

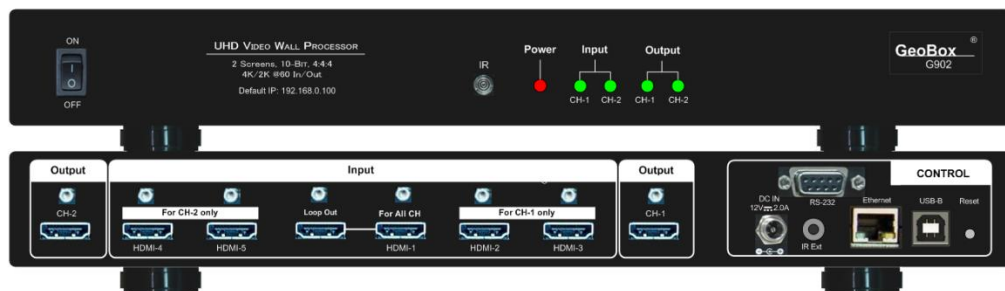


The absolute opposite of ordinary

G902 UHD Video Wall Controller Datasheet

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

***Input: up to 4096*2160 @60Hz, 7680*2160 @30Hz,
7680*1200 @60Hz in HDMI2.0b, 4:4:4 chroma sampling
Programmable Output resolution: up to 4096*2267/60Hz
or 7680*1234/60Hz, HDMI2.0, RGB 4:4:4
Selectable output refresh rate: 24/30/50/60/100/120Hz
Support HDR 10, BT 2020 signal processing
PIP/POP & 3/4 split view MultiViewer
3D format conversion***



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Introduction

The G902 is a multi-function signal processor supporting 8K/2K 30Hz and 4K/60Hz input and output. Each unit can split signals into two outputs with programmable resolutions for each channel. It can function as a video wall controller, displaying all-in-one content across an entire video wall or discrete true 4K/60 content on each 4K monitor. It also serves as a multi-viewer to display 3-split or 4-split view content on one monitor. Multiple G902 units can be cascaded to build various video wall systems.

The G902 features two 4K/60 output channels and five HDMI 2.0 input ports. One input port is shared between two channels, with each channel having two independent input ports. It supports input resolutions up to 4096x2160 @60Hz and 7680x2160 @30Hz with 4:4:4 chroma sampling. An HDMI 2.0 loop-out port provides daisy chain connections for multiple units to achieve different configurations.

The programmable output range is from 640 to 7680 pixels horizontally and from 480 to 3840 pixels vertically. It supports up to 4096x2267 @60Hz or 7680x1234 @60Hz per channel. The maximum pixel clock is limited to 600 MHz, and the output refresh rate is selectable from 24/30/50/60/100/120Hz. It supports various input sources and timings, including non-VESA standard timings.

The G902 integrates a 10-bit high-end processor with motion adaptive de-interlace, low angle smooth algorithm, and 3:2/2:2 pull-down cadence. Its programmable EDID ensures optimized input timing for the best video performance.

The G902 can execute color adjustments in brightness, contrast, hue, saturation, sharpness, color temperature, and discrete RGB gain adjustment. It automatically detects and processes HDR BT.2020 input signals, outputting them as full-color 4:4:4 RGB SDR signals. Users can select deep color mode for true 10-bit color output, achieving smooth gradient color.

The video wall function in the G902 allows for cropping specific locations and resolutions in the source image for each output. The overlap function lets users change image position, aspect ratio, and cropping area by up to ± 1800 pixels on each edge. Users can freely adjust the aspect ratio and image position, and each channel supports independent image flip and rotation at 90, 180, and 270 degrees. This enables users to build UHD video walls with any LCD array in landscape or portrait orientation.

PIP (picture in picture) and POP (side-by-side or top/bottom) are standard functions in each output channel. The embedded 3-split view MultiViewer function allows for displaying content, while 4-split views can be implemented through dual channels. Both main and sub-images can be flipped and rotated at 90, 180, and 270 degrees, with quick seamless swap capability. The cropping range and position in both the main and sub-images are adjustable, with a maximum of five display windows on the video wall with two monitors.

The G902 integrates a 3D function, capable of converting 3D formats (such as line interleaved, frame packed, and discrete dual camera) into side-by-side, top/bottom, RH/LH Line Alternative and frame sequential 3D output formats. It can also decode all 3D signals into discrete RH or LH for passive displays.

Users can operate and set up the G902 using an IR controller, USB, Web GUI, or Ethernet. Up to 10 custom settings can be saved and recalled. Designed for 24/7 operation, the G902 offers easy configuration, low entry barriers, cost-effectiveness, reliability, and flexibility.

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.
- ✧ One common input port with Loop out function shares the input signal for two output channels at the same time.
- ✧ Each channel has two other independent input ports. These input ports only provide signals for individual channel.
- ✧ Loop out port is raw signal from common input port. It can be daisy chain up to 10 processing modules without HDMI splitter to build big scale display system up to 20 monitors.
- ✧ Max. input: 4096*2160 @60Hz, 7680*2160 @30Hz or 2160*7680 @30Hz (up to 600MHz).
- ✧ Supports interleaved and progressive input signals with 4:4:4 10-bit color under 600 MHz.
- ✧ 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.
- ✧ Preset 17 output timing modes with selectable 8-bit/10-bit color and HDCP control settings.
- ✧ Programmable output range is from 640-7680 in horizontal (with 8 Px/step under 230Mhz, 16 Px/step above 230MHz) and 480-3840 in vertical (with 1 pixel/step). Max. programmable Output: up to 4096*2267 @60Hz or 7680*1234 @60Hz (maximum pixel clock < 600MHz).
- ✧ Selectable refresh rate: 24/30/50/60/100/120
- ✧ Output signal: SDR, progressive full color RGB, 4:4:4, 8/10-bits under 600MHz.
- ✧ HDCP: V2.2/V1.4 in HDMI.
- ✧ Embedded video wall function for image split, cropping, location assignment, position adjustment and precise bezel compensation.
- ✧ Decode 3D signal for passive 3D display and convert 3D format into side by side, Top/Bottom Line Alternative or frame sequential output.
- ✧ One frame latency: 16.6ms (V=60Hz)
- ✧ OSD menu position can be shifted for convenient OSD operation.
- ✧ Programmable EDID in the range at H= 1024-4080 (8 pix/step), V= 720-3840 (1 pix/step).
- ✧ 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 area adjustment.
- ✧ Display 4 types of 3 split views on one UHD monitor.
- ✧ Display 4 split views for one UHD monitor.
- ✧ PIP main and sub-window can be quick swap under FHD in/out with full screen display.
- ✧ Individual color adjustment in main and sub-images.
- ✧ Native 1:1 pixel to pixel image display with original quality.
- ✧ Image Freeze by click keypad on IR controller.
- ✧ 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 SVGA to UHD
- ✧ Support xvYCC 8/10/12-bit wide color gamut input signal processing.
- ✧ Individual 90/180/270 rotation, flip, cropping, scaling & color adjustment up to 4k/60 input in main & PIP/POP-image.
- ✧ Embedded HDMI audio output. While implement PIP/POP, user can select audio from main or sub-image.
- ✧ 10 system settings can be stored and backup.
- ✧ ESD Protection: ±15kV (Air-gap discharge), ±8kV (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
- ✧ 10 system settings can be stored and backup.
- ✧ Dimensions: 330mm*162mm*40mm
- ✧ Weight: 1.45kg
- ✧ CE/FCC/RoHS/UKCA/KC Certified
- ✧ 2 Year Warranty, extension package is available up to 5 years.

Function and features:

A. Input and output

- One common HDMI 2.0b input & two individual HDMI 2.0b inputs specific for each output channel.
 - Support 4096*2160 @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 and 600 MHz.
- 2x HDMI 2.0 outputs with editable output resolution: The range is from 640-7680 (8 Px/step under 230Mhz, 16 Px/step above 230Mhz) in horizontal and 480-3840 (1 pixel/step) in vertical directions (maximum pixel rate is 600 MHz). Max. output: 4096*2267/60, 7680*1234/60Hz (Max. 600 MHz).
- 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.
- All outputs are RGB 4:4:4 progressive signals.
- Selectable output refresh rate: 24/30/50/60/100/120 Hz.
- Support selectable 8-bit/10-bit Deep Color output mode.
- Automatically detect HDR BT. 2020 input signal and processing with full color SDR RGB 4:4:4 output.
- One HDMI 2.0 loop output port for daisy chain connection to build big system with multiple units.

B. High end 10-bit video processor

- High end 10-bit scaling engine for image scaling up and down in the range from XGA to 8K/4K.
- Processor with 3D motion adaptive de-interlace, low angle smooth algorithm and 3:2/2:2 film mode detect and recovery function.
- Complete color adjustment function, including brightness, contrast, hue, saturation, preset color mode, and independent RGB color adjustment.

C. PIP/POP with MultiViewer function

- [PIP]: Picture in Picture display with any two inputs in each channel.
- [SBS]: Horizontal Side by Side display.
- [Top/Bottom]: Top/Bottom display.
- [SBS 2/1]: 2/3:1/3 side by side display with monitor at landscape position
- [POP3]: One image at LH side and top/bottom two images at RH side in landscape monitor.
- [POP4]: One image at Top and two images at bottom in landscape monitor.
- [3X SBS]: 3 split views at landscape. The center image is adjustable from 1/6 to 5/6 horizontal size.
- [3X T/B]: Three split views at portrait direction.
- [4x Split]: is not available in G904 due to only 3 inputs in each channel but this function can be implemented through 2 channels: one [4x Split] + one PIP.
- [4x T/B]: One big image at the top and 3 small images at the bottom. User can implement through two

channels: One [4x T/B] + one PIP

- PIP (picture in picture): with flexible PIP size (320*180 to 1920*1200), location and aspect ratio.
- PIP main and sub-window can be seamless quick swap under FHD in/out with full screen display.
- Except [4x Split] & [4x T/B], 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.
- Cropping function is available in main and sub-images for further location, size and aspect ratio adjustment as well as creating image borders with black or blue color.
- Color individual adjustment in main and sub-images.
- All the inputs for main and sub-images can be up to 4k/2k 60Hz 4:4:4 signals.

D. Video wall function

- Serve as irregular video wall controller with LCD at landscape or portrait position.
- One G902 can control up to 2 monitors with unlimited cascaded with multiple units.
- 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.
- Flexible image aspect ratio and display image position adjustment.

E. Various color adjustment

- Independent R.G.B color gain adjustment.
- Preset color temperature: Standard, Reddish, Bluish
- Brightness, contrast, Hue, saturation and sharpness adjustment.
- Color adjustment can be applied to both main and sub-images

F. Image rotation and flip

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

G. 3D function

- Support Side by Side, Top/Bottom, Line interleaved, Frame sequential and frame packed 3D signal decoding and format conversion.
- Convert 3D signal into separate RH/LH eye frame, Side by Side, Top/Bottom, RH/LH Line Alternative or frame sequential output formats for active 3D display.
- Decode 3D formats into RH/LH for passive 3D display.

H. Native 1:1 pixel to pixel image display mode

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

- [Full screen]: to display the content with full screen.
- [Original AR]: to display content with original aspect ratio
- [1:1]: to display native pixel to pixel image at the center of the screen.
- Further cropping and aspect ratio adjustment is still available.

I. Image freeze

User can use remote controller [Shift] hotkey to freeze video image.

J. Quick PIP ON/OFF and two inputs seamless swap

- User can use remote controller [CH A/B] hotkey to turn ON/OFF PIP image.
- If the output resolution is set to FHD or 1920x1200, user can assign one input signal to main and another signal to PIP channel and execute quick input seamless swap through this function.

K. System control and other features

- Professional design and reliable for 7/24 working environment.
- Full function system setup through remote controller, USB, WebGui or Ethernet (Including through WiFi by PC, Mobile or iPad).
- Firmware update via USB or Ethernet.
- User can select main or sub-image audio while implement PIP/POP.
- OSD menu position can be shifted for convenient OSD operation.
- PC tool can control multiple processors simultaneously through USB or Ethernet.
- RS232 & Ethernet system control compatible with most of control system.
- Programmable EDID in the range at H=1024~4080, V=720~3840.
- BOX ID and programmable IP address for convenient multiple unit control at the same time.
- User can save up to 10 settings and can be recalled by remote controller, RS232, USB or network.
- System settings can be backup in PC and copied to another unit.
- Automatic power ON/OFF through input signal control.

Applications

- 8k/2k video wall with ability to display discrete 4k content in each monitor.
- Multi-viewer: 3 split views & 4 split views for one UHD monitor.
- Cropping specific image area for selectable output resolution & refresh rate.
- 3D format conversion and 3D decoding for passive 3D display.
- Split image and set overlap pixels for 4k projector edge blending system.

Features Description

A. PIP/POP function and MultiViewer functions

PIP/POP main menu

- [PIP]: Picture in Picture display with any two inputs in each channel.
- [SBS]: Horizontal Side by Side display.
- [Top/Bottom]: Top/Bottom display.
- [SBS 2/1]: 2/3:1/3 side by side display with monitor at landscape position
- [POP3]: One image at LH side and top/bottom two images at RH side in landscape monitor.
- [POP4]: One image at Top and two images at bottom in landscape monitor.
- [3X SBS]: Three split views at landscape. The center image size is adjustable.
- [3X T/B]: Three split views at portrait.
- [4x Split]: is not available in G902 due to only 3 inputs in each channel but this function can be implemented through 2 channels: one [4x Split] + one PIP.
- [4x T/B]: One big image at the top and 3 small images at the bottom. User can implement through two channels: One [4x T/B] + one PIP

OSD menu



GCT PC Tool

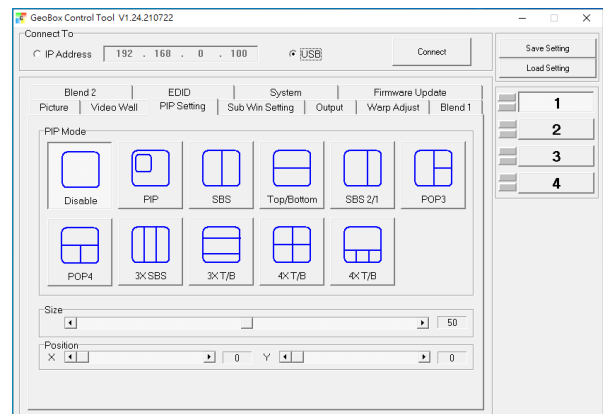
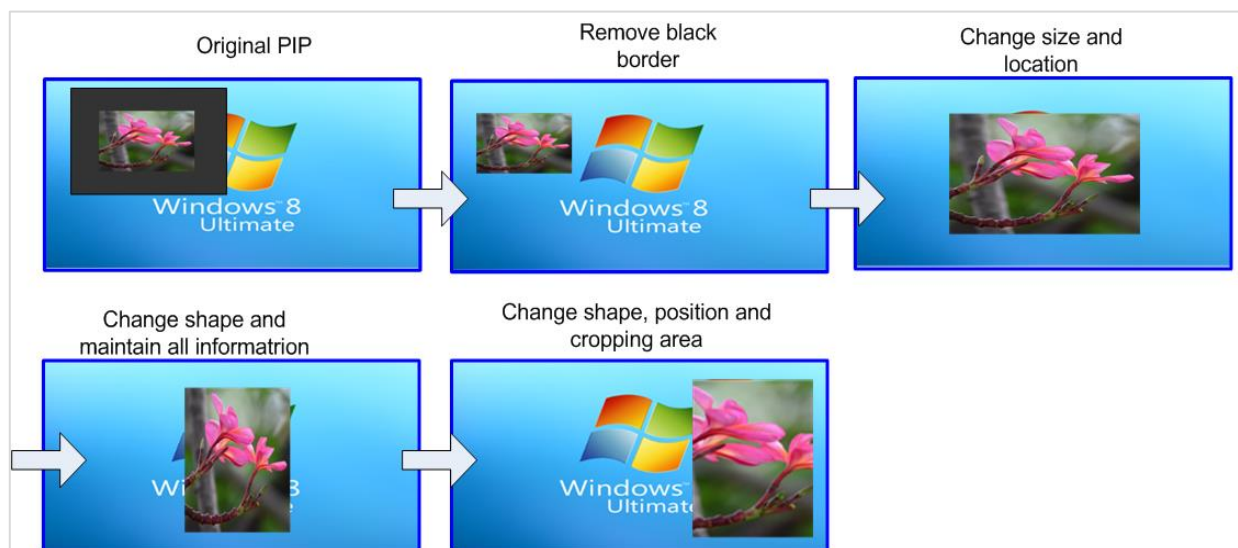




Image cropping in main and sub-images

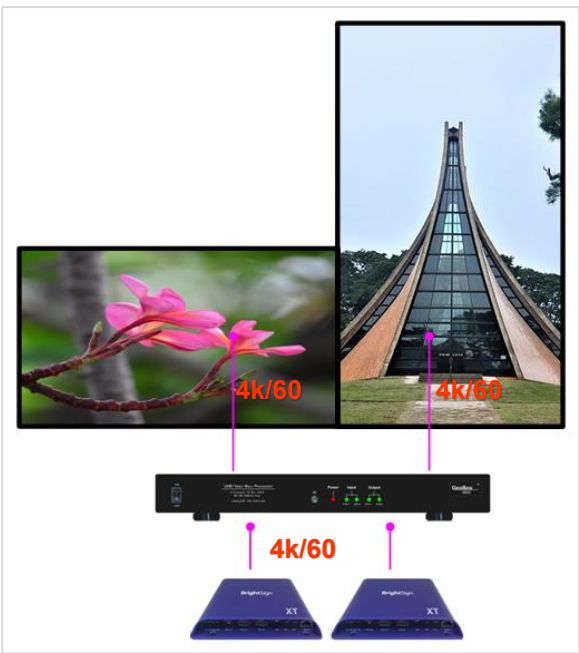


B. 4k video wall

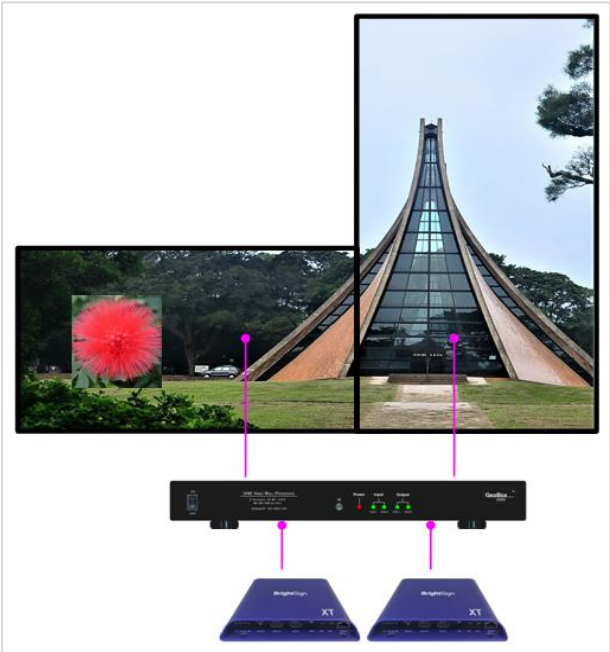
4k video wall



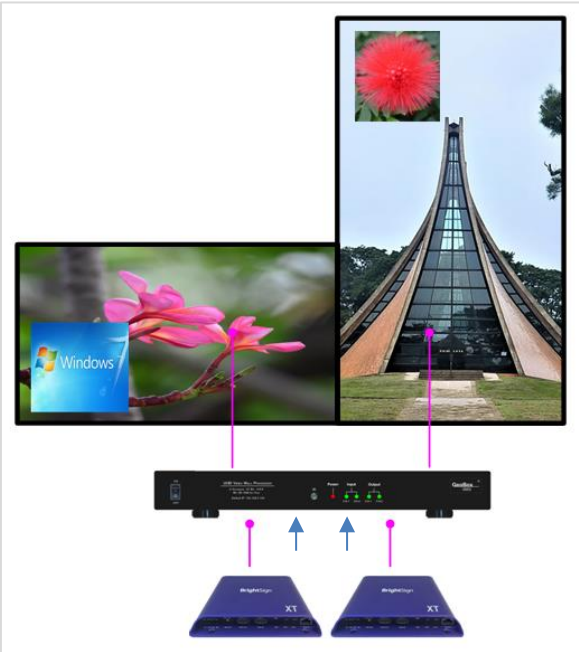
Independent true 4k/60 content in each 4k monitor



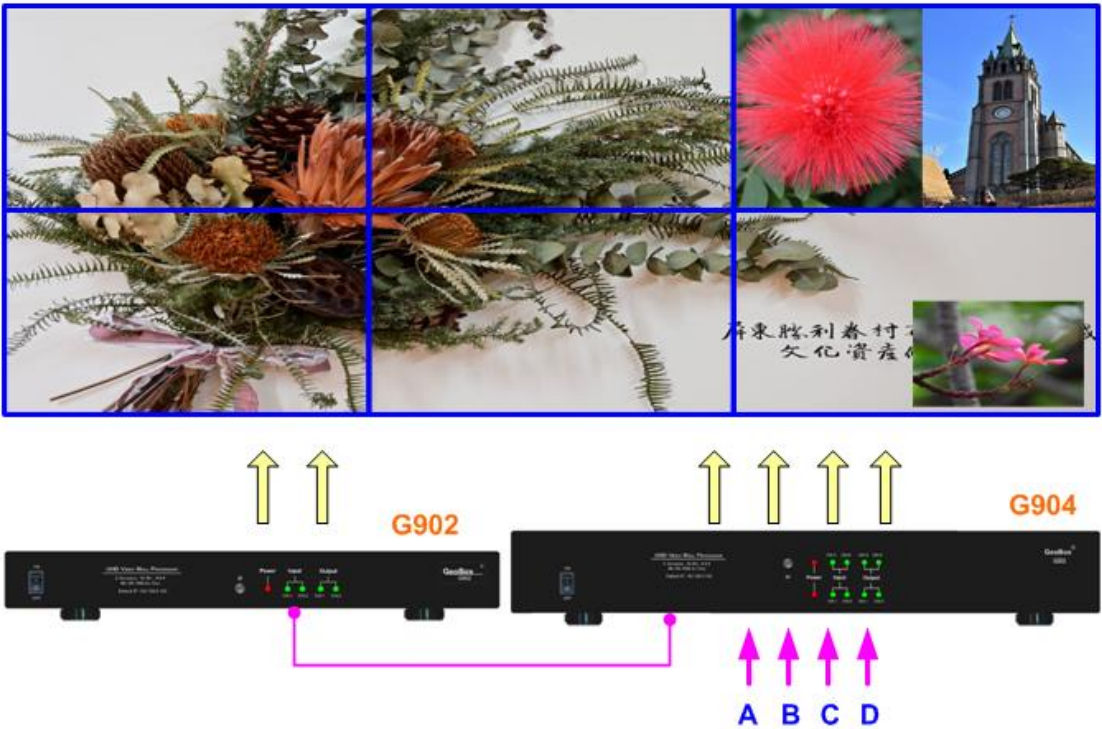
Video wall with PIP



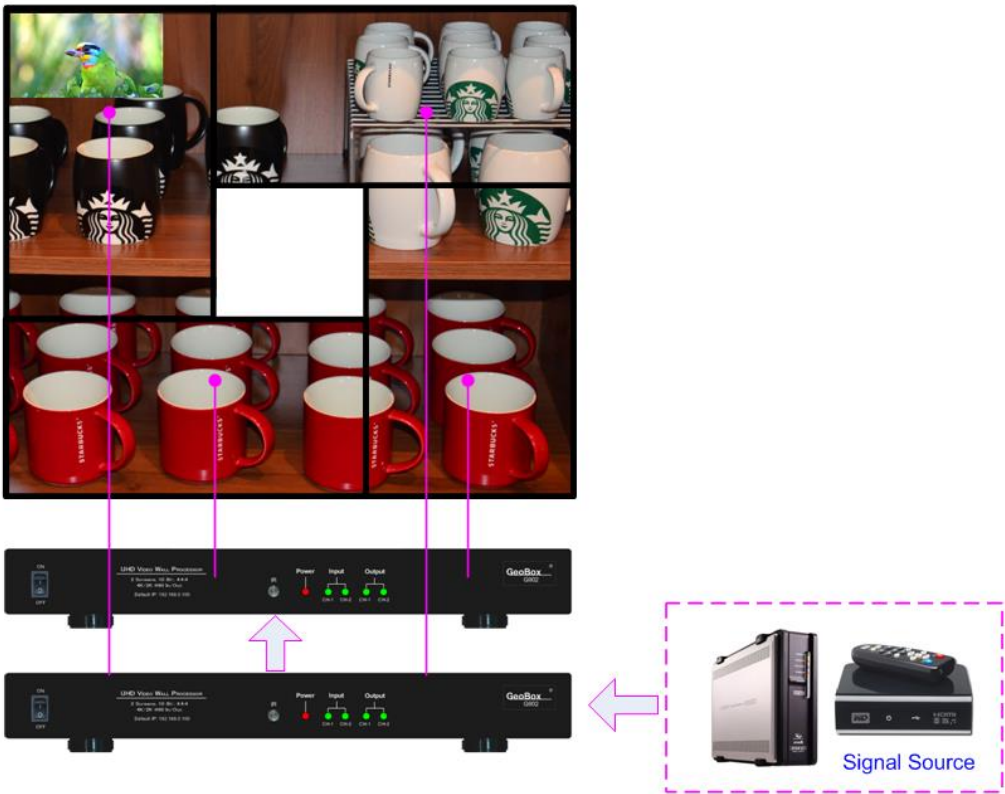
Each monitor displays different PIP images



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



Two G902 to build creative video wall (User can use one G904 to achieve the same)



C. 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 or three 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 be replaced with one G901 in this application.



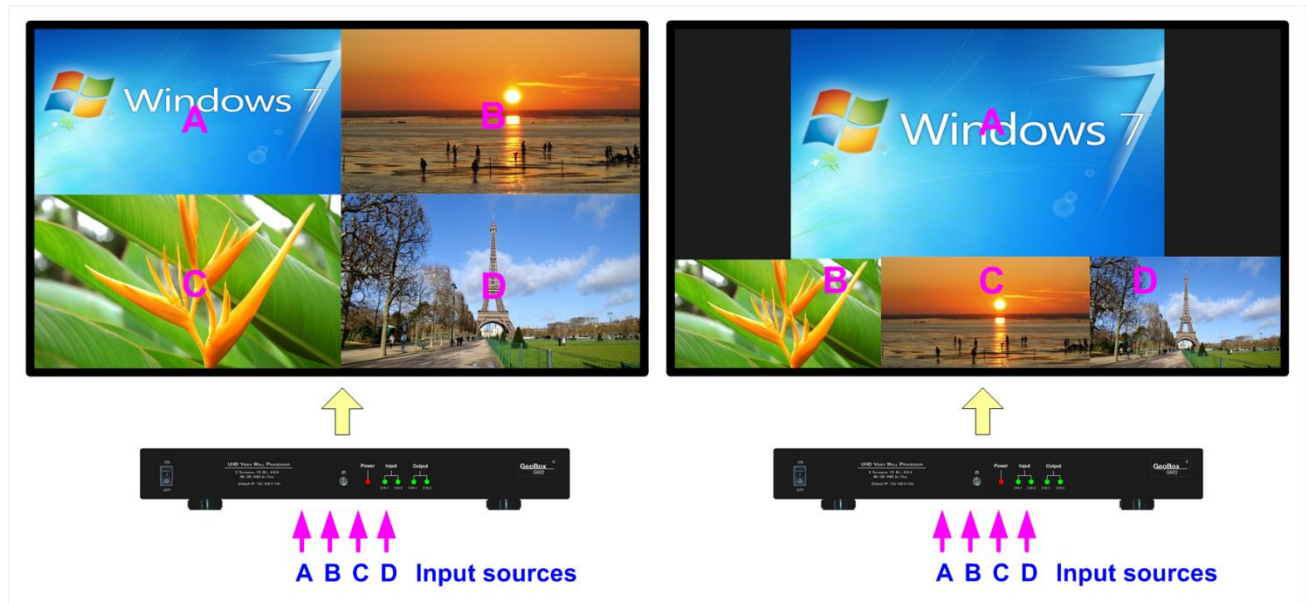
G902 can split 8k/2k image for two 4k/2k projectors and set overlap pixels for projector to do edge blending. **The projectors need to have geometry alignment and edge blending function.** No PC is required for the setup.

D. Multi-viewer: 3 split views in one UHD 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.



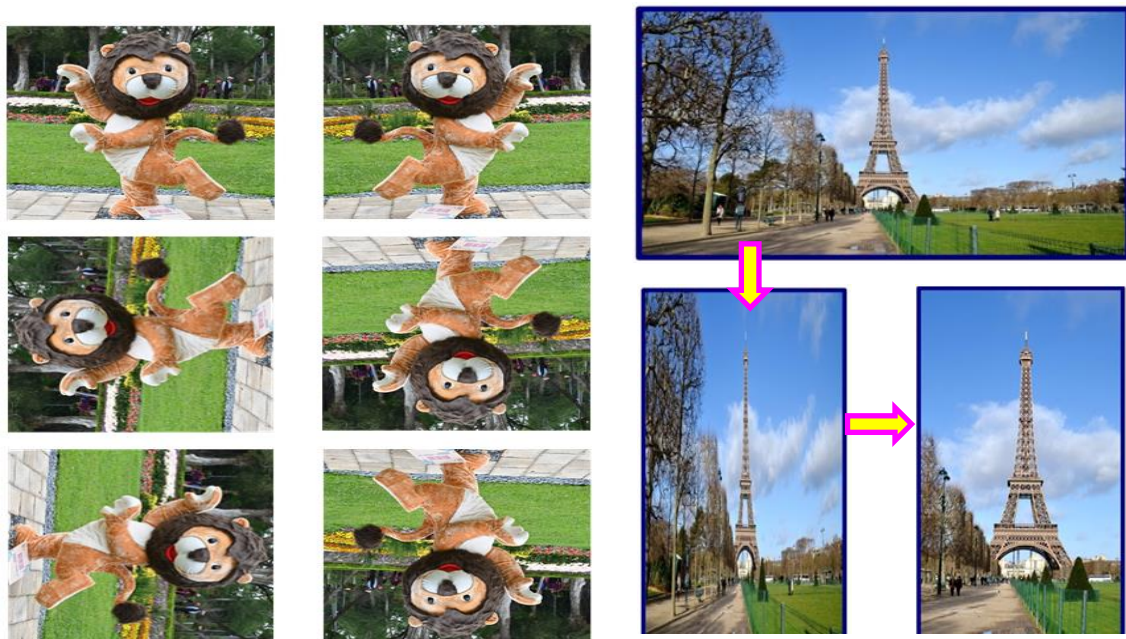
E. MultiViewer: [4x Split] & [4x T/B]



- 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.

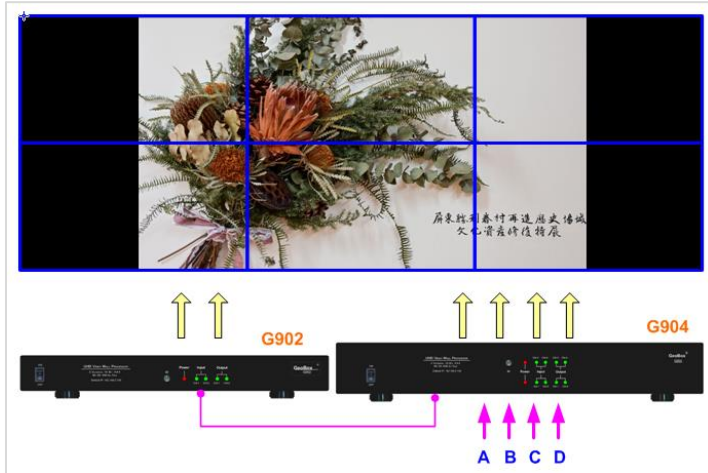
F. Image Flip & Rotation

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.

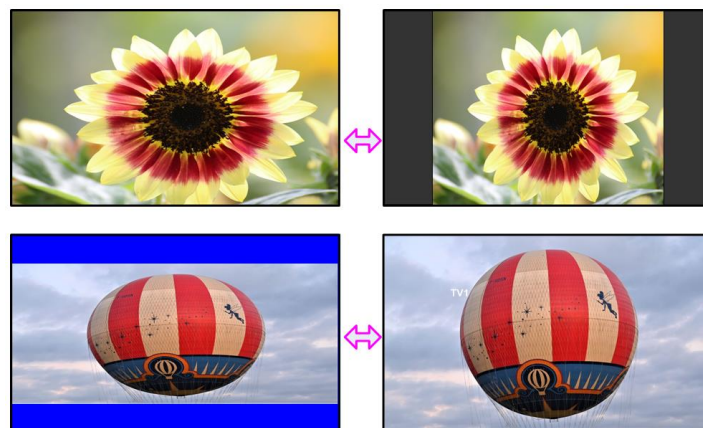


G. Stretch image and change aspect ratio

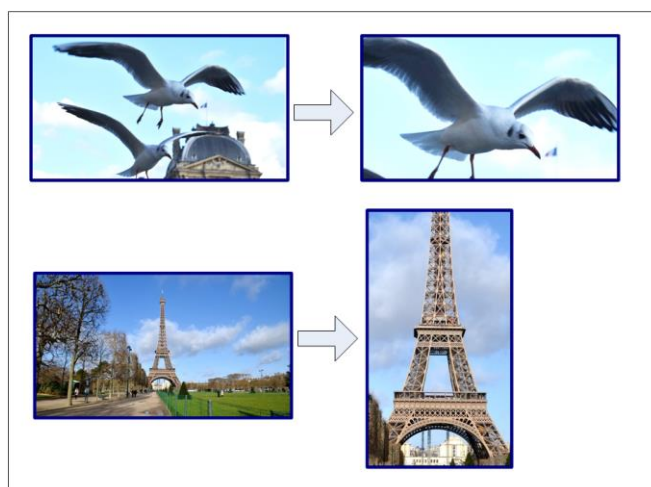
Overlap function can change image size, shift image position or change aspect ratio. The adjusting range is up to +_1800 pixels in each edge based on signal source. It can be applied to main and PIP/POP (sub-image) independently. Background color can be black or blue.



- 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.



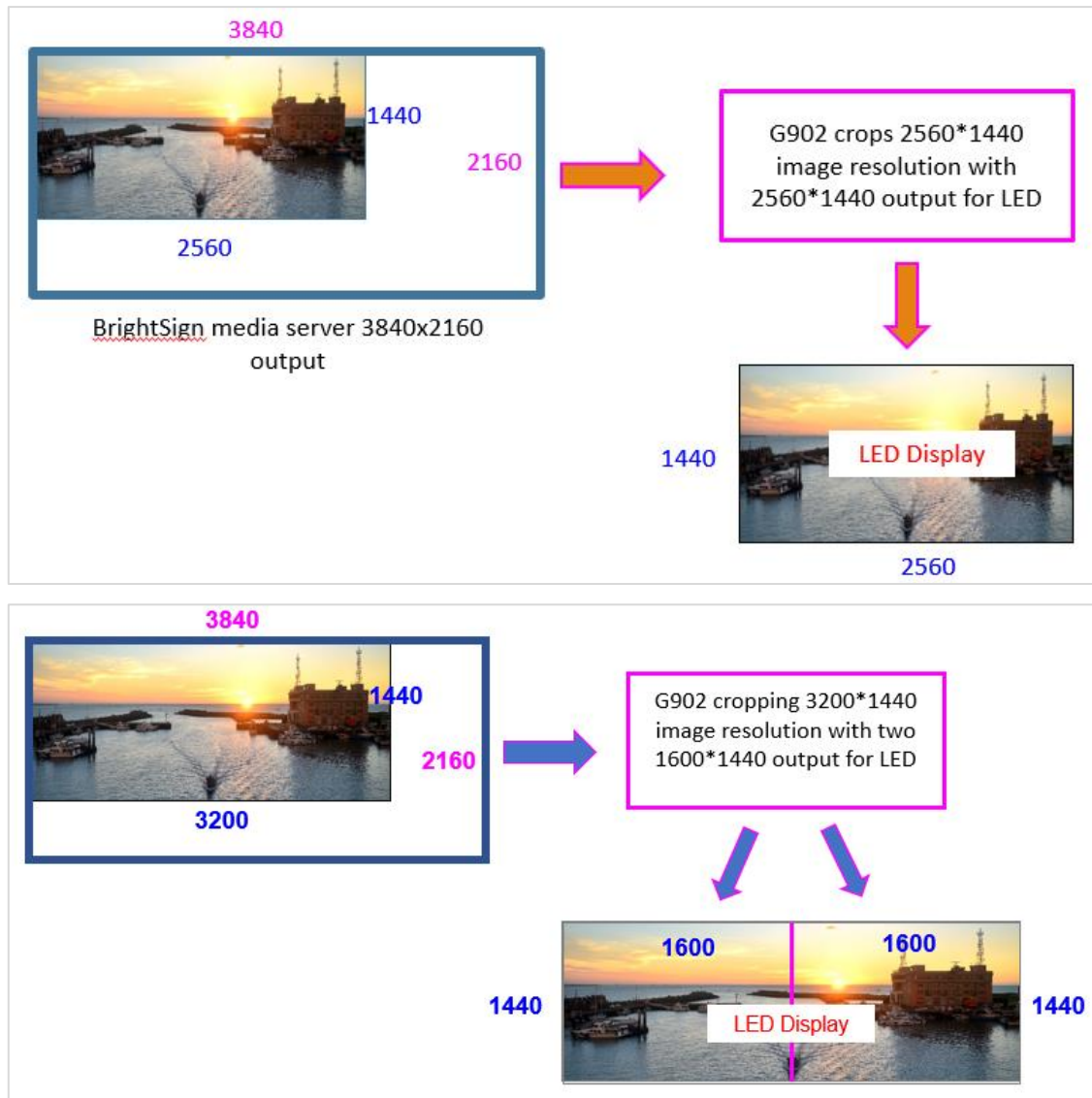
H. Image Cropping and rotation



Crop & Rotate

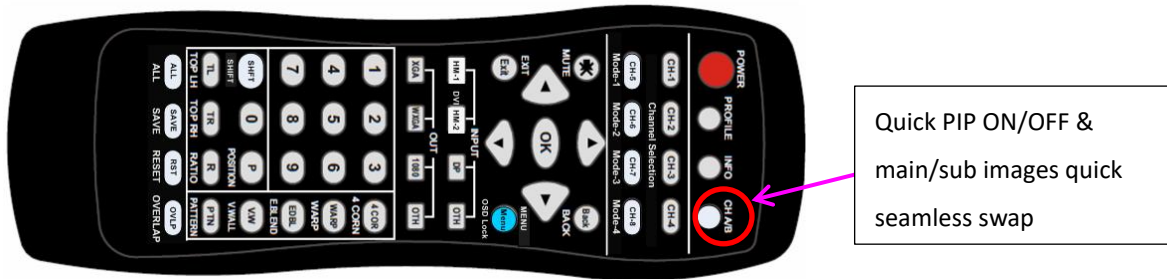
- Image cropping at any location in both main and PIP/POP (sub-image) independently.
- Image cropping function can co-exist with image rotation and flip functions.

I. Crop image for LED display

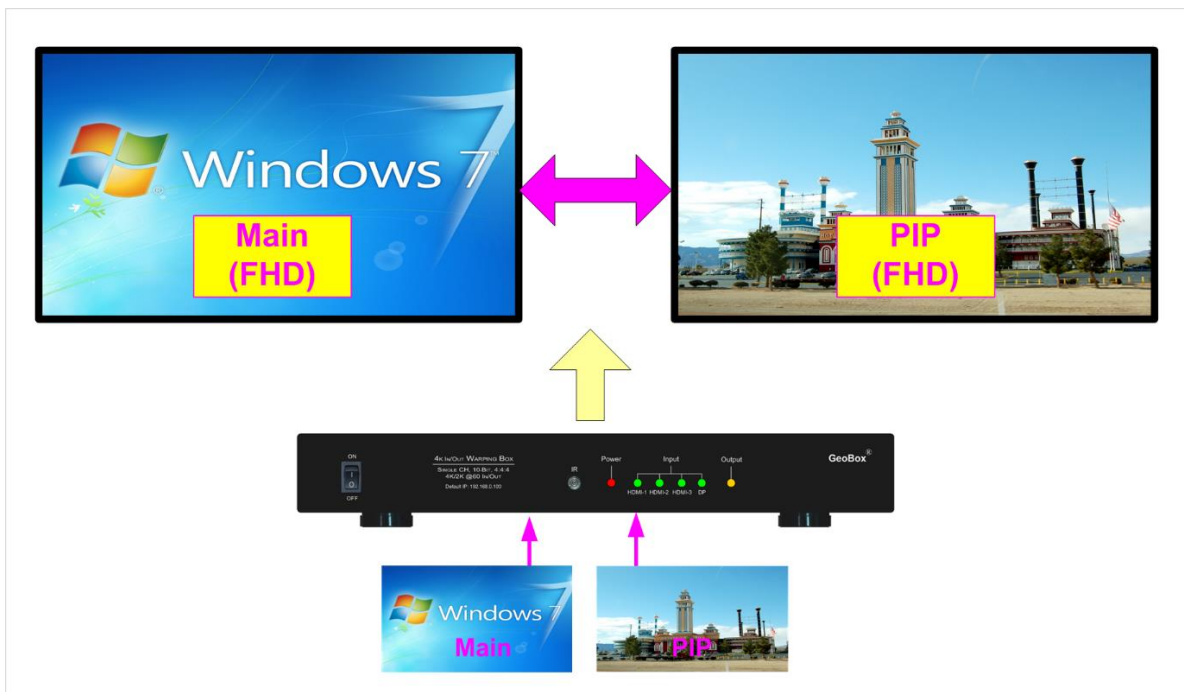


J. Quick PIP ON/OFF and two inputs quick seamless swap

- CH A/B key in remote controller can execute quick PIP image on/off.



- When the output resolution is set to 1920x1200 or 1920x1080, user can add full screen PIP image on top of main image. User can click [CH A/B] key to turn on/off PIP image to swap main/sub-images seamlessly.
- This image swap can be applied to any two inputs. Please assign one input to main image and another input to PIP image, then click [CH A/B] key to execute seamless quick swap between these two inputs.



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