



The absolute opposite of ordinary

G902 2CH UHD Video Wall Controller Datasheet

(Dual CH 8k/2k-in / 4k/60-out)

Input: up to 4096*2400 @60Hz, 7680*2160 @30Hz,

2160*7680 @30Hz, 4:4:4 chroma sampling

Editable Output: up to 4096*2400 @60Hz, RGB 4:4:4

True 10-bit color and up/down scaling

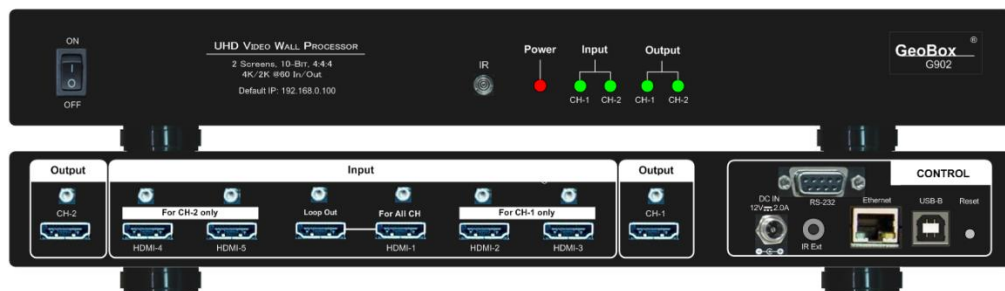
Support HDR 10, BT 2020 signal processing

PIP/POP dual content display

3/4 split view Multi-Viewer

HDMI 2.0 loop out for daisy chain connection

Multi-functions in one box, simple, easy-of-use



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Introduction

G902 is multi-function signal processor with 8k/2k 30Hz, 4k/60Hz input and output. Each box can split signal into two outputs with editable output resolution in each channel and be served as video wall controller to display all-in-one content across entire video wall as well as to display discrete true 4k/60 content in each 4k monitor. It can be serves as multi-viewer to display 3 equal size contents in one monitor at portrait and landscape directions. Multiple units of G900 can be cascaded to build all kind of video wall system.

One G902 has two 4k/60 output channels and 5x HDMI 2.0 input ports. One input port is shared with two channels and each channel has two additional input ports. Input supports up to 4096*2400 @60Hz, 7680*2160 @30Hz with 4:4:4 chroma sampling. One HDMI 2.0 loop out port is to provide daisy chain connection with multiple units to get different configuration.

Programmable output supports up to 4096*2400 or 3120*3120 @60Hz in each channel. The range is from 800-4096 (8 Px/step under 230Mhz, 16 Px/step above 230Mhz) in horizontal and 720-3840 (with 1 pixel/step) in vertical. The maximum resolution is limited to $H * V < 9,830,400$. It supports various input sources and input timings, including non-VESA standard input timings.

It is integrated with 10-bit high end processor, motion adaptive de-interlace, low angle smooth algorithm, 3:2/2:2 pull-down cadence. Programmable EDID enables optimized input timing to get the best video performance.

It can execute color adjustment in Brightness, Contrast, Hue, Saturation, Sharpness, color temperature and discrete RGB gain adjustment. It supports BT 2020 HDR 10 signal processing to get full 4k color gamut. User can select deep color mode with true 10-bit color output to get smooth gradient color.

Video wall function in G902 can crop specific location & resolution in source image for each output. Overlap function allows user to change image position, aspect ratio and cropping area up to +_1800 pixels in each edge. User can adjust aspect ratio and image position freely. Independent image 90/180/270 degrees flip and rotation is also available in each channel. User can build creative video wall with any LCD array at landscape and portrait directions.

PIP (picture in picture) and POP (side by side or top/bottom) is standard functions in each output channel. PIP image can be from 4k/60 source with image size from 320*180 up to 1920x1200. It can be located at any location in one monitor. PIP/POP across entire video wall is possible through input the same sub-image source to related channels. Main and PIP images are swappable. Both PIP and POP are functional while main image is at 90/180/270 degrees flip and rotation. Sub-image can be rotated and flipped independently. The cropping range and position in both main and sub-image are adjustable. Maximum display windows can be displayed in one G902 is four.

G902 can serve as multi-viewer to display up to 4 images in one UHD monitor (3 split views + one PIP) at portrait or landscape directions

User can use IR controller, USB, Web Gui and Ethernet for system operation and setup. It is designed to work in 7/24 working environment and provides easy configuration, low entry barrier, cost effective, reliable and flexible solution.

Specifications

- ✧ Input & output: 5x HDMI 2.0b input ports, 2x HDMI 2.0b output ports and 1x HDMI 2.0b loop port for daisy chain connection.
- ✧ Each channel will share one input port with another channel and has 2x additional HDMI 2.0b input ports for independent display, including PIP/POP.
- ✧ Each output channel can display discrete true 4k pixel to pixel content in each monitor.
- ✧ Max. input: 4096*2400 @60fps or 7680*2160 @30fps in HDMI.
- ✧ Supports interleaved and progressive input signals with 4:4:4 10-bit color.
- ✧ Support High Dynamic Range (HDR): SMPTE ST-2084, SMPTE ST-2086 and BT.2020 HDR 10 input signal processing.
- ✧ Support non-VESA standard input timings.
- ✧ Editable Output: 1x HDMI 2.0b up to 4096*2400 @60fps or 2400*4096 @60fps, 4:4:4 10-bits, progressive RGB. The output range is from 800-4096 in horizontal (with 16 pixels/step) and 720-4096 (8 Px/step under 230Mhz, 16 Px/step above 230Mhz) in vertical directions (maximum resolution is H * V < 9,830,400).
- ✧ Preset 16 output timing modes with 8-bit/10-bit color and 30/50/60Hz selectable refresh rate, including frame rate conversion.
- ✧ HDCP: V2.2/V1.4 in HDMI.
- ✧ Embedded video wall function for image split, cropping, location assignment and position adjustment.
- ✧ OSD menu position can be shifted for convenient OSD operation.
- ✧ Multi-viewer with 4 types of 3 split views on one UHD monitor at landscape or portrait.
- ✧ Flexible aspect ratio adjustment in each edge up to +_ 1800 pixels.
- ✧ Each channel has independent PIP/POP function with PIP image size from 320*180 up to 1920*1200 resolution with flexible position, rotation/flip and cropping range adjustment.
- ✧ Frame lock for multiple unit synchronization.
- ✧ 10-bit processor, 3:2/2:2 cadence, low angle smooth algorithm and 3D motion adaptive de-interlace.
- ✧ High quality scaling engine for image scaling up and down among XGA to UHD
- ✧ Support xvYCC color processing & 8/10/12-bit deep color input signal.
- ✧ Individual 90/180/270 rotation, flip, cropping, scaling & color adjustment up to 4k/60 input in main & PIP/POP-image.
- ✧ Embedded HDMI audio output.
- ✧ Selectable and programmable EDID
- ✧ ESD Protection: ±8kV (Air-gap discharge), ±4kV (Contact discharge)
- ✧ DC power supply: DC adapter: 12V 3A (100V-240V)
- ✧ Max. Power consumption: 18w
- ✧ Working environment: 45° C, 10-90% RH
- ✧ Control: IR, RS232, USB, Ethernet
- ✧ System settings can be stored and backup.
- ✧ Dimensions: 330mm*162mm*40mm
- ✧ Weight: 1.49kg
- ✧ CE/FCC/RoHS/Green Certified
- ✧ 2 Year Warranty, extension package is available up to 5 years.

Function and features:

A. Input and output ports

1. One common HDMI 2.0b input & two individual HDMI 2.0b inputs specific for each output channel.
 - Support 4096*2400 @60Hz, 7680*2160 @30Hz input resolution with 4:4:4 chroma sampling.
 - Connect with various video sources and support none VESA standard input resolution up to 120Hz.
2. 2x HDMI 2.0b outputs with editable output resolution: The range is from 800-4096 (8 Px/step under 230Mhz, 16 Px/step above 230Mhz) in horizontal and 720-3840 (1 pixel/step) in vertical directions (maximum resolution is $H * V < 9,830,400$).
3. Preset output resolutions: 1024*768, 1280*720, 1280*800, 1280*1024, 1360*768, 1400*1050, 1600*1200, 1920*1080 (50/60Hz), 1920*1200 (30/60Hz), 2560*1440, 3200*1800, 3840*2160 (50/60Hz), 3840*2400 @60.
4. One HDMI 2.0b loop out port for raw signal source daisy chain connection.
5. All outputs are RGB 4:4:4 progressive signals.
6. Selectable 8-bit/10-bit Deep Color mode for each output port.
7. Automatically detect HDR BT. 2020 input signal and processing.

B. High end 10-bit video processor

1. 10-bit high end processor for resolution scaling up and scaling down with 3D motion adaptive de-interlace, low angle smooth algorithm and 3:2/2:2 film mode detect and recovery function.
2. Complete color adjustment function, including brightness, contrast, hue, saturation, preset color mode, and independent RGB color adjustment.

C. PIP/POP in each output channel

1. [PIP]: Picture in Picture display with any two inputs in each channel.
2. [SBS]: Side by Side display with monitor at landscape position.
3. [Top/Bottom]: Top/Bottom display with monitor at portrait position.
4. [SBS 2/1]: 2/3:1/3 side by side display with monitor at landscape position
5. [POP3]: One image at LH side and top/bottom two images at RH side in landscape monitor.
6. [POP4]: One image at Top and two images at bottom in landscape monitor.
7. [3X SBS]: Three split views at landscape
8. [3X T/B]: Three split views at portrait.
9. [4x Split]: is not available in G902 due to only 3 inputs in each channel but user can use [4x Split] + [PIP] to achieve the same result.
10. [4x T/B]: One big image at the top and 3 small images at the bottom. User can implement the same result through one [3x SBS] + one [SBS 2/1] or one [4x T/B] + one [PIP].
11. PIP (picture in picture): with flexible PIP size (320*180 to 1920*1200), location and aspect ratio.
12. All the other PIP/POP functions can support monitor at portrait and landscape position. PIP/POP images also support 90/180/270 degrees rotation and flip up to 4k/2k 60Hz.

13. Except preset 3 split views, cropping function is available in PIP and POP image for further location, size and aspect ratio adjustment as well as creating image borders with black or blue color.
14. All the inputs for main and sub-images can be up to 4k/2k 60Hz 4:4:4 signals.

D. Video wall function

1. Serve as video wall controller for irregular video wall with LCD at landscape or portrait position.
2. One G902 can control up to 4 monitors with unlimited cascaded with multiple units.
3. Split the image up to 15x15 sections from single signal source in H&V directions. Assign split image for specific monitor. Each output can be further adjustment with +_ 1800 pixels in H&V for image position shift, aspect ratio adjustment, bezel compensation, creative video wall and creating overlap region for projector edge blending.
4. Flexible image aspect ratio and display image position adjustment.

E. Various color adjustment

1. Independent R.G.B color gain adjustment.
2. Preset color temperature: Standard, Reddish, Bluish
3. Brightness, contrast, Hue, saturation and sharpness adjustment.

F. Image rotation and flip

1. Image 90/180/270 degrees rotation up to 4k/60Hz input resolution.
2. Image flip in Front/Rear, Left/Right and Top/Bottom directions.
3. PIP/POP main and sub-image can be rotated independently.

G. System control and other features

1. Professional design and reliable for 7/24 working environment.
2. Full function system setup through remote controller, USB, WebGui or Ethernet (Including through WiFi by PC, Mobile or iPad).
3. Firmware update via USB or Ethernet.
4. PC tool can control multiple processors simultaneously through USB or Ethernet.
5. RS232 & Ethernet system control compatible with most control systems.
6. User can select blue or black background color when no input signal is detected.
7. Programmable EDID in the range at H=1024~4080, V=720~3840. It supports customized input resolution up to 7680*2160 @30Hz.
8. BOX ID and programmable IP address for convenient multiple unit control at the same time.
9. User can save up to 5 settings and can be recalled by remote controller, RS232, USB or network.
10. System settings can be backup in the box, PC or copied to another unit.
11. Automatic power ON/OFF through input signal control. While no input signal is detected, it will shut down output automatically. User can power ON/OFF the system through the control from signal source.

Applications

- 4k/2k video wall with ability to display discrete 4k content in each monitor.
- Front end processor for multiple projector application and LED wall.
- Image rotation processor for display system.
- The most powerful PIP/POP function for big display system with flexibility to change angle, position and aspect ratio.
- Interface to accept non-VESA standard timings from various input timing up to 8k/2k.
- High quality 3D motion de-interlace for interlaced signal to get the best video quality.
- High quality video up/down scaler with selectable output timings.
- Frame rate conversion to avoid frame repeat or frame loss to keep smooth image.
- True 10-bit processor to keep smooth gradient color.
- 4k creative video wall with ability to display all-in-one image or discrete 4k image in each monitor.
- Cropping specific image area for selectable output resolution for LED display application.
- Multi-viewer: 3 split views in one UHD monitor at portrait or landscape directions.

Features Description

4k video wall

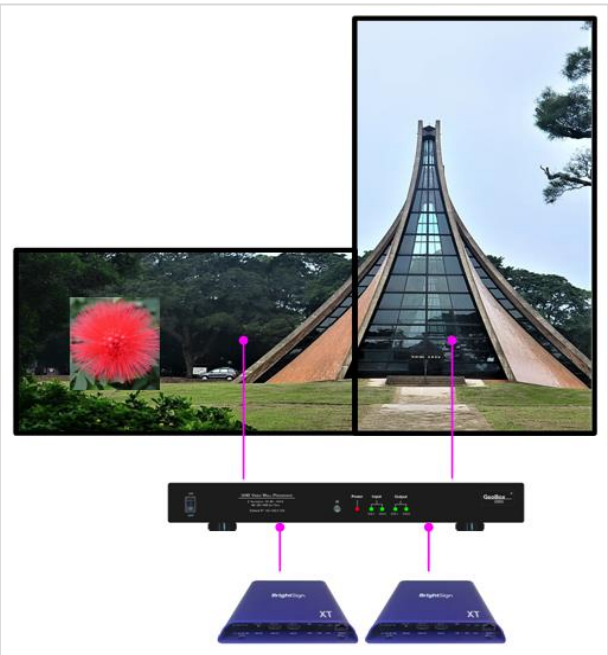
4k video wall



Independent true 4k/60 content in each 4k monitor



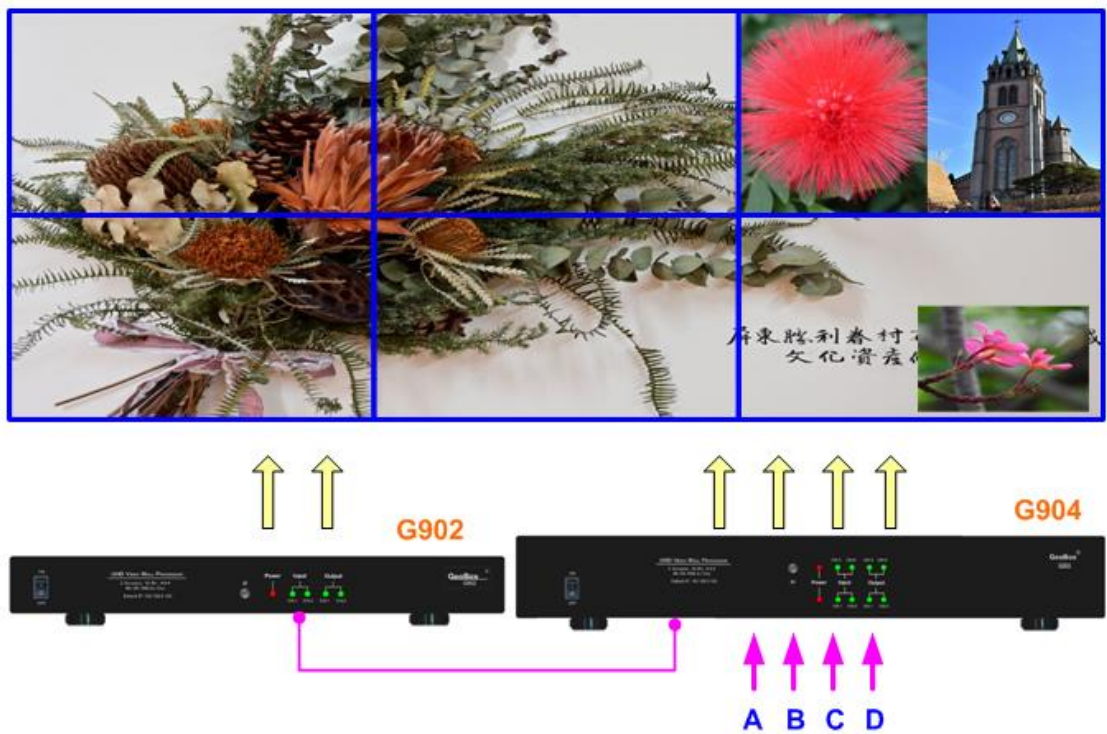
Video wall with PIP



Each monitor displays different PIP images



G902 cascaded with G904 to build 6x monitor video wall with PIP/POP



Two G902 to build creative video wall



Front end processor for edge blending system



- 3x 4k contents are connected to G902
- CH1 executes PIP then output to CH2.
- CH2 executes another PIP then output to M802
- M802 executes edge blending with dual PIP images
- All signals can be 4k/2k @60Hz 4:4:4
- User can display two side by side images across entire screen as well.



- 16:9 image can be displayed in the center of edge blending system.
- Flexible aspect ratio adjustment is available.



- 3x 4k contents are connected to G902
- CH1 or CH2 executes another [3x SBS] then output to G802
- G802 executes edge blending to get 3x equal size images
- If necessary, user can adjust aspect ratio.
- All signals can be 4k/2k @60Hz 4:4:4

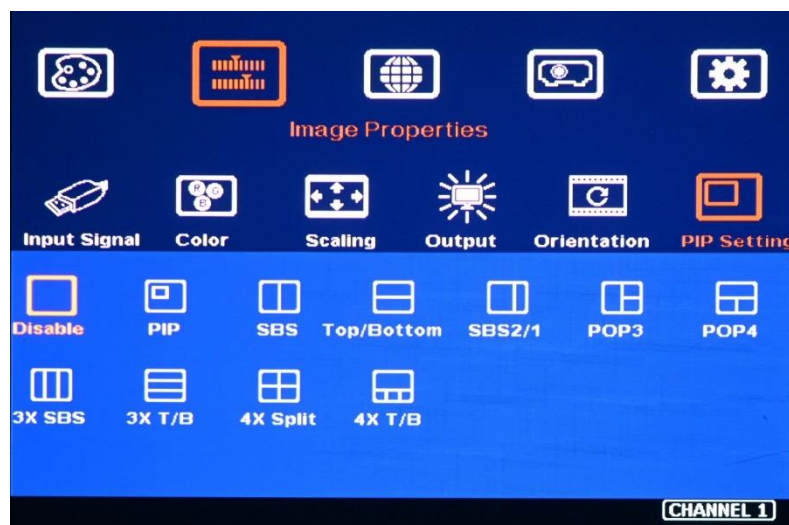


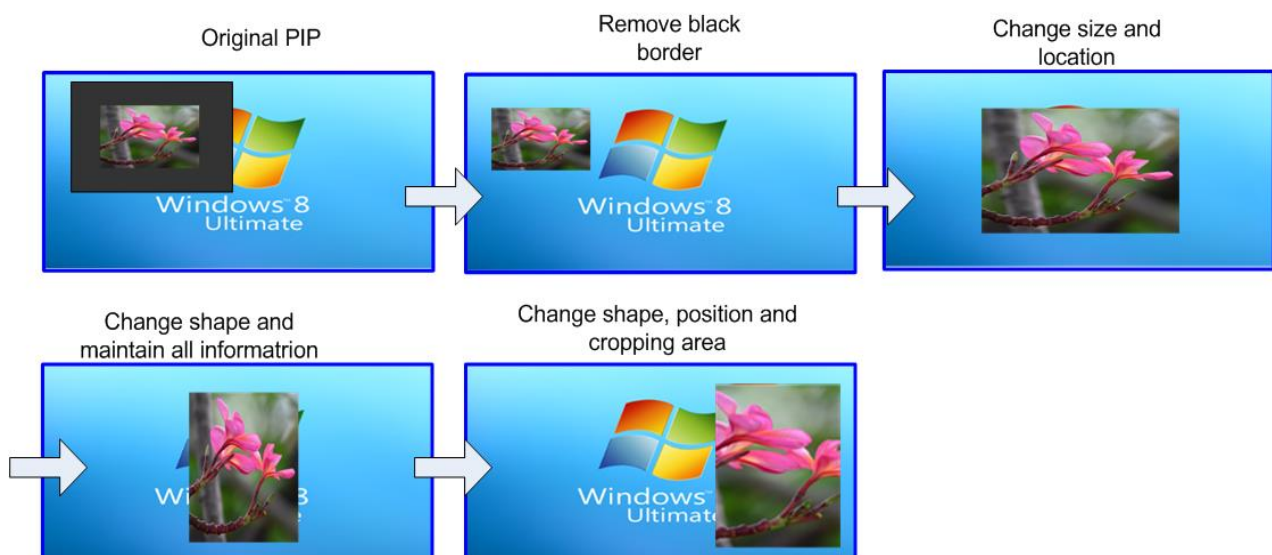
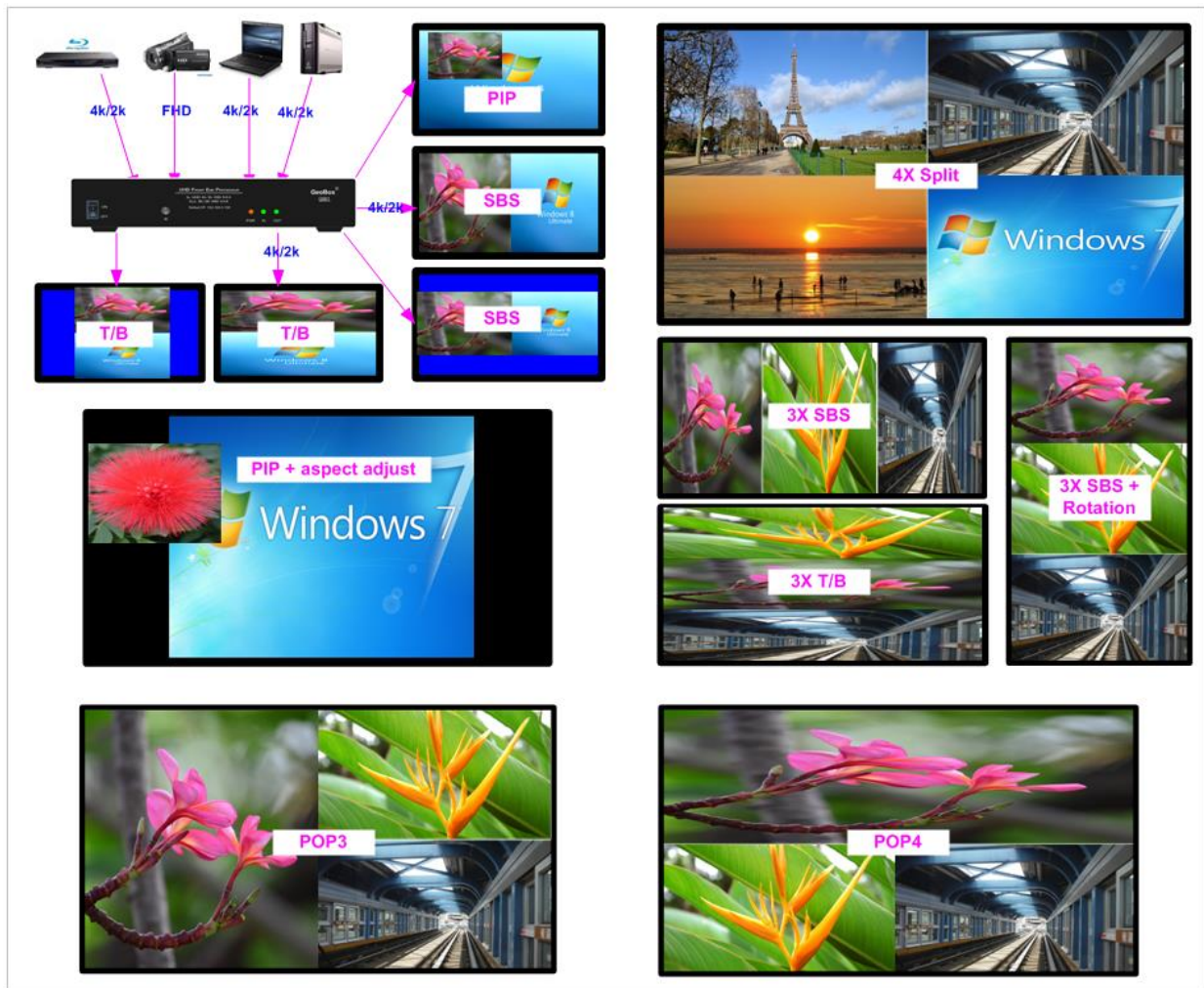
G902 can split 8k/2k image for two 4k/2k projectors and set overlap pixels for projector to do edge blending. **The projectors need to have geometry alignment and edge blending function.** No PC is required for the setup.

PIP/POP function

PIP/POP main menu

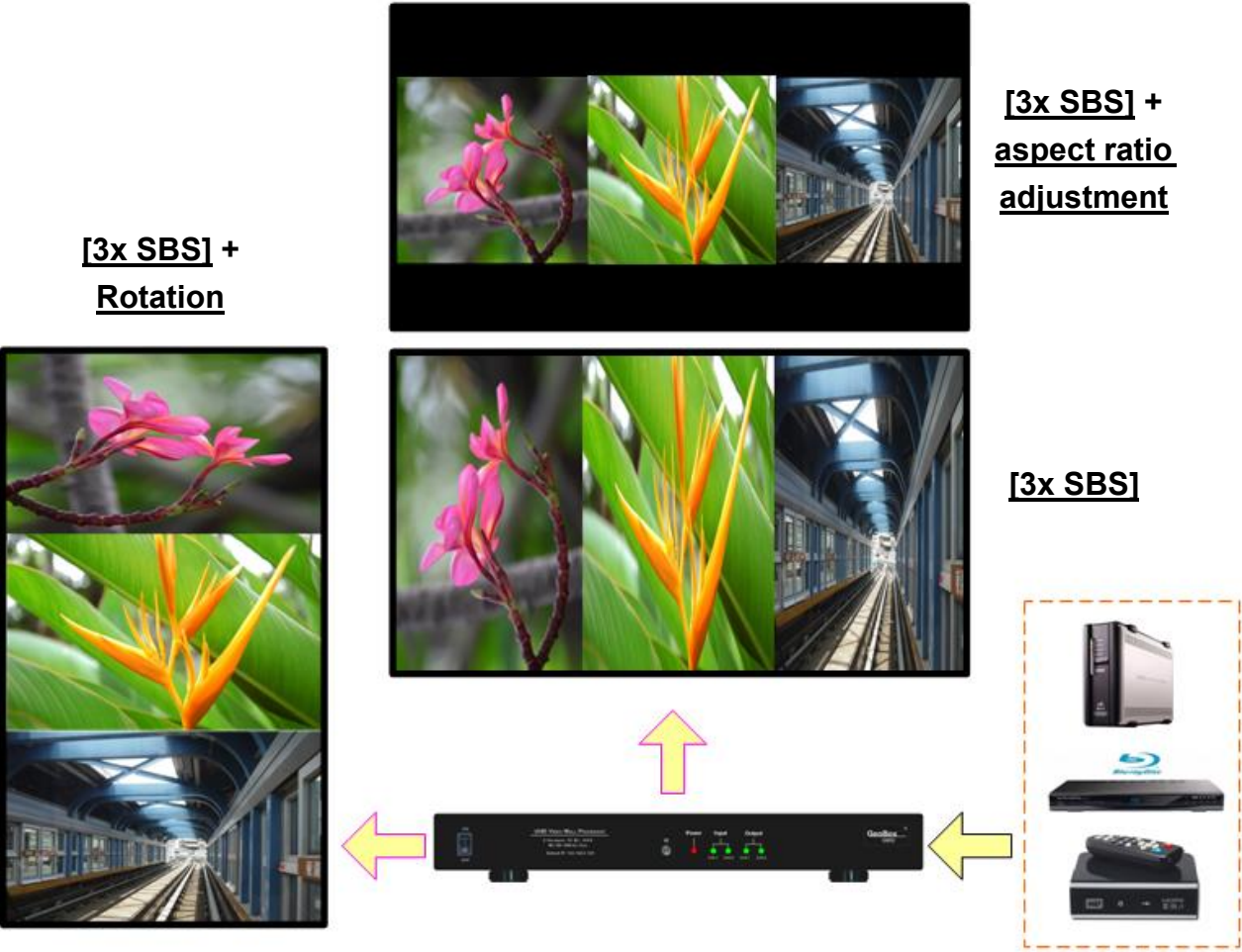
- [Disable]: Disable PIP/POP display.
 - [PIP]: Picture in Picture display with any two inputs in each channel.
 - [SBS]: Side by Side display with monitor at landscape position.
 - [Top/Bottom]: Top/Bottom display with monitor at portrait position.
 - [SBS 2/1]: 2/3:1/3 side by side display with monitor at landscape position
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 - [4x T/B]: One big image at the top and 3 small images at the bottom. User can implement the same result through one [3x SBS] + one [SBS 2/1] or one [4x T/B] + one [PIP].
1. G902 is designed with PIP/POP function. The PIP image can be with variable size from 320*180 to 1920*1200 resolution. Image position and aspect ratio in both main and PIP images is adjustable.
 2. All the other PIP/POP functions can support monitor at portrait and landscape position. PIP/POP images also support 90/180/270 degrees rotation and flip up to 4k/2k 60Hz.
 3. Except preset 3 split views, cropping function is available in PIP and POP image for further location, size and aspect ratio adjustment as well as creating image borders with black or blue color.
 4. All the inputs for main and sub-images can be up to 4k/2k 60Hz 4:4:4 signals.





Multi-viewer: 3 split view in one monitor

3 contents can be equally displayed on one monitor at landscape or portrait location through POP3 setting. The aspect ratio can be also adjusted based on requirements.



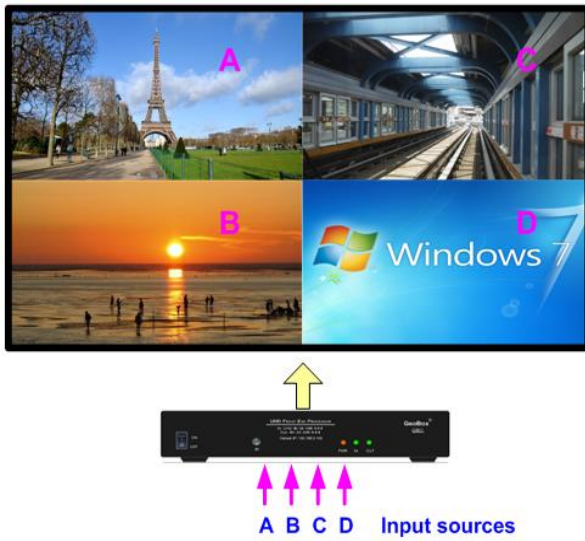
3 Split Views [POP3]



3 Split views [POP4]



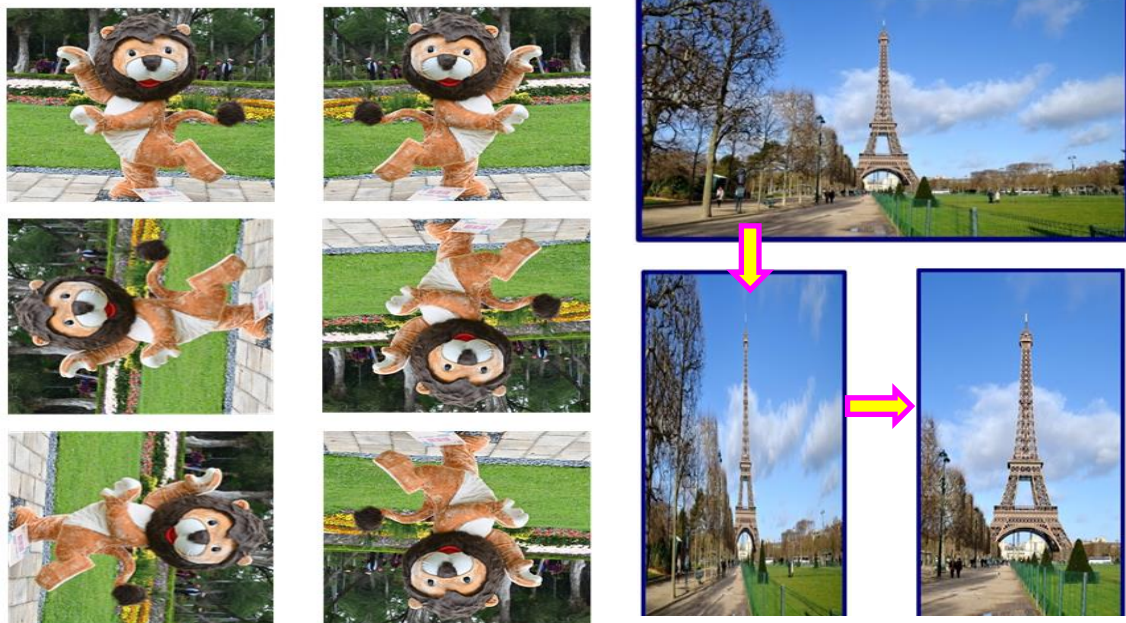
[4x Split] & [4x T/B]



- Due to input port limitation, user needs to use two channels to achieve 4 Split view function. User can apply [4x Split] or [4x T/B] + one [PIP] to get the same result.
- User can use single channel processor G901 to achieve the above [4x Split] and [4x T/B] functions.

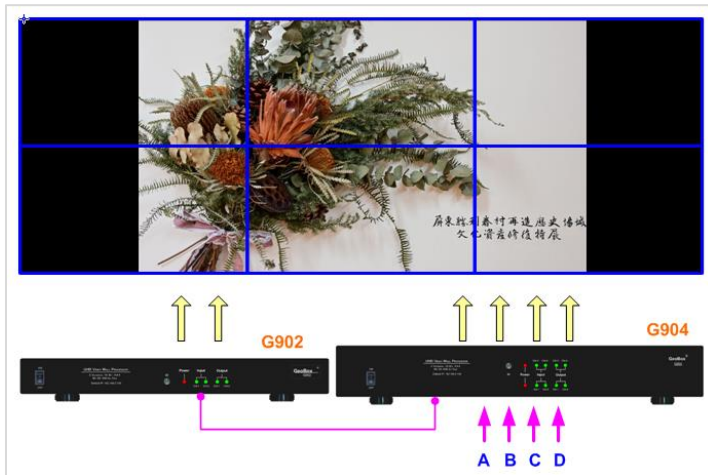
Image Flip & Rotation in main and PIP/POP (Sub-images)

Image 90/180/270 degrees rotation and flip up to 4k/60Hz resolution in both main and sub-images independently. After image rotation or flip, user can also adjust the aspect ratio and cropping area.



Stretch image and change aspect ratio in main and PIP/POP (Sub-images)

Overlap function can change image size, shift image position or change aspect ratio. The adjusting range is up to +_1800 pixels in each edge based on signal source. It can be applied to main and PIP/POP (sub-image) independently. Background color can be black or blue.



- Maintain 16:9 aspect ratio in main windows
- To add PIP/POP sub-image to each monitor is possible.
- Aspect ratio adjustment can be applied to main and sub-image independently pixel by pixel.

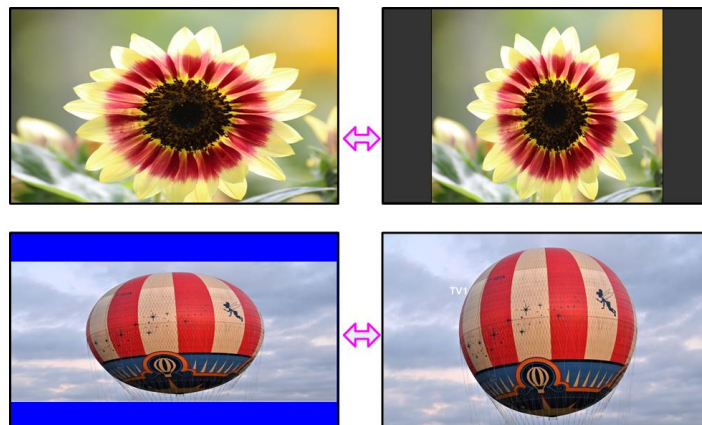
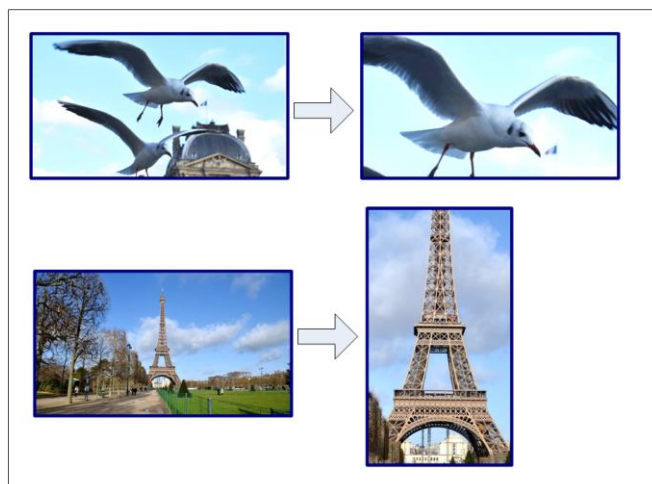


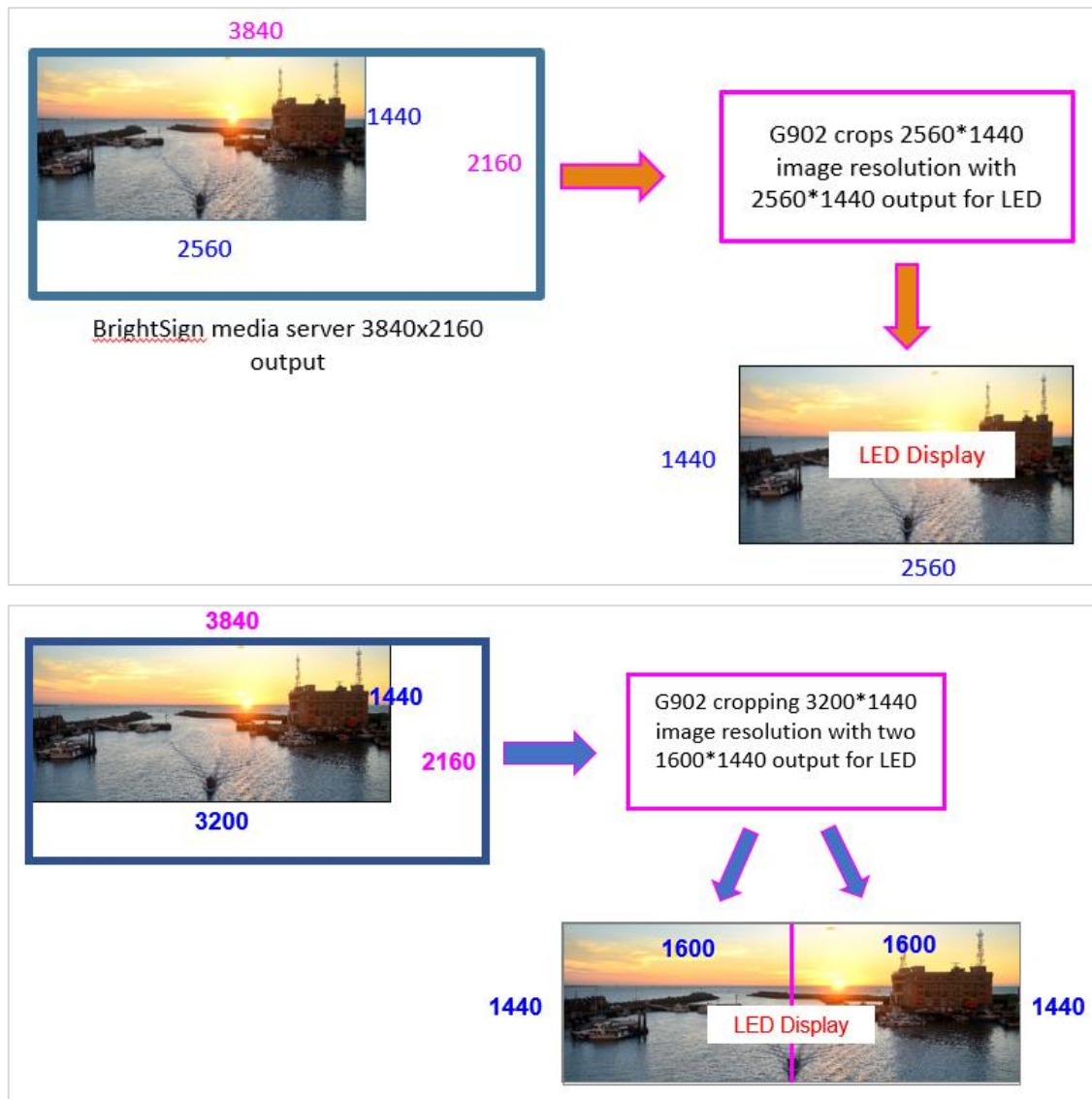
Image Cropping in main and PIP/POP (Sub-images)



Crop & Rotate

- Image cropping at any location in both main and PIP/POP (sub-image) independently.
- Image cropping function can co-exist with image rotation and flip functions.

Crop image for LED display with 10-bits and HDR



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