/270 degrees rotation and flip and keep [Full Screen] or [Original AR] aspect ratio.

➢   The cropping function (Overlap setting function) is available in the Main image and all sub-windows for different locations, sizes, and aspect ratio adjustment and for creating image borders.

➢   Individual color adjustment in main and sub-windows.

➢   All the inputs for main and sub-windows can be up to 4k/2k 60Hz 4:4:4 signals.

15.1.2. [Size]—Change sub-window image size under [PIP] & [3x SBS]

➢ This Menu can change sub-window size under [PIP] from 1/6 to 100% with one hundred adjustment steps. The max. The PIP image is 1920*1200, and the minimum is 320*180. Applying the [Overlap] function to the PIP image can be further reduced to about 160*90 pixels.

➢ When [3x SBS] is applied, the center image size can be adjusted through the [Size] menu. The adjustment range is from 1/6 to 5/6 in the horizontal direction.

15.1.3. [Position]—Set PIP image position

➢ Users can set PIP image positions across any location inside the display.

➢ There are one hundred steps in both horizontal and vertical position adjustment. Users can apply the [Overlap] function to position change with pixel-by-pixel accuracy.

15.1.4. [Ratio]—Display full range image or keep the original aspect ratio

➢ Main Image: can be selected through [Scaling] OSD menu under [Image Properties].

➢ Sub-window: can be selected through [Ratio] OSD menu under [PIP Settings].

➢ Under the [Ratio] menu, there are two selections: [Full Screen] & [Original AR]

- Full Screen: to display full-screen image.

- Original AR: keep the aspect ratio like the original signal source.

- [1 To 1] is only available in the main window. It will show the native size of the image on the screen at the top left location if the output resolution is larger than the input resolution.

Main image ratio selection   Sub-window ratio selection
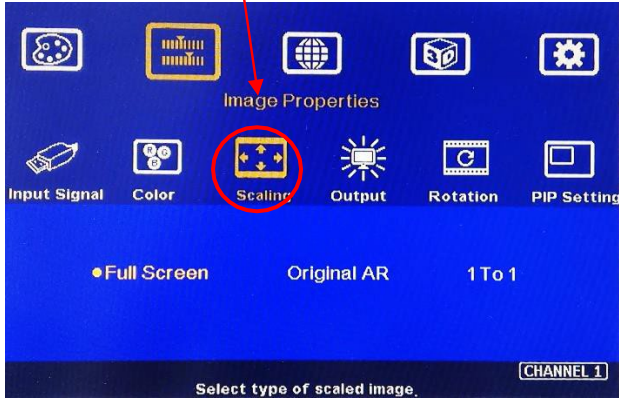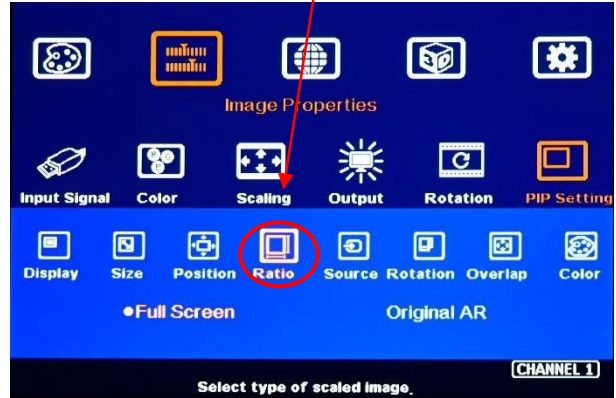
15.1.5.   Source selection

➢ The input source for the main and sub-windows can be selected separately.

➢ Any signal from the input port can be displayed in PIP/POP or 3/4 split view.

➢ Users can swap the position in the central and sub-window--to select a primary image from the [Input Signal] menu and a PIP image from [Source] under the [PIP Settings] menu.

➢ Users can save different settings into [Profile] and recall any time.

➢ Any input port can be selected as the primary or sub-window input source.

➢ Users can set the cropping area of the input source through the [Overlap] function.

➢ Only primary and sub-win1 audio can be selected as audio output.

Primary image source selection   Sub-window source selection
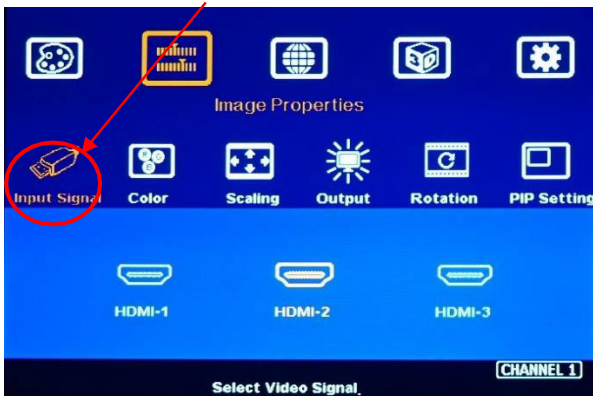
26
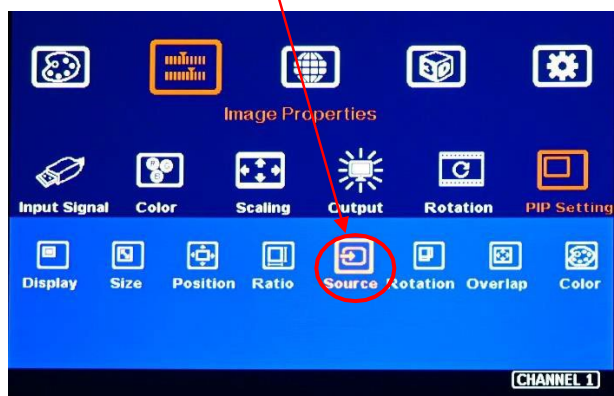
15.1.6. [Rotation]: Sub-window image rotation

➢ Main and sub-windows can be rotated separately at 90/180/270 degrees.

➢ Main image rotation shall be selected from [Rotation] under [Image Properties] OSD menu.

➢ Sub-window rotation must be operated through [Rotation] under [PIP Setting] OSD menu.
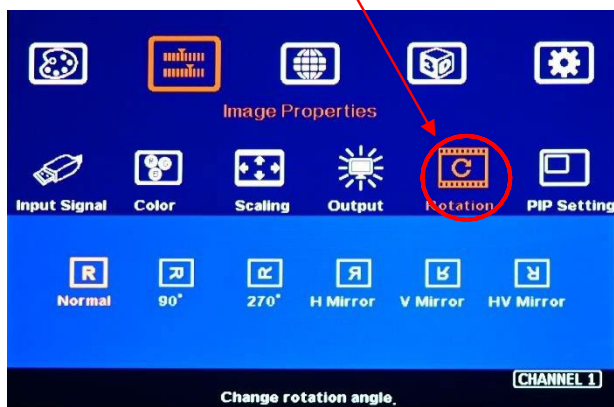
Main image rotation   Sub-window rotation
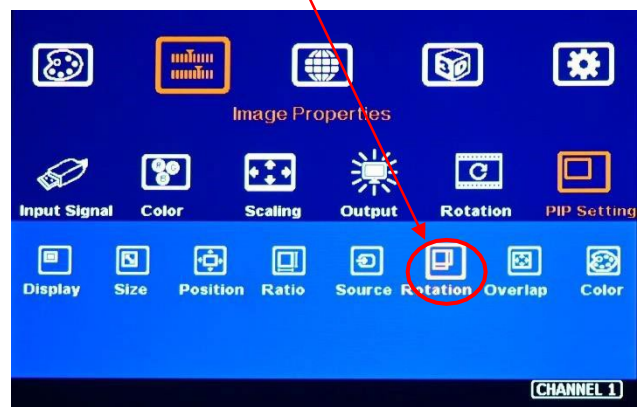
15.1.7. [Overlap]-- Adjust cropping area and aspect ratio

Central image Overlap setting   Sub-window Overlap setting
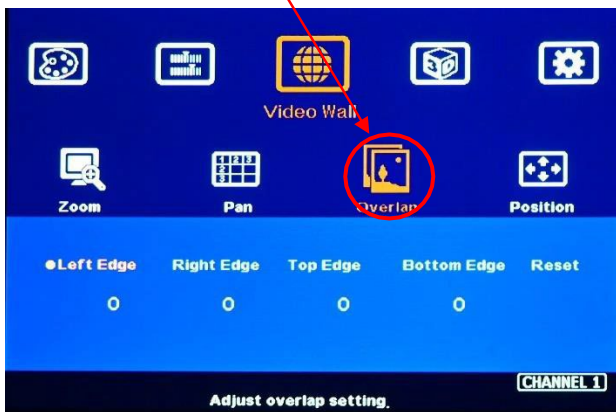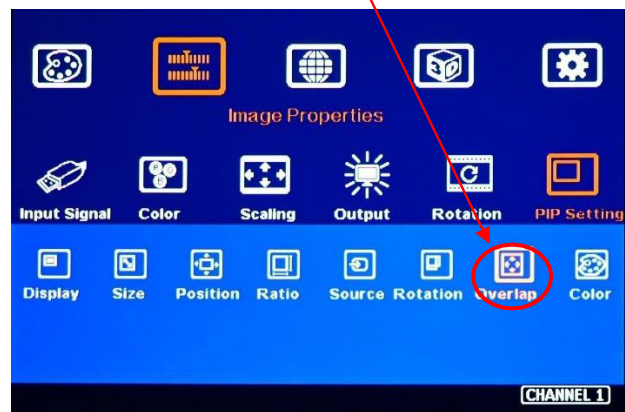
- ➢ Users can change the cropping area and aspect ratio in main and sub-window images through the Overlap OSD menu. Each edge can adjust the overlap up to +_1800 pixels.

- ➢ When the Overlap value is decreased, the image cropping area will be reduced and cause the image Zoom-In effect (enlarged). If the Overlap value is increased, the image cropping area will increase and cause the image Zoom-out effect (shrunk).

- ➢ The overlap function under [PIP Settings] will only be functional for the sub-window. The function is the same as the [Overlap] function under [Video Wall] for the main image.

- ➢ It can change sub-window position, size, and cropping area pixel by pixel.

- ➢ The Overlap function displays the main image and sub-window with various sizes and aspect ratios, as shown below.
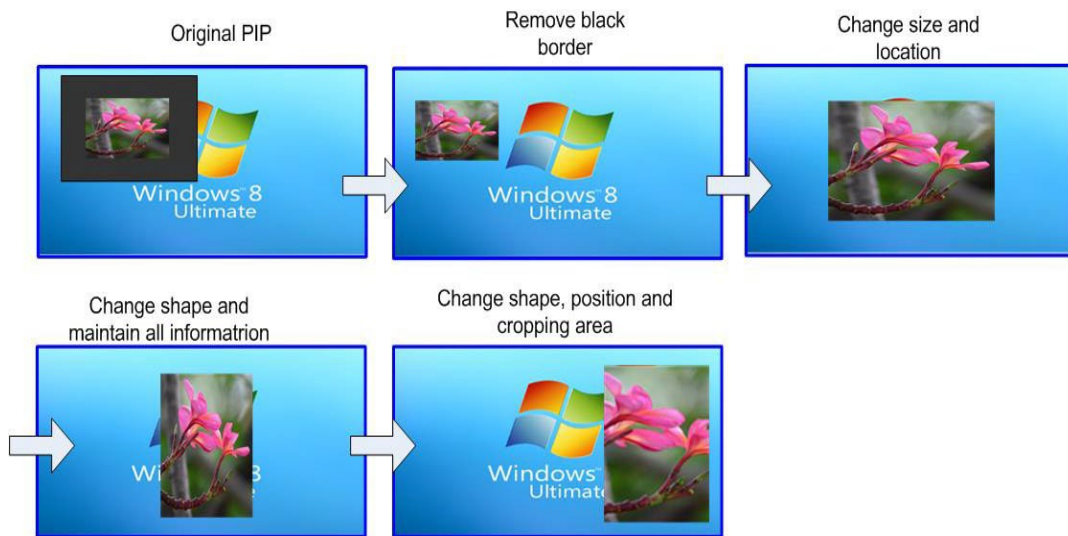
15.1.8.   [Color]—Color adjustment

Users can change the color in the main and the sub-window images through [Color] the OSD menu. The adjustment includes Brightness, Contrast, and independent RGB gain.

For the main window   for sub-window

15.2. <u>PIP (Picture in Picture)</u>

➢ The [Overlap] function under the [PIP Setting] can adjust the PIP image size and aspect ratio.

➢ The Main & the PIP input source is swappable by the input selection.

➢ The PIP window can be quickly turned ON/OFF by the [CH A/B] key on the remote control.

➢ The PIP image can be across the entire screen at any position

➢ The PIP and the main images can be rotated at 90/180/270 degrees to build different display patterns.

➢ The PIP image size is from 320*180 to 1920*1200

➢ It can be further adjusted through the Overlap function to get a 160*130 image size.

➢ Users can replace the main image with a sub-window on the entire display under the FHD output resolution. Quick swaps can be implemented by the [CH A/B] key on the remote controller.

➢ The PIP image layout is positioned in one monitor with hundreds of adjustable positions in the H&V direction.

➢ The PIP image position can be fine-tuned through the [Overlap] function pixel by pixel.

15.3. <u>POP (or PBP): Picture outside Picture (or Picture by Picture)</u>

➢ [SBS]: Horizontal Side by Side display.

➢ [Top/Bottom]: Top/Bottom display.

➢ The display window size is fixed, but the user can adjust each window's cropping area and image aspect ratio.

➢ The rotation function is also available to display with portrait or landscape installation angles on the monitor.

➢ Choose between a Blue or Black color Background for non-Fullscreen windows.

➢ [Options]➔ [Accessibility]➔ [Black screen]➔ ON/OFF.

<u>Independent aspect ratio in primary and sub-window</u>
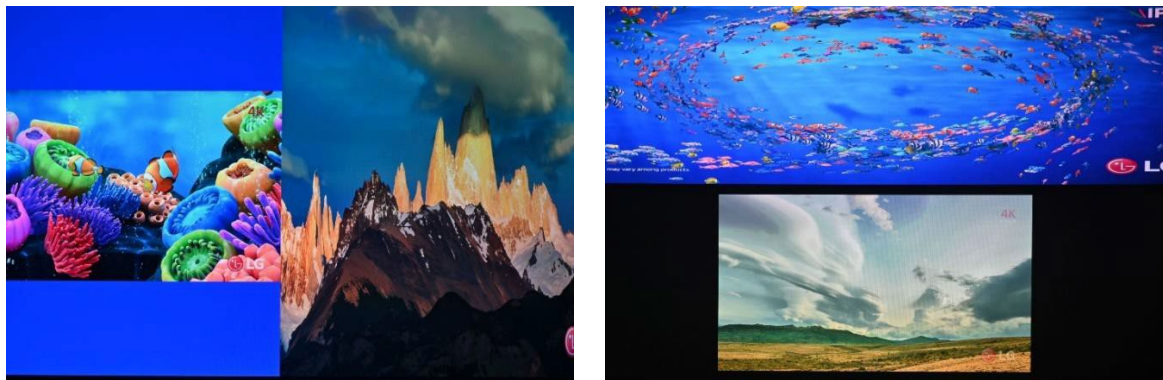
15.4. [SBS 2/1]

➢ SBS 2/1 is to display one image with a size of 2/3 screen size, and another one is 1/3. The location for 1/3 & 2/3 can't be changed, but the user can change the position with a monitor installed in different directions together with image rotation. For instance, if the user has a 2/3 image at the top when a user installs the monitor with 180 degrees rotation and rotates the image at 180 degrees, then the user will see a 2/3 image at the bottom. Users can apply the same concept to POP3 & POP4.

➢ Image rotation in the primary and sub-window can be executed separately.

➢ Image rotation can be executed together with image cropping and aspect ratio adjustment.
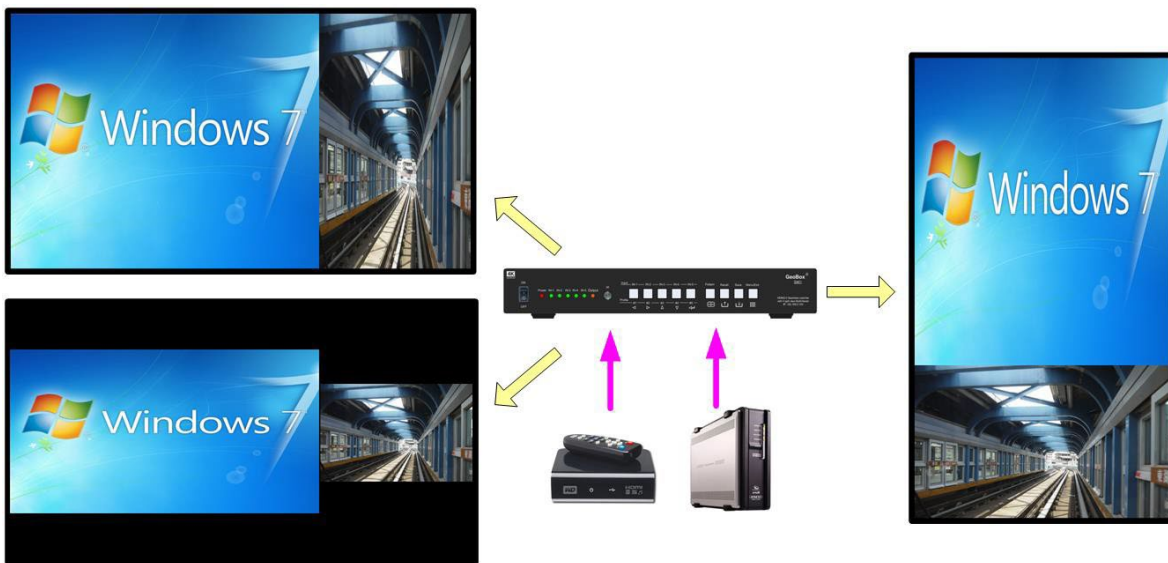
15.5. [3x SBS] in the horizontal direction

➢ 3 split view function is integrated into S901. Users can display 3 split views on one UHD monitor.

➢ The center image size is adjustable from 1/6 to 5/6 screen width through [Size] under [PIP Setting]. The minimum image size on both side windows is 1/12 screen width.

➢ The input signal can be up to 4k/2k 60Hz.

➢ The monitor can be in a landscape or portrait position. The aspect ratio in each split view can also be adjusted through the Overlap function under the [PIP Setting] menu.

➢ Each window can be rotated to be displayed on a monitor in portrait position.

Image rotation to fit portrait monitor
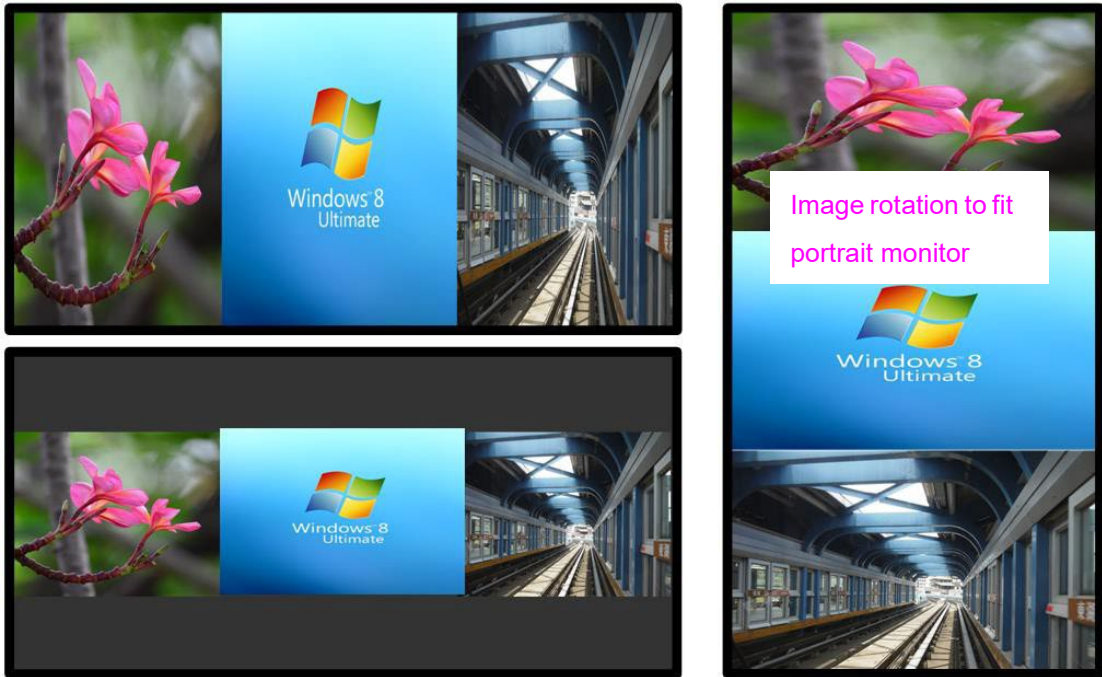
> Below is an example of using one S901 as a front-end processor to display 3 split contents in an edge blending system. Users can apply content with the same aspect ratio as this 1/12 image to get no distortion image. Users can use the PC multi-window function to get a display like the one below.

15.6. 3x T/B

➢ [3X T/B]: Three split views in portrait direction. The image size can be full screen or keep the original aspect ratio. Users can adjust different aspect ratios through the [Overlap] function under [PIP setting].

➢ When multi-units are cascaded, the user can create 6/9/12/16 split views for one display.

➢ Image rotation is available for 90/180/270 degrees rotation.
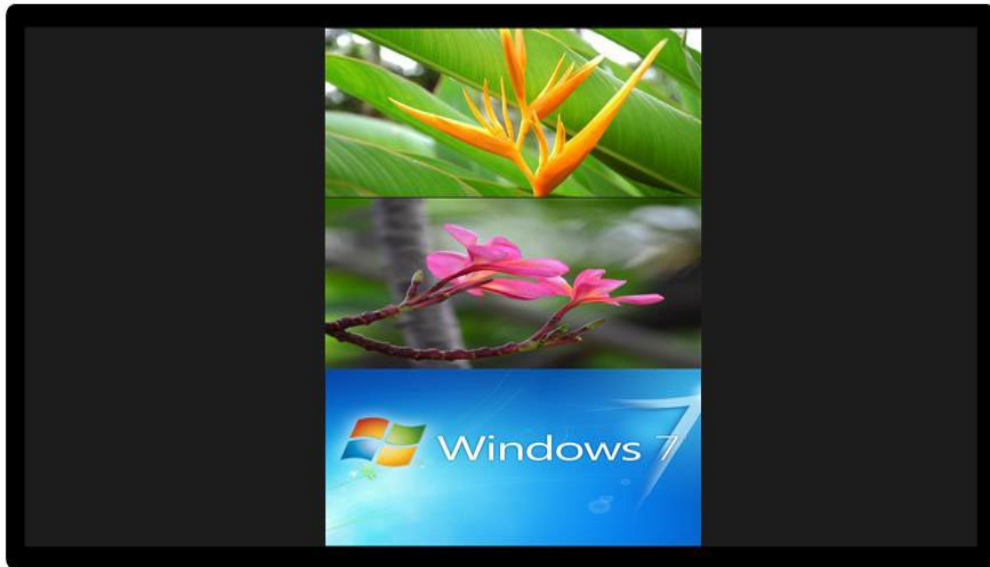
15.7. Other 3 split views

➢ The S901 can display 3 split views in one Ultra HD display.

➢ The monitor can be installed in landscape or portrait position.

➢ The aspect ratio of each split view can also be adjusted via the [Overlap] function under the [PIP Setting] menu.

➢ [POP 3]: There is a large image on the left and two on the right.

➢ [POP 4]: There is a large image at the top and two small images at the bottom.

➢ All windows support 90/180/270-degree rotation and flip of the image and can also be set to maintain the original aspect ratio or full-screen display. All windows have a cropping feature through the [Overlap] menu for different position, size, and aspect ratio adjustments.

➢ The background can be black or blue.

➢ All main window and sub-window inputs can reach up to 4k/2k 60Hz 4:4:4 signal.

3 Split Views [POP3]   3 Split views [POP4]

Monitor installed at the top-down position and execute image rotation to get different display
patterns. The background for the non-full-screen image can be blue or black color.

15.8. 4 split views

➢ Below are two types of 4 split views for one UHD monitor— [4x Split] & [4x T/B]. The 4 split-
view is preset and can be selected through the hotkey on the front panel or OSD menu.

➢ The content for each sub-window can also be selected through [Source] selection under [Image
Properties]➔ [PIP Settings]➔[Source]

➢ The aspect ratio and cropping area can be adjusted through the [Ratio] & [Overlfunctionstion
under [PIP Settings] menu.

➢ All display windows can't be rotated in 4 split-view applications.

➢ Users can change the input source for each window to get a different display layout.

4 split-view hotkeys on the front panel
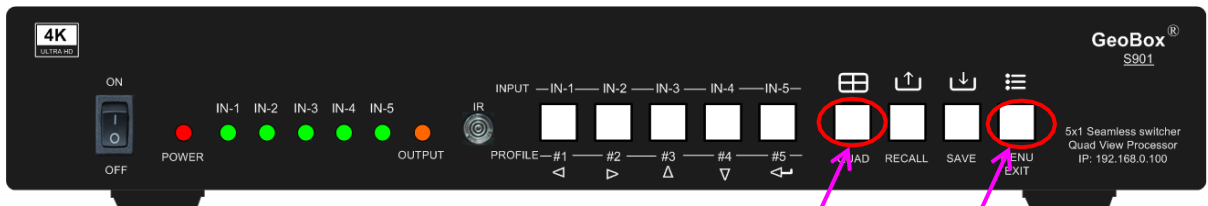
4 split view hot key   OSD Menu key

[4x Split] view

[4x T/B] view
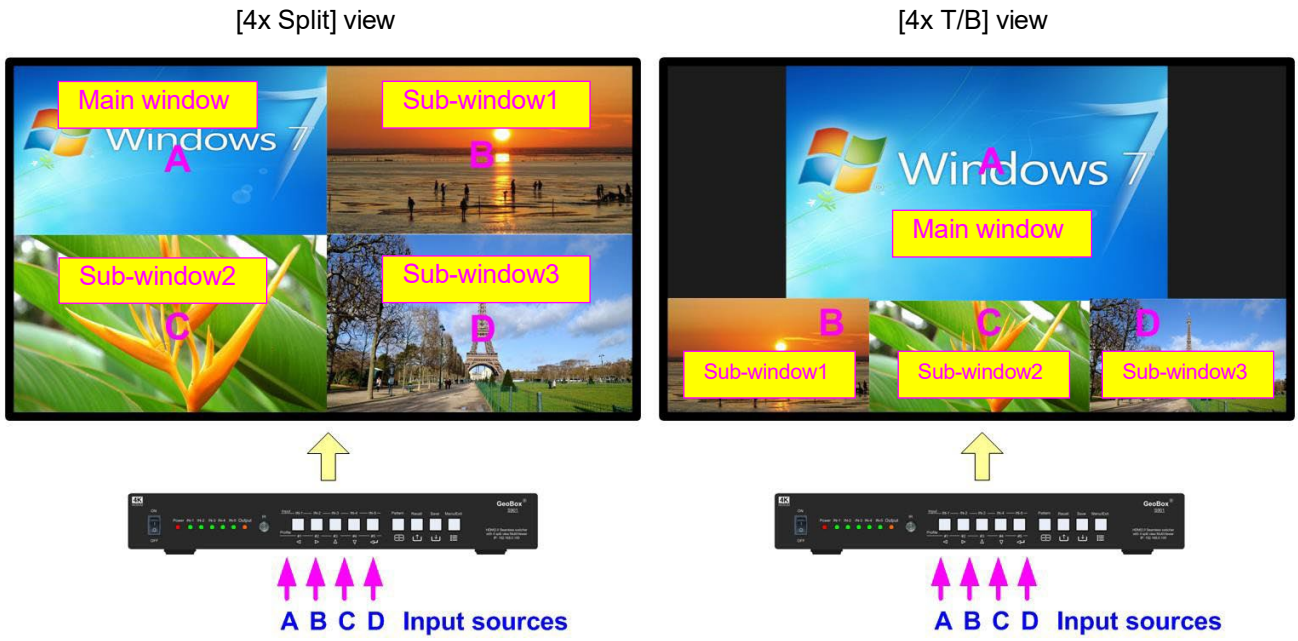
16.   Advanced functions

16.1.   EDID Setting

Selectable EDID setting for input source resolution is added into GeoBox. The settings will be applied to the selected input port. Each input port is to set EDID separately. Below are some guidelines for the EDID setting. Users can access EDID setting OSD menu via: [Options]➔ [Setting]➔ [EDID]

➢   GeoBox can support a wide range of input signal timing—from XGA to 8k/2k @30Hz.

➢   Different source resolutions may show different final image aspect ratios. Users can use different EDID settings to change signal source timing and get different output aspect ratios.

➢   Users can select different EDID directly from the OSD list or use the [Customize] function to create None- VESA standard timing. The range is H=1024-4080, V= 720-3840.

➢   If the signal is from the PC, the user can set customized EDID in GeoBox to let the PC output the expected resolution. Some PC may not follow the GeoBox EDID resolution setting and require a customized output setting from the display card or reboot.

➢   Users can create timings outside VESA standards, such as 7680x2160/30Hz.

➢   PC or laptop may not output required timings due to settings, hardware limitations, or driver issues. Users may need to do custom settings inside PC and reboot to get the desired output.

➢   Windows 10/11 will remember the first EDID when connected with GeoBox for the first time and may not follow the new EDID setting. Below are some suggestions:

-    Power ON GeoBox first and set EDID before connecting with the signal source. It will make sure the PC can catch the correct EDID information.

-    To switch to other Preset modes, then return to the required one. If Preset EDID modes fail, users can try the Customized EDID setting. It may get different results.

-    If Preset modes and Customize EDID settings still cannot get the required result, please insert a small pin into Reset Hole on the back panel for 5 seconds to reset the system. It will reset the system to factory default and get different results. Please note that resetting from Reset Hole will erase customer settings saved in Profile Index.

-    Try the PC display card Scaling and Aspect Ratio setting function.

➢   Users can check the input/output resolution from the INFO key on the remote control.

16.2.   Quick PIP ON/OFF and two input seamless, quick swap

➤ CH A/B key in the remote controller can execute quick PIP-window on/off and quick swap.

Quick PIP on/off &
main/sub window
seamless swap
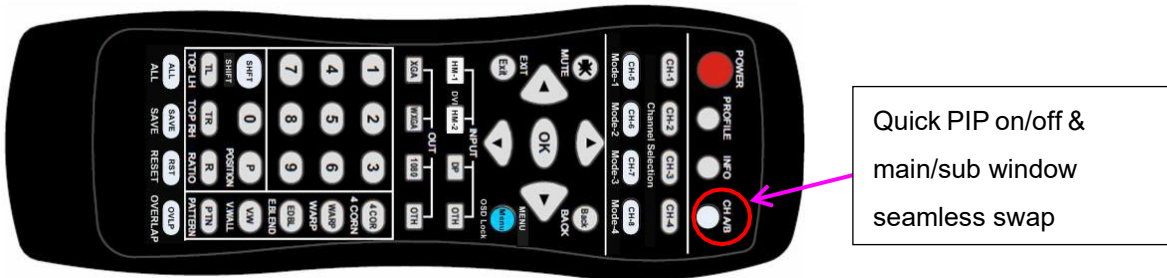
➤ When the output resolution is set to 1920x1200 or 1920x1080, the user can add a full-screen PIP image on top of the main image. Users can click the [CH A/B] key to turn on/off the PIP image to see a seamless main/sub-window swap.

➤ This image swap can be applied when the main and sub-window with the exact resolution. Clicking the [CH A/B] key will execute a seamless, quick swap between these two inputs.

16.3.   Image rotation and flip

✓   There are two image Orientation OSD menus. One is for the primary input, and the second is for the second input for PIP/POP.

✓   Image can be rotated at 90/180/270 degrees and flipped at Right/Left, Top/Bottom, or Front/Rear. This function can support up to 4k/60Hz input signal.

✓   Image 90/270 degrees rotation is for the monitor at the portrait. There is no need to rotate the signal source.

✓   When the main image is rotated or flipped, the OSD will not rotate with the main image.

✓   User can see the direction of the TEXT "R" to select image flip and rotation result.

✓   Main image and PIP image can be rotated independently.
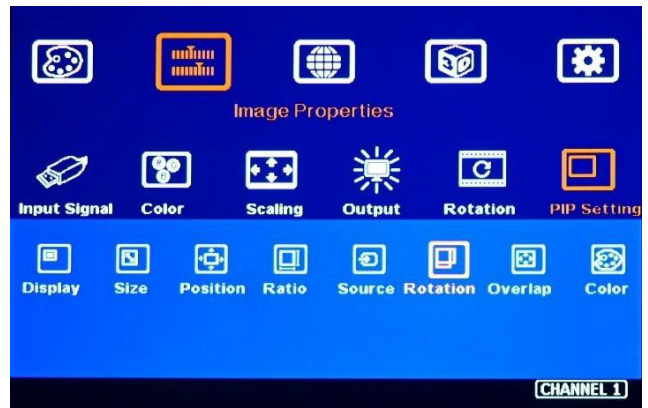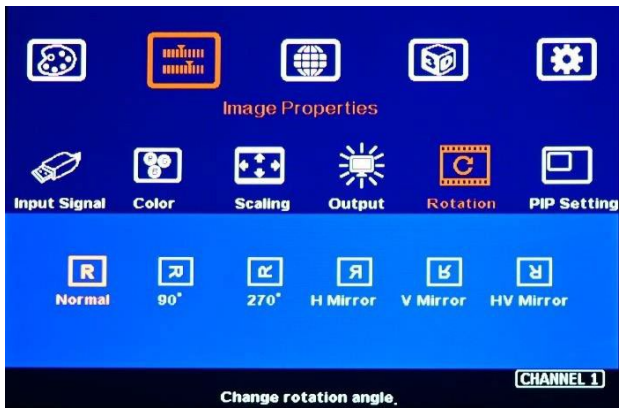
Rotation for main input   Rotation for sub-input (PIP)
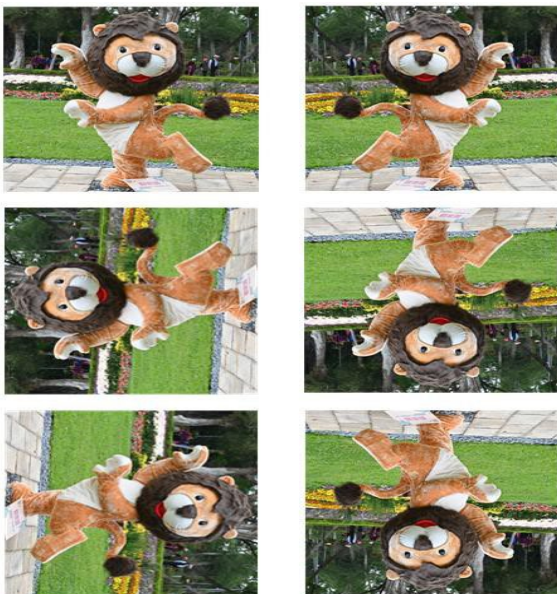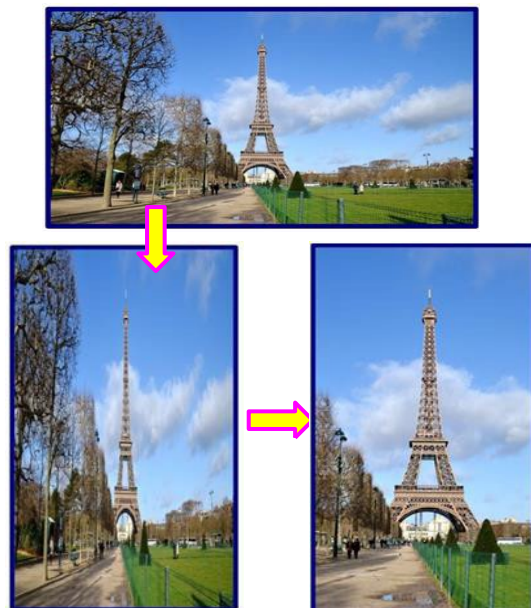
16.4. Image Cropping in main and PIP/POP (Sub-windows)

Crop & Rotate
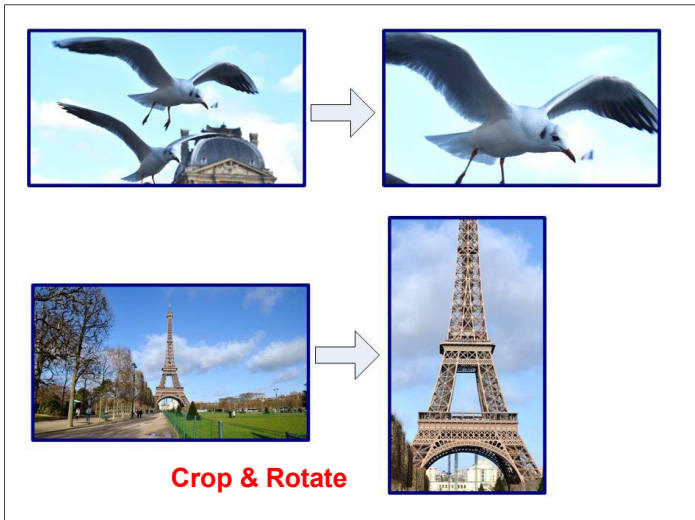
✓ Image cropping in both main and PIP/POP (sub-window) can be done separately.

✓ [Video Wall] setting is for main image cropping.

✓ [Overlap] setting under [PIP setting] menu is for sub-window cropping.

✓ Image cropping function can co-exist with image rotation and flip functions.

16.5. Flexible Aspect Ratio Adjustment in the main window
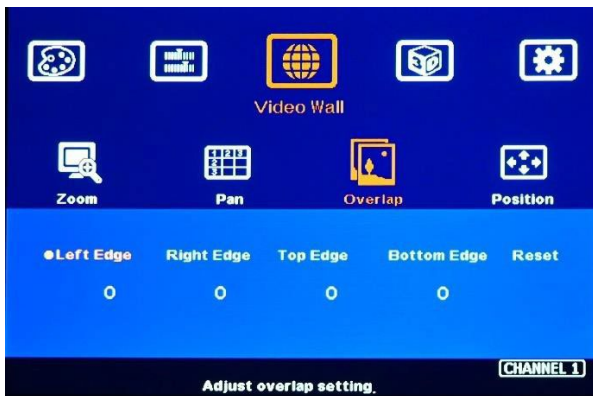
User can use Video Wall [Overlap] function to change the aspect ratio of the image with black or blue border or to stretch the image in specific direction to compensate the aspect ratio difference between video wall and the content. The Maximum adjustment range is +_1800 pixels in each edge.
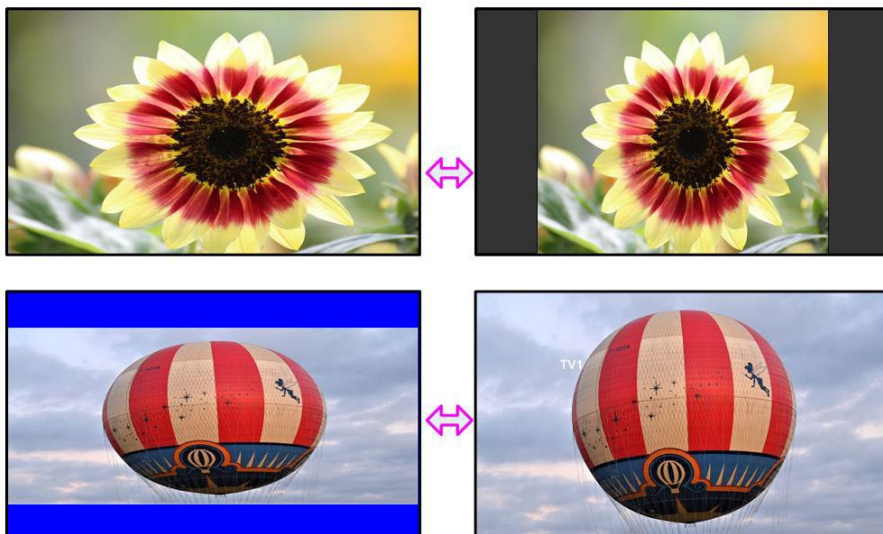
Background color can be black or blue:

[Options]➔ [Accessibility] ➔ [Black screen]➔ On/Off

Case Study: Aspect ratio calculation

Below is a case study regarding the relationship between aspect ratio and overlap value settings in Video Wall. If the LH edge Overlap value increases by 300 pixels and the RH edge increases by 400 pixels on the FHD image, the video's total horizontal pixels will increase by 400+300=700 pixels. As a result, the total horizontal active pixels will be 1920+700=2620. The original image in the horizontal direction will become 1920/2620=73.28%. The final aspect ratio will become (16*73.28):9=11.7:9

16.6. System Standby and automatically turn off output signal

- ➢ OSD [Options]➔ [Accessibility]➔ [Standby Time]
- ➢ If set [Standby Time] at 60, the system will get into Standby Mode after 60 seconds when no input signal is detected. The output signals from S901 will also be terminated at the same time. If S901 detects the input signal again, the system will automatically turn on. During the Standby period, S901 will still be in ON status.
- ➢ If the monitor can automatically turn off/on by detecting the input signal, the user can control the signal source to execute the entire system on/off control.

16.7. Change the Background Color to Blue or Black
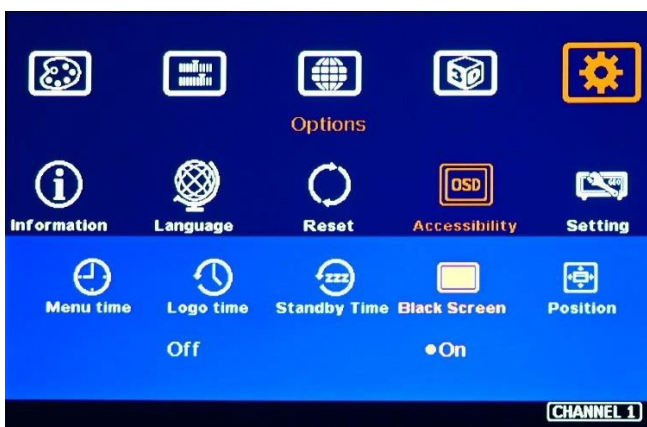
- ✓ OSD [Options]➔ [Accessibility]➔ [Black Screen]➔ [Off]/[On]
- ✓ When no signal input, user can select either blue color background with [Power Saving Mode] message on the screen or black background color without message.

16.8. <u>Turn off the splash screen Logo</u>

➢ Users can turn off the splash screen Logo through [Options]➔ [Accessibility]➔ [Logo Time]
and set the value at "0". The default setting is 10 seconds.

➢ It will reduce some bootup time.

16.9. <u>Image freeze</u>

Users can use the [Shift] key in the remote controller to execute image freeze. It will be helpful while
displaying video images. Pressing the [Shift] key again will turn off the image freeze function.
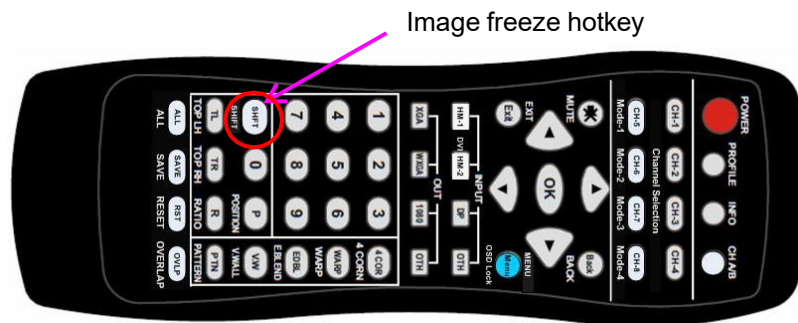
16.10. <u>Native 1:1 pixel-to-pixel image display mode</u>

When single content is displayed on the screen, the user has the below choices for display options:

➢ [Full screen]: to display the content with full screen. The image will be scaled to full screen no
matter the input with what kind of aspect ratio.

➢ [Original AR]: to display content with original aspect ratio. If 4:3 input content is displayed on a
16:9 monitor, it will keep a 4:3 image aspect ratio with a full vertical screen.

➢ [1:1]: to display native pixel-to-pixel image at the center of the screen. When an XGA image is
displayed on a 16:9 monitor, it will show a pixel-to-pixel XGA image at the center of the
monitor without scaling to keep the original image quality.

16.11.   Audio Output setting

If the user executes PIP/POP function, the user can select the audio source between primary and sub-window1. A mute function is available. The audio is embedded inside HDMI. It is only stereo audio in analog RH/LH and digital SPDIF. Please access [Option]➔ [Setting]➔ [Audio] to do the audio setting.

16.12.   HDCP control

Three sub-menus under [Image Properties]➔ [Output]➔ [HDCP Output] settings:

➢   [HDCP Input Only]: Encrypts HDCP only if the input signal has HDCP.

➢   [HDCP Enable]: Always output with HDCP encrypted.

➢   [HDCP Disable]: Does not encrypt HDCP. Only non-HDCP compliant input signal can be output.

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17.   <u>Video Wall settings</u>

> ➢ S901 can support up to 7680*2160/30Hz input resolution in HDMI and 8k/4k/30Hz in DisplayPort. If the user adds one S914 HDMI splitter at the front end, the user can build a high-resolution video wall. This video wall can display one big piece of content across the entire video wall, or some monitors display independent content with true 4k quality. Each monitor can be in landscape or portrait direction with PIP/POP 3/4 split view images.

> ➢ One of the critical applications of the video wall function is to crop any region from the image and output specific resolution for LED display through a programmable output function.

> ➢ Press [V. Wall] hotkey on Remote Controller to activate [Video Wall] menu. WebGui and GCT PC tools are available through an Ethernet connection. USB can also be used for PC tool operation.

17.1. <u>[Zoom]</u>

Use [Zoom] to split the display into horizontal and vertical directions. GeoBox will split the image into different sections. The whole split image is fifteen in both horizontal and vertical directions.
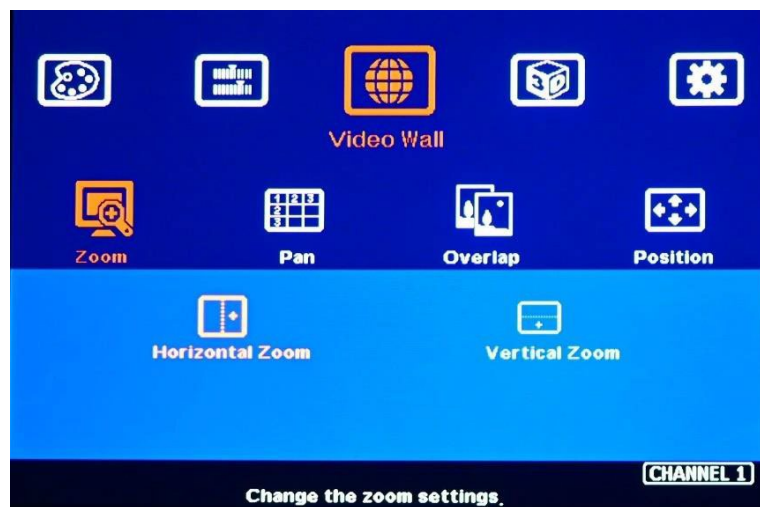
For a 3x1 video wall displays

Horizontal Zoom= 3, Vertical Zoom = 1

For a 3x3 video wall displays

Horizontal Zoom = 3, Vertical Zoom =3

17.2. [Pan]

[Pan] will select the location of each split image in the display in both horizontal and vertical directions. The horizontal direction is counted from Left to Right, and the Vertical direction is counted from Top to Bottom.
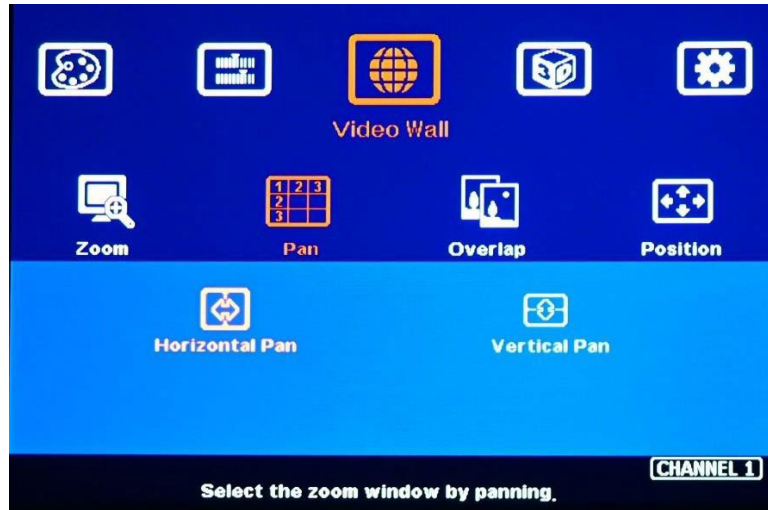
In the case of a 3x3 video wall display, Pan settings are as below:

u	v	w
x	y	z
{	l	}

For No. Monitor*:*   *For No.* Z *monitor:*

Horizontal Pan = 3   *Horizontal Pan = 3*

Vertical Pan = 1   *Vertical Pan = 2*

17.3. [Overlap] – Image cropping, aspect ratio adjustment, and position Alignment

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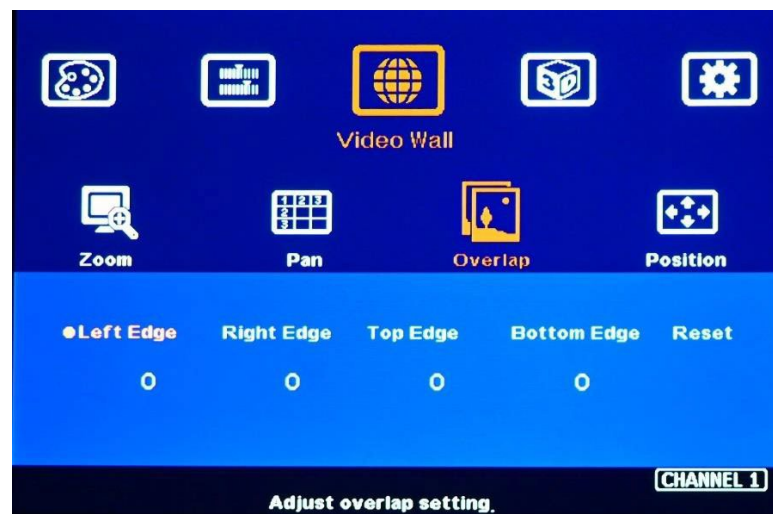
> ➤ Users can use the [Overlap] function to change the cropping area, the aspect ratio, and the image position. It can also execute Bezel compensation and correct the video wall installation misalignment.

> ➤ Maximum [Overlap] adjustment value is +_1800 pixels in all directions.

> ➤ Users can reduce the [Overlap] value to stretch the image outside the video wall (some of the images will be missing) or draw images inside the video wall with a Black or Blue blanking area at the edge by increasing the [Overlap] value. This function can adjust the aspect ratio of the content to match the required aspect ratio.

17.4. [Position] – Image Position adjustment

[Position] function is to shift the image position without changing image size or aspect ratio. After activating the [Position] menu, users can use the direction key to change the image location. It is possible to see blank borders after the image position shifts. Please go back to [Overlap] for a quick position RESET.

18.   3D format conversion and active/passive 3D application

18.1. 3D format conversion

S901 can convert side-by-side, top/bottom, frame packed, line Interleaved (line by Line), and dual camera 3D formats with Side by Side, Top/Bottom, frame sequential outputs, and RH or LH eye frame output for passive 3D.
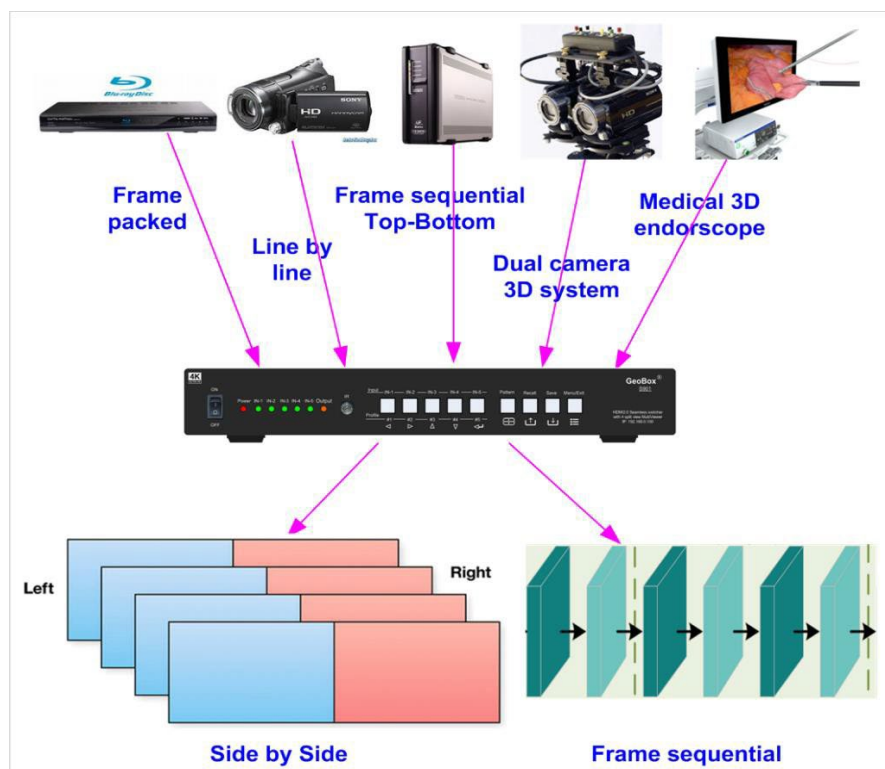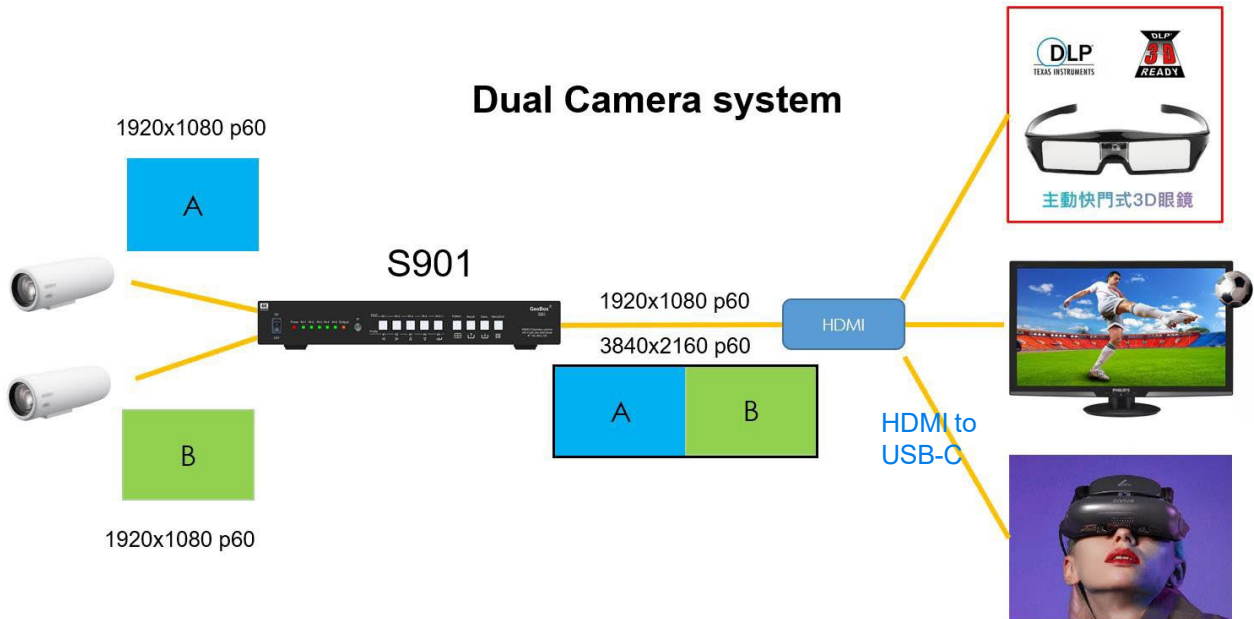
18.2. Active 3D display

➢ S901 can convert 3D formats into Side-by-Side, Top/Bottom, or 100Hz/120Hz frame [Sequential] format for an active 3D.

➢ Frame sequential 3D output can be up to 2560*1600 120Hz.

➢ When converting into 3840x1080 or 3840*2160 side-by-side 3D format for active 3D display, please select the output directly from a preset mode to get standard VESA timing output. The Customize output mode is a reduced blanking signal. Some systems detection may incorrectly work with the 3D signal.

➢ VR HMD system may show 3840*1080 side-by-side 3D signal with a broader image aspect ratio. Please select 16:9 output timing (such as 4k/2k) to let HMD display the average aspect ratio.

18.3. Passive 3D display

S901 can decode 3D signals into RH or LH eye frame signals for passive 3D display. Users need to use two units of S901 and one S914 HDMI splitter for this application. It will be more cost-effective to use one G902 (no warp) or G802 (FHD) / UD102 (4K) (with warp) for a passive 3D system.

18.4. 3D input format selection

For 3D applications, please open the OSD menu by clicking the MENU key on the remote controller or through GCT PC Tool. Then the user will see [3D Properties]➔ [3D Input Format] OSD menu. Under the 3D input format, the user can select [Automatic] for the 3D input signal with a 3D flag inside. These 3D formats include Line by Line (interleaved), frame-packed, and frame sequential. If the input is Side by Side
or Top/Bottom, please select directly. Usually, users can set [Side by Side] as default. It will handle signals with a 3D flag automatically as well.
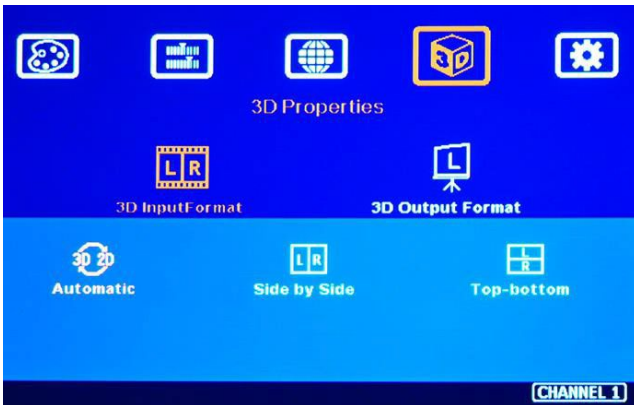
3D Input Format selection   **3D Output Format selection**
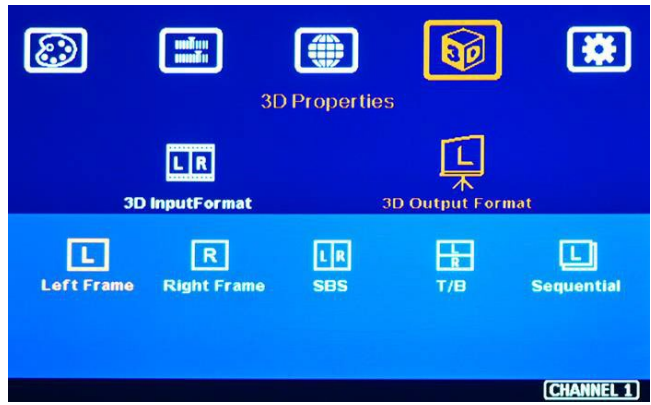
18.5. 3D Output Format selection

➤ Users need to select an output format based on the requirement of the 3D display device.

➤ When the application is for passive 3D with dual projectors, the user needs to use two S901s. Select [Left Frame] in one S901 and [Right Frame] in another S901.

➤ For active 3D applications, the user can select [Side by Side], [Top/Bottom], or [Frame Sequential] based on the requirement.

➤ When selecting [Frame Sequential] with 100/120Hz refresh rate, executing the [Customize] output setting is required.

18.6. Frame sequential Output resolution setting

Usually, FHD and WUXGA projectors can only support up to 1280*720 or 1280*800 @120Hz 3D signal. 4k projector can support input up to 1920x1080 @120Hz. 2560*1560 @120Hz is possible to be supported by some projectors.
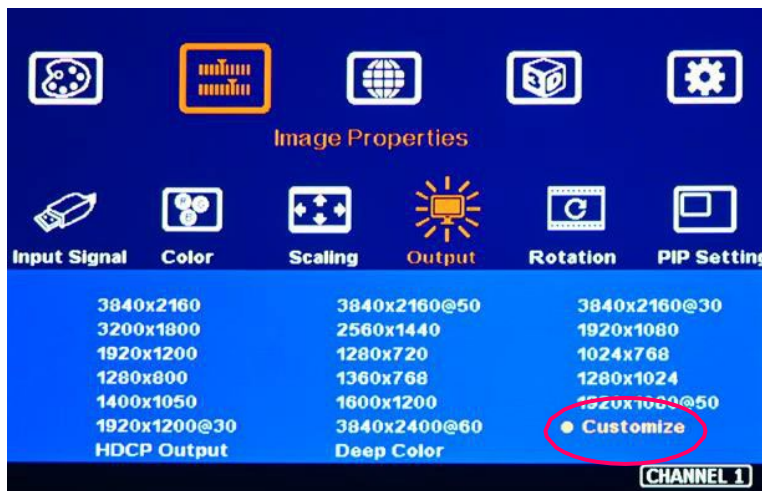
Click [Menu]➔ select [Image Properties]➔ [Output]➔ [Customize]

Under [Customize] menu, please set the output resolution and refresh rate, then click [Apply] to finish the setting.

18.7. Dual camera 3D

➢ If the dual camera is in the 3D input format, the user must implement the POP function to set the image at [Side by Side] output. The operation menu is under [Image properties]➔ [PIP Setting]➔ Display]

➔ select SBS.
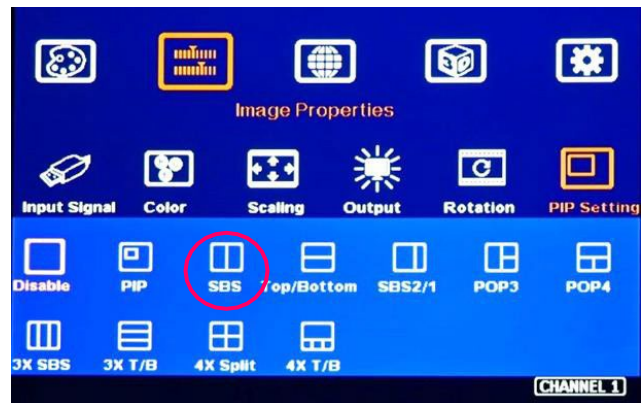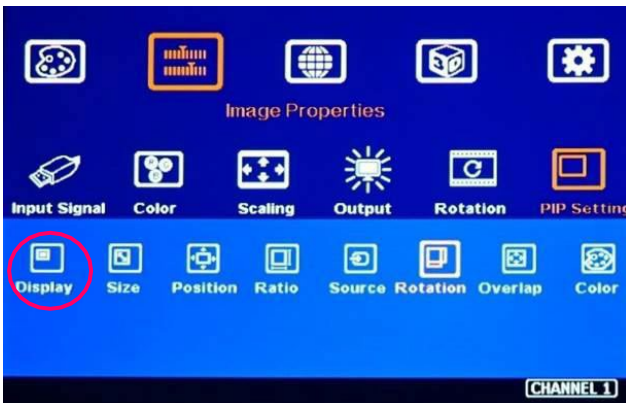
➢ Please select the LH eye frame signal as the primary input and the RH eye frame signal as the sub-window input.

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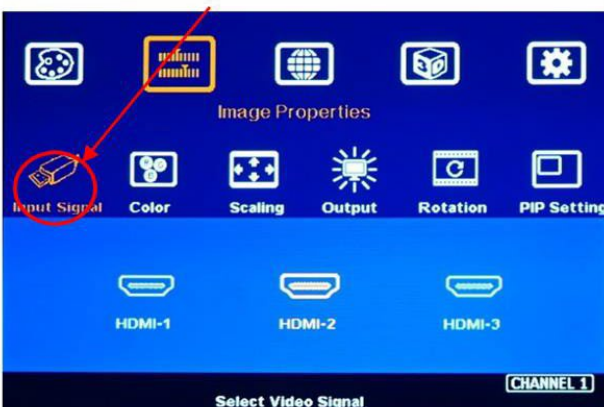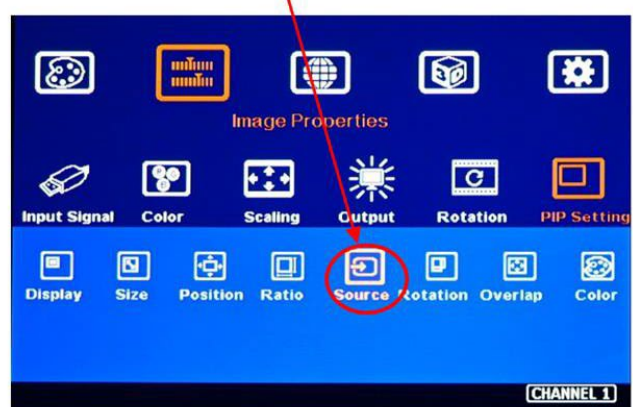
19.   **WebGui and GCT PC Tool (GeoBox Control Tool)**

19.1. **WebGui**

WebGui is embedded inside S901. Once the user connects S901 with PC through Ethernet, the user can access WebGui and execute all operations similar to the OSD menu via Virtual Keys and OSD Menu.

➢   The connection can go through Ethernet, LAN port, Wi-Fi Router, or Cross Over Cat 5/6 cable. Users can set each unit of S901 with a different static IP address (default is 192.168.0.100) in the same domain, then open Google Chrome or Microsoft Edge with an IP address to access each unit of S901 for independent operation. Users can set different IP addresses to control multi- units simultaneously.

➢   Users can turn on/off the system through WebGui and see the status through the power indicator.

➢   OSD operation buttons can execute the full functions of S901 as the usual OSD menu.
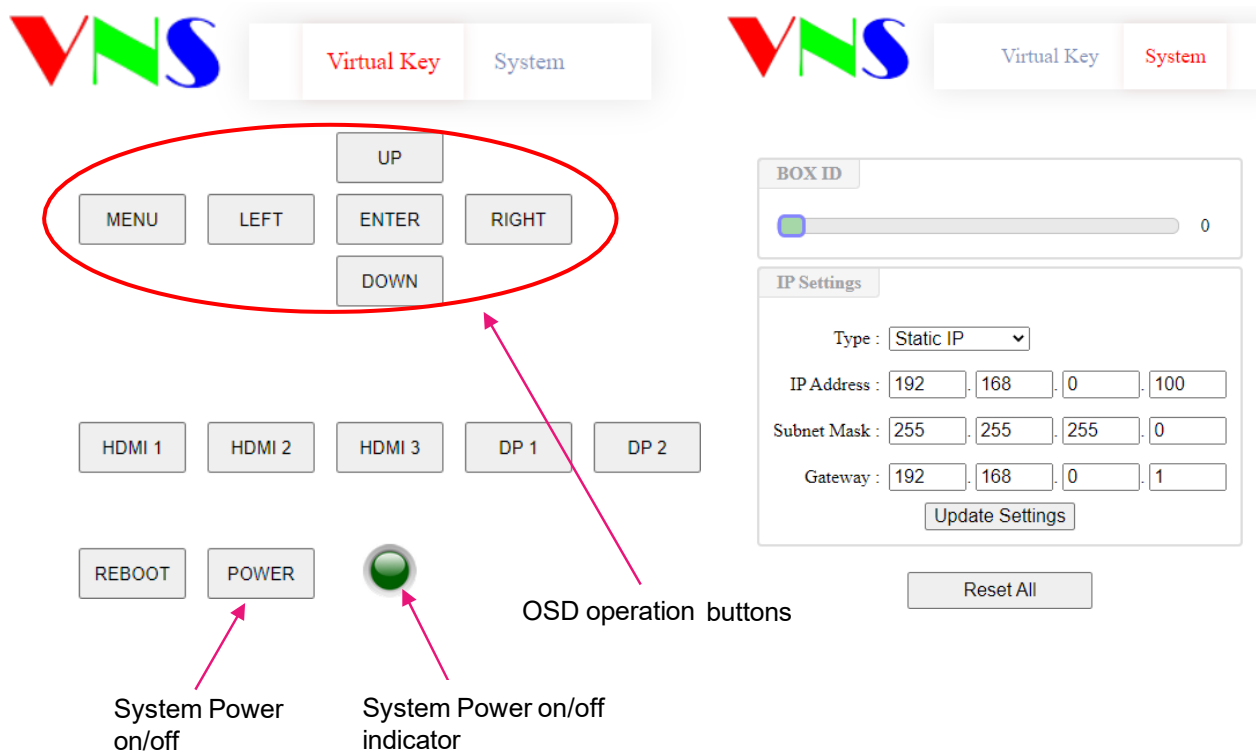
19.2. GeoBox Control Tool (GCT)

➢ GCT is a PC tool executed through a PC. Users need to download this tool from the VIGILLINK website. Once the user connects S901 with PC through Ethernet or USB and opens GCT, the user can access GCT and execute all operations like the OSD menu through the PC keyboard and mouse. Users can also back up system settings in the PC and restore/copy to other units.

➢ GCT synchronizes the settings parameters inside GeoBox. Users can swap the operation between GCT and the remote controller.

➢ Users can execute full operation functions and update Firmware and MCU code through GCT. Users can control multiple units at the same time by changing IP addresses.

➢ User settings can be saved on a PC through [Save Setting]. It will only save the setting under CURRENT display status and not save Profile Index data.

➢ The data saved on the PC can be copied to different S901.

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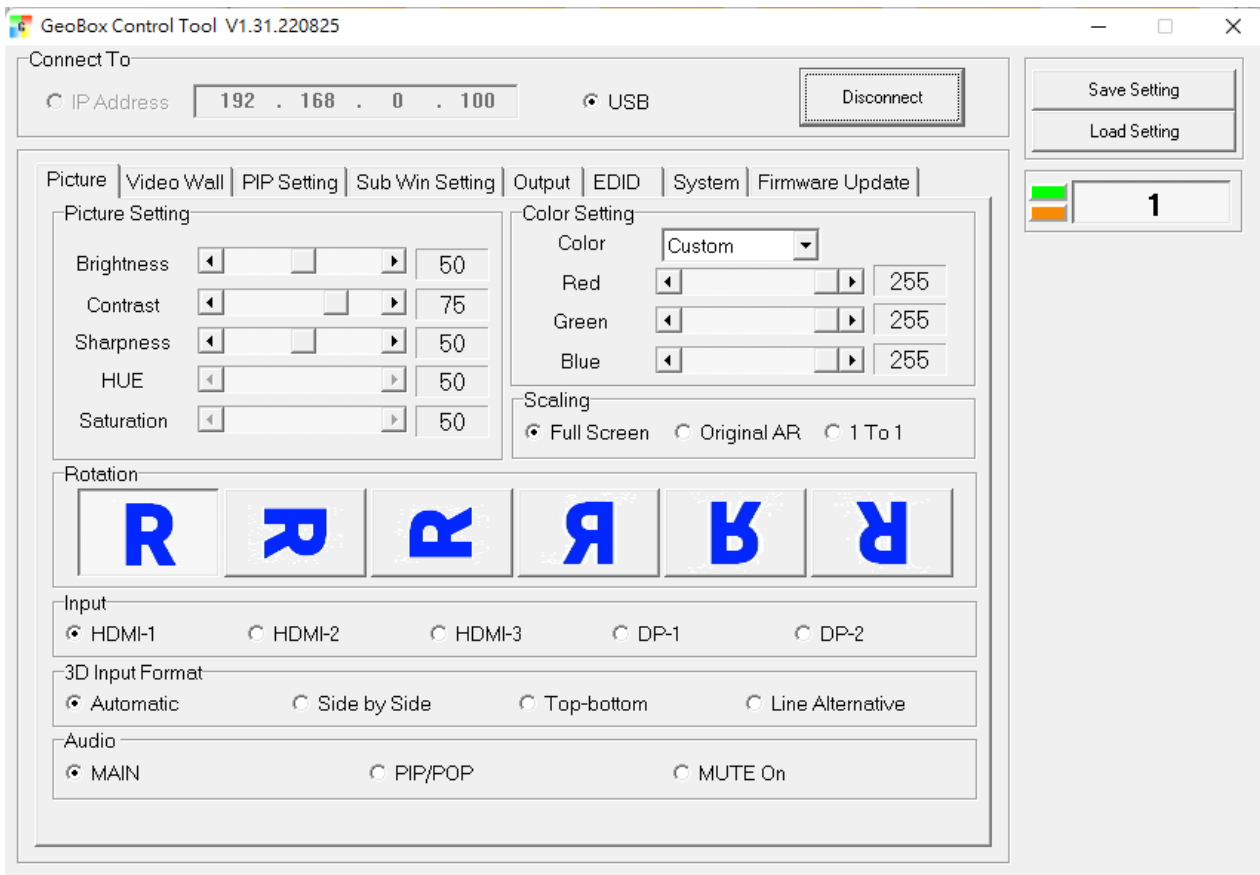
20.   Application case study

20.1. Image cropping for LED display

➢   If the user wants the best video quality, the content, signal source, GeoBox output, and display system should have the exact resolution.

➢   LED display system resolution is based on the number of the display module. It is not fixed resolution like VESA standard, such as XGA, WXGA, WUXGA,1080p, or 2160p.

➢   Media server, Blue Ray player, or low-cost media player can only output standard VESA or video timings. It doesn't have the flexibility to output specific timing based on the requirement in LED or another large display system.

➢   S901 can crop the right image from any video and output the timings that match the display device's system resolution to get the best video quality.

➢   Below are the procedures to crop and set 2560*1440 output timing from the 3840*2160 input source.

Video wall settings: (Example A)

Zoom: H= 2, V= 2, Pan: H=1, V=1

Overlap: RH edge: 2560- (3840/2) = +640, Bottom Edge: 1440-2160/2= +360

Video wall settings: (Example B)

Zoom: H= 1, V= 1, Pan: H=1, V=1

Overlap: RH edge: 2560-3840= -1280, Bottom Edge: 1440-2160= -720

Both methods will crop 2560*1440 resolution from 3840*2160 images. The user can set an output resolution of 2560*1440 by selecting the output timing list or programmable output settings from the OSD menu under [Image Properties]➔ [Output]➔ [Customize].
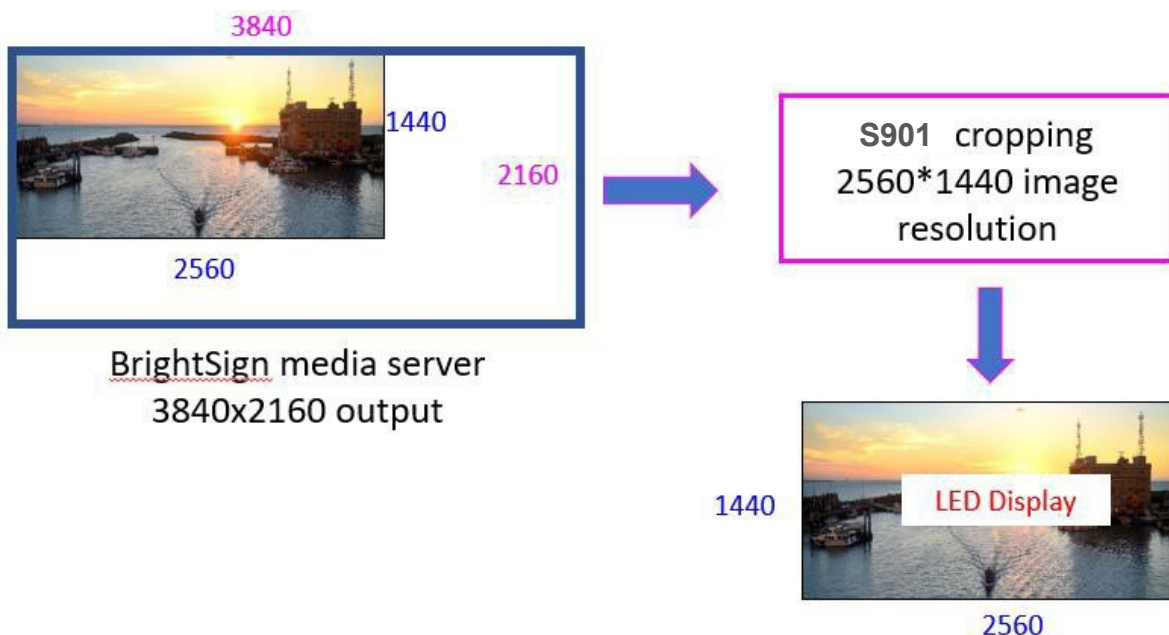
20.2.   Front-end processor

20.2.1.   S901 as a front-end processor for video wall

S901 can be added before the video wall system to allow different display styles across our monitors. Users can also manage to display different content on each discrete monitor.
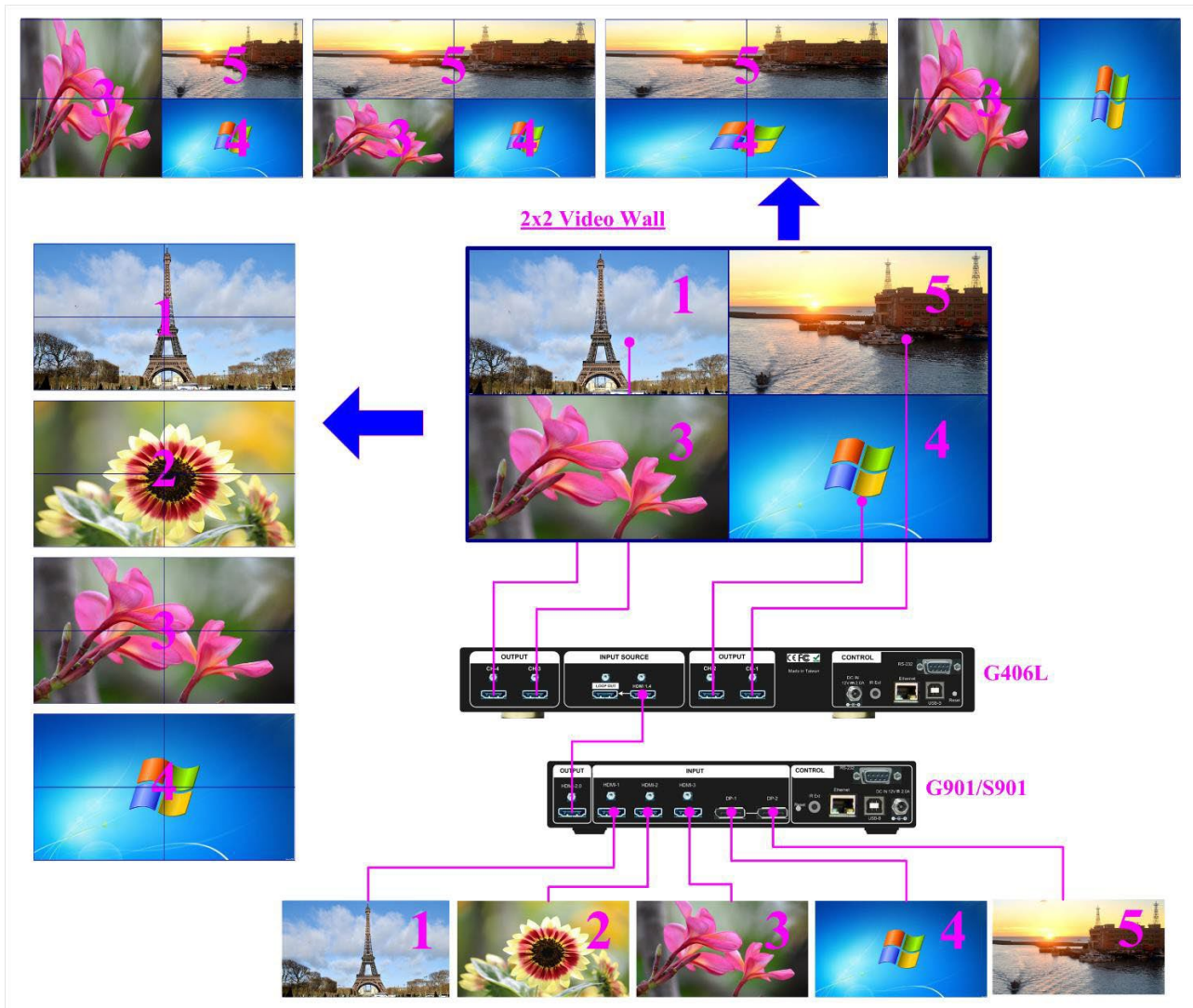
Change the video wall aspect ratio and add PIP.
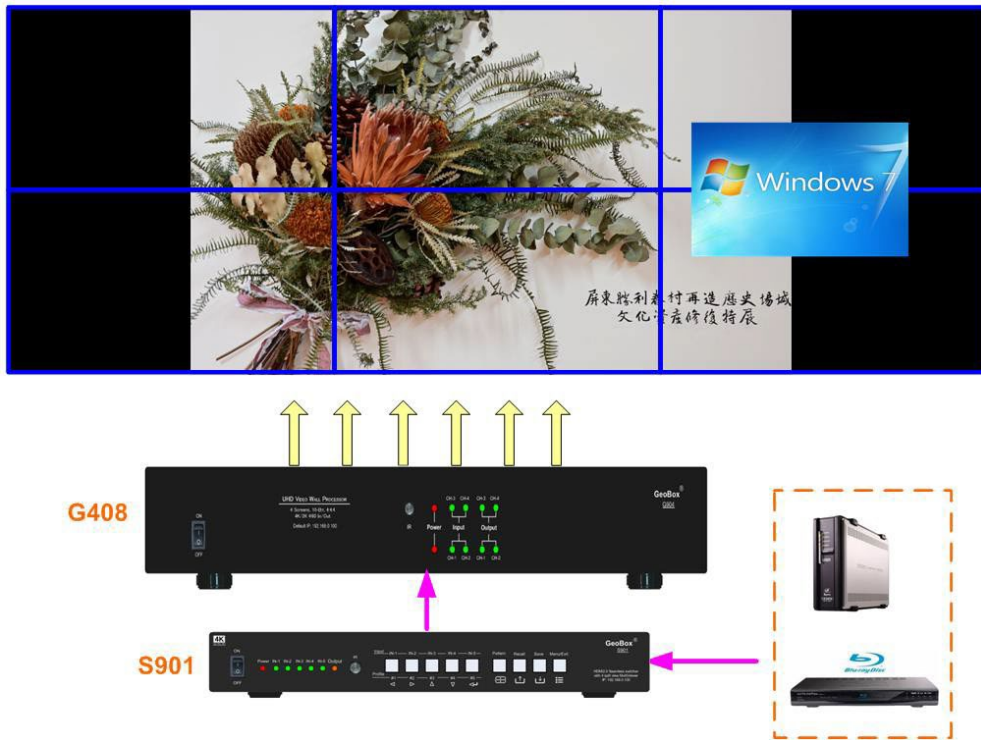
20.2.2. S901 as a front-end processor for projector edge blending system

20.2.3.   S901 is a front-end processor for 3 or 4 split views in the projection system

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20.3. 4K Scaler Switcher

5 in / 1 out switcher with 10-bit high end scaling up / down
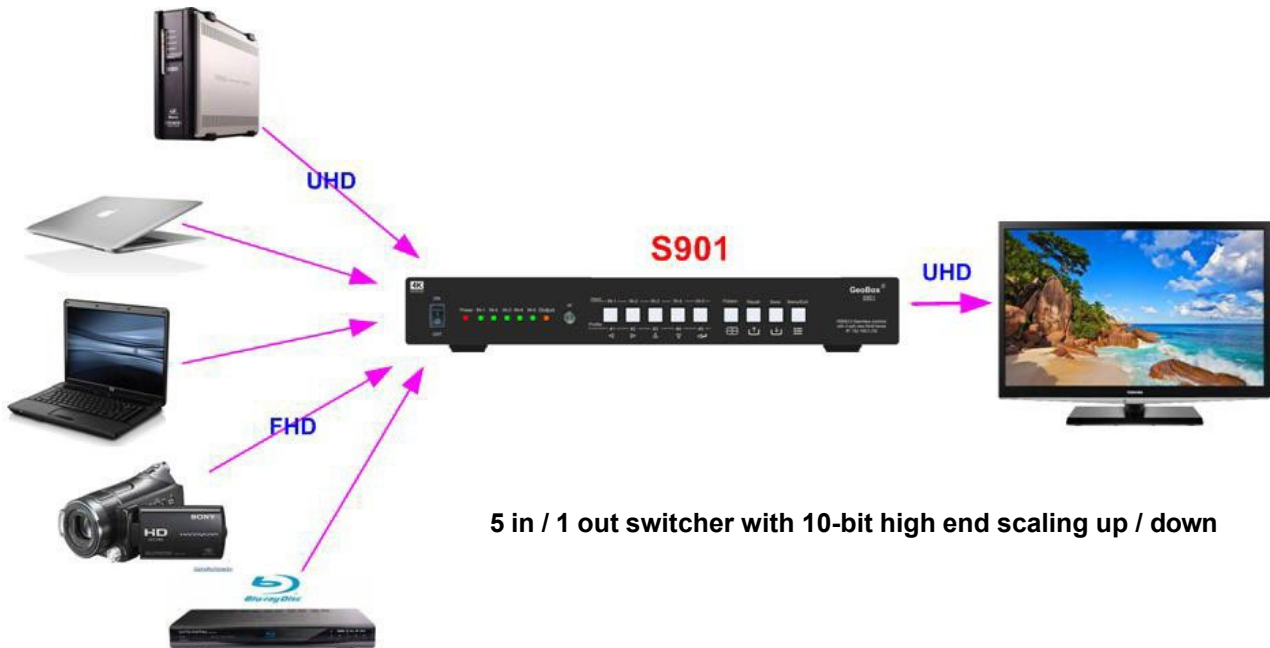
All HDMI input sources support up to 4k/2k/60Hz 4:4:4 input signal. DisplayPort input can be supported up to 1080MHz (7680*4320/30Hz). The output resolution can be from 1024*720 to 4096*2160/60Hz.

Technical support

21. Trouble Shooting

21.1. No image on the screen

➢ If the S901 output resolution is 4k/2k/60Hz and the monitor can't support 4k input, the user will see no display image on the monitor. Please use a remote control or front panel output selection keys to select [1080] or lower output resolution to let the display device be able to support it.

➢ Please check the input/output LED indicators and make sure all the signals are correctly connected.

➢ If the user still can't see the image, please click the [Menu] key to activate OSD. If the user can see normal OSD, the system should be normal. Please click the [INFO] key to check input and output timings.

➢ If the user still can't see the image, please change the signal source, HDMI cable, or display device to find the root cause of the failure.

➢ HDCP may be the reason for the no image. Please make sure the display device is HDCP compliant.

➢ Many HDMI extenders can only support up to 4k/2k @30Hz. Please select the correct HDMI extender based on your requirements.

21.2. <u>Intermittent or loss of input signal</u>

➢ Check the HDMI cable quality and make sure all cables are fitted correctly. 4k/60 signal requires 4k/2k certified cables.

➢ Cable length: Connecting cable length should be as short as possible. Replace a short cable to verify the possible root cause. Usually, the longest standard 4k/2k HDMI cable is only up to 10m.

➢ HDCP compliant issues: If the input source or the monitors are not HDCP compliant, it is possible to stop S901 from negotiating the HDCP link and show intermittent, abnormal, or no image. Please check the HDCP condition in the signal source or display device.

➢ Resolution issues: check if the signal source and connecting cables can provide a source signal supported by S901.

➢ DVI/HDMI signal compatibility: some display devices may only support DVI video signals. The default output is HDMI. Users can change output with DVI format through [Options]➔ [Setting]➔ [DVI]➔ [On] to test it. DVI output can only support up to 4k/30Hz.

➢ Usually, swapping with different cables, output channels, signal sources, and monitors can verify the root cause of the failure.

➢ It is possible to have signal compatibility issues. Users can add one HDMI splitter/switcher in the middle to change the signal impedance. It may fix the issue.

➢ We propose to use signal-enhanced cable, HDBaseT, or Optical Fiber cable for long-distance connection. Conventional 4k/60 HDMI cables can't support more than 10 meters. If using optical fiber cable, the user may need to set DVI output for smooth transmission but only up to 4k/30Hz.

➢ Users can connect a monitor at the end of the Loop out port to check signal source stability.

21.3. <u>Video quality issues</u>

➢ Try to use the highest signal resolution and the number of color bits (RGB 4:4:4) allowed by S901. Please click the INFO key to verify input/output resolution.

➢ Several lower-quality AV players differ, and the specification and actual output. These media players may be designed with lower color sampling bits or poor image compression technology, resulting in lower or lagged image quality.

➢ If you use H.264/H.265 compressed files, please select a player with hardware decoding for smooth video quality.

➢ If the input signal is an interlaced signal (interlaced-1080i), and the image is rotated, then the channel will have no [3D Motion adaptive de-interlaced] processing function. The output video may have a slight jitter phenomenon if the user applies a static image source. The processing channel quality will be reduced. Use a progressive signal source setting (1080p/2160p) whenever possible.

➢ Please press the [INFO] shortcut key to check the input/output signal settings.

➢ Users can select [Image Properties]➔ [Output]➔ [Deep Color] to set 10-bit signal output. It will

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Smooth the gradient color when the input signal is also 10-bit. Please note that HDMI2.0 can only support up to 4k/2k 50Hz 10-bit 4:4:4 signal. 4K/2K 60Hz 10-bit is not supported.

➢ If possible, please apply a 60Hz signal source. Users can see smoother images while the image is panning or in fast motion. Users may see jitter images in 24/30Hz input sources.

21.4. <u>Abnormal display in Front Panel LED indicators</u>

➢ Users should see the Input / Output LED light. If no LED light or LED is intermitting, please check Input

/ Output connecting cables, signal source & monitor.

➢ The OSD menu has been locked if continuous flushing in the Power LED indicator with 1.0-second intervals. Please press the number key 850 on the remote control to deactivate it.

➢ If continuous flushing in the Power LED indicator with 0.5-second intervals, the MENU key has locked the OSD menu. Please press the MENU key for 5 seconds to turn it off.

➢ If the Power LED turns Red, please open the system through the remote controller POWER key.

21.5. <u>Synchronization issue in the outputs</u>

➢ While using multiple units for video wall applications, please enable the [Frame Sync] menu under [Options]➔ [Setting]➔ [Frame Sync] ➔ [Normal].

➢ The input refresh rate should be the same as the output refresh rate so the system can implement Frame Lock to synchronize all the outputs from multiple units. If the input source is 50Hz with 60Hz output, it is possible to see some synchronization issues.

21.6. <u>Call for technical support</u>

➢ Users can send an e-mail to support@VigilLinktw.com together with as much information as possible.

➢ The following information is required for a swift response.

　　✓ Sink device (monitor): type and model number

　　✓ Monitor layout or specific application details (shape of video wall).

　　✓ GeoBox model No. And series No.

　　✓ Detailed timing of signal source and resolution.

　　✓ Press the [Info] key to get System Information and send the data to us, including input/output timing and F/W version.

　　✓ The exact nature of the problem. Please be as detailed as possible.

　　✓ If possible, please attach the Pictures of the issue.

➢ Usually, we will respond within 24 hours (excluding weekends)

➢ Please note that if the machine is sent back for repair, the user needs to pay for some delivery costs.

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22.   Safety Precaution and Maintenance

➢   **Power Supply**

Please connect electric power for all devices in the system from the same Power Distribution Box with the correct grounding. Open the power after finishing the system connection to reduce the risk of system damage from high floating voltage.

➢   **Working Environment**

Please locate S901 in an environment free from dust, moisture, and high temperature with good ventilation.

➢   **Maintenance and Repair**

Apart from what is detailed in the User Guide, maintenance should be carried out by a competent technician assigned by VigilLink. If S901 is physically damaged, it should be returned for repair using VigilLink RMA procedures. If the user opens the unit, it will lose the right to warranty protection.

23.   Warranty and RMA policy

23.1. Warranty and RMA policy

This device is designed and tested to the highest standards and backed by a thirty-month parts and labor warranty. Warranties are effective upon the first delivery date to the end customer and are non-transferable.

23.2. RMA policy

Return Material Authorization (RMA)

If a product needs to be returned for repair, inform the manufacturer, and ask for a Return Material Authorization number.

RMA procedures:

1. The user must receive a Return Material Authorization (RMA) number before returning any item.
2. All RMA numbers must appear on the return-shipping label.
3. All RMA numbers are valid for ten (10) days from the issue date.
4. The customer must prepay all shipping and insurance charges in all RMAs.

Shipping charges and repair fees

1. Within the warranty period: The customer shall pay shipping charges when the unit is returned for repair. The manufacturer will pay shipping charges for the return shipment to the customer. The manufacturer shall bear all the inspection, material, and repair fees.

2.   Outside warranty period:

- Users shall pay for the inspection, material, and labor costs for the repairs and all shipping freight and insurance costs.

- Manufacture shall give a quotation to the user, and the user can decide whether this repair shall be executed. If the user decides to return the unit, the user shall pay for the return cost.

Specifications

- ✧ Input ports: 3x HDMI2.0b, 2x DP1.4. Input signal source seamless switching (within one second).
- ✧ Max. input: 4096*2160 @60fps or 7680*2160 @30fps in HDMI up to 600 MHz and 7680*4320 @30Hz (true 8k/4k @30Hz) in DisplayPort.
- ✧ Supports interleaved and progressive input signals with 4:4:4, 10-bit color up to 4096*2160 60Hz.
- ✧ Support High Dynamic Range (HDR): SMPTE ST-2084, SMPTE ST-2086, and BT.2020 HDR 10 input signal processing.
- ✧ Support non-VESA standard input with high-end scaling up and down functions up to 600 MHz.
- ✧ Preset 17 output timing modes with selectable 8-bit/10-bit color and HDCP control settings.
- ✧ Programmable Output: 1x HDMI2.0 up to 4096*2267@60fps or 7680*1234 @60fps.
- ✧ The output range is from 800-7680 horizontal (8 pixels/step under 230Mhz, 16 pixels/step above 230Mhz) and 600-3840 vertical (1 pixel/step) (maximum pixel clock < 600MHz).
- ✧ 24/30/50/60/100/120Hz refresh rate selection.
- ✧ Output signal: SDR, progressive full-color RGB 4:4:4.
- ✧ HDCP: V2.2/V1.4 in HDMI & V2.2 in DP ports.
- ✧ Embedded video wall function for image split, cropping, location assignment, and bezel compensation.
- ✧ Flexible aspect ratio adjustment in each edge up to +_ 1800 pixels.
- ✧ Support xvYCC 8/10/12-bit wide color gamut input signal processing.
- ✧ One frame latency: 16.7ms (V=60Hz)
- ✧ Programmable EDID in the range at H= 1024-4080 (8 pixels/step), V= 720-3840 (1 pixel/step)
- ✧ PIP/POP function with PIP image size from 320*180 up to 1920*1200 resolution with flexible position, cropping area, aspect ratio, rotation/flip, and color adjustment.
- ✧ The PIP-window input signal can be turned on/off seamlessly through the remote controller shortcut key.
- ✧ Individual color adjustment in main and sub-windows.
- ✧ One S901 can display 4 types of 3 split views on a landscape or portrait UHD monitor. 2 types of 4 split views can be displayed on a landscape monitor. All inputs can be up to 4k/2k 60Hz.
- ✧ 3x SBS split view with an adjustable center image size from 1/6 to 5/6.
- ✧ 5x1 seamless switching with the continuous output signal. Projectors needn't research input sources.
- ✧ High-end video processing: 10-bit processor, 3:2/2:2 cadence, low angle smooth algorithm.
- ✧ High-quality scaling engine for image scaling up and down in the range from XGA to 8K/4K.
- ✧ 3D motion adaptive de-interlace for interlaced input.
- ✧ 90/180/270 rotation, flip, cropping, scaling & color adjustment in main and sub-windows.
- ✧ Embedded HDMI audio output. Users can select audio from the main or sub-window signal source.
- ✧ OSD menu position can be shifted for convenient OSD operation.
- ✧ 3D decoding and format conversion for passive and active 3D display.
- ✧ Image Freeze by clicking the keypad on the remote controller.
- ✧ Native 1:1 pixel-to-pixel image display with original quality.
- ✧ ESD Protection: ±8kV (Air-gap discharge), ±4kV (Contact discharge)
- ✧ DC power supply: DC adapter: 12V 2A (100V-240V), max. Power consumption: 0.6A (7.2w)
- ✧ Working environment: 40°C, 10-90% RH
- ✧ Control: Front panel keypad, IR remote controller, RS232, USB, Ethernet

- 10 system settings can be stored and backup.
- Dimensions (Body only): 260mm*138mm*41mm, Weight: 0.88kg (body only)
- CE/FCC/RoHS/UKCA/KC Certified
- 30-month Warranty

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